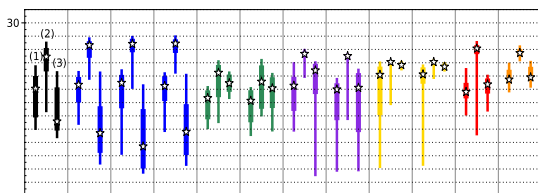


## Introduction

Polar CORDEX focuses on both Arctic and Antarctic RCM simulations; details: [www.climate-cryosphere.org/activities/targeted/polar-cordex](http://www.climate-cryosphere.org/activities/targeted/polar-cordex).

## Science Highlight

Swings in surface net longwave radiation (LWN) are consistent with advection of warm, moist air trapping a low, liquid-bearing cloud layer, followed by a drying and subsequent low-cloud dissipation. The simulations also reveal distinct transitions between the three periods, although to various degrees. Critical to the processes driving the surface energy balance is that most models did not transition to large LWN deficits, reflective of clear or intermittently cloudy skies, during the post-event period as indicated in the observations.



*Observed and modeled percentile ranges of LWN for 3 one-week periods pre, during, post warm, moist advective event during ACSE2014 campaign.*

## 2019 Highlights

The annual Polar CORDEX meeting scientific presentations focussed on following key topics: (i) Surface mass balance of Greenland and Antarctic ice sheets - changes and key drivers. According model inter-comparisons have been accomplished. Simulated recent and future climate change over the Antarctic Peninsula region were presented. (ii) Coupled modeling, its challenges and benefits. For the Arctic, results from atmosphere-ocean models with respect to cyclones and their feedbacks, and improved model physics have been presented. The intra-annual prediction of Arctic sea ice is a promising new capability. For Antarctica,

efforts towards coupling the atmosphere with ocean and ice sheet components have been presented. (iii) Model evaluation. Studies over Greenland and near Svalbard were presented. For the Arctic Ocean, a multi-model intercomparison with the ACSE2014 campaign data has been accomplished. Arctic and Antarctic sea-ice lead data sets have been compiled. (iv) Challenges of high resolution downscaling: Impacts of sea-ice forcing, different physics, resolution, uncertainty assessment, methods to select CMIP6 models.

## 2019 selected publication

Sedlar et al., 2019: Confronting Arctic troposphere, clouds and surface energy budget representations in regional climate models with observations, JGR, in review

## Future activities and developments

Coordinated high-resolution simulations for MOSAiC. Contribution to IPCC AR6 Regional Atlas.



*Participants at the Polar CORDEX meeting at DMI in Copenhagen, Oct. 7-9*

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