

Tracking last deglacial changes in Western Mediterranean deep- intermediate ventilation

ROGER INGLAVAGA¹, ISABEL CACHO¹, ALBERT
CATALÀ¹, JAIME FRIGOLA¹, JOSE N. PEREZ-ASENSIO²
AND LEOPOLDO D. PENA¹

¹Universitat de Barcelona

²Aix Marseille Univ, CNRS, IRD, INRAE, Coll France,
CEREGE

Presenting Author: roger.inglavaga@gmail.com

Major changes occurred in the Western Mediterranean thermohaline circulation during the last deglaciation. A weakening of the deep-water convection in the Gulf of Lion resulted in poorly-ventilated conditions and promoted the deposition of an Organic Rich Layer (ORL). But a previous study suggests that intermediate depths had a different evolution (Pérez-Asensio et al. 2020). The study here presented focuses in the reconstruction of intermediate ventilation conditions along the last 23 ka using the marine sediment core HER-GC-UB6 (946 m) from the Alboran Sea. This study applies a new approach, the U/Mn ratio measured on diagenetic coatings formed on biogenic carbonates and measured by Inductively coupled plasma mass spectrometry (ICP-MS). These results are compared with two other oxygen sensitive proxies previously studied in the same core. They are based one, in benthic foraminifera assemblage and the other, on the benthic $\delta^{13}\text{C}$ gradient between infaunal and epifaunal benthic foraminifera. The obtained U/Mn results agree with the previous records in pointing both the first part of the ORL (13-15 ka) and also part of the Heinrich stadial I (HS1) as the periods less oxygenated at intermediate depths. The massive release of fresher waters during the HS1 could have contributed to a surface stratification preventing deep convection in the Western Mediterranean Sea. The produced new record also supports a major ventilation of intermediate depths at the middle part of the ORL, during the Younger Dryas. The applied proxy, U/Mn appears to be more sensitive to these oxygen changes than the previously applied proxies, encouraging its application as an indicator of deep ventilation conditions.

Pérez-Asensio, J. N., Frigola, J., Pena, L. D., Sierro, F. J., Reguera, M. I., Rodríguez-Tovar, F. J., Dorador, J., Asioli, A., Kuhlmann, J., Huhn, K., & Cacho, I. (2020). Changes in western Mediterranean thermohaline circulation in association with a deglacial Organic Rich Layer formation in the Alboran Sea. *Quaternary Science Reviews*, 228. <https://doi.org/10.1016/j.quascirev.2019.106075>