| Ber. Inst. Erdwiss. K.-F.-Univ. Graz | ISSN 1608-8166 | Band 21 | Graz 2015 |
|---|---|---|---|
| STRATI 2015 | Graz, 19 – 23 July 2015 | | |

# Mt. Jenner (Berchtesgaden, Germany) - a Late Triassic fore reef evolution of the Dachstein platform

MISSONI, S.[1], GAWLICK, H. J.[1], BECHTL, A.[1], BUCUR, II.[2], GRATZER, R.[1], PROCHASKA, W.[1]

[1] Montanuniversität Leoben, Department of Applied Geosciences and Geophysics, Leoben, Austria, email: s.missoni@daad-alumni.de
[2] Babes-Bolyai University, Department of Geology, Cluj-Napoca, Romania

The Late Triassic fore reef evolution of Mt. Jenner in the Berchtesgaden Alps, Germany offer a rare geological archive, in which shallow-burial dolomite formation can be studied in context with sequence stratigraphic cycles in the Norian Dachstein carbonate platform growth.
From the uppermost Carnian to Early Norian the internal fore reef architecture is formed by sequences comprised of dissolution breccia at the base, followed in the lower part by pack-/grainstones to float-/rudstones with shallow and hemipelagic bioclasts, and is overlain by higher energetic resediments.
Sequences in Middle Norian change to recurrent alterations of a shallower, higher energetic framework and deeper water bioclasts.
In the uppermost Tuvalian 3 to Lacian 2I transgressive/regressive cycles throughout the earliest Dachstein platform progradation require eustatic lowering of the hydrologic baselevel combined with massive shallow-burial dolomite formation in the fore reef. Mixing advection of seawater with meteoric water through the sediment at surface-near temperatures favours low Ca/Mg ratios, and salinities with an increasing palaeo-seawater ionisation in Br, Li, Na, Cl per cycle. Well-oxygenated depositional conditions suggests that an anaerobic methanogenic archaea biodegrade directly the organic matter from primary producers in producing biogenic methane. Stratabound hydrate water releases in the dolomite are coupled with singular negative shifts of O isotopes. The altered litho- and microfacies is consistent with the $SO_4$, J and F-poor ionisation. The palaeo-seawater ionisation of Ca, which is analysed by the Crush Leach method, is only weakly affected by the dolomitization in the platform margin, and follows in general the depositional trend of Ca-rich ionisation by a pelagic- and Ca-poor ionisation by a shallow-water influence. An initial stage of ?strike-slip tectonic or ?an extensional pulse in the Lacian 2, as known from the hemipelagic Hallstatt margin, resulted in remobilized erosional products of a volcanic/?ophiolitic hinterland.
The Lacian 2II until Lacian 3 sedimentation is dominated by several eustatic sea-level changes with exposure and stratabound dolomitization in the shallowing-upward cycles. Sulfate reducing bacteria favour in restricted conditions the formation of a distinctive clotted-peloidal micrite microfabric. Characteristic Hopanes in this low energetic environment indicate an input of palaeosoil with biodegraded land plants. Only, in the uppermost cycles of Lacian 3 *Griphoporella* and *Aciculella* dasycladacaen algae occur.
In the Alaunian 1, strong tectonic pulses triggered by strike-slip motions destabilize the geometry also on the proximal Hallstatt margin. Ongoing transgression resp. increasing subsidence, and biogenic crisis led to aggradation in the early Alaunian. Stratabound dolomite horizons with karst fissures top each eustatic sea-level cycle. Corals, microalgae, and calcified microbes recover in the Alaunian 3 and bloom in the latest Alaunian 3II. The platform margin evolution on Mt. Jenner is terminated by the tectonic pulse at the Alaunian/Sevatian boundary.
This Late Triassic fore reef architecture can be directly correlated with other high resolution Dachstein platform successions, dated by means of conodonts, e.g., in the Eastern Alps, Western Carpathians and Julian Alps.

**Acknowledgement:**
This study is founded by FWF Hertha-Firnberg project T533-N21 of the Austrian Sciences Foundation. Preliminary examinations by FWF project P14131-TEC, ÖAD-WTZ project Ro02/2012.