



SnowNews

Spring 2014

Volume 3, Issue 3

Server failure highlights site popularity, vulnerabilities

February 6, 2014 — An unusually strong snowstorm hits the Portland, Oregon metropolitan area, leaving behind over a foot of snow and stranding most NRCS employees at home.

The next day, one of the Water and Climate Information System (WCIS) servers, housed in the Portland office, suffered a catastrophic failure. The National Water and Climate Center's (NWCC) website was immediately impacted and users were unable to access critical snow-pack and water supply data.

Background — Owing to the mission-critical nature of the data served, the NWCC Information Systems Team (IST), led by **Laurel Grimsted**, has "duty officers" who help ensure the WCIS stays operational 24/7. This includes monitoring the data reception and transmission from the Master Stations and ensuring the servers and other systems that make the data available are operational for our customers.

When the server went down on February 7, the duty officer was the first to respond.

On average, the [National Water and Climate Center](#) website receives over 80,000 "hits" each day and approximately 1,000,000 visitors every year.

What happened next?

After failed attempts on February 7 to remotely diagnose and re-start the server, the next step was to try to get to the Portland office and work on recovery on-site. The snow and ice, however, continued to pile up, making travel safety a real concern. The City of Portland asked residents to stay off the streets and mass transit was shut down.

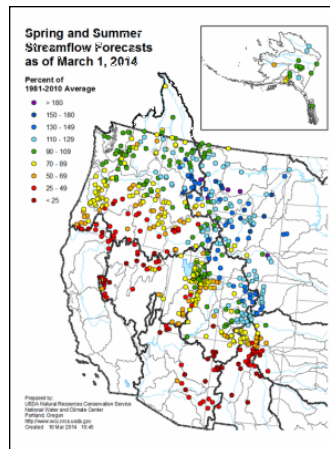
Meanwhile, thousands of users of the NWCC website were unable to get to the data, products, maps, and applications we produce each day.

Cara McCarthy, NWCC Water and Climate Services Acting Team Lead, described the issues our customers faced.

"The phone was ringing off the hook. Users thought we had discontinued valued products. However, because the server was down we could not announce the failure. Many users from all over the country contacted us about our information that they needed."

Cara continued, "in one sense, we were 'lucky' that the crash occurred after a majority of the first-of-the-month water supply forecasts were completed."

To help mitigate the situation, Laurel's team contacted a web-master at National Headquarters



Monthly streamflow forecast maps are very popular from January through June.

to place an emergency announcement on the NWCC website notifying users about the server failure.

After determining the scope and extent of the failure, the OCIO-ITS-AOB and NITC groups, along with **Maggie Dunklee** and **Del Gist** of the NWCC Information Systems Team, went to work. The plan of attack was to use another server in the Portland Computer Center to replace the web server which had crashed.

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- Western Snow Conference
- Annual Photo Contest
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Server failure highlights popularity, vulnerabilities ...cont. from pg 1

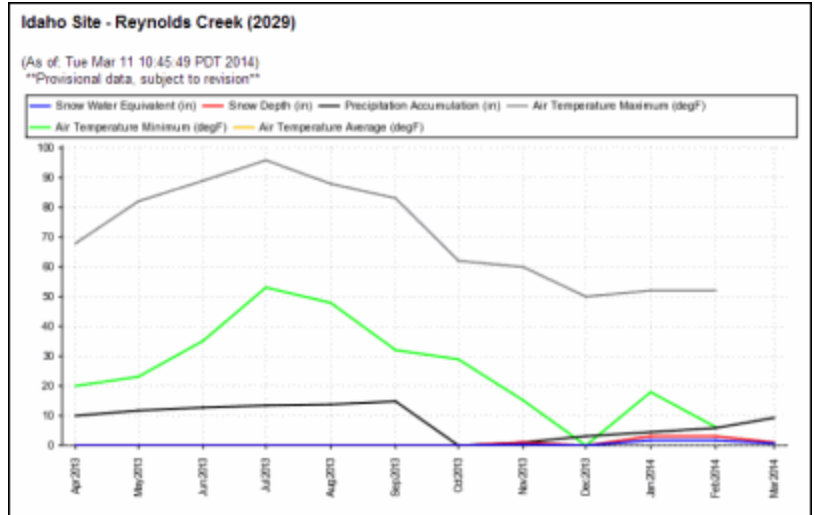
The IST staff performs a full backup of all its servers daily. They used the tapes from the previous day (less than 24 hours old) to restore the data to the new server.

In all, it took almost two days to rebuild the new server and get all the tools and products back in operation. However, the NWCC web page was down for over three days because the Portland office was inaccessible.

And, in the end, this “perfect storm” brought to light some areas where our processes could improve.

Why was the server vulnerable?

Work has been ongoing for several years to move the systems from the Portland Computer Center to a new location in Kansas City, Missouri. This new “hosting” loca-



The NWCC Report Generator web application incorporates data from many sources, including the Water and Climate Information System (WCIS) databases.

tion will allow the WCIS applications to reside on multiple, load-balanced servers, as opposed to one dedicated server, as is the case now.

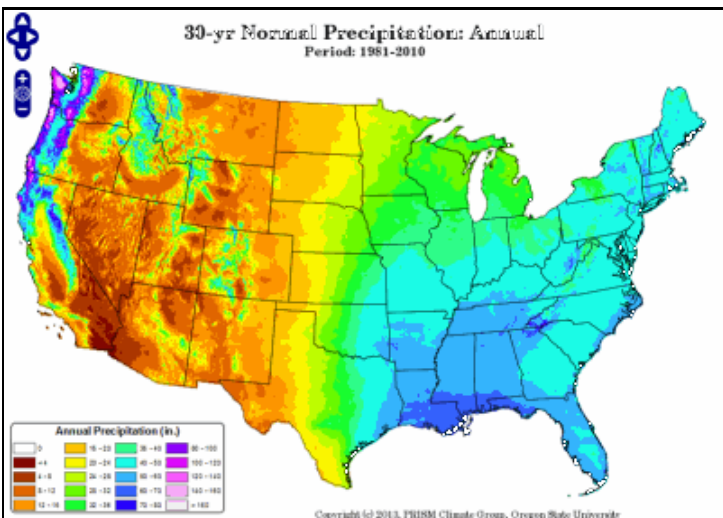
Laurel goes on to explain,

“Our plan is to continue to work toward migration to hosting in Kansas City. Once WCIS is totally into the hosted environment, the system will be more reliable and less likely to failures which could affect WCIS functionality and data availability.”

The current plan is for the Portland Computer Center to be decommissioned with all WCIS databases and applications operational in Kansas City.

Colorado SNOTEL Snowpack Update Report									
Based on Mountain Data from NRCS SNOTEL Sites									
Provisional data, subject to revision									
Data based on the first reading of the day (typically 06:00) for Thursday, March 13, 2014									
Basin Site Name	Elev (ft)	Snow Water Equivalent			Snow Melted Equivalent			Percent of	
		Current (in)	Today's Median (in)	Median Peak (in)	Median Peak Date	Today's Median	Median Peak	Median Peak	Peak
GUNNISON RIVER BASIN									
BUTTE	10160	14.2	11.8	13.9	Apr 06	120	102		
COCHETOPA PASS	10020	4.8	3.5g	3.9	Mar 29	137	123		
COLUMBINE PASS	9400	13.3	16.3	16.8	Apr 05	82	79		
IGARABO	8800	11.4	11.9	14.4	Apr 05	96	79		
MC CLURE PASS	8500	17.0	15.4	18.3	Apr 05	110	104		
MESA LAKES	10000	13.0	14.5	18.3	Apr 16	90	71		
OVERLAND RES.	8840	10.9	11.3	11.8	Apr 02	96	92		
PARK CONE	9600	11.2	9.1	10.1	Apr 05	123	111		
PARK RESERVOIR	9960	23.8	22.6	27.4	May 04	105	87		
PORPHYRY CREEK	10760	18.1	13.3	16.0	Apr 07	136	113		
RED MOUNTAIN PASS	11200	20.6	19.7	24.6	Apr 26	105	84		
SARGENTS MESA	11530	10.3	N/A	N/A	N/A	*	*		
SCHOFIELD PASS	10700	35.8	26.8	33.7	Apr 16	134	106		
SLUNGULLION	11440	13.0	11.5	14.7	Apr 17	113	88		
UPPER TAYLOR	10540	16.0	N/A	N/A	N/A	*	*		
WAGER GULCH	11100	9.1	N/A	N/A	N/A	*	*		
Basin Index (%)						110	93		
UPPER COLORADO RIVER BASIN									
ARAPAHO RIDGE	10960	24.5	17.9g	22.4	May 10	137	109		
BEAVER CK VILLAGE	8500	-X	10.9g	12.5	Apr 02	*	*		
BERTHOUD SUMMIT	11300	23.1	16.0	21.8	Apr 29	144	106		
BISON LAKE	10880	22.1	21.0	28.2	May 06	105	78		
BUFFALO PARK	9240	18.8	10.0c	10.9	Apr 25	188	172		
CHAPMAN TUNNEL	10110	14.4	N/A	N/A	N/A	*	*		
COPPER MOUNTAIN	10550	18.8	12.1	15.4	Apr 28	155	122		
ELLIOT RIDGE	10520	19.9	N/A	N/A	N/A	*	*		
FOOL CREEK	11150	22.3	N/A	N/A	N/A	*	*		
FREMONT PASS	11400	17.2	13.0	18.6	May 07	132	92		
GRIZZLY PEAK	11100	21.5	14.5	17.1	Apr 12	148	126		
HIGH LONESOME	10620	22.0	N/A	N/A	N/A	*	*		
HOOSIER PASS	11400	17.7	12.1	16.0	Apr 25	146	111		

The Update Report is another popular NWCC product.



The PRISM Climate Group at Oregon State University uses WCIS data to produce their 30-year Normal maps.

Snow School 2014

Four Sunny Days, One Cold Night

[Spencer Miller](#)
Public Affairs, Washington
D.C.

Each year NRCS' National Water and Climate Center organizes a West-Wide Snow Survey Training School for surveyors, forecasters and others involved with the program. This year's January training, attended by 42 students, was held in Bend, Oregon for the second year in a row.

For Colorado Soil Conservationist **Christine Shook**, the training was a welcome refresher. "My favorite part is the bivouac," Shook said, referring to the Wednesday night field exercise where students build and sleep in snow shelters. "Sleeping in a snow cave is something I only do once every five years, at this training, but I know I could survive a night out if I had to."

In addition to snow shelter construction, Snow School teaches students about wilderness first aid, gear selection, avalanche safety, over-snow machine operation and data collection methods. Most in-

structors are seasoned snow surveyors, but a couple of instructors are regularly flown in from Alaska, including **Brian Horner**, who teaches wilderness survival, and **Leighan Falley**, who teaches avalanche awareness.

The training has great practical value for snow surveyors. "Last time I went to the field my snow machine wouldn't start," Shook said, "But we learned how to perform field repairs [at Snow School], so I was able get it running. Not a problem."

Avalanche safety training also helps Shook in the field. "I'm more aware of the terrain. On several occasions I've changed course to avoid potentially dangerous conditions."

Networking and camaraderie are key parts of Snow School. Since the program is spread across the West, surveyors rarely get face time with their counterparts in other states. Over the week, students benefit from sharing surveying techniques and their solutions to various problems. On the night of the bivouac, most students gathered around a towering Christmas-tree-fueled

bonfire to share stories and laughs.

Asked if she enjoyed Snow School, Shook replied, "I love it! It's my favorite training." Though she currently works in Soils and surveys snow just one week a month during winter, she said she would do it full time if something opened up.



Christine Shook, Colorado Soil Conservationist



2014 West-wide Snow Survey Training School attendees and instructors



Spotlight On... Jan Curtis

It was the summer of 1969 and Jan Curtis was about to enter his senior year of high school. He had applied earlier that year to be part of the summer astronomy program at the Hayden Planetarium in New York City and was thrilled when he was accepted into the program. The experience was a very positive one and helped shape Jan's love of the stars and science.

Jan went on to attend the City College of New York, graduating with a B.S. degree in Meteorology. He left the East Coast shortly thereafter, having fallen for the California sunshine during his first trip West.

“Helping our stakeholders is extremely satisfying.”



Jan with Dawson, Tuco and Cody

When the opportunity to join the U.S. Navy presented itself, Jan entered Officer's Training in 1975. He became a commissioned officer later that year and began a career that took him to deployments all over the U.S. and abroad.

He lived in Okinawa, Washington DC, Colorado Springs, Monterey, and New Orleans, to name a few. At one point, Jan even served as a climatologist on the small atoll of Diego Garcia in the Indian Ocean, known as one of the most obscure places on earth.

It was during one shore-based assignment in Hawaii that Jan met his future wife, Linda. Linda was also serving in the Navy at the time. In 1985, after about a year of dating, Jan and Linda married in Honolulu and their great adventure together began.

Jan attended Naval Postgraduate School in Monterey, earning a Master's degree in Air Ocean Science in 1989. He continued on deployments domestically and internationally. On one assignment, he was the program manager for a military weather satellite program under development by the U.S. Space Command.

In 1994, after nearly 20 years of service, Jan retired from the Navy at the rank of Lt. Commander.

Jan found himself faced with the question, “What should I do now?” After some discussion, Linda and Jan decided that Alaska might be a great place to spend a few years. After all, the prospect of photographing the Northern Lights seemed almost too good to

believe, and both of them enjoyed the winter weather. So, they packed up and headed to Fairbanks.

Once settled in, Jan stopped by the Meteorology Department at the University of Alaska to see if any volunteer opportunities might be available. To his pleasure, the professor in charge needed some assistance, and Jan began a five-year stint with the University as a research climatologist.

Jan and Linda returned to the Lower 48 in 2001, when he accepted the position as the Wyoming State Climatologist. In this role, Jan performed public outreach, served on the Governor's Drought Task Force, and wrote the *Wyoming State Climate Atlas*.

Jan's next service came in 2005, when he joined the National Water and Climate Center as Meteorologist/Applied Climatologist.

In his nine-plus years with the Center, Jan has enjoyed working with professionals who are truly passionate about their work and have great creative energy. Seeing technology advancements and closing the gaps in our understanding of weather and climate has also been gratifying.

Having lived in seven of the 13 western states over the years, Jan and Linda now co-locate between homes in Santa Fe, New Mexico and Portland, Oregon. Linda serves as the Community Collaborative Rain, Hail and Snow (CoCoRaHS) network national application processor.

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Pacific Northwest Climate Impacts Assessment

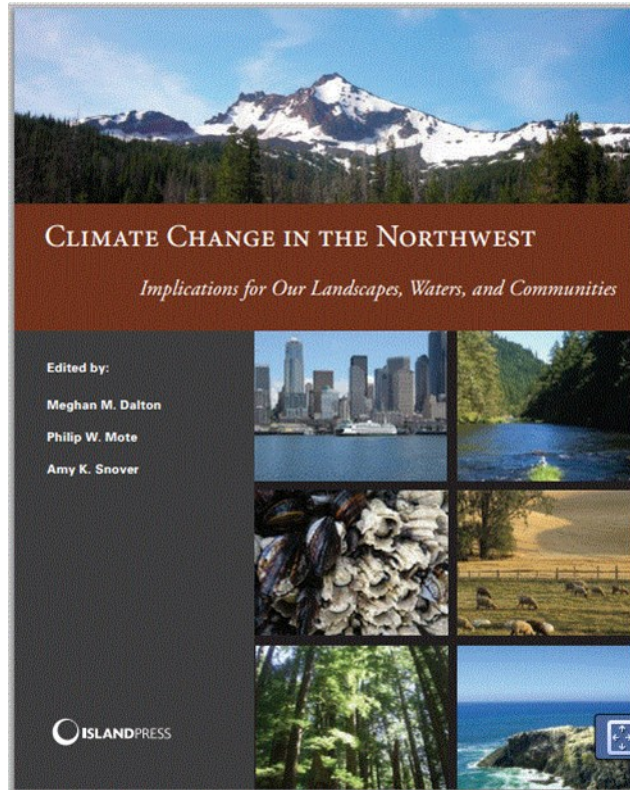
The Pacific Northwest portion of the U.S. National Climate Assessment is now available in PDF format and for purchase in print.

Climate Change in the Northwest: Implications for Our Landscapes, Waters, and Communities assesses the current state of knowledge on key climate impacts. It also addresses consequences to various sectors of the Pacific Northwest including projected impact on:

- Pacific Northwest climate
- Hydrology and water supply
- Coasts and oceans
- Forest ecosystems
- Agriculture
- Human health
- Northwest Tribes

The 271-page report draws on the expertise of dozens of scientists and subject-matter experts within the region.

For more information or to download a copy of the report, go to <http://cses.washington.edu/db/pdf/daltonetal678.pdf>



Spotlight on Jan Curtis



Jan's wife, Linda, is the CoCoRaHS network national application processor.

They have three dogs, Dawson, Tuco and Cody, who enjoy protecting their masters from the desert critters. Linda has recently begun agility training with Cody, their one-year-old border collie.

Jan's plan is to retire from Federal service at the end of May 2014. After retirement, they plan to stay in Santa Fe, where the night skies are more conducive to astronomy and photography, two of Jan's passions.

He's hoping to upgrade the telescope he purchased back in the early '70s, allowing him

...cont from pg 4

to venture to even further unseen places.

And, he's pretty good at it, too. In the past, Jan's photography has been featured in the **National Geographic Magazine**, and most recently won Honorable Mention awards in 2013 and 2014 **Weatherwise Magazine** annual photo contest.



Western State Conservationists meet to discuss issues and provide support

State Conservationists from 12 western states met in Portland March 3-5, 2014, for a Snow Survey Advisory Committee meeting. **Mike Strobel**, National Water and Climate Center (NWCC) Director and Snow Survey and Water Supply Forecasting Program Manager, hosted the gathering.

Mike articulated two broad goals for the meeting: first, to introduce the mission and structure of the Snow Survey Program to the State Conservationists, many of whom are new to the Program. The second goal was to elicit suggestions and advice from attendees on ways the Program could improve its operations, visibility and effectiveness.

Monday's session focused on budgets, program initiatives and allocations to the States. The committee talked about

ways to improve cross-team communication and operating efficiencies. Mike also provided an overview of the organizational assessment he and others participated in 2012 and 2013. The different options outlined in the assessment were discussed by the committee, with each State weighing in on the pros and cons of the options.

The Tuesday morning session focused on snow courses and the process used to identify courses for possible discontinuation. The State Conservationists described how each had addressed this ongoing issue.

Tony Tolsdorf, NWCC Water and Climate Monitoring Team Lead, gave an update on the most recent Snow School, and the status on the Snow Survey Standards and Specifications project.

The Soil Climate Analysis Network (SCAN) project was also a topic of discussion. The committee members shared thoughts about improving the visibility of the project, including the idea of locating a SCAN station in the People's Garden in Washington, D.C.

The role of Water Supply Specialists (WSSs) is different across many of the western states. The committee decided to evaluate the current position descriptions in place for WSSs, focusing on the Snow Survey Program's core tasks and responsibilities.

Spencer Miller, Public Affairs Specialist, presented details on ongoing activities to promote the Program's mission, including a new web page and "infographics."

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Members of the Snow Survey State Conservationist (STC) Advisory Committee at the Clear Lakes SNOTEL site. Ron Alvarado (Oregon STC), Carlos Suarez (California STC); Astrid Martinez (Wyoming STC); Dave Brown (Utah STC); Dan Good (RID Director); Melissa Webb (Oregon DCO); Astor Boozer (Western Region Conservationist); Bruce Petersen (Nevada STC).

Attending, but not pictured: Bob Jones (Alaska STC); Keisha Tatum (Arizona STC); Joyce Swartzendruber (Montana STC); Xavier Montoya (New Mexico STC); Phyllis Philipps (Colorado STC); Jeff Burwell (Idaho STC); Roylene Rides at the door (Washington STC).



Announcing: 2014 Snow Survey Photo Contest

The annual Snow Survey Photo Contest is on! The year, we've extended the deadline for entries, giving you more time to capture the beauty of the work we do.



The rules are the same:

- The contest is open to all. Photos must have something to do with the Snow Survey Program and the work we do.
- The photo must be taken within the last 12 months.
- Limit of three entries in each category for each person.

- Only those who took the photo can submit. However, if you have historic pictures, we would like to archive them.

There are five categories with First, Second and Third Place awarded in each:

1. **Scenery**
2. **Field work** (people in the field)
3. **Transportation** (helicopters, snow machines, horses, skiing, etc)
4. **Equipment** (such as SNOTEL stations, master stations, computers, warehouses)

5. People

Please **rename** each picture submitted with the following:

- Your name
- Category of picture
- Location of picture

For example:
smith.scenery.yellowstone.jpg

Deadline for submissions is June 30. Send your entries to [Jacquie Workman](#).

Just like last year, snow survey employees will vote for the winners. Voting will begin July 7.

Winners in each category will receive the following:

First Place – Snow Survey belt buckle
Second Place – Gift Card
Third Place – Certificate

Plus the winning entries in each category will be framed and placed on the walls of the NWCC and featured in the fall issue of **SnowNews**.

Please contact Jacquie (503-414-3038) if you have any questions.



Deadline for entries in
this year's photo
contest is June 30.
Voting starts July 7.

State Conservationists Advisory Committee ...cont. from pg 6

Wednesday's sessions consisted of road trips to the Program's Electronics Maintenance Facility (EMF) and to the Clear Lake Snow Telemetry (SNOTEL) site near Mt. Hood.

In addition to representatives from Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming, additional attendees included **Astor Booz-er**, Western Regional Conser-

vationist, **Dan Good**, Resource Inventory Division (RID) Director, and **Randy Julander**, Utah Data Collection Office (DCO), and **Scott Oviatt**, Montana DCO.

NWCC Team Leaders, **Laurel Grimsted**, **Tony Tolsdorf** and **Cara McCarthy** gave presentations about their group's activities.

The advisory committee is planning more regular meetings in the future, including the

possibility of combining with an upcoming regional state conservationist meeting in April.



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	Jolyne Lea 503-414-3040	jolyne.lea@por.usda.gov
	Data Collection Office Supervisor	Daniel Fisher 907-271-2424	daniel.fisher@ak.usda.gov
Arizona	Forecast Hydrologist	Gus Goodbody 503-414-3033	angus.goodbody@por.usda.gov
	Water Supply Specialist	Dino De Simone 602-280-8786	dino.desimone@az.usda.gov
California	Forecast Hydrologist	Jolyne Lea 503-414-3040	jolyne.lea@por.usda.gov
	Water Supply Specialist	Greg Norris 530-792-5609	greg.norris@ca.usda.gov
Colorado	Forecast Hydrologist	Cara McCarthy 503-414-3088	cara.s.mccarthy@por.usda.gov
	Hydrologist	Mage Hultstrand 720-544-2855	mage.hultstrand@co.usda.gov
	Data Collection Office Supervisor (acting)	B.J. Shoup 720-544-2850	william.shoup@co.usda.gov
Idaho	Data Collection Officer	Phil Morrissey 208-685-6983	phil.morrissey@id.usda.gov
	Forecast Hydrologist	Rashawn Tama 503-414-3010	rashawn.tama@por.usda.gov
	Water Supply Specialist	Ron Abramovich 208-378-5741	ron.abramovich@id.usda.gov
Montana	Data Collection Office Supervisor	Scott Oviatt 406-587-6844	scott.oviatt@mt.usda.gov
	Forecast Hydrologist	Cara McCarthy 503-414-3088	cara.s.mccarthy@por.usda.gov
	Water Supply Specialist	Brian Domankos 406-587-6991	brian.domankos@mt.usda.gov
Nevada	Forecast Hydrologist	Jolyne Lea 503-414-3040	jolyne.lea@por.usda.gov
	Water Supply Specialist (acting)	Beau Uriona 801-524-5213 x16	beau.uriona@ut.usda.gov
New Mexico	Forecast Hydrologist	Gus Goodbody 503-414-3033	angus.goodbody@por.usda.gov
	Water Supply Specialist	Wayne Sleep 505-761-4431	wayne.sleep@nm.usda.gov
Oregon	Forecast Hydrologist	Rashawn Tama 503-414-3010	rashawn.tama@por.usda.gov
	Hydrologist	Melissa Webb 503-414-3270	melissa.webb@or.usda.gov
Utah	Data Collection Officer Supervisor (acting)	Thor Thorson 503-414-3003	thor.thorson@or.usda.gov
	Forecast Hydrologist	Gus Goodbody 503-414-3033	angus.goodbody@por.usda.gov
Washington	Snow Survey Supervisor	Randy Julander 801-524-5213	randy.julander@ut.usda.gov
	Forecast Hydrologist	Rashawn Tama 503-414-3010	rashawn.tama@por.usda.gov
Wyoming	Water Supply Specialist	Scott Pattee 360-428-7684	scott.pattee@wa.usda.gov
	Forecast Hydrologist	Cara McCarthy 503-414-3088	cara.s.mccarthy@por.usda.gov
All States	Water Supply Specialist	Lee Hackleman 307-233-6744	lee.hackleman@wy.usda.gov
	Center Director/Program Manager	Mike Strobel 503-414-3055	michael.strobel@por.usda.gov
	Database Manager	Del Gist 503-414-3007	del.gist@por.usda.gov
	Database Manager	Maggie Dunklee 503-414-3049	maggie.dunklee@por.usda.gov
	Information Systems Team Lead	Laurel Grimsted 503-414-3053	laurel.grimsted@por.usda.gov
	Meteorologist	Jan Curtis 503-414-3017	jan.curtis@por.usda.gov
	Modeling Hydrologist	David Garen 503-414-3021	david.garen@por.usda.gov
	Operations Specialist (SNOTEL/SCAN)	Vacant	
	Resource Conservationist	Vacant	
Statistical Assistant/SCAN QC	Denise Schilling 406-727-7580	denise.schilling@mt.usda.gov	
Water & Climate Monitoring Team Lead	Tony Tolsdorf 503-414-3006	tony.tolsdorf@por.usda.gov	
Water & Climate Services Team Lead (acting)	Cara McCarthy 503-414-3088	cara.s.mccarthy@por.usda.gov	



Upcoming events

Events of interest in the coming months.

What: 82nd Western Snow Conference
When: April 14-17, 2014
Where: Durango, Colorado
How: [Conference Web Site](#)
More Information:
[Peter Palmer](#), General Chair, (208) 385-9198.
[Randy Julander](#), Local Chair, (801) 524-5213.

What: 71st Eastern Snow Conference
When: June 3-5, 2014
Where: Appalachian State University, Boone, North Carolina
How: [Conference Web Site](#)
More Information:
[Dr. Baker Perry](#), Program Chair.

What: American Association of State Climatologists (AASC) Annual Meeting
When: July 8-11, 2014
Where: Skamania Lodge, Stevenson, Washington
How: [Conference Web Site](#)
More Information:
[Karen Bumbaco](#), (206) 543-3145.
[Kathie Dello](#), (541) 737-8927.

cli-MATE features weather, climate data

The Midwestern Regional Climate Center (MRCC) recently launched an online climate data system.

[cli-MATE](#) (MRCC Application Tools Environment) is an online system containing weather and climate data on various time (hourly, daily, monthly, seasonal, annual) and spatial (individual station,

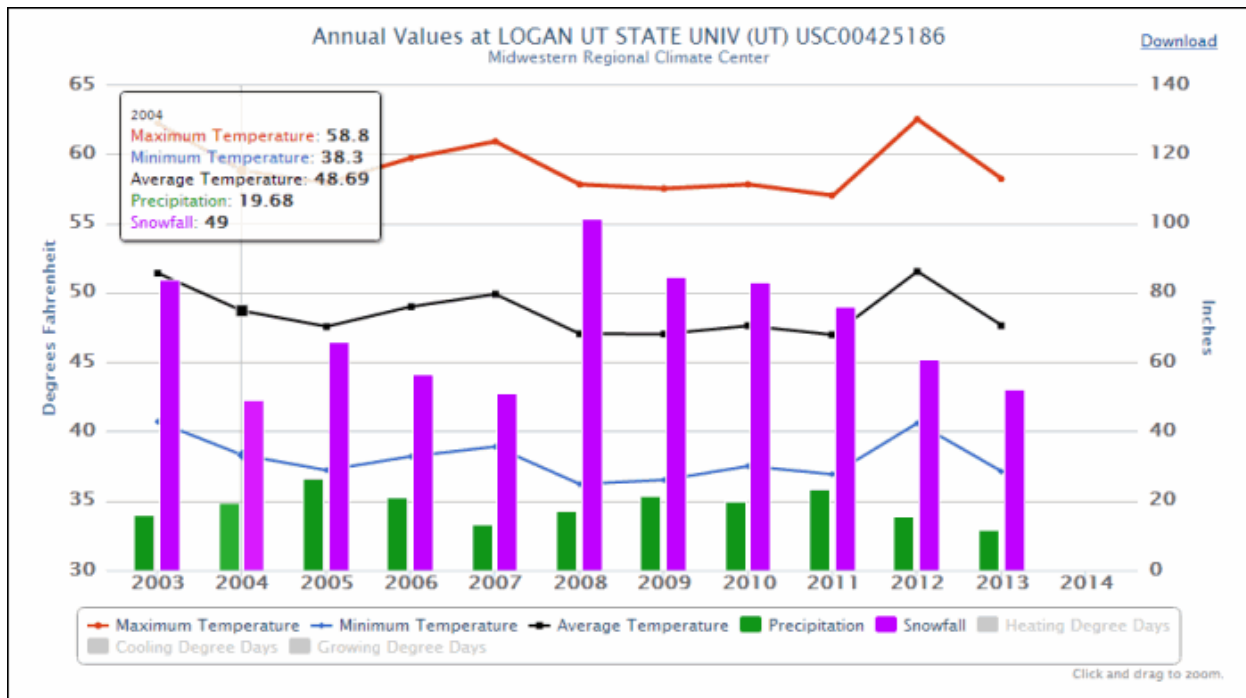
climate division, state) scales.

Real-time and historical climate data are available from around the U.S. Registrants also have access to value-added tools, such as customizable charts of climate data, growing season statistics, degree day products and graphs, freeze statistics, ranking of climate values, gridded

maps of climate data and averages over various regions.

To access cli-MATE data, select the "Register Here" button on the top right of the [cli-MATE homepage](#).

Contact the [MRCC service office](#) if you have any questions or for more information.



Graph of maximum, minimum and average temperature, precipitation and snowfall at the Utah State University weather station for the period 2003-2014.

Western Snow Conference registration underway

The 82nd Western Snow Conference (WSC) will be held April 14-17, in Durango, Colorado.

The Conference will kick off Monday morning, April 14, with a short course and panel discussion entitled "Dust and Carbon Effects on Snow Processes: Detection and Adaptation" with several invited experts in the field.

Tuesday and Wednesday will have a full forum of posters

and oral presentations on a variety of topics related to snow and runoff, climate variability, water management, and water supply forecasting.

The Technical Tour is scheduled for Thursday, April 17, to explore current research activities in the Durango/Silverton area led by personnel of the Center for Snow and Avalanche Studies in Silverton. One of their projects is the issue of dust on snow, chang-

es in albedo, accelerated melt, and the subsequent impact on stream flow.

Check the [WSC web page](#) for conference registration and the most current information, or contact one of the Chairs for more information.

[Peter Palmer](#), General Chair, (208) 385-9198.

[Randy Julander](#), Local Chair, (801) 524-5213.

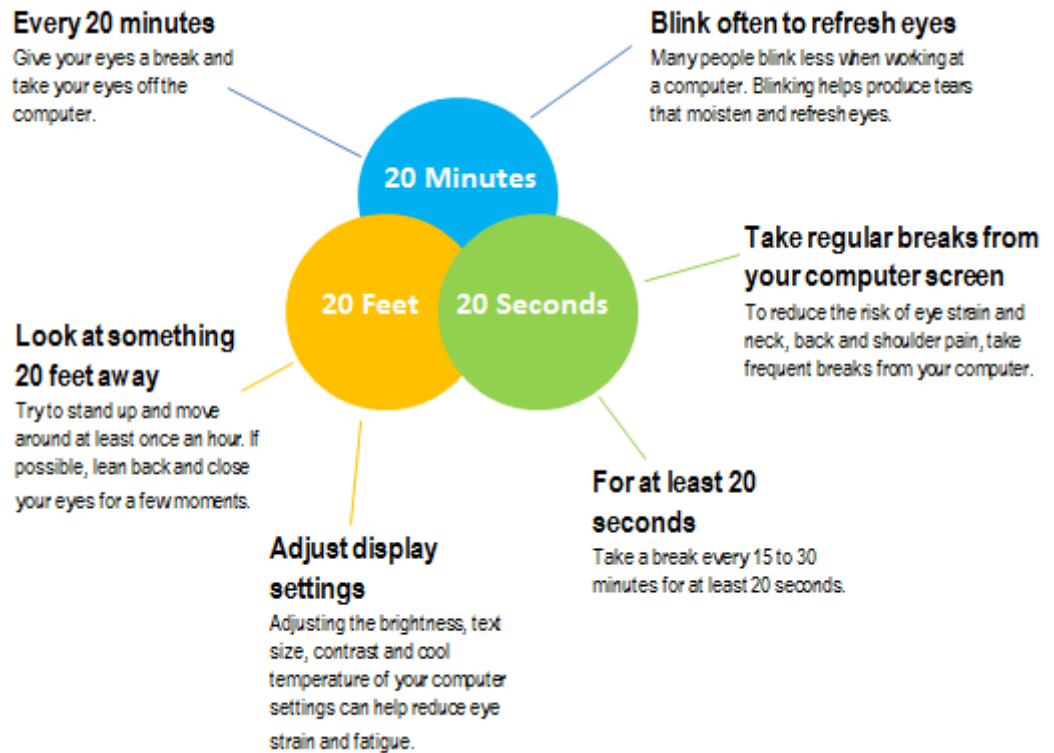


Since 1953, the El Farsante Award has gone to the Western Snow Conference attendee who has committed a memorable blunder in the past year.



Prevent digital eye strain: The 20-20-20 rule

The following was extracted from the Visianinfo.com website and submitted by Del Gist, Information Systems Team Database Coordinator.



NWCC/Snow Survey Program Highlights

On March 14, U.S. Senator **Michael Bennet** (Colorado) joined USDA Undersecretary **Robert Bonnie**, Colorado DCO staff and local water managers to perform a manual reading of the state's snowpack. The group also visited the Berthoud Pass Snow Telemetry (SNOTEL) automated data collection site.

Undersecretary Bonnie is the top environmental and natural resource official at USDA. He oversees both the NRCS and the U.S. Forest Service in his capacity at the agency.

"At a time when parts of our state are facing devastating

drought and significant population growth, having an accurate assessment of our water supply is vital," Bennet said. "Thankfully, we were able to maintain resources for this important snow surveying program this past year, and I look forward to working with NRCS and local water managers to ensure its long-term sustainability."

In 2013, resources for manual snow measurements were threatened by sequestration. Bennet, along with Colorado Senator Mark Udall and Representative Scott Tipton, helped secure funding for the

Snow Survey and Water Supply Forecasting program.

Tony Tolsdorf was recently named Team Lead for the NWCC Water and Climate Monitoring Team. Prior to his appointment, Tony was a Hydrologist with the group for nine years.

Jan Curtis, NWCC Applied Climatologist, will retire in May of this year. We put Jan "In the Spotlight" for this issue (see page 4).



Clouds over Mt. Shasta, California. Photo by Garry Schaefer, Water and Climate Monitoring team lead, retired.

Photo of the month

Products and resources on the web



Shorten those urls

Certain internet browsers will automatically “encode” urls, making them longer and more difficult to interpret.

Now, there’s a General Services Administration (GSA)-supported tool which, among other features, will “unencode” and shorten those cumbersome urls.

Go.usa.gov (<https://go.usa.gov>) is a URL shortener for government employees.

It takes a long URL, like:

<http://www.usa.gov/Citizen/Topics/Environment-Agriculture.shtml>

and turns it into a short URL like:

<http://go.usa.gov/TBUj>

Go.USA.gov is only open to government employees and only shortens government URLs - that is: .mil, .gov, .fed.us, .state.xx.us and .si.edu URLs.

Go.USA.gov also tracks the number of clicks each shortened URL receives, allowing users to measure the impact of their outreach.

You must have a verifiable U.S. Federal, state, or local government e-mail address to register for a Go.USA.gov account.

The third annual Snow Survey Photo Contest is underway! See the article on page 7 of this issue for all the details.



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From the Director's desk Change: It just happens



Considering many recent events, the title of this article seems appropriate.

Coming into February, we were forecasting large deficits in snowpack for much of the West. The outlook, as one person stated, was "grim."

But then we received a number of huge storms and now many areas are approaching or surpassing normal snowpacks. The March 1 outlook was quite different than what we saw on February 1.

It illustrates the limitations in making forecasts during the first half of the season and the risks of making overreaching statements about the chances of recovery. Sometimes nature doesn't care about statistics.

USDA has kicked off the regional **Climate Hubs**. One of the goals of these hubs is to get research and tools to the producers in the field.

Many farmers I have spoken with realize that things are changing, such as temperatures, first and last dates of freezing, timing of snowmelt to streams, and extreme events.

They aren't so concerned with what is causing the change (natural or human), but rather they want to know how to handle the changes. Do they change crops, times of planting and irrigation, and harvest dates? It is a matter of adaptation. They seek help from the USDA on how to adjust to the changes.

Recently, we changed some of our map products here at NWCC. This was driven by trying to improve the products we deliver and by a reduction in manpower in our Program due to retirements. Many of us saw the new map products as an improvement, but from the response, that view is not shared by all.

We received a similar response when we changed from using averages to normals. Some of the responses make good scientific arguments, and we considered all of these in our decision process, but many were just because the new method was different. They liked the old maps better.

As a Program, we are looking at a number of potential changes that will impact what we do. The reality is that we have declining budgets, rising costs, a huge number of retirements, and our continued transition from manual snow courses to automated SNOTEL sites.

We need to find ways of doing things differently and more efficiently. And, we need to decide what we can't do. That is a really difficult statement

for me to make — that we can't do something we have always offered as a product or service. But we need to make tough choices.

The changes we make to the Program are meant to focus our energies on what we do best and what is critical to our mission.

Change is interesting, and for many it is scary. But change happens and it is all about how we anticipate, adjust and adapt that really matter.

As they say, the only thing certain about change is opposition to it. This may be true, but they also say "resistance is futile" and utilizing change to our benefit is the key to success.

Mike



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