



Determining the roles of productivity and preservation during formation of sapropel S1 in the eastern Mediterranean

Niels van Helmond (1), Daniel Reed (2), Caroline Slomp (2), and Henk Brinkhuis (1)

(1) Biomarine Sciences, Institute of Environmental Biology, Laboratory of Palaeobotany and Palynology, Utrecht University, Utrecht, The Netherlands (n.vanhelmond@uu.nl), (2) Department of Earth Sciences, Geochemistry, Faculty of Geosciences, Utrecht University, Utrecht, The Netherlands

Sapropels in the eastern Mediterranean have been intensely studied to obtain a better understanding of the forcings and the complex geochemical and biotic processes involved in their formation. Consensus now says these organic rich layers formed during precession minima, uniformly characterized by high temperatures, enhanced runoff, stratification, and, at least initial high export productivity. Recently, a new reactive transport model was used to reconstruct bulk geochemical constituents of Mediterranean Sea sediments deposited during and after formation of sapropel S1. The model describes the dynamics and burial of a wide range of chemical components including nutrients, such as nitrogen and phosphorus, and total sulfur and total organic carbon. Here, we attempt to constrain the model results further with available biotic, notably palynological (dinoflagellate cysts and pollen), data. We specifically focus on understanding the temporal and spatial variability in the roles that preservation and productivity played during the formation of sapropel S1 in the eastern Mediterranean.