

Clouds, Aerosol, Radiation and Rain – Insights Gained from Global Satellite Observations

Frontiers in Global Change
Seminar Series

Presented by...

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Abstract:

The cloud systems of our planet fundamentally shape our climate in the way they affect the flow of radiation in and out of the planet and in the way they connect key processes together to form the hydrological cycle. Despite the many years of cloud observations from space, we have not gained much insight into these key roles. Information about cloud particle size from satellite radiometers, for example, has been derived now for more than two decades but we still have not convincingly determined if this information is in fact related to real cloud physical properties. Nevertheless correlation between this remote sensing particle size information and aerosol content now serves as a basis for parameterization of the so-called indirect effects in climate models, a key tuning knob of model sensitivity. Similarly we have also observed precipitation from space for many years but have not been able to tie these observations to actual cloud physical processes and thus precipitation observations alone offer little real insight into how precipitation is likely to be shaped by the broader environment in which it forms. In this talk the more recent observations from the A-Train of satellites will be reviewed and it will be argued that combinations of data from radar, lidar and radiometers now provide the tools to advance understanding moving beyond these past limitations. The microphysical content of satellite observations will be revealed and the ability to probe into the rain formation processes will be highlighted. These new insights will also be overlain on the performance of current climate models and the predictions of precipitation change associated with global warming.

Please join us for a meet and greet opportunity
with Dr. Stephens after the seminar.
~Refreshments will be served~

Date: Tuesday,
May 8th

Location: EMSL
Auditorium

Time: 10:00 am