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MEDFLOOD-MOPP, MODELLING PALEO-PROCESSES. TOWARDS A BETTER UNDERSTANDING OF THE PALEO COASTAL HAZARD AND THE ADAPTIVE STRATEGIES USED IN THE ANTIQUITIES TO SETTLE ON THE COAST

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MEDFLOOD-MOPP is a new project launched in 2016 and funded by INQUA for the period 2016-2020.The project stems from the results of MEDFLOOD, which, in 2012, started bridging the communities of earth scientists and archeologists working on sea-level problems in the Mediterranean Sea (Rovere et al., 2012). Results of MEDFLOOD included several publications on geoarchaeology and paleo sea levels in the Mediterranean at different time scales. During the MEDFLOOD 4-year period, 4 workshops were organized including field activities aimed at fueling discussions and interdisciplinary exchanges between archeologists, physical geographers and geologists on sea level topics.

The MEDFLOOD project resulted in a significant improvement in the collaboration between Mediterranean geomorphologists and archaeologists. MEDFLOOD-MOPP, is the natural development of MEDFLOOD. As such, we want to enlarge the MEDFLOOD community and encourage the participation of experts in coastal geomorphology and geo-archaeology as well as engineers and hydrodynamic modellers. Our aims are to i) better define the strategies adopted since the antiquity to design coastal structures, taking into account not only the paleo-geomorphology of the coastal area but also the paleo-coastal hydrodynamics obtained through numerical modelling of paleo-nearshore processes; ii) better constrain the impacts of past catastrophic coastal events (such as major storms or tsunamis).

Only in the past twenty years, the archaeological community started to consider the importance of the environment in understanding the socio- economic and wider natural frameworks in which ancient societies lived, and multidisciplinary research has become a major focus of most large-scale Mediterranean archaeological excavations. Knowledge of the strategies used to build coastal structures in the past is presently based on the texts of ancient authors, often geographers or architects, such as Strabo, Pausanias, Pliny the Elder, Ptolemy. Even if these sources often provided very detailed descriptions, the conceptual framework for the architectural design of coastal structures with respect to palaeo- coastal processes, remains largely unexplored. The recent advances in palaeo-environmental reconstructions, the development of cost-effective techniques for high-resolution aerial photogrammetry (e.g. Unmanned Aerial Vehicles, UAV) and the recent development of freely available and versatile tools for coastal modelling (e.g. Delft3D, XBeach, FUNWAVE) offer us the possibility to assess - for the first time and in a quantitative manner - the strategies of coastal planning since the antiquity. Another emerging field of research at the boundary between geology and coastal engineering is the study of the effects of waves in paleo environments. As an example, a recently highly debated paper (Hansen et al., 2016) revisited the hypothesis, based on field data, that 'superstorms' characterized the Atlantic at the end of the Last Interglacial. To study in a more rigorous way the deposits and landforms that are at the base of this hypothesis, and to make inferences on the waves that might have characterized this period, a closer collaboration is necessary between coastal geomorphologists, sea level geologists and coastal hydrodynamic modellers. This will allow for the most accurate reconstruction of past extreme events in the Mediterranean thus far, and have direct links in reinterpreting the effects of large storms on coastal communities in the past and also allow for prediction of storminess and coastal hazard in the future.