

**Category**

OS Ocean, Sea Ice

**Session Number**

OS-6

**Session Title**

Polar Ocean Dynamics

**Session Description**

Understanding the polar ocean circulation and its interaction with the cryosphere and biogeochemical processes is critical to improve our knowledge of heat, freshwater, energy and carbon budgets, as well as sea level rise and ocean productivity. The Arctic and the Southern Oceans are affected by large scale annular modes of atmospheric variability, have large ice-covered regions, are bordered by ice-sheets and support strong boundary current systems. Dynamically, these flow regimes experience a small Rossby deformation radius, regions of extreme vertical stratification, strong interactions with bathymetry, and eddy variability that influences both mean and transient properties of the large-scale circulation. Despite these similarities, important differences in the behavior of the two regions have been observed, including sea ice trends from recent decades of opposite signs. Differences in ocean stratification, mixed layer processes, bathymetric geometry, and surface forcing have been suggested as possible causes for the distinct natures of the two regions.

In this session, we invite contributions on all physical oceanographic aspects of the Arctic or the Southern Ocean (or ideally both), based on observations, numerical models or theory. Contributions that explore how the ocean impacts the wider polar system, including air-sea exchange, sea ice, ice shelf evolution, biogeochemical cycling and other broad features of the high-latitude climate system, are especially welcome.

**Keywords:** Arctic, Southern Ocean, Physical oceanography, circulation, dynamics

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