**Characterisation of main structures in the South German Molasse Basin from new reflection seismics for geothermal exploration**

MOHAJER-ASHJAEE, S.,[1,2] STEINER, U.[1] SCHUBERT, A.[1] NEUBAUER, F.[2]
[1] ERDWERK GmbH, Geothermie, Hydrogeologie, Bonner Platz 1, D-80803 München, Germany
[2] Dept. Geography and Geology, University of Salzburg, Hellbrunnerstr. 34, A-5020 Salzburg, Austria

For prospecting deep geothermal waters, 3D seismics is getting an increasingly important tool (e.g., Lüschen et al., 2011). This is particularly true for the Alpine Molasse zone, where the partly karstified Upper Jurassic Malm limestones limestones at the base is a well known aquifer increasingly used for geothermal purposes (Böhm et al. , 2012). These results also complement knowledge of the structure of Molasse basin, which represents the classical peripheral foreland basin to the Alpine orogen. Here, we report first preliminary results from selected sites of geothermal prospects. There, the following major structural elements can be recognized: Normal Faults are regularly indicated by the offset of base Malmian - and Eocene reflectors. However the often intense topography of the top Eocene compared to relatively flat base Malmian indicates also trans-tensional regime, resulting in characteristic linear elongated graben and horst structures underlying the Molasse sediments. Ca. NNW-verging listric thrust faults form together with back-thrusts pop-up and rare depressed synclinal structures in Oligocene part of the basin fill. The fore-thrusts root mainly in subhorizontal ca. bedding-parallel thrusts at the base of the Eocene-Oligocene basin fill. In other cases, these thrusts invert normal faults. The compressional tectonic structures taken together as mapped from the 3D seismics can be correlated with the late stages of the Alpine orogeny with mainly transpressional characteristics.

Böhm, F., Savvatis, A., Steiner, U., Schneider, M., Koch, M., 2012. Lithofazielle Reservoir-charakterisierung zur geothermischen Nutzung des Malm im Großraum München. Grundwasser, DOI 10.1007/s00767-012-0202-4.
Lüschen, E., Dussel, D., Thomas, R., Schulz, R., 2011. 3D seismic survey for geothermal exploration at Unterhaching, Munich, Germany. First Break, 29, 45–54.

**Mikrofazies und Verwendungsaspekte von Leithakalk aus historischen Steinbrüchen mit Schwerpunkt auf Kaisersteinbruch**

MOSHAMMER, B.,[1] HEINRICH, M.,[1] RABEDER, J.,[1] BERKA, R.,[1] HOLZER, R.,[2] BEDNARIK, M.,[2] LAHO, M.,[2] PELLER, I.,[2] UNTERWURZACHER, M.,[3] & UHLIR, C.[3]
[1] Geological Survey of Austria, Neulinggasse 38, 1030 Vienna, Austria
[2] Comenius University, Department of Engineering Geology, Mlynská dolina, 842 15 Bratislava 4, Slovakia
[3] CHC - Research Group for Archaeometry and Cultural Heritage Computing, University of Salzburg, Department for Geography & Geology, Hellbrunnerstraße 34, 5020 Salzburg, Austria

A contribution to carbonate microfacies and physical properties of Leitha Limestone s.l. from selected quarries in Burgenland and Styria (Middle Miocene, Austria)
Leitha Limestone s.l. was chosen for investigations within the Historic Quarries Bilateral Project Slovakia-Austria because of its importance as building and sculpture stone since Roman times and its immense use in nearby modern or ancient cities: Bratislava, Carnuntum, Vienna, Graz, Flavia Solva. The surveyed old quarries are situated in the military area of Bruckneudorf including the historical quarry village Kaisersteinbruch and were complemented by the still active and famous quarries of St. Margarethen (so called “Römersteinbruch”), an old quarry nearby (Gaisriegel), and by the underground quarry near Leibnitz in Styria (correctly called “Römerbruch”, producing “Aflenzer Muschelkalk”).
Thin sections were studied for carbonate microfacies and drill cores (35 mm diameter) served for geotechnical analyses (bulk density, specific gravity, porosity, absorption capacity and average uniaxial compressive strength). The major lithological groups are the “grown” (par-/autochthonous algae boundstones) and the detrital limestones. In detail they are varying considerably. An example is given in Figure 1.
Their stratigraphic attribution to the Badenian, or partly younger, is preliminary. Eventual terrestrial influence and hydrodynamic sedimentary conditions can be inferred from texture, the biogenic, silici- and lithoclastic contents. Probably less meaningful for environmental interpretation is the diagenetic overprint which caused selective leaching, neomorphism and cementation, however, this is a dominant factor for the physical rock’s behavior.

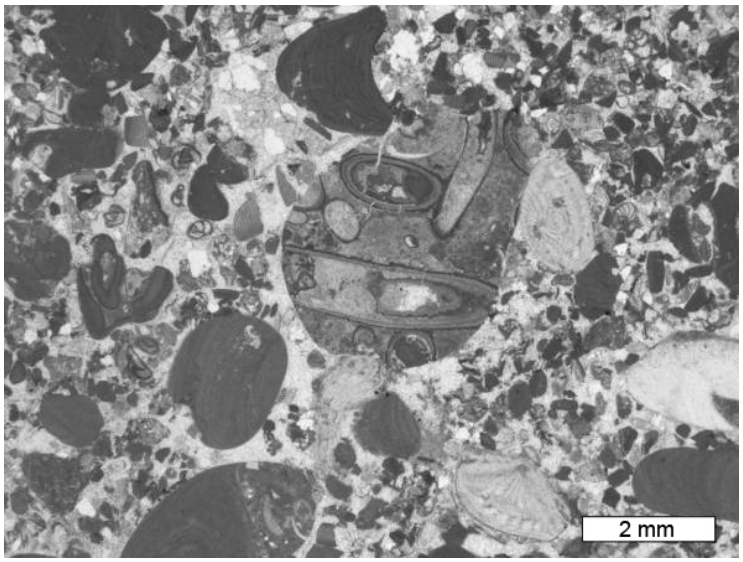


Figure 1: Detrital Leitha Limestone from Kaisersteinbruch (Kapellenbruch).

**Neubewertung des 1906 Dobra Voda Erdbebens an der Wiener Becken-Störung nach der Environmental Seismic Intensity Scale (ESI) 2007**

MÜHLMANN, E., DECKER, K. & HINTERSBERGER,E.
Universität Wien Department für Geodynamik und Sedimentologie

Das Erdbeben von Dobra Voda 1906 (9. Jänner, 23.07 Uhr) zählt zu den stärksten historischen Erdbeben im Bereich des Wiener Becken-Störungssystems. Gemeinsam mit seinen zahlreichen Nachbeben dominiert es die Seismizität der Blattverschiebung am Südostrand des Wiener Beckens. Für das Beben liegen detaillierte Aufzeichnungen über Gebäudeschäden sowie die Reaktionen der Bevölkerung in den betroffenen Ansiedlungen von den damaligen österreichisch-ungarischen Behörden vor. Auf Grundlage dieser Beobachtungen wird in verschiedenen Erdbebenkatalogen für das Beben eine Epizentralintensität von I0 = 8-9 und eine davon abgeleitete Magnitude von M = 5.7 angegeben (ACORN, 2004; CENEC, 2009).
Ein zeitgenössischer ungarischer Bericht dokumentiert neben den Auswirkungen auf Menschen und Gebäude auch die Effekte auf die natürliche Umgebung. Neben hydrogeologischen Beobachtungen an Brunnen und Quellen werden Bodenverflüssigungen, Rutschungen und Spaltenbidlungen, die im Epizentralgebiet während des Erdbebens entstanden, detailliert beschrieben. Solche Befunde finden in der gängigen Europäischen Intensitätenskala (EMS-98) keine Beachtung und haben somit kaum Einfluß auf die Abschätzung der Intensität des historischer Erdbebens. Genau diese Phänomene an der Erdoberfläche gewinnen in der kürzlich etablierten Environmental Seismic Intensity Scale (ESI 2007) stärkere Beachtung. Verwendet man diese Skala, erhält man eine Abschätzung der Stärke des Dobra Voda Erdbebens mit I0~9.

**The effect of petrographic composition of railway ballast on the Los Angeles Abrasion Test**

NEUBAUER, A.[1] BACH, H.[2] & LATAL, C.[1]
[1] Graz University of Technology , Institute of Applied Geosciences, Rechbauerstraße 12, A-8010 Graz, Austria
[2] Graz University of Technology, Institute of Railway Engineering and Transport Economy, Rechbauerstraße 12, A-8010 Graz, Austria

The Los Angeles Test is a common method in order to determine a material's resistance to degradation by abrasion and impact. According to Selig & Boucher (1990) the tendency to wear or fracture is governed by rock type, particle shape and gradation. As the gradation is standardised for the Los Angeles Test, different rock types were selected to identify the influence of petrographic composition and geometric parameters on the L.A. coefficient. 85 Los Angeles Tests were performed on 4 different ballast specimens: basalt, granite porphyry, dunite and granulite. Due to macroscopic criteria a classification into subclasses was conducted in case of granite