

Tectonics of the Aegean and Thracian extensional terrain and its role in morphology and settlement

Yılmaz, Y.

Kadir Has University, Cibali Merkez Kampusu, Cibali 34230, Istanbul, Turkey, yyilmaz@khas.edu.tr

The Aegean region and its surrounding areas, including western Anatolia and the regions of Thrace and the Balkans, have been undergoing N-S extension. This tectonic regime has generated the major morphological features of these regions, and it has had a profound effect on the development of the present morphological entities.

The Aegean extended terrain stretches from the Balkan region in the north to the Mediterranean Sea in the south. It contains a number of major tectonic entities, including the Metamorphic Massifs such as the Cyclades and the Menderes Massif (Cemen et al., 2006), the volcanic associations (Yılmaz, 1998), and the Neogene terrestrial cover sequence (Yılmaz et al., 2000; Yılmaz, 2008). A number of different views have been proposed on each one of these subjects.

The opening of the Aegean Sea and the Marmara Sea and the development of morphological features in and around these seas and in the surrounding territories, including the Aegean islands, owe their appearance to the Aegean Extensional regime (Yılmaz et al., 2000). As a result of the N-S extension, a number of E-W trending structural depressions—the Aegean grabens—were formed. They are separated by intervening long and thin horsts. The faults along both sides of the grabens indicate mainly normal faulting, however, they display occasionally a small component of strike-slip motion near the Sea.

The major river valleys lie along the graben depressions. These valleys form the major runoff paths for drainage into the Aegean Sea. The regions around the entrance of the rivers into the seas have always formed favorable locations for ancient settlement. Hundreds of ancient coastal cities have been located around such areas. The location of ancient dwellings has been strongly influenced by three major factors:

Sea-level fluctuation

Widening and progressive development of the horst-graben system

Sediment transport from the land.

Sea-level fluctuation is mainly climatically-controlled, but the other two factors have been controlled by the N-S extensional regime.

The N-S extension has caused lithospheric thinning and crustal extension. This has brought about pressure release, and thus the generation of magmas. This has resulted in the volcanic activities occurring throughout the region (Yılmaz, 1998) from the Balkans to the Southern Aegean regions. The volcanic products, lavas and pyroclastic rocks, covered the entire region simultaneously with the extension. Some of the late volcanic products have followed the trends of the young structural features, and therefore they have added another factor to the structural ones affecting the development of ancient settlement.

The North Anatolian fault system is a relatively young tectonic entity of the region. It began to tear the Anatolian land in the Eastern region. When it reached the Western regions, where the N-S extension is operating, it initially began as a modifying tectonic force and then became the major influence on the generation of morphological features.

This paper will discuss the roles of the major tectonic forces, their initiation, interactions, and relative contributions to the development of the major morphotectonic entities of the region.

References

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