

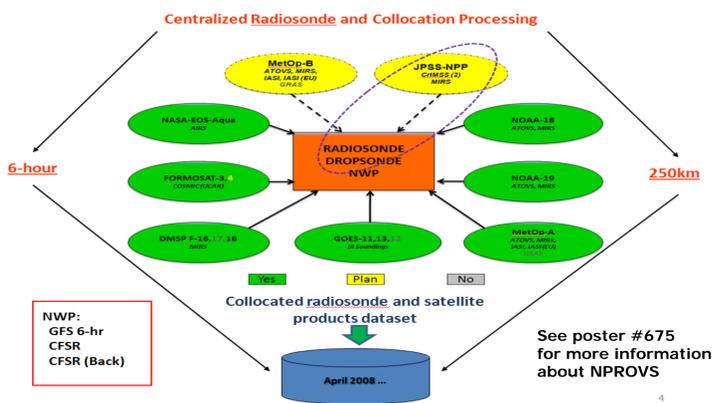
Graphical Programs For The Validation Of Satellite Sounding Products With The NOAA Products Validation System (NPROVS)

Michael Pettey¹, Anthony Reale², Bomin Sun¹, Charles Brown¹

(1) I.M. Systems Group, Inc., Rockville, Maryland (2) NOAA/NESDIS/STAR, College Park, Maryland

NPROVS

The NOAA Products Validation System (NPROVS) was designed within the NOAA/NESDIS Office of Satellite Applications and Research (STAR) to evaluate and monitor the performance of multiple satellite systems.



Selected sounding footprints from a variety of satellites and other processing systems are collocated with ground truth data, typically radiosonde data, by locating a footprint that is closest to the ground truth in space and time. Once collocated, the system data can be compared to the ground truth and to other systems.

The collocated data can be accessed by anyone interested in characteristic performance of the satellite derived products. Daily, weekly and monthly collocation files are made available in binary and netCDF formats.

As part of NPROVS, a set of graphical programs was developed to allow users to view and compare the NPROVS data. The **NPROVS Archive Statistics (NARCS)** provides a long-term view of the performance of each system. **ProfileDisplay (PDISP)** shows individual collocation data and computes vertical accuracy statistics of temperature and moisture profiles. The **Orbital Display System (ODS)** shows images of associated orbital data.

Accessing / Running The Programs

All of the graphical programs are written in Java and can be run on a variety of operating systems including Macintosh OS X, Linux and Windows.

All three programs can be downloaded from the NPROVS web site and installed on a local computer. ProfileDisplay and NARCS can also be run directly from the web site using Java Webstart by clicking on the provided links.

The NPROVS web site also contains links to data files that can be downloaded and opened within the graphical programs.

NPROVS Web Site

<http://www.orbit.nesdis.noaa.gov/smcd/opdb/poes/NPROVS.php>

The NPROVS web site contains information about the NPROVS system as well as links to the graphical programs and data files.

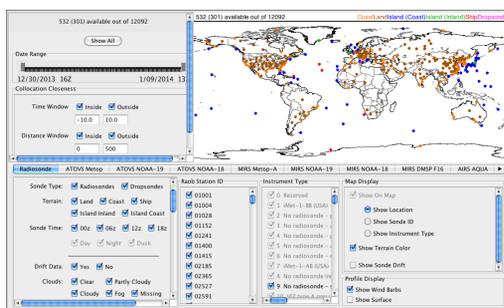
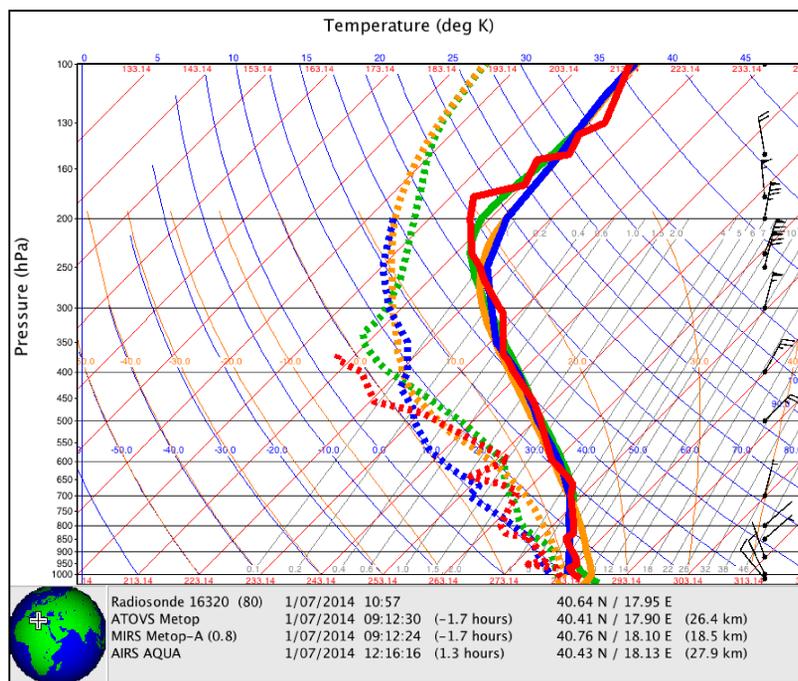
Monthly and long-term summary plots of data from NPROVS (April 2008 to present) are also available.

Questions about NPROVS and specific requests for data access can be directed to Tony.Reale@noaa.gov

Demonstrations of the graphical programs will be shown at various times during the AMS in the NOAA booth.

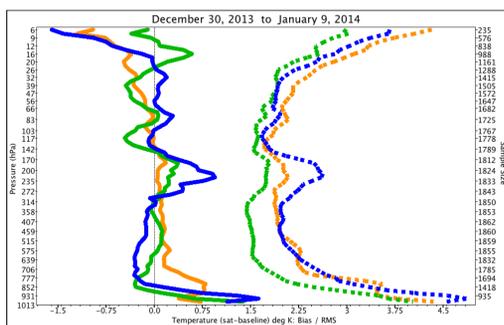
ProfileDisplay (PDISP)

Displays temperature and moisture profiles for the ground truth (RAOB) and every collocated satellite system. All available raw data produced by each satellite system and the associated ground truth can be viewed graphically and as raw text.



Sub-selection capabilities allow for comparison and statistic generation for a user-defined subset of data

The map can be used to view the distribution of collocations as well as other features such as radiosonde balloon drift



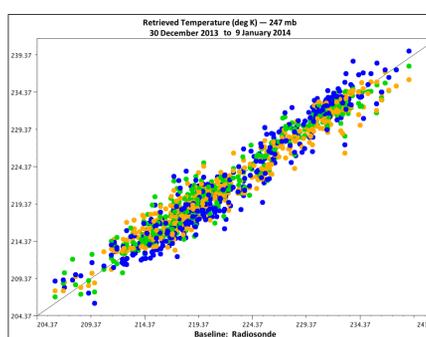
Satellite minus baseline vertical accuracy stats for temperature and water vapor can be generated for user-selected subsets of available collocations.

Bias, RMS and standard deviation statistics can be generated.

Scatter plots are available for user-selected satellite, ground profile data and collocations

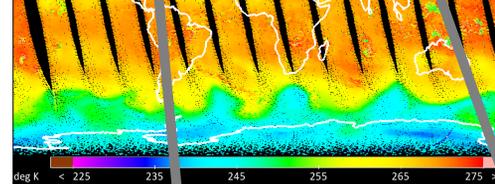
These plots are available for temperature and moisture at every pressure level

Any collocation on the plot can be selected to quickly view the graph of the profiles from the collocation



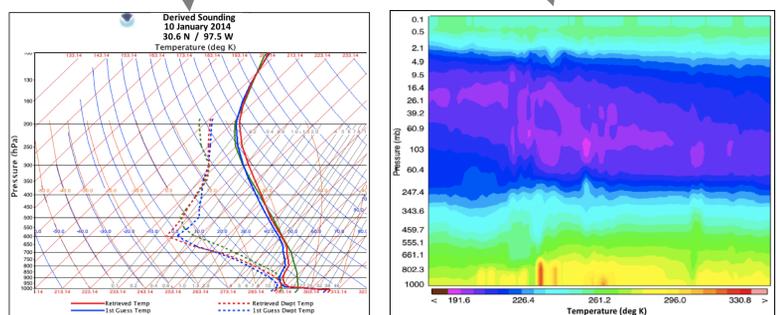
Orbital Display System (ODS)

Graphical display of orbital satellite data from every product system used by NPROVS.

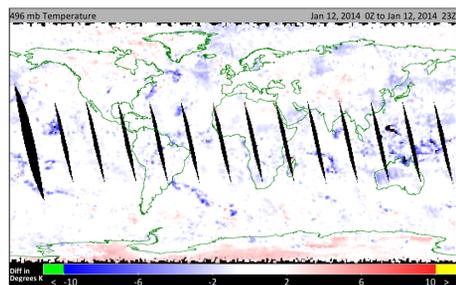


Views of the data can be customized using projection, zooming, smoothing and other controls.

Any satellite footprint can be clicked to display a graph that shows profiles associated with the selected footprint. A line can be drawn on the image to display cross sections of the atmosphere.

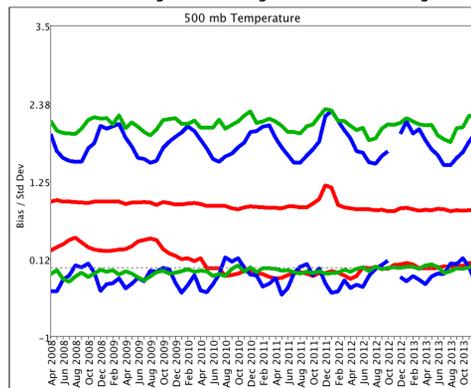


Two parameters from the same satellite or from different satellite systems can be compared by using built-in math functions to subtract one image from another. White shows areas of agreement while red/blue show areas of disagreement.



NPROVS Archive Statistics (NARCS)

Provides long-term trends of satellite minus baseline differences. Includes daily, weekly and monthly statistics of bias, standard deviation and rms.



Temperature and water vapor statistics are available at pre-defined pressure levels and layers.

Statistics based on user-selected options (qc flag, terrain type, and retrieval type) can be displayed.

Long-term trends for a selected satellite at pre-defined pressure levels or layers can be displayed.

Red and blue blocks show warm and cold biases between the satellite and baseline system at each pressure and time period (day, week or month).

