

Remarks: FLÜGEL (2000) introduced the Kollerkogel Formation substitutional for the two former lithostratigraphic units “Kanzelkalk” (e.g., VACEK, 1907; H. FLÜGEL, 1975; EBNER et al., 1980a) and the “Mitteldevon-Dolomit” (EBNER et al., 1980a). In this conception both units have the rank of a member only.

Complementary references: HUBMANN (1993, 2003), HUBMANN & FRITZ (2004), HUBMANN & MESSNER (2007), HUBMANN & WEBER (2010), EBNER & HUBMANN (2012).

Tyrnaueralm-Formation / Tyrnaueralm Formation

BERNHARD HUBMANN

Validity: Valid; first description by GOLLNER & ZIER (1982: “Tyrnauer Alm-Formation”); formalized by GOLLNER & ZIER (1985: p. 48–49; Tyrnauer Alm-Formation); change of name into Tyrnaueralm-Formation by FLÜGEL (2000: p. 32).

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

Type section: At forest road to Tyrnauer Alm east of the Rote Wand (see GOLLNER & ZIER, 1982, 1985) (N 47°21'46" / E 15°25'28").

Reference section(s): Tiefenbachgraben north of Teichalm (see GOLLNER & ZIER, 1985) (N 47°22'18" / E 15°27'54").

Derivation of name: After an alp in the Hochlantsch region, approximately 40 km north of Graz.

Synonyms: Calceola-Schichten (PENECKE, 1890; H. FLÜGEL, 1975), Kalk des Mooskofel (CLAR et al., 1929).

Lithology: Dark grey to black often fossiliferous limestones. Lower parts of the succession consist of light grey late diagenetic dolostones. At Tyrnaueralm and Hochlantsch a less than a half meter thick horizon of dark green porphyritic volcanites is characteristic.

Fossils: At Zechnerhube (Teichalm area) rugose and tabulate corals and stromatoporoids are common. For faunal list see FLÜGEL (1971).

Origin, facies: Parts of the successions were deposited on a tidal flat (indicated by biolaminations and fenestrate fabrics) and shallow subtidal environments (indicated by various cnidarians).

Chronostratigraphic age: Upper Eifelian–Givetian; not Frasnian as illustrated in the ASC 2004.

Biostratigraphy: *ensensis* to *varcus* conodont zones.

Thickness: 150 m (up to 500 m?).

Lithostratigraphically higher rank unit: Lantsch Group.

Lithostratigraphic subdivision: GOLLNER & ZIER (1985) distinguished two different facial types which were considered as informal members. FLÜGEL (2000) erected the following three members:

Rote-Wand Member: Sequence of various volcanitic rocks and dolostones; 50 to 150 m in thickness.

Zechneralm Member: Interbeddings of black dolomitic *Amphipora* float/packstones and platy, sometimes laminated darkgrey dolomites; strong variation in thickness (less than 100 m).

Tiefenbach Member: Predominantly grey-blue micritic limestones, locally rich in fossils (stromatoporoids, corals); about 50 m in thickness.

Underlying unit(s): Plabutsch Formation (conformable contact).

Overlying unit(s): Zachenspitze and Hochlantsch Formations.

Lateral unit(s): Plabutsch Formation.

Geographic distribution: Styria, highland in the surroundings of Graz; ÖK50-BMN, map sheet 134 Passail.

Remarks: This formation has substantial similarities in lithology and fossil content with the Kollerkogel Formation of the Rannach Group.

Complementary references: HUBMANN (1993, 2003), HUBMANN & MESSNER (2007).

Zachenspitze-Formation / Zachenspitze Formation

BERNHARD HUBMANN

Validity: Valid; first description by GOLLNER & ZIER (1985: “Zachenspitzeformation”); change of name into Zachenspitze-Formation by FLÜGEL (2000: p. 34).

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

Type section: At the Zachenspitze, a mountain east of the Hochlantsch (see GOLLNER & ZIER, 1982, 1985) (N 47°22'05" / E 15°27'06").

Reference section(s): Tiefenbachgraben north of Teichalm (see GOLLNER & ZIER, 1985) (N 47°22'18" / E 15°27'54").

Derivation of name: After a mountain top next to Hochlantsch, approximately 40 km north of Graz.

Synonyms: Quadrigemminum-Kalk (PENECKE, 1890); partly: Stringocephalenschichten (HERITSCH, 1906); auffallendes Kalkband des Wallhüttenprofils (HERITSCH, 1917c).

Lithology: Massive and bedded grey-blue often fossiliferous limestones.

Fossils: Rugose and tabulate corals, stromatoporoids, conodonts, tentaculitids.

Origin, facies: Differentiated depositional environment composed of restricted lagoonal areas, reefal systems and open marine shallow subtidal settings.

Chronostratigraphic age: Upper Givetian–(?)Frasnian

Biostratigraphy: *varcus* conodont zone.

Thickness: Variable; 80 m up to 300 m.

Lithostratigraphically higher rank unit: Lantsch Group.

Lithostratigraphic subdivision: GOLLNER & ZIER (1985) distinguished two different facial types which were considered as informal members. FLÜGEL (2000) erected the following two members:

Ranerwand Member: Sequence of grey flaserlimestones; subordinate argillaceous shales and volcanoclastic rocks; up to 80 m in thickness.

Teichalm Member: Grey-blue to dark-grey sometimes densely fossiliferous limestones; subordinate tuff horizons; strong variation in thickness (up to 300 m?).

Underlying unit(s): Tyrnaueralm Formation (conformable contact).

Overlying unit(s): Hochlantsch Formation and Steinberg Formation.

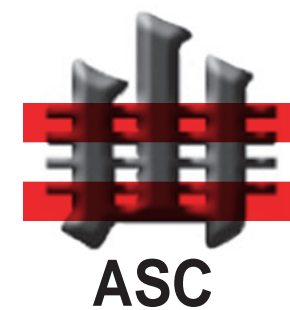
Lateral unit(s): Hochlantsch Formation.

Geographic distribution: Styria, highland in the surroundings of Graz; ÖK50-BMN, map sheet 134 Passail.

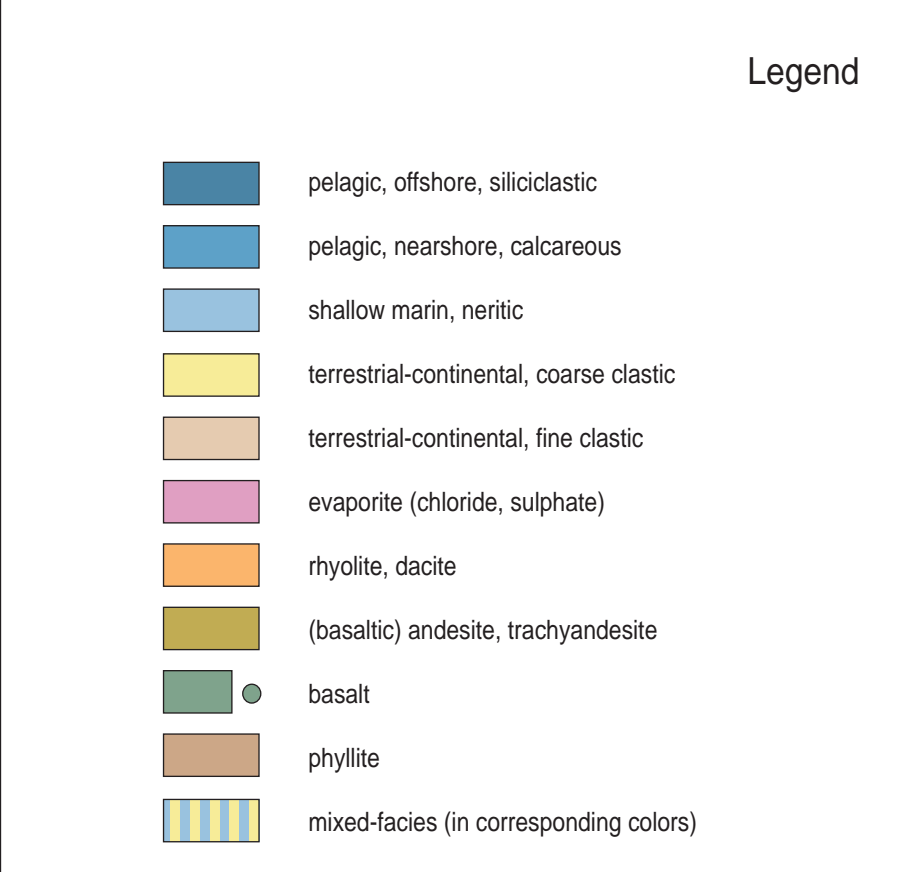
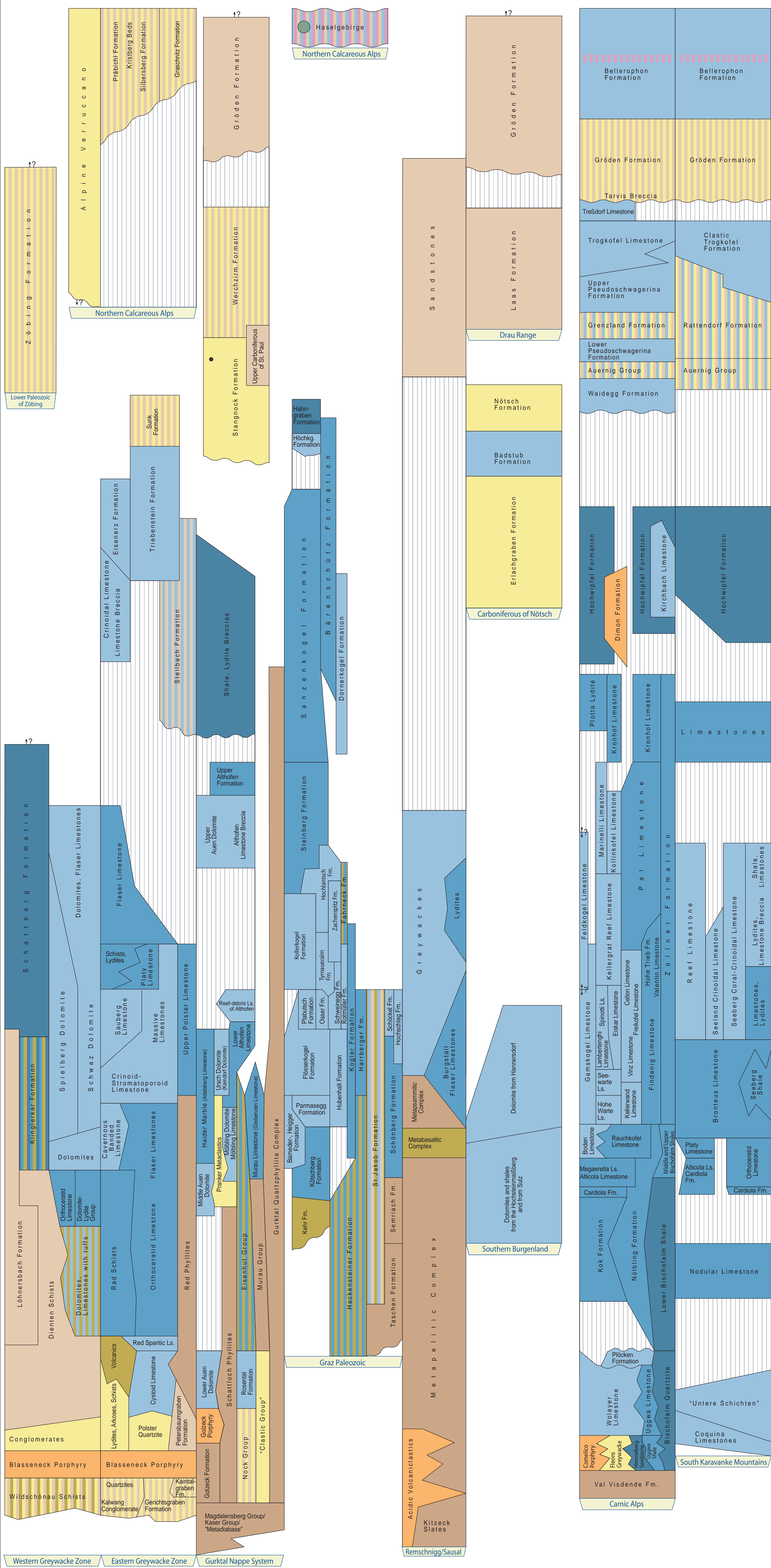
Austrian Stratigraphic Chart 2004 - Paleozoic

(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		
				335					
				340					
		345							
		350							
		355							
		359.2							
		365							
		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							
		495							
		500							
		PERMIAN	MIDDLE CAMBRIAN			PAIBIAN	505	PERMIAN	MIDDLE CAMBRIAN
510									
515									
520									
525									
530									
535									
540									
542									
CAMBRIAN	LOWER CAMBRIAN				545	CAMBRIAN	LOWER CAMBRIAN		
			550						
			555						
			560						
			565						
			570						
			575						
			580						
			585						
			590						



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

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