Geophysical Research Abstracts,
Vol. 10, EGU2008-A-09200, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-09200
EGU General Assembly 2008

Seasonality in the Mediterranean Sea: A calibration study using paired single specimen δ^{18}O and Mg/Ca measurements of *G. ruber alba*

J.C. Wit (1), G.-J. Reichart (1), S.J.A. Jung (2), D. Kroon (2)

(1) Department of Geochemistry, Faculty of Geosciences, Utrecht University, The Netherlands

(2) School of Geosciences, University of Edinburgh, Scotland

(j.wit@geo.uu.nl / Fax: +31302535302 / Phone: +31302536722)

Seasonality is increasingly recognised as an important parameter of the climate system. We investigated a novel approach for reconstructing seasonality using paired δ^{18}O and Mg/Ca measurements on single specimen planktic foraminifera *G. ruber alba*. The Mediterranean Sea was selected for calibrating and testing this novel approach, because of its semi-enclosed basin properties and its important role in the northern hemisphere climate system. A central North Atlantic site was used in order to assess the broader applicability of the method in an open ocean setting.

G. ruber alba has a year round presence with blooming periods in May-June. δ^{18}O temperature variations in single specimen *G. ruber alba* reflect measured sea surface (0-50 m) temperatures at both the Mediterranean and North Atlantic sites. This suggests that single specimen measurements of stable oxygen isotopes from *G. ruber alba* allows the reconstruction of seasonality. The variability observed in single specimen analyses of Mg/Ca show a similar spread in reconstructed temperatures. When comparing Mg/Ca and δ^{18}O based temperature, however, no correlation is observed, indicating an offset in one or both temperature proxies. Mg/Ca measurements show large within test variability, which cannot be linked to changes in ambient seawater, but might be connected to fluctuations in symbiont activity during test formation. An assessment of the controlling mechanisms behind the within test Mg/Ca variation and

its possible influence on the oxygen isotopes is therefore needed to improve the reconstruction of seasonality using both δ^{18}O and Mg/Ca data.