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Abstract Title:
"The Atmospheric Infrared Sounder (AIRS) on Aqua: Instrument Stability and Data Products for Climate Observations"

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Abstract Text:

The Atmospheric Infrared Sounder (AIRS) on the EOS Aqua spacecraft provides observations of upwelling infrared radiance in 2378 channels from 3.7 to 15.4 microns. The AIRS has demonstrated exceptional radiometric and spectral stability and accuracy making it ideal for climate-quality observations of the Earth's atmosphere. This paper discusses AIRS instrument and the pre-flight and in-flight measured performance. It also discusses how the design and simple algorithmic approach has lead to highly accurate and stable Level 1B and Level 2 data products. Example instrument performance in flight will be presented along with examples of the data products obtained and their validation and stability.

Preflight radiometric calibration accuracy of less than 0.1K has been demonstrated through testing while the instrument is in thermal vacuum. Spectral calibration accuracy of less than 0.5% of the resolution (5 ppm of the center frequency) has been demonstrated preflight. In-orbit the radiometric stability of the Level 1B has been confirmed to be of this order through comparison of AIRS SST products with RTGs. Spectral stability has been confirmed by observation of upwelling spectral features in the atmosphere to be better than 2 ppm. Currently the accuracy of the Level 2 products is meeting requirements of 1K/km for temperature under clear ocean conditions and mid latitudes.

Brief Biography:

Thomas S. Pagano is the Project Manager for the AIRS/AMSU/HSB Suite of instruments on the EOS Aqua Spacecraft. He was the lead engineer responsible for the calibration of the AIRS instrument in orbit. Prior to joining JPL in 1997, he was the Chief Systems Engineer on the MODIS instrument development program at Raytheon SBRS since 1985. He has a BS in Physics from UC Santa Barbara, and an MS in Physics from Montana State University. He holds 2 US patents and is author of numerous papers on space remote sensing systems.