

First results from the gravity and magnetic survey of the Mediterranean Sea*

by

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Summary****

Taking into account also seismicity, heat flow, reflection and refraction seismic and paleomagnetism, results are discussed of a regional bathymetric, gravimetric and magnetic survey of the Mediterranean sea performed from 1961 to 1965 in cooperation between Saclant ASW Research Center and O.G.S.

All the observations agree in the indication that most of the present deep sea basins of the Western and Central Mediterranean, after a rising in the Miocene, collapsed for more than 3 km in a relatively recent epoch (Pliocene). This collapse could be perhaps correlated with a phase of distension between Europe and Africa, with possibly consequent anticlockwise rotation of Sardinia-Corsica and of the Southern Apennine.

Relicts of continental areas formerly emerged exist especially at the margins of the Balearic, Ligurian and Jonian seas; whereas more extended areas of the same type exist around the Tyrrhenian. The Sicily Channel and the Aegean sea are instead areas of more recent collapse, with extended graben in formation.

On the contrary, all the geophysical observations concur to indicate a zone of compression in the Eastern Mediterranean.

In the deep sea basins, the gravimetric anomalies indicate a continental type of Crust, but the deep seismic refraction data are too scanty for a good calibration. Magnetism do not indicate evident lineations, and strong magnetic anomalies correspond especially to volcanic apparatus outcropping from the bottom or buried.

Two insular arcs (the Calabrian and Aegean one) dominate the actual evolution of the Central Mediterranean, delimitating two marginal seas with the corresponding Benioff zones, along which lithosphere is being absorbed. In agreement with the global tectonics theory, seismicity permits to delineate the contact between the great European and African plates, and the existence of minor plates with partly independent movements (Aegean, Turkish, and -probably- Adriatic ones).

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