10:30 - 10:30

The lagoonal harbour of Portus Pisanus (N Tyrrhenian Sea, Italy): a long history of human adaptation to changing coastline

Veronica Rossi, Monica Bini, Christophe Morhange, Adriano Ribolini, Giovanni Sarti

During the last millennia human and natural processes have become increasingly intertwined, especially in the Mediterranean coastal and alluvial plains where major urban and trade centres developed since protohistoric times. Port's construction represents one of the human activities that have mostly contributed to modify coastal environments, inducing a variety of hydrodynamic and hydrochemical changes especially since Roman times (Marriner et al., 2014).

Exceptions in this common manner to plan harbours have been recognised along the N Tyrrhenian coast, where no high-impact defense works are explicitly documented by either historical sources or archaeological excavations for three main harbours developed during Etruscan-Roman times (IV-I century BC): Portus Lunae (Bini et al., 2012), Portus Pisanus and Vada Volterrana.

Roman literary sources (i.e., Itinerarium Maritimum 501; Rutilio Namaziano) mentioned Portus Pisanus as a flourishing commercial site within a natural protected area (called Sinus Pisanus by Tacito) characterized by Posidonia meadows and located at the foot of Leghorn hills, ca. 18.5 km south of the Pisa city. Recently, archaeological excavations undertaken close to the hills slope, 3 km inland from modern coastline, unearthed a wooden palisade, stone piers and a warehouse dated to the Roman period (Pasquinucci, 2013; Morhange et al., 2015).

However, the exact location of the lagoonal harbour basin is still controversial. Through a multidisciplinary approach (sedimentological and micropalaeontological core analyses, radiocarbon dating, geomorphological field survey, remote sensing and historical cartography), this study aims to contribute to fill this knowledge gap and shed new light on the main stages of Portus Pisanus history, in the framework of the mid-late Holocene palaeogeographic evolution of Pisa coastal plain.

Since the marine transgression peak (ca. 8000 cal yr BP), the study area was occupied by a wide lagoonal basin. This basin, recorded by a m-thick subsurface succession of soft grey clays with brackish meiofauna, persisted for several millennia and corresponds to Sinus Pisanus. The available stratigraphic data document that during Roman times the lagoon became progressively less connected to the sea and turned into a coastal lake/pond. This seaward facies shift forced the westward transferring of the Middle Ages harbour.

These results show that natural sheltered conditions, whose prolonged persistence was also favoured by the distance of the main coeval Arno River branch from the Sinus Pisanus site, made more advantageous for humans to accommodate to the shoreline changes, rather than making high-impact interventions.

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2014, Marriner N., Morhange C., Kaniewski D., Carayon N., Ancient harbour infrastructure in the Levant: tracking the birth and rise of new forms of anthropogenic pressure, Nature Scientific Reports, 4, 5554.

2015, Morhange C., Marriner N., Baralis A., Blot M.L., Bony G., Carayon N., Carmona P., Flaux C., Giaime M., Goiran J.-P., Kouka M., Lena A., Oueslati A., Pasquinucci M., Porotov A., Dynamiques géomorphologiques et typologie géoarcheologique des ports antiques en contextes lagunaires, Quaternaire, 26, (2), 117–139.

2013, Pasquinucci M., Guida all'archeologia delle coste livornesi. Nardini Editore. Provincia di Livorno. 271 pp.

Session - Archaeological Features I (Lecture Hall H) – Chair: Ursula Warnke

11:00 – 11:30

The Roman port in Savudrija: A research program for the harbor and it´s coastal landscape

Ida Koncani Uhac, Rita Auriemma

The Roman port in the bay of Savudrija (Umag, Croatia) encompasses a complex consisting of different structures, some of which are visible along the shoreline, particularly in the southern section of the small bay, between the beach line that has been washed away by the action of the waves and the natural terrace on which a campsite is currently located. This terrace that was more protruding in ancient times hides a series of wall formations hypothetically attributable to substructure works. Furthermore, excavations have been carried out in correspondence of the breakwater and inner pier. The aim was to evaluate the height of the jetty and the depth of the local bedrock, to highlight the building steps and to define the time of construction and the chronological