Geophysical Research Abstracts,
Vol. 10, EGU2008-A-09096, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-09096
EGU General Assembly 2008

Benthic foraminiferal δ^{13}C records from the Danian-Selandian transition in Egypt

A. Bornemann (1), R.P. Speijer (2), E. Steurbaut (2, 3), J. Sprong (2), P. Schulte (4) and M. Youssef (5)

(1) Institut für Geophysik und Geologie, Universität Leipzig, Leipzig, Germany, (2) Department of Earth- and Environmental Sciences, K.U.Leuven, Leuven, Belgium, (3) Royal Belgian Institute of Natural Sciences, Brussels, Belgium, (4) Institut für Geologie und Mineralogie Universität Erlangen-Nürnberg, Erlangen, Germany, (5) Geology Department, South Valley University, Qena, Egypt (a.bornemann@uni-leipzig.de)

During the last years several negative inflections ($>$0.5 per mil) in δ^{13}C have been identified during the Paleogene. The most prominent one with an amplitude $>$2.5 per mil being the Paleocene-Eocene Thermal Maximum (PETM; 55.5 Ma). Smaller, less pronounced negative excursions have also been identified from the Eocene epoch (ELMO, X-event). These intervals are mostly interpreted to represent hyperthermal conditions causing dissociation of gas hydrates and the release of methane from the sea floor. Less attention has been paid to negative δ^{13}C excursions from the Paleocene. However, δ^{13}C records for the Danian and Selandian are mostly based on poorly dated, low resolution records (Egypt, Israel, Charis and Schmitz, 1998) or on bulk-rock samples (Zumaya; Schmitz et al., 1997).

Here we present benthic foraminiferal (*Pyramidulina* spp.) δ^{13}C records from four sections (Gebel Aweina, Gebel Duwi, Gebel Qreiya 1 and 3) in the Egyptian Nile Basin during the Danian-Selandian transition. In all sections studied a negative δ^{13}C excursion has been identified at the P3a/3b planktic foraminiferal subzone boundary with amplitudes between 1 (Aweina, Qreiya) and 2 per mil (Duwi), a second shift towards more negative values occurs at Qreiya 1 and 3 in the upper P3b subzone. Whereas the first excursion is also known from Zumaya, Spain, it is unclear due to different biostratigraphic assignments whether the second one is identical with a sec-

ond negative excursion in Zumaya.

In Egypt, the P3a/3b subzonal boundary consists of an event bed associated with faunal and paleoenvironmental change, carrying similarity with the expression of the PETM in the same basin and it was suggested to have recorded the earliest of these hyperthermals (Speijer, 2003). This view is supported by the herein observed anomalies in δ^{13}C of up to -2 per mil.

References:

Charisi, S. D., Schmitz, B., 1998. Paleoceanography 13, 106-118. Schmitz, B., Asaro,

F., Molina, E., Monechi, S., von Salis, K., Speijer, R. P., 1997. Palaeogeogr. Palaeoclimatol. Palaeoecol. 133, 49-68.

Speijer, R. P., 2003. GSA Special Paper 369, 275-290.