Geophysical Research Abstracts
Vol. 21, EGU2019-11474, 2019
EGU General Assembly 2019

Reduced probability of Arctic ice-free summers for 1.5°C compared to 2°C warming

Alexandra Jahn

University of Colorado at Boulder, Atmospheric and Oceanic Sciences and Institute for Arctic and Alpine Research, Boulder, United States (alexandra.jahn@colorado.edu)

What impact would the IPCC target of limiting global warming to 1.5° to 2°C have on Arctic summer sea ice? Using ensemble simulations from the Community Earth System Model, I show that constraining warming to 1.5°C rather than 2.0°C reduces the probability of any Arctic summer ice-free conditions by 2100 from 100% to 30%. It also reduces the late-century probability of an ice cover below the 2012 record minimum from 98% to 55%. For warming above 2°C, frequent ice-free conditions can be expected, potentially for several months per year. Furthermore, if warming exceeds 2°C, September sea ice extents will always be below the 2012 record minimum. Although sea-ice loss is generally reversible for decreasing temperatures, sea ice will only recover to current conditions if atmospheric CO_2 concentrations are reduced below present-day concentrations.