

Pal Grande Formation

CLAUDIA SPALLETTA, MARIA CRISTINA PERRI, MONICA PONDRELLI, CARLO CORRADINI,
ANGELO MOSSONI & HANS-PETER SCHÖNLAUB

Österreichische Karte 1:50.000

Blatt BMN 197 Kötschach

Blatt BMN 198 Weißbriach

Blatt BMN 199 Hermagor

Blatt UTM 3109 Oberdrauburg

Blatt UTM 3110 Kötschach-Mauthen

Blatt UTM 3116 Sonnenalpe Naßfeld

Blatt UTM 3117 Nötsch im Gailtal

Carta Topografica d'Italia 1:50.000

Foglio 018 Passo di Monte Croce Carnico

Foglio 031 Ampezzo

Foglio 032 Tolmezzo

Foglio 033 Tarvisio

Definition

Gray to reddish mm to cm thick beds of nodular mudstone/wackestone.

Description

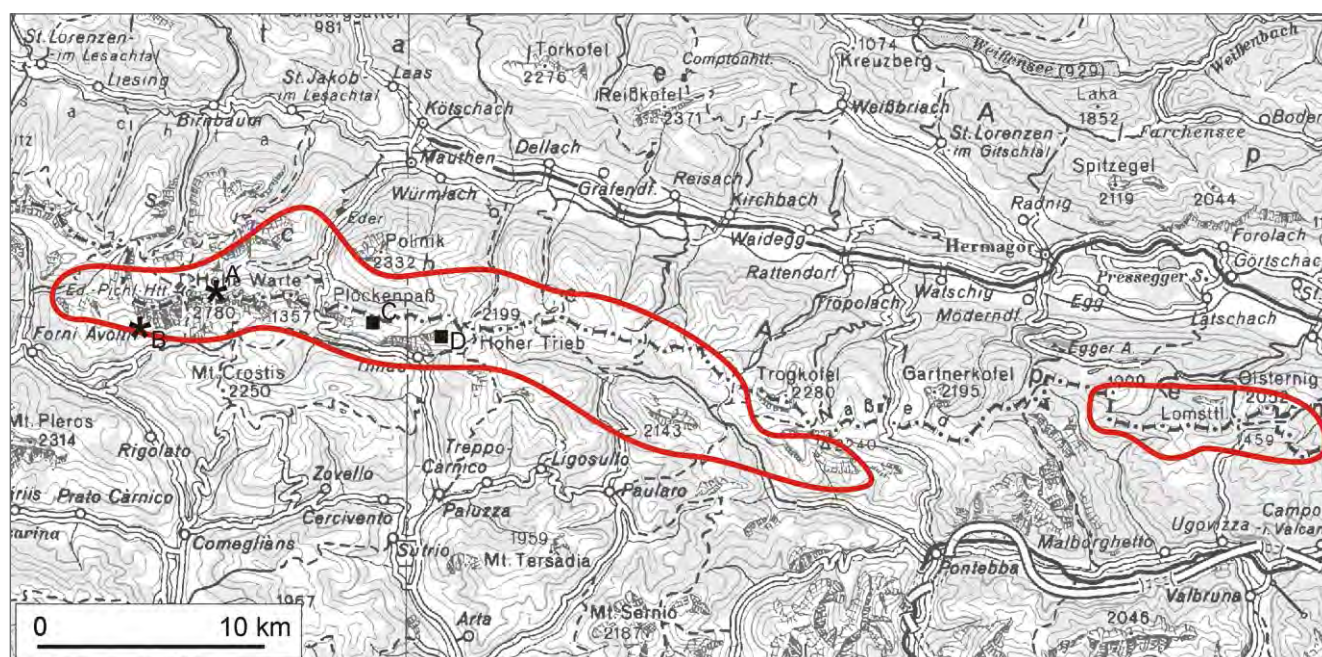
The Pal Grande Formation consists mainly of gray mudstone and wackestone rich in fossils. The original bedding is often concealed by pressure solution and/or burrowing giving to the limestone a characteristic pseudo-nodular look. The reddish colour, when present, is usually limited to the lower part of the formation. At places, in the basal part of the formation, interlayered cm to dm calciruditic and calcarenitic (grainstone) intervals are present, as well as ruditic (intraclast breccia) levels. The ruditic beds can reach thickness of 1-2 m. Black shale, interpreted as equivalent to the Hangenberg Shale (Hangenberg Event) are present only at two localities (Kronhof Graben and Plan di Zermula) (PERRI & SPALLETTA, 2001).

Fossil content

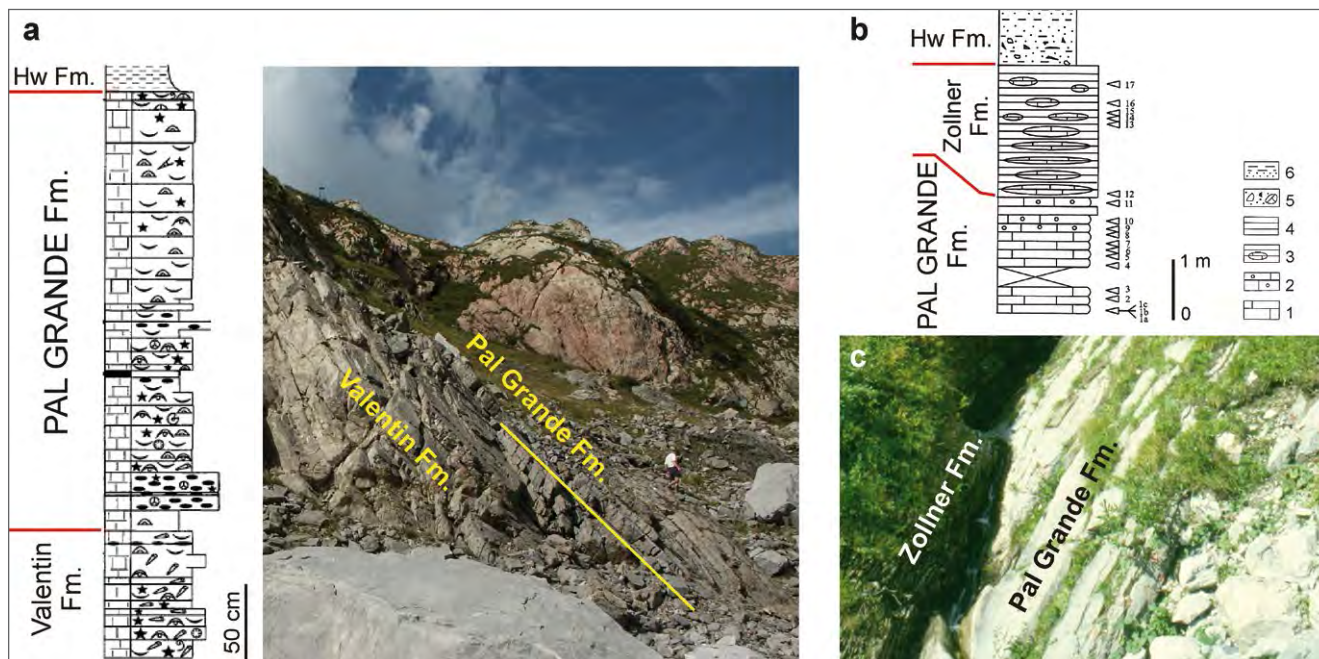
Bivalves, brachiopods, clymenids, crinoids, conodonts, echinoderms, fish teeth and scales, goniatites, orthoceratids, ostracods, trilobites, rare rugose corals.

Depositional environment

Slope to open basin, pelagic environment.



Areas of outcrop of the Pal Grande Formation with indication of the stratotype of the lower and upper boundary (asterisks) A: Wolayer "Glacier" Section; B: Rio Chianaletta Section. Reference sections (squares), C: Freikofel T section; D: Malpasso section.



The type sections for the base and the top of the Pal Grande Formation a) the Wolayer "Glacier" Section: log of the section (after JOACHIMSKI et al., 1994) and view of the section in the field (photo H.P. SCHÖNLAUB); b-c) the Rio Chianaletta Section: log of the section (modified after PERRI & SPALLETTA, 1998) and view of the section in the field (photo M.C. PERRI). Legend: 1. biomicrite; 2. radiolarian-enriched mudstone; 3. radiolarian chert with interbedded limestone levels and lenses; 4. radiolarian chert; 5. breccia of the Hochwipfel Formation; 6. sandstone and pelite of the Hochwipfel Formation.

Stratotype

Wolayer "Glacier" Section (SCHÖNLAUB, 1980), located along the northern side of Wolayer Valley, at coordinates N 46°36'49.0", E 12°52'34.7" for the lower boundary.

Rio Chianaletta Section (PERRI & SPALLETTA, 1998), at coordinates N 46°36'13.7", E 12°50'02.8" for the upper boundary.

Reference sections

Freikofel T section, on the northwest side of Mt. Freikofel, at coordinates N 46°36'05.3", E 12°58'36.6" (base of the section) N 46°36'07.4", E 12°58'36.2" (top) (PERRI & SPALLETTA, unpublished data), where the lower boundary with the Freikofel Formation is well exposed.

Malpasso section, near Casera Malpasso at coordinates N 46°35'29.9", E 13°02'05.7" (base of the section) N 46°35'29.0", E 13°02'04.3" (top) (PERRI & SPALLETTA, 1991), where the typical features of the formation with beds rich in goniatites are well exposed in an easy accessible section.

Type area

Carnic Alps.

Main outcrop areas

The Pal Grande Formation crops out mainly in a wide area of the Central Carnic Alps between Cima Ombladet-Rio Chianaletta to Mt. Cavallo and in the area near Mt. Oisternig and Mt. Cocco to the east.

Thickness

Maximum thickness of about 100 m (Pramosio area).

Boundaries

Underlying units – Freikofel Formation in the proximal part (conformable gradual contact), Valentín Formation in the distal one (unconformable contact: paraconformity), Hohe Trieb Formation (conformable sharp contact).

Overlying units – Zollner Formation (conformable gradual contact), Hochwipfel Formation (unconformable contact: paraconformity, when and where the upper part of the Pal Grande Formation and the Zollner Formation are missing, often this boundary is affected by tectonic superimposition), Plotta Formation (unconformable contact).

Lateral units – Freikofel Formation and Creta di Collina Formation in the proximal part; Zollner Formation in the distal part.

Derivation of name

After Mount Pal Grande/Grosser Pal.

Synonymy

Clymenienkalk am Gross-Pal: FRECH (1987).
Calcari a Climenie: VINASSA DE REGNY & GORTANI (1908).
Clymenienkalke: GAERTNER (1931); HERITSCH (1936).
Calcari nodulari ad ammonoidi: VAI in BRAGA et al. (1971).
Goniatiten-Kalke: FENNINGER & SCHÖNLAUB (1972).
Calcari pelagici a climenie e calcari di scarpata [partim]: SPALLETTA et al. (1982).
Pal-Kalk and Kronhof-Kalk: SCHÖNLAUB (1985).
Climenid pelagic limestone: SPALLETTA & VENTURINI (1990).
Clymenid and goniatitid pelagic lm.: VENTURINI & SPALLETTA (1998).
Calcari a goniatiti e climenie: VENTURINI et al. (2002).
Pramosio Limestone: BRIME et al. (2008).
Calcari di Pramosio: SPALLETTA & PONDRELLI (2009).
Pal-Kalk/Pal Limestone: SUTTNER & KIDO (2014a).
Kronhof-Kalk/Kronhof Limestone: SUTTNER & KIDO (2014b).

Chronostratigraphic age

Devonian – Carboniferous: Frasnian to Viséan.



Views of the Pal Grande Formation in the field. a) gray, well bedded micrite, outcrop near Pal Grande (photo M. PONDRELLI); b) pinkish/gray micrite, Freikofel T section (photo C. SPALLETTA); c) bed rich in goniatites, Pramosio Bassa section (photo C. SPALLETTA); d) gray micrite at Forca di Lanza (photo M. PONDRELLI).

Biostratigraphy

Conodonts. – Upper *hassi* Zone (Frasnian Zone 9 and Zone 10) (Wolayer “Glacier” Section, JOACHIMSKI et al., 1994) to *homopunctatus-texanus* Zone (Rio Chianaletta Section, PERRI & SPALLETTA, 1998).

The age of the lower boundary is different according to the underlying unit: the boundary with the Valentin Formation is Frasnian Zone 9 to Frasnian Zone 10 (Upper *hassi* Zone), the boundary with the Hoher Trieb Formation in the Mt. Pizzul area is Frasnian Zone 11-12, and with the Freikofel Formation is Frasnian Zone 13b (*linguiformis* Zone) at the Freikofel T section, and Frasnian Zone 13a in a more distal area (Pramosio).

Complementary references

Carbon isotopes. – JOACHIMSKI et al. (1994) studied the lower part of the unit in the Wolayer “Glacier” Section.

Remarks -

References

- BRAGA, G.P., CARLONI, G.C., COLANTONI, P., CORSI, M., CREMONINI, P., FRASCARI, F., LOCATELLI, D., MONESI, A., PISA, G., SASSI, F.P., SELLI, R., VAI, G.B. & ZIRPOLI, G. (1971): Note illustrative della Carta geologica d'Italia. Foglio 4c-13 M. Cavallino-Ampezzo. – Ministero dell'Industria, del Commercio e dell'Artigianato, Direzione Generale delle Miniere, Servizio Geologico d'Italia, 108 p., Roma.
- BRIME, C., PERRI, M.C., PONDRELLI, M., SPALLETTA, C. & VENTURINI, C. (2008): Polyphase metamorphism in the eastern Carnic Alps (N Italy-S Austria): Clay minerals and conodont Colour Alteration Index evidence. – *International Journal of Earth Sciences*, **97/6**, 1213–1229, Berlin-Heidelberg.
- FENNINGER, A. & SCHÖNLAUB, H.P. (1972): Das Paläozoikum der Karnischen Alpen. – In: FLÜGEL, H.W. (ed.): *Exkursionsführer 42. Jahresversammlung Paläontologische Gesellschaft*, 18–60, Graz.
- FRECH, F. (1887): Über das Devon der Ostalpen, nebst Bemerkungen über das Silur und einen palaeontologischen Anhang. – *Zeitschrift der Deutschen Geologischen Gesellschaft*, **39**, 659–738, Berlin.
- GAERTNER, H.R. VON (1931): Geologie der Zentralkarnischen Alpen. – *Denkschrift der Österreichischen Akademie der Wissenschaften, mathematisch-naturwissenschaftliche Klasse, Abteilung 1*, **102**, 113–199, Wien.
- HERITSCH, F. (1936): Die Karnischen Alpen. Monographie einer Gebirgsgruppe der Ostalpen mit variszischem und alpidischem Bau. – 205 p., Graz.
- JOACHIMSKI, M.M., BUGGISCH, W. & ANDERS, T. (1994): Mikrofazies, Conodontenstratigraphie und Isotopengeochemie des Frasn-Fammenne-Grenzprofils Wolayer Gletscher (Karnische Alpen). – *Abhandlungen der Geologischen Bundesanstalt*, **50**, 183–195, Wien.
- PERRI, M.C. & SPALLETTA, C. (1991): Famennian conodonts from Cava Cantoniera and Malpasso sections, Carnic Alps, Italy. – *Bollettino della Società Paleontologica Italiana*, **30/1**, 47–78, Modena.
- PERRI, M.C. & SPALLETTA, C. (1998): Conodont distribution at the Tournaisian/Visean boundary in the Carnic Alps (Southern Alps, Italy). – In: SZANIAWSKI, H. (ed.): *Proceedings of the Sixth European Conodont Symposium (ECOS VI)*. – *Palaeontologia Polonica*, **58**, 225–245, Warszawa.
- PERRI, M.C. & SPALLETTA, C. (2001): *Hangenberg Event* al limite Devoniano/Carbonifero al Monte Zermula, Alpi Carniche, Italia. – In: PERRI, M.C. (ed.): *Giornate di Paleontologia 2001*. – *Giornale di Geologia*, **62**, 2000, Supplemento, 31–40, Bologna.
- SCHÖNLAUB, H.P. (1980): Carnic Alps. Field Trip A. with contributions from JAEGER, H., HOUSE, M.R., PRICE, J.D., GÖDDERTZ, B., PRIEWALDER, H., WALLISER, O.H., KRÍŽ, J., HAAS, W. & VAI, G.B. – In: SCHÖNLAUB, H.P. (ed.): *Second European Conodont Symposium, ECOS II, Guidebook, Abstracts*. – *Abhandlungen der Geologischen Bundesanstalt*, **35**, 5–57, Wien.
- SCHÖNLAUB, H.P. (1985): Das Paläozoikum der Karnischen Alpen. – In: SCHÖNLAUB, H.P. (ed.): *Arbeitstagung der Geologischen Bundesanstalt 1985 Kötschach-Mauthen, Gailtal – Geologische Bundesanstalt*, 34–52, Wien.
- SPALLETTA, C. & PONDRELLI, M. (2009): Calcari di Pramosio. – In: VENTURINI, C. (ed.): *Note Illustrative del Foglio 031 Ampezzo*. – *Carta Geologica d'Italia alla scala 1:50000, Istituto Superiore per la Protezione e la Ricerca Ambientale (ex-Agenzia per la Protezione dell'Ambiente e per i Servizi Tecnici, Servizio Geologico d'Italia)*, 45–46, Stampa A.T.I. – S.EL.CA. srl. – L.A.C. srl. – System Cart srl., Firenze.
- SPALLETTA, C. & VENTURINI, C. (1990): Stratigraphic correlation form of the Palaeozoic sequence in the Carnic Alps. – *Rendiconti della Società Geologica Italiana*, **12**, 417–421, Roma.
- SPALLETTA, C., VAI, G.B. & VENTURINI, C. (1982): La Catena Paleocarnica. – In: CASTELLARIN, A. & VAI, G.B. (eds.): *Guida alla geologia del Sudalpino centro-orientale*. – *Guida Geologiche Regionali, Società Geologica Italiana*, 281–292, Bologna.
- SUTTNER, T.J. & KIDO, E. (2014a): Pal-Kalk/Pal Limestone. – In: PILLER, W.E. (ed.): *The lithostratigraphic units of the Austrian Stratigraphic Chart 2004 (sedimentary successions), Vol. I – The Paleozoic Era(them)*. – *Abhandlungen der Geologischen Bundesanstalt*, **66**, 78–79, Wien.
- SUTTNER, T.J. & KIDO, E. (2014b): Kronhof-Kalk/Kronhof Limestone. – In: PILLER, W.E. (ed.): *The lithostratigraphic units of the Austrian Stratigraphic Chart 2004 (sedimentary successions), Vol. I – The Paleozoic Era(them)*. – *Abhandlungen der Geologischen Bundesanstalt*, **66**, 79–80, Wien.
- VENTURINI, C. & SPALLETTA, C. (1998): Remarks on the Palaeozoic stratigraphy and the Hercynian tectonics of the Palaeocarnic Chain (Southern Alps). – In: PERRI, M.C. & SPALLETTA, C. (eds.): *Southern Alps Field Trip Guidebook. Seventh International Conodont Symposium held in Europe*. – *Giornale di Geologia, Special Issue*, **60**, 69–88, Bologna.
- VENTURINI, C., PONDRELLI, M., FONTANA, C., DEL ZOTTO, S. & DISCENZA, K., (2002): Carta geologica delle Alpi Carniche (Fogli occidentale e orientale), alla scala 1:25,000. – S.EL.CA. srl., Firenze.
- VINASSA DE REGNY, I. & GORTANI, M. (1908): Nuove ricerche sul nucleo centrale delle Alpi Carniche. – *Rendiconti della Reale Accademia dei Lincei*, s.5, **17**, 603–612, Roma.

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Abhandlungen der Geologischen Bundesanstalt in Wien](#)

Jahr/Year: 2015

Band/Volume: [69](#)

Autor(en)/Author(s): Spalletta Claudia, Perri Maria Cristina, Pondrelli Monica, Corradini Carlo, Mossoni Angelo, Schönlaub Hans-Peter

Artikel/Article: [Pal Grande Formation 137-140](#)