



A regional ocean model for the Southwest Pacific Ocean region to assess the risk of storms

N. Natoo (1,2), A. Paul (1), M. Hadfield (3), S. Jendersie (3), J. Bornman (4), W. de Lange (2), W. Ye (2,5), and M. Schulz (1)

(1) MARUM - Center for Marine Environmental Sciences, University of Bremen, Bremen, Germany, (2) University of Waikato, Hamilton, New Zealand, (3) National Institute of Water & Atmospheric Research Ltd., Wellington, New Zealand, (4) Curtin University, Perth, Western Australia, (5) CLIMsystems Ltd., Hamilton, New Zealand

New Zealand's coasts are not only affected by mid-latitude storms, but infrequently also by storms that originate from the tropics. Projections for the southern hemisphere's southwest Pacific island countries for the 21st century show a poleward shift of the mid-latitude storm tracks, which consequently might result in changes in wind, precipitation and temperature patterns. Furthermore, an increase in frequency of intense storms is expected for the New Zealand region, which will very likely increase the risk of storm surges and flooding of coastal and low-lying regions. We employ the Regional Ocean Modeling System (ROMS) to assess the changes in the storm climate of the New Zealand region. The model set-up uses a resolution of \sim 50 km for the Southwest Pacific Ocean "parent domain" and \sim 10 km for the New Zealand "child domain", to well represent the major eddies that influence the climate of North Island. With the aim to later utilize this nested ocean model set-up as part of a coupled ocean-atmosphere modelling system for the Southwest Pacific Ocean region, results for the 20th century will be presented. The simulated circulation is shown to be largely consistent with the observed regional oceanography.