

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 than 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.

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Palustrine limestone in the sedimentary succession of the Cenozoic Thakkhola-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 Thakkhola-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 CaCO₃ concentration, δ¹⁸O and δ¹³C of micritic limestone and paleosol 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 CaCO₃ of the limestones from different horizons of these formations ranges from 24-95. The values of δ¹⁸O (‰) (V-PDB) of limestone are very negative and range from -13.53 to -24.96 while the values of δ¹³C (‰) (V-PDB) ranges between 1.58 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 δ¹⁸O 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 δ¹³C values of the carbonates suggest that the orographic 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 δ¹³C VPDB and -1 permil δ¹⁸O VPDB. Thus, carbon isotope values are near sea water values for the Middle Triassic and similar to coeval limestones. δ¹⁸O isotope ratios indicate diagenetic