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

No. 13 – 3

Newsletter MARCH 2013

Superstorm Sandy vs. The Perfect Storm
A Comparison with Focus on Ocean Waves

National Weather Association (NWA) Specialized Operational Services Committee's Marine Section

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National Weather Service (NWS)
Training Division

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As Superstorm Sandy evolved, comparisons were made to the 1991 Perfect Storm, but how similar were they really? The root of these comparisons came from the fact that both events involved the phasing of tropical and mid-latitude energy to produce extremely powerful systems. In addition, they both occurred at the end of October. However, the '91 storm would best be described as a rapidly intensifying extratropical low that absorbed a tropical system (Hurricane Grace), while the case with Sandy was such that the original tropical system's circulation remained fully intact while absorbing an injection of mid-latitude energy. For a closer look at Sandy's evolution via an innovative satellite imagery analysis technique, see this GOES-R and JPSS National Centers Perspective blog entry.

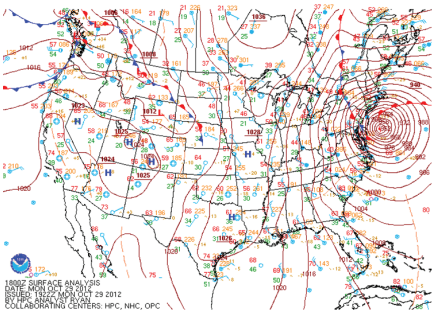

Figure 1. NWS/NCEP surface analysis from 1800 UTC October 29, 2012, depicting Sandy's massive circulation a few hours prior to landfall, at the time of it's 940 mb minimum central pressure.

To draw further contrast, the '91 storm's center remained a good bit away from the U.S. East Coast, while Sandy, of course, came ashore with devastating impacts from the resulting storm surge. Sandy's central pressure bottomed out off the south New Jersey coast at approximately 1800 UTC on October 29 at 940 mb (Fig. 1), an extraordinary level for that region of the Atlantic. In 1991, a minimum central pressure of 972 mb was estimated with the Perfect Storm, though the associated gradient on the north and west sides of the system was even tighter than would typically occur with a storm of that depth due to a very strong area of high pressure extending from Eastern Canada down the Appalachians at the time.

As for seas, Sandy, with its immense and powerful circulation, generated maximum significant wave heights of around 47 feet as analyzed by the Ocean Prediction Center on October 29 (Fig. 2, page 5). With the '91 storm, an offshore buoy east of New England measured a maximum significant wave height of 39 feet, though the system's slow and unusual westward movement allowed seas to build along a lengthy fetch and for an extended period of time, so somewhat higher significant wave heights may well have existed. This fetch was directed westward, towards New England, as well as south and southwestward, which resulted in very large (and in some cases damaging) swell reaching much of the U.S. East Coast.

When considering wave heights, it's important to note that significant wave height is a single number that actually

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INSIDE THIS EDITION ...

Extreme Volunteerism in the NWA

There are many volunteers in our organization who truly make a difference in the health and progress of the NWA, but there are a special few that I like to think of as "Extreme Volunteers". This is my own term, and I hope it is taken in the respectful manor of admiration I have for these people. One is Councilor Janice Bunting. She dedicates countless hours per month volunteering and helping to lead our Communications Group in streamlining the internal and external processes associated with a professional organization with nearly 3,000 members.

On March 12, 2013, Janice organized an outreach event for NWA Vice President John Gordon (another Extreme Volunteer) and me to speak with the University of Oklahoma (OU) and Central Oklahoma local NWA chapter joint meeting held at the National Weather Center in Norman. She picked us up at the airport, drove us to visit potential corporate sponsors, took us out for a quick BBQ lunch, and helped organize a speed-mentoring session for OU students that evening. The event had nearly as many mentors comprised of four former NWA Presidents, a former Vice President and many former and current Councilors, as there were students partaking. Janice did all this while hobbled after a major Achilles heel surgery two weeks earlier. Truth be told, she could get around faster than V.P. Gordon and me on our two good legs with the aid of her speedy three-wheeled cart.

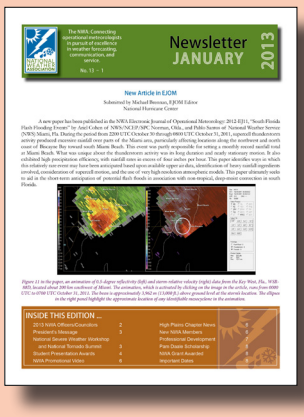
It is this type of dedication to service by our members that will assure the continued success of the NWA well into the future. Kudus to all of our "Extreme Volunteers" who help make the NWA the organization of choice for operational meteorologists across America.

Bruce Thomas, NWA President

NWA President Bruce Thomas took Janice's photo on his iPhone as they were preparing to visit the National Weather Center in Norman, Okla., on March 12, 2013.

Newsletter Submissions

We welcome Newsletter article submissions from members. Send articles to nwanewsletter@nwas.org by the 25th of the month for publication in the following month's edition at the earliest. Information about the Newsletter and a link to author guidelines can be found at http://www.nwas.org/newsletters/.


Newsletter JANUARY 2013

New Article in EJOM

INSIDE THIS EDITION ...

Extended Abstracts for the NWA 38th Annual Meeting

For the second consecutive year, the NWA will offer the option of submitting an extended abstract to its annual meeting. Whether you have an oral or poster presentation you will be able to submit a short paper to further describe your research project. This provides others the opportunity to learn more about your work after the conference is over—especially those who cannot attend. Moreover, this gives researchers an option of citing your work in a more formal way than via a PowerPoint presentation or poster. The extended abstract is a particularly good option if, for some reason, you cannot attend the NWA 38th Annual Meeting (e.g., travel decisions affected by budgets or weather). If you write an extended abstract you should ensure it undergoes an "in-house" review prior to submitting it because it will not be formally peer-reviewed by the NWA. Here is an example from 2012: http://www.nwas.org/meetings/nwa2012/extendedabstracts/NWA2012_D8.2_Craven_Wiedenfeld.pdf. Finally, the template for creating your extended abstract, along with upload instructions, will be available from the NWA 38th Annual Meeting page in the near future. (See page 6 for more meeting info!)

Matthew J. Bunkers
NWA Publications Committee Chair

Weather Information in Service to Society: Perspectives from Social Sciences

Amy Stevermer, Heather Lazrus, Julie Demuth, Kevin Barjenbruch
NWA Committee on Societal Impacts of Weather and Climate

The Value of Social Sciences and Societal Impacts

The scope and magnitude of weather impacts on society continue to expand as extreme events become more frequent and population growth and other factors increase vulnerability. Considering societal impacts and incorporating knowledge from social science disciplines play increasingly important roles in improving forecast content, communication, and utility to a range of weather-sensitive users.

To support integrating the social sciences throughout the weather enterprise, the NWA Committee on Societal Impacts of Weather and Climate was established in 2009. Committee efforts to date include involvement in NWA conference planning and collaborations with other organizations, including the American Meteorological Society's (AMS) Board on Societal Impacts. The committee also works to help the weather community consider societal aspects of forecast and warning information and to foster relationships between meteorologists and social scientists.

Definitions

Social sciences – academic disciplines (e.g., anthropology, communication, economics, psychology) concerned with scientifically understanding human behavior, cognition, and society

Societal impacts – consequences to society of weather and climate events and processes

Risk – possibility of harm due to some hazard; probability of loss

Vulnerability – characteristics of persons or groups that influence their ability to avoid harm from the impact of a hazard

Integrating social sciences perspectives into the weather community requires changing perceptions that weather forecast products are purely meteorological in content and interpretation. Providing people with timely, relevant, and potentially life-saving weather information involves understanding the individuals and groups who use forecast information. Achieving this understanding requires complementing meteorological knowledge with that from the social sciences to better understand what and how weather information is obtained, interpreted, and used in decision-making. Also essential is recognizing how these processes are influenced by non-weather-related factors (e.g., people's worldviews, experiences, risk perceptions, livelihoods, and even time of day). Social scientists ask: Who are the users and what are their needs, constraints, behaviors, and expectations?

As Dr. Jeff Lazo, an economist and Director of the Societal Impacts Program at the National Center for Atmospheric Research (NCAR), wrote in Weather and Society Watch, "…the [National Weather Service] is moving from its core competency to a whole new paradigm—one that requires a significant investment to develop a social science competency." This paradigm change will involve all sectors of the weather enterprise if it is to better serve its users. Forecasters already rely on customers' input to understand needs and decision thresholds across sectors, including aviation, public safety, energy, surface transportation and agriculture. The social sciences can inform these efforts, and several examples exist of social science research that has been or has the potential to be translated to forecast operations.

Research Example: Warning Decisions in Flash Flood Events

In an ongoing project, a research team at NCAR with expertise in meteorology, environmental anthropology, economics, and risk communication is developing an integrated understanding of warning system processes to improve risk communication and warning response for extreme weather events. Part of the study examines flash flood warning communication in Boulder, Colo., where mountainous areas pose significant flash flood risks and warning and response challenges.

A central component of the project examines key differences and similarities between expert and lay understandings of flash floods. The team interviewed 20 experts (forecasters, public officials, and television and radio media representatives) and 26 members of the public. The interviews were carefully designed to identify "mental models" of flash floods. These mental models represent how people understand the causes and consequences of flash floods. The team then compared and contrasted experts' and laypeople's understandings to identify differences in public understanding of flash floods including misconceptions, peripheral beliefs, and imprecise understandings. This mental models approach helps social scientists identify the most important information that people need to know but do not know about flash floods to make informed judgments. These insights can help tailor effective educational efforts in the long term and improve risk communication messages in the short term.

Incorporating a Social Sciences Perspective

The ways in which social sciences perspectives and considerations of societal impacts are being infused into the weather community are myriad. Social sciences and societal impacts themes are becoming prevalent at both NWA and AMS annual meetings. These sessions help communicate new ideas and increase awareness of how the latest social science findings can inform the weather enterprise. Existing and emerging publications, including the AMS journal Weather, Climate, and Society, provide venues for disseminating social science research as related to weather and climate.

See SOCIETY on page 6

Three Rivers NWA Chapter Quarterly News January-March 2013
California University of Pennsylvania (Cal U)

http://hera.calu.edu/clubs/weather/

Brittany Kusniar, Secretary

The Three Rivers Chapter of the NWA had a great start to the spring semester. Chapter members were involved with StormFest, educational outreach, conferences, the Colloquia Series, fundraising, and various workshops.

CHAPTER NEWS

STORMFEST

After many months of planning, Cal U's Sixth Annual StormFest was held on February 15 and 16. StormFest is an educational outreach event geared towards teaching children about meteorology and the earth sciences in a fun way. The event took place at the Carnegie Science Center in Pittsburgh. On Friday, there were 14 activities staffed by around 30 volunteers from the chapter. Many children came to visit on school field trips. The main event on Saturday featured 35 activities and over 105 volunteers. The volunteers were members from our chapter and alumni, the Cal U Geology club, the sorority Alpha Sigma Tau, and the fraternity Theta Xi. The chapter also worked in collaboration with the Ohio University meteorology program, which sent 12 volunteers. Saturday's event featured meteorologist Nick Walker from The Weather Channel who performed two "weather dude" shows. Nick signed autographs and engaged with the public as well. Matthew Kramar, the Science and Operations Officer from the Pittsburgh NWS office, volunteered with an activity geared towards weather safety. He also brought a tornado machine for children to enjoy. Attendees on Saturday had the chance to complete 18 activities to earn a free StormFest t-shirt. StormFest had a record of over 5,000 attendees. This was another successful year for this event.

StormFest volunteers after a successful weekend at the Carnegie Science Center in Pittsburgh.

EDUCATIONAL OUTREACH

Former Educational Outreach chairman, Donald Jellison Jr. was asked to return to Jubilee Christian Academy after a successful presentation last year. In January, he gave a presentation on "Hollywood: Fact or Fiction" to a group of sixth-graders. The children enjoyed his return.

Members of the Educational Outreach Committee traveled to Albert Gallatin North Middle School in February to teach sixth-graders about natural hazards. The recent meteorite phenomenon in Russia was of interest to many students. The committee brought a large "thank you" sign back to campus, with the signatures of the class. The committee also gave the same presentation to juniors and seniors at Ambridge High School in March.

CONFERENCES

Eight chapter members were selected to attend the 93rd AMS Annual Meeting in Austin, Texas from January 6-10. StormFest chair Elizabeth Smith set up a table at WeatherFest promoting our StormFest educational outreach efforts. Activities included "Make a Weather Map" and "Make a Wind Vane." This event was open to conference attendees and the public. Throughout the week, members attended the AMS Early Career Professional Reception, student and professional poster sessions, annual chapter officer's breakfast, AMS Awards Banquet, and interacted with alumni. They made valuable contacts and established relationships with professionals and students in their specific field of interest. Overall, members viewed this experience as extremely beneficial and are looking forward to future AMS conferences.

COLLOQUIA SERIES

U.S. Air Force Captain Josh Iachini was the chapter's first speaker of the semester. He gave a detailed presentation on meteorology career options that are available through the Air Force. Currently, meteorology is one of the four highest demanded degrees in the Air Force. He also spoke about ROTC, training

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and other special operations within this military branch.

The Colloquia Series chair has speakers lined up for the remainder of the semester. Since all presentations are now streamed live on the internet, the chapter plans on opening up these presentations to surrounding chapters to gain local ties and share the series with others.

FUNDRAISING

Chapter members began the semester with several fundraising events. In February, members attended a memorial scholarship fundraiser for a late member of the Cal U Geology club. The chapter has worked closely with the Geology club in the past, and was glad to support them in this event. Also in February, chapter members began selling $5 raffle tickets for a Pittsburgh Penguin game that will take place on April 17. Candy sales began again for the spring semester, with all proceeds going directly to the chapter. The chapter named a winner for the Snowfall Competition. The winning guess (1.5 inches on December 17) received half of the total profit from this raffle event.

WORKSHOPS

The chapter was busy organizing workshops in March. The chapter organized a Robert's Rules of Order workshop open to the campus student body. Cal U's campus parliamentarian led this event. Robert's Rules is the most widely used parliamentary procedure. During this workshop, attendees were taught how to properly use Robert's Rules in their organizations. This workshop was a great way to educate students on proper usage of Robert's Rules in a welcoming environment. The annual Science Olympiad was held on campus in March. Chapter members volunteered for various events throughout the day and interacted with local high school students.

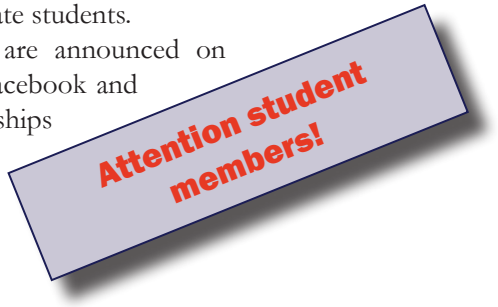
Also in March, Matthew Kramar from the Pittsburgh NWS office delivered an introductory workshop on the GR2Analyst (http://www.grlevelx.com/gr2analyst/) software to chapter members and emergency managers from Washington County, Pa. In the afternoon, he presented a lecture on storm structure, followed by various case studies from archived WSR-88D Level II radar data. The case studies represented significant severe weather events with both tornadic and hail signatures evident from radar analysis. The Cal U licenses for GR2Analyst were procured from grant funding by Dr. Thomas R. Mueller (GIS-Earth Sciences).

Student Scholarships Status

Jeff Tongue, Education Committee Co-Chair

The NWA Council decided late last year that only members of the NWA are eligible for NWA Scholarships. The NWA offers seven scholarships plus a grant each year. Most scholarships carry an award of $1000 and are open to full-time undergraduate and graduate students.

Scholarship application periods are announced on the NWA main Web page and via Facebook and Twitter. Please visit the NWA Scholarships Web page for more details. We will begin accepting applications for three scholarships on April 1.



SANDY from page 1

represents a spectrum of wave heights, specifically, the mean height of the highest 1/3 of the waves. Therefore, peak individual waves for each of these historic storms were certainly much higher than the significant wave height numbers mentioned above. National Oceanic and Atmospheric Administration (NOAA) buoys do not measure nor report the peak height of individual waves, and questions have been raised regarding Canadian buoy observations during extreme conditions, though individual waves of approximately 100 feet were reported by a Canadian buoy with the Perfect Storm, which helped to cement its status as a legendary marine weather event. Sandy, on the other hand, will be remembered first for its devastating coastal and land-based impacts, with the extremely large ocean waves it generated likely to remain more of an interesting afterthought.

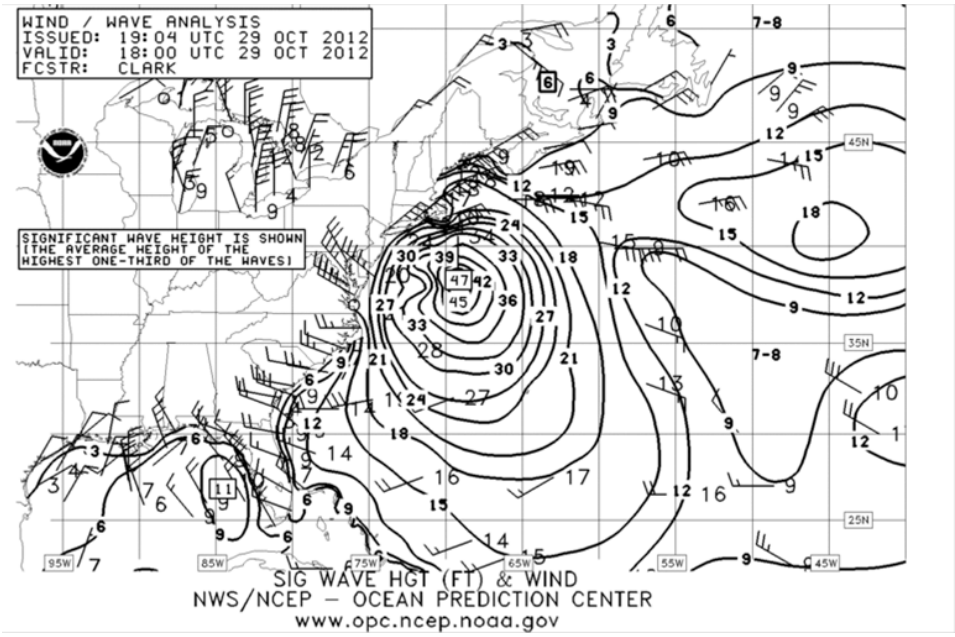
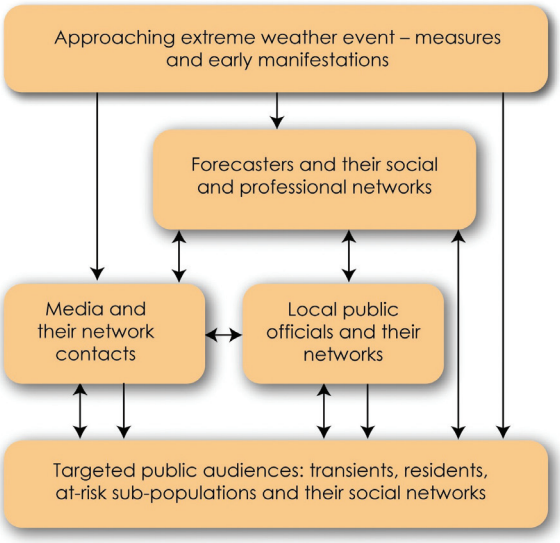


Figure 2. NWS/NCEP Ocean Prediction Center sea state analysis also from 1800 UTC October 29, 2012, depicting 47 feet maximum significant wave height.

SOCIETY form page 3

From a training standpoint, several efforts seek to help the operational community increase its capacity for enhancing services to end-users. For instance, the NWS Operations Proving Ground provides a broad-based framework for testing promising new forecasting capabilities in a realistic operational setting and focuses on service enhancement initiatives for improved impact-based decision support services. The Warning Decision Training Branch has recently released training geared toward improving communication with partners and end-users during high-impact events. In online modules offered via the MetEd website, the COMET Program is increasingly incorporating decision support related information for the weather community and its partners.

As an example of moving ideas into practice, a growing number of grass-roots Integrated Warning Teams (IWTs) nationwide are fostering more effective interactions among forecasters, the media, and emergency management partners. During routine operations, open communication is practiced via phone calls, conference calls, webinars, NWSChat, and other types of social media. When the weather turns dangerous, the team is able to efficiently and directly exchange forecast and warning decision information, helping to protect the public and save lives.



Interactions among public audiences, forecasters, the media, and local public officials, including emergency managers, all help shape the public's interpretation of and response to an approaching extreme weather event.

The focus on including societal impacts perspectives in forecasting and other weather information is likely to continue making strides forward. This sharing of information and inclusion of research findings from social sciences and other communities is even more important given the recent numbers of weather fatalities (1,070 in 2011) and multi-billion dollar weather losses ($35.9 in insured losses in 2011 and an estimated $160 billion in 2012). In light of these numbers, the societal relevance of weather services, and need for the weather enterprise to respond accordingly, cannot be denied.

NWA 38th Annual Meeting
October 12 - 17, 2013

Charleston, S.C.

http://nwas.org/meetings/nwa2013/

Hurricanes Sandy and Isaac in 2012 put further emphasis on a critical question facing the weather enterprise: How do we encourage people to take appropriate action when high-impact weather is threatening them and their property? This issue is certainly not new, but the proliferation of avenues which citizens receive such information (which can be conflicting at times) has brought this topic to an even higher level of importance. The main goal of the conference is the sharing of physical and social science in order to determine how the weather enterprise can encourage people to take appropriate action during high-impact weather events, while realizing there are still limitations of each discipline

High-Impact Weather Communications: Finding Calm in the Eye of the Storm

Schedule of Events and Meeting Overview

The 2013 NWA Annual Meeting will include the annual Broadcaster Workshop, and the Sixth Annual Student Session, both on Sunday, October 13. The general sessions will be held October 14-17. The NWA annual awards luncheon will be held on Wednesday, October 16.

Abstract Submission

Submit abstracts for oral presentations by May 31 and abstracts for poster presentations by June 15 (see page 2 for extended abstract instructions).

Abstracts should be sent via the online form on the NWA Web site at: www.nwas.org/2013abstracts.html. If you are unable to submit your abstract via the online form, please contact the NWA office at (919) 845-1546 or email: exdir@nwas.org.

Presenters will be notified via e-mail regarding the disposition of their abstracts by July 26 from the Program Committee. A preliminary agenda will be posted on the NWA Web site by early August for presenters to review and proofread.

Students, please complete the abstract submission form section regarding student awards. If you concur, your presentations will be reviewed by the NWA Weather Analysis and Forecasting Committee members. Monetary awards will be presented to the best oral presentations and posters in undergraduate and graduate student categories.

Meeting Location
North Charleston Convention Center
5001 Coliseum Drive
North Charleston, SC 29418

Host Hotel (Right next door to the meeting!)
Embassy Suites North Charleston
5055 International Boulevard
North Charleston, South Carolina, 29418

New NWA Members in February 2013

Regular/Military/Retired

Colleen Coyle
Chris Foltz
Dave Hennen
Jennifer Hogan
Jeff Hubright
Mark Huncik
Brian Kolts
Harold Kuykendall
Jeremy LaGoo
William Logan
Danielle Manning
Craig McPherson
Sean Poulos
Phillip Price
Kris Sanders
Jeffery Sparks
Brian Tassia
Robert Thomas
Phillip Tori
Michael Winders

Students

Jacob Anderson
Randin Bernosky
Derek Bowen
Gaje Buchanan
Jonathan Gerhart
Wesley Harrison
Shanna Hirsch
Erika Martin
Andrew Moffitt
Danielle Richter
Kent Sparrow
Alexander Tomoff
Amy Torres
Ryan Werkheiser
Jane Werntz
Bryce Williams

PROFESSIONAL DEVELOPMENT

2013 NWA sponsored Annual Meetings, Conferences and Special Events

April 4-6: The 17th Annual Severe Storms and Doppler Radar Conference

Sponsored by the Central Iowa NWA Chapter, it will be in the Courtyard by Marriott in Ankeny, Iowa.
http://www.iowa-nwa.com/

October 12-17: The 38th NWA Annual Meeting

Charleston, S.C. See page 6 for details.

Other Meetings, Conferences and Special Events in 2013

April 8–12: NOAA Satellite Conference for Direct Readout, GOES/POES, and GOES-R/JPSS Users

Has moved to College Park, Md. The conference will be a great opportunity to enhance user access, reception, and readiness for data, technology, and applications from current and future environmental satellite constellations. All users of environmental satellite data, information, and products are encouraged to attend.
http://satelliteconferences.noaa.gov/

April 17-24: The National Tropical Weather Conference

For Broadcast Meteorologists, it will be at the Isla Grand Resort on Padre Island, Texas. The conference theme is "Tropical Systems: Preparing for the Storm". Attendees will have the opportunity to enhance their knowledge of tropical systems with educational sessions on tropical forecasting, using social media, flying with the hurricane hunters and more. The conference will include all former directors of the National Hurricane Center. http://www.hurricanecenterlive.com and Facebook https://www.facebook.com/NationalTropicalWxConference

May 26-30: The 2013 Joint Scientific Congress of the CMOS, CGU, and CWRA

It will be held at TCU Place in Saskatoon, SK, Canada. Presentations are encouraged for all areas of interest of CMOS (Canadian Meteorological and Oceanographic Society), CGU (Canadian Geophysical Union), and CWRA (Canadian Water Resources Association). The theme is "Bridging Environmental Science, Policy and Resource Management". Visit the Congress Web site for contacts and further information.

Sept. 16-20: The 19th AMS Satellite Meteorology, Oceanography and Climatology Conference and the 2013 EUMETSAT Meteorological Satellite Conference

This international conference will be held in Vienna, Austria. Session topics include current and future satellites, instruments and their applications, climate, calibration and characterization, and data access for easy utilization. The overarching theme will be water vapor, clouds, and precipitation, and the use of current and planned Earth observation systems to improve our understanding and adequately monitor trends and variability in the global hydrological system.
http://www.conferences.eumetsat.int

Easier Access to JOM Articles

Matt Bunkers, Publications Committee Chair

Do you find it inconvenient to log in every time you want to view a paper in the NWA Journal of Operational Meteorology (JOM)? Would you prefer to access the articles without any intermediate steps? There is an easy way to do this, and it is called IP authentication. Several other professional societies have similar member benefits.

How does it work? First, go to your PC or Mac, either at home or at work. Next, type the following address into your favorite browser: www.whatismyip.com

Make note of your IP address near the top of the page (e.g., 204.227.127.170 in the figure). Email your IP address (or addresses, if using both home and work locations) to the NWA Publications Chair at pubchair@nwas.org. The Chair will confirm your membership, and then configure the JOM website so that you can freely access all PDFs from your PC/Mac by simply clicking on their links from the JOM webpage.

IMPORTANT DATES

April 4 - 6: 17th Annual Severe Storms and Doppler Radar Conference, Ankeny, Iowa

April 15: Application period for NWA Broadcast Scholarship closes

April 15: Application period for NWA Sankey Scholarship closes

May 15: Application period for NWA Scofield Scholarship closes

Oct. 12-17: 38th NWA Annual Meeting, Charleston, S.C.

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Submit newsletter items to nwanewsletter@nwas.org using the Instruction for Authors at http://www.nwas.org/newsletters/newsletter_instructions.php.

Members receive the Newsletter and *National Weather Digest* as part of their regular, student or corporate membership privileges.

Address, phone number, email and affiliation changes can now be made online: member.nwas.org.