



VOLUME  
**X**

ISSUE 1, WINTER 2016-2017

# Sage Winds

NATIONAL WEATHER SERVICE BOISE

## SPRING Spotter Checklist

### When should you call us?

**HAIL:** pea size or larger.

**SNOW:** 1" per hour or greater  
OR storm total 4"+ OR snow  
causing road closures.

**REDUCED VISIBILITY:** for any  
reason.

**WIND:** Greater than 40 mph  
or damage.

**HEAVY RAIN:** ½" + in 1 hour

**FREEZING RAIN:** Any amount.

**FLOODING:** Any water where  
it shouldn't be, or overflowing  
river.

**TORNADO or FUNNEL  
CLOUD**

ANY WEATHER RELATED  
DAMAGE, DEATH, OR INJURY

### How to contact us:

1-800-882-1428

@NWSBoise

facebook.com/NWSBoise

boise.weather@noaa.gov

### Severe Weather Training Workshops

**Apr 10 – 10am Fairfield**  
Camas County Senior Center  
125 Willow Ave. W

**Apr 26 – 7pm Buhl**  
Buhl Fire Department  
203 Broadway Ave. N

## Season in Review

Joel Tannenholz

It was one of the most severe winters on record, reminiscent of the winters in the 1980's and early 1990s. But it was not one of the longest. Spring-like weather came to many areas in early February. The extreme cold of December and January did not return, but new problems arose. Warming temperatures and rain combined to induce rapid melting, leading to flooding at lower elevations.

### DECEMBER was one of the coldest and snowiest on record.

On the 4th, a cold front embedded in strong westerly flow aloft brought moderate to heavy snow to the mountains. On the 8th and 9th, a Pacific weather system was the first storm of the season to leave measurable snow on the ground at many lower valley locations.

Starting on the 10th, westerly flow aloft brought milder air, with temperatures near or slightly warmer than average through the 15th. On the 14th and 15th, a moist Pacific weather system in strong westerly flow aloft produced moderate amounts of snow, beginning a long stretch of continuous snow cover in the valleys.

By the 16th, northerly flow over western Canada sent colder air into our region. Snow cover hindered daytime warming and enhanced overnight cooling, resulting in temperatures around 20 degrees below average on the 17th and 18th. By the 19th, the pattern had shifted to westerly flow again, but it provided only slight daytime warming.

On the 23rd and 24th, a strong and very moist Pacific weather system broke records for both snowfall and snow depth. Following this storm, westerly flow aloft persisted from the 26th through the 30th. Without snow cover, this pattern usually brings mild temperatures, as it did earlier in the month. But deep snow accumulated during the last half of the month maintained Arctic-like conditions.

### WHAT WE GOT with each December snowstorm:

**December 4:** Idaho City 9", Cascade 5", Lowman 8", Pine (Elmore County) 4", Garden Valley 3"

**December 8:** Ontario 4", Vale 4", Caldwell 2"

**December 9:** Star 3", Eagle 4", Meridian 2", Featherville (Elmore County) 8"

**December 14:** Fields (Harney County) 4", Meridian 3", Buhl 3", Gooding 4", Jerome 3", Ontario 4", Nyssa 2", Andrews (Harney County) 7", Burns 6", Hines (Harney County) 7", Harper (Malheur County) 4", Boise 2", Caldwell 3", Idaho City 1", Prairie (Elmore County) 2", Grandview 4"

**December 23:** Eagle 3", Boise 3"

**December 24:** Baker City 4", Caldwell 4", Donnelly 6", Eagle 8", Emmett 6", Cascade 6", Middleton 7", Nampa 6", Star 7", Lowman 15", Boise 7", Nampa 7", Weiser 9", Prairie (Elmore County) 12", Brundage 6", Meridian 6", Soldier Mountain 9", Star 9", Twin Falls 3", Fairfield 14", Cascade 8", Sweet 7", Homedale 10"

Season in Review **P.1**

Meet and Greet **P.4**

Farewell to Jeanne Allen, Spotter Highlight **P.5**

Join CoCoRaHS **P.7**

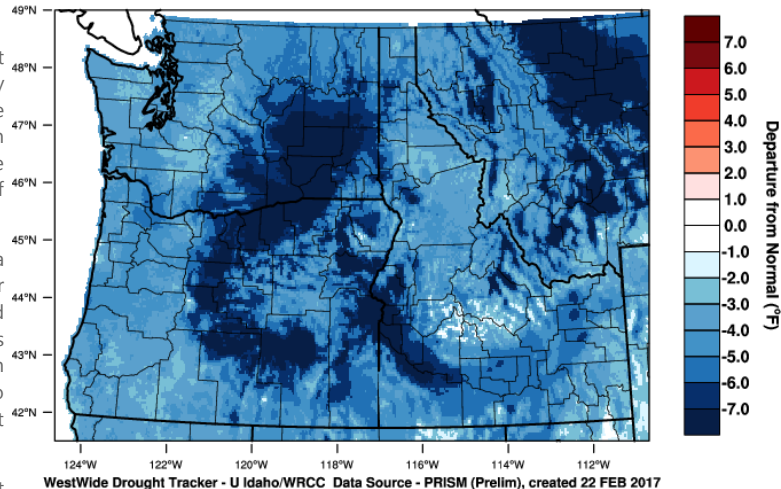
Idaho Flood Safety, Spring Outlook **P.8**

Spring Flood and Water Resources Outlook **P.9**

**December 27:** Brundage 9", Garden Valley 6", Baker City 5", Council 11", Richland (Baker County) 3", Bogus Basin 4"

### Pacific Northwest - Mean Temperature

December-January 2017 Departure from 1981-2010 Normal



WestWide Drought Tracker - U Idaho/WRCRC Data Source - PRISM (Prelim), created 22 FEB 2017

**JANUARY** was cold, snowy, and unusually foggy in many of the lower valleys.

At Boise, lows of 11 below zero on the 6th and 10 below on the 7th were the coldest temperatures since the 25 below that was reached on December 22, 1990. And it was the snowiest month since December 1983.

On the 1st, an upper level high pressure ridge over the Gulf of Alaska extended north over Alaska, enabling northerly flow aloft to transport weather systems and cold air south from Alaska and the

Western Canadian Arctic. From the 1st through the 5th, an upper level trough, which originated over the Gulf of Alaska, resided over the Pacific Northwest states, bringing heavy snow to the region.

Arctic air moved in from British Columbia on the 5th. Clearing skies and fresh deep snow cover provided ideal conditions for radiational cooling and subzero temperatures.

On the 9th, moist Pacific air overrunning the cold air brought freezing rain to the lower valleys. Heavy snow fell on the mountains. Another batch of cold air moved in on the 12th as an upper level trough deepened over the region. The trough failed to produce more than light precipitation before it departed for California and Baja on the 13th.

Cold air remained trapped in the lower valleys as an upper level

ridge brought warming aloft, forming a temperature inversion. Snow cover hindered daytime warming and guaranteed cold overnight temperatures. In this "homemade" arctic air, highs were well below freezing, and lows were near of below zero from the 15th through the 17th.

Southwest flow aloft brought mild moist Pacific air over the region on the 18th. As it lifted over the deep layer of cold air, heavy snow resulted. On the 19th, winds were strong enough to scour the cold air out of the valleys, allowing warmer air to reach the surface. The southwest flow kept temperatures relatively mild through the 22nd.

A cold upper level trough, which had been waiting off the northwest coast, moved inland on the 23rd, with more snow and colder air. As usual, the cold air became trapped in the lower valleys, and a temperature inversion intensified as an upper level ridge built over the northwest U.S.

**WHAT WE GOT with each January snowstorm:**

**January 2:** Eagle 3", Caldwell 2", Garden City 4", Wilder 3", Featherville (Elmore County) 3", Prairie (Elmore County) 2"

**January 3:** Andrews (Harney County) 7"

**January 4:** Boise 4", Andrews(Harney County) 16", Caldwell 9", Kuna 10", Oreana (Owyhee County) 7", Star 4", Burns 8", Fields 8", Juntura(Malheur County) 4", Rome 10", Riddle(Owyhee County) 8", Hollister 6", Silver City 10", Meridian 4", Sand Hollow 9", Hollister 14", Eden(Jerome County) 14"

**January 7:** Vale 5", Middleton 4", Grandview 3", Eagle 4", Marsing 6", Harper 8", Boise 4", Homedale 5", Emmett 6", Mountain Home 4", Star 5", Fruitland 5", Caldwell 5", Nampa 4"

**January 9:** Banner Summit 12", Featherville (Elmore County) 13", Star 6", Middleton 6", Lowman 5", Garden Valley 10", Magic Reservoir (Camas County) 12"

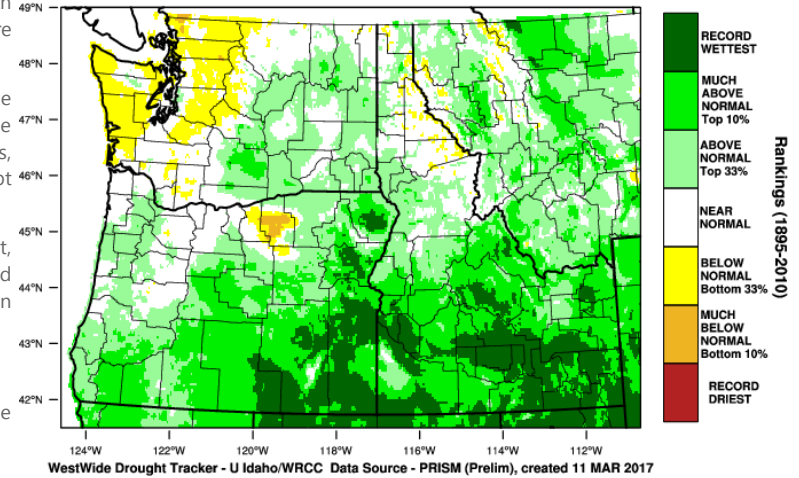
**January 10:** Meridian 5", Kuna 4", Pine (Elmore County) 10", Nampa 6", Caldwell 4", Eagle 4", Idaho City 8", Baker City 3", Richland (Baker County) 3", Halfway (Baker County) 5", Bridgeport (Baker County) 4", Sumpter (Baker County) 8", Nyssa 3", Vale 3", Jamieson 6", Harper (Malheur County) 5", Hines (Harney County) 7", Hill City (Camas County) 30" (!)

**January 11:** Yellow Pine (Valley County) 10", Fairfield 20", Banner Summit 23", Idaho City 12", Lowman 10", Pine (Elmore county) 22", Garden Valley 4", Crouch (Boise County) 8", Cascade 8", Indian Valley (Adams County) 6", McCall 5", Goodrich (Adams County) 4", Fruitvale (Adams County) 9"

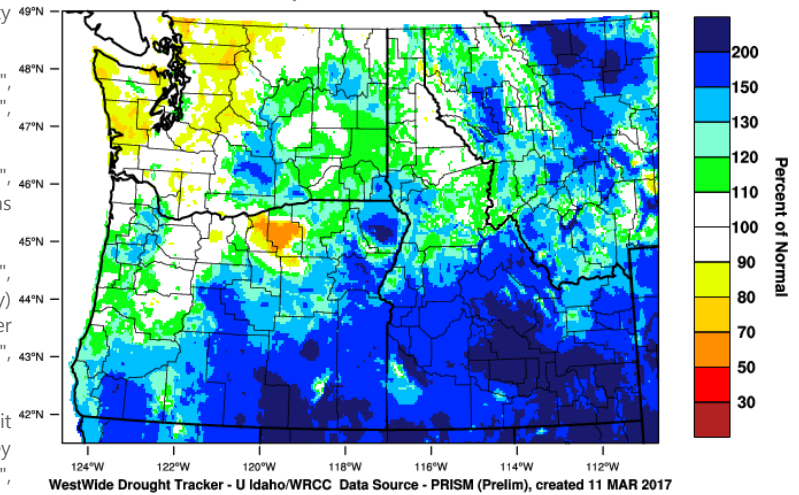
**January 18:** Homedale 3", Boise 2", Nampa 4", Meridian 3", Emmett 4", Harper (Malheur County) 8", Baker 10", Middleton 5", Horseshoe Bend 5", Ontario 8", Eagle 3", Cambridge (Washington County) 10", Star 4", Huston (Canyon County) 6", Nyssa 8", Vale 12", Garden Valley 7", Letha (Gem County) 7", Crouch (Boise County) 10"

**January 19:** Ontario 15", Halfway (Baker County) 11", Bogus Basin 21", Brundage 18", Soldier Mountain 12", Featherville (Elmore County) 23", Fairfield 10", Vale 14", Harper (Malheur County) 12", Weiser 16", Banner Summit (Boise County) 9", New Meadows 15", Owyhee Dam ( Malheur County) 6", Halfway (Baker county) 16", Featherville (Elmore County) 17", Sand Hollow 9", Star 4", Payette 15", Nyssa 8", Ontario 14", Banner Summit 12", Harper (Malheur County) 10"

**Pacific Northwest - Precipitation  
December-February 2017 Percentile**



**Pacific Northwest - Precipitation  
December-February 2017 Percent of 1981-2010 Normal**



**FEBRUARY** brought a preview of spring. Starting the day after Groundhog Day, temperatures were above average through the 10th, and again from the 16th through the 21st. For most of southwest Idaho and eastern Oregon, February was warmer than average.

Snow cover had been continuous for nearly two months at many lower-elevation sites. This was the longest stretch since the 1980s at many locations. But by the second week of February most of it had melted. However, where the snow cover was more persistent, February was slightly colder than average. In the Lower Treasure Valley of Idaho and Oregon the snow melted more slowly than elsewhere at lower elevations, keeping the air relatively cool and contributing to temperature inversions which further retarded warming.

The predominately mild weather was the result of upper level winds from the southwest and west. This pattern encouraged above average temperatures, while transporting enough moisture inland for almost daily rain and snow showers.

On the 7th, a warm front brought moderate to locally heavy amounts snow. But in the lower valleys, where temperatures stayed above freezing, it melted by the end of the day. Following the warm front, on the 9th, the strong and very moist southwest flow produced heavy rain across much of southcentral Idaho and the central Idaho Mountains. Several locations also experienced strong winds.

Offshore, the upper level trough which had been feeding moisture into the northern Intermountain area was poised to move inland. It finally did on the 11th, bringing cooler air but little if any precipitation as it headed south for California and northwest Mexico.

Following the trough, an upper level ridge built over the northwest states. Cool air left behind by the trough was capped by the warmer air in the ridge, forming shallow temperature inversions in the lower valleys. Enough moisture was present for the formation of late night and morning fog from the 13th through the 16th.

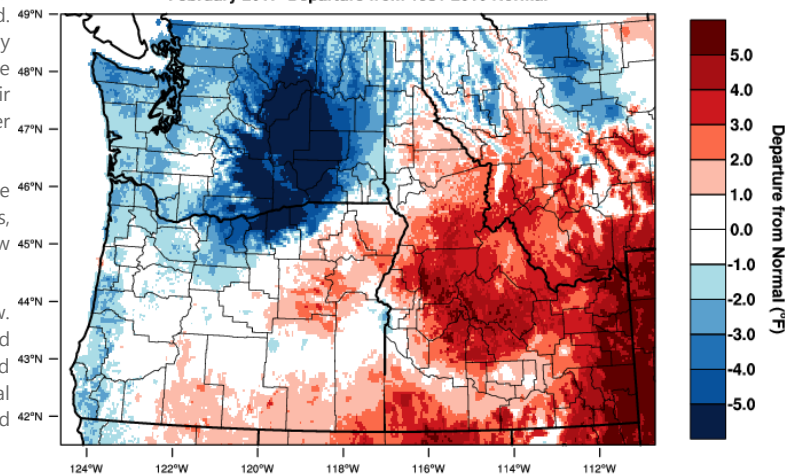
By the 16th, the ridge had moved east, leaving strong southwest flow aloft ahead of yet another upper level trough. A weak disturbance moving through this flow provided enough instability and wind to break the inversion and by afternoon, surface temperatures had rebounded to above average. More weak disturbances brought daily showers. Isolated thunderstorms on the 16th and 19th were the first of the "spring" season.

The upper level trough finally moved inland on the 22nd, and on the 23rd it generated a deep surface low pressure system centered over the Sun Valley area. This storm system dumped heavy snow on southcentral Idaho and the Boise Mountains, but it had little effect on the southwest Idaho valleys, the west central Idaho mountains, and eastern Oregon.

The trough lingered over the Intermountain Region through the end of the month, keeping temperatures below average. Snow flurries were an almost daily

occurrence in the moist and unstable air. On the 28th, a disturbance from the Gulf of Alaska strengthened as it moved into the trough, bringing more snow. In the valleys it was generally light, and it was mostly gone by the end of the day.

**Pacific Northwest - Mean Temperature**  
February 2017 Departure from 1981-2010 Normal



WestWide Drought Tracker - U Idaho/WRCR Data Source - PRISM (Prelim), created 11 MAR 2017

**WHAT WE GOT with each February snowstorm:**

**February 7:** Andrews (Harney County) 6", Eagle 4", near Mountain View (Owyhee County) 7", Meridian 2", Garden City 2", Jerome 2", Eagle 3", Mountain Home 3", Buhl 2", near Oreana (Owyhee County) 4", Jordan Valley 4", Harper (Malheur County) 4", near Rome (Malheur County) 4"

**February 23:** near Filer (Twin Falls County) 3", Twin Falls 6", Buhl 10", Gooding 10", Hollister 11", Kimberly 9", Bogus Basin 11", Magic Mountain Ski Area (Twin Falls County) 28", South Mountain snotel (Owyhee County) 11", Jerome 6", Wendell (Gooding County) 8", Hazelton (Jerome County) 9"

**WHAT WE GOT with the February rainstorm:**

**February 9:** near Hazelton (Gooding County) 0.62", near Glens Ferry (Elmore County) 0.76", near Garden Valley 1.04", 12 ENE Boise (Boise County) 0.91", 9 ENE Lowman (Boise County) 1.21"

**WHAT WE GOT with the February windstorm:**

**February 9:** 5 N Fields (Harney County) average sustained wind 45 mph with gusts to 61 mph, 4N Oreana (Owyhee County) average sustained wind 40 mph with gusts to 50 mph

## Did you know?

Elizabeth Padian

The Boise River watershed is regulated by three reservoirs: Lucky Peak (maintained by the Army Corp of Engineers), Arrowrock (maintained by The Bureau of Reclamation) and Anderson Ranch (Maintained by the Bureau of Reclamation). During flooding and spring melt-off operations, the Army Corp of Engineers takes the lead and works closely with the Bureau of Reclamation to coordinate inflows and outflows through the whole basin. This allows the flows of the Boise River and New York Canal through the Boise Metro area to be as regulated and controlled as possible for the interests of agriculture and flood control.

For frequently asked questions about Boise River Flooding, see [Ada County's FAQ](#). Inundation maps are also available for the Boise River: For the [Boise Area](#), and the [Eagle Area](#).





# Meet and Greet

Aviva Braun

When disaster strikes and there has been significant damage to property, either public or private, the Idaho Office of Emergency Management (IOEM) gets involved. They help counties plan for and mitigate in case of hazards. Their mission is specifically to “guide the State of Idaho in effectively preparing for, protecting against, mitigating the effects of, responding to, and recovering from all hazards.” The National Weather Service works hard to partner with this indispensable organization and provide them with all of the weather information they need to make their critical decisions. As we move out of this active and historical winter season, IOEM and NWS are working together to plan for the upcoming spring flood season. It was a good time to sit down and chat with their Emergency Operations Center Program Coordinator, Cherylyn Murphy.

**NWS:** Good morning Cherylyn. Could you introduce yourself to our readers?

**Cherylyn:** Good morning. I've been at the IOEM for 16 years and have held several positions. When I first came to the IOEM, I worked some with public assistance which is the program that helps with accounting for public infrastructure during disasters; I then worked in individual assistance, the program which helps individual families; I also had responsibilities with the dam program and their plans and the national incident management system. Over most of my career, I've also held some role in setting up the Emergency Operations Center (EOC) for the state. About 5 years ago, a position was created where I could focus solely on the emergency operations center. I still hold this position as IDEOC Program Coordinator. My responsibilities include having processes in place, having written procedures available, making sure we have functioning equipment, and having trained staff to fill the positions. I love my job!

**NWS:** You definitely thrive in this role from what I can tell.

**Cherylyn:** I do! What I didn't mention is that during disasters I become the Plans Section Chief. In that role I gather information, analyze what is pertinent, and then create the various reports and facilitate all of the meetings that occur in EOC operations.

**NWS:** How did you become interested in this line of work?

**Cherylyn:** I've always liked to help our community. When I took a temporary position in administration, I realized that this was a place worth working and I moved up from there.

**NWS:** What does a typical day look like for you? What does it entail?

**Cherylyn:** Running in circles? (Laughs) Well, in disaster mode or not?

**NWS:** Let's talk about disaster mode since we are currently in one and this is probably what people are interested in hearing about.

**Cherylyn:** My typical day starts around 7 am. After I get in, I review everything, look at what has been posted on WebEOC, our web communication system, from the previous night, I relay all of the information that I have to those working on the situational report and then begin working on the incident action plan (IAP). Generally we have an IAP meeting every day and we'll need maps plotted and printed, and all of the EOC displays up and functioning with good information included on them. I've also been answering a lot of people's questions. I was sent out to Minidoka County for about two weeks last month and worked with them to help with their EOC functions and the response to their county's disaster, as this was their first large response. I still talk to them a few times a day in order to support them. It really is a lot of running around right now in disaster mode because it is a mix of my EOC job and my day-to-day job. I get a lot of questions about how things are working and if we need more people staffed. I also aid the EOC managers to understand what is going on in the reports and what the situation is in between each report produced so that they always know what is going on.

**NWS:** What does it take to transition the IOEM from normal functions and into disaster mode?

**Cherylyn:** We often go into heightened awareness mode when we see things going on in Idaho that we think could potentially be a disaster. For example, this past December and January we saw massive amounts of snow falling and

then saw the warming temperatures coming, we moved into heightened awareness so we could watch the situation closely. This mode also allows the EOC to start working with the counties more closely. We always have contact with them, but when we ramp up, it's more consistent. As counties start requesting state declarations, we activate to phase I and start providing resources to counties that need state help. This help could come in the form of technical assistance or physical resources. During the most recent activation of phase I, we dispatched a lot of technical assistance including representatives of the Dept. of Agriculture, the Dept. of Environmental Quality, and the Idaho Dept. of Water Resources for consultation. It may be that we are trying to move water so people can get back to their homes, or maybe we are dealing with a lot of wet hay and not having enough resources to feed individuals' cattle. Most recently, the big thing that we have been dealing with are dairy farmer's ponds. They were getting close to breaching and we wanted to find solutions to prevent this from happening. If this occurred, it would cause hazardous material to flow everywhere and into the water supply. Unfortunately, there were a couple that breached and now state agencies are working with the locals to deal with issues from that. Health and Welfare is involved with this problem, working to get wells tested. The EOC is the facilitator of all of these conversations and interactions. We are a coordinating body. We don't actually respond; instead, we coordinate the state response. We help liaison between the federal response, if we need them, and the county response. In the past, most counties haven't dealt with disasters such as the ones we are currently working through and we can help.

**NWS:** This year excluded, when is your busiest time of year?

**Cherylyn:** Normally, we look at fire season from late July through October, as our busiest time of year. Our flood season is also busy and typically begins in January, but is really active between April and mid-June. Our office knows not to schedule vacations during these months because of how busy we expect to be. EOC activation potential is high and we all have positions within the EOC. However, the last time we had flooding similar to this was 20 years ago in 96/97; it started like this, with a first flooding event in January that turned into 10 declared counties and one tribe. We had three flooding events in 18 months in 96/97 and there were 11, 19 and 20 jurisdictions that the Governor declared for, respectively. Right now we are at 17 county declarations, which is comparable. We have had flooding events in the interim, but it's usually 5-6 counties at the most. These are usually in response to main stem rivers flooding and flash flood events. The current areal flooding is widespread and everywhere.

**NWS:** How does communication between your office and the NWS offices that cover Idaho contribute to your team's success?

**Cherylyn:** Weather is huge for us! Everything we do is weather related. Even if we were to respond to an earthquake, weather would be hugely important for those trying to respond and to the people without homes. Weather guides a lot of what we do and having the great relationship that we have with the four Weather Service offices that serve Idaho really helps. NWS helps us assess what we need to be watching for and thinking about so we can help our counties and tribes.

**NWS:** How does your office specifically use our forecast to plan ahead for a weather event?

**Cherylyn:** We use the NWS site daily to understand whether there is potential for a weather related event. If there are things going on, we use the weather to figure out how we need to respond to what is occurring. During an actual disaster, having NWS come in and do in-person briefs is invaluable because we can ask questions and really understand the pieces that we need to know. For example, with all of this flooding, being able to know whether the overall pattern will be warm or cold, or whether we are going to get more precipitation is key. If we are going to get more precipitation, how is that going to add to what's already there? Also, predicting forward to when main stem flooding will occur, be it next week or later down the line. All of these factors are important to us because our office needs to be prepared with staff and procedures in place in time for all of Idaho's counties to be able to rely on us in their time of need.

**NWS:** Wow, fascinating! Well, that's all I have for you Cherylyn. Thank you for your time. I know it is precious! **Cherylyn:** Thank you.



## Farewell to Boise

Jeanne Allen

Having served in the Boise National Weather Service (NWS) Office for 26 years, Jeanne retired from NWS at the end of January 2017. She will be greatly missed. To honor her service and time working with the Boise team, we asked her to write a brief farewell.

After graduating high school, I wanted to work with horses, so I went to college and earned a 2 year Associates and Applied Science Degree in Animal Husbandry, with an emphasis on horses. After working with horses for about 3 years, I was not satisfied with my career path and went back to college.

I decided to stick close to home. There was a college not very far from where my parents lived at the time, so I decided to live with them and commute to school. Having worked with horses, and having enjoyed being outdoors, I thought it would be interesting to find out more about weather. I decided to pursue a Bachelor of Science degree in Meteorology from SUNY Oswego in Oswego, NY. This was a great school from which to learn meteorology since it was on the eastern end of Lake Ontario. As one of the Great Lakes, it produced a variety of weather to observe and study.

My first weather job was the summer before my senior year at SUNY Oswego. I worked at the National Weather Service Office in Fairbanks, AK on their Fire Weather Program. It was an incredible experience and solidified my interest in pursuing this career path, particularly one within the National Weather Service.



After graduating from SUNY Oswego, my next weather job was as a civilian weather observer for the Air Force in Niagara Falls, NY. After spending almost 3 years in Niagara Falls, I applied to the National Weather Service and spent a year in Glasgow, MT before being transferred to Boise, ID. I have now been at the Boise National Weather Service office for over 26 years!

There is no one particular weather event that stands out to me; instead I marvel at each of the micro-climates I was lucky enough to experience. When I was a student at Oswego, I was able to observe how a Great Lake could affect the local weather. While working at Niagara Falls in the winter, I found it challenging to keep up with changing weather conditions as lake effect snow bands moved back and forth across the

area. While in Glasgow, MT, seeing negative temperatures (in the -30 degree range) with its accompanying wind chills of -80 degrees over the winter months change to triple digit heat in the summer was astonishing. In Boise, I learned about winter valley inversions and about how wildfire smoke over the summer months can affect the local weather. I have found each micro-climate to be amazing and I'm lucky to have experienced them all.

After retirement I plan to do more hiking and get back into photography. Most of all, I look forward to spending more time with my dogs and competing at dog agility trials.

## Highlighted Spotter Report—January 12, 2017

A spectacular amount of snow fell across our region this winter season. An area particularly affected by near continuous snow was Garden Valley, Idaho. One of our SkyWarn Spotters, Ron Reil, did us the favor of letting us know what he was seeing outside his window in a well written report. We are featuring his story here:

*"Up here in Garden Valley the weather has finally let up for a few days, giving me time to recover a little. The last 4 or 5 days have been pretty tough, with snow removal needed almost every day, and yesterday being the worst. We have been getting anywhere from 6" to 10" each day, with some snowfalls exceeding 14", and that blew us past the historic average seasonal snowfall for Crouch, which is 75". We now have 77" of snow on the ground. All of that was on the roofs until yesterday. The night before last, the roofs started unloading, and it was a very spectacular event, so much so that the first big snow slide during the middle of the night scared my two dogs nearly to death, and also woke both me and my wife Gretchen up instantly with the roar. Most of the slide-offs were gentle, but that first one was very violent, reaching completely across the back yard on the west side of the house, all the way to the pasture fence, a distance of about 35'. If anyone, or any critter, had been back there they would have died instantly. That began 36 hours of roof unloading that ended up clearing most of the snow off our house, shop, and barn roofs.*

*Two days ago I knew it was going to warm up yesterday enough to change the snowfall over to rain, so I knew I had a lot of work ahead of me for yesterday, and that turned out to be an understatement. It snowed continuously overnight, so when I woke up in the morning we had a deep accumulation of new wet snow, close to a foot, and as you know, we also had a cold front expected to cross over about noon, causing a temperature drop, so I knew I had to have the snow clearing done before that occurred, or whatever snow and slush was still on the ground would soon be frozen solid. So I got up early, had something to eat, and went to work with my large Kubota tractor. It was snowing hard, but was a wet heavy snow, so I expected I would not be able to move it with the 7' wide Lorenz snow blower, but would have to use the tractor bucket instead, which takes far longer. I got the tractor warmed up, and as I backed out from under the shed-off I cranked up the engine revs, and just for grins gave the blower a try. I was amazed that it could still throw the very wet heavy snow about 25'. That was far enough to make it useful for the job, so I worked quickly*

*to blow off the 1/3rd mile long driveway, and my large hay and horse trailer parking/turn-around area, before the rain started and would make the blower useless.*

*By about 10:30 the snowfall had changed over to mostly rain, but it was only wetting the top inch of the snow, so I was easily able to finish the blowing before the cold-front came in and started dropping the temperature. I was still on the tractor when the cold front came in and the rain turned almost instantly back to snow, along with high winds. It was brutal working in that horizontal snow on my tractor without any protective heated enclosure, but I finished the tractor work, and then started on the hand shovel work, which there was a lot of to do because of all the snow having been shed from the roofs. When I had first come out in the morning I heard a loud crack/boom noise on the north side of the house, and I knew that the snow was getting ready to slide, so I walked over by the generator to watch, expecting another violent slide. Patchy, one of my two Border Collies, came over and sat down next to me to watch too, however, it was anything but violent. It started sliding, and moved steadily about 1 foot per minute, breaking off and dropping over the edge of the roof and building the berms rapidly. Below are a series of images of the results... including my snow removal.*

*Some of the snow blocks rolled down and filled in around our 30 KW generator, but it didn't take me long to dig out a 3' wide walkway around the generator to make accessing it easy in order to open the intake and exhaust ports when needed. We put a lot of time on that generator over the last week, and were very thankful to have it available.*

*This was taken from our horse barn while the snow was still slowly sliding down the north incline of the house roof. It finally stopped sliding when the resistance of the snow berm, next to the generator, became enough to stop its movement, so now it is once again frozen to the roof. :-)*



**Continued on next page...**



This is the east side of my shop shed-off, and as you can see the snow pretty much filled up my previously plowed out access to the propane tanks. The two 1000 gallon tanks are under those round mounds of snow on the left. It was pretty noisy while I used the snow blower to chew out the access again. There was a lot of ice in the slide-off snow which made the big blower very noisy. A regular snow blower would not have been able to cut its way through that compact snow and ice, but that 2,400 pound Lorenz snow blower attachment, which is made of 1/4" thick steel plate, handled it easily. Notice that the sliding snow did just reach the propane tanks, but it wasn't an issue. There is still more snow on the roof yet to slide, but it won't cause any problems, other than me having to prevent the dogs from going in there for their protection until after it does slide.



posts. The last big snow year they were completely under the snow, so we still have a ways to go.

This is the blown out main parking/turn-around area, and my shop building on the right. I finished up with one blower pass down the left side to put a smooth curving finished wall on it since I will be having to look at it for a number of days. :-) I went to extra lengths to clean it all up and not leave any clots of slush or snow to freeze into rock hard lumps that will get buried in our coming snow, and that I would hit with the blower's base cutting edge.



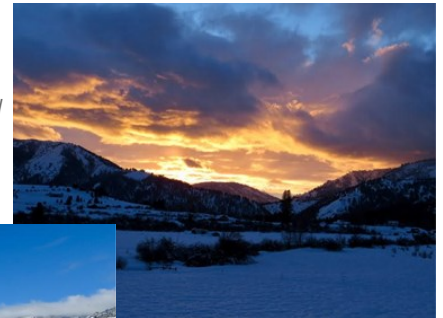
The barn once again has its slide-off snow tunnel, but there are no horses to enjoy its protection and security now. Due to global warming and climate change this is the first time in 6 years that the tunnel has formed. :-)

This is the barn tunnel as viewed from the corral end. There is still a large weight of

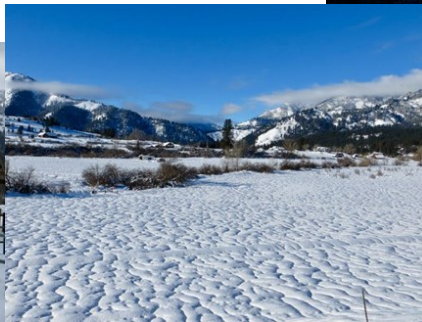
snow on the top of the barn waiting to come down.

This is a panorama of the finished work. That whole surface melted into a smooth wet compact slush by evening that could now be used as an ice skating rink. I had to put on my Whites fire boots this morning for their very aggressive sharp edged lug Vibram soles in order to be able to walk on it with relative safety.

This was our sunset last night, indicating we are coming into a period of nice weather...but cold again. It will be well below zero by morning, despite the 0° low predicted in the forecast. :-)



This pic shows the "valley" in the roof of our house over our front door and kitchen. You can see a horizontal slit in the snow, upper center of image, where the two skylights are located. In the foreground, next to the spiral stair rail, you can see how deep this compact snow, with its thick ice foot, is. It is a scary mass of ice and snow that is very heavy.

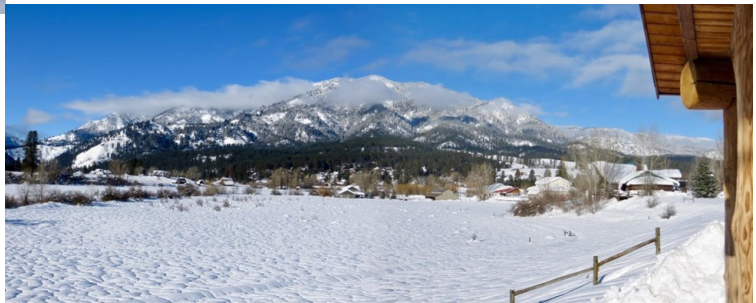


This shows the texturing of the snow in my lower pasture due to the warm moist spell. This is looking SW into the mouth of the South Fork Canyon and Highway 17.

A panorama of Garden Mountain, with Crouch at its base.



Another pic of the "valley" snow. Periodically you hear large noises from this snow as cracks form and it creeps a little downhill. This whole mass can't slide because it is coming from two different directions, 90° opposed, but chunks, like those on the far left, can come down at any time. It will be up there well into Spring, and possibly longer.



Here are a few pics of the results of my snow removal yesterday. This is my horse barn and Diesel fuel tank access path. This access is critical for me to be able to refuel the tractor at the end of each snow removal session. Notice how little of the tops of the fence posts are sticking out of the snow in the background upper right. Those are 5' high



The slide-off snow on the porch of our house, taken from the front door. Patchy, one of my two Border Collies, is there to eat snow. Perhaps if I could leave them out there all the time I would not need to plow snow, they could just eat it all. :-)

The view is pretty much lost when sitting on the porch swing now.



Continued on next page...



This was the first time we have had ice dam formation up here on our place in at least 12-13 years living here. We had it in Boise a few times when we lived down there, but down there the water came down the walls on the inside of the house, which is much worse than we had here. We had no damage other than having to deal with massive icicle formation in dangerous locations under the shed-offs on my shop, and the porch on the house. Those ice formations have almost all collapsed now, and there is no more dripping water to form more. So, for the time being, all is good here. Even the power has been fairly stable for the last 24 hours. This morning was the first time in a week I have walked into the office and found my weather server was still up and running. I did get a call last night, probably from you Jay, inquiring about our snow depth and conditions, probably because my weather page data has been pretty much cut off for the last week. I think I told you we had been getting an average of about 6" of snow per day, but much of the time we got more like 8 to 10 inches a day, often made up of several different periods of snowfall when each weather band came through.

This was the snow load on the roofs 6+ years ago when the Boise Basin received around 300" of snowpack. We had a lot of problems with people being buried by their slide-off roof snow, with a number of serious injuries, and one death. So we take deep snow on the roofs very seriously here. Notice the ice foot at the base of this snow. This was taken at the end of December, if memory serves, but it may be early January, but still lots of snow to come. I marked the top of the snow in case your computer screen doesn't distinguish between the two shades of gray-white well. The snow did eventually slide, which caused the berm to close to the edge of the roof's eave, creating a tunnel, and blocking all light from my shop windows, so I shoveled openings in the snow to let some light in."



## Interested in measuring precipitation? Join the CoCoRaHS observing network.

Valerie Mills

There is always a need for a greater number of observations, and as the saying goes, "the rain doesn't fall the same on all." Precipitation varies greatly across our complex terrain and we need your help measuring precipitation across southwest Idaho and southeast Oregon. Additionally, we'd love your help recruiting your friends or relatives to CoCoRaHS. The more observations we have, the clearer the overall picture of where it did or did not precipitate across southwest Idaho and southeast Oregon. The program requires a physical rain gauge, but does not accept automated measurements for reasons listed on its website. CoCoRaHS requests one observation per day; most observers submit their reports in the morning. A 4-inch rain gauge recognized by the CoCoRaHS program currently sells for just over \$30 dollars online, not including shipping.

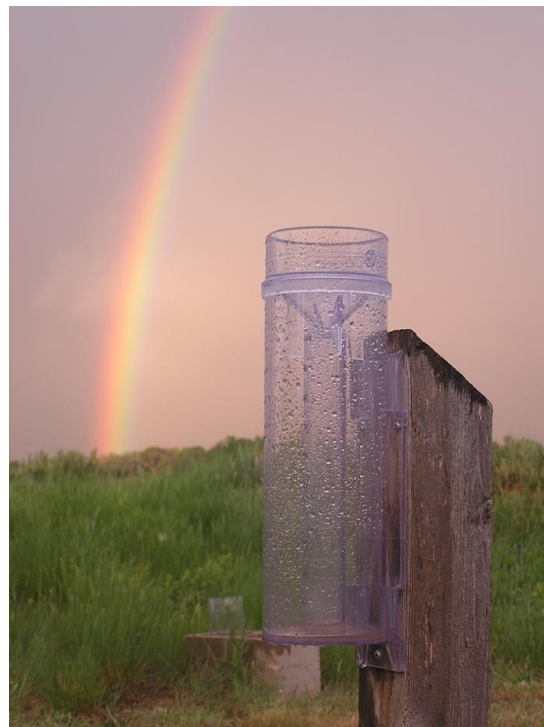
"The more observers in a community, the better the knowledge of local water resources and impacts, including floods and droughts," said Nolan Doesken, Colorado state climatologist. "CoCoRaHS is a great resource for anyone looking to see how much precipitation fell almost anywhere in the country."

And is this all just for fun? Far from it. Just a few examples of people or organizations who use CoCoRaHS data: The National Weather Service, private meteorologists, hydrologists, emergency managers, news media, city utilities, insurance adjusters, the USDA, engineers, mosquito controllers, ranchers, farmers, outdoor and recreation interests, teachers, students, and neighbors in the community.

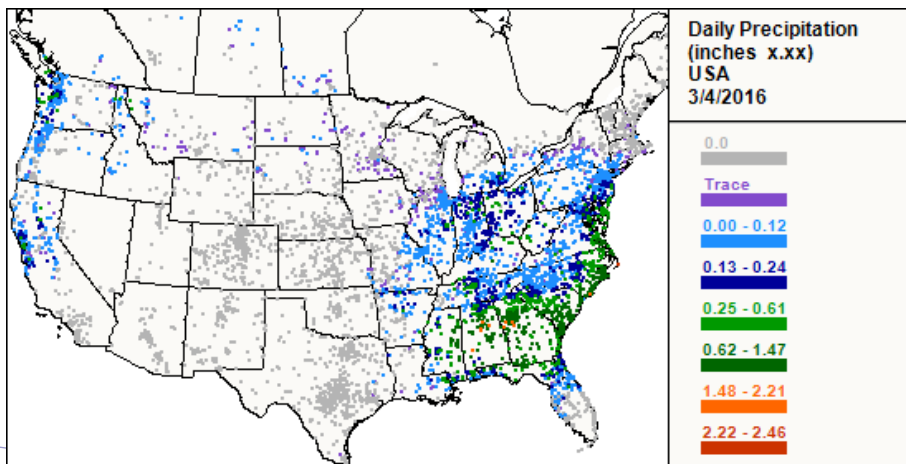
In the figure below, you can see there are limited observations across southwest Idaho and southeast Oregon, compared to the rest of the country. To learn more about the CoCoRaHS program and to see where your fellow observers have recorded rain amounts, visit <http://www.cocorahs.org/>.


Invite your neighbors, relatives and friends by sending them this "Join" link:

<http://www.cocorahs.org/application.aspx>



CoCoRaHS rain gauge after a storm.





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WasyI Hewko

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Jessica Caubre

# Think You Know Everything About Flooding in Idaho?

Katy Branham

It's been a challenging year so far with flooding noted across numerous portions of Idaho. Even with these experiences fresh in mind, there is still more to learn about the power of water. Join us the week of March 13th as we conduct Idaho's 2017 Flood Safety Awareness Week. Each day during the week, a different tidbit related to flooding will be shared and discussed. Look for information on the different types of flooding and what they entail, how to prepare for an upcoming flood, protecting your house and family during ongoing flooding, and the types of damage that can be incurred from widespread flooding.



Your National Weather Service meteorologists strongly encourage you, your friends, and family to review these topics during Flood Safety Awareness Week, or anytime at [www.floodsafety.noaa.gov](http://www.floodsafety.noaa.gov). With so many people living near water throughout Idaho, review of this crucial information may be life-saving!

# Spring Outlook

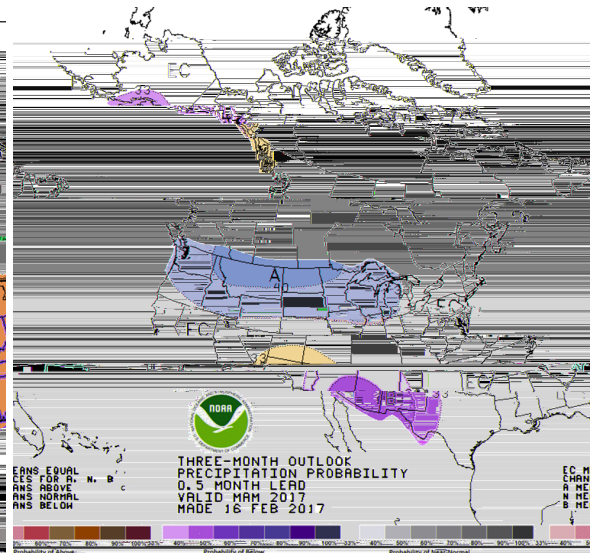
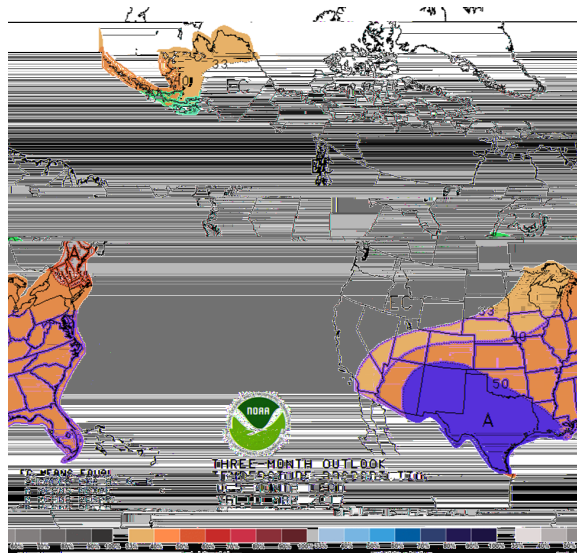
Stephen Parker

The following graphics show the official three-month outlook for the spring of 2017 (Mar-Apr-May) from the Climate Prediction Center, part of the NWS. The country's temperature outlook is for a better chance of above-normal temperatures across the south and east, along with western Alaska. No areas are expected to have below normal temperatures.

As for the country's precipitation outlook, there are better chances for above-normal amounts from the Pacific Northwest across to the Great Lakes region, with below-normal amounts expected across Arizona and New Mexico. The chances for above-normal precipitation are highest in northern Montana and North Dakota.

For southeast Oregon and southwest Idaho, these charts indicate equal chances of above- and below-normal temperatures, with a better chance of above-normal precipitation.

We have been in a weak La Nina since the fall, but now find ourselves in what is called "neutral" conditions. Temperatures in the equatorial eastern Pacific are not significantly warmer or cooler than normal. The outlook is for equal chances of either neutral or El Nino conditions for the summer and fall.



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# SPRING is HERE!

*Friendly reminders on keeping you and your family safe*

## Springtime weather to start preparing for:

- **Flooding:** Snow melt combined with rainfall can create sheet flooding, but some thunderstorms can produce heavy rainfall in a short period of time and create flash flooding. Both of these scenarios can threaten life and property.
- **Thunderstorms:** Hail, lightning, gusty winds, and flooding are all possible with thunderstorms, and can be dangerous. If you hear thunder, it is time to go indoors.

## SPOTTERS! When do we want to hear from you?

- Hail is occurring – note the size in diameter. Use familiar items such as the size of a pea, quarter, etc.
- Heavy rainfall that is causing flooding of any kind.
- ANY property damage caused by wind, hail or rain.
- Funnel Cloud or Tornado

Questions? Comments? Suggestions?

Email: [boi.spotter@noaa.gov](mailto:boi.spotter@noaa.gov)

# Spring Flood and Water Resources Outlook

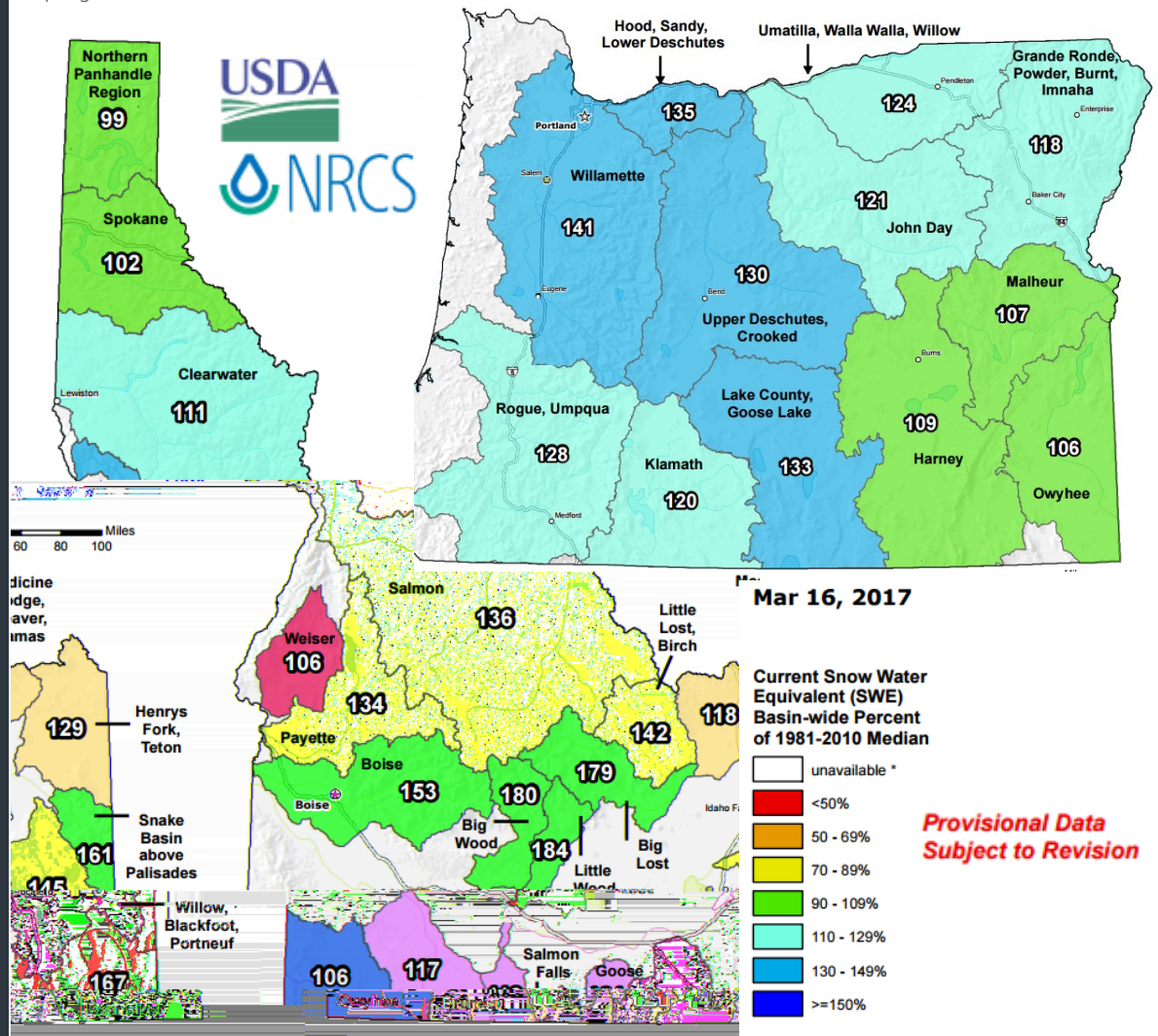
Troy Lindquist

The potential for spring flooding due to snowmelt in 2017 is well above average across most of southern Idaho. Meanwhile, the spring flood potential is about average for northern Idaho. One thing to remember is that mountain snowpack in Idaho generally peaks in early April, leaving several weeks to add to our snowpack and the flood potential.

The primary factors in the development of spring flooding are the occurrence of persistent above normal temperatures, and rain on snow precipitation events. Even for areas that have low snowpack, spring flooding is possible under the right scenario. Additionally, burn scars can have a significant impact on local flood potential during spring snowmelt.

Snowpack as of March 1, snowpack was above median across southern Idaho with record or near record snowpack across much of south-central and extreme southeast Idaho. Percentages ranged from 157 to 192 percent of median in the Wood and Lost River Basins, Snake Basin above Palisades, Bear River, Raft River, Blackfoot, Willow, and Portneuf Basins. Elsewhere south of the Salmon River, basin percentages were generally 110 to 140 percent of median. Across the Clearwater, Spokane, and Panhandle Regions, snowpack ranged from 87 to 99 percent of median. Mountain snowpack in Idaho typically builds through March, and early April snow conditions will be pivotal to water supply conditions through the summer.

Basin-wide reservoir summaries as of March 1 indicate average to above average storage across most regions of Idaho. Large inflows on the Owyhee System in February boosted reservoir levels to 100,000 acre-feet above average. This was a welcome site after multiple years of drought and below average reservoir levels on the Owyhee System. Weather patterns and irrigation demand will drive reservoir operations over the next several months. With the exceptionally large snowpack across much of the south, above average reservoir outflows and high river levels are a good bet on rivers of southern Idaho this spring.



## WATCH/WARNING/ADVISORY What is the Difference?

**WATCH** – Conditions are **favorable for a severe weather event** in the near future. **Be Prepared!**

**WARNING** – Weather is occurring or imminent and is **threatening life or property**. **Take Action!**

**ADVISORY** – Weather that will cause a **significant inconvenience**, and if caution is not taken, may be threatening to life or property. **Be Aware!**