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Extreme events on Gulf of Bothnia

Simo-Matti Siiriä[1], Sam Fredriksson[2], Petra Roiha[1], Pekka Alenius[1], and Annu Oikkonen[1]
[1]Finnish Meteorological Institute, Marine Research, Helsinki, Finland (simo.siiria@fmi.fi)
[2]Swedish Meteorological and Hydrological Institute, Stockholm

The future changes in the physical conditions in the Gulf of Bothnia can have considerable impact on various human activities in the area. In this presentation we concentrate on marine heatwaves and ice conditions. The general changing trends of ice conditions, temperature and salinity give an idea of the changes to come. It is, however, also important to know the possible changes in extremes, and their frequencies in the future. To name a few examples, aquaculture activities can be affected by sudden exceptional warm or cold periods of water, and wind-energy construction benefits from knowing what kind of ice conditions can be expected.

In the SmartSea project we have made simulations of future scenarios for predicting the possible changes in the conditions in the Gulf of Bothnia. We have simulated a historical control period of 1976-2006 with three different downscaled global circulation models, and use these as comparisons for runs made with same model forcings for the years 2006-2060 with RCP 4.5 and RCP 8.5 scenarios. These scenarios are used to detect the type and frequency of extreme events, such as marine heatwaves or extreme ice conditions in the control period, and the change of these in the future for both RCP's.