

ATS/CIRA Colloquium

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Visiting ATS from the University of Utah

Seasonal Variability of Warm Boundary Layer Cloud and Precipitation Properties in the Southern Ocean as Diagnosed from A-Train and Ship-Based Remote Sensing Data

Hosted by Paul DeMott

Friday, Feb. 3, 2017

ATS room 101

Discussion will begin at 11:15 a.m.

Refreshments will be served at 10:45 a.m. in the weather lab

The extensive cloudiness and resulting high albedo of the Southern Oceans (SO) are predominantly due to the occurrence of widespread marine boundary layer (MBL) clouds. Recent work finds correlations between biogenically enhanced cloud condensation nuclei concentrations and cloud droplet number concentrations derived from passive satellite data. The active remote sensors in the A-Train have created a unique and long-term record of these clouds that include vertical profiles of radar reflectivity and microwave brightness temperature from CloudSat that can be combined with solar reflectances from MODIS. We examine this data record using a unique algorithm to infer warm-topped cloud and precipitation properties. We find seasonal variations in cloud properties of summer season clouds demonstrating higher cloud droplet number concentrations on average. In addition, a given rain rate requires higher liquid water contents in summer suggesting that the precipitation in summer clouds are more susceptible to changes in droplet number compared to similar clouds during winter.

Link to colloquium videos and announcement page: <http://www.atmos.colostate.edu/dept/colloquia.php>