

## Regional variation in PETM successions, northeastern Peri-Tethys

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The impact of Paleocene-Eocene Thermal Maximum (PETM) is widespread and distinct in the northeastern Peri-Tethys. The lithology and geochemistry of PETM sediments vary E-W from Central Asia to the Crimea and S-N from Transcaucasia to the central Russian Platform. The southernmost basin contains calcareous and calcareous-clayey sediments; a sapropelitic bed (SB) rich in TOC formed during the PETM. The PETM is poorly developed in silicious clays to the north, and can be identified by turnover in siliceous microfossils only.

The thickness of SB varies from a few decimeters to few metres, and it displays distinct sedimentological features, TOC concentrations and trace elements. Maximal TOC concentrations (up to 25%) occur in the eastern basin (Central Asia) with an arid climate, and the organic matter (OM) is largely basin planktonogenic. Westward (Crimea-Caucasus area), OM content reduces (1-10%), while the percentage of terrestrial OM systematically increases with the decrease in total OM. In most sections, OM is rhythmically distributed in 4 or 5 cycles which vary from a few cm to a few dm in thickness. The highest OM content lies in the lower part of each cycle. The same cyclicity appears in the distribution of many elements (V, Ni, Mo, Se, Zn, Cu, U, Au, Ag a.o.) within SB.

First results of carbon isotope analysis (e.g., Kheu section, central Caucasus) show a large, negative,  $\delta^{13}\text{C}$  excursion reported worldwide. The  $\delta^{13}\text{C}$  profile is similar, with maximal negative  $\delta^{13}\text{C}$  peaks in the lowermost part of the cycles, and higher values in the upper part. In some sections, SB is reduced, and is represented by only one or two cycles (e.g. Gubden section, eastern Caucasus). In this case, the  $\delta^{13}\text{C}$  excursion appears below the SB and has larger range of values, which decline few dm above the SB.

PETM nannofossils display some basin-wide common features in the SB: disappearance of cool-water chiasmoliths, increase of warm-water discoasters and high-fertility *Toweius*, wide occurrence of specific short-lived *Discoster anartios*, *D. mahmoudii* and rhomboasters. Concurrently, there are some regional peculiarities in *Fasciculuthus* and *Coccolithus* distribution. Generally, nannofossil assemblages are much more abundant and diverse in shallower areas. In the deeper basin, they are less abundant and show rhythmical fluctuations in abundance coherent with lithological cyclicity.

Our study of the PETM in the NE Peri-Thetys has shown, on the one hand, the basin evolution in the context of global biotic and abiotic trends and, on the other hand, its distinctive, regional lithological and geochemical features.

RFBR project no. 06-05-65282.