

Stratigraphy and Folding in the Cenozoic Cover of a Fold-Thrust Belt in the Nallıhan Region (Ankara, Central Turkey)

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This study investigates stratigraphy and structural features in the Cenozoic sedimentary sequence of the fold-thrust belt of the Nallıhan-Ankara region, located to the north of the İzmir-Ankara-Erzincan Suture Zone. Permian-Triassic age marble intercalated with schist-phyllites, the upper Jurassic-lower Cretaceous age limestone and the upper Cretaceous age sandstone-shale alternation compose the basement in the study area. These rocks are unconformably overlain by the Cenozoic age terrestrial sedimentary and volcanic units. The Cenozoic stratigraphy begins with the Paleocene-Eocene age coal-bearing, at times, volcanic intercalated conglomerate-sandstone-mudstone alternation of alluvial-fluvial origins (Aksaklar Formation) and the tuff intercalated with lacustrine limestone, bituminous limestone (Kabalar Formation). These units are conformably overlain by the Eocene age basalt-andesite and pyroclastic rocks (Meyildere volcanics). The Paleocene-Eocene aged units are unconformably overlain by the conglomerate-sandstone-mudstone-marl of a lower-middle Miocene lacustrine environment (Hañçili Formation). The terrestrial conglomerate-sandstone alternation (Örencik Formation) is the youngest unit in the Cenozoic stratigraphy, and is assumed to be of Pliocene age based its stratigraphic position on older units.

Field study shows existence of both folds and faults in the sedimentary cover. Stereographic projections of bedding measured in the field shows N25W/45NW and N60W/4SE-oriented fold axes in the Paleocene-Eocene age units. There are also N76W/12SE and N88E/8NE-oriented folds. The difference in fold-axis orientations suggests that some folds may have been rotated in blocks bound by faults during the post-Paleocene/Eocene period. Whereas, the lower-middle Miocene units manifest N88W/13SE-oriented fold axes. It is thus proposed that the observed difference in the azimuth of fold axes represent two different folding phases, one with NE-SW and the other with N-S directed axis of compression. Open folds with E-W orientation seem to be structural elements developed during the last phase of the deformation.