12°C. The study clearly demonstrates that temperature has a major impact on the isotopic composition of soil-respired CO2 and, thus, on the substrate utilized by microorganisms. The results further suggest that, at higher temperatures, the SOM decomposed by microorganisms reflects the SOM pool of the soil. It seems that certain groups of soil microbes with preference for specific C compounds display characteristic temperature optima.
In summary, warming caused a shift in the carbon pool being mineralized and, thus, may play an important role in the ability of microorganisms to use different substrates.

Climatic record in the Maastrichtian continental deposits of Southern Carpathians

A.-V. Bojar[1], D. Grigorescu[2], & Z. Csiki[2]

[1]Institute of Geology and Paleontology, Karl-Franzens University, Heinrichstrasse 26, A-8010 Graz, Austria.
[2]Department of Geology and Geophysics, Bucharest University, Blvd. Nicolae Balcescu 1, 70111 Bucharest, Romania

The Hateg basin is an intra-mountainous depression situated in the central western part of the South Carpathians. From Maastrichtian to Early Paleogene two different formations are known: the Densus-Ciula and the Sinpetru Formation, both of them representing mollase type deposits (Grigorescu et al., 1990; Grigorescu & Csiki, 2002). Both Formations are critical for determining paleoenvironment conditions and tectonic processes of the area during Maastrichtian. Therefore, facies analyses, petrographic and geochemical data (stable isotope analysis on calcretes) have been carried out along representative profiles within these two formations.

Maastrichtian climate was not as warm and equable as the overall climate of the Cretaceous. Worldwide, the isotopic record from foraminifers and bulk sediments indicate temperature fluctuation during Maastrichtian time. These fluctuation are represented by: 1) progressive cooling during the Lower Maastrichtian; 2) accelerate cooling during Early to Late Maastrichtian transition (70 to 71 Ma); 3) abrupt warming at the end of Cretaceous (c. 65.4 to 65.1 Ma) and subsequently temperature decrease during the last 100 k.y. of Maastrichtian.
Continental climates in mid-latitude were still warm, despite cooling trends. Because ocean temperature do not always reflect land temperatures, additional data are in process in order to constrain continental paleoclimatic conditions from the Hateg basin at that time.
The Sanpetru formation consists of cyclic sedimentation of alluvial sequences deposited in a braided meandering river sequence. Within the overbank deposits numerous horizons of fossil soils with carbonate concretions develop. For the channel deposits, paleocurrent directions indicate an E-W flow, parallel to the strike of the detachment fault which border northward the Retezat metamorphic dome. The Retezat dome which rose at the end of the Cretaceous time (Bojar et al., 1998, Willingshofer, 2000) constituted most probably a natural barrier for the adjacent river systems. Paleomagnetic studies within the Sanpetru Formation (Sibisel Valley), show one site with normal polarity, while all the other sites distributed upstream for more than 4 km, have reverse polarity (Panaiotu & Panaiotu, 2002). The data suggest a lower Maastichtain age for the profile (Chron 31, 68.7-71.0). Oxygen stable isotope composition of calcretes from a

4 km sequence (Sibisel Valley) vary systematically from 25 to 23 permil. The data are interpreted to indicate progressive cooling of the continental climate within this interval.

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Middle Miocene seasonal temperature changes in the Styrian Basin as recorded by the isotopic composition of Pectinide and Brachiopod shells

A.-V. Bojar[1], H. Hiden[1], A. Fenninger[1] & F. Neubauer[2]

[1]Institute of Geology and Paleontology, Karl-Franzens University, Heinrichstrasse 26, A-8010 Graz, Austria.

[2]Institute of Geology and Paleontology, Paris-Lodron University, Hellbrunnerstrasse 32, A-5020 Salzburg, Austria.

An important interval in the global climatic and cryospheric development of the Cenozoic was the early to middle Miocene from 17 to 12 Ma. The climatic optimum near the early/middle Miocene was followed by global cooling at around 14 Ma. This event was concomitant with the expansion of the east Antarctica ice sheet. Thus the middle Miocene is characterised by climatic changes which resulted in a rapid shift from relative high-latitude warmth to high-latitude refrigeration.

The mechanisms that may have been responsible for global cooling include: 1) changes in ocean circulation and thus heat transport; 2) CO_2 drown down related to topographic uplift; 3) long-term orbital forcing.

In this study molluscs and brachiopod shells have been used to evaluate paleoclimatic parameters for a shelf environment during the Middle Miocene times. The studied outcrop which is stratigraphically well documented (Friebe, 1990, 1991; Fritz and Hiden, 2001) belongs to the Miocene of the Styria basin, which was part of the Paratethys realm, a land-locked remnant sea which formed subsequent to the collision of Europe and Africa-derived microplates.

When molluscs grow, their shells become biogeochemical recorders of climatic and environmental condition during their lifetime. Previous studies have shown that the calcitic