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The 7 ka pollen record of Akovitika: Key evidence for environmental change and human impact in the SW Peloponnese, Greece

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Detailed investigations on the Holocene stratigraphy of the lower Messenian plain (SW Peloponnese, Greece) carried out within the framework of a geoarchaeological study on the Protogeometric Poseidon Sanctuary of Akovitika indicate significant shoreline fluctuations during Holocene times. Sedimentary, geochemical, mineralogical, and microfossil analyses of 18 vibracores document a maximum landward shoreline displacement around 3000 BC. Subsequently, increased sediment loads entering the gulf predominantly at the eastern head overcompensated the decelerating eustatic sea level rise and triggered beach ridge progradation.

Synopses of adjacent sediment cores reveal extended wetland formation in the swales between the sand ridges throughout the Holocene. The swamp areas enlarged continuously during the late Holocene marine regression and persisted until the large-scaled implementation of drainage measures in the 20^{th} century. However, the strata representing former wetland environments provide excellently preserved pollen assemblages and enable detailed vegetation reconstruction of certain time windows within the past 7000 years.

During early Neolithic times the lower Messenian plain was covered with open vegetation adapted to the seasonal standing water bodies. Deciduous oak forests were abundant but restricted to the surrounding marl terraces while no signs of human impact appear in the pollen record so far. In mid- to late Neolithic times initial modification of the local vegetation composition is evident. The Neogene terraces nearby were still covered with forest, albeit *Pinus* and evergreen oak gradually started replacing deciduous oak. Anthropogenic influence on the vegetation was moderate although the upper part of the sequence (approx. 3500 BC) contains increasing amounts of settlement indicators. Exceptionally high percentages of *Erica* and *Cistus* as well as of charcoal fragments point to extensive burning of woodland and subsequent sustained establishment of a heliophile macchia vegetation. Whether this is man-made or a result of increasing aridity remains uncertain. Agriculture can be excluded for the wet lower Messenian plain in Neolithic times, while it seems possible on the adjacent Neogene marl terraces. The pollen sequence of Submycenaean to Archaic times reflects reduced human impact after the Messenian late Bronze Age population climax. Decreasing amounts of *Olea* show the abandonment of olive orchards while rising dominance of *Phyllirea* indicates a temporary re-establishment of high macchia during the cultural decline of the Dark Ages. Higher percentages of *Olea* in the uppermost sample document a recovering human population in Messenia during Archaic times.