STRUCTURE OF THE ANAXIMANDER MOUNTAINS WITH THE SYSTEM OF THE EASTERN MEDITERRANEAN

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Abstract

Anaximander Montains are a foundered part of the southern Turkish microplate (except the eastern mountains). The hypothesized foundering must be related to transpressive wrench tectonics from the Strabo Transform zone, compression across the Florence Rise, and the extension between the Turkish and Aegean microplates. The Anaximander Mountains form a group of topographically promeninent features rising more than 2 km above the surrounding seafloor.

Key Words: Foundering, Anaximander Mountains, Mud volcanoes.

Introduction

Neotectonics of the eastern Mediterranean is controlled by the reciprocal affects of the Eurasia, Africa and Arab plates and the other small plates and blocks. The tectonic situation in the northern eastern Mediterranean region is dominated by the interaction between the African plate and Eurasian plate (here it is represented by the Aegean and Anatolian plates). The African plate currently moves north-north-eastwards and north-eastwards relative to the Aegean and Anatolian microplates, respectively. The boundary between these microplates and Africa is delineated by the Hellenic Arc and the Pliny/Strabo Trench in the west and the Cyprus Arc and diffuse fault system in the east. Only the Hellenic appears to be an active subduction zone. Both the Pliny/Strabo Trench system and the East Anatolian Fault Zone are sub-parallel to the relative plate motion vector and hence are dominated by transform motion. The region between the west of Cyprus and the East Anatolian Fault Zone is less seismic than both the Hellenic Arc in the west and the East Anatolian Fault system in the northeast. The seismicity is particularly low between Pliny/Strabo Trench and Cyprus.

General Morphology and the Structure of the Anaximander Mountains and the Surroundings

The Anaximander Mountains are under compressional regime of the junction of the Hellenic and Cyprus Arcs. These mountains are made of three principal highs (1) which are separated from each other with faults and undergoing independent deformations. There are variations and unconformities on the strikes and dips of the faults and folds in the region which mean that those structures have been formed by the forces from different directions, and accordingly it could be said that the area has been affected by several deformations at different times. To the north, the mountains are bordered by a chain of relatively small but deep basins which are, from west to east, the Rhodes Basin (more than 4 km deep), the Finike Basin (3 km deep), and the Antalya Basin (about 2.5 km). The eastern continuation of the Strabo Trench, which is poorly expressed in the form of several shallow and gentle seafloor depressions, separates the Anaximander Mountains from the eastern termination of the Mediterranean Ridge and from the Florence Rise (Fig. 1).

The western and southern mountains, and probably the Beydaglar are, although they are spatially widely separated, they seem to be the same morphologically and geologically. The Rhodes and Finike basins indicate rifting in the region. The Finike Basin which was formed by rifting due to the tensional tectonics of the Beydaglar block in the north (Fig. 2) is filled by thick sedimentary sequence over which the sediments, derived from the area between the southern and western mountains, have pushed basinwise over the southern side.

However, the eastern mountain which is separated from the southern mountain with gentle relief of fold belt is quite from the other two mountains tectonically and morphologically and it has been affected from the other two mountains tectonically and morphologically and it has been affected by different tectonism and geological evolution. Mud volcanoes which are probably formed under compressional tectonics are distributed randomly over the eastern mountains. Also the cobblestone structures which were observed at the boundary of the eastern mountains and the Antalya Basin are the result of compressional tectonics. There is no evidence for any typical subduction along the Florence Rise which is a submarine feature extending from Cyprus in the southeast to the Anaximander Mountains. This arcuate structure is considered to act as the present boundary between the African and Anatolian-Aegean plates (2).

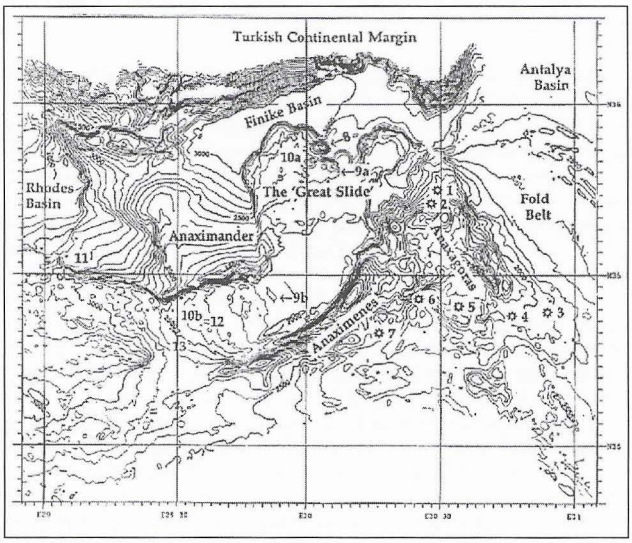

Fig. 1. Bathymetry map of Anaximander Mountains at 100 m contour interval showing locations of principal features. Numbers 1 to 7 are the mud volcanoes. The rest are the other features.

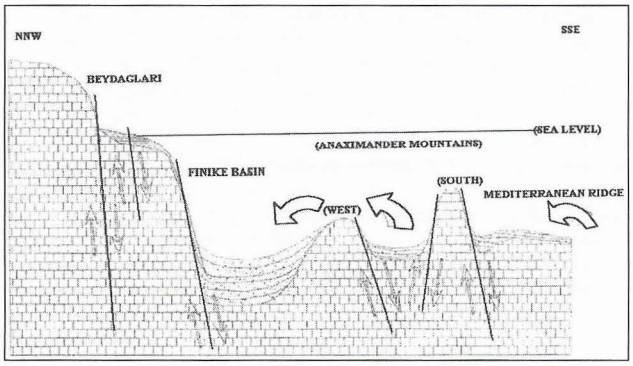

Fig. 2. The schematic NNW-SSE cross section indicating structural tectonic elements between the Beydaglar (SW Turkey), the Finike Basin, the Western and Southern Mountains.

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