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COMPENDIUM OF ABSTRACTS

Sea-level rise and potential drowning of the Italian coastal plains: flooding risk scenarios for 2100

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We depict the relative sea-level rise scenarios for the year 2100 from eight areas of the Italian peninsula. Our estimates are based on the Rahmstorf (2007) and IPCC-AR5 reports 2013 for the RCP-8.5 scenarios (www.ipcc.ch) of climate change, adjusted for the rates of vertical land movements (isostasy and tectonics). These latter are inferred from the elevation of MIS 5.5 deposits and from late Holocene sea-level indicators, matched against sea-level predictions for the same periods using the glacio-hydro-isostatic model of Lambeck et al. (2011). We focus on a variety of tectonic settings: the subsiding North Adriatic coast (including the Venice lagoon), three tectonically stable in Sardinia coastal plains (Oristano, Colledonia and Cagliari coastal plain), Marche (Tronto), Abruzzo (Pescara and Sangro coastal areas), Apulia (Lesina), Granelli (Sicily), and Marina di Campo (Tuscany) and the slightly uplifting Taranto coastal plain. Maps of flooding scenarios are shown on high-resolution Digital Terrain Models mostly based on Lidar data. The expected relative sea-level rise by 2100 will change dramatically the present-day morphology, potentially flooding up to about 6000 km² of coastal plains at elevations close to present-day sea level. The subsequent loss of land will impact the environment and local infrastructures, suggesting land planners and decision makers to take into account these scenarios for a cognizant coastal management. Our method developed for the Italian coast can be applied worldwide in other coastal areas expected to be affected by marine ingression due to global climate change.

Keywords: flooding risk, IPCC

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