

Palaeo-precipitation in the Eastern Paratethys region during Miocene-Pliocene transition (late Meotian, Pontian, Kimmerian)

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Age control on Eastern Paratethys regional stages during the Miocene-Pliocene transition is improved recently (Krijgsman et al. 2010). Based on this stratigraphic framework, as well as well-resolved regional small mammal biostratigraphy (e.g. Nesin & Nadachovski 2001, Hordijk & De Bruijn 2009) it is now possible to estimate palaeo-precipitation in the Eastern Paratethys at a temporary higher resolution.

Precipitation estimates are based on the bioclimatic analysis of rich and well dated fossil herpetofaunal assemblages (Böhme et al. 2006), coming from the western and northern part of the Eastern Paratethys (Hungary, Greece, Ukraine, Russia).

Data from the late Meotian to the middle/late Kimmerian (~6.2 to ~3.8 Ma) indicate an overall warm and humid to very humid climate (60% to over 200% more precipitation than today), with two remarkable dry (and cool?) intervals with 30 to 40% less precipitation than today. The first dry period correspond to the Pontian regional stage (6.04 – 5.6 Ma), whereas the second dry period is dated to 3.95 Ma and correlates to the middle/late Kimmerian.

These results support a postulated (Krijgsman et al. 2010) change in the Euxinian Basin from a negative hydrologic budget of the during the Pontian to a positive hydrologic budget in the early Kimmerian (~5.4 Ma), with possible implication to the proposed overspilling of Paratethys waters into the Mediterranean Basin during the Lago Mare phase of the Messinian Salinity Crisis (Cita et al. 1978).

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