

Life Cycles of Islands and Harbours. The Case Study of the Maiandros River and the City of Miletos

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During the past millennia, the formerly flourishing harbour city of Miletos and its environs have experienced major geographical and ecological changes, caused by the post-glacial sea-level rise, tectonic activities, the delta progradation of the Maiandros (Maeander, Büyük Menderes), and the continued human impact since late Chalcolithic times. Based on historical accounts, archaeological criteria, and geoarchaeological research, it is possible to reconstruct the spatio-temporal evolution of the landscape. Our major geoarchaeological tools are sediment cores, which are analysed and interpreted in a multi-proxy approach.¹

Islands and harbours are key locations where these changes can be exemplified. The post-glacial and early Holocene transgression had created a deep marine embayment in the Büyük Menderes rift zone, which led to the “birth” of several islands, whereof Hybanda and Lade were the most famous ones. The later delta advance of the Maiandros caused their “death”, i.e. their landlocking and final integration into the floodplain, which terminated their “life cycle” (fig. 1).²

At some places, the shifts in the shoreline can be demonstrated: in the area of the Temple of Athena, sea level had reached its highest stand during the early Bronze Age. A similar pattern is evident around the later Sanctuary of Apollo Delphinus, where cultural debris from the late Chalcolithic period is covered by shallow marine sediments.

The environmental changes with high erosion and correlate accumulation rates contributed to the rapid transformation of the Milesian archipelago with five islands to the Milesian Peninsula, which started during the 2nd millennium BC by the evolution of sand bars (tombolos) and was later supported by intentional infill (fig. 2).³

We know from Strabon (*Geographica* 14,1,6) that during his time Miletus had four harbours. The most prominent was the so-called Lion Harbour, a deep and narrow natural indentation between Kale Tepe and Humei Tepe (fig. 2). It shows the highest sedimentation rate in Roman Imperial times, which is evidence of high landscape consumption. With the loss of access to the open sea, at the latest around AD 1500, the life cycles of the Milesian harbours terminated. Today, Miletos is situated some 8 km inland.

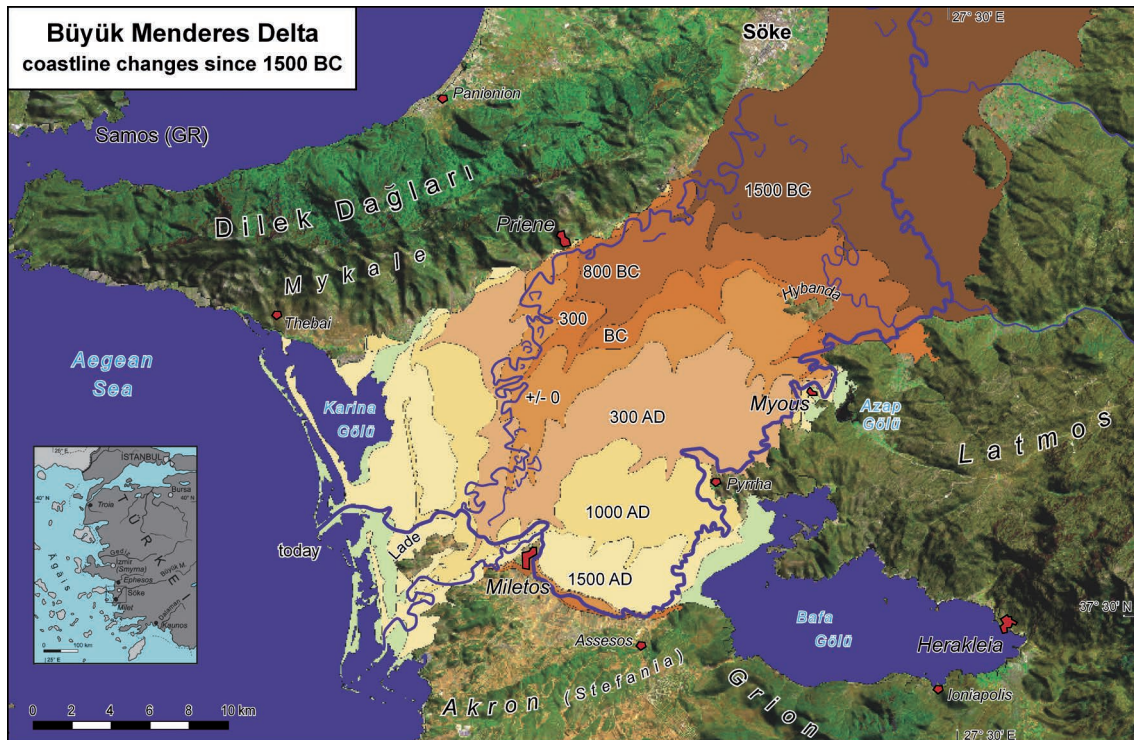


Fig. 1: Spatio-temporal evolution of the delta and floodplain of the Büyük Menderes (Maiandros, Maeander) since 1500 BC. Nowadays, the former marine gulf is nearly totally silted up, except for two remaining lakes in marginal positions, the most prominent one being the brackish Lake Bafa. The former islands of Hybanta and Lade were integrated into the floodplain, former harbour cities (Myous, Priene, Herakleia, Miletos) lost their access to the sea.

Fig. 2: (see page 35) Land-sea distribution in the area of Miletos for three time slices: during the maximum extent of the local marine transgression ca. 2500 BC with the Milesian archipelago (three of the former islands and the mainland are shown in yellow); during Archaic times; during Roman Imperial times. Sediments from denudation and wave action, as well as consolidation measures finally transformed the archipelago into the Milesian peninsula. Noted are also the most important buildings, the markets, the city grid and the harbours. Meanwhile, the whole area is silted up, and the present shoreline is situated at a distance of about 8 km to the west.



LEGEND

age of buildings	distribution of land and water area
modern	land area at maximum transgression (around 2500 BC)
Islamic	water area at maximum transgression
Byzantine	water area during Archaic time
Roman Imperial time	water area during Roman Imperial time
Classical-Hellenistic	coring site
Archaic	contour lines
ambiguous age	
street-insulae-grid (Archaic-Classical)	

map based on:
Bendt, W. (1968): Topographische Karte von Milet, M 1:2.000 (Milet II, 4);
geophysical survey CAU Kiel, Dr. H. Stümpel; own topographical survey

Source: Marc Müllenhoff, Alexander Herda & Helmut Brückner (2008): Geoarchaeology in the City of Thales - Deciphering Palaeogeographic changes in the Agora Area of Miletus. Philippika, 1: 97-110; Wiesbaden.

cartography: Marc Müllenhoff, Alexander Herda

Notes

¹ Brückner 2019; Brückner et al. 2006; 2014; 2017; Herda et al. 2019.

² cf. Brückner et al. 2017.

³ cf. Brückner et al. 2017.

Image Credits

Fig. 1: Brückner et al. 2014, Fig. 11. – Fig. 2: Brückner et al. 2014, Fig. 10.

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