



New insights for the knowledge of the Mediterranean Salinity Crisis from seismic stratigraphy: Why drilling in the Northern Provencal Basin?

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Our study aims at assessing the importance of a deep drilling project in the Gulf of Lions (IODP with Japanese vessel with a riser) on the basis of new insights on the Mediterranean salinity crisis using geometric observations (seismic) and industrial borehole data in the area. The first step in understanding the Salinity Crisis is the analysis of DSDP and ODP results. However, for safety reasons, no complete section in the deep basin has ever been acquired. Although the Messinian evaporites have been widely documented onshore in the marginal basins, the exact nature, age and extent of Messinian deposits offshore and above all in the transition between the Messinian lower margin and the deep basin are still not clearly understood. However evaporites have been intersected by the GLP 2 industrial borehole drilled on the Messinian shelf break. The presence of upper evaporates is generally accepted and we suspect the presence of lower evaporates under messinian massive salt. The acquisition of the ECORS seismic lines and their tie with the GLP2 exploratory well, the release of industrial seismic surveys in the deep basin of the Western Mediterranean sea through the "GDR-Marges*" program, and newer seismic data have allowed us to evidence the morphology of a complex Messinian wedge comprising multiple erosion surfaces, and their relations with evaporites deposited during the crisis. The seismic unit corresponding to Messinian evaporites, onlap onto the Messinian Erosional Surface of the Gulf of Lions. This geometry suggests that there was a continuous rise in base level, during all the evaporites deposition (Messinian crisis). The apparent onlap of the evaporites at the transition between the deep basin and the platform could be caused by rapid (at geological scale) accumulation of thousands of meters of evaporites, infilling the

deep basin, while the water depth remained between 0 and 100 meters with episodic flooding episodes.

*http://gdrmarges.lgs.jussieu.fr/Chantiers/Golfe_Lion/Lion-3.html