

NOAA's NATIONAL WEATHER SERVICE

# Western Region Notes

July 16, 2007

## REGIONAL DIRECTOR'S OFFICE

On behalf of Western Region I would like to take a moment and thank Vickie Nadolski for her service to the Region and wish her well in her temporary assignment as the Acting Deputy Assistant Administrator for NWS. Vickie's leadership has been invaluable to Western region and I am confident that her leadership, vision, and innovation will be great assets to the NWS as she assumes her new duties.

During Vickie's assignment I will be serving as the Acting Western Region Director, Bob Diaz will serve as the Acting Deputy Regional Director and Steve Brueske will be the Acting Systems Operation Division Chief. Bob and I are grateful for your outstanding service and I know we can count on your continued support.

Thanks,

Bob Tibi

**Congratulations to Don Laurine, NWRFC:** Donald Laurine, the Developmental Operational Hydrologist at the Northwest River Forecast Center in Portland, Oregon, is the first recipient of the recently established Gregg B. Rishel Award. The award is named in honor of Gregg B. Rishel, who made several important contributions to hydrologic mission of the NWS, and was well known for his strong work ethic, passion for hydrology, and commitment to improving hydrologic services. The purpose of the Gregg B. Rishel Award is to recognize outstanding contributions by an individual to hydrologic science and/or service which contribute to the fulfillment of the hydrologic services mission of the National Weather Service (NWS).

Don Laurine, is recognized for his recent efforts to implement Ensemble Streamflow Prediction (ESP) technology at the NWRFC to provide new and innovative services and products to NWS customers. Don was instrumental in developing a new graphical web interface to better depict and convey water supply forecast information. This new interface is being implemented in the recently developed consolidated Western Water Supply Web Page and provides a common approach and format to displaying interactive water supply forecasts from six NWS RFCs in three regions. Don has also provided outstanding support for the recent standard RFC web implementation which supports all RFC services: deterministic, ESP, climate, and historical information. During recent flood episodes, users have remarked how much they like and use the information presentation on the NWRFC web page. Thank you Don for a job well done!

**LIFT Attendees Announced:** The attendees for the third Leadership and Innovation For Tomorrow (LIFT) class have been announced. The attendees will be:

Mark Burger, Forecaster, WFO Eureka  
 Aimee Fish, ESSD, Alaska Region Headquarters  
 Tanja Fransen, WCM, WFO Glasgow  
 Nikole Gallegos, IT Specialist, Alaska Region Headquarters  
 Dean Hazen, SOO, WFO Pocatello  
 John Juskie, SOO, WFO Sacramento  
 Daniel Kozlowski, HAS Forecaster, CNRFC  
 Jamie Meier, Met Intern, WFO Oxnard  
 John Mittelstadt, SOO, WFO Pendleton  
 Vernon Preston, WCM, WFO Pocatello  
 Ken Pomeroy, Digital Services Program Leaders, Western Region Headquarters  
 Greg Smith, Senior Hydrologist, CBRFC  
 Michael Stavish, Senior Forecaster, WFO Medford  
 Bryan Tilly, ET, WFO Pocatello  
 Kevin Werner, Hydro Science Program Manager, Western Region Headquarters

The LIFT class will be held in Boise, Idaho in September. Thanks to all who applied for the program and congratulations to those who were selected.

### **Diversity Corner:**

#### ***Meet David Sweet, Forecaster and Performer by Janet Nix***

Some people are lucky to have either the career they've dreamed of or the hobby they enjoy. David Sweet, Journeyman Forecaster at WFO Oxnard, is among the luckiest, as he has both at the same time. David has been interested in weather since he was 5 years old when he remembers noticing patterns in the weather. When the wind changed direction, he realized a storm was blowing in. He wanted to find out why and that curiosity blossomed into a career.

From an early age, he knew he wanted to work at the National Weather Service. Diligently he pursued his dream, studying in the synoptic meteorology program at San Jose State University. He graduated in 1985 with a BS in Meteorology.

Unfortunately, the National Weather Service was under a hiring freeze in 1985, so David found temporary work with the private sector. He contracted to support summer convective experiments, which tracked the effectiveness of Doppler Radar.

Then he moved to Arizona where he worked under a private contract with Westinghouse. David was part of a team that provided forecasting support to The Drug Enforcement Agency (DEA) to detect low-flying airplanes crossing borders without a flight plan



Finally in 1992, David began his career with the NWS as an intern in Charleston, South Carolina. He worked the public desk and adapted changes to the local marine and public forecasts.“

Then in Riverside, California he worked as a forecaster for 18 months for the California Fruit Frost Agricultural Program. For the past ten years, David has worked at WFO Oxnard as a Journeyman Forecaster.

David is up for any challenge and has encountered a significant challenge in his life. He was born with Arthrogryposis, a condition that limits the range of movement in the forelimbs. The condition was severe at birth, but over a dozen reconstructive surgeries morphed the condition into a mere inconvenience. “I benefited from medical science technology of the times,” David said.

David believes the NWS has treated him well. He is not hindered by physical barriers. If he sees any, he speaks up and the NWS has been accommodating. Having a disability does not mean a person must be hindered by it. Opportunities abound. “I want to influence others on the positive opportunities,” David said. As luck would have it, he had that chance to do so through the media. A news crew doing a story on storm chasers at work took an interest in the disability and featured him on television.

That isn't the only time he has been in the spotlight. David has been an amateur actor for 30 years, performing in a variety of community theaters. Recently, he played Franklin D. Roosevelt in the musical Annie. “Playing a real person was an incredible challenge,” David said. “I took extra care to research voice characteristics, physical movements and personality, since so many in the audience would remember who he was.” He has participated in almost 50 stage plays. Currently, he is working on a role as a teacher in a stage version of the Disney movie “High School Musical.” The production will perform in a mini tour throughout the Los Angeles area through September 2007.

David's disability worked a positive spin within the community theater arena. He opened their eyes to access issues for disabled people. David helped the Northside Theatre Company of San Jose become aware of access problems for those who were disabled. The theater obtained enough grant money to install a wheelchair lift both to the stage and the sound booth so disabled people could participate in the theater.

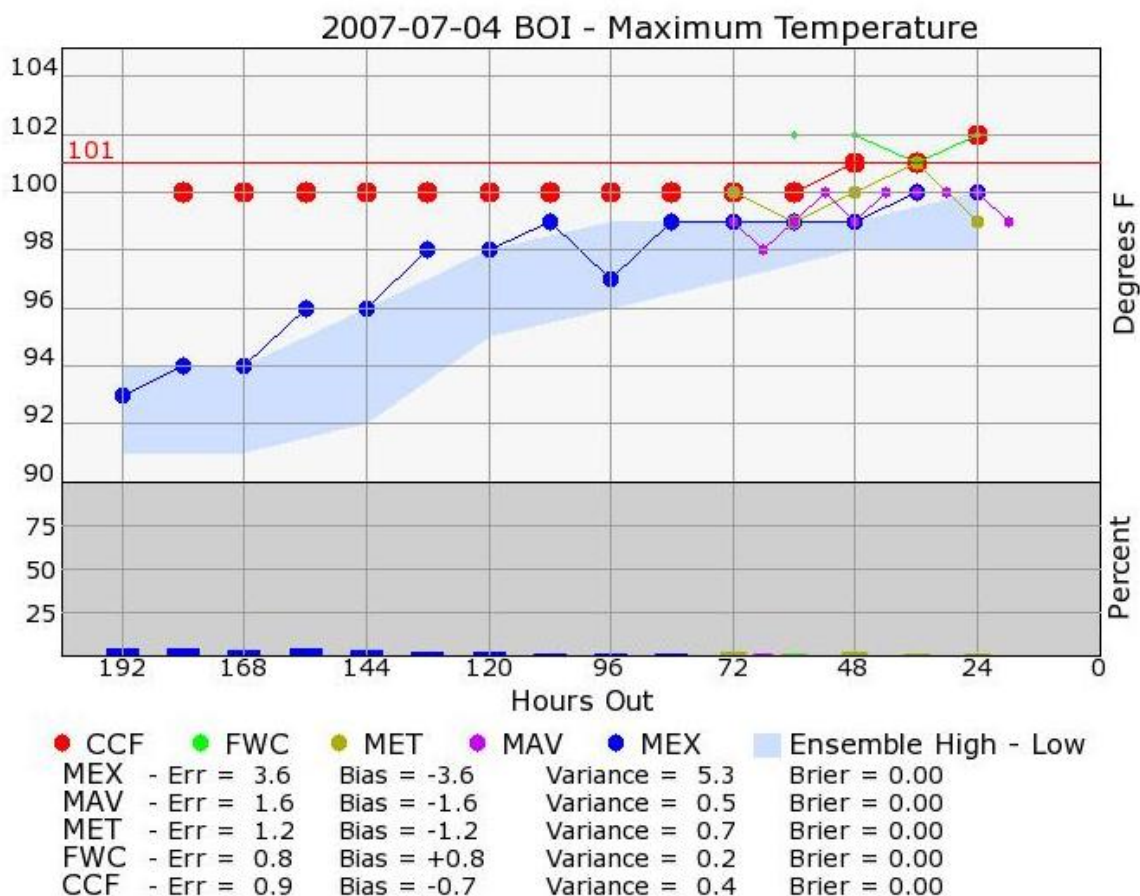
“As a disabled employee, I want other disabled people to realize that there are opportunities.” David lives up to his own message and has shown us that there are opportunities out there for all of us.

## **METEOROLOGICAL SERVICES DIVISION**

**Service of the Week:** Customer Service – High Impact Events

Statistical temperature guidance is quite good, so in most routine situations, there is little room for a forecaster to make significant improvement over guidance. However, there are situations when forecasters can add considerable value to guidance forecasts, even in the extended

portion of the forecast. By doing so, the forecaster can have a big impact on customers, when critical decisions must be made. Boise WFO forecasters seized upon one such opportunity in making the forecast for July 4<sup>th</sup>. Forecasting for the Independence Day holiday, as early as seven days out, BOI forecasters predicted well above normal temperatures and the first 100 or greater reading of the season. The red dots in the graph below show that the 14 WFO temperature forecasts leading up to the holiday were quite consistent, and none missed the observed 101 reading by more than one degree. Guidance temperatures started out 8 degrees too cold, gradually getting closer to the observed value with time (blue dots in the graph). Special Weather Statements were issued well before the holiday, emphasizing the hot temperatures and safety precautions persons should take for prolonged outdoor activities. This was one of those “high impact” events where forecasters added significant value to guidance forecasts.



**Statement of the Week:** The Alambre Wildfire Fire on the Tohono O'odham Nation in south-central Arizona began Saturday in the Baboquivari Mountains near Kitt Peak National Observatory. Steve Reedy, General Forecaster and IMET at WFO Tucson, issued an excellent initial spot forecast for this fire by highlighting the current situation in the discussion. Since thunderstorm activity occurred well into the night on the evening of this spot request, Steve's description of radar data and how it related to the fire explained that a critical weather situation was still brewing. The detail included in the discussion for the first few hours of the forecast was critical for the BIA's decision making process due to the nature of gathering

reliable information during the spin-up process. Steve's attention to the needs of the fire fighting community can be seen in the service he provides through his forecasts. Way to go Steve!

SPOT FORECAST FOR ALAMBRE...USFS  
NATIONAL WEATHER SERVICE TUCSON AZ  
940 PM MST SAT JUL 7 2007

FORECAST IS BASED ON REQUEST TIME OF 2126 MST ON JULY 07. IF CONDITIONS BECOME UNREPRESENTATIVE, CONTACT THE NATIONAL WEATHER SERVICE.

.DISCUSSION...CURRENT RADAR IMAGERY SHOWS THUNDERSTORM ACTIVITY MAINLY SOUTH AND EAST OF THE FIRE SITE. OUTFLOW WINDS FROM THESE STORMS MAY CAUSE GUSTY AND ERRATIC WINDS OVER THE FIRE SITE. A BAND OF SHOWERS CURRENTLY NORTH AND WEST OF RYAN FIELD MAY IMPACT THE FIRE SITE BY 1015 PM MST...BUT THESE SHOWERS WILL ALSO BRING A CONTINUED THREAT OF ERRATIC AND GUSTY WINDS. A RISK FOR SHOWERS AND THUNDERSTORMS WILL CONTINUE THROUGH THE EVENING HOURS BEFORE WINDING DOWN BY MIDNIGHT TONIGHT. OVERNIGHT... ACTIVITY SHOULD BE MINIMAL AND AMBIENT MOISTURE IS EXPECTED TO AID IN OVERNIGHT RELATIVE HUMIDITY RECOVERIES. SHIFTING HIGH PRESSURE WILL LIMIT THE AMOUNT OF MOISTURE IMPORTED INTO SOUTHEAST ARIZONA FOR TOMORROW...SO SHOWER AND THUNDERSTORM ACTIVITY OVER THE FIRE SITE MAY BE LIMITED...BUT ANY ACTIVITY IS EXPECTED TO WAIT UNTIL AFTERNOON TO DEVELOP.

.TONIGHT...

SKY/WEATHER.....MOSTLY CLOUDY THEN BECOMING PARTLY CLOUDY.  
SCATTERED SHOWERS AND THUNDERSTORMS IN THE  
EVENING.

MIN TEMPERATURE.....65 TO 70 DEGS

MAX HUMIDITY.....45 TO 50 PCT

20-FOOT WINDS.....WEST 5 TO 9 MPH SHIFTING TO THE SOUTH 5 TO 10 MPH  
AFTER MIDNIGHT.

LAL.....3

CHANCE OF RAIN.....30 PERCENT

HAINES INDEX.....3 VERY LOW

.SUNDAY...

SKY/WEATHER.....MOSTLY SUNNY. SLIGHT CHANCE OF SHOWERS AND  
THUNDERSTORMS IN THE AFTERNOON.

MAX TEMPERATURE.....87 TO 92 DEGS

MIN HUMIDITY.....23 TO 28 PCT

20-FOOT WINDS.....SOUTHWEST 6 TO 14 MPH WITH GUSTS TO AROUND  
25 MPH

LAL.....1 UNTIL 1200...THEN 2

CHANCE OF RAIN.....0 PCT UNTIL 1200...THEN 20 PERCENT

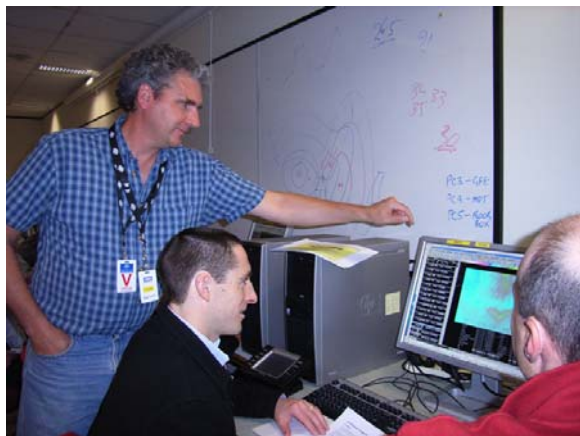
HAINES INDEX.....3 VERY LOW

**Pacific Northwest Offices Visit Key Aviation Customers:** Staff members from CWSU Auburn and WFOs Portland, Seattle and Spokane visited three key aviation customers on June 8th. The key customers were Alaska Airlines Dispatch, Seattle TRACON and Port of Seattle Sea-Tac Airport Operations. Each provided a tour of their facility and addressed their aviation weather needs and requirements with the NWS staff. The NWS staff included John Werth (CWSU MIC), Clinton Rockey and Kirsten Elson of WFO Portland, Kerry Jones and Mike Fries of WFO Spokane, and MIC Brad Colman, Kirby Cook, Ted Buehner, Doug McDonnal, Jeff Michalski, Dustin Guy and Allen Kam of WFO Seattle.

The Alaska Air visit included a presentation on the weather impacts on their flight operations and a tour of their dispatch center including open discussion with a number of dispatchers. At Seattle TRACON, the group toured their darkened operations center and then held a roundtable discussion regarding their staff's weather operations needs. The Sea-Tac operations office also addressed their airport weather needs and provided a tour of their new Ramp Tower and a van tour of the runway complex complete with visits to both ASOS sites, RVR sensors and the snow plow shed. All the customers expressed that they really appreciate the service we provide, read the Area Forecast Discussions particularly the Aviation section, and provided some valuable feedback to help enhance our service even further.

#### **NWS Forecaster Assists Australian Bureau of Meteorology Training Center**

Chris Gibson, NWS Salt Lake City Senior Forecaster, recently spent two weeks at the Australian Bureau of Meteorology (ABoM) Training Center in Melbourne, Australia. The Training Center was hosting an Advanced Forecasters Course for Lead Forecasters from



around the country and a significant portion of the course focused on the Graphical Forecast Editor (GFE) system, the ABoM is adopting as they move to a gridded forecast methodology. During Chris' ABoM forecasting tour of duty earlier this year, his Graphical Forecast Editor (GFE) skills were recognized, and shortly thereafter, Chris was tagged to assist in the GFE portion of the Course. Chris developed and presented lessons such as: Lessons Learned From the U.S. GFE Implementation, The National Digital Forecast Database, Forecasting in a Grid World, and Verification and Grid Checking. He also helped

out with hands-on GFE exercises. Course Manager, Roger Deslandes remarked, "The main theme of the course was forecast process and a major focus was the Gridded Forecast Editing system, given the Bureau's commitment to implement the system operationally. Our forecasters were able to see Chris work through scenarios, demonstrate GFE functionality, and talk about the U.S. experience. In this respect it has given our forecasters initial insight into getting their heads around a new way of doing business."

The ABoM will be fielding the software and conducting training during the next few years. They hope to "go live" with GFE at the Sydney Office, State of New South Wales, in May 2008. Eventually, they plan to develop an Australian Digital Forecast Database, or ADFD.

**IMETs Brief California Firefighters:** Incident Meteorologist Ryan Walbrun, WFO Monterey, provides a morning weather briefing at the Fort Hunter Liggett Wildland School. Over 500 firefighters from across northern and central California participated in the 4 day event between May 31st and June 3rd. IMET Chris Brenchley and IMET trainee Matt Mehle from WFO Monterey also attended the training burn.



**Western Region Outreach Workshop:** Western Region (WR) hosted an “Outreach Workshop” in Park City, UT, June 18-21. The 3 ½ day workshop focused on improving outreach and services. The workshop included field WCMs from each WR WFO, Senior Service Hydrologists, representatives from the three River Forecast Centers (RFC), selected WRH staff, and two NWS Headquarters (NWSH) representatives from the national WCM program office. Featured speakers included Margaret Davidson (NOAA Coastal Services Center), Ray Ban (The Weather Channel), Gary Carter, Office of Hydro Development, and Ken Graham (NWSH). Another key feature of the workshop was a panel discussion with two Emergency Managers (Michael Stever from Salt Lake County, UT and Kari Sagers from Tooele County, UT), a local television station meteorologist (Dina Freedman from KSL-TV, Salt Lake City), and Chris Maier (National WCM from NWSH). The workshop also included a series of break out sessions in which participants were separated into groups of about six people, each a mix of WCMs, SSHs, and RFC representatives. Each group was presented with two questions, broadly related to the future of NWS outreach and/or services. The workshop concluded Thursday afternoon, with each group reporting on their discussions and recommendations.



### Seattle Emergency Preparedness Office Tour:

WFO Seattle hosted another in an ongoing series of customer orientation office tours on June 26th. WCM Ted Buehner arranged and led the tour for a diverse group of customers. The emergency preparedness oriented group included staff from the cities of Bellingham, Renton, and a group of south King county cities, Unigard Insurance, Costco, the Red Cross and the University of Washington. The group learned more about the NWS mission, operations and how NWS products and services blend into their operations. They also met some WFO staff and got answers to their questions, particularly on use of NWS web sites.



*Photo: From left to right - Rick Sucee - Bellingham Police/Emergency Management, Clarice Hall - University of Washington Emergency Management, Deborah Needham - Renton Emergency Management Director, Carol Dunn - King County/Seattle Community Disaster Education Program Manager, Ted Buehner - WFO Seattle WCM, Elenka Jarolimek - University of Washington Emergency Management, Karen Ferreira - Regional Emergency Preparedness Manager for the cities of Burien, Des Moines, Normandy Park and SeaTac, Dale Anderson - Costco Risk Management Director, Andy Day - Bellingham Assistant Fire Chief and Emergency Management Director, Cassie Evans - Unigard Insurance Risk Control Intern, Brian King - Unigard Insurance Risk Control Intern, Bill Mitzel - Unigard Insurance Risk Control Manager*

**WFO Los Angeles/Oxnard Participates in World Ocean Day:** World Ocean Day 2007, which was June 8<sup>th</sup>, is an opportunity each year to celebrate our world ocean and our personal connection to it. The National Weather Service in Oxnard helped celebrate World Ocean Day, along with NOAA's National Ocean Service and National Marine Fisheries Service, at an event held on Dockweiler Beach in Los Angeles. Over 1200 4<sup>th</sup> and 5<sup>th</sup> grade school kids from the Los Angeles area rotated through numerous educational booths – including WFO Oxnard's – to hear about and experience ocean and weather facts and awareness. A beach cleanup was also part of the day's activities, along with a human "Thank You Ocean" sign formed by the kids on the beach and photographed by a Coast Guard helicopter. Visitors to the WFO Oxnard tent got to see and hear about radiosondes, NOAA Weather Radio, and rip current awareness.



Photos: (Left) WCM Eric Boldt (left) and Intern Jamie Meier (right) talk to kids participating in World Ocean Day 2007. (Above) The human "Thank You Ocean" as photographed by a Coast Guard helicopter.



## HYDROLOGY AND CLIMATE SERVICES DIVISION

**Hydrologic Program Manager's Conference:** Several HCSD personnel attended the Hydrologic Program Manager's Conference in Kansas City, MO, July 10-13, 2007. The first two days of the conference were national in scope. Conference attendees participated in activities that helped them to understand the national plan to improve and expand hydrologic services and its relationship to broader NWS activities, and clearly understand the current status of NOAA Hydrology Program activities. The conference emphasized the Advanced Hydrologic Prediction Services (AHPS) and the Integrated Water Resources Service Programs, and the HPM's role and responsibility for their implementation. The last two days of the conference were regional in scope. Hydrologic operational and service issues/regional topics were addressed through breakout sessions. Western Region attendees participated in activities that helped them to understand Western Region's vision for becoming widely recognized as the authority and source for reliable water and river forecasts in the western United States. Some topics for attendees were to understand GIS, data, and climate activities across Western Region, learn how river forecast verification could be implemented at the RFCs and WFOs, understand how the USGS and NWS are working together to provide an early warning debris flow system for Southern California, understand the current capabilities and future enhancements of the Western Water Supply web page, and share ideas on how to reach customers through AHPS.

**Climate Change Technical Advisory Committee:** The Western Region has recently formed a Climate Change Technical Advisory Committee. This is in response to support the ever-increasing demand for climate change information. The subject of climate change is a very "hot topic" right now, and at the same time controversial and political. The technical advisory committee will look at the subject of climate change from many angles and work towards providing the region with the most information and resources possible. An initial face-to-face kickoff meeting has been scheduled for the end of August. Andrea Bair will chair the committee.

## SCIENTIFIC SERVICES DIVISION

### Upcoming Science Workshops

- **September 20-21 - The Fourth Symposium on Southwest Hydrometeorology:** The Fourth Symposium on Southwest Hydrometeorology will be held September 20-21, 2007, at Tucson AZ. For more information, <http://www.atmo.arizona.edu/swhs/SWHSFormSub.html>.
- **October 2-4 - Great Divide Weather Workshop:** The Great Falls and Missoula offices are sponsoring the Eleventh Annual Great Divide Weather Workshop, October 2-4, 2007, in Great Falls, Montana. The deadline for abstracts is September 1st, 2007. For more information: <http://www.wrh.noaa.gov/tx/greatdivide.php>
- **October 13-18 NWA Annual Workshop: Reno, NV** Workshop information can be found at: <http://www.nwas.org/>
- **Aug 1** – Deadline for abstract submission for the AMS Annual Meeting in New Orleans

## General

- **AMS Conference:** The AMS Weather Analysis and Forecasting and Numerical Weather Prediction Conference was held in Park City Utah. WR had 14 papers posted with about 12 attendees. Approximately 300 people from around the world attended the combined conference.
- **More EC Data in AWIPS:** For the last 18 months, Mark Mollner (WR/SSD) has been working with NWSHQ and EC to get more EC model data into AWIPS. Jack Kelly signed on the formal request to the ECMWF for the data. Expect to see more EC data in AWIPS Build 8.1 or 8.3.
- **SOO/DOH Science Expert Regional Call:** SSD conducted an “expert” call in a long running series to introduce the field to new data and science. This month’s expert was Bob Glahn (MDL) who provided an update on the gridded MOS development.

## New Western Region Publications:

New Western Region Technical Attachments, Technical Attachment Lites, and Technical Memoranda may be found at: <http://www.wrh.noaa.gov/wrh/pubs.php>

Kudos to all the authors for a job well done.

## **Technical Memorandum:**

- [Effects of Wildfire in the Mountainous Terrain of Southeast Arizona: An Empirical Formula to Estimate 5-Year Peak Discharge from Small Post-Burn Watersheds](#)  
William B. Reed<sup>1</sup> and Mike Schaffner, June 2007

## **Technical Attachments:**

- [Flood and Precipitation Frequency of the September 13, 2006 Flash Flood in Railroad Wash through Indirect Discharge Estimates](#)  
Glenn Lader, WFO Tucson, AZ
- [A Rare F-2 Tornado Event in Bear Idaho](#)  
Melissa M. Hurlbut, WFO Jacksonville, FL (former affiliation WFO Boise, ID)

## **Technical Attachments Lite:**

- [FAA SLC Air Traffic Control Tower, NWS SLC WFO, and Southwest Airlines Collaborate on Aviation Discussion Guidelines](#)  
Mark Struthwolf, WFO Salt Lake City, UT; Garth Harris, FAA SLC ATCT; Rick Curtis, Southwest Airlines
- [The Northwest California Severe Convection Episode of August 7, 2006 - A Weather Event Simulator \(WES\) Case](#)  
Mark Burger, WFO Eureka, CA
- [Environment Favorable for a Rare Tornado in Northern Montana 13 June 2006](#)  
David Bernhardt, WFO Great Falls, MT

- [The Topanga Fire: A Dramatic Response to Topography, Fuels, and Critical Fire Weather Conditions](#)  
Richard Thompson, WFO Los Angeles/Oxnard, CA

**Teletraining Sessions for July:** The teletraining calendar is now at: <http://rammb.cira.colostate.edu/visit/ecal.asp> Offices can register for the teletraining sessions by sending email to: [visit@comet.ucar.edu](mailto:visit@comet.ucar.edu).

- Use of Ensembles in the Forecast Process (Warm Season Version) (Basic, July 2,3,9,11,12,16,17,19,23,25,26)
- Basic Satellite Principles(Basic, July 11,19)
- Satellite Interpretation of Orographic Clouds / Effects (Basic, July 10,20)
- Forecasting Convective Downburst Potential Using GOES Sounder Derived Products (Basic, July 18)
- Mesoscale Convective Vortices (Basic, July 16)
- Use of GOES/RSO imagery with other Remote Sensor Data for Diagnosing Severe Weather across the CONUS (RSO 3) (Intermediate, July 17,18)

All previous sessions including those with recorded instructor audio and annotations are available at: <http://rammb.cira.colostate.edu/visit/ts.html>

## **SYSTEMS OPERATIONS DIVISION**

**One more Hazard Eliminated at WFO Spokane:** Facilities Engineering Technicians Michael Belarde and Jim Chaisson installed a Ewing tilt down tower at WFO Spokane. This new tower is replaced an aging Rohn tower and eliminated one more climbing hazard in Western Region.



*Jim Chaisson at WFO Spokane*

**Above-Ground Storage Tank (AST) replaced at WFO San Diego:** Facilities Engineering Technicians Jim MacLellan and Tom Page replaced the AST at WFO San Diego. The old tank was showing its age and at the last NOAA Environmental Compliance and Safety Assessment System (NECSAS) team to visit the site recommended replacement.



### **Safe Cooking: How to Reduce Cancer Risks When You Grill**

Did you know that grilling meat increases the production of compounds that are linked to a greater risk of certain cancers? According to an article published by the American Institute for Cancer Research (AICR), researchers have found evidence of heterocyclic amines (HCAs) in meats that are cooked on outdoor grills.

The good news is that there are ways you can reduce your risk to cancer causing agents...and still enjoy your grilled food. Follow these five tips to cook great barbeque safely and deliciously.

1. Marinate meats for at least 12 hours. Evidence suggests that this simple step can reduce the amount of HCAs that are formed when grilling by as much as 99 percent.
2. Try kabobs instead of large pieces of meat, such as steaks. The less time the meat spends on the grill, the better. Kabobs have short cooking times because meat is cut into small, bite-size pieces. If you must cook large portions, pre-cook the meat by baking it, and then grill for a

few minutes at the end of the cooking process for added flavor.

3. Grill meat at low temperatures, and flip frequently to avoid charring.
4. Remove burnt or blackened parts of meat before eating.
5. Trim the fat from your meat before grilling to avoid drips, which cause flare-ups and charring.