Constraints on the application of long chain diol proxies in sediments of the Iberian Atlantic margin

M.W. DE BAR[1]*, D.J.C. DORHOUT[1], J.S. SINNINGHE DAMSTÉ[1,2] AND S. SCHOUTEN[1,2]

[1] NIOZ Royal Netherlands Institute for Sea Research, Department of Marine Microbiology and Biogeochemistry, and Utrecht University, P.O. Box 59, 1790 AB Den Burg, Texel, the Netherlands

[2] Faculty of Geosciences, Utrecht University, Utrecht, the Netherlands

(*correspondence: Marijke.de.Bar@nioz.nl)

Recently, two new proxies have been proposed based on the occurrence of long-chain diols in marine sediments: the Long chain Diol Index (LDI; based on 1,13 and 1,15-diols) [1] as a proxy for sea surface temperature and the Diol Index (based on 1,14- vs. 1,15- or 1,13-diols) [2, 3] as a proxy for upwelling conditions. In this study we validated the applicability of these proxies in surface sediments of the Iberian Atlantic margin.

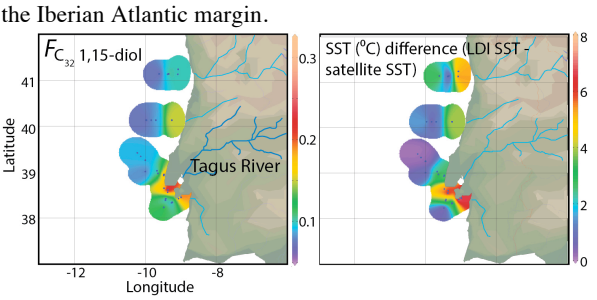

Figure 1: C_{32} 1,15-diol (relative to summed 1,13- and 1,15-diols; left) and difference between the LDI temperatures and actual satellite SSTs (right) along the Iberian margin.

Relatively high fractional abundances of the C_{32} 1,15-diol close to the river mouth are observed, suggesting *in-situ* production of this compound in rivers and subsequent transport into the marine realm. This terrestrial input of diols apparently leads to a bias of up to 8 °C in LDI-based temperatures, limiting the application of the LDI. Application of both Diol Indexes reveals that Diol Index 2 (1,14- vs. 1,13-diols) is a good indicator of the local upwelling conditions, whereas Diol Index 1 (1,14- vs. C_{30} 1,15-diol) seems less suitable as the upwelling signal is overruled by the temperature signal recorded by the C_{30} 1,15-diol.

[1] Rampen *et al.* (2012) *Geochim. Cosmochim. Acta* **84**, 204-216. [2] Rampen *et al.* (2008) *Earth Planet. Sci. Lett.* **276**, 207-213. [3] Willmott *et al.* (2010) *Antarct. Sci.* **22**, 3-10.