

# SnowNews

December 2012

Volume 2, Issue 2

## Flood early warning system installed after record fire

Last summer's wildfire season was a rough one. As an example, the Whitewater-Baldy Complex fire burned over 265 square miles of the Gila National Forest, making it the largest wildfire in New Mexico history.

The Fall 2012 issue of **SnowNews** reported on the analysis **Jim Marron** (NWCC Resource Conservationist), **Gus Goodbody** (NWCC Forecast Hydrologist) and **Dan Moore** (West National Technology Support Center) completed of the fire.

The team analyzed severe burn and monsoonal precipitation pattern spatial layers to determine locations that had a high potential for flooding and dam-

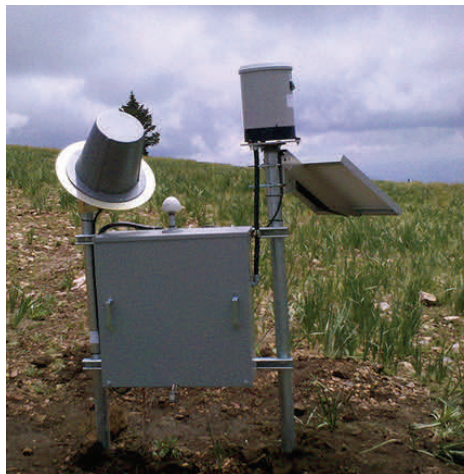
aging debris flows in the upcoming rainy season.

The information provided by the analysis facilitated the Natural Resources Conservation Service (NRCS) Emergency Watershed Protection (EWP) Program in funding the installation of 13 Early Warning and Detection System (EWDS) units in New Mexico.

The stations are located near streams in the upper reaches of the watersheds that were damaged by the fire. The units provide emergency management officials more time to notify about 30,000 residents in five communities of impending floods.

The EWDS units gather relevant information, such as precipitation amounts and flood stage levels. The data are automatically transmitted via satellite to US Geological Survey (USGS) offices every one to four hours during non-flood times, and more frequently during heavy rainfall.

The sensors also transmit the data to the National Weather Service, who in turn provide warnings through local communications channels.



*Buck Mountain precipitation gage with solar panel, radio stand and electronics. Whitewater-Baldy Complex Fire, NM.*

The first 13 EWDS sites are located on US Forest Service-managed lands. Under an agreement with the Department of Homeland Security, USGS will monitor and maintain the sites.

NRCS is currently working with several Federal and State partners to determine whether more detection units are needed across New Mexico.

In addition, preliminary work is underway to determine similar requirements for EWDS sites near Wenatchee, Washington.

For more information, contact [Jim Marron](mailto:Jim.Marron@aphis.usda.gov), 503-414-3047.

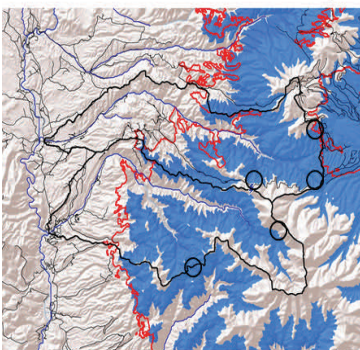
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MINERAL CREEK AND WHITWATER CREEK, NM



*The analysis included preferred locations for EWDS units*



# Upper Missouri River Basin monitoring committees formed

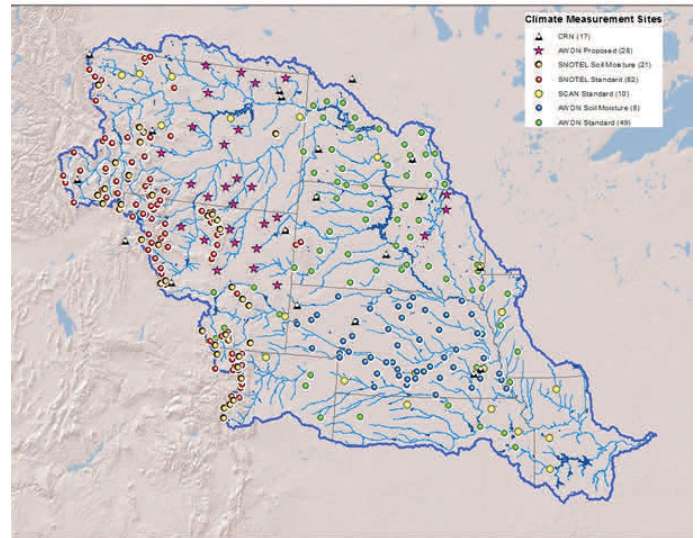
**Tom Perkins**, NWCC  
**Scott Oviatt**, Montana Data Collection Office

Following the 2011 Missouri River Basin flood, several groups and agencies met to discuss the ramifications of the flooding and how to prevent or mitigate future events. These discussions focused on the absence of certain data types and information available to the United States Army Corps of Engineers (USACE) and forecasters from other Federal and State agencies.

The USACE established an independent, expert review panel to assess the operation of the Missouri River main-stem reservoirs for the purpose of gaining lessons learned and recommendations to improve future operations. **Cara McCarthy** from NWCC was a member of that review panel.

One of the panel's recommendations called for better monitoring information across the plains (see **SnowNews**, December 2011). The panel felt that there was insufficient real-time snowpack and soil moisture data available from non-mountainous plains locations. These data could assist in identifying extreme runoff events prior to their occurrence. The geographical areas where this information is lacking includes parts of North Dakota, South Dakota, eastern Wyoming, northwestern Nebraska and eastern Montana (the Upper Missouri River Basin).

In September, a meeting was held in Bismarck, North Dakota, with representatives from many Federal, State, Tribal and local agencies and enti-



*Missouri River Basin showing existing and proposed climate data collection sites. All sites will eventually have snow depth and soil moisture sensors installed.*

“The overall goal for the teams is to improve monitoring and develop a real-time database of SWE and soil moisture data that can be used by forecasters (and others) to plan for impacts of future flood and drought occurrences ...”

ties. **Scott Oviatt, Wade Bott** (North Dakota State Soil Scientist), **Tom Perkins** and **Verlon Barnes** (NRCS Missouri River Basin Coordinator) represented NRCS at that meeting, where two committees were formed.

The first committee, chaired by Scott Oviatt, was tasked with evaluating the existing manual snow sampling networks, and automated weather/climate monitoring networks in the Upper Missouri Basin. From this inventory of sites (and types of data collected), the committee will make recommendations on manual snow sampling methods, and real-time climate monitoring that includes soil moisture monitoring and snow water equivalent (SWE) monitoring.

The second committee was tasked with preparing a proposal that identifies critical investments in soil moisture and snowpack monitoring in order to reduce flood risk and to improve river and water

resource management in the Upper Missouri River Basin. Tom Perkins is a member of this committee.

The overall goal for the teams is to improve monitoring and develop a real-time database of SWE and soil moisture data that can be used by forecasters (and others) to plan for impacts of future flood and drought occurrences in the Upper Missouri River Basin and surrounding areas. The other component is to develop infrastructure and procedures that will ensure that standardized methods are employed across the networks, regardless of political boundaries or agency involvement.

The committees are scheduled to release the results of their activities by the end of the calendar year.

# New tools from the National Water and Climate Center

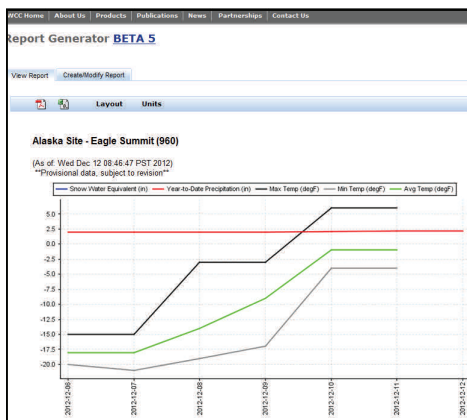
Over the past few months, the National Water and Climate Center (NWCC) released several new tools. Here's a brief description of some of the tools, including a hyperlink to launch the tool, its availability to the public and a contact for more information.

**Report Generator.** Report Generator builds reports based on criteria users define. The Beta 5 version of Report Generator lets users create custom reports from multiple data sources, including the current (1981-2010) 30-Year Normals. Available to the public.

**Streamflow Adjustment Calculator.** The Streamflow Adjustment Calculator is a streamflow modeling and data management tool. It consists of an equation editor and a data manager. Requires eAuthentication. More information: [Gus Goodbody](#), 503-414-3033

**Data Entry Tool.** The web-based Data Entry Tool is designed for data editors and cooperators. It lets users enter data directly into the AWDB database. Requires eAuthentication. More information: [Rashawn Tama](#), 503-414-3010

**AWDB Web Service.** Some new elements have been added to the AWDB Web Service. Web Service users also now have a Tutorial and a Reference Guide to assist them. Available to the public. More information: [Laurel Grimsted](#), 503-414-3053



Output from Report Generator

More information: [Jim Marron](#), 503-414-3047

**30-Year Normals.** NWCC released the 1981-2010 Climatic and Hydrologic Normals in October. Select a state and the type of monthly normal to display, or download the daily 30-Year Normals data for all SNOTEL sites in .csv format. Available to the public. More information: [Cara McCarthy](#), 503-414-3088

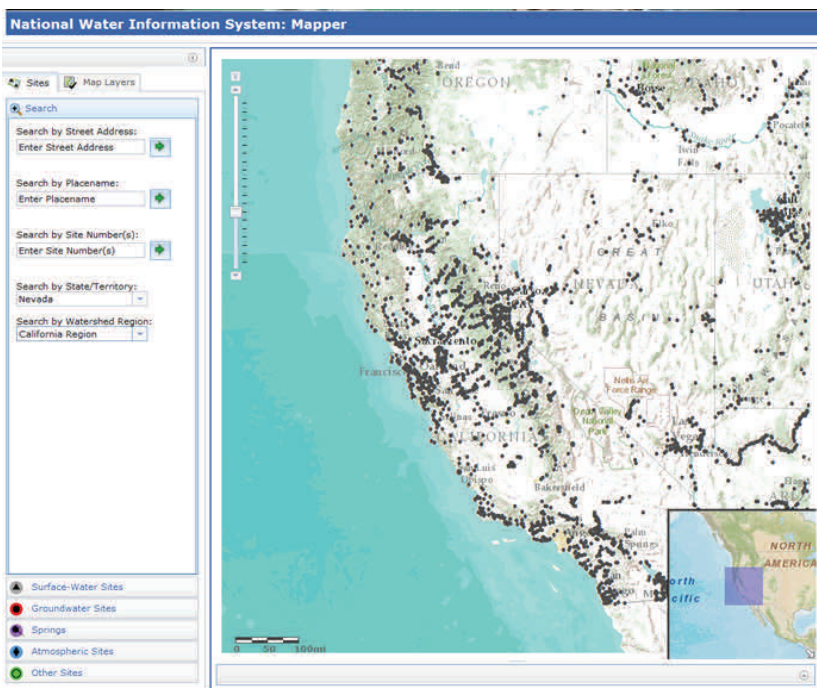
## National Water Information System Mapper

The United States Geological Survey (USGS) collects water-resources data at approximately 1.5 million sites across the US and its territories. The USGS [National Water Information System](#) (NWIS) provides access to these data. The [NWIS Mapper](#) is a new tool developed by USGS to deliver this wealth of data.

The types of data collected are varied, but generally fit into the broad categories of surface water and groundwater. Surface-water data, such as gage height (stage) and streamflow (discharge), are collected at major rivers, lakes, and reservoirs. Groundwater data, such as water level, are collected at wells and springs.

There are 56 possible site types used in the NWIS database, including 14 primary types and 42 secondary types. To simplify mapping of the site locations for most practical applications, the site types are displayed in five groups: Surface-Water Sites, Groundwater Sites, Springs, Atmospheric Sites and Other Sites. The full list of site types can be found [here](#).

*NWIS Mapper showing a topologic view of water sites*





# 2012 Water Year in review

**Jan Curtis**  
**NWCC Meteorologist**

Because much of the weather in the West is usually driven by the El Niño Southern Oscillation (ENSO), after coming out of a La Niña winter, the emergence of El Niño that faltered in late summer was a great surprise.

As the 2012 Water Year closed, the prospects for a neutral ENSO became more certain. As this sequence of events unfolded, La Niña helped to provide the Northern Tier States of the West with late season moisture that ultimately resulted in average to

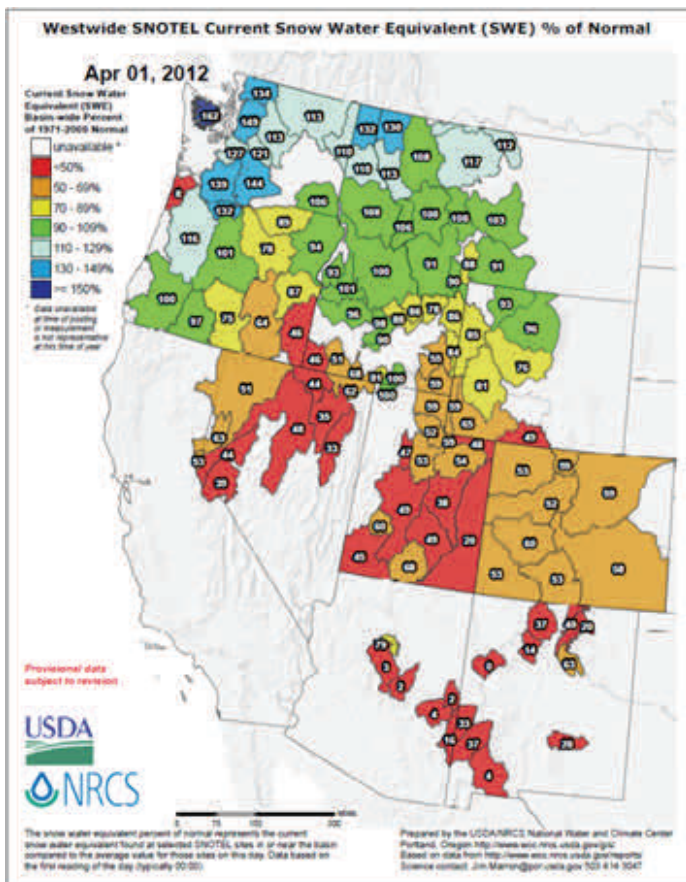
above average snow water equivalent while the Southern Tier States experienced large deficits.

The climatological summer (that is, June through August) saw a moderately active Southwest Monsoon over southern California, Nevada and Arizona. A rather wet Northern Cascades was the

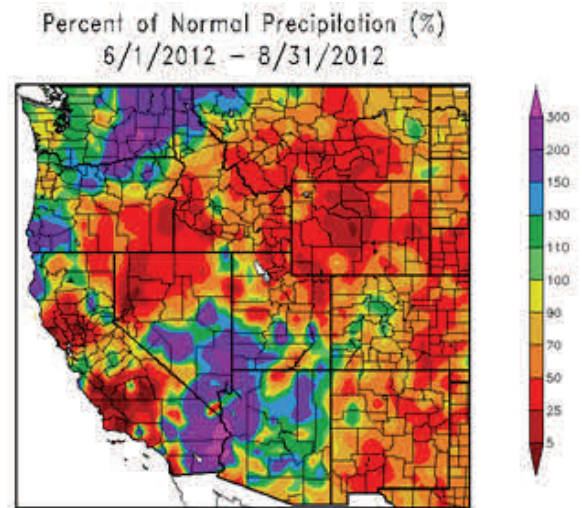
result of an early summer wet pattern as noted below.

Alaska, with few exceptions, had above average moisture.

If you have questions or for more information, contact [Jan Curtis](mailto:Jan.Curtis@usda.gov), 503.414.3017.



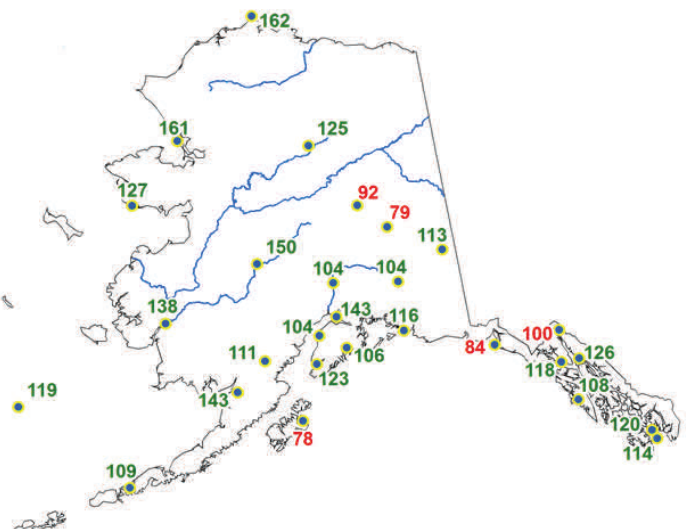
*SNOTEL Snow Water Equivalent Basin-Wide Averages*



generated 9/2/2012 at HPRDC using provisional data.

Regional Climate Center

*Percent of Normal Precipitation, June through August, 2012*



*Alaska Precipitation Percent of Normal, Water Year 2012*

# New Master Station components deployed

For over a year, Maiden Rock Communications (MRC) has been designing and implementing the next generation components for NWCC Master Stations. Working with our Electronics Maintenance Facility (EMF) staff, MRC has progressed through a series of factory and field tests, culminating in the deployment of the components at the Boise Master Station in late October.

The **MRC 525 Meteor Burst Communications Terminal (MBCT)** replaces the older MCC 520B components.

The MRC 525 MBCT is a key element in the Master Station for a Meteor Burst Communications System (MBCS) that allows long range communications between two stations at distances up to 1,667 km (960 miles).

The MRC 525 replaces the eight receivers, synthesizer, and 520B computer and software of the old system, and together with an MCC 528 Exciter, a High Power Final

RF Amplifier (2000 watts), a Power Amp Interface Module (PAIM), Coax Relay Module, and a set of antennas and duplex filters form the complete Master Station.

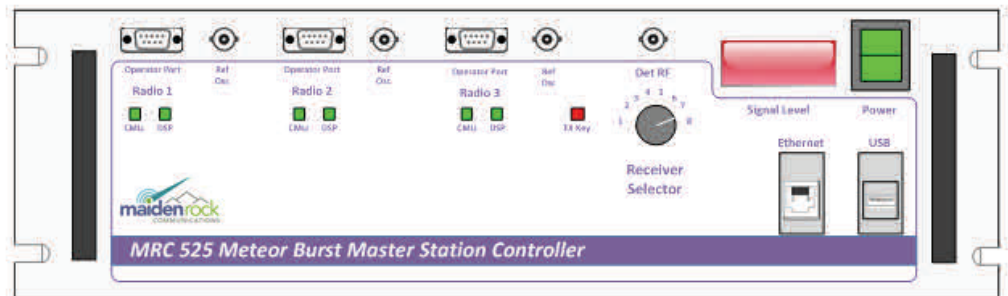
According to John Weeks, EMF lead, "With the installation of the Beta unit of the MRC 525, the overall operation of the Boise Meteorburst Master Station has definitely improved. No longer are we plagued with 20+ year old computers hanging or crashing and our confidence in the system has gone way up."

John goes on to say, "This new equipment is so much

easier to use. All calibrations and adjustments are now made through software, eliminating the need to go into the equipment except for some test measurements. Cabling and interconnectivity is much cleaner. This is the equivalent of going from an old console black and white TV to a new state of the art HD plasma unit."

The entire MBCS is slated to go into final production in the first quarter of 2013.

More information? Contact [Tony Tolsdorf](mailto:Tony.Tolsdorf@nwcc.gov), 503-414-3006.



*MRC 525 Receive Site Controller*

## Garen presents at interdisciplinary conference

After two and a half weeks in France on vacation, **David Garen**, NWCC Modeling Hydrologist, stayed on in Europe for an additional week to attend and make a presentation at the Third International Interdisciplinary Conference "HydroPredict 2012."

Held in Vienna, Austria from September 24-27, the conference was attended by approximately 120 hydrologists from all over the world.

### *Hydro Predict'2012*

Many aspects of hydrologic prediction were covered, including estimating hydrologic changes due to human interventions (especially land use and climate change), resilience of water resource systems and the use of ensemble streamflow predictions in decision making.

Dr. Garen's presentation was entitled: "Ensemble streamflow prediction in western North America: Experience, development, and questions."



## SnowPAC team addresses budget, staffing challenges

SnowPAC (Snow Program Advisory Committee) is a team comprised of state data collection officers, water supply specialists, and National Water and Climate Center staff. The team meets monthly via teleconference to resolve issues and share information as it relates to the Snow Survey and Water Supply Forecasting (SSWSF) Program. In years past, the team also held annual meetings at the NWCC in Portland, Oregon. Due to current travel restrictions, this year's meeting was held using video-teleconferencing (VTC).

The 2012 annual SnowPAC meeting focused on managing budgets during the current continuing resolution. The team discussed how to im-

prove efficiencies in data collection, and shared ideas on how to supplement the budget (for example, through reimbursable agreements). The group also discussed the current staffing challenges facing all the states and the NWCC.

One afternoon was devoted to short (15-minute) presentations from each of the 12 western states which comprise the SSWSF Program. The state reports focused on accomplishments and plans for the coming year. Several states gave updates on SNOTEL sites damaged or destroyed in last summer's wildfire season.

A morning session featured demonstrations of many new tools and products under de-

velopment or recently released by the NWCC. The Report Generator, Data Entry Tool, and Group Management Tool were examined, along with an overview of several other new products and a product delivery timeline.

George Leavesley, Senior Research Scientist at Colorado State University delivered an update on the Object Modeling System (OMS)/ Precipitation Runoff Modeling System (PRMS) project.

The meeting concluded with an update on this year's Snow Survey Training School, including a discussion on future snow schools.

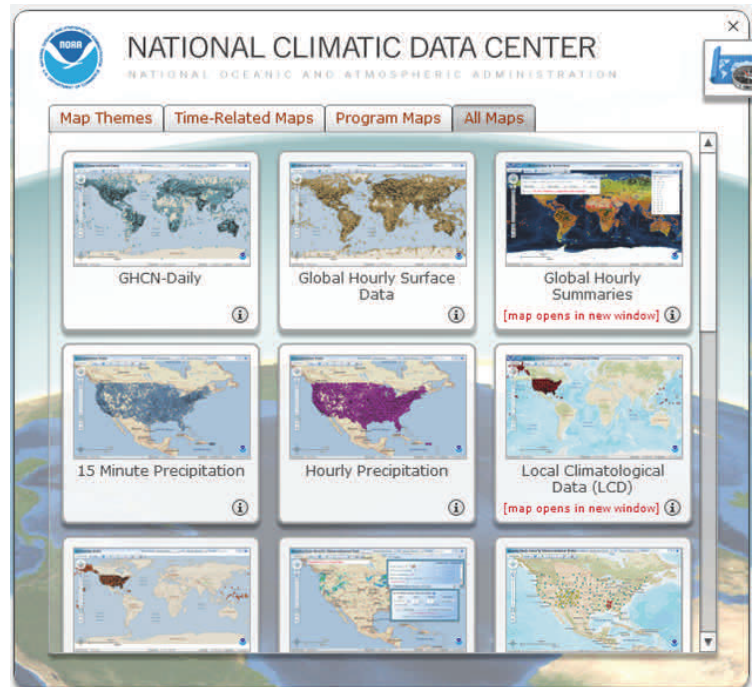
## Integrated climate map applications

The National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC) has developed a set of climate map applications.

NOAA's [Climate](#) website delivers several types of [Data & Services](#). One of the new features on the site is a set of integrated climate maps.

The application provides access to multiple layers of free, searchable climate data quickly and easily.

Global, continental and regional maps are available. A search function allows users to explore data sets and products.



*NCDC's integrated climate maps*

# US COOP station interactive map

Formally created in 1890, the National Weather Service (NWS) Cooperative Observer Program (COOP) is the Nation's weather and climate observing network. More than 11,000 volunteers take observations on farms, in urban and suburban areas, National Parks, seashores and mountaintops.

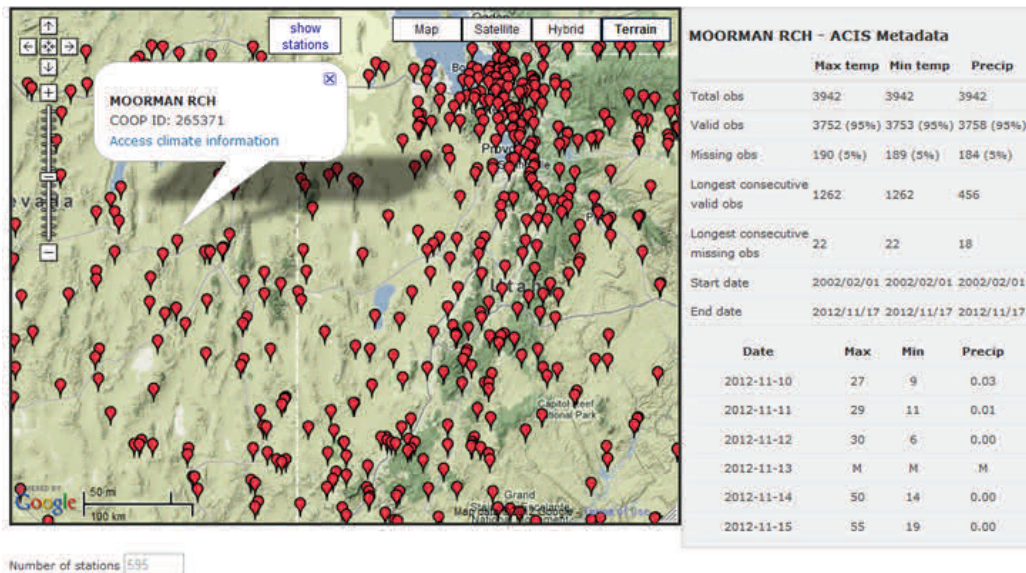
The [Western Regional Climate Center](#) (WRCC) now provides an [interactive map](#) of all COOP stations in the US. The map is easy to use. Either zoom in on an area, or select a state from the dropdown list. The map displays all the COOP stations in the area selected. It also lists the stations by name, including COOP ID,

latitude/longitude and elevation.

To drill down on more information on a station, simply select the station from the map. Metadata from the [Applied Climate Information System](#) (ACIS) displays.



## US COOP Station Map



## Products and resources on the web

### Precipitation return interval

The National Weather Service (NWS) [Advanced Hydrologic Prediction Service](#) (AHPS) provides the Average Recurrence Interval (ARI) of precipitation in real-time and near real-time for the contiguous US. They compute the equivalent ARI of 6- and 24-hour precipitation based on "current" NOAA Atlas precipitation estimates (NOAA Atlas 14, TP-40, etc.).

AHPS also offers high resolution, real-time ARI of 6- and 24-hour gage-adjusted radar precipitation.

All of these tools are available at no cost from <http://metstat.com/solutions/extreme-precipitation-index-analysis/>. To help avoid confusion, AHPS has termed this the *Extreme Precipitation Index* (EPI).

### Hydrology decision support map

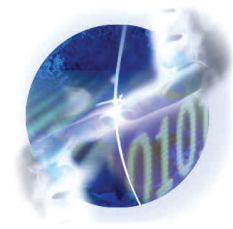
The NWS produces a variety of data sets in support of its Hydrologic Services mission. In support of this goal, the NWS Southern Region Headquarters and West Gulf River Forecast Center (WGRFC) have created a new [Hydro-logic Decision Support Map](#)

that brings together a variety of spatial data products on a single background map.

The tool contains many of the data sets necessary to make water resources, flood and emergency management decisions, and gives stakeholder the flexibility to create customized maps and the ability to scale maps beyond a single River Forecasting Center (RFC) boundary.

A national map of this tool is available [here](#).

Each of the overlays that are displayable in this tool is also available for download.





# Call for Papers: 81st Western Snow Conference

The 2013 Western Snow Conference (WSC) is scheduled for April 15 – 18, and will be held at the Snow King Resort in Jackson Hole, Wyoming. This year's conference theme is "Wild Weather in the Wild West."

The WSC is an annual tradition which started in 1932 as an international forum for individuals and organizations to share scientific, management and socio-political information on snow and runoff. The principal aim of the Western Snow Conference is to advance snow and hydrological sciences.

Now's the time to consider submitting a paper for the 2013 conference. Some topics to consider for papers: Climate Variability, Climate Change Impacts on Snow and Runoff, Water Management, Water Supply Forecasting, Modeling and

Climatology of Snow. Get your thoughts together, prepare a presentation, and make your plans to attend.

**Abstract submission deadline is January 15, 2013**

## What's in store at this year's conference?

A short course and panel discussion is planned for Monday April 15 titled "New Strategies and Techniques in Long Range Streamflow Forecasting." Many agencies use long-range streamflow forecasts for hydropower planning, reservoir operation and marketing. This short course will provide a forum to discuss the current state of forecasting, the advancement of long-range forecasting, additional agency needs and more.

A technical tour is scheduled for Thursday, April 18 to discover how the local environment plays a critical role in the snowpack of the area. This will be an all-day bus trip and

a great opportunity to view the majestic landscape that so many have been studying and discussing.

## More information

Additional information about the conference and Call for Papers:

[www.westernsnowconference.org/](http://www.westernsnowconference.org/)

Lodging information for the Snow King:

[Hotel reservations](#)  
[Condo reservations](#)

Feel free to contact [Peter Palmer](#), General Chair, or [Ron Abramovich](#), North Continental Area Committee, with any questions, comments or suggestions.

Hope to see you in Jackson Hole for a wild meeting in the wild West.



<http://www.westernsnowconference.org>

Photo by Phil Pasteris

## Upcoming events

Events of interest in the coming months.



**What:** Snow School

**When:** January 13-18

**Where:** Seventh Mountain Inn, Bend, Oregon

**How:** AgLearn or [Jo Huelshoff](#) (503) 414-3031

**Who:** More info: [Tony Tolsdorf](#) (503) 414-3006

**What:** 81st Western Snow Conference

**When:** April 15 –18

**Where:** [Snow King Resort](#), Jackson Hole Wyoming

**How:** [www.westernsnowconference.org](http://www.westernsnowconference.org)

**Who:** [Peter Palmer](#) (208) 385-9198

[Ron Abramovich](#), (208) 378-5741

**What:** Tower Climbing Training

**When:** May 21– 22

**Where:** Boise, Idaho

**How:** Contact Tony

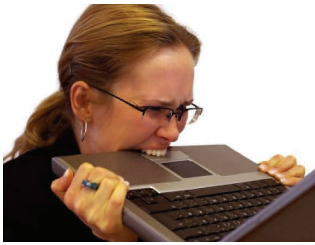
**Who:** [Tony Tolsdorf](#) (503) 414-3006



# De-Stressing is De-Lovely

[Del Gist](#)

NWCC Database Manager



There you are in your cube, steam coming out of your ears, your glazed eyes staring at the crazy-quilt computer screen. All you can think about is the approaching deadline, the piece of equipment that won't come back online or maybe just about everything seems amiss at the moment.

Try as you might you cannot seem to focus and simple things seem difficult to do. Frustration sets in and your blood pressure spikes.

You, my friend have been stung by the stress bug and it's up to you to do what is needed to feel better again.

But what can a person do when stress pulls you down, rolls you over and drags you

bumping along the bottom like a riptide?

One of the first things you can do is to **notice** what is happening. When you place your attention on the fact that you are in a somewhat non-functioning state, you can take steps to ease your mind and begin to regain some peace.

Each of us can find things that soothe or distract us into a different frame of mind when the pressure seems too great:

- \* Actively find something, **anything** to laugh about.
- \* Get up and go outside for a walk or do some movements to get your blood flowing.
- \* Close your eyes. Breathe in through your nose and out your mouth.
- \* Remember a time when you brilliantly handled a problem for someone (especially good when things just don't seem to be working) and give yourself a big pat on the back.
- \* Step back from whatever is causing you stress and

work on something simple for awhile (not always possible, but even five minutes can make a difference).

- \* Find a quiet place to simply sit and be with yourself until peace starts to seep in.
- \* Smile at yourself in a mirror (this may take a couple of tries, but don't give up!).

If, by our thoughts, we can create a "tempest in a teapot" then we can also create calm seas. It's up to you!

## Editor's Note:

As budgets and staffs continue to diminish while workloads increase, we all are experiencing more stress.

We thought it would be good to have an initial article about stress management, a haiku contest (see below) and then a stress management tip in upcoming issues of **SnowNews**.

Please send your stress management tips to [Jacquie Workman](#).

**If your tip is used, you will receive a gift card.**



## New contest! Write a haiku about what we do...

Have fun, relax and test your word skills in our new haiku contest. If your haiku is chosen you will win a gift card!

Rules:

Haiku has three lines

1<sup>st</sup> line 5 syllables

2<sup>nd</sup> line 7 syllables

3<sup>rd</sup> line 5 syllables

The first line is a setup to the poem's premise, the second line reveals the depth and the third line is the zinger/clincher!

Anything to do with what we do (such as snow surveys) is welcome. We hope you have fun with your haiku and look forward to seeing all the entries!

Please send your entries to [Del Gist](#) by January 15, 2013.



*Haiku about snow (author unknown)*



# Snow Survey and Water Supply Forecasting Program Resource Locator

Here's a handy reference for finding resources in the Snow Survey and Water Supply Forecasting Program.

Where	What	Who	How
Alaska	Forecast Hydrologist Data Collection Office Supervisor	Jolyne Lea 503-414-3040 (acting) Daniel Fisher 907-271-2424	<a href="mailto:jolyne.lea@por.usda.gov">jolyne.lea@por.usda.gov</a> <a href="mailto:daniel.fisher@ak.usda.gov">daniel.fisher@ak.usda.gov</a>
Arizona	Forecast Hydrologist Water Supply Specialist	Gus Goodbody 503-414-3033 Dino De Simone 602-280-8786	<a href="mailto:angus.goodbody@por.usda.gov">angus.goodbody@por.usda.gov</a> <a href="mailto:dino.desimone@az.usda.gov">dino.desimone@az.usda.gov</a>
California	Forecast Hydrologist Water Supply Specialist	Jolyne Lea 503-414-3040 Greg Norris 530-792-5609	<a href="mailto:jolyne.lea@por.usda.gov">jolyne.lea@por.usda.gov</a> <a href="mailto:greg.norris@ca.usda.gov">greg.norris@ca.usda.gov</a>
Colorado	Forecast Hydrologist Data Collection Office Supervisor	Cara McCarthy 503-414-3088 (acting) Lee Hackleman 307-233-6744	<a href="mailto:cara.s.mccarthy@por.usda.gov">cara.s.mccarthy@por.usda.gov</a> <a href="mailto:lee.hackleman@wy.usda.gov">lee.hackleman@wy.usda.gov</a>
Idaho	Data Collection Officer Forecast Hydrologist Water Supply Specialist	Phil Morrissey 208-685-6983 Rashawn Tama 503-414-3010 Ron Abramovich 208-378-5741	<a href="mailto:phil.morrissey@id.usda.gov">phil.morrissey@id.usda.gov</a> <a href="mailto:rashawn.tama@por.usda.gov">rashawn.tama@por.usda.gov</a> <a href="mailto:ron.abramovich@id.usda.gov">ron.abramovich@id.usda.gov</a>
Montana	Data Collection Office Supervisor Forecast Hydrologist Water Supply Specialist	Scott Oviatt 406-587-6844 Cara McCarthy 503-414-3088 Brian Domankos 406-587-6991	<a href="mailto:scott.oviatt@mt.usda.gov">scott.oviatt@mt.usda.gov</a> <a href="mailto:cara.s.mccarthy@por.usda.gov">cara.s.mccarthy@por.usda.gov</a> <a href="mailto:brian.domankos@mt.usda.gov">brian.domankos@mt.usda.gov</a>
Nevada	Forecast Hydrologist Water Supply Specialist	Jolyne Lea 503-414-3040 Dan Greenlee 775-857-8500	<a href="mailto:jolyne.lea@por.usda.gov">jolyne.lea@por.usda.gov</a> <a href="mailto:dan.greenlee@nv.usda.gov">dan.greenlee@nv.usda.gov</a>
New Mexico	Forecast Hydrologist Water Supply Specialist	Gus Goodbody 503-414-3033 Wayne Sleep 505-761-4431	<a href="mailto:angus.goodbody@por.usda.gov">angus.goodbody@por.usda.gov</a> <a href="mailto:wayne.sleep@nm.usda.gov">wayne.sleep@nm.usda.gov</a>
Oregon	Forecast Hydrologist Data Collection Officer Supervisor	(acting) Thor Thorson 503-414-3003 Gus Goodbody 503-414-3033	<a href="mailto:thor.thorson@or.usda.gov">thor.thorson@or.usda.gov</a> <a href="mailto:angus.goodbody@por.usda.gov">angus.goodbody@por.usda.gov</a>
Utah	Forecast Hydrologist Snow Survey Supervisor	Randy Julander 801-524-5213 Rashawn Tama 503-414-3010	<a href="mailto:randy.julander@ut.usda.gov">randy.julander@ut.usda.gov</a> <a href="mailto:rashawn.tama@por.usda.gov">rashawn.tama@por.usda.gov</a>
Washington	Forecast Hydrologist Water Supply Specialist	Scott Pattee 360-428-7684 Cara McCarthy 503-414-3088	<a href="mailto:scott.pattee@wa.usda.gov">scott.pattee@wa.usda.gov</a> <a href="mailto:cara.s.mccarthy@por.usda.gov">cara.s.mccarthy@por.usda.gov</a>
Wyoming	Forecast Hydrologist Water Supply Specialist	Lee Hackleman 307-233-6744	<a href="mailto:lee.hackleman@wy.usda.gov">lee.hackleman@wy.usda.gov</a>
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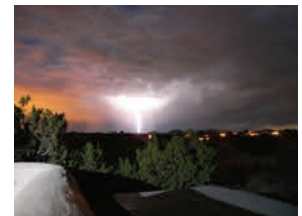
## NWCC highlights

The Snow Survey and Water Supply Forecasting (SSWSF) Program will feel the loss of two recent retirees. **Jon Lea**, Oregon Snow Survey Supervisor retired on November 30. **Rick McClure**, Alaska Data Collection Office Supervisor will retire December 31. Please extend congratulations and thanks to both Jon and Rick for their many years of service to the Agency.

**Neha Katariya** has joined the NWCC contracting group, Team Vistrionix, as a software programmer. Neha recently moved to the US from India. Her current work centers on development of an AWDB Web Service Self-Test Tool.

**Jan Curtis**, NWCC meteorologist, was awarded third place

in the 2012 Photo Contest sponsored by **Weatherwise Magazine**. Here's a [link](#) to all the winning entries.



# Photo of the month

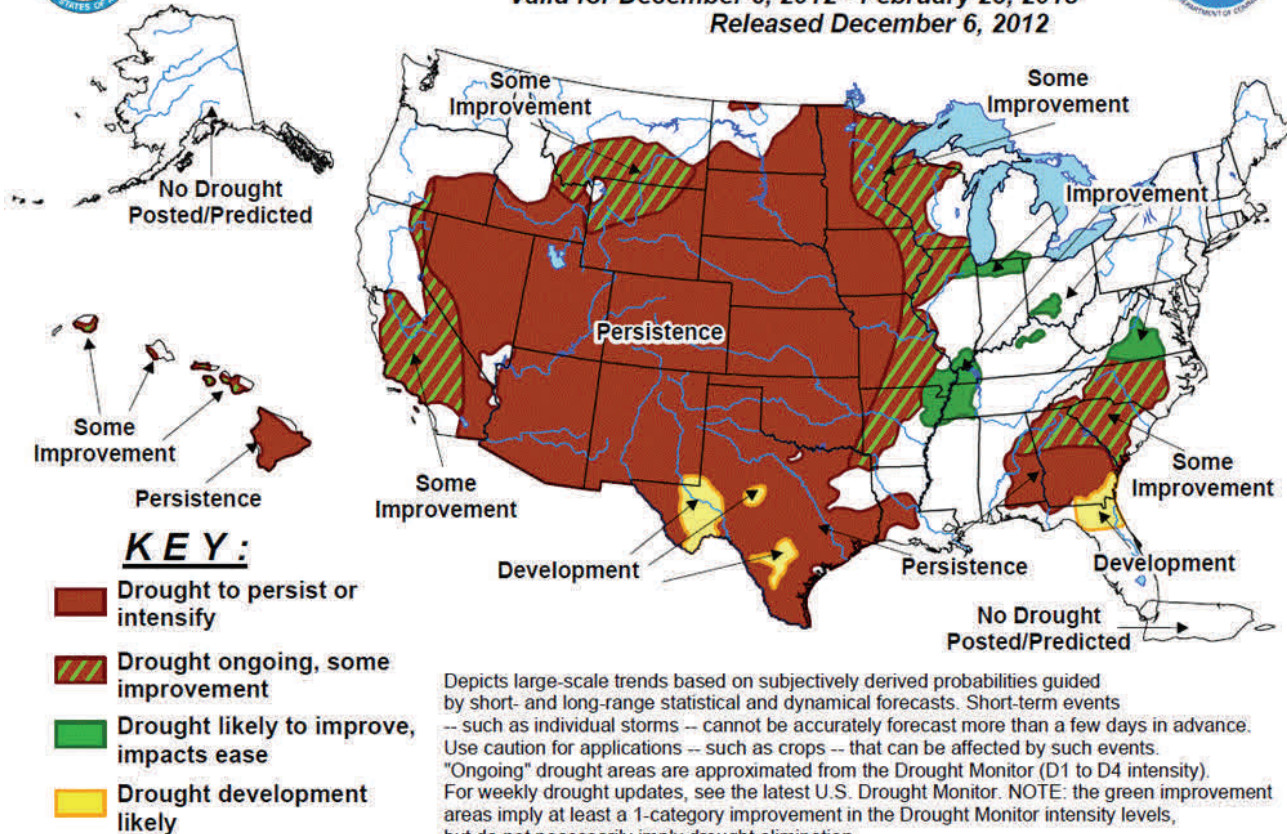


Brian Domonkos, Montana Water Supply Specialist, took this photo of Zach Rich (former Hydrologic Technician) in February 2008, after disembarking the helicopter at Bear Basin snow course in the Spanish Peaks of the Northern Madison Mountain Range (Montana).



## U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid for December 6, 2012 - February 28, 2013  
Released December 6, 2012





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## Helping People Help the Land.

Our mission is: *"To lead the development and transfer of water and climate information and technology which support natural resource conservation."*



With a vision of the future as:

*"A globally-recognized source for a top quality spatial snow, water, climate, and hydrologic network of information and technology."*

## From the Director's desk



I recently participated in the National Drought Forum "The 2012 Drought and U.S. Preparedness for 2013 and Beyond" held in Washington DC. This was an informative meeting and one that set the stage looking ahead to 2013. There were many things that made the 2012 drought so damaging, including dry conditions in the fall of 2011, poor winter precipitation, lack of precipitation during the growing season and very warm conditions (many days over 100 degrees) during the summer. By September, more than 2/3 of the US was in drought. There were huge economic impacts of the drought, many of which we are still assessing. It was estimated that corn yield was down 27%, sorghum was down 23% and soybeans down 14%. About 76% of cattle and 69% of hay acreage is in drought areas.

There are many things we can do about drought, and the USDA has a number of programs to assist those impact-

ed by these conditions. However, we also need to realize that droughts are a part of nature and will continue to occur. Therefore, we need to develop adaptation programs. One reason we aren't seeing many of the same effects as experienced during the 1930s "Dust Bowl" years is due to better conservation programs and practices. Activities such as conservation tillage, cover crops, shifting planting dates and more efficient irrigation systems all help farmers better manage drought. You all should take great pride that our agency has led the way in developing and implementing these strategies.

One of the most important contributions we can make to understanding and managing drought is in providing accurate climate and hydrologic information. Our Snow Survey program is a critical data set for evaluating the annual water supply in the Western US. The Water Supply Forecasting part of the program quantifies projected streamflow, which is critical not only for the mountain west, but also for the rivers that provide water resources to the drought-stricken Midwest. One thing that came out during discussions at the National Drought Forum was the importance of our SCAN system. Many data sets that evaluate soil mois-

ture conditions look at surface conditions. However, SCAN provides soil moisture and temperature at depths of 8, 12 and 20 inches, where crop roots occur. The soil conditions at these depths are what can allow crops to tolerate drought conditions. In 2012, researchers found that many row crops were deep-rooted, as the crops went deeper to obtain soil moisture in order to tolerate the drought. Providing this soil information in real time is why SCAN is becoming more important to many agricultural producers. Our mission to provide water and climate data plays a critical role in how our agency and the country manage drought.

Meetings like the National Drought Forum highlight the great work all of you do and the relevance of our programs to everyone in the country. The work you do is appreciated, the data critical and the importance ever growing. Again, I hope you take great pride in this, as I am exceedingly proud to highlight all of your achievements and contributions.

Have a safe and wonderful holiday season and I'm looking forward to many more accomplishments to highlight in the next year.

Mike



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