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ABSTRACT BOOK

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S33. Taphonomy and diagenesis of marine biogenic sediments in ancient and modern depositional environments

The fate of the Volturno delta (northern Campania, Italy) among geological history and human influence

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The present geomorphology of the Volturno River delta system (northern Campania, southern Italy) is largely a product of complex, long-lived relationships between geological evolution and human impacts. This presentation describes the evolution of the alluvial and coastal plain from the Holocene to the present time. The study was based on stratigraphic well log data analysis, cartographic sources from the last 150 years, bathymetric data acquired in 1887 and in 1987 and compared to extract seafloor changes in the delta offshore (Ruberti et al., 2022). The basis for the Holocene reconstruction was provided by the top of the Campania Grey Tuff (CGT) relief map, which evidences the incised valley excavation following the LGM sea level drop. The CGT is the product of a huge pyroclastic eruption of the Campi Flegrei volcanic district, occurred 39 ky BP, and thus represents both a major marker for the reconstruction of the subsurface stratigraphic record and a sturdy morphologic substrate engraved by river incision associated with the sea level fall that accompanied the last glacial period. The lowstand, transgressive and aggradation/highstand stacking of the Holocene facies were displayed. The present landscape appears largely inherited by the past MIS5 and LGM landscapes. A progressive increment of anthropic forcing took place after 2000 yr BP but the strongest modifications of the landscape occurred since the end of the XVII century. Until that time the landscape was largely covered by marshes and ponds. Human interventions started during the Spanish vice-Kingdom, at the end of the XVI century, when reclamation works were carried out with the aim to drain most of the marshy areas. The availability of reclaimed lands resulted in an intensive land transformation and the loss of most coastal wetland coupled with coastal erosion. Progradation of the delta ended during the early-middle XIX century. A peak of major alterations of the deltaic environment, and retreat of the coastline was attained between the 1960s and the 1990s. It is evident that the transformations of the landscape that have taken place over the last millennium are largely caused by anthropogenic impacts (i.e., reclamation, development of drainage network, land use changes). The sediment input of the river to the Tyrrhenian Sea sharply decreased, thus resulting in a dramatic change of the deltaic morphology and significant coastal land loss. The coastal zone, considered as a dissipative-type shoreline, evolved to an irreversible non-dissipative inshore profile characterized by mean erosional rates of 5 m/yr along the beaches and 24 m/yr on the delta mouth. The river delta changed from a cuspate, wave-dominate delta to arcuate and eventually delta-estuary type.

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