



Shift of the Büyük Menderes River and the evolution of the delta plain, Western Anatolia, Turkey.

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by

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E-W trending Büyük Menderes Graben (BMG) basin bifurcates into two subbranches where reaches the Aegean Sea; as Kuşadası and BMG delta half grabens. The BMG delta subbranch evolved in a progressive seaward fill of the alluvial delta for at least 38 kms.

The modern geomorphological progress is monitored by means of the aerial photographs and archive topographical maps between the period of 1954 and 1996, high resolution satellite images (IKONOS 2002 and QUICKBIRD 2004) and field checked during summer 2004.

The flow trend and shift of the BM River is operated by natural surface processes and lately “controlled” by human activities during post-1970’s. Fan deltas and alluvial fans -one of the best examples is the Söke fan- that are concentrated along the northern margin forces the meandering BM River to shift south causing disconnection of Bafa Lake and the others from the Aegean Sea. The fans and alluvial fills gave rise to the apart of the bays from the sea, leaving lakes behind (eg. Bafa Lake) along the southern margin.

The steep, E-W trending south facing normal faults (Söke fault) cross-cuts low angle south facing Menderes detachment fault where downthrown blocks of faults were northerly tilted during the Plio (?) -Quaternary time. This pivotal northward tilt of the half graben resulted in the development of westward propagating delta front with fan delta developments along the northern slopes of historic BMG bay. Modern successive delta lobes (Late Pliocene-Holocene) with lagoons (eg. Karina and Kocagöl), curvilinear coastlines, well developed levees, oxbow lakes and aperted lakes are the best geomorphological elements of the BMG delta plain. In long term, recorded sea level changes stated the advancing fill towards the sea (regression) giving rise to the coastline changes and modern delta development with lagoons during the human period.

The crustal uplift along the core of the Menderes (Küçük Menderes axis) resulted in the region wide low angle detachment fault which is lately cross-cut by the high angle normal faults. High angle normal faulting resulted in the development of half graben tilted towards north in BM delta half graben.

To conclude, the northern margin alluvial fans are developed as a result of the northward tilting of the BMG delta half graben during the Plio-Quaternary. The BM river gradually shifted south by the development of Söke fan in north and the sediments of the BM River detached a number of bays from the sea forming isolated lakes behind during human period.

Key words: delta, meandering river, half graben, tilt of a basin, Büyük Menderes, Plio-Quaternary.