

Marine Geological Researches in the North Eastern Ionian Sea
 (Gr 82 Cruise : Preliminary Results)
 MARION GROUP *****

Resumé.

Une campagne récente (septembre 1982) à bord du R/V Bannock a permis d'étudier en détail, essentiellement par sismique réflexion et dragages, les régions du bassin ionien situées entre l'arc calabrais externe et la terminaison nord occidentale de l'arc hellénique. Ces résultats permettent de préciser la connaissance de la ride apulienne et la structure de la marge hellénique entre la fosse Nord-Matapan et l'île de Céphalonie. Quatre dragages et quatre carottages ont fourni des échantillons géologiques et sédimentologiques le long de cette marge.

Abstract.

A marine geological and geophysical program was carried out by the R/V Bannock between september 1-15 on the margins of Apulian foreland and NW Hellenic Arc and trench system.

The objectives of the expedition were the following:

1. - to complete a systematic seismic survey over the Apulian swell;
2. - to clarify the geological structures and the prevailing sedimentary mechanisms along the N-W Hellenic Arc extremity;
3. - to study its structural correlation towards both the Apulian domain and the Western Hellenic margin;
4. - to verify structural relations, if any, between the external Calabrian and Hellenic Arcs.

During the cruise various geological researches were performed such as deep seismic reflection profiling (30 kJ sparker), shallow profiling (3.5 kHz), proton magnetic measurements, dredging, coring, collection of windblown materials and bottom photography.

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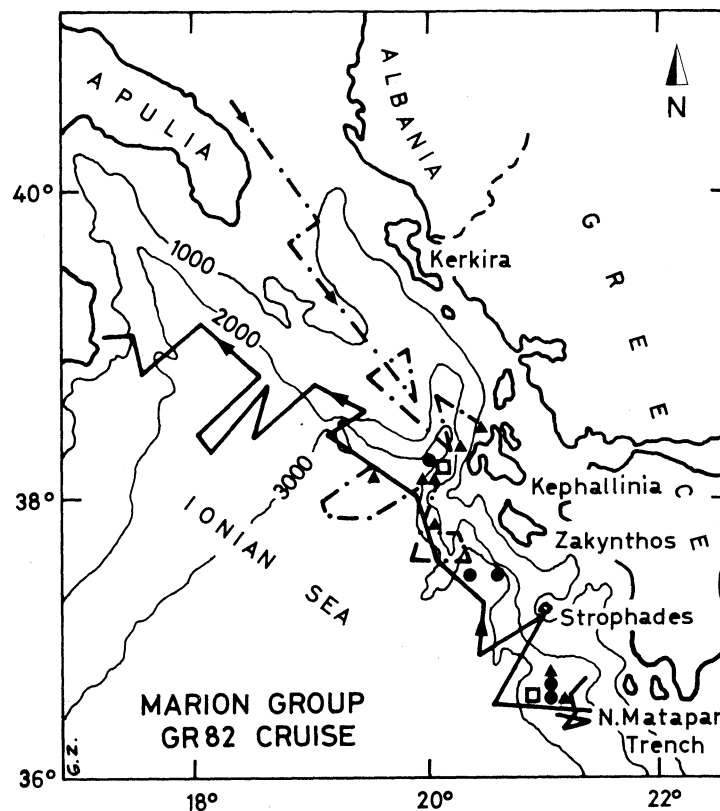
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Preliminary results of the deep seismic profiles show that:

1. - on the Apulian swell the sedimentary cover (which includes on its eastern border thick strata below presumed Messinian horizons) was better defined and clarify the recent tectonic framework of the whole area.
 2. - in the Hellenic subduction zone the North Western extremity of the Ionian Trench consists of a series of alternatively NW-SE and NE-SW oriented segments. The former are locally thickly sedimented (f.i. the sedimentary cover of the so called Zakynthos trough is up to 1.6 sec thick), and contain two distinct units which are tentatively correlated with the Lower Pliocene and the Upper Miocene below an unconformable Upper Pliocene-Quaternary sequence.
- The overall disposition is due likely to a progressive transition from a frontal subduction (off S-W Peloponnesus) to a strike-slip motion (off Kephallinia). The Hellenic margins between the small islands of Strophades and the island of Zakynthos is highly tectonized in response to such a transition.



--- bathymetry, single channel seismic reflection; — bathymetry, magnetometry, single channel seismic reflection; ▲ dredges; ● cores; □ camera.

Several dredge hauls made along this portion of the margin have produced different types of indurated to semi-indurated sediments and various coloured marls. Preliminary examination of the dredged material identified marls and sandstones of probable Lower Pliocene-Quaternary age, similar to those reported from Western Kephallinia Island. Microbrecias, recovered from the Northern wall of the Northern Matapan Trench (more than 5000 m depth), were tectonized as indicated by the lineations present on many rock surfaces.

Four cores have been recovered along the N-W Hellenic margin (see location map). They display different types of sediments showing various sedimentary mechanism. The macroscopic study of the cores in correlation with 3.5 kHz profiling shows the following: the sediments to the Western of Kephallinia and the SW of Zakynthos consist of dark and light gray laminated muds interbedded with Pteropods rich coarse sand and frequent turbiditic layers (2-5 cm) with erosional surfaces. On the contrary the core of N Matapan Deep consists of homogeneous dark greenish gray mud (homogenite) without apparent structures.

The magnetic record does not show any significant magnetic anomalies over the surveyed area related to deep seated structures.

As a part of the EOLO Project of the CNR, during the Gr 82 Cruise airborne particles were collected over the Ionian Sea by mesh panels and by filters for a quantitative evaluation of their amount in the atmosphere near the sea surface.

During the cruise the scientific team visited the Strophades Islands and collected samples which will be studied in correlation with the available seismic profiling data and dredged samples.

