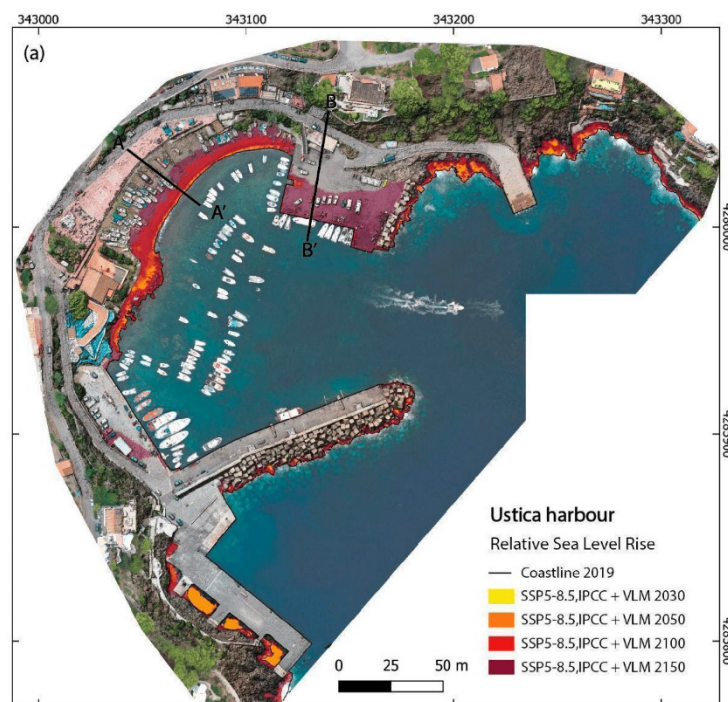


## Relative Sea-Level Rise Projections and Flooding Scenarios for 2150 CE for the Island of Ustica (Southern Tyrrhenian Sea, Italy).

### Summary

The island of Ustica (Italy) is constantly exposed to the effects of sea-level rise, which is threatening its coastal zone. With the aim of assessing the sea levels that are anticipated by 2150 CE under the climatic projections shown in the AR6 report from the IPCC, a detailed evaluation of potential coastal flooding under different climatic scenarios and the ongoing land subsidence has been carried out for three coastal zones. Scenarios are based on the determination of the current coastline position, a high-resolution digital terrain and marine model, and the SSP1-2.6, SSP3-7.0, and SSP5-8.5 climatic projections. Relative sea-level rise projections allowed the mapping of the potential inundated surfaces for 2030, 2050, 2100, and 2150. The results show rising sea levels for 2150, ranging from a minimum of  $66 \pm 40$  cm (IPCC AR6 SSP2.6 scenario) to a maximum of  $128 \pm 52$  cm (IPCC AR6 SSP8.5 scenario). In such conditions, considering the SSP8.5 scenario during storm surges with return times (RTs) of 1 and 100 years, the expected maximum wave run-up along the island may vary from 3 m (RT = 1) to 14 m (RT = 100), according to the coastal morphology. Our results show that adaptation and mitigation actions are required to protect the touristic and harbor installations of the island.



### Figure

Potential submersion areas for Ustica Harbor, based on the current rates of VLM and the SSP5-8.5 climatic scenario up until 2150 (see [Table S1](#) and [Figure 10a](#) for flooded surfaces).

### How to cite

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