9th Alexander von Humboldt International Conference
Istanbul | Turkey | 24 – 28 March 2014
AvH9-13


# Morphotectonic development of the Marmara Region

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The Marmara Region refers to northwestern Turkey. It consists essentially of the Marmara Sea and the surrounding areas. Tectonically the region is complex and critical, because the N–S extensional regime of the Aegean Region and the North Anatolian Transform Fault Zone (NAFZ) as the northern plate boundary of the Anatolian Plate intersect.The present morphological charectere of the region have been developed as a result of these two main tectonic forces and their interplays.

The major morphotectonic components of the region are the following:
a-The Thrace-Kocaeli Peneplain
b-The Marmara Sea Basin
c-The Istanbul and Bursa-Balıkesir Plateaus
d-The North Anatolian Fault Zone (NAFZ)
e-The Ganos High and the Armutlu High.

The most prominent active tectonic entity in the region is the NAFZ. It cuts across the Anatolian Peninsula in the E–W direction, entering into the Marmara Region and extending to the Aegean Sea. As an active tectonic element, it has significant morphological control in the region. The major morphological difference between the regions to the north and the south of the Marmara Sea Basin is mainly related to the NAFZ. As a plate boundary, it formed a barrier to the N–S extension, saving the northern sector from the pronounced effect of the extension. The southern region has gradually elevated to much higher altitudes. Therefore the land to the south of the Marmara Sea is a plateau about 300 to 800 m high known as the Bursa-Balıkesir Plateau. It has a rather rugged topography represented by NW and NE trending ridges separated by depressions. The ridges and the depressions correspond to horsts and grabens respectively. The present major morphological features are the product of the new,on-going tectonic events.

The data reveal that the Marmara Region has passed through the following morphotectonic evolution. Together with the surrounding region it suffered a long period of denudation between the Oligocene and the late Miocene, which formed a regionwide peneplain. The N–S extensional regime followed this phase and began to produce a horst-graben system, and thus, fragmented the peneplain. The flat-lying erosional surfaces have been elevated on the horsts. Later, the NAFZ reached the Marmara Region. In the initial stage, it affected NW Anatolia extensively as a wide right-lateral shear regime. This has evolved, and through time the present narrow fault zone has developed.

In this presentation, the major morphological entities of the Marmara Region are first described and then, in light of the data presented, their development will be discussed.