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Palaeogeographic evolution and sea level changes of a tectonically active area: the case of Psatha, Alkyonides Gulf, Greece

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The study of environmental changes in coastal areas provide useful information for past conditions and constitute a powerful tool for accurate palaeogeographic reconstructions. Several coastal landforms are present on the coastal zone, with different response to environmental change. Coastal wetlands and lagoons are particularly sensitive to local paleoenvironmental changes and provide an excellent opportunity to reconstruct the evolution of the coastal zone evolution and the sea level changes. In this context, the aim of this work is to elucidate the coastal evolution of Psatha bay, Alkyonides Gulf, Greece, through coastal drillings and geomorphological sea level markers.

The study area is located at the eastern end of Corinth Gulf, in the Gulf of Alkyonides. Psatha is bounded by active neotectonic structures, which have been a determining factor in its development. In this work we adopt a multiproxy approach through the study of coastal drillings and beachrocks, and micro-topography constructed after photogrammetric processing of very high resolution and accuracy images acquired by several Unmanned Aerial System flights. We coupled detailed beachrock mapping, microstratigraphic analysis and luminescence dating to study beachrock outcrops found up to 1 m above the present sea-level. For the palaeoenvironmental reconstruction, multiproxy analyses were undertaken, which included sedimentological analysis of the core, paleontological analysis of macrofauna and microfauna and radiocarbon dating. The results of this work will contribute to the better understanding of a coastal site in a tectonically active area and the relative sea level changes.

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