MORPHOLOGICAL TYPES IN THE WESTERN PART OF THE MEDITERRANEAN RIDGE - DEFORMATION PATTERNS OF AN ACCRETIONARY COMPLEX

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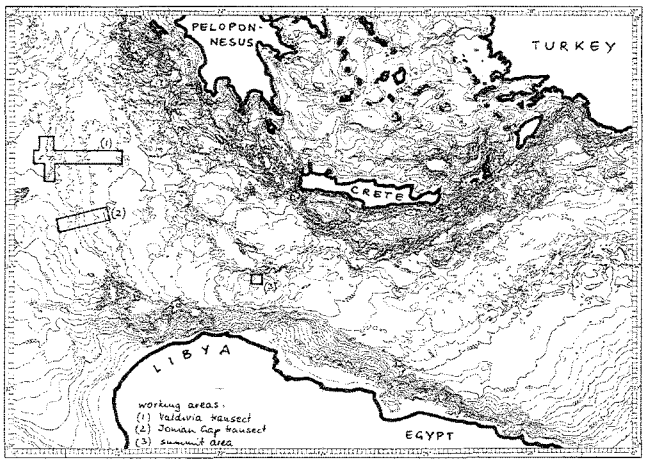
During Meteor cruise no. 25/4 (1993), the detailed morphology of the western part of the Mediterranean Ridge (MR) has been studied in two transects from western forelands onto the ridge and in the summit area SW of Crete (Fig.), and the deformation front bordering the Messina Abyssal Plain was surveyed.

The Hydrosweep swath-mapping system and a deep-tow side-scan sonar were applied during the profiling, together with continuous gravity and magnetic measurement covering the above areas. Four piston cores were raised from ponded deposits in order to study tectonical instabilities documented in the sedimentary sequences.

The bathymetric maps show impressing variations of the small-scaled relief. Side-scan sonar records allow the identification detail structures. The tectonic instability of the area is reflected in the sediment cores by slumping structures, debris flow and turbidite layers. The dating of these sequences should enable us to gain more insight into the tectonic history of the MR. The gravity and magnetic anomalies coincide with the prominent tectonic units. First gravity modelling for the summit area of MR indicates the possibility to identify mud diapirs.



MICROPALEONTOLOGY AND STRATIGRAPHY OF TWO CORES FROM THE ALBORAN SEA (WESTERN MEDITERRANEAN, "TRAINING THROUGH RESEARCH" CRUISE 1992)

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During the 1992 "Training Through Research" cruise of the R/V "Gelendzhik" in the Alboran sea, six gravity cores were taken. The longest cores, 73 and 74, located in the deepest part of the investigated area, were selected for micropaleontological/ stratigraphical study.

Core 73 is located on the slope of an underwater rise next to the southwestern edge of the Maimonid Ridge while core 74 is located on the gently tilted abyssal plain. The distance between the two core locations is 5 km. The cores were described and subsampled on board. They consist of light-brown bioturbated calcareous-clay muds in their uppermost parts (59 cm from the top in core 73 and 60 cm from the top in core 74). This unit is underlain by clayey-carbonate beige-grey muds with massive or indistinctly-laminated structures disturbed by bioturbation. This unit continuous to the depth of 87 cm in core 73 and to the depth 117 cm in core 74. Grey and green-grey layered muds with a silty lenses build up the lower parts of the cores. The interval contains turbidite sequence which is in particular distinct at the level of 243-370 cm from the top of the core 73 and 264-485 cm from the top of the core 74.

Core 73 was sampled every 10 cm and core 74 every 20 cm. Samples were weighted, washed over a >63 mm sieve, dried and split. In the fraction >100 mm at least 200 specimens of planktonic foraminifera were identified at a generic level. After counting, the residue was checked for rare species. In total 60 samples were studied, 18 species of planktonic and 22 genus of benthic foraminifera were identified.

Of special interest are distribution patterns of the main species *Gl. inflata* and *N. pachyderma*. It was shown by VERGNAUD GRAZZINI and PIERRE (1991) and TROELSTRA *et al.* (manuscript) that the replacement of *N. pachyderma* dominance by *Gl. inflata* dominance is an evidence of pycnocline deepening and reestablishing of active water ventilation in the Mediterranean dated about 7 ka BP. It also provides the evidence of water temperature increase because *N. pachyderma* which is known as a "cold"-water species is replaced by *Gl. inflata,* a member of temperature transitional assemblage. This event supports the hypothesis of a reversal of the hydrographycal regime in the Mediterranean.

A strong decrease in the intermediate and deep water ventilation was also noted in the Alboran basin between 8-9 ka BP, in phase with the last stagnant event in the eastern Mediterranean. This situation changed around 7 ka BP by reestablishment of the deep-pycnocline level and active ventilation of deep and intermediate waters. This level can be seen in the cores at a depth of 70 cm (core 73) and of 90 cm (core 74). Increasing numbers of *G. bulloides* at the same level in both cores support the idea of water regime changes. This species is always abundant in modern upwelling areas.

The appearance of *Gssacculifer* and the increasing numbers of *Gsruber* (representatives of warm subtropical fauna) at 100 cm in core 73 and 130 cm in core 74 support the idea of a warming trend from the Younger Dryas (11-10 ka BP) to the present climatic conditions.

The cool water species *T. quinqueloba,* present in a frequencies of 40-50% in the lower part of the cores, decreases dramatically in abundance from 100 cm upwards in core 73 and from 150 cm upcore 74. This species seems to be especially abundant at the time of cool and unstable water conditions during the Late Glacial time and Younger Dryas. Based on the above and also by extrapolation of the sedimentation rates the Holocene/Pleistocene boundary is placed at 100 cm in the core 73 and 140 cm in core 74.

The main feature of the foraminiferal assemblages from 100 and 140 cm downward in the cores is a strong dominance of cool water species such as : *N. pachyderma, T. quinqueloba* and *Gl. scitula*. Relatively high percentages of *Gl. inflata, N. dutertrei* and *G. bulloides* in the lower partof the core 73 suggest that the sediments at this level were accumulated during oxygen isotope stage 3.

Calculated sedimentation rates for the cores are about 10 cm/1000 years for core 73 and 13-14 cm/1000 years for the core 74 at least for Holocene. It coincides with interpretation by calcareous nannofossil data.