SAGE WINDS

Serving Spotters and Cooperative Observers in Southeast Oregon and Southwest Idaho

Volume 6, Issue 1

Fall/Winter 2008-2009

Idaho to Join CoCoRaHS in 2009!!!

By Simone Lewis, Meteorologist

Are you a weather nut? Do you know someone who is? Do you want to help your local community by providing valuable weather information that will aid in the protection of both lives and property? If so, we have a great program for you! CoCoRaHS, or the Community Collaborative Rain, Hail, and Snow Network will officially begin in Idaho on January 1st, 2009.

CoCoRaHS is a nationwide, non-profit group of volunteers who take daily measurements of rain, hail, and snowfall, and post their data online for a variety of organizations to view and utilize. The program began after a devastating flash flood hit Fort Collins, Colorado in July 1997. Five people were killed, and over $200 million worth of damages occurred as a result of this disaster. CoCoRaHS (established by the Colorado Climate Center at Colorado State University) was born from this disaster in order to provide scientists, local emergency managers, and the public with critical, sometimes lifesaving information regarding precipitation in their area.

A variety of organizations benefit from the CoCoRaHS network. For example, your local National Weather Service office in Boise, Idaho will use the data to aid in decisions on the issuance of watch and warning products for potentially life threatening weather, as well as to help us verify our forecasts, and for research in order to gain a better understanding of the local weather patterns that affect southwest Idaho and southeast Oregon. Local emergency managers can also use the data to prepare for potential disasters in their communities, thereby saving both lives and property. Other groups that use and benefit from CoCoRaHS data include individuals who make water management and irrigation decisions, engineers, insurance adjusters, the United States Department of Agriculture, mosquito control personnel, ranchers and farmers, and schools.

CoCoRaHS is a community based volunteer project. Anyone with an enthusiasm for weather and a desire to serve their local community can participate. All that is required is internet access, and a rain/snow gage (which can be purchased through CoCoRaHS (-a great holiday gift for the weather enthusiast in your family)-). For additional details on the program, or to join CoCoRaHS, visit the website www.cocorahs.org. To join CoCoRaHS, click on the link "Join CoCoRaHS" to fill out the registration form. You will be asked to provide your name, address, and the name of a parent or guardian if the participant is under the age of 18. All information will be kept confidential, and is not visible to others. After entering your information, you will be assigned a station number, and will be contacted by the station administrator and/or the National Weather Service office in Boise, Idaho in order to welcome you to the program, and to assist you with any questions or concerns you may have. Volunteers for the program do not have to be current weather spotters for the National Weather Service. Therefore, this is an ideal program for your friends, neighbors, and even local school or scouting groups to participate in.

A short training presentation is provided on the website (www.cocorahs.org) under the link "Training Slide Show" (you can view the training slide show before joining CoCoRaHS in order to get an idea of what is required of volunteer observers). Local training sessions and outreach events will also be offered in the near future, and on an as needed basis (volunteers will be notified of training sessions). Questions concerning the program can also be directed to either George Skari (George.Skari@noaa.gov) or Simone Lewis (Simone.Lewis@noaa.gov) at the National Weather Service in Boise, Idaho (208-334-9860).

CoCoRaHS is also in need of additional volunteers for eastern Oregon. If you live in Oregon and are interested in the program, you do not need to wait until 2009 to join. Go to the CoCoRaHS website today to sign up and begin serving your local community!

I'm nuts about weather!

"The National Weather Service (NWS) provides weather, hydrologic and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community."

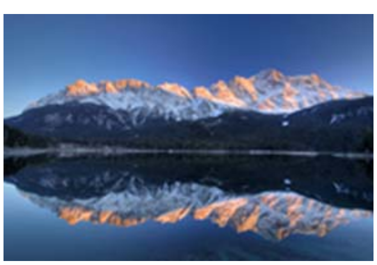
Inside this issue:

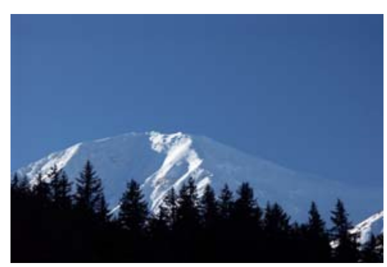
Winter Weather Statistics
By Josh Smith, Meteorologist

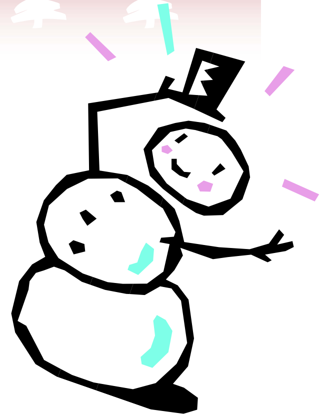
We get a lot of questions each year on winter weather statistics for Southeast Oregon and Southwest Idaho. The table below covers most of the questions we get. Just for some clarification, measurable snowfall means greater than or equal to 0.1 inches of snow.

City	Average Seasonal Snowfall (inches)	Highest total daily Snowfall (Date)	Highest Seasonal Snowfall total (inches)	Number of Days with Measurable Snowfall	Highest Snow Depth (Date)	Average Seasonal Snow Depth (inches)	Consecutive Days with Snow Depth over an 1"
Boise, Idaho (1893-2008)	20.2	15.5 inches (2/1/1916, 2/2/1916)	50.0 (1916-1917)	17.8	12 inches (12/30/1983, 12/31/1983)	0.2	58 (1985-1986)
McCall, Idaho (1905-2008)	133.7	33.0 inches (1/15/1971, 1/21/1964)	269.5 (1951-1952)	43.9	69 inches (2/2/1952)	9.6	175 (1919-1920)
Jerome, Idaho (1915-2008)	15.2	16.0 inches (2/04/1916)	71.5 (1916-1917)	10.1	20 inches (3/17/1917, 3/16/1917, 3/15/1917)	0.4	101 (1963-1964)
Burns, OR (1939-2008)	41.0	14.0 inches (11/23/1977)	88.1 (1951-1952)	29.8	26 inches (2/26/1993)	0.8	113 (1951-1952)
Baker City, OR (1943-2008)	27.6	11.2 inches (1/12/1998)	56.6 (1947-1948)	27.8	22 inches (2/8/1949, 2/9/1949, 2/10/1949)	0.5	112 (1951-1952)

It may seem hard to believe that Boise, Idaho averages 20.2 inches of snow a year. But over the last ten years (1998-2008), Boise has seen four years of at least 20.2 inches of snow including last winters 32.7 inches. Last winters 32.7 inches was the highest snowfall seen in Boise since the 1992-1993 winter season when 34.5 inches fell.







Measuring Snowfall
By Simone Lewis, Meteorologist

Winter is fast approaching, and with it comes the onset of snow. This article will briefly discuss the proper snow measurement guidelines for National Weather Service Cooperative Observers. It is important that these guidelines are followed closely, or inconsistencies in the data can result.

At the beginning of each snowfall season, remove the funnel and inner measuring tube on the standard 8-inch rain gauge. Ensure that the rain gauge is in good condition, and that no leaks are observed (if damage or leaks are present, contact the NWS office). Place a snowboard in an open location, away from obstructions such as trees and buildings, and away from the north side of structures in the shadows. It is also a good idea to mark the snowboard with a flag or other device, so that it can easily be found.

There are three values that should be recorded when reporting solid precipitation: snowfall, snow depth, and water equivalent. Snowfall is the amount of snow that has fallen since the previous observation. Snow depth is the total depth of snow, sleet, or ice on the ground at the time of observation. Water equivalent is a measure of the amount of water in a sample of melted snow.

Snowfall measurements are to be taken once every 24 hours at observation time. Snowfall is a measurement of the greatest depth of new snow that has occurred since the last observation, and is measured in whole inches and tenths (4.1, for example). If snowfall melts either partially or completely, an estimate of the total depth of snowfall is recorded as the total snowfall for the 24 hour period (a remark should be made that snowfall melted during the observation period). Always clear the snowboard after the observation is taken.

Snow depth is recorded once every 24 hours at observation time and is rounded to the nearest whole inch. Snow depth measurements are taken from either a permanently mounted snow stake or from the average of several locations where the snow has been undisturbed (least affected by the wind or obstacles). If faced with a situation where part of the location is bare, and part is snow covered, take an average of the bare ground (0 inches) and the snow covered ground. If less than half of the location is covered by snow, snow depth is recorded as a trace (T), even if significant snow depth still exists in snow covered spots.

The water equivalent of snow is measured once a day at the regular observation time. This measurement is taken by melting the snow accumulated in the 8-inch can, pouring the liquid into the 2-inch tube, and measuring the amount. It can also be measured by first pouring warm water into the inner measuring tube of your standard rain gage, and using the NWS provided measuring stick, measure the amount of liquid to the nearest hundredth of an inch, and record. Empty this warm water into the 8-inch gage can to melt the snow. After the snow is melted, pour the liquid back into the inner measuring tube of the standard rain gage (use the funnel to ensure that no liquid is lost). Now, take a second measurement using the measuring stick, and record to the nearest hundredth of an inch. Subtract the first measurement from the second and record the value in the precipitation column on your form.

It is important to note that during high winds, less snowfall will collect in the gage than will land on the ground. When this happens, it may be necessary to take your measurements from snow on the ground, and not in the gage. Empty the snow inside the 8 inch cylinder, and cut a "biscuit" with the can where the snow on the ground is near average depth. Gather this snow in the can, and repeat the above procedures for measuring the water equivalent.

As always, you are encouraged to call in significant snowfall reports to the National Weather Service Office in Boise, ID using the spotter hotline (1-800-882-1428). This number can also be used in case you have any questions or concerns with your snow observations. Happy Snow!!!

Source: Snow Measurement Guidelines for National Weather Service Cooperative Observers, May 1997.

How Are Long Range Outlooks Produced?

By Stephen Parker, Lead Forecaster

The roots of modern climate prediction can be traced to the late 1700's. One of the nation's first applied climatologists was Thomas Jefferson, the third President of the United States. A century later, the federal government assigned to the Army Signal Corps the mission to define the climate of the regions of the country being opened for farming.

In 1890, the United States Department of Agriculture (USDA) created the Weather Bureau "climate and crops services" which began publishing the Weather and Crops Weekly Bulletin, which the Climate Prediction Center (CPC), in conjunction with the USDA, still publishes today.

In 1970, various federal weather and climate functions were consolidated into the National Weather Service (NWS) and placed in a new agency called the National Oceanic and Atmospheric Administration (NOAA). In the 1980's the National Weather Service established the Climate Prediction Center (CPC), known at the time as the Climate Analysis Center (CAC). The CPC is best known for its United States climate forecasts based on El Niño and La Niña conditions in the tropical Pacific.

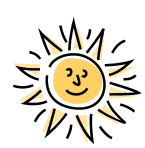
As you know, each local National Weather Service Forecast Office, including Boise, produces detailed forecasts out to 7 days. All long range outlooks, however, are produced on a national basis by the CPC in Camp Springs, Maryland. Detailed daily forecasts beyond a week have little or no accuracy due to the chaotic nature of weather. But generalized long range outlooks can be made (with some accuracy) up to a year in advance. These outlooks are prepared graphically on national-scale maps. There are three categories each for both temperature and precipitation forecasts: above normal; below normal; and the "equal chances" area, where the forecast is for neither above nor below normal. Since there are three categories, there is initially a 33% chance that each category will be accurate. However, after the forecast process is applied, some areas of the maps show departures from the starting point of 33%. Contour lines are drawn for 40, 50, 60, and 70 percent chances of being in either the above or below normal category. The higher the value of the contour lines, the higher the confidence for the forecast of that category.

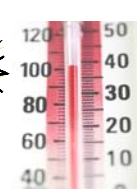
These long range outlooks are issued on the 3rd Thursday of each month. They cover both the next individual month, and also a series of three-month periods out to a year in advance. These outlooks are available on the internet as links from our Boise National Weather Service Offices homepage. Locate the "Climate" section on the left menu, then select "National", and then find the "Climate" section once again and select "Predictions". The direct URL address is: http://www.cpc.ncep.noaa.gov/products/predictions/

So, why do we make such long range outlooks when they are so generalized and of limited accuracy? First of all, there is a demand for such outlooks from many sectors of the economy. Every competitive edge, however slight, can be useful to both industrial and agricultural interests. Demand from the general public has always been high as well, because folks have always been very curious about upcoming weather. Since the beginning of mankind, people have searched for ways to make accurate long-term weather predictions by observing plants and animals, by looking at weather patterns from season to season, and by many other, sometimes highly unusual, methods.

The Climate Prediction Center (CPC) has produced these long range outlooks for many years, although the form has changed with time. They use historical observations, pattern correlations, statistical models and tools, sea surface temperatures, snow cover, soil moisture, vegetation state, seasonal cycles, recent trends, and numerous large-scale atmospheric and sea surface temperature oscillations such as in El Nino. All these data go into various computer climate models that are run by CPC. The final touch that makes the products the most useful they can be is forecaster experience and interpretation. Humans must still evaluate and analyze the data and the output from the computer climate models to create the final outlook maps.

Just for the record the current outlook for the three-month period containing December, January, and February is for equal chances of above and below normal for both temperature and precipitation.





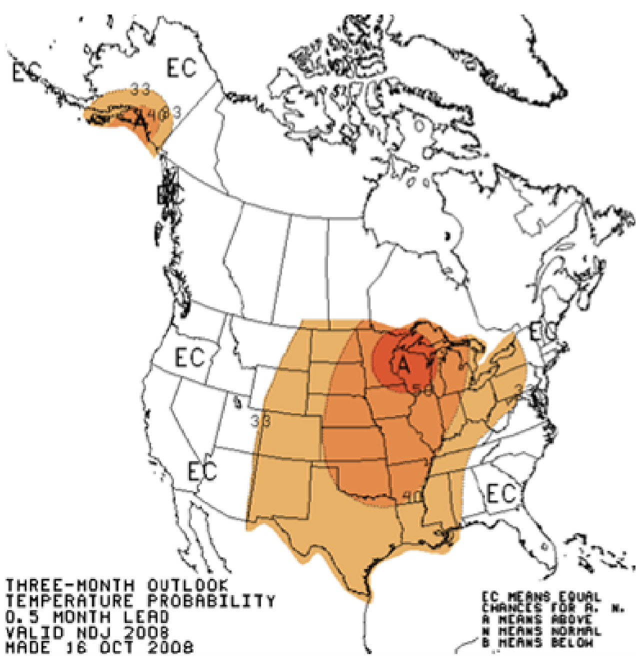
ENSO Update and Winter Outlook

By Megan Thimmesch, Meteorologist

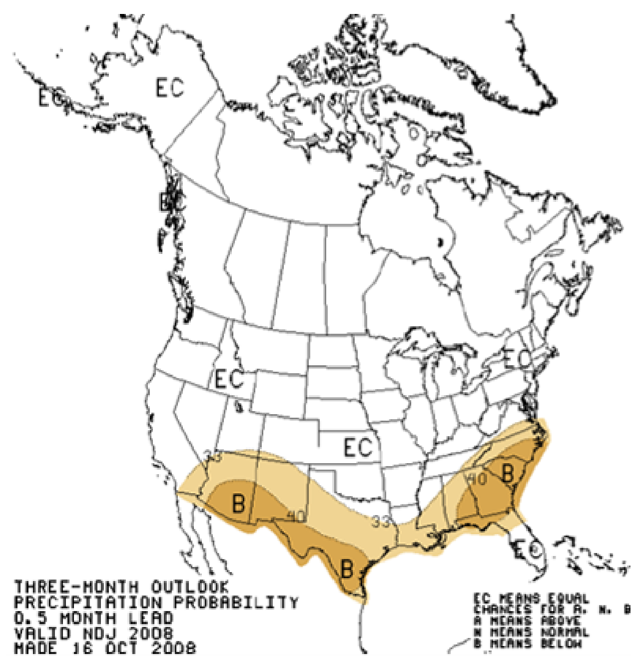
The Oceanic Nino Index, or ONI, is a principal measurement used in monitoring, assessing, and predicting the El Nino Southern Oscillation or ENSO. More specifically, it measures departures from normal of sea-surface temperatures in the central and eastern equatorial Pacific. A negative ONI indicates cooler than normal sea-surface temperatures within that region, while a positive ONI indicates warmer than normal sea-surface temperatures. When the ONI exceeds +0.5°C, the ocean-atmosphere circulation is experiencing El Nino conditions, and when the ONI drops below -0.5°C, the ocean-atmosphere circulation is experiencing La Nina conditions.

At this time last year, equatorial Pacific sea-surface temperatures had been persistently cooler than normal (ONI at or below -0.5°C), and NOAA climatologists were expecting similar conditions to continue through mid-winter. In fact, sea-surface temperatures remained cool throughout the 2007-2008 winter season and La Nina conditions contributed to cooler than average temperatures and greater than average snowfall across much of southeast Oregon and southwest Idaho.

The most recent ONI measurement of -0.2°C suggests near normal sea-surface temperatures; not indicative of either El Nino or La Nina conditions. These “ENSO-neutral” conditions are expected to persist through April of 2009. Without a strong ENSO signal, forecasting warmer/cooler or wetter/drier seasonal conditions becomes exceedingly difficult in our region. Consequently, the Climate Prediction Center’s Three Month Outlooks (Nov/Dec/Jan) do not favor a particular trend. As seen below, the temperature outlook *(below left)* does not favor either warmer or cooler than average conditions, just as the precipitation outlook *(below right)* does not favor wetter or drier than average conditions.



3-Month Temperature Probability Outlook—Valid for November, December, and January



3-Month Precipitation Probability Outlook—Valid for November, December, and January

Fire Season 2008
By Dawn Fishler, Meteorologist

One of the most frequent questions I was asked by public and media this past summer is why our wildfire season was so much quieter than the past few years. A combination of factors contributed to the low acreage burned. We had a wet winter with an above normal snowpack in the mountains and then a cool spring which allowed for the snow to melt off slowly. This kept the fuels in the mountains green and unlikely to burn well into the summer. We also had fewer lightning strikes than normal, with lightning leading the ignition of larger fires in the backcountry. All these factors led to approximately ninety-five percent less acreage burned this year compared to last.

Is this any indication of what is to come next summer? No, we will have to see what this winter and summer have in store.

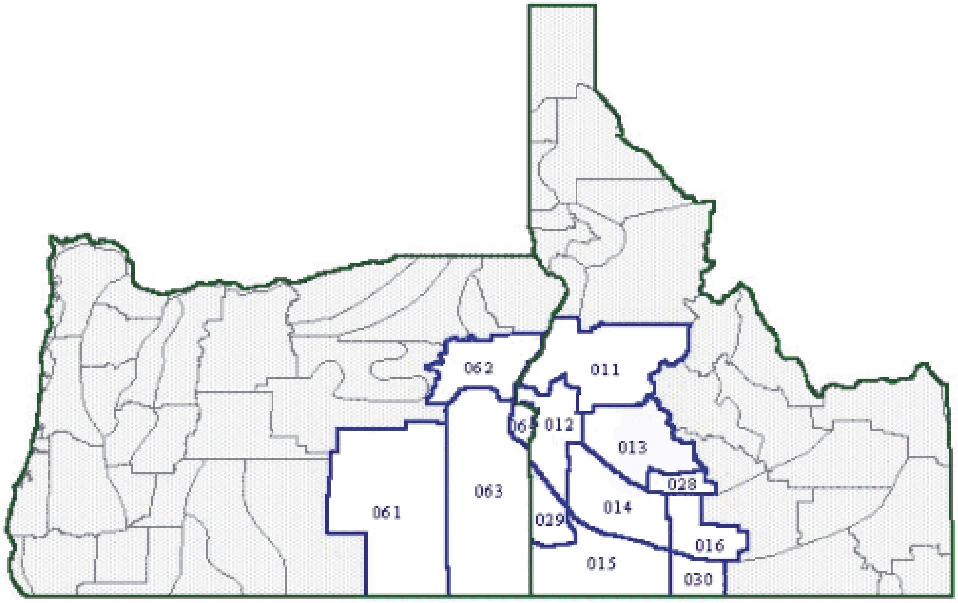
Winter Warnings and Advisories are Changing!
By Dawn Fishler, Meteorologist

National Weather Service winter weather warnings and advisories are changing this season to simplify and clarify the communication and dissemination of expected winter hazards. Some warning and advisory names will remain the same, but many will be changed to a single name. Below is a table summarizing these changes. These changes resulted from a survey given to the public with an overwhelming majority wanting to change to the new simplified criteria.

Within the watch or the advisory we will specify what that particular watch or advisory is for. We will also specify what criteria will be reached to justify the warning or advisory. Each zone has its own specific criteria for snowfall amounts, none of which have changed. See the map of zones on the opposite page and their criteria.

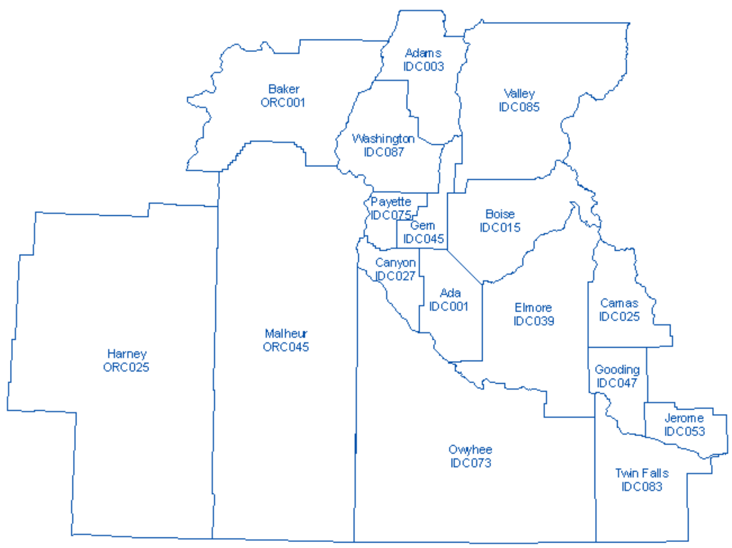
These changes will reduce the number of specific winter warnings and advisories and enhance clarity and consistency with other national weather service offices. It will also make products clearer to the public with the graphical depiction on National Weather Service webpages easier to understand.

Previous Warning	New Warning	Previous Advisory	New Advisory
Blizzard	Blizzard	Freezing Rain	Freezing Rain
Wind Chill	Wind Chill	Winter Weather	Winter Weather
Winter Storm	Winter Storm	Snow	Winter Weather
Heavy Snow	Winter Storm	Snow and Blowing Snow	Winter Weather
Sleet	Winter Storm	Sleet	Winter Weather
		Blowing Snow	Winter Weather



Left: The Boise forecast office area of responsibility in southeast Oregon and southwest Idaho (outlined in blue) with the zone numbers.

Below: The counties within the Boise forecast office area of responsibility.



Below are the criteria for a warning or advisory to be issued based on snow alone for each of the zones. (Remember that they can be issued for any of the reasons listed as the previous warning on page 6, but now only have one name).

Warning Criteria:

Zones 11, 13, 28, 29: 6 inches of snow in 12 hours or 10 inches of snow in 24 hours.

Zones 12, 14, 15, 16, 30, 61, 63, 64: 4 inches of snow in 12 hours or 6 inches of snow in 24 hours.

Zones 62:
Below 5000 feet: 4 inches of snow in 12 hours or 6 inches of snow in 24 hours.
Above 5000 feet 6 inches of snow in 12 hours or 10 inches of snow in 24 hours.

Advisory Criteria:

Zones 11, 13, 28, 29: 3 inches of snow in 12 hours or 6 inches of snow in 24 hours.

Zones 12, 14, 15, 16, 30, 61, 63, 64: 2 inches of snow in 12 hours or 4 inches of snow in 24 hours.

Zones 62:
Below 5000 feet: 2 inches of snow in 12 hours or 4 inches of snow in 24 hours.
Above 5000 feet 3 inches of snow in 12 hours or 6 inches of snow in 24 hours.

How Do you Measure Rainfall when there are no Measurements?

By Jay Breidenbach, Senior Service Hydrologist

The problem of determining how much rain has occurred during a storm seems easy enough. Historically, rain gage observations at individual locations form the official record and precipitation climatology at airport and co-operative observer locations. While this may be a good estimate of what happened at a single point, there is great uncertainty about how much rain has fallen at nearby locations. Precipitation has a very high degree of spatial variability, especially in Idaho and Oregon where mountainous terrain causes large differences between valleys and ridges. The uncertainty about how much rain has fallen in more remote areas is even greater because the distance to any type of gage observation is usually very large.

Even though it can be hard to estimate how much precipitation has fallen during a storm, meteorologists and hydrologists need reliable estimates for all areas. Good precipitation estimates are particularly important as input into hydrology models which forecast river levels. Inaccurate precipitation estimate increase the amount of error in the hydrologic forecasts. This problem is particularly noticeable when large areas of a stream basin do not contain any rain gages.

Radar-derived precipitation estimates are produced by determining a rainfall rate from radar echos. In general, more intense radar echos, usually colored yellow, orange or red on a radar display, are associated with the highest precipitation rates. Radar-derived estimates of precipitation are generally not as accurate as rain gage observations at a single point, but are highly detailed in showing how precipitation is distributed and varies in intensity across the forecast area.

The radar works by bouncing a beam of energy off distant precipitation, which means that the radar must be able to “see” the precipitation from its location, before a rainfall estimate can be made. Mountainous terrain often causes beam blockage preventing the radar from penetrating into some areas (figure1). This beam blockage problem is particularly noticeable in portions of the Boise area of forecast responsibility, including the central Idaho Mountains as well as western Baker and Harney counties in Oregon. It is impossible to retrieve an accurate radar precipitation estimate in these areas.

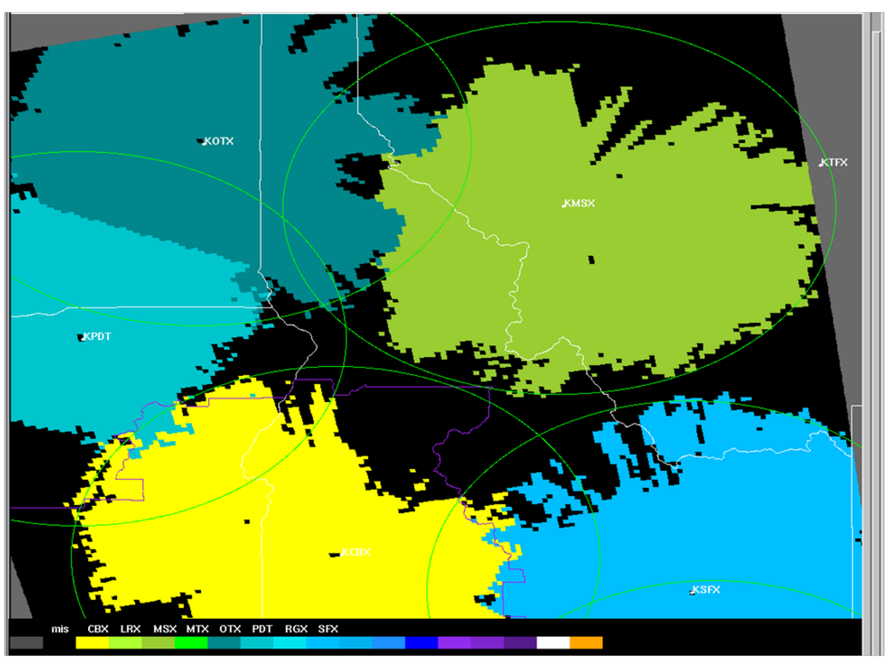


Figure 1. Radar Coverage over Idaho and portions of Oregon and Montana. Yellow area shows area of coverage from Boise radar. Radar coverage for Pocatello, Pendleton, Spokane, and Missoula Radars are also shown. Back areas indicate places with poor radar coverage where radar echoes are rarely observed because of distance from the radar or beam blockage by intervening mountains.

Continued from page 8

The Multisensor Precipitation Estimator (MPE) is a computer program run at the National Weather Service which combines radar-derived precipitation estimates with rain gage observations in an optimal way. The MPE algorithm uses gage-radar pairs to correct radar over or under estimation and combines the two sources of data into a single estimate of precipitation on a grid which can be viewed as an image by meteorologists and hydrologists at the National Weather Service. The MPE estimate is not perfect, but takes advantage of the point accuracy of rain gage observations and the spatial detail provided by radar.

MPE first creates a multi-radar mosaic of precipitation by combining data from multiple radars into a single grid (figure 2). Areas where two or more radars have overlapping coverage use the radar whose radar beam scans at the lowest elevation above sea level.

After radar bias is corrected, the MPE program creates a multi-sensor estimate by combining rain gage observations with the radar estimates into a single grid which can be viewed as an image (figure 3). The computer algorithm places more weight on gage observation for areas at or very near an actual gage. For areas that are further away from a gage, more weight is placed on the radar-derived estimate, even though there is still some influence from distant rain gages. In areas where no radar coverage is available, an estimate is made by searching for the closest rain gages and radar observations and interpolating or “extrapolating” their values to the location in question. Long term rainfall climatology is also used to help scale precipitation estimates into remote and ungaged areas where radar coverage is poor.

Multi-sensor Precipitation estimates for longer durations can be created by summing up the 1 hr estimates. An example of a storm total precipitation estimate is shown in figure 4. An interesting comparison to the multisensor estimate shown in figure 4 can be made by comparing a storm total map which was derived only from radar estimates with no help from rain gages (figure 5). Note in figure 5 that the radar indicated little or no precipitation in Central Idaho near McCall, Yellow Pine, and in Frank Church Wilderness. However, raingage observations showed that this was the area where the rain was heaviest. The multisensor estimate (figure 4) incorporates both sensors to give a more thorough view of the rainfall event.

MPE takes advantage of point accuracy of rain gage observations while making use of the spatial distributions of precipitation intensity possible with radar observations. The multisensor estimate is not perfect and is greatly affected by errors in gage data such as those caused by frozen precipitation. However, the MPE algorithm produces the best possible gridded precipitation analysis available today and provides useful information even in the mountainous western U.S were radar has difficulty is such complex terrain.

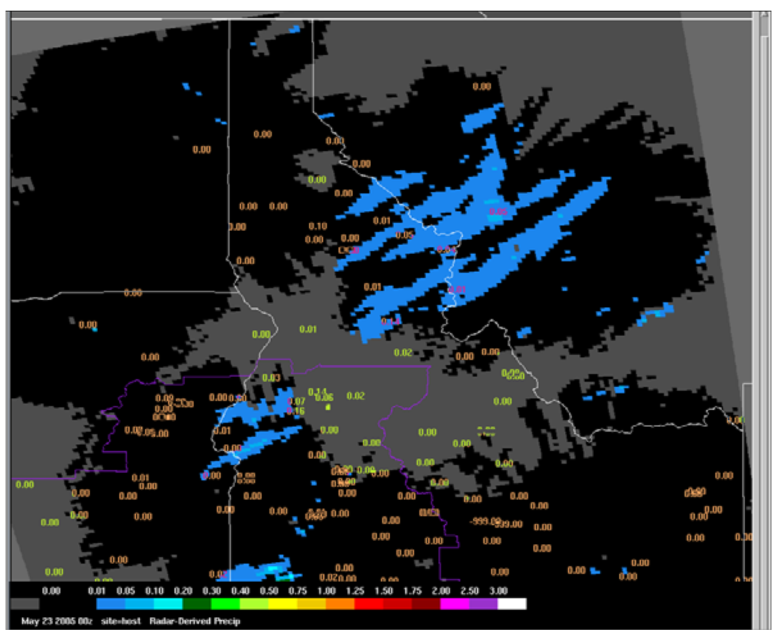


Figure 2. Radar Precipitation Mosaic. Precipitation estimates are for duration of 1 hour. Grey area indicates poor radar coverage due to beam blockage or long ranges from radar. Rain gage observations for the same 1 hr duration are plotted for comparison.

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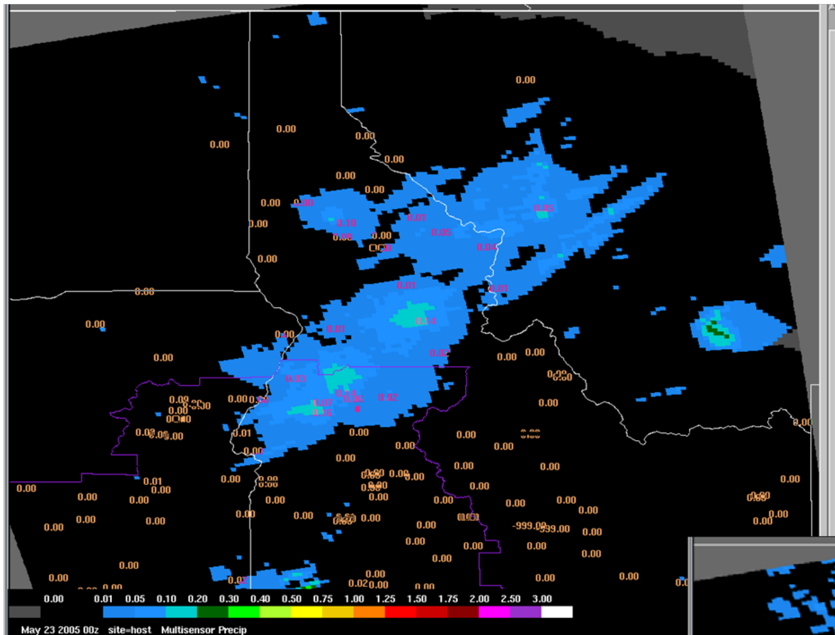


Figure 3. Multisensor precipitation estimate combining radar and rain gage data for 1 hour duration matching time in figure 2. Note that area of poor radar coverage is filled in by this estimation technique.

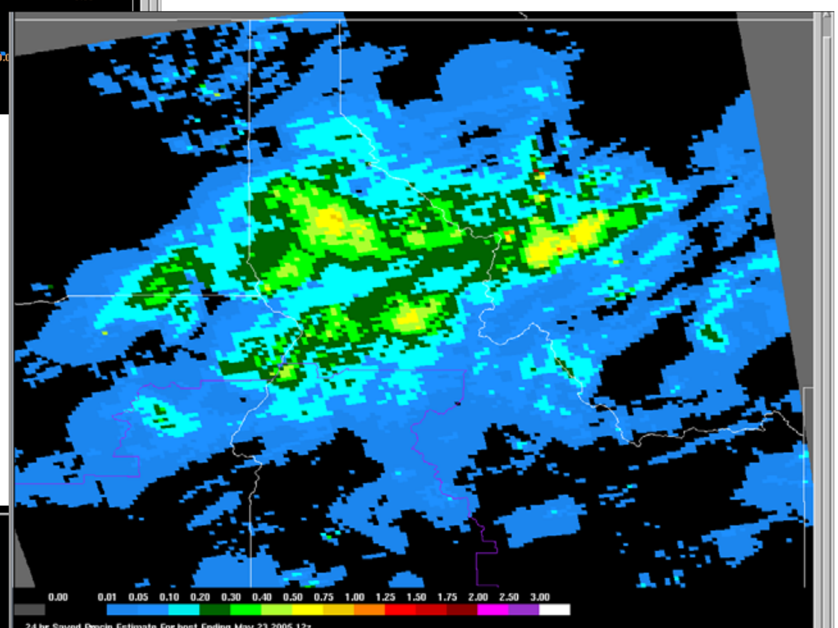


Figure 4. 24 hour storm total derived from the multisensor precipitation estimates ending at 12z on May 23rd. Notice how the multisensor estimate does a much better job of estimating precipitation in the mountains which was a "Grey" area where the radar had trouble detecting any precipitation.

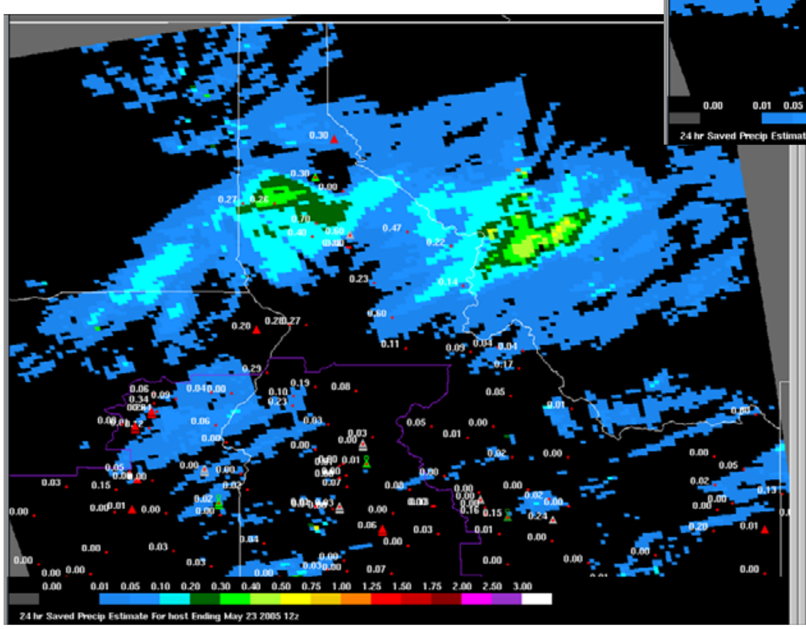


Figure 5. Radar-Only Storm Total Precipitation - Compared with 24 hour rain gage totals.

The Special Olympic World Winter Games are coming to Boise, ID in 2009!!!

Special Olympics

The Eighth Special Olympic World Winter Games (SOWWG) will be held in Boise, February 6-13, 2009. This is the first return of the games to the United States since 2001.

Approximately 3000 athletes from 85 countries will be coming to the Boise area during this week to compete in Alpine Skiing, Cross Country Skiing, Figure Skating, Floor Hockey, Snowboarding, Snowshoeing, and Speed Skating.

This is a great event to show local pride and support the hard work of these many talented athletes.

For more information visit: http://www.2009WorldGames.org

"The mission of the Special Olympics is to provide year-round training and athletic competition in a variety of Olympic-type sports to children and adults with intellectual disabilities in order to develop physical fitness, demonstrate courage, experience joy and participate in a sharing of gifts, skills and friendship with their families, other Special Olympics athletes and the community."

NWS Windchill Chart

Temperature (°F)

Wind (mph) \ Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes, 10 minutes, 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

The Windchill Temperature is how cold people and animals feel when outside. Windchill is based on the rate of heat loss from exposed skin caused by wind and cold. As the wind increases, it draws heat from the body, driving down skin temperature and eventually the internal body temperature. Therefore, the wind makes it FEEL much colder.

National Weather Service, Boise, ID

National Weather Service
3833 S Development Ave
Bldg 3807
Boise, ID 83705

Phone: 208-334-9860
Fax: 208-334-1662
Recorded Forecast: 208-342-6569
E-mail: Dawn.Fishler@noaa.gov

Working Together To Save Lives

SkyWarn Spotter Recognition Day is December 6!!!

The National Weather Service in Boise, Idaho is looking for licensed Amateur Radio operators to join licensed meteorologists and man the radios during SkyWarn Recognition Day. We have radios that cover the entire radio wavelength spectrum from 70 cm to 80 meters. Talk-in will be on 147.3800MHz+ DCS 174. The Southwest Idaho Amateur Radio Emergency Services group will be present at the event helping to make radio contacts. (www.idahoares.org)

SkyWarn Recognition day runs from 5pm Friday December 5 through 5pm Saturday December 6. If you would like to be here the entire 24 hours, we would be glad to host you. But if your interest is only for an hour or two, please come.

SkyWarn Recognition Day was developed in 1999 by the National Weather Service and the American Radio Relay League. It celebrates the contributions that volunteer SkyWarn radio operators make to the National Weather Service. During the day SkyWarn operators are encouraged to contact other radio operators across the world and spread the word about how amateur radio can be used for the protection of life and property.

If you would like to volunteer, contact Stephen Parker or Dawn Fishler at (208) 334-9860 (stephen.parker@noaa.gov or dawn.fishler@noaa.gov).

Come for the day, come for an hour. Get a personalized tour of the NWS Forecast office while licensed operators use our radios to contact other SkyWarn spotters and amateur radio operators from across the country.

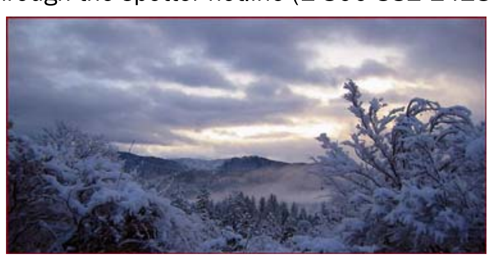
More information on SkyWarn Recognition day can be found at http://www.crh.noaa.gov/hamradio/index.php

Those SkyWarn Spotters who are not radio operators are welcome to visit the Boise weather office for a personalized tour during an open house we will be having from 11 am to 3 pm on Saturday, December 6. Snacks will be provided.

Please Help us this Winter!

Please remember to report significant winter weather to us through the spotter hotline (1-800-882-1428). Significant winter weather includes (but is not limited to):

- Heavy Rain
- Flooding
- Winds in excess of 50 mph
- Low visibilities
- Freezing Rain
- Snow



Snow is of particular importance as we are trying to get better snowfall reports throughout all of Southeast Oregon and Southwest Idaho. Please always report snowfall amounts as soon as you can! Do not assume that someone else has already called in the report even if you live in a populated area. All reports are helpful! There are times that snowfall patterns will leave 5 inches in one part of the valley and only a trace less than 20 miles away. Getting detailed information is pertinent in helping us fulfill our mission of protecting lives and property. Thank you for your continued support and volunteering your time as a SkyWarn Spotter or Cooperative Observer! We truly appreciate it!

For tips on measuring snowfall, please see page 3 of this newsletter.