

PRISMED II CRUISE IN EASTERN MEDITERRANEAN SEA  
MAIN RESULTS (28 JAN - 28 FEB 1998)

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During PRISMED II cruise (conducted on board the R/V *L'Atalante* by UMR CNRS Géoscience Azur, Villefranche-sur-Mer) four main sectors of the eastern Mediterranean basin were surveyed in great detail. The objectives were to study both the characteristics of the recent to present deformations and the sedimentary processes acting in this narrow Mesozoic basin still separating the African Continental Margin from the southern border of the Anatolian-Aegean Microplate and Europe.

EM12 Dual survey (bathymetry and acoustic imagery) at 100 % recovery, together with geophysical profiling (serial 6-channel continuous seismic reflection, 3.5 kHz echo-soundings, magnetic and gravimetric data) were continuously recorded on board the R.V. *L'Atalante*.

This strategy was considered as the best to better map, understand and finally interpret, at a regional scale, the morphological, structural and sedimentary characteristics of this area involved in incipient continental collision between African Plate and European Plate in the Aegean sector. In the near future (some Ma), this region will give rise to a mountain belt system.

The successively surveyed four main zones were:

- (1) a broad domain of the Mediterranean Ridge (250 km in length, 200 km in width), **between the south of Crete and Libyan Margin**. There, data (especially the acoustic imagery) clearly demonstrate the presence of different structural domains, characterized by numerous tectonic features (thrusts, folds, normal faults, strike-slip faults), reflecting the coexistence of sub-surface ductile deformations, and deep brittle fracturing. Numerous mud volcanoes, localized in two main distinct belts, were also described.

- (2) a wide elongated area (450 km in length, 100 km in width), **between the south-east margin of Crete and the Nile Deep-Sea Fan**. In this sector, deformation of the Mediterranean prism shows, in front of the Nile Delta, broad asymmetrical folds bordering a northern internal domain where large flows of probably highly fluid material (under-compacted mud ?) were observed. The Nile Delta shows, in this sector, an important network of meandering channels distributing the Nile sedimentary input to the abyssal plain, even locally almost directly to the present-day compression front.

- (3) two contiguous zones were also surveyed, respectively **west and south of Cyprus island**. The first zone (Florence sector) illustrates the transpression type structural connection, between the Mediterranean Ridge and the active subduction/collision south of Cyprus. In the second area, a detailed study of the Eratosthenes Sea Mount was performed. This sea mount, which consists of a fragment of the African craton colliding with Cyprus, is intensively cut by normal and strike-slip faulting, and its contact with the Cyprus Margin shows intense compressional deformations.

- (4) At last, a broad sector of the **Nile Deep-Sea Fan** was also surveyed at the end of the cruise. Towards the east, growth pattern indicates the halokinetic influence of underlying Messinian salt layers, and active tectonism, most probably of transtensional type related to the Suez rift system. Active tectonism also clearly controlled the distribution of numerous salt diapirs. Offshore Port Saïd, the fan is affected by huge submarine mass-flows, that are controlled by both deep active tectonics and by upflow of underlying Messinian strata.

During this cruise, more than 13,000 km of geophysical profiles and about 200,000 km<sup>2</sup> (more than 1/3 of the surface of France) of EM12 data (bathymetry and acoustic imagery) were collected in the Eastern Mediterranean, thanks to the particularly high tech geophysical and computer equipments of the R/V *L'Atalante*.

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