

A NEW MORPHO-BATHYMETRIC MAP OF THE EASTERN MEDITERRANEAN SEA

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Abstract

We present a new morpho-bathymetric compilation of the Eastern Mediterranean Sea basins. This map, based on DTMs at 100m from different swath bathymetric surveys, allows to illustrate, and discuss, most of the active geological processes actually operating within the various basins and particularly well expressed on the sea floor. Moreover the map may be used as a bathymetric background to better constraint deep current circulation and gyres as well as various physical modeling (tsunamis for example); the document could be also very useful for planning detailed oceanographic surveys (such as fluid systems, deep sea ecosystems, etc....).

Keywords: Mapping, Bathymetry, Geomorphology, Levantine Basin, Mediterranean Sea

Following previous morpho-bathymetric syntheses of the Mediterranean Sea at a 500- meter grid [1, 2], we have compiled a new morpho-bathymetric synthesis of the Eastern Mediterranean using digital terrain models (DTMs) based on a 100-meter grid. The various DTMs have been generated using data provided by several Mediterranean Institutes, and collected using different swath bathymetry systems. One may estimate that 90% of the seabed, extending by water depths higher than 2000m, have now been mapped using these swath systems despite difficulties issued from EEZ claims.

The aim of this scientific synthesis is chiefly to illustrate, in details, the various morphological features resulting from the different (sedimentary, tectonic, geochemical, magmatic, etc.) active geological processes operating on the major physiographic domains, which characterize the Eastern Mediterranean Sea: the Calabria outer arc (Ionian Sea), the Mediterranean Ridge [3] (most of the central Eastern Mediterranean basin), the Nile sedimentary cone and the Eratosthenes seamount (south of Cyprus) [4].

For areas not yet mapped by swath bathymetry the synthesis has been completed by data extracted from the GEBCO and the EMODNET Project DTM files.

A few artifacts, introduced by the use of these large scale files, can be detected along most of the continental slopes not yet mapped in details, as well as for example in the southern domain of the Adriatic Sea. Similarly it has not been possible to systematically adjust a few, but non-linear, discrepancies in Z values between various DTM files. Such differences result from the use of data collected by swath systems operating at different frequencies and/or from minor differences in seawater sound velocity corrections. This map of the Eastern Mediterranean Sea illustrates, despite a few artifacts, the results of active geological processes at levels of details never reached so far.

of many active geological processes participating to the present-day shaping of the seafloor of the Eastern Mediterranean basins and margins.

References

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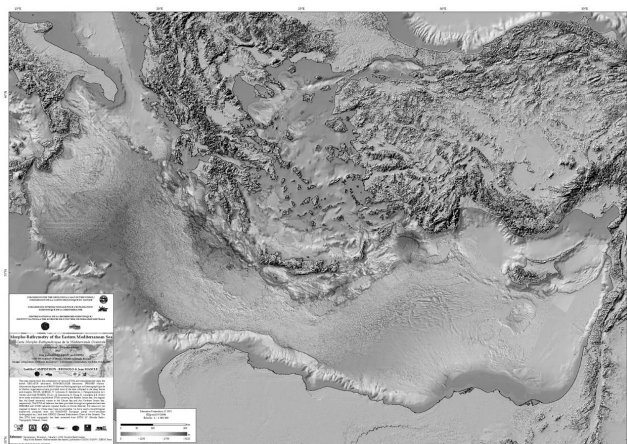


Fig. 1. Morpho-bathymetric synthesis of the Eastern Mediterranean Sea (DTM at 100 meter). This detailed synthesis allows the observation of seabed images