

The FAMOS school day: Fostering confidence in a diverse body of early-career polar marine scientists

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What is FAMOS?



Forum for Arctic Modeling and Observational Synthesis

The Forum for Arctic Ocean Modeling and Observational Synthesis (FAMOS) is an international effort to make progress in

- Arctic (not Antarctic)
- Marine (not terrestrial)
- Modeling (not observations).

"Arctic" includes subarctic areas such as the Nordic Seas. "Marine" includes physical, chemical, and biological studies of ocean and sea ice. "Modeling" mostly indicates numerical simulation, but also includes laboratory and theoretical studies.

Beyond these topics, FAMOS has participation from disciplines that impact the Arctic marine system, e.g., atmospheric, glaciological, and hydrologic sciences.

Further, FAMOS encourages strong participation from observationalists who collect data via field work or satellites. Modelers need observations for initialization, assimilation, validation, and parameterization development; observationalists need modelers to interpolate and extrapolate their sparse data in space and time, and to guide observational programs. But the collaboration runs deeper than this: Observationalists make scientific advances that serve to inspire new modeling work, and vice versa.

The FAMOS project started in 2011, an outgrowth of an initial project called AOMIP (Arctic Ocean Model Intercomparison Project) that started in 1999. FAMOS is fundamentally a collaboration accelerator. It consists of:

- An annual meeting during which talks and discussions lead to new projects and proposals
- Ongoing projects that are eventually published, in part in J. Geophysical Research special issues (there have been three since 1999)

Major funding for FAMOS comes from the U.S. National Science Foundation, Office of Polar Research, and the Canadian Government.

FAMOS Annual Workshop



FAMOS annual meeting participants
October 2016 at Woods Hole Oceanographic Institute

The annual workshop is held for 2.5 action-packed days Wednesday-Friday, usually in the fall and usually in or near Woods Hole, MA, USA. In 2018 it was held in Bergen, Norway.

The agenda consists of:

- short AGU-style 15 minute talks, grouped by topic (e.g., sea ice, large-scale oceanography, small-scale ocean mixing and eddies, biogeochemistry).
- posters (and corresponding 1-minute "lightening talks" to advertise these)
- panel discussions
- break-out sessions
- meals/happy hour/social activities

FAMOS is a "bottom-up" activity, i.e., the agenda is set by the submitted talks and posters. Time is also reserved for reporting on ongoing FAMOS collaborations and planning for future collaborations.

Attendance is typically 110-150. Students and postdocs generally represent 30-40% of participants, and are heavily represented in talks, session management, panel reporting, etc.

The panels, break-out sessions, and meals/social activities have one goal in mind: to generate collaborative projects and guide them to publication. This is the essential characteristic of FAMOS.

Screenshot

FAMOS School



Student introductions at the start of the 2018 FAMOS school. The room will be filled the next day for the main workshop.

The first day (i.e., Tuesday) of the annual workshop week is devoted to the FAMOS School for New Arctic Investigators, with 30-50 (maximum) graduate students, postdocs, and a few early-career scientists. Students are required to submit a proposed talk or poster with their application (even if it is only a tentative plan of research): the idea is that students will be active (not passive) participants at FAMOS. Applications are accepted first-come, first-served, with travel support reserved for first-time applications and a few returning students if they are especially active in collaborative projects. Other students are free to attend using their own funding; generally > 50% of students use some of their own (i.e., university) funding.

The format consists of:

- 30-40 minute talks by 5-6 invited speakers, with corresponding 20-30 minute discussion periods.
 - These sometimes have a theme, e.g.,
 - 2015's "Arctic Sequest" contest to determine the "best" Arctic sea, with expert speakers on the Bering, Barents, Laptev, Chukchi, and Canadian Polar Shelf Seas
 - 2016's "Peer-to-peer" speakers were early-career investigators within 5 years of PhD
- A special after-lunch session devoted to topics of interest to early-career investigators, e.g.,
 - Public outreach:
 - student-led demonstrations of sea ice melt, Arctic Ocean stratification, etc.
 - a National Public Radio host came and conducted student "interviews," followed by a discussion and advice.

Outcomes and the Future

Journal of Geophysical Research Special Issue:
Forum for Arctic Modeling and Observational Synthesis
(FAMOS) 2: Beaufort Gyre Phenomenon
First published: 1 March 2018
Last updated: 16 October 2020



There have been three special JGR issues devoted to AOMIP/FAMOS collaborative projects. The latest one (2018-2020) focused on the Beaufort Gyre, with 23 out of 38 papers led by student authors.

Earth's Future

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Sea Ice Targeted Geoengineering Can Delay Arctic Sea Ice Decline but not Global Warming

Lorenza Zampano, Helge F. Goessling

First published: 09 December 2019 | <https://doi.org/10.1029/2019EF001280> | Citations: 2

Furthermore, we are thankful to Thomas Jung, Mike Steele, and the Forum for Arctic Ocean Modeling and Observational Synthesis (FAMOS) community for the support and very helpful discussions.

The above is a student-led publication inspired by the 2017 FAMOS school geoengineering session.

An example of student feedback:

- What makes the FAMOS meeting so great to me is the active nature of the event. The presentations have a very high quality and I could learn a lot during these few days, but there is much more to it. I just love listening to all the great minds discussing scientific ideas, interesting concepts or even just computational issues. I love the relaxed atmosphere of the event where everybody is open and accessible, where I can just walk up to Prof. Big Name and get enough ideas for the next six months of my research. FAMOS is how a true scientific event should look like. People are sharing their ideas for the sake of moving science forward without overprotecting them from others, and there is such a lively discussion that I have not yet seen elsewhere.