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The Multiple Signatures of the Mediterranean Messinian Salinity Crisis

The crisis fits with the lowstand of third order cycle TB 3.4, increased by Western Mediterranean sills. It occurred in a deep basin physiography testified by canyons. It belongs three kinds of impacts : subaqueous, subaerial and subterranean (endokarsts). From chronological point of view, these impacts are either contemporaneous, or delayed.

MESSINIAN CONTEMPORANEOUS SIGNATURES The crisis is recorded by three signatures : (i) the evaporites of the abyssal plains, (ii) the canyons on margins and also on European and African hinterlands (iii) and, in between, the apron built by coalescent canyons fans.

PLIOCENE DELAYED SIGNATURES The flooding of the Mediterranean basins was so fast that the Pliocene transgressive system track is absent. The canyons were transformed into rias which infills were systematically structured in Gilbert deltas. The duration of the margins reconstruction (1.5 Ma) was five times longer than its dismantling was (0.3 Ma).

MESSINIAN/PLIOCENE ENDOKARSTIC SIGNATURES The Rhone and Ardeche canyons, near their confluence, cut a Mesozoic carbonate platform which yield two types of endokarstic network : - A sub-vertical one, Messinian in age, drowned in its lower part and linked to the Rhone talveg. - Two horizontal others, in connexion with the benchmark pliocene levels : the marine/non marine transition and the abandonment surface.