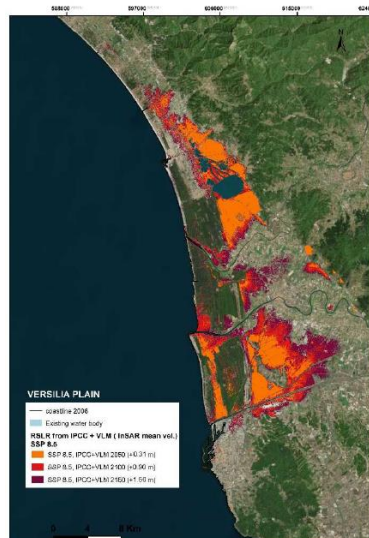


Relative sea level rise projections up to 2150 along the Italian coasts from geodesy, high resolution topography and climatic projections

Summary

For the Italian region, we estimated the current and expected RSLR trend at 2030-2050-2100 and 2150 for 39 main coastal plains which are yet exposed to coastal hazard. Geodetic data consist in about 27 years of continuous GNSS observations at selected stations located within 5 km from the coast and InSAR data from the Copernicus European Ground Motion Service (<https://egms.land.copernicus.eu/>). The latter were integrated with additional InSAR data sets to extend to past years the data time series at specific sites, such as for the Venice lagoon. Finally, we provide revised sea level rise projections for the selected coastal plains of the Italian region by including VLM in the analysis. Scenarios are based on the IPCC-AR6 Report for different Shared Socio-economic Pathways (SSP) and global warming levels (www.ipcc.ch). Our analysis show that IPCC often underestimate the projected SLR since the current VLM rates are neglected or not adequately considered. Finally, detailed maps of the expected flooding scenarios for 39 Italian coastal plains projected on high resolution DEM obtained by the analysis of LiDAR data or low elevated aerial photogrammetry surveys by UAVs, are provided. About 10,000 km² of the Italian coasts yet exposed to multiple hazard and about 38,500 km² in the Mediterranean. Based on these scenarios, adaptation measures to face the ongoing RSLR, are required.



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