



SPoRT Quarterly
April–June 2016

The SPoRT REPORT

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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

SMAP Initial Assimilation Results

SPoRT operates a near-real-time run of the Noah land surface model using the NASA Land Information System for the CONUS (<http://weather.msfc.nasa.gov/sport/modeling/lis.html>). Soil moisture fields from this model are used by partner WFOs for situational awareness for flooding, drought monitoring, and fire risk. This product will soon be enhanced by assimilation of near-surface soil moisture retrievals from the NASA Soil Moisture Active-Passive (SMAP) satellite, launched in 2015. Currently, the SPoRT LIS computes soil moisture and temperature based on meteorological forcing data consisting of rainfall, surface air temperature, humidity, and winds, and downwelling radiation. With the addition of observational data (SMAP soil moisture retrievals), LIS can refine and improve model estimates by combining the two data sources (model states and observations) through use of an Ensemble Kalman Filter.

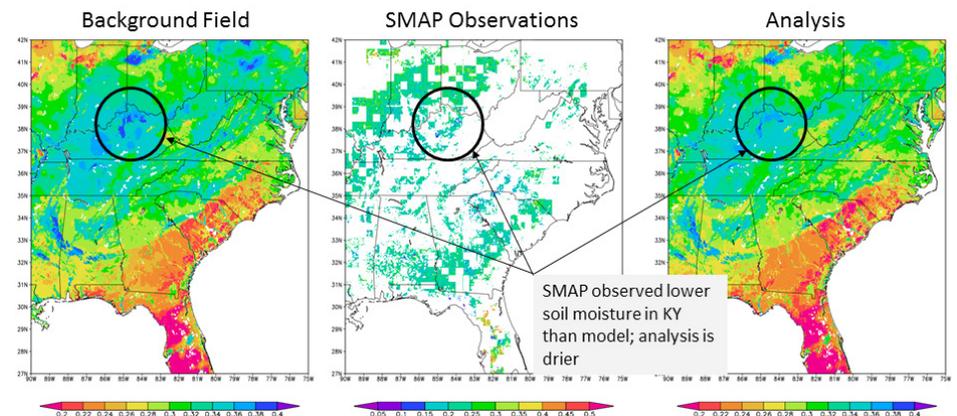
SMAP is so named because it includes both active (radar) and passive (radiometer) remote sensing instruments. Unfortunately, the radar failed after only

a few months of operations. However, the L-band (1–4 GHz) radiometer still provides soil moisture measurements with a resolution of 36 km and a volumetric accuracy of $0.04 \text{ cm}^3/\text{cm}^3$. The measurements are sensitive to soil moisture down to roughly 5 cm in depth. Both the penetration depth and the accuracy are a significant improvement on earlier, higher-frequency instruments such as AMSR-E. SMAP Level 2 passive soil moisture retrievals are being assimilated into LIS, combining the high

spatial resolution (3 km) of the model with accurate retrievals from the satellite. In the future, we will explore the use of higher resolution SMAP datasets being developed by the SMAP science team.

SMAP assimilation in LIS has been developed and tested at SPoRT, based on previous results from assimilating Soil Moisture Ocean and Salinity (SMOS) retrievals (Blankenship et

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Initial test case of SMAP L2 data assimilation implementation into SPoRT-LIS for case study valid at 12Z on 1 May 2015.

al., in press). SMOS was launched by the European Space Agency in 2009. Assimilation of SMOS data demonstrated the ability of L-band satellite retrievals to improve both correlation scores and the dynamic range of modeled 0–10 cm layer soil moisture, validated against station measurements.

The figure on page 1 shows an example of a LIS soil moisture field before (left) and after (right) assimilation of SMAP data (middle). For this example, the changes to the analysis are subtle but areas where there are soil moisture observations differ from the model first guess there are meaningful analysis increments. The SMAP-enhanced

SPoRT-LIS model fields will be available beginning in late July. The new model analyses will be available along with the standard SPoRT-LIS output so that the products may be evaluated and monitored before making a decision regarding operational implementation. In the future, we also plan to begin assimilating SMOS soil moisture along with the SMAP retrievals in the SPoRT-LIS run.

Recent Accomplishments

Migration to Polar2Grid

This quarter, SPoRT finalized end-to-end testing to migrate real-time VIIRS data processing to Polar2Grid. Polar2Grid was developed by the University of Wisconsin CIMSS/SSEC to create high quality reprojected imagery for polar orbiting satellites in an open-source, modular application system. This accomplishment represents the first step in implementing next-generation, community software for processing SPoRT products that will enable greater flexibility for data processing in the future. SPoRT began processing Alaska direct broadcast Visible Infrared Imaging Radiometer Suite (VIIRS) data in Polar2Grid and developed a methodology to generate limb corrected single bands and the 3.9 μm reflected component from the Polar2Grid output. The single bands and the 3.9 μm reflected component

are then used to generate local and on-demand, client-side multispectral products in AWIPS. Utilization of Polar2Grid along with previous EPDT development of derived parameters code will make it easier to implement client-side multispectral products using existing NWS data streams. The figure below is an example VIIRS EUMETSAT Daytime Microphysics RGB that was generated client-side in AWIPS using data processed through Polar2Grid. SPoRT plans to continue working with GINA and the Alaska Region to migrate away from pre-generated multispectral products toward generating the suite of EUMETSAT multispectral products locally and on demand.

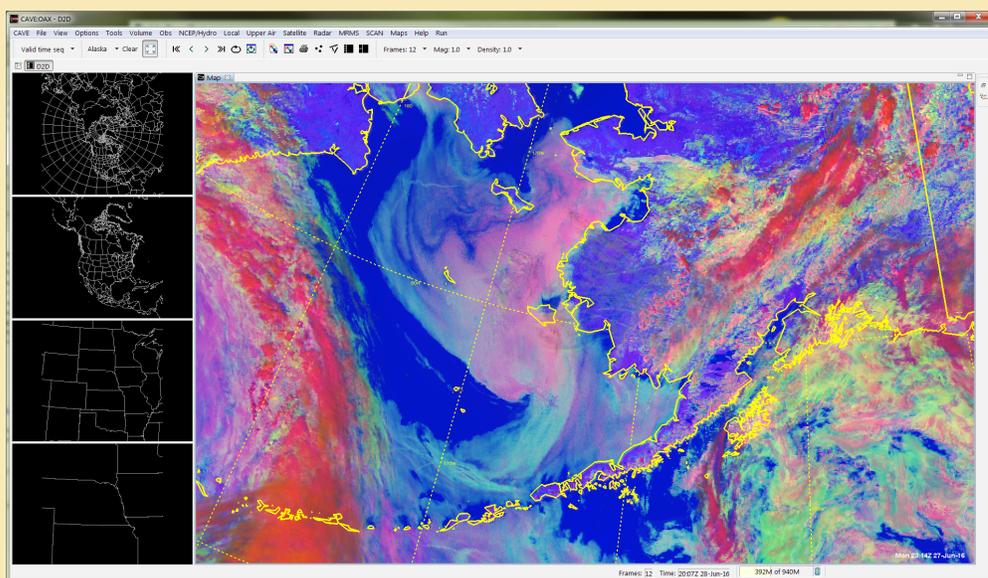
NOAA Testbed Workshop

Mr. Bradley Zavodsky attended the 7th NOAA Testbeds & Proving Ground Workshop in College Park, MD. The

objective of this meeting was for the various NOAA Testbeds associated with each National Center for Environmental Prediction (NCEP) to provide an overview of their activities from the previous year. Each National Center has a corresponding testbed that enables interaction between forecasters and the research community through evaluation of experimental products in a pseudo-operational environment. Mr. Zavodsky presented a poster entitled “Recent SPoRT Testbed Activities in Support of NASA and NOAA Proving Ground Datasets” describing SPoRT’s collaboration with the NOAA Testbeds and our own testbed activities with partner Weather Forecast Offices.

April 27, 2011 Tornado Outbreak 5 year Anniversary

This past April 27th marked the 5-year anniversary of the 2011 tornado outbreak that severely impacted the state of Alabama. In order to commemorate this anniversary, SPoRT put together a viewer to view Landsat Imagery from 2010 to 2015, which encompassed imagery of the state of Alabama that showed what the landscape looked like before, right after the outbreak, and in the years since. This viewer used cloud-free scenes from Landsat 5, 7, and 8 missions during the warm season to compose an annual True Color, Normalized Difference Vegetation Index, and Enhanced Vegetation Index imagery. The viewer (<http://weather.msfc.nasa.gov/April27Outbreak/>) and accompanying blog post (<https://nasa sport.wordpress.com/2016/04/26/april-27-2011-five-years-later-a-satel->



EUMETSAT Daytime Microphysics RGB generated client-side with Alaska direct broadcast VIIRS data processed through Polar2Grid. The Daytime Microphysics RGB utilizes the 3.9 μm reflected component to discriminate cloud microphysical properties for the identification of low clouds and fog, strong convection, and warm versus cold rain precipitation processes.

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[lite-imagery-perspective/](#)) quickly went “viral” and was featured by multiple local print and television media outlines in Huntsville.

Joint Center for Satellite Data Assimilation (JCSDA) Workshop

Dr. Aaron Naeger attended the 14th JCSDA Technical Review Meeting & Science Workshop on Satellite Data Assimilation from May 31–June 2 at the California State University, Moss Landing Marine Laboratories in Moss Landing, CA. The purpose of the annual JCSDA technical review meeting and science workshop was to review the ongoing and planned scientific development sponsored by the NASA-NOAA-DOD program. The meeting allowed for discussion, interactions, and scientific exchanges between JCSDA partners and managers. By attending this meeting, Dr. Naeger was able to present the SPoRT Aerosol Optical Depth (AOD) Composite product to the JCSDA partners and managers in an effort to commence collaborations between the Joint Center and NASA SPoRT. Meeting attendees showed a strong interest in the potential of the SPoRT AOD Composite product in enhancing aerosol and radiance assimilation.

NASA Flood Response Workshop

Mr. Jordan Bell attended the NASA Flood Response Workshop on June 14–16 in Greenbelt, MD. This workshop provided an opportunity for government agencies, academia and the private sector that use Earth Observing data to come together to understand the current capabilities and shortfalls that are used and needed when responding to floods not only here in the United States, but also internationally. SPoRT was well represented at this workshop, with multiple mentions of our products — specifically our LIS products and our R2O paradigm.

Transitions and Assessments

New Web Page for Training and Transition

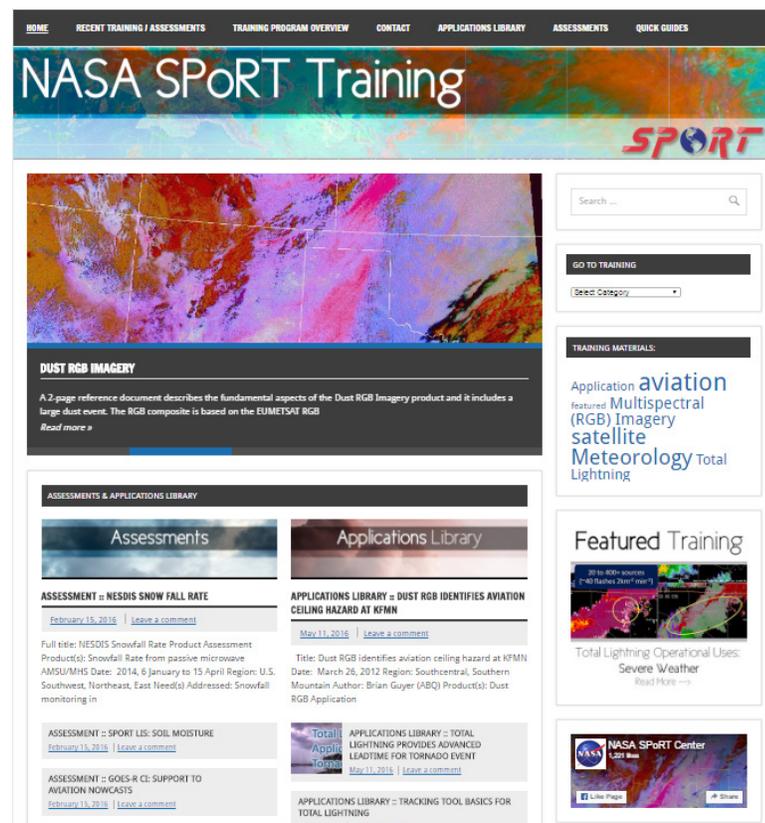
The growing number and evolving forms of training encouraged the development of a new Web page for SPoRT’s modules, micro-lessons, and quick guides. The new site can be found at <http://weather.msfc.nasa.gov/sport/training/> where both training and assessment activities can be found (see figure below).

The new page provides access to SPoRT training via categories such as Aviation, Multispectral (RGB) Imagery, and Total Lightning, as well as a search tool. In addition, user feedback forms are available during product assessments and the resulting assessment reports are also made available on this site. A new aspect to SPoRT’s training and assessment efforts is to take user-submitted examples of product impact and form an Applications Library, which is also prominent on the new webpage. Several short training formats of less than 8 minutes in length are included in the Applications Library.

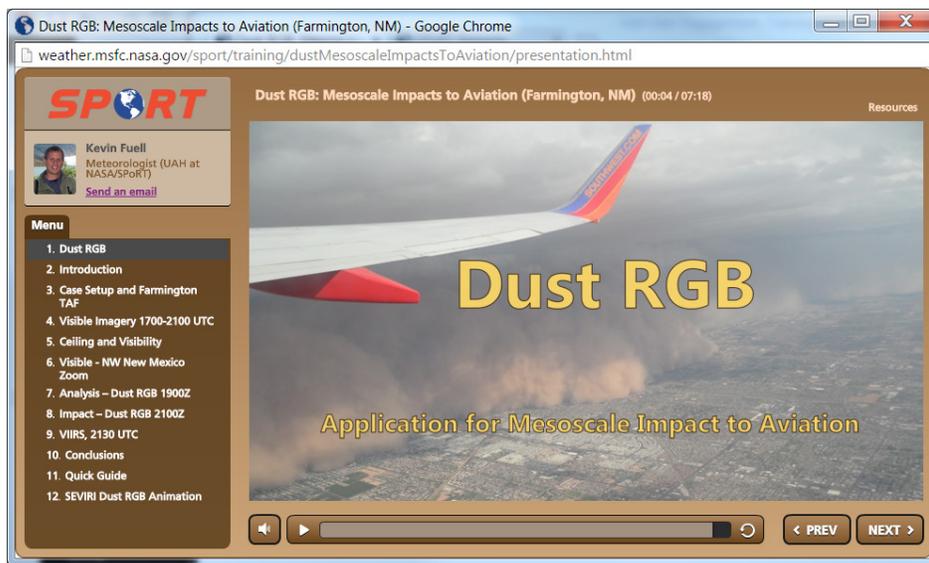
Dust RGB Micro-lesson Training with Albuquerque WFO

SPoRT and the NWS WFO in Albuquerque, NM published an article entitled “Next generation satellite RGB dust imagery leads to operational changes at NWS Albuquerque” (<http://dx.doi.org/10.15191/hwajom.2016.0406>) which highlights the operational impact and policy changes that occurred due to the transition of the EUMETSAT Dust RGB product via MODIS and VIIRS instruments. As a result of the publication in the NWA Journal of Operational Meteorology, the case examples used in the paper were developed into short micro-lessons (i.e. < 8 minutes training items.) The first case has been published to the SPoRT Applications Library. The 7-minute microlesson demonstrates the application of the Dust RGB to a mesoscale event that impacted the ceiling conditions at the Farmington, New Mexico airport TAF site in March 2012. Observations at the site and the resulting changes to the TAF via use of the Dust RGB are highlighted. The lesson also illustrates the value of the Dust RGB with the GOES visible and MODIS/VIIRS true color imagery as part of preparation

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New SPoRT Training Web page containing the new Applications Library.



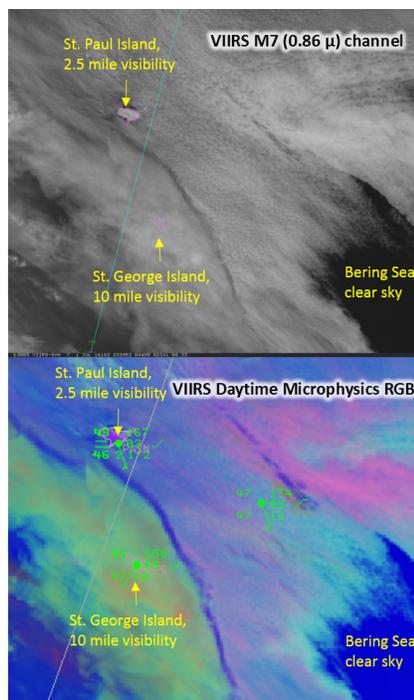
Front page of Dust RGB Microlesson.

for GOES-R which will be able to create all three products. Work on micro-lesson items has been done for the other two cases in the journal article and these are to be published in the next quarter.

S-NPP VIIRS Daytime Microphysics Assessment

Starting on June 19 the three Alaska WFOs, as well as the Alaska Aviation Weather Unit (AAWU) and Anchorage Center Weather Service Unit (CWSU; ZAN) began a trial assessment of the Daytime Microphysics (DTMicro) RGB created from the S-NPP VIIRS instrument. As part of SPoRT's JPSS work the VIIRS M7 (3.7 μ) channel was split to utilize the reflective component within the EUMETSAT best-practices recipe for the DTMicro RGB. The individual color components for the RGB were processed and sent to Alaska and the AWIPS system composites the three files to allow the user to sample the image. The abundance of daylight in Alaska summer leaves few opportunities for the application of the popular Nighttime Microphysics RGB, previously evaluated by forecasters to analyze fog and low clouds. Hence, the DTMicro RGB is being tested as an alternative during this period to assess the value to identify cloud features where aviation hazards may exist. An example from an Anchorage WFO forecaster (right) showed the application of the DTMicro RGB to differentiate low clouds with ceiling obstructions at St. Paul Island TAF site from stratus clouds with higher ceilings over St. George

Island. User feedback indicated "The low stratus/fog shows up quite well in contrast to the higher mid-level clouds to the southwest of the Pribilof Islands. 'St. Paul' reported 1/2 sm or lower fog and OVC002 through the morning. We can see that 'near St. George are' thicker clouds from the increased red values, smaller water particles, and the cloud top temperatures are colder. At this time St. George reported OVC026." The assessment of the DTMicro RGB will end July 30. In the future derived cloud properties products from VIIRS will be transitioned to forecasters for comparison to the RGBs to aid users with physical interpretation.



Example of advantages of using DTMicro RGB product compared to single band imagery for fog detection.

Satellite Proving Ground Activities

2016 NOAA Satellite Proving Ground User Readiness Meeting

This year's Proving Ground User Readiness meeting took place in Norman, OK from May 9–13. This annual meeting is an opportunity for developers, trainers, and operational users to meet to present their work and discuss the next steps in preparing the community for both GOES-R and JPSS. SPoRT gave two presentations. The first covered SPoRT's role with the Experimental Product Development Team. The presentation was focused on the various code sprints that were conducted at SPoRT in Huntsville, AL the previous fall that were designed to focus on specific issues. The end result for the developed code was to be ready for the AWIPS baseline or to be placed on the Virtual Lab for future development. In all, seven code sprint activities took place; three for GOES-R and four for JPSS. The second presentation focused on SPoRT's training activities in preparation for the Geostationary Lightning Mapper. SPoRT personnel have been requested to provide both subject matter expertise and a module for the Satellite Foundational Course for GOES-R. The presentation covered SPoRT's actions in supporting COMET's "Introduction to the GLM" in addition to developing the "GLM Visualization in AWIPS" module. The highlight and pivotal component of the latter module was the first ever display of the GLM proxy product, which simulates GLM events, groups, and flashes from LMA observations, in AWIPS II.

In addition to the SPoRT-led presentations, the Operations Proving Ground (OPG) presented the initial results of the RGB evaluation with the Japanese Advanced Himawari Imager (AHI) instrument, serving as a proxy for the GOES-R Advanced Baseline Imager (ABI). Also, results from the first forecaster interaction with the Integrated Training concept developed at SPoRT to allow forecasters to directly access quick, refresher training guides directly in AWIPS. Initial results were very positive. The forecaster community

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is particularly eager to see this in operations as it allows them to pull up training material directly in AWIPS, which is highly useful when quick guides are integrated. The integrated training capability will be baselined in late 2016 or early 2017.

2016 OCONUS Technical Interchange Meeting

The OCONUS Technical Interchange Meeting returned to Honolulu, HI this year after the previous meeting in Anchorage, AK. The OCONUS meeting is particularly focused on addressing forecast needs and concerns of Alaska and Pacific Region, as well as other National Weather Service entities that work well outside the continental United States. The emphasis is on the upcoming GOES-R and JPSS satellites, but is not necessarily restricted to these. SPoRT's liaison to the NOAA Satellite Proving Ground, Dr. Geoffrey Stano, provided a 30-minute overview of the program's activities and focused on the strong partnership with Alaska Region and the Geographic Information Network of Alaska (GINA). One key product discussed at the meeting was NOAA's operational temperature and moisture profiles from the CrIS and ATMS, called NUCAPS. SPoRT has collaborated with CIMSS, CIRA, and GINA to produce a demonstration product that allows forecasters to view plan view and cross sections of

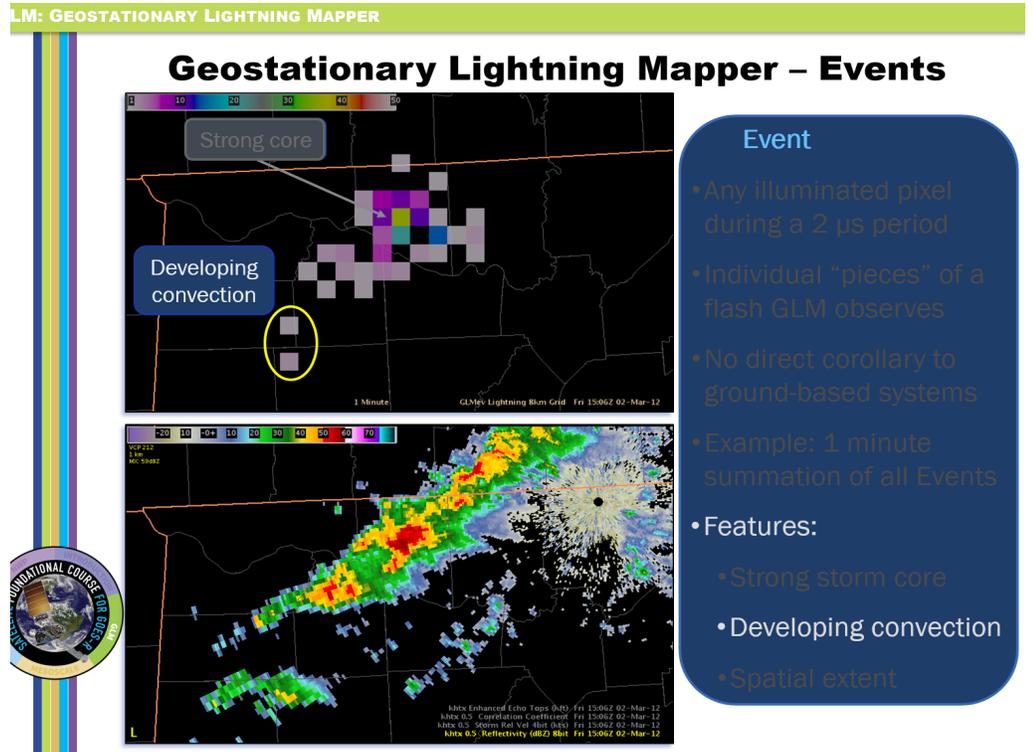
NUCAPS for identifying three-dimensional air masses associated with convective initiation and aviation forecast challenges. This product was successfully demonstrated at the Hazardous Weather Testbed and will be evaluated by the Alaska Center Weather Service Unit this winter. SPoRT will work with the EPDT to develop baseline capabilities for gridding the NUCAPS data. SPoRT also met with the other satellite liaisons to identify opportunities to coordinate and collaborate on products and had interactions with forecasters. Site visits to the Joint Typhoon Warning Center and Honolulu WFO also occurred, allowing additional interaction with forecasters to better understand the forecast challenges that they face.

SPoRT Involvement in the Training for GOES-R

As part of the National Weather Service's efforts to prepare for GOES-R, the Satellite Training Advisory Team (STAT) was created. The STAT team was tasked with identifying training needs for the National Weather Service. At this stage, the focus is on foundational training with applications training set to come later this year. Based on SPoRT's expertise, the STAT requested three actions from SPoRT. The first was for SPoRT individuals to serve as subject matter experts for

two modules. These were the "Uses of Multi-spectral Imagery" and COMET's "Introduction to the Geostationary Lightning Mapper." As subject matter experts, the SPoRT personnel provided background, content, and conceptual feedback to the modules to help the authors develop the training. Both of these modules are 30 minutes in length. Additionally, SPoRT's satellite liaison for GOES-R was tasked with creating a 10-minute module called "GLM Visualization in AWIPS." The goals of this module are to demonstrate the differences between GLM and ground-based networks and to show how GLM data will look in AWIPS. The GLM proxy product, developed by the lightning group at Marshall Space Flight Center takes ground-based lightning mapping array data and converts it into the three basic products that will be first available from GLM after launch. These include Events (any illuminated pixel during a 2 μ s period), Groups (clusters of Events in time and space), and Flashes (clusters of Groups in time and space). This was the first ever use of the GLM proxy in AWIPS. The module is currently out for external review and after final revisions will be provided to the National Weather Service's learning management system in August. A sample slide from the module is shown below.

Sample slide from Foundational GLM Visualization Module developed by SPoRT's Satellite Liaison, Dr. Geoffrey Stano.



Social Media Corner

Wide World of SPoRT Blog

The SPoRT blog received fewer than normal posts during the second quarter; however, one of those posts received the most views (over 4000) of any post in the blog's history. This post, titled, "April 27, 2011 — Five Years Later: A Satellite Imagery Perspective," detailed yearly satellite imagery from before the outbreak in 2010, through 2015. Loops of Landsat imagery showed the year-to-year recovery of vegetation along the tornado damage scars in central and northern Alabama very effectively. The post highlighted the Tuscaloosa, and Hackleburg-Phil Campbell tornado tracks, but contained a link to a web viewer produced by SPoRT that allowed for the visualization of this and other satellite imagery data sets over the tornado damaged areas.

Another post demonstrated the use of similar Landsat imagery within the NWS Damage Assessment Toolkit to properly assess tornado damage tracks. The Damage Assessment Toolkit, or DAT, is used by many NWS offices in the Central and Southern Regions to help with the damage survey process. SPoRT has worked with DAT developers for the past several years to incorporate hi-resolution satellite imagery into the DAT to help with tornado damage surveys, in particular. Other uses for these hi-res imagery have been detailed, including those for hail swaths and damaging straight-line

wind events. In this post, newcomer to the Wide World of SPoRT blog, Sam Shamburger, of the NWS office in Nashville, mentioned how the hi-res imagery were used to extend the tracks of two tornadoes that occurred during an unusual severe weather outbreak in late December. The ground-survey process after tornado outbreaks can be complicated by the inaccessibility of some areas. So, satellite imagery can be a useful tool for examining tornado tracks, especially when the tornadoes are sufficiently large and occur over vegetated areas. Sam wrote, "Landsat imagery allowed NWS Nashville personnel to extend two of the tornado paths by several more miles than originally estimated", which indeed demonstrated the effectiveness of these types of imagery for this process. A couple of other posts were made during the quarter, including a post about the use of NUCAPS sounding data at HWT and VIIRS Day-Night Band imagery for fire detection at night. These and other informative posts can be found on the SPoRT blog at <http://nasasport.wordpress.com>. The SPoRT group is very appreciative of the efforts of all of our collaborative authors. You can also follow us through Facebook (NASA SPoRT Center) and Twitter (@NASA_SPoRT). If you would like privileges to post on the SPoRT blog, please send an email to Kris White (kris.white@noaa.gov). Thanks and we hope you'll keep reading!



Landsat imagery showing an EF5 tornado track in 2011 and how it has recovered in 2015.

Tweets of the Quarter

Kevin Scharfenberg @wksiv Follow

Tropical waters have warmed up over the past 10 days. White=82+, pink=85+. Data courtesy @NASA_SPoRT

RETWEETS 2 LIKES 3

Brian Carcione @BCCWx Follow

Using lightning data (fortunately lack thereof) from North AL Lightning Mapping Array at RTS tonight. @NASA_SPoRT

RETWEETS 3 LIKES 10

7:45 PM - 3 Jun 2016

3 10

Jeremy Scott Smith @WX_Overford Follow

Putting the Convective initiation probs & cloud top cooling to work for TS near KMEM @NASA_SPoRT @UAHSWIRLL

RETWEET 1 LIKES 3

1:39 PM - 24 Jun 2016

1 3

SPoRT Seminars

- April 13: “Application of a Non-Steady Runoff Method in Landlab: Implications for Modeling Landscape Change” — Jordan M. Adams (Department of Earth and Environmental Sciences, Tulane University)
- June 29: “Overview and Early Results from NASA’s Global Precipitation Measurement (GPM) Mission” — Dr. George Huffman (Goddard Space Flight Center)

Presentations

Blankenship, C. and J. Case, 2016: Toward Improved Real-Time Modeled Soil Moisture Estimates by Assimilating SMOS and SMAP Retrievals. 4th SMAP Applications Workshop, Austin, TX, 4–5 April 2016.

Molthan, A. and J. Burks, 2016: GOES-R and JPSS EPDT. 2016 NOAA Satellite Proving Ground/User Readiness Meeting, Norman, OK, 9–13 May 2016.

Naeger, A., B. Zavodsky, and P. Gupta 2016: Development and Validation of the SPoRT AOD Composite Product for Data Assimilation. 14th Joint Center for Satellite Data Assimilation (JSCDA) Workshop, Moss Landing CA., 31 May–2 June 2016.

Stano, G., 2016: NASA SPoRT Training Activities in Preparation for the Geostationary Lightning Mapper. 2016 NOAA Satellite Proving Ground/User Readiness Meeting, Norman, OK, 9–13 May 2016.

Stano, G., 2016: SPoRT Support to OCONUS and Future Plans. 2016 GOES-R JPSS OCONUS Satellite Proving Ground Technical Interchange Meeting, Honolulu, HI, 27–30 June 2016.

Zavodsky, B., A. Molthan, J. Case, M. Goodman, C. Blankenship, J. Bell, N. Elmer, and K. White, 2016: Land

Surface and Hydrology Applications at the NASA SPoRT Center. 2016 NASA Water Resources Team Meeting, Tuscaloosa, AL, 26–28 April 2016.

Zavodsky, B., J. Burks, A. Molthan, K. Fuell, A. LeRoy, E. Berndt, L. Schultz, G. Stano, J. Case, and M. Smith, 2016: Recent SPoRT Testbed Activities in Support of NASA and NOAA Proving Ground Datasets. 7th NOAA Testbeds & Proving Grounds Workshop, College Park, MD, 5–6 April 2016.

Visitors

Jordan Adams

Ms. Jordan Adams, a PhD student at Tulane University, visited SPoRT on 12–13 April 2016 to discuss her work related to the development of a hydrology modeling framework called Landlab, which enables flood and landscape modeling for different temporal and spatial scales in an open-source, community framework. SPoRT envisions closer collaborations with hydrologists at NWS forecast offices and River Forecast Centers, so the objective of this meeting was to learn more about the types of tools that are available for performing these types of forecasts and pathways for integrating NASA datasets.

Dr. Louis Uccellini

Dr. Louis Uccellini, Assistant Administrator for the National Oceanic and Atmospheric Administration (NOAA) and the Director of the National Weather Service (NWS) visited MSFC, University of Alabama in Huntsville and the NWS Huntsville Weather Forecast Office on 6 June 2016. SPoRT briefed Dr. Uccellini on updates to our interactions with NWS forecasters, our activities related to the NOAA Satellite Proving Grounds, and new engagement with the National Water Center. Initial feedback was very positive regarding SPoRT’s work with NWS forecasters.

Dr. Mike Farrar

Dr. Michael Farrar, Director of the Meteorological Development Laboratory (MDL) in the NWS visited SPoRT on 6 June 2016. The MDL develops and transitions tools and techniques vital to improving NWS operations. Dr. Farrar met with SPoRT to discuss ways in which SPoRT R2O expertise in transition of satellite products and modeling applications can be better integrated into the processes by which the NWS transitions experimental products.

Bill Ward

Mr. Bill Ward, NWS Pacific Region Science Services Division Chief and Lead for the NOAA Operational Advisory Team, visited SPoRT on 13–15 June 2016 to learn about SPoRT capabilities in support of NWS Pacific Region interests and participation in NOAA Satellite Proving Ground activities. Mr. Ward received numerous presentations from the SPoRT staff highlighting SPoRT’s successful R2O paradigm, with a strong emphasis on recent activities related to satellite remote sensing, land surface modeling, training development, and the integration of new capabilities within AVIPS. Discussions focused on upcoming opportunities for the SPoRT team to engage with Pacific region and other NWS regions as part of continued preparations for the GOES-R and JPSS satellite programs.

Dr. George Huffman

Dr. George Huffman, NASA lead for the Global Precipitation Measurement (GPM) Integrated Multi-satellite Retrieval for GPM (IMERG) gridded precipitation products, visited SPoRT on 29–30 June 2016 to discuss the latest improvements to this algorithm. SPoRT has been collaborating with Dr. Huffman to develop foundational training for the IMERG product in preparation for an upcoming assessment with NWS hydrologists and River Forecast Centers. Dr. Huffman met with the SPoRT team leading the GPM assessment activities

to provide input on the training slides. He will provide some voice over capabilities later this summer as a subject matter expert on the training.

Proposals

SMAP

A proposal entitled “SMAP Soil Moisture Retrieval Assimilation for Improved Weather Forecasting” was recently accepted. Clay Blankenship is the Principal Investigator of this 3-year proposal, with Jonathan Case and Brad Zavodsky as co-investigators. This proposal will use SMAP soil moisture retrievals to improve soil moisture fields, and investigate the impact of the SMAP data on weather forecasts using the NASA-Unified WRF for coupled land/atmosphere prediction.

SERVIR Applied Science Team

SPoRT Team Members were involved in three Step-2 Proposals to the NASA ROSES15 SERVIR Applied Science Team solicitation. The Step-2 proposals were submitted at the end of

April and with selections announced in mid-June. The following proposal was selected with associated SPoRT team members in bold: “Monitoring Intense Thunderstorms in the Hindu-Kush Himalayan Region;” PI: Dr. Patrick Gatlin (NASA/MSFC); Co-Is: **Jonathan Case (ENSCO)**, **Jordan Bell (UAH)**, Dr. Dan Cecil (NASA/MSFC), Dr. Walt Petersen (NASA/MSFC); Collaborators: **Dr. Andrew Molthan (NASA/MSFC)**, Bhupesh Adhikary (ICIMOD/SERVIRHimalaya), Harri Pietarila (Finnish Meteorological Institute).

Publications

- Bell J. R. and A. L. Molthan, 2016: Evaluation of Approaches to Identifying Hail Damage to Crop Vegetation Using Satellite Imagery. *J. Operational Meteor.*, accepted.
- Blankenship, C. B., J. L. Case, B. T. Zavodsky, and W. L. Crosson, 2016 (in press): Assimilation of SMOS Retrievals in the Land Information System. *IEEE Trans. Geosci. Remote Sens.*

Naeger, A. R., Gupta, P., Zavodsky, B. T., and McGrath, K. M.: Monitoring and tracking the trans-Pacific transport of aerosols using multi-satellite aerosol optical depth composites, *Atmos. Meas. Tech.*, 9, 2463-2482, doi:10.5194/amt-9-2463-2016, 2016.

Congratulations

Congratulations are in order to former SPoRT Co-PI Jason Burks, who took an exciting opportunity to join the Cooperative Institute for Research in the Atmosphere (CIRA) as a member of MDL at the end of April. Jason officially joined the SPoRT Team in 2012 as a NASA Civil Servant following collaborations with SPoRT as the Information Technology Officer at the Huntsville National Weather Service. During his time with SPoRT, he significantly advanced SPoRT’s capabilities for developing software and plug-ins for the NWS AWIPS decision support system. He also was a community leader for AWIPS development through his outstanding leadership of the Experimental Products Development Team (EPDT), an activity funded through the NOAA Satellite Proving Grounds to support new visualization tools for GOES-R and JPSS datasets. These activities included development of the Tracking Meteogram, GLM baseline plug-in, and Integrated Training Capabilities for AWIPS. We wish him well as he tackles new challenges as part of his new position and look forward to opportunities for further collaboration

Upcoming Calendar of Events

- July 12 - 13, 2016: 1st TEMPO Applications Workshop (Huntsville, AL)
- July 19 - 21, 2016: AMS Community Meeting, (Tuscaloosa, AL)
- July 26 - 28, 2016: SPoRT Science Advisory Committee (Huntsville, AL)
- August 15 - 19, 2016: AMS Satellite Meeting August (Madison, WI)
- August 24 - 25, 2016: Natural Environments Day of Launch Working Group (Cape Canaveral, FL)
- September 12 - 16, 2016: National Weather Association Annual Meeting (Norfolk, VA)
- September 26 - 30, 2016: EUMETSAT Satellite Conference (Darmstadt, Germany)

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