findlichen, in ein Evaluierung hinsichtlich des geothermalen Potentials ist eine Herausforderung für die Zukunft.

Facies and lithostratigraphic anatomy of a Central Paratethys temperate carbonate platform (Leitha Mountains, Badenian, Austria)

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The Leitha Limestone is a widespread carbonate unit of Middle Miocene age in the Pannonian Basin System. Especially the Leitha Mts. represent a small isolated carbonate platform of Langhian to Early Serravallian age (=Badenian). This platform attains a size of c. 30 km length (NNE-SSW) and 6 km width. Seismic surveys document a potential thickness of more than 200 m for the entire carbonate succession, which consists pre-dominantly of corallinacean limestones. It comprises a variety of facies, characterized by different organism groups (e.g., corallinaceans, corals, molluscs, echinoderms and brachiopods) which reflect variable environmental conditions. Carbonate production itself is very sensitive to small environmental changes in basic parameters like climate, temperature, nutrients and water energy; especially in very shallow marine environments, marginal changes in water depth induce large displacements of facies zones. In the Central Paratethys Sea coral reefs s.s. seem to be limited to the Styrian Basin while for example in the Vienna Basin only coral carpets occur. Nevertheless, coral-bearing limestones are widespread along basin margins and platforms during the Mid-Miocene Climate Optimum (MMCO) extending northwards into the Carpathain Foredeep. With the onset of the Miocene Climate Transition (MCT), the paleogeographic extension of these bioconstructions became strongly limited and their northernmost occurrences remained in the area of the Pannonian Basin complex. Aside from the cooling, coral growth might have been negatively affected during the MCT by increased terrigenous discharge from the Alps due to more humid conditions. Coeval coral bioconstructions were therefore represented only by coral carpets and small patch reefs, restricted to isolated platforms. In the Leitha Mts. the interval from the MMCO to the MCT can be studied based on new nannoplankton data. These new findings allow a re-evaluation of the mollusc-, echinoid- and coral assemblages as well as the overall carbonate facies in terms of regional environmental shifts and global climate change.

Lithostratigraphy and facies of a Middle Badenian limestone succession in the Mannersdorf quarries (Austria, Central Paratethys)

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The Middle Miocene Vienna Basin is characterized by the development of small carbonate platforms along the basin margins and on tectonic highs. These comprise corallinacean limestones with rare and local coral patches or carpets. The successions within the platforms are expected to provide insight into paleoenvironmental and climatic changes, because they were more sensitive to regional factors like increased sediment or freshwater influx than open marine areas. In this study we want to characterize the north-eastern part of the Leitha Mountains carbonate platform with c. 80-m-thick continuous corallinacean limestone successions covering a Central Alpine Permian-Mesozoic core. The studied outcrops are close to the village Mannersdorf in Lower Austria. The faunal elements (e.g., *Porites*, *Tarbellastraea*, *Isognomon* and *Pholadomya*) indicate an Early/Middle Badenian (Early/Late Langhian) age for the limestones. The exposed sedimentary succession shows two transgressive-regressive (T-R) sequences and one transgressive phase. The first T-R sequence starts with basal conglomerates grading into poorly sorted gravel and coarse sand with a first intercalation of a corallinacean limestone bed. Upsection, this marine phase is terminated by progradation of fluvial gravel. The second T-R sequence starts with the development of marly corallinacean limestones, containing a shallow marine fauna including *in situ Pholadomya*. Upsection, deeper marine rhodolite carpets are developed which are replaced by marly limestones with *in situ Pinna* indicating seagrass facies. Seagrasses grow in the well illuminated intertidal and subtidal zone. In the present-day Mediterranean Sea, *Pinna* is found down to 10 m in association with seagrasses. The third transgression is represented by development of marl sand flats which in the recent are mostly found in water depth of about 40 m.

In-situ trace element and ID-TIMS Sm-Nd analysis of scheelite and Re-Os dating of molybdenite at Schellgaden, a Au-(W) deposit in the Eastern Alps, Austria

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Scheelite-bearing gold occurrences („Schellgaden type“) are located along the eastern margin of the Penninic Tauern Window in the upper parts of the pre-Alpine sequences of the Storz-Kareck complex. The volcano-sedimentary and calc-alkaline plutonic rocks of this complex, interpreted as an island arc sequence, were intruded by Variscan granitoids („Zentralgneise“). Subeconomic molybdenite mineralization, which is spatially distal and presumably unrelated to the Au-(W) occurrences, is associated with an aplitic granite gneiss. Molybdenite from this aplitic granite gneiss was dated with the Re-Os chronometer. Two runs of one molybdenite sample yielded ages of 362±3 and 366±1 Ma, the first run less than optimally spiked.

Both host rocks and the ore deposits were affected by polyphase deformation and metamorphism during the Young Alpine orogeny. Three types of sulfide-bearing Au-quartz veins are known: concordant mylonitic (Type 1), remobilized sub-concordant (Type 2), and discordant (Type 3; AMANN et al. 1997). Scheelite is restricted to Type 1 veins. It shows bluish fluorescence under UV light and is associated with galena, pyrite, minor other sulfides and native gold. Large scheelite crystals (*Scheelite 1*) are deformed and show metamorphic re-crystallization (*Scheelite 2*).

Trace element concentrations in scheelite were obtained using EMS and LA-ICPMS techniques (WIESER 2010). Both scheelite generations are Mo-poor, do not show pronounced zonation in cathodoluminescence images and have similar trace element concentrations. Total REE concentrations in scheelite are high (454-2378 ppm). Chondrite normalized REE patterns of both scheelite generations show enrichment in MREE and a relative depletion of LREE and HREE, resulting in convex (bell-shaped) patterns. Similar REE patterns are known from orogenic (mesozonal) gold deposits.

Sm-Nd isotope systematics of *Scheelite 1* obtained by micro-drilling from polished sections was analyzed by ID-TIMS (WIESER 2010). Concentrations of Sm (65-171 ppm) and Nd (111-365 ppm) are remarkably high for scheelite. However, $^{147}Sm/^{144}Nd$ ratios vary only within a very narrow range from 0.1836 to 0.2623. Thus, the calculated regression ages have very large uncertainties. An age of 322±140 Ma can be calculated from all (n = 12) analyzed samples. Initial ε_{Nd} values for all scheelites are slightly positive (+1.9 to +2.9). Hence, an old crustal source, strongly enriched in LILE, can be ruled out and an Alpine age for Type 1 mineralization is excluded. An epigenetic hydrothermal formation for the Au-(W) deposits during the Variscan orogenic cycle is favored, although the large age uncertainty does not preclude a pre-Variscan, syngenetic origin.

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Die Hydrodynamik fossiler Blockgletscher am Beispiel des Schönebenblockgletschers, Österreich

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Große Gebiete im österreichischen Alpenraum wie die Hohen Tauern oder die Niederen Tauern sind vorwiegend aus kristallinen Gesteinen aufgebaut. In diesen Gebieten sind Blockgletscher wichtige Grundwasserspeicher. Großraumstudien (UNTERSWEG & SCHWENDT 1996) ergaben für die Niederen Tauern beispielsweise über 450 vorwiegend fossile Blockgletscher, an die Quellen mit hoher Schüttung gebunden sind. Viele dieser Quellen werden für Trinkwasserversorgungen aber auch zur Energiegewinnung im Zusammenhang mit Kleinkraftwerken genutzt. Über die Entwässerungsdynamik und die Speichereigenschaften fossiler Blockgletscher ist bis dato aber noch wenig bekannt.

Der Schönebenblockgletscher befindet sich in den Niederen Tauern und erstreckt sich von 1720 m bis auf knapp über 1900 m Seehöhe. Die geologischen Einheiten im Einzugsgebiet gehören zur Rannach-Serie und bestehen überwiegend aus Gneisen, Quarziten und Serizitphylliten. Die aus dem Blockgletscher austretende Quelle mit einem Einzugsgebiet von ca. 0,75 km² ist seit dem Jahr 2004 eine Dauermessstelle des Hydrografischen Dienstes des Landes Steiermark.

Zur Untersuchung der hydraulischen Eigenschaften des fossilen Blockgletschers wurden an der Quelle Datenlogger installiert, um Abflussmenge, Wassertemperatur und elektrische Leitfähigkeit des Wassers kontinuierlich zu erfassen. Des Weiteren kann auf bereits bestehende, vom hydrographischen Dienst des Landes Steiermark zur Verfügung gestellte, hydrologische Daten seit 2004 zurückgegriffen werden Die Wassertemperatur der Quelle schwankt jahreszeitlich zwischen 1,8 °C und 2,2 °C, die elektrische Leitfähigkeit des Wassers zeigt Werte zwischen ca. 30 µS/cm und ca. 75 µS/cm. Sowohl Quellschüttung als auch physikochemische Parameter des Quellwassers sprechen auf Neubildungsereignisse rasch an. Das Auslaufverhalten der Quelle zeigt jedoch ein langsames Entleeren des Aquifers. Dies lässt ähnlich wie bei Karstquellen auf unterschiedliche Aquiferkomponenten schließen. Das Auslaufverhalten wurde daraufhin mit karsthydrologischen analytischen Ansätzen untersucht und ausgewertet. Erste Ergebnisse zeigen eine schnelle Entwässerungskomponente mit einer Zeitdifferenz von wenigen Stunden bis zu einem halben Tag zwischen hydraulischem Puls (maximale Grundwasserneubildung) und Änderung der physi-