

**UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE
PHOENIX, ARIZONA**

***Fire Weather Annual Report
2006***

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A. Fire Weather Overview

The Desert Southwest continued to suffer with drought and extremely dry conditions carried over from the fall of 2005. Little rainfall fell during the first two months of the year in 2006, setting records for the extreme dry conditions. Much of Arizona had far less than 50 percent of normal winter snow pack at the end of February, with Flagstaff recording only 1.6 inches of snow since the fall of 2005. This was well below the normal snow total of 72.5 inches for the period. Fuel moisture levels were unusually dry during this time frame, and the anomalously dry fuels supported continued growth of early fire starts in central Arizona (i.e., the February Fire near Payson, Arizona).

In early March, an intense winter storm moved through Arizona and provided some relief, blanketing the area with snow and rain. This precipitation event ended the dry streak at Phoenix, Arizona, where that part of the state experienced a record-breaking 143 consecutive days without precipitation since October 18, 2005. The widespread introduction of moisture delayed the onset of significant fire activity for several weeks due to the green-up of fine herbaceous fuels throughout the region.

Fuels continued to dry and cure during the spring and early summer despite the brief reprieve from precipitation that fell in March. Dead fuel moisture levels were very dry during this time, with observed 10-hour fuel moisture levels persisting below 5% across parts of the Great Basin and desert Southwest. The extreme antecedent dry conditions, combined with above average temperatures exacerbated drought conditions, fueling the first of many fires within our CWA, namely the *Saddle*, *Cibola*, *White* and *Gran* fires in south-central Arizona, with increased fire activity spilling into Southern California by June.

Record heat occurred in many areas of south-central Arizona and southeast California in July. Dry thunderstorm events and below average precipitation over this same region initiated and supported the growth of major fires, such as the *Sawtooth Complex*, primarily west of the Lower Colorado River valley into southeast California. The increased activity also led to an increase of spot forecast requests for southeast California and Joshua Tree National Park (Region 5) during this time frame.

An early and extremely active monsoon season arrived in early July and later ended in September, bringing significant rainfall to many parts of the state during the three-month period, thus facilitating a terminus to the active fire season. Above average rainfall that fell during the latter part of July and into August helped to ease existing drought conditions. The early and extremely active monsoon season led to above average precipitation amounts recorded in central and southeast Arizona.

The influx of moisture followed the second driest winter on record for the Southwest region that had left snow pack levels extremely low and little in the way of spring runoff to fill reservoirs. The wetter than average summer monsoon reduced the drought severity throughout parts of south-central Arizona, mainly across portions of the deserts and the Tonto National Forest. The heavy downpours produced record mainstream flows along the Upper Gila River and Salt River basins in eastern Arizona and localized flooding across parts of the entire region, with record flash flood events occurring near Tucson, Arizona at the end of July and early August.

The trend of above normal temperatures and below normal precipitation persisted into the fall months and winter months, with many areas across Arizona and southeast California recording little or no rainfall during October and November. Santa Anna winds in southeast California, and strong gradient winds along the Lower Colorado River Valley fanned large, deadly fires, namely the *Esperanza* fire in this region. Conditions still remained dry with below normal temperatures and below normal precipitation amounts recorded at many stations through the end of the year.

B. Red Flag Warning Verification

The National Weather Service in Phoenix issued a total of **29** Red Flag Warnings (RFW) all due to strong winds and low relative humidity. NWS Phoenix does not issue a watch or warning for dry thunderstorms in Arizona per the Region 3 AOP. Per the Region 5 AOP, the criteria for a dry lightning RFW apply only to fire weather zones 230 and 232 in southeast California. There were **no** Red Flag Warnings issued for dry thunderstorm events covering these zones in 2006.** Below are summary statistics for the individual weather zones serviced by NWS Phoenix.

- Number of RFWs Issued (by zone)
- Probability of Detection (POD) (Highest Skill = 1.0)
- Far Alarm Ratio (FAR) (Highest Skill = 0.0)
- Critical Success Index (CSI) (Highest Skill = 1.0)
- Average Lead Time of the Warning

<u>Zone</u>	<u># Issued</u>	<u>POD</u>	<u>FAR</u>	<u>CSI</u>	<u>Avg. Lead Time</u>
131/232	9	0.78	0.22	0.64	14.95 hours
132	7	1.00	0.29	0.71	18.63 hours
133	7	1.00	0.43	0.57	20.75 hours
230	3**	1.00	0.00	1.00	11.75 hours
232	3**	0.67	0.33	0.50	16.75 hours
Total	29	0.91	0.28	0.68	14.50 hours

C. Fire Weather Watch Verification

The National Weather Service in Phoenix issued a total of **26** Fire Weather Watches during 2006, all due to strong winds and low relative humidity.

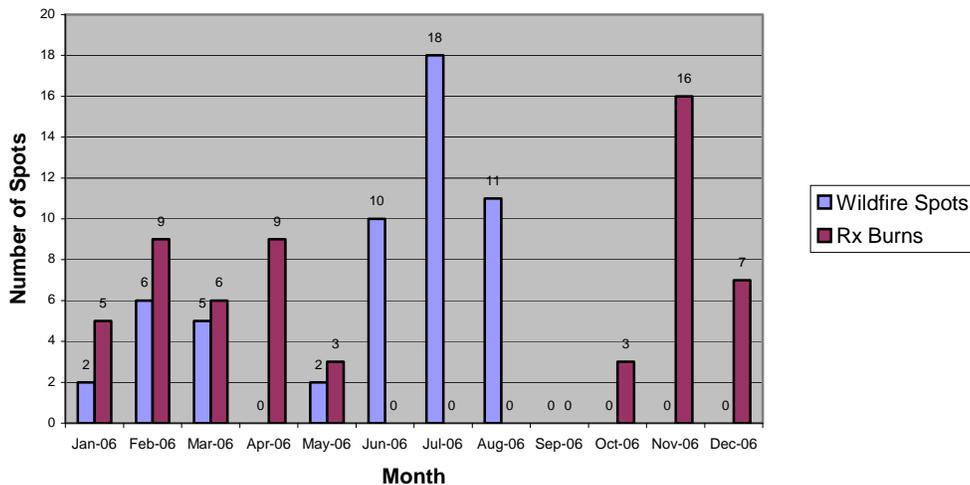
<u>Zone</u>	<u># Issued</u>	<u>Upgraded to RFW</u>	<u>Verified</u>	<u>Avg. Lead Time</u>
131/231	8	6	4	26.90 hours
132	8	7	6	33.37 hours
133	7	6	4	43.25 hours
230	1	1	1	19.25 hours
232	2	2	1	25.17 hours
Total	26	22	16	37.50 hours

D. Spot Forecasts

The National Weather Service in Phoenix issued a total of **112** spot forecasts during the 2006 calendar year. This year, about 57% of the summer wildfire spot forecasts were for fires along the Lower Colorado River Valley, west into southeast California, including Joshua Tree National Park. The chart below breaks down the number and type of spot forecast issued per month.

<u>RX BURNS</u>	<u>WILDFIRES</u>	<u>OTHER</u>	<u>TOTAL</u>
58	54	0	112

2006 Monthly Spot Forecasts



E. Incident Meteorologist (IMET) Dispatches

The National Weather Service in Phoenix participated in **three** (3) dispatches in 2006. During those three dispatches, the IMET trainee, Valerie L. Meyers was dispatched out to fires for a total of **17** days.

WFO PHOENIX:

<u>Incident Name</u>	<u>Location</u>	<u>Dispatch Days</u>	<u>Dispatch Dates</u>
1) February	near Payson, AZ	2 Days	2/10/06 – 2/11/06
2) Martinez II Reserve Complex	near Reserve, NM	7 Days	6/16/06 – 06/22/06
3) West Texas IA	College Station, TX @ the TFS EOC	8 Days	8/7/06 – 8/14/06

F. Fire Weather Training and Outreach Activities

The National Weather Service in Phoenix continued to be active with fire weather training and outreach. Valerie L. Meyers served as instructor for S-290 courses within the state of Arizona, and also conducted outreach visits to a variety of state and federal customers.

<u>Dates</u>	<u>Activity</u>	<u>Agency</u>	<u>Location</u>
February 8-9	Region 3 Preseason Meeting	Local Agencies	Albuquerque, NM
December 2-3	S-290	Arizona Forestry Division	Casa Grande, AZ