EGU21-10968
https://doi.org/10.5194/egusphere-egu21-10968
EGU General Assembly 2021
© Author(s) 2022. This work is distributed under
the Creative Commons Attribution 4.0 License.

Coastal changes through time is the only constant: Case study of west coast of Naxos Island, Cyclades, Greece

Niki Evelpidou, Alexandros Petropoulos, Anna Karkani, and Giannis Saitis
National and Kapodistrian University of Athens, Faculty of Geology and Geoenvironnent, Zogragou, Greece

Coastal areas include various landforms, such as dunes, lagoons and wetlands, which constitutes them as areas of particular environmental and geomorphological values. Coastal lagoons and dunes are of great environmental importance, given that, among others, they provide habitat for rare species of flora and fauna, but they also contribute to the protection of the coastal zone from sea level rise, storms, etc. Although these features are unique elements for sustainable development and are of great importance to the natural environment and economy, due to their relatively small size, they are one of the most vulnerable and threatened ecosystems. Such a case is the western coast of Naxos Island, hosting several wetlands bordering with low-lying sand dunes.

Naxos island lies in the center of the Aegean Sea, being part of the Cyclades Island group. The western coasts of Naxos include a number of natural features, which have been inherited from their palaeogeographical evolution over the last 10,000 years. Typically, the western coastal zone is composed of a sandy beach, bordered by low lying sand dunes, lagoons and an alluvial plain. These systems are becoming increasingly vulnerable, due to natural processes such as intensity of waves, but also due to human interventions that have blocked sediment input to the coastal zone and the increasing touristic development. The erosion of the dunes, the intense storms, the sea level rise, extreme events such as storms or tsunamis, and the increased tourist "raid", will lead to marine flooding not only to the beach, but also to the lagoons and many acres of land (rural, residential areas).

The aim of our study is to assess the vulnerability of the western coasts of Naxos to sea level rise, considering both natural and anthropogenic pressures. For this purpose, we used a series of methodologies for the environmental and geomorphological study of the coastal zone and the shallow submarine area, which included: a) photointerpretation of aerial photographs from 1960 until today, b) systematic seasonal aerial monitoring by drone, since 2015, c) mapping of the coastal zone and topographic sections using DGPS and d) dune mapping and sampling, e) sampling of underwater beachrocks. Through our analysis we aim to better elucidate the impact of the relative sea level rise in the study area.