

Tectonic Implications of High Altitude Plio-Quaternary Fluvial Deposits in the Horst-Graben System of Western Turkey

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Plio-Quaternary sedimentation along the recent creeks is studied on the Bozdag horst that is an active structure within the horst-graben system of western Turkey. The horst trends E-W and is located between Gediz graben to the north and K. Menderes graben to the south. Fluvial deposits with maximum observable thickness of 160 m accumulated in twenty-three separate depressions are found at high elevations (300 to 1350 m above the graben floors) near the drainage divide over this horst. N-S orientations of these depressions, 1.7 to 13 km long and 0.35 to 2.2 wide, are transverse to the long axis of the horst and are coinciding with the current major creeks of the area. Eleven of these depressions are within the drainage basin of the Gediz Graben, three within the K. Menderes Graben and others are extending to both drainage basins. The current creeks are eroding and deeply dissecting these deposits. This relation indicates a major change in the erosion/deposition processes occurred in the area. The active deposition is taking place only within a lake preserved in one of these depressions. Paleocurrent directions and bifurcating patterns in some depressions suggest that the deposits were accumulated along northerly flowing creeks. Considering the active tectonic scheme in the region it is proposed that formation and subsequent erosion of these deposits is attributed to the southward tilting of the Bozdag horst which, in turn, modified the stream profiles such that major creek channels became site of deposition instead of erosion during Plio-Quaternary.