Highlights of GOES-R AWG Proxy Data Activities at CIMSS

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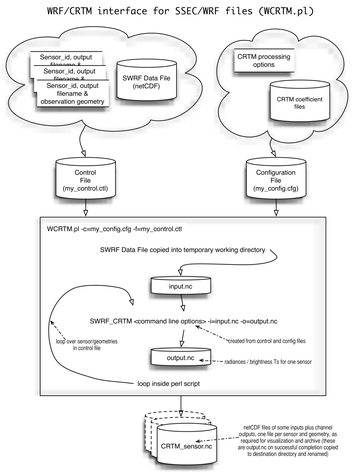
Overview

GOES-R Algorithm Working Group (AWG) activities at the Cooperative Institute for Meteorological Satellite Studies have covered three main areas:

- Further development of software (dubbed WCRTM) to easily generate proxy ABI data from Weather Research & Forecasting (WRF) model data and the Joint Center for Satellite Data Assimilation's Community Radiative Transfer Model (CRTM).
- Developments in enhancing land surface property data to improve simulated proxy data
- Production of new simulated proxy ABI data sets based on the CIMSS RT models for testing and evaluating GOES-R atmospheric motion vector algorithms

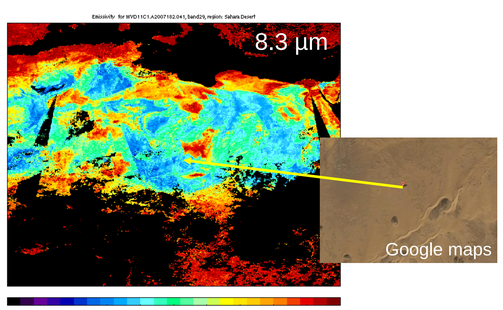
WCRTM

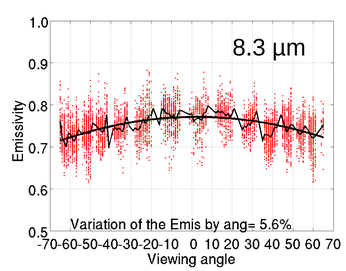
WCRTM is an interface between WRF files generated at CIMSS (SWRF netCDF files) and the CRTM. It comprises a main executable, SWRF_CRTM, a Perl wrapper script, CRTM.pl. SWRF_CRTM is compiled from F90 source and linked to the CRTM libraries, currently REL-2.0.5; it accepts a range of command line options at runtime. WCRTM.pl manages passing command line options to SWRF_CRTM in accordance with the contents of a configuration file (information about where the CRTM coefficient files are stored and CRTM processing options) and a control file (information about WRF input file, CRTM output file and sensors to be simulated). WCRTM.pl makes sure the correct CRTM coefficient files are linked-to, and runs the whole process in a uniquely named temporary directory (represented by the large rectangular box), finally sending netCDF results to required destinations only upon successful completion.

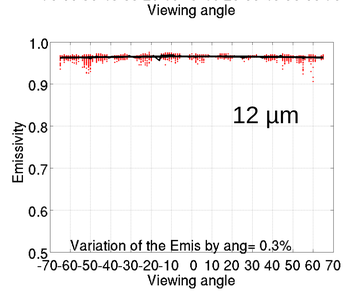


Land surface emissivity

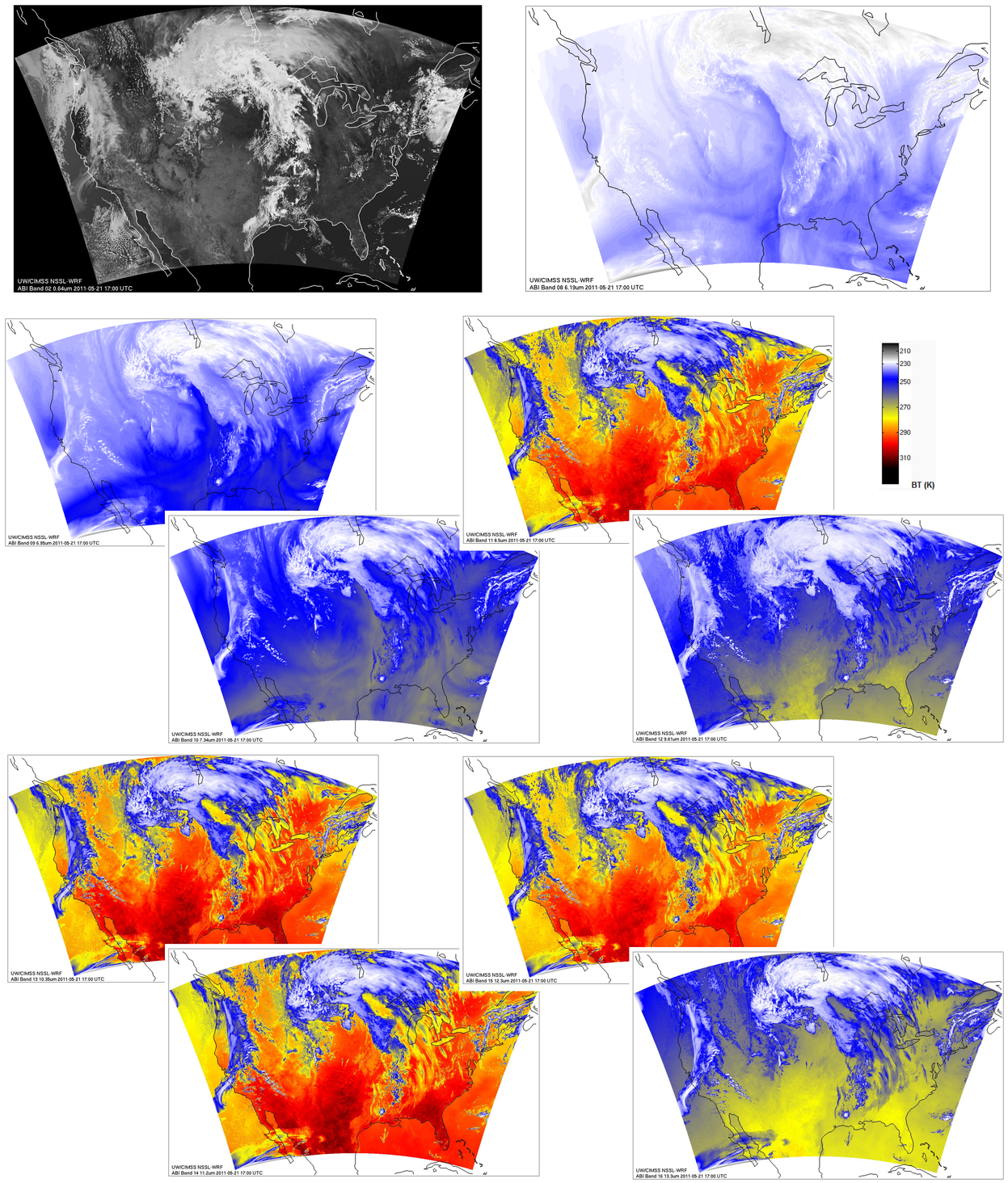
Lab measurements show that clay, sand, and gravel have an emissivity at 8-9 µm that varies by 1-3% for viewing angles from 0º to 65º.
A homogeneous sandy area (8x8 grid points) in the Sahara (see below) was selected for January and July 2007 to see whether this behavior is observed in daily mean MODIS MYD11C1 emissivity products. As the results show (at right), the 8.3 µm emissivities do have significant angular variation. Maximum variation occurs in winter during daytime (5.8 %).







Simulated Proxy ABI Data



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