Community Satellite Processing Package (CSPP)
Cross-track Infrared Sounder (CrIS) Dual-Regression Retrievals and Applications

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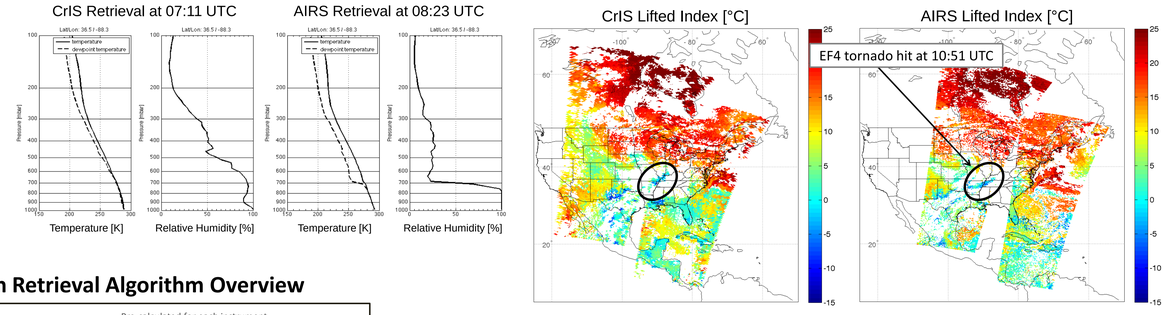
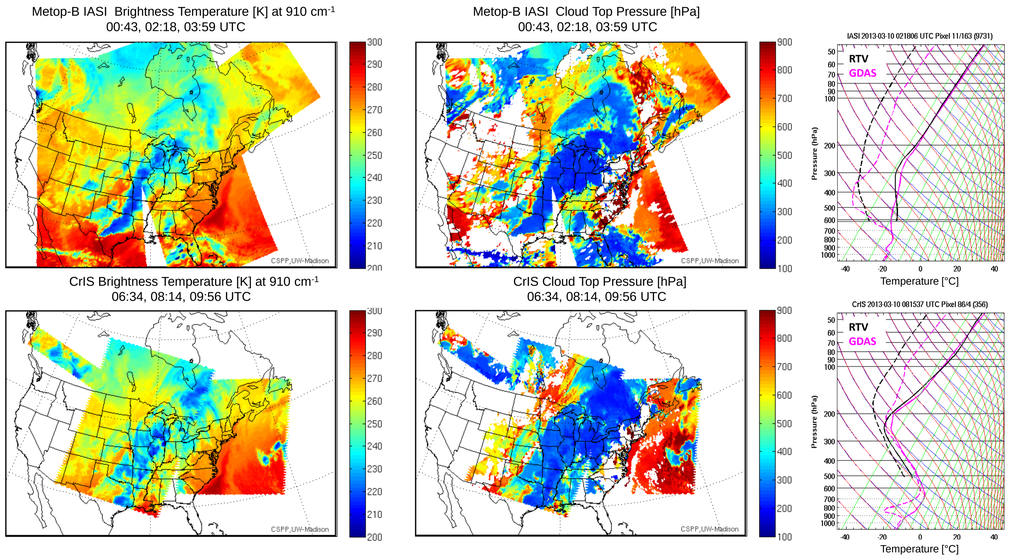
The Dual-Regression (DR) algorithm[1,2], available as part of CSPP on http://cimss.ssec.wisc.edu/cspp/, provides single field-of-view products (temperature, humidity and ozone profiles, surface and cloud parameters, stability indices) under clear and cloudy conditions from input Direct Broadcast (DB) or archived AIRS (Atmospheric Infrared Sounder), IASI (Infrared Atmospheric Sounding Interferometer) and CrIS radiance measurements. Our science goals are to

- measure temperature trends, water cycle, cloud properties, and trace gases (regional and global)
- study time tendencies of atmospheric parameters (e.g. lifted index) from consecutive overpasses
- add quantitative information to MODIS/AVHRR/VIIRS imagery
- improve weather prediction, forecasting and climate models

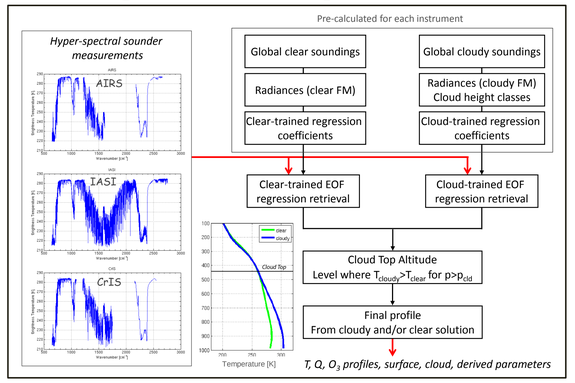
CrIS and AIRS: Tornado Outbreak in U.S. Midwest (29 Feb 2012)



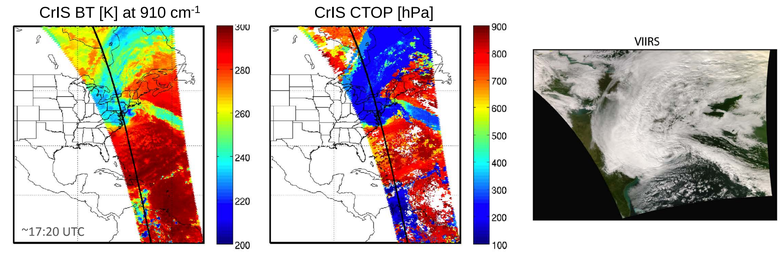
Metop-B IASI and CrIS: Direct Broadcast over CONUS (10 March 2013)



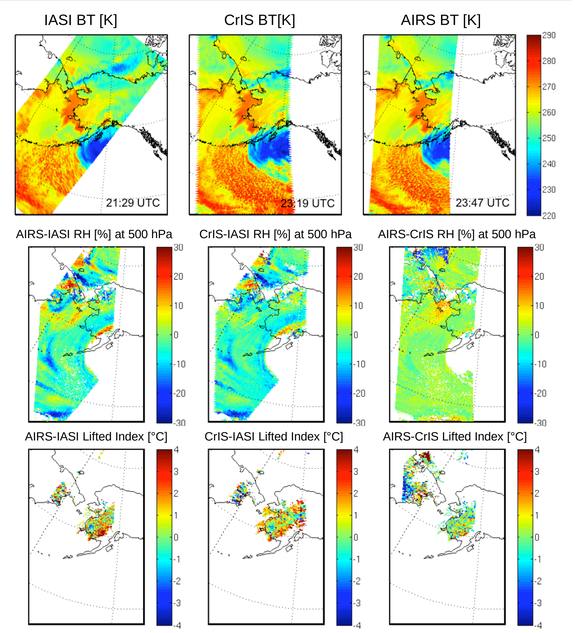
Dual-Regression Retrieval Algorithm Overview



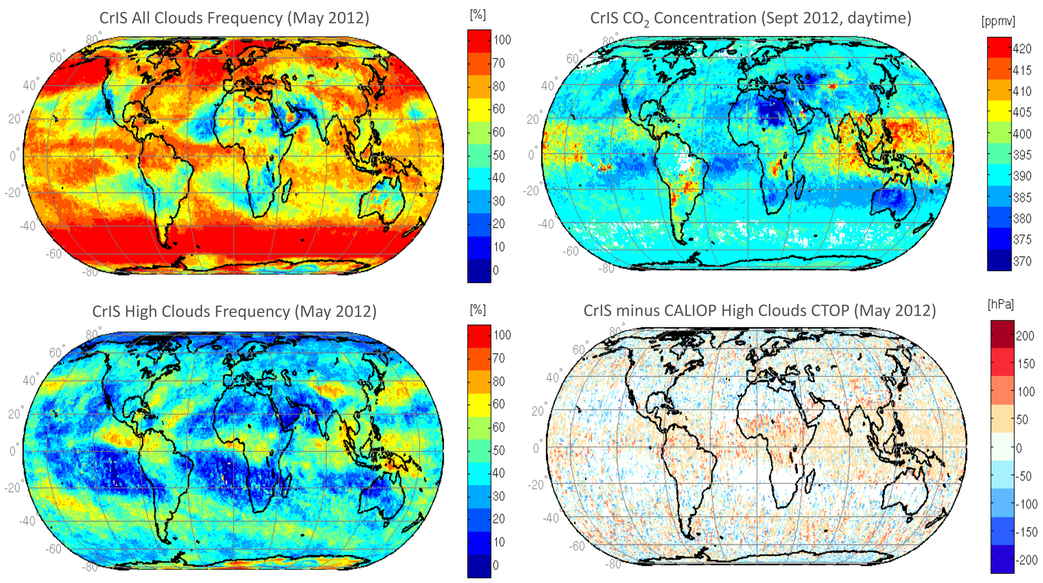
CrIS and AIRS: Super-Storm Sandy (29 Oct 2012)

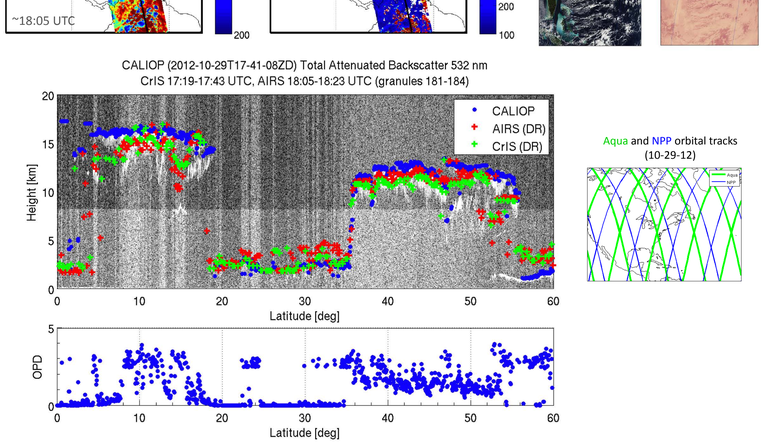


IASI, CrIS, AIRS: Parameter Differences (01 Nov 2012)



CrIS: Global Monthly Mean Products





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[1] Smith, W. L., E. Weisz, S. Kirev, D. K. Zhou, Z. Li, and E. E. Borbas (2012), Dual-Regression Retrieval Algorithm for Real-Time Processing of Satellite Ultraspectral Radiances. *J. Appl. Meteor. Clim., 51*, Issue 8, 1455-1476.

[2] Weisz, E., W. L. Smith, N. Smith (2013), Advances in simultaneous atmospheric profile and cloud parameter regression based retrieval from high-spectral resolution radiance measurements, Submitted to *JGR-Atmospheres*.