

**Fossils:** In the lower part of the section fossil trees are intercalated in the basal portion identified as *Dadoxylon schrollianum*; also, spores have rarely been found.

**Origin, facies:** See entry Gröden Formation in Carnic Alps.

**Chronostratigraphic age:** Late Middle Permian due to reworked pebbles of quartzporphyritic composition presumably derived from the Bozen Quartzporphyry of the Dolomites.

**Biostratigraphy:** -

**Thickness:** Up to 350 meters.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Laas Formation and Gailtal Crystalline Complex, respectively.

**Overlying unit(s):** Alpinen Buntsandstein and Werfen Formation of the Triassic sequence.

**Lateral unit(s):** -

**Geographic distribution:** In the Gailtal Alps and Lienz Dolomites ("Drauzug").

**Remarks:** -

**Complementary references:** -

## Nördliche Kalkalpen / Northern Calcareous Alps

The thick Mesozoic sequences of the Northern Calcareous Alps are resting on predominantly clastic (Upper) Permian sediments. A primary (transgressive) contact to the underlying Greywacke Zone (e.g., Leobner Hut area near Eisenerz) is only rarely known due to overprint by Alpidic tectonic movements. In some cases a coherent connection between Permian "continental detritic" deposits and a Mesozoic cover is not traceable since they feature tectonic hangingwall boundaries (e.g., Silbersberg Nappes in NE Styria and Lower Austria, and Veitsch Nappe south of the Mürz Valley; NEUBAUER et al., 1994).

### Alpinen Verrucano / Alpine Verrucano

HANS P. SCHÖNLAUB

**Validity:** Invalid.

**Remarks:** The term "Alpinen Verrucano" was introduced by TOLLMANN (1962). TOLLMANN (1972: p. 83) defined this unit as coarse to fine detritic, weakly bedded continental Permian series deposited in an arid climate at the onset of the Alpine sedimentary cycle. Interbedded are acid volcanics and its debris. According to TOLLMANN (1972) and RIEHL-HERWIRSCH (1972) the "Alpinen Verrucano" should not be mixed with the "Verrucano Alpino" of ACCORDI (1956) which is restricted to the Lower Permian conglomerates overlying the Variscan sequence. Hence, RIEHL-HERWIRSCH (1972: p. 104) suggested to abandon this name and not to use it in further descriptions of tentatively similar rock sequences.

**Type area:** Not defined.

**Type section:** No type section defined.

**Reference section(s):** -

**Derivation of name:** After Castell Verruca in the Monte Pisani area (Tuscany/Italy).

**Synonyms:** -

**Lithology:** Mainly red, partly green, grey or brown coarse to fine grained conglomerates, sandstones and volcaniclastics.

**Fossils:** Rare and very badly preserved plant remains.

**Origin, facies:** Continental redbeds.

**Chronostratigraphic age:** Permian.

**Biostratigraphy:** -

**Thickness:** Up to 1,000 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Various units of the Variscan Alpine sequence.

**Overlying unit(s):** Triassic sequences of the Northern Calcareous Alps.

**Lateral unit(s):** -

**Geographic distribution:** The Alpine Verrucano occurs at the base of the Alpine orogenic cycle within the Austroalpine nappe system.

**Remarks:** -

**Complementary references:** -

### Präbichl-Formation / Präbichl Formation

HANS P. SCHÖNLAUB

**Validity:** Invalid; the term was introduced by SCHWINNER (1929) for the clastic post-Variscan cover overlying Devonian limestones between Leobner Hütte (1,582 m) and the mountain Polster (1,910 m) northeast of Präbichl Pass, Styria, at the base of the Northern Calcareous Alps.

**Type area:** ÖK50-UTM, map sheet 4215 Eisenerz (ÖK50-BMN, map sheet 101 Eisenerz), area between Polster Kar, Leobner Hütte and peak of Polster northeast of Präbichl Pass, Styria.

**Type section:** Northeastern directed section between "Knappensteig" west of Leobner Hütte and Hirschegg Sattel (1699 m) (N 47°32'00" / E 14°58'14").

**Reference section(s):** -

**Derivation of name:** After Präbichl Pass (1,226 m) in the Eisenerz Alps (Styria).

**Synonyms:** Prebichlschichten, Präbichlkonglomerat (SCHWINNER, 1929; CORNELIUS, 1936); Werfener Basisbrekzie (HIESSLEITNER, 1931, 1935); Basiskonglomerat der Werfener Schichten (HABERFELNER, 1935); Präbichlschichten (KRAINER & STINGL, 1986).

**Lithology:** Generally, the predominantly red clastic sequence starts with an up to 50 m thick limestone conglomerate containing pebbles from the underlying strata (limestones, siderite, ankerite). This basal conglomerate and breccia is succeeded by interbedded lenses of quartz-rich conglomerates and pink siltstones which grade into more than 50 m thick sandstones alternating with mudstones and siltstones (SOMMER, 1972). In the quartz-rich conglomerate chert clasts occur quite frequently and are derived from the reworked Devonian to Carboniferous sequence

below. The overlying intra-Permian volcanics, however, are missing in this sequence.

**Fossils:** No fossils have yet been found in this presumably continental sequence except some reworked conodonts in limestones pebbles of the conglomerates at the base.

**Origin, facies:** Sedimentologically, the Präbichl Formation represents three fining-upward megasequences with alluvial fan deposits at the base suggesting a braided alluvial channel system and a distal sheet flood facies (KRAINER & STINGL, 1986).

**Chronostratigraphic age:** Lower Permian (?).

**Biostratigraphy:** -

**Thickness:** At the type locality some 160 m, at other locations 50 to 100 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** The transgressive post-Variscan cover unconformably overlies different lithologies ranging from the Carboniferous Eisenerz Formation to Devonian limestones and the Upper Ordovician Blasseneck Porphyry (SCHÖNLAUB, 1982a).

**Overlying unit(s):** Werfen Formation (Triassic).

**Lateral unit(s):** -

**Geographic distribution:** According to KRAINER & STINGL (1986) the transgressive sequence at the base of the Northern Calcareous Alps in Salzburg (Leogang) and Tyrol (Wörgl) displays similar lithologies like the Präbichl Formation of the type area. A direct correlation, however, is not possible due to the lack of volcanics characterizing the intra-Permian volcanic episode and the break in the sequence in the type area obliterating the transition to the Werfen Formation. Similarly, to the east the Präbichl Formation can be recognized as far as the Semmering area although the abundance of basal breccias and conglomerates seems to be replaced by smaller-sized gravel bearing alluvial fan deposits (CORNELIUS, 1936, 1937; CLAR, 1972; SOMMER, 1972).

**Remarks:** -

**Complementary references:** -

### Kristbergschichten / Kristberg Beds

HANS P. SCHÖNLAUB

**Validity:** Invalid; the term was introduced by VAN AMEROM et al. (1982: p. 287) for a tripartite clastic sequence which unconformably overlies crystalline rocks of the Silvretta Phyllitgneissic Nappe in the Montafon region of Vorarlberg.

**Type area:** ÖK50-UTM, map sheet 1230 Bludenz (ÖK50-BMN, map sheet 142 Schruns), Außerkristberg north of Silbertal near Schruns, Vorarlberg (VAN AMEROM et al., 1982).

**Type section:** Creek between Bartholomäberg and Kristberg ("Profil Kristberg") of VAN AMEROM et al., 1982 (N 47°06'15" / E 09°57'49").

**Reference section(s):** -

**Derivation of name:** After locality Kristberg northeast of village Schruns in the Province of Vorarlberg.

**Synonyms:** -

**Lithology:** Clastic fluviomarine fining-upward megasequences consisting at the base of poorly sorted conglomerates

and breccias with clasts of the underlying basement rocks up to 30 cm diameter, succeeded by an alternation of greyish laminated and partly bioturbated sandstones and bedded and laminated siltstones with intercalations of up to 2 m thick blackish carbonate beds and capped by reddish alluvial fan deposits.

**Fossils:** Plants in the clastic beds and calcareous algae, ostracods, foraminifers and fish remains in the limestone beds.

**Origin, facies:** The lithology and fossil content of the whole sequence indicates short lasting marine incursions interrupted by a lacustrine environment favouring vegetation and the formation of caliches and paleosols.

**Chronostratigraphic age:** Upper Carboniferous (Stephanian) to Lower Permian (?).

**Biostratigraphy:** *Callipteris* sp. group *conferta*, *C. flabelliformis*, *Lebachia piniformis*, *L. parvifolia*, *Ernestiodendrum filiciformis*, *Odontopteris* sp. and others.

**Thickness:** At the type locality some 70 meters.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Crystalline Complex of Silvretta (granite gneisses).

**Overlying unit(s):** Gröden Formation.

**Lateral unit(s):** -

**Geographic distribution:** The Kristberg Formation is restricted to the Province of Vorarlberg and distributed between the Rellstal in the west and the Klostertal in the east extending laterally over some 15 km.

**Remarks:** -

**Complementary references:** -

### Silbersberg-Formation / Silbersberg Formation

FRANZ NEUBAUER

**Validity:** Invalid; first nomination by CORNELIUS (1952b: p. 51; "Silbersbergserie") with later descriptions by LESKO (1960), NIEVOLL (1984) and NEUBAUER et al. (1994).

**Type area:** ÖK50-UTM, map sheet 4212 Müzzzuschlag (ÖK50-BMN, map sheet 105 Neunkirchen), Eastern Greywacke Zone near Gloggnitz, Lower Austria.

**Type section:** The type locality of the Silbersberg Formation is at the southern slope of the Silbersberg near Gloggnitz (Lower Austria).

**Reference section(s):** -

**Derivation of name:** After mount Silbersberg near Gloggnitz (Lower Austria).

**Synonyms:** Silbersbergschichten (CORNELIUS, 1952a); Silbersbergkonglomerat (CORNELIUS, 1952a); Silbersbergserie (CORNELIUS, 1952b); Silbersbergschiefer (NIEVOLL, 1984).

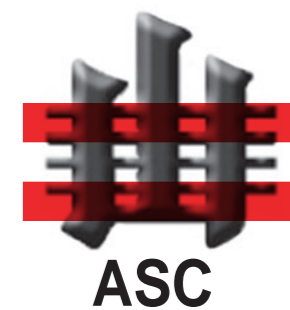
**Lithology:** The Silbersberg Formation mainly comprises quartz-rich greyish-greenish metaconglomerates and quartzphyllites of variable composition ranging from quartz-rich to mica-rich phyllites interlayered with quartz-rich metaconglomerates. The areal extent was mapped by NEUBAUER et al. (1994). All rocks are metamorphosed in lower greenschist facies metamorphic conditions.

**Fossils:** -

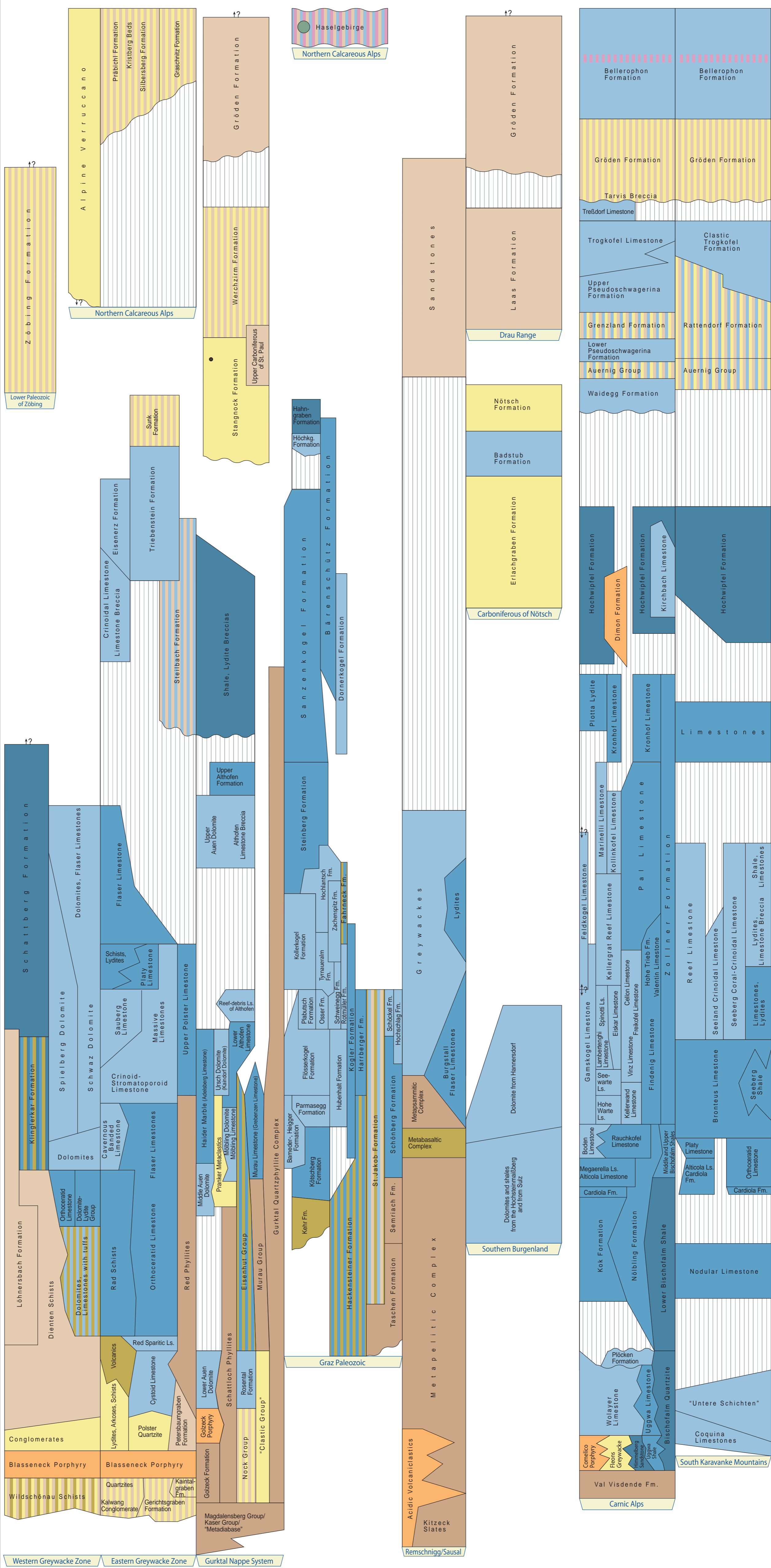
# Austrian Stratigraphic Chart 2004 - Paleozoic

(sedimentary successions)

Austrian Stratigraphic Commission



ERA	SYSTEM / PERIOD / SERIES / EPOCH	STAGE / AGE	DURATION Ma	Global Classification					
				ERATHM / ERA	SYSTEM / PERIOD / SERIES / EPOCH				
PALEOZOIC	PERMIAN	CHANGHSINGIAN / Dorashanian	251	PERMIAN	MID PERMIAN / GUADALUPIAN / LOPINGIAN				
		WUCHIAPINGIAN / Dufuflian	255						
		CAPITANIAN	260						
		WORDIAN	265						
		ROADIAN	270						
		PERMIAN	LOWER PERMIAN / CISURALIAN			KUNGURIAN	275		
						ARTINSKIAN	280		
						SAKMARIAN	285		
						ASSELIAN	290		
		PERMIAN	TRIAS			GZHELIAN	295	TRIAS	U. CARBONIFEROUS / PENNSYLVANIAN
KASIMOVIAN	300								
MOSKOVIAN	305								
BASHKIRIAN	310								
TRIAS	LOWER CARBONIFEROUS / MISSISSIPPIAN			SERPUKHOVIAN	315				
				VISEAN	320				
				TOURNAISIAN	325				
PERMIAN	DEVONIAN			FAMENNIAN	350	DEVONIAN	UPPER DEVONIAN		
				FRASNIAN	355				
				GIVETIAN	360				
		EIFELIAN	365						
		DEVONIAN	LOWER DEVONIAN	EMSIAN	370				
				LOCHKOVIAN	375				
		PERMIAN	DEVONIAN	LUDFORDIAN / GORSTIAN	380			DEVONIAN	MIDDLE DEVONIAN
				HOMERIAN / SHEINWOOD	385				
				TELYCHIAN	390				
				AERONIAN	395				
RHUDDANIAN	400								
DEVONIAN	LOWER DEVONIAN			PRAGIAN	405				
				LOCHKOVIAN	410				
PERMIAN	DEVONIAN			WEN-LUD-LOCK / LOW	415	DEVONIAN	LOWER DEVONIAN		
				HOMERIAN / SHEINWOOD	420				
				TELYCHIAN	425				
		AERONIAN	430						
		RHUDDANIAN	435						
		DEVONIAN	LOWER DEVONIAN	PRAGIAN	440				
				LOCHKOVIAN	445				
		PERMIAN	DEVONIAN	HIRNANTIAN	450			DEVONIAN	UPPER ORDOVICIAN
				DARRIWILIAN	455				
				TREMA-DOCIAN	460				
PAIBIAN	465								
DEVONIAN	LOWER DEVONIAN			PRAGIAN	470				
				LOCHKOVIAN	475				
PERMIAN	DEVONIAN			WEN-LUD-LOCK / LOW	480	DEVONIAN	MIDDLE ORDOVICIAN		
				HOMERIAN / SHEINWOOD	485				
				TELYCHIAN	490				
				AERONIAN	495				
		RHUDDANIAN	500						
		DEVONIAN	LOWER DEVONIAN	PRAGIAN	505				
				LOCHKOVIAN	510				
		PERMIAN	DEVONIAN	WEN-LUD-LOCK / LOW	515			DEVONIAN	UPPER ORDOVICIAN
				HOMERIAN / SHEINWOOD	520				
				TELYCHIAN	525				
AERONIAN	530								
RHUDDANIAN	535								
DEVONIAN	LOWER DEVONIAN			PRAGIAN	540				
				LOCHKOVIAN	545				



- Legend**
- pelagic, offshore, siliciclastic
  - pelagic, nearshore, calcareous
  - shallow marin, neritic
  - terrestrial-continental, coarse clastic
  - terrestrial-continental, fine clastic
  - evaporite (chloride, sulphate)
  - rhyolite, dacite
  - (basaltic) andesite, trachyandesite
  - basalt
  - phyllite
  - mixed-facies (in corresponding colors)
  - coal (may include several seams)
  - ? position/age doubtful/controversial
  - | equal units
  - \ older unit left \ younger unit right
  - hiatus
  - unconformity
  - GSSP
  - Fm. Formation
  - Ls. Limestone

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