Ocean–atmosphere coupled model for storm surge risk assessment in Bangladesh coast

Nabir Mamnun

Nansen-Bangladesh International Centre for Coastal, Ocean and Climate Studies (NABIC)

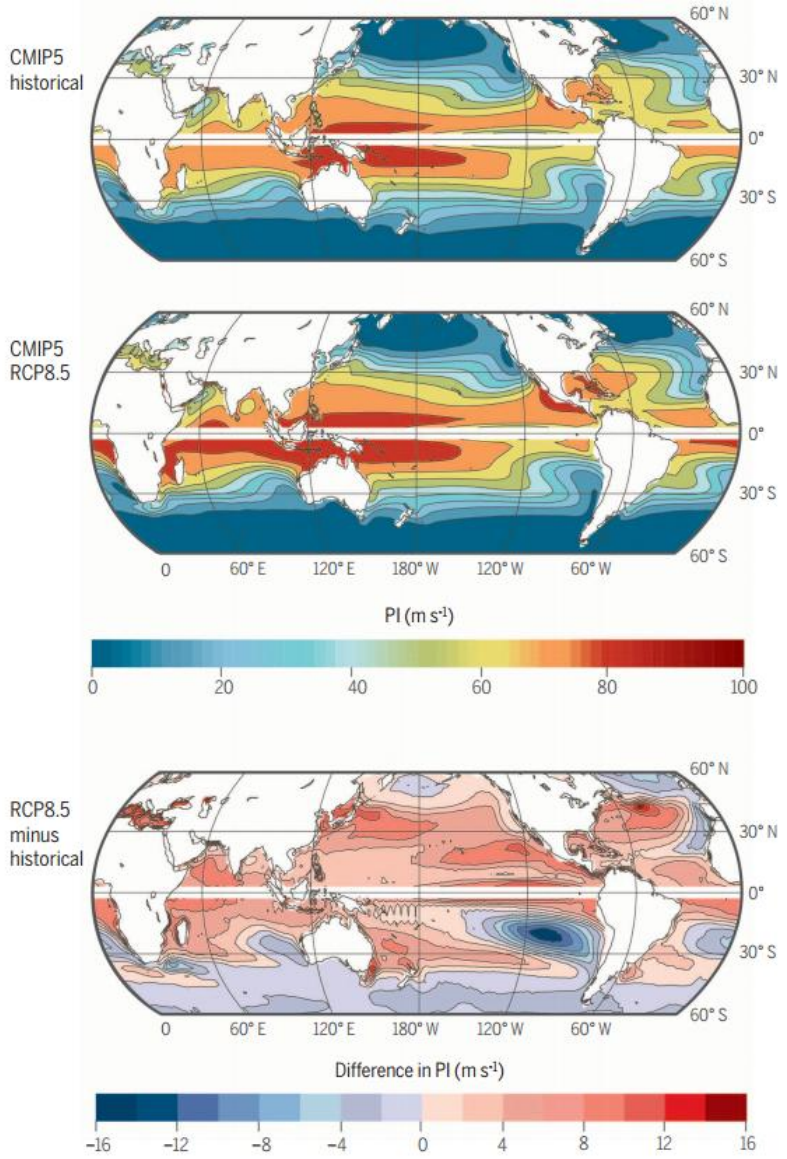
Storm surge have been big problem for the coastal population of Bangladesh.

- 5.48 tropical cyclones per year
- a super storm with devastating damage in every 2-3 years
- massive destruction and loss of human life associated with a tropical cyclone can be attributed mainly to storm surges

Year	Estimated No. of deaths
1991	138958
1994	170
1995	172
1996	545
1997	410
1998	233
2007	4234
2008	15
2009	197
2013	24

Global Warming Influence on tropical cyclone intensity

- tropical cyclone intensity should increase as the climate warms.
- Less agreement exists on the detection of recent historical trends in tropical cyclone intensity.
- future greenhouse gas forcing of potential intensity will increasingly dominate over aerosol forcing, leading to substantially larger increases in tropical cyclone intensities.



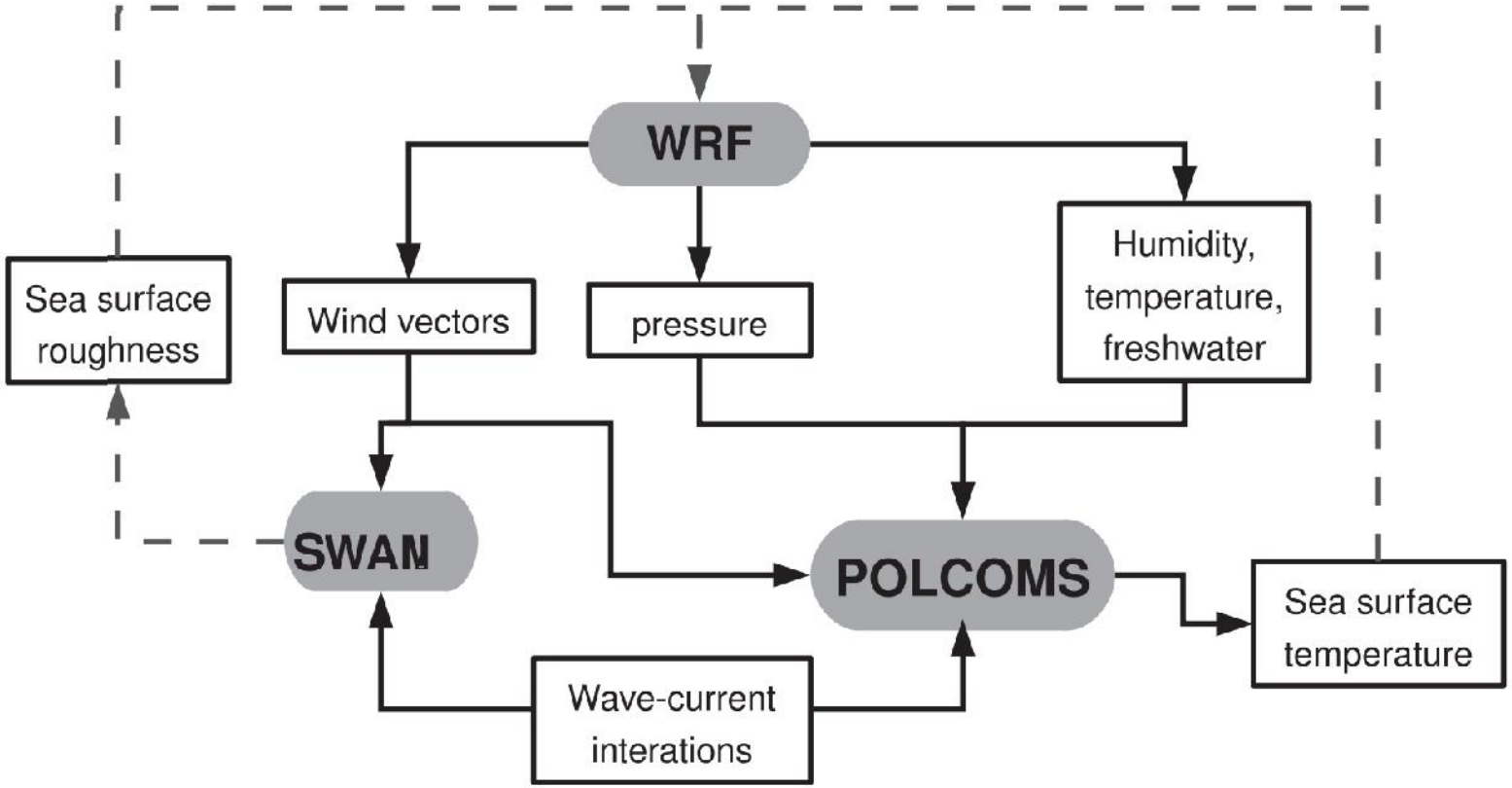
Sobel et al. 2016

Objectives

To investigate changes in the behaviour of storm surges under global warming using an ocean-atmosphere coupled model.

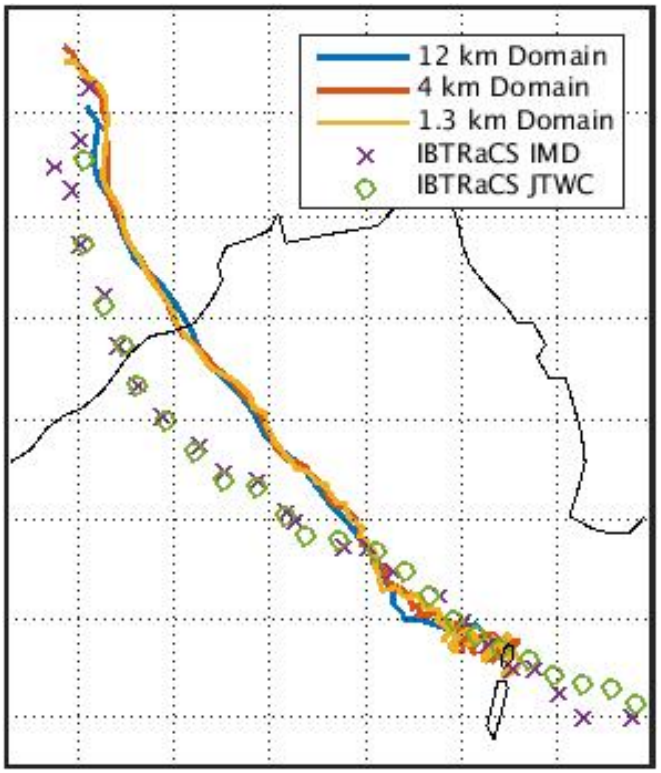
- To validate an ocean-atmosphere coupled model for storm surge
- To run the model for idealize cases; and
- To assess the damages and impacts

Model schematic showing components



WRF nest comparison

cyclone track



air pressure