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Relative sea-level change in the central Cyclades (Greece) since the Early Bronze Age

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The Aegean is a focus of important cultural achievements in Europe since the Neolithic period. The resulting abundance of archaeological remains, many of them below sea-level represent an advantageous area for the study of local relative sea-level change. We have carried out detailed mapping of Despotiko Island (SW of Antiparos) and its surrounding. Despotiko is situated almost exactly in the center of the Cyclades (as defined nowadays), more so than Delos, and therefore is very well suited for sea-level studies of the Cyclades. This beneficial location, combined with a spacious and protected bay, additionally may explain its former importance as stepping-stone in the Aegean Sea. The island is uninhabited at present, but Early Bronze Age settlement sites and graveyards as well as a large Archaic sanctuary proof its former importance. The sanctuary is situated on a gently northeast dipping slope in the northeast part of Despotiko, in range of sight of the Órmos Despotiko. Since 1997 large parts of this important sanctuary have been excavated during several excavation campaigns. Tectonically, Despotiko, Antiparos and Paros, belong to the Attic-Cycladic Crystalline of the Central Hellenides, a stack of metamorphic tectonic nappes, mainly comprising variable types of gneiss, schist, marble and amphibolite, and tectonic slices of unmetamorphosed sediments on top, separated by low-angle normal faults from the metamorphic units below. Submerged archaeological structures at the sea bottom of the Órmos Despotiko, a Classical marble inscription from the sanctuary and partly submerged agriculture trenches at the east coast Despotiko, indicate that the relative sea-level in this area was some 3 m lower during the Early Bronze Age and still more than 1 m lower during Classical time. These values of relative sea-level rise indicate a subsidence component additional to the global sea-level rise in the investigated time period. Neglecting possible vertical tectonic movements and by means of the present sea floor bathymetric configuration the sea level reconstruction would imply the existence of an isthmus between Despotiko, Kimitiri and Antiparos linking the islands at least until Classical time. The existence of an isthmus would not only have altered the communication paths between the two islands, but Despotiko Bay would also have been even better protected from northwest winds than at present. The sea-level values from Despotiko are compared with other recent sea-level reconstructions on other islands of the Cyclades.