YOUR NATIONAL WEATHER SERVICE SPOKANE QUARTERLY REPORT

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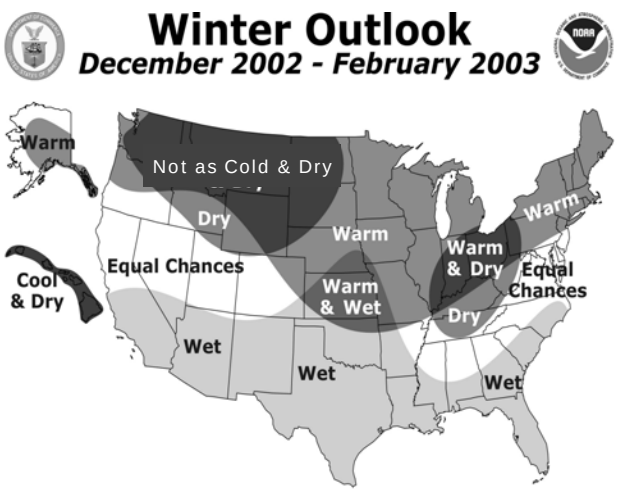
The Weather Watcher

of the Inland Northwest

www.wrh.noaa.gov/Spokane

It's Coming Back—El Niño!

After months of developing in the tropical Pacific Ocean, El Niño is poised to influence the fall and winter weather across the United States. This event will be weaker than the very strong 1997-98 version, but it will still impact the temperature and precipitation patterns across the country. This El Niño is expected to reach moderate strength this winter. With nearly half of the U.S. experiencing drought, the fall and winter outlooks offer "limited relief." Some improvements in the drought are possible across the southern U.S., but it may not be enough to alleviate the dry conditions entirely.



What can we expect this winter? Past El Niño events have shown a strong correlation for above normal temperatures during the fall and winter months across the Inland Northwest. During the 1997-98 winter, the average temperature in Spokane ran about 3° above normal.

The outlook for precipitation is not as clear cut. There is a strong indication of below normal precipitation for regions west of the Cascades. But for regions east of the Cascades into north Idaho, the signal is weaker. Seasonal climate outlooks are based on probability. With a weak signal, there are equal chances for the below normal, normal, and above normal conditions, which means there is an equal probability to be in any of these classes. During the 1997-98 winter, precipitation was only 2 inches below normal in Spokane, yet only 16 inches of snow was recorded during the entire winter. Normal snowfall for Spokane is around 47 inches!

A better assumption for this winter is that it will be mild with below normal snowfall for the valleys and lower elevations. Snow in the mountains may be less than normal, especially in the Cascades. Exact temperatures or snowfall amounts cannot be predicted on a seasonal time frame.

What is El Niño? El Niño is a disruption of the ocean-atmosphere system in the tropical Pacific which has important consequences for the weather around the globe. This ranges from increased rainfall across the southern U.S. and Peru to dry conditions in the Pacific Northwest and Australia.

El Niños happen irregularly, every 2-7 years, and include 1997-98, 1991-92 and 1986-87. It was originally recognized by fishermen off the coast of South America as the appearance of unusually warm water in the Pacific Ocean. El Niño means "The Little Boy" or "Christ child" in Spanish. This name was used for the tendency of the phenomenon to arrive around Christmas. *Cont on Page 3.*

INSIDE THIS ISSUE:

Editor's Notes

With the release of the latest seasonal winter outlook, there has been a good of deal of news about El Niño and drought. This issue tries to relate the phenomena of El Niño to the Inland NW and what effects it can have here.

Remember, for your up-to-date source on weather information, keep it tuned to your local NOAA Weather Radio. September is Weather Radio Awareness Month in Washington State.

If there is something you would like to see in the next newsletter or if you have comments or questions about a previous issue of the *Weather Watcher*, please contact:

Robin Fox or Ken Holmes
(509) 244-0110

The main purpose of this publication is to keep our readers informed about our services and programs and to recognize those who help us accomplish our mission, including weather spotters, coop observers, media and emergency management.

All articles are written by the NWS staff. A special thanks to Ron Miller and Andy Haner for their contributions.

The Dog Days of Summer 2002

Will the Summer of 2002 be remembered for the hot July or the cool August? When averaged together, the three months of summer were very close to normal in our region. The beginning of June continued the cool spell seen in Spring. Temperatures on the 7th and 8th were more than 10 degrees below normal. Daily record lows were set at many locations. Winchester, ID even picked up 4.3" of snow. June also had it's warm spells in the middle and the end of the month. Overall, June actually wound up a bit warmer than normal.

After a rather cool 4th of July (Spokane only had a high of 68°F), the weather quickly warmed up. A very large ridge of high pressure moved up from the four-corners region of the U.S. This ridge was responsible for Reno setting a new all-time high temperature two days in a row. For the Inland Northwest, it meant several daily high temperature records, but no monthly or all-time records were set. Wenatchee and Lewiston reached triple-digit temperatures four days in a row (July 10th-13th) with Spokane reaching the century mark for three consecutive days. Spokane peaked at 102°F and Wenatchee hit 104°F. Lewiston easily was the hottest, reaching 103° F, 105°F, 107°F, and 110°F. Temperatures cooled by 14-18 degrees on the 14th as a cool front moved in from the Pacific. This pushed the hot ridge off to our east, while the rest of the month still remained hot and dry. Lewiston had a couple more triple-digit days on the 23rd and 24th. All of this hot and dry weather heightened wildfire concerns in the area. Additionally, there were several dry lightning episodes resulting in wildfires.

If there was any fear that the hot weather in July would continue through the summer, it was quickly put to rest in early August. A Pacific trough slowly moved over the area resulting in cool but dry weather. Temperatures were about 15 degrees below normal during the first week in August, with Spokane reaching only 68°F on the 6th. During the second week of August, temperatures warmed up into the lower 90s. The wind flow was out of the north, which is an unusual wind direction during the middle of summer. This ushered in extremely dry air with afternoon relative humidities in the single digits. A vigorous dry storm moved into the area from Canada on the evening of the 15th, packed with very strong winds. Gusts up to 77 mph were measured in the Okanogan Valley with downed power lines common across the northern mountains. For the rest of the month, temperatures were very close to normal. Thunderstorm activity picked up considerably over extreme eastern Washington as well as the Idaho Panhandle. Spokane picked up 1.06" from a thunderstorm on the 22nd. This was the 4th wettest August day ever in Spokane. A week later Lewiston received 0.84". The Columbia Basin and Cascades remained very dry with many locations receiving less than 0.10" during August. ☼ *Ronald Miller*

Summer Weather Statistics

Wenatchee Airport	**June**	**July**	**August**	**Total**
Avg High Temp	80.1	89.0	85.8	85.0
Departure from Norm	+1.4	+2.3	-0.3	+1.1
Avg Low Temp	55.7	62.0	59.7	59.1
Departure from Norm	1.7	+2.2	0.0	+1.3
Total Precip	0.18	0.03	T	0.21
Departure from Norm	-0.46	-0.27	-0.35	-1.08
Lewiston Airport	**June**	**July**	**August**	**Total**
Avg High Temp	79.9	92.3	85.0	85.7
Departure from Norm	+1.9	+4.7	-2.6	+1.3
Avg Low Temp	54.0	61.8	55.9	57.2
Departure from Norm	+0.4	+2.5	-3.4	-0.2
Total Precip	1.45	0.15	1.38	2.98
Departure from Norm	+0.29	-0.57	+0.63	+0.35
Spokane Airport	**June**	**July**	**August**	**Total**
Avg High Temp	74.9	86.1	80.9	80.6
Departure from Norm	+1.0	+3.6	-1.7	+1.0
Avg Low Temp	49.6	56.6	51.9	52.7
Departure from Norm	+0.4	+2.0	-2.6	-0.1
Total Precip	1.50	0.25	1.24	2.99
Departure from Norm	+0.32	-0.51	+0.56	+0.37
Total Snowfall	0.0	0.0	0.0	0.0
Departure from Norm	0.0	0.0	0.0	0.0

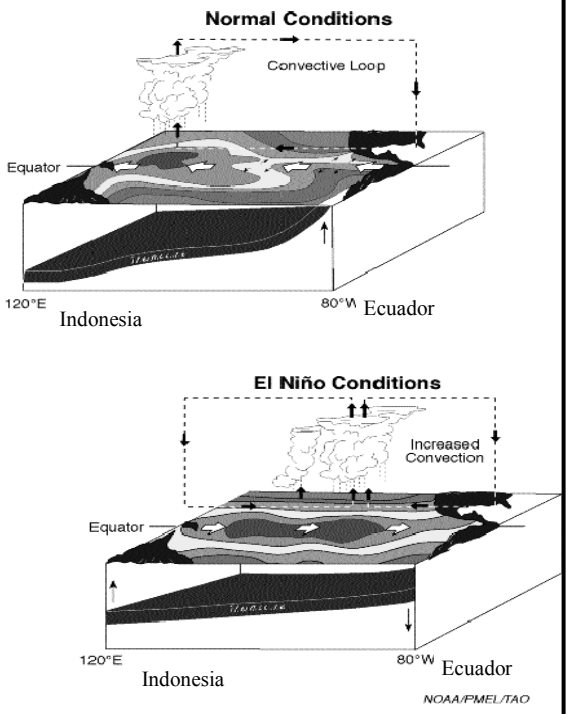
Trivia answer: The 37th driest September-August period in the 108-year record for the Pacific NW!

More on El Niño

Cont from Page 1. **What causes El Niño?** Under normal conditions, the trade winds blow toward the west across the tropical Pacific. These winds pile up warm surface water in the west Pacific, so that the sea surface is about 1/2 meter higher at Indonesia than at Ecuador. The sea surface temperature is about 8° C higher in the west, with cool temperatures off of South America, due to an upwelling of cold water from deeper levels. This cold water is nutrient-rich, supporting high levels of diverse marine life and major fisheries. Rainfall is found in the rising air over the warmest water, while the east Pacific is relatively dry.

During El Niño, the trade winds relax over the tropical Pacific leading to lack of mixing of the surface water. This cuts off the upwelling off the South America coast and warm ocean temperatures shifts from Indonesia toward Ecuador. The rise in sea surface temperature causes a drastic decline in diverse marine life and commercial fisheries in this region. Rainfall follows the warm water eastward, with associated flooding in Peru and drought in Indonesia and Australia. The eastward movement of the heat source in the warm surface water results in large fluctuations in the global atmospheric circulation. This forces a change in the weather pattern far removed from the tropical Pacific. One result over the U.S. is a stronger and more vigorous southern jet stream.

How is El Niño monitored? Weather observations in the tropical Pacific are essential for the prediction of short term climate variations. NOAA operates a network of ocean buoys which measure temperature, currents and winds across the equator. For more, visit *www.pmel.noaa.gov/tao/elnino/nino-home.html* ☼ *Robin Fox*



These diagrams depict the changes in the warm ocean water and resulting weather across the Pacific Ocean during normal and El Niño conditions.

How Dry Was it?

Summer is usually the dry season for the Northwest U.S., but this year it was persistently drier than normal. During this period, the Northwest Region, including the states of Washington, Oregon and Idaho, was the ninth driest May through August on record. The extent of the drought this year is comparable to the major dry episodes in 2000 and 1988, but one has to go back to the 1930s to find significantly greater extents of drought. ☼ *Robin Fox*

WEATHER SPOTTER CHECKLIST

- FUNNEL CLOUD...Watch for cloud rotation aloft
- TORNADO...Watch for rotation & damage on the ground
- HAIL...Pea-sized or larger
- HEAVY RAIN...1/2 inch in 1 hr; 1.5+ inches in 24 hrs
- SNOW...2 inches or more
- PRECIPITATION CHANGES...rain to snow, any freezing
- FLOODING...Of any kind. Watch for changing water levels
- POOR VISIBILITY…1/2 mile or less
- TRAVEL PROBLEMS…due to weather
- STRONG WINDS…30 mph+, or any damage
- ANY DAMAGE, INJURY OR LOSS OF LIFE DUE TO WEATHER...Include location, time and specific cause.

If you observe any of these conditions, please call the NWS

(509) 244-0435

Funnel Spotted over Davenport

This photo came from Lincoln County Spotter 21-H on the morning of September 17th. The funnel appeared about 10 miles west of Davenport, under a cold pool aloft which lead to increased instability. Doppler weather radar showed a very broad rotation in the area. Visible satellite showed only one convective-looking cell in the area. The photo was snapped around 1100-1115 am, and the funnel apparently dissipated between 1120-1125 am without touching down. ☼ *Andy Haner*

Fall Spotter Training

Oct. 1st Lewiston
7:00 pm
Brammer Building next to City Hall

Oct 24th Spokane
7:00 pm
Fire Station #92 in Mead

Timely weather information is closer than you think!

Listen to NOAA Weather Radio

Bonners Ferry...162.500
Spokane……162.400
Lewiston……...162.550
Omak……162.525
Wenatchee……162.475

Staff News

Forecaster, Jon Rizzo, has moved to greener and warmer pastures. By early this summer, he returned to Key West, Florida after receiving a promotion as the Warning Coordination Meteorologist. A new forecaster, Todd Lericos, has recently arrived to take his place. Todd arrived after working in Tallahassee, Florida while completing his Masters Degree in Meteorology.

Lead forecaster, Todd Carter, received a job reassignment on station as the Information Technology Officer. He will forego daily forecasting duties and instead be dedicated to computer projects. A new lead forecaster has been hired as a replacement, Matt Fugazzi. He will be joining the NWS Spokane office late this year from Boise.

Good Luck to Jon, Todd, Todd & Matt!
☼ *Robin Fox*

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Trivia: How did this summer rank in dryness across the Pacific Northwest?