Geophysical Research Abstracts,
Vol. 10, EGU2008-A-05419, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-05419
EGU General Assembly 2008

Sea water δO^{18} variability surrounding sapropel S1 deposition in the Aegean Sea

M.V. Triantaphyllou (1), P. Ziveri (2,3), **V. Lianou** (1), G. Mortyn (2), V. Lykousis (4) and M.D. Dermitzakis (1)

(1) University of Athens, Faculty of Geology & Geoenvironment, Dept. of Hist. Geology-Paleontology, Panepistimiopolis 15784, Athens, Greece, (2) ICTA Autonomous University of Barcelona (UAB) Edifici Cn-Campus UAB, 08193, Bellaterra, Spain, (3) Department of Paleoclimatology and Geomorphology, Faculty of Earth and Life Sciences, Vrije Universiteit Amsterdam, De Boelelaan 1085 1081 HV Amsterdam, The Netherlands, (4) Hellenic Centre for Marine Research, Inst. of Oceanography, 19013 Anavyssos, Greece (mtriant@geol.uoa.gr / Phone: +30 210 7274893)

The Aegean Sea in the Eastern Mediterranean is situated within a climatic transition zone, sensitive to changes in temperature, precipitation and wind patterns. In contrast to modern environmental conditions of low biological production and oxygen-replete bottom waters in the Eastern Mediterranean Sea, the occurrence of organic-rich sapropel layers demonstrates that dramatically different conditions occurred periodically in the entire eastern Mediterranean since the Pliocene. The mechanisms responsible for enhanced fertilization and sapropel formation are still under debate, and here we propose a method combining coccolithophere geochemistry with ecology.

Here we focus on the most recent sapropel S1 deposited in the Aegean Sea and use the inorganic and organic chemistry of coccolithophores to monitor changes in seawater isotopic composition (d18Ow), and their taxonomical distribution and accumulation rate to elucidate broader environmental conditions. *Emiliania huxleyi* coccolith δ_{18}O has been analysed from a number of samples below and within sapropel deposition. The calculated d18Ow variability is related to both change in freshwater input and carbonate ion concentration.. d18Ow decreases ($\sim 0.6\,‰$) before S1 deposition, demonstrating fresher conditions and a possible runoff source for nutrient delivery. A similar

but more prominent decrease has also been observed in a previous study south of the Cretan Sea. These results and intepretations from coccoliths will be compared against foraminiferal d18O from the same core, to make detailed depth-specific comparisons and more fully reconstruct past conditions surrounding S1.

This work is part of a EUROCORES-EUROCLIMATE, Project MERF (Quaternary Marine Ecosystem Response to Fertilization) and Pythagoras I project (EU and Greek Ministry of Education, EPEAEK II).