



Experimental study on deformation and strength behaviour of marine sediments from the Adriatic shelf: first results from the PROMESS1 drilling project.

N. Sultan (1), S. Berné (1), M. Canals (2), A. Cattaneo (3), J. Frigola (2), S. Lafuerza (2), F. Trincardi (3), R. Urgeles (2)

(1) Ifremer, Plouzané, France, (2) University of Barcelona, Barcelona, Spain, (3) IGM, Bologna, Italy, (nabil.sultan@ifremer.fr)

The aim of the PROMESS-1 drilling project is to better understand climatic variability, sea-level changes, canyon history, and slope instability processes in two well-studied continental margins: the Gulf of Lions and the Adriatic deltaic margins, in the Mediterranean Sea. At both sites boreholes have been drilled with in-situ geotechnical measurements and several piston cores were recovered in order to carry out laboratory geotechnical tests. The purpose of this paper is to outline some of the first geotechnical results obtained from the Adriatic sites where swath bathymetry and high-resolution seismic reflection profiles show a series of seafloor and subseafloor sediment crenulations that have been interpreted as slow-moving sediment deformation or sediment waves (Correggiari et al., 2001; Cattaneo et al., 2004). The main objective is to elucidate the origin of such crenulations; is it caused by slope instability or hypopycnal flows/bottom current dynamics as suggested by Lee et al. (2002). Besides the in-situ CPTU measurements carried out during the PROMESS1 cruise, an experimental program on undisturbed marine sediment samples from the Adriatic borehole PRAD2 has been undertaken. The study included classification tests, oedometer/permeability tests and static and cyclic triaxial tests. Based on the combination of the different in-situ and laboratory geotechnical measurements, this work offers an interpretation of the sediment behaviour in terms of triggering mechanisms of the observed undulation features in the prodelta wedges of the Adriatic shelf. (This work is supported by the EC through contract EVR1- 2001-00041).

Cattaneo, A., Correggiari, A., Marsset, T., Thomas, Y., Marsset, B., Trincardi, F., 2004.

Seafloor undulation patterns on the Adriatic shelf and comparison to deep-water sediment waves. *Mar. Geol.* 213, 121- 148.

Correggiari, A., Trincardi, F., Langone, L., Roveri, M., 2001. Styles of failure in heavily-sedimented highstand prodelta wedges on the Adriatic shelf. *J. Sediment. Res.* 71, 218- 236.

Lee, H.J., Syvitski, J.P.M., Parker, G., Orange, D., Locat, J., Hutton, W.H., Imran, J., 2002. Turbidity-current generated sediment waves: modeling and field examples. *Mar. Geol.* 192, 79- 104.