

WANN, 1929); Chloritschiefer des Bergler Kogel (FLÜGEL, 1957); Stanzberg Serie (GRÄF, 1958); erzführende Serie (WEBER, 1990); Arzberg Schichten (EBNER & WEBER, 1978); Waldstein-Formation (FRITZ, 1991).

**Lithology:** Alkaline volcanics; sometimes intercalations of dark coloured shales.

**Fossils:** -

**Origin, facies:** -

**Chronostratigraphic age:** Presumably pre-Ludlow.

**Biostratigraphy:** -

**Thickness:** Several hundreds of meters.

**Lithostratigraphically higher rank unit:** Peggau Group (FLÜGEL, 2000).

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Successions of the Passail Group.

**Overlying unit(s):** Semriach Formation, ?Schönberg Formation.

**Lateral unit(s):** -

**Geographic distribution:** Styria, highland in the surroundings of Graz; ÖK50-BMN, map sheets 133 Leoben, 134 Passail, 162 Köflach, 163 Voitsberg, 164 Graz.

**Remarks:** -

**Complementary references:** -

### St. Jakob-Formation / St. Jakob Formation

BERNHARD HUBMANN

**Validity:** Valid; first description and nomination by THALHAMMER (1982: "St. Jakob-Gruppe"); formalized by FLÜGEL (2000: p. 11; "St. Jakob-Formation"); change of name into St. Jakob-Formation by EBNER et al. (2000).

**Type area:** ÖK50-UTM, map sheet 4223 Weiz (ÖK50-BMN, map sheet 134 Passail).

**Type section:** Not defined, but according to FLÜGEL (2000) the type region is in the vicinity of St. Jakob in Breitenau (N 47°23'05" / E 15°26'11").

**Reference section(s):** -

**Remarks:** THALHAMMER (1982) distinguished within the "St. Jakob-Group" three units which were adopted by FLÜGEL (2000) as members of the St. Jakob Formation (see below).

**Derivation of name:** After the village St. Jakob, 52 km north of Graz.

**Synonyms:** Carbonschichten der Breitenau (VACEK, 1891); partly: Karbon der Breitenau (FLÜGEL, 1953a); Magnesit der Breitenau (H. FLÜGEL, 1975).

**Lithology:** Limestones, siliciclastics and alkaline metavolcanites.

**Fossils:** Conodonts.

**Origin, facies:** Pelagic environment.

**Chronostratigraphic age:** Llandovery–Givetian; does not reach up into the Eifelian as indicated in the ASC 2004.

**Biostratigraphy:** *costatus* Zone and *varcus* Zone.

**Thickness:** Up to 280 m.

**Lithostratigraphically higher rank unit:** Laufnitzdorf Group.

**Lithostratigraphic subdivision:** FLÜGEL (2000) discerned three members:

Aibl Member: Limestones, sandstones, alkaline volcanics; about 180 m in thickness.

Breitenau Member: Magnesites and dolomites; up to 100 m in thickness.

Schattleiten Member: Succession of limestones, argillaceous shales and silt/sandstones; 80–100 m in thickness.

**Underlying unit(s):** Tectonic contact to Kogler Formation.

**Overlying unit(s):** Tectonic contact to Kogler Formation.

**Lateral unit(s):** Unknown because of tectonic boundaries.

**Geographic distribution:** Styria, highland in the surroundings of Graz; ÖK50-UTM, map sheet 4223 Weiz (ÖK50-BMN, map sheet 134 Passail).

**Remarks:** -

**Complementary references:** GOLLNER et al. (1982), FLÜGEL & NEUBAUER (1984).

### Semriach-Formation / Semriach Formation

BERNHARD HUBMANN

**Validity:** Valid; first description by CLAR (1874: "Semriacher Schiefer"); formalized by FLÜGEL (2000: p. 47; Semriacher-Phyllit-Formation); change of name into Semriach-Formation by EBNER et al. (2001).

**Type area:** ÖK50-UTM, map sheet 4223 Weiz (ÖK50-BMN, map sheet 164 Graz).

**Type section:** No type section defined, but FLÜGEL (2000) selected a type region at Windhofkogel (1,064 m) east of Semriach (N 47°13'28" / E 15°26'09").

**Reference section(s):** -

**Remarks:** Tectonic position of the formation and its relationship to the Rannach Nappe or Schöckel Nappe respectively is not clarified at the moment.

**Derivation of name:** After Semriach, a small town north-east of Peggau-Deutschfeistritz, approx. 30 km north of Graz.

**Synonyms:** Semriacher Schiefer (CLAR, 1874); partly: Untere Schiefer (HERITSCH, 1906); Phyllite von Semriach and Phyllite von Passail (SCHWINNER, 1925); Serie der Phyllite (SEEWANN, 1929); Schiefer der Passailer Mulde (H. FLÜGEL, 1975).

**Lithology:** Sericite phyllites with insertions of green schists; marbles.

**Fossils:** -

**Origin, facies:** -

**Chronostratigraphic age:** Presumably pre-Devonian.

**Biostratigraphy:** -

**Thickness:** Presumably several hundreds of meters.

**Lithostratigraphically higher rank unit:** Passail Group (FLÜGEL, 2000).

**Lithostratigraphic subdivision:** FLÜGEL (2000) discerned two members:

Hundsberg Member: Coarse grained quartzites and quartzitic slates; 10 to 50 m in thickness.

Rötschgraben Member: White to bluish-white fine-grained marbles; few meters in thickness.

**Underlying unit(s):** In its southern outcropping area the formation shows a tectonic contact to green schists of the Taschen Formation. North of Plenzengreith a marble ho-

rizon separates the Semriach Formation from the St. Radegund Crystalline. In the area of St. Kathrein the Hochschlag Formation underlies the Semriach Formation.

**Overlying unit(s):** Schönberg Formation and Schöckel Formation (tectonic contact).

**Lateral unit(s):** Not known because of tectonic boundaries.

**Geographic distribution:** Styria, highland in the surroundings of Graz; ÖK50-BMN, map sheets 134 Passail, 135 Birkfeld, 164 Graz, 165 Weiz.

**Remarks:** -

**Complementary references:** -

### Schönberg-Formation / Schönberg Formation

BERNHARD HUBMANN

**Validity:** Valid; re-nomination of "Arzberg Schichten" (see FLÜGEL, 2000: p. 39), formalized by FLÜGEL (2000: p. 39).

**Type area:** ÖK50-UTM, map sheet 4223 Weiz (ÖK50-BMN, map sheet 134 Passail).

**Type section:** No type section defined, but FLÜGEL (2000) selected a type region at Schönberg, northeast of Arzberg; ÖK50-BMN, map sheet 164 Graz (N 47°15'53" / E 15°31'58").

**Reference section(s):** -

Remarks: Characteristic of the formation is the synsedimentary lead-zinc-silver-barite-mineralization.

**Derivation of name:** After "Schönberg", a municipality and hill northeast of Arzberg, approx. 35 km north of Graz.

**Synonyms:** Partly: Grenzphyllit (CLAR, 1874); untere Schiefer (HERITSCH, 1917c); Graphitphyllitserie (SEEWANN, 1929); Tonschiefer-Fazies (FLÜGEL & MAURIN, 1952); Karbon von Waldstein (FLÜGEL, 1953a); Striatoporen-Kalk (H. FLÜGEL, 1975); dunkle, pigmentreiche Gesteine ("Schwarzschiefer") (WEBER, 1977); höhere karbonat- und kohlenstoffreiche Serie (WEBER, 1977); tiefere, grüngesteinbe-tonte Serie (WEBER, 1977); Arzberg Schichten (EBNER & WEBER, 1978); erzführende Serie (WEBER, 1990).

**Lithology:** Predominantly black shales and darkgrey to black limestones with high amounts of clay.

**Fossils:** Very rare and badly preserved tabulate corals (mostly thamnoporidae).

**Origin, facies:** Organic carbon-rich sediments of a euxinic basin.

**Chronostratigraphic age:** Presumably Lochkovian–Emsian/Eifelian.

**Biostratigraphy:** -

**Thickness:** Probably more than 300 m.

**Lithostratigraphically higher rank unit:** Peggau Group (FLÜGEL, 2000).

**Lithostratigraphic subdivision:** FLÜGEL (2000) distinguished four facial types which were considered as members:

Kreuzwirt Member: Particularly dark coloured limestones and dolomites that may be intercalated with black shales; thickness up to 200 m.

Rabenstein Member: Dark grey crinoidal limestones; 30 to 50 m in thickness.

Rauchenberg Member: Carbonatic black shales; probably more than 300 m in thickness.

Weizbauer Member: Black argillaceous shales with intercalated beds of limestones and quartzites; probably between 100 and 200 m in thickness.

Pfaffenkogel Member: White biolaminated dolomites with birdseye-structures, thick bedded dolomites; up to 200 m in thickness.

**Underlying unit(s):** Presumably Semriach Formation and Taschen Formation.

**Overlying unit(s):** Schöckel Formation (tectonic contact).

**Lateral unit(s):** -

**Geographic distribution:** Styria, highland in the surroundings of Graz; ÖK50-BMN, map sheets 133 Leoben, 134 Passail, 135 Birkfeld, 163 Voitsberg, 164 Graz, 165 Weiz.

**Remarks:** -

**Complementary references:** RANTITSCH et al. (1998), EBNER et al. (2000).

### Hochschlag-Formation / Hochschlag Formation

BERNHARD HUBMANN

**Validity:** Valid; first description by E. FLÜGEL (1957: "Hochschlagserie" and "Hochschlagkalke"); formalized by FLÜGEL (2000: p. 43; Hochschlag-Formation).

**Type area:** ÖK50-UTM, map sheet 4223 Weiz (ÖK50-BMN, map sheet 134 Passail).

**Type section:** No type section defined, but FLÜGEL (2000) selected a type region at Hochschlag, northeast of St. Erhard (Breitenau); ÖK50-UTM, map sheet 4223 Weiz (ÖK50-BMN, map sheet 134 Passail) (N 47°24'11" / E 15°30'17").

**Reference section(s):** -

**Derivation of name:** After Hochschlag (1,580 m), a mountain northeast of the Breitenau valley, approx. 55 km north of Graz.

**Synonyms:** Partly: Kalkschieferstufe i. A. (WAAGEN, 1937); Kalkzug der Brandlucke (NEUBAUER, 1982).

**Lithology:** Predominantly platy to slaty limestones with intercalations of black argillaceous shales, calcareous phyl-lites, whitish dolomites and metavolcanites.

**Fossils:** Rare rugose and tabulate corals.

**Origin, facies:** Shallow marine offshore environment.

**Chronostratigraphic age:** Presumably Emsian–Eifelian or Givetian.

**Biostratigraphy:** -

**Thickness:** More than 200 m.

**Lithostratigraphically higher rank unit:** Peggau Group (FLÜGEL, 2000).

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** ?Weizbauer Member of the Schönberg Formation.

**Overlying unit(s):** Dornerkogel Formation (tectonic contact).

**Lateral unit(s):** -

**Geographic distribution:** Styria, highland in the surroundings of Graz; ÖK50-BMN, map sheets 134 Passail, 165 Weiz.

**Remarks:** -

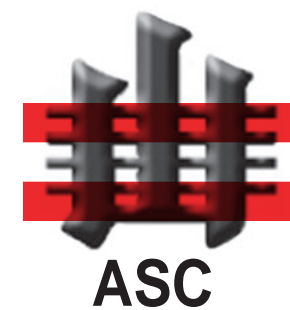
**Complementary references:** -



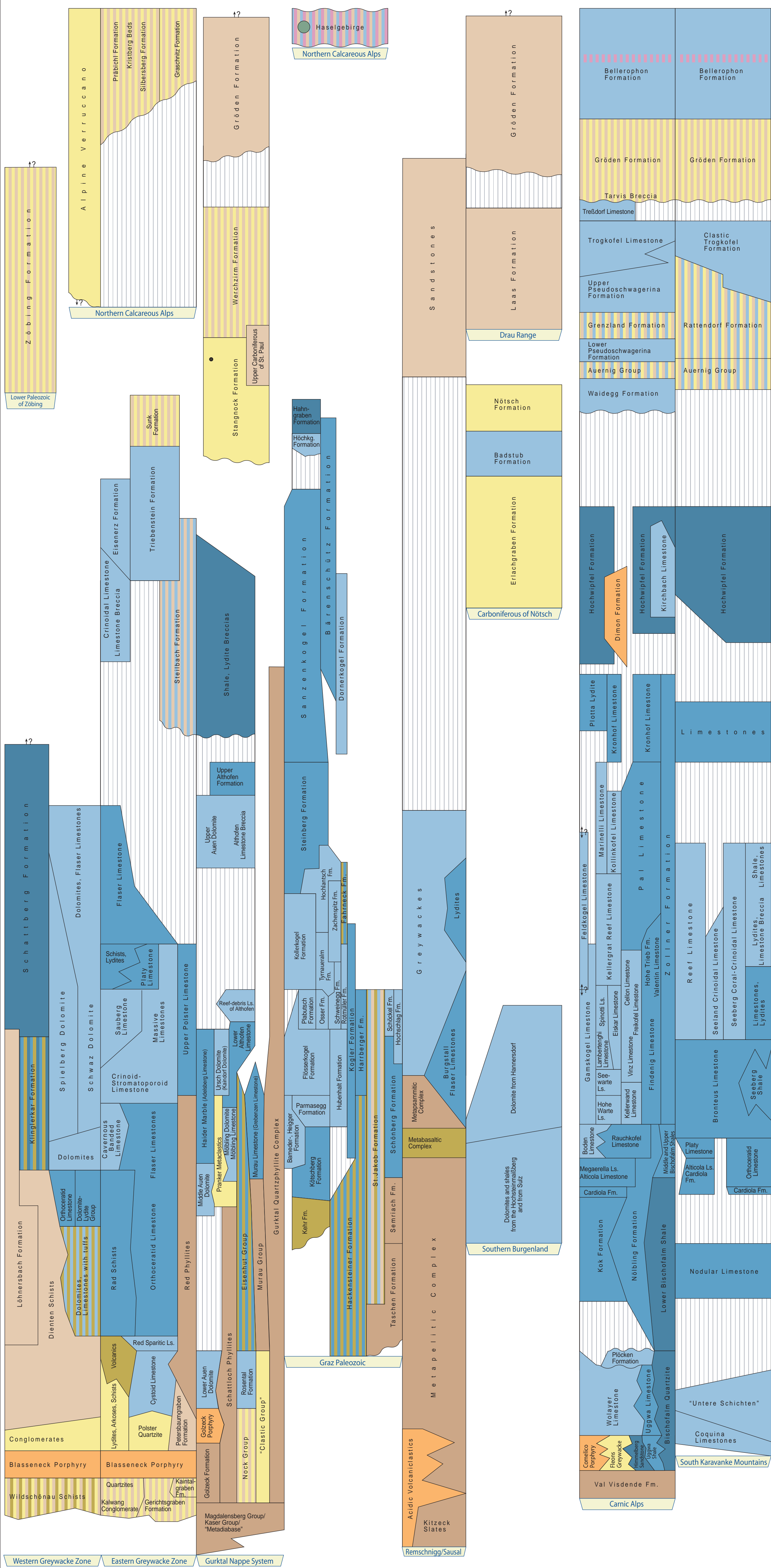
# Austrian Stratigraphic Chart 2004 - Paleozoic

(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 / Dzhulfian	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						
		EMSIAN	370						
		DEVONIAN	LOWER DEVONIAN	LOCHKOVIAN	375				
				PRAGIAN	380				
				Zlichovian	385				
				Dalejian	390				
		PERMIAN	DEVONIAN	LUDFORDIAN / GORSTIAN	395			DEVONIAN	MIDDLE DEVONIAN
HOMERIAN / SHEINWOOD	400								
TELYCHIAN	405								
AERONIAN	410								
RHUDDANIAN	415								
DEVONIAN	UPPER ORDOVICIAN			HIRNANTIAN	420				
				DARRIWILIAN	425				
				TREMACIAN	430				
				PAIBIAN	435				
PERMIAN	CAMBRIAN			WEN-LUD-LOCK	440	CAMBRIAN	UPPER CAMBRIAN		
		WEN-LUD-LOCK	445						
		WEN-LUD-LOCK	450						
		WEN-LUD-LOCK	455						
		WEN-LUD-LOCK	460						
		CAMBRIAN	MIDDLE CAMBRIAN	WEN-LUD-LOCK	465				
				WEN-LUD-LOCK	470				
				WEN-LUD-LOCK	475				
				WEN-LUD-LOCK	480				
		CAMBRIAN	LOWER CAMBRIAN	WEN-LUD-LOCK	485				
WEN-LUD-LOCK	490								
WEN-LUD-LOCK	495								
WEN-LUD-LOCK	500								
CAMBRIAN	LOWER CAMBRIAN	WEN-LUD-LOCK	505						
		WEN-LUD-LOCK	510						
		WEN-LUD-LOCK	515						
		WEN-LUD-LOCK	520						
CAMBRIAN	LOWER CAMBRIAN	WEN-LUD-LOCK	525						
		WEN-LUD-LOCK	530						
		WEN-LUD-LOCK	535						
		WEN-LUD-LOCK	540						



- 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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Cutout and English adaptation of the "Die Stratigraphische Tabelle von Österreich 2004": Geological Survey of Austria

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