



Geomorphic evolution of the Lilas River fan delta (Central Evia, Greece), during the Quaternary

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This study deals with the geomorphic evolution of the Lilas river fan delta, which is a late Holocene fan delta with an area of about 25 km², extended mainly towards the south Evoikos Gulf and a secondary extension of approximately 5 km² towards the north Evoikos Gulf (Central Evia Isl., Greece).

This work has combined field geomorphological mapping with the study of the stratigraphy of late Pleistocene - Holocene deltaic sediments. A detailed geomorphic map at the scale of 1:5,000 has been prepared showing both the deltaic plain and the coastal zone features using GIS techniques. Comparative interpretation of aerial photographs taken in different dates and reliable maps of the last two centuries along with field observations depict recent changes of the delta morphology. Profiles of seven drill cores up to the depth of 70 m, provided by the municipality authorities, were considered in order to study the late Pleistocene – Holocene stratigraphy of the broader fan delta plain. Additionally, two boreholes reaching the depth of 4.75 m were drilled with a portable drilling set. The stratigraphy of the late Holocene sediments was studied in detail and 41 sediment samples, collected from selected sedimentary layers, were analyzed using micropaleontological and grain size analysis methods, while samples were dated using OSL.

The study of the stratigraphy of the late Holocene deltaic sediments showed that during this period the sea invaded the area of the northwestern delta and created a shallow open marine environment which at times was disturbed by multiple quiet lagoonal phases of fine sediment deposition. Geomorphological mapping showed that among the most important factor for the recent development of the delta is fluvial sedimentation. The dominant landforms in the deltaic plain are the numerous abandoned palaeochannels. The main channel of the river changed its course several times leading to the building and subsequent abandonment of at least four fan delta lobes, through which the fan delta has advanced during the late Holocene. Today most of the deltaic shoreline is generally stable due to relatively long-term quiet marine conditions whereas fan delta progradation occurs only in the area of the recent river mouth. It is estimated that during the last 160 years the area of the active river mouth has advanced about 500 m.