



Seismic signatures of Upper Messinian events in the West Sardinian margin and the East Liguro-Provençal basin

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A new seismic dataset acquired in Autumn 2010 on the West Sardinian margin and Eastern Liguro-Provençal basin (WS10 project) has provided important new information concerning the Messinian events. In particular, the good seismic resolution allows a well definition of the seismic facies of the Upper Unit (UU), which represents the upper sequence of the " Messinian trilogy ", well known in the Mediterranean literature. The trilogy includes also the main seismically transparent salt sequence, that reaches a thickness of some hundreds of meters , called Mobile Unit (MU), and the generally high amplitude reflectors of the Lower Unit (LU), that is not yet calibrated in the West Mediterranean region.

As shown by the DSDP boreholes in the passive margins of the Balearic basin, the UU is represented by an alternation of gypsum, halite and marls, highlighted on the seismic profiles by a package of high amplitude about parallel reflectors.

Within the UU we have identified a transparent seismic thickness that, specially due to some diapiric structures, we have interpreted as a salt layer. Its seismically continuous and regular extent, testifies its primary deposition, which necessarily implies a drawdown of the sea level during the deposition of the UU.

The UU locally terminates at the foot of the slope, where the Messinian events are marked by the erosional surface (MES), characterized by clear toplap of the pre-Messinian sequences. Sometimes the UU is present on the lower slope, where it is gradually onlapping the thin and often deformed MU or, if the MU is completely moved toward the basin, directly onlaps the pre-MU sequence.

The UU on the lower slope is locally topped by an erosional surface, that laterally converges, toward east, in the MES. Alternatively, along other seismic profiles, the top of the Messinian sequence is concordant with both the Lower Pliocene and the last UU reflectors but, in some cases, a clear erosional truncation is recognizable inner the UU.

These erosional surfaces and the salt layer inner the UU of the deep basin, suggest important sea level changes that have to be considered for a full comprehension of the Messinian events. Their correlation will be the main topic of our future interpretation.