gerem Milieu lagerten sich graue, sowie rötlich-braune Silte ab. Klüfte sind mit jüngerem, siltigen, wahrscheinlich pleistozänem Material verfüllt. Synsedimentäre Deformation, möglicherweise bedingt durch Paläo-Erdbeben, kann beobachtet werden. Im obersten Bereich des Steinbruches lagerten sich Konglomeratkomponenten in toniger Matrix ab, welche auf Murenabgänge (Debris Flows) zurückzuführen sein könnten.

New Triassic and Jurassic biostratigraphic constraints for precision of the age of Darnó ophiolitic melange (NE Hungary)

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The Darnó Complex in the Darnó Hill type area in north Hungary represents an ophiolite mélange complex similar to those in the Dinaridic realm. The ophiolite suite is closely associated with radiolarites and ophiolitic mélanges containing blocks of up to kilometer-size. The components consist of radiolarites, pelagic Bódvalenke and Hallstatt-type limestones as well as remnants of a Triassic-Jurassic ocean floor. The mélange contains a turbiditic, shale-radiolarite-matrix, dated roughly as Middle Jurassic by former preliminary investigations.

In the Mély-völgy quarry near Recsk we isolated from the radiolaritic matrix of the ophiolite blocks a well preserved Callovian-Oxfordian radiolarian fauna: *Archaeodictyomitra minoensis, Archaeodictyomitra* spp., *Eucyrtidiellum semifactum, Eucyrtidiellum unumaense, Hsuum maxwelli, Protunuma ochiensis, Saitoum trichylum, Stichocapsa japonica, Tricolocapsa conexa, Tricolocapsa* sp., *Triversus hungaricus, Tetracapsa* sp., *Unuma gordus, Williriedellum dierschei, Zhamoidellum ovum*. On the other hand, from a red radiolarite horizon interfingering with a m-sized green basalt block just above the sampling points of this Jurassic fauna, we found a poorly preserved, but unambigously latest Anisian to Late Ladinian radiolarian fauna: ?*Entactinosphaera* sp. cf. *Entactinosphaera triassica, Pseudostylosphaera longispinosa, Spongopallum* sp., *Parasepsagon* sp. The age range and composition of the Darnó mélange seems to be similar to the ophiolitic melanges in the Dinaridic Ophiolite Belt and in Medvenica and Kalnik Mts. on the NW in Croatia. Due to the typical features the Darno ophiolitic mélange is interpreted to be formed originally as a primary synorogenic sediment formed simultaneously during thrusting of ophiolite and sediment-cover nappes representing ocean floor and underplated fragments of the a continental margin, overprinted by contemporaneous and younger tectonics forming a typical accretionary complex.

In the Late Jurassic the Darnó mélange belonged to the northernmost part of the coherent, north-south trending Neotethyan ophiolite belt (e.g. accretionary complex zone) striking from the Hellenides (Maliak Zone) northward to the Albanides (Mirdita Zone) and the Dinaridic Ophiolite Belt. From this setting it became displaced due to sizeable ?Cretaceous to Tertiary strike-slip movements along the Mid-Hungarian Zone.

Facies and cyclicity of the Lower Permian Zweikofel Formation (Upper *Pseudoschwagerina* Limestone), Carnic Alps (Austria).

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The mixed siliciclastic-carbonate Zweikofel Formation (Sakmarian to Artinskian) of the Carnic Alps (Austria) is interpreted as a stack of transgressive and highstand systems tracts, respectively, of glacio-eustatic sequences. The Zweikofel Fm is 94-106 m in thickness, and consists of a cyclic succession of thin- to thick bedded fossiliferous limestones and four intercalated intervals 1-4 m thick of siliciclastics. The entire Zweikofel Fm comprises approximately 4.5 Ma of time, which indicates a low average accumulation rate of about 22 m/Ma. The siliciclastic intervals consist of siltstone, sandstone and fine-grained, quartz-rich conglomerate with grain size up to about 5 cm. Fossils indicate deposition in a shallow-marine nearshore environment. The inventory of carbonate facies is characterized by oolitic and macro-oncolitic limestones, respectively. Other common facies include bioclastic grainstones/packstones, bioclastic wackestones/packstones, and algal floatstone. A diversified faunal and algal assemblage indicates deposition in a shallow neritic, normal-saline, low- to high-energy environment. Within the intervals of limestones, a paracyclic vertical arrangement of facies is identified. The lower part of the paracycles consists of oolitic and bioclastic grainstones to packstones. Up-section, within a paracycle, these grade into thin- and wavy bedded, dark gray oncolitic and algal limestone. At Garnitzenbach, parasequences are 1-7 m in thickness and characterize the lower and middle part of the Zweikofel Fm. The upper part consists of thin- and wavy-bedded fossiliferous limestones with abundant algae and, locally, crinoids and gastropods. In the Zweikofel section, paracycles up to 13 m in thickness are characterized by oolitic limestones in their upper part. Low average sediment accumulation rate of the Zweikofel Formation combined with persistent deposition of shallow neritic facies suggests that the base of the siliciclastic intervals is a sequence boundary, and that the siliclastics represent part of the transgressive systems tract. Above, the limestones would pertain to the transgressive and/or to the highstand systems tract. In both sections, thin-bedded fossiliferous limestone of the uppermost Zweikofel Formation is sharply overlain by unbedded *Tubiphytes-Archaeolithoporella* mound facies of the overlying Trogkofel Group.

New results on the groundwater body of the Parndorfer Platte (Northern Burgenland, Austria)

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According to the requirements of the Water Framework Directive (WFD, Article 4) and the Austrian Water Act (WRG, § 30c), a good status of groundwater should be achieved by the year 2015. For this reason it is necessary to know the time elapsed between measures set in the recharge area and improvements at the observation wells. In many areas dominated by agricultural use the problem of high nitrate concentrations in the groundwater and

drinking water is of prime importance.
Nitrate infiltrates, from soils under intensive agricultural use or other sources, into groundwater and therefore in many cases into drinking water resources. An estimation of the Mean Residence Time (MRT) of groundwater as well as an investigation of the natural hydrological facts concerning groundwater recharge is possible by isotope-hydrology measurements (oxygen-18, tritium etc.) if there is no anthropogenic tritium contamination (e.g. waste disposal sites, water treatment plants etc.) or infiltration of river waters enriched in tritium.
From the commonly available methods to determine Mean Residence Times (MRT < 50 yrs) of waters for research and practical purposes, the following methods were tested (KRALIK et al. 2008):
1) Variation of the oxygen-18 isotopes
2) Tritium-model ages as routine method as well as
3) Tritium/Helium-3 ($^3H/^3He$) and
4) Chlorinated Fluor-Carbons (CFC) measurements
The main purpose was to obtain a statistical overview of the MRTs in the first few metres of the frequently used uppermost aquifer. Five standard monitoring wells of the Parndorfer Platte and the Traun Enns Platte were analysed by the Isotope Hydrology Section of the IAEA for CFC and $^3H/^3He$ concentrations.
Investigations in the groundwater body **Parndorfer Platte** (HÄUSLER 2007) included all six monitoring wells of the Austrian Water Quality Monitoring System (GZÜV). Thus, on a quarterly basis, 24 groundwater samples were collected and analysed. Four monitoring wells (67 %) show MRTs between 15-30 years and two monitoring wells (33 %) at the eastern border indicate MRT > 50 years. However, there is no simple relation between MRT and the nitrate or pesticide content. From the calculated MRTs it is evident that measures taken now to improve the groundwater quality will in most monitoring wells not show effects in a few years' time. However, monitoring wells with short MRTs can be used to test groundwater quality improvements within a short time period.

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Tectonothermal evolution of a Jurassic suture zone in the Greek Rhodope

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A Jurassic suture zone in the Greek Rhodope is studied in terms of structures, petrology and age. It represents a widely dispersed agglomerate of rocks which experienced continuous deformation and metamorphism from Early Jurassic to Late Cretaceous recorded in metapelites, metabasites and metaperidotites. The suture zone is located between a lower plate of Carboniferous/Permian and an upper plate of Late Jurassic gneisses. On the basis of different temperature conditions in the footwall compared to the hangingwall, the suture zone itself is divided into an upper and a lower subunit which experienced coherent deformation stages. A geodynamic scenario for the Greek Rhodope describes continuous subduction and related magmatism in the Mid Jurassic and in the Late Cretaceous. Variscan basement was detached from the European plate and experienced together with Permian oceanic rocks intense deformation and metamorphism close to ultra-high-pressure level at ≥180 Ma. The studied rocks define buoyant slivers which exhumed along the subduction thrust pathways as result of slab breakoff in the Late Jurassic. Hangingwall units of the suture zone were positioned at the base of the upper plate and experienced coaxial geometries and thermal reequilibration. Subsequent and final exhumation was due to high-grade SW-vergent shearing followed by low-angle NE-vergent normal faulting on-top of the exhuming wedge. The final architecture of the Greek Rhodope results from thermal overprints in the Tertiary and the formation of a southward propagating core complex in a back-arc position.

Type locality of the Hochreith Formation as part of the Lower Cretaceous Rossfeld basin fill of the Weitenau syncline revisited (Northern Calcareous Alps, Salzburg)

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The type locality of the Hochreith Formation, which is normally correlated with the Schrambach Formation (late Berriasian to Valanginian) or more likely the basal part of the Rossfeld Formation (late Valanginian to early Hauterivian), should be therefore the basal part of the sedimentary succession of the Early Cretaceous Rossfeld basin fill of the Weitenau syncline east of the type area of the Rossfeld Formation.
To prove the age of these cherty limestones we reinvestigate the type locality of the Hochreith Formation. The change from pure micritic limestones of the Oberalm Formation (Late Tithonian to Berriasian as proven by calpionellids in the Weitenau syncline) as part of the Kimmeridgian to Berriasian Plassen Carbonate Platform in a deep-water setting to the siliclastic influenced cherty limestones (?Hochreith Formation) should be contemporaneous with the drowning of the Plassen Carbonate Platform in Late Berriasian times. Interestingly fine-grained turbidites consist of shallow-water debris and thick mass-flow deposits of the Barmstein Limestones are missed in the Weitenau area. Upsection of the Hochreith Formation the younger (?Hauterivian to Aptian) sedimentary succession shows a coarsening upward trend with an increase of turbidites and mass-flows to the top of the succession.
The well bedded, cherty, bioturbated limestones with marly intercalations of the type locality bear a relatively poor radiolarian assemblage: *Acaeniotyle* sp., *Alievium* cf. *helenae*, *Archaeodictyomitra mitra*, *Archaeodictyomitra sixi*, *Cryptamorphella* cf. *dumitricai*, *Dictyomitra* sp., *Gongylothorax* cf. *favosus*, *Hisocapsa uterculus*, *Pseudodictyomitra* cf. *primitiva*, *Rhopalosyringium* sp., *Sphaerostylus* cf. *squinaboli*, *Tetracapsa* cf. *kaminogoensis*, *Williridellum* cf. *sujkowskii*, *Xitus rectularis*. This radiolarian fauna test the age of the Hochreith Formation as Late Kimmeridgian to Early Tithonian. Therefore a comparison with the Schrambach Formation or the lower Rossfeld Formation is obsolete. In fact the Hochreith Formation underly stratigraphically the Oberalm Formation.
On base of the detection of Late Kimmeridgian-Early Tithonian cherty limestones in the Weitenau syncline below the Oberalm Formation and the upsection following Rossfeld basin-like basin fill the Weitenau syncline cannot directly be compared with the sedimentary succession of the Rossfeld basin fill in the type area