

Name of the WG*

Coastal Geoarchaeology WG

WG description (*max. 1/2 page*)

Coastal areas are considered of extreme importance both from natural and anthropogenic points of view since they not only demand the protection of the physical environment but also the valorisation and protection of the related archaeological heritage associated with them.

The millennial landscape changes in these areas are strictly related to relative sea-level variations due to the sum of global, regional and local processes that belong to endogenic factors (tectonics, isostasy, and volcanism) and surface processes (erosion, transport and sedimentation). All these spatial- and temporal-dependent processes are intertwined with a complex anthropic response which, itself, influences the evolution of the coastal landscapes. Studying past records of these millennial coastal changes is fundamental to predict their future modifications in the context of global change and sea-level rise, paying particular attention to urbanized sectors. Between these records, a privileged place is occupied by the submerged and emerged remains of harbours and coastal settlements that were largely distributed along the Mediterranean coast during the Holocene. In this period, coastal landscapes were thus gradually transformed under human influence and the study of such changes plays a fundamental role in the comprehension of human occupation. As most of these ancient coastal settlements are today submerged due to the relative sea-level rise occurring over the last millennia, the challenge of coastal geoarchaeological research is to study the submerged archaeological structures both as evidence of past sea-level stands and coastal conformations.

In recent years, the development of innovative technologies, including Unmanned Surface Vessels (USV) allowed high-resolution mapping of wide coastal areas, seabed morphologies and underwater archaeological sites by combining remote and direct data from geological and archaeological samples. These transdisciplinary studies are the modern approach to understanding the four-dimensional coastal evolution as different 3D surface changes through time. In the case of archaeological sites, such investigations also have a documental value of cultural and natural heritage. A multidisciplinary approach oriented to paleo-landscape reconstructions at regional and local scales provides the opportunity to understand the role of natural and anthropogenic forcing in the landscape evolution, as well as to discover the past human adaptations to natural modifications of their environment.

This cutting-edge information can shed new light on the impacts of past climate changes on modern populations and the effects of surface processes at the social level.

Coastal Geoarchaeology working group aims to create an interdisciplinary scientific community, which will discuss issues related to past anthropized seascape reconstructions

and their evolution through time. We are creating a network of junior and senior researchers that includes archaeologists and geoscientists interested in the modelling of paleo-coastal processes and the reconstruction of the coastal zone evolution and related human adaptations, paying special attention to the technological content. The planned action to reach these objectives are:

1. Organizing a series of planned workshops, fieldtrips and summer schools accompanied by periodic online meetings to support the continuous interaction between members;
2. Organizing thematic sessions at the main international geoscience congresses such as EGU, IAG Regional Conference and International Conference;
3. Encouraging new research and outreach on topics related to the WG by promoting the connection with new international projects (like Cost actions);
4. Creating online channels to foster the exchange of information through a website, regular newsletters, social media etc.
5. Strengthening the collaboration with other international WGs on the joint themes.

During the thematic Workshops or Thematic sessions, Coastal Geoarchaeology working group points to fuel the discussion on specific research topics:

- Geoarchaeological studies of coastal areas: from field data to modelling approaches
- New technologies for paleo-landscape reconstruction in anthropized coastal areas
- Assessment of human adaptations to past and recent climate and sea-level changes
- New perspectives for anthropized paleo-landscape reconstructions
- Past interactions between human societies and coastal processes

Past activities (*max. 1 page*)

Since the first year, we have established a collaboration with the international INQUA-funded project ONSEA (Evolution of Seascapes) that aims at creating a large interdisciplinary community of PhD, DCR, ECR and SS, sharing common interest in the study of the geomorphological evolution and the human occupation of the coastlines during the Holocene. This project arises from the experience of the previous INQUA NEPTUNE project, which collected a community of more than 150 junior and senior geoscientists and archaeologists interested in the development of innovative techniques and procedures to analyse the past landscape evolution at a wider scale from the shoreline to the continental shelf.

In the framework of this collaboration, we have successfully organized the thematic session in the next EGU25 congress (28 April - 2 May 2025) GM8.7 Insights into Paleo-Seascape Evolution and reconstruction: Coastal and Submarine Geomorphology and Geoarchaeology in a Changing World, by collecting 10 oral presentations and 6 poster.

In addition, on 16 -18 September 2025 we have organized the thematic session TS10 “Geomorphology and coastal communities: a geoarchaeological approach” in the IAG Regional conference in Timisoara (conveners Gaia Mattei, Pietro Patrizio, and Teresa Bardaji Azcárate, Department of Science and Technology, Parthenope University of Naples, Italy, Teresa Bardaji Azcárate, Department of Geology, Geography and Environment Science, University of Alcalá). The section collected 12 contributions fuelling a significant discussion on several specific topics.

Regarding the organization of meetings and seminars, we organized an online-onsite Lecture by Prof. Teresa Bardaji titled “Coastal paleolandscapes in southern Iberia: insights into hazard analyses and risk management” that took place on 18 March 2025 during her visit at the Parthenope University of Naples.

The same day, in order to plan future activities described in the next section, a WG COASTAL GEOARCHEOLOGY MEETING was held in Naples on 18-03-2025 at Parthenope University. The meeting was attended by the WG leaders as well as by some members of the steering committee both online and in person. During the meeting a detailed agenda of events that will be organized over the next 2 years has been drawn up. Others periodical online meeting were organized during the year.

Future activities (*max. 1/2 page*)

In the second year, regarding the organization of a series of planned workshops, field trips, and summer schools accompanied by periodic online meetings to support the continuous interaction between members), we have planned periodic online meetings focusing on scientific themes related to the WG and Special issue after the EGU and IAG sessions described below.

In addition, we are setting up a **Workshop with a field trip at Baelo Claudia in Tarifa (Spain) in June 2027**. Instead, **a final Workshop is planned in Naples for June 2028**, during which a field trip to the most important coastal archaeological sites along the Campi Flegrei area is provided. In order to strengthening the collaboration with other international WGs on the joint themes, we would like to involve Stefano Furlani of Rocky Coasts WG and Aaron Micallef of Submarine Geomorphology WG in the organization of the final Workshop.

Regarding the involvement in new research and outreach on topics related to the WG by promoting the connection with new international projects), we have already set a partnership with the INQUA-funded project titled ONSEA (Evolution of Seascapes) with which we are organizing a **joint Workshop on 3-4 September 2026 online** considering the unstable geopolitical situation and the consequent uncertainties related to the

shortage of plane fuel in the coming months as well as the continuous cancellation of flights.

In addition, the WG will be involved as a scientific partner in an Italian project funded by the Ministry of Economy and Made in Italy titled PAS (Paesaggi Archeologici Sommersi in Italian, Underwater Archaeological Landscapes in English) that provides the geoarchaeological study of some coastal archaeological sites along the Southern Italy coast. Finally, the Spanish Project QTECTIBERIA (PID2021-1235100B-I00) funded by the Spanish Ministry of Science and Innovation (MICIN) is also involved in the WG. The project entitled “Tectonic Geomorphology, Active Tectonics And Ancient Earthquakes in Spain and Portugal” is focused on the analysis of historical and ancient earthquakes based on the analysis of the tectonic geomorphology, and geoarchaeological records and/or monuments of the historical heritage within the affected areas. The study involves inland and coastal zones focusing on the changes introduced by seismic shaking and the analyses of new seismic landscapes generated. This is of special interest on littoral areas where geomorphological changes introduced by strong earthquakes and tsunamis commonly reshape coastlines influence in the continuity and survival of ancient societies.

Regarding the Creation of online channels to foster the exchange of information through a website, regular newsletters, social media etc.) we have set the X profile (https://x.com/iag_coastgeoarc?t=FSF42fgOjz6nnivJTVEuyw&s=09).

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