

Data Description

1. PROJECT

Title: New insight from CryoSat-2 sea ice thickness for sea ice modelling

Funding organisation: Centre for Polar Observation and Modelling, ACSIS and UKESM program funded by the U.K. Natural Environment Research Council

2. DATASET

Title: Simulations with the sea ice model CICE documenting the impact of improved sea ice physics.

The paper uses sea ice thickness data (CryoSat-2) to identify and correct shortcomings in simulating winter ice growth in the widely used sea ice model CICE. Adding a model of snow drift and using a different scheme for calculating the ice conductivity improve model results. Sensitivity studies demonstrate that atmospheric winter conditions have little impact on winter ice growth, and the fate of Arctic summer sea ice is largely controlled by atmospheric conditions during the melting season.

A full description of the data processing and uncertainties is given by Schröder et al. (2018). All simulations are listed in Tables 1 to 3.

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Organisation: University of Reading

Rights-holder: University of Reading

3. TERMS OF USE

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4. CONTENTS

File names correspond to run names in Tables 1 to 3. Monthly means on our 1deg tripolar grid are provided. The data is stored in netCDF format, with the following variables:

data variables:

-1	hi_m	grid cell mean ice thickness [m]
-2	hs_m	grid cell mean snow thickness [m]
-3	aice_m	ice area (aggregate) [1]
-4	dvidtt_m	volume tendency thermo [cm/day]
-5	dvidtd_m	volume tendency dynamics [cm/day]

grid variables:

-1	TLAT
-2	TLON
-3	tarea

Contents of simulations_Table1.tar.gz:

cice_best_free.nc
cice_best_ini_16nov2010.nc
cice_best_ini_16nov2011.nc
cice_best_ini_16nov2012.nc
cice_best_ini_16nov2013.nc
cice_best_ini_16nov2014.nc
cice_best_ini_16nov2015.nc
cice_best_ini_16nov2016.nc
cice_climini_ini_16nov2010.nc
cice_climini_ini_16nov2011.nc
cice_climini_ini_16nov2012.nc
cice_climini_ini_16nov2013.nc
cice_climini_ini_16nov2014.nc
cice_climini_ini_16nov2015.nc
cice_climini_ini_16nov2016.nc
cice_default_free.nc
cice_default_ini_16nov2010.nc
cice_default_ini_16nov2011.nc
cice_default_ini_16nov2012.nc
cice_default_ini_16nov2013.nc
cice_default_ini_16nov2014.nc
cice_default_ini_16nov2015.nc
cice_default_ini_16nov2016.nc
cice_mw_form_e_free.nc
cice_mw_form_e_ini_16nov2010.nc
cice_mw_form_e_ini_16nov2011.nc
cice_mw_form_e_ini_16nov2012.nc
cice_mw_form_e_ini_16nov2013.nc
cice_mw_form_e_ini_16nov2014.nc
cice_mw_form_e_ini_16nov2015.nc
cice_mw_form_e_ini_16nov2016.nc
cice_mw_form_e_sd_free.nc
cice_mw_form_e_sd_ini_16nov2010.nc
cice_mw_form_e_sd_ini_16nov2011.nc
cice_mw_form_e_sd_ini_16nov2012.nc
cice_mw_form_e_sd_ini_16nov2013.nc
cice_mw_form_e_sd_ini_16nov2014.nc
cice_mw_form_e_sd_ini_16nov2015.nc
cice_mw_form_e_sd_ini_16nov2016.nc
cice_mw_form_free.nc
cice_mw_form_ini_16nov2010.nc
cice_mw_form_ini_16nov2011.nc
cice_mw_form_ini_16nov2012.nc
cice_mw_form_ini_16nov2013.nc
cice_mw_form_ini_16nov2014.nc
cice_mw_form_ini_16nov2015.nc
cice_mw_form_ini_16nov2016.nc
cice_mw_free.nc
cice_mw_ini_16nov2010.nc
cice_mw_ini_16nov2011.nc
cice_mw_ini_16nov2012.nc
cice_mw_ini_16nov2013.nc
cice_mw_ini_16nov2014.nc
cice_mw_ini_16nov2015.nc
cice_mw_ini_16nov2016.nc
grid_info.nc
selected_region_figure4.nc

Contents of simulations_Table2.tar.gz:

cice_Ldown15_ini_16nov2010.nc

cice_Ldown15_ini_16nov2011.nc
cice_Ldown15_ini_16nov2012.nc
cice_Ldown15_ini_16nov2013.nc
cice_Ldown15_ini_16nov2014.nc
cice_Ldown15_ini_16nov2015.nc
cice_Ldown15_ini_16nov2016.nc
cice_Tair2_ini_16nov2010.nc
cice_Tair2_ini_16nov2011.nc
cice_Tair2_ini_16nov2012.nc
cice_Tair2_ini_16nov2013.nc
cice_Tair2_ini_16nov2014.nc
cice_Tair2_ini_16nov2015.nc
cice_Tair2_ini_16nov2016.nc
grid_info.nc
selected_region_figure4.nc

Contents of simulations_Table3.tar.gz:

cice_80climforcing_ini_16nov2010.nc
cice_80climforcing_ini_16nov2011.nc
cice_80climforcing_ini_16nov2012.nc
cice_80climforcing_ini_16nov2013.nc
cice_80climforcing_ini_16nov2014.nc
cice_80climforcing_ini_16nov2015.nc
cice_80climforcing_ini_16nov2016.nc
cice_80climforcing_winter_ini_16nov2010.nc
cice_80climforcing_winter_ini_16nov2011.nc
cice_80climforcing_winter_ini_16nov2012.nc
cice_80climforcing_winter_ini_16nov2013.nc
cice_80climforcing_winter_ini_16nov2014.nc
cice_80climforcing_winter_ini_16nov2015.nc
cice_80climforcing_winter_ini_16nov2016.nc
cice_climforcing_ini_16nov2010.nc
cice_climforcing_ini_16nov2011.nc
cice_climforcing_ini_16nov2012.nc
cice_climforcing_ini_16nov2013.nc
cice_climforcing_ini_16nov2014.nc
cice_climforcing_ini_16nov2015.nc
cice_climforcing_ini_16nov2016.nc
cice_climforcing_wind2010_ini_16nov2010.nc
cice_climforcing_wind2010_ini_16nov2011.nc
cice_climforcing_wind2010_ini_16nov2012.nc
cice_climforcing_wind2010_ini_16nov2013.nc
cice_climforcing_wind2010_ini_16nov2014.nc
cice_climforcing_wind2010_ini_16nov2015.nc
cice_climforcing_wind2010_ini_16nov2016.nc
cice_climforcing_winter_ini_16nov2010.nc
cice_climforcing_winter_ini_16nov2011.nc
cice_climforcing_winter_ini_16nov2012.nc
cice_climforcing_winter_ini_16nov2013.nc
cice_climforcing_winter_ini_16nov2014.nc
cice_climforcing_winter_ini_16nov2015.nc
cice_climforcing_winter_ini_16nov2016.nc
grid_info.nc
selected_region_figure4.nc