



Preliminary sedimentological and geochemical results from borehole GL1-4 in the North Western Mediterranean Sea, project PROMESS 1.

J. Frigola (1), M. Canals (1), S. Berné (2), I. Cacho (1), G. Herrera (1), B. Dennielou (2), R. Gelfort (3), A.S. Alix (2), M.A. Bassetti (2) & the Shipboard Scientific Party.

(1) GRC Geociències Marines, Facultat de Geologia, Universitat de Barcelona, 08028 Barcelona, Spain. (2) IFREMER, Plouzanè, France (3) GGA Hannover, Germany.

One of the aims of the PROMESS1 (PROfiles across MEditerranean Sedimentary Systems. Part 1) EU-project was to recover long sediment sections (50-300m) from specific sites from the shelf and upper slope of the Adriatic Sea and the Gulf of Lions in order to obtain a chrono-stratigraphic record of the last 500 kyr. The study of these long sediment sections will provide invaluable information about the sedimentary processes that controlled the margin evolution under the influence of glacio-eustatic sea-level changes, slope stability and variable sediment fluxes.

During the PROMESS1 cruise four long sediment cores were recovered onboard the SRV Bavenit operated by the Dutch geotechnical company FUGRO. PRAD1-2 (PRomess ADriatic; site 1; borehole 2; 71 m long) and PRAD2-4 (32 m long) in the Adriatic Sea, and PRGL1-4 (PRomess Gulf of Lions; site 1; borehole 4; 300 m long) and PRGL2-2 (100 m long) in the Gulf of Lions.

PRGL1-4 was recovered in the densely canyoned Gulf of Lions at 298 m water depth on the interfluvium of the Aude (Bourcart) and Herault canyons. This site is of great interest for paleoclimatic purposes since it is not directly influenced by the Rhone deltaic system and offers a much more continuous record than canyon walls and thalwegs. Therefore, this interfluvium likely offers both a high sediment supply (allowing high-resolution studies) and stratigraphic continuity. Moreover, the very long recovery in this site, 300 m, together with the first biostratigraphic analysis carried out onboard provide evidence of its high potential for the study of rapid climatic oscillations at very high and ultra-high resolution. Preliminary results from grain-size analyses and

XRF core scanner from PRGL1-4 show a long term pattern which reflects the dominance of the glacial-interglacial 100 kyr orbital cycles that were previously identified on seismic profiles. In addition, very high frequency oscillations equally observed may represent the abrupt (millennial scale) climate changes also recorded in the North Atlantic region and in different areas within the Mediterranean Sea (Heinrich Events and D/O cycles). The very high sedimentation rates recorded in this borehole together with an in progress well-constrained chronology offer an excellent opportunity to the study of abrupt climate changes at decadal to centennial resolution. Acknowledge EC, with contract number EVR1-CT-2002-40024.