

GEOLOGY OF THE SURFICIAL SEDIMENTS OFF EASTERN MACEDONIA  
AND THRAKI, NORTHERN AEGEAN SEA

by

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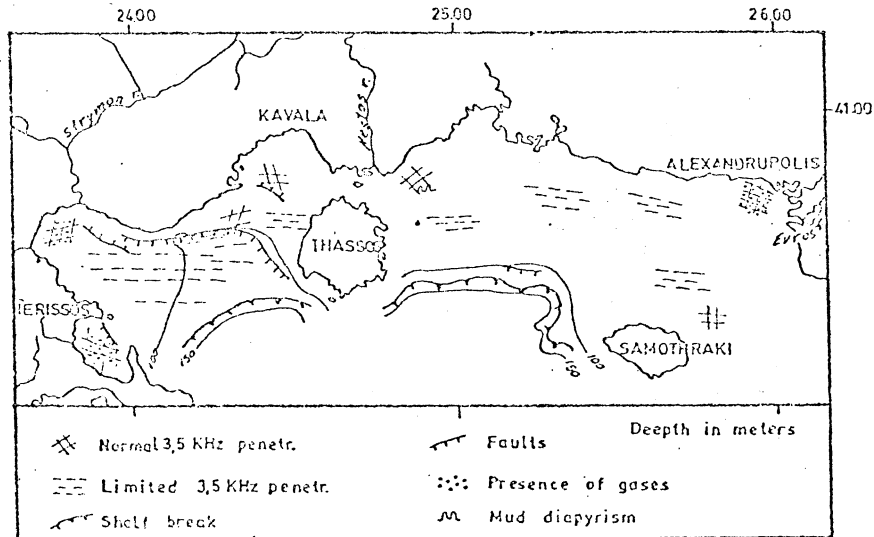
Abstract: The area under study extends from Ierissos gulf, east of Chalkidiki peninsula, to Alexandroupolis, and from the shoreline of eastern Macedonia and Thraki to the shelf edge. The research started in 1981 and included bathymetric, seismic and magnetic profiling, surface sampling and coring. Following are the preliminary results of this study.

A marine geological research was carried out during the last years off eastern Macedonia and Thraki (Fig.1).

The bathymetry shows that the area west of Thassos island is complex morphologically, containing a number of hills, ponds and channels some of which are of sedimentary and other of tectonic origin. East of Thassos island the morphology is smooth and only a few channels are present at the easternmost part near Samothraki island.

The study of and the comparison between the seismic profiles carried out by an ORE subbottom profiler and a Uniboom system showed that the present sea floor is only partly covered by recent sediments, deposited during and after the recent sea level rise. The greatest thickness of these sediments occurs in ponds, inside small gulfs, and thins rapidly toward the outer shelf where it is practically absent. The recent tectonism is more active to the west than to the east and in most cases it superceeds sedimentation. The shelf break occurs at a depth of 120m to 130m, while in the slope the sediments are transported by slumping, mass flows e.t.c. The detailed examination of the Uniboom seismic profiles

showed that in some high sediment input areas organic gases are present within the sedimentary layers, producing "masking" effects in the recorded profiles. In other places mud diapirism was noted.



The area receives considerable amount of sediments from a number of rivers, most important of which are Strymon, Nestos and Evros. The grain size analyses showed that at the western sector the sandy sediments cover a narrow strip along the shoreline as well as most of the outer shelf, while the interior parts of the small bays and part of the interior shelf is covered by silty sediments. At the eastern sector, most of the area is covered by sandy sediments while fine grained ones are present only in small isolated areas. The carbonate content is usually from 30% to 50%, attributed mainly to the biogenic components which constitute a large portion of the coarse fraction of the sediments and consist mainly of benthonic foraminifera, molluscs, ostracods, shell fragments e.t.c. Locally many foraminiferal tests are filled by authigenic glauconite. From the other constituents, the heavy minerals are locally present in considerable amounts f.ex. in Ierissos Gulf (pyrite, garnet, amphibolite), Strymonikos gulf (amphibole, pyroxene, pyrite) around Thassos island (epidote, amphibole, magnetite) and at Alexandroupolis gulf (magnetite, ilmenite, amphibole).

The on-going study includes geochemical and clay mineral analyses which will also be considered in order to construct the sedimentation model of this area.