



New geological and tectonic findings on the Ganos Fault and surroundings, NW Turkey

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Ganos Fault, is a right lateral strike-slip fault, presented the western segment of the dextral North Anatolian Fault and has about 100 km long. It is namely Gaziköy-Saros segment and connects the western Marmara and Aegean Sea in Saros Gulf in continent. Ganos Fault is very active in both historical and instrumental period. Historical period earthquakes ($M>6$) occurred in 542, 824, 1063, 1343, 1344, 1354, 1542 and 1766. Besides in last century, 1912 Mürefte ($M=7.3$) Earthquake occurred on the Ganos Fault was the greatest and destructive. The aim of this study is present to new findings on geological and tectonics of Ganos Fault and surroundings. In this area, Lower-Middle Eocene aged Gaziköy Formation, as the basement unit, consists of sandstone-siltstone-shale and tuffit exposures as incline to north at the north of the Ganos Fault. It also observed with WSW-ENE direction in anticline at the southern part of the fault in Gaziköy Formation. Lower-Middle Miocene aged formations of Çanakkale Group overlie with angular unconformity on the Gaziköy Formation. Çanakkale Group consists of Gazhanedere and Kirazlı Formations. They appear lateral bedding and vertical transition in the region. Sandstones located at upper part of Kirazlı Formation and include Avimactra fossils. Although the Kirazlı Formation has aged Late Miocene in the previous studies, upper part of the formation firstly aged as Late Pliocene (Aktschagylian) according to Avimactra venjukovi (Andrussov), Avimactra ososkovi (Andrussov), Avimactra karabugasica (Andrussov) ve Avimactra subcaspia (Andrussov) in this study. This Aktschagylian aged lithology is cutting by the Ganos Fault and also has a tectonically contact with Eocene aged unit. This shows that the strike-slip deformation starts in Late Miocene and continues in Late Pliocene at least. In the study area, the youngest formation is marine terraces which located about 40 m. above sea level around Gaziköy village. This terrace consists of poor grained, incohesive conglomerate, sandstone and has rich in *Ostrea edulis* (Linne) content. At the southern part of the succession, *Ostrea edulis* content is decreasing despite *Chlaysms variabilis*, *Cerastoderma* (*Cerastoderma*) *edule* Lamarck, *Glycymeris* (*G.*) *glycymeris* Lamarck and *Acanthocardia* sp. progressively increasing in the unit. According to these fossil faunas, Late Pleistocene age is dated to this formation. We understood as the vertical movement together with strike-slip movement efficient since Late Pleistocene. In this study, active fault mapped around Gaziköy and also measured fault-slip vectors on this fault is presented by kinematic analysis and contour-rose diagrams of joint-bedding measurements. According to joint-bedding measurements taken from Gaziköy Formation, regional compressional direction determined as WNW-ESE at the north of Gelibolu Peninsula. In addition, metric fault planes, Gaziköy Formation sandstones and their planes, has kinematic indicators as the striae. Kinematic analysis results (inversion) of these fault-slip data shows an active transtensional tectonic regime and presented as the maximum horizontal stress (1) axis a NW-SE ($N117\pm34^\circ E$) and minimum horizontal stress (3) axis a NE-SW ($N30\pm5^\circ E$). Rm value is the 0,30. According fault plane measurements and some earthquakes focal mechanism solutions, Ganos Fault has an active and right lateral strike-slip fault with the normal component since Late Miocene. This result related with the continental collision in eastern Anatolia, slab-pull forces on African plate in SW Turkey combined effect of the Anatolian extrusion to west since Late Miocene time.