

influence, and some correlation of carbon and oxygen isotopes is present. Strontium isotope ratios ( $^{87}\text{Sr}/^{86}\text{Sr}$ ) range between 0.7078003 and 0.707980 and are similar to expected Middle Triassic sea water values and values from limestones of the same formation. This suggests early dolomitisation under the influence of Triassic sea water or formational pore waters. Dolomitisation under the influence of meteoric saline waters or metamorphic fluids can be ruled out based on isotope geochemistry. Based on our isotope data no indications for evaporates or deep burial dolomitisation have been found. We favour post-depositional seawater dolomitization models for the Wetterstein dolomites which are driven by convection through major parts of the Middle Triassic carbonate platforms due to slope convection (thermal seawater convection due to temperature differences from open ocean versus warm platform top, and reflux of slightly evaporated seawater derived from above). This model is transitional to early burial dolomitization models. Predicted geometries of such dolomites are massive, platform-related, follow the bedding, and follow largely convection cells.

### **Tabun Khara Obo impact crater (Mongolia): Status of Research**

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Tabun Khara Obo (TKO) is the only known meteorite crater in Mongolia. The crater is centered at 44°17'50"N and 109°39'20"E in South East Mongolia. It is a 1.3 km diameter simple bowl-shaped structure well outlined in modern topography and clearly visible on remote sensing images. The crater is located on a flat-top mountain range formed by Proterozoic metamorphic metasedimentary rocks. It is exposed in volcanoclastic sandstones and greywacke, quartz-feldspar-mica schist, and schistose terrigenous sediments. Gravity, magnetic,  $\gamma$ -ray, and resistivity data exist for the TKO structure (BAYARAA et al. 2005). The gravity correlates with the topography pretty well. The 2.5-3 mGal anomaly is similar to other same sized craters. The magnetic field depicts regional lithology NE trend. A weak magnetic low centered over the crater may be attributed to impact disruption and truncation of a regional trend. VE sounding data show an abrupt resistivity change from <30 $\Omega$ m to 200 $\Omega$ m at depths of 75-100m, which is attributed to the crater infill - target rock (breccia) boundary.

The TKO crater is slightly oval in shape, elongated perpendicularly to the regional NE lithology and foliation trend. We explain this by impact modification, when rocks of the crater rim slumped along the fracture planes preferentially developed along regional trend. A number of aligned hills at SE and NW may have formed by sliding of the blocks. Radial and tangential faults and fractures have developed abundantly through the periphery of the crater. Breccias found along the crater's periphery but mostly at E-NE part of the structure. Monomict breccias form narrow (<1 m) lenses while polymict breccias form cover sheets outside of the crater's Eastern rim. The base of these breccia cover is irregular which may imply it's deposition on paleo-surface. While geophysics and morphological data are consistent with an impact origin, no diagnostic evidence for shock metamorphism, such as planar deformation features (PDFs), has yet been found. Previous authors reported finding planar fractures (PF), isotropic quartz grains, and breccias with suevitic texture (SHKERIN 1976, SUETENKO & SHKERIN 1970). We also found cataclastic textures of quartz and PFs; however, such features are not wholly characteristic for impact processes and can also be formed by tectonic processes. A numerical model simulation was completed to reproduce the result

comparable to observed geologic setting. For this the SALEB hydrocode modeling software code has been modified by to replicate the elevated platform. A drilling project is planned for August-September, 2008. We plan to drill a 200 m deep core drill hole at or near the center of the crater and hope to recover impact breccias below about 70 m depth.

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### **An extensional allochthon at the southern rim of the central Northern Calcareous Alps - the isolated Jurassic occurrence of Mount Rettenstein near Filzmoos**

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Mount Rettenstein (also called Rötstein, 2246 m.a.s.l.) southwest of the Dachstein massif in the central Northern Calcareous Alps nearby the small town Filzmoos is a conspicuous limestone peak within the rather smooth „Werfener Schuppenzone“ landscape. It is the southernmost major incidence of Upper Jurassic (Late Oxfordian to Kimmeridgian) Plassen Carbonate Platform rocks in quite a distance to all other prominent Plassen Formation occurrences. The some hundreds of metres thick Plassen Limestone sequence is stratigraphically underlain by an Early to early Late Jurassic basin succession of grey marly limestone (Scheiblberg Formation - ?Hettangian to Pliensbachian; dated by ammonites and radiolarians), condensed red limestone (Adnet Formation – Toarcian; dated by ammonites) and grey to red radiolarite (Callovian to Oxfordian; dated by radiolarians). The primary Triassic substratum is missing due to tectonic processes. This Early to Late Jurassic Rettenstein sequence *sensu stricto* is surrounded/underlain by the Scythian-Anisian Werfen-Gutenstein succession of the „Werfener Schuppenzone“ from which, however, it is separated by a some tens of metres thick chaotic Hallstatt Mélange complex, dated by means of radiolarians as Bajocian to Bathonian. This Hallstatt Mélange is in moment the oldest known Hallstatt Mélange in the Northern Calcareous Alps, comparable with the occurrences in the Bad Mitterndorf region.

Two major faults of regional significance affect the Rettenstein section, constituting the lower and the upper border of the Hallstatt Mélange. The lower fault not only separates individual stratigraphic successions of different age and paleogeographic origin but also juxtaposes two units with remarkable difference in thermal overprint: The Conodont Alteration Index (CAI) of 1.0 acquired for Hallstatt Limestones and Zlambach Formation of the Hallstatt Mélange and the excellent state of the radiolarians in the Jurassic basin sediments prove low diagenetic conditions in the hanging-wall. In contrast, the southern „Werfener Schuppenzone“ rocks of the footwall are thought to have generally been subject of high diagenetic to low-grade metamorphic conditions – at Mount Rettenstein this metamorphic overprint is reflected by