THE ACTIVE DEFORMATION OF ERATOSTHENES SEAMOUNT, SOUTH OF CYPRUS

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Eratosthenes Seamount is a slightly NNE/SSW–elongated block of about 100 km x 70 km which rises over 1200 m from the seafloor about 100 km south of Cyprus. Its origin is enigmatic but it is generally thought to be an uplifted or remnant block of the African continental margin. New seismic data clearly show the seamount to be underthrusting both Cyprus to the North and Nile sediments to the South, suggesting that Eratosthenes is buckling between the colliding African and Turkish plates. The plateau forming the top of Eratosthenes is separated into different levels by faults cutting it in a roughly WSW–ENE direction. Mass movements including large slides are evident on its flanks. The western flank appears to be thrusting beneath sediments to the West; but the eastern flank shows evidence of normal faulting with rotated blocks. There also seems to be a discontinuity between the seamount and the gently north–sloping Levantine basin to the East, suggesting faulting, possibly connected with the Southeast flank of the Hecataeus Ridge and the eastern part of the Cyprus arc to the North.

Northwards underthrusting beneath Cyprus, probably since Early Miocene, has caused and is causing strong compression in southern Cyprus with both uplift and southward thrusting; and the amplification of these forces since Late Miocene time was probably the result of wedging of the Eratosthenes block beneath Cyprus, which continues to the present. Because the gravity anomaly associated with Eratosthenes can be explained largely by the topography of the seamount (there is almost no associated Bouguer anomaly), it is postulated that the structure is caused in large part by up–arching since Early Miocene time with active tectonic modification during the current stage of breakup. Counterclockwise rotation of the entire block, occurring as part of the wedging process, has resulted in underthrusting of Eratosthenes beneath the sediments to the West, the cross–cutting WSW–ENE faulting, and some rifting between the eastern flank of Eratosthenes and the NE–SW fault zone defining the edge of the Levantine basin to the east of the seamount. It is therefore a very tectonically–active feature undergoing destruction in the collision process.

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BENTHIC FORAMINIFERA AS INDICATORS OF POLLUTION IN THE EASTERN MEDITERRANEAN

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A detailed study of foraminiferal populations was carried along the Mediterranean coast of Israel and Turkey.

The primary goal is to investigate the influence of pollution of the eastern Mediterranean marine environment upon the benthic fauna. Foraminifera were chosen to be studied in particular as a representable faunal type.

In order to carry out the primary goal many specialists from the fields of biology, botany, ecotoxicology, natural history, geology, chemistry, and oceanography were involved. Following analyses have been performed or are in progress : (1) Taxonomic and ecological analysis of benthic foraminifera, (2) Experimental ecotoxicological study of transport and defense systems of foraminifera, (3) Geochemical and morphological analyses of foraminiferal tests, (4) Isotope analysis of foraminiferal tests. Foraminiferal parameters were correlated with various oceanographic, sedimentological, geochemical and biological factors (i.e. primary productivity).

Foraminifera show a clear response to various pollution sources such as heavy metals, coal and domestic sewage (YANKO *et al.*, 1994). It supports the feasibility of studying benthic foraminifera as a technique for the *in situ* continuous monitoring of near shore marine pollution. Industrial pollution, especially by coal and heavy metals, has a deleterious effect upon the foraminifera. This is denoted by a reduced population diversity and density, stunting of the tests and increase of percentage of abnormal shells.

This suggests that the defense system of foraminifera may be damaged by xenobiotics. Experimentally a few defense mechanisms have been found and their damage by certain heavy metals (Hg, Pb and Cd) was detected (YANKO and BRESLER, 1994; BRESLER and YANKO, in press).

On the other hand, the foraminifera responded positively to the presence of domestic sewage. Apparently they accept it as a nutrient source. If this is indeed so, the inference may be drawn that benthic foraminifera may be useful not only for detecting anthropogenic pollution, but also natural organic pollution as well. Anomalously large test sizes and species abundance may potentially indicate the presence of naturally occurring organic material. Such may be the case where natural gas seepages occur in the shallow marine environment.

Therefore, the study of shallow water benthic foraminifera has a wide, as yet not completely realized, potential in a variety of fields where the monitoring of the present marine environment or analysis of the paleomarine section is required.

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