



A different approach to age range of Neogene sediments in SW Turkey

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There are different views about the age range of the Neogene rocks at the same locations along Burdur-Fethiye Shear Zone (BFSZ), in SW Turkey. In most of the recent studies, lacustrine limestones, claystones and marls were dated as Pliocene. Besides, meander and braided river conglomerates and sandstones, and also alluvial fan conglomerates, mudstones and claystones were locally mapped together with these lacustrine sediments under the same formation name.

Actually, two distinct sedimentary sequences are observed on the region. The first sequence starts at the base with alluvial fan, meander river and braided river sediments of Gölhisar Formation and passes laterally and vertically to lacustrine sediments of İbecik Formation. İbecik Formation is represented by claystone, marl and limestone in all of the basins on BFSZ. The first sequence is unconformably overlain by the second sequence. The second sequence includes alluvial fan conglomerates, mudstones and claystones of Dirmil Formation.

When considering the supposed age range of these sediments, the timing of the tectonic evolution of the region cause problems. During our studies on the BFSZ, we observed that this age range (Pliocene) is not acceptable. The lacustrine sediments, which consist mainly of white, whitish yellow, yellow and beige limestone, claystone, marl and fine-grained sandstone, crop out around Eğirdir, Acıgöl, Burdur, Tefenni, Acıpayam, Çameli, Gölhisar and Eşen basins along BFSZ. These sediments are locally cut by the volcanic rocks. Therefore, these volcanic rocks are very important for dating these lacustrine units.

Paton (1992) dated the lamproites around Acıpayam at 5.13 ± 0.6 , 6.28 ± 0.48 , 6.16 ± 0.25 and 6 ± 1.54 Ma (Tortonian-Lower Pliocene). These lamproites cut conglomerates and limestones at around 1300 to 1600 meter elevations. Alçıçek (2001) dated *Perrisodactyla-Equidae* *Hipparion* cf. *Primigeniup* sp. in the clayey limestones (İbecik Fm) as Vallesian. Also, the gypsum and anhydrite levels at the upper part of this lacustrine sequence indicate an aridity period. These levels are most probably related to Messinian salinity crisis. Taking into account all of these results, the lowermost parts of the lacustrine sequence are Tortonian in age; the gypsum and anhydrite levels are Messinian in age; and the claystones with caliche at the upper part of the sequence are Lower Pliocene in age.

Consequently, the tectonic evolution of the Burdur-Fethiye Shear Zone started in Middle-Late Miocene. Alluvial fan and river sediments (Gölhisar Fm) had deposited before and during Tortonian and now they have a thickness exceeding 1000 m under the İbecik Formation. İbecik Formation has an age range between Tortonian and Lower Pliocene. The Plio-Quaternary sediments (Dirmil Formation) and equivalent units are generally located in front of the faults along the BFSZ and they point out a new sedimentation and tectonic period.