

The Arctic Ocean Climate System

(Interdisciplinary research school 10 ETCS)

The Swedish research icebreaker *Oden* will join the Canadian icebreaker CCGS *Louis S. St-Laurent* for operations in the central Arctic Ocean during August 9 – September 19, 2025, in a collaboration with the Canadian Geological Survey. The navigation of *Oden* during the operations will be decided by the Canadian research team and all research on *Oden* will have to be organized around this. This collaboration provides an excellent opportunity to organize an opportunistic research school that evolves around the permanent and semi-permanent research infrastructure on board *Oden*.

The research school covers aspects of all three main components of the Arctic Ocean climate system: the ocean, the sea ice and the atmosphere, as well as the coupling between them. The school is built around three activities: 1) Practical work on research observations and sampling; 2) Instructions and exercises within each topic; 3) A comprehensive series of lectures. It is organized around several work packages (WPs), each led by a senior scientist with research experience on *Oden*. All students will be assigned to one WP, but individual students are encouraged to explore WPs other than their own main assignment. This will, however, have to be arranged in agreement between the WP leaders to safeguard efficient research work within each WP.

The WPs will be organized to carry out research work, observations and sampling, as on a normal research expedition on *Oden*. Students will take part in the practical work in their WP, under instruction from their WP Leaders. The difference to a normal expedition is work and navigation will be governed by boundaries set up by the Canadian research team. The practical work will by necessity be organized differently in each WP, depending on differences in research methods. Each WP Leader will additionally organize topical exercises and discussion meetings, when possible using data generated within the work packages, to follow the work from observations to generation of useable datasets. In addition to the work in each WP, there will also be a series of lectures consisting of background lectures on the Arctic Ocean system and lectures around each topic providing both the background on each topic, what in each topic is unique for the Arctic and how it links to other research topics, and place the WPs in context of a research expedition. All students are expected to participate in all lectures and to take an active part in the discussions, as this will be the interdisciplinary part of the research school. The scheduling of these lectures will depend on the operations of *Oden* and will also be organized around the work schedule of all the WPs; hence, lecture schedules will be announced daily at short notice when time allows.

The learning outcomes are expected to be the hands-on practical and technical experience within each research topic, a deep understanding on how the research topic fits into the bigger picture of the central Arctic Ocean climate system and a broad general understanding of the other research topics and the system. Issues like how datasets and results are produced and published will also be included, and the research school will also bring an understanding of how a research expedition is organized.

Each student will be examined, but the method of examination will differ among the WPs depending on its character. It can be a written or oral exam, or a writing assignment. After completing the research school, each successful student will be issued a certificate, detailing the work involved and the number of ECTS expected. The students can use this at their home university for credits towards their degree, according to local rules.