

# **Revised Active Fault Map of Northwest Anatolia: Fault geometry and kinematics surrounding the Sea of Marmara**

**Omer Emre, Ahmet Dogan, Fuat Saroglu, Cengiz Yildirim, Volkan Ozaksoy**

**General Directorate of Mineral Research and Exploration, Geology Dept, 06520, Ankara**

This paper presents results of a project that carried out in Northwest Anatolia by General Directorate of MTA to revise of the Active Fault Map of Turkey published in 1992. The active faults are divided into four classes as earthquake rupture, active fault, potentially active fault and neotectonic fault or lineament. Original scale of mapping is in 1:25 000 however, regional Active Fault Map of the Northwest Anatolia would be published in scale of 1:250 000. New data indicate that NW Anatolia is formed a transition region between North Anatolian Transform Fault System (NAF), and Aegean extensional tectonic regime. The transition zone is bounded NAFS from the north and Sındırgı-Sincanlı fault zone from the south. In the NW Anatolia, the NAFS turns into a broad deformation zone and bifurcates into two main strands, northern and southern. The northern strand that is master zone of NAFS is extends in the Sea of Marmara. Lateral motion along the NAFS is essentially accommodated by it. As for the southern strand, it extends between Dokurcun valley and Bandırma bay and it is connected to Gonen bend at the westernmost end. Active faults in NW Anatolia form three major bend systems concave to the south trending in E-W named Bursa, Gonen and Balıkesir. Both flanks of the bends are formed right lateral strike slip fault and at the apex of the bends in the west NE-SW trending faults have reverse or thrust component whereas in the east NW-SE trending faults have normal or normal dip slip component. Bursa and Gonen bends morphologically bound Southern Marmara Depression south of Marmara Sea. Bursa bend is formed Uluabat and Bursa faults. Uluabat fault is transpressional strike slip, however, Bursa fault is normal dip slip. The bend is connected to the Eskisehir fault zone trending of NW that is eastern boundary of Aegean extensional tectonic regime within the Central Anatolia together with Tuzgözü fault. Gonen bend system includes three parallel fault sets. Southernmost fault zone is constituted Yenice-Gönen, Mustafakemalpaşa, Manyas and Orhaneli faults. Second one is Sarıköy fault and third one is formed by Biga-Çifteçeşmeler fault zone and Edincik faults. Geometry of this bend parallel to the Ganos bend on the northern strand of NAF. Balıkesir bend forms Havran, Balıkesir and Kepsut faults.

The data indicate that active faults in the southern Marmara and Biga Peninsula can not be directly evaluate within the NAF system. Those fault systems form complex bend structure in the transitional area between NAF and Aegean extensional tectonic regime. Eastern margins of the southward concave bends join right lateral strike slip fault zones that reach within the Anatolian Block. We interpreted that bend geometry in the region is controlled by the paleotectonic structures. We also speculate origin of the Marmara bend on the northern strand of the NAF between Ganos and Gulf of İzmit was formed due to the similar kinematic.