

**COMMENCEMENT AGE OF NEOTECTONIC REGIME AND SEISMICITY IN SOUTHWEST  
TURKEY: Akşehir-Simav Fault System**

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In the area between Karaman in the SE and Sındırgı in the NW, a 10-30 km wide, 500 km long and NW-SE-trending discontinuous oblique-slip normal fault system is exposed. This mega-seismogenic belt is here termed to be the Akşehir-Simav fault system (ASFS). The ASFS is characterized by a series of grabens to horsts and their margin-bounding oblique-slip normal faults to fault zones. Grabens are two major groups: (1) first-order (major) grabens, and (2) second-order (secondary) grabens. Both the major and secondary grabens comprising the ASFS have two graben fills: (a) ancient graben fill deformed (folded and reverse to strike-slip faulted), and (b) modern graben fill overlying on ancient graben fill with an angular unconformity.

In the frame of episodic evolutionary history of the grabens in southwestern Turkey that also contains the ASFS and related structures three phases succeed each others: (1) phase-I extension in early-middle Miocene, (2) internening short-term contractional phase (last paleotectonic period), and (3) phase-II extension (neotectonic period in Plio-Quaternary period). Therefore, the range of last paleotectonic period is early Miocene - late Pliocene.

The ASFS is a regional seismogenic structure. This is indicated by a series of historical and ground ruptures-forming recent earthquakes sourced from different fault segments comprising the Akşehir and Simav fault zones included in the ASFS. The 94, 1766, 1873, 1876 and 1896 are historical, the 1921, 1944, 1946, 1969, 1970, 2000 and the 2002 are recent earthquakes which caused heavy damage to structures and loss of life. Epicenters of both historical and recent destructive earthquakes are mostly located at or near the intersections between major and secondary graben margin-bounding faults. This situation implies to the interlocking of motion and accumulation of elastic strain energy at these places, i.e. along the normal fault complexities.

Consequently, the ASFS is an oblique-slip normal fault system with a high seismicity as indicated by both historical and recent devastating earthquakes, and 129 years long seismic gap. Ages and deformation patterns of graben fills, kinematic analyses of slip-plane data of fault arrays strongly indicate that an episodic evolutionary history for grabens, and Plio-Quaternary commencement age of current extensional tectonic regime in the ASFS. This system also contributes to the current NNE-directed crustal extension as much as the E-W- and NE-SW-trending graben-horst systems in Southwest Turkey. This is indicated by the stereographic plots of slip plane data, the fissure-ridge travertines and focal mechanism solutions of recent earthquakes.