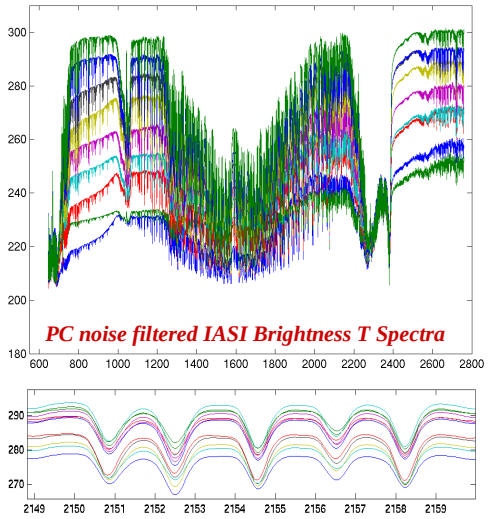
University of Wisconsin-Madison, Space Science and Engineering Center

Spectral Radiances provide a new standard in absolute accuracy:
Direct IASI radiance validation results from aircraft

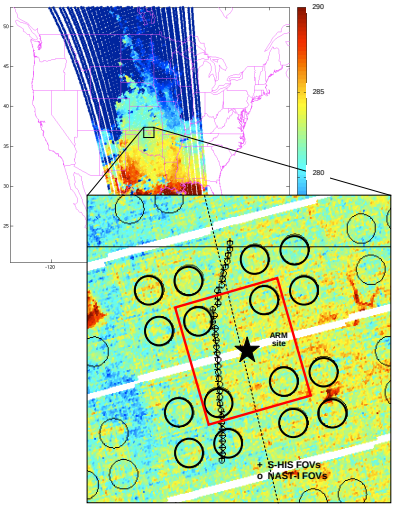
Hank Revercomb, William L. Smith Sr.*, David C. Tobin, Robert O. Knuteson, Fred A. Best,
Douglas P. Adler, Nick N. Ciganovich, Steven Dutcher, Ray Garcia, Joe K. Taylor,
Daniel D. LaPorte, Scott D. Ellington, Mark W. Werner, and Ken Vinson
*and Hampton University



JAIVEx: Joint Airborne IASI Validation Experiment

- **What:** Metop and Aqua satellite under-flights for radiance and retrieval validation (IPO / UK / EUMETSAT supported)
- **Who:** NPOESS Airborne Sounder Testbed team (NAST-I/M & S-HIS on NASA WB57) & UK team (ARIES on Facility for Airborne Atmospheric Measurements BAe146-301)
- **When:** 14 April to 4 May 2007
- **Where:** Comparisons over the Gulf and Oklahoma ARM site from Houston airbase

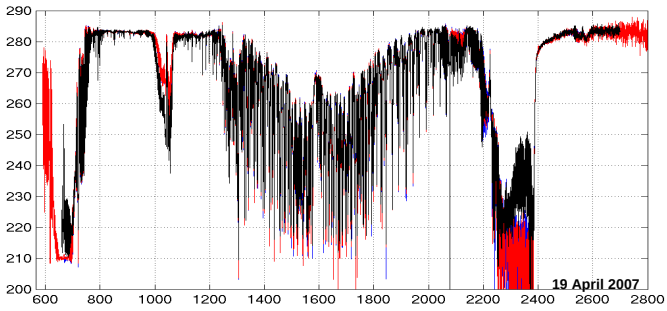
Flight over ARM SGP, 19 April 07



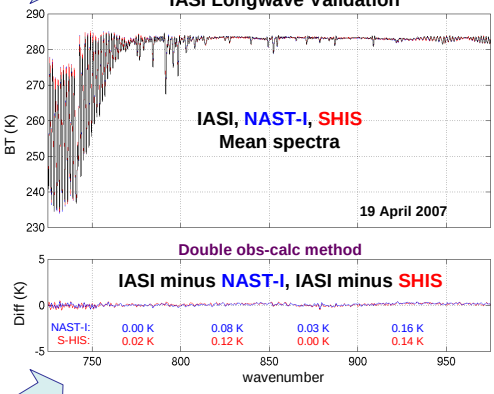
Summary of Radiance Validation

- The absolute calibration of IASI and AIRS Radiance are comparable and represent a huge improvement over past IR sounders for both weather and climate applications
- The value of aircraft observations for direct radiance validation has now been definitively proven (0.1 K sensitivity)
- Validation over their lifetime is still needed to assure the long-term stability

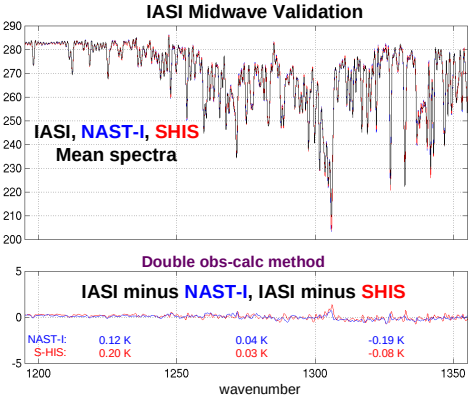
IASI, NAST-I, and SHIS Mean Spectra
(IASI L1C and NASTI spectra processed to match SHIS spectral resolution)



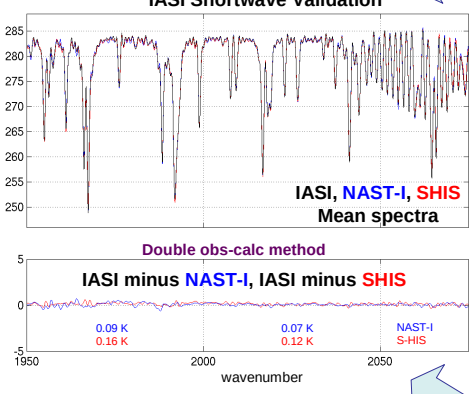
IASI Longwave Validation



IASI Midwave Validation



IASI Shortwave Validation



Much more JAIVEx data to analyze (7 Cal/Val Flights)

Four CART-site (2 day & 2 night); Three Gulf of Mexico (2 day & 1 night); Five joint MetOp & Aqua (3 day & 2 night)