

Lithology: At the base coarse grained massive sandstones frequently alternating with argillaceous shales and phyllites. Sandstones are mostly developed as light colored arkoses, feldspar-rich fine-grained grey sandstones and light-colored quartz-sandstones.

Fossils: -

Origin, facies: Probably sediments of a marginal marine basin.

Chronostratigraphic age: ?Middle–Upper Ordovician.

Biostratigraphy: -

Thickness: Strong variations; up to 1,000 m.

Lithostratigraphically higher rank unit: -

Lithostratigraphic subdivision: -

Underlying unit(s): Magdalensberg Group, Kaser Group.

Overlying unit(s): Murau Group, ?Eisenhut Group.

Lateral unit(s): ?Nock Group.

Geographic distribution: ÖK50-UTM, map sheet 3106 Radenthein (ÖK50-BMN, map sheets 183 Radenthein, 184 Ebene Reichenau).

Remarks: -

Complementary references: SCHÖNLAUB & HEINISCH (1993).

Murau-Gruppe / Murau Group

THOMAS J. SUTTNER

Validity: Invalid; the name Murau-Gruppe was introduced by NEUBAUER (1979: p. 484).

Type area: ÖK50-UTM, map sheets 3230 Tamsweg, 4225 Murau (ÖK50-BMN, map sheets 158 Stadl, 159 Murau).

Type section: -

Reference section(s): Area between Bodendorfer Ochsenberg and Rosenkranzhube south of St. Lorenzen; the best outcropping section is found close to the Lorenz creek north of Konrad farmstead in the area of Georgenberg (N 47°05'38" / E 14°05'31"); Birkleitenkogel (NEUBAUER, 1979: Fig. 10, p. 484).

Derivation of name: After the town Murau.

Synonyms: Phyllitische Glimmerschiefer (THURNER, 1935); Phyllonite [partim] (THURNER, 1935).

Lithology: Fine grained micaceous shale, graphitic micaceous shale containing sometimes garnet, phyllites, siliceous shale, phyllites with carbonate lenses, quartzite beds, siliceous shale with lydites intercalated, grey bedded dolomite, grey laminated micaceous shale.

Fossils: Conodonts.

Origin, facies: The depositional environment suggests an euxinic basin with intercalations of calciturbidites (NEUBAUER, 1984: p. 57).

Chronostratigraphic age: Llandovery–Ludlow.

Biostratigraphy: *sagitta* and *crispa* conodont zones.

Thickness: > 200 m.

Lithostratigraphically higher rank unit: -

Lithostratigraphic subdivision: -

Underlying unit(s): "Clastic Group" (conformable contact).

Overlying unit(s): Murau Limestone (Greibenzen Limestone) (conformable contact).

Lateral unit(s): Eisenhut Group; "Gurktal Quartzphyllite Complex".

Geographic distribution: Styria, surrounding of Murau between Bodendorfer Ochsenberg and Lorenzer Bach (NEUBAUER, 1979: Figs. 1, 10, p. 484).

Remarks: NEUBAUER (1979) distinguished 3 groups within the Lower Paleozoic sequence of the Gurktal Nappe: the Auen Group, Pranker Group and Murau Group. The Murau Group consists of several epimetamorphic units which are not discriminated into distinctive formations until now (compare Text-Fig. 3).

Complementary references: THURNER (1958), SCHÖNLAUB (1979, 1992).

Murau-Kalk (Greibenzenkalk) / Murau Limestone (Greibenzen Limestone)

BERNHARD HUBMANN

Validity: Invalid; early descriptions by ROLLE (1854: "Kalklager der Grebenzen") and GEYER (1891a: "Kalke [der Murauer Mulde]"); THURNER (1933) considered the Grebenzenkalk as a facial variety of the "Murauer Kalk".

Type area: ÖK50-UTM, map sheet 4225 Murau (ÖK50-BMN, map sheet 159 Murau).

Type section: No type section defined; THURNER (1933) mentioned typical "Murauer Kalke" at Blasenkogel (1,602 m; N 47°06'44" / E 14°18'26"); METZ (1963) specified the Grebenzen (1,870 m; N 47°02'21" / E 14°19'49"), a mountain north of Friesach (Carinthia) as "locus typicus" for the Grebenzen Limestone.

Reference section(s): -

Remarks: The synonymy of Murau Limestone and Grebenzen Limestone respectively their relationship is a matter of controversy in the literature.

Derivation of name: After the town Murau respectively the mountain Grebenzen (1,900 m).

Synonyms: Grebenzenkalk (THURNER, 1930); Murauer Kalke (THURNER, 1930); Murauer-Kalke und Dolomite (THURNER, 1952); Grebenzer-Kalk (THURNER, 1952); Pleschaitz-Kalk (THURNER, 1952); Grebenzen-Pleschaitz-kalk (SCHÖNLAUB, 1979); Bänderkalke (Typ Murau) (SCHÖNLAUB, 1979); Murau-Kalk (NEUBAUER, 1980b); Kalke der Grebenzen und des Pleschaitz (THURNER & VAN HUSEN, 1980); Murauer Kalke (THURNER & VAN HUSEN, 1980); Murauer Bänderkalke (THURNER & VAN HUSEN, 1980); Murauer Kalk (FLÜGEL & NEUBAUER, 1984); Grebenzenkalk (FLÜGEL & NEUBAUER, 1984).

Lithology: Recrystallized banded limestones and marbles. Locally lower parts of the succession are dominated by grey laminated marbles which contain fragments of crinoids whereas upper parts are mainly built up by whitish to pink colored marbles which are in some part cloudy dolomitized.

Fossils: Crinoids and rare conodonts.

Origin, facies: Open marine environment (?).

Chronostratigraphic age: Pridoli–Emsian.

Biostratigraphy: -

Thickness: 200–800 m.

Lithostratigraphically higher rank unit: -

Lithostratigraphic subdivision: -

Underlying unit(s): Murau Group.

Overlying unit(s): -

Lateral unit(s): -

Geographic distribution: Surroundings of Murau; ÖK50-BMN, map sheets 159 Murau, 160 Neumarkt.

Remarks: -

Complementary references: SCHÖNLAUB & HEINISCH (1993).

Oberer Auen-Dolomit / Upper Auen Dolomite

THOMAS J. SUTTNER

Validity: Invalid; the name Oberer Auen-Dolomit for this unit was first used by NEUBAUER (1979: p. 467), who mapped and revised the low metamorphic Lower Paleozoic succession in the surroundings of Murau.

Type area: ÖK50-UTM, map sheets 3230 Tamsweg, 4225 Murau (ÖK50-BMN, map sheets 158 Stadl, 159 Murau).

Type section: -

Reference section(s): Section in the vicinity of Haider farmstead located south of Murau in the Auen area (N 47°02'26" / E 14°09'19").

Derivation of name: After Auen area (compare locality map of NEUBAUER, 1979: Fig. 1).

Synonyms: Dolomitkeile von Laßnitzau [partim] (TURNER, 1956: p. 164).

Lithology: Bedded and massive grey limonitic dolomites; dark grey unbedded, brecciated dolomite.

Fossils: Conodonts.

Origin, facies: Shallow marine limestone, neritic unit.

Chronostratigraphic age: Frasnian–Famennian.

Biostratigraphy: *asymmetricus* and *gigas* conodont zones.

Thickness: 10 m.

Lithostratigraphically higher rank unit: Auen Group (see remarks at Golzeck Formation).

Lithostratigraphic subdivision: -

Underlying unit(s): Haider Marble (Adelsberg Limestone) (unconformable contact).

Overlying unit(s): Upper Althofen Formation; Shale, Lydite Breccia (unconformable contact).

Lateral unit(s): Althofen Limestone Breccia.

Geographic distribution: Styria and Carinthia, in the surrounding of Murau, especially south of it near the Styrian/Carinthian states border in the area of Auen (NEUBAUER, 1979: Fig. 1).

Remarks: -

Complementary references: TURNER (1958), NEUBAUER (1984), NEUBAUER & PISTOTNIK (1984), SCHÖNLAUB (1992).

Althofener Kalkbrekzie / Althofen Limestone Breccia

THOMAS J. SUTTNER

Validity: Invalid; first observations within the limestone deposits near Althofen were made by REDLICH (1905) and

later described in more detail by HABERFELNER (1936). A description including all criteria necessary for a formal lithostratigraphic characterization is provided by SCHÖNLAUB (1971c: Figs. 1, 2, p. 299).

Type area: ÖK50-UTM, map sheet 4102 Althofen (ÖK50-BMN, map sheet 186 Sankt Veit an der Glan).

Type section: Ancient quarry of Aich (SCHÖNLAUB, 1971c: Fig. 1, 2; p. 289) some hundred meters NNW of Treibach-Althofen (N 46°52'46" / E 14°28'03").

Reference section(s): -

Derivation of name: After the town Althofen.

Synonyms: Knotenkalk (SCHÖNLAUB, 1971c).

Lithology: Limestone breccia (consisting of reworked pebbles of the Lower Althofen Limestone and the Reef-debris limestone of Althofen).

Fossils: Calcispheres, conodonts, crinoids, ostracods?, radiolarians.

Origin, facies: Shallow marine limestone, neritic unit.

Chronostratigraphic age: Generally, the unit is assigned to the Famennian by SCHÖNLAUB (1971c); Lower and Middle Devonian is indicated by reworked conodonts from underlying units.

Biostratigraphy: *asymmetricus*, *gigas* and *triangularis* conodont zones.

Thickness: Approx. 6 m.

Lithostratigraphically higher rank unit: Althofen Group (see remarks at Lower Althofen Limestone).

Lithostratigraphic subdivision: -

Underlying unit(s): Reef-debris limestone of Althofen (unconformable contact).

Overlying unit(s): Upper Althofen Formation (conformable contact).

Lateral unit(s): Upper Auen Dolomite.

Geographic distribution: Carinthia, in the area between Althofen and Töscheldorf.

Remarks: -

Complementary references: SCHÖNLAUB (1979, 1992), NEUBAUER & PISTOTNIK (1984), KREUTZER et al. (1997).

Obere Althofen-Formation / Upper Althofen Formation

THOMAS J. SUTTNER

Validity: Invalid; first observations within the limestone deposits near Althofen were made by REDLICH (1905) and later described more in detail by HABERFELNER (1936). A description including all criteria necessary for a formal lithostratigraphic characterization is provided by SCHÖNLAUB (1971c: Figs. 1, 2, p. 300).

Type area: ÖK50-UTM, map sheet 4102 Althofen (ÖK50-BMN, map sheet 186 Sankt Veit an der Glan).

Type section: Ancient quarry of Aich (SCHÖNLAUB, 1971c: Fig. 1, 2; p. 289) some hundred meters NNW of Treibach-Althofen (N 46°52'46" / E 14°28'03").

Reference section(s): -

Derivation of name: After the town Althofen.

Synonyms: -

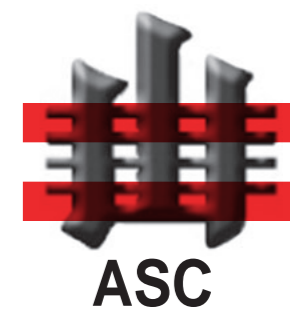
Lithology: Thin, platy grey to reddish limestone.

Fossils: Conodonts.

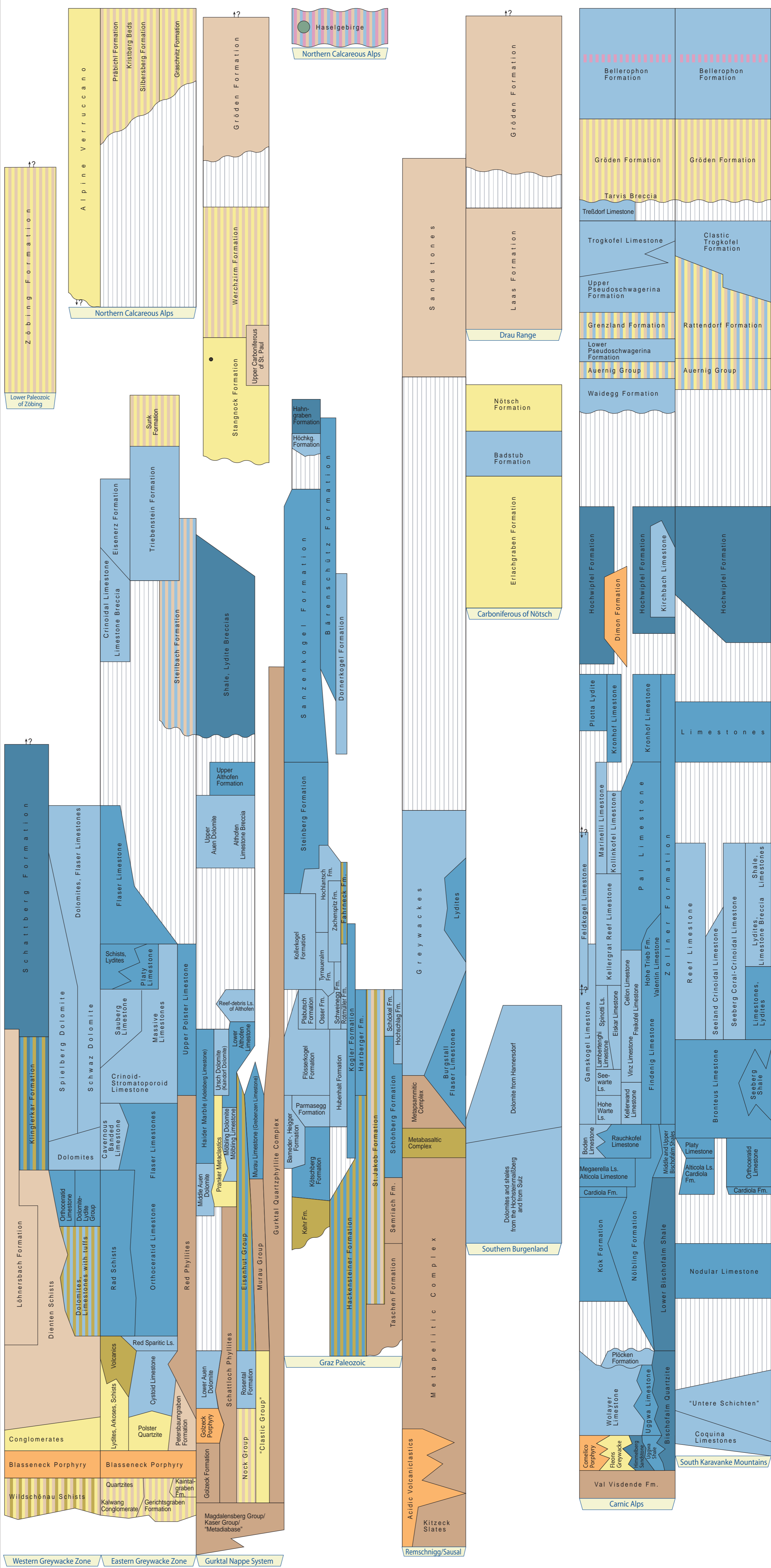
Austrian Stratigraphic Chart 2004 - Paleozoic

(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	UPPER PERMIAN / CARBONIFEROUS / PENNSYLVANIAN			GZHELIAN	295	PERMIAN	LOWER PERMIAN / CISURALIAN
KASIMOVIAN	300								
MOSKOVIAN	305								
BASHKIRIAN	310								
PERMIAN	UPPER PERMIAN / CARBONIFEROUS / PENNSYLVANIAN			SERPUKHOVIAN	315				
				VISEAN	320				
					325				
PERMIAN	LOWER PERMIAN / MISSISSIPPIAN			TOURNAISIAN	330	PERMIAN	LOWER PERMIAN / MISSISSIPPIAN		
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				340					
		345							
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		370							
		375							
PERMIAN	UPPER DEVONIAN	FAMENNIAN	380	PERMIAN	UPPER DEVONIAN				
		FRASNIAN	385						
		GIVETIAN	390						
		EIFELIAN	395						
		DEVONIAN	LOWER DEVONIAN			EMSIAN	400		
						405			
		PRAGIAN	410						
		LOCHKOVIAN	415						
		PERMIAN	LOWER DEVONIAN			LUDFORDIAN / GORSTIAN	420	PERMIAN	LOWER DEVONIAN
						HOMERIAN / SHEINWOOD	425		
TELYCHIAN	430								
AERONIAN	435								
RHUDDANIAN	440								
HIRNANTIAN	443.7								
445									
450									
455									
460									
PERMIAN	UPPER ORDOVICIAN	DARRIWILIAN	465	PERMIAN	UPPER ORDOVICIAN				
		470							
		475							
		480							
		485							
		488.3							
		490							
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		PERMIAN	MIDDLE CAMBRIAN			PAIBIAN	505	PERMIAN	MIDDLE CAMBRIAN
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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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