

THE LATE MESSINIAN EROSIONAL SURFACE: CONSTRAINTS FROM MARGINAL BASINS IN NE MOROCCO, SARDINIA AND SICILY

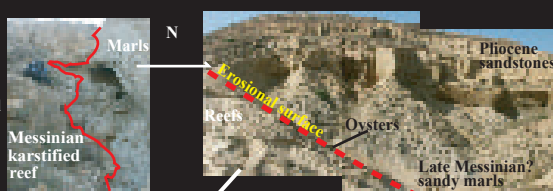
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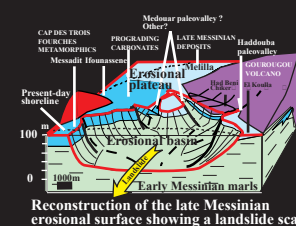
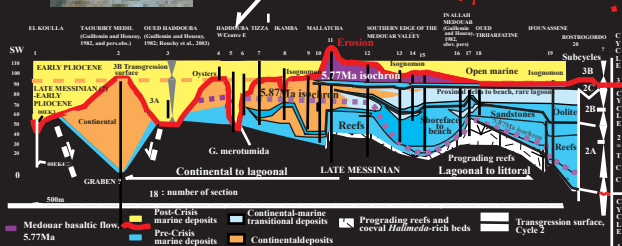
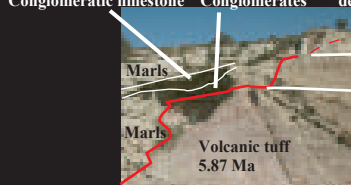
Geometrical, sedimentological and biostratigraphical investigations in three outcropping Messinian marginal basins of the Mediterranean provided new informations about the age and nature of the late Messinian erosional surface, and about the subsequent post Messinian Crisis deposits. The erosional surface is described in Sicily, western Sardinia and the Cap des Trois Fourches peninsula in Morocco.

MELILLA-NADOR BASIN (NE MOROCCO)

Erosion surface on the northern side of the Haddouba paleovalley. The erosional surface is bored and encrusted by molluscs.

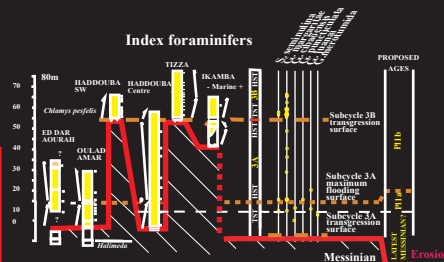


Conglomeratic limestone Conglomerates Lagoonal deposits



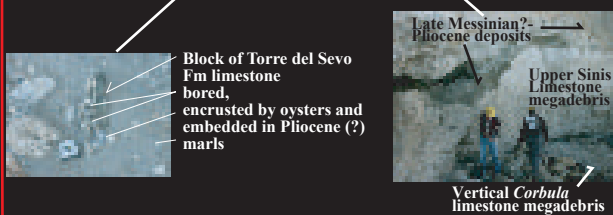
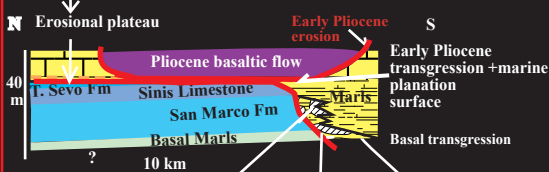
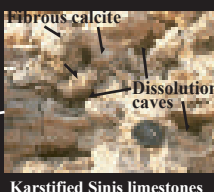
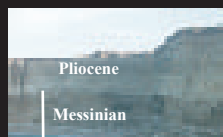
Investigated sections and correlations in the southern Cap des Trois Fourches peninsula. Post-Crisis deposits are organized in two sedimentary subcycles, 3A and 3B. TCC: Terminal Carbonate Complex

In the Melilla-Nador area the erosional surface was reconstructed over 10kmx5km. It is interpreted as a landslide scar which developed in the margin of an erosional plateau. Erosional valleys developed at the plateau margins. The sandy post-crisis infilling shows a basal transgressive system tract which did not provide definite index fossils, but the Atlantic *Globorotalia cibaoensis* foraminifer. It could be late Messinian in age. Above, deposits date as early Pliocene from the occurrences of the *G. margaritae*-*G. puncticulata* foraminifers and from pectinids.



The lowermost part of the Subcycle 3A deposits only provided *G. cibaoensis* and one poorly preserved *G. merotumida*. It could be late Messinian in age. Early Pliocene *G. margaritae* and *G. puncticulata* are identified upper in the section.

WESTERN SARDINIA (ITALY)

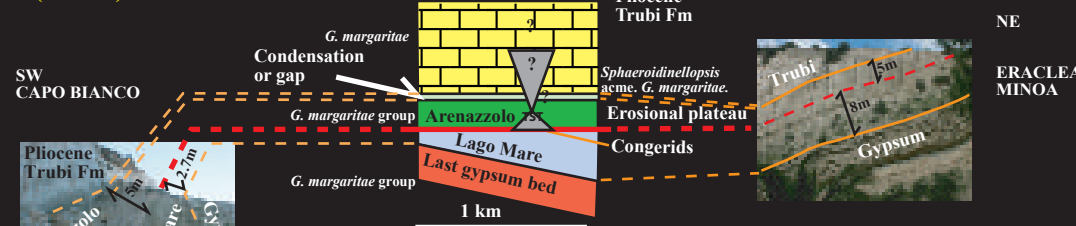


In the Sinis peninsula the Monte Palla Formation is in fact a diagenetic facies below the late Messinian erosional surface. The surface shows a 20km x 5km karstic plateau and a southern dismembered cliff. The post-crisis deposits are organized in two sedimentary subcycles. The basal transgressive deposits were reported to early Pliocene (NN12, Cherchi and Martini, 1981), but no definite index fossil was found. Pliocene deposits date as early Pliocene in the upper part from the occurrence *G. margaritae* and *G. puncticulata* foraminifers (op. cit.).

CONCLUSION

- the geometry of the late Messinian erosional surface is composed of wide-extent erosional plateaus. The margins of the plateaus are indentated by steep cliffs and/or paleovalleys reaching at most 80m depth;
- gravity-induced erosional features can be associated with subaerial erosion. They are recorded in Morocco (landslides) and Sardinia (submarine chaotic deposits);
- the transgressive system tract of the post-Messinian Salinity Crisis deposits was identified in the three investigated marginal basins; its age is not definitely established and further investigations are necessary for a better precision. It could be latest Messinian/earliest Pliocene;
- *G. margaritae* group foraminifers are mentioned above and under the erosional surface Sicily, only above in Morocco (*G. cibaoensis*). They occurred earlier in the Mediterranean than previously accepted, under the Trubi.

SICILY (ITALY)



At Eraclea Minoa the Lago Mare is eroded by a southwestward gently dipping erosional surface. The Arenazzolo shoreface deposits constitute a TST. Sr isotope study should indicate a 300 ky condensed section or a gap within 2 metres at the Arenazzolo-Trubi boundary. *Globorotalia margaritae* group foraminifers are found between gypsum beds and in the Arenazzolo, indicating they occurred prior to the Trubi deposits, during late Messinian in the Mediterranean as in the Atlantic.