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Storm surge frequency reduction in Venice under climate change

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Increased tidal levels and storm surges related to climate change are projected to result in extremely adverse effects on coastal regions. Predictions of such extreme and small-scale events, however, are exceedingly challenging, even for relatively short time horizons. Here we use data from observations, ERA-40 re- analysis, climate scenario simulations, and a simple feature model to find that the frequency of extreme storm surge events affecting Venice is projected to decrease by about 30% by the end of the twenty-first century. In addition, through a trend assessment based on tidal observations we found a reduction in extreme tidal levels. Extrapolating the current +17 cm/century sea level trend, our results suggest that the frequency of extreme tides in Venice might largely remain unaltered under the projected twenty-first century climate simulations.