Geophysical Research Abstracts
Vol. 19, EGU2017-16616, 2017
EGU General Assembly 2017

A joint analysis of wave and surge conditions for past and present extrem events in the south-western Baltic Sea

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Extreme marine events in the south-western Baltic Sea like the historic storm in 1872 are rare, but have large impacts on human safety and coastal infrastructure. The aforementioned extreme storm event of 1872 and has cost over 250 human lives, left severely damaged infrastructure and caused land loss due to coastal erosion. Recent extreme events also result in drastic impacts to coastal regions.

Using results from numerical wave and hydrodynamic model simulations we will present a joint analysis of wave and water level conditions for selected extreme events. For the historic event the numerical models have been forced by reconstructed wind and pressure fields from pressure readings. Simulated atmospheric conditions from reanalysis have been used for the more recent events. The height of the water level due to the possible previous inflow of water masses in the Baltic Sea basin, as well as possible seiches and swell effects have been incorporated in the simulations. We will discuss similarities and differences between the historic and the more recent marine hazard events.