National Weather Service – WFO Eureka
Annual Fire Weather Report
2013

Corral Complex – Willow Creek, CA August, 2013

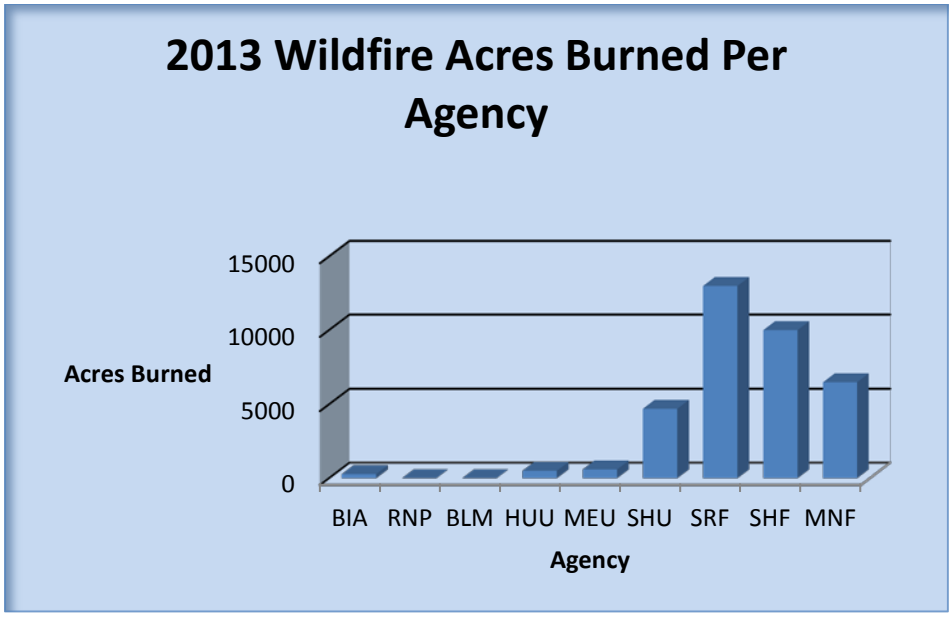
I) INCIDENT REVIEW

Local Fire Activity

For the second year in a row Northern California experienced a busy fire season. Locally across northwest CA, including the NWS Eureka CWA, there were many small fires and two large fires.

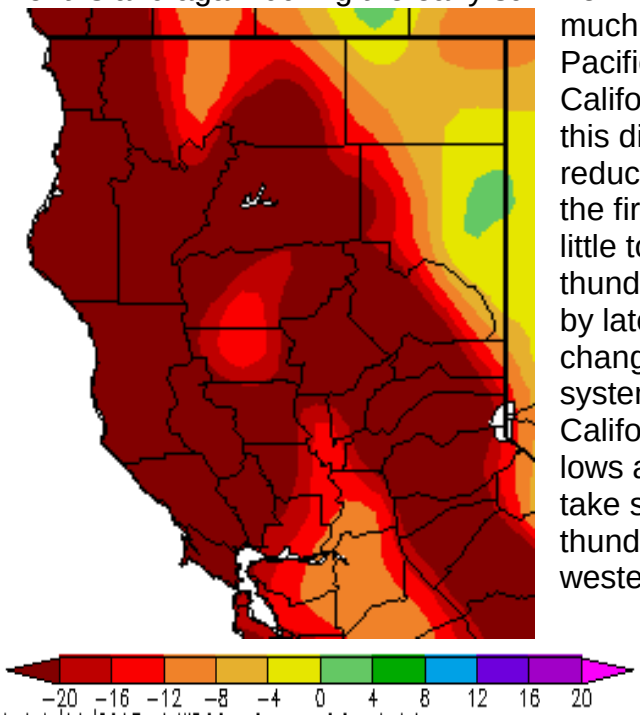
After a slow start due to some late spring rain, wildfire activity picked up rapidly in late July. The first fire (arson) began near Orleans and burned around the south and east end of the community and along highway 96. There was one fatality along with multiple structures damaged. About a week later the Butler fire (arson) was started along the Salmon River. The majority of the perimeter of this fire was located in WFO Medford's county warning area…however as the fire moved south and westward it did gradually work into the Eureka county warning area. This fire finally was contained in late September after burning nearly 12,000 acres. During the middle of August an impressive thunderstorm moved over eastern Humboldt County and sparked many fires including the Corral Complex. This complex burned approximately 13,000 acres and was finally contained in early October after a period of favorable weather. Both fires required the assignment of both Type 1 and Type 2 teams as well as incident meteorological support.

In late November a very strong offshore event helped promote more wildfire activity across southern Mendocino and north Sonoma counties. Although, technically, these fires were located just outside WFO Eureka's county warning area smoke from the fires did impact communities within the county warning area. Additionally, an incident meteorologist was assigned from WFO Eureka to support the incident management team at the Butler Fire (Cloverdale, CA).



II. WEATHER REVIEW

As mentioned in the previous page, 2013 was a busy season in terms of local wildfire activity. Examining the image below, one would understand why fire had a propensity to burn all across northern and central California…but especially around northwest California. The image depicts anywhere from 10 to 20 inches of precipitation below the yearly average…with the higher amounts of 20 inches or more across all of northwest California. The drought conditions allowed fuels to dry rapidly during the early spring months and again during the early summer months. The fire season could have been much worse if it had not been for a few spring Pacific storms that brought rain to northern Californian during late April and May. Although this did not accomplish much in terms of drought reduction it did allow for a delay in the start of the fire season. During the summer months little to no rainfall fell and fortunately no thunderstorm activity was observed. However by late July the synoptic pattern began to change as a series of "cut-off" low pressure systems began to form off the coast of northern California. As August approached, these cut off lows allowed a classic thunderstorm pattern to take shape. During the middle of August a thunderstorm outbreak was observed over the western Shasta Trinity forest and southern Six



Rivers NF. Over 1000 strikes were observed starting hundreds of small fires across Humboldt and Mendocino Counties. Some of these fires were combined to form the Corral Complex near Willow Creek. Another round of thunderstorms occurred in nearly the same area a couple of weeks later however these were associated with much more precipitation. Anywhere from 1-2 inches of rain fell across the region putting a major dent in the ongoing fires. Favorable weather continued into early September with cooler temperatures and higher rh values. A normal September and October were observed in terms of temperature and rh, along with very little rainfall. During the third week of November a very strong offshore flow event was observed. East winds in excess of 50 mph and extremely dry air fell over southern Mendocino and Northern Sonoma counties promoting more wildfire activity. The dry fall continued into December where only minimal amounts of rain were recorded. The extremely dry year continued into January of 2014.

III. RED FLAG WARNING VERIFICATION

Note: Warnings are issued for individual forecast zones. e.g., a Red Flag Warning issued for 3 zones will be treated as 3 separate warnings.

Total Events

Number of Red Flag Warnings Issued:	**29**
Number of Red Flag Warnings Verified:	**19**
Number of Missed Events:	**3**
Number of Warnings preceded by a Fire Weather Watch:	**29**
Number of Watches not followed by a Warning:	**4**
Average Lead Time for Warnings:	**18 hours**
Average Lead Time for Watches:	**36 hours**
Probability of Detection (POD):	**0.86**
False Alarm Ratio (FAR):	**0.34**
Critical Success Ratio (CSR):	**0.59**

The 7 Red Flag Warnings above are verified by two separate categories, however there were no warnings issued for Wind and RH during 2013:

Dry Lightning Events

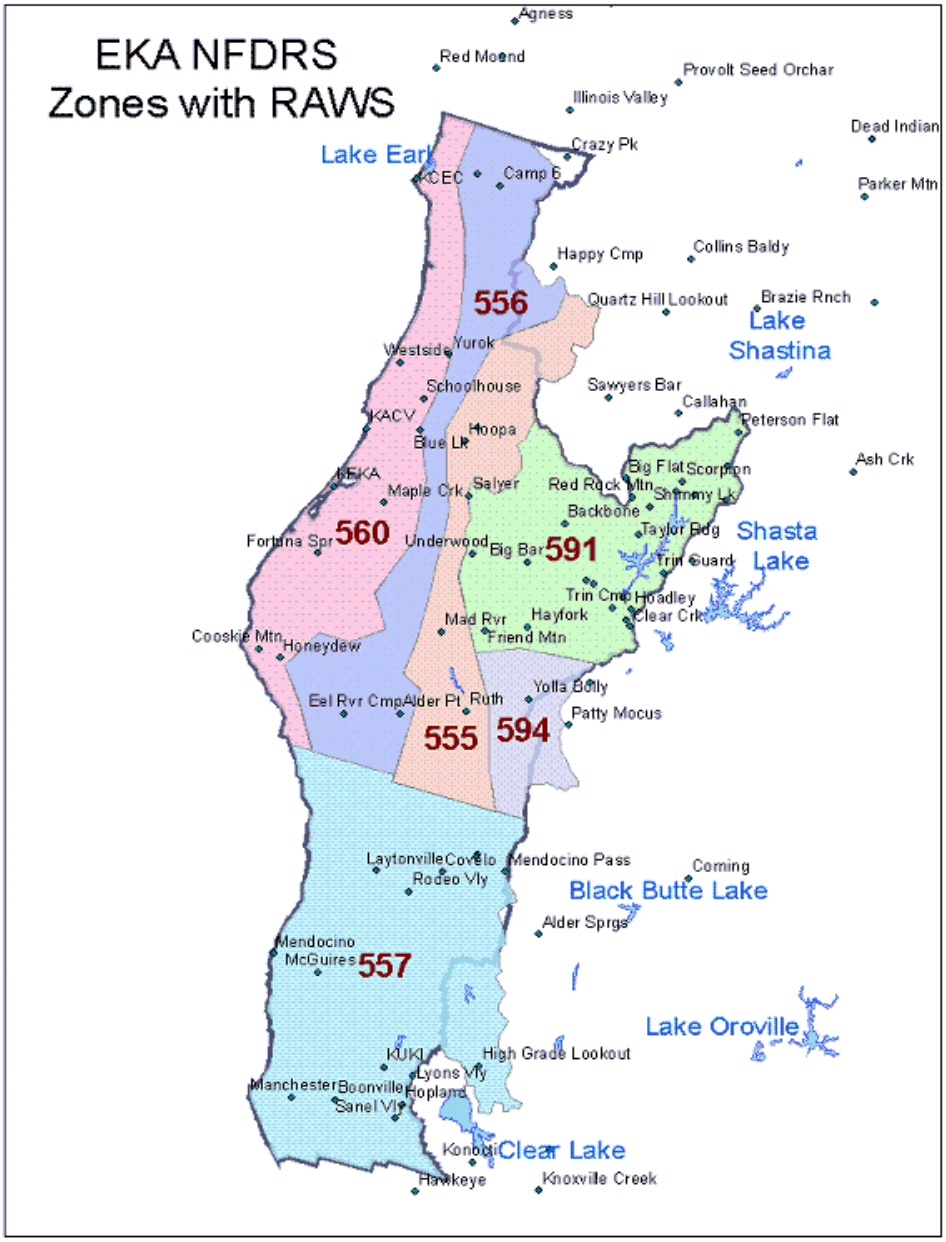
Number of Red Flag Warnings issued for Dry Lightning:	**26**
Number of Red Flag Warnings verified:	**16**
Number of Missed Events:	**3**
Average Lead Time:	37 **hours**
POD:	0.**84**
FAR:	**0.38**
CSR:	**0.55**

Wind and Low Relative Humidity

Number of Red Flag Warnings issued for Dry Lightning:	**3**
Number of Red Flag Warnings verified:	**3**
Number of Missed Events:	**0**
Average Lead Time:	**12**
POD:	**1.0**
FAR:	**0**
CSR:	**1.0**

IV. NFDRS FORECAST VERIFICATION

Due to national funding the verification statistics are no longer available. The zones and NFDRS station locations for WFO Eureka are depicted in the map below.



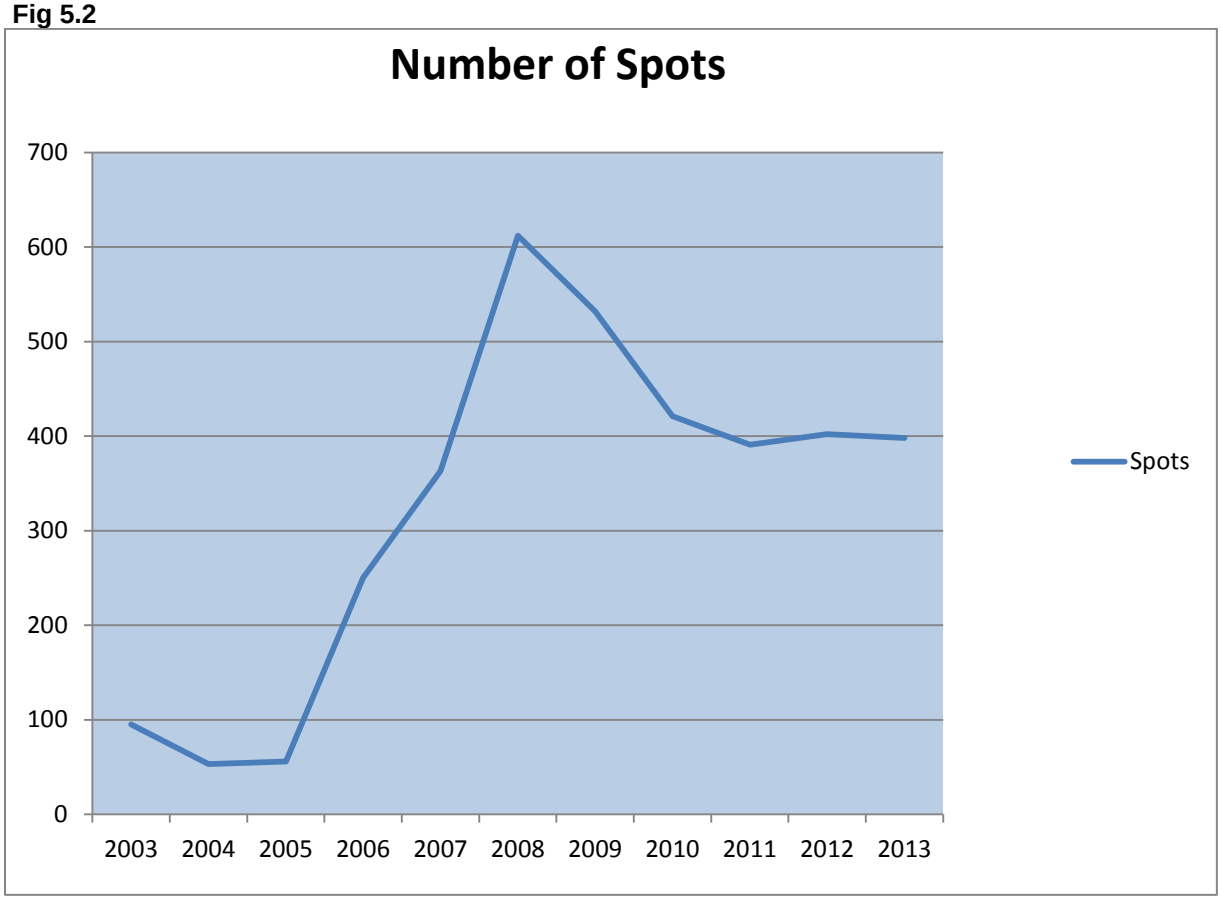
V. SPOT FORECASTS

The National Weather Service Office in Eureka issued a total of 398 site specific or spot forecasts during the calendar year 2013. This is nearly the same amount as last year and remains consistent the last 3 year average of about 400 per year. Given that 2013 was a more active year in terms of local wildfires nearly 25% of the total spots were issued for wildfires.

Table 5.1

Spots for Wildfires	**101**
Spots for Project Burns	**297**
Spots for Hazmat	**0**
Spots for SAR	**0**
Average Turnaround Time For All Spots	**29** minutes
Total Spots	**398**

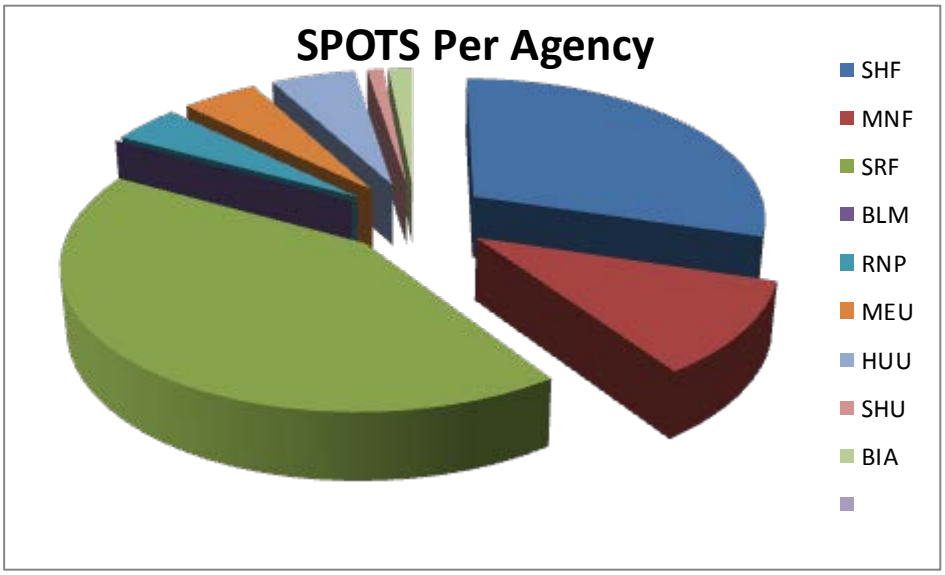
Fig 5.2



During 2013 WFO Eureka ranked 15th out of 122 NWS offices in terms of overall spot forecast production but ranks 8th in the nation regarding the issuance of prescription burn related spot forecasts. The average "turn-around-time" for all spot forecasts was 29 minutes. The turn-around time showed an increase of 1 minute compared to 2012.

Turn-around time is defined as the elapsed time between a spot forecast request receipt (or notification) and forecast transmission.

The majority of Rx spot forecast requests were for small burns or pile burns associated with the Forest Service. Similar to previous years, the majority of spot forecast requests originated from the USFS and CAL Fire with less than 5% distributed between the national and state parks and BIA.



VI. ON-SITE METEOROLOGICAL SUPPORT

Incident Meteorologist (IMET) support from WFO Eureka totaled 30 days. Eureka currently has one certified IMET, Jeff Tonkin and an IMET Trainee, Alex Dodd. Jeff Tonkin was dispatched to 3 separate incidents while Alex Dodd was not dispatched to any assignments.

IMET	Incident	Location	Dates	Local WFO
Jeff Tonkin	Butler Fire	Orleans, CA	Aug 3 - Aug 17	MFR
Jeff Tonkin	Corral Complex	Willow Creek, CA	Aug 25 - Sep 8	EKA
Jeff Tonkin	McCabe Fire	Cloverdale, CA	Nov 22 - Nove 24	MTR

There were 3 IMETs from other National Weather Service WFO's dispatched to fires or incidents within the Eureka CWA during 2013.

IMET	Home WFO	Incident	Location	Dates
Jim Wallman	REV	Corral Complex	Willow Creek, CA	August 14 - August 28
Ryan Leach T	MSO	Corral Cmplex	Willow Creek, CA	August 25 - August 31
M. Simosko T	BMX	Corral Complex	Willow Creek, CA	August 26 - September 8

VII. TRAINING, EDUCATIONAL, OUTREACH AND FIELD ACTIVITIES

The following table (Fig. 7.1) summarizes various fire weather activities the Eureka fire weather staff participated in during the 2013 calendar year.

Fig. 7.1

Dates	Activity	Agency/User/Audience	Representative	Location
Feb 18	Taught S-390	CAFire	Jeff	Willits, CA
Feb 25	CA AOP Meeting	Multi Agency	Nancy	EKA - Conf Call
Feb 16	User Meeting	Shasta Trinity NF	Jeff, Alex, Shawn	Redding, CA
Mar 4,5	RT 130 Training	IMETs	Jeff, Alex	SRF Eureka, CA
Mar 11-14	IMET Training	IMET Cadre	Jeff, Alex	EKA - Conf Call
Mar 21	OSPR		Nancy	EKA
Mar 22	Fire Wx Presentation	HSU	Nancy	HSU
Mar 29	User Meeting	SRF - Lower Trinity	Jeff	Willow Creek, CA
Apr 16	User Meeting	North Coast AQMD	Jeff, Shawn	EKA
June 11	User Meeting	SHF	Jeff, Shawn	Weaverville, CA
Aug-3	IMET Dispatch	Butler Fire	Jeff	Orleans, CA
Aug 25	IMET Dispatch	Corral Fire	Jeff	Willow Creek, CA
Aug 29	Incident Fam Visit	Corral Fire	Matthew, Tony	Willow Creek, CA
Nov 22	IMET Dispatch	McCabe Fire	Jeff	Cloverdale, CA

VIII. EUREKA FIRE WEATHER PROGRAM SUMMARY

ANNUAL COMPARISON TABLE

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Red Flag Warnings Issued:	14	5	3	16	2	32	13	6	5	7	29	
Dry Lightning:	1	0	0	3	2	19	8	6	0	7	26	
Wind/RH:	13	5	3	13	0	13	5	0	5	0	3	
Average Lead Time (hr):	13	16.1	9	13.6	0	17	N/A	N/A	12	24	18	
Fire Wx Watch	5	4	4	10	2	36	4	15	5	7	26	
Dry Lightning:	4	0	0	0	2	19	4	15	0	7	23	
Wind/RH:	1	4	4	10	0	17	0	0	5	0	3	
Average Lead Time (hr):	16	33.5	14.5	29.5	0	59.5	N/A	N/A	38	60	34	
POD	1.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	1.0	0.86	
CSI	0.71	1.0	1.0	0.86	0.0	0.63	0.0	0.0	0	0.14	0.59	
FAR	0.29	0.0	0.0	0.14	1.0	0.38	1.0	1.0	1.0	0.85	0.34	
Spots Issued	95	53	56	250	363	612	532	421	391	402	398	
Wildfire Spots	85	17	14	91	57	316	82	22	26	66	101	
Rx Spots	10	34	39	158	306	296	450	399	360	334	297	
Turn-Around Time (min.)	70	56	37	52	35	31	29	27	29	28	29	
Total EKA IMET Days	33	28	23	106	63	48	31	21	29	31	30	
Mark (2006-2010)				53	28	14	0	3				
Jeff	33	28	23	53	35	34	31	18	18	31	30	
Alex (2011 -)									11	0	0	
Total IMET Days in CWA	11	6	0	127	7	317	17	4	4	34	65	

The following table illustrates a comparison of activity and performance for the period 2003 through 2013.

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Comments, Questions or Suggestions can be emailed to jeff.tonkin@noaa.gov