Highlights of Recent Publications

Long-term trends in downwelling spectral infrared radiance over the US Southern Great Plains.

Journal of Climate, Volume 24, Issue 18, 2011.

Gero, P. Jonathan and Turner, David D.

A trend analysis was applied to a 14-year time series of downwelling spectral infrared radiance observations from the Atmospheric Emitted Radiance Interferometer (AERI) located at the Atmospheric Radiation Measurement Program (ARM) site in the U.S. Southern Great Plains.

The possibilities of polar meteorology, environmental remote sensing, communications and space weather applications from Artificial Lagrange Orbit.

Advances in Space Research, Volume 48, Issue 11, 2011.

Lazzara, Matthew A.; Coletti, Alex and Diedrich, Benjamin L.

After 50 years, polar orbiting satellites are still the best view of the polar regions of the Earth. The prospect of a solar sailing satellite system in an Artificial Lagrange Orbit (ALO, also known as "pole sitters") offers the opportunity for polar environmental remote sensing, communications, forecasting and space weather monitoring.

Improvements in shortwave bulk scattering and absorption models for the remote sensing of ice clouds.

Journal of Applied Meteorology and Climatology, Volume 50, Issue 5, 2011.

Baum, Bryan A.; Yang, Ping; Heymsfield, Andrew J.; Schmitt, Carl G.; Xie, Yu; Bansemer, Aaron; Hu, Yong-Xiang and Zhang, Zhibo.

This study summarizes recent improvements in the development of bulk scattering/absorption models at solar wavelengths. The approach combines microphysical measurements from various field campaigns with single-scattering properties for nine habits including droxtals, plates, solid/hollow columns, solid/hollow bullet rosettes, and several types of aggregates.

Scale-aware integral constraints on autoconversion and accretion in regional and global climate models.

Geophysical Research Letters, Volume 38, 2011.

Bennartz, Ralf; Lauer, Axel and Brenguier, Jean-Louis.

This paper describes a novel method to constrain autoconversion and accretion rates in climate models. The method offers two desirable features that might ultimately help to effectively eliminate autoconversion efficiency as a free tuning parameter in climate models. Firstly, it can be constrained based on concurrent observations of column integrated cloud properties, namely cloud droplet number concentration, liquid water path, and precipitation rate. Secondly, the scale-dependency of autoconversion can be incorporated and resolved explicitly.

Methane on Uranus: The case for a compact CH4 cloud layer at low latitudes and a severe CH4 depletion at high-latitudes based on re-analysis of Voyager occultation measurements and STIS spectroscopy.

Icarus, Volume 215, Issue 1, 2011.

Sromovsky, L. A.; Fry, P. M. and Kim, J. H.

Lindal et al. presented a range of temperature and methane profiles for Uranus that were consistent with 1986 Voyager radio occultation measurements of refractivity versus altitude. A localized refractivity slope variation near 1.2 bars was interpreted to be the result of a condensed methane cloud layer. However, models fit to near-IR spectra found particle concentrations much deeper in the atmosphere, in the 1.5–3 bar range, and a recent analysis of STIS spectra argued for a model in which aerosol particles formed diffusely distributed hazes, with no compact condensation layer.

Honors and Awards

James Kossin
Received the Gold Medal from the Office of Oceanic and Atmospheric Research for excellence in research.

Steven Ackerman
Honored by Wisconsin Academy for his "extraordinary career as an atmospheric scientist."

Jean Phillips
Appointed next chair for the AMS History Committee.

Tim Schmit
Received a Department of Commerce Silver Medal.
Received the T. Theodore Fujita Research Achievement Award from the National Weather Association.

The Advanced Satellite Products Branch, CIMSS, and SSEC
Recognized by the Spaceflight Meteorology Group for support over the years to the Space Shuttle Program.