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Relative sea level rise by 2100 and flooding hazard along the coastal plains of the Mediterranean region: new insights from the SAVEMEDCOASTS project.

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Sea level rise (SLR) is one of the main global threats caused by climate change. Recent independent studies and the IPCC reports (www.ipcc.ch) show that global sea levels could rise up to 0.8-1.0 m by 2100. When in combination with vertical land movements (VLM) for natural or anthropogenic causes, changes in relative sea levels are particularly crucial in subsiding coasts, accelerating land flooding.
In the frame of the SAVEMEDCOASTS project (www.savemedcoasts.eu), we used the best free available topographic (SRTM, ASTER EUDEM, DLR, ALOS) and bathymetric (EMODnet), data set of the Mediterranean region, and analyzed high resolution Digital Terrain and Marine Models. We focus on the main coastal plains of this region, located at less than 1 m above sea level, which are more prone to be flooded by sea level rise in the next decades, particularly when subsiding.
For the Italian peninsula, we re-analyzed the raw LiDAR data acquisitions, collected in the framework of the "Not Ordinary Plan For Remote Sensing" MATTM project of the Italian Ministry of the Environment and for Protection of the Land and Sea. From these data we extracted and investigated very high resolution DTMs at 2m/pixel, that cover the Italian peninsula with a buffer of about 2 km from the coastline toward the inland.
We used the IPCC projections for RCP4.5 and RCP8.5 climate change scenarios of the expected sea level rise by 2100 for the Mediterranean region, in combination with the trend of VLM from geodetic or observational data, to provide the relative sea level rise projections for 2100 in selected zones more prone to be flooded in the next decades. Here we focus on the main coastal plains, the deltas of the Nile and Po rivers, the coasts of SW Turkey, part of Greece and the north Adriatic sea (Emilia Romagna and Venice lagoon, Italy), besides other densely inhabited coastal areas.