possible, at least two instruments were placed at different stations.
The S-N line - due to the low number of stations (10) and the great distance between them - the measurements could be interpreted only as 1-d. 6 locations were used for long term („long-period“) measurements, and the thickness of the lithosphere was found more then 100 km at the beginning and at the end of the profile, and about 50 km in the middle part. (These interpretations are very much affected by near surface inhomogeneities and the result may contain large errors.) The longer SE-NW line could be interpreted as a 2-d section. Reliable results were obtained down to a depth of more than 10 km. The Graz basin with a depth down to 3 km and the transition from Northern Limestone Alps to Flysch as low resistivity zones can be clearly distinguished from the high resistive zones in the inner Alpine part of the profile. Further a low resistive dyke in between the alpine part is visible.
The measurements gave some very interesting qualitative results, but are not sufficient to construct a conductivity model of that region. For that purpose some hundreds of measurements with 3-d interpretation must be performed.
Acknowledgements: MT Pool of GFZ Potsdam; Austrian Acad. Sc. IGCP474-DIMS.

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Palustrine limestone in the sedimentary succession of the Cenozoic Thakhola-Mustang Graben (central Nepal)

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Located at the northern side of the Dhaulagiri and Annapurna Ranges and South of Yarlung Tsangpo Suture Zone, the Thakhola-Mustang Graben of central Nepal represents the Cenozoic extensional tectonic phase of the Tibetan Plateau and the whole Himalaya. The graben is an asymmetrical basin containing thick (more than 850 m) continental debris. Stratigraphically, the graben sediments are divided into four formations, namely the Tetang Formation, the Thakkhola Formation, the Sammargaon Formation and the Marpha Formation. The oldest sedimentary units are the Tetang and Thakkhola formations (Miocene) while the Sammargaon and the Marpha formations lying disconformably above these formations represent younger units (Plio-Pleistocene). Although the stratigraphy of the area is well established, the paleoclimatic evolution and the depositional environments of this graben are still largely unrevealed.
We tried to identify the depositional environment and the paleoelevation by studying palustrine limestones from different levels of the succession. Mapping, construction of columnar sections and sampling of limestone were carried out in the field while measurement of $CaCO_3$ concentration, $\delta^{18}O$ and $\delta^{13}C$ of micritic limestone and paleosoil limestone and thin section analysis of limestone were done in the lab. Pelletal, charophytic algae, oncolitic algal micritic palustrine limestones are present in the Thakkhola Formation whereas the Tetang Formation consists of micritic limestones with ostracodes, micritic mudstone with root and tuffaceous limestone. The percentage of $CaCO_3$ of the limestones from different horizons of these formations ranges from 24-95. The values of $\delta^{18}O$ (‰) (V-PDB) of limestone are very negative and range from -13.53 to -24.96 while the values of $\delta^{13}C$ (‰) (V-PDB) ranges between1.58 to 11.08.
The presence of discontinuous growth of oncolites with minimum quartz grain content suggests that they are developed a considerable distance away from the mouth of a river in agitated water. Algal mats and charophyte algae cemented by sparite are also present in shallow water Limestones. Spherical pellets, 25 to 40µm in diameter with irregular structures, are present in micritic limestones of deeper part of the lake system Ostracodes in dark micritic mudstone indicate quite and calm water condition.. Although the thickness of the graben is high, these microfabrics suggest that they are deposited in flat and shallow lacustrine environments. The $\delta^{18}O$ value of the limestones of the Thakkhola Graben reflects meteoric water values (GARZIONE et. al. 2000) similar to the modern value indicating that the Thakkhola-Mustang Graben attained the current elevation level prior to the east-west extension of the Himalaya. The relatively high $\delta^{13}C$ values of the carbonates suggest that the orthographic barrier (Himalaya) to moisture existed during the Miocene period.

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Outcrop analogue study and isotope geochemistry of Middle Triassic dolomites (Vienna Basin, Austria)

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The basement below the Neogene Vienna Basin of Austria (so-called „First Floor“ of exploration) consists of the thrust units of the Alpine-Carpathian nappes including units of the Northern Calcareous Alps. Within these, Middle and Upper Triassic carbonates and especially dolomites form the most important reservoir rocks, as the dolomites frequently are characterized by intensive jointing and comparably high fracture porosity. Several dolomitic intervals have been drilled; most prominent are Middle Triassic dolomites of the Wetterstein carbonate platform and Upper Triassic Hauptdolomit. The extent and genesis of dolomitisation has been investigated by applying outcrop analogue studies and isotope geochemical methods.
An outcrop analogue study was performed at the southwestern margin of the Vienna Basin, in the Helenental-Lindkogel area. Here, a transition from bedded into massive Wetterstein dolomite is exposed. Inside the bedded dolomites sometimes fine laminations of light and dark grey layer can be recognized. Two different kinds of breccias are present: the first one is a tectonic breccia occurring along extensional faults; the second one is a sedimentary breccia that is not linked to faults and appears in patches inside the dolomite. Data from porosity measurements show that on average the bedded dolomite has higher porosities (up to 7%) than the massive dolomites (1-3%). Dolomite types of these outcrops could be correlated into the well Schönfeld 1, where similar bedded types and breccias are present.
Stable isotope values of the dolomites range around 3 permil $\delta^{13}C$ VPDB and -1 permil $\delta^{18}O$ VPDB. Thus, carbon isotope values are near sea water values for the Middle Triassic and similar to coeval limestones. $\delta^{18}O$ isotope ratios indicate diagenetic

influence, and some correlation of carbon and oxygen isotopes is present. Strontium isotope ratios ($^{87}Sr/^{86}Sr$) 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 volcaniclastic sandstones and greywacke, quartz-feldspar-mica schist, and schistose terrigenic sediments. Gravity, magnetic, γ-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 <30Ωm to 200Ωm 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.

Acknowledgements: Our work is supported by the Austrian OEAD N-S Dialogue Scholarship program and the Austrian Academy of Sciences.

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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 Rötelstein, 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