

Geoarchaeology of coastal transitional geomorphic systems

(Proposer: Prof. Alessandro Fontana)

The PhD project focuses on the analysis of the geomorphological and environmental evolution of selected archaeological sites located along the lagoon and deltas, spanning from the Bronze Age to the Middle Ages, with a main focus on the Adriatic coast. Aim of the project is to investigate the physical landscape in defined chronological intervals and to reconstruct the anthropogenic impact induced by the ancient human groups on the natural processes. to analyze the strategies adopted by the different cultural and societal entities to cope with relative sea-level rise and paleohydrographic variations related to river avulsion in deltas.

The PhD candidate will investigate several key areas through the reconstruction of geomorphological dynamics and paleoecological setting. In particular, the study of the pollen sequences, sampled through stratigraphic cores and archaeological sections, will represent a major tool for assessing the variation of the vegetation cover in the studied sites and assess the changes from a natural (or semi-natural) to a human-affected landscape. The paleoecological conditions will be also assessed through the analysis of microfossil (e.g. foraminifera, ostracoda), that are very sensitive to subtle variation in water salinity.

The geoarchaeological investigation of transitional coastal environments has received increasing attention in the last decades. This is certainly due to a rising interest in the long-term interaction between human societies and the environment, as well as compelling concern on the impact of predicted relative sea-level rise on coastal areas in future Global Change scenarios, which will demand a leap in the resilience of local communities to rapid environmental changes.

Landscape evolution in low coastal areas is controlled by several intervening processes. The primary driving factor is represented by the relative sea level elevation, which provides the base level for the terminal tracts of the fluvial system and connected deltas and estuaries. Sea-level variations also control the space available for the activity of coastal processes related to waves, marine water circulation, and tides, and the development of barrier-lagoon systems. All these processes are highly dynamic and, through the erosion, transport, and deposition of sediments, continuously shape the physical landscape at time scales ranging from few hours to long term, as glacio-eustatic fluctuations and geological land subsidence.

The project will focus on some selected sites of the northern Adriatic coast (e.g., Aquileia, Concordia Sagittaria, Altino, Jesolo), but also some comparison with Dalmatia or Istria will be eventually considered.

Possible collaborations with University of Utrecht, University of Modena and Reggio Emilia, Geological Survey of Croatia.

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