National Aeronautics and Space Administration

The SPoRT REPORT

SPoRT Quarterly
April – June 2013

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Short-term Prediction Research and Transition (SPoRT) Center
NASA Marshall Space Flight Center (MSFC), Huntsville, AL
http://weather.msfc.nasa.gov/sport/

The SPoRT Center is a NASA- and NOAA-funded project to transition unique observations and research capabilities to the operational community to improve short-term weather forecasts on a regional scale. While the direct beneficiaries of these activities are Selected Weather Forecast Offices (WFOs) and National Centers, the research leading to the transitional activities benefits the broader scientific community.

Quarterly Highlights

SPoRT Response to Tornado Damage and Recovery in Moore, Oklahoma

On May 20, 2013, the city of Moore, Oklahoma was struck by an EF-5 tornado that devastated a large swath of the community. In response to the event, the SPoRT team developed several products as part of an ongoing feasibility study to examine the utility of NASA, NOAA, and commercial satellite data in responding to disaster events. Immediately following the event, the VIIRS day-night band was used to identify power outages across Moore, Oklahoma and southern portions of Oklahoma City that resulted from the storm. As skies cleared from west to east, cloud-free imagery from the morning of May 21 was compared to the morning of May 20 and difference imagery identified the outage area. SPoRT distributed the VIIRS day-night band imagery through a tiled imagery viewer and shared results with end-user partners and NASA Headquarters management.

The SPoRT team also participated in analysis of lightning data associated with the tornado and parent supercell thunderstorm. SPoRT acquires data from the Oklahoma Lightning Mapping Array and distributes the data to end users in a variety of formats in real time, including single-domain imagery and multi-network composites designed to emulate future capabilities of the GOES-R Geostationary Lightning Mapper (GLM) instrument. In a post-event review, lightning data were analyzed to determine the presence of a "lightning jump" exhibited by the storm, and how the change in lightning activity during the storm related to storm intensity. These characteristics were also portrayed using unique Advanced Weather Interactive Processing System (AWIPS) II capabilities developed by the SPoRT team, namely, a total lightning tracking tool that identifies a given storm on radar and provides a graph of total lightning flash rates over time. Although available radar data also clearly showed the presence of storm-scale rotation and the ongoing tornado, continued research on relationships between lightning and severe weather is expected to improve severe storm analysis and to provide increases in warning lead time.

In the days and weeks following the Moore tornado, other imagery became available for processing and distribution by SPoRT. The ASTER instrument aboard NASA's Terra satellite obtained imagery over the Moore, Oklahoma area on June 2, clearly identifying the damage scar in false color and Normalized Difference Vegetation Index (NDVI) imagery across the city. The imagery was overlaid with radar and National Weather Service (NWS) storm survey information in an effort to visualize the damage track in the context of radar

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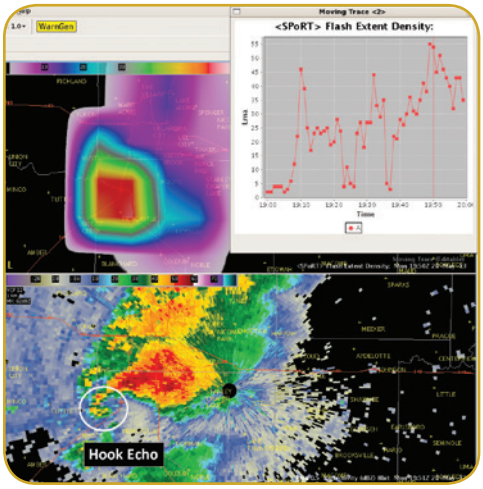
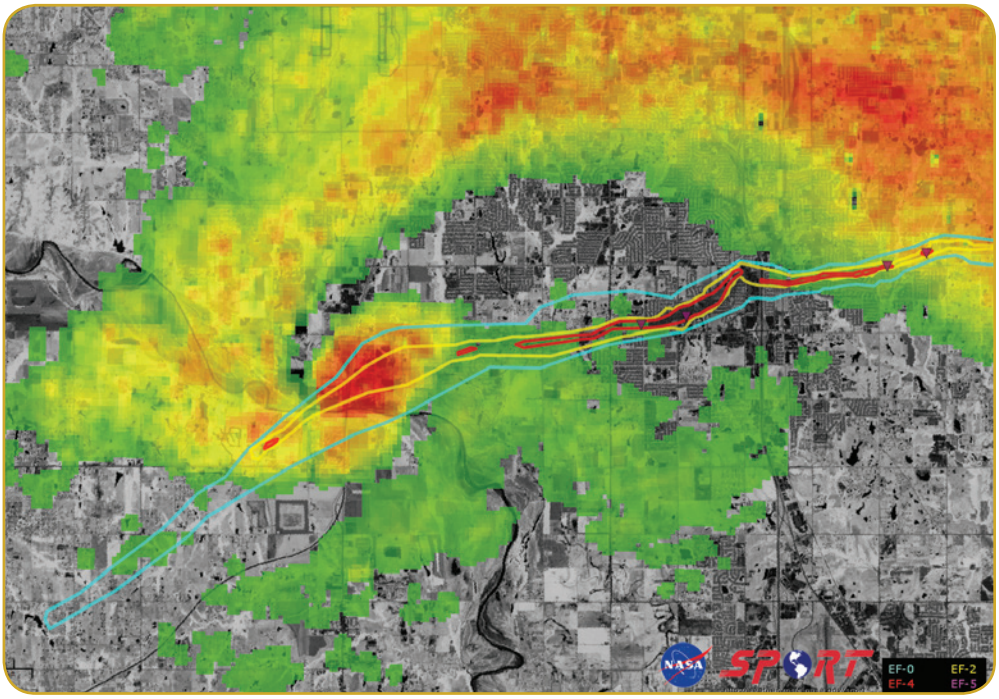


SPoRT AWIPS II plugins displaying tends in total lightning as observed by the Oklahoma Lighting Mapping Array on May 20, 2013.

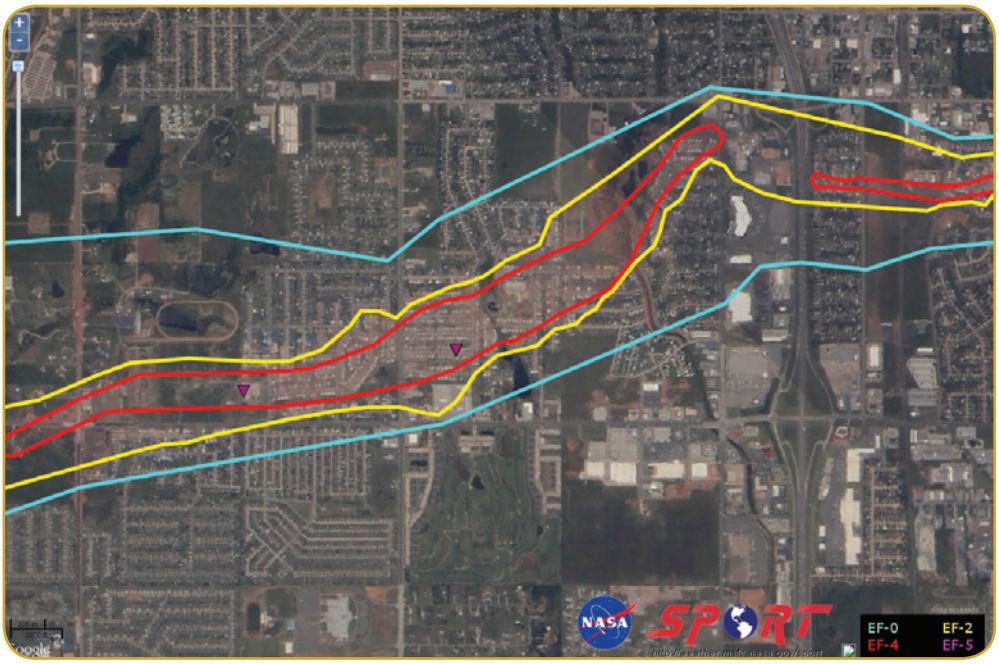
reflectivity imagery. These types of post-storm damage imagery have proven to be useful for delineating storm tracks, particularly at NWS Huntsville following the April 27th super outbreak event.

In addition to NASA satellite imagery, SPoRT has also obtained access to imagery acquired from the International Space Station SERVIR Environmental Research and Visualization (ISERV) camera. ISERV produces true color imagery on the order of 5-m resolution, identifying individual structures in neighborhoods. ISERV imagery captured some of the early recovery in the Moore area, and will continue to be monitored to document ongoing recovery from the storm. ISERV imagery and other satellite data are now being distributed via SPoRT's recently launched Web Mapping System (WMS) framework, which allows for easy georeferencing of satellite imagery and colocation with other data products. SPoRT plans to continue developing WMS capabilities, disaster-related imagery, and dissemination of these images to the end-user community through its WMS system and WMS-capable decision support systems.

SPoRT disaster-related imagery can be viewed at <http://weather.msfc.nasa.gov/sport/disasters/>.



Radar data overlaid on ASTER NDVI imagery from the Moore, OK EF-5 tornado on May 20, 2013. Colored polygons depict tornado strength based on damage assessments.



ISERV imagery captured damage caused by the May 20, 2013 EF-5 tornado in Moore, OK.

Recent Accomplishments

Real-time SPoRT-LIS Expansion

SPoRT manages a real-time configuration of the NASA LIS that runs over the southeastern half of the Conterminous U.S. (CONUS), providing hourly output of land surface variables on a 3-km domain. The output is used by select collaborating NWS Weather Forecast Offices (WFOs) for diagnostics, drought/flood outlooks, and initialization of land surface variables for local model runs. The real-time SPoRT-Land Information System (LIS) runs the Noah Land Surface Model (LSM) in an offline capacity apart from a numerical weather prediction model, using input atmospheric and precipitation analyses to drive the integration of the Noah LSM. The current domain extent has been limited by the input precipitation from the NCEP Stage IV analyses. It is due to the nature of the geographical edges of the Stage IV grid and its limitations in the western U.S. that the SPoRT-LIS has been confined to a domain over the southeastern half of the CONUS.

A full CONUS application of LIS is currently being configured using the National Severe Storms Laboratory's precipitation product in place of the Stage IV product. The Multi-Radar Multi-Sensor (MRMS; formerly known as the National Mosaic and multi-sensor Quantitative precipitation estimate) product has full CONUS coverage at higher-resolution, thereby providing better coverage and greater detail than that of the Stage IV product. A full spin-up run of LIS using the MRMS precipitation dataset was made this past quarter in preparation for eventual transition into a real-time product. The full CONUS LIS is currently being run in real time along with the southeastern CONUS.

SPoRT/SERVIR collaboration with Kenya Meteorological Department

SPoRT and SERVIR recently established a collaboration with the Kenya Meteorological Department (KMD) in East Africa to improve the land surface initialization and provide a model verification capability for their real-time Weather Research and Forecasting (WRF) runs. KMD currently generates real-time WRF forecasts on a grid with 7-km spacing in support of its daily operations by initializing the model from NCEP Global Forecast System (GFS) fields. The relatively coarse resolution GFS soil fields (~22 km) do not adequately represent soil moisture variations on the 7-km grid, especially in areas of complex terrain. It is the goal of SPoRT and SERVIR to provide KMD with improved soil moisture initialization by spinning up and running LIS in real time over East Africa at a comparable resolution to the KMD-WRF grid.

Three different configurations were tested in separate 3-km LIS spin-up simulations over an eastern Africa domain. In each experiment, the NCEP Global Data Assimilation System (GDAS) analyses were used with three different precipitation sources: (1) GDAS modeled precipitation, (2) the NCEP Climate Prediction Center Morphing (CMORPH) product, and (3) the Tropical Rainfall Measuring Mission (TRMM) 3B42RT product. The CMORPH and TRMM LIS spin-up runs were somewhat similar to one another, with slightly more spatial detail of soil moisture provided by the CMORPH-based runs. The GDAS precipitation LIS run generated somewhat unrealistic-looking soil moisture distributions based on the coarser resolution modeled precipitation fields. Because of the higher temporal and spatial resolution of CMORPH and its favorable comparison to the TRMM-LIS run, the LIS run using CMORPH precipitation was chosen for real-time WRF modeling applications at KMD.

Implementing the Lightning Mapping Array Plug-in for AWIPS II Operationally

In the early part of this year, the SPoRT decision support system group team finalized the new lightning mapping array plug-in for AWIPS II. The plug-in itself has been working very well in the SPoRT AWIPS II environment, but had not been officially tested by NOAA. SPoRT developed an AWIPS Test Authorization Note (ATAN) providing details of the functionality of the plug-in. The ATAN allows SPoRT to provide a "third-party" software plug-in to operational NWS WFOs who have access to total lightning observations. The ATAN was approved this spring and the plug-in has been successfully implemented at WFOs Huntsville and Houston as well as the Spaceflight Meteorology Group. This has been a tremendous success for the SPoRT team to develop, test, and operationally implement an AWIPS II plug-in as well as a major transition effort to collaborate with our partner forecast offices. The Huntsville forecast office has made several blog posts highlighting the return of total lightning data in operations.

Post 1: <http://nasasport.wordpress.com/2013/06/15/lma-data-back-at-wfo-huntsville-and-quickly-useful-for-airport-weather-warning/>

Post 2: <http://nasasport.wordpress.com/2013/06/16/lma-data-at-wfo-huntsville-part-ii-new-day-new-utility/>

Satellite Proving Ground Activities

Preparing for QPE and VIIRS Imagery Assessments

At the start of July SPoRT and CIRA will begin an assessment of VIIRS Night-time Imagery with several "Front Range" WFO partners along the eastern Rocky Mountain region. Products from VIIRS will include the Day-Night Band, RGB imagery, and single channel imagery. The objective is to examine how to best integrate these new capabilities into night-time operations. In addition, July 15 will begin a period of intense evaluation of the QPE product suite created by the GOES-R Precipitation AWG. SPoRT provided support in May/June to transition this product to Alaska WFOs and the RFC as well as the San Juan WFO. Activities for both assessments included multiple teletraining sessions with product developers, ingest & display in AWIPS I, as well as creation of laminated Quick Guides for use in the operations area. Also included in the QPE assessment will be the CIRA LPW product suite which includes AIRS infrared sounding retrievals. The focus for the evaluation will be on how the QPE provides value at high latitude compared to the stronger convective-type events of the tropics.

Results of GOES-R QPE/CIRA LPW Spring Assessment

SPoRT's assessment of NESDIS GOES-R QPE and CIRA LPW for the West Coast concluded this April. These products were assessed by NWS personnel in the Eureka, Medford, and Monterey Weather Forecast Offices during March and April. Forecasters expressed interest in using QPE's 1-, 3-, 6-, and 24-hour accumulation products for flood guidance. However, the complex terrain seemed to lead to inaccurate estimations of rainfall and a somewhat predictable, but unquantifiable, orography-induced bias; rainfall was often underestimated by QPE along the coast and overestimated within the mountainous terrain. Forecasters had higher confidence in the accuracy of LPW, but often used LPW either to confirm model data or with other forecast information, and ultimately indicated that it had very small to some impact on their forecasting process.

GOES-R Visiting Scientist Trip to Support the Colorado Lightning Mapping Array

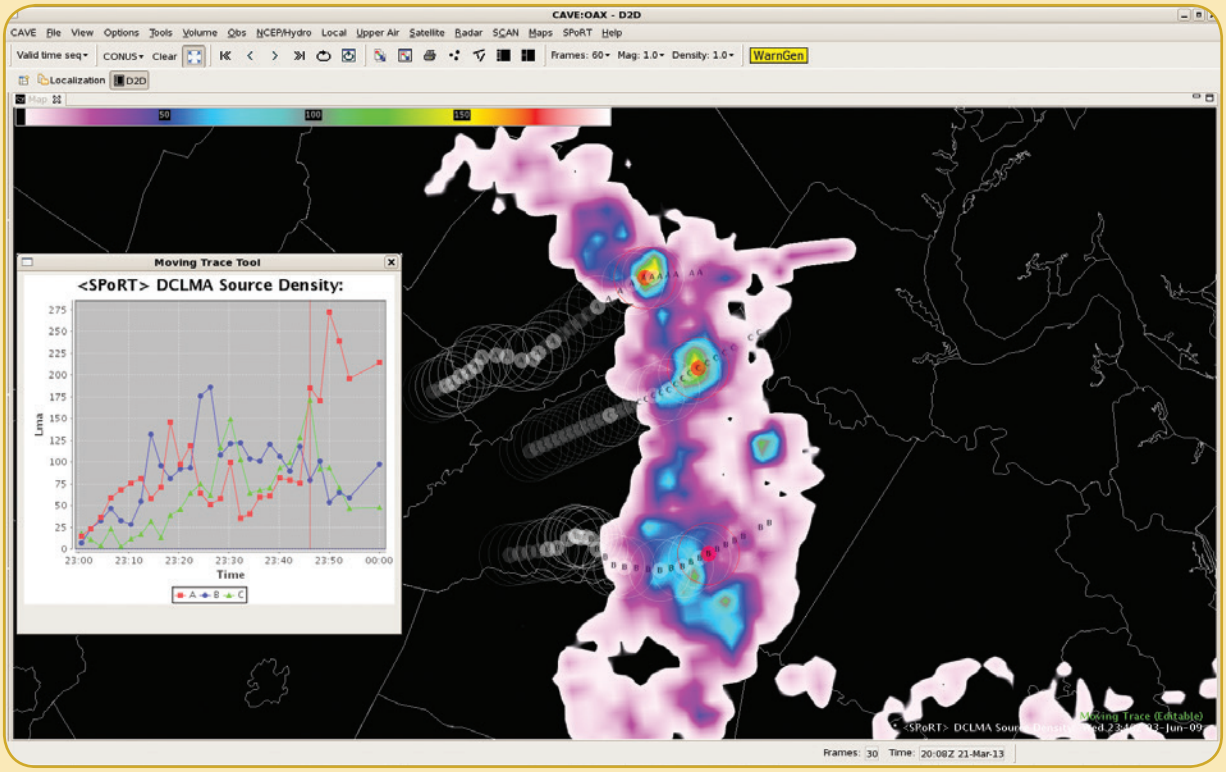
The SPoRT program submitted a visiting scientist proposal to the GOES-R program in late 2012 to extend collaborations with the Colorado Lightning Mapping Array. The effort would have SPoRT coordinate with the owners of the network (Dr. Steve Rutledge, Colorado State University), processors of the data and developers of lightning mapping arrays (New Mexico Tech), and with CIRA and their local forecast office partners in Boulder, Colorado and Cheyenne, Wyoming. This proposal was accepted and from April 15-19, 2013, SPoRT lightning expert Dr. Geoffrey Stano visited all of the participating institutions. The trip coincided with a major snowstorm with over two feet of snow measured. In spite of the travel difficulties and the unusual background of discussing severe thunderstorms in a snowstorm, the trip was a success. Three separate science sharing presentations were given and numerous discussions occurred on how to use these data in operations. The trip also resulted in SPoRT forming an agreement with CSU to receive the real-time Colorado Lightning Mapping Array data feed in order to support operations at WFOs Boulder and Cheyenne. This also supported GOES-R Proving Ground efforts, such as the HWT's Spring Program and the pseudo-geostationary lightning mapper mosaic product going to the Aviation Weather Center and Storm Prediction Center. SPoRT will continue to work with the Boulder and Cheyenne forecast offices to improve the operational displays and for continued training on this new collaboration.

Total Lightning at the Hazardous Weather Testbed

As part of our efforts to support the GOES-R Proving Ground activities, SPoRT collaborates with research groups to transition their products to NWS WFOs or testbeds for evaluations prior to GOES-R's launch. One such product is UAH GOES-R CI, which SPoRT transitioned to the Spring Experiment at NOAA's HWT in AWIPS II this past May and June. UAH GOES-R CI is a product that is developed at the University of Alabama in Huntsville by John Mecikalski.

GOES-R CI was given positive feedback pertaining to its incorporation of environmental data in the algorithm, demonstrated 30+ minute lead times on CI, and received some additional suggestions for display options. Through collaborative efforts like these, we hope to continue to aid product developers and the therefore the forecast community.

In addition to collaborating with the GOES-R CI team, SPoRT also provided several total lightning products and tools. First, SPoRT's lightning mapping array plug-in for AWIPS II was used. This was a major success as SPoRT provided the full pseudo-geostationary lightning mapper (PGLM) product suite instead of only providing the raw data. Also, SPoRT's collaborations expanded to provide processed data from seven lightning mapping arrays. SPoRT has traditionally worked with the three NASA networks at Kennedy Space Center, North Alabama, and Washington, D.C. Last year, SPoRT began receiving data from the Oklahoma network. This year, SPoRT began collaborations with the Colorado, Houston, and West Texas networks. Furthermore, the 2013 Spring Program was the first demonstration of the SPoRT / Meteorological Development Laboratory's (MDL) Total Lightning Tracking Tool (TLTT).



A demonstration of the Total Lightning Tracking tool plotting the time series of source density for three cells observed by the Washington D.C. Lightning Mapping Array in AWIPS II.

The most requested feedback during any total lightning evaluation has been for a way to display the time series trend of total lightning in real-time. MDL had established an AWIPS I version that used the System for Convection Analysis and Nowcasting software, but had difficulty in real-time operations. The TLTT uses the forecaster to select a storm cell of interest and then create a time series plot in a pop-up window. The manual nature avoids the issues associated with automated cell trackers that have difficulty with merging and splitting cells. An example of the TLTT is shown below from the Washington D.C. region.

The feedback from the Spring Program was very positive. The PGLM data received an average response of 3.95 out of 5 for its use and utility. Much of the feedback was similar to one response that stated, "It definitely helped in detecting where storms were strengthening or weakening quickly." The TLTT in its first evaluation performed very well and received an average score of 3.24 out of 5. The general feedback stated that, conceptually, the TLTT was very useful and of great interest, but there will need to be updates to improve its implementation in real-time. The forecasters gave a great deal of recommendations to help with the real-time implementation, such as selecting a polygon over a period of time to track the storm, only highlight the current cell point to avoid clutter, and to make the y-axis of the display fixed instead of dynamic. The discussion was very useful and will make the TLTT a stronger tool for when it is evaluated this fall in the Operations Proving Ground.

Joint Polar Satellite System

As a part of both GOES-R and JPSS Proving Grounds, Gary Jedlovec travelled to Alaska for the annual OCONUS technical interchange meeting in Anchorage and Fairbanks in mid-June. It was a very successful trip. SPoRT has been working to complete the transition of all our partners (who use AWIPS I) to a new menu system allowing them to access the full complement of SPoRT products. Gary's trip to Alaska helped spur completion of the task, as the three Alaska offices are now receiving SPoRT VIIRS and MODIS (single channels and RGBs), SPoRT POES/GOES Hybrid, NESDIS QPE, CIRA LPW, and SPoRT SST products. SPoRT personnel will visit the Alaska WFOs in August for informal training, discussions, and assessment planning. Two WFO partners (HUN and HGX) have already transitioned to AWIPS II and await the delivery of SPoRT plug-in software for these exciting new JPSS products – to be completed in the 3rd quarter.

A JPSS-related assessment is planned for July-August: SPoRT and CIRA are managing an assessment of the VIIRS Day-Night-Band and several night-time RGB products (Nighttime Microphysics, Dust, and IR channels) by a group of collaborating WFOs on the front range of the Rockies (ABQ, TFX, CYS, BOU).

Training Activities

E-Learning Modules

Short, focused training via self-paced web modules helps to reach a wide audience and compliments the more broad training users receive. SPoRT assisted in preparations for the use of the GOES-R Convective Initiation (CI) product at the Hazardous Weather Testbed (HWT) by creating a new module that focused on the change to a probabilistic product. This 10 minute module was delivered and used to prepare users for their week of evaluation. There is also a module in development regarding the NASA LIS. Considerable utility of LIS fields by Huntsville and Birmingham WFOs has led to work on a training module that demonstrates applications to drought monitoring, assessing flooding potential, and diagnosing summertime CI.

Teletraining

In support of SPoRT's assessment of GOES-R and JPSS Proving Ground products, several teletraining sessions were conducted. The GOES-R Quantitative Precipitation Estimate (QPE) product created by NESDIS was presented to the Alaska WFOs, Alaska/Pacific River Forecast Center, and the San Juan, Puerto Rico WFO. Product developers and SPoRT staff participated in delivering two separate sessions. To complement QPE, the Collaborative Institute for Research in the Atmosphere (CIRA) Layer Precipitable Water (LPW) was also presented as part of a NASA ROSES project. In a separate effort, the VIIRS Day-Night Band (DNB) and RGB products valid at night were presented to a group of Front Range WFO partners (ABQ, BOU, CYS, TFX) by SPoRT and CIRA. This included examples of the DNB imagery for use in fire and smoke plume events as well as cloud analysis with the Night-time Microphysics and Dust RGB imagery.

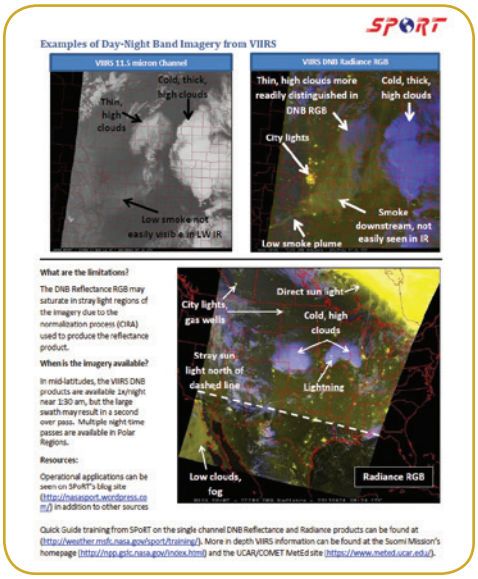
Seminars/Visits

The Tropical Proving Ground activities included visits by SPoRT and EUMETSAT staff to provide in-class training to National Hurricane Center/Tropical Analysis and Forecast Branch staff regarding the Day-time Microphysics and Convective Storms RGB imagery available from Meteosat Second Generation SEVIRI as well as the Day-Night Band product suite from VIIRS. Several hours of lecture and discussion were provided over a two day visit. In addition, SPoRT was invited to present a seminar on the GOES-R QPE and CIRA LPW products via telecom to users in the Pacific, Alaska and Western NWS Regions.

Quick Guides

To help the operational user during their shift duties, SPoRT has used a "Quick Guide" method for various products. These 2-sided, single sheet references provide an easy way for users to be reminded of the important points for a given product. The Quick Guides help a user recall some of the details that they received from other more robust training (i.e., E-learning modules, teletraining, etc.). SPoRT has created several of these for:

- QPE and LPW
- VIIRS instrument
- VIIRS imagery and Day-Night Band (including an RGB-version of DNB)
- GOES-R CI
- Several RGB imagery products: Air Mass, Night-time Microphysics, Dust
- AIRS Total Ozone and Anomaly products



VIIRS Day-Night Band RGB Quick Guide developed by SPoRT in collaboration with forecasters at the NWS Albuquerque office.

Blog Summary

The SPoRT blog received 25 new posts during the spring quarter of 2013. The first post of the quarter, on April 1, was made by SPoRT's own, Brad Zavodsky. This post detailed new and unique sounding data from the Cross-track Infrared Sounder (CrIS) aboard the Suomi-NPP satellite, which are available to SPoRT collaborators. The post detailed comparisons between the atmospheric soundings derived from the CrIS with those of other hyperspectral data sets available from the AIRS and IASI instruments, in addition to a model sounding from the Rapid Refresh (RAP). Atmospheric soundings of this nature can be beneficial for forecasters by increasing confidence in model guidance depictions and/or providing additional data in regions with little or no in-situ upper-air observations.

Another April post covered some of the benefits of the MODIS imagery in operations at the Albuquerque NWS office. There, imagery from the MODIS and VIIRS instruments has proven to be very useful, garnering much support and use by the local staff. The particular case noted utilized the Dust and Nighttime Microphysics RGBs produced by SPoRT to help differentiate between blowing dust and low clouds during the early morning hours of April 23. Typically, this type of discrimination between meteorological phenomena would have been nearly impossible in GOES imagery alone. In a relatively low-density observation network, such as the one that exists across eastern New Mexico, it's important to understand the extent of phenomena between observation sites. This is why satellite imagery of this sort can be so crucial for forecasting in these environments.

The last couple of posts that finished up the month of April came from the Huntsville NWS office and described the operational effectiveness of the Lightning Mapping Array (LMA), or total lightning data. In one case cited, intracloud lightning occurred in a storm for more than 30 minutes before any cloud to ground flashes were observed by the National Lightning Detection Network (NLDN). While both data sets are important and useful for

WFO Corner

Anchorage, Fairbanks, and Juneau

All three offices have setup the SPoRT base menu in AWIPS I and are ingesting data being sent to the Alaska Regional Headquarters by SPoRT. The Hybrid GEO/LEO imagery that includes MODIS and VIIRS is especially helpful at these high latitudes where the GOES footprint becomes large. Each WFO is participating in the intensive evaluation period for the NESDIS QPE and CIRA LPW products to begin in July.

Albuquerque

Many products continued to be examined at ABQ and several blog posts of their applications have been made. Collaborations include testing of new GOES-R CI product display as well as RGB imagery applications with work toward a publication on Dust RGB imagery in operations. In addition, Brian Guyer submitted feedback comparing the SPoRT and CIRA versions of the Snow-Cloud RGB imagery for a given case, which was shared within the GOES-R PG.

Great Falls

RGB Imagery and Hybrid products are being examined by staff. Some observations and questions about the Air Mass RGB imagery have led SPoRT to investigate some brightness temperature correction methods to help decrease variations between the Aqua and Terra versions of MODIS.

Boulder, Cheyenne

These CIRA offices both participated in the comparison of the Snow-Cloud RGB imagery products by CIRA and SPoRT. Rob Cox (SOO) provided a short summary of 3 large snow events in April and their comparison of the products. This aided CIRA in making some improvements to the display of the product in AWIPS I and provided SPoRT insight to how the products are used in operations.

Huntsville

The Huntsville office continues its use of North Alabama Lightning Mapping Array data in operations. Currently, forecasters are using the legacy source density data, while Kris White and Brian Carcione have been experimenting with the use of newly available flash density data. The flash density component of total lightning, which is better cited in the literature and is an overall better proxy for the future GLM aboard GOES-R, is showing some promising early results as an operationally relevant tool. We are looking forward to continued use of these data sets and plan to share research and observations of the total lightning data for the NWA convention in October.

Our local WRF Environmental Modeling System model is still up and running and we have been piping the model data into AWIPS II. We have had some successes and failures with some of the data sets, but are continuing to work with SPoRT on the issues. Currently, both the SPoRT operational and control runs are being performed on the same machine and we'll be incorporating the MET software to perform necessary statistical, quantitative comparisons between model runs in the near future.

Blog Summary…*continued*

operations, total lightning networks have the ability to alert forecasters that electrical activity is ongoing before cloud to ground strikes occur, and when rapid changes in electrical activity occur, which is important for severe weather considerations. The future GLM instrument planned for GOES-R will also have this ability, but will offer added coverage for areas that do not currently have in-situ ground networks, which is the great majority of the CONUS. Other posts later in the quarter in June highlighted the utility of LMA data at NWS Huntsville on several occasions, from assistance for warning decision support during severe weather activity to aiding in lightning detection for airport weather warnings. One post noted the advantage of total lightning data and supplemental data sets of this nature in general, when an operational outage of NLDN data occurred. Another post by Brian Carcione, Science and Operations Office at NWS Huntsville, mentioned the use of LMA data in providing on-site decision support for an outdoor festival in Cullman, Alabama. The total lightning data have been very beneficial to operations at NWS Huntsville for a decade now and forecasters there continue to advocate their usage.

A series of posts from late May to mid-June, by longtime collaborator NWS Albuquerque provided insight into the use of VIIRs and MODIS imagery in their operations. From monitoring the detection of an unusual heat burst event to viewing fire behavior changes and smoke plumes, the Albuquerque office often finds operationally meaningful uses for MODIS and VIIRs imagery. Not only were some of the imagery products useful for operational forecasters, but some were also shared in graphics provided for emergency managers and the public on web pages and the office Facebook account. As always, we greatly appreciate the Albuquerque office's diligence and their engaging efforts during collaborations!

While we can't mention all posts made during the quarter for this article, we are very appreciative of our collaborative authors, especially the informative posts of the Albuquerque and Huntsville NWS offices. We would also like to welcome newcomer, Jordan Bell to our blog and appreciate his recent posts. Thanks to these posters, and others, the SPoRT blog had over 4,500 views this past quarter. Interestingly, these viewers span countries across the globe, from our Canadian neighbors to the north, to Saudi Arabia, to New Zealand…and many countries in between! Please visit the Wide World of SPoRT blog to see these and other posts when you can, at <http://nasasport.wordpress.com>. If you would like privileges to post on the SPoRT blog, please send an email to Kris White (kris.white@noaa.gov). Many of our collaborative NWS offices have recently opened office accounts with us. If you'd like to do that, please let us know. Thanks and we hope you'll keep reading!

Publications

Jedlovec, G.J., 2013: Transitioning Research Satellite Data to the Operational Weather Community: The SPoRT Paradigm. GRSL magazine.

Jedlovec, G.J., 2013: Transitioning NASA Earth-observing Satellite Data to the Operational Weather Community. Earth Observer, NASA/GSFC, May/June issue.

Zavodsky, B.T., J.L. Case, C.B. Blankenship, W.L. Crosson, K.D. White, 2013: Application of next-generation satellite data to a high-resolution, real-time land surface model, Earthzine, J. Kart, editor, Institute of Electrical and Electronics Engineers.

Zavodsky, B.T., A.L. Molthan, and M.J. Folmer, 2013: Multispectral imagery for detecting stratospheric air intrusions associated with mid-latitude cyclones. J. Operational Meteor., 1 (7), 71-83.

Presentations

Zavodsky, B., J. Srikishen, 2013: Using AIRS Profile Information to Better Assimilate AIRS Radiances in GSI, 11th Joint Center for Satellite Data Assimilation Workshop, College Park, MD.

Zavodsky, B., E. Berndt, C. Blankenship, and K. Fuell, 2013: Recent Activities with AIRS Level-2 Profile Data at the SPoRT Center, 2013 Spring AIRS Science Team Meeting, Pasadena, CA.

Proposals Awarded

- In conjunction with personnel at GSFC, SPoRT was awarded the 2012 NASA/ROSES A.13 proposal in Modeling, Analysis, and Prediction, titled "Advancing Coupled Land-Atmosphere Modeling with the NASA Unified-WRF via Process Studies and Satellite-Scale Data Assimilation."

Proposals Submitted

- ROSES13 A.33: NASA Data for Operation and Assessment (11/15/13-11/15/15) "Improving Microwave Sounder Data Yield and Impact by Assimilating SMOS Soil Moisture Data"; PI: Clay Blankenship; Co-Is: Brad Zavodsky, Jon Case, Jayanthi Srikishen
- ROSES13 A.28: The Science of Terra and Aqua (1/1/14-12/31/16) "Improved Observations Near Clouds and Severe Weather using AIRS/MODIS/AMSU"; PI: Bill Blackwell (MIT); Co-Is: Adam Milstein (MIT), Brad Zavodsky, Clay Blankenship
- ROSES13 A.36: Advancing Collaborative Connections for Earth System Science (10/1/13-9/30/15) "Workflows for Request, Analysis, and Processing (WRAPs): Providing Tools to Support Model Validation and Verification Experiments with NASA Earth Science Observations"; PI: Andrew Molthan; Co-Is: Brad Zavodsky, Barb Brown (NCAR), Rahul Ramachandran (UAH)

Visitors

- April 24-25, John Murrary, Applied Science, NASA HQ – Review SPoRT disaster activities
- June 26, Bill Bauman, ENSCO, Inc/Applied Meteorology Unit – Discussed collaboration opportunities between the Applied Meteorology Unit and SPoRT with Gary Jedlovec.

Seminars

- April 30, Emily Berndt (NASA Post-Doctoral Scientist, ORAU) – An overview of research activities related to the influence of stratospheric intrusions on high impact non-convective weather events.
- May 7, Rahul Ramachandran (Principal Research Scientist ITSC / UAH) – A tool for constructing data albums for significant weather events.

Calendar of Events

- ROSES panel review for A.33: NASA Data for Operations and Assessment, August 1, 2013, Washington, DC
- EUMETSAT Meteorological Satellite Conference and AMS Conference on Satellite Meteorology and Oceanography, September 16-20, 2013 Vienna, Austria
- NWA Annual Meeting, October 12-17, 2013, Charleston, SC
- GOES-R Satellite Champion visit to SPoRT, November 12-14, 2013, Huntsville, AL
- AGU Fall Meeting, December 9-13, 2013, San Francisco, CA
- AMS Annual Meeting and Conferences, February 2-6, 2014, Atlanta, GA

National Aeronautics and Space Administration

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NP-2013-09-106-MSFC
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