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Retrieval of Sea Ice Emissivity and Integrated Retrieval of Atmospheric Parameters Over the Arctic from AMSR-E

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Abstract

There is a lack of data on the state of the atmosphere and the surface because of too few direct observations, which makes remote sensing important in these regions. We present two new methods for retrieval of atmospheric parameters over the Arctic from radiances measured by the Microwave Scanning Radiometer for EOS (MSR-E) on the satellite Aqua. The emissivities of sea ice at AMSR-E frequencies from AMSR-E r

meteorological reanalysis data. This is valuable since the sea ice emissivity is not well known. Mean emissivities thus retrieved for two representative ice and multiyear ice) are needed by the second method which simulates atmospheric and surface parameters from AMSR-E radiances. The retrieved parameters include water vapor, cloud liquid water path, surface wind speed, surface temperature and ocean, sea ice concentration, and multiyear ice fraction. Both methods show promising results.

Keywords: [Microwave radiometry](#), [polar regions](#), [sea ice](#), [emissivity retrieval](#)

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