dimensionalen Datenquellen abgeleitet wurden. Weiters konnte gezeigt werden, dass viele geomorphologische Strukturen mit gravimetrischen relevanten Dichteänderungen assoziiert sind, und damit auch ein eindeutiger Beweis für ihren tektonischen Ursprung erbracht werden kann. Daten aus Bougueranomalien haben damit zur wesentlichen Verbesserung des Verständnisses der pleistozänen Geschichte beigetragen. Die vorhandenen Gravimetriemesswerte, die insbesondere in verschieden Sedimentbecken großflächig und mit hoher Auflösung verfügbar sind ist, können damit als wichtige Quelle zur hochauflösenden Strukturaufnahme dienen.

The unique style of biocalcification by *Oocardium stratum* (Desmidiaceae, Chlorophyta)

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In the Eastern Alps, spring-associated limestones (SAL) are present as flowstones and porous limestones (tufa limestones). Among actively-forming tufas, formation of limestones with a cream to ocre-coloured, smooth to botryoidal surface is induced by the unicellular micro-alga *Oocardium stratum*. Calcification by *O. stratum* can comprise a major portion of large SAL deposits. Individual cells are heart-shaped globuli each embedded in a mucus capsule. Along part of the mucus capsule, calcification is induced in form of a tube-shaped calcite crystal. During calcite precipitation, the cells shift upward. When the cells split, their corresponding tube branches, too, while the optical orientation of the crystal lattice is retained. In this way 'bush-shaped' elongate single calcite crystals riddled by tubes (left behind by the upward-shifting algae) originate. A different calcification is represented by hemispheres with laterally-merged calcite tubes; it is as yet unknown to what extent the variations in calcification are related to environment (e. g. water chemistry, hydrology, illumination, crystallization substrate) or to genetic differences within '*O. stratum*'. Experiments with precipitation substrates indicate that calcification by *O. stratum* can proceed rapidly: the determined maximum rate of calcification (starting from colonization) is up to 10 mm per eight months. During the cold/low-lit season calcification ceases, and the cells pass into an unknown state (anabiosis?, encystation?). Over the cold season, diatom mats spread and show precipitation of calcite rhombohedra within their mucus. In the next warm season, diatom mats disappear, and *O. stratum* regenerates from unknown sources (re-activated cysts?, spores?). The calcification by *O. stratum* is unique in that spheroidal unicells produce tube-shaped, gently curved, single calcite crystals up to 10 mm in documented length. *Oocardium* calcite can comprise a macrofacies of laminated tufa in itself, or may build the 'limestone component' of phytoclastic tufas and moss tufas. In diagenetically matured SAL the original fabric of *Oocardium* calcite tends to be blurred by recrystallization combined with further, inorganic crystallization of calcite spar, leaving a coarsely-crystalline sparstone ('combispar') with patchy relicts of the original fabric. We suspect that microfacies produced by *O. stratum* are often confused with calcification fabrics from filamentous cyanobacteria, which latter are more easy to recognize in the field and in many cases are present in the same creek together with *O. stratum*.

Modern molluscan drilling frequencies in the Gulf of Trieste

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Several hypotheses have been suggested to explain the transition from Paleozoic faunas dominated by epibenthic suspension-feeders to post-Paleozoic faunas dominated by endobenthic animals. The Northern Adriatic Sea has been used as a modern analogue for epeiric Paleozoic shelf environments because in its eastern and northernmost parts it supports dense communities of epibenthic suspension feeders (mostly sponges, ascidians and ophiurids) - a faunal structure characteristic of the Paleozoic rather than the Recent based on the life-modes of its constituent taxa. For this reason the Northern Adriatic Sea has been used to explore this long-term faunal transition. Low predation and bioturbation intensities are considered background conditions in the Northern Adriatic, but few studies have analysed drilling predation in this area. In this study we examine drilling predation on molluscs as a test of the low-predation hypothesis.
Standardized bulk samples were collected from the upper-most 20cm of sediment at two tidal flat- and six sublittoral locations. The species composition is relatively diverse (172 species of bivalves, gastropods and scaphopods from the subtidal and 67 from the intertidal, totalling 178), is typical for Mediterranean Seas and is taxonomically similar between samples. A total of 60,480 disarticulated valves and gastropod shells, and 700 articulated bivalves were examined for drill holes. The overall drill frequency across subtidal samples was 27.5%, and across intertidal samples was 1.93%. Overall drilling frequency for individual subtidal samples ranged from 18.7% to 32.4% and for intertidal samples from 1.4% to 2.4%. Three species, *Bittium latreillii*, *B. reticulatum* and *Corbula gibba* were abundant in the intertidal and subtidal. For each, drilling intensities were higher in the subtidal [*B. latreillii* (n = 4353, DF = 34.5%), *B. reticulatum* (n = 2296, DF = 32.9%), *Corbula gibba* (n = 1877, DF = 33.4%)] than in the intertidal [*B. latreilli* (n = 1066, DF = 3.4%), *B. reticulatum* (n = 3517, DF = 2.67%), *Corbula gibba* (n = 1948, DF = 0.0%)]. Other abundant subtidal taxa include *Nassarius cf. pygmaeus* (n = 2387, DF = 14.1%) and *Turritella communis* (n=2209, DF = 44.1%); both confirm high drilling frequencies in the subtidal. In addition, *C. gibba*'s prey effectiveness - reflecting this species' ability to resist drilling predators in the subtidal - is high (PE = 48.5%). In summary, our results suggest that drilling frequencies are low in the intertidal, but high in the subtidal; therefore we cannot support low predation intensity as a general background condition in the Northern Adriatic Sea.

Predatory drilling intensities of Karpatian and Badenian molluscan assemblages from the Central Paratethys

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Predation may be one of the most important agents of natural selection and therefore may contribute greatly to regional and global biodiversity. Direct evidence of ecological interactions between fossil organisms is generally rare, but one exception is predatory drill holes on molluscan shells. To date little is known about ecological interactions between molluscs and their shell-

drilling predators from Karpatian (Upper Burdigalian) and Badenian (Lower Langhian) assemblages in the Central Paratethys. There, Karpatian molluscan assemblages occur in restricted, nearshore environments and, compared to the shelf assemblages of the Badenian, are characterized by rather low diversity (species richness and evenness). From the perspective of evolutionary palaeoecology it is of special interest if the low-diversity assemblages of the Karpatian are also characterized by lower predation intensities than their higher diverse open shelf's counterparts from the Badenian.
Drilling frequencies (df) were calculated from three Karpatian (Kleinebersdorf, Neudorf, Laa) and two Badenian localities (Grund, Gainfarn). Somewhat surprisingly two of the low-diversity, nearshore Karpatian localities, Kleinebersdorf (n = 1431, df=18.0%), Neudorf (n=229, df=12.7%), had distinctly higher predation intensities than the two Badenian localities Gainfarn (n=8719, df=6.6%) and Grund (n=4205, df=5.1%), which are in the range of the third Karpatian locality Laa (n=2451, df=5.6%). This pattern is also roughly reflected in predation intensities of the most abundant species, which vary from locality to locality. In the Karpatian assemblages, the most abundant taxa were *Granulolabium bicinctum* (n=465, Kleinebersdorf df=20.3%), *Amalda glandiformis* (n=54, Neudorf, df=7.4%), and *Agapilia pachii* (n=845, Laa, df=2.7%). In the Badenian assemblages the most abundant taxa were *Corbula gibba* (n=5770, Gainfarn, df=6.6%) and *Timoclea marginata* (n=1616, Grund, df=2.6%).
As a preliminary conclusion, drilling frequency appears generally to be patchy in the Miocene of the Paratethys and low-diversity, nearshore assemblages of the Karpatian tend to have higher drilling frequencies than higher diverse open-shelf assemblages of the Badenian.

The Schützen „hot spot": 3D-modelling of a shallow aquifer (Northern Burgenland, Austria)

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Wachtel (1859) reported the temperature of the Schützen sulphur spring 24-26° Reaumur (equalling 30-32° Celsius), and therefore the former thermal spring of Schützen is comparable to the well known occurrences of natural thermal springs in the vicinity of the Leithagebirge. Later on this hot spring cooled down and suddenly disappeared in 1971 when foundation works cut the groundwater flow close to the dome of Leitha limestone formation of the „Kalkofen" quarry (Theuer & Trucksitz 1996). The tectonic situation between the Ruster Höhenzug and the Leithagebirge is quite complex, as can be shown by hybrid seismic sections down to 200 metres, and shallow 2D-resistivity tomography profiles (Scheibz 2006). A high resolution 3D-multielectrode geoelectrical survey in the center of Schützen revealed a detailed insight in the near to the surface aquifer geometry of this former hot sulphur spring. The Upper Miocene of the Schützen region consists of Leitha limestone of Badenian to Sarmatian age which is overlain by Lower Pannonian siltstone and claystone. The profile of a bore hole down to eight metres in the discharge area of the former sulphur spring consists of limestone intercalated with sand and gravel. The karstified aquifer is confined by a layer of about three metres consisting predominantly of siltstone (Kollmann et al. 1990). A raster of seven 2D-sections at a length of 100 to 150 metres each and down to a depth of 14 metres revealed a high resistivity centre where a 3D-block was measured. Resistivity tomography of this block of 2500 m^2 in size, down to a depth of 28 metres shows a complex buckling pattern of higher resistivity beds (consisting of Miocene limestone), overlain by lower resistivity beds interpreted as Pannonian siltstone. From the structural point of view this local buckling of karstified limestone may be due to folding and faulting tectonics, comparable to the local uplift of the Kalkofen-slice north of Schützen.
Mulitielectrode resistivity measurements in the vicinity of the up-lifted Leitha limestone revealed that up-thrusting of Miocene beds is only restricted to a narrow corridor between the Ruster Höhenzug and the Leithagebirge.

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Geologic interpretation of shallow and deep geophysical soundings in the section Leithagebirge - Ruster Höhenzug (Northern Burgenland, Austria)

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DC geoelectric and seismic measurements have been carried out along a profile near the village of Schützen/Northern Burgenland. The profile connected the northeast trending mountain range of the Leithagebirge with the north-south trending „Ruster Höhenzug" that both can be understood as far foothills of the Central Alpine zone. A section of 2000 m starting from north of Schützen and extending up to the Goldberg in the southeast was investigated. The high resolution seismic survey allowed the interpretation as refraction, reflection and refraction tomography. The approximately NW-SE-trending seismic section revealed a cover with p-wave velocity of 800 m (above the ground water table) over a seismic layer with about 1700 m/s (below ground water table) and a maximum depth of 50 m followed by a layer with velocity increasing from 2000 m/s to over 2500 m/s. A prominent reflection signal indicates the interface between first and second layer into the depth. The velocity of the deepest resolved layer, presumptively the basement, was over 2700 m/s. The basement showed a syncline at profile meter 500 and an anticline at 900 m and further not so prominent undulations at longer distances. A more shallow depression is also visible at the interface between first and second layer. As the amplitudes of reflectors are clearly visible also at greater depth of the basement, folding of