

Remarks on the Early-Middle Eocene biomagnetostratigraphy based on planktic foraminiferal evidences from the Tethyan successions of northeastern Italy

Valeria Luciani¹, L. Giusberti², D. Rio²

¹ Dipartimento di Scienze della Terra, Università di Ferrara, Via Saragat, 1, Ferrara, Italy

² Dipartimento di Geoscienze, Università di Padova, via Gradenigo, 6, Padova, Italy

In the Early Paleogene the Earth experienced a pronounced warming trend that peaked during the Early Eocene Climatic Optimum (EECO; ca. 50–52 Ma). This long-term climate trend is punctuated by short-lived (<200 kyr) warming events, known as hyperthermals, the most prominent of them is the PETM (Paleocene Eocene Thermal Maximum, ca. 55 Ma). After the EECO, the Earth climate system underwent a composite transition towards the modern icehouse world reached in the Early Oligocene (e.g., Zachos et al., 2001: *Science* 292; 2008: *Nature* 451). Even increasingly scientific attention is dedicated to definitely comprehend timing, nature and characteristics of the complex evolution of the Paleogene climate.

A main corollary of the great interest dedicated in recent years to the Paleogene climate is the generation of new stratigraphic high-resolution data. As a result, the biostratigraphic resolution for planktic foraminiferal zonal schemes has significantly increased in the earliest Eocene across the PETM. At the same time, the requirement of reliable biohorizons for stratigraphic correlation across the other climate changes forces further ameliorations in the biostratigraphic classification of the entire early Paleogene. A recent and extensive review is available in the tropical to subtropical Paleogene planktic foraminiferal Zonation by Wade et al. (2011: *Earth Science Reviews* 104).

Several complete Paleogene successions (Forada, Possagno, Alano, Farra), with a sound magneto-biostratigraphic and stable isotope record crop out in the Venetian Southern Alps of northeastern Italy. They have revealed to be well suited to explore the record of planktic foraminifera in the early Paleogene.

All the biostratigraphic events utilized in the Early Eocene/middle Eocene standard zonal schemes have been recognized. However, our study shows that some foraminiferal events unexpectedly occur in a remarkably different position with respect to the available magnetostratigraphic calibration.

Specifically, we present an updated magnetostratigraphic calibration from the Tethyan realm of the lowest and highest occurrences (LO, HO) of the following zonal markers: LO of *Morozovella aragonensis*, LO and HO of *Guembelitroides nuttallii* and LO of *Acarinina cuneicamerata*.