

SPoRT Quarterly  
July – September 2018

# The SPoRT REPORT

Join SPoRT on:  
*NWSChat @ nasa\_sport, @NASA\_SPoRT on Twitter,*  
or blog with us @ <http://nasasport.wordpress.com/>

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 NOAA Weather Forecast Offices (WFOs) and National Centers, the research leading to the transitional activities benefits the broader scientific community.

## Quarterly Highlights

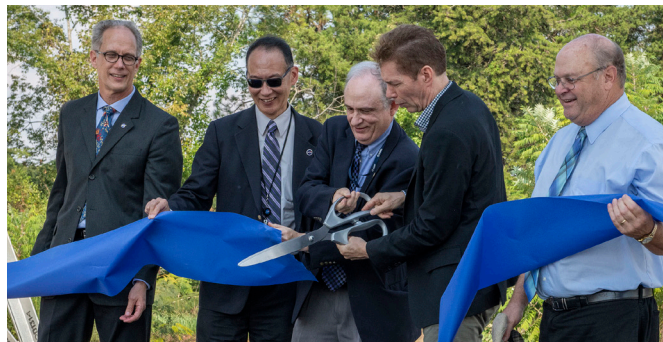
### Marshall GOES Receiving Station Ribbon Cutting

A ribbon cutting ceremony was held 21 September for the GOES receiving station at NASA Marshall Space Flight Center. It receives data from both GOES East and GOES West. Invited speakers included Dr. Jack Kaye and Dr. Tsengdar Lee both from NASA Headquarters, Dr. Paul McConnaughey Associate Center Director here at MSFC, Dr. Gary Jedlovec — Earth Science Branch Chief, Dr. Steven Goodman — Retired Senior Scientist for the GOES-R satellite program, and Mr. Brian Carcione — NWS Huntsville, Science and Operations

Officer. Funding for the facility was jointly provided by NASA and NOAA.

These systems acquire the full complement of the six instruments on-board each satellite that include the Advanced Baseline Imager (ABI), Geostationary Lightning Mapper (GLM), and 4 space weather instruments.

SPoRT is principally interested in data from the ABI and GLM instruments to conduct remote sensing science regarding applications of multispectral imagery and lighting data and to develop and disseminate new derived products for collaborative partners with the National Weather Service, Industry, Academia, and within NASA.



Cutting the ribbon, from left to right, are Dr. Gary Jedlovec, Dr. Tsengdar Lee, Dr. Jack Kaye, Dr. Paul McConnaughey, and Dr. Steven Goodman.

A key advantage of the GOES Rebroadcast antennas at Marshall Space Flight Center is the ability for NASA SPoRT to have access to real-time data from GOES-16 (GOES-East) and GOES-17. GOES-17 was declared “Beta” mature on 27th August and released through GOES Rebroadcast (GRB) the following day. SPoRT team members were able to quickly integrate GOES-17 into real-time processing the same day data were available through GRB and the Receiving Station here at MSFC.



GOES Receiving Station at Marshall Space Flight Center, Building 4316.

Quicklooks of key multispectral products such as the Air Mass RGB are available on the [SPoRT webpage](#) until the satellite turns off to drift to the GOES-West position in November. Next quarter, SPoRT anticipates the availability of GOES-17 imagery and

lightning data once the satellite reaches the GOES West position and will update its real-time pages in November when GOES-17 data are available again.

Data from these systems are not only on the SPoRT web page but are

further provided via web services to Government, Industry, Academia and the public and may be found on the MSFC-developed [Interactive Satellite Imagery Viewer](#). These interfaces were heavily utilized by these groups during the recent Hurricane Michael event.

## Recent Accomplishments

### Successful ICESat-2 Launch

NASA's Ice, Cloud and land Elevation Satellite-2, or [ICESat-2](#) launched on Sept. 15 from Vandenberg Air Force Base in California and will provide scientists with height measurements that create a global portrait of Earth's third dimension, gathering data that can precisely track changes of terrain, including glaciers, sea ice and forests. As an official [Early Adopter](#), the SPoRT team will use the data from ICESat-2 to improve short-term weather forecasts in Alaska. Understanding the extent and depth of ice and snow is necessary to the mission of the National Weather Service in Alaska. Commercial fishing and offshore oil drive the economy, so accurate modeling and observation of sea ice extent and depth is needed to help ensure people make it home safely at the end of the work day. It is anticipated that the ice thickness products, used in late winter to determine the depth and extent of that winter's ice, could aid forecasters in understanding whether the modeled ice and snow depth is indeed accurate for early spring melting that can result in significant downstream flooding. During the next quarter SPoRT will participate in and ICESat-2 Benchmarking Workshop and anticipate the availability of early release mission data.

### Transition of polar-orbiter RGB processing to Alaska Region

SPoRT has worked with the three WFOs in Alaska for more than seven years in collaboration with GINA (Geographic Information Network of Alaska) who is responsible for providing much of the satellite data to NWS Alaska Region Headquarters and to the forecasters. During the past several years, SPoRT has been providing high quality RGBs from polar-orbiting sensors that have been adjusted to offset the effects of limb cooling. As RGBs emerged as an integral part of the forecaster repertoire, it became obvious that the fastest way to provide these high quality RGBs would be for the limb-adjustment to happen in Alaska – as opposed to processing the data in Alabama, which results in lengthy data transfers. In order to minimize any negative impact on GINA's operational processing and network loads, SPoRT has recently developed a way for GINA and Alaska

Region Headquarters to simply generate new limb-adjusted and inter-calibrated versions of several infrared channels of MODIS (Terra & Aqua) and VIIRS (S-NPP and NOAA-20). This method will perform the adjustment on the new SCMI (Sectorized Cloud and Moisture Imagery) files, and is compatible with GINA's existing processing framework. These activities will improve RGB consistency across platforms and reduce the latency of high-quality RGB imagery. Processing will soon be transitioned to GINA and NWS Alaska Region Headquarters for testing, SPoRT will provide AWIPS configuration files allowing for improved display and visualization of RGB imagery at native resolution in the forecaster's display. One RGB the Alaska Region forecasters heavily rely on is the Night-time Microphysics RGB, Fig. 1 demonstrates the improved display and resolution of RGBs derived from SCMI data in AWIPS.

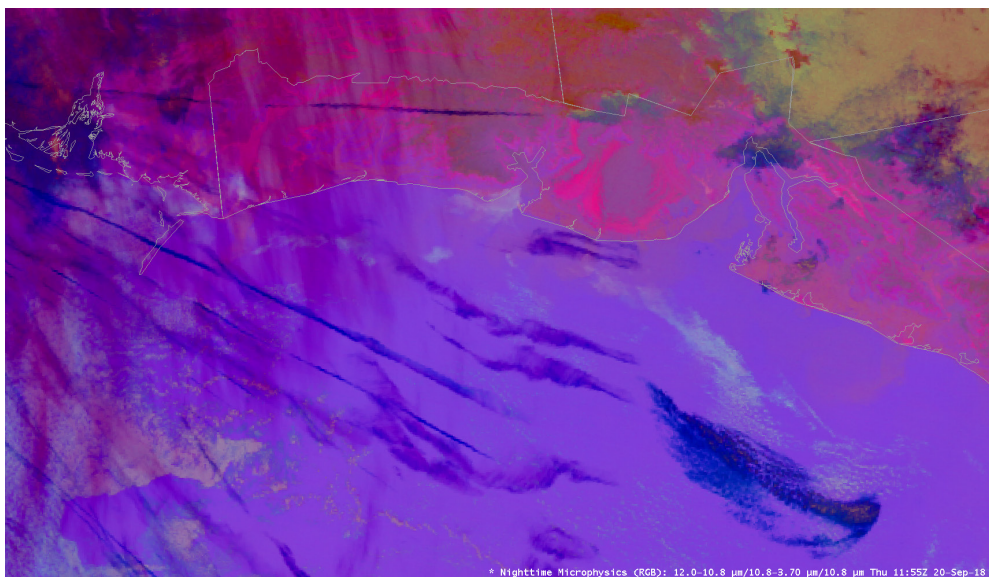


Figure 1. Example Night-time Microphysics RGB derived from VIIRS SCMI imagery and displayed in AWIPS with improved resolution. This imagery is important for identifying fog in aqua colors and has been routinely used in Alaska WFOs for several years.

## Land Information System supports Hurricane Florence and Michael Analysis

Hurricane Florence struck the Carolinas in mid-September, resulting in monumental rainfall totals and serious flooding, particularly across southern and eastern North Carolina. Widespread totals exceeded 10–20 inches across most of southern/eastern North Carolina

and far eastern South Carolina, with maximum rainfall of more than 30 inches along and within a few counties of the Atlantic Coast.

The extreme rainfall dramatically impacted the soil moisture, which

underwent a substantial transformation from very dry to near-saturation across south-eastern North Carolina. Soil moisture retrievals before and after Hurricane Florence from NASA's Soil Moisture Active Passive (SMAP) mission (Fig. 2a–b) captured the substantial

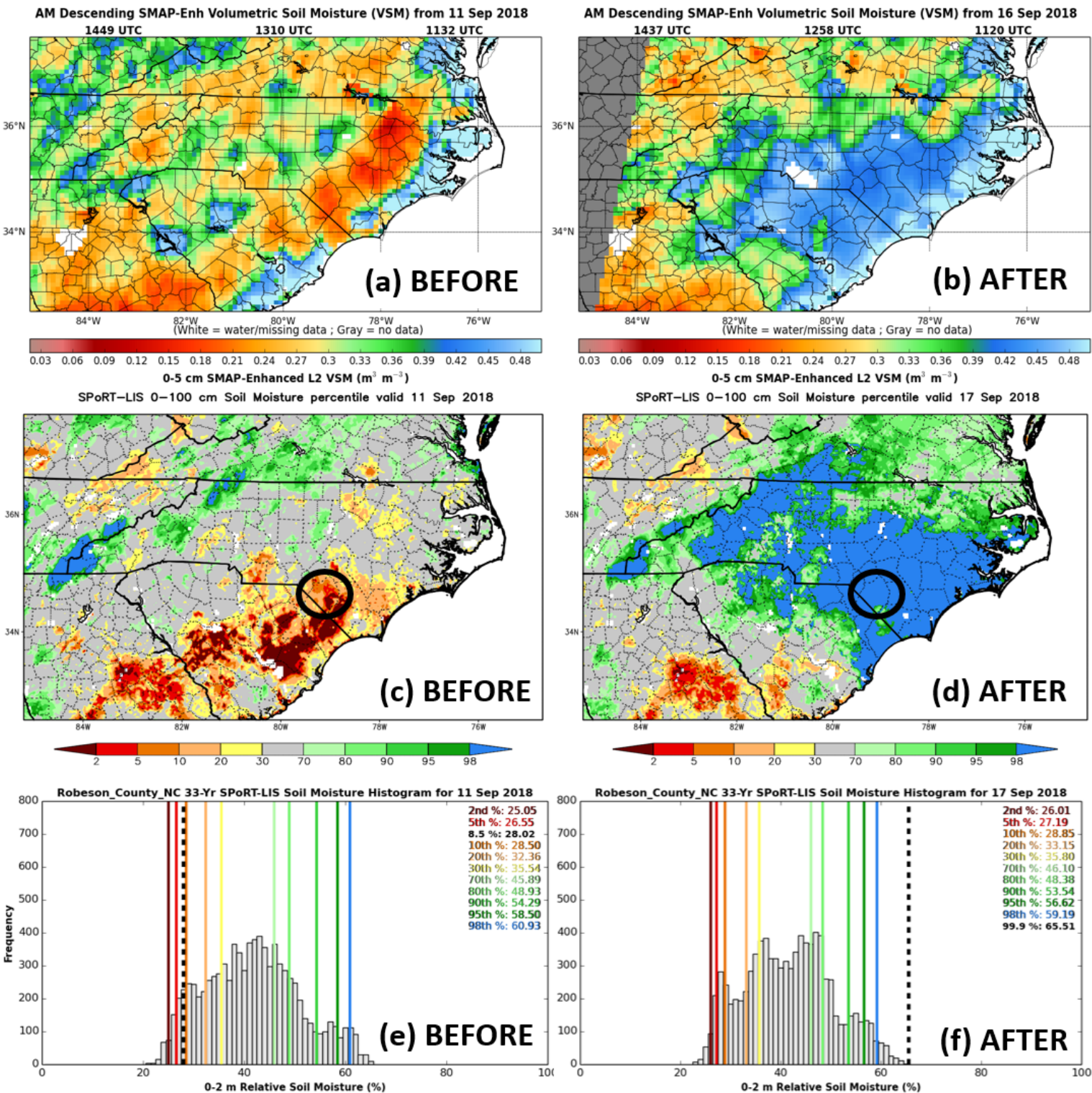


Figure 2. Collection of Hurricane Florence before and after depictions of soil moisture conditions: (a) SMAP soil moisture retrieval valid 11 Sep, (b) SMAP retrieval valid 16 Sep, (c) SPoRT-LIS 0–100 cm soil moisture percentile valid 11 Sep, (d) SPoRT-LIS 0–100 cm percentile valid 17 Sep, (e) histogram of climatological SPoRT-LIS 0–200 cm soil moisture and 11 September value (black dashed line) for Robeson county, NC (labeled in panels c and d), and (f) Robeson county, NC histogram for 17 Sep.

change in near-surface soil moisture (~top 5 cm) over this region. Note that ongoing research at SPoRT seeks to further improve the experimental soil moisture estimates by [assimilating SMAP retrievals into the SPoRT-LIS framework](#).

Figure 2c–d captures the large change in 0–100 cm soil moisture percentiles relative to the SPoRT-LIS 1981–2013 climatological database. Anomalously dry soil moisture is depicted by orange/red colors, while anomalously wet soil moisture is given by green/blue colors. Prior to Hurricane Florence, much of South Carolina and southern parts of North Carolina were experiencing unusually dry soil moisture for this time of year. Despite the capacity for the soils to receive moisture, the historic rainfall event was enough to overcome soil moisture deficits, quickly leading to near-saturated soil conditions in all model depths (not shown), and ultimately substantial flooding. The deep soil layer experienced excessive soil moisture percentiles above the 98th percentile predominantly over North Carolina where the heaviest rainfall occurred and where the pre-storm dry anomalies were not as large as in South Carolina.

Finally, the dramatic transformation in the modeled total column (0–2 m) soil moisture is nicely highlighted by examining the present-day, county-averaged values relative to the 1981–2013 climatological distributions, as shown in Figure 2e–f for Robeson County, NC, near the border of South Carolina (labeled in panels c and d). On 11 September, the soil moisture in Robeson county was only in the 8.5th percentile relative to the 33-year climatology on this day (bold dashed line in panel e). However, following the Hurricane Florence prodigious rainfall event, total column soil moisture averaged over all of Robeson county exceeded even the tail of the distribution of 1981–2013 SPoRT-LIS individual soil moisture gridded values on 17 September, thereby establishing record high soil moisture for this time of year (> 99.9th percentile; panel f). In

summary, despite predominantly dry soils prior to Hurricane Florence across much of the Carolinas, the tremendous 10–30”+ rainfall totals led to a quick saturation of the soils and massive, widespread flooding.

### GACC Visit for Lightning Initiated Wildfire Project

From Monday through Wednesday, Sept. 24th to 26th, SPoRT team member Kris White visited the Northern California Operations in Redding, CA, as a part of SPoRT’s efforts to ramp up collaborative and research activities with the wildfire community. The Northern California Operations is the Geographic Area Coordination Center (GACC) for the northern half of U.S. Forest Service (USFS) Region 5 (California) and the Regional Emergency Command Center for the Northern California Region of the California Dept of Forestry and Fire Protection (CAL FIRE). Most time was spent working with Brent Wachter, a meteorologist employed by the USFS working for the Predictive Services part of operations at the GACC. Brent previously worked as a Senior Forecaster at the NWS office in Albuquerque, and is still active as an Incident Meteorologist, providing fire forecasts at wildfire incidents and also provides content for Wildland Fire Behavior courses for the National Weather Service.

A mini-conference was held, which included presentations from NASA SPoRT, researchers from the Browns Valley Research Station of the Univ. of California Division of Agriculture and Natural Resources, and members of the GACC and the Klamath National Forest. Other members of the wildfire community were present, including others from the Northern California and Southern California GACCs, and CAL FIRE. Kris presented the latest information regarding SPoRT’s endeavors in lightning-initiated wildfire research. SPoRT is using a synthesis of data from the Geostationary Lightning Mapper aboard the GOES-16/17 satellites, the SPoRT Land Information System (SPoRT-LIS), and the Evaporative Stress Index to derive lightning-initiated wildfire probabilities in near real-time. The goal

is to deliver an end-product to decision-makers in operational centers such as the Northern California GACC, and have in-place for potential field-testing as early as summer 2019. Part of the reason for the visit was also to understand more about wildfire operations and the current data sets utilized by this community and their continuing data needs.

### GLM Science Team Meeting

The annual Geostationary Lightning Mapper (GLM) Science Meeting was held September 11–13, 2018 in Huntsville, Alabama. Nearly 70 members of the scientific, engineering, and technical community supporting the GLM instruments were in attendance in person or online for this meeting. This offered a timely meeting with key GLM Calibration/Validation Team members and several additional stakeholders, both domestic and foreign, as we move closer to the GLM Peer Stakeholder-Product Validation Reviews (PS-PVRs) for both GOES-16 and -17 GLM. One of the leads of the NOAA Calibration Validation Coordination Team (CVCT), Liz Kline, who provides essential guidance to the core GLM Cal/Val Team, was also in attendance and provided a high-level talk on GOES work request processes and validation maturity levels. There were also updates from EUMETSAT on the Meteosat Third Generation Lightning Imager (MTG LI) planned for launch in the 2021 timeframe. A wide variety of talks, both local and through remote access, were presented that updated the community on the status and applications of independent (ground, in-situ, and space-based) validation reference systems, and on National Weather Service training activities. The GLM is meeting instrument specifications (i.e., > 70% flash detection efficiency averaged across its field-of-view, and over the diurnal cycle). SPoRT Team members Geoffrey Stano, Anita LeRoy, Doug Kahn, and Chris Schultz presented work related to lightning safety, detection of meteors in GLM, lightning initiated wildfire, winter weather, and lightning jump from the perspective of GLM.

## Meteor Detection by GLM

SPoRT and the NASA Meteoroid Environment Office (MEO) have embarked on an O2R project that exploits GLM's apparent sensitivity to bright meteors. The MEO is responsible for characterizing bright meteors over the U.S. in order to provide space situational awareness to the U.S. government and the general public, primarily utilizing a network of ground-based cameras concentrated in locations throughout CONUS. SPoRT is providing its expertise in GLM to determine the feasibility of developing an automated algorithm in GLM that reliably detects meteors throughout its field of view, and to determine if GLM can provide useful meteor light curves that would help better characterize the energy of fireball events to supplement the meteor camera network.

Initial results are promising; GLM can detect some bright meteors in the Level 2 data, meaning that a possible algorithm could be implemented at the most operationally intuitive data level. GLM detections are compared to MEO's observations from the camera networks, providing a "ground truth" which could be used to better characterize GLM's detections. An event captured by the camera network on 13 August (Fig. 3) demonstrated the ability of GLM to characterize energetics, location, and duration (Fig. 4) of a meteor event.



Figure 3. Imagery from a North Georgia camera in the NASA All-sky Fireball Network, operated by MEO, capturing the 13 August meteor event.

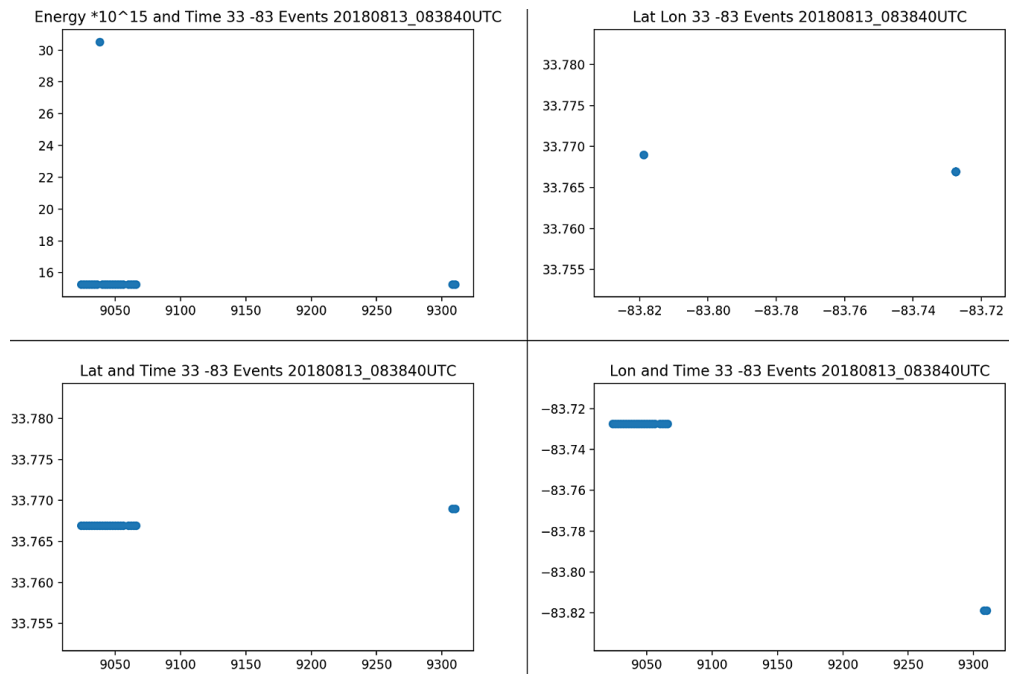


Figure 4. 13 August GLM observations (upper left) energy versus time, (upper right) latitude versus longitude, (lower left) latitude versus time, and (lower right) longitude versus time.

## GOES-16/-17 anaglyph 3D imagery

In support of SPoRT's ongoing work to enhance operational capabilities with ABI on GOES-16/17, SPoRT member Kevin McGrath discovered a way to generate anaglyph 3D imagery from ABI visible imagery. This is made possible by taking advantage of the slightly different viewing angles offered by the GOES-16 and GOES-17 satellites at their respective East and Center positions. In anaglyph 3D imagery, the 3D effect is achieved by assigning chromatically opposite colors, typically red and cyan, to the two different viewing angles. The person viewing the imagery typically wears red/cyan glasses to see the 3D effect.

Working later with Kris White at the Huntsville WFO, they were able to successfully generate anaglyph 3D imagery in AWIPS using an elegant implementation requiring a "Procedure" file and red/cyan color tables specifically constructed for visible imagery from GOES-16 and GOES-17. Taking the baseline gray-scale color table for ABI visible (0.64  $\mu\text{m}$ ) imagery in AWIPS, they converted the shades of gray to shades of cyan (equal mixing of green and blue) and applied this to GOES-16 visible imagery. Then, they converted the same color map to shades of red and applied this to GOES-17 visible imagery. The two images were then loaded simultaneously and the top image layer was set to a transparency of 50%. Finally, the combined images were saved to a Procedure file within AWIPS for easy loading and viewing later. When a forecaster wears the appropriate 3D glasses, which typically have red for the left eye and cyan for the right eye, the visible imagery appears in 3D!

Examples of the anaglyph 3D imagery were shared with other forecasters at the HUN WFO who have used the imagery to help refine their conceptual model and analysis of flow regimes at different levels of the troposphere. Similarly, forecasters have stated that it can benefit their analysis of storm structure and vertical shear. Instructions to produce the imagery were also passed along to the Tallahassee WFO in early October, who made a tweet about the imagery, including an example of developing convection in the Gulf of Mexico.

This type of imagery is only available for a short time period while GOES-16 and GOES-17 are so close together. Post-processing case examples may have benefits for educating forecasters and helping them to refine their own conceptual models of tropospheric flow regimes. In the meantime pick up a pair of 3D glasses and check out this [blog post](#) and [animation on twitter](#) on SPoRT's social media outlets.

## Transitions and Assessments

### Joint Polar Satellite System Satellite Training Advisory Team Update

SPoRT has continued to support the Satellite Training Advisory Team (STAT) on training for the Joint Polar Satellite System (JPSS). In this quarter, SPoRT has completed the quick guide for the Snowfall Rate product developed by NESDIS. In the early part of the next quarter, SPoRT will have completed the corresponding quick brief as well as the Global Precipitation Mission overview module.

### SPoRT product installation with the Data Add-ons Manager

SPoRT has been providing our collaborative WFO partners with packages of configuration files for more than 10 years. In 2015 Matt Foster (NWS Central Region) developed software to manage a WFO's third party AWIPS software. This software is known as the DAM (Data Add-ons Manager). As the DAM has become more widely utilized throughout the NWS, we have developed a method of producing a WFO-specific configuration package that the DAM understands. Now, WFO personnel have only minor changes to make to their configuration

files — reducing the installation time, the chance for typing errors, and overall headaches. About 9 of our 30 WFOs have begun using the SPoRT DAM packages. Although our traditional configuration method is still available, we are slowly converting our partner WFOs to the DAM method. Those interested can contact Matt Smith ([matthew.r.smith@nasa.gov](mailto:matthew.r.smith@nasa.gov)) for more information.

### GOES Satellite Training Advisory Team Update

Short, 'micro-lesson' training items continue to be completed in support of new GOES-16/17 RGB imagery products. The Differential Water Vapor RGB product uses new water vapor capabilities of the Advanced Baseline Imager (ABI), and this RGB allows users to estimate vertical moisture profiles in areas without in-situ observations. An example of the RGB application was completed and delivered to the NWS Satellite Training Advisory Team (STAT). The Differentiate Water

Vapor RGB complements a previously developed micro-lesson for the Air Mass RGB which also uses several water vapor bands. Another training item for the new Fire Temperature RGB was also delivered to STAT. This RGB was developed by CIRA and adapted to GOES-16/17 ABI from work done using the S-NPP VIIRS imager, and the 2018 Oklahoma fire event was used as the training case example. Going beyond just hotspot detection, the Fire Temperature RGB allows forecasters to discern the most active portions of the fire and the GOES ABI frequency provides rapid updates to fire detection and monitoring. An update to the case example for the Nighttime Microphysics RGB 'micro-lesson' has been occurring and nearing completion. The product assessment from 2017 by NWS Southern Region WFOs lead to new insights and best practices that are included in the update to be delivered to STAT to support forecasters in this traditional "fog" season.

**Menu** Notes

- 1. Fire Temperature RGB
- 2. Challenge & Objective
- 3. Product Basics
  - 3.1. Channel Saturation
  - 3.2. Color Interpretation
  - 3.3. Limitations
- 4. Impact
- 5. Learner Assessment
  - 5.1. RGB Features
  - 5.2. Fire temperature intensity
- 6. Summary & Resources

**Fire Temperature RGB Application 8 April 2018: Oklahoma Fires (00:50 / 10:47)** Resources

### Fire Temperature RGB

Introduction

**Fire Temperature RGB:**

- Developed by CIRA for VIIRS, adapted for GOES-16 ABI
  - Curtis Seaman
- 3 different channels saturate to see variation in fire intensity

**Issue: "hotspot" detection:**

- Typically use 3.9 channel, which saturates at a lower temperature
- 3.9 has less contrast between active fires and recent burn areas

**Application Example:**

- Rhea & 34 Complex fires of western Oklahoma: April 2018

Lesson time : ~12 minutes

Contributor/Narration: Kevin Fuell  
Instructional Designer: Laurie Nave  
Organization: NASA/SPoRT

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

# Outreach Activities

SPoRT engages with our partners and the community in a number of ways, including through the use of social media and participation in outreach activities. You can follow us through Facebook ([NASA SPoRT Center](#)) and Twitter ([@NASA\\_SPoRT](#)). SPoRT also maintains the Wide World of SPoRT blog (<http://nasasport.wordpress.com>), where SPoRT scientists and our forecaster partners highlight interesting examples of product use. If you would like privileges to post on the SPoRT blog, please send an email to Kris White ([kris.white@noaa.gov](mailto:kris.white@noaa.gov)) or Jordan Bell ([jordan.r.bell@nasa.gov](mailto:jordan.r.bell@nasa.gov)).

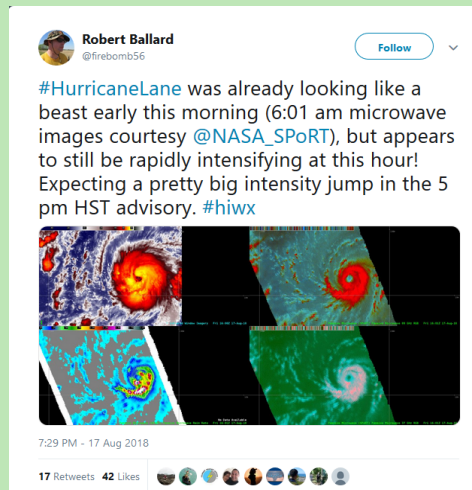
## Wide World of SPoRT Blog

The SPoRT Blog had a total of five blog posts in Q3 of 2018, with four focusing on Hurricane Florence. The first [blog post](#) of the quarter focused on identifying widespread low clouds and fog in the southeastern United States around sunrise. This post highlighted the benefit of using the Nighttime Microphysics RGB, Natural Color RGB, and Visible RGB in combination, as the visible channels become usable during daylight.

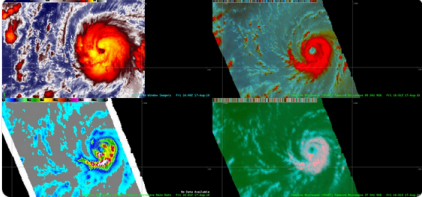
The final four blog posts highlighted various SPoRT activities surrounding Hurricane Florence. The blog posts ranged from the [heavy rainfall forecasts](#) and soil moisture conditions prior to Florence making landfall, to [passive microwave](#) views of Florence, to an assessment of Florence's rainfall on the [soil moisture post-storm](#).

The blog post that looked at the soil moisture post-Florence also included runs of the SPoRT LIS with assimilated SMAP data.

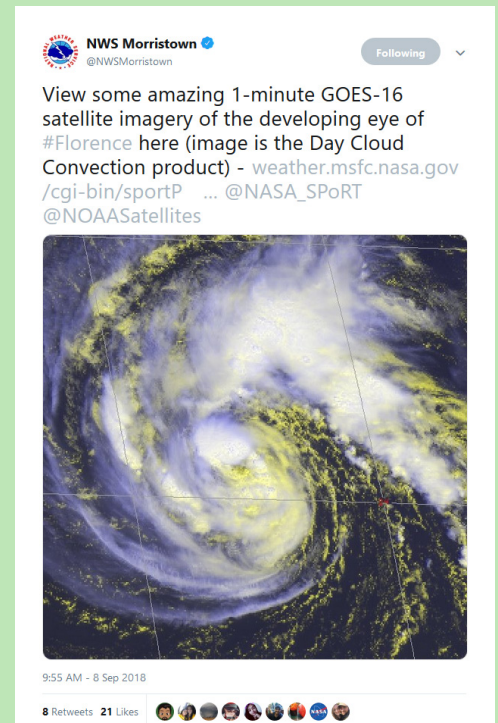
## Tweets of the Quarter



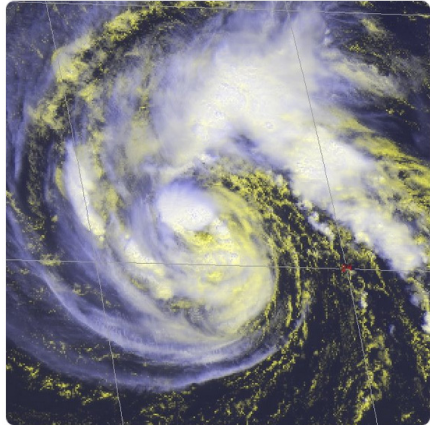
**Robert Ballard** @firebomb56  
#HurricaneLane was already looking like a beast early this morning (6:01 am microwave images courtesy @NASA\_SPoRT), but appears to still be rapidly intensifying at this hour! Expecting a pretty big intensity jump in the 5 pm HST advisory. #hiwx



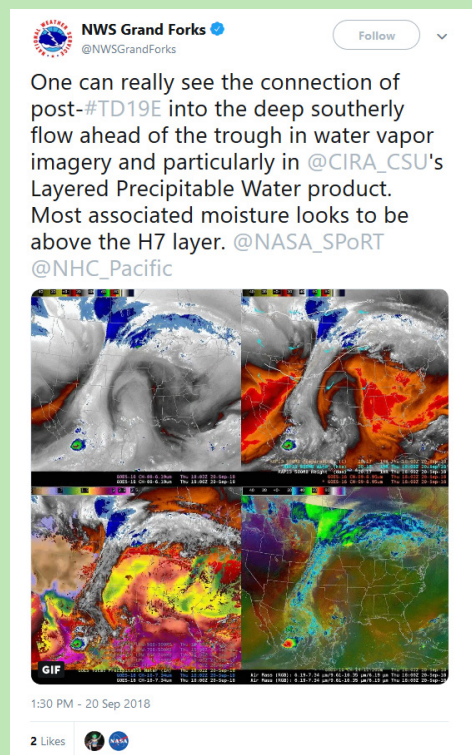
7:29 PM - 17 Aug 2018  
17 Retweets 42 Likes



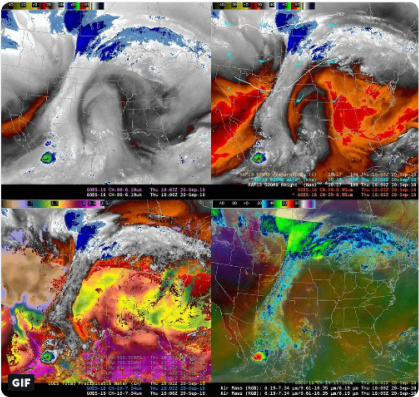
**NWS Morristown** @NWSMorristown  
View some amazing 1-minute GOES-16 satellite imagery of the developing eye of #Florence here (image is the Day Cloud Convection product) - [weather.msfc.nasa.gov/cgi-bin/sportP](http://weather.msfc.nasa.gov/cgi-bin/sportP) ... @NASA\_SPoRT @NOAASatellites



9:55 AM - 8 Sep 2018  
8 Retweets 21 Likes



**NWS Grand Forks** @NWSGrandForks  
One can really see the connection of post-#TD19E into the deep southerly flow ahead of the trough in water vapor imagery and particularly in @CIRA\_CSU's Layered Precipitable Water product. Most associated moisture looks to be above the H7 layer. @NASA\_SPoRT @NHC\_Pacific



1:30 PM - 20 Sep 2018  
2 Likes



**USAID/OFDA** @theOFDA  
Two typhoons are tracking toward #Japan: #Typhoon #Soulik, closely followed by Typhoon #Cimaron. Our disaster experts in Asia & DC are monitoring the 🌀🌀.



4:51 PM - 20 Aug 2018  
1 Retweet 5 Likes

# Presentations



**LeRoy, A., G. Stano, E. Berndt, B. Zavodsky**, 2018: SPoRT Overview – Aviation. *FAA Aviation Weather Research Review and Satellite Technical Exchange Meeting*, Boulder, CO, 10–11 July.

**LeRoy, A., on behalf of NASA SPoRT**, 2018: NASA SPoRT Satellite Capabilities Briefing. *FAA Aviation Weather Research Review and Satellite Technical Exchange Meeting*, Boulder, CO, 10–11 July.

**Schultz, C. J., M. Bateman, K. Virts, G. Stano, P. Meyer, D. Mosier**, 2018: GOES-East Geostationary Lightning Mapper Capabilities for Operations & Performance. *Day of Launch Working Group Meeting*, Kennedy Space Center, FL, 14–15 August.

**Case, J. L., P. N. Gatlin, J. Srikishen, J. Knickerbocker, J. R. Bell, R. E. Allen, P. J. Meyer, D. J. Cecil, and W. A. Petersen**, 2018: Forecasting and monitoring intense thunderstorms in the Hindu-Kush Himalayan region: Preliminary results from Spring 2018 demonstration. *National Weather Association 43rd Annual Meeting, Poster Session #2*, St. Louis, MO, 25–30 August, P2–14.

**Bell, J.R., L.A. Schultz, and A.L. Molthan**, 2018: Investigations of Hail Damage Swaths using Various Satellite Remote Sensing Platforms. *National Weather Association 43rd Annual Meeting, Poster Session #2*, St. Louis, MO, 25–30 August 2018, P2–15.

**Fuell, K., E. Berndt, K. White, and K. McGrath**, 2018: New, Multi-Spectral (RGB) Imagery Products from GOES-16 Usher in a New Era of Satellite Meteorology. *National Weather Association 43rd Annual Meeting, Poster Session #1*, St. Louis, MO, 25–30 August, P1–16.

**Berndt, E., N. Smith, K. White, E. Stevens, and G. Weaver**, 2018: The Evolution of Gridded NUCAPS: An Overview of Research to Operations Activities. *National Weather Association 43rd Annual Meeting, Poster Session #1*, St. Louis, MO, 25–30 August, P1–26.

Jacobs, A., **A. LeRoy**, 2018: The Experimental Use of Multispectral and GPM Data in Hydrologic Applications in Alaska. *National Weather Association 43rd Annual Meeting, Poster Session #2*, St. Louis, MO, 25–30 August, P2–22.

**Harkema, S., E. Berndt, C. J. Schultz, G. Stano, and S. Wingo**, 2018: Characteristics of Thundersnow with Heavy-Snowfall Observed with Next-Generation Satellite Sensors. *National Weather Association 43rd Annual Meeting, Session D: Remote Sensing* St. Louis, MO, 25–30 August.

**LeRoy, A., M. Smith, F. LaFontaine**, 2018: Results from Operational Assessments of GPM-derived Datasets. *National Weather Association 43rd Annual Meeting, Poster Session #3*, St. Louis, MO, 25–30 August, P3–8.

**LeRoy, A., C. Schultz, N. Curtis, D. Kahn, L. Carey**, 2018: Examining Sub-flash Properties of lightning from GLM for tracking and intensification characterization of thunderstorms. *National Weather Association 43rd Annual Meeting, Poster Session #3*, St. Louis, MO, 25–30 August, P3–38.

**Stano, G. T., C. J. Schultz, M. R. Smith, and A. LeRoy**, 2018: Utilizing the Geostationary Lightning Mapper for Lightning Safety. *GLM Science Team Meeting*, 11–14 September.

**Stano, G. T., K. K. Fuell, A. Leroy, and K. M. McGrath**, 2018: An Early Operational Assessment of the Geostationary Lightning Mapper. *Annual EUMETSAT Meteorological Satellite Conference, Current and Future Meteorological Satellite Systems and Data Access*, Tallinn, Estonia, 16–21 September, 1.22.

**Stano, G. T., C. J. Schultz, M. R. Smith, and A. LeRoy**, 2018: Utilizing the Geostationary Lightning Mapper for Lightning Safety. *Annual EUMETSAT Meteorological Satellite Conference, Current and Future Meteorological Satellite Systems and Data Access*, Tallinn, Estonia, 16–21 September, 300.

**Fuell, K.**, 2018: Application of Multispectral (RGB) Imagery from VIIRS by Operational Forecasters in Alaska. *JPSS Science Seminar*, 24–Sep, [https://www.jpss.noaa.gov/science\\_seminars\\_archive.html](https://www.jpss.noaa.gov/science_seminars_archive.html)



## Publications



**Naeger, A. R.**, 2018: Impact of dust aerosols on precipitation associated with atmospheric rivers using WRF-Chem simulations. *Results in Physics*, 10, 5 pp. <https://doi.org/10.1016/j.rinp.2018.05.027>.

Mishra, V., W.L. Ellenburg, R.E. Griffin, J.R. Mecikalski, J.F. Cruise, **C.R. Hain**, and M.C. Anderson, 2018: An initial assessment of a SMAP soil moisture disaggregation scheme using TIR surface evaporation data over the continental United States. *Inter. J. Appl. Earth Obs*, 68, 92–104, accepted.

Anderson, M.C., F. Gao, K. Knipper, **C.R. Hain**, W. Dulaney, D. Baldocchi, E. Eichelmann, K. Hemes, Y. Yang, J. Medellin-Azuara and W.P. Kustas, 2018: Field-scale Assessment of Land and Water Use Change over the California Delta using *Remote Sensing*. *Remote Sensing*, 10, 1–28, accepted.

Yang, Y., M.C. Anderson, F. Gao, B. Wardlow, **C.R. Hain**, J.A. Otkin, J. Alfieri, Y. Yang, L. Sun and W. Dulaney, 2018: Field-scale mapping of evaporative stress indicators of crop yield: An application over Mead, NE, USA. *Remote Sensing of Environment*, 210, 387–402, accepted

Fang, L., X. Zhan, **C.R. Hain**, J. Yin, J. Liu and M.A. Schull, 2018: An Assessment of the Impact of Land Thermal Infrared Observation on Regional Weather Forecasts using Two Different Data Assimilation Approaches. *Remote Sensing*, 10, 625–38, accepted.

**Li, X.**, J. R. Mecikalski, **J. Srikishen**, **B. Zavodsky**, and W. A. Petersen, 2018: Assimilation of GPM Rain-Rate Products with GSI Data Assimilation System for Heavy and Light Precipitation Events. *Geophysical Research Letters*, in preparation.

**Leroy, A.**, **E. Berndt**, **A. Molthan**, **B. Zavodsky**, **M. Smith**, **F. LaFontaine**, **K. McGrath**, and **K. Fuell**, 2018: “Operational Applications of Global Precipitation Measurement Observations”. *Satellite Precipitation Measurement*, Springer, accepted.

Weaver, G. M., N. Smith, **E. Berndt**, **K. White**, J. Dostalek, and **B. Zavodsky**, 2018: Addressing the Cold Air Aloft Aviation Challenge with Satellite Sounding Observations. *NWA Journal of Operational Meteorology*, in preparation.

**Elmer, N.**, **E. Berndt**, G. Jedlovec, and **K. Fuell**, 2018: Limb Correction of Geostationary Infrared Imagery in Clear and Cloudy Regions to Improve Interpretation of RGB Composites for Real-time Applications. *J. Atmos & Oceanic Tech.*, in review.

## Visits and Visitors



**Mounir Lekouara** from EUMETSAT visited on Sept 10 to discuss collaborations regarding the next-generation lightning imager that will be onboard Meteosat Third Generation

**Kris White** visited the US Forest Service Geographical Area Coordination Center in Redding, CA as part of a funded project to utilize the NASA SPoRT Land Information System in their operational forecasting.

**Bill Vaughan** and **Chris Schultz** attended the Day of Launch Working Group meeting at Kennedy Space Center from 14–15 August to present Geostationary Lightning Mapper work relative to space launches.

**Emily Berndt** attended the NOAA Satellite Training Advisory Team Meeting in Boulder, CO Sept 11–14 to provide updates on current SPoRT STAT training material and future training plans for Gridded NUCAPS products.

**Anita LeRoy** represented NASA SPoRT at the FAA Aviation Weather Research Technical Exchange Meeting in Boulder, CO on 9–13 July 2018. SPoRT provided a satellite capabilities overview to FAA management demonstrating its R2O/O2R expertise alongside value-added lightning and ABI products for aviation weather.

# Congratulations and Awards

Each year the MSFC Science and Technology Office holds a Peer Awards celebration during late summer.

The following SPoRT team members were recognized by their peers for significant contributions to SPoRT in their everyday work.

**Roger Allen**

**Jordan Bell**

**Emily Berndt**

**Clay Blankenship**

**Kevin Fuell**

**Christopher Hain**

**Anita LeRoy**

**Kevin McGrath**

**Chris Schultz**

**Lori Schultz**



## Community Participation

At the 43rd National Weather Association Annual meeting SPoRT hosted an Exhibit Booth as an opportunity to foster collaboration and science with NWA attendees who span the research, academia, and operational forecasting communities. SPoRT had various informational material and Quick Guides available to share with the conference attendees.

## Upcoming Calendar of Events

- |                         |  |
|-------------------------|--|
| <b>22 Oct to 26 Oct</b> | NISAR Meeting; Laurel, MD  |
| <b>29 Oct to 1 Nov</b>  | Aerosols and Cloud-Convection-Precipitation Science Planning Workshop; Hampton, VA |
| <b>31 Oct to 1 Nov</b>  | ICESat-2 Benchmarking Meeting; Boulder, CO   |
| <b>10 Dec to 14 Dec</b> | AGU Fall Meeting; Washington, DC   |

National Aeronautics and Space Administration

**George C. Marshall Space Flight Center**

Huntsville, AL 35812

[www.nasa.gov/marshall](http://www.nasa.gov/marshall)

[www.nasa.gov](http://www.nasa.gov)