



12/30/2015

MEMORANDUM FOR: Scott Carpenter and Claudia Bell
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National Weather Service, Western Region

FROM: Andy Haner and Steve Reedy
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National Weather Service, Seattle, WA

SUBJECT: 2015 Annual Fire Weather Report

This report evaluates NWS Seattle's Fire Weather products and services in support of Western Washington land management agencies and public safety partners in the 2015 calendar year. This report addresses our forecast services, verification of Red Flag Warnings; verification of weather inputs into the National Fire Danger Rating System (NFDRS); Spot Forecast statistics; IMET dispatch information; and detailed information on fire weather training, liaison, and outreach activities.

Implementation of daily YouTube Fire Weather Briefings:

In 2015, NWS Seattle started producing daily Fire Weather YouTube briefing videos. This was intended as a western-Washington alternative to those unable to attend the daily 0900 Washington state phone call. It was also hoped that it would be useful to firefighters enroute to initial attack, in order to plug the weather gap between arrival on a new incident and the availability of a Spot Forecast.

Video production occurred most days from June 8 through October 2, and videos were released around 1000 each day. Initial feedback was overwhelmingly positive, mainly due to its focus on western Washington's fire weather concerns. During more critical fire weather, over a dozen views were common, with some of those "views" representing briefings for entire engine crews. During quiet periods at the beginning and end of the season, only 1 or 2 views were common.

In 2016, we will explore ways to make the briefings more concise, with the goal of shortening the briefings from this year's 4-7 minutes down to 2-4 minutes. We will also explore specific trigger points at which we start producing the videos, as opposed to set calendar dates. Lastly, we will explore ways to distribute the briefing earlier in the morning in order to broaden and expand the audience.

Weather Synopsis:

With mountain snowpack in western Washington well below normal for the opening half of 2015, it was no surprise that the 2015 fire season would get underway quickly. By mid-June, fuel dryness had achieved levels usually reserved for the driest time of season in August. Not helping matters was the fact that for some areas, June 2015 proved to be among the top 5 driest on record with recorded precipitation values ranging from 11 to 32 percent of normal and the warmest on record for much of western Washington. This, combined with May, proved to be the driest May-June period on record. The more-normally dry month of July continued this trend, with much of the area generally seeing less than 50 percent of normal rainfall values. While isolated occurrences of scattered lightning did occur in both June and July, strikes proved limited. The most notable of these being: the event of June 29th for Fire Wx Zone 662 (SEW's

only Fire Wx Zone east of the Cascades), where while no major fires were reported started in this zone, the adjacent zone saw the start of the long-running Wolverine Fire and the event of July 26th around the Puget Sound area (Fire Wx Zones 654, 656 and 657) which would ignite the Alder Lake Fire.

August saw western Washington round the corner when it comes to moisture. Unfortunately, that moisture also brought lightning with it. The time period of August 10th-14th would bring 3 lightning events through the area and started 7 fires within or very close to SEW's CWA. One of these, the Goodell Fire (which would eventually merge into the Upper Skagit Complex), would require an IMET dispatch. However, by August 14th, significant rainfall was occurring with these storms and thus proved to be a season-slaking event. The combination of above- to much-above average rainfall for western Washington for August (ranging from 113 percent of normal to 257 percent of normal!) and average to above average rainfall for September allowed for persistent moisture to make conditions very unfavorable for fire starts or prolonged fire activity. By mid-September, this combination of elevated RH values combined with fuel moistures on the rise would effectively end the 2015 fire season early.

2015 Fire Weather Watch / Red Flag Warning Verification:

A Red Flag Warning (RFW) is a weather warning with a special emphasis on firefighter safety. Once fuels become critically dry, Red Flag Warnings are issued when any one of three weather scenarios is expected within about 24 hours. The weather scenarios are: 1) a combination of Moderate Wind and Low Humidity, 2) an extremely Dry and Unstable Air Mass, and 3) Scattered Lightning with the potential to start multiple fires. Red Flag events are determined using lightning data, surface observations (mainly RAWS and ASOS sites), and upper air data. Impacts - such as growth on existing fires and new ignitions - are also considered.

2015 saw NWS Seattle's **2nd-worst Red Flag performance in the past 10 years**. In our worst year (2012), over-warning played the bigger role in poor performance (POD=0.52, FAR=0.62, CSI=0.28), with a False Alarm Rate (FAR) of 65%. In contrast, **under-warning** played an increased role in 2015 (POD=0.47, FAR=0.45, CSI=0.34), with a Probability of Detection (POD) of less than half. 2015 also featured a lot of lightning events, with which forecasters typically struggle more than larger-scale events (wind/RH, dry/unstable). There were six separate days with un-warned lightning; notable fire starts occurred on 4 of those days in or close to our area of responsibility. Lightning-related training will be provided to NWS Seattle forecasters in order to improve performance in 2016 and beyond.

Here is the individual breakdown of warnings and events...

June 27

An RFW issued for a dry and unstable air mass over all four mountain zones (Olympics and Cascades) plus Zone 662 (Stehekin area). Red Flag criteria were reached in the Olympic and Cascade zones, but not east of the crest. Watches were issued with excellent lead time; warnings issued with fair lead time. Warnings = 5, Verified = 4, Unverified = 1, Missed Events = 0, average lead time = 5 hours (Fire Weather Watch lead time = 46 hours)

June 28

RFW issued for lightning in 12 zones. Scattered lightning was observed in 3 zones from SW Wa up to the Central Puget Sound Region in the morning. The RFW in the coastal zone was cancelled at 450 AM but then re-issued at 821 AM. Lightning was not observed in the coastal zone, counting as two unverified warnings. Excellent lead time.

Warnings = 13, Verified = 3, Unverified = 10, Missed Events = 0, average lead time = 25 hours

June 29

Scattered lightning was observed in 4 zones from 3-7 AM, including the east Puget Sound Lowlands, the central Cascades, and Lake Chelan area. Unfortunately, the *previous day's RFW had expired* at 11 pm on 6/28, except in the Lake Chelan area. *New warnings were issued* at 430 am for the two Cascade zones with zero-lead time, but warnings were not issued for the 2 East Puget Sound Lowland zones. At

Lake Chelan, a warning had been in effect for 21 hours. This event started the **Wolverine Fire**, which was immediately adjacent to the Stehekin zone.
Warnings = 3, Verified = 2, Unverified = 1, Missed Events = 2, average lead time = 5 hours

July 5

RFW issued for a Fraser outflow-like wind/RH event. Wind and humidity criteria were exceeded in the Bellingham area, over the north Cascades, and over the northwest Olympic Peninsula. RFW for central Puget Sound did not verify. (This was the day that a big mass of smoke spread southwest from the B.C. Coast Range across the Olympic Peninsula.)
Warnings = 4, Verified = 3, Unverified = 1, Missed Events = 1, average lead time = 12 hours

July 7

Scattered lightning occurred in the Stehekin area with no RFW in effect.
Warnings = 0, Verified = N/A, Unverified = N/A, Missed Events = 1, average lead time = 0 hours

July 9

Scattered lightning occurred in the central Cascades (Zone 659) with no RFW in effect.
Warnings = 0, Verified = N/A, Unverified = N/A, Missed Events = 1, average lead time = 0 hours

July 11

Scattered lightning occurred east of I-5 in Skagit and Whatcom Counties. No warnings were in effect. However, significant rain occurred and moistened fuels substantially. Therefore, this was not counted as a Red Flag event.

July 26

Scattered lightning occurred in the central Puget Sound zone (654) and both East Puget Sound Lowland zones (656 and 657), with no RFW in effect. This event started the **Alder Lake Fire**.
Warnings = 0, Verified = N/A, Unverified = N/A, Missed Events = 3, average lead time = 0 hours

July 30

Red Flag Warnings were issued for all 4 zones encompassing the Olympics and Cascades for dry and unstable conditions. All 4 zones easily verified with good lead time. The Paradise Fire experienced some of its more active fire behavior.
Warnings = 4, Verified = 4, Unverified = 0, Missed Events = 0, average lead time = 20 hours

August 10

Scattered dry lightning occurred in both Cascade zones (658 and 659) during the evening, with no RFW in effect. Numerous fire starts occurred in and near North Cascades National Park, including the **Goodell Fire** near Newhalem. The **Cougar Creek Fire** (near Mt. Adams, just south of our central Cascade zone) also started from this event.
Warnings = 0, Verified = N/A, Unverified = N/A, Missed Events = 2, average lead time = 0 hours

August 12

Scattered lightning occurred over 8 fire weather zones during the morning and early afternoon, with no RFW in effect. Lightning impacted the eastern Olympics, the southwest interior, central Puget Sound lowlands, both East Lowland zones, both Cascade zones, and the Stehekin area. Numerous fire starts occurred; 11 spot forecast requests arrived on Aug. 13...six for new wildfires. New fire starts included the **Swan Creek Fire** in southeast Tacoma, the **Gold Pan Complex** in the eastern Olympics, the **Miller Fire** near Skykomish, and the **Bear Creek and Tatle Peak Fires** in the north Cascades.
Warnings = 0, Verified = N/A, Unverified = N/A, Missed Events = 8, average lead time = 0 hours

August 14

Hundreds of lightning strikes were observed across western Washington, with every zone receiving at least a single lightning strike. However, significant rainfall prompted local flooding, and this was ultimately a fire season-slowng event. Therefore, this is not counted as a Red Flag event. No RFWs were in effect for this event.

Other isolated lightning occurrences and events falling short of Red Flag criteria were headlined in Fire Weather Planning Forecasts.

Red Flag Warnings	- 29 Issued	
	- 16 Verified	
	- 13 Did Not Verify	
Red Flag Events with no warning in effect	- 18 Missed Events	
Average warning lead-time of Red Flag events	- 7.0 hours	
# Of Red Flag Warnings issued = a + c	= 29	
# Of Red Flag Warnings that verified = a	= 16	
# Of Red Flag Warnings that did not verify = c	= 13	
# Of Red Flag events with no warning issued = b	= 18	
Probability of Detection (POD) = $a/(a+b)$	= $16/(16+18)$	= 0.47
False Alarm Rate (FAR) = $1 - (a/(a+c))$	= $1 - (16/(16+13))$	= 0.45
Critical Success Index (CSI) = $a/(a+b+c)$	= $16/(16+18+13)$	= 0.34

2015 NFDRS Weather Forecast Verification:

NWS Seattle plays a key role in the National Fire Danger Rating System (NFDRS) by providing forecast weather for use in producing forecast fire danger indices for the next day. Therefore, forecast accuracy has a direct impact on the accuracy of forecast fire danger indices. NWS weather inputs are verified by computing the percent improvement of the NWS forecast over a persistence forecast; a persistence forecast simply assumes that tomorrow's weather will be the exact same as today's weather.

The skill of NWS Seattle's **temperature and relative humidity** forecasts showed little change from 2014 and was close to the 10-year average of skill.

However, the *average* of **wind speed** forecasts tied for being the worst on record going back to 1984, and this was the first time since 2003 that there was degradation of the average versus a persistence forecast of wind speed.

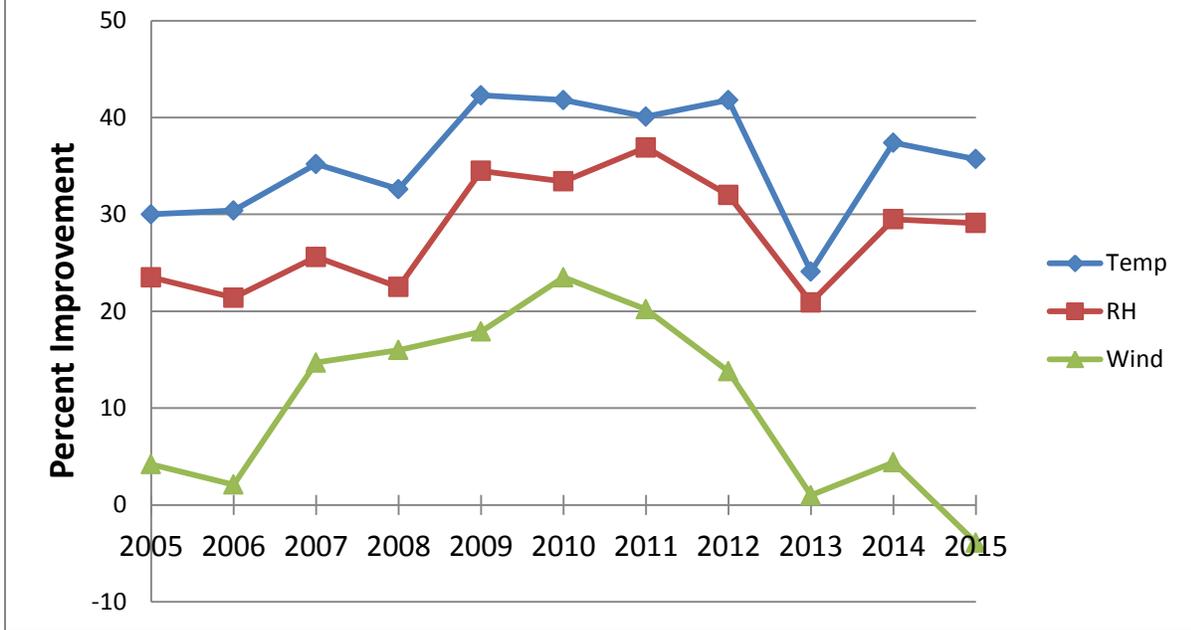
The poor wind speed forecasting is mostly due to the drag by a single poorly performing station on the average, that station being Ohanapecosh. Our forecast wind speeds at Ohanapecosh suffered so greatly for two reasons: 1) the wind sensor was out of service for much of the previous 2014 season, allowing no basis upon which to calibrate the 2015 forecasts; 2) the observed wind speeds in 2015 were only 30-45% of the magnitude observed in 2013, meaning our 2-year old forecast calibration for this site was no longer valid. Wind speed forecasts in 2016 will reflect the new lower-speed climatology for this site, which will significantly improve the average showing for all 41 stations in this analysis. *If this one station were removed from the 2015 verification, the average wind speed forecast of the remaining 40 stations would have improved significantly over 2013 and 2014, while the median value would have been similar to 2014.*

Temperature: Forecasts showed an average 35.7% improvement over persistence. This is 0.1% better than the 2005-2014 average.

Relative Humidity: Forecasts showed an average 28.0% improvement over persistence. This is 1.1% better than the 2005-2014 average.

Wind Speed: Forecasts showed an average 3.9% degradation versus a persistence forecast. This is 15.7% worse than the 2005-2014 average. However, the median showed 9.9% improvement, which is only 1.9% worse than 2014.

NFDRS Verification, 2005-2015 Percent Improvement over Persistence



Annual NFDRS Weather Forecast Verification											
Year	Temperature			Relative Humidity			Wind Speed				
	MAE(f)	MAE(p)	%IMPV	MAE(f)	MAE(p)	%IMPV	MAE(f)	MAE(p)	%IMPV		
1984	3.7	5.2	28.8	8.8	11.1	20.7	1.8	1.9	5.2		
1985	3.2	4.8	33.3	8.6	11.2	23.2	1.7	2.0	15.0		
1986	3.6	4.7	23.4	9.0	10.9	17.4	1.6	1.8	11.1		
1987	3.4	5.4	37.2	8.0	10.8	25.9	1.5	1.7	8.7		
1988	3.2	5.6	42.8	8.2	11.1	26.1	1.7	1.7	11.7		
1989	3.2	4.8	33.5	8.5	10.6	19.6	1.5	1.7	12.5		
1990	3.3	5.4	37.9	8.5	11.5	25.5	1.4	1.5	4.0		
1991	3.3	5.7	52.8	8.2	11.5	28.7	1.6	1.9	15.8		
1992	3.2	5.1	38.1	9.0	11.8	23.9	1.5	1.6	3.1		
1995	3.3	4.9	32.6	8.8	11.3	22.1	1.7	1.9	10.5		
1996	3.0	5.4	44.4	7.8	11.0	29.1	1.8	2.0	10.0		
1998	3.4	5.5	38.2	8.1	11.6	30.2	1.6	1.6	0.7		
1999	3.8	6.1	37.3	9.0	12.9	30.3	1.5	1.5	0.7		
2000	3.6	5.2	30.7	8.6	11.7	26.5	1.6	1.6	0.0		
2001	3.5	4.4	21.6	8.1	10.0	18.7	1.6	1.8	6.3		
2002	3.4	4.9	30.6	8.0	10.7	24.8	1.7	1.9	10.8		
2003	4.1	5.5	25.0	9.2	11.3	16.7	1.9	1.9	-3.9		
2004	3.8	4.9	22.4	9.2	11.5	19.6	1.6	1.8	5.0		
2005	3.8	5.4	30.0	9.5	12.6	23.5	1.5	1.6	4.2		
2006	3.9	5.6	30.4	8.7	11.2	21.4	1.5	1.6	2.1		
2007	3.6	5.5	35.2	9.0	12.5	25.6	1.4	1.6	14.7		
2008	3.6	5.5	32.6	9.1	12.0	22.5	1.7	2.1	16.0		
2009	3.4	6.0	42.3	8.4	13.0	34.5	1.4	1.8	17.9		
2010	3.1	5.4	41.6	7.9	12.0	33.2	1.5	2.0	23.3		
2011	3.1	5.1	39.7	7.6	12.2	36.8	1.5	2.0	20.9		
2012	3.2	5.5	41.8	7.8	11.6	32.0	1.2	1.5	13.8		
2013	4.0	5.4	23.9	9.6	12.5	21.0	1.8	1.8	1.0		
2014	3.7	5.1	37.4	9.2	13.3	29.5	1.6	1.8	4.4		
2015	<u>3.7</u>	<u>6.0</u>	<u>35.7</u>	<u>9.2</u>	<u>13.2</u>	<u>29.1</u>	<u>1.6</u>	<u>1.8</u>	<u>-3.9</u>		

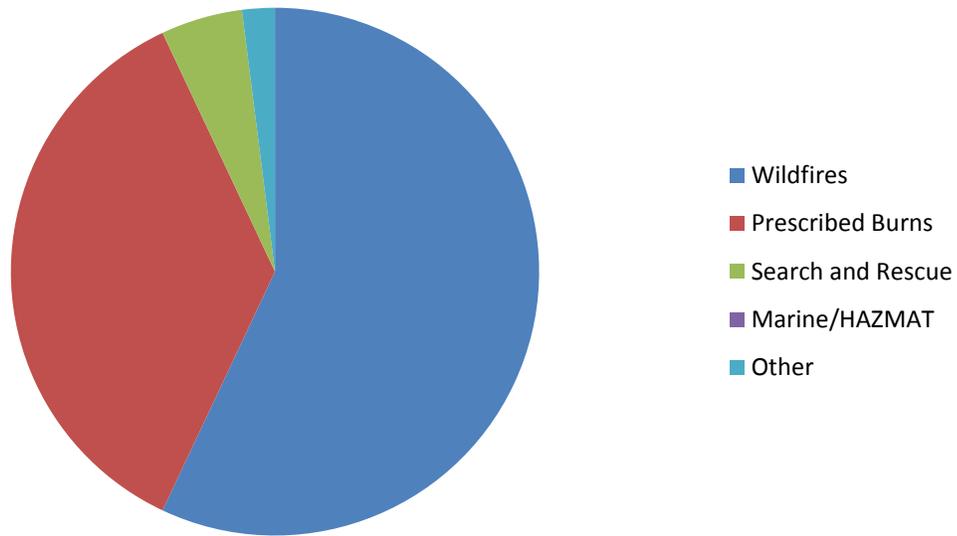
Fire Wx Zone	Station	Mean Absolute Error of Weather Inputs						MAE (Persistence)			% Impv. Over Persistence		
		T	Fcst Bias	RH	Fcst Bias	WS	Fcst Bias	T	RH	WS	T	RH	WS
649	Quillayute (UIL)	3.2	-0.2	8.8	-2.2	2.3	1.2	4.6	13.4	2.8	31	35	15
649	Hoquiam (HQM)	2.6	1.5	6.8	-2.1	2.5	-1.1	3.6	11.3	2.8	27	39	10
650	Forks	3.2	-0.7	7.6	-1.2	1.2	-0.1	5.8	13.7	1.4	45	44	12
650	Ellis Mtn	4.9	1.0	13.3	-7.4	2.6	-0.1	6.5	15.5	3.8	24	14	32
650	Black Knob	3.9	1.8	8.3	-4.2	1.9	-1.8	6.6	14.0	1.3	40	41	-45
651	Minot Peak	3.0	1.0	9.2	-2.3	2.0	0.5	5.6	14.7	1.8	46	37	-10
652	Toms Creek	3.1	1.2	10.0	-5.5	2.1	-0.8	5.7	15.0	1.9	46	33	-5
652	Owl Mtn	3.6	1.0	11.4	-8.3	1.7	-0.4	6.6	15.3	2.0	46	25	16
652	Humtullips	4.0	2.1	10.2	-7.5	2.3	-1.9	5.9	13.6	2.0	32	25	-18
653	Whidbey (NUW)	3.1	0.8	8.5	-3.2	2.2	-1.2	3.8	10.3	3.2	18	18	32
653	Bellingham (BLI)	2.9	0.3	6.5	-1.4	2.0	-0.1	4.1	11.2	2.9	31	42	30
653	Everett (PAE)	2.6	1.2	6.9	-2.4	2.5	-1.0	4.6	10.7	3.4	44	36	27
654	Quilcene	3.5	-0.2	8.9	-3.4	1.2	-0.1	6.5	14.7	1.4	46	40	13
654	Bremerton (PWT)	2.9	0.1	6.9	-2.9	2.2	-1.1	5.0	12.0	3.5	43	42	36
654	Seattle (SEA)	2.7	0.5	6.1	-1.5	1.9	-0.4	4.3	9.0	2.7	37	32	31
654	Tacoma (TCM)	3.0	1.1	6.5	-2.2	2.1	-0.6	4.2	10.0	3.5	29	35	39
655	Olympia (OLM)	2.6	0.4	6.9	0.7	2.1	-0.6	4.5	10.4	3.2	42	33	35
655	Chehalis RAWS	3.3	-0.8	7.8	2.5	1.6	0.1	5.3	11.0	1.7	38	28	6
656	Marblemount	4.3	-0.3	9.3	-4.7	1.5	-0.2	6.9	14.2	1.3	38	35	-14
656	Sedro Woolley	3.3	0.2	7.5	-3.1	1.4	-0.8	5.2	11.3	1.7	35	33	16
657	Enumclaw	3.1	0.2	8.3	-6.1	1.3	-0.4	4.9	10.3	1.4	37	20	5
657	Ashford	3.1	-0.7	7.7	-0.1	0.7	0.0	5.5	11.7	1.0	42	34	25
658	Kidney Creek	M	M	M	M	0.7	-0.2	M	M	0.8	M	M	10
658	Hozomeen	4.4	0.7	10.7	-5.9	0.7	0.4	6.8	13.3	0.7	34	19	-14
658	Sumas Mtn	3.5	1.0	11.9	-8.5	1.4	-0.6	5.8	13.6	1.7	39	13	18
658	Finney Creek	3.7	1.4	11.8	-9.8	1.4	-0.8	6.6	13.2	1.3	44	10	-3
658	Johnson Ridge	4.8	-1.4	9.8	-2.7	1.7	-1.0	6.6	13.0	1.7	28	25	0
658	Gold Hill	3.2	1.5	9.8	-6.8	1.2	-0.1	6.0	13.1	1.0	47	25	-25
659	Kosmos	4.1	-1.0	8.9	-2.6	0.8	-0.6	6.4	13.3	0.7	35	33	-14
659	Hager Creek	4.2	0.1	10.8	-2.9	0.5	0.1	6.9	18.1	0.6	39	40	15
659	Ohanapecosch	7.7	-5.5	12.0	-0.3	1.7	1.7	6.9	13.9	0.3	-11	13	-416
659	Lester	3.4	0.6	8.3	-3.2	1.2	0.0	6.0	12.2	1.1	43	32	-9
659	Stampede Pass (SMP)	2.3	2.3	11.3	-6.7	1.0	-0.3	16.5	41.0	1.5	M	M	M
659	Greenwater	5.5	-2.4	9.6	-0.1	0.9	-0.7	7.3	12.5	0.9	25	23	-3
659	Fire Training Academ	3.7	2.5	10.4	-7.3	0.9	0.0	5.2	11.4	1.1	29	9	21
659	Orr Creek	5.0	-0.4	10.8	-2.3	0.5	0.1	8.0	15.3	0.6	37	30	17
661	Cougar Mtn	3.3	1.4	9.9	-5.8	1.2	0.1	5.5	14.2	1.2	40	30	-7
661	Hurricane RAWS	3.8	1.5	11.9	-7.0	2.6	-2.0	5.0	12.2	3.0	24	2	13
661	Buck Knoll	3.6	0.0	9.8	-5.7	1.3	-0.3	5.8	14.7	0.9	39	33	-45
661	Jefferson	3.1	-0.1	9.4	-4.5	1.8	-1.2	6.4	15.6	1.8	51	39	-1
662	Stehekin	5.0	1.5	7.1	-0.7	2.1	-0.7	7.1	10.9	2.2	29	34	3
Averages		3.7		9.2		1.6		6.0	13.6	1.8	35.7	29.1	-3.9
Medians		3.4		9.2		1.6		5.8	13.2	1.7	37.5	33.0	9.9

2015 Spot Forecasts:

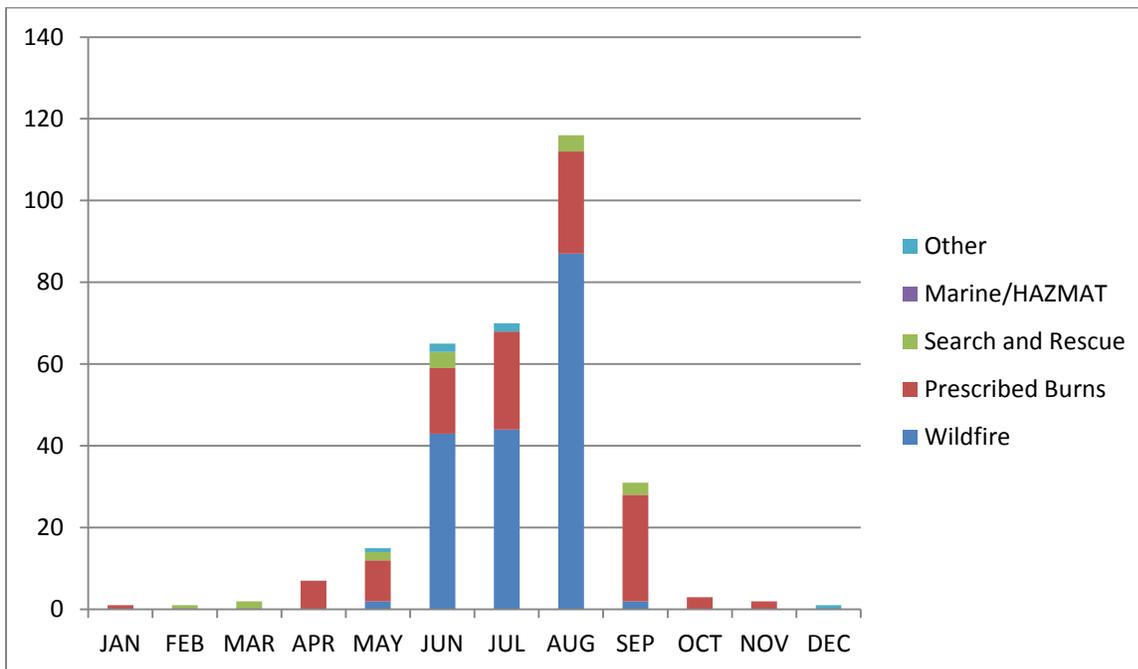
NWS Seattle issued **314 Spot Forecasts in 2015**. This shatters the old record of **210**, set just last year in 2014. Spot Forecasts were in support of wildland fires, prescribed burns, Search and Rescue missions, Marine/HAZMAT operations or other local events, such as the hosting of the 2015 US Open professional golf tournament. Wildfire and prescribed burn spot requests increased significantly, with the time frame from August 2nd through August 22nd being of particular interest...wherein 69 wildfire and 21 prescribed burn spot requests were fulfilled. Search and Rescue and Marine/HAZMAT requests both went down this year, while Other spot requests went up, not only from the aforementioned US Open, but also due to heightened awareness of the dry conditions surrounding the 4th of July holiday and the festivities associated with the holiday.

<u>Purpose</u>	<u># of Spots</u>
Wildfire	178
Prescribed Burns	114
Search and Rescue	16
Marine/HAZMAT	0
Other	6

2015 Spot Forecasts by Purpose



Breakdown of 2015 Spots Forecasts by Month



2015 IMET Dispatches

In 2015, NWS Seattle Incident Meteorologists (IMETs) supported **4 incidents** totaling **42 full days** of on-site weather support, plus partial days and travel. They were:

<u>Dates</u>	<u>IMET</u>	<u>Location</u>	<u>Incident</u>
7/6 – 7/21	Haner	Loomis, WA	Newby Lake Fire
8/1 – 8/2	Haner	Hayfork, CA	Fork Complex
8/3 – 8/17	Haner	Hyampom, CA	South Complex
8/22 – 9/5	Haner	Troy, OR	Grizzly Bear Complex

Training and Liaison Activities in 2015:

NWS Seattle committed 51 staff-days in 2015 either participating in, or directly supporting, fire weather training, liaison, or outreach events. A combined total of 4,875 people attended these events. The table below lists the activities.

<u>Date</u>	<u>Forecaster</u>	<u>Location</u>	<u>Activity</u>
3/19 – 3/20	Haner, Reedy	Portland, OR	Pre-Season Coordination Meeting, NWCC (18 Attendees)
3/23 – 3/26	Haner, Reedy	Live online	Virtual IMET Workshop
4/6 – 4/11	Haner, Reedy	Boise, ID	IMET Continuity of Excellence Exercise, Haner on Training Cadre (~45 Attendees)
4/13	Reedy	North Bend, WA	Fire Safety Refresher (21 Attendees)
4/17	Haner	Sedro-Woolley, WA	Fire Safety Refresher (20 Attendees)
4/25	Haner	Anacortes, WA	Fire Safety Refresher for Structure Crews (20 Attendees)
5/6	Haner, Reedy	Sedro-Woolley, WA	Fire Safety Refresher for Baker River Hotshots (20 Attendees)
5/13	Haner, Reedy, Johnson, Buehner	NWS Seattle, WA	Annual Fire Weather Users' Meeting, held online (30 Attendees)
5/18	Reedy	North Bend, WA	Fire Safety Refresher (17 Attendees)
5/19	Haner	Ashford, WA	STEM Career Fair at Columbia Crest STEM School (250 Attendees)
5/20	Reedy	Darrington, WA	Fire Safety Refresher (15 Attendees)
5/21	Reedy	Sequim, WA	Wildfire and Drought Preparation Seminar/Seasonal Outlook (100 Attendees)

5/28	Haner	Randle, WA	Fire Safety Refresher (30 Attendees)
6/3	Haner, Buehner	Seattle, WA	Mariners' Weather Education Day (4000 Attendees)
6/5	Haner	Port Angeles, WA	Fire Safety Refresher (30 Attendees)
6/10	Haner	Edgewood, WA	Seasonal Outlook (30 attendees)
6/17	Reedy	Renton, WA	Seasonal Outlook, IMET/Spot Forecast Primer (30 Attendees)
6/18	Haner	Marblemount, WA	Fire Safety Refresher (25 Attendees)
6/20	Reedy	Mt. Erie, WA	S-190 Course Instruction (40 Attendees)
6/22	Reedy	North Bend, WA	Fire Safety Refresher (36 Attendees)
6/23	Haner, Reedy	Rainier, WA	S-290 Course Instruction (80 Attendees)
6/24	Haner	Sedro Woolley, WA	Fire Safety Refresher (25 Attendees)
7/1	Reedy, Buehner	Seattle, WA	Fire Weather Media Tour (23 Media members contacted)