Project information

Keywords
Arctic, sea ice

Project title
Developing Modelling Tools to Understand the Role of Solar Radiation to Sea Ice Mass Balance in a Seasonally Ice Covered Arctic (SOLICE)

Year
2014

Project leader
Mats Granskog

Participants

Mats Granskog (NPI), project lead

Tore Hatterman (Akvaplan-niva)

Anthony Doulgeris (UiT)

Keguang Wang (MET.no)

Caixin Wang, Alexey Pavlov, Sebastian Gerland (NPI)

Ole Anders Nøst (Akvaplan-niva)

International partners/collaborators;

Donald K. Perovich (Donald.K.Perovich@erdc.drem.mil), at Cold Regions Research and Engineering Laboratory (CRREL), Hanover, USA

Marcel Nicolaus (marcel.nicolaus@awi.de), at Alfred Wegener Institute (AWI), Germany

Jeremy Wilkinson, British Antarctic Survey (EU FP7 project ICE-ARC)

Flagship
Arctic Ocean

Funding Source

850 000 NOK Fram Centre funding in 2014.

Another Fram Centre project (ModIOE) contributes significantly to the progress of this project through development and model runs of the CICE-ROMS coupled model and SOLICE is dependent on some model output from that project to carry out the work, especially in the coming years.

Summary of Results

The following task were planned to be carried out in 2014 according to the project plan. Most of these have proceeded as planned, and are to be completed by the end of the year.

Task 1.1. In the initial phase of the project the main task have been, as according to the project plan to, examine existing autonomous observations from the high-Arctic, and this work has progressed according to plan – with support from a number of external projects that have installed observational systems in earlier years and will be deploying similar autonomous systems in the coming year 2015. A manuscript for publication has been prepared from this observational data and this will be submitted in early 2015.

Task 1.2 The data has been collected, and verification is planned to be completed by the end of the year.

Task 3.1 The analysis of the ROMS Arctic 4 km results have started and was largely completed by the end of the year.

Task 3.2 is targeted to set up a stand-alone CICE configuration for the Arctic region, and perform the simulation for the Arctic sea ice climate. Currently, we have tested the original setting of global sea ice simulation which is embedded in the CICE code. A

new configuration has been completed to set up the CICE model for the Arctic-20km grid, and compiled successfully. The atmospheric forcing fields have been prepared in netcdf file format. Some work is now being carried out to modify the code to read the netcdf forcing files into the CICE code.

The project has kept two workshops in 2014, one to discuss the overall work progress and adjustments for the 2015 work plan (as in proposal submitted 1 Nov 2014), and a small workshop to discuss current parameterization schemes in models and improvements was held in Dec 2014.

For the Management

n/a

Published Results/Planned Publications

Manuscript in preparation:

Working title: Analysis of ice mass balance buoys and radiative fluxes in summers 2012 and 2013 in the central Arctic Ocean (Wang et al.) – to be submitted to JGR Ocean in second quarter of 2015

Communicated Results

n/a

Interdisciplinary Cooperation

n/a

Budget in accordance to results

This is the first year of the project, and as such the work has started more or less as planned in the project plan. A researcher was hired to work for the project at NPI (8 person-months for Dr. Caixin Wang). So far we are in the initial phases of the project and have progressed according to project plan and Fram Centre funding in 2014 has covered the work performed to a large degree, but due to the amount of funding we have also re-evaluated and adjusted the amount of work, and will focus the work in coming years better to the main aim of the project, and also try to synchronize activities with the MoDIOE project better, to best use of resources and to benefit of both Fram Centre projects.

Researcher C. Wang was hired with a delay relative to the original plans, as the hiring process took longer than expected, thus she was not hired until later in May, and salary costs are therefore somewhat lower in 2014 than anticipated (this will not be an issue in 2015).

Could results from the project be subject for any commercial utilization

No

Conclusions

n/a