



Science Mission Directorate
National Aeronautics and Space Administration

Transitioning NPOESS Data to Weather Offices: The SPoRT Paradigm with EOS Data

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transitioning unique NASA data and research technologies



The SPoRT Paradigm

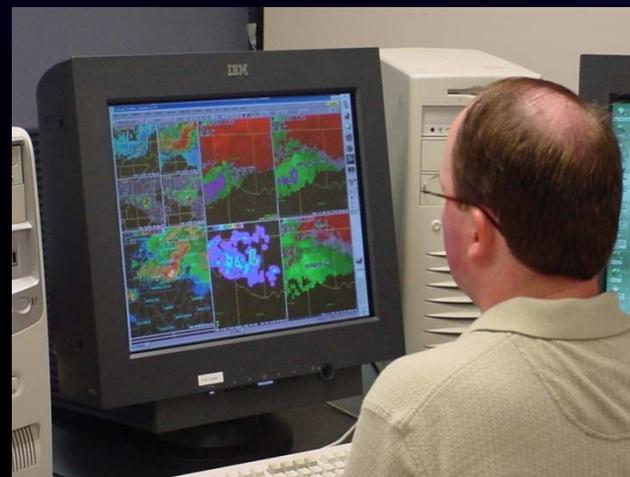
Mission of the SPoRT Center: Apply NASA measurement systems and unique Earth science research to improve the accuracy of short-term (0-24 hr) weather prediction at the regional and local scale

- conduct focused research
- evaluate in “testbed” mode
- transition priority products to WFOs

External Partners – NOAA (NWS, NESDIS, NSSL), NASA GSFC, JCSDA, JPL) , universities

End users - Southern Region WFOs, private sector weather partners

<http://weather.msfc.nasa.gov/sport>



Keys to success - end user interaction

- *link data / products to forecast problems*
- *Integrate capabilities into AWIPS*
- *Provide training / forecaster interaction & feedback*



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Unique EOS Data and Products

MODIS high resolution visible/infrared imagery – derived products

- 4 times / day – full resolution, channels simulating NPOESS
- TPW, LST / SST, ocean color products, cloud and fog products, composite imagery (atmospheric constituents / land features)

AMSR-E products

- rain rate, convective fraction, SSTs, TPW

Lightning Mapping Array (LMA)

- source densities, flash rates, lightning warning and forecast products

AIRS temperature and moisture profiles

- clouds, moisture, stability, improve analysis fields

GOES aviation products, CSU/CIRA TPW and anomaly, high resolution WRF forecasts products, and 2-3D analysis fields for nowcasting and model initialization

Transition of EOS products to operations provides forecaster training / readiness for NPOESS data and products





NPOESS Products and Forecast Problems

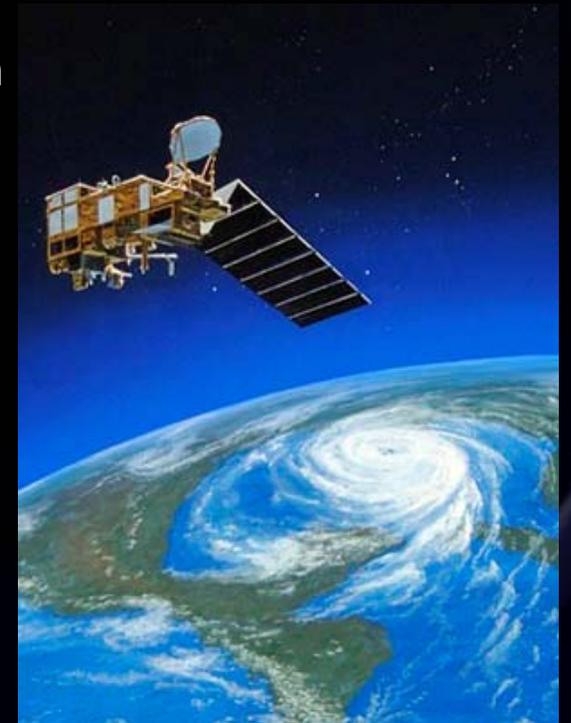
IMAGERY - single channel and multi-channel composite imagery -
nowcasting and diagnostic analysis

SOUNDING - temperature and moisture profiles, layered TPW – data
void regions, moisture variations and stability changes

CLOUD PRODUCTS - base and top height,
layers, phase, icing levels – nowcasting, aviation
forecasts

IMAGE PRODUCTS – night-time fog product,
TPW, SSTs, ocean color products, surface
vegetation types / coverage snow coverage /
depth, land surface temperature, etc. – aviation
forecast issues, moisture variability / storm develop,
marine forecasts / local model initialization, max. / min.
temperature forecasts, flooding - snow melt, and
others

See T. Lee's paper for VIIRS applications





Data Access and Dissemination

NPOESS Data Exploitation (NDE) – see J. Yoe's paper

- receive data from NPOESS ground system
- process imagery and products to meet customer requirements
- ensure archive and distribution to authorized users

SPoRT is collaborating with NDE to facilitate the use of NPP / NPOESS data analogous to its EOS data usage

- access to NDE near real-time data and product servers (IDPS)
- additional derived products
- dissemination and use in WFOs regional applications and problems
- product use assessment

SPoRT will process, reformat, and disseminate data to WFOs for use in AWIPS II





Data Ingest and Display in AWIPS II

AWIPS II is the next generation decision support system for the NWS WFOs, RFCs, and National Centers

- Initially roll-out 2009-2010
- Combined AWIPS and NAWIPS capabilities
- Many benefits -- easier addition of local applications, access to large data sets and resolutions

SPoRT is developing plug-ins for EOS / NPP data to facilitate use of these data in AWIPS II environment

- Additional plug-ins for advanced displays to benefit use by forecasters
- 3D displays, true / false color channel composites





Training

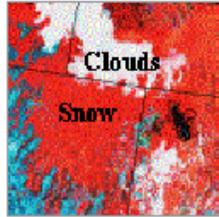
SPoRT has developed numerous training modules for NASA EOS data – PowerPoint, Articulate and VISIT modules - overview and detailed

Adapt and develop new modules for NPP / NPOESS applications

Planned training modules

- VIIRS imagery
- CrIS sounding applications
- Cloud and aviation products
- Fog product
- Multi-channel composite imagery
 - natural color – smoke & aerosols
 - false color – cloud properties and snow mapping
- Land surface temperature applications
- SST and ocean color for coastal process monitoring

TRAINING



MODIS False Color Snow
[Download](#) (for NWS users)
[Launch](#) in browser

This module provides a basic understanding of how the MODIS false color snow product, provided in AWIPS, differentiates snow on the ground from clouds. It is available as a zipped VISIT View Module. Once you have downloaded and unzipped the module into your directory, run the **visitlocal.bat** file to conduct your training.

<http://weather.msfc.nasa.gov/sport/training>





Summary

Use successful SPoRT paradigm to transition NPOESS data and products to operational weather community

Focus on WFOs, but also RFCs and National Centers as appropriate

Transition data, products for short term weather forecast application -- tools and techniques so others can help facilitate use of NPOESS data by the operational weather community

Transition of NPOESS products to WFO operations provides forecaster training on satellite methods, producing greater end user advocacy for new and unique products

