



NEWSLETTER

**National Weather
Association**

NO. 10 – 2 FEBRUARY 2010

A Noteworthy Winter of 2009-2010



Jan. 28-29 winter storm in Norman, Okla. Photo courtesy of R. Tanamachi of the University of Oklahoma. (Do not reproduce without photographer's permission).

Are you ready for the winter of 2009-2010 to end? One article cannot sufficiently capture the events that have occurred so far this winter, but a few of the more significant events are included here along with information on

what is causing the extreme events.

In this age of social networking, Twitter tweeters are frequently describing this winter using hashtags with the words mudslide, blizzard, snow, ice storm, El Niño and we can't forget 'snowmageddon'. Other networking sites have been filled with impressive winter weather photos and tornado shots from California. So what is causing these unusual winter events, and what are some of the records that have been set?

As Steve Zubrick notes in the President's Message (page 3), El Niño is contributing to this unusual weather, but it is not the

only factor. The National Oceanic and Atmospheric Administration (NOAA)/National Weather Service (NWS) Climate Prediction Center Deputy Director Mike Halpert explained that El Niño was largely responsible for bringing increased moisture to the Southern and Eastern U.S., but very strong episodes of the negative phase of the Arctic Oscillation are driving the polar jet stream farther south than usual delivering the cold air that has contributed to the record winter weather events in the South and East.

In the negative phase, pressures over the North Pole are higher than normal while mid latitude pressures are relatively lower. The result is lower than normal temperatures in the mid latitudes with warmer than normal temperatures generally north of the Arctic Circle. The reverse is true in the positive phase. These hemispheric phases are part of the normal cycle of the atmosphere and only represent temporary redistributions of heat energy across the hemisphere. The phase of the Arctic Oscillation can only be accurately predicted with a lead time of 7-10 days, so Halpert said that influences of a positive or negative phase are not included in the long-lead climate forecasts. (See the image of December's northern hemisphere temperature anomaly on page 6.)

While snow was being trucked

See STOP, page 6

Warning size for hail grows larger! See page 2 for details on new criteria that began in January.



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NWA member Mike Eckert of the NWS Hydrometeorological Prediction Center took the photo at left of the NCEP building in Camp Springs, Md., during the Feb. 9 blizzard.

Announcing the NWA 2010 Meteorological Satellite Applications Award Grant

The NWA invites all undergraduates to write an original paper on the study and use of satellite remote sensing data in weather analysis and forecasting. Themes of the paper may include original research, case studies, development of a technique / algorithm, or a survey of applications. One author will receive the NWA Meteorological Satellite Applications Award, a grant of \$500, and be invited to present a poster at the NWA 35th Annual Meeting in Tucson, Ariz., in October 2010. Free registration for the 2010 Annual Meeting is included. An additional stipend of \$500 will be provided to help cover travel and hotel expenses.

Student papers should not exceed ten (10) pages including images and appendices. The student must be enrolled as an undergraduate at the time the paper is written and be in good academic standing at the college or university attending. The student also must be a U.S. citizen or hold permanent resident status. All of the requirements and instructions for submitting a paper are located at www.nwas.org/grants/NWAMETSATAwardGrant.php. Contact the NWA Office with any questions. The deadline for receipt of papers is June 15, 2010.

"The National Weather Association Meteorological Satellite Applications (NWA MetSat) Award Grant requires undergraduate students to think about how to advance the field of operational meteorology with observations from one of the most fundamental instruments to the field -- weather satellites. Because of this, the NWA MetSat award is one of the best additions to my curriculum vitae. As part of a graduate school or job application, this award signals a unique understanding of the fundamentals of research in the physical sciences, satellite meteorology, and insight that operational meteorology is a dynamic field which requires fresh ideas. This award brought me to my first annual meeting of the NWA, a memorable experience and resume builder itself. As important as the award, the ability to present my work to the attendees was a defining moment in my undergraduate career and undoubtedly led to additional opportunities within the NWA and with professionals in the field. My unending thanks extend to the sponsors of this award for aiding my early career."

Written by Jordan Gerth
2007 MetSat Award recipient

NWS Severe Hail Criterion Changes

Previously, the NWS issued Severe Thunderstorm Warnings whenever a thunderstorm was forecast to produce wind gusts to 58 miles per hour (50 knots) or greater and/or hail size 3/4 inch (penny-size) diameter or larger. For the past few years, offices that cover areas of Kansas have experimented using a warning criterion of one inch diameter hail. During the spring and early summer of 2009, this experiment expanded to other areas in the Central and Western U.S. **Beginning Jan. 5, 2010**, the minimum size for severe hail nationwide increased to **one inch (quarter-size)** diameter. There will not be a change to the wind gust criterion of 58 mph.

This change is based on [research](#) indicating significant damage does not occur until hail size reaches 1 inch (quarter-size) in diameter, and as a response to requests by core partners in emergency management and the media. Particularly in areas of the Central U.S., the frequency of severe thunderstorm warnings issued for penny-size and nickel-size hail might have desensitized the public to take protective action during a severe thunderstorm warning.

In areas that experimented with changing to the one inch hail criterion, media partners stated their user feedback suggests warnings are now more meaningful. In addition, television networks receive fewer viewer complaints for breaking into programming for non-damaging storms.

The Emergency Management community in those areas agreed that warnings carry more weight, and spotters now concentrate on the more significant events.

-National Weather Service



Additional hail resources

NWS Service Change Notice:

www.weather.gov/os/notification/scn09-52_1inch_hail_oper.txt

NWS One inch hail Web site:

www.weather.gov/oneinchhail/

Hail Damage Threshold Sizes for Common Roofing Materials (Marshall et al.):

<http://ams.confex.com/ams/pdfpapers/45858.pdf>

President's Message: What a Crazy Winter!

Wow! What a crazy winter it's been! I've worked for the NWS in the Washington D.C. area for nearly 25 years, and have never experienced as many big snowstorms (3) in one season as we've had this winter. Two back-to-back storms in early February within five days of each other brought portions of the region to a near standstill. Prodigious amounts of snow have fallen not only across the Mid-Atlantic, but in many locations, especially across the southern tier of states. Forecasters and media have been challenged to predict these massive storms.

This 2009-10 winter season is already one for the record books. Seasonal snowfall records were smashed, not only here in D.C., but in Baltimore, Md., Wilmington, Del., Philadelphia and Allentown, Penn., and Atlantic City, N.J. Many other observers (e.g., NWS cooperative observers) are likely approaching record totals. In one storm alone, on Feb. 5-6, two foot snow totals were common in the D.C. area. Our office in Sterling, Va., officially measured over 32 inches! Taking snow measurements during these winter storms proved a challenge at times. Below, our intrepid meteorologist intern (Kevin Witt-5' 10") wades through snow nearly three feet deep to get representative measurements outside our office during blizzard conditions on Feb. 10 (photo background: the base of our WSR-88D tower).

I salute everyone who braved treacherous conditions to meet their

duty to provide customers and the public with the best forecasts and broadcasting support possible. I've heard many stories of forecasters, media and other support staff manning their posts nearly round-the-clock. While winter conditions were severe, loss of life was low, no doubt due to the services that many of you provided! In Washington D.C., the early February storm caused an unprecedented four day shutdown of the Federal Government, idling nearly 230,000 federal workers from Monday-Thursday; estimated by some officials to cost roughly \$100 million per day in lost productivity. The U.S. House cancelled its sessions. When the Federal Government attempted to resume work on Friday, Feb. 12, the region's transportation network was still not ready. Massive gridlock and commuting delays ensued during the Friday evening rush hour that AAA compared to those commuting jams experienced during the 9-11 disaster.

It's been a rough winter this season, owing to the El Niño conditions and active southern jet stream and combined with the anomalous negative phase Arctic Oscillation (AO). Heavy precipitation; snow, rain and ice, fell across many sections of the U.S. On Dec. 18-19, 2009, a major snowstorm struck the Mid-Atlantic region, dumping nearly two feet of snow in the Washington-Baltimore area.

Significant winter storms were common especially across the southern tier of the CONUS U.S. as the map (page 6) of various NWS watch/warnings/

and two Emergency Declarations for January 2010 winter storms that impacted Arizona and Oklahoma.

Other snowfall records fell.

Wichita Falls, Texas, eclipsed its all time seasonal snowfall record dating back over 50 years. Oklahoma City is a few tenths of an inch shy of its all time seasonal snow record. And Dallas-Fort Worth International Airport (DFW) in Texas had just over 11 inches of snow on Feb. 11 breaking all-time records for a single calendar day. During the 24 hours ending on 4 a.m. Friday, Feb. 12, 12.5 inches of snow fell at DFW making that the greatest 24-hour snowfall on record, and they need just a few more inches to break their all-time season snowfall record.

Although the Northeast has not had much snow over the past few seasons, Burlington, Vt., on Jan. 2-3 managed to break its single storm snowfall record when nearly 33 inches fell over a 35 hour period. However, this storm featured quite localized snowfall amounts across the Champlain Valley; nearby Plattsburg, N.Y., 20 miles west of Burlington, only received seven inches. This proved a challenge to forecasters.

Many of this season's significant winter storms featured blizzard conditions. Blizzards can produce life-threatening conditions for those venturing outdoors unprepared. The seemingly frequent issuance of Blizzard Warnings by NWS offices kept media outlets busy getting the message out. Many media outlets went to "wall-to-wall" in their coverage of these life-threatening storms. While blizzards are more common in the mountains of the West, the Great Plains and along the coastal Northeast U.S., issuance of Blizzard Warnings in areas unaccustomed to them created additional challenges to both forecasters and the media. In central Maryland, over two dozen persons were stranded during blizzard conditions



advisories (WWA) shows for the late January 2010 storm system. So far in early 2010, FEMA has made four Major Disaster Declarations for states in the Mid-Atlantic due to severe winter storm conditions caused by the mid-December 2009 snow storm,

See *PRESIDENT*, page 6

ENHANCING YOUR PROFESSIONAL DEVELOPMENT – PROPOSED NEWSLETTER TOPICAL ARTICLES

To help meet the NWA mission to “Support and Promote Excellence in Operational Meteorology”, the Professional Development and Remote Sensing Committees are planning a series of short but targeted articles focused on specific topics of interest to NWA members. Our proposed list of articles to be published in 2010 is listed below.

However, we need your help to ensure we are meeting the needs of NWA members. We ask that you review this list, and provide us your feedback, to include contact information for potential collaborators/co-authors, to pd@nwas.org.

Article Topic	Committee Lead	Proposed Collaborator(s)
National Severe Weather Workshop	John Ferree	Greg Carbin
Winter Weather	Rich Shull	Dan Miller
Summary of the GOES-R Workshop	James Gurka	Jordan Gerth, Tim Schmit
Probability Forecasts at the NWS Storm Prediction Center	Ken Carey	Russ Schneider, Steve Weiss, Greg Carbin
Cooperative Weather Observations	Ken Carey	Joel Cline, Janice Bunting
Oral and Poster Presentations (Part III)	Ken Carey	Carl Thormeyer, John Scala
Flooding and Inundation	Christine McGehee	Mary Erickson, Jesse Feyen
Hydrometeorological Test Bed	Ralph Ferraro	Tim Schneider, Brian Motta
Agents vs. Do-It-Yourself	Amy Gardner	Dave Freeman
ULF Lightning Network	Gary Ellrod	Ron Holle
Phased Array, CASA, etc.	Pam Heinselman	Brian Motta
Remote Sensing of Water Flood Levels (IFLOWS)	Christine McGehee	Ralph Ferraro
Summary of NSSL Radar Experiments	Pam Heinselman	
Fire Weather	Mark Fox	Paul Stokols, Marie Trabert
Student Professional Development Opportunities	Elise Schultz	Jordan Gerth, Michael Stanga
Vendor Technologies	Brian Motta	
Tsunami Service Assessment	Ken Graham	
Real-Time Lightning	Dennis Buechler	
Using the GOES Sounder to Nearcast Severe Weather	Ken Carey	Robert Aune, Jordan Gerth
Communicating and Promoting Interest and Awareness in Science	Mike Mogil	
Leveraging Social Science, Understanding Your Customer	Dave Freeman	Mike Mogil
Thunderstorms and Tornadoes	Dan Miller	Rich Shull, Greg Carbin, Mark Fox
Serving as an NWA Volunteer	Elise Schultz	Jordan Gerth, Ken Carey
Social Media	Elise Schultz	Jordan Gerth, Mike Mogil
Ethics in Our Profession	Dave Freeman	Mike Mogil, Mark Fox
NPOESS Data Exploitation (NDE)	Stacy Bunin	James Yoe
Quarterly COMET Updates	Greg Byrd	
Broadcaster Professional Development	Dave Freeman	Amy Gardner, Betsy Kling
WAS*IS Activities	Ken Carey	Julie DeMuth, Eve Grunfest
Hurricane Forecast Improvement Program	Rich Shull	Pablo Santos, Mark DeMaria
Satellite-derived Snowfall Rates	Ralph Ferraro	Huan Meng, Nai-Yu Wang
NCDC and Remote Sensing	Gary Ellrod	Brian Motta, Jeff Privette
Extratropical Cyclone Track Climatology	To Be Determined	
GOES-R Proving Ground, User Readiness for GOES-R	James Gurka	Jordan Gerth, Brian Motta

*Kenneth Carey, Chair, Professional Development Committee
Ralph Ferraro, Chair, Remote Sensing Committee*

35th NWA Annual Meeting: Oct. 2 to 7, 2010

Where:

Marriott Tucson University Park, in the heart of the University of Arizona, 880 E. 2nd Street, Tucson, Ariz. 85719

Annual Meeting Hotel Information:

Marriott Tucson University Park Hotel

www.marriott.com/hotels/travel/tusup-tucson-marriott-university-park/

NWA room rates are as follows:

Single & Double room rate: \$106.00; Standard Suites: \$139.00

Call (800) 228-9290 and request the National Weather Association 2010 Annual Meeting rate to reserve your room! (Call by Sept. 1 to take advantage of our group rate!)

Our Theme:

"Fire and Ice: Science and Society," emphasizing the ongoing and emerging interaction between the branches of the weather and water enterprise, including the private sector, media, academia and government. Topics will include: societal impact research and public policymaker interaction with weather forecasters; tropical cyclone forecasting, particularly in the eastern Pacific; wildfire forecasting; hydrometeorology, precipitation forecasting and estimation; innovative uses for lightning data; winter and severe convective storms, with emphasis on high plains and western U.S. geography issues; data denial and how operational forecasters cope with key data losses; and climate variability and forecasting, particularly on the intra-annual level.

Professional Development Opportunities:

The 2010 Annual Meeting will include the annual Broadcasters' Workshop and DVD swap, and the 3rd Annual Students' Session at the University of Arizona Student Union – both on Sunday, Oct. 3. Student presentations will be reviewed by the NWA Weather Analysis and Forecasting Committee members, and monetary awards will be presented to the best presentations and posters in undergraduate and graduate student categories. The general session will be Oct. 4-7, with the annual awards luncheon on Wednesday, Oct. 6.



Abstract Submission:

The deadline for submissions of abstracts is June 1. Abstracts should be sent via the online form on the NWA Web site at: www.nwas.org/2010abstracts.html. Abstracts will be published in the Meeting Agenda as submitted, so please make sure that they have been carefully reviewed and edited. If you are unable to submit your abstract via the online form, contact the NWA office at (919) 845-1546 or email: exdir@nwas.org. Presenters will be notified regarding the disposition of their abstracts by Aug. 15.

Still Need More?

Annual Meeting Program Committee Chair: Erik Pytlak, Science and Operations Officer, NOAA/NWSFO, 520 North Park Ave, Tucson, AZ 85719; (520) 670-5156; annualmeeting@nwas.org.

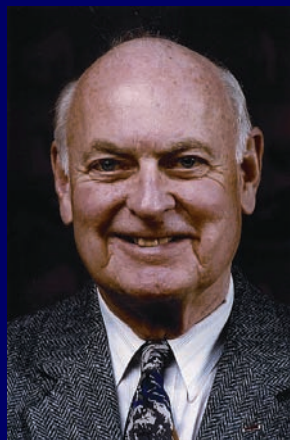
Broadcaster Workshop Program Chair: Mike Goldberg, PO Box 2491, Glen Allen, VA 23058-2491; mike@mike-goldberg.com

For more information on exhibits, special accommodations, registration and overall meeting program, visit www.nwas.org, contact the NWA office at (919) 845-1546 or email exdir@nwas.org.

In Memory of Kenneth C. Spengler

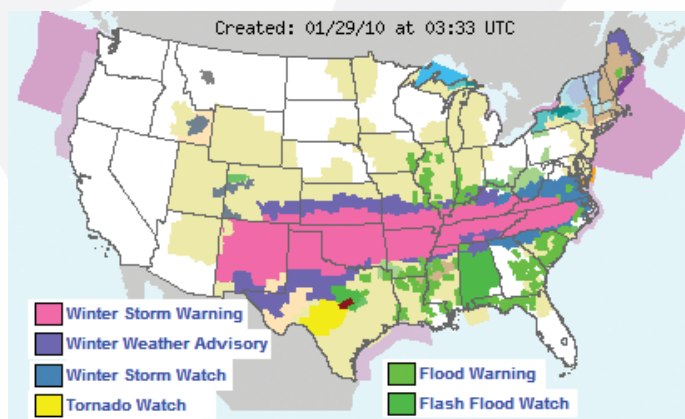
Kenneth C. Spengler (1915-2010), American Meteorological Society Executive Director for over 40 years and a retired USAF Brigadier General, passed away on January 28, 2010. Dr. Spengler served as AMS Executive Director from 1946 through 1988, leading the AMS through a time of rapid change after World War II. Membership increased from 2,000 to 10,000 during his tenure.

Dr. Spengler was also a charter member of the National Weather Association, joining in 1976 during the NWA's first year. He remained a member of the NWA until his passing. The NWA extends heartfelt condolences to Dr. Spengler's family.



associated with the third major winter storm that struck the Mid-Atlantic region Feb. 9-10.

A few events challenged forecasters. Note in the WWA map (below) valid at ~0300 UTC on Jan. 29, 2010, that the D.C. region is not under any winter storm watch. However, they ended up getting warning levels (5 inches) of snow by the end of the next day (Jan. 30). And in a summary of the Dec. 24, 2009 Christmas Eve Blizzard that struck portions of central Oklahoma, forecasters there faced challenges predicting that storm system would ultimately produce blizzard conditions.



Still, I was amazed how much lead time was afforded to the public by the timely issuance of long-lead Winter Storm Watches and subsequent Winter Storm (or in some cases Blizzard) Warnings for many of these major winter storms. Some winter storm warnings were posted nearly 30 hours in advance; while watches were issued nearly 48 hours out.

As good as these long lead times were, there is still much to learn in how we both characterize and express uncertainty and unpredictability of significant weather events. The National Research Council (NRC) report *Completing the Forecast* issued in 2006 on this topic offered nine recommendations for the entire Weather Enterprise to act upon (including NWS, academia, private sector and the media). Recently, an ad hoc committee on Uncertainty in Forecasts (referred to as "ACUF"), of the American Meteorological Society's Board of Enterprise Communication, developed a draft planning document that furthers this topic. This draft called, "A Weather and Climate Enterprise Strategic Implementation Plan for Generating and Communicating Forecast Uncertainty Information," is available for comment (<http://www.ametsoc.org/boardpages/cwce/docs/BEC/ACUF/2010-01-Plan.pdf>). I encourage all to review this plan. Provide feedback by March 31, 2010 directly to the ACUF by sending it to: acufplan@gmail.com

Finally, I hope you will consider presenting and sharing your winter-related research on storms that are now part of this record-setting anomalous winter season at our 35th Annual Meeting in Tucson, Ariz., in October. There's much we can learn from each other about this winter! I also encourage you to recognize your fellow NWA members who have made significant contributions to operational meteorology by nominating them for a 2010 NWA award (www.nwas.org/awards/index.php).

Please feel free to contact me at anytime. My email is President@nwas.org

Steve Zubrick
NWA President

STOP from front

into some of the Vancouver 2010 Winter Olympic courses to compensate for drier and warmer than normal weather, many people in the Eastern U.S. would have gladly shipped Vancouver their snow.

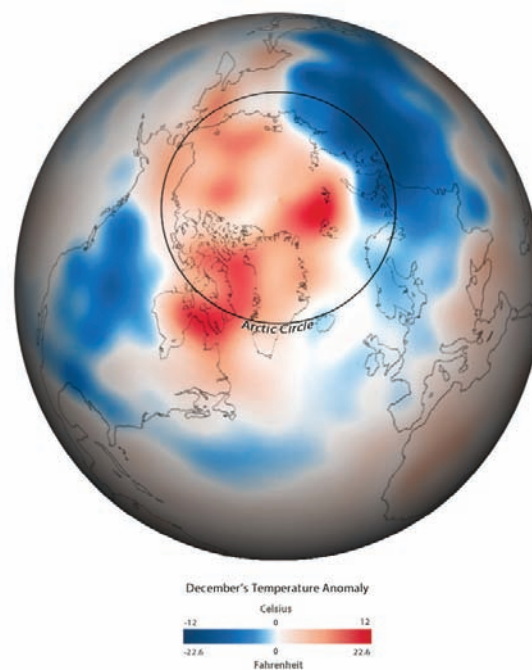


Image courtesy of Ned Gardiner, NOAA
Climate Program Office

Here are just a few of the new preliminary weather records and unusual weather events that have occurred recently.

- Rain fell on some portion of Southern California each day from Jan. 17-23. Several daily rainfall records were broken during this period. Significant mudslides and flooding occurred and many stations logged their lowest barometric pressures on record. On Jan. 22, the pressure fell to 29.07" of mercury at Los Angeles International Airport breaking the old record of 29.25" set on Jan. 17, 1998. Other all-time record low pressure readings were set across southern Nevada and Arizona. On Jan. 21, 1.69" of rain fell at Palm Springs International Airport breaking the previous daily record of 0.62" set in 1982.
- On Jan. 28-29, a major ice and snow event left damage throughout portions of Oklahoma. Many areas received a half inch coating of ice on the 28, but southwest Oklahoma received up to 1.5" of glaze. On the 29, Oklahoma City Will Rogers International Airport received 5.0" of snow breaking the old record of 1.8" set in 1979. As the storm moved to the East Coast, it continued to leave those in its path covered in ice and snow. A more thorough summary of the storm impacts in Oklahoma, as well as links to other areas affected, is located at www.srh.noaa.gov/oun/?n=events-20100128.
- The Nation's Capital and surrounding areas were crippled by record snowfall in early February. During the Feb. 5-6 storm Dulles International Airport recorded a two-day snowfall total of 32.4". Preliminary indications are that this two-day storm total snowfall breaks the previous two-day storm record of 23.2" set on Jan. 7-8, 1996, and the previ-

ous three-day storm record of 24.6" set on Jan. 6-8, 1996. As with any major climate record achievement, this preliminary record amount will be quality controlled by NOAA's National Climatic Data Center. On Feb. 9-10, heavy snow and blizzard conditions pummeled areas of southwest Pennsylvania and northeast West Virginia to the East Coast including the Washington D.C. area.

- According to data obtained from the Environment Canada [Web site](#), the Vancouver International Airport observation site in British Columbia had an average daily maximum temperature of 9.9°C (50°F) in January, and the average daily minimum was 4.5°C (40°F). The January normals for the site are 6.1°C (43°F) and 0.5°C (33°F) respectively. No snowfall was recorded at this site in January and the normal for the month is 16.6 cm (6.5 in.).

- With a week left in February, several stations in Alaska were reporting monthly average temperatures 5-7° above normal. On Feb. 19, Yakutat, Ala., reached a high temperature of 54° which set a new record high for the date. The old record was 48° set in 1963.

Janice Bunting
Contributing Editor

More information about the December 2009 negative phase is located at:

www.climatewatch.noaa.gov/2010/images/arctic-air-ushers-in-chilly-december.

Professional Development Opportunities in 2010

NWA sponsored Annual Meetings, Conferences and Special Events for 2010

The 2010 National Storm Conference: March 13

The Texas Severe Storms Association (TESSA) and NWS will collaborate again for this annual conference to be held at the Colleyville Center in Colleyville, Texas. The North Texas Chapter of the AMS/NWA is a sponsor of this event. <http://www.tessa.org/meeting.html>.

14th Annual Severe Storms and Doppler Radar Conference: March 25–27

This annual conference sponsored by the Central Iowa NWA Chapter will be held at the Sheraton Hotel and Convention Center in Des Moines, Iowa. <http://www.iowa-nwa.com/conference/>.

35th Annual Meeting of the National Weather Association: Oct. 2

See page 5 for details on this meeting which will be held in Tucson, Ariz. See Call for Abstracts at www.nwas.org. Abstracts due by 1 June 2010.

The National Flood Workshop: October 24-26

Sponsored by many agencies including the NWA, this conference will be in Houston, Texas. Abstracts are due April 28. Submit online at www.nationalfloodworkshop.net. E-mail the Weather Research Center in Houston at wrc@wxresearch.org for more information.

Other Conferences and Special Events

The 2010 Alaska Weather Symposium (AWS '10): March 9–10

This Symposium at the University of Alaska - Fairbanks provides a forum for the exchange of operational and research information related to weather in the Alaska environment. <http://weather.arsc.edu/Events/AWS10/>

World Meteorological Day: March 23

WMO and the National Meteorological and Hydrological Services of its 188 Members celebrate World Meteorological Day on 23 March to commemorate the 1950 entry into force of the convention that created WMO, which became a Specialized Agency of the United Nations a year later.

2010 National Hurricane Conference: March 29–April 2

The 32nd annual conference will be held at the Orlando Hilton, Orlando, Fla. <http://www.hurricanemeeting.com/>

21st International Lightning Detection Conference: April 19–20

3rd International Lightning Meteorological Conference: April 21–22

These conferences will be held at the Buena Vista Palace in Orlando, Fla. <http://www.vaisala.com/newsandmedia/events/ildcilmc.html>.

NOAA/NWS Eastern Region Flash Flood Conference: June 2-4

Improving flash flood forecast, warning performance and public action response are the objectives of this conference that will be at the Woodlands Inn and Resort, Wilkes-Barre, Penn. Sponsored by the NOAA/NWS Eastern Region, NOAA/NWS Weather Forecast Office in Binghamton, N.Y. and the Susquehanna Flood Forecast and Warning System. <http://www.erh.noaa.gov/bgm/research/ERFFW/>

14th Annual Great Divide Workshop: November 2-4

This workshop will be held at the Crowne Plaza in Billings, Mont. Send abstracts to Wr.Great.Divide.Workshop@noaa.gov by Oct. 1. www.wrh.noaa.gov/byz/greatdivide/welcome.php.

Students and Teachers: Now accepting applications for all NWA Scholarships and Grants

And for the first time ever, they're all on-line!

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 fall. Additionally, there will be **seven** education grants for K-12 Teachers.

Visit us online for more information:

www.nwas.org/committees/ed_comm/application/

www.nwas.org/grants/

NWA Scholarship	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
2010 Sol Hirsch Education Fund Grant for K-12 Teachers	June 1
Arthur C. Pike Scholarship	Oct. 25
Cassens/Phillips Family Undergraduate Scholarship	Oct. 25

Undergraduates: see page 2 to learn about an Opportunity to win a National Award and Cash Prize

Dates 2 Remember

March 13: 2010 Texas Severe Storms Association (TESSA) Conf., Colleyville, Texas

March 15: Application period ends for NWA Broadcast Meteorology Scholarship

March 25-27: 14th Severe Storms and Doppler Radar Conf., Des Moines, Iowa

April 15: Application period ends for NWA David Sankey Minority Scholarship

April 21-22: International Lightning Meteorological Conference, Orlando, Fla.

June 2-4: NOAA/NWS Eastern Region Flash Flood Conference, Wilkes-Barre, Penn.

June 21-27: Lightning Safety Awareness Week

Oct. 2-7: 35th National Weather Association Annual Meeting, Tucson, Ariz.

NWA Newsletter (ISSN 0271-1044)

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Editor and Publisher: Steve Harned, Executive Director

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Submit newsletter items directly to the NWA office or to nwanewsletter@nwas.org. Material received by the 25th will be considered for the next month's issue.

Members receive the Newsletter and *National Weather Digest* as part of their regular, student or corporate membership privileges. Printed Newsletter subscriptions are available for \$25 per year plus extra shipping costs outside U.S. Single copies are \$3. **Address, phone number, email and affiliation changes can now be made online at the member portal.**

Supporting and promoting excellence in operational meteorology and related activities since 1975.

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