Paleoenvironmental changes in the Karpatian of the Korneuburg Basin inferred from foraminiferal assemblages

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The construction of the S1 at Stetten (Lower Austria) gave a unique opportunity to study an approximately 2.5 km long east-west transect within the Korneuburg Basin. Seven profiles have been recorded and 170 samples were investigated for foraminiferal assemblages along with ongoing studies on molluscs and ostracods. With this huge amount of data, a detailed reconstruction is possible for the southern part of the basin for the first time. Not only the environmental settings, but also morphometric data, such as rapid changes in size or morphology (aberrant chambers) were taken into consideration. These down-sizing characteristics and deformations are likely an indication for a stressed environment.

In the lower Miocene the Korneuburg Basin was cut off from the open waters of the Parathetys and characterized by a northern portion with predominantly marine and a southern portion with predominantly estuarine conditions (HARZHAUSER & WESSELY 2003).

However, fully marine faunas have settled temporarily in the southern part during short-termed marine ingressions. LATAL et al. (2006) interpreted the isotopic differences in gastropod shells between the marine and estuarine assemblages as caused by changes of ambient water salinity rather than by temperature.

Sea-surface temperatures are estimated to range annually from 13 to 26 °C. This is confirmed by the data provided by the analysis of foraminiferal assemblages as well as by earlier results from gastropd samples (LATAL et al. 2006).

The diversity of foraminiferal assemblages from the Stetten area follows the pattern of previous studies. The benthic and planktic foraminifera are generally well preserved, abundant and diverse. About 60 benthic and 10 planktic species are present in sediments from the Stetten S1 transect. Two main groups of assemblages were identified statistically. One is dominated by the genus *Ammonia* (up to 90 %), which indicates very shallow water and might be considered as an indicator for tidal flats or lagoons. Another, more diverse group contains planktic genera, such as *Cassigerinella* and *Globigerina*, and is associated with „deeper" water benthic foraminifera. Some samples are rich in species frequently attributed to increased organic flux or ambient low oxygen content (e.g., *Bulimina elongata*, *Bolivina* spp., *Praeglobobulimina pupoides).*

A marine to estuarine environment with changing water depths, salinities, and food supply with constantly high (subtropical) temperatures can be assumed for the southern part of the Korneuburg Basin.

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LATAL, C., PILLER, W. & HARZHAUSER, M. (2006): Small-scaled environmental changes: indications from stable isotopes of gastropods (Early Miocene, Korneuburg Basin, Austria). - Int. J. Earth Sci. (Geol Rundsch), **95**: 95-106.

Palaeobiogeographical provenances of dasycladalean algae of the Plassen Carbonate Platform within the Late Jurassic-Earliest Cretaceous platform-basin-system (Northern Calcareous Alps, Austria)

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In the Northern Calcareous Alps of Austria/Germany shallow-water carbonates were reported from the Plassen Carbonate Platform sensu lato, with duration of Late Oxfordian/Kimmeridgian to Berriasian. Most occurrences of the Plassen Carbonate Platform are preserved in the central Northern Calcareous Alps.

The Plassen Carbonate Platform sensu lato developed on top of the advancing and rising nappes and prograded towards the older trench-like basin fills in a shallowing-upward cycle in a continuously convergent regime with decreasing tectonic activity. The biostratigraphic dating of these platform carbonates (e.g., with dasycladales, benthic foraminifera, microproblematica and others) and their sedimentary base, their installation, evolution and disappearing are key elements to unravel an enigmatic period of the western Neotethys evolution and to get a better general understanding of the elimination of a shallow-water carbonate platform (drowning/demise, subsequent erosion and redeposition in contemporaneously formed basins) in an active tectonic regime. The tectonic regime of the Northern Calcareous Alps during growth of the Plassen Carbonate Platform sensu lato was characterized by ophiolitic emplacements, crustal stacking, and extensional tectonics and/or strike-slip movements.

Today, the Plassen Carbonate Platform sensu lato is divided into three independent carbonate platforms with radiolarite deep-water basins between: the Wolfgangsee Carbonate Platform to the north, the Plassen Carbonate Platform sensu stricto in a central position and the Lärchberg Carbonate Platform to the south. The differences in the litho-stratigraphic and overall geodynamic evolution of the three platforms account for the exemplified peculiarities in their dasycladalean algal inventories. In many cases, it allows the assignment of resediments in basinal series to a certain platform as a helpful palaeobiogeographical tool when other data are lacking.

Shedding from these platforms generally took place towards northern directions: Sillenkopf Formation with

resediments from the Lärchberg Carbonate Platform, Barmstein Limestones from the Plassen Carbonate Platform sensu stricto, and Seekarspitz Limestone from the Wolfgangsee Carbonate Platform. Dasycladalean algae are common constituents in these platform carbonates, but display differences in their phytoinventories. In that manner, there are taxa common in all three platforms (e.g., *Clypeina jurassica*, *Salpingoporella pygmaea*), taxa common to the Plassen Carbonate Platform sensu stricto and Lärchberg Carbonate Platform (e.g., *Campbeliella striata*, *Clypeina loferensis*, *Rajkaella bartheli*, *Salpingoporella annulata*) and taxa restricted to the Plassen Carbonate Platform sensu stricto on the one hand and the Lärchberg Carbonate Platform on the other hand. There are 5 taxa reported only from the Lärchberg Carbonate Platform (*Clypeina catinula*, *Delofriella quercifoliipora*, *Neogyroporella gawlicki*, *Steinmanniporella svilajaensis*, *Zergabriella embergeri*). The overall terrigeneous input, and partly assumed brackish influence of the Lärchberg Carbonate Platform, lacking in the Wolfgangsee Carbonate Platform and Lärchberg Carbonate Platform, are considered the main influencing factors for this most discrete microflora. The outer platform dwelling *Steinmanniporella svilajaensis* additionally occurs in the Sillenkopf Formation.

Within the Plassen Carbonate Platform sensu stricto there are two intervals with reefal platform margin deposits, (Late) Kimmeridgian (southern part of the Plassen Carbonate Platform sensu stricto) and Late Tithonian-?partly Early Berriasian (northern part of the Plassen Carbonate Platform sensu stricto). *Petrascula bursiformis* characterizes the Kimmeridgian reefal interval of the Plassen Carbonate Platform sensu stricto, whereas *Neoteutloporella socialis* (Praturlon) forming microalgal reefs is only known from the second reefal interval and the time-equivalent Barmstein Limestones.

Finally there are taxa restricted to the Barmstein Limestones such as *Humiella catenaeformis*, *Selliporella neocomiensis*, *Petrascula piai* and forms so far lacking formal systematic description and on the other hand certain taxa, e.g., *Campbeliella striata*, are absent in the Barmstein Limestones.

Untersuchungen zur Einsetzbarkeit kalibrierter numerischer Hangmodelle als Grundlage für die Vorhersage von Massenbewegungen

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In Gebirgsregionen werden Siedlungen und Infrastruktur häufig von Massenbewegungen bedroht. Zur Analyse solcher Naturgefahren werden immer häufiger numerische Modelle verwendet. Die Adaption solcher Modelle an reale Daten geschieht jedoch auch heute oft noch nach dem „trial and error"-Prinzip.

Ziel des vom Fonds zur Förderung der wissenschaftlichen Forschung (FWF) unterstützten Projekts KASIP (Knowledge-based Alarm System with Identified Deformation Predictor) ist die Entwicklung eines neuartigen wissensbasierten Alarmsystems, welches auf kalibrierten numerischen Hangmodellen basiert und eine realitätsnahe Vorhersage möglicher Massenbewegungen erlauben soll.

Im Rahmen des Beitrags wird die Massenbewegung „Steinlehnen" bei Gries im Sellrain (Tirol) präsentiert (ZANGERL et al. 2007). Die numerische Modellierung geschieht hierbei mit Hilfe des Finite-Differenzen-Programms FLAC3D der Firma Itasca (ITASCA 2010) auf Grundlage der vorhandenen Monitoringdaten (Laserscannerdaten, Tachymetrie- und Mikroseismikmessungen).

Zur Kalibrierung des numerischen Modells werden Methoden der adaptiven Kalman-Filtertechnik verwendet (SCHMALZ et al. 2010). Diese sollen die optimale Schätzung des aktuellen Systemzustands (geometrische und physikalische Parameter) des Hanges erlauben und zusammen mit den stochastischen Eigenschaften des Modells die Grundlage für eine realitätsnahe Modellierung des aktuellen, aber auch des künftigen Hangverhaltens bieten.

Für die Bereitstellung der Geometrie-, Monitoring- und Geologiedaten des „Steinlehnen" bedanken wir uns bei unserem Projektpartner alpS-GmbH (http://www.alp-s.at).
Für die finanzielle Unterstützung bedanken wir uns bei: Fonds zur Förderung der wissenschaftlichen Forschung (FWF) Projektnummer: P20137. Webseite: http://info.tuwien.ac.at/ingeo/research/kasip

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Quartär- und strukturgeologische Untersuchung zur Entstehung der Krimmler Wasserfälle

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Das Krimmler Achental mündet fast 400 m über dem Be-