



Examining infrared radiances for evidence of stochastic forcing

Sergio DeSouza-Machado (1), Andrew Tangborn (1), Larrabee Strow (1), and Philip Sura (2)

(1) University of Maryland Baltimore County, Baltimore MD, (2) Florida State University, Tallahassee, FL

Under clear-sky conditions, Top-of-the Atmosphere (TOA) hyperspectral radiances from infrared sounders probe temperatures and humidity at multiple levels in the Earth's atmosphere. Depending on the weighting functions, many of the channel radiances are also affected by the presence of clouds. Here we use TOA radiance data from NASA's Atmospheric Infrared Sounder (AIRS). Higher order moments (skewness and kurtosis) of Probability Distribution Functions (PDFs) from selected AIRS channels, constructed using 12 years of data from the instrument, are analyzed for evidence of stochastic forcing under clear and cloudy sky conditions. Trends in cloud radiative forcing are also studied and understood in terms of trends in regional subsets of the PDFs, and compared to trends in PDFs from ERA simulated radiances.