



The Eocene-Oligocene palynological record from the Xining Basin (Tibetan Plateau, China) as evidence for Asian paleoenvironments and regional change

Carina Hoorn (1), Julia Straathof (2), Hemmo Abels (3), and Guillaume Dupont-Nivet (2)

(1) Institute for Biodiversity and Ecosystem Dynamics, University of Amsterdam, Kruislaan 314, 1098 SM Amsterdam, The Netherlands, (2) Paleomagnetic Laboratory "Fort Hoofddijk", Faculty of Geosciences, Utrecht University, Budapestlaan 17, 3584 CD Utrecht, The Netherlands, (3) Stratigraphy-Paleontology, Faculty of Geosciences, Utrecht University, Budapestlaan 4, 3584 CD Utrecht, The Netherlands

The Eocene–Oligocene (E–O) transition is marked by global cooling trend that coincided with rapid growth of the Antarctic ice sheet and a drop in atmospheric carbon dioxide levels. This trend is particularly well registered in the oceanographic record, but complete continental sequences comprising this transition are sparse. Even rarer are palynological records for this period of climatic change.

Here, we report on a palynological and chronostratigraphic study of playa/lake deposits situated in the Xining Basin (Tibetan Plateau, NW China). In this basin, the E–O transition was identified by a regional lithological change in the red bed / gypsum alternation and was precisely dated through magnetostratigraphy and cyclostratigraphy (Abels et al., this session). This sedimentary sequence also contains pollen and includes high abundances (and many varieties) of *Ephedra* and *Nitraria*, taxa typical for arid vegetation types. Subtle fluctuations of these taxa throughout the sequence suggest that the local vegetation alternated from desert type (*Ephedra* dominated) to -slightly more humid- steppe type (*Nitraria* dominated). A remarkable increase in regional pollen influx of Pinaceae occurs below the E–O boundary, at ca. 36 Ma, and is considered to be evidence for climatic cooling and/or increased topography in the Tibetan Plateau.

The palynological results of the Xining section fit well in the wider Chinese context during the E–O transition when a broad arid belt crossed China from East to West. By Neogene times the arid zone was restricted to NW China (Sun & Wang, 2005) and palynological assemblages were no longer *Ephedra* and *Nitraria* dominated, but instead a.o. characterized by *Artemisia* and *Amaranthaceae* / *Chenopodiaceae* and only minor amounts of *Nitraria*. This change seems to coincide with the development of the Asian monsoons, but the role that this climatic system played on the evolution of the arid land floras remains to be further investigated.