The Inland Northwest Informer

Information For Storm Spotters, Cooperative Observers And Everyone

A Publication Of WFO Pendleton, Oregon

Fall/Winter 2013 - Volume 13

Severe Storms of September 2013

By Mary Wister, Science and Operations Officer

There is a general rule-of-thumb that severe storms east of the Cascades are less of a threat after Labor Day. The main reason for this rule-of-thumb is we lose daylight by several minutes each day, and surface heating is usually not significant for severe storms. Of course, some rules are made to be broken and this was definitely the case in September 2013. Eastern Washington and eastern Oregon observed two significant severe thunderstorm outbreaks on September 5 and September 15. Flash flooding was also observed on September 5. Let's recap the events on these two days.

September 5, 2013 - A large and deep low pressure system developed off the eastern Pacific in early September. On September 5, the low traversed to the northeast across central Oregon and south central Washington. A strong jet stream around the low provided dynamic lift to aid in the development of showers and thunderstorms. Figure 1 shows the position of the jet stream (300mb analysis) over eastern Oregon by late afternoon. The atmosphere was already moist and unstable. Forecasters were anticipating very heavy rain with some storms, and flash flood watches were issued the previous day for the east slopes of the Washington Cascades, the Simcoe Highlands, and north central Oregon where wildfires the previous two years created burn scars in steep terrain. Heavy rain in a short period of time can result in debris flows of water and ash in areas previously affected by wildfires, and there was a potential for debris flows that day.

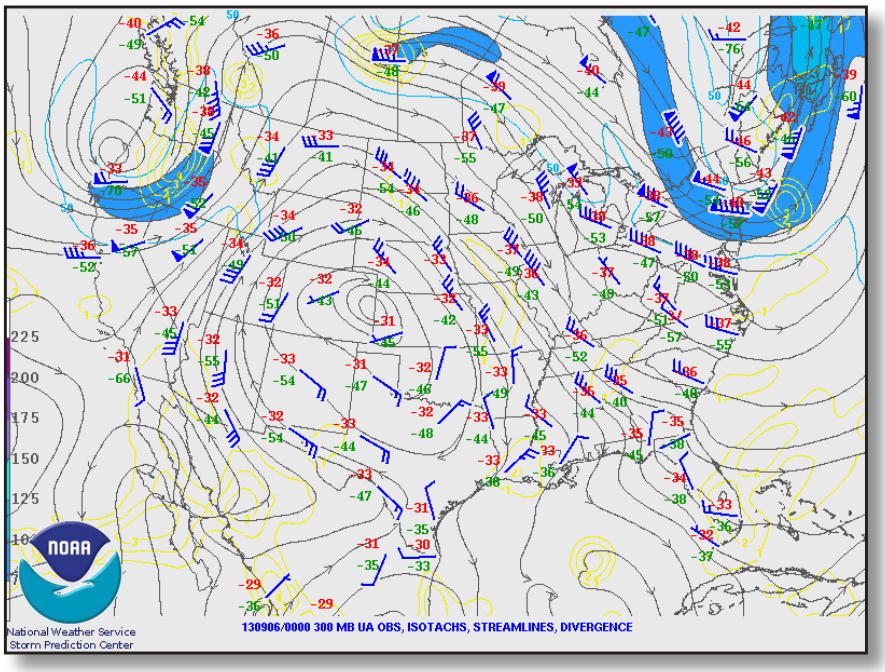

Figure 1. 300 mb Upper-Air Observations, Isotachs, Streamlines, and Divergence Storm Prediction Center

Shortly after noon, the Storm Prediction Center (SPC) in Norman, Oklahoma, issued severe thunderstorm watches that covered the entire NWS Pendleton's forecast area (see figure 2). NWS Pendleton was geared up for a very active day with extra staffing and several SKYWARN Nets.

The reports we received from weather spotters, HAM operators, cooperative observers, and the many Facebook posts helped the staff at NWS Pendleton keep track of the individual storms. There were numerous severe thunderstorms across the area. Over three dozen reports of large hail, damaging winds, and flash flooding were recorded in our local storm report. This included a mudslide four-feet deep and 150-feet wide that closed Highway 410 near Nile Road in Yakima County. Over nine miles of Highway 37

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were covered with rocks and mud near Holdman in Umatilla County. The social media network was a tremendous advantage! Our Facebook followers kept us up to date on the events that evening, and some included photos and videos.

> ***DID YOU KNOW?***
>
> The Storm Prediction Center (SPC) has an archive section on their webpage to review storm reports and the weather charts associated with significant outbreaks such as the ones that occurred in Washington and Oregon on September 5 and 15. Check it out at:
>
> *http://www.spc.noaa.gov/exper/archive/events/*

September 15, 2013 - Just ten days after the major outbreak on September 5, forecasters were watching another low pressure system off the coast tracking across Washington and Oregon. Although the system was not quite as strong as the previous storm that month, it did pack quite a punch. Widespread damaging winds with gusts of 60-70 mph were reported in many areas. A weather station located 10 miles northwest of Richland, Washington, measured a gust of 77 mph at 6:45 PM that evening. Winds estimated at 80 mph were reported near the former Umatilla Chemical Depot, and 26 power poles were forced down by the strong winds in Echo. Looking at the storm reports across the United States (figure 3) you can see there was not much activity across the United States with the exception of eastern Washington and eastern Oregon. Strong outflow winds were the biggest outcome of the storms that day. A few reports of large hail and very heavy rain were also observed.

It was unseasonably hot on September 15 with record high temperatures throughout the region. Afternoon temperatures in the Columbia Basin were in the 90s, and Downtown Pendleton and Monument soared to 100 degrees. This significant heating likely helped to destabilize the atmosphere and result in strong outflow boundaries associated with thunderstorms.

Once again, reports we received from weather spotters, cooperative observers, and social media were invaluable and helped NWS Pendleton provide the best service to the public. Thank you! ❖

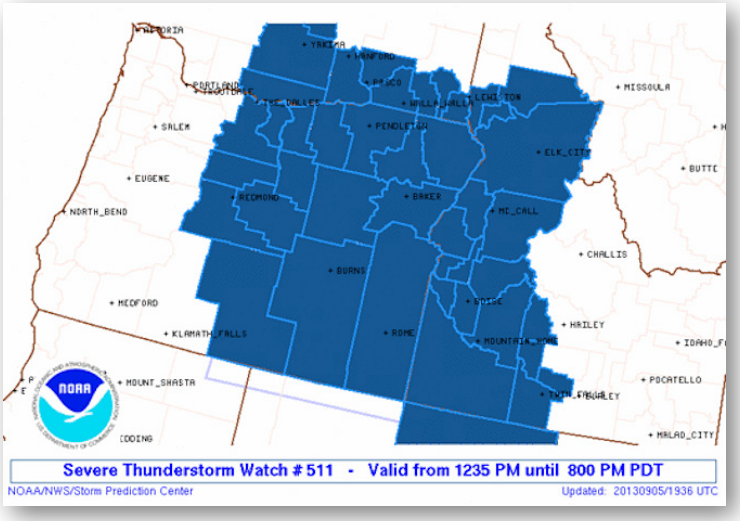
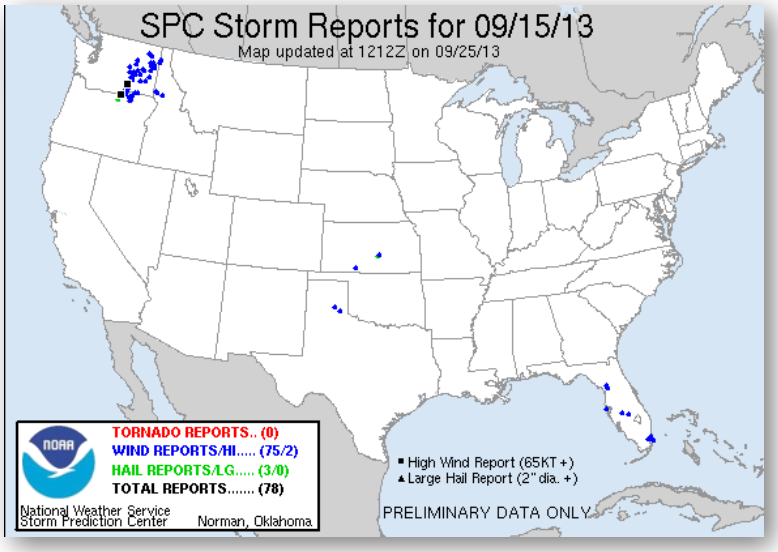


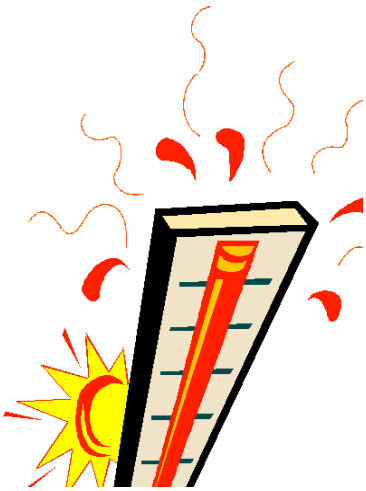
Figure 2. Severe Thunderstorm Watch #511
Storm Prediction Center

Figure 3. Storm Reports for 09/15/13
Storm Prediction Center



July 2013 Heat Wave

By Mary Wister, Science and Operations Officer



A major heat wave affected the western United States in early July, and the Pacific Northwest was hit particularly hard by the excessive heat. In fact, hot and dry conditions predominated the entire month in NWS Pendleton's County Warning Area. Daily record high temperatures were common throughout the month, and several weather stations received monthly records or near records. The weather station 2 miles north of Madras, Oregon, reported a monthly maximum temperature of 92.9° breaking the previous record of 91.7° set in 2003. The Yakima Airport reported a monthly maximum temperature of 95.4° breaking the previous record of 93.6° set in 1960. Many stations were as much as seven degrees above normal. Total precipitation was well below normal across the region, with many locations not reporting any precipitation for the month.

Widespread maximum temperature records were measured on July 1 and July 2. This first table shows the record highs from cooperative stations and other official weather stations on the afternoon of July 1.

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Table 1

City	Previous Record	New Record
Antelope, OR	98 IN 1967	100
Grizzly, OR	95 IN 1968	96
Hermiston, OR	105 IN 1924	106
John Day, OR	96 IN 1986	102
Long Creek, OR	95 IN 1967	100
Madras 2n, OR	94 IN 2008	101
Meacham, OR	90 IN 2008	95
Moro, OR	101 IN 1942	104
Pelton Dam, OR	105 IN 2001	106
Pendleton, OR	98 IN 1942	105
Sisters, OR	96 IN 1967	98
Redmond, OR	96 IN 1967	99
Ellensburg, WA	96 IN 1942	102
Dayton, WA	103 IN 1922	103 (Tied)
Goldendale, WA	99 IN 1942	101
Satus Pass, WA	92 IN 2006	96
Walla Walla, WA	99 IN 1987	106
Whitman Mission, WA	97 IN 2006	100
Yakima, WA	97 IN 2006	106

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This next table is a list of official weather stations that reported record high temperatures on July 2. ❖

Table 2

City	Previous Record	New Record
Antelope, OR	99 In 1942	101
Hermiston, OR	107 In 1942	107 (TIED)
Long Creek, OR	96 In 1970	97
Meacham, OR	89 In 1967	93
Monument, OR	105 In 1967	110
Pendleton, OR	101 In 1967	106
Redmond, OR	101 In 1967	102
Sisters, OR	95 In 1991	100
Ellensburg, WA	101 In 1942	103
Satus Pass, WA	94 In 1968	96
Whitman Mission, WA	102 In 1967	106
Yakima, WA	97 In 2006	106

WFO Pendleton Open House

By Mike Vescio, Meteorologist In Charge

WFO Pendleton held an Open House on June 1st, 2013. Several partners participated in the event including: the Blue Mountain Rocketeers and Glenda Project, Pendleton Lifeflight, the American Red Cross, and several emergency managers. Several cooperative observers received awards in a special ceremony. Staff members demonstrated how warnings are issued for severe storms on a special Weather Event Simulator and even let guests try and issue warnings for past events. Special weather briefings were given every half hour for the crowd.

Other topics that were on display included aviation weather , hydrology, fire weather, climate, and our office's coop station. The Blue Mountain Rocketeers launched model rockets on the south lawn and spectators loved the display. The event was attended by over 200 people and the weather was perfect! Pictured above is a crowd gathering for a weather balloon launch at midday. ❖

Pendleton Public Zone Alterations 2013

By Michael Vescio, Meteorologist In Charge

In an effort to serve its users better, WFO Pendleton is reconfiguring some of its public zones beginning on December 3rd, 2013. Most of the zone boundaries will remain the same or experience just minor modifications. The following maps show the present public zone configuration (Fig. 1), and the new public zone configuration (Fig. 2).

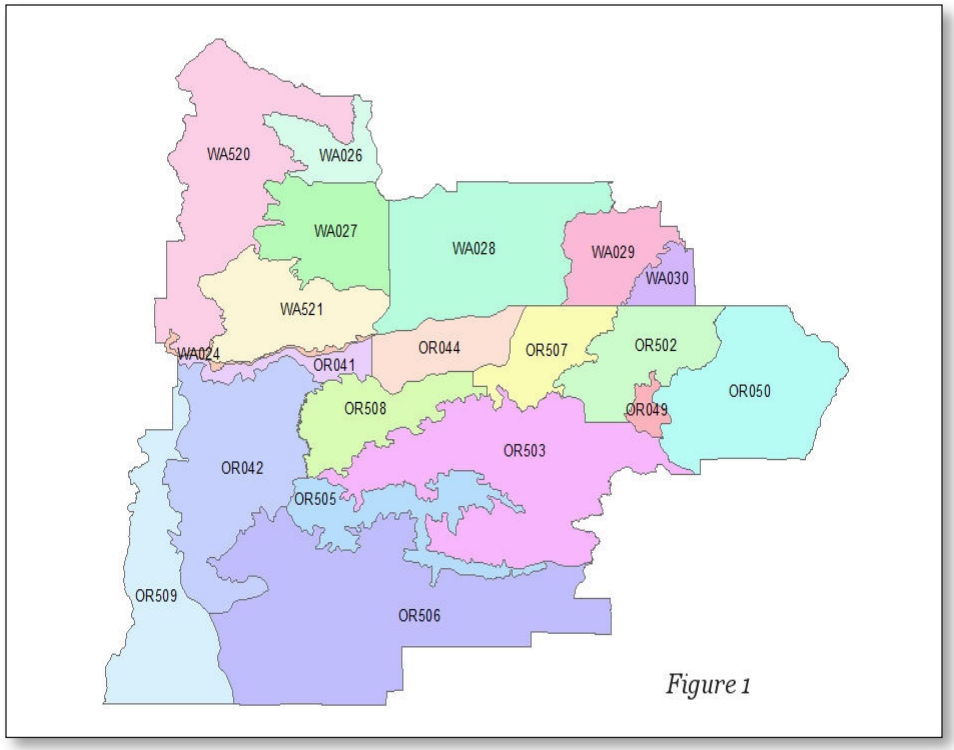

Figure 1

Notice that the biggest adjustment is associated with Oregon Zone 42. It will be split into two parts along the Jefferson-Wasco County line. This will help forecasters at Pendleton to refine winter storm, high wind, and freeze events providing better overall service. The new southern zone, OR511, will be expanded to include the city of Bend removing it from OR509- East Slopes of the Washington Cascades. The city of Bend receives much less snowfall than other areas in OR509 such as La Pine and Sunriver, so it will fit better in OR511. ❖

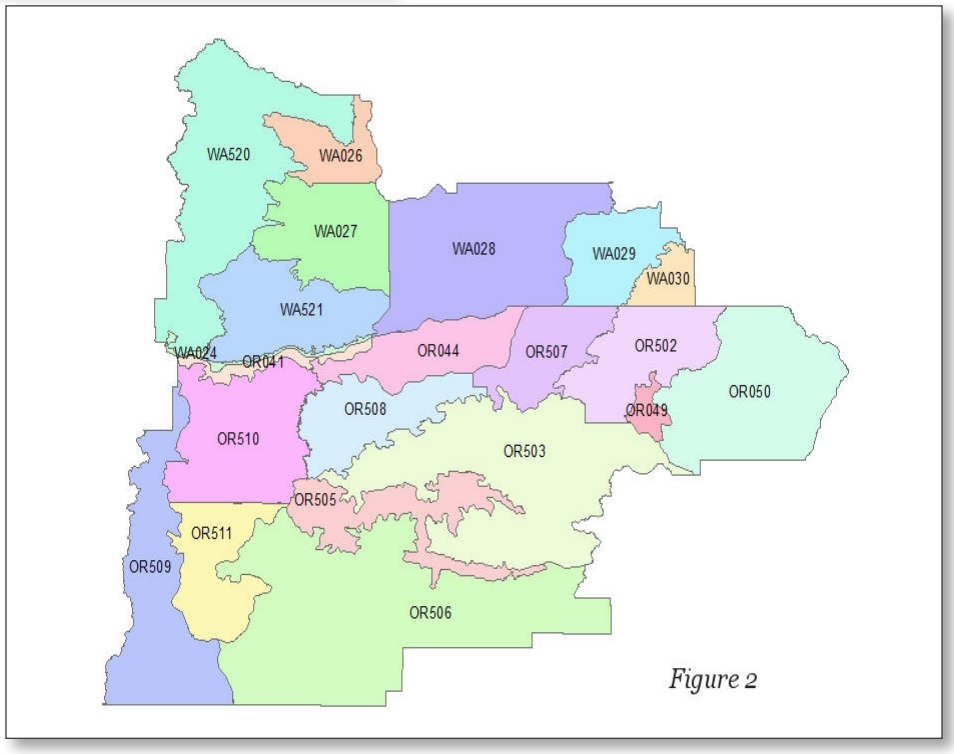

Figure 2

Water Year Precipitation
October 2012 - September 2013

By Marilyn Lohmann, Service Hydrologist

Location	Amount In Inches	Percent of Normal
Bend	9.62	85%
Condon	14.03	97%
Dufur	11.31	82%
Heppner	11.95	85%
John Day City	13.23	100%
La Grande	18.82	114%
Madras	8.95	86%
Meacham	40.58	127%
McNary Dam	10.87	128%
Milton-Freewater	15.62	95%
Mitchell	12.83	92%
Moro	10.89	96%
Pelton Dam	10.94	98%
Pendleton WFO	12.82	96%
Pilot Rock	14.02	97%
Prineville	9.33	87%
Redmond Airport	7.90	89%
Seneca	12.18	88%
The Dalles	11.74	81%
Wallowa	17.68	101%
Wickiup Dam	17.64	83%
Cle Elum	24.51	110%
Dayton	18.64	98%
Ellensburg	10.12	113%
Hanford	7.98	114%
Mill Creek Dam	19.69	105%
Mt Adams RS	51.59	112%
Selah	9.53	110%
Sunnyside	10.50	140%
Whitman Mission	15.16	104%
Yakima Airport	8.46	103%

The water year began with above normal precipitation in October, followed by near to below normal precipitation in November and December, with the mountains seeing well below normal precipitation. January was drier than normal across most of the region with the mountains of northeast Oregon being the only area with above normal precipitation. February was very dry with amounts of only 25 to 50 percent of normal region-wide. March had a good amount of weather systems move through, but precipitation amounts were light and generally below normal. In April, the mountains saw above normal precipitation, while the lower elevations remained dry. Near to above normal precipitation was seen in May with the highest amounts across south central Washington.

There was above normal precipitation in June, with an especially strong system moving through on the 19th and 20th. This system produced record 24 hour rainfall in numerous locations across northeast Oregon. High pressure was the dominant weather feature during July with little to no precipitation throughout the month. Well above normal temperatures were also seen July with a heat wave during the first 10 days of the month, where the lower elevations had temperatures in the 100 to 108 degree range and 90s in the mountains.

August saw an unusual amount of thunderstorms move through the area. These storms produced very heavy rain across central Oregon and south central Washington with a number of reports of mudslides and street flooding. September had well above normal precipitation across the region with numerous locations seeing 200 to 300 percent of normal.

Most of the precipitation came during thunderstorms that produced flash flooding, mud and debris flows at numerous locations across the region, including along Highway 410 near Nile Washington and along Highway 37, north of Pendleton. For the water year, most locations ended up with near to slightly above normal precipitation. This was due in large part to the well above normal precipitation during September.

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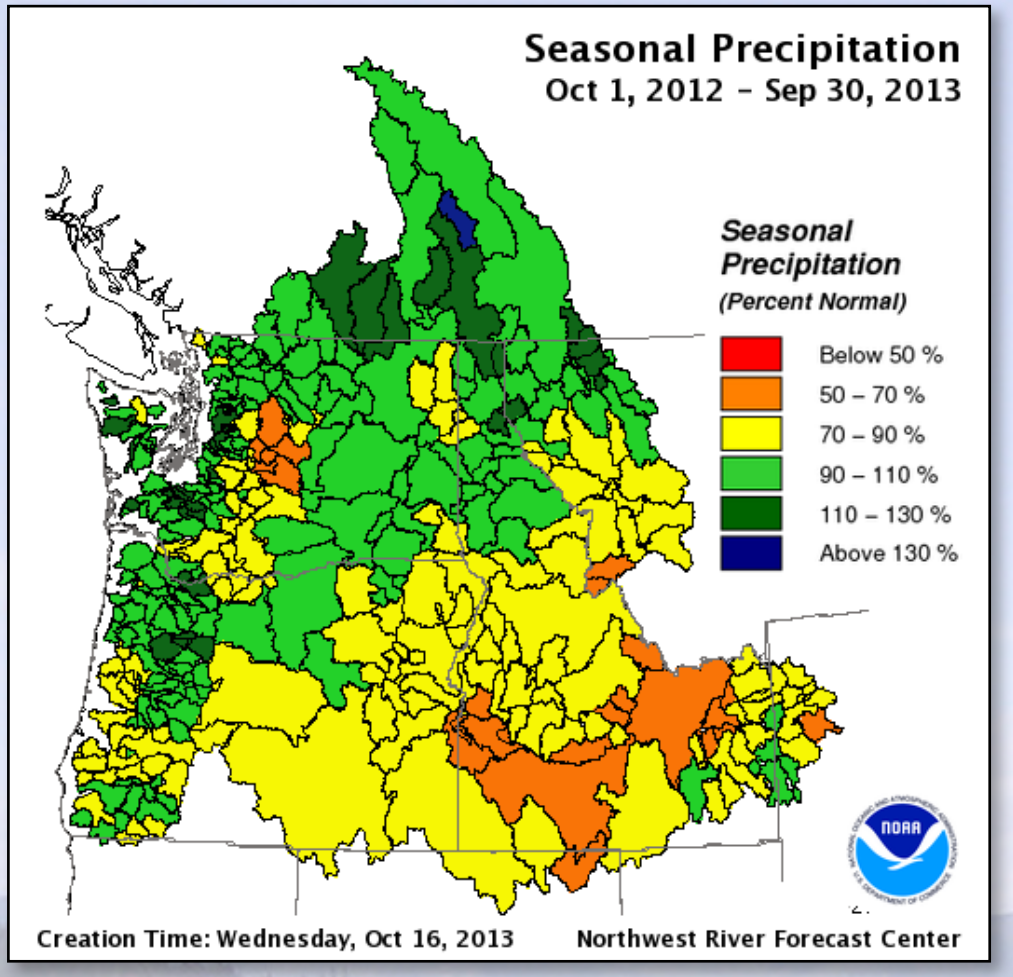
The following image is the Seasonal Precipitation map for the Pacific Northwest. This takes into account water year precipitation totals from climate stations covering the period October 1, 2012 to September 30, 2013. Blues and greens indicate above normal precipitation for the year, while yellows and oranges indicate below normal. ❖



Another Active Fire Season in the Pacific Northwest

By Rachel Trimarco, Incident Meteorologist / Fire Weather Program Leader

Fire season in the Pacific Northwest began in June, although there were a few wildfires in May. The greatest activity was seen in July and August, diminishing in September with 376,200 acres burned by the middle of October. Approximately 145,000 acres burned were located in the Pendleton National Weather Service's local area of responsibility.

High winds across central Oregon on May 4th toppled trees onto power lines causing 16 fires around La Pine. The largest Burgess Road grass fire quickly spread to 168 acres and threatened homes, forcing evacuations. Fortunately, no homes were lost due to the preparation of defensible space by homeowners. For information on preparing your property, visit the firewise.org website.

Government Flats Complex. Photo by Scott McMullen

By the middle of July, most fuels across the area had become dry enough to carry fire, and thunderstorms easily ignited wildland fires across the region. Numerous thunderstorms with abundant lightning sparked several fires on July 16th, including eight in the Wallowa Fire Zone and the Cuba fire in the Hells Canyon National Recreation Area. This fire on the Idaho side of the Snake River burned 530 acres and was not contained until July 23rd. Later that week, on July 20th, a much larger fire began in central Oregon on the Warm Springs Reservation. The human caused Sunnyside Turnoff brush fire spread rapidly due to hot, dry winds, threatening the town of Warm Springs and the Kah-Nee-Ta Resort as it grew to 51,340 acres. Evacuations were ordered, but no homes were lost and the fire was eventually contained on July 31st.

Another large fire began on July 24th along Highway 97, fifteen miles northeast of Goldendale, WA. The Mile Marker 28 fire also threatened homes and forced evacuations as it grew to 26,092 acres on the Yakama Nation Reservation. Although thunderstorms on August 1st brought around an inch of rain and hail, not all of the fire saw precipitation and therefore was not contained until August 6th. Farther north, in Washington, the Colockum Tarps human-caused fire began on July 27th southwest of Malaga. This fire spread south into Kittitas County and consumed three primary residences and several minor outbuildings along with 80,184 acres before containment on August 16th.

Thunderstorms returned going into August, and the Green Ridge fire began on July 21st fourteen miles northwest of Sisters, OR in the Deschutes National Forest. The fire was kept active by hot, dry, unstable weather, and was finally contained on August 14th after burning 1510 acres. Lightning then caused several fires around John Day, OR on August 7th with the Grouse Mountain and Starvation fires becoming part of the G C Complex. These fires burned in the Malhuer National Forest as well as on private lands, and on August 8th, strong north winds pushed fire to near the northern boundary of the town of John Day. In all, 12,161 acres burned by the time the fires were contained on August 21st.

Several more lightning-caused fires began in Washington during the second week of August. The Conrad Lake fire thirty-five miles south of Naches burned 1100 acres of the Goat Rocks Wilderness in the Okanogan-Wenatchee National Forest beginning on August 9th. At the same time, the Manastash Ridge fire began fourteen miles west of Cle Elum and the Manastash Ridge Complex was formed. This fire burned intensely for several weeks, and more thunderstorms on August 22nd produced erratic

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winds that fanned the flames and hampered firefighter progress. Containment progress was further delayed towards the end of the month when several days of rain impeded burnout operations. Another large lightning-caused fire occurred during this period on the Yakama Nation Reservation thirty miles northeast of Goldendale. The Jo Jo fire began on August 11th and consumed 4400 acres of primarily grassland before being contained on the 13th. Numerous other small fires also began as a result of thunderstorms the weekend of August 9th through 12th, but fortunately for initial attack crews, most of these storms were accompanied by heavy rain.

Yet another large fire near John Day, OR began on August 12th,six miles southwest of Granite, on the Greenhorn Unit of the North Fork John Day Wilderness in the Umatilla National Forest. The Vinegar fire burned 1,351 acres and threatened the small mining community of Greenhorn as well as the Olive Lake Campground and a historic wooden pipeline. Although there was occasional rain from passing showers and thunderstorms, fires such as this, and those previously mentioned in the Okanogan-Wenatchee, burning in high sub-alpine forests, would not be considered contained until the season-ending rain event that did not occur until September.

One last large incident that deserves mention here is the Government Flats Complex. This was a conflagration of three fires that included the Blackburn fire ten miles southwest of the City of the Dalles, OR. These fires were lightning-caused and ran from August 16th through September 9th, consuming 11,434 acres on portions of the Mt. Hood National Forest and Bureau of Land Management and private lands. Thirteen structures were lost including several homes, and the City of the Dalles Watershed was threatened by potential debris flows associated with flash flooding.

There were many other large fires in other portions of the Pacific Northwest this year, but by the middle of September the fire season was quickly winding down as wetter weather returned. Several strong weather systems moved through the region during the month, bringing severe thunderstorms, strong wind, large hail, but also very heavy rain that set records and caused flash flooding. ❖

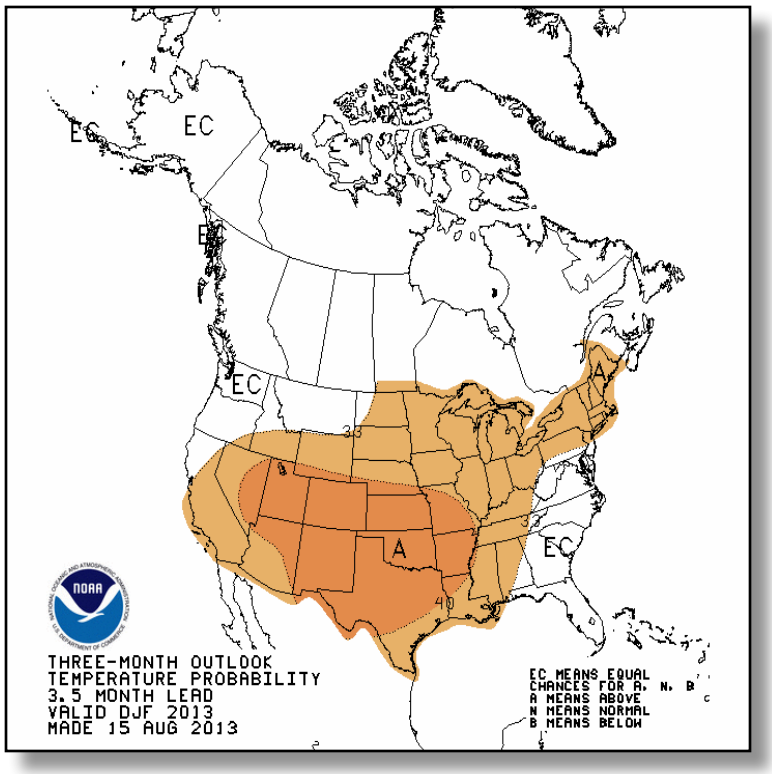
Colockum Tarps Fire.
Photo by Washington State Department of Natural Resources

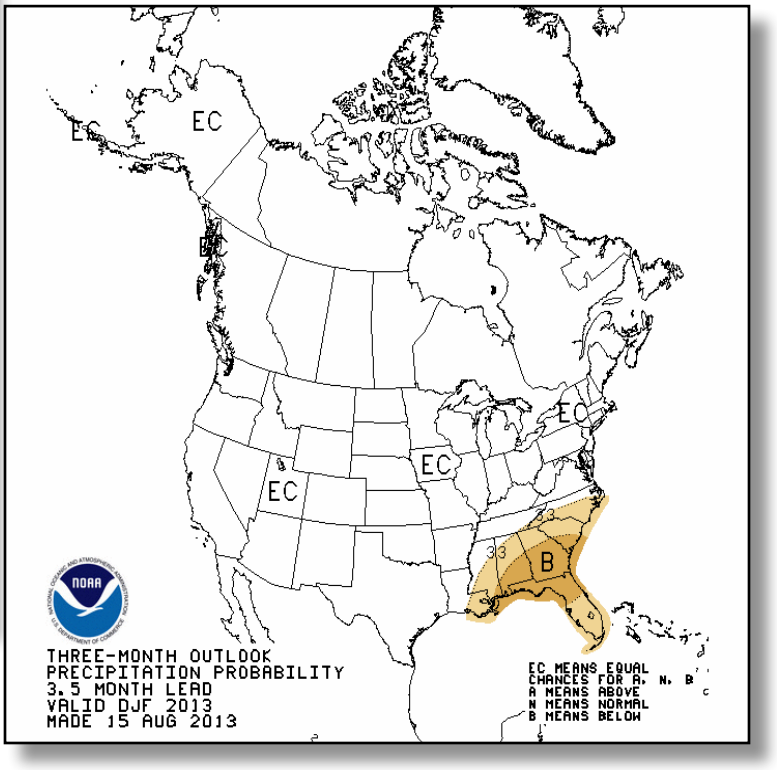
Winter 2013 Outlook

By Diana Hayden, Meteorologist

The winter outlook issued by the Climate Prediction Center, shows that the Pacific Northwest is under what is called Equal Chances (EC) for both the temperature and precipitation forecasts. This means that there are no significant climate signals that would lead to above or below normal conditions. Therefore, there is an equal chance of above, near, or below normal temperatures or precipitation occurring through the months of December, January and February.

One climate signal that has a big impact on the Pacific Northwest winter is the El Nino-Southern Oscillation, or ENSO. Current runs of the climate models for ENSO indicate that neutral conditions are expected to continue into at least the early part of 2014. ❖





Cooperative Program Highlights

A number of Cooperative Program Observer service awards were presented this summer, with several of them occuring during our office's Open House event on June 1, 2013. Observers attending the Open House event and receiving their awards included Clint Carlson (Ione, OR) receiving a 30-year award, Jacob Beach representing Smith Frozen Foods (Weston, OR) receiving a 50-year institutional award, Roger Rasico (Pilot Rock , OR) receiving a 20-year award, and Ken Kohagen (Yakima, WA) receiving a 15-year award. In addition, Sean Davis, Emergency Manager for Franklin County, Washington received certification for Storm Ready status renewal. Other awards were presented at different dates and locations, and can be seen on the following highlights pages. ❖

Clint Carlson (right) is presented an award for 30 years of service in the NWS Cooperative Program by Meteorologist-In-Charge Mike Vescio. Clint's station is Ione 18S in northeast Oregon.

Jacob Beach (right), representing Smith Frozen Foods, is presented an institutional award for 50 years of service in the NWS Cooperative Program by Meteorologist-In-Charge Mike Vescio. Smith Frozen Foods' station is located in Weston, Oregon.

Roger Rasico (right) is presented an award for 20 years of service in the NWS Cooperative Program by Meteorologist-In-Charge Mike Vescio. Roger's station is Pilot Rock 11E in northeast Oregon.

Cooperative Program Highlights

Ken Kohagen (right) is presented an award for 15 years of service in the NWS Cooperative Program by Meteorologist-In-Charge Mike Vescio. Ken's station is Yakima 5WSW in central Washington.

Sean Davis (right), Franklin County Emergency Manager, received a Storm Ready certificate of renewal for his county's participation in the National Weather Service's Storm Ready Program..

Chris Sandvig is presented an award for 15 years of service in the NWS Cooperative Program. Chris's station is located at Easton Dam in Kittitas County, WA.

Cooperative Program Highlights

Jody Taylor is presented an award for 20 years of service in the NWS Cooperative Program. Jody's station is Naches 10NW, located northwest of Naches in Yakima County, WA.

The City of Richland, represented by Jay Marlow (left) and John Finch (left-center) is presented an institutional award for 50 years of service in the NWS Cooperative Program by Meteorologist-In-Charge Mike Vescio (right-center). Also in attendance was Stephen Bieda, Meteorologist (right).The city's cooperative station is located at the Richland Water Treatment Plant In Richland, Washinton..

Wade Hudlow is presented an award for 25 years of service in the NWS Cooperative Program. Presenting the award is Jim Smith, Observation Program Leader. Wayde's station is Hatten 9SE, located northeast of the Tri-Cities in Franklin County, WA.

Photo Album

A wall of dust, produced by a severe thunderstorm over the Tri-Cities, was captured on camera by Bill Cartright on September 15.

A supercell thunderstorm approaches the National Weather Service office in Pendleton, Oregon on September 15. Photo by R. Brooks.

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