

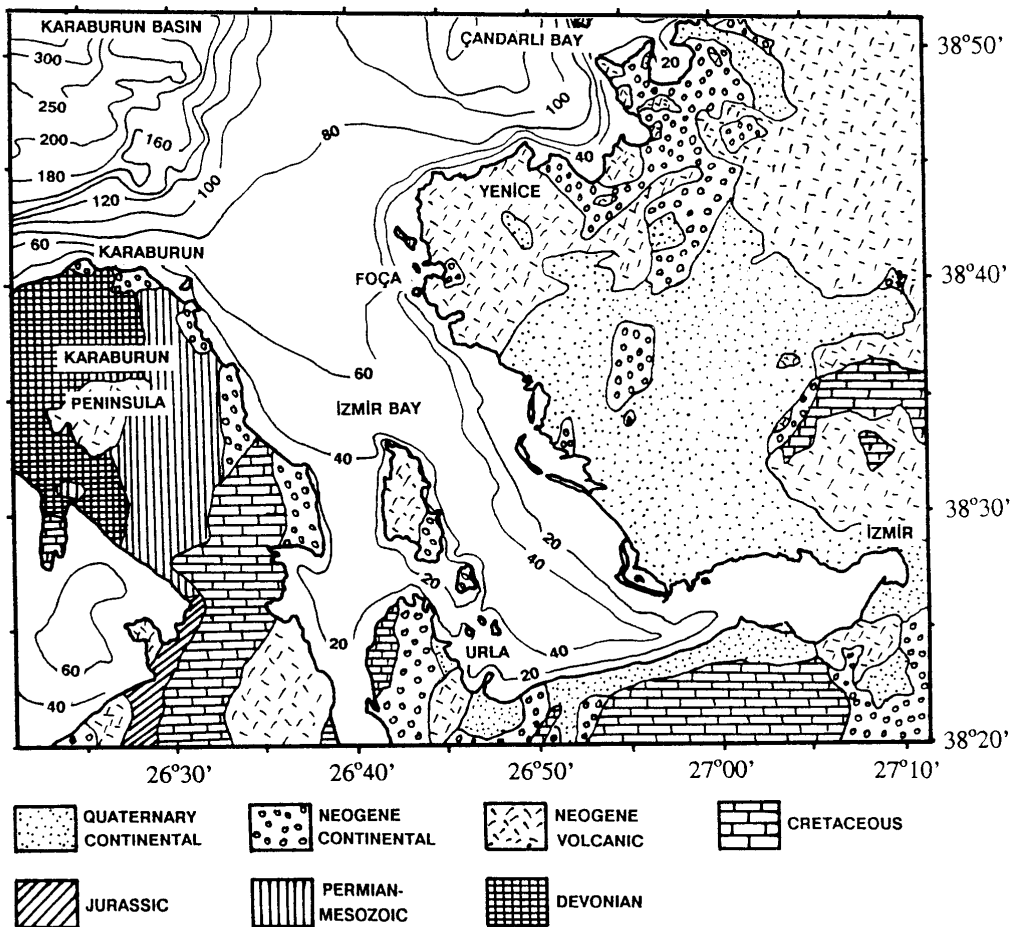
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## GEOPHYSICAL INVESTIGATIONS IN THE GULF OF IZMIR (WESTERN-TURKIYE): NEOTECTONIC AND SEDIMENTOLOGICAL APPROACH

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Izmir Bay was formed by an asymmetric E-W directed graben similar to other important bays in western Anatolia. It was partially separated by Karaburun Peninsula from the Aegean Sea 828 morphologically, and was formed and controlled mainly by NE and N directed uplifted and subsided blocks (Kaya 1979, Sengor 1987, Ulug & Gunay 1993).



Geology of Izmir Bay and its surrounding (from M.T.A. 1964) on the Bathymetry (from Aksu et al 1990).

The geology of Izmir Bay and its surrounding is given in the figure. In the Bay, which formed in a subsided wally, the effects of Alpine Orogenesis in general can be seen. The area was first established in the Valanginian period and the surrounding rocks were represented with Cretaceous deposits of flysch facies. This suggests that the depositional environment was not stable. Periodic sea level oscillations caused conglomerate, sandstones-marl and limestone alternations. But the greater thickness of limestones suggest that the marine environment continued in a longer period (Basoglu 1975).

Miocene period started with shallow lake sediments after an important absence between Cretaceous and Miocene. The gradual subsidence of the lake caused the continental depositions. Volcanic tuffaceous and similar materials, which cover large areas in the Miocene period were deposited after the extension in N, NW-SE and NE-SW directed fault systems caused by orogenic movements.

According to some scientists, Izmir Bay was formed by normal faults at the end of the Neogene or probably in Middle Pleistocene. Terraces located on the shore and in the valley suggest that the movements continued also in the Quaternary. In the Quaternary, Izmir Bay was a deep valley in the glacial (cold) periods, and it was a Bay like today in the interglacial (warm) periods. It can be said that Izmir Bay reached the present form first in the Flandrien transgression.

Numerous shallow seismic, multichannel reflection and several seismic refraction studies were done in the Bay in various times. Most of these studies were carried out by the R/V K. Piri Reis of the Institute of Marine Sciences and Technology in Izmir. After the multichannel seismic studies an exploration well **Foca-1** with 2220m final depth was drilled in the outer bay between Foca and Karaburun.

In this well of a thick Miocene sequence was cut. The lower 1000m of this sequence was volcanic origin. This is a negative point for the oil potential in the Bay. However, 360, thick evaporites were also cut during the drilling (Turgut 1988). Finally, for a better understanding of the geology of Izmir Bay seismic refraction studies along a profile, which cut the **Foca-1** oil well, were carried out in this project and the obtained new data were compared with the older results.

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