Spring 2006

SKYWATCH

Spotter Newsletter

Storms Hit Area

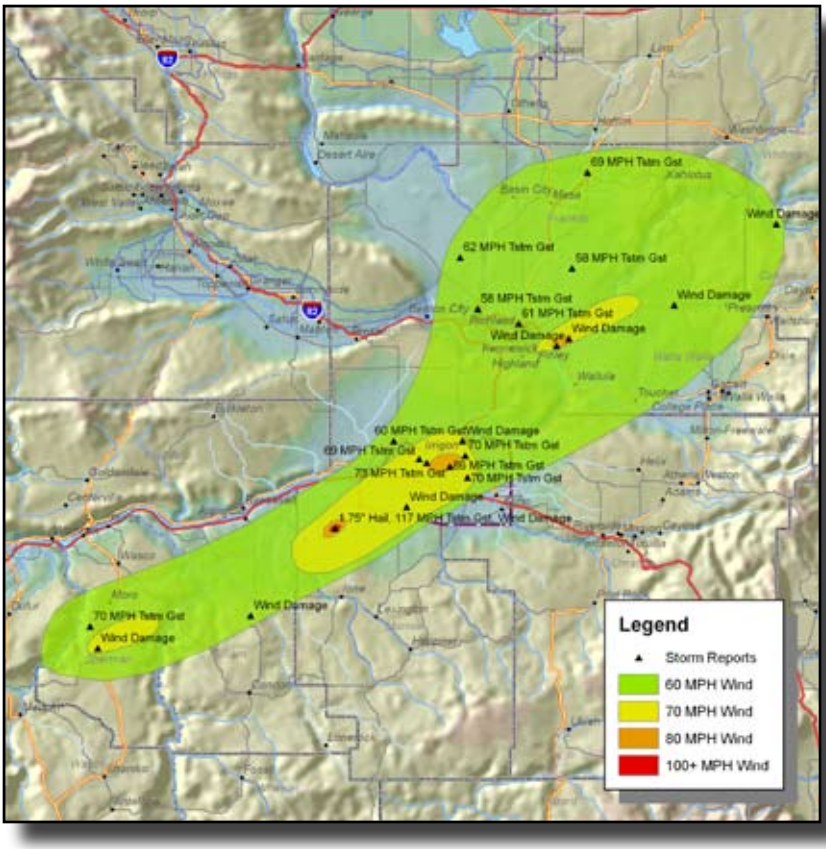
On the afternoon and early evening of Friday, May 19th 2006 a severe weather outbreak occurred across portions of Northern Oregon and Southeastern Washington. The storms formed in association with an upper level disturbance moving northward across the area. The region was in the midst of an early season heat wave with afternoon temperatures well into the 90s for several days leading up to the event. The hot temperatures coupled with abundant low level moisture (surface dewpoints in the 50s) led to an unusually unstable air mass for the Pacific Northwest. By early afternoon, thunderstorms developed over Jefferson County Oregon and became severe when entering Wasco County. The storms produced large hail in Maupin. As the storms entered Sherman County they began to take on a bow echo configuration and accelerate. From this point forward the storm complex produced damaging winds through portions of Sherman, Gilliam, Morrow, and Umatilla Counties in Oregon and Benton, Franklin, Walla Walla,

IN THIS ISSUE

Continued on page 2...

...continued from cover

and Columbia Counties in Washington. Throughout these counties along the path of the storms, peak wind gusts were 60-75 mph, however there were at least 3 areas of winds exceeding 80 mph. The first area was 10-12 miles southwest of Boardman where a measured wind gust to 117 mph was recorded. The second area occurred at the Umatilla Chemical Depot in extreme northwest Umatilla County where peak wind gusts were measured at 86 mph. The third area of enhanced winds were estimated by a National Weather Service survey team near 90 mph about 5 miles east of Burbank in Walla Walla County. Nearly 50 reports of severe wind and hail occurrences were received on Friday afternoon and evening and it is likely that more damage is yet to be discovered. This event is certainly one of the biggest to ever occur in the Pendleton County Warning Area. It reinforces the need for people to have an immediate plan of action should a warning be issued for your location.

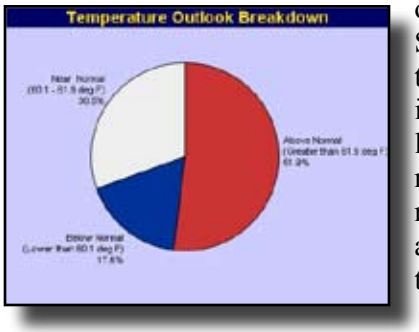


Path of storm with wind and damage reports.

Summer Climate Outlook

by Jon Mittelstadt, Science & Operations Office

The single biggest influence in determining climate outlooks is the El Nino / La Nina cycle. The El Nino / La Nina cycle is a change in ocean and atmospheric conditions across the tropical Pacific Ocean, which in turn can influence the climate just about anywhere on earth. For example, weak La Nina conditions developed during the second half of winter 2005/2006. These conditions probably contributed to the wetter than normal conditions that most locations in the Pacific Northwest experienced last winter.



However, those La Nina conditions have recently ended, and for the next 3 to 6 months neither El Nino nor La Nina is expected. As such, climate forecasters have less confidence in their outlook because they have to depend on other signals as a basis for their forecast. Furthermore, precipitation outlooks for summer are complicated because it is a dry period for the Pacific Northwest, and because precipitation tends to come from "hit-and-miss" showers and thunderstorms. As such, one location may experience heavy rain that provides them with above normal precipitation, while nearby locations may continue to have below normal precipitation. Given these factors, climatologists have below normal confidence in this summer outlook, especially regarding precipitation.

In the absence of El Nino / La Nina conditions, other climate signals used for the current summer outlook include: (1) the "Pacific Decadal Oscillation" that can lead to 10 to 20 year-long wetter or drier than normal periods in the Pacific Northwest, and (2) recent climate trends which show a summer warming trend for most of the western U.S. Based primarily on these climate signals, climatologists expect that over the July-August-September period, the Pacific Northwest is somewhat more likely to experience normal or below normal precipitation, and above normal temperatures.

For example, the average temperature at Cle Elum, Washington for the July-August-September period is 61.9°. The following pie chart shows the NOAA/NWS Climate Prediction Center (CPC) forecast for Cle Elum, WA, for the July-August-September period. CPC is forecasting a 51.9% chance for the average temperature during this 3-month period to be greater than 61.9°. They forecast a 30.5% chance for the average temperature during this 3-month period to be between 60.1° and 61.9°. And there is a 17.6% chance for the average temperature during this 3-month period to be lower than 60.1°. CPC forecasts for other locations in the Pacific Northwest have similar percentages.

Amateur Radio Does Weather

by Ken Elliston, Umatilla-8H, KD7FYR

Amateur radio and the National Weather Service have been working together for many years. In particular, amateur radio operators use the 146.800 repeater, located above the Spout Springs Ski Area near Tollgate in Northeast Oregon, to report a summary of daily weather conditions. This repeater has a large range from Joseph and Imnaha Oregon on the East to Goldendale and Prosser Washington to the West.

Ken Elliston KD7FYR (Umatilla 8 H) currently hosts the 6:00 am Weather Net which runs 7 days a week. Hams from all over SE Washington and NE Oregon contribute their weather data to this net. This net was started back in the late 1960's or early 1970's by Emmett Eden W7INM from Enterprise Oregon. When he died in October 1988 Louie Byrd WB7OQN of Hermiston Oregon took over the net. When Louie Byrd died in December 2000 Ken Elliston KD7FYR of Meacham Oregon took over as net control or host.

The weather reports are passed on via High Frequency (HF) radio to the Oregon Emergency Management Net (OEMN). The OEMN collects reports summarizing daily weather conditions from all of Oregon, Washington, and Idaho. The OEMN then relays the weather reports to the National Weather Service in Portland.

All licensed amateur radio operators are welcomed and encouraged to join us. You do not need a fancy weather station to be a part of this net. All you need is an outdoor thermometer which records the day's high and low temperatures, a barometer and a rain gage that measures in hundredths of an inch. A humidity gage is optional.

Come join us. We would love to have you. For more information call Ken KD7FYR on the 146.800 repeater or phone 541-983-2566.

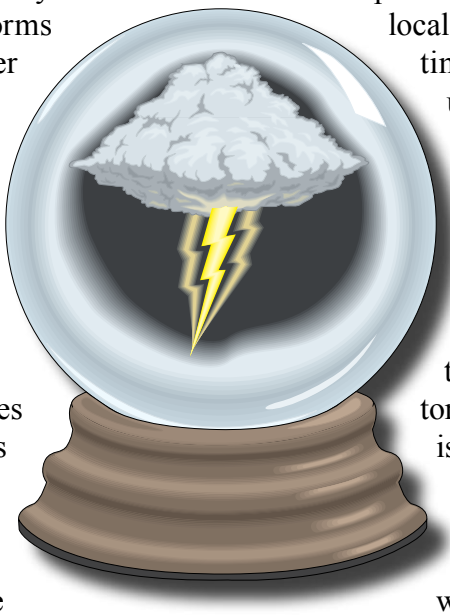
To get all the latest weather information, see
The National Weather Service on the web at
weather.gov/pendleton

The Storm Prediction Center

A Center of Excellence for Severe Storm Forecasting

by Mike Vescio, Meteorologist in Charge

Certainly one of the highlights of my career will be the nearly seven years I spent as a Forecaster at the Storm Prediction Center (SPC). The origin of the SPC can be traced to a successful tornado forecast for Tinker Air Base in 1948 by Fawbush and Miller. Eventually the National Severe Storms Forecast Center (NSSFC) was formed in Kansas City, Missouri and the Severe Local Storms Unit (SELS) was tasked with issuing tornado and severe thunderstorm watches for the contiguous United States. In 1997 as part of a reorganization, the SELS Unit became the SPC and transferred to Norman, OK to be collocated with the National Severe Storms Laboratory (NSSL), where they reside today.



The SPC has 20 professional meteorologists who work around the clock monitoring conditions nationwide for the potential for severe thunderstorms and tornadoes. They are part of the National Weather Service's "Ready-Set-Go" concept. The ready phase pertains to convective outlooks. The SPC issues severe thunderstorm forecasts out to 3 days for the lower 48 states. This gives emergency managers, media, the public, and of course the local forecast offices time to "get ready" for upcoming severe weather events.

The SPC is also part of the "set" phase. The set phase occurs when a severe thunderstorm or tornado watch is issued. Watches are generally issued about an hour before severe weather develops and are valid for 4 to 8 hours. They may cover parts of more than one state and on average are about 25,000 square miles. Historically the SPC has issued parallelogram watches but has recently begun to issue irregular shaped watches that are aligned with county borders. A watch means conditions are

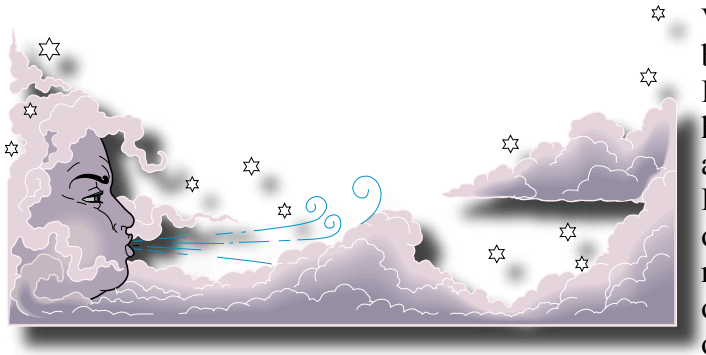
Continued on page 9...

Big Wind and Dust Storm of March 16, 2005

by Alan Polan, Meteorologist

Ingredients for Dust Storms

The arid climates of valleys immediately east of the Cascades as well as the Columbia Basin make these areas susceptible to dust storms. The probability of a dust storm occurring in these areas is related to the moisture content of the topsoil on a given day. Average topsoil moisture is related to the normal monthly rainfall for a given location. The seasonal distribution of precipitation in the Columbia Basin shows a distinct wet season from late Fall to early Spring and a dry season from late Spring to early Fall. Consequently, dust storms in the Columbia Basin are more likely to occur in the warmer and drier months of May through October. However, a dust storm can occur in arid valleys and in the Columbia Basin in other months. A dry spell of two to three weeks duration is normally sufficient to dry out the topsoil enough at lower elevations east of the Cascades to allow blowing dust to occur when the 2-minute average wind speed reaches 20-30 mph. The other ingredient needed for a dust storm is a wind event. The following mechanisms can produce tight pressure gradients and rapid pressure rises needed for a wind event: dry cold fronts, fast moving air associated with an upper level Jet Stream mixing down to the ground, colder air in thunderstorm downdrafts resulting in microscale surface high-pressure and a moving outflow boundary.



Synoptic Pattern on March 16, 2005

A notable wind and dust storm occurred in the late morning and afternoon on March 16, 2005. Very weak and fast moving disturbances resulted in below normal February precipitation east of the Cascades. The region was set up for this event by an upper level high-pressure ridge persisting over the interior Pacific Northwest from February 21 to March 15, a period with near zero precipitation. This nearly precipitation-free period produced the dry soil conditions necessary for a dust storm. The ridge was replaced by a strong upper-level shortwave moving from northwest to southeast across Washington. The shortwave pushed a dry surface cold front through the Columbia Basin. Descending air behind the cold front occurred beneath a strong upper-level jet stream oriented perpendicular to the cold front, thus allowing higher winds aloft to mix down to the ground. A well-defined surface low also moved across eastern Washington. Preceding the cold front, around 4:00 AM, southwesterly winds around 5000 feet above MSL were 25 to 35 knots and increased to 45 knots behind the front in the afternoon. Between 8:15 AM and noon, peak wind gusts at the surface began exceeding 45 mph. The dust storm began in earnest around midday and continued through the afternoon in response to increasing winds.

Storm Impacts

The effects of the storm were widespread and considerable. Although the winds at the majority of locations in the Columbia Basin were just slightly below high wind warning criteria, the winds were very gusty with peak wind gusts causing storm damage to trees and power poles with power lines blown down, and roof damage. Weather stations at nineteen locations measured peak wind gusts from 45 to 64 mph. Visibility restrictions down to near zero due to blowing dust occurred in the Tri-Cities Area, along I-84 between Boardman and Pendleton, along highways on the Hanford Nuclear Reservation, and along Highway 12 between Burbank and Dayton. Extremely low visibilities led to road closures and/or multiple vehicle pileups. Vehicles pulled off the road to avoid collisions. A five-vehicle pileup with one injury involving three semi-trucks and two other vehicles occurred on Highway 241, six miles north of Sunnyside at 12:15 PM with the highway closed from Sunnyside to Highway 241 until 5:15 PM. It didn't take an accident to close Highway 221 between Prosser and Patterson – the dust was enough. The Washington Department of Transportation reported that near zero visibility forced the highway's closure from 3:30 to 5:30 PM. In Yakima County, very low visibilities resulted in six injuries in a three-car accident and one injury in a separate head-on collision of two semi-trucks. Spotters, law enforcement, and amateur radio operators reported visibilities of a half mile or less due to blowing dust in the following counties: Benton, Columbia, Deschutes, Morrow, Umatilla, Walla Walla, Yakima.

Precipitation Summary

by Marilyn Lohmann, Service Hydrologist

The water year began with wet conditions across the region during the month of October, followed by below normal precipitation over most of the region during November. December was cold with snow across much of the area during the first part of the month and then freezing rain and above normal precipitation during the last part of December, which caused some flooding in Central and North Central Oregon. The above normal precipitation continued into January. February was drier and cooler than normal. March saw cooler than normal temperatures and below normal precipitation. April began wet with many locations seeing precipitation 13 out of the first 15 days of the month, but then turned dry and warmer by month's end.

Stations	Oct 2005 - Apr 2006 Precipitation	Percent of Normal
Bend	**14.56**	**174%**
Boardman	**10.23**	**157%**
Condon	**13.21**	**128%**
Heppner	**11.16**	**113%**
John Day City	**9.47**	**115%**
Madras 2 N	**11.21**	**129%**
Mitchell 2 NE	**8.76**	**117%**
Monument #2	**11.56**	**124%**
Moro	**13.49**	**155%**
Pendleton Exp Sta	**13.90**	**108%**
The Dalles	**17.63**	**141%**
Union Exp Sta	**7.42**	**87%**
Wickiup Dam	**23.50**	**135%**
Connell 12 SE	**9.93**	**139%**
Glenwood #2	**34.01**	**124%**
Goldendale	**19.30**	**114%**
Kennewick	**7.94**	**133%**
Whitman Mission	**12.72**	**123%**
Yakima #2	**7.95**	**129%**

...continued from page 5 favorable for severe weather in and close to the watch area. Once a watch is issued people within the watch area should have a plan of action should a warning be issued. Prior to and during the lifetime of the watch, SPC forecasters issue frequent statements called Mesoscale Discussions that highlight the significant weather elements and/or storms in the threatened area(s). It is not uncommon during the height of storm season in the late spring and summer to have as many as 10 watches in effect nationwide concurrently!

The "go" portion of Ready-Set-Go are the warnings issued by the local forecast offices. Once a warning is issued people in the warned area should take immediate action to protect life and property.

I have tremendous respect for the people that work at the SPC. Their job is incredibly challenging given its national scope. Everyone there has had a love of severe weather for many years and they are very committed to doing the best job possible. Be sure to check out their web site every day at www.spc.noaa.gov. If you find that Oregon and Washington are in a risk for severe thunderstorms sometime during the next 3 days be sure to check out our web page at http://weather.gov/pendleton for additional information on the upcoming threat.

"Weather Words"

Word Search Puzzle

See if you can find all of the hidden words in the letters below. Words can be arranged left, right, up, down or diagonally. Answer key is on page 11.

V T O U K S B Z Q B D O O L F E K W G Q M M Z G V
U C B H C H J L B R Q U D C O T P P N D L H Q D L
U W M O A W H D Y T E F A S R A H S I D B L N K X
M K O N R E P O R T S V N T E M N C N M I X A X D
U R U E T A M A X S Q P R E C I P I T A T I O N T
A X T Q S T D A P K D X O E A L W S H A Z P G V X
S N L Q U H M I H P M U T T S C X T G N W X Z O B
L N O O G E N E O K X A F V T B F P I L N Y L E W
M R O T S R E D N U H T W T R E O A L P E M K U I
Z F K W E Z A H E P X W F T A I R X V J T L V S V

AMATEUR, CLIMATE, FLOOD, FORECAST, GUST, HAIL, LIGHTNING, OBSERVER, OUTLOOK, PHONE, PRECIPITATION, RADIO, RAIN, REPORTS, SAFETY, SKYWATCH, SNOW, SPOTTER, STORM, THUNDER, THUNDERSTORM, TORNADO, TRACK, WEATHER, WIND

Staff Spotlight

by Diana Koester, Journeman Meteorologist

Hello, my name is Diana Koester, and I'm one of the new forecasters at the National Weather Service in Pendleton. I was born and raised right here in the Pacific Northwest, coming from a farming family in Hermiston, Oregon.

My interest in weather came from always wanting to know when the wind was going to blow, or when the next storm would hit. I'll admit that I was more likely as a kid to hide under the bed than go to the window when I heard thunder. Eventually, this fear turned into a fascination after being stuck in a lightning storm for several hours at my great grandmother's house in northern Washington. From that point on, I greatly enjoyed watching the weather outside, as well as checking the weather reports constantly from the newspaper, radio and the local television stations. My family always knew whom to ask when they needed a weather forecast.

When it came to figuring out what I wanted to do as a career, someone in my family suggested I should go into meteorology, and I said 'sure'. With math and science being amongst my favorite subjects, I figured that it was a good option for me. During high school, several of my teachers brought to my attention a summer program through the Saturday Academy that included an apprenticeship at the Weather Station in Pendleton. Getting to experience first-hand the process of forecasting weather helped me to finally decide that I should pursue meteorology as a career.

I then attended the University of Arizona down in Tucson, Arizona where I studied Atmospheric Science as a major, and also involved myself in the many music ensembles at the school. Marching band in the desert Southwest was a great way for a meteorology student to see wonderful cloud formations and experience first-hand the downpours of rain and spectacular lightning shows from the monsoons.

Upon graduating in 2005, I was excited to be able to return back home to Eastern Oregon and work here in Pendleton as first an Intern and then a General Forecaster.

Would you like to get future newsletters from our web page? We will notify you by e-mail to let you know when the next issue is available. This will greatly save on paper and postal costs. Let us know by sending an e-mail to pdt.spotters@noaa.gov.

Classic Cumulonimbus Cloud

This photograph of a classically shaped cumulonimbus cloud was taken by National Weather Service Forecaster Roger Cloutier. The photograph was taken right outside the NWS office in Pendleton, facing northeast. The building in the foreground is the Oregon Army National Guard Armory. The storm cloud is actually miles away. It isn't very often that you see such a well defined cloud structure as this.

Answer key for word search on page 9.

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+ + + + K + + + + + D O O L F E + + G + + + + + +
+ + + + C + + + + R + + D + O T + + N + + + + + +
+ + + + A W + + Y T E F A S R A H + I D + L + + +
+ + O + R E P O R T S V N + E M + C N + I + + + +
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+ + T + S T D + P + + + O E A L W + H A + + + + +
S + L + U H + I H + + + T T S C + + G N W + + + +
+ N O + G E + + O + + + + + T B + + I + + Y + + +
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