

EGU22-2852

<https://doi.org/10.5194/egusphere-egu22-2852>

EGU General Assembly 2022

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Probabilistic Tsunami Hazard Assessments in Eastern Sicily (Italy) including sea level rise caused by climate change and local subduction effects.

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The coasts of the Mediterranean Sea are densely populated and exposed to tsunami inundations as reported by historical evidence. Measures to mitigate the tsunami risk in this region are based on Probabilistic Tsunami Hazard Assessments (PTHA) computed considering present coastal morphologies. However, mean sea level projections for the 21st century indicated a general sea level rise which can be substantially modified if uplift or subsidence may occur locally due to other geological factors. In order to reduce the potential impact of tsunamis all factors (climatic or not) should be included in the tsunami hazard analysis. In this study we focus on the Eastern Sicily and we examine how the PTHA can significantly change when the general trend of sea level rise, based on AR-5 and AR-6 IPCC climate scenarios and rates of Vertical Land Movements, are included in the region. Moreover, we take into account associated epistemic uncertainties related to the future sea level rise under different conditions of low- and high-emission representative concentrations.