

Category

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

Session Number

AC-8

Session Title

Causes and Effects of Changing Polar Climate, Cryosphere and Hydrological Cycle

Session Description

The Arctic is warming two to three times faster than the global average. The annual minimum Arctic sea ice extent has declined by 50% and its thickness by 85% since the late 1970s. Decreased sea ice and warming are intensifying the Arctic hydrological cycle. In the Antarctic, sea ice has undergone a small net increase that masks large regional variability, whilst Antarctic Peninsula marine ice shelves continue to disintegrate. Such changes at the poles do not occur in isolation from the rest of the planet. There are vigorous two-way interactions between the polar and lower latitudes, including midlatitude drivers of Arctic temperature amplification and of the intensification of the atmospheric water cycle, and tropical drivers of Antarctic climate. Conversely, much attention has been focused recently on the potential impacts of rapid Arctic warming upon mid-latitude weather. This session will provide a venue to present progress and new ideas on the drivers of Arctic and Antarctic climate, cryospheric and hydrological change, and the global consequences of these changes. We encourage dialogue between meteorologists, oceanographers, hydrologists and cryospheric scientists, working with both observations and models, to address issues such as: the causes of polar amplification; role of the hydrological cycle in polar climate; interactions between polar and mid-latitude climate; cryospheric- and moisture-related climate feedbacks; evaluation of polar processes in climate models.

Keywords: Arctic, Antarctic, climate, cryosphere, hydrology, teleconnections, feedbacks

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