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## Future scenarios of coastal flooding in north-east Italy

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Climate change and subsidence will likely have a significant role to increase coastal flooding risk. The socio-economic impact of inundations can be very relevant, and, in a context of climate change, it is necessary to develop effective methods for assessing coastal flood hazard suitable for large-scale studies. This work focuses on the application of a new modelling approach for mapping flooding hazard for future scenarios characterized by sea level rise and ground lowering due to subsidence. The flood intensity index approach (Iw, Dottori et al. 2015) will be used to quantitatively evaluate the flood extent. This recent methodology allows to create reliable scenarios with low computational costs. The effects of the storm surge are assessed using a base scenario corresponding to 100 years return period event. IW inputs are represented by water height set as storm level plus a part of wave height. The scenarios will be created by quantitatively combining IPCC sea level rise projections with subsidence data that will be compared to high-resolution digital terrain models. The study area of this work is the ~205 km long coastal plain of Northern Italy, from Venice to Rimini, composed of low-lying sandy beaches and which includes the Po delta area. The coast is characterized by large portions of the territory below mean sea level and by geological features made by recent quaternary sediments which have a natural subsidence rate. In the past (1960-1980) the subsidence rate had an exceptional increase caused by excessive groundwater withdrawal for agricultural and industrial activities, human consumption and by natural gas extraction.