FAMOS

Forum for Arctic Modeling and Observational Synthesis Phase 1 and 2

http://www.whoi.edu/projects/famos/

Principal investigator

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Areas of contribution

Oceanic processes
Modelling and forecasting
Education
Observations
Sea ice processes
Data assimilation
Data archiving
Outreach

Summary

The Forum for Arctic Ocean Modeling and Observational Synthesis (FAMOS) is an international effort to focus on enhancing collaboration and coordination among arctic marine and sea ice modelers, theoreticians and
observationalists based on a set of activities starting from generating hypotheses, to planning research included both observations and modeling, and to finalizing analyses synthesizing major results from the field studies and coordinated numerical experiments. The FAMOS-2 project will be focusing on studies of processes and mechanisms with high and ultra high resolution to improve understanding of physical processes and predictions.

**Description**

The overall goal of FAMOS is a better understanding of the Arctic climate system (with a focus on marine environment) through the use of improving numerical models and observational tactics and strategies. The other project goals are to:

The project’s goals are to:

- Maintain and enhance in FAMOS the established AOMIP international collaboration to reduce uncertainties in model predictions (model validation/improvements via coordinated experiments and studies; reanalysis methods and products for correct initial and boundary conditions; design and implementation of the oceanic and sea ice remote and in situ observing systems);
- Support synthesis across the suite of Arctic models and observatories and/or observational projects and systems;
- Organize scientific meetings and workshops including virtual teleconferences;
- Conduct collaboration with other similar projects focused on other aspects of arctic/global climate (atmospheric, terrestrial, etc) with a special focus on model and data improvements and analysis;
- Disseminate findings of FAMOS effort to broader communities and involve the larger community in discussions, coordinated modeling and observational field experiments;
- Train a new generation of ocean and sea-ice observationalists and modelers continuing the practice of annual 1-2 day FAMOS workshop schools.

The majority of FAMOS project’s goals are complimentary for the following YOPP objectives:

- "Improve the polar observing system to provide good coverage of high-quality observations in a cost effective manner".
- "Gather additional observations through field programmes aimed at improving understanding of polar key processes."
- "Develop improved representation of polar key processes in uncoupled and coupled models used for prediction, including those which are a particular hindrance to high-quality prediction for the polar regions, such as stable boundary layer representation, surface exchange, and steep orography."
- "Develop improved data assimilation systems that account for challenges in the polar regions such as sparseness of observational data, steep orography, model error and the importance of coupled processes (e.g., atmosphere-sea ice interaction)."
- "Explore the predictability of sea ice on time scales from days to a season."
- "Improve understanding of the benefits of using existing prediction information and services in the polar regions, differentiated across the spectrum of user types and benefit areas."
- "Provide training opportunities to generate a sound knowledge base on polar prediction related issues."

Since 1999, the AOMIP and FAMOS project (which continues AOMIP work since 2012) have organized 18 workshops and meetings, published more than 150 papers in peer-reviewed journals and currently we have a membership e-mail list of 273 project participants.
Note that the 4th annual FAMOS meeting (November 3, 2015) will have a theme for discussions “Year of Polar Prediction YOPP” introduced and moderated by Thomas Jung.

**Timeline**

2015-11-01 - 2019-12-25

**Regional emphasis**

Northern hemisphere: Yes

Southern hemisphere: No

**Key project deliverables**

1. Recommendations on how to improve regional arctic ocean and sea ice models
2. Recommendations on how to improve arctic observing systems (optimal solutions with estimates of costs and expected uncertainties (i.e. less expensive - more uncertain results)
3. Scientific analysis of roles of different factors in the observed changes of the Arctic environment
4. Results of model simulations and specifically designed and organized observational data to satisfy needs of model calibration and validation and data assimilation for obtaining initial conditions for predictions and diagnostic model runs to reconstruct past conditions.

**Data management**

The need for an observational database for arctic marine modelers has been a topic of some discussion at AOMIP and FAMOS workshops. One possibility is to store all FAMOS data locally at FAMOS web site. The other choice is to archive all data at the National Snow and Ice Data Center (NSIDC) called ACADIS = Advanced Cooperative Arctic Data and Information Service, which is designed to collect all NSF-funded arctic data in one place. The organization and search strategies of all of these data are still under development.

**Is data provided to WMO Global Telecommunication System**

No

**Real-time provision**
N/A because we are not involved in operational predictions.

**Other information**

For FAMOS phase 2 the results of proposal evaluation will be available by August 1, 2016.

**Timelines**

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