



The Role of Longwave Radiation in the 2007 Arctic Sea Ice Anomaly

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Satellite observations revealed large seasonal change in the Arctic sea ice extent in 2007, the annual minimum being 37% lower than the 1979–2006 average. Factors believed to play a role in the seasonal Arctic sea ice anomaly include: changes in the thickness of sea ice, the ice-albedo feedback, Arctic Ocean heat transport, atmospheric heat transport, downwelling shortwave and longwave radiation. The focus of this study is to assess the role of clouds and longwave radiation in the Arctic Sea ice concentration anomaly. Used will be an artificial neural network framework for calculating the longwave radiation based on a radiative transfer model, meteorological reanalysis parameters, and satellite observations from MODIS. Training of the model was accomplished with co-located observations from MODIS and A-Train satellites and it was optimized for high latitudes.