Geophysical Research Abstracts
Vol. 19, EGU2017-3302, 2017
EGU General Assembly 2017

Quantification of sea ice production in Weddell Sea polynyas

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The regional climate model COSMO-CLM was used to perform simulations the Weddell Sea region in Antarctica for the time period 2002-2015 with the focus on atmosphere-ocean-sea ice interactions. The original model was adapted to polar regions by the use of a thermodynamic sea ice module with snow cover and an temperature-dependent albedo scheme for sea ice. The recently published topography RTopo2 was used. The model was run with nesting in ERA-Interim data in a forecast mode. Sea ice concentrations were taken from satellite measurements (AMSR-E, SSMI/S, AMSR2) and were updated daily to allow for a close-to-reality hindcast. Simulations were done with 15 km resolution for the whole period 2002-2015 with the goal to force the sea-ice ocean model FESOM. In a second step a 5 km simulation was one-way nested for the winter period (April - September) 2002-2015 to allow for a better quantification of sea ice production in the Weddell Sea. Estimates of sea ice production and comparisons of the results to remote sensing data will be presented.