

PORTLAND FIRE WEATHER – 2012 ANNUAL REPORT

CRITICAL FIRE WEATHER EVENTS

Critical Fire Weather conditions are those that **COULD** result in extreme fire behavior, or, in the case of problem or dry lightning, an abnormally high number of ignitions. One must be careful when assessing problem lightning. There are times when lightning activity does not meet Red Flag criteria (at least LAL 3 coverage), but does result in a high incidence of project fires.

The overall severity of any fire season is highly correlated with the extent and frequency of critical fire weather patterns during the season. It is not unusual to have an extended dry period during any given fire season. This in itself could result in an elevated degree of fire activity, provided the fuel conditions are right. However, to elevate a high fire danger situation to a critical or extreme level normally requires an additional weather element, or trigger, to be superimposed on the dryness. This additional trigger could be problem or dry lightning, an extremely unstable air mass, or a combination of strong wind and low humidity. Red Flag Warnings are issued when a combination of critical weather exists **WITH** sufficiently dry fuels and severe burning conditions. The Red Flag criteria for the Portland Fire Weather district are listed below:

CRITERIA FOR STRONG WIND AND LOW HUMIDITY (NIGHT)

ZONES 601 AND 602: Two stations must report 35% humidity or less **AND** 10-minute wind speed of 10 mph or more for 3 hours in an 8-hour block.

ZONES 603 AND 612: Rockhouse1 RAWs must report 35% humidity or less **AND** 10-minute wind speed of 15 mph or more for 4 hours in an 8-hour block **AND** one other RAWs must report 35% or less humidity **AND** 10-minute wind speed of 10 mph or more for 2 hours.

ZONE 604: Two stations (airports) must report 30% humidity or less **AND** 2-minute wind speed of 15 mph or more for at least 4 hours in an 8-hour block.

ZONES 605, 607, AND 660: One station must report 35% humidity or less **AND** 10-minute wind speed of 10 mph or more for 4 hours in an 8-hour block **AND** at least **TWO** other stations must report 35% or less humidity **AND** 10-minute wind speed of 10 mph or more for at least 2 hours.

ZONES 606 AND 608: One station must report 30% humidity or less **AND** 10-minute wind speed of 10 mph or more for at least 4 hours in an 8-hour block **AND** one other station must report the same for at least 1 hour.

CRITERIA FOR STRONG WIND AND LOW HUMIDITY (DAY)

At least 2 stations within a zone must report 25% humidity or less **AND** wind speed of 10 mph or more (except 15 mph in zone 604) for at least 4 hours in an 8-hour block.

CRITERIA FOR DRY AND UNSTABLE AIR MASS (HAINES 6)

At least **ONE** station within a zone must report 25% humidity or less **AND** show a high-level Haines value of 6 **AND** fuel conditions (Dryness Levels) are in the “BROWN”. At forecaster discretion, can also be issued when Dryness Levels are “YELLOW”.

PROBLEM LIGHTNING

Dryness Levels **MUST** be in the “BROWN” and expected lightning frequency is such that multiple starts (about 5-7) are expected. Typically scattered or LAL 3 coverage. At forecaster discretion, can also be issued when Dryness Levels are “YELLOW”.

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There were five critical fire weather events during the 2012 fire season. There was one missed event. This was a lightning event in zone 660 that started the evening of September 8th and carried over to the early-morning hours of the 9th.

1. AUGUST 14-16, 2012 DRY AND UNSTABLE AIR MASS AND CRITICAL FUELS

The 2012 fire season was relatively quiet through July, with fuel conditions about 1 to 2 weeks behind seasonal normals. Persistent upper level ridging with less onshore low-level flow started in early August and continued through early October. Mid and high-level Haines 6 conditions developed on the 15th and 16th as a surface thermal trough moved across the forecast area. The thermal trough was centered over the North and Central Willamette Valley and the North Oregon Cascades the morning of the 16th, and then migrated across the Cascades later in the day.

WARNING CHRONOLOGY

- **Watch issued 0854 PDT on August 14th**
 - **Zones 602, 603, 604, 605, 606, 607, 608, 660**
 - **Valid from the morning of Aug. 15 through evening of the 17th.**
- **Upgraded to a Warning 1616 PDT on August 14th**
 - **Zones 603, 604, 606, 608 valid 1300 Aug. 15th through 2100 Aug. 17th**
 - **Zones 602, WA604, 605, 607, 660 valid 1300 Aug 16th through 2100 Aug. 17th**
- **Update 1417 PDT August 17th**
 - **End warning for WA604, 602, 603**
 - **Continue for 605, 607, 660**

EVENT SUMMARY

Figure 12 (next page) shows the surface pattern at 0500 PDT on August 15th. Note the developing thermal trough over Southwest Oregon and spreading into the North and Central Oregon Coast Range and Willamette Valley (1012 mb surface contour). By 1700 PDT the thermal trough was located along a line from near Burns, OR to Astoria, OR. The lowest surface pressure was over Portland, OR. The 1700 PDT Medford upper air sounding registered a mid-level Haines 6. Extreme fire behavior was noted in all Divisions of the Buckhead Complex, in the Willamette NF.

At 0500 PDT on the 16th, the surface thermal trough had divided into three pieces (see figure 13 next page). The first segment was situated, as usual, over Northern California. The second part was over the Central and North Willamette Valley and into the adjacent Cascade foothills. The third piece was in the Columbia Gorge and Basin. At 1700 PDT on the 16th the Willamette Valley portion of the surface thermal trough had drifted to the Cascades. The 1700 PDT Salem upper air sounding came in with a mid-level Haines 6. The 0500 PDT sounding on the 17th also registered a mid-level Haines 6. ERC values for the Cascades were at or above the 90th percentile.

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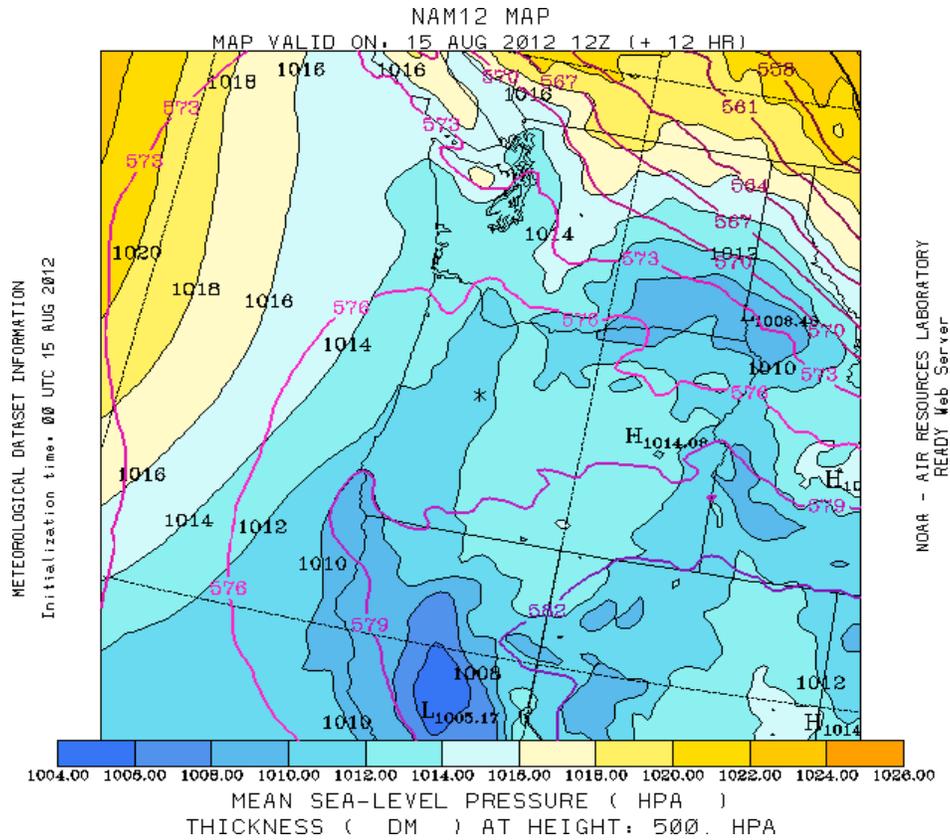


Figure 12 – Surface pattern 0500 PDT August 15, 2012

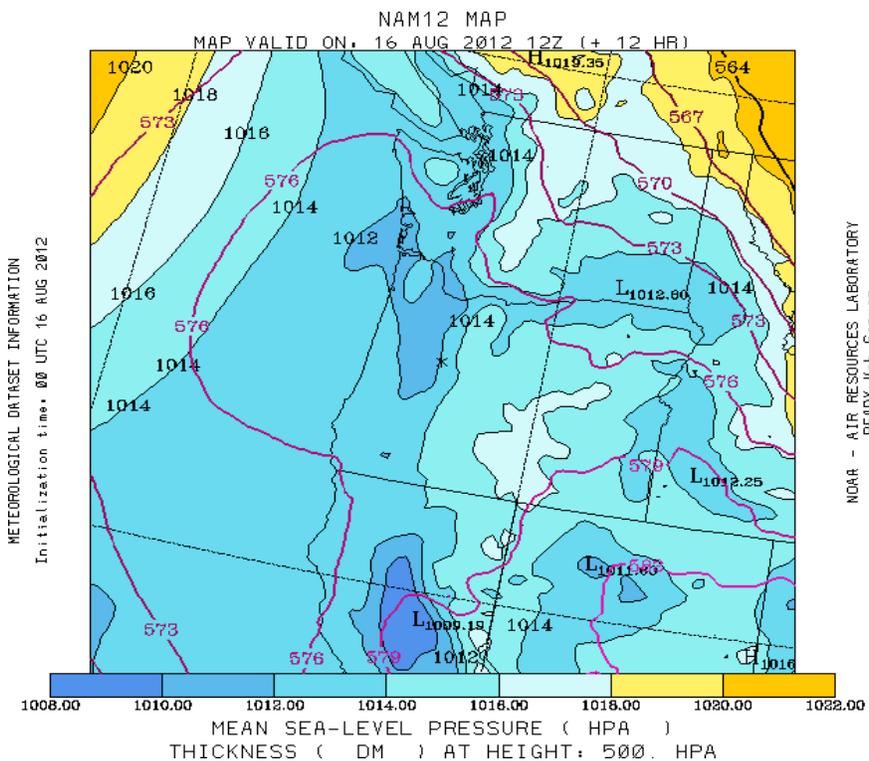


Figure 13 – Surface pattern 0500 PDT August 16, 2012

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VERIFICATION

- **Mid-Level Haines 6 on 1700 PDT Medford Sounding Aug. 15.**
- **Extreme Fire Behavior observed on Buckhead Complex (zone 608).**
- **Mid-Level Haines 6 on 1700 PDT Salem Sounding Aug. 16.**
- **Mid-Level Haines 6 on 0500 PDT Salem Sounding Aug. 17.**
- **Thermal trough passage to the Cascade Crest on Aug. 16.**

Dry and unstable events are extremely difficult to verify. The Salem and Medford upper air soundings are the primary verification sources. However, there are only two soundings per day, which makes it a challenge to determine an event start time. Model soundings are used to provide additional support, but these are not absolute. The other primary verification source is surface analyses. These are used to track the evolution and movement of surface thermal troughs. The event start time was estimated to be 1700 PDT on the 16th.

2. AUGUST 17, 2012 PROBLEMATIC LIGHTNING AND CRITICALLY DRY FUELS

This event evolved from the Dry and Unstable event that occurred from the 14th through 16th. The demise of the upper ridge resulted in a lightning episode on the 18th. Lightning data from the Northwest Coordination Center (NWCC) indicated 15 strikes in zone 606 and 60 strikes in zone 608 for the 24-hour period ending at 0800 PDT on the 18th. The first strikes were noted around 0300 PDT. The lightning in the Central Oregon Cascades and foothills ended shortly before sunrise.

WARNING CHRONOLOGY

- **Warning issued 1417 PDT August 17th**
 - **Zones 605, 607, 660 valid 0700 Aug. 18 through 2300 Aug. 18.**
- **Warning issued 1417 PDT August 17th**
 - **Zones 606, 608 valid 0700 Aug. 18 through 2300 Aug. 18.**
- **Update 2248 PDT August 18th to end the event.**

VERIFICATION

- **Lightning detected zones 606 and 608 (NWCC and BLM data).**
- **Lightning detected zones 604, 605, 607, 660 around 0200 PDT Aug. 19.**
 - **Counted as a miss since lightning occurred AFTER event ended.**
- **Critical fuels: Buck Creek (660) ERC of 64 on Aug. 18.**
- **Critical fuels: Wanderer's Peak (607) ERC of 53 on Aug. 18.**

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3. SEPTEMBER 12-14, 2012 WIND/LOW HUMIDITY AND HAINES 6

This was the first major offshore episode of the 2012 fire season. After a warm and dry August, the first two weeks of September continued the persistent trend. By this time, overall fuel conditions had reached extremely critical levels. ERC values in the Cascades were above the 97th percentile at the onset of this event. This was a widespread offshore event, covering nearly all of the forecast area. Fortunately, there was just one large fire at the time, the Cascade Creek Fire in the Mt. Adams District of the Gifford Pinchot NF, and it was in an area that was less susceptible to east wind.

WARNING CHRONOLOGY

- **WATCH issued 1453 PDT September 10**
 - **Zones 602, WA604, 605, 607, 660**
 - **Valid the evening of Sept. 12 through the afternoon of Sept. 13.**
- **UPDATE issued 1455 PDT September 11**
 - **WARNING issued WA604, 605, 607, 660**
 - **Valid 2000 PDT Sept. 12 through 1700 PDT Sept. 13**
 - **Watch continues Zone 602**
- **UPDATE issued 1056 PDT September 12**
 - **WARNING continues zones 605, 607, 660**
 - **WARNING continues WA604 2000 PDT Sept. 12 through 1700 PDT Sept. 13.**
- **UPDATE issued 1513 PDT September 12**
 - **WARNING issued zone 602**
 - **Valid 2000 PDT Sept. 12 through 1300 PDT Sept. 13.**
 - **WARNING extended zones 607, 660**
 - **Valid through 0500 PDT Sept. 14**
 - **NO CHANGE WA604, 605**
- **UPDATE issued 0935 PDT September 13**
 - **NO CHANGE to valid times.**
- **UPDATE issued 1232 PDT September 13**
 - **WARNING extended WA604 through 2000 PDT Sept. 13**
 - **WARNING extended 602, 605 through 2000 PDT Sept. 13**
- **UPDATE issued 1941 PDT September 13**
 - **WARNING ended zones 602, WA604, 605**
 - **WARNING continues zones 607, 660**

EVENT SUMMARY

A classic offshore episode had developed by the early-morning hours of the 12th. Figure 14 (next page), shows the surface pattern at 0500 PDT. Note the sharp thermal trough along the Oregon Coast. At 0800 PDT on the 12th, Mt. Hebo, zone 602, had east wind of 20 mph with gusts to 33 mph, and an RH of 35 percent. Cedar Creek RAWS recorded gusts to 17 mph and an RH of 36 percent.

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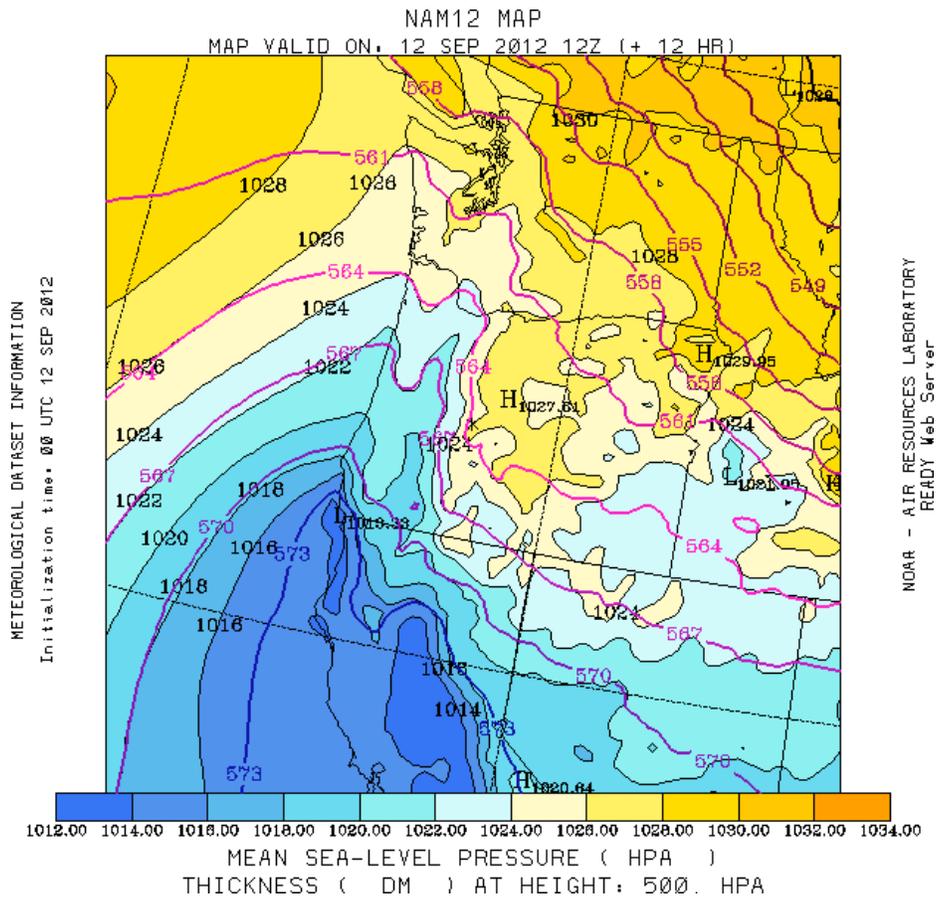


Figure 14 – Surface pattern 0500 PDT September 12, 2012

The surface thermal trough was located between the Coast Range and Cascades by 1400 PDT September 13th. Figure 15 (next page), shows the surface pattern and 2 meter RH. Notice the widespread values of 20 percent or less in the Willamette Valley, Cascades, and Cascade foothills. Several RAWS sites observed afternoon humidity of 20 percent or less on the 13th. Trout Creek, zone 606, had an RH of 14 percent at 1400 PDT. Yellowstone, zone 606, was at 11 percent. Single-digit humidity values were noted throughout zone 608. Emigrant RAWS, far south end, was at 5 percent.

East wind was most notable during the afternoon of the 12th through the early-morning on the 13th. Three-Corner Rock RAWS, zone 660, observed sustained wind of 30-35 mph with gusts to near 55 mph. South Fork and Abernathy, zone 602, had sustained wind near 15 mph with gusts to 25 mph.

The event morphed into a thermal trough situation on the 13th and 14th. Figure 15 shows the thermal trough firmly established inland by the afternoon of the 13th. At 0500 PDT September 14th the thermal trough had shifted to the Willamette Valley and was becoming established in the Columbia Gorge. An onshore marine surge was also starting to develop in Southwest

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Washington and the North Oregon Coast and Coast Range. Finally, by 1400 PDT the thermal trough was on Cascade east-slopes.

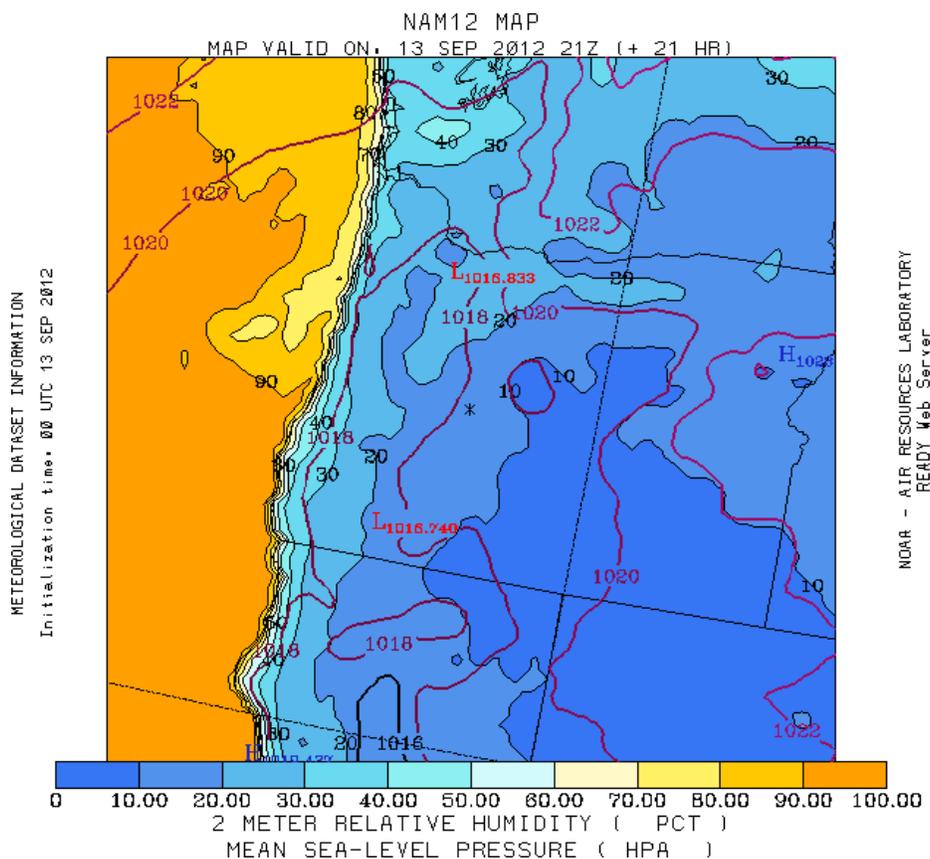


Figure 15 – Surface pattern and 2meter RH 1400 PDT September 13, 2012

Extremely critical fuel conditions had developed in many areas during this event. ERC values in the Cascade zones were near or above the 97th percentile. A few of the more notable ERC values on the 13th included: 74 at Emigrant (zone 608), 68 at Buck Creek (zone 660), 60 at Fields (zone 608), 59 at Village Creek (zone 603), and 58 at Yellowstone (zone 606).

VERIFICATION

- **ZONE 602**
 - **Abernathy wind 10-13g20 and RH 23-26% 0500 PDT to 0800 PDT Sept. 13.**
 - **South Fork wind 13-15g20 and RH 25-35% 2112 PDT Sept. 12 through at least 1012 PDT Sept. 13 (met nighttime criteria).**
 - **Start time 0500 PDT September 13**
- **ZONE 603**
 - **Did not quite meet day or night criteria. Conditions at Rockhouse did not last the required 4 hours or more.**
- **WA/OR ZONE 604**

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- Portland wind 15-21g29 and RH 14-24% 1253 PDT Sept. 12 through 1853 PDT (met daytime criteria).
- Troutdale wind 13-21g20-26 and RH 17-25% 1253 PDT Sept. 12 through 1653 PDT (met daytime criteria).
- Troutdale wind 16-25g35 and RH 27-32% 2353 PDT Sept. 12 through 1053 Sept. 13 (met nighttime criteria).
- **ZONE 605**
 - Horse Creek wind 8-9g20 and RH 21-22% 2027 PDT Sept. 12, 0127 and 0427 PDT Sept. 13 (met nighttime criteria).
- **ZONE 607**
 - Locks wind 9-14g19-31 and RH 13-22% 1308 PDT Sept. 12 through 1608 PDT (met daytime criteria).
 - Log Creek wind 10g24-30 and RH 17-22% 1306 PDT Sept. 12 through 1906 PDT (met daytime criteria).
 - Log Creek wind 8-10g24-31 and RH 18-22% 1906 PDT Sept. 12 through 0706 PDT Sept. 13 (met nighttime criteria).
- **ZONE 660**
 - Larch Mountain wind 10-15g30 and RH 14-21% 1012 PDT Sept. 12 through 1609 PDT (met daytime criteria).
 - 3 Corner Rock wind 25-33g54 and RH 28-35% 2000 PDT Sept. 12 through 0500 PDT Sept. 13 (met nighttime criteria).
- **Start time established at 1012 PDT Sept. 12. This start time applied to zone 607 as well based on verification policies stated in the Annual Operating Plan.**
- **THERMAL TROUGH PASSAGE (HAINES 6)**
 - Coast 0700 PDT Sept. 12
 - Coast Range 1100 PDT Sept. 13
 - Willamette Valley 0700 PDT Sept. 14
 - Cascades 1600 PDT Sept. 14
 - Salem and Medford mid-level Haines 6
- **EXTREME FIRE BEHAVIOR EXHIBITED ON THE CASCADE CREEK FIRE**

4. SEPTEMBER 21-22, 2012 LIGHTNING AND CRITICAL FUELS

Southwest Washington and Northwest Oregon was in the midst of a two-month dry period by the latter half of September. Strong high pressure aloft and frequent subsidence inversions elevated fire danger to extreme levels. High pressure aloft had been centered over the Pacific Northwest up through September 20th. At 0500 PDT September 20th an upper low was approaching the South Oregon Coast, which resulted in moist and unstable south flow west of the Cascades. The upper level ridge had migrated east into Idaho by the afternoon of the 21st, and signified an upper-ridge breakdown pattern. The extended dry spell, extreme fuel conditions, and presence of a large wildfire heightened sensitivity to additional Red Flag scenarios, in this case problematic lightning. The Cascade Creek Fire, in the Mt. Adams district had already consumed over 15,000 acres by September 20th. Occasional extreme fire behavior had been observed on the fire during the past couple of weeks, but long-distance spotting remained the biggest issue. Buck Creek

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RAWS, just south of the fire origin, observed an ERC of 72 on the 21st, above the 97th percentile. The 100-hour fuel moisture value was 7 percent.

WARNING CHRONOLOGY

- **WATCH issued 1433 PDT September 20.**
 - **Zones 606, 607, 608**
 - **Valid evening Sept. 21 through evening Sept. 22.**
 - **Zone 660**
 - **Valid late-evening Sept. 21 through evening Sept. 22.**
- **UPDATE issued 0924 PDT September 21.**
 - **Added Zone 605 to WATCH.**
- **UPDATE issued 1407 PDT September 21.**
 - **WATCH cancelled zones 605, 606, 607, 608.**
 - **Upgrade to WARNING zone 660.**
 - **Valid midnight Sept. 23 through 0600 PDT Sept. 23.**
- **UPDATE issued 0912 PDT September 22.**
 - **WARNING cancelled.**

VERIFICATION

Warning did not verify. No lightning observed in the 24-hour period ending at 0800 PDT September 23rd.

5. OCTOBER 3-7, 2012 WIND AND LOW RH

Fire season 2012 carried through into early October. The most extreme fuel conditions of the season occurred in the first week of the month. Many RAWS sites observed all-time or close to record-setting ERC values. Late-September and early-October are prime periods for offshore events. This was a prolonged east wind episode. The Cascade Creek Fire, which started in early September, continued to exhibit active fire behavior into early October. The fire would finally be contained in mid to late October by natural methods.

WARNING CHRONOLOGY

- **NO WATCH ISSUED**
- **WARNING issued 1402 PDT Oct. 2**
 - **Zones 605, 606, 607, 608, 660**
 - **Valid 0000 PDT Oct. 3 through 1800 PDT Oct. 4.**
 - **Zones 601, 602, 603, 604, 612**
 - **Valid 0600 PDT Oct. 3 through 1800 PDT Oct. 4.**
- **UPDATE 1304 PDT Oct. 4**
 - **WARNING extended zones 605, 607, 660**
 - **Valid through 1900 PDT Oct. 6.**
 - **NO CHANGES to other zones.**

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- UPDATE 0931 PDT Oct 5
 - WARNING extended zone 602
 - Valid through 1500 PDT Oct. 6.
 - NO CHANGES to other zones.
- UPDATE 1117 PDT Oct. 5
 - WARNING extended zone 604
 - Valid through 2100 PDT Oct. 5.
 - NO CHANGES to other zones.
- UPDATE 0916 PDT Oct. 6
 - WARNING extended zones 605, 607, 660
 - Valid through 1200 PDT Oct. 7
 - NO CHANGES to other zones.
- UPDATE 1458 PDT Oct. 6
 - WARNING ended zone 602
 - NO CHANGES to other zones
- UPDATE 1206 PDT Oct. 7
 - WARNING ended

EVENT SUMMARY

A cold upper-level trough was dropping out of Canada into the Northern Rockies during the afternoon of October 2nd (see Figure 16 below). The colder air migrating into Eastern Washington in early fall typically results in thermally-induced surface low pressure along the Oregon Coast, which sets the stage for offshore low-level flow.

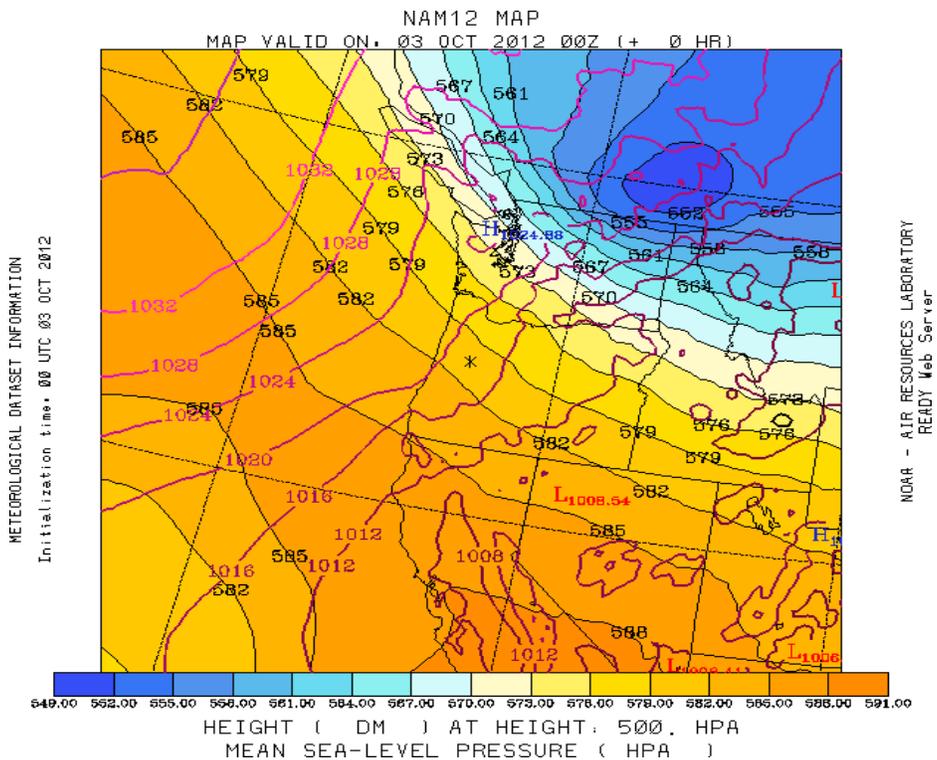


Figure 16 – 500 mb heights (color-filled) and Surface pattern 1700 PDT Oct. 2, 2012

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Figure 17 (below) shows the surface pattern and wind vectors at 1400 PDT on the 3rd. The thermally-induced surface low was firmly established along the Oregon Coast. Low-level east wind, denoted by the vectors, was especially prominent from the Cascade Foothills to the coastline (note the longer vector lengths). Three-Corner Rock RAWS (Zone 660) registered east wind of 25-30 mph with gusts up to 58 mph during the late-morning and afternoon hours of the 3rd. Other notable wind speeds included: South Fork (Zone 602) 20 mph with gusts to 30 mph, several locations in the Willamette Valley (zone 604) with North to Northeast wind 15-20 mph with gusts to 30 mph, and Portland Airport (Zone 604) 25 mph with gusts 35-40 mph.

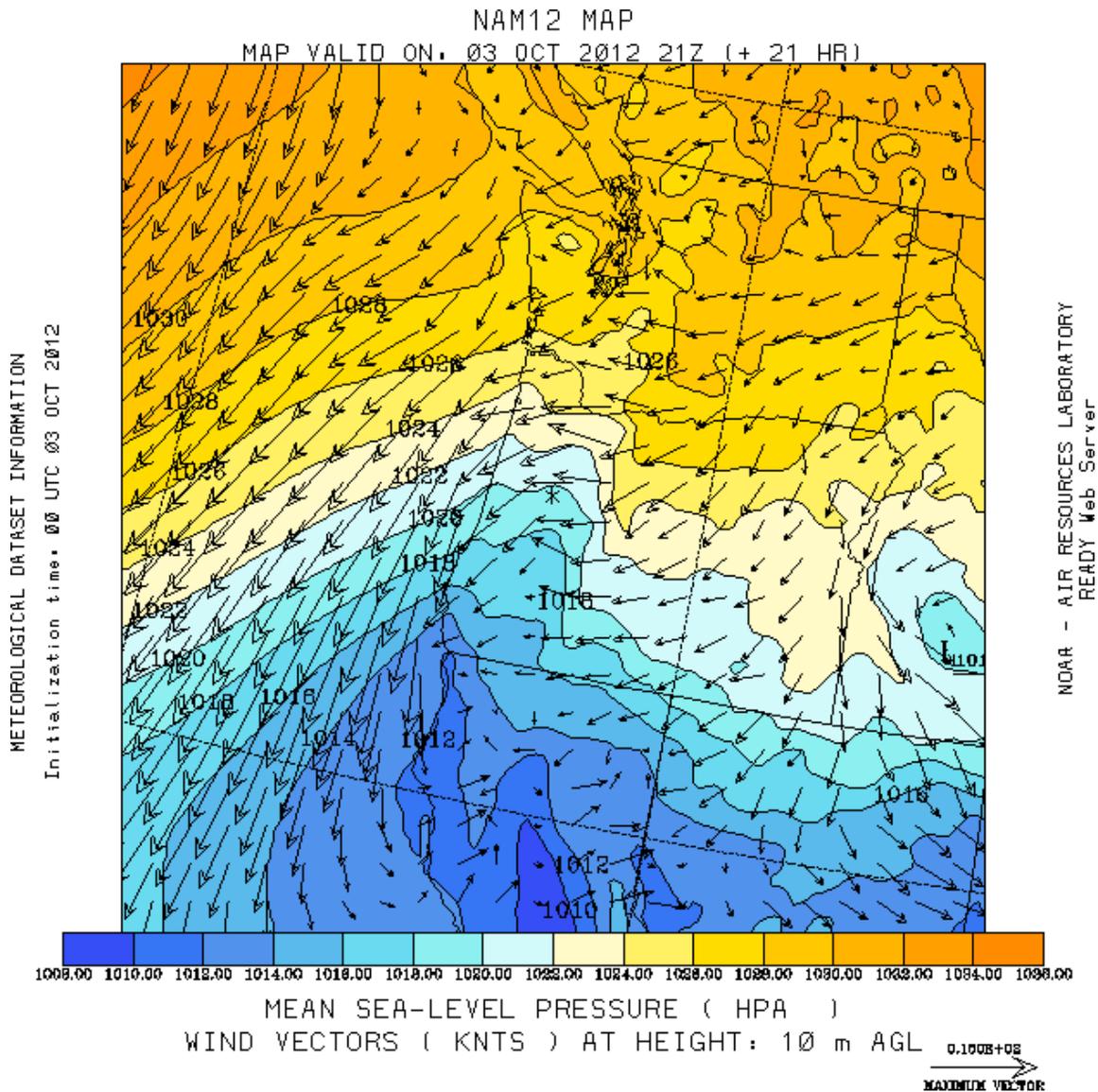


Figure 17 – Surface pattern (color-filled) and surface wind vectors 1400 PDT Oct. 3, 2012

By 0500 PDT October 4th, the thermally-induced surface low remained along the coastline, but the offshore low-level component had weakened. Poor overnight humidity recovery occurred in the Coast Range, Cascades, and Cascade Foothills. Several RAWS sites in these areas registered humidity values of 35 percent or less during the early-morning hours of the 4th. Cedar Creek

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RAWS (Zone 601) was around 25 percent at sunrise. Elk Rock and Canyon Creek (Western Zone 660) reported 30 to 35 percent. The thermal trough drifted to the Coast Range and Willamette Valley by the afternoon of the 4th. The offshore component continued to weaken, and was generally confined to the South Washington and North Oregon Cascades and foothills, the Columbia Gorge, and the North Oregon Coast Range. Extreme fuel conditions persisted through the first week of October. Buck Creek RAWS, in Eastern Zone 660 and closest to the Cascade Creek Fire, observed an ERC of 71 on the 4th. Dry Creek RAWS reported 61. These are near-record values for these locations.

At 1100 PDT October 5th, the thermal trough remained entrenched over the Willamette Valley and the Cascade foothills. The strongest east wind was confined to the northern fire weather zones, with a much weaker offshore component over the southern areas. ERC values on the 5th inched a little higher, reaching 72 at Buck Creek and 64 at Dry Creek. The overall pattern remained unchanged through the 6th. The surface thermal trough would drift a little west, toward the coast, during the night, and then shift east toward the Cascade foothills during the day. Buck Creek observed its highest ERC value of the season, 75, on the 6th. As of 0900 PDT of the 6th, the Cascade Creek Fire had burned 20, 290 acres. The west and northwest flanks of the fire continued to be quite active.

The persistent thermal trough hugged the coastline the morning of the 7th, but a change was finally beginning to develop. A coastal wind reversal, or southerly surge, that developed along the South Oregon Coast during the early-morning hours, was moving north in the in the late-morning and early-afternoon. By 1100 PDT the onshore surge had reached the Central Oregon Coast, and by 1400 PDT was close to Tillamook. The remnants of the thermal trough were in the Cascade foothills. The offshore episode was finally coming to an end. The Type II Incident Management Team on the Cascade Creek Fire transitioned to the local Type III team the morning of the 7th.

VERIFICATION

- **Numerous observing sites reached wind and humidity criteria on the 3rd and 4th. The event start time was as early as 1100 PDT October 3rd.**

National Weather Service

Fire Weather Program



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FORECASTS AND SERVICES

SPOT FORECASTS

Spot forecast requests in 2012 were down about 30 percent compared to last year. There were 157 spot requests through early November. The number of wildfire spots dropped from 93 in 2011 to 51 this year. Nearly 80 percent of the wildfire spots occurred in August and September, many of which were for the Buckhead Complex in the Willamette NF. Prescribed fire spot request distribution was fairly uniform throughout the season. The spring burning period (May and June) had 33 spot requests. Last year there were 14. The dry late summer and early fall period provided opportunities for prescribed fire activities. However, extremely critical fuel conditions in September and early October limited prescribed burning. There were 36 spot requests this year from September 1st through October 31st, compared to 67 last year. Early-November activity was primarily pile burning, with four spot requests through the first week. Eugene BLM and the US Fish and Wildlife were quite active in prescribed burning during the fall.

The use of spot forecasts continued to become more diverse. There were a handful of requests for search-and-rescue missions, training exercises by local fire departments, public safety, and HAZMAT. There were also 12 spot forecast requests for ocean buoy deployment and maintenance missions. There were 2 spot requests for annual early-spring spray activities. Figures 18 and 21, on pages 58 and 60, show the 2012 spot breakdown by month and the annual spot summary since 1992.

The Willamette National Forest has always been one of the primary users of the spot forecast program. The forest accounted for 51 of the 86 spot forecast requests. The Mt. Hood National Forest remained a primary participant, with 27 spot requests. The Mt. Hood NF had 14 wildfire spot requests, well below last year's total of 49. The US Forest Service accounted for about 55 percent all spot requests. The US Fish and Wildlife Service continued to utilize the spot program for its prescribed burn activities. The USFWS submitted 21 requests, which was about the same as last year. Other agencies that were prominent in the spot forecast program included the Oregon Department of Forestry (ODF), and the BLM. City and local agencies, like Portland Fire and Tualatin Valley Fire and Rescue and county sheriff offices had a few requests. Even county emergency management had a few requests. Surprisingly, the Washington Department of Natural Resources (DNR) had just three requests. The Grand Ronde tribe of the BIA submitted two prescribed burn requests.

The most active spot months were August, September and October, with a total of 106 spot requests. Normally, wildfire requests start to increase in July, and reach a peak in August. This year, the prime fire season was delayed a few weeks, but lasted several weeks longer than the previous few years. Nearly half of all wildfire spot requests occurred in August, with 15 more in September and 8 in October. Of the 51 wildfire spot requests, 45 came from the US Forest Service. The other six requests came from state agencies.

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INTERESTING SPOT FORECAST TIDBITS FOR 2012

- ☛ The **FIRST** spot request for 2012 occurred January 19th. The Corvallis Fire Department made a request for a Search and Rescue mission during a flooding event. Serious flooding occurred in the Central and South Willamette Valley January 18-20th. The **LAST** spot request for the season was November 7th, submitted by the Middle Fork district of the Willamette National Forest for some pile burning.
- ☛ The **FIRST** wildfire spot was issued July 7th, requested by the Barlow District of the Mt. Hood NF, for the 191 Fire. The **LAST** wildfire spot forecast was issued October 8th, by the Hood River District of the Mt. Hood NF for the 752 Fire.
- ☛ The most spot forecasts in one day: 4 on August 12th and September 25th. There were several days with 3 spots.
- ☛ There were 86 spot requests from the Forest Service (USFS), or 55 percent of the seasonal total. The BLM made 12 requests, compared to 23 last year. Ten BLM requests were for prescribed burn activities and the other two were for spray projects. Oregon Department of Forestry submitted eight requests, three for wildfires, three for prescribed burning, and two others for training purposes. The US Fish and Wildlife Service had 21 spot requests.
- ☛ The 146 USFS spot requests were divided amongst the forests as follows: 51 for the Willamette, 27 for the Mt. Hood, 8 for the Gifford Pinchot, and none for the Siuslaw.
- ☛ The Eugene BLM district had 10 spots, while the Salem district submitted two. All BLM spot requests for prescribed burn or spray activities. The BLM conducted two spray projects. The Salem district had the Horning Seed Orchard spray project in late-April, about 3 weeks later than usual. The Eugene district conducted the Tyrell Seed Orchard operation around the same time.
- ☛ August had the most spot requests, 38, slightly ahead of October and September. There were two large fires (100 acres or at least Type II management level) in the Portland forecast area. The Buckhead Complex, in the Middle Fork district of the Willamette NF, and the Cascade Creek Fire that burned in the Mt. Adams district of the Gifford Pinchot NF. The primary fires comprising the Buckhead Complex were: Buckhead, Evangeline, Bobby, and Steeple fires. The office handled 20 wildfire spot requests associated with the Buckhead Complex.

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TURN-AROUND TIME

“Turn-Around Time” has been documented since the 2000 season. It is defined as the elapsed time between spot request receipt, or notification, and forecast transmission. The Web-based spot program makes this element very easy to monitor. The usual complications for prescribed burns still exist. Quite often, the user-agency will submit a spot request the day before actual ignition. Obviously, turn-around time is not applicable in these cases. The precedent for the Portland office is to disregard turn-around time for requests submitted in advance of the actual burn time.

A past agreement between the former Pacific Northwest Wildfire Coordinating Group (PNWCG) and Western Region of the National Weather Service (NWS) stated that required turn-around times were to be no more than 45 minutes for wildfire spot requests and 60 minutes for prescribed burns, unless prior arrangements have been made. The 2012 turn-around times were 39.58 minutes for prescribed burns, 38.29 minutes for wildfires, and 24.65 minutes for all other forecast requests. The 2012 times were a few minutes longer than the 2011 times for wildfire and prescribed requests, but almost 10 minutes less for all other requests. There are rare occasions when the Portland office may not have a qualified spot forecaster on duty when a spot request is received. In these cases, a certified spot forecaster must be called back to the office. At the end of the 2012 season the Portland office had nine qualified spot forecasters and three others in training status. The likelihood of having to call in someone to handle a spot request is much lower than previous years.

The web-based spot program provides a quick and easy means for users to request spot forecasts. There were a few occasions when the completed spot forecast suffered delays upon transmission. There has been infrequent software glitches that result in delayed spot request receipt by the forecast office, or delayed spot forecast transmission to the user.

There were a few instances when the applicable turn-around time was close to or exceeded 100 minutes. The first occurrence was May 12th, for a prescribed burn in the McKenzie District of the Willamette NF. The spot request was submitted at 1411 PDT on Saturday, May 12th. The fire desk was not yet staffed on weekends. The public forecaster had public products with higher priority, which resulted in a 98-minute turn-around time. Another case occurred on June 2nd. The Barlow district of the Mt. Hood NF sent a prescribed burn spot request at 1412 PDT. Originally, the completed forecast was not needed until 0800 PDT June 3rd. However, later in the afternoon, the dispatcher called the office and stated the burn boss wanted the forecast earlier. Ultimately, the turn-around time was 101 minutes. The longest turn-around time, 143 minutes, was for a wildfire spot on the Cascade Creek Fire September 21st. The Incident Meteorologist (IMET) assigned to the fire departed on September 20th. The replacement IMET did not arrive until late-evening on the 21st. The Annual Operating Plan (AOP) states that prescribed burn requests **SHOULD** be received by 1200 on any given day. Typical spot turn-around times this season were on the order of 20 to 30 minutes.

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FIGURE 18 – 2012 SPOT FORECASTS (BY MONTH)

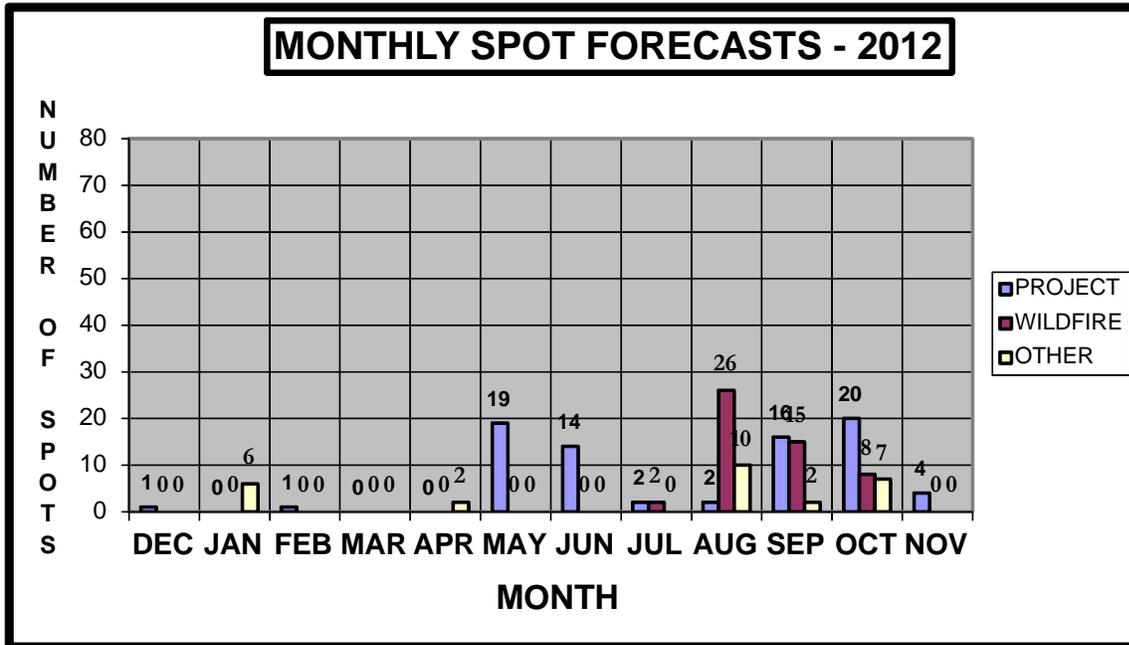


Table 8 (next page) shows the annual spot forecast data from 1995 to 2012. The spot frequency showed a dramatic increase from 2000 to 2003, but due to the change in forecast area responsibility and agency requirements for prescribed burns, 2004 spot totals were much lower. Also, some units/districts curtailed prescribed burn activities starting in 2004 due to budget constraints, staffing concerns, or a number of other reasons. However, note the substantial increase in prescribed burn spots this year.

Seasonal spot totals exhibited a consistent trend from 2008 to 2010, with an average of about 125 spots per season. The 2011 spot season was the busiest since the 2003 transfer of fire weather zones 609, 610, and 611 to the Pendleton office. The 2012 spot tally was typical for any given year. Mid-May was abnormally warm and dry, which allowed land agencies to conduct spring burn projects. The total May prescribed burn spot requests nearly equaled the October total.



Figure 19 – Dollar Lake Fire September 3rd, 2011

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TABLE 8 – ANNUAL SPOT FORECAST DATA

YEAR	PROJECT*	WILDFIRE	TOTAL
1995	104	15	119
1996	64	51	115
1997	58	9	67
1998	52	31	83
1999	58	54	112
2000	89	20	109
2001	125	70	195
2002	123	147	270
2003	117	132	249
2004	71	21	92
2005	55	29	84
2006	120	96	216
2007	70	25	95
2008	61	73	134
2009	57	58	115
2010	69	51	120
2011	128	93	221
2012	106	51	157

* = INCLUDES TRAINING SPOTS, SEARCH AND RESCUE, AND OTHER MISC. REQUESTS.

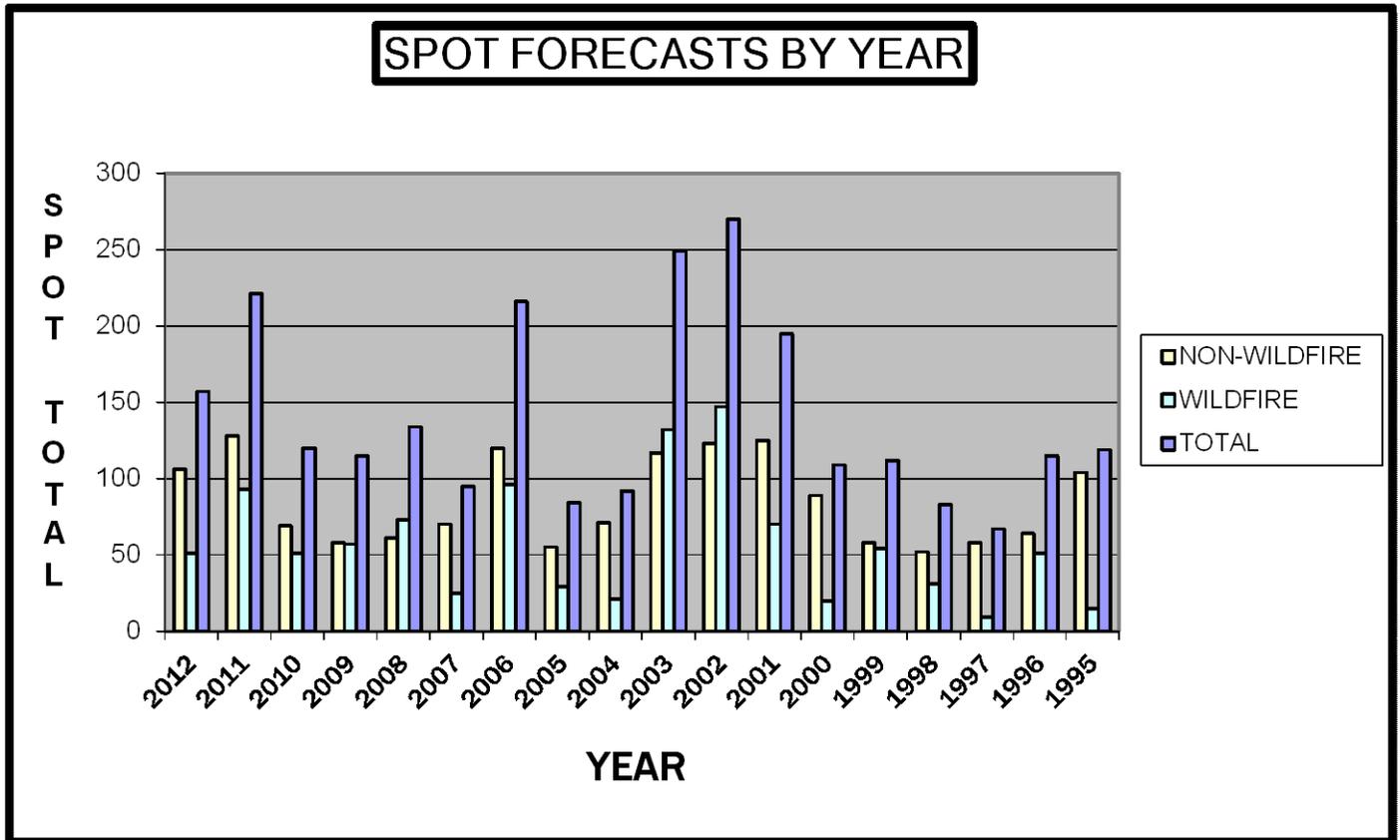


Figure 20 – Cascade Creek Perimeter Map October 6, 2012

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Figure 21 below shows the yearly spot breakdown from 1995 to 2012.

FIGURE 21 – ANNUAL SPOT FORECAST TOTALS



FORECAST SERVICES

The fire weather desk was staffed from April 2nd, 2012 through November 2nd, 2012. Full-time fire weather operations (7 days a week) commenced on May 27th, 2012, during the Memorial Day holiday weekend, and ended on October 13th, 2012, a few days later than last year. Internet weather briefings started on May 29th, 2012. Internet briefing participation was similar to last year through mid-August, during the more benign part of the fire season. The number of users generally averaged 5-8 through mid-August, but jumped to 7-12 by the end of August. In late-August through September 15-20 briefing participants was common. Eugene Dispatch, Mt. Hood N.F., Gifford Pinchot N.F., several ODF units, and the north and south zones of Willamette N.F. were primary participants. Daily internet briefings ended on October 19th, two weeks later than last year. The Portland office also participated in daily coordination calls set up by the Northwest Coordination Center. These calls started on July 2nd and ended October 7th. The National Weather Service seasonal detail at the Northwest Coordination Center ended in 2011. The office added another Type I IMET, for a total of three, and had two Type II IMETs.

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NFDRS forecasts started on April 1st and ended on November 2nd, but the verification period went from April 15th through October 31st. This was the fourth year of doing an all-points forecast. Verification statistics are based on persistence forecasts. This year verification was determined using two systems. The standard program, which originated from Boise, was compared to an in-house version. Both methods provided similar results, even though the in-house database contained approximately 33 percent more forecasts than the Boise version.

The baseline statistic is forecaster improvement over persistence. The old Memorandum of Understanding (MOU), which expired in 2005, included verification performance standards. The baseline standards were 35 percent improvement for temperature, 25 percent improvement for humidity, and 10 percent improvement for wind, and then a 5 percent increase each year thereafter. The current expectations are less rigid than the expired MOU. The Portland office experienced about a one percent decrease in temperature performance, 36.2 percent improvement over persistence this year compared to 37.4 percent in 2011. The 2012 humidity score was two percent lower, 30.2 percent this year to 32.2 percent in 2011. The 2012 wind score was lower than last year, the first decrease in over four years. The 2012 wind score near zero, a drop from 7.5 percent in 2011.

April through June was an exceptional period for NFDRS forecasting. The temperature scores were 45 to 60 percent, wind scores -5 to 23 percent, and humidity scores of close to 50 percent, although the May average was a mere 14 percent. Numerous big-change days contributed to the gaudy numbers. NFDRS forecasting became much more difficult in August due to long-term persistence patterns. The August humidity score was a modest 18.9 percent. There were 3575 individual NFDRS forecasts in 2012, about 500 more than the 2011 total of 3105.

TRAINING AND EDUCATIONAL OUTREACH ACTIVITIES

Portland continued to be heavily involved in teaching and training activities. Table 9 shows all of the outreach activities from fall 2011 through fall of 2012. The Portland office has several people involved in training and outreach activities. The S-190 through S-590 series has undergone major revisions in the past few years. PowerPoint presentations have been developed, replacing the slides and overhead projection graphics. Portland continues to have some responsibility for teaching and training services for zones 609, 610, and 611, although Pendleton is the primary resource.

The Portland office was unique in that a National Weather Service fire weather meteorologist used to be detailed at the Northwest Coordination Center from March through October. This seasonal position went away after the 2011 season. The NWCC used Predictive Service personnel outside the geographic area in 2012 to fill critical needs.

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TABLE 9 – TRAINING AND EDUCATIONAL OUTREACH ACTIVITIES

DATES	ACTIVITY	AGENCY/USER	INSTRUCTOR
January 18-19, 2012	FIRE BEHAVIOR WORKSHOP	NWCC	WEISHAAR/WEAGLE
February 11-12, 2012	S-290 ASTORIA, OR	LOCAL FD	WEISHAAR
February 18-19, 2012	S-290 TUALATIN, OR	TVFR	WEAGLE
March 3, 2012	S-190 PORTLAND CC	PCC	WEISHAAR
March 3-4, 2012	S-290 VENETA, OR	ODF	WEAGLE/DONOFRIO
March 20-21, 2012	S-290 SWEET HOME, OR	ODF	WEAGLE
April 7, 2012	S-190 PORTLAND CC	PCC	BONK
April 14-15, 2012	S-290 DALLAS, OR	ODF	COLLINS
April 26-27, 2012	S-290 CLACKAMAS CC	CCC	WEISHAAR/DONOFRIO
May 8, 2012	S-390 CLACKAMAS CC	CCC	WEISHAAR/ROCKEY
May 10, 2012	S-290 REFRESHER SHERWOOD, OR	TVFR	WEAGLE
June 8, 2012	WX REFRESHER HOOD RIVER, OR	COL. GORGE SA	WEISHAAR

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DATES	ACTIVITY	AGENCY/USER	INSTRUCTOR
June 19, 2012	S-190 CAMP BALDWIN	USFS	WEISHAAR
June 19-20, 2012	S-290 RANDLE, WA	USFS	BONK

LARGE FIRES AND IMET DISPATCHES

The 2012 fire season had the potential to be much more active than 2010 or 2011. Overall fuel conditions reached all-time record levels in September and early October. Fortunately, lightning frequency was extremely low in that period. There were two large fires in the Portland Forecast area, as shown below in Table 10.

TABLE 10 – MAJOR FIRES

FIRE NAME	AGENCY	SIZE	START DATE	CONTAIN DATE	CAUSE
Buckhead Complex	USFS Willamette	294	August 5, 2012	August 25, 2012	Lightning
Cascade Creek Fire	USFS Gifford Pinchot	20,296	September 9, 2012	October 15, 2012	Lightning

The Portland office fulfilled several spot forecasts for the Buckhead Complex, including the larger individual fires within the complex. The Buckhead Complex necessitated the use of a Type III Incident Management organization. A Type II management team assumed command of the fire on September 10th. On September 20th, tentative plans had been made to transfer command back to the local Type III organization. A switch in low-level wind on the 21st caused the fire to spot across the Salt Creek drainage, on the northwest flank, and make a 2-mile run to the north. Thus, a replacement Type II team was ordered and in place on the 23rd. Extreme fuel conditions persisted through early October. The local Type III team assumed control of the incident on October 6th. The Portland office acquired another Type I IMET early in 2012, for a total of three. The Portland IMETS provided support for 86 days. The 9 dispatches and 86 days were the most of any NWS office.

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The Portland office filled **NINE** IMET requests.

1. WOOD HOLLOW (8 DAYS)

IMET: SCOTT WEISHAAR
DATES: June 25th through July 3rd, 2012
LOCATION: Central Utah
IMT: Great Basin Type II
IC – Mike Whalen
CAUSE: Lightning

2. SHINGLE FIRE (9 DAYS)

IMET: SCOTT WEISHAAR
DATES: July 3rd through July 11th, 2012
LOCATION: Near Duck Creek Village, UT
Dixie NF
IMT: Central Oregon Type II
IC- Mark Rapp
CAUSE: Human-Caused

3. WALDO CANYON FIRE (7 DAYS)

IMET: SHAWN WEAGLE (T)
DATES: July 1st through July 7th, 2012
LOCATION: Pike and San Isabel NF
ICP – Colorado Springs, CO
IMT: EGBCC Type I Team 2
IC – Rich Harvey
CAUSE: Under Investigation

4. TEN MILE COMPLEX/HOLLOWAY NORTH FIRE (8 DAYS)

IMET: SCOTT WEISHAAR
DATES: August 13th through August 20th, 2012
LOCATION: Vale BLM
ICP – McDermitt, NV
IMT: Pac NW Type I Southern Area Type II
IC – Jeff Pendleton
CAUSE: Lightning

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5. TAYLOR BRIDGE FIRE (11 DAYS)

IMET: SHAWN WEAGLE
DATES: August 15th through August 25th, 2012
LOCATION: Washington DNR, Southeast
ICP – Cle Elum, WA
IMT: Washington Type II
IC – Rex Reed
CAUSE:

6. SIXTEEN COMPLEX (6 DAYS)

IMET: JON BONK
DATES: September 6th through September 11th, 2012
LOCATION: Near Williams, CA
ICP – Woodland, CA
IMT: CalFire Team 3
IC – Todd Derum
CAUSE: Non-Meteorological

7. POLE CREEK FIRE (11 DAYS)

IMET: JON BONK
DATES: September 11th through September 21st, 2012
LOCATION: Deschutes NF – near Sisters, OR
ICP – Sisters, OR
IMT: Oregon Type II Team 4
IC – Brian Watts
CAUSE: Lightning

8. CASCADE CREEK FIRE (10 DAYS)

IMET: SCOTT WEISHAAR
DATES: September 11th through September 20th, 2012
LOCATION: Gifford Pinchot NF – Mt. Adams RD
ICP – Trout Lake, WA
IMT: Washington Type II
IC – Dave LaFave
CAUSE: Lightning

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9. CASCADE CREEK FIRE (16 DAYS)

IMET: SHAWN WEAGLE
DATES: September 22nd through October 7th, 2012
LOCATION: Gifford Pinchot NF – Mt. Adams RD
ICP – Trout Lake, WA
IMT: Washington Type II
IC – Larry Nickey
CAUSE: Lightning

FINAL SUMMARY

The 2012 fire season started later than usual, about 4 to 5 weeks behind schedule. But, the peak part of the season lasted through September and well into October. Record-setting ERC values were noted across many portions of the fire weather forecast area in early October. The average number of lightning days was lower than average in many areas, with the highest frequency in the South Washington Cascades. There were six Red Flag events, one of which went unwarned. There were a total of 29 Red Flag Warnings (each zone counts as one warning). Antecedent conditions, including snow pack and spring precipitation, among other things, resulted in a later-than-normal start to the peak fire season. Frequent wetting rain events persisted into late-June, which helped to maintain very low fuel indices. The most significant heat wave occurred in mid-August, with several inland locations exceeding 100 degrees. Dry spells of 100 days or more occurred in the coastal zones, coast range, and Central Oregon Cascades and foothills. The forecast area had two large fires.

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