

Category

OS Ocean, Sea Ice & AC Atmosphere, Climate & CR Cryosphere

Session Number

OS-7

Session Title

Atmosphere-Ice-Ocean interactions in the Polar Regions

Session Description

The Arctic and Antarctic climate system is strongly affected by atmosphere-ice-ocean (AIO) interactions and feedbacks between snow, ice, ocean, and the atmosphere, such as snow physics processes, polynya formation, sea ice production, and bottom water formation. AIO interactions are also triggered by synoptic weather phenomena such as cold air outbreaks, katabatic winds, and polar lows. The representation of these physical, chemical, and biogeochemical processes and interactions at different spatial and temporal scales, however, remains a major challenge for current weather and climate models.

This session combines research foci on atmospheric and ocean boundary layers, sea ice, and snow-cover processes as well as on global change related to the Arctic and Antarctic. We invite contributions related to the coupling between atmosphere, ice, and ocean, including the influence of sea ice floe-size distribution, sub-mesoscale ocean/sea ice dynamics and thermodynamics, and interactions between the Polar Regions and the global circulation. In addition, the session focuses on processes and parameterizations related to physical, chemical, and biogeochemical exchange and transport, where we also invite contributions addressing observational challenges. Further focus is on snow cover modeling as well as snow ablation and accumulation. Contributions are welcome dealing with theoretical and observational studies, including remote sensing, as well as studies using numerical models.

Keywords: atmosphere, cryosphere, ocean

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