

## **The geology and paleogeographical position of the Knallalm-Neualm area north of Russbach (northern Dachstein Block, central Northern Calcareous Alps)**

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The Knallalm-Neualm area north of Russbach has been investigated due to its stratigraphic evolution and structure. In contrast to the official geological map of Austria (ÖK St. Wolfgang, Plöchinger 1982), post-Triassic sedimentary rocks take a larger area and show a greater stratigraphic range than suggested: the Knallalm-Neualm area yields a Norian to Tithonian succession, in places transgressed by Gosau Group rocks. A more than 1 km thick panel of Norian to Rhaetian lagoonal Dachstein limestone is overlain by Middle Jurassic red limestones of the Klaus Formation – definite Liassic rocks have not been observed yet. The red limestones pass gradually into siliceous rocks of the Ruhpolding Radiolarite Group. Compared to nearby localities within the Dachstein Block to the south (Plassen area) and north (Katrin-Nussensee area), the Ruhpolding Radiolarite Group is low in thickness (less 50 m) and poor in breccias with two thin breccia horizons within and a mega-breccia horizon of unknown stratigraphic position ?at the top/on top of the Ruhpolding Radiolarite Group. Dating of radiolarians within the background sediments has not been finished yet, but apparently radiolaritic sedimentation did not span a longer interval than Callovian to (?Middle) Oxfordian. Whilst the components of the lower breccia layers are of local, “kalkvorlpin” origin, also exotic components with Hallstatt facies affinity can be observed in the coarse, uppermost breccia. Local decametre-sized Dachstein limestone occurrences in the same stratigraphic level are thought to be slide blocks of this breccia as well. A 150 to 200 m thick sequence of Tithonian shallow water carbonates of back-reef to lagoonal Plassen Formation is found on top. Since there is neither evidence for Kimmeridgian sediments nor for a transition from deep-water to shallow-water sedimentation the apparent complete Late Jurassic succession is in fact none. The Plassen Formation cannot have been formed in situ but must be regarded to be transported, most probably in forms of a mega-slide, to its present place in late to post-Tithonian times. In contrast to the preponderance of fault contacts at the northern margin of the Gosau Basin (Wagreich & Decker 2001) in some places a stratigraphic onlap of Gosau Group breccias on the Late Triassic to Late Jurassic succession along an erosional, karstified surface can be observed.

Under a structural point of view, the area is subdivided by the steep SW-NE-striking Brettkogel Fault with an apparent vertical offset of many hundreds of meters, juxtaposing Norian (and older?) rocks to the N/NW against Rhaetian to Late Cretaceous strata to the S/SE. The fault, originally thought to terminate northeastwards (Plöchinger 1982), could be shown to continue, how-

ever, changing its geometry close to Mount Kl. Brettkogel from SW-NE- to E-W-strike. Fossils within the fault scarp breccias that mainly consist of components of the adjacent strata, support a Late Cretaceous, syn-Gosau age of faulting as already proposed by the model of Wägrich & Decker (2001). However, the interpretation of the Brettkogel Fault as a normal fault of a pull-apart basin cannot be supported as it can be traced far towards east at least into the Lake Hallstättersee area with a minimum apparent vertical offset of some 100 m. In other respects, the overall structural geology is characterised by numerous smaller-scale faults of variable origin, geometry and age. Although many of the high angle faults might have originated in the same, ?syn-Gosau tectonic framework like the Brettkogel Fault, there is also clear evidence for NNE-directed fold-thrust structures bordered by transverse faults. The exact age of these contractional movements is not known, however, it was surely post Late Jurassic.

In order to evaluate its paleogeographic position, the stratigraphic sequence of the Knallalm-Neualm area is to be compared to nearby equal-age successions. The Early to Middle Jurassic section of the Katrin-Nussensee area at the northern margin of the Dachstein Block (see Auer et al., this volume) is also thin but more complete inclusive the Adnet Formation. The Ruhpolding Radiolarite Group was deposited north of the Trattberg Rise and is represented by Tauglboden Formation whose breccias show some significant differences as they always contain clasts of the Kössen and Adnet formations, are coarser-grained, and take a far higher percentage of the total volume. In the south, the immensely thick Middle/Late Jurassic Strubberg-Sillenkopf succession of the Plassen area is completely different as it largely consists of mega-slides originating from the Hallstatt facies belt. Instead, the sequence of the Knallalm-Neualm area is better comparable with the approximately equal-latitude successions of the Sarsteinalm 14 km to the east (central Dachstein block east of Lake Hallstättersee) and the Moosbergalm 7 km to the west (south-eastern Osterhorn Mountains), both of which show thin radiolaritic sequences with no or negligible breccia occurrences and incomplete, eroded tops. E.g. at the Sarsteinalm there are also no Liassic strata and similarly the few Plassen Formation relics lack their basal successions and rests with unclear basal contact probably as slide blocks on a thin radiolarite sequence. Considering these stratigraphic profiles, it seems reasonable to suggest an akin paleogeographic position for the three mentioned locations in close distance to the Trattberg Rise on its southern slope. Since per definition the Trattberg Rise separated the Tauglboden Basin to the north from the Lammer-Sillenkopf Basin to the south in the Oxfordian to Early Tithonian, the radiolaritic sequence of the Knallalm-Neualm area should not be referred to as Tauglboden Formation (Plöchinger 1982) but must be regarded to represent the very distal Strubberg-Sillenkopf succession.

Plöchinger, B. (1982): Geologische Karte der Republik Österreich 1 : 50.000: Blatt 95 St. Wolfgang im Salzkammergut mit Erläuterungen. – 1-74, Geol. B.-A., Wien.

Wägrich, M. & Decker, K. (2001): Sedimentary tectonics and subsidence modelling on the type Upper Cretaceous Gosau basin (Northern Calcareous Alps, Austria). *Int. J. Earth Science*, **90**: 714–726.