



# The Inland Northwest Informer

Information For Storm Spotters, Cooperative Observers And Everyone

A Publication Of WFO Pendleton, Oregon

Spring-Summer 2009 - Volume 4

# Downslope Windstorms

By Mary Johnson and Jon Mittelstadt

*A description and post-storm analysis of the January 2009 windstorms that occurred along the east slopes of the Oregon and Washington Cascade Mountains.*

The Cascade Range acts as a barrier to low-level wind coming from the west. Under the right conditions, westerly winds from 10,000 to 15,000 feet above sea level can descend along the east slopes of the Cascades to create

strong and damaging surface winds. These “downslope windstorms” are not uncommon along the Cascade East Slopes. However, it is unusual to have two big events in the same month, but this is what occurred in January 2009.

On New Years Day, January 1, 2009, downslope winds in central Oregon damaged power poles and lines and toppled hundreds

of trees, some blocking roads and causing significant property damage. Most of the damage was reported from the Bend and Sisters areas. A gust to 82 mph was reported near Sisters, OR.

On January 7, 2009, conditions were favorable for strong downslope winds on the lee side of the Washington Cascades. (It’s interesting to note that 12 hours later these same

conditions moved east over the Rocky Mountains and created a downslope windstorm in Boulder, CO.) Windows were broken at several locations in the Yakima Valley, including the YMCA where one person was injured and had to be taken to the hospital. A gust to 80 mph was recorded in Goldendale, WA, and a gust to 99 mph was recorded on Sedge Ridge, elevation 4300 feet. ❖

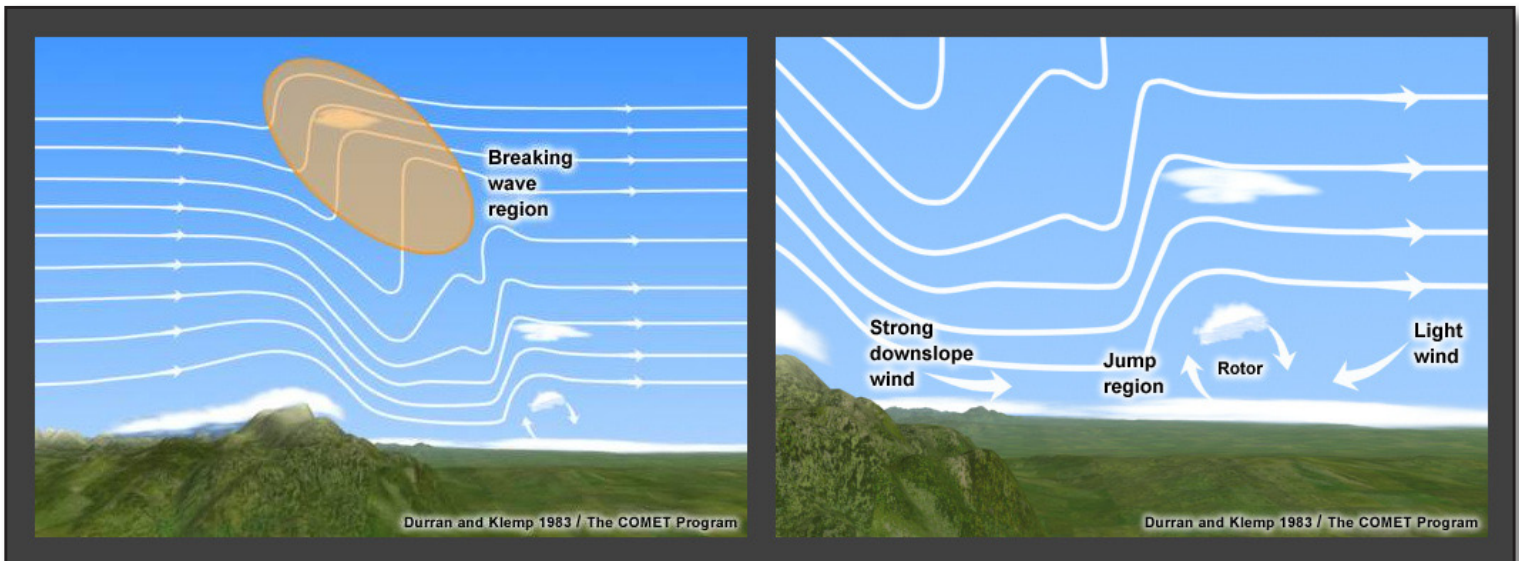


Figure 1. These diagrams show how mountains and certain atmospheric conditions can change the flow of the atmosphere. In these diagrams the flow of air follows the white lines. A “breaking mountain wave” can develop in the atmosphere as high as 30,000 to 40,000 feet, potentially creating a turbulence hazard for aircraft. Under these conditions, there is also potential for strong downslope winds in the lee of the mountains and for “rotors” downstream. Rotors are another potentially severe hazard for aircraft.

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# Hail Criterion Increases June 1st

By Micheal Vescio, Meteorologist-In-Charge

The National Weather Service (NWS) Central Region has conducted a demonstration project in the state of Kansas and adjoining County Warning Areas over the past four years, utilizing a hail size criterion of 1" for the issuance of Severe Thunderstorm Warnings, rather than the historical 3/4" diameter threshold. This experiment was based on feedback from local partners (emergency managers, media, public, etc.), as well as scientific research conducted by Texas Tech University which determined that significant property damage does not occur until hailstones reach 1" in diameter.

Customer responses in these areas have indicated a high satisfaction with the adoption of the 1" hail criterion. Our media partners said warnings are more meaningful because the public knows that there is a genuine risk of damage when a Severe Thunderstorm Warning is issued and fewer complaints are fielded from viewers/listeners of excessive interruptions in programming. Emergency

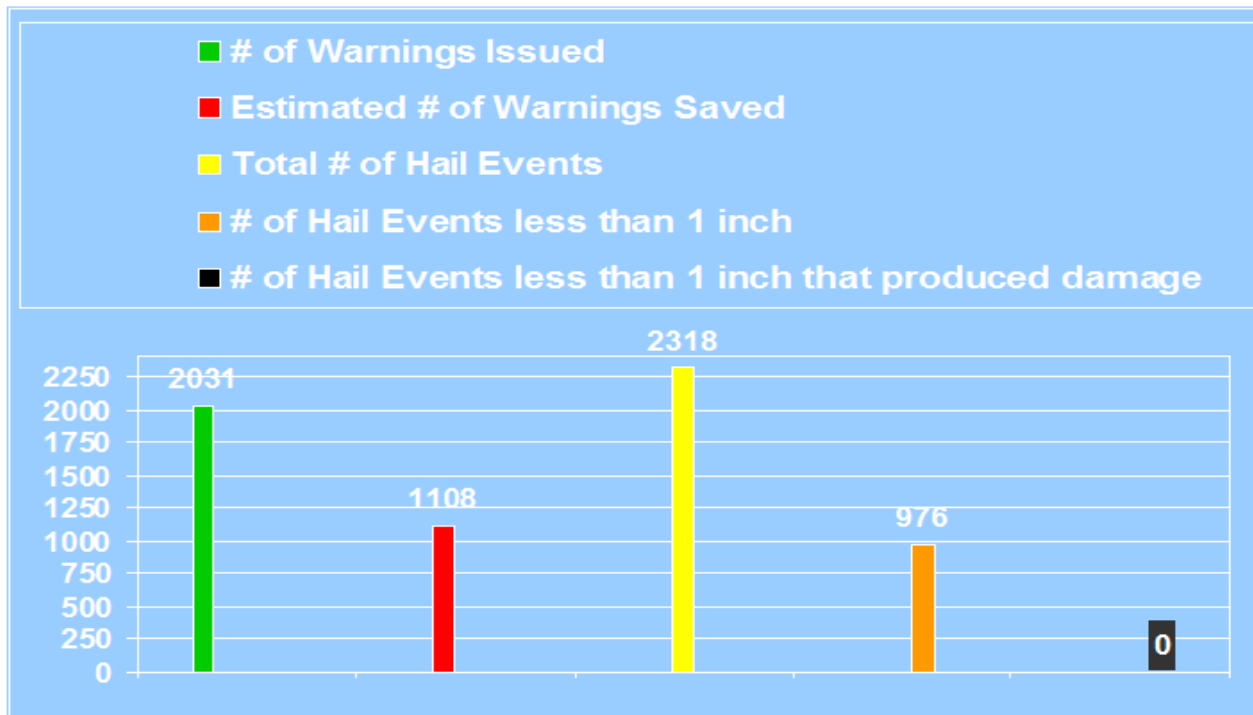
managers agree that warnings carry more weight and credibility.

Based on the favorable response from partners and customers, the NWS Western Region (WR) will implement a similar demo for all 8 NWS WR states, on **June 1, 2009** to encompass the main severe weather season for both the northern tier of NWS WR and the southwest monsoon season. Information for organized strong, but less than severe, thunderstorms will be provided via a **Significant Weather Advisory**. Pulse-type storms of moderate strength that are not expected to last long will be covered with **Short Term Forecasts** or **Special Weather Statements**.

What does the new criterion for hail mean? It means that fewer severe thunderstorm warnings are likely to be issued. Studies conducted in the Central Region of the NWS indicate that, on average, the number of warnings issued by any given forecast office

will decrease by about 1/3. However, that also means that when a severe thunderstorm warning is issued, everyone must take the warning very seriously and recognize that warnings are no longer issued for lower-impact storms. The figure below shows a sample of 2031 warnings issued in Central Region using the new criterion and an estimation of 1108 warnings saved, for a reduction of 35%. Three-quarter inch hail made up approximately 30% of the hail database in this study.

We will still be interested in hail of less than 1 inch in diameter, so be sure to continue to report those occurrences to the National Weather Service in Pendleton. Prior to June 1, 2009, any Severe Thunderstorm Warnings for hail will be based on the 3/4" criterion, but as of June 1st, the switchover to the new 1" criterion will occur. Send us your comments to [W-Pdt.Webmaster@noaa.gov](mailto:W-Pdt.Webmaster@noaa.gov) which can be found at [www.weather.gov/Pendleton](http://www.weather.gov/Pendleton) under "contacts".❖





# Lightning Safety Awareness Week

By Dennis Hull, Warning Coordination Meteorologist

## Lightning Safety Awareness Week is June 21-27.

The tremendous heat and electricity that make lightning fascinating to watch can be deadly. The two places that offer some safety from lightning are buildings and automobiles.

A home or office building will allow the lightning energy to move through the electrical wiring or plumbing into the ground. To be safe, stay away from electrical appliances and plumbing fixtures. Using a corded phone or taking bath during a thunderstorm is a no-no.

The metal exterior of a vehicle offers a protective cage from lightning as long as you keep your arms inside, the windows rolled up, and don't touch the metal parts of the car.

Lightning strikes don't always kill, but may stop a heart. Start CPR or AED quickly. Check <http://www.lightningsafety.noaa.gov/> for more safety tips, statistics, and information about lightning.

## If you are outside, remember the following:

1. No place outside is safe during lightning. All 27 lightning deaths nationwide in 2008 occurred outside.
2. Stay away from metal objects that could conduct lightning. If you attended the weather spotter training, you probably remember the large herd of cattle that was killed when lightning struck the barbed wire fence they were touching.
3. Stay away from tall objects that could attract lightning.
4. A "bolt from the blue" lightning may strike up to 10 miles away from the rain area of a thunderstorm.
5. When thunder roars...go indoors! If you can hear thunder, you are close enough to get struck by the next lightning bolt. Stop the baseball, golf, or soccer game, get out of the pool, get off the lake, and get down the mountain. ❖

## When Thunder Roars...Go Indoors!



# Water Year Precipitation October 2008 - March 2009

By Marilyn Lohmann, Service Hydrologist

Station	Amount In Inches	Percent of Normal
Bend.....	3.73.....	49%
Condon.....	7.82.....	87%
Dayville.....	3.42.....	61%
Dufur.....	9.49.....	98%
Grizzly.....	5.93.....	72%
Heppner.....	7.82.....	92%
John Day City.....	4.84.....	70%
Joseph.....	7.88.....	104%
LaGrande.....	10.89.....	108%
Madras 2N.....	5.07.....	66%
Meacham.....	29.24.....	105%
Milton-Freewater.....	11.60.....	118%
Moro.....	6.41.....	82%
Pelton Dam.....	5.14.....	70%
Pendleton, WFO.....	9.12.....	114%
Pilot Rock.....	7.63.....	94%
Prineville.....	4.60.....	72%
Redmond Airport.....	3.75.....	77%
The Dalles.....	12.33.....	106%
Union Exp Stn.....	7.32.....	104%
Wallowa.....	12.77.....	129%
Wickiup Dam.....	12.60.....	78%
Dayton.....	16.25.....	126%
Ellensburg.....	8.51.....	138%
Glenwood.....	21.00.....	82%
Hanford.....	4.50.....	97%
Ice Harbor Dam.....	6.74.....	94%
McNary Dam.....	3.55.....	65%
Mill Creek Dam.....	13.88.....	109%
Mt Adams RS.....	25.02.....	70%
Prosser.....	4.13.....	80%
Sunnyside.....	4.69.....	99%
Whitman Mission.....	11.16.....	124%
Yakima Airport.....	4.73.....	84%

The water year began with a cooler and drier October, followed by near to below normal precipitation during November. December saw near to above normal precipitation with above normal snowfall. January was still dry across central Oregon, but near to above normal over the rest of northeast Oregon and south Central Washington. February was much drier than normal across the region with a number of locations just east of the Cascades reporting only 10 to 30 percent of normal precipitation for the month. March saw much colder temperatures and above normal precipitation.❖

## Did You Know?



On **July 4, 1776**, Thomas Jefferson recorded the weather on the very first Independence Day. At 2 pm, it was cloudy with a temperature of 76 degrees.



On **July 9, 1995**, a severe thunderstorm developed near Redmond, Oregon, and traveled nearly 200 miles before dissipating. This thunderstorm produced baseball sized hail from Condon to Hermiston. It also spawned flash floods, damaging winds and even a brief tornado elsewhere along its path, causing tens of millions of dollars in damage to crops, structures, and property.



On **August 10, 2000**, a severe thunderstorm produced winds over 70 mph at the John Day airport in Oregon, and lightning started a fire that burned 20 thousand acres along a 22 mile stretch of Interstate 84 between Boardman and Arlington, Oregon. Another lightning caused fire on this date threatened dozens of structures in Alderdale, Bickleton and Sixprong areas of Klickitat County, Washington.



On **August 28, 1959**, a man bailed out of his airplane at 46,000 feet into a violent thunderstorm. What normally would have been a 13 minute descent, turned out to be a 45 minute journey he described as one of the most bizarre and painful experiences imaginable.



# Pendleton Snow Season 2008 - 2009

By Diana Hayden , Meteorologist

For two winters in a row, the Pendleton Airport reported seasonal snowfall totals in the top 10 snowiest winters on record. The 2007-2008 winter season had a total of 34.6 inches of snow for a ranking of number 7 snowiest winter season on record. This winter season (2008-2009) had a total of 45.8 inches of snow for a ranking of number 3 snowiest winter season on record. Below is a table of the top five snowiest winter seasons for the Pendleton Airport.

Eastern Oregon Regional Airport - Pendleton		
Rank	Winter Season	Snowfall Total (in.)
1	1949-1950	53.9
2	1992-1993	49.5
3	2008-2009	45.8
4	1968-1969	42.0
5	1955-1956	36.0

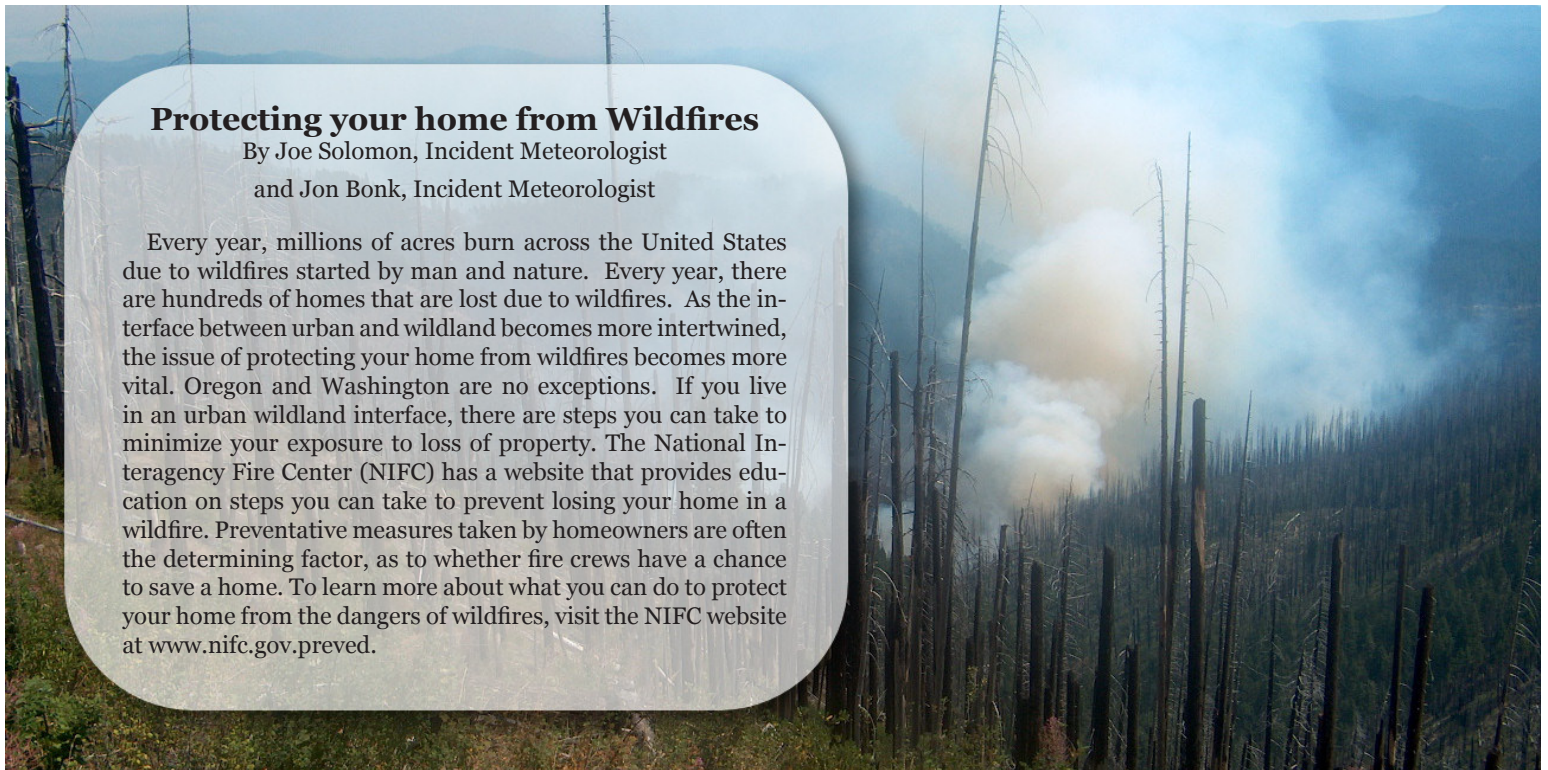
Another station that reported record snowfall was Whitman Mission, in southeast Washington. The 2008-2009 winter season recorded a record 32.8 inches of snowfall, making it the snowiest winter season on record at the National Historical Site. The following lists the top 5 snowiest winter seasons for Whitman Mission.❖

Whitman Mission NHS - Walla Walla		
Rank	Winter Season	Snowfall Total (in.)
1	2008-2009	32.8
2	1968-1969	31.3
3	1992-1993	28.2
4	1971-1972	20.0
5	1972-1973	18.2

## Protecting your home from Wildfires

By Joe Solomon, Incident Meteorologist  
and Jon Bonk, Incident Meteorologist

Every year, millions of acres burn across the United States due to wildfires started by man and nature. Every year, there are hundreds of homes that are lost due to wildfires. As the interface between urban and wildland becomes more intertwined, the issue of protecting your home from wildfires becomes more vital. Oregon and Washington are no exceptions. If you live in an urban wildland interface, there are steps you can take to minimize your exposure to loss of property. The National Interagency Fire Center (NIFC) has a website that provides education on steps you can take to prevent losing your home in a wildfire. Preventative measures taken by homeowners are often the determining factor, as to whether fire crews have a chance to save a home. To learn more about what you can do to protect your home from the dangers of wildfires, visit the NIFC website at [www.nifc.gov/preved](http://www.nifc.gov/preved).

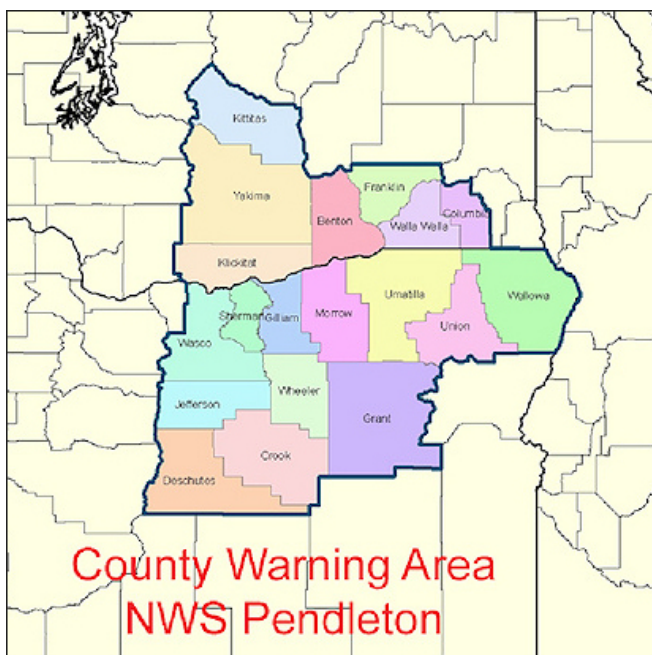


# SKYWARN 2-Meter Nets

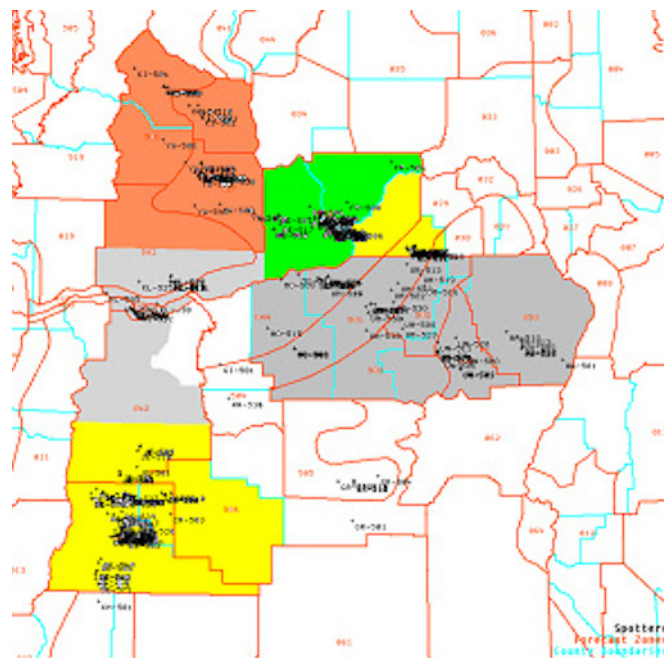
By Alan Polan, Meteorologist, KE4TRR

Spotter reports are often the only information available to the Warning Forecaster and, as such, are critical to accurate analysis and forecasting of severe thunderstorms.

## SKYWARN 2-Meter Nets and Amateur Radio Spotters in NWS Pendleton's County Warning Area



Counties in NWS Pendleton's County Warning Area (CWA).



The right image shows the approximate areas covered by each of the SKYWARN 2-Meter Nets in NWS Pendleton's CWA. Also shown, the locations of trained SKYWARN Spotters who have Amateur Radio Licenses.

The table (below) shows the frequencies of the Amateur Radio repeaters for the SKYWARN 2-Meter Nets.

The photo (next page) shows the radio equipment cabinet located in the operations area of the NWS Pendleton Weather Forecast Office. The radio on the left is a commercial HF radio for our SHARES (SHARED RESOURCES) HF Radio Station, SHARES call sign KC2XML. The other radios support our SKYWARN Amateur Radio Station, call sign WX7PDT. The radio next to the SHARES HF Radio is an HF Amateur Radio for the NWS Pendleton SKYWARN HF Net. The Amateur Radio in the middle is for a 2-Meter APRS (Automatic Position Reporting System) packet radio station. The two Amateur Radios on the right are for SKYWARN 2-Meter Nets. One of them is a dual band (2-Meter/70-centimeter) radio. The other radio is a 2-Meter radio that's tuned to the frequency for the EchoLink node in Pendleton (frequency 145.720 MHz simplex, node access number 7099).

SKYWARN 2-Meter Net	Frequency (MHz)	PL Tone (Hz)	Repeater Location
Morrow-Umatilla-Union-Wallowa (1)	146.800-	100.0	Spout Springs
Deschutes County (2)	147.360+	None	Long Butte
Benton-Franklin County (1)	146.760-	100.0	Rattlesnake Ridge
Walla Walla County (1)	146.960-	100.0	Lewis Peak
Yakima-Kittitas-Klickitat County (3)	145.270-	123.0	Quartz Mountain
<b>Yakima-Kittitas-Klickitat County (1) (3)</b>	146.860-	123.0	Darland Mountain
<b>Yakima-Kittitas-Klickitat County (3)</b>	147.080+	123.0	King Mountain
Klickitat-Wasco-Sherman County (1)	146.820-	82.5	Juniper Point

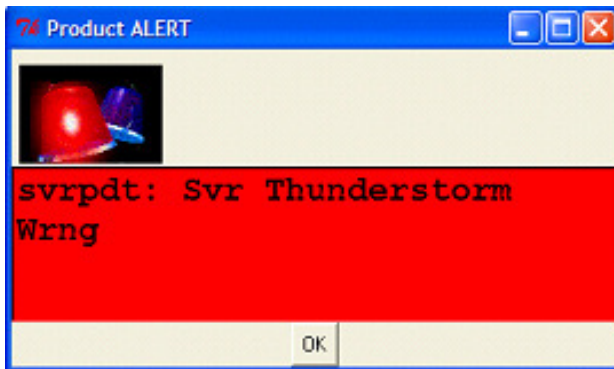
(1) Amateur Radio Station WX7PDT has direct line-of-sight path to these repeaters.  
 (2) EchoLink node, with access number of 211222. WX7PDT talks to repeater via EchoLink node in Pendleton (node 7099).  
 (3) Repeaters linked together in WA7SAR Search and Rescue linked repeater system. WX7PDT has direct path to Darland Mountain repeater. The county with best radio coverage for each repeater in system is shown in bold font.

Continued on page 7





Station WX7PDT at NWS Pendleton is equipped with a Personal Computer (PC), which is installed in the radio equipment cabinet. This PC is nicknamed “CHAOS” in our PC Local Area Network (LAN) architecture. When a Warning Forecaster issues a Severe Thunderstorm Warning for NWS Pendleton’s CWA, the following Product ALERT message GUI (Graphical User Interface) appears on CHAOS’s monitor screen to alert the WX7PDT Amateur Radio Operator that a new Severe Thunderstorm Warning has just been issued for somewhere in the CWA.



Similar Product ALERT message GUIs are displayed on CHAOS’s monitor screen for other severe weather products issued by NWS Pendleton. The WX7PDT Amateur Radio Operator can then call up the text of the product (Watch, Warning, Statement) on CHAOS’s monitor from NWS Pendleton’s public website and relay the information to the SKYWARN Net. Thus, SKYWARN Amateur Radio Station WX7PDT is immediately alerted whenever a “short fuse” severe weather Watch, Warning, or follow-up Severe Weather Statement goes into effect in the CWA.

## Stay Alert for Watches, Warnings, Statements, and Local Storm Reports!

It is very important for a Skywarn Net Control Station (NCS) to maintain situational awareness of the areas threatened by thunderstorms and to be cognizant of the recent history of the storms. The best way to do that is to stay abreast of the Severe Thunderstorm and Flash Flood Watches, Severe Thunderstorm Warnings and the associated follow-up Severe Weather Statements, and Local Storm Reports that have been issued for NWS Pendleton’s CWA, and be especially aware of those warnings that are in effect for the listening area of the 2-Meter repeater used by your SKYWARN Net.

Listen to NOAA Weather Radio broadcasts for warnings! The text of Severe Thunderstorm/Tornado Warnings, follow-up Severe Weather Statements, and Local Storm Reports are available on NWS Pendleton’s website. Click on the following link to load the webpage for current weather hazards in NWS Pendleton’s CWA: [Current Hazards in NWS Pendleton's County Warning Area](#)

Click on this link to load a time-lapse loop of NWS Pendleton’s enhanced weather radar images and any warning areas into your Internet browser: [NWS Pendleton's Enhanced Weather Radar Images Loop](#), then click on the “AutoUpdate is Off” button to set it to “On” to get new radar images.

## Thunderstorms Are Small Scale Phenomena

Just because a thunderstorm isn’t affecting you over its life cycle, don’t downplay its significance. It bears repeating that just because thunderstorms are presently not strong or severe where you happen to be located, or they are not even occurring where you are, does not mean that the storms can be written off as inconsequential. An outbreak of severe thunderstorms can occur over a period of several hours. The storms may not move close enough to you to give you severe weather where you are located, but that doesn’t mean that they are not capable of producing severe weather elsewhere. Just because you don’t get any thunderstorms doesn’t mean that thunderstorms elsewhere don’t have the potential to intensify and produce severe weather affecting those areas. The storms could propagate in your direction and eventually affect your neck of the woods, so while thunderstorms are occurring you are encouraged to maintain your vigilance as a SKYWARN Spotter.

The typical, single-cell thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. It is when these cells become well organized into lines, bow echoes as seen on radar, or as a supercell with an efficient and persisting updraft that thunderstorms become long-lived and travel over long distances. Even when they are better-organized and producing severe weather, thunderstorms are still local severe storms with the emphasis on “local”. So don’t downplay the risk or the seriousness of

the situation when thunderstorms are present. All thunderstorms are dangerous, if merely for the life-threatening cloud-to-ground lightning they produce and their potential to sometimes produce heavy rain that can cause localized flash flooding.

### **Activating a SKYWARN 2-Meter Net for Thunderstorms**

SKYWARN Net Control Operators in Pendleton's CWA have the authority to activate their SKYWARN 2-Meter Net, on their own initiative. Because of the increase in the workload that occurs when thunderstorms are ongoing, the NWS Pendleton Forecasters are focused on performing multi-tasking operations to maintain situational awareness; therefore, they are often too busy to call a SKYWARN Net Control Operator via landline to request that they activate their SKYWARN 2-Meter Net.

In addition, Pendleton's CWA covers a huge area that includes nineteen counties in Washington and Oregon. The NWS Warning Forecasters may be simultaneously focusing their attention on strong/severe thunderstorms in several, widely separated areas, and consequently they don't have time to proactively call on a landline and request that a SKYWARN 2-Meter Net be activated.

Therefore, in the interest of timely activation of SKYWARN 2-Meter Nets, it is advantageous to allow net activation decisions to be made at the local level by hams who are trained SKYWARN Spotters. The NWS Pendleton Weather Forecast Office has found that delegating net activation authority to the local level results in SKYWARN 2-Meter Nets being activated more often.

Net Control Operators for SKYWARN 2-Meter Nets have requested a set of guidelines for when to activate their SKYWARN Net on a local 2-meter. Activation depends on one of several scenarios occurring. For example, the SKYWARN Net should be activated in response to an episode of thunderstorm-related hazardous/severe weather that is occurring in the listening area of the 2-Meter repeater used by the SKYWARN Net, or that threatens to move into that area. The activation guidelines summarize these scenarios for quick and easy reference in the field.

### **SKYWARN 2-Meter Net Activation Guidelines for Thunderstorms**

SKYWARN Net Control Operators who are responsible for activation of a SKYWARN 2-Meter Net can use the following guidelines to decide when to activate their Net. These guidelines cannot cover all situations in which a net activation would be needed. Net activation would be justified if lives or property were otherwise at risk due to circumstances associated with thunderstorms.

If you are a Net Control Operator for your SKYWARN 2-Meter Net (you're on NWS Pendleton's telephone call list for your SKYWARN Net), and at least one of the following guidelines has been met, or will soon be met, don't wait for NWS Pendleton to call you and request activation of your Net, as they may be too busy dealing with a skyrocketing workload to take the time to call.

1. SKYWARN Spotter reports, automated weather station observations, or otherwise reliable weather reports indicate severe weather associated with thunderstorms have occurred recently in your area.
2. A severe thunderstorm watch is in effect for your area and thunderstorms have moved into your area.
3. A tornado watch is in effect for your area and thunderstorms have moved into your area.
4. A severe thunderstorm warning has been issued for your area or for an area near you (an adjacent county).
5. A tornado warning has been issued for your area or for an area near you (an adjacent county).
6. Thunderstorms are occurring in your area and are producing hail and gusty winds.
7. Your SKYWARN Spotter training suggests that a thunderstorm is becoming very well organized. The following visual clues indicate a strong or severe thunderstorm:
  - Wall cloud - a persistent lowering of a thunderstorm cloud base in which horizontal rotation of the cloud elements around a vertical axis may be evident.
  - Funnel cloud - not in visible contact with the ground, with cloud rotation around a vertical axis. Also look for rotating dust and debris on and near the ground below the funnel. If the funnel cloud and the dust and debris immediately below it are persistently rotating in the same direction, then they're embedded in a rotating air column that extends from the base of the thunderstorm to the ground, in which case the rotating air column is actually a tornado with an incomplete condensation funnel, but a tornado nonetheless.
  - Overshooting cloud top that protrudes above the top of a thunderstorm anvil.
8. Heavy rainfall from thunderstorms occurring at the rate of 0.5 inch or more over a short period of time (one hour or less).
9. Flash flooding due to runoff from heavy rainfall produced by thunderstorms.❖



# Effective Leadership

By Vincent Papol, Senior Meteorologist

In September 2008, the WFO PDT Leadership Program conducted a seminar that included a guest speaker, Umatilla County Commissioner Dennis Doherty. The seminar consisted of a PowerPoint presentation and video about passion given by Senior Meteorologist Vincent Papol. Dennis Doherty spoke about relationships afterwards.

Dennis Doherty mentioned that a lot more work could get done when one has a good relationship. Relationships are teamwork and they create responsibility that is shared. If a person wants to make something happen, they will find a way. If a person does not, they will make an excuse not to. One could also stop something from happening because someone else will get the credit. Most of all, he wrote down

a phrase, "Go along to get along. Get along to go along".

Perhaps Jon Mittelstadt, Science and Operations Officer, sums it up best: If you "Go along to get along", it means you are willing to go along with someone else's goal/destination in order to get along with them. If you do this, you might be popular, but you won't be effective.

On the other hand: If you "Get along to go along", it means you understand how critically important relationships are to your goal/destination, but you're not willing to compromise just to get along. This premise might lead to conflicts in the short term, but in the long term you will be effective.



In addition, Vincent Papol created a six month leadership development program for WFO Pendleton. Staff members who enroll in the program are required to view six leadership videos, and write a report on these videos. The topics in these videos covered motivation, leadership of character, vision, passion, and goals. Also, those enrolled in the program attend and participate in leadership seminars and events, take a quiz, and do a special project by reading a leadership book and writing a book report. Once complete, the graduate will receive a Certificate of Completion.

**eSpotter**



Online Weather Reporting System

**eSpotter Reminder!** You can now go online and send your spotter reports directly to us in real time. Many Spotters have already signed up, why not be the next? In the past you were able to send us an email with your report but it may have been days before anyone saw it. With eSpotter, we will get your report as soon as you send it. We will then be able to use the report in our local storm report.

To sign up for eSpotter, go to [espotter.weather.gov](http://espotter.weather.gov) and register by following the instructions. Don't forget to use Pendleton, OR as your local Weather Forecast Office.

# Photo Album



*Cumulonimbus cloud over northeast Oregon.  
By D. Hayden*



*Alto cumulus clouds at sunset.  
By D. Hayden*



*Wallowa Lake and the Wallowa Mountains.  
By R. Cloutier*