

The NWA: Connecting operational meteorologists in pursuit of excellence in weather forecasting, communication, and service.

No. 12 - 3

# Newsletter A M A R C H A

#### **New Products from NPP**

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#### 1. Introduction

The Suomi National Polar-orbiting Partnership (Suomi NPP) was launched on Oct. 28, 2011 to usher in the next generation of operational U.S. polar-orbiting satellites. It was named after Verner Suomi, the father of satellite meteorology. The data from NPP has several purposes including observation of climate variables, assimilation into numerical models, and use in forecast offices. NPP

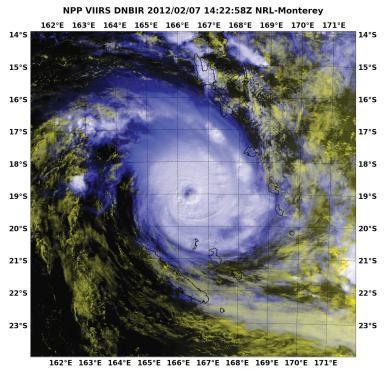


Figure 1. Tropical Cyclone Jasmine in the South Pacific illuminated by moonlight in this visible/infrared color composite image from February 7, 2012 at 1422 UTC. Cyan indicates cirrus; yellow reveals low clouds based on reflected moonlight.

occupies a near-midday/midnight orbit (1330, 0130 local time) to complement the orbital crossing times of satellite systems run by other agencies. This means that regardless of wherever you are in the world, the satellite will always pass somewhere near your location just after midday and again just after midnight your time. Complementarily, the U.S. military generally launches weather satellites in early morning orbits, and Europe oversees mid-morning coverage. The launch of NPP was overseen by National Oceanic and Atmospheric Administration (NOAA) Joint Polar Satellite System (JPSS).

The NPP satellite is commanded from the NOAA Satellite Operations Facility (NSOF) in Suitland, Md., through a ground station at Svalbard, Norway. Svalbard's high latitude (78° N) enables it to contact and downlink data from all 14 daily NPP satellite orbits. The stored global mission data from NPP is transmitted from Svalbard within minutes to the U.S. via a fiber-optic cable system completed in January 2004 as a joint venture with the Norwegian Space Center. The Svalbard ground station and fiber-optic link improves data latency from NPP to ~100 minutes compared to the ~120-180 minute data latency from NOAA and the Defense Meteorological Satellite Program (DMSP). NPP generates approximately 1.5 terabytes of data per day, processed into around 25 separate environmental data records (EDRs) and higher level products

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at NSOF and the Air Force Weather Agency (AFWA). NPP now supports real-time Direct Broadcast services via an X-band downlink.

#### 2. Instruments

Five advanced imager and sounder sensors on NPP collect atmospheric, land, and ocean data globally for meteorological, oceanographic, and climate applications. The Visible Infrared Imaging Radiometer Suite (VIIRS) is a 22-channel visible/ infrared sensor that combines the best aspects of the NOAA Advanced Very High Resolution Radiometer (AVHRR), the DMSP Operational Linescan System (OLS), and the National Aeronautics and Space Administration (NASA) Moderate Resolution Imaging Spectroradiometer (MODIS) sensors. VIIRS has nearly all the capabilities of MODIS but with a wider swath width (3000 km) and a capability for much higher resolution spatial detail at the edge of the scan. VIIRS-derived products include vegetation mapping, cloud cover, sea and land surface temperature, fire detection, aerosol/dust/smoke plumes, and snow/ ice cover. VIIRS also has a day/night band to detect low levels of visible to near infrared radiance at night from sources on or near the Earth's surface, such as low clouds and fog, snow cover, and lightning flashes. This low-light imagery is dramatically improved compared to the current capability on DMSP. As an example, Fig. 1 shows Tropical Cyclone Jasmine by moonlight in the South Pacific in February of this year. Like MODIS, VIIRS features spectacular true color closeups of Earth. Many of the VIIRS channels have higher spatial resolution than MODIS, particularly for the infrared channels. In particular, a suite of five imager channels has a spatial resolution of 370 m.

Cross-track Infrared Sounder (CrIS) is a Fourier transform spectrometer that uses a Michelson interferometer sounder capable of sensing upwelling infrared radiances from 4 to 16 micrometers at high spectral resolution (~1300 spectral channels). This will provide improved vertical atmospheric distributions of temperature and water vapor from the surface to the top of the atmosphere in clear and partly cloudy conditions. CrIS is a major improvement over the current operational NOAA infrared sounder, which has only 20 channels, and provides continuity and comparable performance to NASA's Atmospheric Infrared Sounder (AIRS) onboard NASA's Earth Observing System (EOS) Aqua spacecraft. Complementing CrIS is the Advanced Technology Microwave Sounder (ATMS) that provides atmospheric temperature and water information in all weather conditions, including complete overcast, but with less vertical and horizontal detail than CrIS.

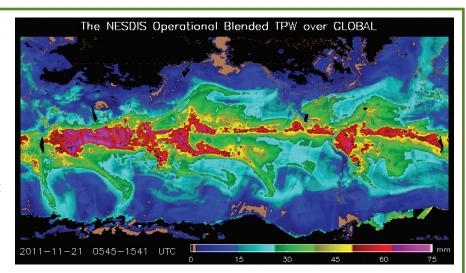


Figure 2. Operational NOAA/NESDIS BTPW Product.

ATMS is the successor to the highly successful Advanced Microwave Sounder Unit/Microwave Humidity Sounder (AMSU/MHS) package presently in operations. Assimilation of AIRS and AMSU/MHS data in numerical weather prediction models has resulted in significant improvements in weather forecasting. For example, in the Southern Hemisphere, the use of these data has extended the accuracy of the two-day forecast to five days.

The Ozone Mapping and Profiler Suite (OMPS) consists of two complementary instruments to continue collection of the ozone record. The Clouds and the Earth's Radiant Energy System (CERES) continues a nearly 30-year record of measurements of the Earth radiation budget by instruments on NASA spacecraft. All of these instruments provide continuity to important satellite-derived long-term datasets extending back to 1979. All NPP data are permanently archived by National Environmental Satellite, Data and Information Service (NESDIS).

#### 3. NOAA NESDIS NPP Data Exploitation (NDE) Mission

The NDE system links NPP and associated JPSS Common Ground System with the civilian operational user community. Driven by data requirements, NDE creates NPP and JPSS data products for dissemination in near real-time to operational end users. These data products include generic NPP and JPSS data records tailored in alternative formats, projections and aerial coverage. NDE produces mission continuity products similar to those available from the current polar-orbiting operational satellite programs, but takes advantage of the improved capabilities from the new sensors on NPP and JPSS satellites.

#### 4. Direct Readout Capability

The NPP mission supports the direct readout user community by broadcasting raw data and supplying science algorithms and processing tools to produce Science Data Records (SDRs), EDRs or geophysical products. The data are not encrypted, but some current EOS high rate data users may need to upgrade their receivers and/or antennas for the NPP X-band frequency. High

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#### Additional Resources for New NPP Products

COMET Satellite Userport: <a href="http://www.meted.ucar.edu/npoess.php">http://www.meted.ucar.edu/npoess.php</a>

NexSat: http://www.nrlmry.navy.mil/NEXSAT.html

SPoRT: <a href="http://www.ghcc.msfc.nasa.gov/sport/">http://www.ghcc.msfc.nasa.gov/sport/</a>

NWA Remote Sensing Committee: <a href="http://www.nwas.org/committees/rs/">http://www.nwas.org/committees/rs/</a>

#### What a Difference YOU Make!

"Never doubt that a small group of committed people can change the world. Indeed, it is the only thing that ever has."

Margaret Mead, anthropologist 1901-1978.

In 1975, a small group of committed people decided to step into the unknown when they formed the National Weather Association. Any

movement starts with a small group of people volunteering of themselves for a vision they share and value. If it has teeth, the movement gradually becomes organized over time, and likely even formalizes its operations with a staff dedicated to the effort. The organizations that endure and even thrive are those that couple this staff with a consistent, perhaps even growing, volunteer commitment and support. I would consider the NWA a thriving organization that had its start and endurance attributed to these efforts.



We have an amazing staff who came to the organization out of appreciation for its value. We have a volunteer pool that is growing and diversifying every year. When I consider how we find ourselves in a world that is constantly competing for our attention and time, I wonder how it is possible that anyone has time to do anything beyond the demands of a job and family. All the more compelling to see the quality and quantity of NWA volunteers that offer their time to chair and staff committees, edit journals, create newsletters, grade tests, put together meetings, staff conferences, mentor and provide vision and guidance.

We are an organization that is big enough to have an impact on a national scale, yet small enough for each of you to make a difference. With this month's newsletter, we present the NWA Committee Chairs for the current year (pages 6-7). Every NWA member has a unique perspective that can benefit the future of this organization. Please consider where your interests and strengths lie, and if they coincide with the focus of one of these committees, feel free to contact the Chair for additional information on ways your voice can make a difference through committee membership.

Liz Quoetone, NWA President

## Annual Meeting Articles on the Professional Development Committee Website

Immediately after the 36th NWA Annual Meeting in Birmingham, the Professional Development Committee invited selected oral and poster presenters to submit their work for publication in the NWA Newsletter and be part of a series of professional development articles highlighting the important work of members across our profession. Our goal was to challenge all members, through these examples, to find ways to enhance what many of them are already doing: providing outstanding customer operational weather support.

Due to a backlog of articles we previously submitted to the NWA Newsletter that have not yet been published, we are starting to post articles on the NWA Professional Development Committee website (www.nwas.org/committees/professionaldevelopment/). The first four articles are now posted and can also be found at the NWA's What's New page (http://www.nwas.org/whatsnew.php). Information will also be posted about these articles on the NWA Facebook and Twitter sites. Finally, a headline and link from the NWA main page will help focus attention on these important articles.

Thank you again for all of your hard work in allowing us to help make your outstanding work available to your NWA member colleagues.

Ken Carey Councilor and Professional Development Committee Member

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data rate users receive all the instrument data.

#### 5. Product Example

The operational global Blended Total Precipitable Water (BTPW) product shown in Fig. 2 draws on the NOAA/NESDIS Microwave Integrated Retrieval System (MIRS) and other data sources. The addition of ATMS onboard NPP now provides wider swaths of data (2600 vs. 2200 km for AMSU), which will make this product much more timely and accurate.

Over the past eight years, the Cooperative Program for Operational Meteorology, Education and Training (COMET) has developed training modules in anticipation of the launch of NPP and follow-on operational polar satellites. A complementary training effort is hosted by the Naval Research Laboratory in Monterey, Calif., on their Next Generation Weather Satellite Demonstration Project (NexSat) website. NexSat posts near real-time imagery from NPP, especially VIIRS, to preview the new operational capability. The Short-term Prediction Research and Transition Center (SPoRT) is a NASA project to transition unique research capabilities to the National Weather Service. SPoRT is developing new VIIRS products and associated training for eventual implementation.



#### 2012 NWA ANNUAL AWARD NOMINATIONS — DUE BY AUG. 1

Nominations are requested for the 2012 NWA Annual Awards.

Awards will be presented during the Awards Banquet on Oct. 10th during the 37th NWA Annual Meeting in Madison, Wis.

Go to http://www.nwas.org/awards/ for details and the application.

#### NWA 37th Annual Meeting Information

October 6-11, 2012 in Madison, Wisconsin



Where business and inspiration meet.

The meeting sessions will be held in the beautiful Frank Lloyd Wright designed Monona Terrace Convention Center in downtown Madison

#### Location & Schedule

Monona Terrace Convention Center One John Nolen Drive, Madison, WI 53703

The 2012 NWA Annual Meeting will include the annual Broadcaster Workshop and DVD swap, and the Fifth Annual Student Session both on Sunday, Oct. 7.

The general sessions will be held Oct. 8–11. The NWA annual awards luncheon will be held on Wednesday, Oct. 10.

Exhibits from NWA Corporate Members and others will be available Sunday through Tuesday.

#### Theme

"Synthesizing Weather Information for Society: From Observations to Action across our Communities".

Today's meteorologists understand that the best forecast means collaborating with weather partners in education, emergency management, government, research, broadcast media and more. At this year's meeting, the breadth of the professional community is invited to explore the emerging technologies, ideas, and science that not only allow us to improve weather forecasts but also to fine tune the message to customers and the general public.

All Annual Meeting information is located at: www.nwas.org/meetings/nwa2012

#### **Abstract & Poster Submissions**

Submit abstracts requesting oral presentations by 25 May 2012 and abstracts requesting poster presentations by 29 June 2012.

Abstracts should be sent via the online form and will be published as submitted, so please make sure that they have been carefully reviewed and edited. Presenters will be notified via e-mail regarding disposition of their abstracts by 20 July 2012. A preliminary agenda will be posted on the NWA web site by early August for presenters to review and proofread.

Undergraduate and graduate students can apply to become eligible for monetary awards given for the best oral presentations and posters.

## More Info on Madison, the Meeting, the Program Planning & Social Media:

The meeting blog at <a href="http://nwa2012.com/">http://nwa2012.com/</a> will be maintained by the NWA Annual Meeting Program Committee, for information on the events, the agenda, the hotels and the local area as well as breaking news.

NWA will also provide updates on this Web page, on the NWA Facebook Page, Twitter and other social media. Please use the hashtag #NWAS12 for any tweets associated with the 2012 Annual Meeting. Attendees are most welcome to use their Twitter accounts to send out information, and retweet liberally.

## Alex Wovrosh Awarded the 2011 NWA Arthur C. Pike Meteorology Scholarship

Alex Wovrosh of Eastlake, Ohio and a senior at Ohio University was awarded the 2011 NWA Arthur C. Pike

Meteorology Scholarship.



A top performing student (overall GPA 3.59 with a 3.90 in meteorology) Alex also has demonstrated traits and performances of one who will be a leader in the profession of meteorology in the future. As a NOAA Hollings scholar, he interned at the National Severe Storms Lab (NSSL) in Norman, Okla., during the summer of 2011 where he worked diligently on a research project that

involved the tuning and testing of software to automatically detect and track storm cells in radar data. The results of his NSSL work are improvements which have been implemented in software used by dozens of research institutions worldwide.

As a sophomore, Alex was hired as a research assistant and worked on a project investigating a semi-permanent area of low pressure off Antarctica. The results of his research were so successful that he received NSF funding to attend a scientific conference in Argentina where his poster was judged to be the conference best.

As a leader, he has served as a teaching assistant for an introductory climatology course, been the treasurer of the university American Meteorological Society (AMS) chapter, and mentors second-year meteorology students. His professional goal is to obtain his Ph.D. and then pursue a career in research climatology.

One of Alex's professors states that he is "...simply years ahead of the pace of the typical meteorology student." Congratulation to Alex Wovrosh for winning the 2011 NWA Arthur C. Pike Meteorology Scholarship!

#### Joshua Alland Winner of the 2011 Phillips Family Undergraduate Scholarship in Meteorology

Joshua Alland of Apple Valley, Minn., was awarded the 2011 NWA Phillips Family Undergraduate Scholarship in Meteorology. A junior attending Iowa State University, Joshua joins fellow Iowa State student Samantha Santeiu as one of the winners of 2011 NWA scholarships.

Joshua is a top performing student who is highly respected by the faculty, participates in several leadership and professional development activities, and has a strong desire to "make a difference" in the world as a meteorologist. His goal is to collaborate with the brightest scientists and politicians as all strive to address the challenges of global climate change. He is a NOAA Hollings Undergraduate Scholar, a member of the Iowa State honors program and several dean's lists, and other extracurricular academic activities. His overall GPA is 3.50 with a noteworthy 4.0 GPA in meteorology.

Joshua's talents were identified early in his college career as he was selected to participate in the Spring 2010 freshman Honors program. In this program, he conducted research to develop a composite picture of days with extreme precipitation in the central U.S. He worked well independently and prepared a well received report summarizing his findings. He has demonstrated strong leadership traits by serving as a teaching assistant for an introductory meteorology course and by holding the office of academic chair for the campus AMS chapter. Additionally he offers individual study sessions and holds review sessions



to help fellow students with academic challenges. Congratulations Joshua for winning the 2011 NWA Phillips Family Undergraduate Scholarship!

# Students & Teachers!

#### 2012 NWA Scholarships and Grants Applications Period is Open!

This year, the NWA is offering six scholarship opportunities and one grant for university students.

Four scholarships will be available this spring and two in the summer. Additionally, there will be seven education grants for K-12 Teachers.

Information for scholarships and grants are online:

www.nwas.org/committees/ed\_comm/application/

www.nwas.org/grants/index.php

NWA Scholarships and Grants	Application Closing Date
Broadcast Meteorology Scholarship	March 15
David Sankey Minority Scholarship	April 15
AccuWeather Undergraduate Scholarship	May 15
Dr. Roderick A. Scofield Scholarship	May 15
Meteorological Satellite Application Award Grant	June 15
2012 Sol Hirsch Education Fund Grant for K-12 Teachers	June 1
Arthur C. Pike Scholarship	Oct. 25
Phillips Family Undergraduate Scholarship	Oct. 25

#### 2012 NWA Committee Chairs

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#### **New NWA Members from February 2012**

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#### NWA sponsored Annual Meetings, Conferences and Special Events

March 29-31: 16th Annual Severe Storms & Doppler Radar Conference

This conference sponsored by the NWA Central Iowa Chapter will be held at the Courtyard by Marriott Hotel in Ankeny, Iowa. http://www.iowa-nwa.com/conference/

#### March 31: The 10th Annual Great Lakes Meteorology Conference

Sponsored by the Northwest Indiana AMS/NWA local Chapter, it will be held at the Strongbow Inn in Valparaiso, Ind. http://www.valpo.edu/student/nwa/conference

#### Oct. 6-11: 37th National Weather Association Annual Meeting

This Annual Meeting will be held in Madison, Wisc. The meeting sessions will occur in the beautiful Frank Lloyd Wright designed Monona Terrace Convention Center in downtown Madison. See page 4 for details. http://www.nwas.org/meetings/nwa2012

#### Other Meetings, Conferences and Special Events

July 15-20: Short-course: Studies in Air Quality for Science Educators

The Science Center for Teaching, Outreach, and Research on Meteorology (the STORM Project) at the University of Northern Iowa (Cedar Falls) will sponsor this intensive, one-week course designed specifically for middle school and high school science teachers. Participants will receive a stipend. Most expenses, including travel, will be covered by the STORM Project. Out-of-state teachers are encouraged to apply. http://www.uni.edu/storm/saqse/

#### July 18-20: ORBCRE Symposium 2012

The Ohio River Basin Consortium for Research and Education Symposium 2012 will be held at Ohio University in Athens, Ohio. Abstracts are due 15 March. Theme is: Research and Education of Ohio River Basin: Transportation, Energy and Environment. http://www.orbcre.org/



#### New COMET Module on Atmospheric Dust

COMET Program is pleased to announce the publication of the new module, "Atmospheric Dust". Atmospheric dust storms are common in many of the world's semi-arid and arid regions and can impact local, regional and even global weather, agriculture, public health, transportation, industry and ocean health. This globally-relevant three-hour module takes a multifaceted approach to studying atmospheric dust storms. The first chapter examines the impacts of dust storms, the physical processes involved in their life cycle, their source regions, and their climatology. The second chapter explores satellite products and dust models that are used for dust detection and monitoring. It also presents a process for forecasting dust storms. The third and final chapter of the module examines the major types of dust storms: those that are

synoptically forced, such as pre- and post-frontal dust storms and large-scale trade winds; and those caused by mesoscale systems, such as downslope winds, gap flow, convection and inversion downburst storms.

The module is intended for operational forecasters who work in areas prone to or impacted by dust storms as well as meteorology students. Just follow this link to the MetEd description page that provides additional information and a link to begin the module:

http://meted.ucar.edu/training\_module.php?id=820.

Greg Byrd UCAR/COMET

IMPORTANT DATES

March 29 – 31: 16<sup>th</sup> Severe Storms & Doppler Radar Conference, Ankeny, Iowa.

March 31: 10<sup>th</sup> Great Lakes Meteorology Conference, Valparaiso, Ind.

April 15: Application period for NWA David Sankey Minority Scholarship closes.

May 15: Application period for NWA AccuWeather and Dr. Scofield Scholarships closes.

June 1: Sol Hirsch Education Fund Grant application period closes.

June 15: Meteorological Satellite Application Award Grant application period closes.

Aug. 1: Nomination period for Annual NWA Awards closes.

Oct. 6-11: 37th NWA Annual Meeting, Madison, Wisc.

#### NWA Newsletter (ISSN 0271-1044)

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