

FIRE WEATHER ANNUAL SUMMARY - 2012
FOR
EASTERN WASHINGTON
AND
NORTHERN IDAHO

By

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Winter 2011-2012 (Dec – Feb)

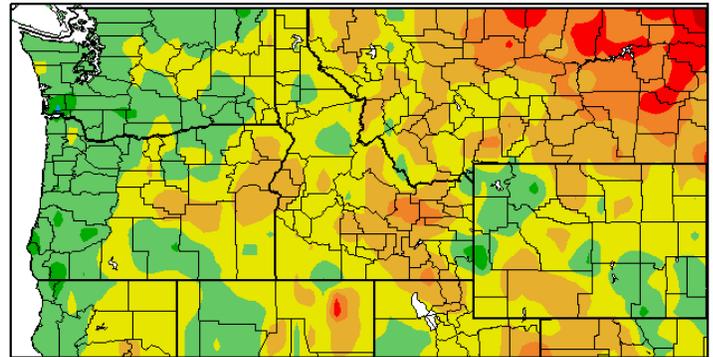
La Nina conditions in the equatorial Pacific Ocean remained weak to moderate through the winter of 2011 and 2012 which led to a prediction of a colder and wetter than normal winter for the Inland Northwest.

December was warm and very dry for the first 3 weeks of the month as a strong ridge in the eastern Pacific deflected storms away from the region. Conditions changed the last week of December as a warm atmospheric river developed from the tropics. This brought above normal temperatures to the region and rain to the lower elevations with a mix of rain and snow in the mountains. Temperatures were above normal and precipitation below normal.

This pattern lingered in to the first two weeks of **January** with warm temperatures but mainly dry conditions. Things changed the last two weeks of January as the storm door opened providing much needed moisture to the region. A couple of major storms moved through the Pacific Northwest producing impressive amounts of snow. Despite this precipitation, it was not enough to overcome the dry beginning of the month and temperatures were again above normal with below normal precipitation.

February was fairly average weather-wise with a few storms moving through the region that resulted in strong winds. Temperatures were near or slightly above normal and precipitation was near normal for the month.

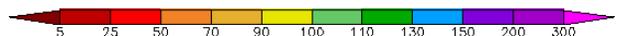
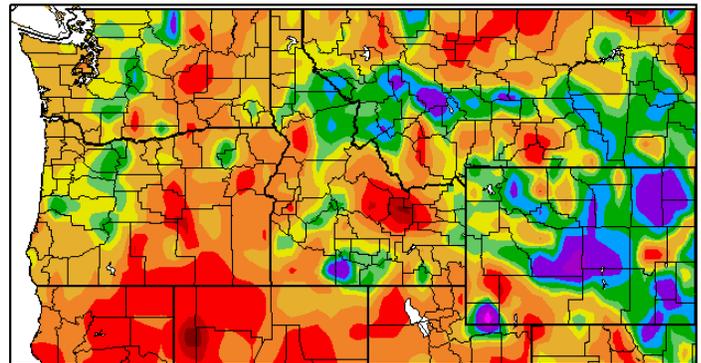
Departure from Normal Temperature (F)
12/1/2011 – 2/29/2012



Generated 6/22/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
12/1/2011 – 2/29/2012



Generated 6/22/2012 at HPRCC using provisional data.

Regional Climate Centers

The maps above show that **temperatures** were near normal over almost the entire Pacific Northwest (yellow and light green shading, top image). **Precipitation** amounts were below normal (orange and red shading, bottom image)

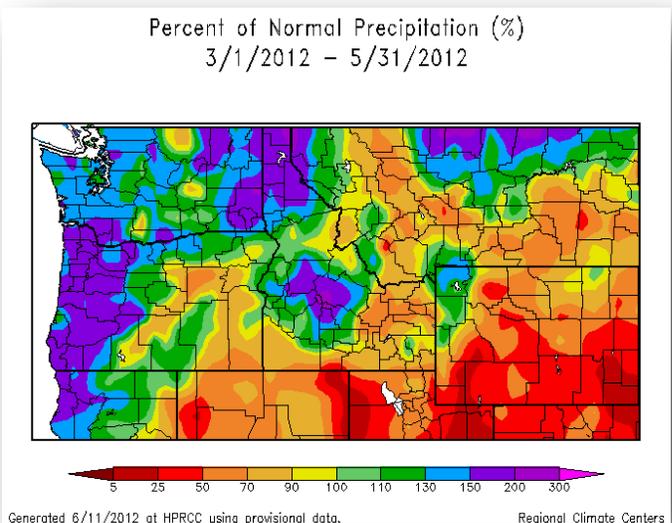
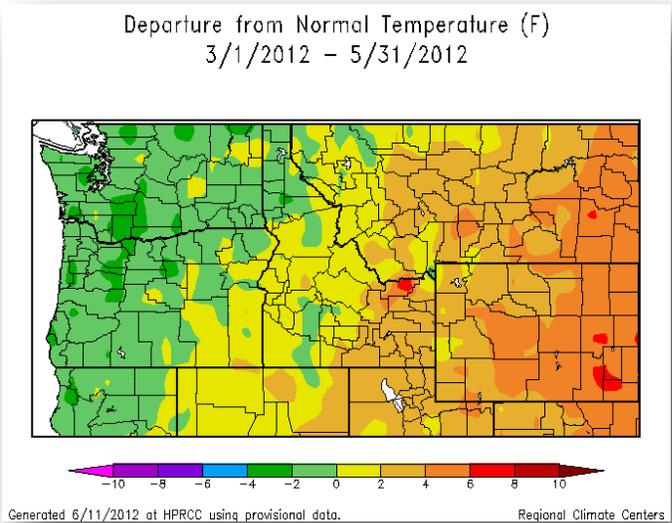
Spring 2012 (MAR – MAY)

Cool and Wet! That summarizes the Spring of 2012 in the Inland Northwest for the second straight year. And while it's not unusual to have a cold and wet Spring in the Inland Northwest, this was one for the record books.

March started off warm and mainly dry for the first 10 days. The three weeks that followed set records for precipitation and cold temperatures. Over ten records for monthly precipitation were shattered and numerous daily records fell as well.

April remained wet and cold for the first week of April. The last three weeks were warm with only a few hit or miss showers. Temperatures soared into the 70s and 80s the last two weeks of the month with a few areas reaching the 90s. Temperatures were well above normal with precipitation near normal.

Generally **May** tends to be wetter than April and sometimes March, but not in 2012. No significant storms moved into the region and this kept the month drier than normal at most observations sites. A few locations set record high temperatures during the middle of the month, but much cooler air arrived from the north resulting in a cooler than normal temperatures.



Temperatures were normal to below normal over the entire Pacific Northwest (green and yellow shading, top image). **Precipitation** amounts were well above normal (in some cases over twice the normal amount, purple shading, bottom image).

Summer 2012 (Jun-aug)

The summer of 2012 was one of extremes. The beginning was cool and wet while the end was anything but.

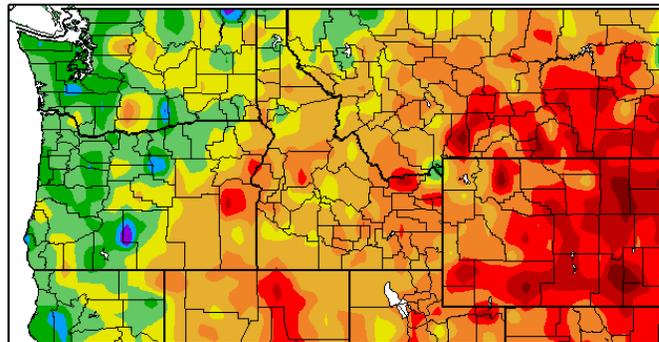
While most of the country was sweltering under an extreme heat wave in June, the Pacific Northwest remained cool and wet. An unusually cold and wet weather system dropped into the region during the first week of the month and delivered near record cold temperatures and record rainfall to many areas. A warming and drying period was observed for several days during the middle of the month but it didn't last long as a series of wet weather systems brought more record rainfall to several locations. For the month, temperatures ended up cooler than normal with normal to well above normal rainfall.

Conditions changed drastically in **July**. More cool and wet conditions commenced the month but as if on cue the heat arrived in earnest after the Fourth of July holiday. Temperatures skyrocketed well above normal with several locations rising above the century mark. Lingering low level moisture resulted in very muggy days during the middle of the month with a round of severe thunderstorms from the 15th to the 20th of the month. The severe event on the 20th resulted in widespread flash flooding, large hail, and downed trees. Two fatalities were reported near Republic and Lake Pend Oreille. The final 10 days of the month were unremarkable with warm and dry conditions. Temperatures were 2-3° above normal with near normal precipitation.

August saw very hot and dry weather.

Temperatures were 2-5° above normal and precipitation was well below normal. A few thunderstorms during the first half of the month sparked a few fires, but it was a dry cold front on the 13th that set off the Taylor Bridge Fire.

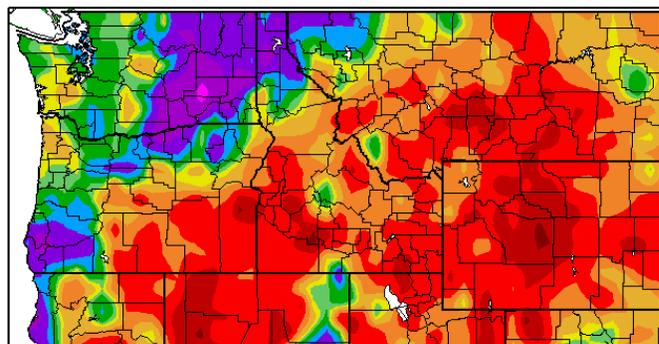
Departure from Normal Temperature (F)
6/1/2012 – 8/31/2012



Generated 9/18/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
6/1/2012 – 8/31/2012



Generated 9/18/2012 at HPRCC using provisional data.

Regional Climate Centers

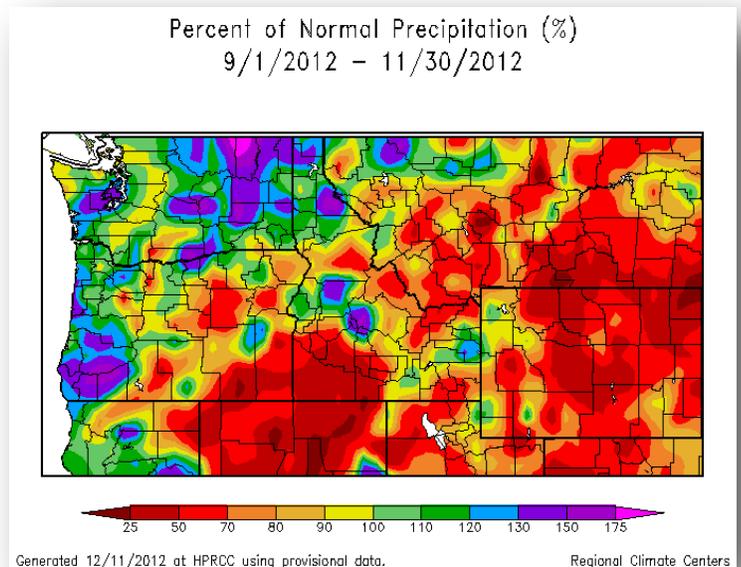
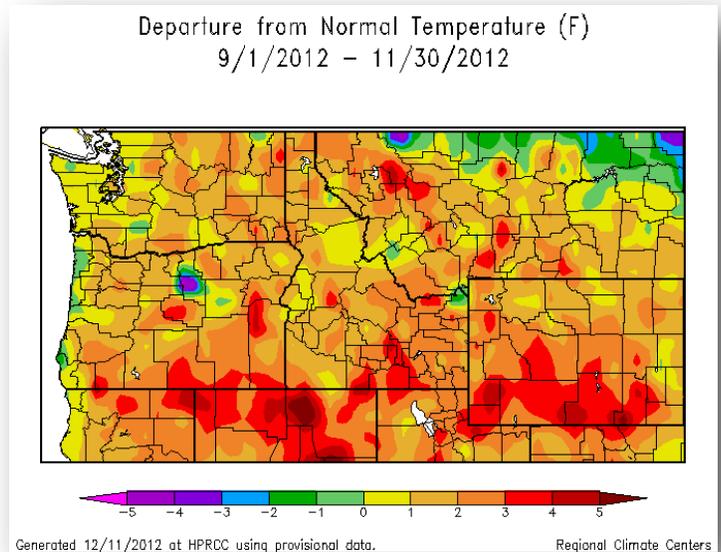
For the 3 month period **Temperatures** were near normal, but the very cool temperatures of June offset the very warm temperatures in August. (green and yellow shading, top image). **Precipitation** finally dried out in August, but the wet June totally overwhelmed the dryness of August. (In some cases 2-3 times the normal amount, purple shading, bottom image).

Autumn 2012 (Sep-Nov)

September 2012 was one of the driest on record. Spokane, Lewiston and Wenatchee only measured a scant trace of precipitation for the month. This has only happened twice before at Spokane and Lewiston. Temperatures were 2-5° above normal. A thunderstorm event on the 8th and 9th started numerous fires across the Inland Northwest. This was followed by a wind event on the 9th and 10th that fanned numerous fires out of control.

October began just as September had ended warm and very dry. This resulted in control problems on area fires through the 11th. This also marked the 84th day without measurable rain at Wenatchee. Fortunately, rain arrived before any more cold fronts did. Light precipitation began on the 12th and 13th with a stronger system on the 14th and 15th. This decreased the fire threat. A strong cold front followed the heavier precipitation on the 15th with wind gusts over 60 mph at Moses Lake and Uniontown. By the end of the month a series of cold weather systems moved into the region and brought snow down to the valley floors near the Cascades and mountains near the Canadian border. Temperatures were near normal and precipitation was above normal for the month.

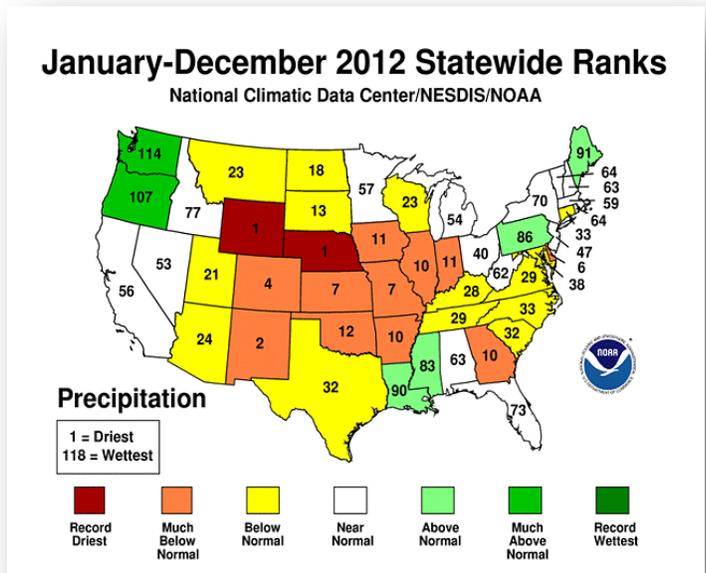
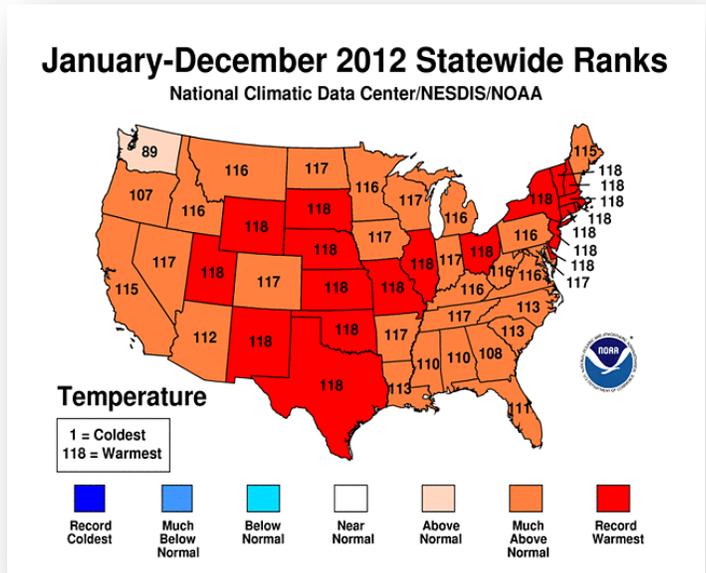
The first few days of **November** were mild. But afterward the weather pattern changed and allowed a numerous weather systems to move into the region. This brought widespread rain and snow, with snow down to the lowlands. The last two weeks of November saw mild storms moving in from the South Pacific. Although it remained very wet, the southwest flow brought snow levels up to pass levels. Temperatures for the month were 1-3° above normal with normal to above normal precipitation.



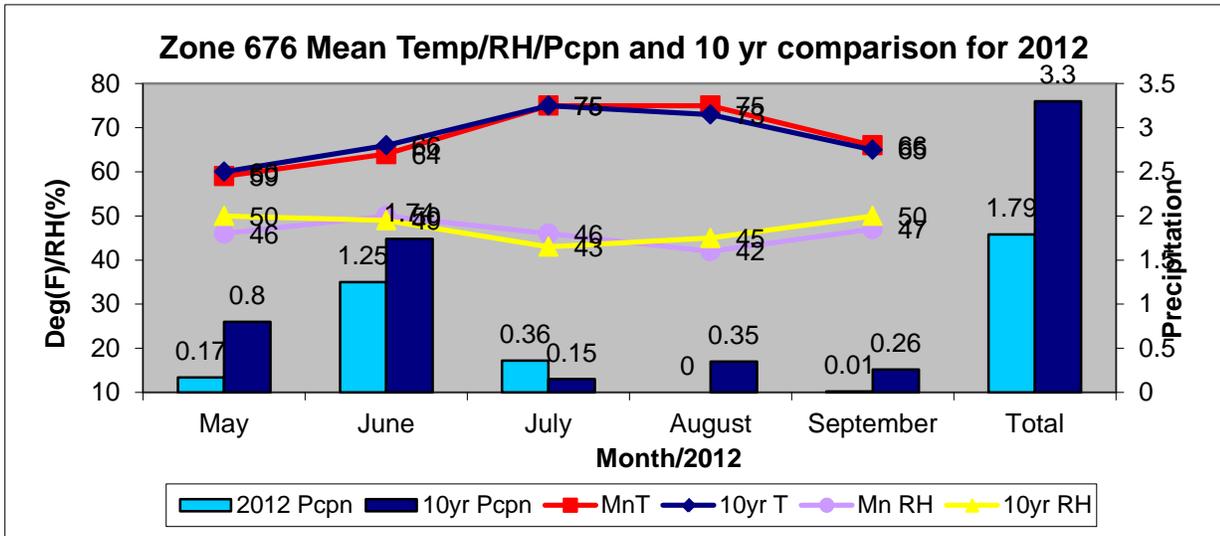
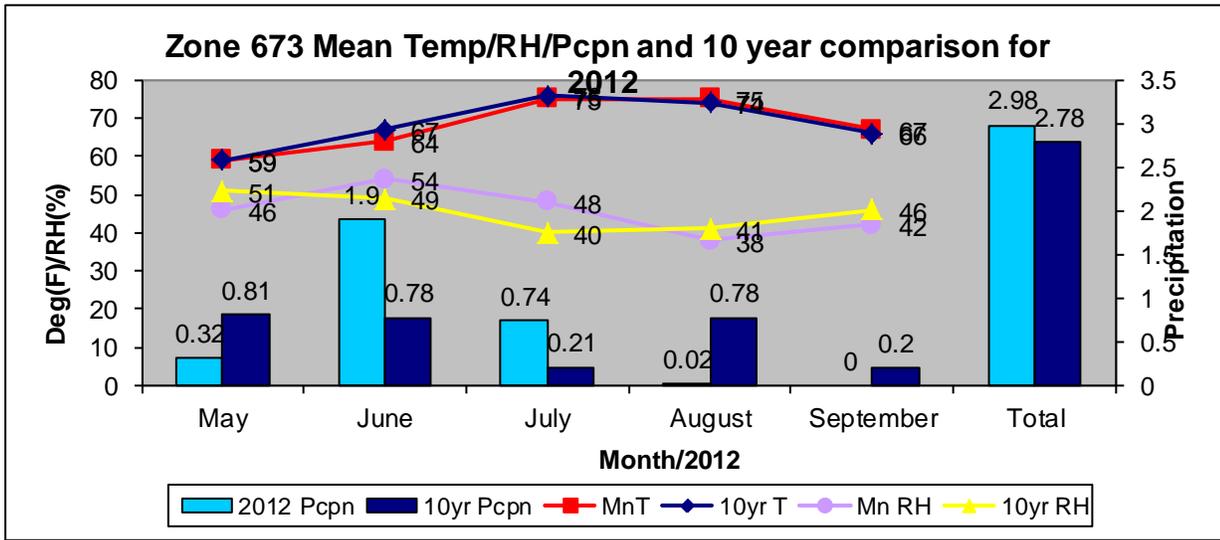
Temperatures were mainly above normal over the Inland Northwest (yellow and orange shading, top image). **Precipitation** amounts were well above with some areas over 150 percent of normal (Blue and purple shading), except for the south Washington Cascades (yellow and orange shading, bottom image).

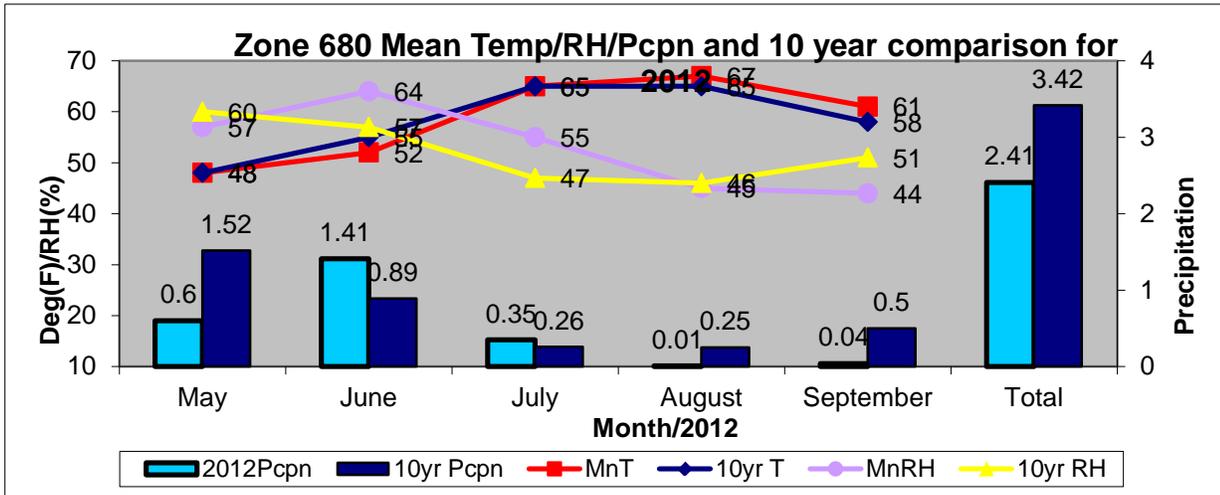
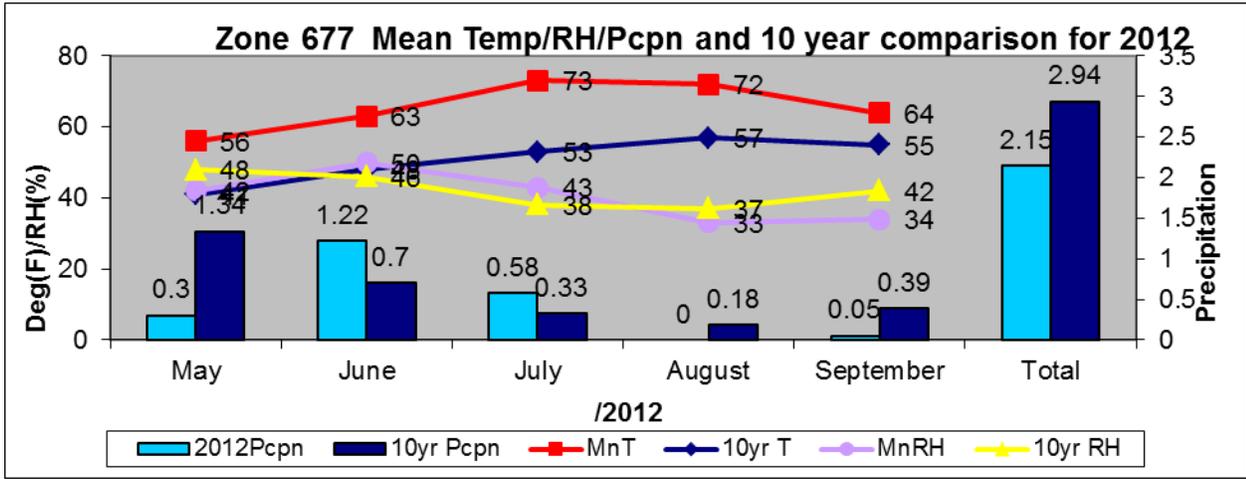
YEARLY SUMMARY

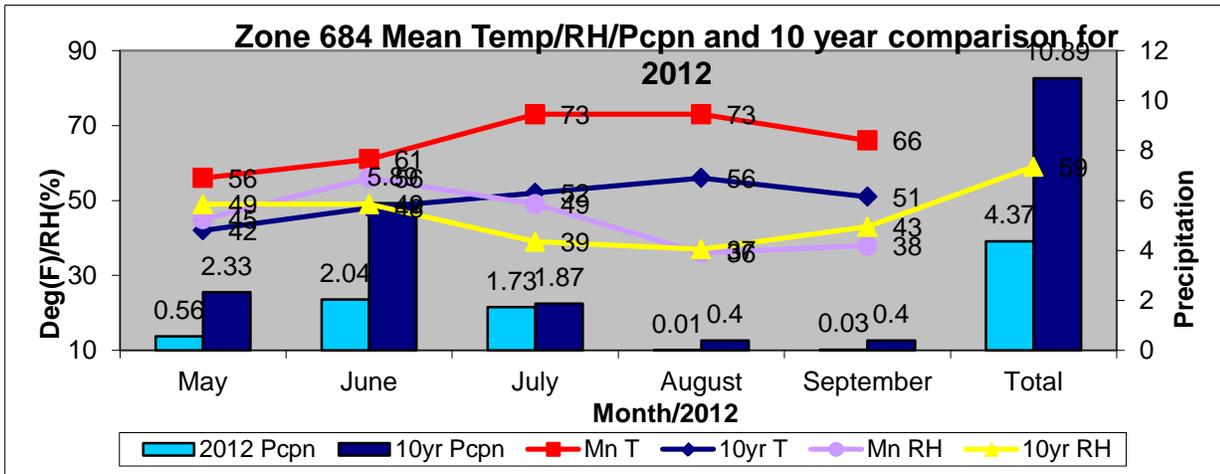
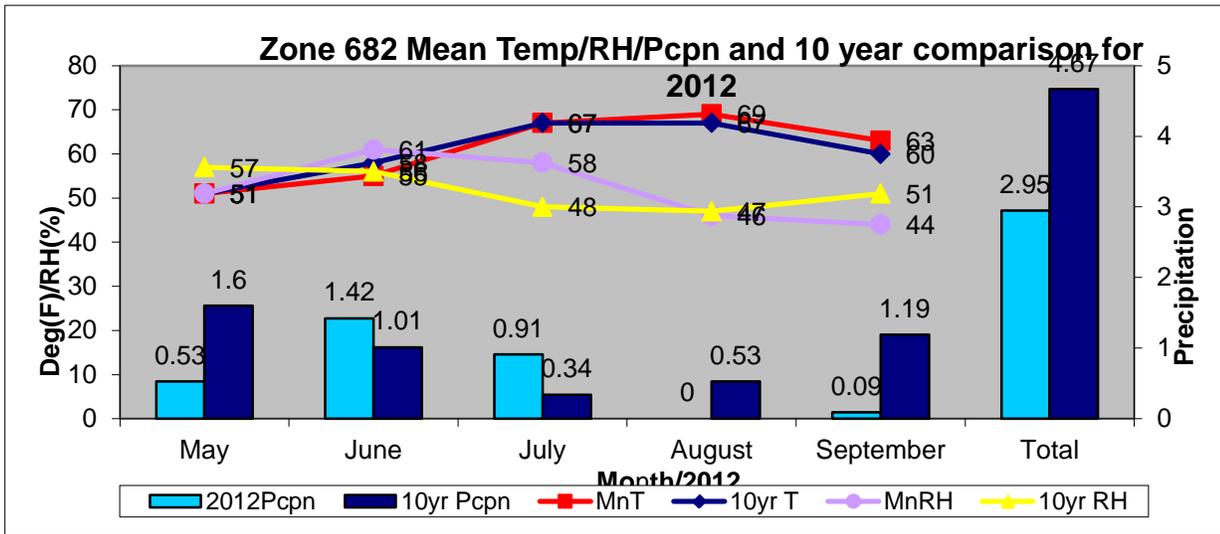
In summary, 2012 was dominated by a long-lasting wet and cool late winter into early summer period, much like 2011. This wet and cool spell delayed the curing of fuels into July. Warm and very dry conditions in August through early October allowed fuels to dry out quickly and remain volatile well into October.

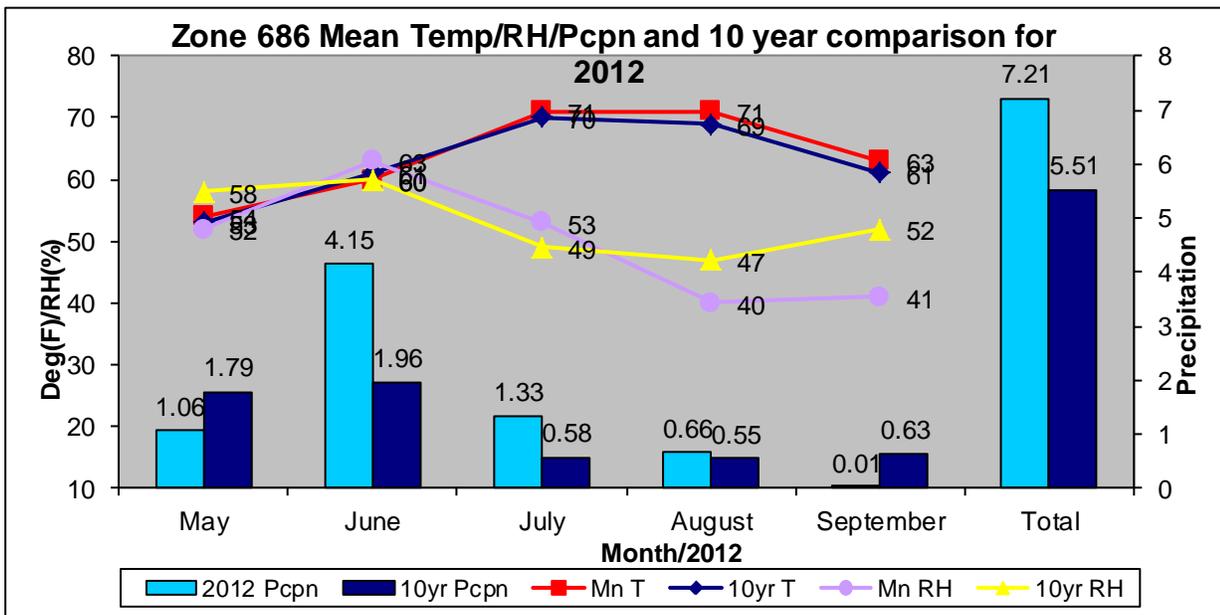
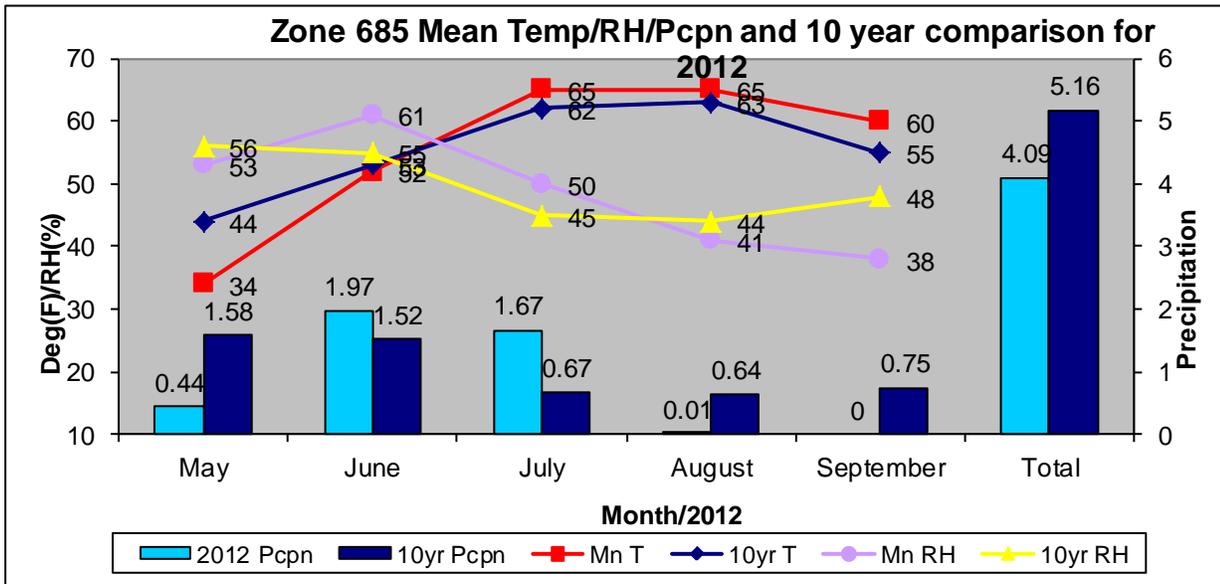


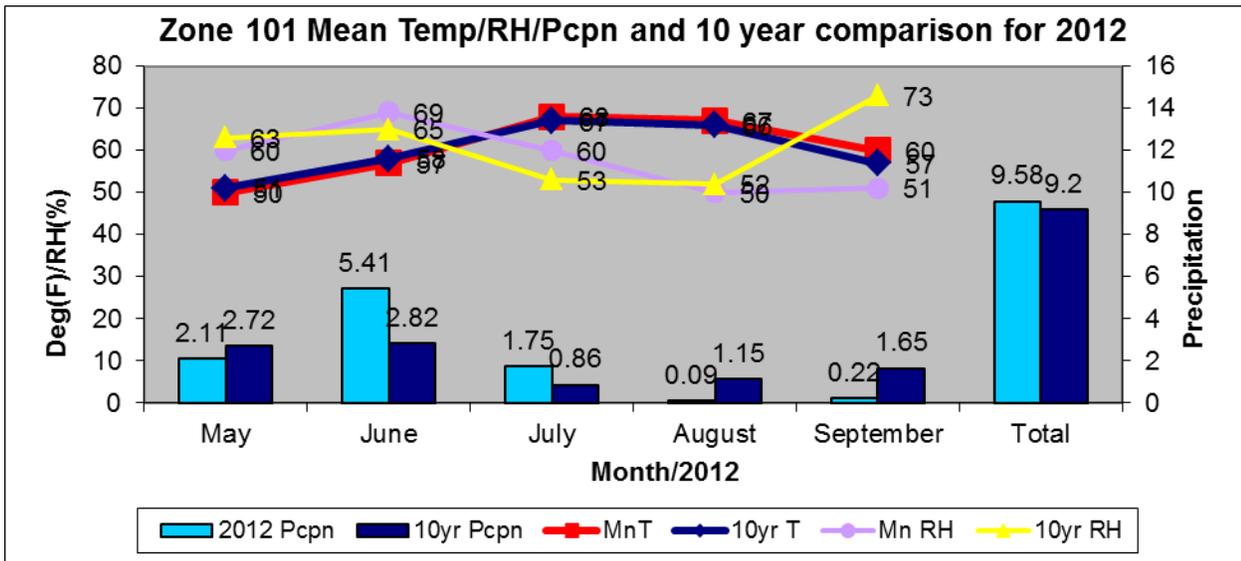
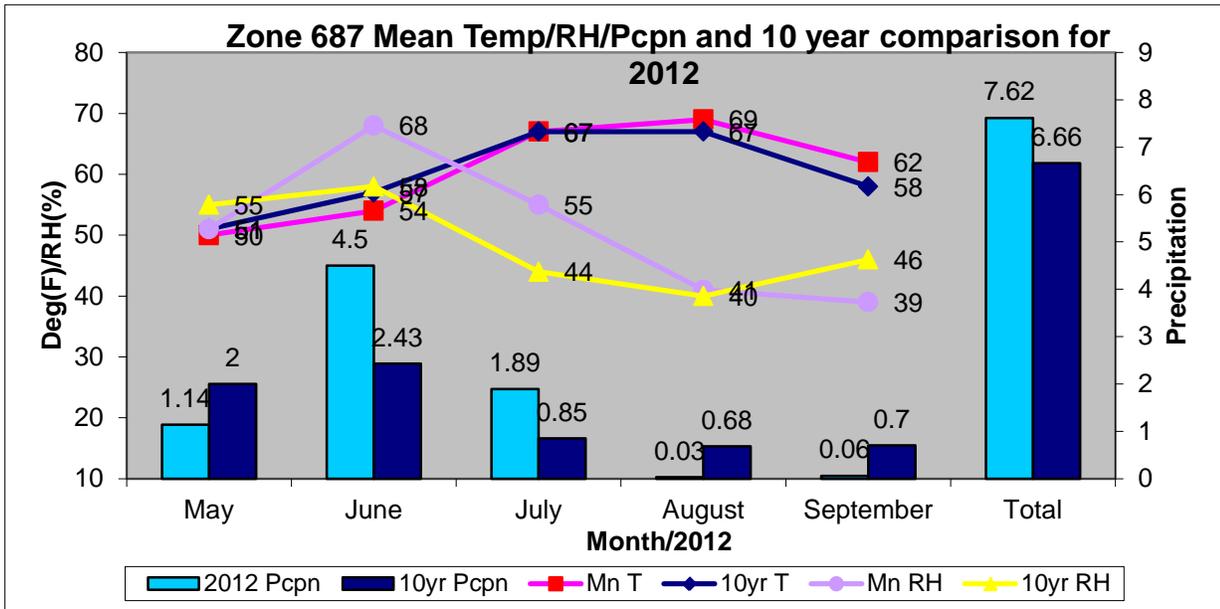
Temperatures across most of the U.S. were much warmer than normal for the year; the Pacific Northwest was slightly above normal (pale orange shading, top image). **Precipitation** amounts over Washington and Oregon were generally above normal (green shading), while precipitation was mainly drier than normal for most of the country (yellow, orange and brown shading, bottom image).











SPOKANE 2012 RED FLAG WARNINGS/WATCHES

Date	Zones	Reason	Verification	Lead Time (hours)
Jul 8-9	673,676, 677,684	Lightning	Yes 673, 676,677 Miss 684 Preceded by watch	18
Jul 13-14	673, 676, 677, 684	Lightning	Yes 676, 677 No 673, 684 Wet Not Preceded by a watch	24
Aug 3-4	673, 676 677	Lightning	No Preceded by a watch	24
Aug 5-7	680, 682, 684, 685, 686, 687, 101	Lightning	Yes 685 No for the rest No ltg Not Preceded by watch	24
Aug 8-9	673, 676, 677	Wind/Low RH/Haines	Yes 673, 677 No 676 Not Preceded by watch	8
Aug 10-11	676	Wind/Low RH/Haines	Yes Not Preceded by watch	1
Aug 13-14	676, 677	Wind/Low RH/Haines	Misses	0
Aug 15-16	673, 684, 686, 687	Lightning	Yes 673, 686, 687 Cancelled 684 Preceded by Watch	30
Aug 17-19	684, 685, 687	Lightning	Cancelled with no ltg	30
Aug 19	684,686,687,672,101	Lightning	Cancelled watch 684 The others were good Preceded by Watch	60
Aug 22	101	Lightning	Miss abundant ltg	0
Aug 23	673, 677	Wind/Low RH/Haines	Yes to both	48
Sep 7	673,676,677,686,684	Wind/Low RH/Haines	Yes to all Preceded by Watch	48
Sep 8	673,676,677,680,682 684,685,686,687	Lightning	Yes to all Not Preceded by Watch	10
Sep 9	101	Wind/Low RH/Haines	Yes Not preceded by Watch	36
Sep 10	685	Wind/Low RH/Haines	Yes Not preceded by Watch	10
Sep 15	676	Wind/Low RH/Haines	Yes Not preceded by Watch	12

Oct 1	All zones	Wind/Low RH/Haines	Yes to all Preceded by Watch	42
Total Warnings: 62		Dry Lightning: 33		Wind/low RH/Haines/Instability: 26
Correct Warnings: 44		Incorrect Warnings: 17		Missed Warnings: 4
Warnings Preceded with a Watch: 28				
Probability of Detection:	Dry Lightning .90	Wind/low RH/Haines 0.92	All 0.92	
False Alarm Rate:	Dry Lightning 0.42	Wind/low RH/Haines .12	All 0.27	
Critical Success Index:	Dry Lightning 0.54	Wind/low RH/Haines 0.82	All 0.68	

ALL WARNINGS

All RFW by Month	JUN	JUL	AUG	SEP	OCT	Season
Warnings	0	8	27	17	10	62
Warned Events	0	6	13	17	8	44
Unverified Warnings	0	2	13	0	2	17
Missed Events	0	0	4	0	0	4
Total Events	0	6	17	17	8	48
POD	0.00	1.00	0.76	1.00	1.00	0.92
FAR	0.00	0.25	0.48	0.00	0.20	0.27
CSI	0.00	0.75	0.43	1.00	0.80	0.68

WARNINGS FOR DRY LIGHTNING

RFW for Dry Lightning	673	676	677	680	682	684	685	686	687	101	All Zones
Warnings	5	4	4	2	2	5	3	2	4	2	33
Warned Events	3	3	3	1	1	2	2	1	2	1	19
Unverified Warnings	2	1	1	1	1	3	1	1	2	1	14
Missed Events	0	0	0	1	0	0	0	0	0	1	2
Total Events	3	3	3	2	1	2	2	1	2	2	21
Lead Time (hours)	19	17	17	4	7	11	17	10	21	6	14
POD	1.00	1.00	1.00	0.50	1.00	1.00	1.00	1.00	1.00	0.50	0.90
FAR	0.40	0.25	0.25	0.50	0.50	0.60	0.33	0.50	0.50	0.50	0.42
CSI	0.60	0.75	0.75	0.33	0.50	0.40	0.67	0.50	0.50	0.33	0.54

WARNINGS FOR LOW RH COMBINED WITH WIND OR HAINES OR INSTABILITY

RFW for Wind/RH	673	676	677	680	682	684	685	686	687	101	All Zones
Warnings	4	4	5	2	2	2	2	2	1	2	26
Warned Events	4	3	5	2	2	2	1	2	0	2	23
Unverified Warnings	0	1	0	0	0	0	1	0	1	0	3
Missed Events	0	1	1	0	0	0	0	0	0	0	2
Total Events	4	4	6	2	2	2	1	2	0	2	25
Lead Time (hours)	23	22	20	28	28	38	10	38	0	32	25
POD	1.00	0.75	0.83	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.93
FAR	0.00	0.25	0.00	0.00	0.00	0.00	0.50	0.00	1.00	0.00	0.12
CSI	1.00	0.60	0.83	1.00	1.00	1.00	0.50	1.00	0.00	1.00	0.82

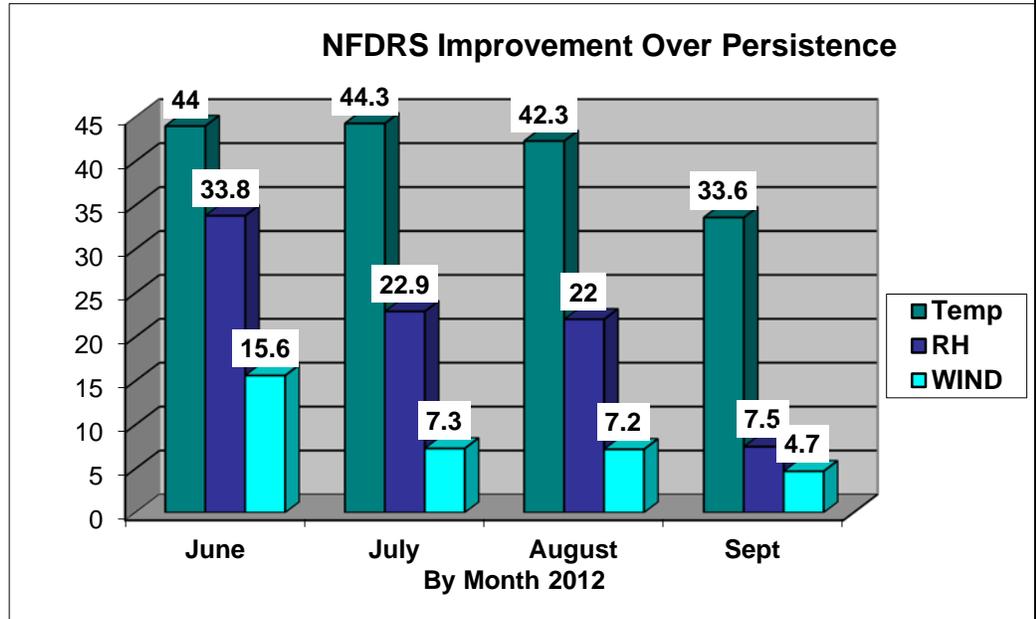
ALL WARNINGS BY ZONE

All Red Flag Warnings	673	676	677	680	682	684	685	686	687	101	All Zones
Warnings	9	8	9	4	4	7	5	4	5	4	59
Verified Warnings	7	6	8	3	3	4	3	3	2	3	42
Unverified Warnings	2	2	1	1	1	3	2	1	3	1	17
Missed Events	0	1	1	1	0	0	0	0	0	1	4
Total Events	7	7	9	4	3	4	3	3	2	4	46
Lead Time (hours)	21	20	19	16	21	24	15	28	21	19	20
POD	1.00	0.86	0.89	0.75	1.00	1.00	1.00	1.00	1.00	0.75	0.91
FAR	0.22	0.25	0.11	0.25	0.25	0.43	0.40	0.25	0.60	0.25	0.29
CSI	0.78	0.67	0.80	0.60	0.75	0.57	0.60	0.75	0.40	0.60	0.67

NFDRS VERIFICATION BY MONTH

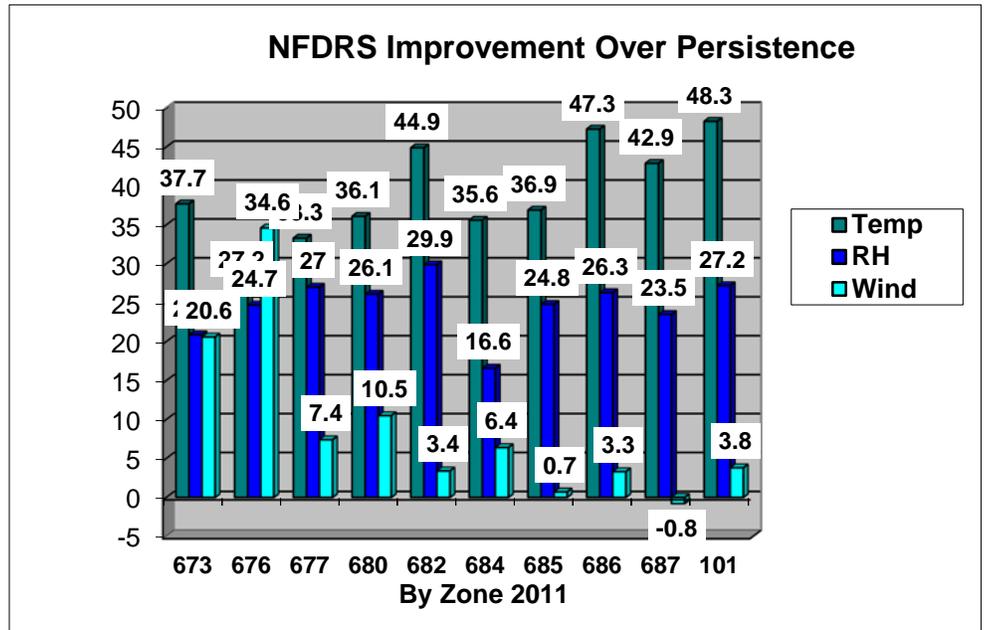
NFDRS forecast verification was accomplished by comparing the average forecast values derived from the 2 PM zone trend forecasts, with the 2 PM NFDRS Fire Weather Zone observation averages for the following day.

Temperature and Relative Humidity show very good improvement over persistence. Wind forecasts for 2012 show good improvement over persistence. Some things to note with wind forecasts: wind observations from the RAWS sites in the mountain zones show little day to day changes on the 1300 observations unless there is a significant wind event, also the 1300 wind speeds in mountain zones are generally light. In addition when there is a wind event, usually caused by a cold front, many of the key mountain RAWS observations show little if any change, and there were a few cold front passages where the winds did not increase until after the 1300 observations were already posted.



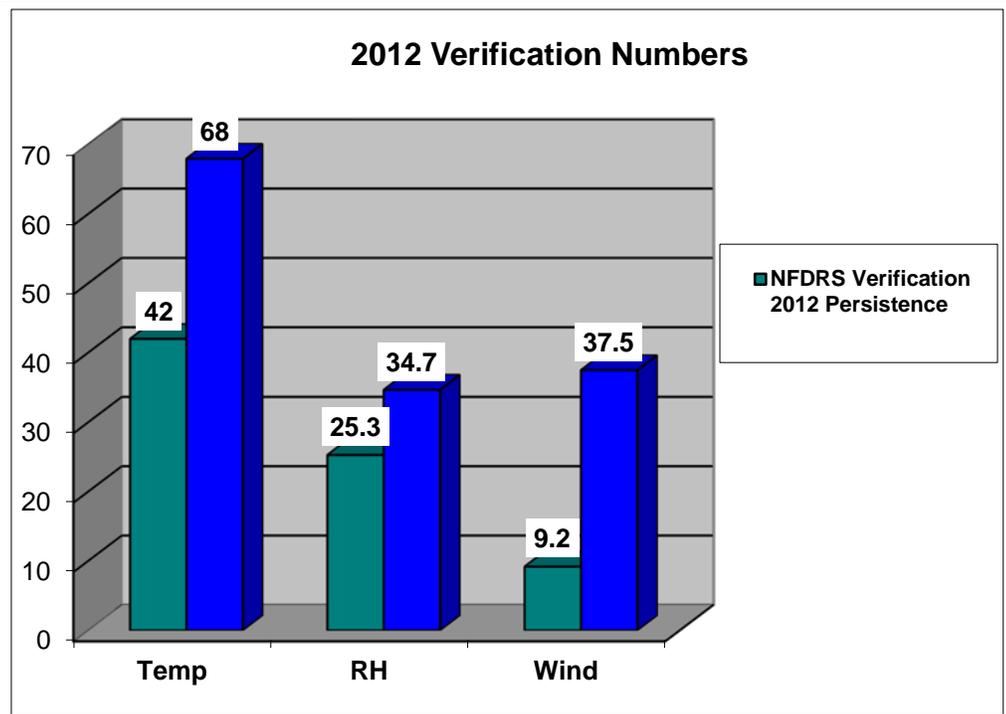
NFDRS VERIFICATION VS. PERSISTENCE

For all zones both temperatures and relative humidity forecasts show good improvement over persistence. Winds show improvement. Note winds in complex terrain are the hardest to show any improvement over persistence. Zone 685 and 687 are especially difficult for improvement as the Raws sites rarely blow much with frontal passages.



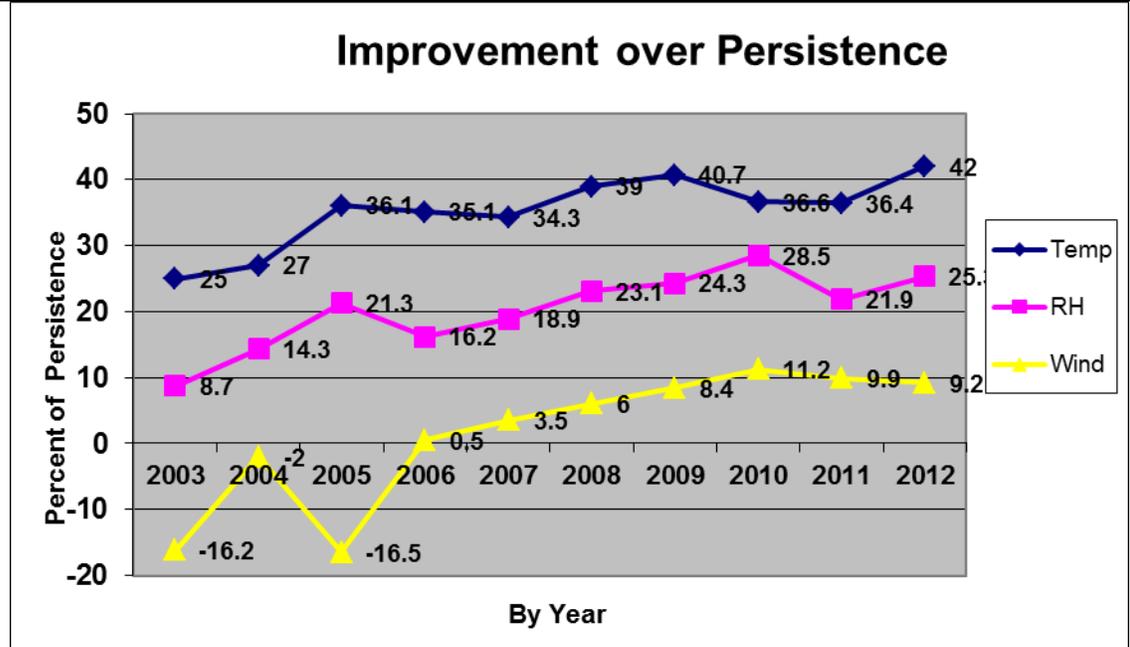
NFDRS VERIFICATION VS. PERSISTENCE AND IN BIG CHANGE EVENTS

This graphic shows the improvement over persistence from day to day compared to improvement when there are big changes. A big change equals a temperature change 10 degrees, relative humidity 5% and winds by 5 mph.



IMPROVEMENTS VS. PERSISTENCE OVER YEARS

While forecast improvement over persistence fluctuated from year to year note that the trend is generally upward for all parameters from 2006 through 2010, but has flattened for 2011 and 2012. This may show that these numbers are near the best we can do for forecasting improvement over persistence.



2012 Fire Season Fire Activity Summary

The total number of fires in 2012 was above the ten-year average. The total number of acres in 2012 was above the ten year average. Below is a list of all fires of large fires by agency.

Fire	Acres Burned	Start Date	Agency
Meteor	1,003	4/11	COA
Lake Lenice	230	6/3	PRI
Milepost 31	1,141	6/13	WFS
Navarre	800	7/5	WFS
Cashe Butte	470	7/10	SPD
Quilomene	100	7/13	SES
Foster Creek	1,291	7/13	SES
South Omak Lake	211	7/13	COA
Douglas County Complex	2,184	7/15	WFS
Crane Road	12,500	8/1	WFS
Antoine 2	6,837	8/5	SPD
Lost Monument	50	8/6	OWF
Mount Barney	40	8/8	OWF
Taylor Bridge	23,500	8/13	SES
Buffalo Lake Road	11,299	8/14	COA
Death Wind Canyon	823	8/19	SPD
Icy Creek	1,154	9/3	OWF
Little Park Creek	700	9/5	SES
Barker Canyon Complex	81,155	9/8	SPD
Yakima Complex	2,300	9/8	OWF
Table Mountain Complex	42,312	9/8	OWF
Manila Creek Complex	1,641	9/8	COA
Wenatchee Complex	56,478	9/8	OWF
Okanogan Complex	6,169	9/9	OWF
Apache Pass	23,324	9/9	WFS
Radio	191	9/9	COF
Goat	7,378	9/16	OWF
St Marys Mission Road	17,031	10/2	COA

Fire Data of Customer Agencies – 2012

Agency	Lightning Caused Fires	Acres Burned	Human Caused Fires	Acres Burned	Total Fires	Total Acres Burned
SE DNR	68	4,000	77	25,753	145	29,753
NE DNR	96	2,466	246	1,310	342	3,776
Colville BIA	37	13,160	59	18,201	96	31,361
Okanogan-Wenatchee NF	164	115,881	42	6,449	206	122,330
Colville NF	14	196	5	1	19	197
Idaho Panhandle USFS/IDL	83	183	63	105	146	329
FWS	3	191	8	1,381	11	1,572
BLM	22	26,136	25	23,185	47	49,321
Spokane BIA	0	0	7	47	7	47
Total	487	162,213	532	76,432	1,019	238,645

Fire Data by Year: 1970-2012

YEAR	TOTAL FIRES	LIGHTNING CAUSED FIRES	TOTAL ACRES BURNED
1970	1,303	488	215,037
1971	606	127	3,902
1972	747	253	2,111
1973	1,079	123	11,223
1974*	1,103	238	9,466
1975	953	337	4,807
1976	740	117	32,272
1977	983	591	16,342
1978	790	339	2,361
1979	1,263	446	17,090
1980	613	243	3,465
1981	930	482	16,894
1982	910	368	5,776
1983	595	176	2,453
1984	879	406	5,757
1985	1,112	355	71,488
1986	865	295	9,727
1987	1,057	348	18,214
1988	689	84	89,140
1989	1,088	399	14,259
1990	1,203	583	15,324
1991	1,080	430	47,928
1992	959	368	33,819
1993**	655	186	3,295
1994	1,433	648	260,245
1995	792	211	4,002
1996	739	205	35,375
1997	467	247	5,283
1998	969	439	50,943
1999	951	283	13,128
2000***	827	435	259,024
2001	953	507	182,468
2002	1,157	465	70,814
2003	1,027	416	147,130
2004	1,314	819	86,705
2005	807	217	34,023
2006	1,298	542	321,561
2007	940	284	88,598
2008	1,078	471	77,769
2009	1,382	872	29,862
2010	758	302	25,553
2011	552	107	13,137
2012	1,014	487	238,645

*Colville NF not included before 1974

**Spokane IA not included before 1993

***Added Northern Idaho District in 2000

FORECASTS 2012

Month	Routine Forecast		Spot Forecast				Red Flag Events		Zone Trend
	FW Fcsts	LM Fcsts	Wildfire	WFU	RX Fire	HAZ	FWX Watch	Red Flag Warning	NFDRS Fcsts
Jan	0	0	0	0	1	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	6	0	0	0	5	0	0	0	0
Apr	26	0	3	0	87	0	0	0	0
May	48	0	2	0	164	0	0	0	11
Jun	60	0	16	0	3	0	0	0	30
Jul	62	0	46	0	2	0	3	8	31
Aug	62	0	73	0	0	0	10	27	31
Sep	60	0	0	0	94	0	5	17	30
Oct	58	0	44	0	33	0	10	10	26
Nov	7	0	0	0	7	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0
Total	389	0	278	0	302	0	28	62	159
Avg Time			29.9	0.0	26.1	0.0			

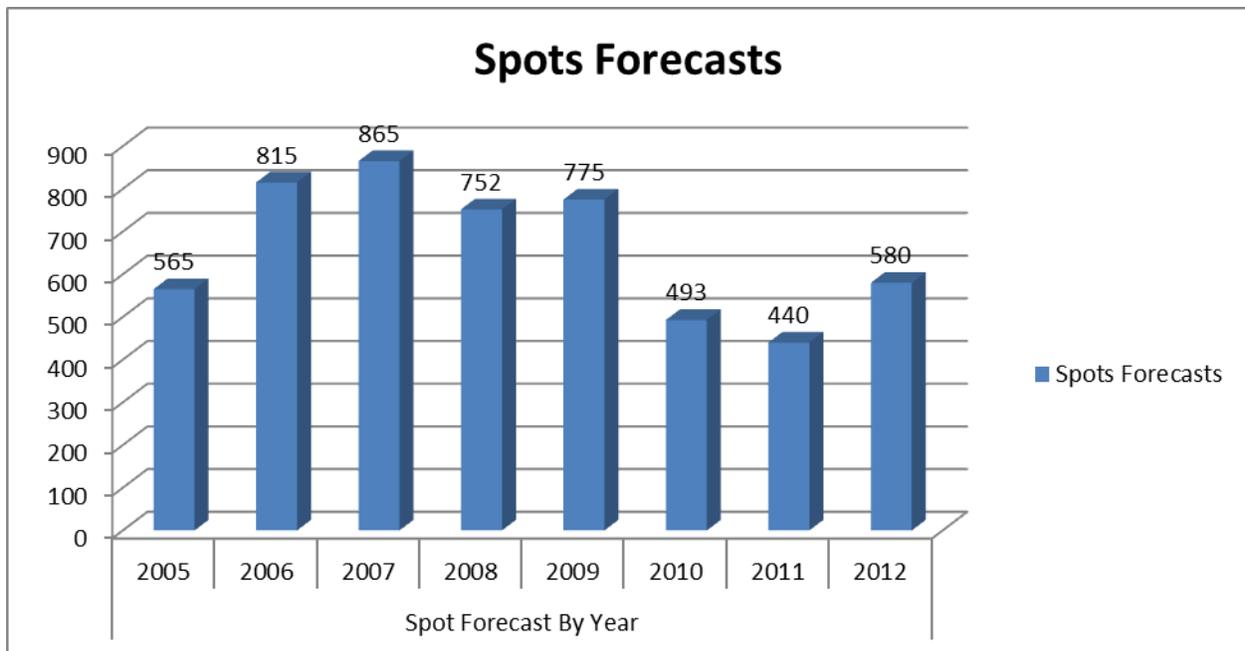
OPERATIONAL SUMMARY OF THE 2012 FIRE SEASON

Fire weather forecast support began March 25th with one forecast per day until May 21st. Full service fire weather forecast support began May 20th and continued until October 28th. Forecasts once per day were then issued through November 7th. With the introduction of numerous gridded forecasts available via our web site the winter land management forecasts were not needed through the winter.

This season, the WFO Spokane Fire Weather Program issued a total of 580 spot forecasts for management planned activities, wildfires, and wildfire use fires. This spot forecast total is 140 more than in 2011. This was the result of a very cool and wet spring and early summer of 2011.

The Internet spot forecast request system continues to offer land management agencies rapid response for their spot forecast requests with an average turnaround time of 28 minutes. The rapid response time has allowed for more spot forecasts to be processed. FARSITE data was also made available through our internet spot forecast site.

WFO Spokane again hosted a daily internet briefing through the peak fire season. This is an excellent opportunity for the weather forecasters to share their thoughts with the land managers and receive feedback of forecasts and fuel conditions.



IMET & Dates Dispatched	Incident Name and Location	Incident Team/FBAN
Jeremy Wolf 6/27-7/02/2012	Dahl Fire/Roundup MT	Poncin Type II Team
Todd Carter 7/12-28/2012	Chandral Creek Fire/Darby MT	Shawn Pearson Type II Team
Bob Tobin 8/10-26/2012	Trinity North Fire/Pine ID	Rich Harvey Type I Team
Shawn Weagle 8/15-25/2012	Taylor bridge Fire/Cle Elum WA	Reed Type II team
Jon Fox 9/2-17/2012	Halsteadt Fire/Salmon ID	Houseman Type I team Adell Type II team
Jeremy Wolf 9/11-26/2012 Chris Brenchly 9/25-10/05/2012	Wenatchee Complex/Wenatchee WA	Pendleton Type I Team Reinarz Type I Team
Phil Manuel 9/13-26/2012 Julia Ruthford 9/24-29/2012 Zack Finch(T) 9/19-29/2012	Okanogan Complex/Goat Fire near Chelan WA	Roos Williams Type II Team Dave Leitch Type II Team
Dan Byrd 9/16-29/2012 Julia Ruthford 9/29-10/06/2012	Table Mtn/Yakima Complex near Ellensburg WA	Morcom Type I Team

Training	Dates and Location	Instructor
Fire behavior Conference	1/17-20/2012 Vancouver WA	Wolf/Tobin
MT/ID Airshed	2/15/2012 Coeur D'Alene ID	Wolf
S-290	2/25-26/2012 Othello WA	Tobin
S-390	2/27-28/2012 Wenatchee WA	Tobin
S-290	2/28-29/2012 Tonasket WA	Tobin
S-390	3/15-17/2010 Coeur D'Alene	Tobin
IMET training	3-26-28/2012	Fox/Wolf/Tobin/Carter
Region 6 meeting	4/04-05/2012 Portland OR	Tobin
Interagency meeting	4/12/2012 Cusick WA	Tobin
WAIMT2 meeting	4/16-17/2012 Yakima WA	Tobin
S-290	4/19-20/2012 Colville WA	Tobin
S-290	5/05-06/2012 Wenatchee	Wolf
RT-130	4/11 and 5/07/2012 Spokane	Carter/Fox/Wolf/Tobin
S-190	5/09/2012 Airway Heights WA	Tobin
IC Meeting	5/20/2012 CDA ID	Tobin
Spring Command Meeting	6/05/2012 Spokane WA	Tobin
S-190	6/06/2012 Airway Heights WA	Tobin
S-290	6/11-12/2012 CDA ID	Wolf
S-290	7/09-10/2012 Spokane WA	Tobin