



## **Future storm surge risk in Denmark**

M. Dobrynin (1), K. S. Madsen (2), and N. Kliem (1)

(1) Danish Meteorological Institute, Centre for Ocean and Ice, Denmark (mdo@dmi.dk), (2) Danish Meteorological Institute, Centre for Ocean and Ice. Now at: National Environmental Research Institute Aarhus University, Denmark

Coastal areas of Denmark are storm surge risk areas and coastal protection is needed to mitigate the storm surge effects of rising mean sea level, and changes in wind patterns attributed to changing climate. That is why good estimates of the expected ranges of future storm surges are required. An ensemble of storm surge simulations for the Danish coast is produced with the hydrodynamic models MOG2D and DMI-BSHcmod. First, the models were forced by a regional climate model (RCM) to determine the effects of different emission scenarios and different global circulation models used to force the RCM. Second, the circulation model was forced by ERA40 and RCM HIRHAM data for the simulation period of 1960-2000 in order to study the effect of more realistic simulation of the past on the future model simulation. Effects of global and regional mean sea level rise, as well as isostatic land adjustments are taken into account. The global sea level rise is estimated by IPCC to be 19-57 cm by year 2100. GPS measurements of isostatic land rise have been made at six locations in Denmark, indicating a land rise close to 0 cm in the south-western part of Denmark, rising to 2 mm/yr in northern Denmark.