

SAFARI OUTCROP DATABASE

SAFARI database standard

Version 2.0

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1. The SAFARI project

1.1 Project background

The original SAFARI project was undertaken between 1989 and 1994 by a consortium of Norwegian oil companies (Statoil, Norsk Hydro, Saga Petroleum) and the Norwegian Petroleum Directorate (NPD). This was one of the first projects to collect quantitative analogue data for reservoir modelling purposes, and resulted in a dataset of quantified heterogeneity data, as well as photos and text, from 13 different field analogues (outcrops) and 201 cross sections covering four depositional environments. However at that time, there was no proper database structure in which the data could be stored.

Around 2004 the SAFARI data were donated to the FORCE Sed/Strat group with the goal of building a digital database for outcrop data. The FORCE Sed/Strat group then took the initiative to enhance the database with new information collected using modern digital outcrop techniques. The Virtual Outcrop Group at the University of Bergen joined the project in 2007. The Sed/Strat Group decided that this new project should be called SAFARI after the original pioneering work.

The SAFARI project is a collaborative project between the Virtual Outcrop Geology (VOG) group based at the Centre for Integrated Petroleum Research (CIPR), the FORCE industry consortium and academic partners.

The goal of the current SAFARI project is to develop a fully searchable repository of geological outcrop data, from clastic sedimentary systems. The project is running in two phases. The first phase is supported by 25 sponsors and the Norwegian Research Councils Petromax program. Phase 1 will run from 2009 until 2012. Main goal for the SAFARI work group was the development of XML standards for describing outcrop nomenclature and building of a database structure. The second phase of the project is funded by 18 companies and started in 2011. The project will continue until 2013. Main objective beside acquiring new data is a web-based interface to the SAFARI database allowing amongst others data query and presentation, data input and export functionalities.

You can find more information about the SAFARI project at safariidb.com.

1.2 The SAFARI work group

The SAFARI work group is part of the Virtual Outcrop Geology group based at the Centre for Integrated Petroleum Research (Uni CIPR) of UniResearch AS. The group comprises scientific and technical staff that develops and maintains the standards and web-based applications for the sponsoring companies and collaborating partners. Additionally, master and PhD students are joining the group to acquire and analyse new outcrop data for continuously growth the database. Company-sponsored summer student temporarily joined the project to collect and process already existing outcrop data for the database from different data sources.

The SAFARI work group is supported by 25 sponsoring petroleum companies organized through FORCE Sed/Strat group and the Norwegian research council.

2. Introduction to SAFARI database standard 2.0

The SAFARI standard is defined as a new geological outcrop nomenclature standard for sandbody shape and depositional settings. It combines new definitions/contents with as much as possible existing and already accepted standards.

The definition of the SAFARI standard (enumerations and data tables) was done in collaboration with the FORCE consortium, Kevin Keogh (Statoil) and John Howell (project leader at Uni CIPR).

The SAFARI work group is collaboratively with sponsoring companies developing and maintaining the standard in the following four key areas: SAFARI data model, SAFARI XML schema, web-based interface and data content.

SAFARI data model

The SAFARI data model is the structural and conceptual basis for the SAFARI database. The current version 2.0 data model contains 430 data tables and 124 enumerations tables covering 4 main subject areas of geological outcrop nomenclature. Each subject area describes an important aspect of outcrops: general information, depositional settings information, lithostratigraphic information and sequence stratigraphic information. Additional to earlier versions, the SAFARI version 2.0 has been updated to allow the implementation of geometric data from modern depositional systems.

The tables and their relationship are described in detail at the end of this document and are also available at safariidb.com.

SAFARI XML schema

The SAFARI XML schema is based on WITSML (Wellsite information transfer standard markup language). WITSML is a standard for transmitting technical data between organisations in the petroleum industry that is continued to be developed by Energistics. The XML exchange standard is used to import new data into the database, as well as export data to other programs in a standardized format. SAFARI standard v.1.0 has been used to generate the XML schemas in autumn 2010. In the next step the SAFARI XML standard will be updated to implement changes made in SAFARI version 2.0.

Web-based interface

A web-based interface (safariidb.com) is developed for accessing and working with the SAFARI data and database. Key functionality includes the browsing outcrops in the database, searching on architectural element bodies, support system for feature requests and knowledge base for geological background information and description of the SAFARI standard. The web-based interface is subject to continuous development and maintenance procedures both initiated by user requests and the SAFARI work group itself. The next iteration includes the implementation of a web-based data upload tool (based on version 2.0) and expanded data query functionality (image/file search, expanded query entry points).

Data content

The SAFARI standard is defined in an open and most flexible way to allow data input (depositional data from outcrops and modern systems) from variable source and types. A certain amount of mandatory information must be given by the user to ensure a comparable evaluation of the data sets and their quality.

3. How you start working with the SAFARI database

The SAFARI database can be accessed through the web-portal <http://safaridb.com/>. On the public SAFARI web pages, general information about the project and SAFARI work group can be found.

To access the database, one needs to login to the pages. Sponsors of Phase 2 of the project can obtain login and password from their company super user or the SAFARI support contact. Collaborating partners (institutes which have agreed to share data with the SAFARI user community) may obtain login and password from the SAFARI support. Once logged into the SAFARI member pages, the user has various options for how to use the database.

Search

The **Search** is interacting with the SAFARI database system as a whole. It allows the user to type specific words/terms to find information from the various parts of the SAFARI systems (e.g. knowledge base, outcrops, geometric data, images and other files).

A main application of the search covers the hard data of the database. This is the numerical information that can be used to populate reservoir models. It includes data on object size and shape, training images for multipoint statistical modelling and variograms for sequential indicator simulation.

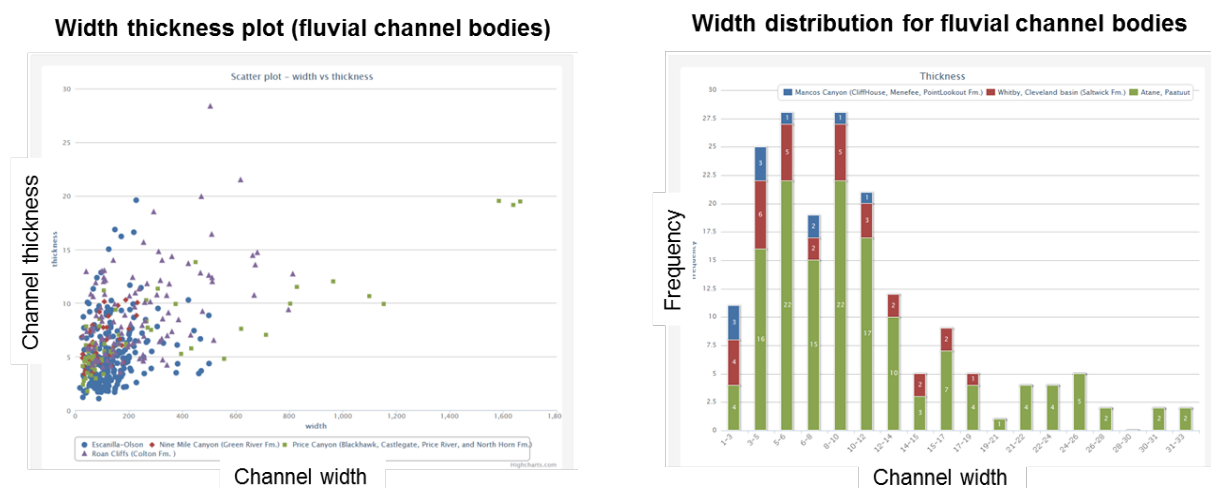


Figure 1: Examples of search results for architectural element geometry statistics.

Browse

The **Browse** function returns a complete list of all outcrop sections stored in the SAFARI database. Each outcrop section is connected to a descriptive summary page (automatically generated by the system) which includes links to downloadable file such as images, cross-sections as well as automatically generated and section specific data quality report.

Knowledge base (wiki)

The **Knowledge base**, also called SAFARI wiki, comprises the soft data of the SAFARI system. This is information that improves conceptual understand of depositional systems for geologist and reservoir modelers working in clastic reservoirs. The knowledge base is organised in a familiar way that includes articles and their discussion pages in main and sub categories. Currently the articles describe/define each single element of the SAFARI classification schema for depositional

environment. A typically article includes a short summary and the following paragraphs: description, diagnostic features in core/well, examples (linked to both modern depositional system pictures and virtual outcrops examples), reservoir aspects and modelling strategies. Below an example of an architectural element is given.

Abandoned channel fill

Relations Edit Create

MAIN CATEGORY
Continental GDE

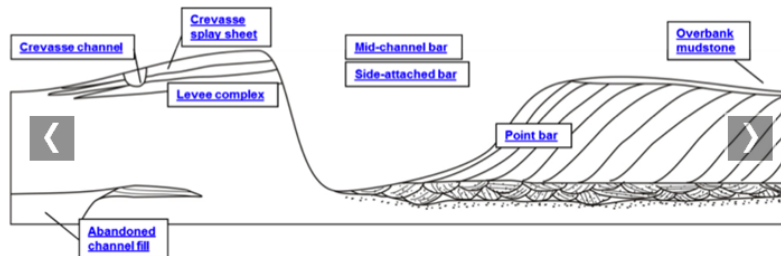
SUB CATEGORY
Architectural
Element

ALL ARTICLES
All articles

SEARCH

Go!

Article Discussion



Schematic of meandering fluvial system

Note the active channel, the channel belt and an older abandoned channel

Within fluvial systems, the channel is a conduit for carrying water and sediment as either bed load or suspended load. Sediment is deposited in a variety of barforms on the base and edges of the channels. The active channel may become abandoned through avulsion of the entire channel system, neck-cut off at a meander bend or switching of channel position within a braid belt. The abandoned stretch of the channel, which typically becomes a standing body of water is then filled, normally be fine grained sediment and or organic debris (peat). A critical aspect of the abandoned channel deposits is that they provide insight into the dimensions of the original active channel which can be hard to determine from channel belt deposits that are made up of laterally accreting bar forms.

Description

Abandoned channel fills are typically comprised of fine grained deposits, commonly organic rich mudstones. In cross section they exhibit a channel shapes with an erosive base. They will commonly sit adjacent to the deposits of the coarser grained barforms that were active immediately prior to channel abandonment. In high net gross sand rich fluvial systems they may occur as discontinuous lens of fine grained material. Slumps and collapse features from the adjacent bank are common. In areas of limited exposure they may be difficult to distinguish from the surrounding overbank deposits.

Diagnostic features in core/well logs

Mud dominated abandoned channel deposits will be extremely difficult to distinguish from overbank mudstones with wireline logs alone. They will also be difficult to distinguish in core, however they may be darker in colour than the surrounding overbank deposits (more organic) and will lack internal structures associated with sub aerial exposure.

Figure 2: Example of the wiki entry for abandoned channel fill (only upper part of the article is shown).

Data upload

The *Data upload* tool allows any user to upload data into the database. The upload tool is absolutely coherent with the SAFARI standard 2.0

Standard

The *SAFARI standard v2.0* is published completely on the safaridb.com webpage. This allows users to investigate and better understand the structure and content of the SAFARI database in terms of data tables, enumerations and their relationships. There are two sub-menus when clicking the standard tab. Clicking the *show* button will directly open the data table 'ModelProject' that defines the top of the standard. Any other data table links down from there. When clicking the *overview* button, a side menu appears with lists for all data tables (entities) and enumerations. The entities and enumerations are organised in packages and subpackages (see table below).

Table 1: Organisation structure of entities and enumerations on *Standard overview* page at safariidb.com.

Package	Subpackage	entities and enumerations related to...
model	file	... supporting objects (e.g. files, pictures...)
	general	... general data model
	modern	... general modern depositional section data
	outcrop	... general outcrop data
depositional	general	... general depositional model
	lithology	... lithology data
	modern.ae	... modern depositional data – Architectural elements
	modern.de	... modern depositional data – Depositional environments
	modern.gde	... modern depositional data – Gross depositional environments
	modern.se	... modern depositional data – Sub environments
	outcrop.ae	... outcrop depositional data – Architectural elements
	outcrop.de	... outcrop depositional data – Depositional environments
	outcrop.gde	... outcrop depositional data – Gross depositional environments
	outcrop.lf	... outcrop depositional data – Lithofacies
lithostrat	age	... geological age data
	general	... general lithostratigraphical model
sequenceStrat	general	... general sequence stratigraphical model

SAFARI support system

The *SAFARI support system* allows the user to request new features, ask for support or report bugs and other software-related problems.

Requests for modifications or enhancements of the SAFARI standard should be submitted through this system with a summary of the request made, a detailed description of the business requirement (why you want the change made) and a suggested field type, requirements and description for each attribute requested.

4. SAFARI v2.0 – Classification schema for depositional environments

Significant changes have been made to the classification schema v2.0 on all hierarchical levels aiming a more logical and consistent structure of the schema itself and between the single elements. The basic definition of each hierarchical level is summarized in the table below.

Table 2: Definition of depositional hierarchical levels.

Gross depositional environments	= First order distinction based on the broad depositional setting.
Depositional environment	= Second order distinction into the key environments, commonly equates to the play level.
Subenvironment	= Subdivision based upon specific elements of the depositional environment, commonly equates to a hydrocarbon field.
Architectural elements	= Deposits at a scale that would typically be used for reservoir modelling.

In total, three gross depositional environments are identified and shown below.

Table 3: Elements of the first two depositional levels.

Gross depositional environments	Depositional environment	Definition
Continental	Erg	Dominated by aeolian processes.
	Lake	Dominated by lacustrine processes.
	Alluvial	Dominated by fluvial and overbank processes.
Paralic and shallow marine	Fluvio deltaic	F: Fluvial dominated delta.
	Tide influenced delta	Ft: Fluvial dominated, tidal influenced delta.
	Wave influenced delta	Fw: Fluvial dominated, wave influenced delta.
	Shoreface	W: Non deltaic, regressive wave dominated shoreline.
	Tide influenced shoreface	Wt: Non deltaic, wave dominated, tidally influenced shoreline.
	Wave dominated delta	Wf: Wave dominated, fluvial influenced delta.
	Tidal shoreline non deltaic	T: Non deltaic shoreline dominated by tidal processes.
	Wave influenced tidal shoreline	Tw: Non deltaic, tide dominated, wave influenced shoreline.
	Tide dominated delta	Tf: Tide dominated, fluvial influenced delta.
	Barrier island	W: Transgressive, wave dominated coastline with barrier islands.
	Wave dominated estuary	Wf: Drowned river valley with a low tidal range. Dominated by wave processes at the mouth and fluvial processes at the bay head.
	Tide influenced barrier island	Wt: Transgressive, wave dominated coastline with barrier islands cut by frequent tidal channels.
Tide dominated estuary	Tf: Drowned river valley on a tide dominated shoreline.	
Deep marine	Shelf	Shallow marine shelf.
	Slope	Deep water deposits dominated by gravity processes on a slope (tectonic or passive).
	Basin Floor	Deep water deposits dominated by gravity processes on the basin floor.

An additional structural change is the introduction of "filters". These are predefined on a specific hierarchical level and provide an additional degree of granularity that is relevant to that specific category not to other categories at the same level. So far only a filter for "climate" was added to the continental environment. Depending on the chosen "climate" the set of depositional elements to be chosen from is adjusted accordingly.

On the following pages the classification schema is presented. The diagrams summarize the full list of elements for each gross depositional environment and depositional level. Additionally, the impact of the filter on the depositional elements is shown.

The diagrams of the classification schema use a number of colours and font styles to simplify the understanding of the schemas content. Colours are used to identify applied filters. Further elements and environments are highlighted that allow comparison of data between outcrops and modern depositional systems. Below is a summary with detailed description of the used symbology.

Table 4: General symbology for classification schema diagrams (AE = architectural element).

Colour code	description
any architectural element (AE)	Fields without special highlighting contain elements that are apply to outcrop data.
<i>background AE</i>	<i>Italic</i> written architectural elements describe background elements, usually applicable to outcrop data.
AE applicable to modern and outcrop systems	Fields highlighted in light green contain elements that are applicable to both outcrops and modern depositional systems. These elements can be used for direct comparisons between them.
modern AE only	Elements with bold green naming are distinct applications to modern depositional systems only.

4.1 Continental - gross depositional environment

The climate filter applied to the continental gross depositional environment is based on the Köppen-Geiger climate classification. The definitions and details of the filter is summarized in the table below.

Table 5: Climate classification filter after Köppen-Geiger.

colour code / enumeration	definition
equatorial	$T_{min} \geq +18 \text{ }^{\circ}\text{C}$
arid	$P_{ann} < 10 P_{th}$ (P_{ann} = accumulated annual precipitation, P_{th} = dryness threshold)
warm temperate	$-3 \text{ }^{\circ}\text{C} < T_{min} < +18 \text{ }^{\circ}\text{C}$
snow	$T_{min} \leq -3 \text{ }^{\circ}\text{C}$
polar	$T_{max} < +10 \text{ }^{\circ}\text{C}$

Detailed information about the classification is published in: Kottek, M., J. Grieser, C. Beck, B. Rudolf, and F. Rubel, 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263. DOI: 10.1127/0941-2948/2006/0130.

Gross depositional environment	Climate filter	Depositional Environment	Subenvironment	Architectural element (deposits) (in alphabetic order)	
Continental	equatorial	Lake	Lacustrine delta	Lacustrine delta mouth bar	
				Lacustrine distributary channel	
			Lacustrine non-deltaic shoreline	Lacustrine beach deposit	
				Lacustrine shoreface deposit	
			Lacustrine	<i>Evaporite</i>	
				<i>Lacustrine carbonate</i>	
				<i>Lacustrine mudstone</i>	
				<i>Lacustrine turbidite</i>	
			Alluvial	Alluvial fan	Abandoned channel fill
					Mid-channel bar
		Point bar			
		Sheetflood deposit			
		Side-attached bar			
		Sub-aerial debris flow deposit			
		Undifferentiated sheet			
		Alluvial plain		<i>Overbank mudstone</i>	
				Paleosol, immature	
				Paleosol, mature	
				Paleosol, undifferentiated	
		Peat/coal deposit			
		Fluvial		Abandoned channel fill	
				Channel belt, MultiStorey-Multilateral	
				Channel belt, MultiStorey-Unilateral	
				Channel belt, SingleStorey-Multilateral	
				Channel belt, SingleStorey-Unilateral	
				Channel belt, undifferentiated fill	
				Fluvial sheetflood	
				Mid-channel bar	
				Modern channel	
				Modern channel belt	
				Point bar	
				Side-attached bar	
				Incised valley	Abandoned channel fill
					Channel belt, MultiStorey-Multilateral
		Channel belt, MultiStorey-Unilateral			
		Channel belt, SingleStorey-Multilateral			
		Channel belt, SingleStorey-Unilateral			
		Channel belt, undifferentiated fill			
		Crevasse channel			
		Crevasse splay sheet			
		Fluvial sheetflood			
		Levee complex			
		Mid-channel bar			
		Modern channel			
		Modern channel belt			
		<i>Overbank mudstone</i>			
		Paleosol, immature			
Paleosol, mature					
Paleosol, undifferentiated					
Peat/coal deposit					
Point bar					
Side-attached bar					
Overbank	Crevasse channel				
	Crevasse splay sheet				
	Levee complex				
	<i>Overbank mudstone</i>				

Figure 3: Continental gross depositional environment with 'equatorial' climate filter.

Gross depositional environment	Climate filter	Depositional Environment	Subenvironment	Architectural element (deposits) (in alphabetic order)	
Continental	arid	Erg	Dune complex	Aeolian dunes	
				Damp interdune	
				Dry interdune	
		Lake	Sandsheet	Dry sandsheet	
			Lacustrine delta	Lacustrine delta mouth bar	
				Lacustrine distributary channel	
				Lacustrine non-deltaic shoreline	Lacustrine beach deposit
					Lacustrine shoreface deposit
			Sabkha	Damp sabkha	
				Wet sabkha	
			Lacustrine	Evaporite	
				Lacustrine carbonate	
				Lacustrine mudstone	
				Lacustrine turbidite	
			Alluvial	Alluvial fan	Abandoned channel fill
					Mid-channel bar
					Point bar
		Sheetflood deposit			
		Side-attached bar			
		Sub-aerial debris flow deposit			
		Undifferentiated sheet			
		Alluvial Plain			Overbank mudstone
					Paleosol, immature
					Paleosol, mature
				Paleosol, undifferentiated	
		Fluvial		Abandoned channel fill	
				Channel belt, MultiStorey-Multilateral	
				Channel belt, MultiStorey-Unilateral	
				Channel belt, SingleStorey-Multilateral	
				Channel belt, SingleStorey-Unilateral	
				Channel belt, undifferentiated fill	
				Fluvial sheetflood	
				Mid-channel bar	
				Modern channel	
				Modern channel belt	
				Point bar	
				Side-attached bar	
				Incised valley	Abandoned channel fill
					Channel belt, MultiStorey-Multilateral
					Channel belt, MultiStorey-Unilateral
					Channel belt, SingleStorey-Multilateral
					Channel belt, SingleStorey-Unilateral
					Channel belt, undifferentiated fill
					Crevasse channel
		Crevasse splay sheet			
		Fluvial sheetflood			
		Levee complex			
Mid-channel bar					
Modern channel					
Modern channel belt					
Overbank mudstone					
Paleosol, immature					
Paleosol, mature					
Paleosol, undifferentiated					
Peat/coal deposit					
Point bar					
Side-attached bar					
Overbank	Crevasse channel				
	Crevasse splay sheet				
	Levee complex				
	Overbank mudstone				

Figure 4: Continental gross depositional environment with 'arid' climate filter.

Gross depositional environment	Climate filter	Depositional Environment	Subenvironment	Architectural element (deposits) (in alphabetic order)	
Continental	warm temperate	Lake	Lacustrine delta	Lacustrine delta mouth bar	
				Lacustrine distributary channel	
			Lacustrine non-deltaic shoreline	Lacustrine beach deposit	
				Lacustrine shoreface deposit	
			Lacustrine	<i>Lacustrine carbonate</i>	
				<i>Lacustrine mudstone</i>	
				<i>Lacustrine turbidite</i>	
			Alluvial	Alluvial fan	Abandoned channel fill
					Mid-channel bar
					Point bar
					Sheetflood deposit
					Side-attached bar
					Sub-aerial debris flow deposit
					Undifferentiated sheet
				Alluvial plain	<i>Overbank mudstone</i>
					Paleosol, immature
					Paleosol, mature
					Paleosol, undifferentiated
					Peat/coal deposit
				Fluvial	Abandoned channel fill
					Channel belt, MultiStorey-Multilateral
					Channel belt, MultiStorey-Unilateral
					Channel belt, SingleStorey-Multilateral
					Channel belt, SingleStorey-Unilateral
					Channel belt, undifferentiated fill
					Fluvial sheetflood
					Mid-channel bar
					Modern channel
					Modern channel belt
					Point bar
					Side-attached bar
					Incised valley
				Channel belt, MultiStorey-Multilateral	
				Channel belt, MultiStorey-Unilateral	
			Channel belt, SingleStorey-Multilateral		
			Channel belt, SingleStorey-Unilateral		
			Channel belt, undifferentiated fill		
			Crevasse channel		
			Crevasse splay sheet		
			Fluvial sheetflood		
			Levee complex		
			Mid-channel bar		
			Modern channel		
			Modern channel belt		
			<i>Overbank mudstone</i>		
			Paleosol, immature		
			Paleosol, mature		
	Paleosol, undifferentiated				
	Peat/coal deposit				
	Point bar				
	Side-attached bar				
	Overbank	Crevasse channel			
		Crevasse splay sheet			
		Levee complex			
		<i>Overbank mudstone</i>			

Figure 5: Continental gross depositional environment with 'warm temperate' climate filter.

Gross depositional environment	Climate filter	Depositional Environment	Subenvironment	Architectural element (deposits) (in alphabetic order)	
Continental	snow/polar	Erg	Dune complex	Aeolian dunes	
				Damp interdune	
				Dry interdune	
			Sandsheet	Dry sandsheet	
		Lake	Lacustrine delta	Lacustrine delta mouth bar	
				Lacustrine distributary channel	
			Lacustrine non-deltaic shoreline	Lacustrine beach deposit	
				Lacustrine shoreface deposit	
			Lacustrine	<i>Lacustrine mudstone</i>	
			<i>Lacustrine turbidite</i>		
		Alluvial	Alluvial fan	Abandoned channel fill	
				Mid-channel bar	
				Point bar	
				Sheetflood deposit	
				Side-attached bar	
				Sub-aerial debris flow deposit	
				Undifferentiated sheet	
				Alluvial plain	<i>Overbank mudstone</i>
					Paleosol, immature
					Paleosol, mature
			Paleosol, undifferentiated		
				Peat/coal deposit	
			Fluvial	Abandoned channel fill	
				Channel belt, MultiStorey-Multilateral	
				Channel belt, MultiStorey-Unilateral	
				Channel belt, SingleStorey-Multilateral	
				Channel belt, SingleStorey-Unilateral	
				Channel belt, undifferentiated fill	
				Fluvial sheetflood	
				Mid-channel bar	
				Modern channel	
				Modern channel belt	
				Point bar	
				Side-attached bar	
				Incised valley	Abandoned channel fill
					Channel belt, MultiStorey-Multilateral
					Channel belt, MultiStorey-Unilateral
			Channel belt, SingleStorey-Multilateral		
			Channel belt, SingleStorey-Unilateral		
			Channel belt, undifferentiated fill		
		Crevasse channel			
		Crevasse splay sheet			
		Fluvial sheetflood			
		Levee complex			
		Mid-channel bar			
		Modern channel			
		Modern channel belt			
		<i>Overbank mudstone</i>			
		Paleosol, immature			
		Paleosol, mature			
Paleosol, undifferentiated					
Peat/coal deposit					
Point bar					
Side-attached bar					
Overbank	Crevasse channel				
	Crevasse splay sheet				
	Levee complex				
	<i>Overbank mudstone</i>				
Sub-glacial	not yet defined				
Peri-glacial	not yet defined				

Figure 6: Continental gross depositional environment with 'snow/polar' climate filter. Note that glacial depositional environments are not yet implemented.

4.2 Paralic and shallow marine - gross depositional environment

So far there was no filter applied to paralic and shallow marine gross depositional environment. However, the table below summarizes a colour code based on dominant depositional processes that has been used on depositional environment level.

Table 6: Colour code for dominant depositional processes in paralic and shallow marine environments.

Abbreviation/ colour code	definition
F	Fluvial dominated process
Ft	Fluvial dominated, tide influenced
Fw	Fluvial dominated, wave influenced
W	Wave dominated process
Wf	Wave dominated, fluvial influenced
Wt	Wave dominated, tide influenced
T	Tide dominated process
Tf	Tide dominated, fluvial influenced
Tw	Tide dominated, wave influenced

Gross depositional environment	Depositional Environment	Subenvironment	Architectural element (deposits) (in alphabetic order)	
Paralic and Shallow marine	F: Fluvio-deltaic	Delta top	Coastal dune	
			Distributary channel	
			Peat/coal deposit	
		Delta front	Delta mouth bar	
			Lower delta front deposit	
			Upper delta front deposit	
		Prodelta	Prodelta deposit	
		Ft: Tide-influenced delta	Delta top	Coastal dune
				Distributary channel
			Peat/coal deposit	
			Tidal point bar	
			Tidally influenced fluvial braid bar	
			Tidally influenced fluvial channel	
			Tidally influenced fluvial point bar	
			Tidally influenced fluvial side bar	
	Delta front		Delta mouth bar	
		Lower delta front deposit		
		Upper delta front deposit		
	Prodelta	Prodelta deposit		
	Fw: Wave-influenced delta	Delta top	Coastal dune	
			Distributary channel	
			Peat/coal deposit	
		Delta front	Delta mouth bar	
			Lower delta front deposit	
			Upper delta front deposit	
	Prodelta	Prodelta deposit		
	W: Shoreface	Backshore	Coastal dune	
			Peat/coal deposit	
			<i>Supra-tidal sabkha deposit</i>	
		Foreshore	Beach bar	
		Beach deposit		
		Beach ridge/chenier		
		Berm		
Shoreface		Lower shoreface deposit		
		Rip channel		
		Upper shoreface deposit		
Offshore transition zone	Offshore transition zone deposit			
Wf: Wave-dominated delta	Delta top	Coastal dune		
		Distributary channel		
		Peat/coal deposit		
	Foreshore	Beach deposit		
		Beach ridge/chenier		
	Shoreface	Lower shoreface deposit		
		Rip channel		
		Upper shoreface deposit		
	Offshore transition zone	Offshore transition zone deposit		

Figure 7: Paralic and shallow marine gross depositional environment (1/4).

Gross depositional environment	Depositional Environment	Subenvironment	Architectural element (deposits) (in alphabetic order)	
Paralic and Shallow marine	Wt: Tide-influenced shoreface	Backshore	Coastal dune	
			Peat/coal deposit	
			<i>Supra-tidal sabkha deposit</i>	
			Tidal channel	
			Tidal point bar	
		Foreshore	Beach deposit	
			Beach ridge/chenier	
			<i>Inter-tidal sabkha deposit</i>	
		Shoreface	Lower shoreface deposit	
			Rip channel	
			Upper shoreface deposit	
		Offshore transition zone	Offshore transition zone deposit	
		T: Tidal shoreline - non-deltaic	Supra-tidal flat	Peat/coal deposit
				Supra-tidal flat deposit
	<i>Supra-tidal sabkha deposit</i>			
	Tidal channel			
	Tidal point bar			
	Inter-tidal flat		Inter-tidal bar	
			Inter-tidal flat deposit	
			<i>Inter-tidal sabkha deposit</i>	
	Sub-tidal		Sub-tidal bar	
			Sub-tidal channel	
			Tidal channel	
	Offshore transition zone		Offshore transition zone deposit	
	Tw: Wave-influenced tidal shoreline		Supra-tidal flat	Peat/coal deposit
				Supra-tidal flat deposit
		<i>Supra-tidal sabkha deposit</i>		
		Tidal channel		
		Tidal point bar		
		Inter-tidal flat	Beach bar	
			Beach deposit	
			Beach ridge/chenier	
			Inter-tidal bar	
			Inter-tidal flat deposit	
			<i>Inter-tidal sabkha deposit</i>	
		Sub-tidal	Sub-tidal bar	
			Sub-tidal channel	
			Tidal channel	
	Shoreface	Lower shoreface deposit		
		Rip channel		
		Upper shoreface deposit		
	Offshore transition zone	Offshore transition zone deposit		
Tf: Tide-dominated delta	Delta top	Coastal dune		
		Distributary channel		
		Peat/coal deposit		
		Tidal point bar		
		Tidally influenced fluvial braid bar		
		Tidally influenced fluvial channel		
		Tidally influenced fluvial point bar		
		Tidally influenced fluvial side bar		
	Delta front	Delta mouth bar		
		Lower delta front deposit		
		Upper delta front deposit		
	Prodelta	Prodelta deposit		

Figure 8: Paralic and shallow marine gross depositional environment (2/4).

Gross depositional environment	Depositional Environment	Subenvironment	Architectural element (deposits) (in alphabetic order)
Paralic and Shallow marine	W: Barrier island	Lagoon	Lagoonal mudstone
			Lagoonal sandstone
		Barrier	Coastal dune
			Ebb-tidal delta
			Flood-tidal delta
			Peat/coal deposit
			Tidal inlet channel
			Undifferentiated barrier complex
		Foreshore	Washover fan
			Beach bar
			Beach deposit
		Shoreface	Beach ridge/chenier
	Lower shoreface deposit		
	Offshore transition zone	Rip channel	
		Upper shoreface deposit	
	Wf: Wave-dominated estuary	Bay head	Offshore transition zone deposit
			Bay head delta
			Distributary channel
		Central basin	Peat/coal deposit
			Bay fill deposit
		Barrier inlet	Lagoonal mudstone
			Lagoonal sandstone
			Coastal dune
			Ebb-tidal delta
			Flood-tidal delta
			Peat/coal deposit
		Foreshore	Tidal inlet channel
			Undifferentiated barrier complex
			Washover fan
			Beach bar
		Shoreface	Beach deposit
			Beach ridge/chenier
			Berm
	Offshore transition zone	Lower shoreface deposit	
		Rip channel	
	Wt: Tide-influenced barrier island	Lagoon	Upper shoreface deposit
Offshore transition zone deposit			
Barrier		Lagoonal mudstone	
		Lagoonal sandstone	
		Coastal dune	
		Ebb-tidal delta	
		Flood-tidal delta	
		Peat/coal deposit	
Inlet		Tidal inlet channel	
		Undifferentiated barrier complex	
Foreshore		Washover fan	
		Beach bar	
	Beach deposit		
Shoreface	Beach ridge/chenier		
	Lower shoreface deposit		
Offshore transition zone	Rip channel		
	Upper shoreface deposit		

Figure 9: Paralic and shallow marine gross depositional environment (3/4).

Gross depositional environment	Depositional Environment	Subenvironment	Architectural element (deposits) (in alphabetic order)	
Paralic and Shallow marine	Tf: Tide-dominated estuary	Supra-tidal flat	Peat/coal deposit	
			Supra-tidal flat deposit	
			Tidal channel	
			Tidal point bar	
		Inter-tidal flat	Inter-tidal bar	
			Inter-tidal flat deposit	
			Tidal channel	
		Sub-tidal	Sub-tidal bar	
			Sub-tidal channel	
			Tidal channel	
		Shelf	Epicontinental shelf	Shelf channel
				<i>Shelf mudstone</i>
	Shelf turbidite			
	Tempestite			
	Pericontinental shelf		Tidal sandwave	
			Shelf channel	
			<i>Shelf mudstone</i>	
		Shelf turbidite		
		Tempestite		
	Tidal sandwave			

Figure 10: Paralic and shallow marine gross depositional environment (4/4).

4.3 Deep marine - gross depositional environment

So far, no filters were applied to the deep marine gross depositional environment.

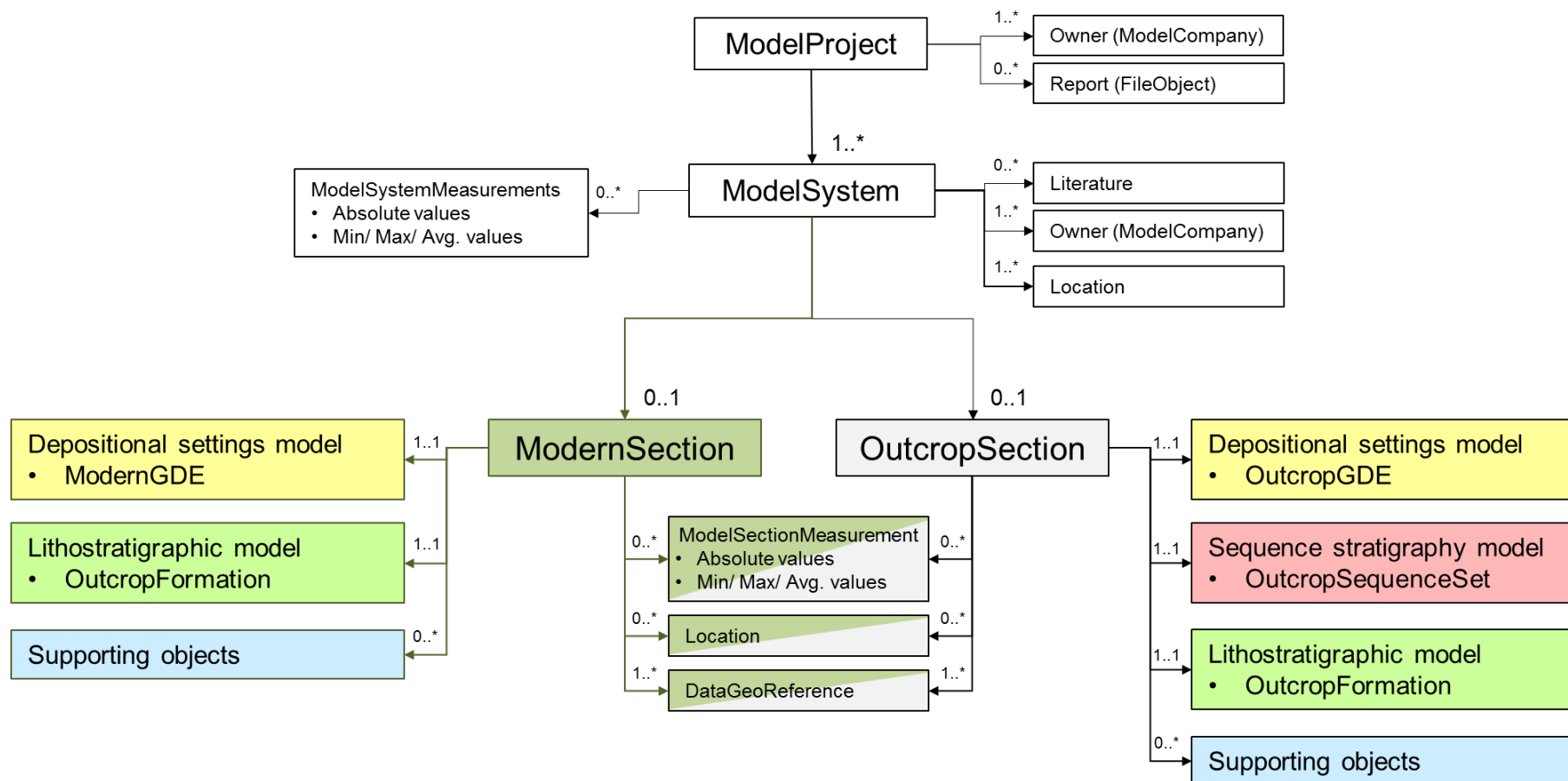
Gross depositional environment	Depositional Environment	Subenvironment	Architectural element (deposits) (in alphabetic order)
Deep marine	Slope	Erosional confined channel belt complex	Aggradational submarine channel belt
			Erosional submarine channel belt
			Internal submarine levee
			Passive submarine channel fill
			Submarine debris flow deposit
			Submarine meandering channel belt
		Submarine outerbank bar	
		Submarine point bar	
		Erosional to levee confined channel belt complex	Aggradational submarine channel belt
			Erosional submarine channel belt
			External submarine levee
			Internal submarine levee
	Submarine debris flow deposit		
	Submarine meandering channel belt		
	Slope - non turbidite	Submarine outerbank bar	
		Submarine point bar	
		Undifferentiated submarine levee	
	Basin Floor	Unconfined levee channel belt complex	Contourite
			<i>Hemipelagic mudstone</i>
			Mass transport complex
			Aggradational submarine channel belt
Submarine debris flow deposit			
Submarine meandering channel belt			
Lobe		Submarine outerbank bar	
		Submarine point bar	
		Undifferentiated submarine levee	
Basin Floor - non turbidite		Distal turbidite sheet	
		Proximal turbidite sheet	
		Contourite	
		<i>Hemipelagic mudstone</i>	
		Mass transport complex	
		<i>Pelagic mudstone</i>	

Figure 11: Deep marine gross depositional environment.

5. SAFARI v2.0 – Data tables (entities)

Data tables and enumerations for SAFARI database standard 2.0 are included in this document for your convenience. A more interactive overview of the data tables and enumerations can be found on the SAFARI website: <http://safaridb.com>.

5.1 General data model



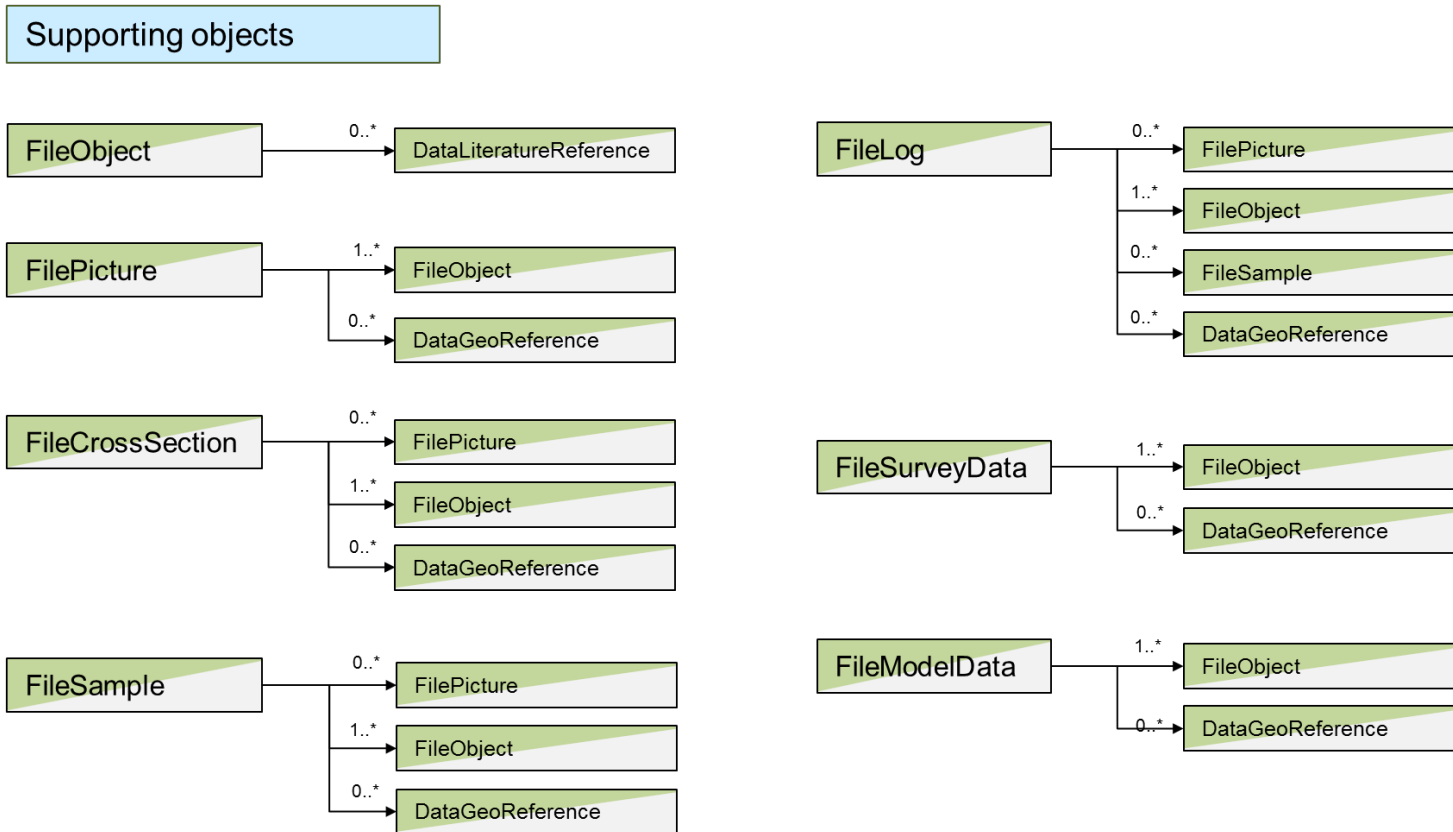


Table Name: ModelProject

Package: model

Sub package: general

Description: General information about the project under which data were collected.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
projectReport	no		0..*		FileObject	This table defines the storage space for data files (incl. maps, pictures, cross-section files, reports...).
modelSystem	yes		1..*		ModelSystem	General information about the outcrop. Here a choice is required, whether data characterize an outcrop or a modern depositional system.
originalOwner	yes		1..*		ModelCompany	A company having ownership or relation to an outcrop project
projectName	yes	text				Name of the project that contains the outcrops.
description	yes	text				Text to describe the project.
comments	no	text				Relevant information about the data in this category.

Table Name: ModelSystem

Package: model

Sub package: general

Description: General information about the system that is characterized. Here a choice is required, whether data describe an outcrop or a modern depositional system.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
approvedBy	no	text				Approved by person or title.
approvedDate	no	date				The date when the outcrop dataset was approved.
collectedBy	yes	text				The people that collected this outcrop dataset and are responsible for it.
comments	no	text				Relevant information about the data in this category.
location	yes		1..*		ModelLocation	Location of the described system.
dateEndCollection	no	date				Date when the collection of this outcrop dataset ended.
dateStartCollection	yes	date				Date when the collection of this outcrop dataset started.
issuedBy	no	text				The person or organization that has issued the project to collect this outcrop dataset.
issuedDate	no	date				The date when the outcrop dataset was issued.
literature	no		0..*		DataLiteratureReference	Detailed literature information.
modernSystem	yes		0..1		ModernSection	A modern section describes one part of a modern depositional system that represents a unique gross depositional environment. The size (dimension) of a depositional system (e.g. a river) can be a criterion to subdivide the system into sections.
name	yes	text				Name of outcrop site.
outcropSection	yes		0..1		OutcropSection	An outcrop section describes one part of the outcrop that represents a unique gross depositional environment and/or one unique formation. Outcrops that cover various formations should be split into various according sections. Also the size (dimension) of the outcrop can be a criterion to subdivide the outcrop into sections. The subdivision of an outcrop can be done both in vertical and horizontal direction.
owner	yes		1..*		ModelCompany	A company having ownership or relation to an outcrop project.
measurementsAbsolute	no		0..*		ModelSystemMeasurement	A physical description of the outcrop section. Here the absolute measurement is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measurementsMinimum	no		0..*		ModelSystemMeasurementSummary	A physical description of the outcrop section. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
measurementsMaximum	no		0..*		ModelSystemMeasurementSummary	A physical description of the outcrop section. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
measurementsAverage	no		0..*		ModelSystemMeasurementSummary	A physical description of the outcrop section. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
updatedBy	no	text				The person who updated the outcrop dataset.
updatedDate	no	date				The date when the outcrop dataset was updated.

Table Name: ModelSystemMeasurement

Package: model

Sub package: general

Description: A physical description of the whole system (outcrop or modern system). Here the absolute measurement is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			DataGeneralMeasurementType		Outcrop-specific type of measurement.
measurementCompleteness	yes			DataMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			DataMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: ModelSystemMeasurementSummary

Package: model

Sub package: general

Description: A physical description of the whole system (outcrop or modern system). Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			DataGeneralMeasurementType		Outcrop-specific type of measurement.
measurementCompleteness	yes			DataMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			DataMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: ModelCompany

Package: model

Sub package: general

Description: A company having ownership or relation to an outcrop project.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
name	yes	text				Company name.
comments	no	text				Relevant information about the data in this category.

Table Name: ModelLocation

Package: model

Sub package: general

Description: Location of the described system.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
country	yes	text		ModelCountry		Country, where system (outcrop or modern depositional system) is located.
region	no	text				Region, where system (outcrop or modern depositional system) is located.
location	no	text				More detailed description of system location.

Table Name: OutcropSection

Package: model

Sub package: outcrop

Description: An outcrop section describes one part of the outcrop that represents a unique gross depositional environment and/or one unique formation. Outcrops that cover various formations should be split into various according sections. Also the size (dimension) of the outcrop can be a criterion to subdivide the outcrop into sections. The subdivision of an outcrop can be done both in vertical and horizontal direction.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
name	yes	text				The name of the section.
description	no	text				Description of outcrop section (or stratigraphical unit).
accessibility	no	text				Description of how hard it is to access the outcrop.
comments	no	text				Relevant information about the data in this category.
outcropKind	yes			OutcropKind		Type of outcrop.
structuralComplexity	yes			OutcropStructuralComplexity		Structural complexity of the outcrop. After Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.
outcropQuality	yes			ModelSectionQuality		Describes, how well or poorly exposed the outcrop is. Data quality indicator.
outcrop3Dcontrol	yes			Outcrop3DControl		3D controls of the outcrop. Data Quality indicator.
dataSetScale	yes			DataSetScale		Scale at which level of detail data are provided for this outcrop section. Data quality indicator.
spatialObservationAndSampling Type	yes			DataSpatialObservationType		Description of the type of spatial observation and sampling. Data quality indicator.
dominantLithology	yes			LithologyKind		The type of lithology. These values represent the lithological terminology in descriptions of rock cuttings in mud logs. Reference: WITSML standard for mud logs by Energistics (2010).
dataAcquisitionMethod	yes			DataAcquisitionMethod		Predominately used method of data acquisition. Data Quality indicator.
publicationType	yes			DataPublicationType		Describes the type of publication e.g. peer-reviewed article or an unpublished report. Data Quality indicator.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalDipDirection	no			ModelEarthDirection		Orientation should always be measured and/or given as clockwise deviation from North.
orientation	no			ModelEarthDirection		Orientation should always be measured and/or given as clockwise deviation from North.
grossDepositionalEnvironment	yes		1..1		OutcropGDE	Selector for gross depositional environment.
formation	yes		1..1		OutcropFormation	The table contains information of the outcrop's formation, the fundamental lithostratigraphic unit, identified by lithological characteristics and stratigraphic position, generally tabular. Mappable at the Earth's surface and traceable into the subsurface (Tucker, M.E., 2003, Sedimentary Rocks in the Field. The Geological Field Guide Series, John Wiley & Sons Ltd., 3.ed., 244p.).
geoReference	yes		1..*		DataGeoReference	Geographical reference given as a polygon or point (e.g. GPS).
sequenceStratigraphy	no		0..1		OutcropSequenceSet	Information about the sequence set
measurementsAbsolute	no		0..*		ModelSectionMeasurement	A physical description of the outcrop section. Here the absolute measurement is stored.
measurementsMinimum	no		0..*		ModelSectionMeasurementSummary	A physical description of the outcrop section. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
measurementsMaximum	no		0..*		ModelSectionMeasurementSummary	A physical description of the outcrop section. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
measurementsAverage	no		0..*		ModelSectionMeasurementSummary	A physical description of the outcrop section. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
location	no		0..*		ModelLocation	Location of the described system.
literature	no		0..*		DataLiteratureReference	Detailed literature information.
sectionFile	no		0..*		FileObject	This table defines the storage space for data files (incl. maps, pictures, cross-section files, reports...).
picture	no		0..*		FilePicture	Information about pictures and figures that are stored together with the outcrop.
crossSection	no		0..*		FileCrossSection	Information about cross-sections of a specific outcrop.
sedimentaryLog	no		0..*		FileLog	Information about sedimentary logs that are stored with a specific

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
sample	no		0..*		FileSample	Information about information about samples that are collected along the outcrop (e.g. rock samples).
surveyData	no		0..*		FileSurveyData	Information about surveys and survey data that are performed along the outcrop.
modelData	no		0..*		FileModelData	Information about models and model data that are performed along the outcrop.

Table Name: ModernSection

Package: model

Sub package: modern

Description: A modern section describes one part of a modern depositional system that represents a unique gross depositional environment. The size (dimension) of a depositional system (e.g. a river) can be a criterion to subdivide the system into sections.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
name	yes	text				The name of the section.
description	no	text				Description of outcrop section (or stratigraphical unit).
comments	no	text				Relevant information about the data in this category.
sectionQuality	yes			ModelSectionQuality		Describes, how well or poorly exposed the modern depositional system is. Data quality indicator.
outcrop3Dcontrol	yes			Outcrop3DControl		3D controls of the outcrop. Data Quality indicator.
dataSetScale	yes			DataSetScale		Scale at which level of detail data are provided for this outcrop section. Data quality indicator.
spatialObservationAndSampling Type	yes			DataSpatialObservationType		Description of the type of spatial observation and sampling. Data quality indicator.
acquisitionMethod	yes			DataAcquisitionMethod		Predominately used method of data acquisition. Data Quality indicator.
publicationType	yes			DataPublicationType		Describes the type of publication e.g. peer-reviewed article or an unpublished report. Data Quality indicator.
grossDepositionalEnvironment	yes		1..1		ModernGde	Selector for modern gross depositional environment.
formation	yes		1..1		OutcropFormation	The table contains information of the outcrop's formation, the fundamental lithostratigraphic unit, identified by lithological characteristics and stratigraphic position, generally tabular. Mappable at the Earth's surface and traceable into the subsurface (Tucker, M.E., 2003, Sedimentary Rocks in the Field. The Geological Field Guide Series, John Wiley & Sons Ltd., 3.ed., 244p.).
geoReference	yes		1..*		DataGeoReference	Geographical reference given as a polygon or point (e.g. GPS).
measurementsAbsolute	no		0..*		ModelSectionMeasurement	A physical description of the outcrop section. Here the absolute measurement is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measurementsMinimum	no		0..*		ModelSectionMeasurementSummary	A physical description of the outcrop section. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
measurementsMaximum	no		0..*		ModelSectionMeasurementSummary	A physical description of the outcrop section. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
measurementsAverage	no		0..*		ModelSectionMeasurementSummary	A physical description of the outcrop section. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
location	no		0..*		ModelLocation	Location of the described system.
literature	no		0..*		DataLiteratureReference	Detailed literature information.
sectionFile	no		0..*		FileObject	This table defines the storage space for data files (incl. maps, pictures, cross-section files, reports...).
picture	no		0..*		FilePicture	Information about pictures and figures that are stored together with the outcrop.
surveyData	no		0..*		FileSurveyData	Information about surveys and survey data that are performed along the outcrop.
modelData	no		0..*		FileModelData	Information about models and model data that are performed along the outcrop.

Table Name: ModelSectionMeasurement

Package: model

Sub package: general

Description: A physical description of the section (outcrop or modern system). Here the absolute measurement is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			DataGeneralMeasurementType		Outcrop-specific type of measurement.
measurementCompleteness	yes			DataMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			DataMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: ModelSectionMeasurementSummary

Package: model

Sub package: general

Description: A physical description of the section (outcrop or modern system). Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			DataGeneralMeasurementType		Outcrop-specific type of measurement.
measurementCompleteness	yes			DataMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			DataMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: DataLiteratureReference

Package: model

Sub package: general

Description: Detailed literature information.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
title	yes	text				Title of publication, reference, webpage, etc.
author	yes	text				Author of publication.
year	yes	number				Year, when the literature was published.
publicationSource	yes	text				Journal, book, book section or similar that gives detailed information about the publication.
accessed at	no	date				Date at which the information was accessed, applies especially to web information.
webSource	no	text				Source (e.g. web address) from where information was accessed.
digitalObjectIdentifier	no	text				The ISBN or DOI number for the publication.
comments	no	text				Relevant information about the data in this category.
publicationType	yes			DataPublicationType		Describes the type of publication e.g. peer-reviewed article or an unpublished report. Data Quality indicator.
file	no		0..*		FileObject	This table defines the storage space for data files (incl. maps, pictures, cross-section files, reports...).

Table Name: DataGeoReference

Package: model

Sub package: general

Description: Geographical reference given as a polygon or point (e.g. GPS).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
nameCRS	yes	text				The name of a well-known Coordinate Reference System (CRS) for the geometry. The namingSystem attribute specifies the authority for the CRS (e.g., EPSG). A best practice is to specify EPSG codes (www.epsg.org). The code attribute can capture a coded identity of the CRS. This might be an EPSG numeric code or an OGC urn. See document "Definition identifier URNs in OGC namespace" at http://portal.opengeospatial.org/files/?artifact_id=30575 for a recommended practice on specifying CRS codes.
closed	no	boolean				True ("true" or "1") indicates that the geometry is closed (i.e., it is a polygon). False ("false" or "0") or not given indicates that the geometry is not closed (i.e., it is a point or line). This is irrelevant unless four or more points are specified.
point	yes		1..*		DataGeoPoint	Specifies a spatial point. A point represented by two coordinates as defined by nameCRS. The ordered aggregate of points represents the geometry of the located item. If only one point is specified then the item is located using a point. If two or three points are specified then the item is located using a line. If four or more points are specified then the item is located using either a line (closed=false) or a polygon (closed=true). Linear interpolation is used between the ordered points on a line or polygon. If the geometry is closed, at least four points must be specified and the first and last coordinates shall be coincident.

Table Name: DataGeoPoint

Package: model

Sub package: general

Description: Specifies a spatial point. A point represented by two coordinates as defined by nameCRS. The ordered aggregate of points represents the geometry of the located item. If only one point is specified then the item is located using a point. If two or three points are specified then the item is located using a line. If four or more points are specified then the item is located using either a line (closed=false) or a polygon (closed=true). Linear interpolation is used between the ordered points on a line or polygon. If the geometry is closed, at least four points must be specified and the first and last coordinates shall be coincident.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
coord1	yes	text				The first coordinate. The semantics of this coordinate is defined by the first axis in the Coordinate Reference System (CRS) defined by a parent node.
coord2	no	text				The second coordinate. The semantics of this coordinate is defined by the second axis in the Coordinate Reference System (CRS) defined by a parent node.

Table Name: FileObject

Package: model

Sub package: file

Description: This table defines the storage space for data files (incl. maps, pictures, cross-section files, reports...).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
name	yes	text				Name of the file.
format	no	text				The underlying format of the file.
binary???	no	text				base64 The actual content of the binary file.
compressed???	no	text				boolean True ("true" or "1") if the file was compressed before converting to base 64. False ("false" or "0") or not given indicates otherwise..
comments	no	text				Relevant information about the data in this category.
literatureReference	no		0..*		DataLiteratureReference	Detailed literature information.

Table Name: FilePicture

Package: model

Sub package: file

Description: Information about pictures and figures that are stored together with the outcrop.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
name	yes	text				Name of picture, figure,..
description	yes	text				Description or caption of the picture.
scale	no	text				Scale of a specific figure (e.g. map figure).
comments	no	text				Relevant information about the data in this category.
type	yes			FilePictureType		Type of pictures (e.g. photographs, figures) taken.
pictureOrientation	no			OutcropOrder		The order describes time scales (often used in sequence stratigraphy) ranging through five orders of magnitude, from tens of thousands of years to hundreds of millions of years. They are not related to an absolute geological time. (Miall, A. D. 2006. The Geology of Fluvial Deposits. Springer. Berlin. 582p.)
file	yes		1..*		FileObject	This table defines the storage space for data files (incl. maps, pictures, cross-section files, reports...).
geoReference	no		0..*		DataGeoReference	Geographical reference given as a polygon or point (e.g. GPS).

Table Name: FileCrossSection

Package: model

Sub package: file

Description: Information about cross-sections of a specific outcrop.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
name	yes	text				A name or ID of the cross section.
description	yes	text				Description or caption of the cross section.
scale	no	text				Scale of the cross-section.
comments	no	text				Relevant information about the data in this category.
file	yes		1..*		FileObject	This table defines the storage space for data files (incl. maps, pictures, cross-section files, reports...).
pictures	no		0..*		FilePicture	Information about pictures and figures that are stored together with the outcrop.
geoReference	no		0..*		DataGeoReference	Geographical reference given as a polygon or point (e.g. GPS).

Table Name: FileLog

Package: model

Sub package: file

Description: Information about sedimentary logs that are stored with a specific outcrop.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
name	yes	text				A name of the log.
description	yes	text				Textual description of the log.
scale	no	text				Scale of the log.
comments	no	text				Relevant information about the data in this category.
file	yes		1..*		FileObject	This table defines the storage space for data files (incl. maps, pictures, cross-section files, reports...).
sample	no		0..*		FileSample	Information about information about samples that are collected along the outcrop (e.g. rock samples).
pictures	no		0..*		FilePicture	Information about pictures and figures that are stored together with the outcrop.
geoReference	no		0..*		DataGeoReference	Geographical reference given as a polygon or point (e.g. GPS).

Table Name: FileSample

Package: model

Sub package: file

Description: Information about samples that are collected along the outcrop (e.g. rock samples).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
name	yes	text				Name of the sample (e.g. rock sample).
description	no	text				A textual description of the sample.
location	no	text				Textural description of the sample location along an outcrop if not already specified as part of the geology interval.
comments	no	text				Relevant information about the data in this category.
fileReport	no		0..*		FileObject	This table defines the storage space for data files (incl. maps, pictures, cross-section files, reports...).
fileAnalytic	no		0..*		FileObject	This table defines the storage space for data files (incl. maps, pictures, cross-section files, reports...).
picture	no		0..*		FilePicture	Information about pictures and figures that are stored together with the outcrop.
geoReference	no		0..*		DataGeoReference	Geographical reference given as a polygon or point (e.g. GPS).

Table Name: FileSurveyData

Package: model

Sub package: file

Description: Information about surveys and survey data that are performed along the outcrop.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
name	yes	text				Name of the survey data set.
acquisitionDate	yes	date				Date when survey data were acquired.
comments	no	text				Relevant information about the data in this category.
surveyType	yes			FileSurveyType		Type of survey data.
acquisitionType	yes			FileAcquisitionType		Type of survey data acquisition.
fileType	no			FileSurveyFileType		Type of survey file format.
fileSurveyData	yes		1..*		FileObject	This table defines the storage space for data files (incl. maps, pictures, cross-section files, reports...).
fileAcquisitionReport	yes		1..*		FileObject	This table defines the storage space for data files (incl. maps, pictures, cross-section files, reports...).
geoReference	no		0..*		DataGeoReference	Geographical reference given as a polygon or point (e.g. GPS).

Table Name: FileModelData

Package: model

Sub package: file

Description: Information about models and model data that are performed along the outcrop.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
name	yes	text				Name of model data.
format	no	text				Format of the model.
modelGenerationDate	yes	date				Date when model was build/generated.
comments	no	text				Relevant information about the data in this category.
modelDataType	yes			FileModelType		Type of model data.
fileModelData	yes		1..*		FileObject	This table defines the storage space for data files (incl. maps, pictures, cross-section files, reports...).
fileModelReport	yes		1..*		FileObject	This table defines the storage space for data files (incl. maps, pictures, cross-section files, reports...).
geoReference	no		0..*		DataGeoReference	Geographical reference given as a polygon or point (e.g. GPS).

5.2 Depositional settings model (outcrop)

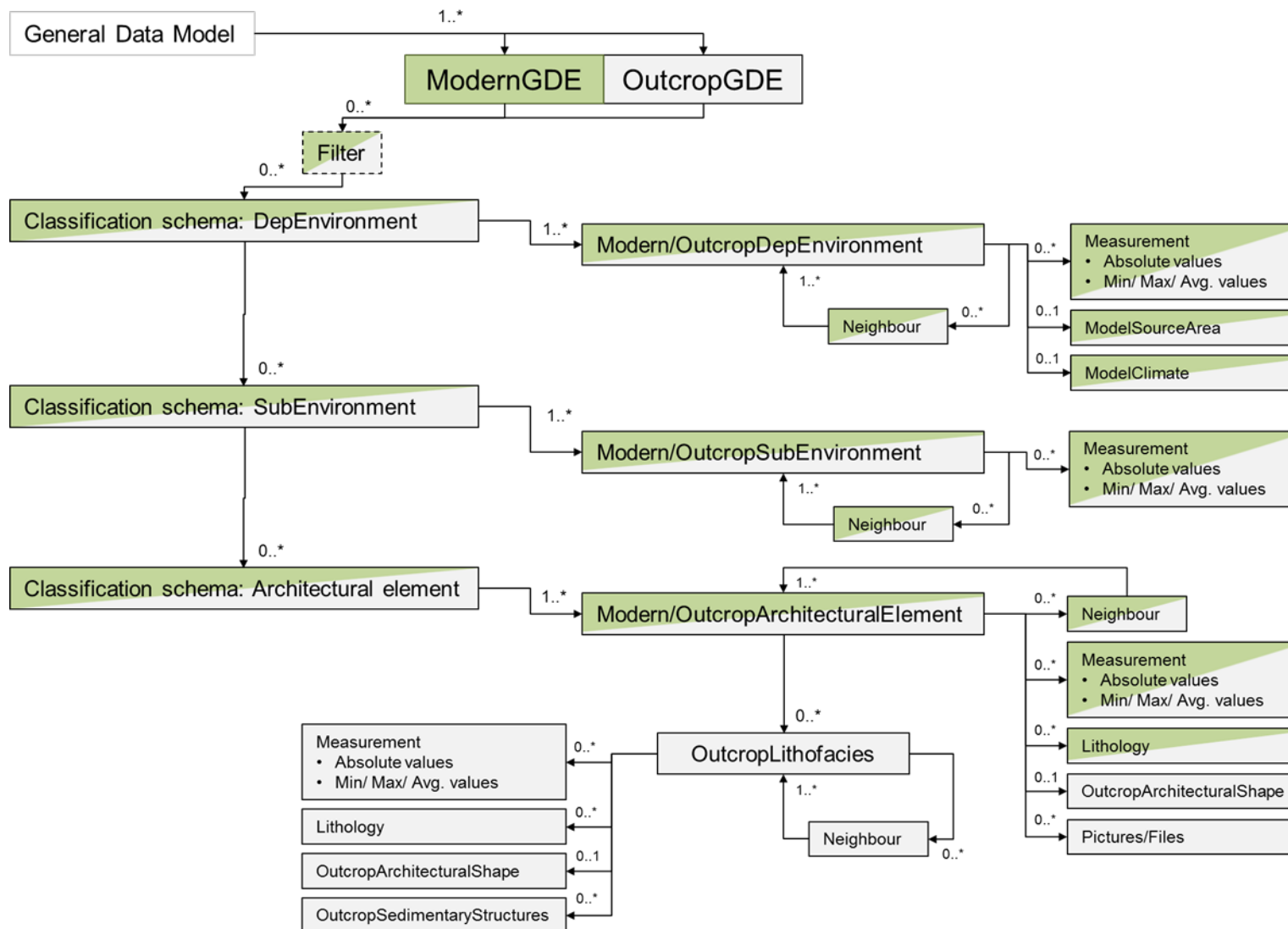


Table Name: OutcropGde

Package: depositional

Sub package: outcrop.gde

Description: Selector for gross depositional environment.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
gdeContinental	no		0..1		GdeContinental	Continental gross depositional environment.
gdeParalicShallowMarine	no		0..1		GdeParalicAndShallowMarine	Paralic and shallow marine gross depositional environment.
gdeDeepMarine	no		0..1		GdeDeepMarine	Deep marine gross depositional environment.
gdeAapgDeepMarine	no		0..1		GdeAapgDeepMarine	AAPG Atlas of Deep water outcrops nomenclature.

Table Name: GdeContinental

Package: depositional

Sub package: outcrop.gde

Description: Continental gross depositional environment.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
filEquatorial	no		0..*		FilEquatorial	Tmin ≥ +18 °C; The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., et al., 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.
filWarmTemperate	no		0..*		FilWarmTemperate	Pann < 10 Pth (Pann = accumulated annual precipitation, Pth = dryness threshold); The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., et al., 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.
filArid	no		0..*		FilArid	-3 °C < Tmin < +18 °C; The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., et al., 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.
filSnowPolar	no		0..*		FilSnowPolar	Tmin ≤ -3 °C, Tmax < +10 °C; The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., et al., 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.

Table Name: GdeParalicAndShallowMarine

Package: depositional

Sub package: outcrop.gde

Description: Paralic and shallow marine gross depositional environment.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
deFluvioDeltaic	no		0..*		DeFluvioDeltaic	F: Fluvial dominated.
deTideInfluencedDelta	no		0..*		DeTideInfluencedDelta	Ft: Fluvial dominated, tidal influenced delta.
deWaveInfluencedDelta	no		0..*		DeWaveInfluencedDelta	Fw: Fluvial dominated, wave influenced delta.
deShoreface	no		0..*		DeShoreface	W: Non deltaic, regressive wave dominated shoreline.
deTideInfluencedShoreface	no		0..*		DeTideInfluencedShoreface	Wt: Non deltaic, wave dominated, tidally influenced shoreline.
deWaveDominatedDelta	no		0..*		DeWaveDominatedDelta	Wf: Wave dominated, fluvial influenced delta.
deTidalShorelineNonDeltaic	no		0..*		DeTidalShorelineNonDeltaic	T: Non deltaic shoreline dominated by tidal processes.
deWaveInfluencedTidalShoreline	no		0..*		DeWaveInfluencedTidalShoreline	Tw: Non deltaic, tide dominated, wave influenced shoreline.
deTideDominatedDelta	no		0..*		DeTideDominatedDelta	Tf: Tide dominated, fluvial influenced delta.
deBarrierIsland	no		0..*		DeBarrierIsland	W: Transgressive, wave dominated coastline with barrier islands.
deWaveDominatedEstuary	no		0..*		DeWaveDominatedEstuary	Wf: Drowned river valley with a low tidal range. Dominated by wave processes at the mouth and fluvial processes at the bay head.
deTideInfluencedBarrierIsland	no		0..*		DeTideInfluencedBarrierIsland	Wt: Transgressive, wave dominated coastline with barrier islands cut by frequent tidal channels.
deTideDominatedEstuary	no		0..*		DeTideDominatedEstuary	Tf: Drowned river valley on a tide dominated shoreline.
deShelf	no		0..*		DeShelf	Shallow marine shelf.

Table Name: GdeDeepMarine

Package: depositional

Sub package: outcrop.gde

Description: Deep marine gross depositional environment.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
deSlope	no		0..*		DeSlope	Deep water deposits dominated by gravity processes on a slope (tectonic or passive). Continental slope or similar tectonically derived geomorphic feature below the shelf edge. Slope is characterised by steep gradients.
deBasinFloor	no		0..*		DeBasinFloor	Deep water deposits dominated by gravity processes on the basin floor. Basin floor = deep water plain which starts at the base of the slope.

Table Name: GdeAapgDeepMarine

Package: depositional

Sub package: outcrop.gde

Description: AAPG Atlas of Deep water outcrops nomenclature.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
deAapgDeepMarine	yes		1..*		DeAapgDeepMarine	AAPG Atlas of Deep water outcrops nomenclature.

Note:

The classification schema of the AAPG deep water outcrop atlas is kept in the database for practical reasons. Due to the discrepancies between the SAFARI and the AAPG standards not all AAPG dataset can be converted into the SAFARI database. In order to keep those datasets within the system, the AAPG standard is kept. But it will only be used for the stored data and won't allow to upload any new data in that format.

Table Name: OutcropDepositionalEnvironment

Package: depositional

Sub package: outcrop.de

Description: Information about the depositional environment of the outcrop.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
description	no	text				A textual description of the sub environment.
basinName	no	text				Name of the depositional basin.
comments	no	text				Relevant information about the data in this category.
basinType	yes			OutcropBasinKind		Type of depositional basin.
outcropOrder	no			OutcropOrder		The order describes time scales (often used in sequence stratigraphy) ranging through five orders of magnitude, from tens of thousands of years to hundreds of millions of years. They are not related to an absolute geological time. (Miall, A. D. 2006. The Geology of Fluvial Deposits. Springer. Berlin. 582p.)
accommodationRegime	no			OutcropAccommodation Regime		Mean subsidence rate per one thousand years.
depositionalDipDirection	no			ModelEarthDirection		Orientation should always be measured and/or given as clockwise deviation from North.
measurementsAbsolute	no		0..*		OutcropDepositionalMeasurement	A physical description of the depositional environment. Here the absolute measurement is stored.
measurementsAverage	no		0..*		OutcropDepositionalMeasurement Summary	A physical description of the depositional environment. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
measurementsMinimum	no		0..*		OutcropDepositionalMeasurement Summary	A physical description of the depositional environment. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
measurementsMaximum	no		0..*		OutcropDepositionalMeasurement Summary	A physical description of the depositional environment. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
neighbour	no		0..*		OutcropDepositionalNeighbour	Information on the neighbourhood relationship between objects belonging to the same scale (depositional environment, sub environment, architectural elements, lithofacies units). see also: Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.
climate	no		0..1		ModelClimate	Contains information about the climate conditions during the deposition. The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., J. Grieser, C. Beck, B. Rudolf, and F. Rubel, 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.
sourceArea	no		0..1		ModelSourceArea	Contains information about the source of deposited material.

Table Name: OutcropDepositionalMeasurement

Package: depositional

Sub package: outcrop.de

Description: A physical description of the depositional environment. Here the absolute measurement is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			OutcropDepositionalMeasurementType		Depositional environment specific types of measurement.
measurementCompleteness	yes			DataMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			DataMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: OutcropDepositionalMeasurementSummary

Package: depositional

Sub package: outcrop.de

Description: A physical description of the depositional environment. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			OutcropDepositionalMeasurementType		Depositional environment specific types of measurement.
measurementCompleteness	yes			DataMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			DataMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: OutcropDepositionalNeighbour

Package: depositional

Sub package: outcrop.de

Description: Information on the neighbourhood relationship between objects belonging to the same scale (depositional environment, sub environment, architectural elements, lithofacies units). see also: Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
comments	no	text				Relevant information about the data in this category.
dominateNeighbourDirection	yes			NeighbourDirection		Spatial neighbour relationship between objects belonging to the same scale (Depositional environment, Subenvironment, Architectural elements, Lithofacies units). (Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.)
subordinateNeighbourDirection	no			NeighbourDirection		Spatial neighbour relationship between objects belonging to the same scale (Depositional environment, Subenvironment, Architectural elements, Lithofacies units). (Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.)
dominateBoundingSurface	no			BoundingSurface		Description of the bounding surface between two elements.
subordinateBoundingSurface	no			BoundingSurface		Description of the bounding surface between two elements.
depositionalEnvironment	yes		1..*		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.

Table Name: ModelClimate

Package: depositional

Sub package: general

Description: Contains information about the climate conditions during the deposition. The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., J. Grieser, C. Beck, B. Rudolf, and F. Rubel, 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
comments	no	text				Relevant information about the data in this category.
mainClimate	yes			ModelMainClimate		The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., J. Grieser, C. Beck, B. Rudolf, and F. Rubel, 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263. DOI: 10.1127/0941-2948/2006/0130.
climatePrecipitation	no			ModelClimatePrecipitation		The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., J. Grieser, C. Beck, B. Rudolf, and F. Rubel, 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263. DOI: 10.1127/0941-2948/2006/0130.
climateTemperature	no			ModelClimateTemperature		The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., J. Grieser, C. Beck, B. Rudolf, and F. Rubel, 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263. DOI: 10.1127/0941-2948/2006/0130.

Table Name: ModelSourceArea

Package: depositional

Sub package: general

Description: Contains information about the source of deposited material.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
name	yes	text				Name of the source are, e.g. name of the basin.
description	no	text				Description of the source area.
comments	no	text				Relevant information about the data in this category.
sourceAreaGeology	no			RockClass		Rock class summaries the three main types of rocks, namely igneous, sedimentary, and metamorphic.
sourceAreaDistance	no			ModelSourceAreaDistance		The distance between the deposited material and its origin.
sourceAreaClimate	no		0..1		ModelClimate	Contains information about the climate conditions during the deposition. The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., J. Grieser, C. Beck, B. Rudolf, and F. Rubel, 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.

Table Name: OutcropSubEnvironment

Package: depositional

Sub package: outcrop.se

Description: Information about the depositional subenvironment of the outcrop.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
description	no	text				A textual description of the sub environment.
comments	no	text				Relevant information about the data in this category.
outcropOrder	no			OutcropOrder		The order describes time scales (often used in sequence stratigraphy) ranging through five orders of magnitude, from tens of thousands of years to hundreds of millions of years. They are not related to an absolute geological time. (Miall, A. D. 2006. The Geology of Fluvial Deposits. Springer. Berlin. 582p.)
measurementsAbsolute	no		0..*		OutcropSubEnvironmentMeasurement	A physical description of the subenvironment. Here the absolute measurement is stored.
measurementsAverage	no		0..*		OutcropSubEnvironmentMeasurement Summary	A physical description of the architectural element. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
measurementsMinimum	no		0..*		OutcropSubEnvironmentMeasurement Summary	A physical description of the architectural element. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
measurementsMaximum	no		0..*		OutcropSubEnvironmentMeasurement Summary	A physical description of the architectural element. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
neighbour	no		0..*		OutcropSubEnvironmentNeighbour	Information on the neighbourhood relationship between objects belonging to the same scale (depositional environment, sub environment, architectural elements, lithofacies units). see also: Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.

Table Name: OutcropSubEnvironmentMeasurement

Package: depositional

Sub package: outcrop.se

Description: A physical description of the depositional environment. Here the absolute measurement is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			OutcropSubenvironmentMeasurementType		Subenvironment specific types of measurement.
measurementCompleteness	yes			OutcropMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			OutcropMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: OutcropSubEnvironmentMeasurementSummary

Package: depositional

Sub package: outcrop.se

Description: A physical description of the architectural element. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			OutcropSubenvironmentMeasurementType		Subenvironment specific types of measurement.
measurementCompleteness	yes			OutcropMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			OutcropMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: OutcropSubEnvironmentNeighbour

Package: depositional

Sub package: outcrop.se

Description: Information on the neighbourhood relationship between objects belonging to the same scale (depositional environment, sub environment, architectural elements, lithofacies units). see also: Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
comments	no	text				Relevant information about the data in this category.
dominateNeighbourDirection	yes			NeighbourDirection		Spatial neighbour relationship between objects belonging to the same scale (Depositional environment, Subenvironment, Architectural elements, Lithofacies units). (Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.)
subordinateNeighbourDirection	no			NeighbourDirection		Spatial neighbour relationship between objects belonging to the same scale (Depositional environment, Subenvironment, Architectural elements, Lithofacies units). (Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.)
dominateBoundingSurface	no			BoundingSurface		Description of the bounding surface between two elements.
subordinateBoundingSurface	no			BoundingSurface		Description of the bounding surface between two elements.
outcropSubEnvironmentt	yes		1..*		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.

Table Name: OutcropArchitecturalElement

Package: depositional

Sub package: outcrop.ae

Description: Information about the architectural elements of the outcrop.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
name	no	text				Name or label of architectural element.
background	yes	boolean				Choice whether or not an architectural element describes the background.
description	no	text				A textual description of the architectural element.
comments	no	text				Relevant information about the data in this category.
outcropOrder	no			OutcropOrder		The order describes time scales (often used in sequence stratigraphy) ranging through five orders of magnitude, from tens of thousands of years to hundreds of millions of years. They are not related to an absolute geological time. (Miall, A. D. 2006. The Geology of Fluvial Deposits. Springer. Berlin. 582p.)
connectivity	no			OutcropArchitecturalConnectivity		Connectivity between adjacent architectural elements.
depositionalConfinement	no			DepositionalConfinement		Specifies whether a depositional system is unconfined or confined by erosional, tectonic or unspecified geomorphology.
lithofacies	no		0..*		OutcropLithofacies	Information about the lithofacies of the outcrop.
lithology	no		0..*		Lithology	All relevant information regarding the lithology of architectural elements and lithofacies. Based on Energistics WITSML_v.1.4.1 well-log lithology standard.
measurementsAbsolute	no		0..*		OutcropArchitectural Measurement	A physical description of the architectural element. Here the absolute measurement is stored.
measurementsAverage	no		0..*		OutcropArchitectural MeasurementSummary	A physical description of the architectural element. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
measurementsMinimum	no		0..*		OutcropArchitectural MeasurementSummary	A physical description of the architectural element. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measurementsMaximum	no		0..*		OutcropArchitecturalMeasurementSummary	A physical description of the architectural element. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
neighbour	no		0..*		OutcropArchitecturalNeighbour	Information on the neighbourhood relationship between objects belonging to the same scale (depositional environment, sub environment, architectural elements, lithofacies units). see also: Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.
outcropArchitecturalShape	no		0..1		OutcropArchitecturalShape	Contains information about the shape of an architectural element or lithofacies.
picture	no		0..*		FilePicture	Information about pictures and figures that are stored together with the outcrop.
File	no		0..*		FileObject	This table defines the storage space for data Files (incl. maps, pictures, cross-section files, reports...).

Table Name: OutcropArchitecturalMeasurement

Package: depositional

Sub package: outcrop.ae

Description: A physical description of the architectural element. Here the absolute measurement is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			OutcropArchitecturalMeasurementType		Architectural element specific types of measurement.
measurementCompleteness	yes			OutcropMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			OutcropMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: OutcropArchitecturalMeasurementSummary

Package: depositional

Sub package: outcrop.ae

Description: A physical description of the architectural element. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			OutcropArchitecturalMeasurementType		Architectural element specific types of measurement.
measurementCompleteness	yes			OutcropMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			OutcropMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: OutcropArchitecturalNeighbour

Package: depositional

Sub package: outcrop.ae

Description: Information on the neighbourhood relationship between objects belonging to the same scale (depositional environment, sub environment, architectural elements, lithofacies units). see also: Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
comments	no	text				Relevant information about the data in this category.
dominateNeighbourDirection	yes			NeighbourDirection		Spatial neighbour relationship between objects belonging to the same scale (Depositional environment, Subenvironment, Architectural elements, Lithofacies units). (Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.)
subordinateNeighbourDirection	no			NeighbourDirection		Spatial neighbour relationship between objects belonging to the same scale (Depositional environment, Subenvironment, Architectural elements, Lithofacies units). (Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.)
dominateBoundingSurface	no			BoundingSurface		Description of the bounding surface between two elements.
subordinateBoundingSurface	no			BoundingSurface		Description of the bounding surface between two elements.
outcropArchitecturalElement	yes		1..*		OutcropArchitecturalElement	Information about the architectural elements of the outcrop.

Table Name: OutcropLithofacies

Package: depositional

Sub package: outcrop.lf

Description: Information about the lithofacies of the outcrop.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
lithofaciesKind	yes	text				Kind of lithofacies.
description	no	text				A textual description of the lithofacies.
bioturbationDescription	no	text				A textual description of the bioturbation.
bodyFossilDescription	no	text				A textual description of body fossils.
palynology	no	text				A textual description of palynomorphs.
comments	no	text				Relevant information about the data in this category.
outcropOrder	no			OutcropOrder		The order describes time scales (often used in sequence stratigraphy) ranging through five orders of magnitude, from tens of thousands of years to hundreds of millions of years. They are not related to an absolute geological time. (Miall, A. D. 2006. The Geology of Fluvial Deposits. Springer. Berlin. 582p.)
bioturbationIndex	no			OutcropBioturbation Index		Bioturbation Index (BI) is an indicator for the degree of sediment disruption or the percentage of ichnofabric in the sediment. The percentage bioturbation values should be used as a guide and not an absolute class division. (Taylor, A.M. & Goldring, R. 1993. Description and analysis of bioturbation and ichnofabric. Journal of the Geological Society, London, vol.150, 141-148.)
lithology	yes		1..*		Lithology	All relevant information regarding the lithology of architectural elements and lithofacies. Based on Energetics WITSML_v.1.4.1 well-log lithology standard.
measurementsAbsolute	no		0..*		OutcropLithofaciesMeasurement	A physical description of the lithofacies element. Here the absolute measurement is stored.
measurementsAverage	no		0..*		OutcropLithofaciesMeasurement Summary	A physical description of the lithofacies element. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
measurementsMinimum	no		0..*		OutcropLithofaciesMeasurement	A physical description of the lithofacies element. Here a range of

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
					Summary	values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
measurementsMaximum	no		0..*		OutcropLithofaciesMeasurement Summary	A physical description of the lithofacies element. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
lithofaciesNeighbour	no		0..*		OutcropLithofaciesNeighbour	Information on the neighbourhood relationship between objects belonging to the same scale (depositional environment, sub environment, architectural elements, lithofacies units). see also: Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.
outcropArchitecturalShape	no		0..*		OutcropArchitecturalShape	Contains information about the shape of an architectural element or lithofacies.
outcropSedimentaryStructures	no		0..*		OutcropSedimentaryStructures	Information about the occurring sedimentary structures that formed during and after the deposition.

Table Name: Lithology

Package: depositional

Sub package: lithology

Description: All relevant information regarding the lithology of architectural elements and lithofacies. Based on Energetics WITSML_v.1.4.1 well-log lithology standard.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
color	no	text				Lithology color description. Should be based on Munsell color charts.
matrixCement	no	text				Lithology matrix/cement description.
densShale	no	number				Shale density for the interval.
comments	no	text				Relevant information about the data in this category.
lithologyType	yes			LithologyKind		The type of lithology. These values represent the lithological terminology in descriptions of rock cuttings in mud logs. Reference: WITSML standard for mud logs by Energetics (2010).
modalGrainSize	yes			ModalGrainSize		The modal grain size was based on the Wentworth scale. Wentworth, C.K., 1922, A scale of grade and class terms for clastic sediments, The Journal of Geology, vol. 30, issue 5, pp. 377-392. DOI: 10.1086/622910
grainSizeTrend	yes			GrainSizeTrend		Change of the grain size in e.g. a layer, sandstone core, outcrop section.
sorting	yes			GrainSorting		Sorting of grain population is a measure of the range of grain sizes present and the magnitude of the spreads of these sizes around the mean size. The classification given here uses the logarithmic phi (ϕ) scale, proposed by Krumbein in 1934, to allow graphical plotting and statistical calculations. $\phi = -\log_2 d$ (d= grain diameter in millimeter). Additionally also visual estimations charts may be used. (classification after Folk, R.L., 1974, Petrology of sedimentary rocks: Hemphill, Austin Tex., 182p.; visual chart after Harrell, J., 1984, A visual comparator for degree of sorting in thin and plane sections: Journal of Sedimentological Petrology, v.54, Fig. 3,4,5,6, p.684.)
grainClastShape	no			GrainClastShape		Common shapes of pebbles.
sphericity	no			GrainSphericity		Measure of how close a grain or particle approaches a sphere.
roundness	no			GrainRoundness		Measure of how angular the shape of the grain is.
limestoneClassification	no			LimestoneClassification		Limestone classification after R.J. Dunham, 1962, Classification of carbonate rocks according to depositional texture. In Ham, W. E.. Classification of carbonate rocks. American Association of Petroleum Geologists Memoir. 1. pp.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
						108-121.
sandstoneClassification	no			SandstoneClassification		Sandstone classification schema taken from M. Tucker, 2003: Sedimentary rocks in the field. The geological field guide series, 3ed., John Wiley & Sons Ltd., Chichester, England, p.33.
hardness	no			LithologyHardness		Lithology hardness is based on Mohs scale of mineral hardness and the ability of one natural sample of matter to scratch another.
visiblePorosity	no			LithologyVisiblePorosity		Porosity is the percentage of void spaces in rock or soil. The theoretical maximum porosity for a clastic rock is about 26%. Defined after BakerHughes definitions and taken from Energistics WITSML_v1.4.1 well-log standards.
averagePorosity	no			LithologyAveragePorosity		The pore volume of a rock averaged using various well log or core porosity measurements. The theoretical maximum porosity for a clastic rock is about 26%. Defined after BakerHughes definitions and taken from Energistics WITSML_v1.4.1 well-log standards.
permeability	no			LithologyPermeability		Measure of the ability of a porous material (e.g a rock or unconsolidated material) to allow fluids to pass through it.
picture	no		0..*		FilePicture	Information about pictures and figures that are stored together with the outcrop.
sample	no		0..*		Filesample	Information about information about samples that are collected along the outcrop (e.g. rock samples).
log	no		0..*		FileLog	Information about sedimentary logs that are stored with a specific outcrop.

Table Name: OutcropArchitecturalShape

Package: depositional

Sub package: outcrop.lf

Description: Contains information about the shape of an architectural element or lithofacies.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
shapeDescription	no	text				Description of sediment body geometry (shape) of architectural element or lithofacies.
comments	no	text				Relevant information about the data in this category.
shapeKind	yes			OutcropArchitecturalShape		Sediment body geometry (shape) of architectural element or lithofacies.

Table Name: OutcropLithofaciesMeasurement

Package: depositional

Sub package: outcrop.lf

Description: A physical description of the lithofacies element. Here the absolute measurement is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			OutcropLithofaciesMeasurementType		Lithofacies specific types of measurement.
measurementCompleteness	yes			DataMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			DataMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: OutcropLithofaciesMeasurementSummary

Package: depositional

Sub package: outcrop.lf

Description: A physical description of the lithofacies element. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			OutcropLithofaciesMeasurementType		Lithofacies specific types of measurement.
measurementCompleteness	yes			DataMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			DataMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: OutcropLithofaciesNeighbour

Package: depositional

Sub package: outcrop.lf

Description: Information on the neighbourhood relationship between objects belonging to the same scale (depositional environment, sub environment, architectural elements, lithofacies units). see also: Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
comments	no	text				Relevant information about the data in this category.
dominateNeighbourDirection	yes			NeighbourDirection		Spatial neighbour relationship between objects belonging to the same scale (Depositional environment, Subenvironment, Architectural elements, Lithofacies units). (Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.)
subordinateNeighbourDirection	no			NeighbourDirection		Spatial neighbour relationship between objects belonging to the same scale (Depositional environment, Subenvironment, Architectural elements, Lithofacies units). (Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.)
dominateBoundingSurface	no			BoundingSurface		Description of the bounding surface between two elements.
subordinateBoundingSurface	no			BoundingSurface		Description of the bounding surface between two elements.
outcropLithofacies	yes		1..*		OutcropLithofacies	Information about the lithofacies of the outcrop.

Table Name: OutcropSedimentaryStructures

Package: depositional

Sub package: outcrop.lf

Description: Information about the occurring sedimentary structures that formed during and after the deposition.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
sedimentaryDescription		no	text			Description of sedimentary structures that formed during and after the deposition.
comments		no	text			Relevant information about the data in this category.
sedimentaryStructureKind		yes		OutcropSedimentaryStructureKind		Sedimentary structures are textural features of sedimentary rocks that are generated by a variety of sedimentary and biogenic processes.

Table Name: DeArid

Package: depositional

Sub package: outcrop.de

Description: $-3\text{ }^{\circ}\text{C} < T_{\text{min}} < +18\text{ }^{\circ}\text{C}$; The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottke, M., et al., 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263. Information about models and model data that are performed along the outcrop.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
deErg	no		0..*		DeErg	Depositional environment that is dominated by aeolian processes.
deLakeArid	no		0..*		DeLakeArid	Depositional environment that is dominated by lacustrine processes.
deAlluvialArid	no		0..*		DeAlluvialArid	Depositional environment that is dominated by fluvial and overbank processes.

Table Name: DeEquatorial

Package: depositional

Sub package: outcrop.de

Description: $T_{min} \geq +18 \text{ }^\circ\text{C}$; The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., et al., 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
deLakeEquatorial	no		0..*		DeLakeEquatorial	Depositional environment that is dominated by lacustrine processes.
deAlluvial	no		0..*		DeAlluvial	Depositional environment that is dominated by fluvial and overbank processes.

Table Name: DeSnowPolar

Package: depositional

Sub package: outcrop.de

Description: $T_{min} \leq -3 \text{ }^\circ\text{C}$, $T_{max} < +10 \text{ }^\circ\text{C}$; The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., et al., 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
deErg	no		0..*		DeErg	Depositional environment that is dominated by aeolian processes.
deLakePolar	no		0..*		DeLakePolar	Depositional environment that is dominated by lacustrine processes.
deAlluvial	no		0..*		DeAlluvial	Depositional environment that is dominated by fluvial and overbank processes.

Table Name: DeWarmTemperate

Package: depositional

Sub package: outcrop.de

Description: Pann < 10 Pth (Pann = accumulated annual precipitation, Pth = dryness threshold); The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., et al., 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
deLakeWarm	no		0..*		DeLakeWarm	Depositional environment that is dominated by lacustrine processes.
deAlluvial	no		0..*		DeAlluvial	Depositional environment that is dominated by fluvial and overbank processes.

Table Name: DeAlluvial

Package: depositional

Sub package: outcrop.de

Description: Depositional environment that is dominated by fluvial and overbank processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
seAlluvialFan	no		0..*		SeAlluvialFan	Cone shaped alluvial deposit, with a point source. Laid down on the margin of a basin.
seAlluvialPlain	no		0..*		SeAlluvialPlain	Plain dominated by alluvial processes.
seFluvial	no		0..*		SeFluvial	Processes and deposits specifically related to river channels.
seIncisedValley	no		0..*		SeIncisedValley	A valley cut by fluvial processes into bedrock or older sediment.
seOverbank	no		0..*		SeOverbank	The area on the alluvial plain outside the channels.

Table Name: DeAlluvialArid

Package: depositional

Sub package: outcrop.de

Description: Depositional environment that is dominated by fluvial and overbank processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
seAlluvialFan	no		0..*		SeAlluvialFan	Cone shaped alluvial deposit, with a point source. Laid down on the margin of a basin.
seAlluvialPlainArid	no		0..*		SeAlluvialPlainArid	Plain dominated by alluvial processes.
seFluvial	no		0..*		SeFluvial	Processes and deposits specifically related to river channels.
seIncisedValley	no		0..*		SeIncisedValley	A valley cut by fluvial processes into bedrock or older sediment.
seOverbank	no		0..*		SeOverbank	The area on the alluvial plain outside the channels.

Table Name: DeAlluvialPolar

Package: depositional

Sub package: outcrop.de

Description: Depositional environment that is dominated by fluvial and overbank processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
seAlluvialFan	no		0..*		SeAlluvialFan	Cone shaped alluvial deposit, with a point source. Laid down on the margin of a basin.
seAlluvialPlain	no		0..*		SeAlluvialPlain	Plain dominated by alluvial processes.
seFluvial	no		0..*		SeFluvial	Processes and deposits specifically related to river channels.
seIncisedValley	no		0..*		SeIncisedValley	A valley cut by fluvial processes into bedrock or older sediment.
seOverbank	no		0..*		SeOverbank	The area on the alluvial plain outside the channels.
seSubGlacial	no		0..*		SeSubGlacial	Area of deposition beneath an active glacier.
sePeriglacial	no		0..*		SePeriglacial	Area of deposition in front of an active glacier.

Table Name: DeErg

Package: depositional

Sub package: outcrop.de

Description: Depositional environment that is dominated by aeolian processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
seDuneComplex	no		0..*		SeDuneComplex	Environment dominated by aeolian dunes.
seSandsheet	no		0..*		SeSandsheet	A low lying plain of wind blown sand that lacks well defined dunes.

Table Name: DeLakeArid

Package: depositional

Sub package: outcrop.de

Description: Depositional environment that is dominated by lacustrine processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
seLacustrineDelta	no		0..*		SeLacustrineDelta	A deltaic unit formed where a fluvial systems enter a lake.
seLacustrineNonDeltaicShoreline	no		0..*		SeLacustrineNonDeltaicShoreline	The shoreline of a lack that is not associated with a fluvial input point.
seLacustrineAridEquatorial	no		0..*		SeLacustrineAridEquatorial	A lake.
seSabkha	no		0..*		SeSabkha	A low lying plain in an arid environment that is dominated by evaporitic processes.

Table Name: DeLakeEquatorial

Package: depositional

Sub package: outcrop.de

Description: Depositional environment that is dominated by lacustrine processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
seLacustrineDelta	no		0..*		SeLacustrineDelta	A deltaic unit formed where a fluvial systems enter a lake.
seLacustrineNonDeltaicShoreline	no		0..*		SeLacustrineNonDeltaicShoreline	The shoreline of a lack that is not associated with a fluvial input point.
seLacustrineAridEquatorial	no		0..*		SeLacustrineAridEquatorial	A lake.

Table Name: DeLakePolar

Package: depositional

Sub package: outcrop.de

Description: Depositional environment that is dominated by lacustrine processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
seLacustrineDelta	no		0..*		SeLacustrineDelta	A deltaic unit formed where a fluvial systems enter a lake.
seLacustrineNonDeltaicShoreline	no		0..*		SeLacustrineNonDeltaicShoreline	The shoreline of a lack that is not associated with a fluvial input point.
seLacustrinePolar	no		0..*		SeLacustrinePolar	A lake.

Table Name: DeLakeWarm

Package: depositional

Sub package: outcrop.de

Description: Depositional environment that is dominated by lacustrine processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
seLacustrineDelta	no		0..*		SeLacustrineDelta	A deltaic unit formed where a fluvial systems enter a lake.
seLacustrineNonDeltaicShoreline	no		0..*		SeLacustrineNonDeltaicShoreline	The shoreline of a lack that is not associated with a fluvial input point.
seLacustrineWarm	no		0..*		SeLacustrineWarm	A lake.

Table Name: SeAlluvialFan

Package: depositional

Sub package: outcrop.se

Description: Cone shaped alluvial deposit, with a point source. Laid down on the margin of a basin.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
channelMorphology	no			ChannelMorphology		Morphology of the channel system.
aeAbandonedChannelDel	no		0..*		AeAbandonedChannelDel	Heterolithic deposits laid down by suspension in abandoned channel, equivalent to modern channel (associated to continental depositional environments).
aeMidChannelBar	no		0..*		AeMidChannelBar	Bar dominated by downstream accretion elements (associated to continental depositional environments).
aePointBar	no		0..*		AePointBar	Barform comprised of lateral accretion (associated to continental depositional environments).
aeSheetfloodDeposit	no		0..*		AeSheetfloodDeposit	Unconfined lobe (associated to continental depositional environments).
aeSideAttachedBar	no		0..*		AeSideAttachedBar	Bar dominated by downstream accretion elements at margin of channel (associated to continental depositional environments).
aeSubaerialDebrisFlowDeposit	no		0..*		AeSubAerialDebrisFlowDeposit	Debris flow deposit within channel (associated to continental depositional environments).
aeUndifferentiatedSheet	no		0..*		AeUndifferentiatedSheet	Sheet deposits, depositional process not determined (associated to continental depositional environments).

Table Name: SeAlluvialPlain

Package: depositional

Sub package: outcrop.se

Description: Plain dominated by alluvial processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeOverbankMudstone	no		0..*		AeOverbankMudstone	Background deposits laid down from suspension during flood events (associated to continental depositional environments).
aePaleosolImmature	no		0..*		AePaleosolImmature	Immature "fossil" soils buried within either sedimentary or volcanic deposits (associated to continental depositional environments).
aePaleosolMature	no		0..*		AePaleosolMature	Mature "fossil" soils buried within either sedimentary or volcanic deposits (associated to continental depositional environments).
aePaleosolUndifferentiated	no		0..*		AePaleosolUndifferentiated	Undifferentiated "fossil" soils buried within either sedimentary or volcanic deposits (associated to continental depositional environments).
aePeatCoalDeposit	no		0..*		AePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).

Table Name: SeAlluvialPlainArid

Package: depositional

Sub package: outcrop.se

Description: Plain dominated by alluvial processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeOverbankMudstone	no		0..*		AeOverbankMudstone	Background deposits laid down from suspension during flood events (associated to continental depositional environments).
aePaleosolImmature	no		0..*		AePaleosolImmature	Immature "fossil" soils buried within either sedimentary or volcanic deposits (associated to continental depositional environments).
aePaleosolMature	no		0..*		AePaleosolMature	Mature "fossil" soils buried within either sedimentary or volcanic deposits (associated to continental depositional environments).
aePaleosolUndifferentiated	no		0..*		AePaleosolUndifferentiated	Undifferentiated "fossil" soils buried within either sedimentary or volcanic deposits (associated to continental depositional environments).

Table Name: SeDuneComplex

Package: depositional

Sub package: outcrop.se

Description: Environment dominated by aeolian dunes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeAeolianDunes	no		0..*		AeAeolianDunes	Wind blown sand in a range of positive relief features. Possible drop down menu for different types of bedform (associated to continental depositional environments).
aeDampInterdune	no		0..*		AeDampInterdune	Heterolithic sheet dominated by mixed, wind ripples, adhesion structures and halokenitic structures (associated to continental depositional environments).
aeDryInterdune	no		0..*		AeDryInterdune	Sandsheet dominated by wind ripples (associated to continental depositional environments).

Table Name: SeFluvial

Package: depositional

Sub package: outcrop.se

Description: Cone shaped alluvial deposit, with a point source. Laid down on the margin of a basin.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
channelMorphology	yes			ChannelMorphology		Morphology of the channel system.
aeAbandonedChannelDel	no		0..*		AeAbandonedChannelDel	Heterolithic deposits laid down by suspension in abandoned channel, equivalent to modern channel (associated to continental depositional environments).
aeChannelBeltMultiStoreyMultilateral	no		0..*		AeChannelBeltMultiStoreyMultilateral	Composite channel belt with evidence of both vertical and lateral juxtaposition of bar forms (associated to continental depositional environments).
aeChannelBeltMultiStoreyUnilateral	no		0..*		AeChannelBeltMultiStoreyUnilateral	Composite channel belt with evidence of vertical juxtaposition of bar forms (associated to continental depositional environments).
aeChannelBeltSingleStoreyMultilateral	no		0..*		AeChannelBeltSingleStoreyMultilateral	Composite channel belt with evidence of lateral juxtaposition of bar forms (associated to continental depositional environments).
aeChannelBeltSingleStoreyUnilateral	no		0..*		AeChannelBeltSingleStoreyUnilateral	Simple channel belt with no evidence for multiple channels (associated to continental depositional environments).
aeChannelBeltUndifferentiatedDel	no		0..*		AeChannelBeltUndifferentiatedDel	Channel belt with undifferentiated Del (associated to continental depositional environments).
aeFluvialSheetflood	no		0..*		AeFluvialSheetflood	Unconfined flow outside a channel (typical arid) (associated to continental depositional environments).
aeMidChannelBar	no		0..*		AeMidChannelBar	Bar dominated by downstream accretion elements

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
						(associated to continental depositional environments).
aePointBar	no		0..*		AePointBar	Barform comprised of lateral accretion (associated to continental depositional environments).
aeSideAttachedBar	no		0..*		AeSideAttachedBar	Bar dominated by downstream accretion elements at margin of channel (associated to continental depositional environments).

Table Name: SeIncisedValley

Package: depositional

Sub package: outcrop.se

Description: A valley cut by fluvial processes into bedrock or older sediment.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
channelMorphology	yes			ChannelMorphology		Morphology of the channel system.
depositionalSubstrate	yes			DepositionalSubstrate		Dominating depositional substrate an incised valley cuts into.
aeAbandonedChannelDel	no		0..*		AeAbandonedChannelDel	Heterolithic deposits laid down by suspension in abandoned channel, equivalent to modern channel (associated to continental depositional environments).
aeChannelBeltMultiStoreyMultilateral	no		0..*		AeChannelBeltMultiStoreyMultilateral	Composite channel belt with evidence of both vertical and lateral juxtaposition of bar forms (associated to continental depositional environments).
aeChannelBeltMultiStoreyUnilateral	no		0..*		AeChannelBeltMultiStoreyUnilateral	Composite channel belt with evidence of vertical juxtaposition of bar forms (associated to continental depositional environments).
aeChannelBeltSingleStoreyMultilateral	no		0..*		AeChannelBeltSingleStoreyMultilateral	Composite channel belt with evidence of lateral juxtaposition of bar forms (associated to continental depositional environments).
aeChannelBeltSingleStoreyUnilateral	no		0..*		AeChannelBeltSingleStoreyUnilateral	Simple channel belt with no evidence for multiple channels (associated to continental depositional environments).
aeChannelBeltUndifferentiatedDel	no		0..*		AeChannelBeltUndifferentiatedDel	Channel belt with undifferentiated Del (associated to continental depositional environments).
aeCrevasseChannel	no		0..*		AeCrevasseChannel	Minor channel that develops as the flow in the main channel spills onto flood plain (associated to continental depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
aeCrevasseSplaySheet	no		0..*		AeCrevasseSplaySheet	Sheet deposited as flow in channel exceeds the bank and becomes unconfined (associated to continental depositional environments).
aeFluvialSheetflood	no		0..*		AeFluvialSheetflood	Unconfined flow outside a channel (typical arid) (associated to continental depositional environments).
aeLeveeComplex	no		0..*		AeLeveeComplex	A series of stacked crevasse splay sheets +/- crevasse channel (associated to continental depositional environments).
aeMidChannelBar	no		0..*		AeMidChannelBar	Bar dominated by downstream accretion elements (associated to continental depositional environments).
aeOverbankMudstone	no		0..*		AeOverbankMudstone	Background deposits laid down from suspension during flood events (associated to continental depositional environments).
aePaleosolImmature	no		0..*		AePaleosolImmature	Immature "fossil" soils buried within either sedimentary or volcanic deposits (associated to continental depositional environments).
aePaleosolMature	no		0..*		AePaleosolMature	Mature "fossil" soils buried within either sedimentary or volcanic deposits (associated to continental depositional environments).
aePaleosolUndifferentiated	no		0..*		AePaleosolUndifferentiated	Undifferentiated "fossil" soils buried within either sedimentary or volcanic deposits (associated to continental depositional environments).
aePeatCoalDeposit	no		0..*		AePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).
aePointBar	no		0..*		AePointBar	Barform comprised of lateral accretion (associated to continental depositional environments).
aeSideAttachedBar	no		0..*		AeSideAttachedBar	Bar dominated by downstream accretion elements at margin of channel (associated to continental depositional environments).

Table Name: SeLacustrineAridEquatorial

Package: depositional

Sub package: outcrop.se

Description: A lake.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeEvaporite	no		0..*		AeEvaporite	Evaporite deposits (associated to continental depositional environments).
aeLacustrineCarbonate	no		0..*		AeLacustrineCarbonate	Carbonate formed in a lake setting (associated to continental depositional environments).
aeLacustrineMudstone	no		0..*		AeLacustrineMudstone	Hemipelagic mudstone deposited from suspension in a lake (+/- limestone) (associated to continental depositional environments).
aeLacustrineTurbidite	no		0..*		AeLacustrineTurbidite	Lacustrine turbidite deposits (sheets) (associated to continental depositional environments).

Table Name: SeLacustrinePolar

Package: depositional

Sub package: outcrop.se

Description: A lake.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeLacustrineMudstone	no		0..*		AeLacustrineMudstone	Hemipelagic mudstone deposited from suspension in a lake (+/- limestone) (associated to continental depositional environments).
aeLacustrineTurbidite	no		0..*		AeLacustrineTurbidite	Lacustrine turbidite deposits (sheets) (associated to continental depositional environments).

Table Name: SeLacustrineWarm

Package: depositional

Sub package: outcrop.se

Description: A lake.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeLacustrineCarbonate	no		0..*		AeLacustrineCarbonate	Carbonate formed in a lake setting (associated to continental depositional environments).
aeLacustrineMudstone	no		0..*		AeLacustrineMudstone	Hemipelagic mudstone deposited from suspension in a lake (+/- limestone) (associated to continental depositional environments).
aeLacustrineTurbidite	no		0..*		AeLacustrineTurbidite	Lacustrine turbidite deposits (sheets) (associated to continental depositional environments).

Table Name: SePeriGlacial

Package: depositional

Sub package: outcrop.se

Description: Area of deposition in front of an active glacier.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.

Table Name: SeOverbank

Package: depositional

Sub package: outcrop.se

Description: The area on the alluvial plain outside the channels.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeCrevasseChannel	no		0..*		AeCrevasseChannel	Minor channel that develops as the flow in the main channel spills onto flood plain (associated to continental depositional environments).
aeCrevasseSplaySheet	no		0..*		AeCrevasseChannel	Minor channel that develops as the flow in the main channel spills onto flood plain (associated to continental depositional environments).
aeLeveeComplex	no		0..*		AeLeveeComplex	A series of stacked crevasse splay sheets +/- crevasse channel (associated to continental depositional environments).
aeOverbankMudstone	no		0..*		AeOverbankMudstone	Background deposits laid down from suspension during flood events (associated to continental depositional environments).

Table Name: SeSubGlacial

Package: depositional

Sub package: outcrop.se

Description: Area of deposition beneath an active glacier.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.

Table Name: SeSabkha

Package: depositional

Sub package: outcrop.se

Description: A low lying plain in an arid environment that is dominated by evaporitic processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeDampSabkha	no		0..*		AeDampSabkha	Heterolithic sheet dominated by mixed, wind ripples, adhesion structures and halokenitic structures (associated to continental depositional environments).
aeWetSabkha	no		0..*		AeWetSabkha	Mudstones dominated sheet (associated to continental depositional environments).

Table Name: SeSandsheet

Package: depositional

Sub package: outcrop.se

Description: A low lying plain of wind blown sand that lacks well defined dunes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeDrySandsheet	no		0..*		AeDrySandsheet	Sandsheet dominated by wind ripples (associated to continental depositional environments).

Outcrop Architectural Element Tables: Continental

Package: depositional

Sub package: outcrop.ae

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
AeAbandonedChannelDel	Heterolithic deposits laid down by suspension in abandoned channel, equivalent to modern channel (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeAeolianDunes	Wind blown sand in a range of positive relief features. Possible drop down menu for different types of bedform (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeChannelBeltMultiStoreyMultilateral	Composite channel belt with evidence of both vertical and lateral juxtaposition of bar forms (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeChannelBeltMultiStoreyUnilateral	Composite channel belt with evidence of vertical juxtaposition of bar forms (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeChannelBeltSingleStoreyMultilateral	Composite channel belt with evidence of lateral juxtaposition of bar forms (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeChannelBeltSingleStoreyUnilateral	Simple channel belt with no evidence for multiple channels (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeChannelBeltUndifferentiatedDel	Channel belt with undifferentiated Del (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeCrevasseChannel	Minor channel that develops as the flow in the main channel spills onto flood plain (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeCrevasseSplaySheet	Sheet deposited as flow in channel exceeds the bank and becomes unconfined (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeDampInterdune	Heterolithic sheet dominated by mixed, wind ripples,	architectural	yes	1..1	OutcropArchitectural	Information about the

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
	adhesion structures and halokenitic structures (associated to continental depositional environments).	Element			Element	architectural elements of the outcrop.
AeDampSabkha	Heterolithic sheet dominated by mixed, wind ripples, adhesion structures and halokenitic structures (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeDryInterdune	Sandsheet dominated by wind ripples (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeDrySandsheet	Sandsheet dominated by wind ripples (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeEvaporite	Evaporite deposits (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeFluvialSheetflood	Unconfined flow outside a channel (typical arid) (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeLacustrineBeachDeposit	Deposits laid down in a non-deltaic lake shoreline (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeLacustrineCarbonate	Carbonate formed in a lake setting (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeLacustrineDeltaMouthBar	Bar deposited where channel meets lacustrine standing body of water (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeLacustrineDistributaryChannel	Channel on top of delta (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeLacustrineMudstone	Hemipelagic mudstone deposited from suspension in a lake (+/- limestone) (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeLacustrineShorefaceDeposit	Deposits laid down in a lake shoreface (typically thin) (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
AeLacustrineTurbidite	Lacustrine turbidite deposits (sheets) (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeLeveeComplex	A series of stacked crevasse splay sheets +/- crevasse channel (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeMidChannelBar	Bar dominated by downstream accretion elements (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeOverbankMudstone	Background deposits laid down from suspension during flood events (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AePaleosolImmature	Immature "fossil" soils buried within either sedimentary or volcanic deposits (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AePaleosolMature	Mature "fossil" soils buried within either sedimentary or volcanic deposits (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AePaleosolUndifferentiated	Undifferentiated "fossil" soils buried within either sedimentary or volcanic deposits (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AePointBar	Barform comprised of lateral accretion (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeSheetfloodDeposit	Unconfined lobe (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeSideAttachedBar	Bar dominated by downstream accretion elements at margin of channel (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
AeSubAerialDebrisFlowDeposit	Debris flow deposit within channel (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeUndifferentiatedSheet	Sheet deposits, depositional process not determined (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeWetSabkha	Mudstones dominated sheet (associated to continental depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.

Table Name: DeBarrierIsland

Package: depositional

Sub package: outcrop.de

Description: W: Transgressive, wave dominated coastline with barrier islands.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
seLagoon	no		0..*		SeLagoon	Brackish, standing body of water connected to the ocean (associated to paralic and shallow marine depositional environments).
seBarrier	no		0..*		SeBarrier	Linear ridge of sand which separates a lagoon or estuary from the open ocean (associated to paralic and shallow marine depositional environments).
seInlet	no		0..*		SeInlet	Channel or waterway that connects a bay or lagoon with the sea (associated to paralic and shallow marine depositional environments).
seForeshoreWWtTrans	no		0..*		SeForeshoreWWtTrans	Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).
seShoreface	no		0..*		SeShoreface	Area between fair weather wave base and low tide level. Dominated by wave processes (associated to paralic and shallow marine depositional environments).
seOffshoreTransitionZone	no		0..*		SeOffshoreTransitionZone	Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Table Name: DeFluvideltaic

Package: depositional
 Sub package: outcrop.de
 Description: F: Fluvial dominated delta.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositional Environment	Information about the depositional environment of the outcrop.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
seDeltaTop	no		0..*		SeDeltaTop	Flat, sub-aerial exposed portion of delta (associated to paralic and shallow marine depositional environments).
seDeltaFront	no		0..*		SeDeltaFront	Front, predominantly sub-aqueous portion of a delta (associated to paralic and shallow marine depositional environments).
seProdelta	no		0..*		SeProdelta	Area in front of a prograding delta (associated to paralic and shallow marine depositional environments).

Table Name: DeShelf

Package: depositional

Sub package: outcrop.de

Description: Shoreline systems in which the net migration of the shoreline is landward (A>S).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
seEpicontinentalShelf	no		0..*		SeEpicontinentalShelf	Broad, low relief shelf formed on top of flooded continental shelf, typically sheltered (associated to paralic and shallow marine depositional environments).
sePericontinentalShelf	no		0..*		SePericontinentalShelf	Oceanic shelf that forms on flooded margin of continental crust (associated to paralic and shallow marine depositional environments).

Table Name: DeShoreface

Package: depositional

Sub package: outcrop.de

Description: W: Non deltaic, regressive wave dominated shoreline.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
seBackshoreWPro	no		0..*		SeBackshoreWPro	Supra-tidal deposits laid down by wind and storm events landward of the foreshore (associated to paralic and shallow marine depositional environments).
seForeshoreWProWfTrans	no		0..*		SeForeshoreWProWfTrans	Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).
seShoreface	no		0..*		SeShoreface	Area between fair weather wave base and low tide level. Dominated by wave processes (associated to paralic and shallow marine depositional environments).
seOffshoreTransitionZone	no		0..*		SeOffshoreTransitionZone	Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Table Name: DeTidalShorelineNonDeltaic

Package: depositional

Sub package: outcrop.de

Description: T: Non deltaic shoreline dominated by tidal processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
seSupraTidalFlat	no		0..*		SeSupraTidalFlat	Area above normal high tide, flooded by extreme tides or storm surges. In arid areas may be dominated by evaporites fed by reflux (associated to paralic and shallow marine depositional environments).
seInterTidalFlatTPro	no		0..*		SeInterTidalFlatTPro	Low lying flat area between high and low tide levels (associated to paralic and shallow marine depositional environments).
seSubTidal	no		0..*		SeSubTidal	Area influenced by tidal currents but not sub-aerial exposed at low tide (associated to paralic and shallow marine depositional environments).
seOffshoreTransitionZone	no		0..*		SeOffshoreTransitionZone	Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Table Name: DeTideDominatedDelta

Package: depositional

Sub package: outcrop.de

Description: Tf: Tide dominated, fluvial influenced delta.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
seDeltaTopFtTfPro	no		0..*		SeDeltaTopFtTfPro	Flat, sub-aerial exposed portion of delta (associated to paralic and shallow marine depositional environments).
seDeltaFront	no		0..*		SeDeltaFront	Front, predominantly sub-aqueous portion of a delta (associated to paralic and shallow marine depositional environments).
seProdelta	no		0..*		SeProdelta	Area in front of a prograding delta (associated to paralic and shallow marine depositional environments).

Table Name: DeTideDominatedEstuary

Package: depositional

Sub package: outcrop.de

Description: Tf: Drowned river valley on a tide dominated shoreline.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
seSupraTidalFlat	no		0..*		SeSupraTidalFlat	Area above normal high tide, flooded by extreme tides or storm surges. In arid areas may be dominated by evaporites fed by reflux (associated to paralic and shallow marine depositional environments).
seInterTidalFlatTfTrans	no		0..*		SeInterTidalFlatTfTrans	Low lying flat area between high and low tide levels (associated to paralic and shallow marine depositional environments).
seSubTidal	no		0..*		SeSubTidal	Area influenced by tidal currents but not sub-aerial exposed at low tide (associated to paralic and shallow marine depositional environments).

Table Name: DeTideInfluencedBarrierIsland

Package: depositional

Sub package: outcrop.de

Description: Wt: Transgressive, wave dominated coastline with barrier islands cut by frequent tidal channels.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
seLagoon	no		0..*		SeLagoon	Brackish, standing body of water connected to the ocean (associated to paralic and shallow marine depositional environments).
seBarrier	no		0..*		SeBarrier	Linear ridge of sand which separates a lagoon or estuary from the open ocean (associated to paralic and shallow marine depositional environments).
seInlet	no		0..*		SeInlet	Channel or waterway that connects a bay or lagoon with the sea (associated to paralic and shallow marine depositional environments).
seForeshoreWWtTrans	no		0..*		SeForeshoreWWtTrans	Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).
seShoreface	no		0..*		SeShoreface	Area between fair weather wave base and low tide level. Dominated by wave processes (associated to paralic and shallow marine depositional environments).
seOffshoreTransitionZone	no		0..*		SeOffshoreTransitionZone	Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Table Name: DeTideInfluencedDelta

Package: depositional

Sub package: outcrop.de

Description: Ft: Fluvial dominated, tidal influenced delta.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
seDeltaTopFtTfPro	no		0..*		SeDeltaTopFtTfPro	Flat, sub-aerial exposed portion of delta (associated to paralic and shallow marine depositional environments).
seDeltaFront	no		0..*		SeDeltaFront	Front, predominantly sub-aqueous portion of a delta (associated to paralic and shallow marine depositional environments).
seProdelta	no		0..*		SeProdelta	Area in front of a prograding delta (associated to paralic and shallow marine depositional environments).

Table Name: DeTideInfluencedShoreface

Package: depositional

Sub package: outcrop.de

Description: Wt: Non deltaic, wave dominated, tidally influenced shoreline.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
seBackshoreWtPro	no		0..*		SeBackshoreWtPro	Supra-tidal deposits laid down by wind and storm events landward of the foreshore (associated to paralic and shallow marine depositional environments).
seForeshoreWtPro	no		0..*		SeForeshoreWtPro	Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).
seShoreface	no		0..*		SeShoreface	Area between fair weather wave base and low tide level. Dominated by wave processes (associated to paralic and shallow marine depositional environments).
seOffshoreTransitionZone	no		0..*		SeOffshoreTransitionZone	Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Table Name: DeWaveDominatedDelta

Package: depositional

Sub package: outcrop.de

Description: Wf: Wave dominated, fluvial influenced delta.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
seDeltaTop	no		0..*		SeDeltaTop	Flat, sub-aerial exposed portion of delta (associated to paralic and shallow marine depositional environments).
seForeshoreWfPro	no		0..*		SeForeshoreWfPro	Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).
seShoreface	no		0..*		SeShoreface	Area between fair weather wave base and low tide level. Dominated by wave processes (associated to paralic and shallow marine depositional environments).
seOffshoreTransitionZone	no		0..*		SeOffshoreTransitionZone	Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Table Name: DeWaveDominatedEstuary

Package: depositional

Sub package: outcrop.de

Description: Wf: Drowned river valley with a low tidal range. Dominated by wave processes at the mouth and fluvial processes at the bay head.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
seBayHeadDelta	no		0..*		SeBayHeadDelta	Small delta, formed at the point where a fluvial system enters a bay or lagoon (associated to paralic and shallow marine depositional environments).
seCentralBasin	no		0..*		SeCentralBasin	Low energy area between the bay head and the barrier in a wave dominated estuary (associated to paralic and shallow marine depositional environments).
seBarrier	no		0..*		SeBarrier	Linear ridge of sand which separates a lagoon or estuary from the open ocean (associated to paralic and shallow marine depositional environments).
seInlet	no		0..*		SeInlet	Channel or waterway that connects a bay or lagoon with the sea (associated to paralic and shallow marine depositional environments).
seForeshoreWProWfTrans	no		0..*		SeForeshoreWProWfTrans	Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).
seShoreface	no		0..*		SeShoreface	Area between fair weather wave base and low tide level. Dominated by wave processes (associated to paralic and shallow marine depositional environments).
seOffshoreTransitionZone	no		0..*		SeOffshoreTransitionZone	Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Table Name: DeWaveInfluencedDelta

Package: depositional

Sub package: outcrop.de

Description: Fw: Fluvial dominated, wave influenced delta.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
seDeltaTop	no		0..*		SeDeltaTop	Flat, sub-aerial exposed portion of delta (associated to paralic and shallow marine depositional environments).
seDeltaFront	no		0..*		SeDeltaFront	Front, predominantly sub-aqueous portion of a delta (associated to paralic and shallow marine depositional environments).
seProdelta	no		0..*		SeProdelta	Area in front of a prograding delta (associated to paralic and shallow marine depositional environments).

Table Name: DeWaveInfluencedTidalShoreline

Package: depositional

Sub package: outcrop.de

Description: Tw: Non deltaic, tide dominated, wave influenced shoreline.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
seSupraTidalFlat	no		0..*		SeSupraTidalFlat	Area above normal high tide, flooded by extreme tides or storm surges. In arid areas may be dominated by evaporites fed by reflux (associated to paralic and shallow marine depositional environments).
seInterTidalFlatTwPro	no		0..*		SeInterTidalFlatTwPro	Low lying flat area between high and low tide levels (associated to paralic and shallow marine depositional environments).
seSubTidal	no		0..*		SeSubTidal	Area influenced by tidal currents but not sub-aerial exposed at low tide (associated to paralic and shallow marine depositional environments).
seShoreface	no		0..*		SeShoreface	Area between fair weather wave base and low tide level. Dominated by wave processes (associated to paralic and shallow marine depositional environments).
seOffshoreTransitionZone	no		0..*		SeOffshoreTransitionZone	Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Table Name: SeBackshoreWPro

Package: depositional

Sub package: outcrop.se

Description: Supra-tidal deposits laid down by wind and storm events landward of the foreshore (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeCoastalDune	no		0..*		AeCoastalDune	Aeolian dune that forms in a backshore location (associated to paralic and shallow marine depositional environments).
aePeatCoalDeposit	no		0..*		AePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).
aeSupraTidalSabkhaDeposit	no		0..*		AeSupraTidalSabkhaDeposit	Deposits laid down above the normal high tide limit in an arid environment. Dominated by evaporitic reflux interbedded with muds deposited by extreme tides or storm surges (associated to paralic and shallow marine depositional environments).

Table Name: SeBackshoreWtPro

Package: depositional

Sub package: outcrop.se

Description: Supra-tidal deposits laid down by wind and storm events landward of the foreshore (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeCoastalDune	no		0..*		AeCoastalDune	Aeolian dune that forms in a backshore location (associated to paralic and shallow marine depositional environments).
aePeatCoalDeposit	no		0..*		AePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).
aeSupraTidalSabkhaDeposit	no		0..*		AeSupraTidalSabkhaDeposit	Deposits laid down above the normal high tide limit in an arid environment. Dominated by evaporitic reflux interbedded with muds deposited by extreme tides or storm surges (associated to paralic and shallow marine depositional environments).
aeTidalChannel	no		0..*		AeTidalChannel	Channel that provides a conduit for water on the incoming or more commonly outgoing tide (associated to paralic and shallow marine depositional environments).
aeTidalPointBar	no		0..*		AeTidalPointBar	Point bar in tidal channel. Typically heterolithic (associated to paralic and shallow marine depositional environments).

Table Name: SeBarrier

Package: depositional

Sub package: outcrop.se

Description: Linear ridge of sand which separates a lagoon or estuary from the open ocean (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeCoastalDune	no		0..*		AeCoastalDune	Aeolian dune that forms in a backshore location (associated to paralic and shallow marine depositional environments).
aePeatCoalDeposit	no		0..*		AePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).
aeUndifferentiatedBarrierComplex	no		0..*		AeUndifferentiatedBarrierComplex	All deposits associated with a barrier island, lumped into a single AE (associated to paralic and shallow marine depositional environments).
aeWashoverFan	no		0..*		AeWashoverFan	Landward sheets of sand deposited during storm washover of barrier (associated to paralic and shallow marine depositional environments).

Table Name: SeBayHeadDelta

Package: depositional

Sub package: outcrop.se

Description: Small delta, formed at the point where a fluvial system enters a bay or lagoon (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeBayHeadDeltaDeposit	no		0..*		AeBayHeadDeltaDeposit	Delta deposit where river enters estuary or bay (associated to paralic and shallow marine depositional environments).
aeDistributaryChannel	no		0..*		AeDistributaryChannel	Channel on top of delta carrying water and sediment to the shoreline (associated to paralic and shallow marine depositional environments).
aePeatCoalDeposit	no		0..*		AePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).

Table Name: SeCentralBasin

Package: depositional

Sub package: outcrop.se

Description: Low energy area between the bay head and the barrier in a wave dominated estuary (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeBayDelDeposit	no		0..*		AeBayDelDeposit	Mudstone (and minor sands) deposited in restricted bays between delta lobes (associated to paralic and shallow marine depositional environments).
aeLagoonalMudstone	no		0..*		AeLagoonalMudstone	Hemipelagic mudstone deposited in lagoon (associated to paralic and shallow marine depositional environments).
aeLagoonalSandstone	no		0..*		AeLagoonalSandstone	Sandstone deposits in a lagoon. Typically introduced by wash over (associated to paralic and shallow marine depositional environments).

Table Name: SeDeltaFront

Package: depositional

Sub package: outcrop.se

Description: Front, predominantly sub-aqueous portion of a delta (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeDeltaMouthBar	no		0..*		AeDeltaMouthBar	Bar deposited where channel meets standing body of water (associated to paralic and shallow marine depositional environments).
aeLowerDeltaFrontDeposit	no		0..*		AeLowerDeltaFrontDeposit	Lower part of delta front (associated to paralic and shallow marine depositional environments).
aeUpperDeltaFrontDeposit	no		0..*		AeUpperDeltaFrontDeposit	Upper part of delta front (Lithofacies: clinotherm, shales) (associated to paralic and shallow marine depositional environments).

Table Name: SeDeltaTop

Package: depositional

Sub package: outcrop.se

Description: Flat, sub-aerial exposed portion of delta (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeCoastalDune	no		0..*		AeCoastalDune	Aeolian dune that forms in a backshore location (associated to paralic and shallow marine depositional environments).
aeDistributaryChannel	no		0..*		AeDistributaryChannel	Channel on top of delta carrying water and sediment to the shoreline (associated to paralic and shallow marine depositional environments).
aePeatCoalDeposit	no		0..*		AePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).

Table Name: SeDeltaTopFtTfPro

Package: depositional

Sub package: outcrop.se

Description: Flat, sub-aerial exposed portion of delta (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeCoastalDune	no		0..*		AeCoastalDune	Aeolian dune that forms in a backshore location (associated to paralic and shallow marine depositional environments).
aeDistributaryChannel	no		0..*		AeDistributaryChannel	Channel on top of delta carrying water and sediment to the shoreline (associated to paralic and shallow marine depositional environments).
aePeatCoalDeposit	no		0..*		AePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).
aeTidalPointBar	no		0..*		AeTidalPointBar	Point bar in tidal channel. Typically heterolithic (associated to paralic and shallow marine depositional environments).
aeTidallyInfluencedFluvialBraidBar	no		0..*		AeTidallyInfluencedFluvialBraidBar	Fluvial braided bar that shows some minor influence from tidal processes (associated to paralic and shallow marine depositional environments).
aeTidallyInfluencedFluvialChannel	no		0..*		AeTidallyInfluencedFluvialChannel	Fluvial channel deposits with minor tidal influence (associated to paralic and shallow marine depositional environments).
aeTidallyInfluencedFluvialPointBar	no		0..*		AeTidallyInfluencedFluvialPointBar	Fluvial point bar that shows some minor influence from tidal processes (associated to paralic and shallow marine depositional environments).
aeTidallyInfluencedFluvialSideBar	no		0..*		AeTidallyInfluencedFluvialSideBar	Fluvial side-attached bar that shows some minor influence from tidal processes (associated to paralic and shallow marine depositional environments).
aeDistributaryChannel	no		0..*		AeDistributaryChannel	Channel on top of delta carrying water and sediment to the shoreline (associated to paralic and shallow marine depositional environments).

Table Name: SeEpicontinentalShelf

Package: depositional

Sub package: outcrop.se

Description: Broad, low relief shelf formed on top of flooded continental shelf, typically sheltered (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeShelfChannel	no		0..*		AeShelfChannel	Channel deposit on the shelf (associated to paralic and shallow marine depositional environments).
aeShelfMudstone	no		0..*		AeShelfMudstone	Background sedimentation on shelf, predominantly hemipelagic mudstone (associated to paralic and shallow marine depositional environments).
aeShelfTurbidite	no		0..*		AeShelfTurbidite	Deposit from density driven current initiated either through storm set up, seismic activity or delta collapse (associated to paralic and shallow marine depositional environments).
aeTempestite	no		0..*		AeTempestite	Storm derived sheet on shelf (associated to paralic and shallow marine depositional environments).
aeTidalSandwave	no		0..*		AeTidalSandwave	Large sub-tidal barforms (associated to paralic and shallow marine depositional environments).

Table Name: SeForeshoreWProWfTrans

Package: depositional

Sub package: outcrop.se

Description: Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeBeachDeposit	no		0..*		AeBeachDeposit	Deposits of the intertidal zone on a wave-dominated coast line (associated to paralic and shallow marine depositional environments).
aeBeachRidgeChenier	no		0..*		AeBeachRidgeChenier	A linear ridge formed by wave action on a beach (associated to paralic and shallow marine depositional environments).
aeInterTidalSabkhaDeposit	no		0..*		AeInterTidalSabkhaDeposit	Inter-tidal zone of arid coast (associated to paralic and shallow marine depositional environments).

Table Name: SeForeshoreWfPro

Package: depositional

Sub package: outcrop.se

Description: Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeBeachDeposit	no		0..*		AeBeachDeposit	Deposits of the intertidal zone on a wave-dominated coast line (associated to paralic and shallow marine depositional environments).
aeBeachRidgeChenier	no		0..*		AeBeachRidgeChenier	A linear ridge formed by wave action on a beach (associated to paralic and shallow marine depositional environments).

Table Name: SeForeshoreWProWfTrans

Package: depositional

Sub package: outcrop.se

Description: Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeBeachBar	no		0..*		AeBeachBar	Bar formed on a beach (associated to paralic and shallow marine depositional environments).
aeBeachDeposit	no		0..*		AeBeachDeposit	Deposits of the intertidal zone on a wave-dominated coast line (associated to paralic and shallow marine depositional environments).
aeBeachRidgeChenier	no		0..*		AeBeachRidgeChenier	A linear ridge formed by wave action on a beach (associated to paralic and shallow marine depositional environments).
aeBerm	no		0..*		AeBerm	A flat topped ridge formed by storm action (associated to paralic and shallow marine depositional environments).

Table Name: SeForeshoreWtPro

Package: depositional

Sub package: outcrop.se

Description: Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeBeachDeposit	no		0..*		AeBeachDeposit	Deposits of the intertidal zone on a wave-dominated coast line (associated to paralic and shallow marine depositional environments).
aeBeachRidgeChenier	no		0..*		AeBeachRidgeChenier	A linear ridge formed by wave action on a beach (associated to paralic and shallow marine depositional environments).
aeInterTidalSabkhaDeposit	no		0..*		AeInterTidalSabkhaDeposit	Inter-tidal zone of arid coast (associated to paralic and shallow marine depositional environments).

Table Name: SeForeshoreWWtTrans

Package: depositional

Sub package: outcrop.se

Description: Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeBeachBar	no		0..*		AeBeachBar	Bar formed on a beach (associated to paralic and shallow marine depositional environments).
aeBeachDeposit	no		0..*		AeBeachDeposit	Deposits of the intertidal zone on a wave-dominated coast line (associated to paralic and shallow marine depositional environments).
aeBeachRidgeChenier	no		0..*		AeBeachRidgeChenier	A linear ridge formed by wave action on a beach (associated to paralic and shallow marine depositional environments).

Table Name: SeInlet

Package: depositional

Sub package: outcrop.se

Description: Channel or waterway that connects a bay or lagoon with the sea (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeEbbTidalDelta	no		0..*		AeEbbTidalDelta	Seaward prograding delta fed by outgoing tidal flow through tidal channel (associated to paralic and shallow marine depositional environments).
aeFloodTidalDelta	no		0..*		AeFloodTidalDelta	Landward prograding delta fed by incoming tidal flow through tidal channel (associated to paralic and shallow marine depositional environments).
aeTidalInletChannel	no		0..*		AeTidalInletChannel	Deposit laid down in a tidal inlet channel. Typically muddy or heterolithic (associated to paralic and shallow marine depositional environments).

Table Name: SeInterTidalFlatTfTrans

Package: depositional

Sub package: outcrop.se

Description: Low lying flat area between high and low tide levels (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeInterTidalBar	no		0..*		AeInterTidalBar	Bar form in a tidal channel that is sub-aerially exposed at low tide (associated to paralic and shallow marine depositional environments).
aeInterTidalFlatDeposit	no		0..*		AeInterTidalFlatDeposit	Deposits laid down in an inter-tidal flat. Typically mud-rich in the upper portion and more sand-dominated in the lower part (associated to paralic and shallow marine depositional environments).
aeTidalChannel	no		0..*		AeTidalChannel	Channel that provides a conduit for water on the incoming or more commonly outgoing tide (associated to paralic and shallow marine depositional environments).

Table Name: SeInterTidalFlatTPro

Package: depositional

Sub package: outcrop.se

Description: Low lying flat area between high and low tide levels (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeInterTidalBar	no		0..*		AeInterTidalBar	Bar form in a tidal channel that is sub-aerially exposed at low tide (associated to paralic and shallow marine depositional environments).
aeInterTidalFlatDeposit	no		0..*		AeInterTidalFlatDeposit	Deposits laid down in an inter-tidal flat. Typically mud-rich in the upper portion and more sand-dominated in the lower part (associated to paralic and shallow marine depositional environments).
aeInterTidalSabkhaDeposit	no		0..*		AeInterTidalSabkhaDeposit	Inter-tidal zone of arid coast (associated to paralic and shallow marine depositional environments).
aeTidalChannel	no		0..*		AeTidalChannel	Channel that provides a conduit for water on the incoming or more commonly outgoing tide (associated to paralic and shallow marine depositional environments).

Table Name: SeInterTidalFlatTwPro

Package: depositional

Sub package: outcrop.se

Description: Low lying flat area between high and low tide levels (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeBeachBar	no		0..*		AeBeachBar	Bar formed on a beach (associated to paralic and shallow marine depositional environments).
aeBeachDeposit	no		0..*		AeBeachDeposit	Deposits of the intertidal zone on a wave-dominated coast line (associated to paralic and shallow marine depositional environments).
aeBeachRidgeChenier	no		0..*		AeBeachRidgeChenier	A linear ridge formed by wave action on a beach (associated to paralic and shallow marine depositional environments).
aeInterTidalBar	no		0..*		AeInterTidalBar	Bar form in a tidal channel that is sub-aerially exposed at low tide (associated to paralic and shallow marine depositional environments).
aeInterTidalFlatDeposit	no		0..*		AeInterTidalFlatDeposit	Deposits laid down in an inter-tidal flat. Typically mud-rich in the upper portion and more sand-dominated in the lower part (associated to paralic and shallow marine depositional environments).
aeInterTidalSabkhaDeposit	no		0..*		AeInterTidalSabkhaDeposit	Inter-tidal zone of arid coast (associated to paralic and shallow marine depositional environments).
aeTidalChannel	no		0..*		AeTidalChannel	Channel that provides a conduit for water on the incoming or more commonly outgoing tide (associated to paralic and shallow marine depositional environments).

Table Name: SeLagoon

Package: depositional

Sub package: outcrop.se

Description: Brackish, standing body of water connected to the ocean (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeLagoonalMudstone	no		0..*		AeLagoonalMudstone	Hemipelagic mudstone deposited in lagoon (associated to paralic and shallow marine depositional environments).
aeLagoonalSandstone	no		0..*		AeLagoonalSandstone	Sandstone deposits in a lagoon. Typically introduced by wash over (associated to paralic and shallow marine depositional environments).

Table Name: SeLacustrineDelta

Package: depositional

Sub package: outcrop.se

Description: A deltaic unit formed where a fluvial system enters a lake.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeLacustrineDeltaMouthBar	no		0..*		AeLacustrineDeltaMouthBar	Bar deposited where channel meets lacustrine standing body of water (associated to continental depositional environments).
aeLacustrineDistributaryChannel	no		0..*		AeLacustrineDistributaryChannel	Channel on top of delta (associated to continental depositional environments).

Table Name: SeLacustrineNonDeltaicShoreline

Package: depositional

Sub package: outcrop.se

Description: The shoreline of a lack that is not associated with a fluvial input point.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeLacustrineBeachDeposit	no		0..*		AeLacustrineBeachDeposit	Deposits laid down in a non-deltaic lake shoreline (associated to continental depositional environments).
aeLacustrineShorefaceDeposit	no		0..*		AeLacustrineShorefaceDeposit	Deposits laid down in a lake shoreface (typically thin) (associated to continental depositional environments).

Table Name: SeOffshoreTransitionZone

Package: depositional

Sub package: outcrop.se

Description: Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeOffshoreTransitionZoneDeposit	no		0..*		AeOffshoreTransitionZoneDeposit	Between FWWB (fair-weather wave base) and SWB (storm wave base), heterolithic with HCS (hummocky cross-stratification) sandstone and hemipelagic mudstone (Reading, 1996, Sedimentary environment.); alternative names: upper offshore (associated to paralic and shallow marine depositional environments).

Table Name: SePericontinentalShelf

Package: depositional

Sub package: outcrop.se

Description: Oceanic shelf that forms on flooded margin of continental crust (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeShelfChannel	no		0..*		AeShelfChannel	Channel deposit on the shelf (associated to paralic and shallow marine depositional environments).
aeShelfMudstone	no		0..*		AeShelfMudstone	Background sedimentation on shelf, predominantly hemipelagic mudstone (associated to paralic and shallow marine depositional environments).
aeShelfTurbidite	no		0..*		AeShelfTurbidite	Deposit from density driven current initiated either through storm set up, seismic activity or delta collapse (associated to paralic and shallow marine depositional environments).
aeTempestite	no		0..*		AeTempestite	Storm derived sheet on shelf (associated to paralic and shallow marine depositional environments).
aeTidalSandwave	no		0..*		AeTidalSandwave	Large sub-tidal barforms (associated to paralic and shallow marine depositional environments).

Table Name: SeProdelta

Package: depositional

Sub package: outcrop.se

Description: Area in front of a prograding delta (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeProdeltaDeposit	no		0..*		AeProdeltaDeposit	Deposits (mainly mudstone) seaward of delta front (associated to paralic and shallow marine depositional environments).

Table Name: SeShoreface

Package: depositional

Sub package: outcrop.se

Description: Area between fair weather wave base and low tide level. Dominated by wave processes (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeLowerShorefaceDeposit	no		0..*		AeLowerShorefaceDeposit	Above fair weather wave base, dominated by amalgamated HCS (hummocky cross-stratification) beds (associated to paralic and shallow marine depositional environments).
aeRipChannel	no		0..*		AeRipChannel	Sub-aqueous channel between two beach bars by which the water carried into the beach by waves is returned to the ocean (associated to paralic and shallow marine depositional environments).
aeUpperShorefaceDeposit	no		0..*		AeUpperShorefaceDeposit	Sub-tidal zone dominated by migration of bars during fair weather periods (associated to paralic and shallow marine depositional environments).

Table Name: SeSubTidal

Package: depositional

Sub package: outcrop.se

Description: Area influenced by tidal currents but not sub-aerial exposed at low tide (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeSubTidalBar	no		0..*		AeSubTidalBar	Bar form in a tidal channel that is not sub-aerially exposed at low tide (associated to paralic and shallow marine depositional environments).
aeSubTidalChannel	no		0..*		AeSubTidalChannel	Portion of channel dominated by tidal currents that is never emergent (associated to paralic and shallow marine depositional environments).
aeTidalChannel	no		0..*		AeTidalChannel	Channel that provides a conduit for water on the incoming or more commonly outgoing tide (associated to paralic and shallow marine depositional environments).

Table Name: SeSupraTidalFlat

Package: depositional

Sub package: outcrop.se

Description: Area above normal high tide, flooded by extreme tides or storm surges. In arid areas may be dominated by evaporites fed by reflux (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aePeatCoalDeposit	no		0..*		AePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).
aeSupraTidalFlatDeposit	no		0..*		AeSupraTidalFlatDeposit	Deposits laid down above the normal high tide limit by extreme tides or storm surges. Typically very muddy (associated to paralic and shallow marine depositional environments).
aeSupraTidalSabkhaDeposit	no		0..*		AeSupraTidalSabkhaDeposit	Deposits laid down above the normal high tide limit in an arid environment. Dominated by evaporitic reflux interbedded with muds deposited by extreme tides or storm surges (associated to paralic and shallow marine depositional environments).
aeTidalChannel	no		0..*		AeTidalChannel	Channel that provides a conduit for water on the incoming or more commonly outgoing tide (associated to paralic and shallow marine depositional environments).
aeTidalPointBar	no		0..*		AeTidalPointBar	Point bar in tidal channel. Typically heterolithic (associated to paralic and shallow marine depositional environments).

Table Name: SeSupraTidalFlatTfTrans

Package: depositional

Sub package: outcrop.se

Description: Area above normal high tide, flooded by extreme tides or storm surges. In arid areas may be dominated by evaporites fed by reflux (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aePeatCoalDeposit	no		0..*		AePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).
aeSupraTidalFlatDeposit	no		0..*		AeSupraTidalFlatDeposit	Deposits laid down above the normal high tide limit by extreme tides or storm surges. Typically very muddy (associated to paralic and shallow marine depositional environments).
aeTidalChannel	no		0..*		AeTidalChannel	Channel that provides a conduit for water on the incoming or more commonly outgoing tide (associated to paralic and shallow marine depositional environments).
aeTidalPointBar	no		0..*		AeTidalPointBar	Point bar in tidal channel. Typically heterolithic (associated to paralic and shallow marine depositional environments).

Outcrop Architectural Element Tables: Paralic and shallow marine

Package: depositional

Sub package: outcrop.ae

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
AeBayDelDeposit	Mudstone (and minor sands) deposited in restricted bays between delta lobes (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeBayHeadDeltaDeposit	Delta deposit where river enters estuary or bay (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeBeachBar	Bar formed on a beach (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeBeachDeposit	Deposits of the intertidal zone on a wave-dominated coast line (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeBeachRidgeChenier	A linear ridge formed by wave action on a beach (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeBerm	A flat topped ridge formed by storm action (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeCoastalDune	Aeolian dune that forms in a backshore location (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeDeltaMouthBar	Bar deposited where channel meets standing body of water (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeDistributaryChannel	Channel on top of delta carrying water and sediment to the shoreline (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeEbbTidalDelta	Seaward prograding delta fed by outgoing tidal flow	architectural	yes	1..1	OutcropArchitectural	Information about the

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
	through tidal channel (associated to paralic and shallow marine depositional environments).	Element			Element	architectural elements of the outcrop.
AeFloodTidalDelta	Landward prograding delta fed by incoming tidal flow through tidal channel (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeInterTidalBar	Bar form in a tidal channel that is sub-aerially exposed at low tide (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeInterTidalFlatDeposit	Deposits laid down in an inter-tidal flat. Typically mud-rich in the upper portion and more sand-dominated in the lower part (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeInterTidalSabkhaDeposit	Inter-tidal zone of arid coast (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeLagoonalMudstone	Hemipelagic mudstone deposited in lagoon (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeLagoonalSandstone	Sandstone deposits in a lagoon. Typically introduced by wash over (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeLowerDeltaFrontDeposit	Lower part of delta front (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeLowerShorefaceDeposit	Above fair weather wave base, dominated by amalgamated HCS (hummocky cross-stratification) beds (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeOffshoreTransitionZoneDeposit	Between FWWB (fair-weather wave base) and SWB (storm wave base), heterolithic with HCS (hummocky cross-stratification) sandstone and hemipelagic mudstone (Reading, 1996, Sedimentary environment.); alternative names: upper offshore (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
	swamp (associated to continental or paralic and shallow marine depositional environments).					outcrop.
AeProdeltaDeposit	Deposits (mainly mudstone) seaward of delta front (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeRipChannel	Sub-aqueous channel between two beach bars by which the water carried into the beach by waves is returned to the ocean (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeShelfChannel	Channel deposit on the shelf (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeShelfMudstone	Background sedimentation on shelf, predominantly hemipelagic mudstone (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeShelfTurbidite	Deposit from density driven current initiated either through storm set up, seismic activity or delta collapse (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeSubTidalBar	Bar form in a tidal channel that is not sub-aerially exposed at low tide (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeSubTidalChannel	Portion of channel dominated by tidal currents that is never emergent (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeSupraTidalFlatDeposit	Deposits laid down above the normal high tide limit by extreme tides or storm surges. Typically very muddy (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeSupraTidalSabkhaDeposit	Deposits laid down above the normal high tide limit in an arid environment. Dominated by evaporitic reflux interbedded with muds deposited by extreme tides or storm surges (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeTempestite	Storm derived sheet on shelf (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
						outcrop.
AeTidalChannel	Channel that provides a conduit for water on the incoming or more commonly outgoing tide (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeTidalInletChannel	Deposit laid down in a tidal inlet channel. Typically muddy or heterolithic (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeTidallyInfluencedFluvialBraidBar	Fluvial braided bar that shows some minor influence from tidal processes (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeTidallyInfluencedFluvialChannel	Fluvial channel deposits with minor tidal influence (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeTidallyInfluencedFluvialPointBar	Fluvial point bar that shows some minor influence from tidal processes (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeTidallyInfluencedFluvialSideBar	Fluvial side-attached bar that shows some minor influence from tidal processes (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeTidalPointBar	Point bar in tidal channel. Typically heterolithic (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeTidalSandwave	Large sub-tidal barforms (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeUndifferentiatedBarrierComplex	All deposits associated with a barrier island, lumped into a single AE (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeUpperDeltaFrontDeposit	Upper part of delta front (Lithofacies: clinothem, shales) (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeUpperShorefaceDeposit	Sub-tidal zone dominated by migration of bars during fair weather periods (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
AeWashoverFan	Landward sheets of sand deposited during storm washover of barrier (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.

Table Name: DeSlope

Package: depositional

Sub package: outcrop.de

Description: Deep water deposits dominated by gravity processes on a slope (tectonic or passive). Continental slope or similar tectonically derived geomorphic feature below the shelf edge. Slope is characterised by steep gradients.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
seErosionalConfinedChannelBeltComplex	no		0..*		SeErosionalConfinedChannelBeltComplex	Channel complex that aggrades within a predefined canyon or submarine valley. No associated deposition outside of the canyon (associated to deep marine depositional environments).
seErosionalToLeveeConfinedChannelBeltComplex	no		0..*		SeErosionalToLeveeConfinedChannelBeltComplex	Channel complex that is initially confined within an erosional feature, such as a canyon, but laterally Dels and expands onto the surrounding unconfined slope (associated to deep marine depositional environments).
seSlopeNonTurbidite	no		0..*		SeSlopeNonTurbidite	Slope deposits not associated with turbidity currents (associated to deep marine depositional environments).

Table Name: DeBasinFloor

Package: depositional

Sub package: outcrop.de

Description: Deep water deposits dominated by gravity processes on the basin floor. Basin floor = deep water plain which starts at the base of the slope.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
seUnconfinedLeveeChannelBeltComplex	no		0..*		SeUnconfinedLeveeChannelBeltComplex	Channel complex that is confined by aggradational levees and sheets (associated to deep marine depositional environments).
seLobe	no		0..*		SeLobe	Unconfined sheets (associated to deep marine depositional environments).
seBasinFloorNonTurbidite	no		0..*		SeBasinFloorNonTurbidite	Basin floor deposits not associated with turbidity currents (associated to deep marine depositional environments).

Table Name: SeErosionalConfinedChannelBeltComplex

Package: depositional

Sub package: outcrop.se

Description: Channel complex that aggrades within a predefined canyon or submarine valley. No associated deposition outside of the canyon (associated to deep marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeAggradationalSubmarineChannelBelt	no		0..*		AeAggradationalSubmarineChannelBelt	Belt of channels that are confined by levees (associated to deep marine depositional environments).
aeErosionalSubmarineChannelBelt	no		0..*		AeErosionalSubmarineChannelBelt	Cut and Del channels, outerbank bars common (associated to deep marine depositional environments).
aeInternalSubmarineLevee	no		0..*		AeInternalSubmarineLevee	Levee associated with aggrading channel within the canyon (associated to deep marine depositional environments).
aePassiveSubmarineChannelDel	no		0..*		AePassiveSubmarineChannelDel	Hemipelagic Del of canyon feature (associated to deep marine depositional environments).
aeSubmarineDebrisFlowDeposit	no		0..*		AeSubmarineDebrisFlowDeposit	Debris flow within canyon, typically locally derived (associated to deep marine depositional environments).
aeSubmarineMeanderingChannelBelt	no		0..*		AeSubmarineMeanderingChannelBelt	Sinuuous channel belt comprised of point bars and outer bank bars OR Channel belt generated by sinuous channel that may also be aggrading (associated to deep marine depositional environments).
aeSubmarineOuterbankBar	no		0..*		AeSubmarineOuterbankBar	Barform formed by flow stripping on the outerbank of a bend in a sinuous channel (associated to deep marine depositional environments).
aeSubmarinePointBar	no		0..*		AeSubmarinePointBar	Barform comprised of lateral accretion (associated to deep marine depositional environments).

Table Name: SeErosionalToLeveeConfinedChannelBeltComplex

Package: depositional

Sub package: outcrop.se

Description: Channel complex that is initially confined within an erosional feature, such as a canyon, but laterally Dels and expands onto the surrounding unconfined slope (associated to deep marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeAggradationalSubmarineChannelBelt	no		0..*		AeAggradationalSubmarineChannelBelt	Belt of channels that are confined by levees (associated to deep marine depositional environments).
aeErosionalSubmarineChannelBelt	no		0..*		AeErosionalSubmarineChannelBelt	Cut and Del channels, outerbank bars common (associated to deep marine depositional environments).
aeExternalSubmarineLevee	no		0..*		AeExternalSubmarineLevee	Levee associated with spill over out of canyon (associated to deep marine depositional environments).
aeInternalSubmarineLevee	no		0..*		AeInternalSubmarineLevee	Levee associated with aggrading channel within the canyon (associated to deep marine depositional environments).
aeSubmarineDebrisFlowDeposit	no		0..*		AeSubmarineDebrisFlowDeposit	Debris flow within canyon, typically locally derived (associated to deep marine depositional environments).
aeSubmarineMeanderingChannelBelt	no		0..*		AeSubmarineMeanderingChannelBelt	Sinuuous channel belt comprised of point bars and outer bank bars OR Channel belt generated by sinuous channel that may also be aggrading (associated to deep marine depositional environments).
aeSubmarineOuterbankBar	no		0..*		AeSubmarineOuterbankBar	Barform formed by flow stripping on the outerbank of a bend in a sinuous channel (associated to deep marine depositional environments).
aeSubmarinePointBar	no		0..*		AeSubmarinePointBar	Barform comprised of lateral accretion (associated to deep marine depositional environments).
aeUndifferentiatedSubmarineLevee	no		0..*		AeUndifferentiatedSubmarineLevee	Undifferentiated levee deposit (associated to deep marine depositional environments).

Table Name: SeSlopeNonTurbidite

Package: depositional

Sub package: outcrop.se

Description: Slope deposits not associated with turbidity currents (associated to deep marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeContourite	no		0..*		AeContourite	Sediment deposited by semi-permanent bottom currents (e.g. thermohaline-, wind-, tidally driven currents) (associated to deep marine depositional environments).
aeHemipelagicMudstone	no		0..*		AeHemipelagicMudstone	Shelf/slope mudstone (associated to deep marine depositional environments)
aeMassTransportComplex	no		0..*		AeMassTransportComplex	Chaotic deposit formed by slumping and sliding (associated to deep marine depositional environments).

Table Name: SeUnconfinedLeveeChannelBeltComplex

Package: depositional

Sub package: outcrop.se

Description: Channel complex that is confined by aggradational levees and sheets (associated to deep marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeAggradationalSubmarineChannelBelt	no		0..*		AeAggradationalSubmarineChannelBelt	Belt of channels that are confined by levees (associated to deep marine depositional environments).
aeSubmarineDebrisFlowDeposit	no		0..*		AeSubmarineDebrisFlowDeposit	Debris flow within canyon, typically locally derived (associated to deep marine depositional environments).
aeSubmarineMeanderingChannelBelt	no		0..*		AeSubmarineMeanderingChannelBelt	Sinuuous channel belt comprised of point bars and outer bank bars OR Channel belt generated by sinuous channel that may also be aggrading (associated to deep marine depositional environments).
aeSubmarineOuterbankBar	no		0..*		AeSubmarineOuterbankBar	Barform formed by flow stripping on the outerbank of a bend in a sinuous channel (associated to deep marine depositional environments).
aeSubmarinePointBar	no		0..*		AeSubmarinePointBar	Barform comprised of lateral accretion (associated to deep marine depositional environments).
aeUndifferentiatedSubmarineLevee	no		0..*		AeUndifferentiatedSubmarineLevee	Undifferentiated levee deposit (associated to deep marine depositional environments).

Table Name: SeLobe

Package: depositional

Sub package: outcrop.se

Description: Unconfined sheets (associated to deep marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeDistalTurbiditeSheet	no		0..*		AeDistalTurbiditeSheet	Heterolithic sheets deposited towards the end of the unconfined flow (associated to deep marine depositional environments).
aeProximalTurbiditeSheet	no		0..*		AeProximalTurbiditeSheet	Sand dominated sheets deposited from unconfined flow (associated to deep marine depositional environments).

Table Name: SeBasinFloorNonTurbidite

Package: depositional

Sub package: outcrop.se

Description: Basin floor deposits not associated with turbidity currents (associated to deep marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeContourite	no		0..*		AeContourite	Sediment deposited by semi-permanent bottom currents (e.g. thermohaline-, wind-, tidally driven currents) (associated to deep marine depositional environments).
aeHemipelagicMudstone	no		0..*		AeHemipelagicMudstone	Shelf/slope mudstone (associated to deep marine depositional environments)
aeMassTransportComplex	no		0..*		AeMassTransportComplex	Chaotic deposit formed by slumping and sliding (associated to deep marine depositional environments).
aePelagicMudstone	no		0..*		AePelagicMudstone	Mudstones and claystones deposited from suspension on the basin floor (associated to deep marine depositional environments).

Outcrop Architectural Element Tables: Deep marine

Package: depositional

Sub package: outcrop.ae

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
AeAggradationalSubmarineChannelBelt	Belt of channels that are confined by levees (associated to deep marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeContourite	Sediment deposited by semi-permanent bottom currents (e.g. thermohaline-, wind-, tidally driven currents) (associated to deep marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeDistalTurbiditeSheet	Heterolithic sheets deposited towards the end of the unconfined flow (associated to deep marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeErosionalSubmarineChannelBelt	Cut and Del channels, outerbank bars common (associated to deep marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeExternalSubmarineLevee	Levee associated with spill over out of canyon (associated to deep marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeHemipelagicMudstone	Shelf/slope mudstone (associated to deep marine depositional environments)	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeInternalSubmarineLevee	Levee associated with aggrading channel within the canyon (associated to deep marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeMassTransportComplex	Chaotic deposit formed by slumping and sliding (associated to deep marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AePassiveSubmarineChannelDel	Hemipelagic Del of canyon feature (associated to deep marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AePelagicMudstone	Mudstones and claystones deposited from suspension on the basin floor (associated to deep marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeProximalTurbiditeSheet	Sand dominated sheets deposited from unconfined flow (associated to deep marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeSubmarineDebrisFlowDeposit	Debris flow within canyon, typically locally derived	architectural	yes	1..1	OutcropArchitectural	Information about the architectural

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
	(associated to deep marine depositional environments).	Element			Element	elements of the outcrop.
AeSubmarineMeanderingChannelBelt	Sinuuous channel belt comprised of point bars and outer bank bars OR Channel belt generated by sinuous channel that may also be aggrading (associated to deep marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeSubmarineOuterbankBar	Barform formed by flow stripping on the outerbank of a bend in a sinuous channel (associated to deep marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeSubmarinePointBar	Barform comprised of lateral accretion (associated to deep marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeUndifferentiatedSubmarineLevee	Undifferentiated levee deposit (associated to deep marine depositional environments).	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.

Table Name: DeAapgDeepMarine

Package: depositional

Sub package: outcrop.de

Description: AAPG Atlas of Deep water outcrops nomenclature.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		OutcropDepositionalEnvironment	Information about the depositional environment of the outcrop.
seAapgDeepMarine	no		0..*		SeAapgDeepMarine	AAPG Atlas of Deep water outcrops nomenclature.

Table Name: SeAapgDeepMarine

Package: depositional

Sub package: outcrop.se

Description: AAPG Atlas of Deep water outcrops nomenclature.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		OutcropSubEnvironment	Information about the depositional subenvironment of the outcrop.
aeAapgChannel	no		0..*		AeAapgChannel	AAPG Atlas of Deep water outcrops nomenclature.
aeAapgMassTransportComplexDeposits	no		0..*		AeAapgMassTransportComplexDeposits	AAPG Atlas of Deep water outcrops nomenclature.
aeAapgSheet	no		0..*		AeAapgSheet	AAPG Atlas of Deep water outcrops nomenclature.
aeAapgThinBeds	no		0..*		AeAapgThinBeds	AAPG Atlas of Deep water outcrops nomenclature.

Outcrop Architectural Element Tables: AAPG Deep marine

Package: depositional

Sub package: outcrop.ae

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
AeAapgChannel	AAPG Atlas of Deep water outcrops nomenclature.	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeAapgMassTransportComplexDeposits	AAPG Atlas of Deep water outcrops nomenclature.	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeAapgSheet	AAPG Atlas of Deep water outcrops nomenclature.	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.
AeAapgThinBeds	AAPG Atlas of Deep water outcrops nomenclature.	architectural Element	yes	1..1	OutcropArchitectural Element	Information about the architectural elements of the outcrop.

5.3 Depositional settings model (modern system)

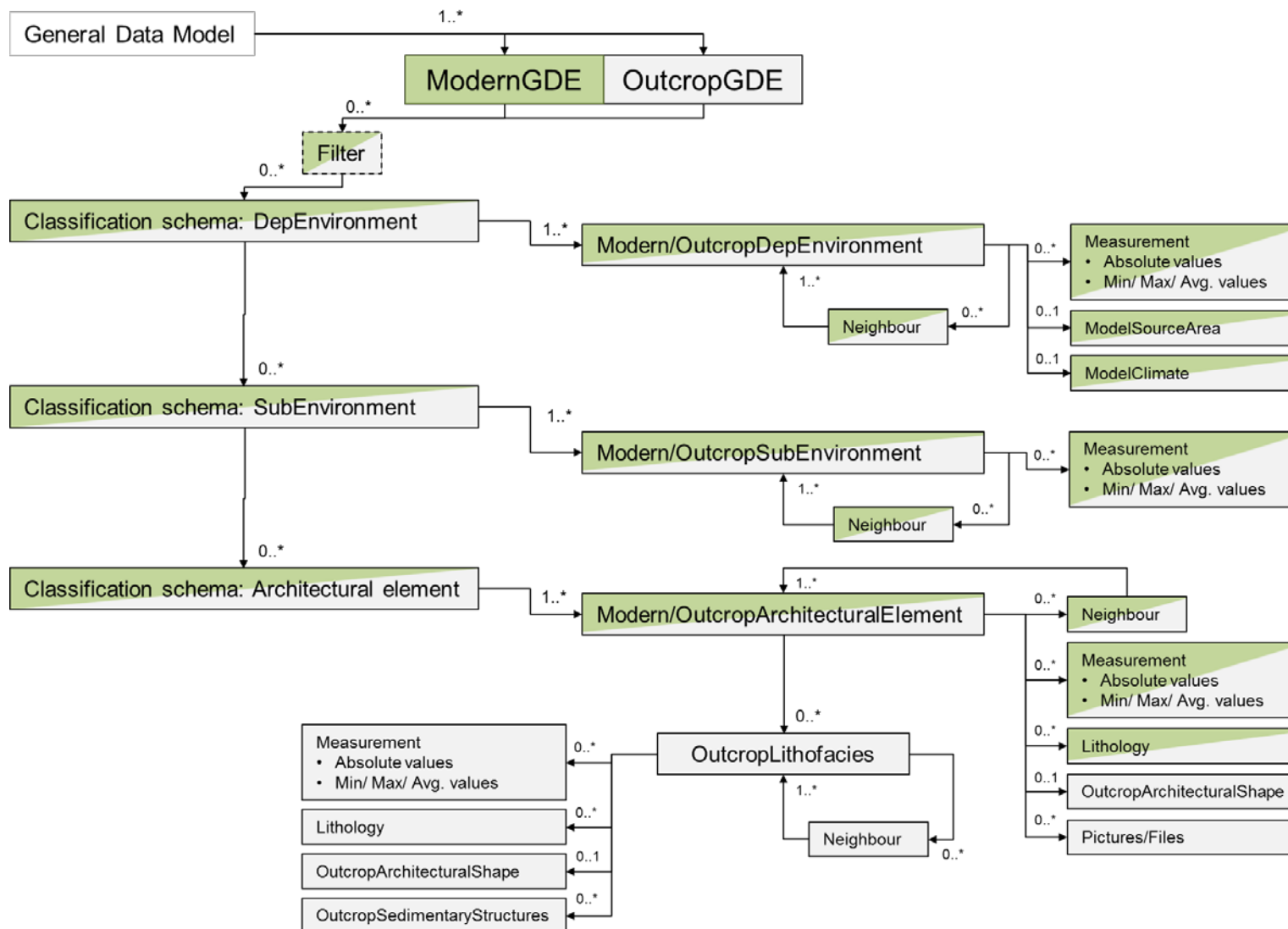


Table Name: ModernGde

Package: depositional

Sub package: modern.gde

Description: Selector for modern gross depositional environment.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
modernGdeContinental	no		0..1		ModernGdeContinental	Modern continental gross depositional environment.
modernGdeParalicShallowMarine	no		0..1		ModernGdeParalicAndShallowMarine	Modern paralic and shallow marine gross depositional environment.

Table Name: ModernDepositionalEnvironment

Package: depositional

Sub package: modern.de

Description: Information about depositional environments of modern systems.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
description	no	text				A textual description of the subenvironment.
basinName	no	text				Name of the depositional basin.
comments	no	text				Relevant information about the data in this category.
basinType	yes			OutcropBasinKind		Type of depositional basin.
accommodationRegime	no			OutcropAccommodation Regime		Mean subsidence rate per one thousand years.
depositionalDipDirection	no			ModelEarthDirection		Orientation should always be measured and/or given as clockwise deviation from North.
measurementsAbsolute	no		0..*		ModernDepositionalMeasurement	A physical description of the modern depositional environment. Here the absolute measurement is stored.
measurementsAverage	no		0..*		ModernDepositionalMeasurement Summary	A physical description of the modern depositional environment. Here a range of values (non-absolute measurements) are stored (e.g. minimum, maximum and average values).
measurementsMinimum	no		0..*		ModernDepositionalMeasurement Summary	A physical description of the modern depositional environment. Here a range of values (non-absolute measurements) are stored (e.g. minimum, maximum and average values).
measurementsMaximum	no		0..*		ModernDepositionalMeasurement Summary	A physical description of the modern depositional environment. Here a range of values (non-absolute measurements) are stored (e.g. minimum, maximum and average values).
neighbour	no		0..*		ModernDepositionalNeighbour	Information on the neighbourhood relationship between objects belonging to the same scale (depositional environment, sub environment, architectural elements, lithofacies units). see also: Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
climate	no		0..1		ModelClimate	Contains information about the climate conditions during the deposition. The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., J. Grieser, C. Beck, B. Rudolf, and F. Rubel, 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.
sourceArea	no		0..1		ModelSourceArea	Contains information about the source of deposited material.

Table Name: ModernDepositionalMeasurement

Package: depositional

Sub package: modern.de

Description: A physical description of the modern depositional environment. Here the absolute measurement is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			ModernDepositionalMeasurementType		Specific types of measurements for modern depositional environment.
measurementCompleteness	yes			DataMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			DataMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: ModernDepositionalMeasurementSummary

Package: depositional

Sub package: modern.de

Description: A physical description of the modern depositional environment. Here a range of values (non-absolute measurements) are stored (e.g. minimum, maximum and average values).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			ModernDepositionalMeasurementType		Specific types of measurements for modern depositional environment.
measurementCompleteness	yes			DataMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			DataMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: ModernDepositionalNeighbour

Package: depositional

Sub package: modern.de

Description: Information on the neighbourhood relationship between objects belonging to the same scale (depositional environment, sub environment, architectural elements, lithofacies units). see also: Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
comments	no	text				Relevant information about the data in this category.
dominateNeighbourDirection	yes			NeighbourDirection		Spatial neighbour relationship between objects belonging to the same scale (Depositional environment, Subenvironment, Architectural elements, Lithofacies units). (Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.)
subordinateNeighbourDirection	no			NeighbourDirection		Spatial neighbour relationship between objects belonging to the same scale (Depositional environment, Subenvironment, Architectural elements, Lithofacies units). (Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.)
dominateBoundingSurface	no			BoundingSurface		Description of the bounding surface between two elements.
subordinateBoundingSurface	no			BoundingSurface		Description of the bounding surface between two elements.
depositionalEnvironment	yes		1..*		ModernDepositionalEnvironment	Information about depositional environments of modern systems.

Table Name: ModernSubEnvironment

Package: depositional

Sub package: modern.se

Description: Information about the subenvironment of modern depositional systems.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
description	no	text				A textual description of the sub environment.
comments	no	text				Relevant information about the data in this category.
measurementsAbsolute	no		0..*		ModernSubEnvironment Measurement	A physical description of the modern subenvironment. Here the absolute measurement is stored.
measurementsAverage	no		0..*		ModernSubEnvironment MeasurementSummary	A physical description of the modern subenvironment. Here a range of values (non-absolute measurements) are stored (e.g. minimum, maximum and average values).
measurementsMinimum	no		0..*		ModernSubEnvironment MeasurementSummary	A physical description of the modern subenvironment. Here a range of values (non-absolute measurements) are stored (e.g. minimum, maximum and average values).
measurementsMaximum	no		0..*		ModernSubEnvironment MeasurementSummary	A physical description of the modern subenvironment. Here a range of values (non-absolute measurements) are stored (e.g. minimum, maximum and average values).
neighbour	no		0..*		ModernSubEnvironment Neighbour	Information on the neighbourhood relationship between objects belonging to the same scale (depositional environment, sub environment, architectural elements, lithofacies units). see also: Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.

Table Name: ModernSubEnvironmentMeasurement

Package: depositional

Sub package: modern.se

Description: A physical description of the modern subenvironment. Here the absolute measurement is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			ModernSubenvironmentMeasurementType		Specific types of measurements for modern subenvironment.
measurementCompleteness	yes			DataMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			DataMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: ModernSubEnvironmentMeasurementSummary

Package: depositional

Sub package: modern.se

Description: A physical description of the modern subenvironment. Here a range of values (non-absolute measurements) are stored (e.g. minimum, maximum and average values).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			ModernSubenvironmentMeasurementType		Specific types of measurements for modern subenvironment.
measurementCompleteness	yes			DataMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			DataMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: ModernSubEnvironmentNeighbour

Package: depositional

Sub package: modern.se

Description: Information on the neighbourhood relationship between objects belonging to the same scale (depositional environment, sub environment, architectural elements, lithofacies units). see also: Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
comments	no	text				Relevant information about the data in this category.
dominateNeighbourDirection	yes			NeighbourDirection		Spatial neighbour relationship between objects belonging to the same scale (Depositional environment, Subenvironment, Architectural elements, Lithofacies units). (Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.)
subordinateNeighbourDirection	no			NeighbourDirection		Spatial neighbour relationship between objects belonging to the same scale (Depositional environment, Subenvironment, Architectural elements, Lithofacies units). (Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.)
dominateBoundingSurface	no			BoundingSurface		Description of the bounding surface between two elements.
subordinateBoundingSurface	no			BoundingSurface		Description of the bounding surface between two elements.
modernSubEnvironment	yes		1..*		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.

Table Name: ModernArchitecturalElement

Package: depositional

Sub package: modern.ae

Description: Information about architectural elements of modern depositional systems.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
name	no	text				Name or label of architectural element.
background	yes	text				Choice whether or not an architectural element is a background.
description	no	text				A textual description of the architectural element.
comments	no	text				Relevant information about the data in this category.
depositionalConfinement	no			DepositionalConfinement		Specifies whether a depositional system is unconfined or confined by erosional, tectonic or unspecified geomorphology.
measurementsAbsolute	no		0..*		ModernArchitectural Measurement	A physical description of the modern architectural element. Here the absolute measurement is stored.
measurementsAverage	no		0..*		ModernArchitectural MeasurementSummary	A physical description of the modern architectural element. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
measurementsMinimum	no		0..*		ModernArchitectural MeasurementSummary	A physical description of the modern architectural element. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
measurementsMaximum	no		0..*		ModernArchitectural MeasurementSummary	A physical description of the modern architectural element. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.
neighbour	no		0..*		ModernArchitectural Neighbour	Information on the neighbourhood relationship between objects belonging to the same scale (depositional environment, sub environment, architectural elements, lithofacies units). see also: Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.
lithology	no		0..*		Lithology	All relevant information regarding the lithology of architectural elements and lithofacies. Based on Energetics WITSML_v.1.4.1 well-log lithology standard.

Table Name: ModernArchitecturalMeasurement

Package: depositional

Sub package: modern.ae

Description: A physical description of the modern architectural element. Here the absolute measurement is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			ModernArchitecturalMeasurementType		Specific types of measurements for modern architectural elements.
measurementCompleteness	yes			DataMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			DataMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: ModernArchitecturalMeasurementSummary

Package: depositional

Sub package: modern.ae

Description: A physical description of the modern architectural element. Here a range of values (non-absolute measurements, e.g. minimum, maximum and average values) is stored.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
measureQuantity	yes	number				The actual number (quantity) of the measurement. Here the absolute measurement is stored.
comments	no	text				Relevant information about the data in this category.
measurementUnit	yes			DataMeasurementUnit		Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.
measurementType	yes			ModernArchitecturalMeasurementType		Specific types of measurements for modern architectural elements.
measurementCompleteness	yes			DataMeasurementCompleteness		Describes the completeness of the measurement or observation. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)
measurementQuality	yes			DataMeasurementQuality		The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled.

Table Name: ModernArchitecturalNeighbour

Package: depositional

Sub package: modern.ae

Description: Information on the neighbourhood relationship between objects belonging to the same scale (depositional environment, sub environment, architectural elements, lithofacies units). see also: Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
comments	no	text				Relevant information about the data in this category.
dominateNeighbourDirection	yes			NeighbourDirection		Spatial neighbour relationship between objects belonging to the same scale (Depositional environment, Subenvironment, Architectural elements, Lithofacies units). (Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.)
subordinateNeighbourDirection	no			NeighbourDirection		Spatial neighbour relationship between objects belonging to the same scale (Depositional environment, Subenvironment, Architectural elements, Lithofacies units). (Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.)
dominateBoundingSurface	no			BoundingSurface		Description of the bounding surface between two elements.
subordinateBoundingSurface	no			BoundingSurface		Description of the bounding surface between two elements.
modernArchitecturalElement	yes		1..*		ModernArchitecturalElement	Information about architectural elements of modern depositional systems.

Table Name: ModernGdeContinental

Package: depositional

Sub package: modern.gde

Description: Modern continental gross depositional environment.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
modernDeEquatorial	no		0..*		ModernDeEquatorial	Tmin ≥ +18 °C; The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., et al., 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.
modernDeWarmTemperate	no		0..*		ModernDeWarmTemperate	Pann < 10 Pth (Pann = accumulated annual precipitation, Pth = dryness threshold); The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., et al., 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.
modernDeArid	no		0..*		ModernDeArid	-3 °C < Tmin < +18 °C; The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., et al., 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.
modernDeSnowPolar	no		0..*		ModernDeSnowPolar	Tmin ≤ -3 °C, Tmax < +10 °C; The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., et al., 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.

Table Name: ModernGdeParalicAndShallowMarine

Package: depositional

Sub package: modern.gde

Description: Modern paralic and shallow marine gross depositional environment.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
modernDeFluvioDeltaic	no		0..*		ModernDeFluvioDeltaic	F: Fluvial dominated delta.
modernDeTideInfluencedDelta	no		0..*		ModernDeTideInfluencedDelta	Ft: Fluvial dominated, tidal influenced delta.
modernDeWaveInfluencedDelta	no		0..*		ModernDeWaveInfluencedDelta	Fw: Fluvial dominated, wave influenced delta.
modernDeShoreface	no		0..*		ModernDeShoreface	W: Non deltaic, regressive wave dominated shoreline.
modernDeTideInfluencedShoreface	no		0..*		ModernDeTideInfluencedShoreface	Wt: Non deltaic, wave dominated, tidally influenced shoreline.
modernDeWaveDominatedDelta	no		0..*		ModernDeWaveDominatedDelta	Wf: Wave dominated, fluvial influenced delta.
modernDeTidalShorelineNonDeltaic	no		0..*		ModernDeTidalShorelineNonDeltaic	T: Non deltaic shoreline dominated by tidal processes.
modernDeWaveInfluencedTidalShoreline	no		0..*		ModernDeWaveInfluencedTidalShoreline	Tw: Non deltaic, tide dominated, wave influenced shoreline.
modernDeTideDominatedDelta	no		0..*		ModernDeTideDominatedDelta	Tf: Tide dominated, fluvial influenced delta.
modernDeBarrierIsland	no		0..*		ModernDeBarrierIsland	W: Transgressive, wave dominated coastline with barrier islands.
modernDeWaveDominatedEstuary	no		0..*		ModernDeWaveDominatedEstuary	Wf: Drowned river valley with a low tidal range. Dominated by wave processes at the mouth and fluvial processes at the bay head.
modernDeTideInfluencedBarrierIsland	no		0..*		ModernDeTideInfluencedBarrierIsland	Wt: Transgressive, wave dominated coastline with barrier islands cut by frequent tidal channels.
modernDeTideDominatedEstuary	no		0..*		ModernDeTideDominatedEstuary	Tf: Drowned river valley on a tide dominated shoreline
modernDeShelf	no		0..*		ModernDeShelf	Shallow marine shelf.

Table Name: ModernDeArid

Package: depositional

Sub package: modern.de

Description: $-3\text{ °C} < T_{min} < +18\text{ °C}$; The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., et al., 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
modernDeErg	no		0..*		ModernDeErg	Depositional environment that is dominated by aeolian processes.
modernDeLakeArid	no		0..*		ModernDeLakeArid	Depositional environment that is dominated by lacustrine processes.
modernDeAlluvialArid	no		0..*		ModernDeAlluvialArid	Depositional environment that is dominated by fluvial and overbank processes.

Table Name: ModernDeEquatorial

Package: depositional

Sub package: modern.de

Description: $T_{min} \geq +18 \text{ }^\circ\text{C}$; The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., et al., 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
modernDeLake	no		0..*		ModernDeLake	Depositional environment that is dominated by lacustrine processes.
modernDeAlluvial	no		0..*		ModernDeAlluvial	Depositional environment that is dominated by fluvial and overbank processes.

Table Name: ModernDeSnowPolar

Package: depositional

Sub package: modern.de

Description: $T_{min} \leq -3 \text{ }^\circ\text{C}$, $T_{max} < +10 \text{ }^\circ\text{C}$; The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., et al., 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
modernDeErg	no		0..*		ModernDeErg	Depositional environment that is dominated by aeolian processes.
modernDeLake	no		0..*		ModernDeLake	Depositional environment that is dominated by lacustrine processes.
modernDeAlluvialPolar	no		0..*		ModernDeAlluvialPolar	Depositional environment that is dominated by fluvial and overbank processes.

Table Name: ModernDeWarmTemperate

Package: depositional

Sub package: modern.de

Description: Pann < 10 Pth (Pann = accumulated annual precipitation, Pth = dryness threshold); The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., et al., 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
modernDeLake	no		0..*		ModernDeLake	Depositional environment that is dominated by lacustrine processes.
modernDeAlluvial	no		0..*		ModernDeAlluvial	Depositional environment that is dominated by fluvial and overbank processes.

Table Name: ModernDeAlluvial

Package: depositional

Sub package: modern.de

Description: Depositional environment that is dominated by fluvial and overbank processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about depositional environments of modern systems.
modernSeAlluvialFan	no		0..*		ModernSeAlluvialFan	Cone shaped alluvial deposit, with a point source. Laid down on the margin of a basin.
modernSeAlluvialPlain	no		0..*		ModernSeAlluvialPlain	Plain dominated by alluvial processes.
modernSeFluvial	no		0..*		ModernSeFluvial	Processes and deposits specifically related to river channels.
modernSeIncisedValley	no		0..*		ModernSeIncisedValley	A valley cut by fluvial processes into bedrock or older sediment.
modernSeOverbank	no		0..*		ModernSeOverbank	The area on the alluvial plain outside the channels.

Table Name: ModernDeAlluvialArid

Package: depositional

Sub package: modern.de

Description: Depositional environment that is dominated by fluvial and overbank processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about depositional environments of modern systems.
modernSeAlluvialFan	no		0..*		ModernSeAlluvialFan	Cone shaped alluvial deposit, with a point source. Laid down on the margin of a basin.
modernSeFluvial	no		0..*		ModernSeFluvial	Processes and deposits specifically related to river channels.
modernSeIncisedValley	no		0..*		ModernSeIncisedValley	A valley cut by fluvial processes into bedrock or older sediment.
modernSeOverbank	no		0..*		ModernSeOverbank	The area on the alluvial plain outside the channels.

Table Name: ModernDeAlluvialPolar

Package: depositional

Sub package: modern.de

Description: Depositional environment that is dominated by fluvial and overbank processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about depositional environments of modern systems.
modernSeAlluvialFan	no		0..*		ModernSeAlluvialFan	Cone shaped alluvial deposit, with a point source. Laid down on the margin of a basin.
modernSeAlluvialPlain	no		0..*		ModernSeAlluvialPlain	Plain dominated by alluvial processes.
modernSeFluvial	no		0..*		ModernSeFluvial	Processes and deposits specifically related to river channels.
modernSeIncisedValley	no		0..*		ModernSeIncisedValley	A valley cut by fluvial processes into bedrock or older sediment.
modernSeOverbank	no		0..*		ModernSeOverbank	The area on the alluvial plain outside the channels.
modernSePeriglacial	no		0..*		ModernSePeriglacial	Area of deposition in front of an active glacier.

Table Name: ModernDeErg

Package: depositional

Sub package: modern.de

Description: Depositional environment that is dominated by aeolian processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about depositional environments of modern systems.
modernSeDuneComplex	no		0..*		ModernSeDuneComplex	Environment dominated by aeolian dunes.
modernSeSandsheet	no		0..*		ModernSeSandsheet	A low lying plain of wind blown sand that lacks well defined dunes.

Table Name: ModernDeLake

Package: depositional

Sub package: modern.de

Description: Depositional environment that is dominated by lacustrine processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about depositional environments of modern systems.
modernSeLacustrineDelta	no		0..*		ModernSeLacustrineDelta	A deltaic unit formed where a fluvial system enters a lake.
modernSeLacustrineNonDeltaicShoreline	no		0..*		ModernSeLacustrineNonDeltaicShoreline	The shoreline of a lack that is not associated with a fluvial input point.

Table Name: ModernDeLakeArid

Package: depositional

Sub package: modern.de

Description: Depositional environment that is dominated by lacustrine processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about depositional environments of modern systems.
modernSeLacustrineDelta	no		0..*		ModernSeLacustrineDelta	A deltaic unit formed where a fluvial system enters a lake.
modernSeLacustrineNonDeltaicShoreline	no		0..*		ModernSeLacustrineNonDeltaicShoreline	The shoreline of a lack that is not associated with a fluvial input point.
modernSeSabkha	no		0..*		ModernSeSabkha	A low lying plain in an arid environment that is dominated by evaporitic processes.

Table Name: ModernSeAlluvialFan

Package: depositional

Sub package: modern.se

Description: Cone shaped alluvial deposit, with a point source. Laid down on the margin of a basin.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
channelMorphology	no			ChannelMorphology		Morphology of the channel system.
modernAeMidChannelBar	no		0..*		ModernAeMidChannelBar	Bar dominated by downstream accretion elements (associated to continental depositional environments).
modernAePointBar	no		0..*		ModernAePointBar	Barform comprised of lateral accretion (associated to continental depositional environments).
modernAeSheetfloodDeposit	no		0..*		ModernAeSheetfloodDeposit	Unconfined lobe (associated to continental depositional environments).
modernAeSideAttachedBar	no		0..*		ModernAeSideAttachedBar	Bar dominated by downstream accretion elements at margin of channel (associated to continental depositional environments).
modernAeSubAerialDebrisFlowDeposit	no		0..*		ModernAeSubAerialDebrisFlowDeposit	Debris flow deposit within channel (associated to continental depositional environments).
modernAeUndifferentiatedSheet	no		0..*		ModernAeUndifferentiatedSheet	Sheet deposits, depositional process not determined (associated to continental depositional environments).

Table Name: ModernSeAlluvialPlain

Package: depositional

Sub package: modern.se

Description: Plain dominated by alluvial processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAePeatCoalDeposit	no		0..*		ModernAePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).

Table Name: ModernSeDuneComplex

Package: depositional

Sub package: modern.se

Description: Environment dominated by aeolian dunes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeAeolianDunes	no		0..*		ModernAeAeolianDunes	Wind blown sand in a range of positive relief features. Possible drop down menu for different types of bedform (associated to continental depositional environments).
modernAeDampInterdune	no		0..*		ModernAeDampInterdune	Heterolithic sheet dominated by mixed, wind ripples, adhesion structures and halokenitic structures (associated to continental depositional environments).
modernAeDryInterdune	no		0..*		ModernAeDryInterdune	Sandsheet dominated by wind ripples (associated to continental depositional environments).

Table Name: ModernSeFluvial

Package: depositional

Sub package: modern.se

Description: Processes and deposits specifically related to river channels.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
channelMorphology	yes			ChannelMorphology		Morphology of the channel system.
modernRiverProfileLocation	no			ModernRiverProfileLocation		The location along the longitudinal stream or river profile.
modernAeChannel	no		0..*		ModernAeChannel	A channel in a modern setting.
modernAeChannelBelt	no		0..*		ModernAeChannelBelt	A series of laterally related barforms associated with a modern channel.
modernAeFluvialSheetflood	no		0..*		ModernAeFluvialSheetflood	Unconfined flow outside a channel (typical arid) (associated to continental depositional environments).
modernAeMidChannelBar	no		0..*		ModernAeMidChannelBar	Bar dominated by downstream accretion elements (associated to continental depositional environments).
modernAePointBar	no		0..*		ModernAePointBar	Barform comprised of lateral accretion (associated to continental depositional environments).
modernAeSideAttachedBar	no		0..*		ModernAeSideAttachedBar	Bar dominated by downstream accretion elements at margin of channel (associated to continental depositional environments).

Table Name: ModernSeIncisedValley

Package: depositional

Sub package: modern.se

Description: A valley cut by fluvial processes into bedrock or older sediment.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernRiverProfileLocation	no			ModernRiverProfileLocation		The location along the longitudinal stream or river profile.
channelMorphology	yes			ChannelMorphology		Morphology of the channel system.
depositionalSubstrate	yes			DepositionalSubstrate		Dominating depositional substrate an incised valley cuts into.
modernAeChannel	no		0..*		ModernAeChannel	A channel in a modern setting.
modernAeChannelBelt	no		0..*		ModernAeChannelBelt	A series of laterally related barforms associated with a modern channel.
modernAeCrevasseChannel	no		0..*		ModernAeCrevasseChannel	Minor channel that develops as the flow in the main channel spills onto flood plain (associated to continental depositional environments).
modernAeCrevasseSplaySheet	no		0..*		ModernAeCrevasseSplaySheet	Sheet deposited as flow in channel exceeds the bank and becomes unconfined (associated to continental depositional environments).
modernAeFluvialSheetflood	no		0..*		ModernAeFluvialSheetflood	Unconfined flow outside a channel (typical arid) (associated to continental depositional environments).
modernAeLeveeComplex	no		0..*		ModernAeLeveeComplex	A series of stacked crevasse splay sheets +/- crevasse channel (associated to continental depositional environments).
modernAeMidChannelBar	no		0..*		ModernAeMidChannelBar	Bar dominated by downstream accretion elements (associated to continental depositional environments).
modernAePeatCoalDeposit	no		0..*		ModernAePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).
modernAePointBar	no		0..*		ModernAePointBar	Barform comprised of lateral accretion (associated to continental depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
modernAeSideAttachedBar	no		0..*		ModernAeSideAttachedBar	Bar dominated by downstream accretion elements at margin of channel (associated to continental depositional environments).

Table Name: ModernSeLacustrineDelta

Package: depositional

Sub package: modern.se

Description: A deltaic unit formed where a fluvial system enters a lake.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeLacustrineDeltaMouthBar	no		0..*		ModernAeLacustrineDeltaMouthBar	Bar deposited where channel meets lacustrine standing body of water (associated to continental depositional environments).
modernAeLacustrineDistributaryChannel	no		0..*		ModernAeLacustrineDistributaryChannel	Channel on top of delta (associated to continental depositional environments).

Table Name: ModernSeLacustrineNonDeltaicShoreline

Package: depositional

Sub package: modern.se

Description: The shoreline of a lack that is not associated with a fluvial input point.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeLacustrineBeachDeposit	no		0..*		ModernAeLacustrineBeachDeposit	Deposits laid down in a non-deltaic lake shoreline (associated to continental depositional environments).

Table Name: ModernSeOverbank

Package: depositional

Sub package: modern.se

Description: The area on the alluvial plain outside the channels.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeCrevasseChannel	no		0..*		ModernAeCrevasseChannel	Minor channel that develops as the flow in the main channel spills onto flood plain (associated to continental depositional environments).
modernAeCrevasseSplaySheet	no		0..*		ModernAeCrevasseSplaySheet	Sheet deposited as flow in channel exceeds the bank and becomes unconfined (associated to continental depositional environments).
modernAeLeveeComplex	no		0..*		ModernAeLeveeComplex	A series of stacked crevasse splay sheets +/- crevasse channel (associated to continental depositional environments).

Table Name: ModernSePeriGlacial

Package: depositional

Sub package: modern.se

Description: Area of deposition in front of an active glacier.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.

Table Name: ModernSeSabkha

Package: depositional

Sub package: modern.se

Description: A low lying plain in an arid environment that is dominated by evaporitic processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeDampSabkha	no		0..*		ModernAeDampSabkha	Heterolithic sheet dominated by mixed, wind ripples, adhesion structures and halokenitic structures (associated to continental depositional environments).
modernAeWetSabkha	no		0..*		ModernAeWetSabkha	Mudstones dominated sheet (associated to continental depositional environments).

Table Name: ModernSeSandsheet

Package: depositional

Sub package: modern.se

Description: A low lying plain of wind blown sand that lacks well defined dunes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeDrySandsheet	no		0..*		ModernAeDrySandsheet	Sandsheet dominated by wind ripples (associated to continental depositional environments).

Architectural Element Tables: Continental

Package: depositional

Sub package: modern.ae

Table name	Description	Name	Required	Plurality	Enumeration	Referenced table(s)	Description
ModernAeAeolianDunes	Wind blown sand in a range of positive relief features. Possible drop down menu for different types of bedform (associated to continental depositional environments).	architecturalElement	yes	1..1		ModernArchitecturalElement	Information about architectural elements of modern depositional systems.
		duneShape	no		ModernDuneShape		Simple shape of a dune that defines the geometric type. Compound and complex forms may be defined by choosing various components (dominating and minor) that are superimposed.

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
ModernAeChannel	A channel in a modern setting.	architecturalElement	yes	1..1	ModernArchitecturalElement	Information about architectural elements of modern depositional systems.
ModernAeChannelBelt	A series of laterally related barforms associated with a modern channel.	architecturalElement	yes	1..1	ModernArchitecturalElement	Information about architectural elements of modern depositional systems.
ModernAeCrevasseChannel	Minor channel that develops as the flow in the main channel spills onto flood plain (associated to continental depositional environments).	architecturalElement	yes	1..1	ModernArchitecturalElement	Information about architectural elements of modern depositional systems.
ModernAeCrevasseSplaySheet	Sheet deposited as flow in channel exceeds the bank and becomes unconfined (associated to continental depositional environments).	architecturalElement	yes	1..1	ModernArchitecturalElement	Information about architectural elements of modern depositional systems.
ModernAeDampInterdune	Heterolithic sheet dominated by mixed, wind ripples, adhesion structures and halokenitic structures (associated to continental depositional environments).	architecturalElement	yes	1..1	ModernArchitecturalElement	Information about architectural elements of modern depositional systems.

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
ModernAeDampSabkha	Heterolithic sheet dominated by mixed, wind ripples, adhesion structures and halokenitic structures (associated to continental depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeDryInterdune	Sandsheet dominated by wind ripples (associated to continental depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeDrySandsheet	Sandsheet dominated by wind ripples (associated to continental depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeFluvialSheetflood	Unconfined flow outside a channel (typical arid) (associated to continental depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeLacustrineBeachDeposit	Deposits laid down in a non-deltaic lake shoreline (associated to continental depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeLacustrineDeltaMouthBar	Bar deposited where channel meets lacustrine standing body of water (associated to continental depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeLacustrineDistributaryChannel	Channel on top of delta (associated to continental depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeLeveeComplex	A series of stacked crevasse splay sheets +/- crevasse channel (associated to continental depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeMidChannelBar	Bar dominated by downstream accretion elements (associated to continental depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAePointBar	Barform comprised of lateral accretion (associated to continental depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
ModernAeSheetfloodDeposit	Unconfined lobe (associated to continental depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeSideAttachedBar	Bar dominated by downstream accretion elements at margin of channel (associated to continental depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeSubAerialDebrisFlowDeposit	Debris flow deposit within channel (associated to continental depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeUndifferentiatedSheet	Sheet deposits, depositional process not determined (associated to continental depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeWetSabkha	Mudstones dominated sheet (associated to continental depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.

Table Name: ModernDeBarrierIsland

Package: depositional

Sub package: modern.de

Description: W: Transgressive, wave dominated coastline with barrier islands.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about the depositional environment of the outcrop.
netShorelineMovement	no			NetShoreline Movement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
modernSeLagoon	no		0..*		ModernSeLagoon	Brackish, standing body of water connected to the ocean (associated to paralic and shallow marine depositional environments).
modernSeBarrier	no		0..*		ModernSeBarrier	Linear ridge of sand which separates a lagoon or estuary from the open ocean (associated to paralic and shallow marine depositional environments).
modernSeInlet	no		0..*		ModernSeInlet	Channel or waterway that connects a bay or lagoon with the sea (associated to paralic and shallow marine depositional environments).
modernSeForeshoreWWtTrans	no		0..*		ModernSeForeshoreWWtTrans	Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).
modernSeShoreface	no		0..*		ModernSeShoreface	Area between fair weather wave base and low tide level. Dominated by wave processes (associated to paralic and shallow marine depositional environments).
modernSeOffshoreTransitionZone	no		0..*		ModernSeOffshoreTransitionZone	Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Table Name: ModernDeFluvioDeltaic

Package: depositional

Sub package: modern.de

Description: F: Fluvial dominated process in shallow water (shallow water delta).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about depositional environments of modern systems.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
modernSeDeltaTop	no		0..*		ModernSeDeltaTop	Flat, sub-aerial exposed portion of delta (associated to paralic and shallow marine depositional environments).
modernSeDeltaFront	no		0..*		ModernSeDeltaFront	Front, predominantly sub-aqueous portion of a delta (associated to paralic and shallow marine depositional environments).
modernSeProDelta	no		0..*		ModernSeProdelta	Area in front of a prograding delta (associated to paralic and shallow marine depositional environments).

Table Name: ModernDeShelf

Package: depositional

Sub package: modern.de

Description: Shallow marine shelf.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about depositional environments of modern systems.
modernSeEpicontinentalShelf	no		0..*		ModernSeEpicontinentalShelf	Broad, low relief shelf formed on top of flooded continental shelf, typically sheltered (associated to paralic and shallow marine depositional environments).
modernSePericontinentalShelf	no		0..*		ModernSePericontinentalShelf	Oceanic shelf that forms on flooded margin of continental crust (associated to paralic and shallow marine depositional environments).

Table Name: ModernDeShoreface

Package: depositional

Sub package: modern.de

Description: W: Non deltaic, regressive wave dominated shoreline.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about depositional environments of modern systems.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShoreline Movement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
modernSeBackshoreWPro	no		0..*		ModernSeBackshoreWPro	Supra-tidal deposits laid down by wind and storm events landward of the foreshore (associated to paralic and shallow marine depositional environments).
modernSeForeshoreWProWfTrans	no		0..*		ModernSeForeshoreWProWfTrans	Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).
modernSeShoreface	no		0..*		ModernSeShoreface	Area between fair weather wave base and low tide level. Dominated by wave processes (associated to paralic and shallow marine depositional environments).
modernSeOffshoreTransitionZone	no		0..*		ModernSeOffshoreTransitionZone	Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Table Name: ModernDeTidalShorelineNonDeltaic

Package: depositional

Sub package: modern.de

Description: T: Non deltaic shoreline dominated by tidal processes.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about depositional environments of modern systems.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShoreline Movement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
modernSeSupraTidalFlat	no		0..*		ModernSeSupraTidalFlat	Area above normal high tide, flooded by extreme tides or storm surges. In arid areas may be dominated by evaporites fed by reflux (associated to paralic and shallow marine depositional environments).
modernSeInterTidalFlatTPro	no		0..*		ModernSeInterTidalFlatTPro	Low lying flat area between high and low tide levels (associated to paralic and shallow marine depositional environments).
modernSeSubTidal	no		0..*		ModernSeSubTidal	Area influenced by tidal currents but not sub-aerial exposed at low tide (associated to paralic and shallow marine depositional environments).
modernSeOffshoreTransitionZone	no		0..*		ModernSeOffshoreTransitionZone	Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Table Name: ModernDeTideDominatedDelta

Package: depositional

Sub package: modern.de

Description: Tf: Tide dominated, fluvial influenced delta.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about depositional environments of modern systems.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
modernSeDeltaTopFtTfPro	no		0..*		ModernSeDeltaTopFtTfPro	Flat, sub-aerial exposed portion of delta (associated to paralic and shallow marine depositional environments).
modernSeDeltaFront	no		0..*		ModernSeDeltaFront	Front, predominantly sub-aqueous portion of a delta (associated to paralic and shallow marine depositional environments).
modernSeProDelta	no		0..*		ModernSeProdelta	Area in front of a prograding delta (associated to paralic and shallow marine depositional environments).

Table Name: ModernDeTideDominatedEstuary

Package: depositional

Sub package: modern.se

Description: Tf: Drowned river valley on a tide dominated shoreline

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about the depositional environment of the outcrop.
netShorelineMovement	no			NetShoreline Movement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
modernSeSupraTidalFlat	no		0..*		ModernSeSupraTidalFlat	Area above normal high tide, flooded by extreme tides or storm surges. In arid areas may be dominated by evaporites fed by reflux (associated to paralic and shallow marine depositional environments).
modernSeInterTidalFlatTfTrans	no		0..*		ModernSeInterTidalFlatTfTrans	Low lying flat area between high and low tide levels (associated to paralic and shallow marine depositional environments).
modernSeSubTidal	no		0..*		ModernSeSubTidal	Area influenced by tidal currents but not sub-aerial exposed at low tide (associated to paralic and shallow marine depositional environments).

Table Name: ModernDeTideInfluencedBarrierIsland

Package: depositional

Sub package: modern.de

Description: Wt: Transgressive, wave dominated coastline with barrier islands cut by frequent tidal channels.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about the depositional environment of the outcrop.
netShorelineMovement	no			NetShoreline Movement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
modernSeLagoon	no		0..*		ModernSeLagoon	Brackish, standing body of water connected to the ocean (associated to paralic and shallow marine depositional environments).
modernSeBarrier	no		0..*		ModernSeBarrier	Linear ridge of sand which separates a lagoon or estuary from the open ocean (associated to paralic and shallow marine depositional environments).
modernSeInlet	no		0..*		ModernSeInlet	Channel or waterway that connects a bay or lagoon with the sea (associated to paralic and shallow marine depositional environments).
modernSeForeshoreWWtTrans	no		0..*		ModernSeForeshoreWWtTrans	Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).
modernSeShoreface	no		0..*		ModernSeShoreface	Area between fair weather wave base and low tide level. Dominated by wave processes (associated to paralic and shallow marine depositional environments).
modernSeOffshoreTransitionZone	no		0..*		ModernSeOffshoreTransitionZone	Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Table Name: ModernDeTideInfluencedDelta

Package: depositional

Sub package: modern.de

Description: Ft: Fluvial dominated, tidal influenced delta.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about depositional environments of modern systems.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
modernSeDeltaTopFtTfPro	no		0..*		ModernSeDeltaTopFtTfPro	Flat, sub-aerial exposed portion of delta (associated to paralic and shallow marine depositional environments).
modernSeDeltaFront	no		0..*		ModernSeDeltaFront	Front, predominantly sub-aqueous portion of a delta (associated to paralic and shallow marine depositional environments).
modernSeProDelta	no		0..*		ModernSeProdelta	Area in front of a prograding delta (associated to paralic and shallow marine depositional environments).

Table Name: ModernDeTideInfluencedShoreface

Package: depositional

Sub package: modern.de

Description: Wt: Non deltaic, wave dominated, tidally influenced shoreline.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about depositional environments of modern systems.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShoreline Movement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
modernSeBackshoreWtPro	no		0..*		ModernSeBackshoreWtPro	Supra-tidal deposits laid down by wind and storm events landward of the foreshore (associated to paralic and shallow marine depositional environments).
modernSeForeshoreWtPro	no		0..*		ModernSeForeshoreWtPro	Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).
modernSeShoreface	no		0..*		ModernSeShoreface	Area between fair weather wave base and low tide level. Dominated by wave processes (associated to paralic and shallow marine depositional environments).
modernSeOffshoreTransitionZone	no		0..*		ModernSeOffshoreTransitionZone	Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Table Name: ModernDeWaveDominatedDelta

Package: depositional

Sub package: modern.de

Description: Wf: Wave dominated, fluvial influenced delta.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about depositional environments of modern systems.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShoreline Movement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
modernSeDeltaTop	no		0..*		ModernSeDeltaTop	Flat, sub-aerial exposed portion of delta (associated to paralic and shallow marine depositional environments).
modernSeForeshoreWfPro	no		0..*		ModernSeForeshoreWfPro	Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).
modernSeShoreface	no		0..*		ModernSeShoreface	Area between fair weather wave base and low tide level. Dominated by wave processes (associated to paralic and shallow marine depositional environments).
modernSeOffshoreTransitionZone	no		0..*		ModernSeOffshoreTransitionZone	Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Table Name: ModernDeWaveDominatedEstuary

Package: depositional

Sub package: modern.de

Description: Wf: Drowned river valley with a low tidal range. Dominated by wave processes at the mouth and fluvial processes at the bay head.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about the depositional environment of the outcrop.
netShorelineMovement	no			NetShoreline Movement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
modernSeBayHeadDelta	no		0..*		ModernSeBayHeadDelta	Small delta, formed at the point where a fluvial system enters a bay or lagoon (associated to paralic and shallow marine depositional environments).
modernSeCentralBasin	no		0..*		ModernSeCentralBasin	Low energy area between the bay head and the barrier in a wave dominated estuary (associated to paralic and shallow marine depositional environments).
modernSeBarrier	no		0..*		ModernSeBarrier	Linear ridge of sand which separates a lagoon or estuary from the open ocean (associated to paralic and shallow marine depositional environments).
modernSeInlet	no		0..*		ModernSeInlet	Channel or waterway that connects a bay or lagoon with the sea (associated to paralic and shallow marine depositional environments).
modernSeForeshoreWProWfTrans	no		0..*		ModernSeForeshoreWProWfTrans	Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).
modernSeShoreface	no		0..*		ModernSeShoreface	Area between fair weather wave base and low tide level. Dominated by wave processes (associated to paralic and shallow marine depositional environments).
modernSeOffshoreTransitionZone	no		0..*		ModernSeOffshoreTransitionZone	Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Table Name: ModernDeWaveInfluencedDelta

Package: depositional

Sub package: modern.de

Description: Fw: Fluvial dominated, wave influenced delta.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about depositional environments of modern systems.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShorelineMovement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
modernSeDeltaTop	no		0..*		ModernSeDeltaTop	Flat, sub-aerial exposed portion of delta (associated to paralic and shallow marine depositional environments).
modernSeDeltaFront	no		0..*		ModernSeDeltaFront	Front, predominantly sub-aqueous portion of a delta (associated to paralic and shallow marine depositional environments).
modernSeProDelta	no		0..*		ModernSeProdelta	Area in front of a prograding delta (associated to paralic and shallow marine depositional environments).

Table Name: ModernDeWaveInfluencedTidalShoreline

Package: depositional

Sub package: modern.se

Description: Tw: Non deltaic, tide dominated, wave influenced shoreline.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
depositionalEnvironment	yes		1..1		ModernDepositionalEnvironment	Information about depositional environments of modern systems.
waterDepths	yes			WaterDepths		Water depths in receiving basin.
netShorelineMovement	no			NetShoreline Movement		Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.
modernSeSupraTidalFlat	no		0..*		ModernSeSupraTidalFlat	Area above normal high tide, flooded by extreme tides or storm surges. In arid areas may be dominated by evaporites fed by reflux (associated to paralic and shallow marine depositional environments).
modernSeInterTidalFlatTwPro	no		0..*		ModernSeInterTidalFlatTwPro	Low lying flat area between high and low tide levels (associated to paralic and shallow marine depositional environments).
modernSeSubTidal	no		0..*		ModernSeSubTidal	Area influenced by tidal currents but not sub-aerial exposed at low tide (associated to paralic and shallow marine depositional environments).
modernSeShoreface	no		0..*		ModernSeShoreface	Area between fair weather wave base and low tide level. Dominated by wave processes (associated to paralic and shallow marine depositional environments).
modernSeOffshoreTransitionZone	no		0..*		ModernSeOffshoreTransitionZone	Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeBackshoreWPro

Package: depositional

Sub package: modern.se

Description: Supra-tidal deposits laid down by wind and storm events landward of the foreshore (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeCoastalDune	no		0..*		ModernAeCoastalDune	Aeolian dune that forms in a backshore location (associated to paralic and shallow marine depositional environments).
modernAePeatCoalDeposit	no		0..*		ModernAePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).
modernAeSupraTidalSabkhaDeposit	no		0..*		ModernAeSupraTidalSabkhaDeposit	Deposits laid down above the normal high tide limit in an arid environment. Dominated by evaporitic reflux interbedded with muds deposited by extreme tides or storm surges (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeBackshoreWtPro

Package: depositional

Sub package: modern.se

Description: Supra-tidal deposits laid down by wind and storm events landward of the foreshore (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeCoastalDune	no		0..*		ModernAeCoastalDune	Aeolian dune that forms in a backshore location (associated to paralic and shallow marine depositional environments).
modernAePeatCoalDeposit	no		0..*		ModernAePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).
modernAeSupraTidalSabkhaDeposit	no		0..*		ModernAeSupraTidalSabkhaDeposit	Deposits laid down above the normal high tide limit in an arid environment. Dominated by evaporitic reflux interbedded with muds deposited by extreme tides or storm surges (associated to paralic and shallow marine depositional environments).
modernAeTidalChannel	no		0..*		ModernAeTidalChannel	Channel that provides a conduit for water on the incoming or more commonly outgoing tide (associated to paralic and shallow marine depositional environments).
modernAeTidalPointBar	no		0..*		ModernAeTidalPointBar	Point bar in tidal channel. Typically heterolithic (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeBarrier

Package: depositional

Sub package: modern.se

Description: Linear ridge of sand which separates a lagoon or estuary from the open ocean (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeCoastalDune	no		0..*		ModernAeCoastalDune	Aeolian dune that forms in a backshore location (associated to paralic and shallow marine depositional environments).
modernAePeatCoalDeposit	no		0..*		ModernAePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).
modernAeUndifferentiatedBarrierComplex	no		0..*		ModernAeUndifferentiatedBarrierComplex	All deposits associated with a barrier island, lumped into a single AE (associated to paralic and shallow marine depositional environments).
modernAeWashoverFan	no		0..*		ModernAeWashoverFan	Landward sheets of sand deposited during storm washover of barrier (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeBayHeadDelta

Package: depositional

Sub package: modern.se

Description: Small delta, formed at the point where a fluvial system enters a bay or lagoon (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeBayHeadDeltaDeposit	no		0..*		ModernAeBayHeadDeltaDeposit	Delta deposit where river enters estuary or bay (associated to paralic and shallow marine depositional environments).
modernAeDistributaryChannel	no		0..*		ModernAeDistributaryChannel	Channel on top of delta carrying water and sediment to the shoreline (associated to paralic and shallow marine depositional environments).
modernAePeatCoalDeposit	no		0..*		ModernAePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).

Table Name: ModernSeCentralBasin

Package: depositional

Sub package: modern.se

Description: Low energy area between the bay head and the barrier in a wave dominated estuary (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeBayDelDeposit	no		0..*		ModernAeBayDelDeposit	Mudstone (and minor sands) deposited in restricted bays between delta lobes (associated to paralic and shallow marine depositional environments).
modernAeLagoonalSandstone	no		0..*		ModernAeLagoonalSandstone	Sandstone deposits in a lagoon. Typically introduced by wash over (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeDeltaFront

Package: depositional

Sub package: modern.se

Description: Front, predominantly sub-aqueous portion of a delta (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeDeltaMouthBar	no		0..*		ModernAeDeltaMouthBar	Bar deposited where channel meets standing body of water (associated to paralic and shallow marine depositional environments).
modernAeLowerDeltaFrontDeposit	no		0..*		ModernAeLowerDeltaFrontDeposit	Lower part of delta front (associated to paralic and shallow marine depositional environments).
modernAeUpperDeltaFrontDeposit	no		0..*		ModernAeUpperDeltaFrontDeposit	Upper part of delta front (Lithofacies: clinotherm, shales) (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeDeltaTop

Package: depositional

Sub package: modern.se

Description: Flat, sub-aerial exposed portion of delta (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeCoastalDune	no		0..*		ModernAeCoastalDune	Aeolian dune that forms in a backshore location (associated to paralic and shallow marine depositional environments).
modernAeDistributaryChannel	no		0..*		ModernAeDistributaryChannel	Channel on top of delta carrying water and sediment to the shoreline (associated to paralic and shallow marine depositional environments).
modernAePeatCoalDeposit	no		0..*		ModernAePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).

Table Name: ModernSeDeltaTopFtTfPro

Package: depositional

Sub package: modern.se

Description: Flat, sub-aerial exposed portion of delta (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeCoastalDune	no		0..*		ModernAeCoastalDune	Aeolian dune that forms in a backshore location (associated to paralic and shallow marine depositional environments).
modernAeDistributaryChannel	no		0..*		ModernAeDistributaryChannel	Channel on top of delta carrying water and sediment to the shoreline (associated to paralic and shallow marine depositional environments).
modernAePeatCoalDeposit	no		0..*		ModernAePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).
modernAeTidalPointBar	no		0..*		ModernAeTidalPointBar	Point bar in tidal channel. Typically heterolithic (associated to paralic and shallow marine depositional environments).
modernAeTidallyInfluencedFluvial BraidBar	no		0..*		ModernAeTidallyInfluencedFluvial BraidBar	Fluvial braided bar that shows some minor influence from tidal processes (associated to paralic and shallow marine depositional environments).
modernAeTidallyInfluencedFluvial Channel	no		0..*		ModernAeTidallyInfluencedFluvial Channel	Fluvial channel deposits with minor tidal influence (associated to paralic and shallow marine depositional environments).
modernAeTidallyInfluencedFluvial PointBar	no		0..*		ModernAeTidallyInfluencedFluvial PointBar	Fluvial point bar that shows some minor influence from tidal processes (associated to paralic and shallow marine depositional environments).
modernAeTidallyInfluencedFluvial SideBar	no		0..*		ModernAeTidallyInfluencedFluvial SideBar	Fluvial side-attached bar that shows some minor influence from tidal processes (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeEpicontinentalShelf

Package: depositional

Sub package: modern.se

Description Broad, low relief shelf formed on top of flooded continental shelf, typically sheltered (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeShelfChannel	no		0..*		ModernAeShelfChannel	Channel deposit on the shelf (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeForeshoreWfPro

Package: depositional

Sub package: modern.se

Description: Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeBeachDeposit	no		0..*		ModernAeBeachDeposit	Deposits of the intertidal zone on a wave-dominated coast line (associated to paralic and shallow marine depositional environments).
modernAeBeachRidgeChenier	no		0..*		ModernAeBeachRidgeChenier	A linear ridge formed by wave action on a beach (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeForeshoreWtPro

Package: depositional

Sub package: modern.se

Description: Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeBeachDeposit	no		0..*		ModernAeBeachDeposit	Deposits of the intertidal zone on a wave-dominated coast line (associated to paralic and shallow marine depositional environments).
modernAeBeachRidgeChenier	no		0..*		ModernAeBeachRidgeChenier	A linear ridge formed by wave action on a beach (associated to paralic and shallow marine depositional environments).
modernAeInterTidalSabkhaDeposit	no		0..*		ModernAeInterTidalSabkhaDeposit	Inter-tidal zone of arid coast (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeForeshoreWProWfTrans

Package: depositional

Sub package: modern.se

Description: Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeBeachBar	no		0..*		ModernAeBeachBar	Bar formed on a beach (associated to paralic and shallow marine depositional environments).
modernAeBeachDeposit	no		0..*		ModernAeBeachDeposit	Deposits of the intertidal zone on a wave-dominated coast line (associated to paralic and shallow marine depositional environments).
modernAeBeachRidgeChenier	no		0..*		ModernAeBeachRidgeChenier	A linear ridge formed by wave action on a beach (associated to paralic and shallow marine depositional environments).
modernAeBerm	no		0..*		ModernAeBerm	A flat topped ridge formed by storm action (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeForeshoreWWtTrans

Package: depositional

Sub package: modern.se

Description: Inter-tidal zone dominated by breaking waves (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeBeachBar	no		0..*		ModernAeBeachBar	Bar formed on a beach (associated to paralic and shallow marine depositional environments).
modernAeBeachDeposit	no		0..*		ModernAeBeachDeposit	Deposits of the intertidal zone on a wave-dominated coast line (associated to paralic and shallow marine depositional environments).
modernAeBeachRidgeChenier	no		0..*		ModernAeBeachRidgeChenier	A linear ridge formed by wave action on a beach (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeInlet

Package: depositional

Sub package: modern.se

Description: Channel or waterway that connects a bay or lagoon with the sea (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeEbbTidalDelta	no		0..*		ModernAeEbbTidalDelta	Seaward prograding delta fed by outgoing tidal flow through tidal channel (associated to paralic and shallow marine depositional environments).
modernAeFloodTidalDelta	no		0..*		ModernAeFloodTidalDelta	Landward prograding delta fed by incoming tidal flow through tidal channel (associated to paralic and shallow marine depositional environments).
modernAeTidalInletChannel	no		0..*		ModernAeTidalInletChannel	Deposit laid down in a tidal inlet channel. Typically muddy or heterolithic (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeInterTidalFlatTfTrans

Package: depositional

Sub package: modern.se

Description: Low lying flat area between high and low tide levels (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeInterTidalBar	no		0..*		ModernAeInterTidalBar	Bar form in a tidal channel that is sub-aerially exposed at low tide (associated to paralic and shallow marine depositional environments).
modernAeInterTidalFlatDeposit	no		0..*		ModernAeInterTidalFlatDeposit	Deposits laid down in an inter-tidal flat. Typically mud-rich in the upper portion and more sand-dominated in the lower part (associated to paralic and shallow marine depositional environments).
modernAeTidalChannel	no		0..*		ModernAeTidalChannel	Channel that provides a conduit for water on the incoming or more commonly outgoing tide (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeInterTidalFlatTPro

Package: depositional

Sub package: modern.se

Description: Low lying flat area between high and low tide levels (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeInterTidalBar	no		0..*		ModernAeInterTidalBar	Bar form in a tidal channel that is sub-aerially exposed at low tide (associated to paralic and shallow marine depositional environments).
modernAeInterTidalFlatDeposit	no		0..*		ModernAeInterTidalFlatDeposit	Deposits laid down in an inter-tidal flat. Typically mud-rich in the upper portion and more sand-dominated in the lower part (associated to paralic and shallow marine depositional environments).
modernAeInterTidalSabkhaDeposit	no		0..*		ModernAeInterTidalSabkhaDeposit	Inter-tidal zone of arid coast (associated to paralic and shallow marine depositional environments).
modernAeTidalChannel	no		0..*		ModernAeTidalChannel	Channel that provides a conduit for water on the incoming or more commonly outgoing tide (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeInterTidalFlatTwPro

Package: depositional

Sub package: modern.se

Description: Low lying flat area between high and low tide levels (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeBeachBar	no		0..*		ModernAeBeachBar	Bar formed on a beach (associated to paralic and shallow marine depositional environments).
modernAeBeachDeposit	no		0..*		ModernAeBeachDeposit	Deposits of the intertidal zone on a wave-dominated coast line (associated to paralic and shallow marine depositional environments).
modernAeBeachRidgeChenier	no		0..*		ModernAeBeachRidgeChenier	A linear ridge formed by wave action on a beach (associated to paralic and shallow marine depositional environments).
modernAeInterTidalBar	no		0..*		ModernAeInterTidalBar	Bar form in a tidal channel that is sub-aerially exposed at low tide (associated to paralic and shallow marine depositional environments).
modernAeInterTidalFlatDeposit	no		0..*		ModernAeInterTidalFlatDeposit	Deposits laid down in an inter-tidal flat. Typically mud-rich in the upper portion and more sand-dominated in the lower part (associated to paralic and shallow marine depositional environments).
modernAeInterTidalSabkhaDeposit	no		0..*		ModernAeInterTidalSabkhaDeposit	Inter-tidal zone of arid coast (associated to paralic and shallow marine depositional environments).
modernAeTidalChannel	no		0..*		ModernAeTidalChannel	Channel that provides a conduit for water on the incoming or more commonly outgoing tide (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeLagoon

Package: depositional

Sub package: modern.se

Description: Brackish, standing body of water connected to the ocean (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeLagoonalSandstone	no		0..*		ModernAeLagoonalSandstone	Sandstone deposits in a lagoon. Typically introduced by wash over (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeOffshoreTransitionZone

Package: depositional

Sub package: modern.se

Description: Area between fair weather and storm wave bases (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeOffshoreTransitionZoneDeposit	no		0..*		ModernAeOffshoreTransitionZoneDeposit	Between FWWB (fair-weather wave base) and SWB (storm wave base), heterolithic with HCS (hummocky cross-stratification) sandstone and hemipelagic mudstone (Reading, 1996, Sedimentary environment.); alternative names: upper offshore (associated to paralic and shallow marine depositional environments).

Table Name: ModernSePericontinentalShelf

Package: depositional

Sub package: modern.se

Description Oceanic shelf that forms on flooded margin of continental crust (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeShelfChannel	no		0..*		ModernAeShelfChannel	Channel deposit on the shelf (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeProdelta

Package: depositional

Sub package: modern.se

Description: Area in front of a prograding delta (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeProdeltaDeposit	no		0..*		ModernAeProdeltaDeposit	Deposits (mainly mudstone) seaward of delta front (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeSupraTidalFlat

Package: depositional

Sub package: modern.se

Description: Area above normal high tide, flooded by extreme tides or storm surges. In arid areas may be dominated by evaporites fed by reflux (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAePeatCoalDeposit	no		0..*		ModernAePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).
modernAeSupraTidalFlatDeposit	no		0..*		ModernAeSupraTidalFlatDeposit	Deposits laid down above the normal high tide limit by extreme tides or storm surges. Typically very muddy (associated to paralic and shallow marine depositional environments).
modernAeSupraTidalSabkhaDeposit	no		0..*		ModernAeSupraTidalSabkhaDeposit	Deposits laid down above the normal high tide limit in an arid environment. Dominated by evaporitic reflux interbedded with muds deposited by extreme tides or storm surges (associated to paralic and shallow marine depositional environments).
modernAeTidalChannel	no		0..*		ModernAeTidalChannel	Channel that provides a conduit for water on the incoming or more commonly outgoing tide (associated to paralic and shallow marine depositional environments).
modernAeTidalPointBar	no		0..*		ModernAeTidalPointBar	Point bar in tidal channel. Typically heterolithic (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeSupraTidalFlatTfTrans

Package: depositional

Sub package: modern.se

Description: Area above normal high tide, flooded by extreme tides or storm surges. In arid areas may be dominated by evaporites fed by reflux (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAePeatCoalDeposit	no		0..*		ModernAePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).
modernAeSupraTidalFlatDeposit	no		0..*		ModernAeSupraTidalFlatDeposit	Deposits laid down above the normal high tide limit by extreme tides or storm surges. Typically very muddy (associated to paralic and shallow marine depositional environments).
modernAeTidalChannel	no		0..*		ModernAeTidalChannel	Channel that provides a conduit for water on the incoming or more commonly outgoing tide (associated to paralic and shallow marine depositional environments).
modernAeTidalPointBar	no		0..*		ModernAeTidalPointBar	Point bar in tidal channel. Typically heterolithic (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeShoreface

Package: depositional

Sub package: modern.se

Description: Area between fair weather wave base and low tide level. Dominated by wave processes (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeLowerShorefaceDeposit	no		0..*		ModernAeLowerShorefaceDeposit	Above fair weather wave base, dominated by amalgamated HCS (hummocky cross-stratification) beds (associated to paralic and shallow marine depositional environments).
modernAeRipChannel	no		0..*		ModernAeRipChannel	Sub-aqueous channel between two beach bars by which the water carried into the beach by waves is returned to the ocean (associated to paralic and shallow marine depositional environments).
modernAeUpperShorefaceDeposit	no		0..*		ModernAeUpperShorefaceDeposit	Sub-tidal zone dominated by migration of bars during fair weather periods (associated to paralic and shallow marine depositional environments).

Table Name: ModernSeSubTidal

Package: depositional

Sub package: modern.se

Description: Area influenced by tidal currents but not sub-aerial exposed at low tide (associated to paralic and shallow marine depositional environments).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
subEnvironment	yes		1..1		ModernSubEnvironment	Information about the subenvironment of modern depositional systems.
modernAeSubTidalBar	no		0..*		ModernAeSubTidalBar	Bar form in a tidal channel that is not sub-aerially exposed at low tide (associated to paralic and shallow marine depositional environments).
modernAeSubTidalChannel	no		0..*		ModernAeSubTidalChannel	Portion of channel dominated by tidal currents that is never emergent (associated to paralic and shallow marine depositional environments).
modernAeTidalChannel	no		0..*		ModernAeTidalChannel	Channel that provides a conduit for water on the incoming or more commonly outgoing tide (associated to paralic and shallow marine depositional environments).

Architectural Element Tables: Paralic and shallow marine

Package: depositional

Sub package: modern.ae

Table name	Description	Name	Required	Plurality	Enumeration	Referenced table(s)	Description
ModernAeCoastalDune	Aeolian dune that forms in a backshore location (associated to paralic and shallow marine depositional environments).	architecturalElement	yes	1..1		ModernArchitecturalElement	Information about architectural elements of modern depositional systems.
		duneShape	no		ModernDuneShape		Simple shape of a dune that defines the geometric type. Compound and complex forms may be defined by choosing various components (dominating and minor) that are superimposed.

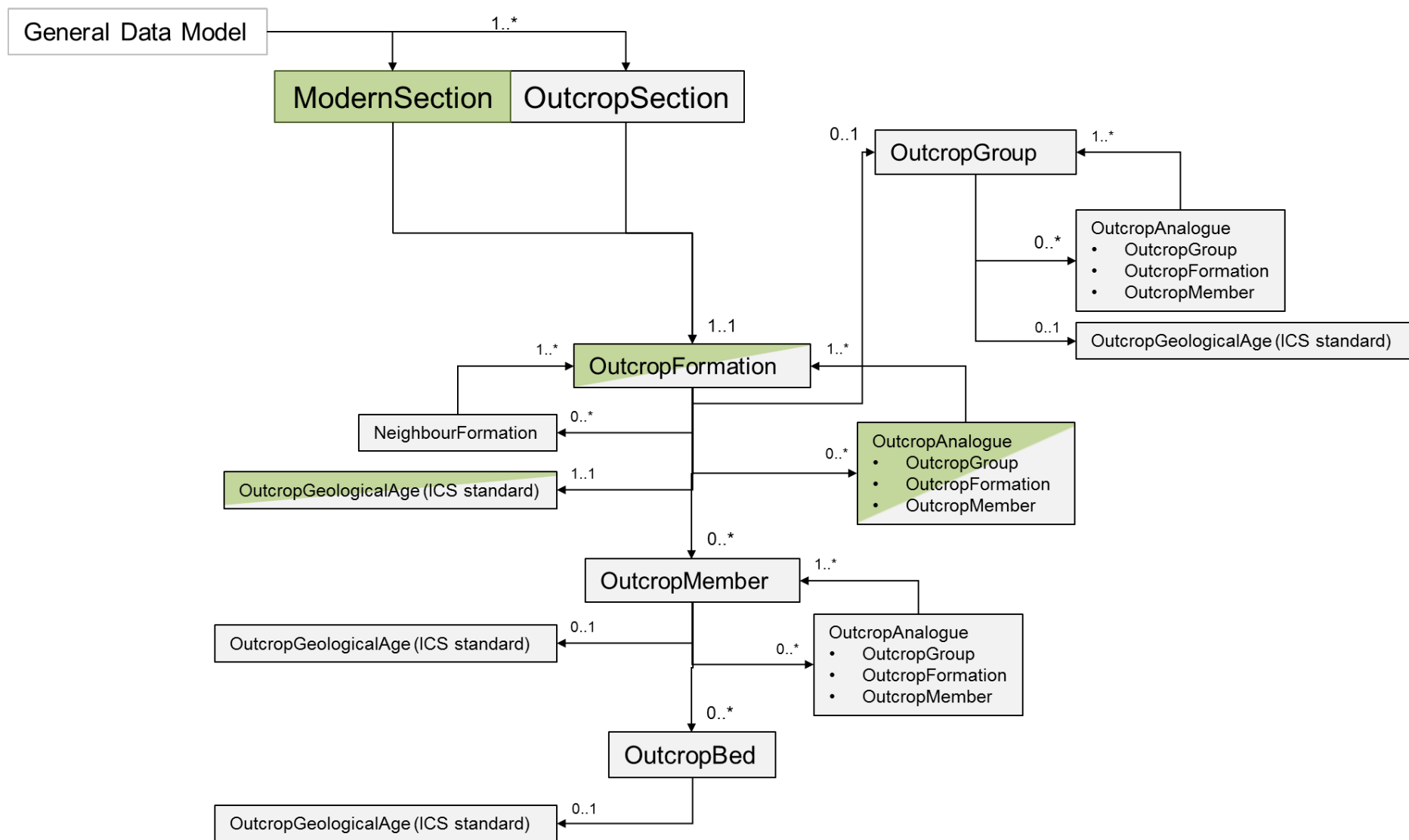
Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
ModernAeBayDelDeposit	Mudstone (and minor sands) deposited in restricted bays between delta lobes (associated to paralic and shallow marine depositional environments).	architecturalElement	yes	1..1	ModernArchitecturalElement	Information about architectural elements of modern depositional systems.
ModernAeBayHeadDeltaDeposit	Delta deposit where river enters estuary or bay (associated to paralic and shallow marine depositional environments).	architecturalElement	yes	1..1	ModernArchitecturalElement	Information about architectural elements of modern depositional systems.
ModernAeBeachBar	Bar formed on a beach (associated to paralic and shallow marine depositional environments).	architecturalElement	yes	1..1	ModernArchitecturalElement	Information about architectural elements of modern depositional systems.
ModernAeBeachDeposit	Deposits of the intertidal zone on a wave-dominated coast line (associated to paralic and shallow marine depositional environments).	architecturalElement	yes	1..1	ModernArchitecturalElement	Information about architectural elements of modern depositional systems.
ModernAeBeachRidgeChenier	A linear ridge formed by wave action on a beach (associated to paralic and shallow marine depositional environments).	architecturalElement	yes	1..1	ModernArchitecturalElement	Information about architectural elements of modern depositional systems.
ModernAeBerm	A flat topped ridge formed by storm action (associated to paralic and shallow marine depositional environments).	architecturalElement	yes	1..1	ModernArchitecturalElement	Information about architectural elements of modern depositional systems.

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
ModernAeDeltaMouthBar	Bar deposited where channel meets standing body of water (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeDistributaryChannel	Channel on top of delta carrying water and sediment to the shoreline (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeEbbTidalDelta	Seaward prograding delta fed by outgoing tidal flow through tidal channel (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeFloodTidalDelta	Landward prograding delta fed by incoming tidal flow through tidal channel (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeInterTidalBar	Bar form in a tidal channel that is sub-aerially exposed at low tide (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeInterTidalFlatDeposit	Deposits laid down in an inter-tidal flat. Typically mud-rich in the upper portion and more sand-dominated in the lower part (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeInterTidalSabkhaDeposit	Inter-tidal zone of arid coast (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeLagoonalSandstone	Sandstone deposits in a lagoon. Typically introduced by wash over (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeLowerDeltaFrontDeposit	Lower part of delta front (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeLowerShorefaceDeposit	Above fair weather wave base, dominated by amalgamated HCS (hummocky cross-stratification) beds (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeOffshoreTransitionZone Deposit	Between FWWB (fair-weather wave base) and SWB (storm wave base), heterolithic with HCS (hummocky cross-stratification) sandstone and hemipelagic mudstone (Reading, 1996, Sedimentary environment.); alternative	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
	names: upper offshore (associated to paralic and shallow marine depositional environments).					
ModernAePeatCoalDeposit	Accumulated vegetable matter deposited in an anoxic environment. Lithified peat, equivalent to modern peat swamp (associated to continental or paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeProdeltaDeposit	Deposits (mainly mudstone) seaward of delta front (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeRipChannel	Sub-aqueous channel between two beach bars by which the water carried into the beach by waves is returned to the ocean (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeShelfChannel	Channel deposit on the shelf (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeSubTidalBar	Bar form in a tidal channel that is not sub-aerially exposed at low tide (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeSubTidalChannel	Portion of channel dominated by tidal currents that is never emergent (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeSupraTidalFlatDeposit	Deposits laid down above the normal high tide limit by extreme tides or storm surges. Typically very muddy (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeSupraTidalSabkhaDeposit	Deposits laid down above the normal high tide limit in an arid environment. Dominated by evaporitic reflux interbedded with muds deposited by extreme tides or storm surges (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeTidalChannel	Channel that provides a conduit for water on the incoming or more commonly outgoing tide (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeTidallnletChannel	Deposit laid down in a tidal inlet channel. Typically muddy	architectural	yes	1..1	ModernArchitectural	Information about architectural

Table name	Description	Name	Required	Plurality	Referenced table(s)	Description
	or heterolithic (associated to paralic and shallow marine depositional environments).	Element			Element	elements of modern depositional systems.
ModernAeTidallyInfluencedFluvialBraidBar	Fluvial braided bar that shows some minor influence from tidal processes (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeTidallyInfluencedFluvialChannel	Fluvial channel deposits with minor tidal influence (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeTidallyInfluencedFluvialPointBar	Fluvial point bar that shows some minor influence from tidal processes (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeTidallyInfluencedFluvialSideBar	Fluvial side-attached bar that shows some minor influence from tidal processes (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeTidalPointBar	Point bar in tidal channel. Typically heterolithic (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeUndifferentiatedBarrierComplex	All deposits associated with a barrier island, lumped into a single AE (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeUpperDeltaFrontDeposit	Upper part of delta front (Lithofacies: clinotherm, shales) (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeUpperShorefaceDeposit	Sub-tidal zone dominated by migration of bars during fair weather periods (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.
ModernAeWashoverFan	Landward sheets of sand deposited during storm washover of barrier (associated to paralic and shallow marine depositional environments).	architectural Element	yes	1..1	ModernArchitectural Element	Information about architectural elements of modern depositional systems.

5.4 Lithostratigraphic model



The schema of the International stratigraphic chart from 2010 (below) is used as basis for the geological age classification.

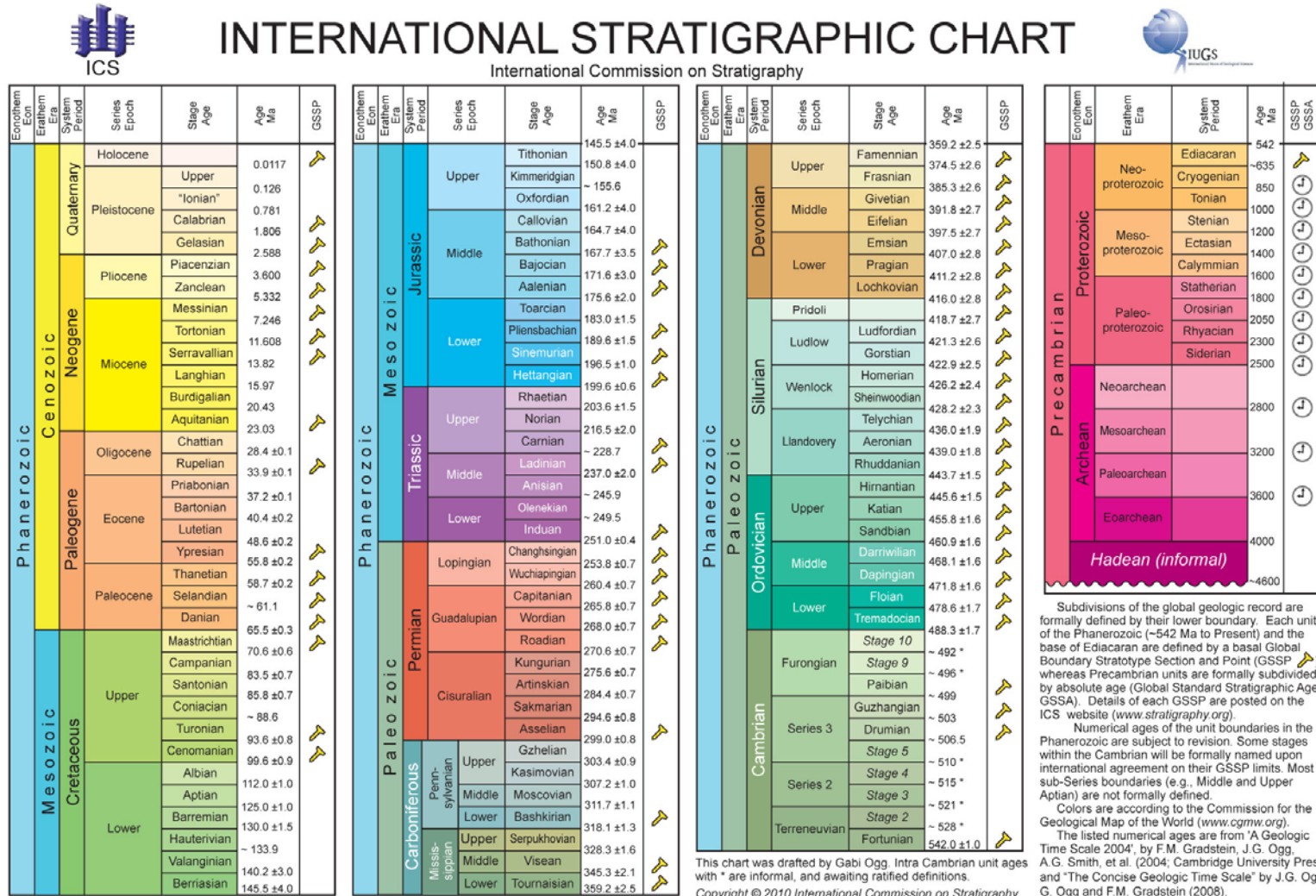


Table Name: OutcropFormation

Package: lithostrat

Sub package: general

Description: The table contains information of the outcrop's formation, the fundamental lithostratigraphic unit, identified by lithological characteristics and stratigraphic position, generally tabular. Mappable at the Earth's surface and traceable into the subsurface (Tucker, M.E., 2003, Sedimentary Rocks in the Field. The Geological Field Guide Series, John Wiley & Sons Ltd., 3.ed., 244p.).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
formationName	yes	text				Name of the formation.
formationDescription	no	text				A textual description of the formation.
startAge	no	number				The beginning (older) time of the age. This is commonly specified in millions of years (Ma).
endAge	no	number				The ending (younger) time of the age. This is commonly specified in millions of years (Ma).
comments	no	text				Relevant information about the data in this category.
group	no		0..1		OutcropGroup	The table contains information about the group, an assemblage of formations (Tucker, M.E., 2003, Sedimentary Rocks in the Field. The Geological Field Guide Series, John Wiley & Sons Ltd., 3.ed., 244p.).
member	no		0..*		OutcropMember	The table contains information about the member, a formal lithostratigraphic unit constituting a formation (Tucker, M.E., 2003, Sedimentary Rocks in the Field. The Geological Field Guide Series, John Wiley & Sons Ltd., 3.ed., 244p.).
analogue	no		0..*		OutcropAnalogue	The table contains information of the outcrop's formation, the fundamental lithostratigraphic unit, identified by lithological characteristics and stratigraphic position, generally tabular. Mappable at the Earth's surface and traceable into the subsurface (Tucker, M.E., 2003, Sedimentary Rocks in the Field. The Geological Field Guide Series, John Wiley & Sons Ltd., 3.ed., 244p.).
neighbourFormation	no		0..*		OutcropNeighbourFomation	Information about neighbouring formations.
startAgeSeries	yes		1..1		OutcropGeologicalAge	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
endAgeSeries	no		0..1		OutcropGeologicalAge	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Table Name: OutcropGroup

Package: lithostrat

Sub package: group

Description: The table contains information about the group, an assemblage of formations (Tucker, M.E., 2003, Sedimentary Rocks in the Field. The Geological Field Guide Series, John Wiley & Sons Ltd., 3.ed., 244p.).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
groupName	no	text				Name assigned to the assemblage of formations (group).
groupDescription	no	text				A textual description of the group.
startAge	no	number				The beginning (older) time of the age. This is commonly specified in millions of years (Ma).
endAge	no	number				The ending (younger) time of the age. This is commonly specified in millions of years (Ma).
comments	no	text				Relevant information about the data in this category.
analogue	no		0..*		OutcropAnalogue	This table allows to store information of various types of analogues to the outcrop and points back to the represented group, formation or member, respectively.
startAgeSeries	no		0..1		OutcropGeologicalAge	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
endAgeSeries	no		0..1		OutcropGeologicalAge	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Table Name: OutcropMember

Package: lithostrat

Sub package: general

Description: The table contains information about the member, a formal lithostratigraphic unit constituting a formation (Tucker, M.E., 2003, Sedimentary Rocks in the Field. The Geological Field Guide Series, John Wiley & Sons Ltd., 3.ed., 244p.).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
memberName	yes	text				Name of the member.
memberDescription	no	text				A textual description of the member.
startAge	no	number				The beginning (older) time of the age. This is commonly specified in millions of years (Ma).
endAge	no	number				The ending (younger) time of the age. This is commonly specified in millions of years (Ma).
comments	no	text				Relevant information about the data in this category.
bed	no		0..*		OutcropBed	Information about the bed, a distinctive subdivision of a member, the smallest formal lithostratigraphic unit (Tucker, M.E., 2003, Sedimentary Rocks in the Field. The Geological Field Guide Series, John Wiley & Sons Ltd., 3.Edition, 244p.).
analogue	no		0..*		OutcropAnalogue	This table allows to store information of various types of analogues to the outcrop and points back to the represented members.
startAgeSeries	no		0..1		OutcropGeologicalAge	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
endAgeSeries	no		0..1		OutcropGeologicalAge	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Table Name: OutcropBed

Package: lithostrat

Sub package: general

Description: Information about the bed, a distinctive subdivision of a member, the smallest formal lithostratigraphic unit (Tucker, M.E., 2003, Sedimentary Rocks in the Field. The Geological Field Guide Series, John Wiley & Sons Ltd., 3.Edition, 244p.).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
bedName	yes	text				Name of the bed.
bedDescription	no	text				A textual description of the bed.
startAge	no	number				The beginning (older) time of the age. This is commonly specified in millions of years (Ma).
endAge	no	number				The ending (younger) time of the age. This is commonly specified in millions of years (Ma).
comments	no	text				Relevant information about the data in this category.
startAgeSeries	no		0..1		OutcropGeologicalAge	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
endAgeSeries	no		0..1		OutcropGeologicalAge	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Table Name: OutcropAnalogue

Package: lithostrat

Sub package: general

Description: This table allows to store information of various types of analogues to the outcrop and points back to the representing outcropGroup, outcropFormation or outcropMember, respectively. One of these three has to be chosen as mandatory.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
analogueDescription	yes	text				A textual description of the group.
comments	no	text				Relevant information about the data in this category.
analogueType	yes			OutcropAnalogueType		Defines types of outcrop analogues.
outcropGroup	yes		1..*		OutcropGroup	The table contains information about the group, an assemblage of formations (Tucker, M.E., 2003, Sedimentary Rocks in the Field. The Geological Field Guide Series, John Wiley & Sons Ltd., 3.ed., 244p.).
outcropFormation	yes		1..*		OutcropFormation	The table contains information of the outcrop's formation, the fundamental lithostratigraphic unit, identified by lithological characteristics and stratigraphic position, generally tabular. Mappable at the Earth's surface and traceable into the subsurface (Tucker, M.E., 2003, Sedimentary Rocks in the Field. The Geological Field Guide Series, John Wiley & Sons Ltd., 3.ed., 244p.).
outcropMember	yes		1..*		OutcropMember	The table contains information about the member, a formal lithostratigraphic unit constituting a formation (Tucker, M.E., 2003, Sedimentary Rocks in the Field. The Geological Field Guide Series, John Wiley & Sons Ltd., 3.ed., 244p.).

Table Name: OutcropNeighbourFormation

Package: lithostrat

Sub package: general

Description: Information about neighbouring formations.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
contactDescription	yes	text				A textural description about the type of contact between the formations.
comments	no	text				Relevant information about the data in this category.
outcropFormation	yes		1..*		OutcropFormation	The table contains information of the outcrop's formation, the fundamental lithostratigraphic unit, identified by lithological characteristics and stratigraphic position, generally tabular. Mappable at the Earth's surface and traceable into the subsurface (Tucker, M.E., 2003, Sedimentary Rocks in the Field. The Geological Field Guide Series, John Wiley & Sons Ltd., 3.ed., 244p.).

Table Name: OutcropGeologicalAge

Package: lithostrat

Sub package: age

Description: Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
comments	no	text				Relevant information about the data in this category.
agePhanerozoic	no		0..1		AgePhanerozoic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
agePrecambrium	no		0..1		AgePrecambrian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Table Name: AgePhanerozoic

Package: lithostrat

Sub package: age

Description: Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
comments	no	text				Relevant information about the data in this category.
ageCenozoic	no		0..1		AgeCenozoic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
ageMesozoic	no		0..1		AgeMesozoic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
agePaleozoic	no		0..1		AgePaleozoic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Table Name: AgePrecambrian

Package: lithostrat

Sub package: age

Description: Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
comments	no	text				Relevant information about the data in this category.
ageProterozoic	no		0..1		AgeProterozoic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
ageArchean	no		0..1		AgeArchean	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
ageHadean	no		0..1		AgeHadean	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Outcrop Geological Age Tables: Eon

Package: lithostrat

Sub package: age

All tables named below contain a *comments* attribute with following properties:

Attribute name	Required	Data type	Description
comments	no	text	Relevant information about the data in this category.

Table name	Description	Name	Required	Enumeration	Description
AgeProterozoic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEraNeoproterozoic	no	AgeEraNeoproterozoic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageEraMesoproterozoic	no	AgeEraMesoproterozoic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageEraPaleoproterozoic	no	AgeEraPaleoproterozoic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeArchean	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEraNeoarchean	no	AgeEraNeoarchean	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageEraMesoarchean	no	AgeEraMesoarchean	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageEraPaleoarchean	no	AgeEraPaleoarchean	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageEraEoarchean	no	AgeEraEoarchean	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeHadean	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEonHadean	no	AgeEonHadean	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Outcrop Geological Age Tables: Era

Package: lithostrat

Sub package: age

All tables named below contain a comments attribute with following properties:

Attribute name	Required	Data type	Description
comments	no	text	Relevant information about the data in this category.

Table name	Description	Name	Required	Plurality	Enumeration	Description
AgeCenozoic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageQuaternary	no	0..1	AgeQuaternary	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageNeogene	no	0..1	AgeNeogene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		agePaleogene	no	0..1	AgePaleogene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeMesozoic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageCretaceous	no	0..1	AgeCretaceous	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageJurassic	no	0..1	AgeJurassic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageTriassic	no	0..1	AgeTriassic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgePaleozoic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	agePermian	no	0..1	AgePermian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageCarboniferous	no	0..1	AgeCarboniferous	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageDevonian	no	0..1	AgeDevonian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageSilurian	no	0..1	AgeSilurian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageOrdovician	no	0..1	AgeOrdovician	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageCambrian	no	0..1	AgeCambrian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Outcrop Geological Age Tables: Period

Package: lithostrat

Sub package: age

All tables named below contain further a comments attribute with following properties:

Attribute name	Required	Data type	Description
comments	no	text	Relevant information about the data in this category.

Table name	Description	Name	Required	Plurality	Enumeration	Description
AgeQuaternary	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageHolocene	no	0..1	AgeHolocene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		agePleistocene	no	0..1	AgePleistocene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeNeogene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	agePliocene	no	0..1	AgePliocene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageMiocene	no	0..1	AgeMiocene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgePaleogene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageOligocene	no	0..1	AgeOligocene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageEocene	no	0..1	AgeEocene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		agePaleocene	no	0..1	AgePaleocene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeCretaceous	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageUpperCretaceous	no	0..1	AgeUpperCretaceous	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageLowerCretaceous	no	0..1	AgeLowerCretaceous	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeJurassic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission	ageUpperJurassic	no	0..1	AgeUpperJurassic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageMiddleJurassic	no	0..1	AgeMiddleJurassic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Table name	Description	Name	Required	Plurality	Enumeration	Description
	on Stratigraphy.	ageLowerJurassic	no	0..1	AgeLowerJurassic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeTriassic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageUpperTriassic	no	0..1	AgeUpperTriassic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageMiddleTriassic	no	0..1	AgeMiddleTriassic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageLowerTriassic	no	0..1	AgeLowerTriassic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgePermian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageLopingian	no	0..1	AgeLopingian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageGuadalupian	no	0..1	AgeGuadalupian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageCisuralian	no	0..1	AgeCisuralian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeCarboniferous	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageUpperPennsylvanian	no	0..1	AgeUpperPennsylvanian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageMiddlePennsylvanian	no	0..1	AgeMiddlePennsylvanian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageLowerPennsylvanian	no	0..1	AgeLowerPennsylvanian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageUpperMississippian	no	0..1	AgeUpperMississippian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageMiddleMississippian	no	0..1	AgeMiddleMississippian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageLowerMississippian	no	0..1	AgeLowerMississippian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeDevonian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageUpperDevonian	no	0..1	AgeUpperDevonian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageMiddleDevonian	no	0..1	AgeMiddleDevonian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageLowerDevonian	no	0..1	AgeLowerDevonian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Table name	Description	Name	Required	Plurality	Enumeration	Description
AgeSilurian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	agePridoli	no	0..1	AgePridoli	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageLudlow	no	0..1	AgeLudlow	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageWenlock	no	0..1	AgeWenlock	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageLlandovery	no	0..1	AgeLlandovery	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeOrdovician	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageUpperOrdovician	no	0..1	AgeUpperOrdovician	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageMiddleOrdovician	no	0..1	AgeMiddleOrdovician	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageLowerOrdovician	no	0..1	AgeLowerOrdovician	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeCambrian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageFurongian	no	0..1	AgeFurongian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageSeries3	no	0..1	AgeSeries3	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageSeries2	no	0..1	AgeSeries2	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
		ageTerreneuvian	no	0..1	AgeTerreneuvian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Outcrop Geological Age Tables: Epoch

Package: lithostrat

Sub package: age

All tables named below contain a comments attribute with following properties:

Attribute name	Required	Data type	Description
comments	no	Text	Relevant information about the data in this category.

Table name	Description	Name	Required	Enumeration	Description
AgeHolocene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochHolocene	no	AgeEpochHolocene	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgePleistocene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochPleistocene	no	AgeEpochPleistocene	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgePliocene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochPliocene	no	AgeEpochPliocene	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeMiocene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochMiocene	no	AgeEpochMiocene	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeOligocene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochOligocene	no	AgeEpochOligocene	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeEocene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochEocene	no	AgeEpochEocene	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgePaleocene	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochPaleocene	no	AgeEpochPaleocene	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Table name	Description	Name	Required	Enumeration	Description
AgeUpperCretaceous	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochUpperCretaceous	no	AgeEpochUpperCretaceous	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeLowerCretaceous	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochLowerCretaceous	no	AgeEpochLowerCretaceous	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeUpperJurassic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochUpperJurassic	no	AgeEpochUpperJurassic	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeMiddleJurassic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochMiddleJurassic	no	AgeEpochMiddleJurassic	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeLowerJurassic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochLowerJurassic	no	AgeEpochLowerJurassic	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeUpperTriassic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochUpperTriassic	no	AgeEpochUpperTriassic	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeMiddleTriassic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochMiddleTriassic	no	AgeEpochMiddleTriassic	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeLowerTriassic	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochLowerTriassic	no	AgeEpochLowerTriassic	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeLopingian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochLopingian	no	AgeEpochLopingian	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Table name	Description	Name	Required	Enumeration	Description
AgeGuadalupian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochGuadalupian	no	AgeEpochGuadalupian	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeCisuralian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochCisuralian	no	AgeEpochCisuralian	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeUpperPennsylvanian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochUpperPennsylvanian	no	AgeEpochUpperPennsylvanian	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeMiddlePennsylvanian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochMiddlePennsylvanian	no	AgeEpochMiddlePennsylvanian	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeLowerPennsylvanian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochLowerPennsylvanian	no	AgeEpochLowerPennsylvanian	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeUpperMississippian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochUpperMississippian	no	AgeEpochUpperMississippian	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeMiddleMississippian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochMiddleMississippian	no	AgeEpochMiddleMississippian	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeLowerMississippian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochLowerMississippian	no	ageEpochLowerMississippian	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeUpperDevonian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochUpperDevonian	no	AgeEpochUpperDevonian	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Table name	Description	Name	Required	Enumeration	Description
AgeMiddleDevonian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochMiddleDevonian	no	AgeEpochMiddleDevonian	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeLowerDevonian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochLowerDevonian	no	AgeEpochLowerDevonian	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgePridoli	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochPridoli	no	AgeEpochPridoli	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeLudlow	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochLudlow	no	AgeEpochLudlow	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeWenlock	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochWenlock	no	AgeEpochWenlock	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeLlandovery	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochLlandovery	no	AgeEpochLlandovery	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeUpperOrdovician	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochUpperOrdovician	no	AgeEpochUpperOrdovician	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeMiddleOrdovician	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochMiddleOrdovician	no	AgeEpochMiddleOrdovician	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeLowerOrdovician	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochLowerOrdovician	no	AgeEpochLowerOrdovician	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Table name	Description	Name	Required	Enumeration	Description
AgeFurongian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochFurongian	no	AgeEpochFurongian	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeSeries3	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochSeries3	no	AgeEpochSeries3	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeSeries2	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochSeries2	no	AgeEpochSeries2	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.
AgeTerreneuvian	Description of geological age based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.	ageEpochTerreneuvian	no	AgeEpochTerreneuvian	Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

5.5 Sequence stratigraphic model

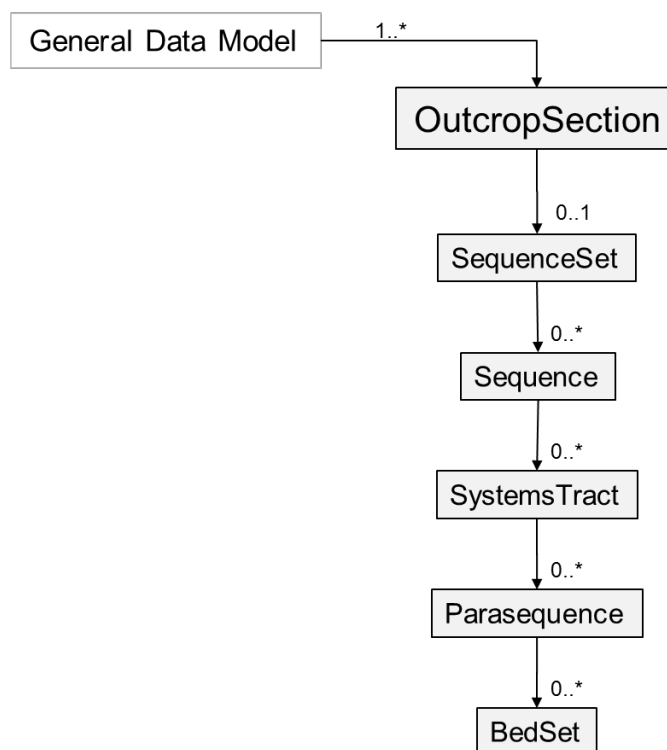


Table Name: OutcropSequenceSet

Package: sequenceStrat

Sub package: general

Description: Information about the sequence set.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
type	yes	text				Major stratigraphic unit.
comments	no	text				Relevant information about the data in this category.
stackingPattern	no			OutcropSequenceStackingPattern		Information about the stacking pattern.
sequence	no		0..*		OutcropSequence	Information about the sequence.

Table Name: OutcropSequence

Package: sequenceStrat

Sub package: general

Description: Information about the sequence.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
type	yes	text				Principal unit, a succession of relatively conformable genetically related strata bounded by an unconformity or its correlative conformity (Tucker, 2003).
comments	no	text				Relevant information about the data in this category.
outcropOrder	no			OutcropOrder		The order describes time scales (often used in sequence stratigraphy) ranging through five orders of magnitude, from tens of thousands of years to hundreds of millions of years. They are not related to an absolute geological time. (Miall, A. D. 2006. The Geology of Fluvial Deposits. Springer. Berlin. 582p.)
systemTract	no		0..*		OutcropSystemsTract	Information about the systems tract.

Table Name: OutcropSystemsTract

Package: sequenceStrat

Sub package: general

Description: Information about the systems tract.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
comments	no	text				Relevant information about the data in this category.
type	yes			OutcropSystemsTract		A linkage of contemporaneous depositional systems, i.e. related facies, or facies associations) (Tucker, 2003).
outcropOrder	no			OutcropOrder		The order describes time scales (often used in sequence stratigraphy) ranging through five orders of magnitude, from tens of thousands of years to hundreds of millions of years. They are not related to an absolute geological time. (Miall, A. D. 2006. The Geology of Fluvial Deposits. Springer. Berlin. 582p.)
parasequence	no		0..*		OutcropParasequence	Information about the parasequence, a relatively conformable succession of genetically related beds or bedsets bounded by marine flooding surfaces, typically metre-scale (Tucker, 2003).

Table Name: OutcropParasequence

Package: sequenceStrat

Sub package: general

Description: Information about the bed, a distinctive subdivision of a member, the smallest formal lithostratigraphic unit (Tucker, M.E., 2003, Sedimentary Rocks in the Field. The Geological Field Guide Series, John Wiley & Sons Ltd., 3.Edition, 244p.).

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
type	yes	text				Building block (allocyclic).
comments	no	text				Relevant information about the data in this category.
bedset	no		0..*		OutcropBedset	Information about the bedset.

Table Name: OutcropBedset

Package: sequenceStrat

Sub package: general

Description: Information about the bedset.

Name	Required	Data type	Plurality	Enumeration	Referenced table(s)	Description
type	yes	text				Minor, element (autocyclic).
comments	no	text				Relevant information about the data in this category.

6. SAFARI v2.0 – Enumerations tables

Data tables and enumerations for SAFARI database standard 2.0 are included in this document for your convenience. A more interactive overview of the data tables and enumerations can be found on the SAFARI website: <http://safaridb.com>.

The enumeration tables are assorted alphabetically and according to the part of the model they belong to.

6.1 General data model

DataAcquisitionMethod

Package: model

Sub package: general

Predominately used method of data acquisition. Data Quality indicator.

Name	Definition
scaledPhotoMontages	A montage of photos of an outcrop which include a scale that allows measurements of features to be taken from the photographs.
photoMontagesAndMosaics	A montage of photos from an outcrop of outcrop section.
fieldSketchesAndArchitecturalDrawings	Sketches and other drawings that were done in the field e.g. of outcrop sections. Architectural drawings are based on measured elements and can be used to determine the size and geometry of elements.
gprProfile	Ground penetrating radar (GPR) profile data used to detect and map subsurface features and patterning.
lidarData	Lidar data were the basis for the interpretation of depositional features
photogrammetricData	Any photogrammetric data used to describe the outcrop.
satelliteImagery	Includes imagery from Landsat, Google Earth or others.
otherOutcropObservations	Other methods used to observe and characterise the outcrop.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

DataGeneralMeasurementType

Package: model

Sub package: general

Type of measurements on system and section level.

Name	Definition
horizontalWidth	The width (x) of the item measured horizontally = parallel to depositional strike.
horizontalLength	The length (y) of the item measured horizontally = parallel to depositional dip.
vertical	The depth or thickness (z) of the item measured vertically.

DataMeasurementCompleteness

Package: model

Sub package: general

Describes the completeness of the measurement or observation. Data quality indicator. (see also: Geehan, G. & Underwood, J., 1993. the use of length distributions in geological modelling. In: Flint, S.S. & Bryant, I.D. (eds) The geological modelling of hydrocarbon reservoirs and outcrop analogues. IAS Special Publication, 15, 205-212.)

Name	Definition
complete	The measured feature has 2 limits (borders).
partial	The measured feature has 1 limits (borders).
incomplete	The measured feature has no limits (borders).
unknown	It is unknown whether the feature has limits. The feature will not be considered in statistical analysis.

DataMeasurementQuality

Package: model

Sub package: general

The quality of the data, such as good, fair, poor. Data quality may be affected by the method of acquisition or how a product is handled. Data quality indicator.

Name	Definition
good	Data with high quality (greater than 80%); Evidence includes consistent results from well-designed, well-conducted studies.
fair	Modest outputs of good quality (less than 80%); Evidence is sufficient to determine effects.
poor	Leads to limited outputs (less than 50%); Evidence is insufficient to assess the effects.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

DataMeasurementUnit

Package: model

Sub package: general

Unit of a measurement, e.g. meters, percent. Generally as standard SI unit.

Name	Definition
unitless	A unitless quantity.
meter	Meter - standard SI unit for length measurements.
squarekilometer	Squarekilometer - standard SI unit for area measurements.
degree	Degree - standard unit for plane angle measurements.
percent	Percentage - the preceding number is a fraction of 100.
degree North	Unit for geographic latitude on the Northern Hemisphere (given in full numbers).
degree South	Unit for geographic latitude on the Southern Hemisphere (given in full numbers).

DataPublicationType

Package: model

Sub package: general

Describes the type of publication e.g. peer-reviewed article or an unpublished report. Data quality indicator.

Name	Definition
peerReviewedLiterature	Any peer-reviewed article in journals, books or similar.
phdThesis	Any PhD thesis.
masterThesis	Any other thesis such as bachelor thesis or master thesis.
publishedTechnicalReports	Any published technical report (not peer-reviewed).
internalCompanyReports	Any internal company report (typically unpublished).
internet	Any work/documents/information published on the internet.
unpublished	Any other unpublished work.
unknown	The value is not known. This value should not be used in normal situations.

DataSetScale

Package: model

Sub package: general

Scale at which level of detail data are provided for this section (outcrop or modern). Data quality indicator.

Name	Definition
depositionalSystemScale	Data (only/mainly) collected at the system scale (depositional environment level); e.g. alluvial environment. Most common for large scale mapping projects.
subenvironmentScale	Data collected (only/mainly) at the detail of subenvironment scale; e.g. alluvial fan or dune complex. Most common for understanding the large-scale facies association relationships, connectivity of the system & low order sequence stratigraphy stacking patterns.
architecturalElementScale	Data collected (only/mainly) at the detail of architectural elements; e.g. barforms, bedforms etc. Most common for understanding the medium-scale heterogeneities/Dels of elements.
lithofaciesScale	Data collected (only/mainly) at the detail of lithofacies scale; e.g. lithology, ichnology, mineral composition, sedimentary structure types.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

DataSpatialObservationType

Package: model

Sub package: general

Description of the type of spatial observation and sampling. Data quality indicator.

Name	Definition
vertical_1D	Vertical section such as a well or sedimentary log through a body.
horizontal_1D	Horizontal section such as a well or sedimentary log through a body.
crossSection_2D	Single cross section through a body.
planform_2D	Map view of a body.
pseudo_3D	Outcrop with multiple cuts through a body which allow the 3D geometry to be reliably reconstructed.
full_3D	Dense sampling that allows the geometry of a body to be observed in 3D.
unknown	Unknown distance between deposition and source area. This value should not be used in normal situations.

FileAcquisitionType

Package: model

Sub package: file

Type of survey data acquisition.

Name	Definition
groundBasedLidar	Ground-based lidar (ground-based light detection and ranging).
helicopterBasedLidar	Helicopter-based lidar (helicopter-based light detection and ranging).
photogrammetry	Determining geometric properties of objects from photographic images.
groundPenetratingRadar	Ground penetrating radar (GPR) survey is a method used to detect and map subsurface artifacts, features, and patterning.
other	Other data acquisition method.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

FileModelType

Package: model

Sub package: file

Description: Type of model data.

Name	Definition
GeocellularModel	A computer model of a geological volume. The volume is subdivided into cells which are assigned properties such as facies, lithology, porosity etc
SyntheticSeismic	A seismic volume generated synthetically to illustrate what an outcrop would look like if a seismic survey were carried out over it.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

FilePictureType

Package: model

Sub package: Dee

Type of pictures (e.g. photographs, figures) taken.

Name	Definition
singleOverviewPhoto	Single photo showing all or part of an outcrop section.
panoramaOverviewPhoto	Overview image comprised of multiple pictures.
detailedPhoto	E.g. detailed pictures of outcrop elements, samples, lithology, and others.
figure	Figures, illustrations, cross-sections and similar.
map	E.g. maps, sketch maps and similar.
other	All other types of pictures.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

FileSurveyType

Package: model

Sub package: file

Description: Type of survey data.

Name	Definition
GPR	GPR (ground penetrating radar) is a geophysical method that uses radar pulses to image the shallow subsurface.
LIDAR	LIDAR (light detection and ranging) is an optical remote sensing technology that measures properties of scattered light to find range and/or other information of a distant target.
virtualOutcrop	3D virtual outcrop data.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

FileSurveyFileType

Package: model

Sub package: file

Type of survey file format.

Name	Definition
pdf	PDF is a file format created by Adobe Systems in 1993 for document exchange.
arcgisFormat	ArcGIS file formats created by ESRI software.
other	Other software specific file formats, e.g. reservoir modelling software.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

ModelCountry

Package: model

Sub package: general

Country list

Name	Definition
A...	...
...	...
Z...	...

ModelSectionQuality

Package: model

Sub package: general

The exposure quality of a section (outcrop or modern system) indicates how easy depositional features can be observed and measured. Especially vegetation has disturbing influence on the visibility and interpretation of depositional features. Data quality indicator.

Name	Definition
extremelyWellExposed	Excellent section with no or very little vegetation (outcrops extend for greater than one kilometre).
wellExposed	Section with very limited vegetation (outcrops extend for up to one kilometre).
moderateExposed	Section with moderated vegetation coverage (outcrops extend for up to several hundred meters; possible to identify and correlate beds and bodies).
poorlyExposed	Section mainly covered by vegetation (outcrops only as isolated pockets of 5 to 25 meters).
veryPoorExposed	Section with lots of vegetation or scrub cover (outcrops only as isolated examples, less than 5 meters).
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

Outcrop3DControl

Package: model

Sub package: outcrop

3D controls of the outcrop. Data Quality indicator.

Name	Definition
veryGood	Multiple cliff sections at a variety of orientations or one very sinuous section.
good	Cliff with moderate sinuosity or several cliffs with a variety of orientation.
fair	Two parallel cliff sections or one section with some sinuosity.
no3DControls	The outcrop forms a straight line and does not allow three-dimensional interpretations of the behaviour of depositional features, e.g. a straight cliff.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

OutcropStructuralComplexity

Package: model

Sub package: outcrop

Structural complexity of the outcrop. After Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.

Name	Definition
undisturbed	No faults or very minor faulting, mild tectonic dip.
mildlyDeformed	Some faulting and/or folding, beds and bodies still easy to correlate.
heavilyDeformed	A lot of faulting also folded; beds difficult to trace and correlate.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

6.2 Depositional settings model

BasinKind

Package: depositional

Sub package: general

Type of depositional basin.

Name	Definition
passiveContinentalMargin	Continental margin characterised by the transition from oceanic to continental crust at an ancient rift.
extensionalBasin	Basin associated with crustal extension.
forelandBasin	Basin resulting from crustal flexure caused by mountain building.
foreArcBasin	Basin situated between a subduction zone and a volcanic arc.
backArcBasin	Extensional basin formed which occur behind a volcanic arc as a consequence of trench rollback (also called retroarc).
strikeSlipBasin	Basin formed at kinks in strike-slip fault systems. Also called pull-apart or transtensional basins.
intracratonicBasin	Basin formed when rifting ceases, which leads to lithospheric cooling due to reduced heat flow; they are commonly large but not very deep.
paleofjord	Basin, that is an erosional feature formed by glaciers.
saltBasin	Basin, that is generated by halokinesis.
retroArcForelandBasin	Basin formed as a result of lithospheric loading behind a mountainous arc under a compressional regime; they are commonly Deled with continental deposits.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

BoundingSurface

Package: depositional

Sub package: general

Description of the bounding surface between two elements.

Name	Definition
erosional	A sharp boundary caused by erosion of the old element prior to the deposition of the younger.
erosionalCrosscuttingNeighbour	An erosional boundary at the side of a body. Boundary refers to the younger of the two bodies.
erosionalCrosscutsNeighbour	An erosional boundary at the side of a body. Boundary refers to the older of the two bodies.
erosionalConcordantCutting	An erosional boundary at the base of a body. Boundary refers to the younger of the two bodies.
erosionalCondordantCut	An erosional boundary at the top of a body. Boundary refers to the older of the two bodies.
conformable	A sharp boundary not associated with erosion.
gradational	A gradational boundary between two elements.
tectonicOther	Boundary associated with fault.
unknown	The value is not known. All reasonable attempts should be made to determine the appropriate value.

ChannelMorphology

Package: depositional

Sub package: general

Morphology of the channel system.

Name	Definition
braided	Multiple active channels in plan view, channel deposits are dominated by mid-channel bars.
meandering	Single, sinuous channel deposits dominated by point bars successions (sinuosity ratio greater than 1.5).
straight	More or less straight channel with sinuosity ratio smaller than 1.5.
anastomosing	Mutiple active channels, deposits dominated by vertically accreting channels and well developed levee successions.
mixed	Mixed braided and meandering system which contains both point bars and mid-channel bars in near equal proportions.
unspecified	Channel type not distinguished.
unknown	The value is not known. All reasonable attempts should be made to determine the appropriate value.

DepositionalConfinement

Package: depositional

Sub package: general

Specifies whether a depositional system is unconfined or confined by erosional, tectonic or unspecified geomorphology.

Name	Definition
tectonicConfinement	Confinement of element by tectonic features.
erosionalConfinement	Confinement of element by erosional features.
unspecifiedConfinement	Confinement of element by unspecified features.
unconfined	No confinement.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

DepositionalSubstrate

Package: depositional

Sub package: general

Dominating depositional substrate an incised valley cuts into.

Name	Definition
bedrockSubstrate	Incised valley cuts into consolidated bedrock.
alluviumSubstrate	Incised valley cuts into older sediment.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

GrainClastShape

Package: depositional

Sub package: lithology

Common shapes of pebbles.

Name	Definition
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Name	Definition
sphere	S=I=L (S=short, I=intermediate, L=long diameters, respectively)
rod	S=I<L (S=short, I=intermediate, L=long diameters, respectively)
blade	S<I<L (S=short, I=intermediate, L=long diameters, respectively)
disc	S<I=L (S=short, I=intermediate, L=long diameters, respectively)
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

GrainRoundness

Package: depositional

Sub package: lithology

Measure of how angular the shape of the grain is.

Name	Definition
veryAngular_0	Corners sharp and jagged. Further information in SAFARI wiki.
angular_1	Corners less sharp and jagged. Further information in SAFARI wiki.
subangular_2	Corners very little sharp and jagged. Further information in SAFARI wiki.
subrounded_3	Corners less rounded. Further information in SAFARI wiki.
rounded_4	Corners rounded. Further information in SAFARI wiki.
wellRounded_5and6	Corners completely rounded. Further information in SAFARI wiki.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

GrainSizeTrend

Package: depositional

Sub package: lithology

Change of the grain size in e.g. a layer, sandstone core, outcrop section.

Name	Definition
upwardCoarsening	Succession with an upward increase in grain size.
upwardFining	Succession with an upward decrease in grain size.
uniform	Succession with no change in modal grain size.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

GrainSorting

Package: depositional

Sub package: lithology

Sorting of grain population is a measure of the range of grain sizes present and the magnitude of the spreads of these sizes around the mean size. The classification given here uses the logarithmic phi (ϕ) scale, proposed by Krumbein in 1934, to allow graphical plotting and statistical calculations. $\phi = -\log_2 d$ (d= grain diameter in millimeter). Additionally also visual estimations charts may be used. (classification after Folk, R.L., 1974, Petrology of sedimentary rocks: Hemphill, Austin Tex., 182p.; visual chart after Harrell, J., 1984, A visual comparator for degree of sorting in thin and plane sections: Journal of Sedimentological Petrology, v.54, Fig. 3,4,5,6, p.684.)

Name	Definition
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Name	Definition
veryWellSorted	Standard deviation $<0.35\phi$; ($\phi = -\log_2 d$ (d = grain diameter in millimeter)).
wellSorted	Standard deviation 0.35-0.50 ϕ ; ($\phi = -\log_2 d$ (d = grain diameter in millimeter)).
moderatelyWellSorted	Standard deviation 0.50-0.71 ϕ ; ($\phi = -\log_2 d$ (d = grain diameter in millimeter)).
moderateSorted	Standard deviation 0.71-1.00 ϕ ; ($\phi = -\log_2 d$ (d = grain diameter in millimeter)).
poorSorted	Standard deviation 1.00-2.00 ϕ ; ($\phi = -\log_2 d$ (d = grain diameter in millimeter)).
veryPoorSorted	Standard deviation 2.00-4.00 ϕ ; ($\phi = -\log_2 d$ (d = grain diameter in millimeter)).
extremelyPoorSorted	Standard deviation $>4.00\phi$; ($\phi = -\log_2 d$ (d = grain diameter in millimeter)).
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

GrainSphericity

Package: depositional

Sub package: lithology

Measure of how close a grain or particle approaches a sphere.

Name	Definition
low	Grains are not spherical. Further information in SAFARI wiki.
high	Grains are spherical (or close to). Further information in SAFARI wiki.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

LimestoneClassification

Package: depositional

Sub package: lithology

Limestone classification after R.J. Dunham, 1962, Classification of carbonate rocks according to depositional texture. In Ham, W. E.. Classification of carbonate rocks. American Association of Petroleum Geologists Memoir. 1. pp. 108-121.

Name	Definition
grainstone	Grain supported limestone that contains no mud.
packstone	Grain supported limestone with mud interstitial mud.
wackestone	Matrix supported limestone with more than 10% grains.
mudstone	Matrix supported limestone with less than 10% grains.
boundstone	Limestone where the original components have been bound together during deposition.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

LithologyAveragePorosity

Package: depositional

Sub package: lithology

The pore volume of a rock averaged using various well log or core porosity measurements. The theoretical maximum porosity for a clastic rock is about 26%. Defined after BakerHughes definitions and taken from Energistics WITSML_v1.4.1 well-log standards.

Name	Definition
good	More than 15% porosity.

Name	Definition
fair	10-15% porosity.
poor	5-10% porosity.
trace	Less than 5% porosity.
none	0% porosity
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

LithologyHardness

Package: depositional

Sub package: lithology

Lithology hardness is based on Mohs scale of mineral hardness and the ability of one natural sample of matter to scratch another.

Name	Definition
mohsScale1	Equivalent hardness to talc.
mohsScale2	Equivalent hardness to gypsum.
mohsScale3	Equivalent hardness to calcite.
mohsScale4	Equivalent hardness to fluorite.
mohsScale5	Equivalent hardness to apatite.
mohsScale6	Equivalent hardness to orthoclas feldspar.
mohsScale7	Equivalent hardness to quartz.
mohsScale8	Equivalent hardness to topaz.
mohsScale9	Equivalent hardness to corundum.
mohsScale10	Equivalent hardness to diamond.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

LithologyKind

Package: depositional

Sub package: lithology

The type of lithology. These values represent the lithological terminology in descriptions of rock cuttings in mud logs. Reference: WITSML standard for mud logs by Energistics (2010).

Name	Definition
andesite	Intermediate porphyritic volcanic rock consisting of plagioclase, pyroxene, hornblende and biotite.
anhydrite	The mineral form of anhydrous calcium sulfate, commonly massive in evaporite beds.
arkose	An indurated arenaceous deposit consisting chiefly of quartz and feldspar (>25%).
basalt	Volcanic rock consisting essentially of plagioclase feldspar and pyroxene.
breccia	A lithified rock rich in angular fragments of size greater than 2mm.
calcarenite	A limestone more than half of which consists of cemented sand-size grains of calcium carbonate: a consolidated calcareous sand.
calclutite	A limestone more than half of which consists of detrital calcite particles of silt and/or clay size: a consolidated calcareous mud.
calcsiltite	A limestone more than half of which consists of detrital calcite particles of silt size: a consolidated calcareous silt.
chalk	A fine-grained limestone composed largely of coccolith fragments.

Name	Definition
chert	Siliceous sedimentary rock containing finely crystalline and fibrous quartz.
clay	Unconsolidated deposit of very fine particles of size generally less than 1/256mm and composed of clay minerals.
claystone	An indurated clay, lacking the fissility of shale.
coal	A combustible organic sedimentary rock with less than 40% of mineral matter (based on dry material) composed of polymers of cyclic hydrocarbons.
conglomerate	An indurated sedimentary rock containing an essential quantity of rounded rock fragments larger than 2mm, and normally having a matrix of sand.
diabase	Igneous rock of grain size intermediate between basalt and gabbro composed of plagioclase feldspar, pyroxene and opaque minerals. Synonym: dolerite.
diorite	Plutonic igneous rock consisting of plagioclase feldspar, commonly with hornblende and biotite.
dolomite	Sedimentary rock containing more than 90% dolomite (mineral) and less than 10% calcite.
dolomiteCalcareous	A dolomite rock containing more than 10% calcite.
extrusiveRock_volcanic	Igneous rocks formed by solidification of material erupted sub-aerially or sub-aqueously onto the earth's surface, as either lava flows or pyroclastic material.
feldspar	The family of aluminium silicates of sodium, potassium, calcium and other metals which comprise over 60% of the earth's crust, are the most abundant mineral group, and occur in all types of rocks.
gabbro	Coarse grained plutonic igneous rock composed essentially of calcic plagioclase feldspar, pyroxenes and iron oxide.
glaucinite	A mineral composed of ferrous potassium silicates related to mica which commonly imparts a green color to its sedimentary host rock.
gneiss	A metamorphic rock, commonly foliated and crystalline, whose mineral content can range from quartz and feldspars to amphiboles and pyroxenes.
granite	Coarse grained plutonic rock typically containing free quartz, alkali feldspar and biotite mica.
gravel	An unconsolidated deposit of coarse clastics. The diameters on the Wenworth scale are generally greater than 2mm.
greenstones	A field term for any dark fine grained altered or metamorphosed basic igneous rock.
greywacke	A dark grey consolidated deposit containing feldspar, rock fragments and a dark chloritic matrix.
gumbo	A term used in the U.S. for clay soils that become sticky, impervious, and plastic when wet.
gypsum	A mineral composed of hydrous calcium sulphate, commonly forming thick extensive evaporite beds.
halite	A mineral composed of sodium chloride common in evaporite rocks.
igneous	Term applied to rock or mineral formed by solidification of molten or partly molten material (magma).
intrusiveRock_plutonic	Igneous rock formed by cooling and solidification of magma within the earth's crust.
lignite	A low-rank humic coal.
limestone	A sedimentary rock composed mostly of the mineral calcite (calcium carbonate) which is the consolidated equivalent of lime mud, calcareous sand, and/or shell fragments.
limestoneArgillaceous	A limestone homogeneously mixed with 10-50% clay minerals.
limestoneDolomitic	A limestone containing 10-50% dolomite and 50-90% calcite.
limestoneSandy	A limestone homogeneously mixed with 10-50% quartz grains.
marble	A metamorphic rock composed of calcite.
marl	A consolidated or semi-consolidated mixture of clay and generally fine grained carbonate material.

Name	Definition
metamorphicRock	Rocks formed by mineralogical, chemical and structural alteration of pre-existing rocks under conditions of temperature and pressure at depth in the earth.
mudstone	Consolidated and indurated mud.
ophiolite	Basic and ultra-basic igneous rocks and their metamorphosed, often hydrated, derivatives, believed to represent former oceanic crust.
peat	Unconsolidated, semi-carbonised plant remains which are a precursor of humic coal.
phosphate	Any mineral compound containing the ((PO4)3) radical.
phosphateRock	Any rock containing phosphate minerals such as apatite of sufficient purity and abundance to be an economic resource.
potassiumAndMagnesiumSalts	Salts such as sylvinitite, carnalite, keiserite with swelling properties that can severely obstruct drilling operations.
quartzite	A sedimentary rock composed of more than 95% of quartz.
rhyolite	Silica rich volcanic rock consisting of quartz and alkali feldspar with minor plagioclase and biotite.
salt	Common term for naturally occurring sodium chloride.
sand	An aggregation of particles having diameters in the range 1/16mm to 2mm usually consisting of quartz.
sandstone	A sedimentary rock composed of indurated sand.
schist	A strongly foliated crystalline metamorphic rock.
serpentine	A rock forming mineral of hydrous iron and magnesium silicates, often resulting from metamorphism of amphiboles and pyroxenes.
shale	A fine-grained sedimentary rock formed by the compaction of clay, silt or mud.
silt	Unconsolidated sedimentary material with grain sizes between 1/16mm and 1/256mm.
siltstone	Consolidated silt.
slate	A compact fine-grained metamorphic rock displaying slaty cleavage along which the rock may be cut into sheets.
syenite	Plutonic igneous rock composed essentially of alkali feldspar, with lesser sodic plagioclase, biotite and hornblende, and minor quartz.
tillite_diamictite	Consolidated unsorted glacial deposits with particles ranging from boulder to mud in grain size and of highly variable composition.
trachyte	A group of fine-grained often porphyritic volcanic rocks containing alkali feldspar and minor mafic minerals.
tuff	An indurated pyroclastic deposit, predominantly consisting of fine-grained volcanic rocks: sedimentary particles may be present. Tuff may be deposited sub-aerially or sub-aqueously, and may be well sorted or heterogeneous.
ultrabasic	A class of igneous rocks composed mostly of mafic minerals such as pyroxenes along with calcic feldspar, with no free silica and a total silica content less than about 45%.
undifferentiated	The lithology is not differentiated. This is typically used to Delout a lithology description to 100 percent.
noDescription	No description is provided.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

LithologyPermeability

Package: depositional

Sub package: lithology

Measure of the ability of a porous material (e.g a rock or unconsolidated material) to allow fluids to pass through it.

Name	Definition
impermeable_tight	Less than 0.1 milliDarcies.
slightlyPermeable_poorly	Less than 100 milliDarcies.
fairlyPermeable_permeable	100-1000 milliDarcies.
highlyPermeable	Great than 1 Darcy.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

LithologyVisiblePorosity

Package: depositional

Sub package: lithology

Porosity is the percentage of void spaces in rock or soil. The theoretical maximum porosity for a clastic rock is about 26%. Defined after BakerHughes definitions and taken from Energistics WITSML_v1.4.1 well-log standards

Name	Definition
good	more than 15% porosity
fair	10-15% porosity
poor	5-10% porosity
trace	less than 5% porosity
none	0% porosity
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

ModalGrainSize

Package: depositional

Sub package: lithology

The modal grain size was based on the Wentworth scale. Wentworth, C.K., 1922, A scale of grade and class terms for clastic sediments, The Journal of Geology, vol. 30, issue 5, pp. 377-392. DOI: 10.1086/622910

Name	Definition
boulder	Greater than 256 millimeter.
cobble	Between 64 millimeter and 256 millimeter.
pebble	Between 4 millimeter and 64 millimeter.
granule	Between 2 millimeter and 4 millimeter.
veryCoarseSand	Between 1 millimeter and 2 millimeter.
coarseSand	Between 500 micrometer and 1000 micrometer.
mediumSand	Between 250 micrometer and 500 micrometer.
fineSand	Between 125 micrometer and 250 micrometer.
veryFineSand	Between 62.5 micrometer and 125 micrometer.
coarseSilt	Between 31.25 micrometer and 62.5 micrometer.
mediumSilt	Between 15.625 micrometer and 31.25 micrometer.
fineSilt	Between 7.8125 micrometer and 15.625 micrometer.
veryFineSilt	Between 3.90625 micrometer and 7.8125 micrometer.
clay	Less than 3.90625 micrometer.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

ModelClimatePrecipitation

Package: model

Sub package: general

The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., J. Grieser, C. Beck, B. Rudolf, and F. Rubel, 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263. DOI: 10.1127/0941-2948/2006/0130.

Name	Definition
desert_W	Arid climates (B): $P_{ann} \leq 5 P_{th}$ (P_{ann} = accumulated annunal precipitation, P_{th} = dryness threshold)
steppe_S	Arid climates (B): $P_{ann} > 5 P_{th}$ (P_{ann} = accumulated annunal precipitation, P_{th} = dryness threshold)
fullyHumid_f	Equatorial climates (A) rainforest: $P_{min} \geq 60$ mm; Warm temperate climates (C): neither Cs nor Cw, Snow climates (D): neither Ds nor Dw (P_{min} = minimum precipitation)
summerDry_s	Equatorial climates (A) savannah: $P_{min} < 60$ mm in summer; Warm temperate climates (C): $P_{smin} < P_{wmin}$, $P_{wmax} > 3 P_{smin}$ and $P_{smin} < 40$ mm; Snow climates (D): $P_{smin} < P_{wmin}$, $P_{wmax} > 3 P_{smin}$ and $P_{smin} < 40$ mm. (P_{min} = precipitation of the driest month; P_{smin} , P_{smax} , P_{wmin} and P_{wmax} are defined as the lowest and highest monthly precipitation values for the summer and winter half-years on the hemisphere considered.)
winterDry_w	Equatorial climates (A) savannah: $P_{min} < 60$ mm in winter; Warm temperate climates (C): $P_{wmin} < P_{smin}$ and $P_{smax} > 10 P_{wmin}$; Snow climates (D): $P_{wmin} < P_{smin}$ and $P_{smax} > 10 P_{wmin}$. (P_{min} = precipitation of the driest month, P_{smin} , P_{smax} , P_{wmin} and P_{wmax} are defined as the lowest and highest monthly precipitation values for the summer and winter half-years on the hemisphere considered.)
monsoonal_m	Equatorial climates (A) monsoon: $P_{ann} \geq 25 (100 - P_{min})$ (P_{ann} = accumulated annunal precipitation, P_{min} = precipitation of the driest month)
unknown	The value is not known. This value should not be used in normal situations.

ModelClimateTemperature

Package: model

Sub package: general

The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kottek, M., J. Grieser, C. Beck, B. Rudolf, and F. Rubel, 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263. DOI: 10.1127/0941-2948/2006/0130.

Name	Definition
hotArid_h	hot steppe/desert: $T_{ann} \geq +18$ °C (T_{ann} = annual mean near-surface (2 m) temperature)
coldArid_k	cold steppe/desert: $T_{ann} < +18$ °C (T_{ann} = annual mean near-surface (2 m) temperature)
hotSummer_a	$T_{max} \geq +22$ °C (T_{max} = monthly mean temperatures of the warmest month)
warmSummer_b	not (a) hot summer and at least 4 $T_{mon} \geq +10$ °C (T_{mon} = mean monthly temperature)

Name	Definition
coolSummerAndColdWinter_c	not (b) warm summer and $T_{min} > -38\text{ °C}$ (T_{min} = monthly mean temperatures of the coldest month)
extremelyContinental_d	like (c) cool summer and cold winter, but $T_{min} \leq -38\text{ °C}$ (T_{min} = monthly mean temperatures of the coldest month)
polarFrost_F	$T_{max} < 0\text{ °C}$ (T_{max} = monthly mean temperatures of the warmest month)
polarTundra_T	$0\text{ °C} \leq T_{max} < +10\text{ °C}$ (T_{max} = monthly mean temperatures of the warmest month)
unknown	The value is not known. This value should not be used in normal situations.

ModelEarthDirection

Package: model

Sub package: general

Orientation should always be measured and/or given as clockwise deviation from North.

Name	Definition
north_N	A direction toward the North Pole ($347.5 < 0 \leq 22.5$).
south_S	A direction toward the South Pole ($157.5 < 180 \leq 202.5$).
east_E	The direction toward which the Earth rotates about its axis ($67.5 < 90 \leq 112.5$).
west_W	The direction opposite that of the Earth's rotation on its axis, and therefore the general direction towards which the Sun sets ($247.5 < 270 \leq 292.5$).
northEast_NE	The ordinal direction halfway between north and east ($22.5 < 45 \leq 67.5$).
northWest_NW	The ordinal direction halfway between north and west ($292.5 < 315 \leq 337.5$).
southEast_SE	The ordinal direction halfway between south and east ($112.5 < 135 \leq 157.5$).
southWest_SW	The ordinal direction halfway between south and west ($202.5 < 225 \leq 247.5$).
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

ModelMainClimate

Package: model

Sub package: general

The used climate classification in SAFARIdb is based on the Köppen-Geiger climate classification world map. Detailed information are published in: Kotték, M., J. Grieser, C. Beck, B. Rudolf, and F. Rubel, 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263. DOI: 10.1127/0941-2948/2006/0130.

Name	Definition
equatorialClimates_A	$T_{min} \geq +18\text{ °C}$
aridClimates_B	$P_{ann} < 10\text{ Pth}$ (P_{ann} = accumulated annual precipitation, P_{th} = dryness threshold)
warmTemperateClimates_C	$-3\text{ °C} < T_{min} < +18\text{ °C}$
snowClimates_D	$T_{min} \leq -3\text{ °C}$
polarClimates_E	$T_{max} < +10\text{ °C}$
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

ModelSourceAreaDistance

Package: model

Sub package: general

The distance between the deposited material and its origin.

Name	Definition
short	Less than 10 kilometer distance between deposition and source area.
medium	10 to 100 kilometer distance between deposition and source area.
long	Greater than 100 kilometer distance between deposition and source area.
unknown	Unknown distance between deposition and source area. This value should not be used in normal situations.

ModernArchitecturalMeasurementType

Package: depositional

Sub package: modern

Specific types of measurements for modern architectural elements.

Name	Definition
horizontalWidth	The width (x) of the item measured horizontally = parallel to depositional strike.
horizontalLength	The length (y) of the item measured horizontally = parallel to depositional dip.
vertical	The depth or thickness (z) of the item measured vertically.
sinuosity	Channel sinuosity is defined as the ratio between length of a element in a predefined section and the length of this section.
distributaryCount	Number of distributaries in a delta.

ModernDepositionalMeasurementType

Package: depositional

Sub package: modern

Specific types of measurements for modern depositional environment.

Name	Definition
horizontalWidth	The width (x) of the item measured horizontally = parallel to depositional strike.
horizontalLength	The length (y) of the item measured horizontally = parallel to depositional dip.
vertical	The depth or thickness (z) of the item measured vertically.
shorelineLobosity	Shoreline lobosity is measured from the modern systems as the ratio between the smoothed length of the coastline of the delta and a straight line between a point at either side.
shorelineSinuosity	Shoreline sinuosity is defined as the ratio between a smoothed length of the coastline and the actual coastline at the observed map scale.
deltaAreaSmooth	Area (spatial extend) of the delta considering a smooth coastline.
deltaAreaDetailed	Area (spatial extend) of the delta considering the actual coastline.
latitude	Latitude of deposition area.

ModernDuneShape

Package: depositional

Sub package: modern

Simple shape of a dune that defines the geometric type. Compound and complex forms may be defined by choosing various components (dominating and minor) that are superimposed.

Name	Definition
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Name	Definition
barchanOrCrescent	Arc-shaped sand ridge, comprising well-sorted sand, also: crescent dune.
parabolicOrBarchanoid	Parabolic or barchanoid dunes are u-shaped mounds of sand with convex noses trailed by elongated arms.
transverse	Transverse dunes are perpendicular to the prevailing wind caused by a steady build-up of sand on an already existing minuscule mound.
linear	Straight or slightly sinuous sand ridges typically much longer than they are wide.
longitudinalOrSeif	Sharp-crested dunes that elongate parallel to the prevailing wind.
star	Radially symmetrical, star dunes are pyramidal sand mounds with slipfaces on three or more arms that radiate from the high center of the mound.
dome	Oval or circular mounds that generally lack a slipface.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

ModernRiverProfileLocation

Package: depositional

Sub package: modern

The location along the longitudinal stream or river profile.

Name	Definition
upper	Upper reaches or headwater zone, that the part of a stream or river proximate to its source, characterized by steep slopes and high energy (large, boulder sized rocks in the stream bed and often a series of pools and flows).
middle	Middle reaches or transfer zone, where the river may flow over flatter land often meandering through valleys. There might still be strong flows but the bottom is more sand and small rocks than big rocks.
lower	Lower reaches or depositional zone characterised by very low energy; the river moves slowly and the river bottom is small gravel and mostly silt.
mouth	The point at which the stream discharges, possibly via an estuary or delta, into a static body of water such as a lake or ocean.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

ModernSubenvironmentMeasurementType

Package: depositional

Sub package: modern

Specific types of measurements for modern subenvironment.

Name	Definition
horizontalWidth	The width (x) of the item measured horizontally = parallel to depositional strike.
horizontalLength	The length (y) of the item measured horizontally = parallel to depositional dip.
vertical	The depth or thickness (z) of the item measured vertically.
shelfWidth	Width of the continental shelf.

NeighbourDirection

Package: depositional

Sub package: general

Spatial neighbour/transition direction between objects belonging to the same scale (Subenvironment, Architectural Elements, Lithofacies units). (Colombera L., Mountney, N.P. and W.D.McGaffrey, 2012, A

relational database for the digitization of fluvial architecture: concepts and example applications, Petroleum Geoscience, 18, 129-140.)

Name	Definition
rightLateral	Right-lateral transition (looking downdip) between predefined and additional object.
leftLateral	Left-lateral transition (looking downdip) between predefined and additional object.
updip	Updip transition between predefined and additional object.
downdip	Downdip transition between predefined and additional object.
upwardsVertical	Upwards vertical transition between predefined and additional object.
downwardsVertical	Downwards vertical transition between predefined and additional object.
unknown	The value is not known. All reasonable attempts should be made to determine the appropriate value.

NetShorelineMovement

Package: depositional

Sub package: general

Long term movement of the shoreline, reflecting the accommodation vs sediment supply ratio.

Name	Definition
progradational	Shoreline systems in which the net migration of the shoreline is basinward ($A < S$).
transgressive	Shoreline systems in which the net migration of the shoreline is landward ($A > S$).
unknown	The value is not known. All reasonable attempts should be made to determine the appropriate value.

OutcropAccomodationRegime

Package: depositional

Sub package: outcrop

Mean subsidence rate per one thousand years.

Name	Definition
low	Mean subsidence rate less than 0.1 meters per one thousand years.
moderate	Mean subsidence rate between 0.1 and 2 meters per one thousand years.
high	Mean subsidence rate greater than 2 meters per one thousand years.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

OutcropArchitecturalConnectivity

Package: depositional

Sub package: outcrop

Connectivity between adjacent architectural elements.

Name	Definition
high	The majority of examples of a specific element (e.g. channel body) are connected and would be in pressure communication.
low	There is some communication between examples of a specific element but it is poor and there are several separate “connected volumes”.
isolated	Individual elements are isolated.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

OutcropArchitecturalMeasurementType

Package: depositional

Sub package: outcrop

Architectural element specific types of measurement.

Name	Definition
horizontalWidth	The width (x) of the item measured horizontally = parallel to depositional strike.
horizontalLength	The length (y) of the item measured horizontally = parallel to depositional dip.
vertical	The depth or thickness (z) of the item measured vertically.
correctedHorizontalWidth	The horizontal size (width) corrected to be a true stratigraphic measure = parallel to depositional strike.
correctedHorizontalLength	The horizontal size (length) corrected to be a true stratigraphic measure = parallel to depositional dip.
correctedVertical	The vertical size corrected to be a true stratigraphic measure.
netToGross	The net to gross sand content of the architectural element.
meanPaleoCurrent	Mean paleocurrent of architectural element (always as measured deviation positive clockwise from north).
elementOrientation	Orientation of architectural element (always as measured deviation positive clockwise from north).
strikeDirection	The direction (positive counterclockwise from north) of an imaginary line made by the intersection of the dipping element with a horizontal plane.
dipDirection	The dip direction is the azimuth of the direction the dip as projected to the horizontal (like the trend of a linear feature in trend and plunge measurements), which is 90° off the strike angle.
dipAngle	The angle of descent of a tilted element relative to a horizontal plane. Positive from horizontal downward.
widthThicknessRatio	The ratio of a horizontal (e.g. width or length) to a vertical (thickness) measurement.

OutcropArchitecturalShape

Package: depositional

Sub package: outcrop

Sediment body geometry (shape) of architectural element or lithofacies.

Name	Definition
belt	A band of facies, typically parallel to depositional strike.
coneOrFan	A cone or fan shaped body radiating from a single point.
dendroid	A branching channel geometry.
jet	A tear shaped body.
lens	A lens shaped body.
ribbon	A ribbon shaped body (e.g. a channel).
sheet	A laterally extensive body.
wedge	A wedge shaped body.
other	Body with other architectural shape.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

OutcropBioturbationIndex

Package: depositional

Sub package: outcrop

Bioturbation Index (BI) is an indicator for the degree of sediment disruption or the percentage of ichnofabric in the sediment. The percentage bioturbation values should be used as a guide and not an absolute class division. (Taylor, A.M. & Goldring, R. 1993. Description and analysis of bioturbation and ichnofabric. Journal of the Geological Society, London, vol.150, 141-148.)

Name	Definition
not measured	Not measured.
bi_0	No bioturbation
bi_1	Between 1 percent and 4 percent; Sparse bioturbation, bedding distinct, few discrete trace fossils and/or escape structures.
bi_2	Between 5 percent and 30 percent; Little bioturbation, bedding distinct, low trace-fossil density.
bi_3	Between 31 percent and 60 percent; Moderate bioturbation, bedding boundaries sharp, traces discrete, overlap rare.
bi_4	Between 61 percent and 90 percent; High bioturbation, bedding boundaries indistinct, high trace density with overlap common.
bi_5	Between 91 percent and 99 percent; Intense bioturbation, bedding completely disturbed (just visible), limited reworking, later burrows discrete.
bi_6	100 percent; Complete bioturbation, sediment reworking due to repeated overprinting.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

OutcropDepositionalMeasurementType

Package: depositional

Sub package: outcrop

Depositional environment specific types of measurement.

Name	Definition
horizontalWidth	The width (x) of the item measured horizontally = parallel to depositional strike.
horizontalLength	The length (y) of the item measured horizontally = parallel to depositional dip.
vertical	The depth or thickness (z) of the item measured vertically.
correctedHorizontalWidth	The horizontal size (width) corrected to be a true stratigraphic measure = parallel to depositional strike.
correctedHorizontalLength	The horizontal size (length) corrected to be a true stratigraphic measure = parallel to depositional dip.
correctedVertical	The vertical size corrected to be a true stratigraphic measure.
paleoLatitude	Paleolatitude of deposition area.

OutcropKind

Package: model

Sub package: outcrop

Type of outcrop.

Name	Definition
naturalCliff	Significant vertical, or near vertical, rock exposure.
roadCut	Rock exposure due to road cuts.
quarry	Rock exposure due to open mining activity (quarries).
seaCliff	Cliff section at the coast.
other	Other kind of outcrop.

Name	Definition
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

OutcropLithofaciesMeasurementType

Package: depositional

Sub package: outcrop

Lithofacies specific types of measurement.

Name	Definition
horizontalWidth	The width (x) of the item measured horizontally = parallel to depositional strike.
horizontalLength	The length (y) of the item measured horizontally = parallel to depositional dip.
vertical	The depth or thickness (z) of the item measured vertically.
correctedHorizontalWidth	The horizontal size (width) corrected to be a true stratigraphic measure = parallel to depositional strike.
correctedHorizontalLength	The horizontal size (length) corrected to be a true stratigraphic measure = parallel to depositional dip.
correctedVertical	The vertical size corrected to be a true stratigraphic measure.
mudContent	Mud content of lithofacies element.
fractionalContent	The relative amount of the lithofacies within the whole architectural element.

OutcropOrder

Package: model

Sub package: outcrop

The order describes time scales (often used in sequence stratigraphy) ranging through five orders of magnitude, from tens of thousands of years to hundreds of millions of years. They are not related to an absolute geological time. (Miall, A. D. 2006. The Geology of Fluvial Deposits. Springer. Berlin. 582p.)

Name	Definition
order_3rd	Duration 1-10 million years; Regional cycles caused by intraplate stresses. Most are probably not of global extent.
order_4th	Duration 0.2-0.5 million years; a) Milankovitch glacioeustatic cycles, astronomical forcing; b) regional cycles caused by flexural loading, especially in foreland basins
order_5th	Duration 0.01-0.2 million years a) Milankovitch glacioeustatic cycles, astronomical forcing; b) regional cycles caused by flexural loading, especially in foreland basins
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

OutcropSedimentaryStructureKind

Package: depositional

Sub package: outcrop

Sedimentary structures are textural features of sedimentary rocks that are generated by a variety of sedimentary and biogenic processes.

Name	Definition
bioturbation	Sedimentary structure resulting from the activity of animals or plants.
currentRippleCrossStratification	Cross stratification formed by the migration of current ripples.
desiccationCracks	Cracks in cohesive sediment caused as they dry out.

Name	Definition
dishAndPillarStructures	Dewatering structures.
flameStructures	Small scale injection structures, typically clay or silt.
grading	An upward fining or coarsening (reverse grading) within a bed.
hummockyCrossStratification	Low angle lamination caused by combined flow associated with storms. Typically marine.
injectionStructures	Sediment that is injected from one bed into another.
loadStructures	Ball shaped structures at the base of a bed, caused by loading onto a soft substrate.
massive	No apparent internal structure.
pedogenicStructure	Structures formed by soil forming processes.
planarLamination	Parallel lamination.
rooting	Structure associated with plant roots.
slumped	Structure formed by shear within a bed that has moved down slope.
softSedimentDeformed_noSpecific	Structure formed by early post depositional processes.
soleStructures	A variety of structures that occur on the underside of a bed (typically sandstone) caused by Deling of scours, loading or a combination of the two. Includes flutes, grooves, gutters and tool marks.
tabularCrossStratification	Cross stratification formed by the migration of straight crested (2D) dunes.
troughCrossStratification	Cross stratification formed by the migration of sinuous crested (3D) dunes.
waveRippleCrossStratification	Cross stratification formed by the orbital motion of waves
other	Other sedimentary structure.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

OutcropSubenvironmentMeasurementType

Package: depositional

Sub package: outcrop

Subenvironment specific types of measurement.

Name	Definition
horizontalWidth	The width (x) of the item measured horizontally = parallel to depositional strike.
horizontalLength	The length (y) of the item measured horizontally = parallel to depositional dip.
vertical	The depth or thickness (z) of the item measured vertically.
correctedHorizontalWidth	The horizontal size (width) corrected to be a true stratigraphic measure = parallel to depositional strike.
correctedHorizontalLength	The horizontal size (length) corrected to be a true stratigraphic measure = parallel to depositional dip.
correctedVertical	The vertical size corrected to be a true stratigraphic measure.

RockClass

Package: depositional

Sub package: lithology

Rock class summaries the three main types of rocks, namely igneous, sedimentary, and metamorphic.

Name	Definition
igneousRock	Igneous rocks are formed through the cooling and solidification of magma or lava, with or without crystallization.
metamorphicRock	Metamorphic rocks are formed through transformation of existing rock types, in a process

Name	Definition
	called metamorphism.
sedimentaryRock	Sedimentary rocks are formed by the deposition of material at the Earth's surface and within bodies of water.
undifferentiated	Rock type/class cannot clearly be identified.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value. Use of this value may result in rejection in some situations.

SandstoneClassification

Package: depositional

Sub package: lithology

Sandstone classification schema taken from M. Tucker, 2003: Sedimentary rocks in the field. The geological field guide series, 3ed., John Wiley & Sons Ltd., Chichester, England, p.33.

Name	Definition
quartzArenite	Sandstones that contain more than 95% of siliceous grains.
subarkose	Sandstones that contain between 95% and 75% quartz, and more feldspar than unstable lithic fragments, and minor accessory minerals.
sublitharenite	Sandstones that contain between 95% and 75% quartz and more unstable lithic fragments than feldspars.
arkosicArenite	Sandstones that contain less than 75% quartz, and more feldspar than unstable lithic fragments, and minor accessory minerals.
lithicArenite	Sandstones that contain less than 75% quartz and more unstable lithic fragments than feldspars.
feldspathicGreywacke	Feldspathic sandstone that contain a clay matrix that is greater than 15%, and more feldspar than unstable lithic fragments.
lithicGreywacke	Sandstone that has a clay matrix greater than 15%, and more unstable lithic fragments than feldspars.
quartzWacke	Quartz arenite that contain a clay matrix that is greater than 15%.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

WaterDepths

Package: depositional

Sub package: general

Water depths in receiving basin.

Name	Definition
shallowWater	Shallow marine system prograding into shallow waters, dominated by shoal water processes.
deepWater	Shallow marine system prograding into deep waters, dominated by gravitational processes.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

6.3 Sequence stratigraphic model

OutcropSequenceStackingPattern

Package: sequenceStrat

Sub package: general

Information about the stacking pattern.

Name	Definition
progradationalClimbing	Succession is progradational and aggradational succession.
progradationalHorizontal	Succession is progradational.
progradationalFalling_attached	Succession is forced regressive (attached).
progradationalFalling_detached	Succession is forced regressive (detached).
aggradationalVertical	Succession is aggradational, no lateral movement of the facies belts.
retrogradationalLandward	Landward migration of facies belts.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

OutcropSystemsTractKind

Package: sequenceStrat

Sub package: general

A linkage of contemporaneous depositional systems, i.e. related facies, or facies associations) (Tucker, 2003).

Name	Definition
lowstand	LST – facies deposited during sea-level low.
transgressive	TST – facies deposited when accommodation creation is greater than sediment supply.
highstand	HST – facies deposited when accommodation is being created but is outpaced by sediment supply.
fallingStage	FSST – facies deposited during sea-level fall.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

6.4 Lithostratigraphic model

OutcropAnalogueType

Package: lithostrat
 Sub package: formation
 Defines types of outcrop analogues.

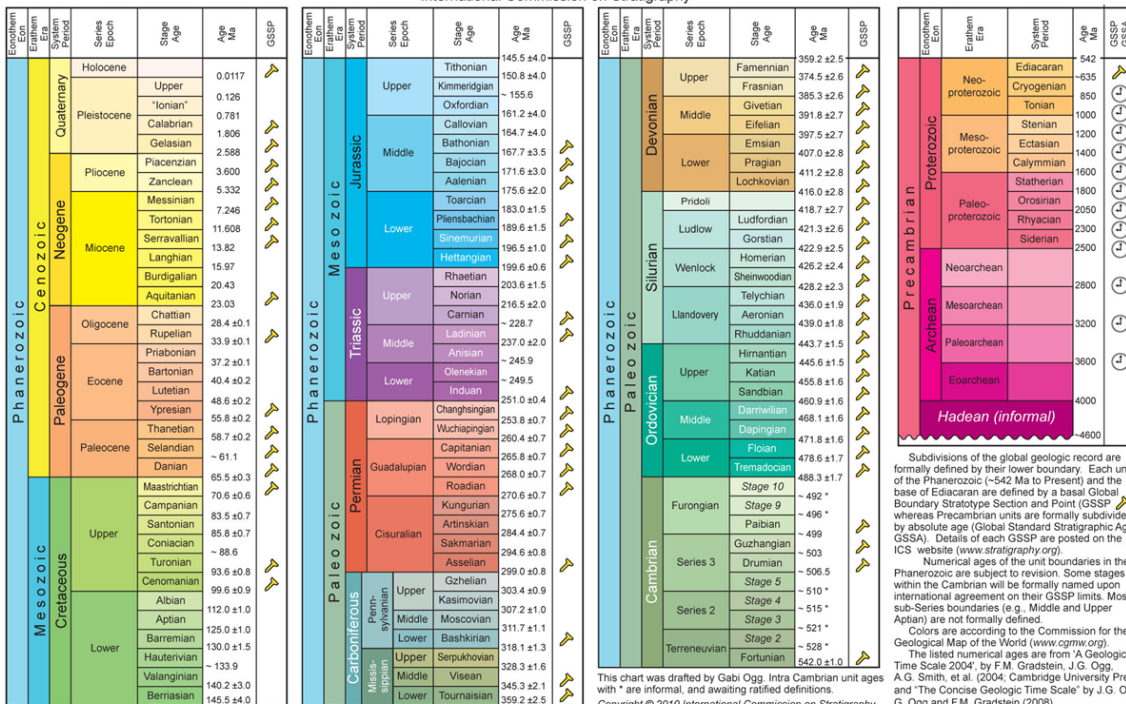
Name	Definition
outcrop	Visible exposure of bedrock or ancient superficial deposits on the surface of the Earth.
modernDepositionalSystem	A depositional system that is presently active.
reservoir	A subsurface pool of hydrocarbons contained in porous or fractured rock formations.
other	Other kind of analogue.
unknown	The value is not known. This value should not be used in normal situations. All reasonable attempts should be made to determine the appropriate value.

Geological age: Epoch



INTERNATIONAL STRATIGRAPHIC CHART

International Commission on Stratigraphy



Subdivisions of the global geologic record are formally defined by their lower boundary. Each unit of the Phanerozoic (~542 Ma to Present) and the base of Ediacaran are defined by a basal Global Boundary Stratotype Section and Point (GSSP), whereas Precambrian units are formally subdivided by absolute age (Global Standard Stratigraphic Age, GSSA). Details of each GSSP are posted on the ICS website (www.stratigraphy.org).

Numerical ages of the unit boundaries in the Phanerozoic are subject to revision. Some stages within the Cambrian will be formally named upon international agreement on their GSSP limits. Most sub-Series boundaries (e.g., Middle and Upper Aptian) are not formally defined.

Colors are according to the Commission for the Geological Map of the World (www.cgmw.org).

The listed numerical ages are from 'A Geologic Time Scale 2004', by F.M. Gradstein, J.G. Ogg, A.G. Smith, et al. (2004; Cambridge University Press) and 'The Concise Geologic Time Scale' by J.G. Ogg, G. Ogg and F.M. Gradstein (2009).

AgeEpochHolocene

Package: lithostrat
 Sub package: age
 Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
recent	Recent age is used for modern depositional systems.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochPleistocene

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Upper	0.0117 to 0.126 Million years.
“Ionian”	0.126 to 0.781 Million years.
Calabrian	0.781 to 1.806 Million years.
Gelasian	1.806 to 2.588 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochPliocene

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Piacenzian	2.588 to 3.600 Million years.
Zanclean	3.600 to 5.332 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochMiocene

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Messinian	5.332 to 7.246 Million years.
Tortonian	7.246 to 11.608 Million years.
Serravallian	11.608 to 13.82 Million years.
Langhian	13.82 to 15.97 Million years.
Burdigalian	15.97 to 20.43 Million years.
Aquitania	20.43 to 23.03 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochOligocene

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Chattian	23.03 to 28.4 ±0.1 Million years.
Rupelian	28.4 ±0.1 to 33.9 ±0.1 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochEocene

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Priabonian	33.9 ±0.1 to 37.2 ±0.1 Million years.
Bartonian	37.2 ±0.1 to 40.4 ±0.2 Million years.
Lutetian	40.4 ±0.2 to 48.6 ±0.2 Million years.
Ypresian	48.6 ±0.2 to 55.8 ±0.2 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochPaleocene

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch. Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Thanetian	55.8 ±0.2 to 58.7 ±0.2 Million years.
Selandian	58.7 ±0.2 to ~61.1 Million years.
Danian	~61.1 to 65.5 ±0.3 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochUpperCretaceous

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Maastrichtian	65.5 ±0.3 to 70.6 ±0.6 Million years.
Campanian	70.6 ±0.6 to 83.5 ±0.7 Million years.
Santonian	83.5 ±0.7 to 85.8 ±0.7 Million years.
Coniacian	85.8 ±0.7 to ~88.6 Million years.
Turonian	~88.6 to 93.6 ±0.8 Million years.
Cenomanian	93.6 ±0.8 to 99.6 ±0.9 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochLowerCretaceous

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Albian	99.6 ±0.9 to 112.0 ±1.0 Million years.
Aptian	112.0 ±1.0 to 125.0 ±1.0 Million years.
Barremian	125.0 ±1.0 to 130.0 ±1.5 Million years.
Hauterivian	130.0 ±1.5 to ~133.9 Million years.
Valanginian	~133.9 to 140.2 ±3.0 Million years.
Berriasian	140.2 ±3.0 to 145.5 ±4.0 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochUpperJurassic

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Tithonian	145.5 ±4.0 to 150.8 ±4.0 Million years.
Kimmeridgian	150.8 ±4.0 to ~155.6 Million years.
Oxfordian	~155.6 to 161.2 ±4.0 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochMiddleJurassic

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Callovian	161.2 ±4.0 to 164.7 ±4.0 Million years.
Bathonian	164.7 ±4.0 to 167.7 ±3.5 Million years.
Bajocian	167.7 ±3.5 to 171.6 ±3.0 Million years.
Aalenian	171.6 ±3.0 to 175.6 ±2.0 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochLowerJurassic

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Toarcian	175.6 ±2.0 to 183.0 ±1.5 Million years.
Pliensbachian	183.0 ±1.5 to 189.6 ±1.5 Million years.
Sinemurian	189.6 ±1.5 to 196.5 ±1.0 Million years.
Hettangian	196.5 ±1.0 to 199.6 ±0.6 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochUpperTriassic

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Rhaetian	199.6 ±0.6 to 203.6 ±1.5 Million years.
Norian	203.6 ±1.5 to 216.5 ±2.0 Million years.
Carnian	216.5 ±2.0 to ~228.7 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochMiddleTriassic

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Ladinian	~228.7 to 237.0 ±2.0 Million years.
Anisian	237.0 ±2.0 to ~245.9 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochLowerTriassic

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Olenekian	~245.9 to ~249.5 Million years.
Induan	~249.5 to 251.0 ±0.4 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochLopingian

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Changhsingian	251.0 ±0.4 to 253.8 ±0.7 Million years.
Wuchiapingian	253.8 ±0.7 to 260.4 ±0.7 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochGuadalupian

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Capitanian	260.4 ±0.7 to 265.8 ±0.7 Million years.
Wordian	265.8 ±0.7 to 268.0 ±0.7 Million years.
Roadian	268.0 ±0.7 to 270.6 ±0.7 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochCisuralian

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Kungurian	270.6 ±0.7 to 275.6 ±0.7 Million years.
Artinskian	275.6 ±0.7 to 284.4 ±0.7 Million years.
Sakmarian	284.4 ±0.7 to 294.6 ±0.8 Million years.
Asselian	294.6 ±0.8 to 299.0 ±0.8 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochUpperPennsylvanian

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Gzhelian	299.0 ±0.8 to 303.4 ±0.9 Million years.
Kasimovian	303.4 ±0.9 to 307.2 ±1.0 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochMiddlePennsylvanian

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Moscovian	307.2 ±1.0 to 311.7 ±1.1 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochLowerPennsylvanian

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Bashkirian	311.7 ±1.1 to 318.1 ±1.3 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochUpperMississippian

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Serpukhovian	318.1 ±1.3 to 328.3 ±1.6 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochMiddleMississippian

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Visean	328.3 ±1.6 to 345.3 ±2.1 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochLowerMississippian

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Tournaisian	345.3 ±2.1 to 359.2 ±2.5 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochUpperDevonian

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Famennian	359.2 ±2.5 to 374.5 ±2.6 Million years.
Frasnian	374.5 ±2.6 to 385.3 ±2.6 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochMiddleDevonian

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Givetian	385.3 ±2.6 to 391.8 ±2.7 Million years.
Eifelian	391.8 ±2.7 to 397.5 ±2.7 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochLowerDevonian

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Emsian	397.5 ±2.7 to 407.0 ±2.8 Million years.
Pragian	407.0 ±2.8 to 411.2 ±2.8 Million years.
Lochkovian	411.2 ±2.8 to 416.0 ±2.8 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochPridoli

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
unnamed	416.0 ±2.8 to 418.7 ±2.7 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochLudlow

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Ludfordian	418.7 ±2.7 to 421.3 ±2.6 Million years.
Gorstian	421.3 ±2.6 to 422.9 ±2.5 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochWenlock

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Homerian	422.9 ±2.5 to 426.2 ±2.4 Million years.
Sheinwoodian	426.2 ±2.4 to 428.2 ±2.3 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochLlandovery

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Telychian	428.2 ±2.3 to 436.0 ±1.9 Million years.
Aeronian	436.0 ±1.9 to 439.0 ±1.8 Million years.
Rhuddanian	439.0 ±1.8 to 443.7 ±1.5 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochUpperOrdovician

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Hirnantian	443.7 ±1.5 to 445.6 ±1.5 Million years.
Katian	445.6 ±1.5 to 455.8 ±1.6 Million years.
Sandbian	455.8 ±1.6 to 460.9 ±1.6 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochMiddleOrdovician

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Darriwilian	460.9 ±1.6 to 468.1 ±1.6 Million years.
Dapingian	468.1 ±1.6 to 471.8 ±1.6 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochLowerOrdovician

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Floian	471.8 ±1.6 to 478.6 ±1.7 Million years.
Tremadocian	478.6 ±1.7 to 488.3 ±1.7 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochFurongian

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Stage 10	488.3 ±1.7 to ~492 Million years.
Stage 9	~492 to ~496 Million years.
Paibian	~496 to ~499 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochSeries3

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Guzhangian	~499 to ~503 Million years.
Drumian	~503 to ~506.5 Million years.
Stage5	~506.5 to ~510 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochSeries2

Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Stage4	~510 to ~515 Million years.
Stage3	~515 to ~521 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEpochTerreneuvian

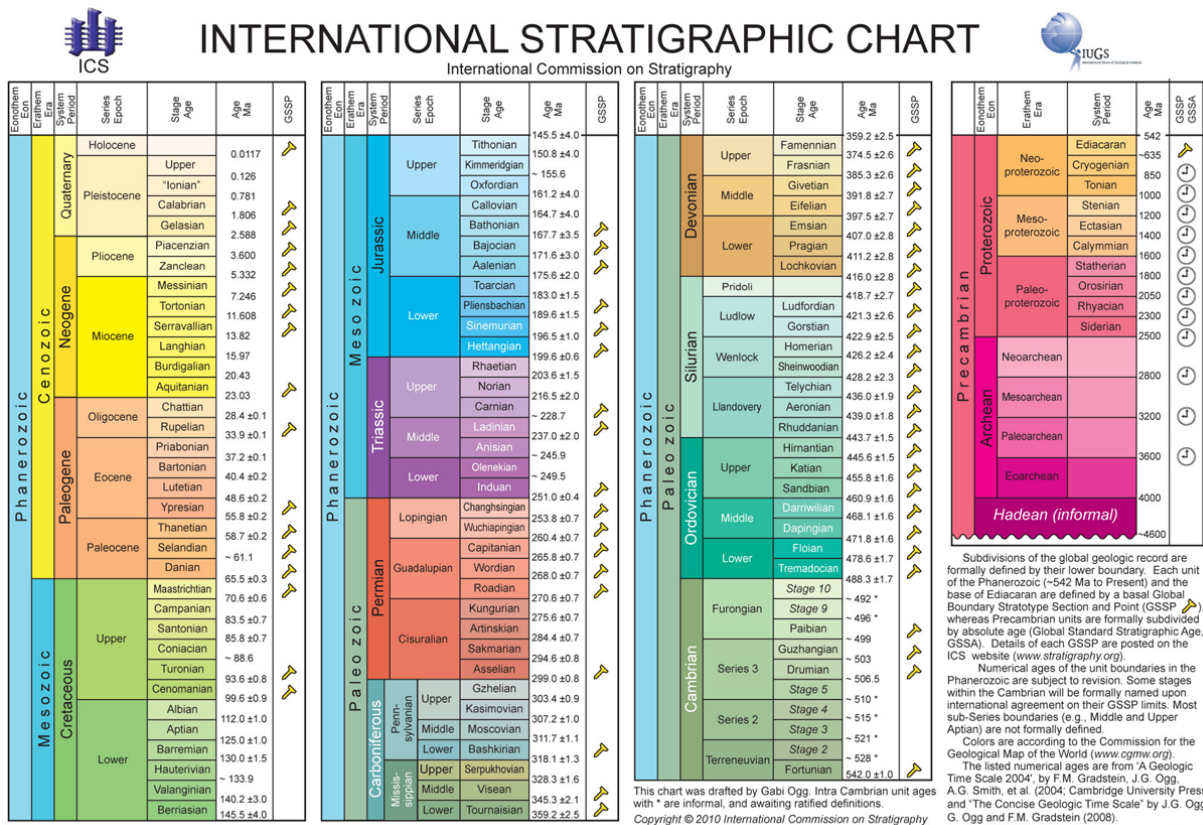
Package: lithostrat

Sub package: age

Description of geological age: Series/Epoch Based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Stage 2	~521 to ~528 Million years.
Fortunian	~528 to 542.0 ±1.0 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

Geological age: Period



AgePeriodQuaternary

Package: lithostrat

Sub package: age

Description of geological age: System/Period; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Holocene	recent to 0.0117 Million years.
Pleistocene	0.0117 to 2.588 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgePeriodNeogene

Package: lithostrat

Sub package: age

Description of geological age: System/Period; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Pliocene	2.588 to 5.332 Million years.
Miocene	5.332 to 23.03 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgePeriodPaleogene

Package: lithostrat

Sub package: age

Description of geological age: System/Period; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Oligocene	23.03 to 33.9 ±0.1 Million years.
Eocene	33.9 ±0.1 to 55.8 ±0.2 Million years.
Paleocene	55.8 ±0.2 to 65.5 ±0.3 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgePeriodCretaceous

Package: lithostrat

Sub package: age

Description of geological age: System/Period; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Upper Cretaceous	65.5 ±0.3 to 99.6 ±0.9 Million years.
Lower Cretaceous	99.6 ±0.9 to 145.5 ±4.0 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgePeriodJurassic

Package: lithostrat

Sub package: age

Description of geological age: System/Period; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Upper Jurassic	145.5 ±4.0 to 161.2 ±4.0 Million years.
Middle Jurassic	161.2 ±4.0 to 175.6 ±2.0 Million years.
Lower Jurassic	175.6 ±2.0 to 199.6 ±0.6 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgePeriodTriassic

Package: lithostrat

Sub package: age

Description of geological age: System/Period; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Upper Triassic	199.6 ±0.6 to ~228.7 Million years.
Middle Triassic	~228.7 to ~245.9 Million years.
Lower Triassic	~245.9 to 251.0 ±0.4 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgePeriodPermian

Package: lithostrat

Sub package: age

Description of geological age: System/Period; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Lopingian	251.0 ±0.4 to 260.4 ±0.7 Million years.
Guadalupian	260.4 ±0.7 to 270.6 ±0.7 Million years.
Cisuralian	270.6 ±0.7 to 299.0 ±0.8 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgePeriodCarboniferous

Package: lithostrat

Sub package: age

Description of geological age: System/Period; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Upper Pennsylvanian	299.0 ±0.8 to 307.2 ±1.0 Million years.
Middle Pennsylvanian	307.2 ±1.0 to 311.7 ±1.1 Million years.
Lower Pennsylvanian	311.7 ±1.1 to 318.1 ±1.3 Million years.
Upper Mississippian	318.1 ±1.3 to 328.3 ±1.6 Million years.
Middle Mississippian	328.3 ±1.6 to 345.3 ±2.1 Million years.
Lower Mississippian	345.3 ±2.1 to 359.2 ±2.5 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgePeriodDevonian

Package: lithostrat

Sub package: age

Description of geological age: System/Period; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Upper Devonian	359.2 ±2.5 to 385.3 ±2.6 Million years.
Middle Devonian	385.3 ±2.6 to 397.5 ±2.7 Million years.
Lower Devonian	397.5 ±2.7 to 416.0 ±2.8 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgePeriodSilurian

Package: lithostrat

Sub package: age

Description of geological age: System/Period; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Pridoli	416.0 ±2.8 to 418.7 ±2.7 Million years.
Ludlow	418.7 ±2.7 to 422.9 ±2.5 Million years.
Wenlock	422.9 ±2.5 to 428.2 ±2.3 Million years.
Llandovery	428.2 ±2.3 to 443.7 ±1.5 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgePeriodOrdovician

Package: lithostrat

Sub package: age

Description of geological age: System/Period; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Upper Ordovician	443.7 ±1.5 to 460.9 ±1.6 Million years.
Middle Ordovician	460.9 ±1.6 to 471.8 ±1.6 Million years.
Lower Ordovician	471.8 ±1.6 to 488.3 ±1.7 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgePeriodCambrian

Package: lithostrat

Sub package: age

Description of geological age: System/Period; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

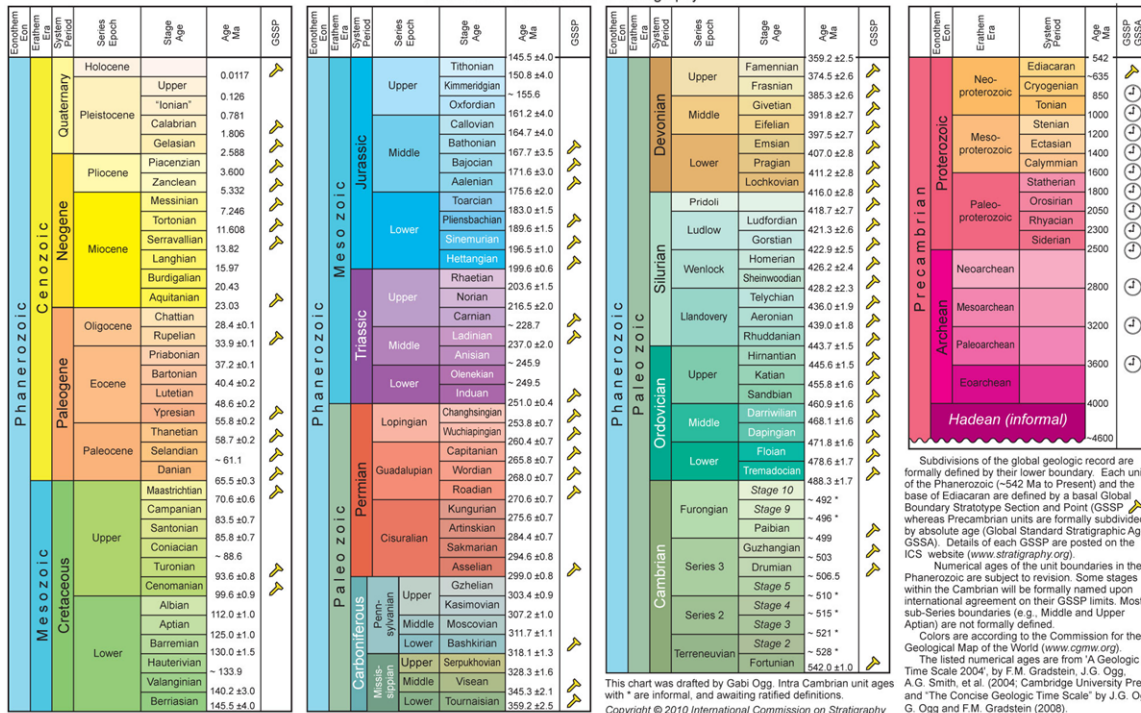
Name	Definition
Furongian	488.3 ±1.7 to ~499 Million years.
Series 3	~499 to ~510 Million years.
Series 2	~510 to ~521 Million years.
Terreneuvian	~521 to 542.0 ±1.0 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

Geological age: Era and Eon



INTERNATIONAL STRATIGRAPHIC CHART

International Commission on Stratigraphy



This chart was drafted by Gabi Ogg. Intra Cambrian unit ages with * are informal, and awaiting ratified definitions. Copyright © 2010 International Commission on Stratigraphy

AgeEraCenozoic

Package: lithostrat

Sub package: age

Description of geological age: Erothem/Era; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Quaternary	recent to 2.588 Million years.
Neogene	2.588 to 23.03 Million years.
Paleogene	23.03 to 65.5 ±0.3 Million years
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEraMesozoic

Package: lithostrat

Sub package: age

Description of geological age: Erothem/Era; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Cretaceous	65.5 ±0.3 to 145.5 ±4.0 Million years.
Jurassic	145.5 ±4.0 to 199.6 ±0.6 Million years.
Triassic	199.6 ±0.6 to 251.0 ±0.4 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEraPaleozoic

Package: lithostrat

Sub package: age

Description of geological age: Erothem/Era; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Permian	251.0 ±0.4 to 270.6 ±0.7 Million years.
Carboniferous	270.6 ±0.7 to 359.2 ±2.5 Million years.
Devonian	359.2 ±2.5 to 416.0 ±2.8 Million years.
Silurian	416.0 ±2.8 to 443.7 ±1.5 Million years.
Ordovician	443.7 ±1.5 to 488.3 ±1.7 Million years.
Cambrian	488.3 ±1.7 to 542.0 ±1.0 Million years.
unknown	The value is not known. No further specification of Stage/Age possible. All reasonable attempts should be made to determine the appropriate value.

AgeEraNeoproterozoic

Package: lithostrat

Sub package: age

Description of geological age: Erothem/Era; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Ediacaran	542.0 ±1.0 to ~635 Million years.
Cryogenian	~635 to 850 Million years.
Tonian	850 to 1000 Million years.
unknown	The value is not known. No further specification of System/Period possible. All reasonable attempts should be made to determine the appropriate value.

AgeEraMesoproterozoic

Package: lithostrat

Sub package: age

Description of geological age: Erothem/Era; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Stenian	1000 to 1200 Million years.
Ectasian	1200 to 1400 Million years.
Calymmian	1400 to 1600 Million years.
unknown	The value is not known. No further specification of System/Period possible. All reasonable attempts should be made to determine the appropriate value.

AgeEraPaleoproterozoic

Package: lithostrat

Sub package: age

Description of geological age: Erothem/Era; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Statherian	1600 to 1800 Million years.
Orosirian	1800 to 2050 Million years.
Rhyacian	2050 to 2300 Million years.
Siderian	2300 to 2500 Million years.
unknown	The value is not known. No further specification of System/Period possible. All reasonable attempts should be made to determine the appropriate value.

AgeEraNeoproterozoic

Package: lithostrat

Sub package: age

Description of geological age: Erothem/Era; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
unnamed	2500 to 2800 Million years.
unknown	The value is not known. No further specification of System/Period possible. All reasonable attempts should be made to determine the appropriate value.

AgeEraMesoproterozoic

Package: lithostrat

Sub package: age

Description of geological age: Erothem/Era; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
unnamed	2800 to 3200 Million years.
unknown	The value is not known. No further specification of System/Period possible. All reasonable attempts should be made to determine the appropriate value.

AgeEraPaleoproterozoic

Package: lithostrat

Sub package: age

Description of geological age: Erothem/Era; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
unnamed	3200 to 3600 Million years.
unknown	The value is not known. No further specification of System/Period possible. All reasonable attempts should be made to determine the appropriate value.

AgeEraEoarchean

Package: lithostrat

Sub package: age

Description of geological age: Erothem/Era; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
unnamed	3600 to 4000 Million years.
unknown	The value is not known. No further specification of System/Period possible. All reasonable attempts should be made to determine the appropriate value.

AgeEonPhanerozoic

Package: lithostrat

Sub package: age

Description of geological age: Eontherm/Eon; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Cenozoic	recent to 65.5 ±0.3 Million years.
Mesozoic	65.5 ±0.3 to 251.0 ±0.4 Million years.
Paleozoic	251.0 ±0.4 to 542.0 ±1.0 Million years.
unknown	The value is not known. No further specification of System/Period possible. All reasonable attempts should be made to determine the appropriate value.

AgeEonProterozoic

Package: lithostrat

Sub package: age

Description of geological age: Eontherm/Eon; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Neoproterozoic	542.0 ±1.0 to 1000 Million years.
Mesoproterozoic	1000 to 1600 Million years.
Paleoproterozoic	1600 to 2500 Million years.
unknown	The value is not known. No further specification of System/Period possible. All reasonable attempts should be made to determine the appropriate value.

AgeEonArchean

Package: lithostrat

Sub package: age

Description of geological age: Eontherm/Eon; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Neoarchean	2500 to 2800 Million years.
Mesoarchean	2800 to 3200 Million years.
Paleoarchean	3200 to 3600 Million years.
Eoarchean	3600 to 4000 Million years.
unknown	The value is not known. No further specification of System/Period possible. All reasonable attempts should be made to determine the appropriate value.

AgeEonHadean

Package: lithostrat

Sub package: age

Description of geological age: Eontherm/Eon; based on International Stratigraphic Chart, 2010, International Commission on Stratigraphy.

Name	Definition
Hadean (informal)	4000 to ~4600 Million years.
unknown	The value is not known. No further specification of System/Period possible. All reasonable attempts should be made to determine the appropriate value.