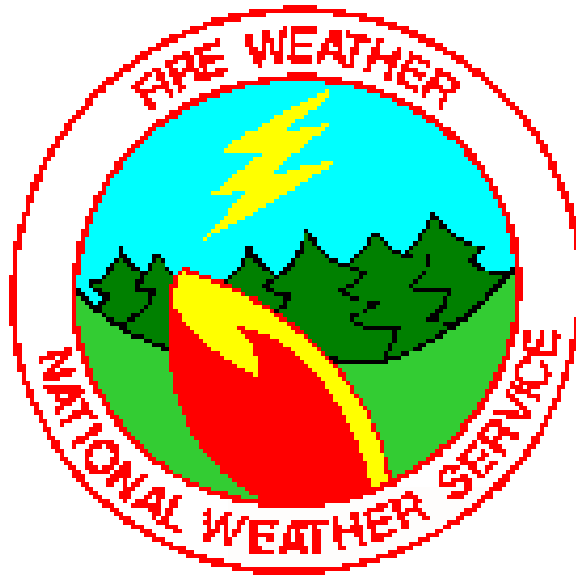


2006 Fire Weather Annual Summary



**San Joaquin Valley Fire Weather District
Hanford, CA**

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I. Summation of the 2006 San Joaquin Valley Fire/Hanford Weather Season

The National Weather Service in Hanford began its fire season activities on May 14th. Before this date, one narrative forecast was issued each weekday afternoon and one forecast issued on Monday mornings or the day after a holiday. Warnings, watches, and spot forecasts were issued on an as needed basis. After May 17th, Hanford Fire Weather began its full fire season activities, preparing two narrative forecasts and zone trend forecasts seven days a week.

January

January 2006 started out wet with a strong winter storm system on the 1st bringing several feet of snow to the high elevations of the Sierra Nevada and heavy rain and flooding to the lower elevations. The next storm did not arrive until the 14th, bringing another 1 to 2 feet of snow to the Sierra and nearly a foot of snow in the Kern County Mountains as well. High pressure brought a dry spell and cold temperatures for the latter third of the month before a few weak storms brought light precipitation to the region for the last few days of the month.

February

February 2006 began with a dry, stable weather pattern over central California. This pattern was broken on the 14th as a dry cold front moved through the area bringing much colder weather and some gusty winds through the Kern County mountain passes and into the desert. This was followed by a winter storm that brought up to a foot of snow to the higher elevations of Sierra Nevada with a couple of inches of snow as low as the 4000 foot elevation. Another storm arrived on the 26th bringing another 2-3 feet of snow at the higher elevations. Overall for the month, the Sierra Nevada and the foothills received between 60 and 95 percent of the normal precipitation, while the Valley and Kern Mountains were only about 25 percent of normal. Temperatures were near normal all areas.

March

March saw a very active storm pattern over Central California with storms moving through every 2 to 3 days throughout the month. Some of these storms brought heavy rain to the lower elevations and 2 to 3 feet of snow in the high Sierra, along with strong gusty winds cold temperatures. The last storm for the month occurred on the 27th and brought 4 to 5 feet of snow in parts of the Sierra and up to 15 inches of snow as far south as the Piutes in Kern County. Overall, precipitation ranged from 135

to 215 percent of normal, except in the Kern Mountains where it was near 100 percent of normal. Temperatures for the month were 4 to 10 degrees below normal.

April

Storms continued to move through the region every 2 to 3 days through the middle of April dumping copious amounts of rain and snow across the district. Precipitation for the month was around 400 percent of normal across much of Central California. Temperatures generally ranged from 1 to 4 degrees below average, although high pressure pushed temperatures well above normal for the last few days of the month.

May

May began dry with mild temperatures, which slowly warmed to above normal the 2nd week of May. A weak disturbance off the Southern California coast on the 14th and 15th brought a few showers and thunderstorms over the region. This was followed by high pressure and unseasonably warm temperatures until the 20th when a late season Pacific storm moved in. This system brought much cooler temperatures, rain, a few thunderstorms and snow above 8000 feet in the Sierra. Temperatures then warmed again before another low pressure system cooled things off again on the 26th. The month ended with dry weather and a warming trend. Temperatures on average were 2 to 4 degrees above normal for the month. Precipitation was near normal, except below normal over the Kern County Mountains.

June

The first week of June was dominated by high pressure and above normal temperatures. The second week of June, in contrast, saw unseasonably cold temperatures but very little precipitation as upper level troughs moved through the area. The last half of the month was once again dominated by high pressure that was centered over the desert southwest. This brought much above normal temperatures to the region. Monsoonal moisture rotated north around the high to bring scattered thunderstorms to Sierra Nevada, Tehachapi Mountains, and the Kern County Desert areas from the 25th through the 28th. Temperatures for the month ended up 3 to 6 degrees above normal with precipitation slightly below normal.

July

Hot conditions dominated the month of July as a strong upper level high pressure system anchored over the Four Corners dominated the weather pattern for much of the month. The San Joaquin Valley saw temperatures reach 100 degrees or warmer on 20

days and 105 degrees or warmer for 14 days. On the 23rd through the 25th, Fresno saw high temperatures of 113 degrees. At the same time, temperatures in the mountains were mostly in the 90s at the 5000 foot elevations and in the 80s at the 8000 foot elevations. The monthly average temperatures were 4 to 8 degrees above normal for most of central California. Despite the heat, humidities did not drop to extremely low levels due to monsoonal moisture that was drawn northward around the ridge of high pressure. This brought scattered thunderstorms over the Sierra Nevada, the Tehachapi Mountains, and the Kern County Desert areas through much of the month. Some of these thunderstorms had heavy rain, with flooding occurring on the 20th and 21st near Huntington Lake, Lake Isabella, Walker Basin, and Pine Mountain Club.

August

An upper level trough persisted along the California coast for the first week of August, cooling temperatures back to near normal with isolated thunderstorms over the Sierra. High pressure returned to the region on the 8th with temperatures warming above 100 degrees in the San Joaquin Valley. The warm temperatures were short lived, however, as an upper level trough of low pressure developed off the California Coast once again. A series of disturbances moved through the trough every other day. This kept temperatures near normal with little or no thunderstorm activity in the southwesterly flow aloft.

High pressure once again continued through the 21st before a ridge briefly rebuild over the region again. The pattern of a ridge for 2 or 3 days followed by a trough for 2 or 3 days repeated itself through the end of the month. Overall for the month, temperatures averaged near normal with little or no precipitation. Minimum humidities were in the single digits and lower teens in the Kern County Mountains frequently during August, while the Sierra Nevada saw humidities mainly in the teens and 20s. Minimum humidities did occasionally drop into the single digits over the higher elevations of the Sierra.

September

A ridge of high pressure strengthened over the region for the first week of September with temperatures warming to several degrees above normal. Monsoonal moisture was drawn up into the region again with thunderstorms over the mountains and deserts almost every day through the 7th. The pattern changed abruptly on September 8th as a strong upper level trough reached California. This cooled temperatures 5 to 10 degrees in the mountains and 10 to 15 degrees in the San Joaquin Valley and the foothills between the 8th and the 10th. An upper ridge built over Northern California on the 11th with low pressure near the Nevada/Arizona border. This

created easterly winds over Central California with warmer temperatures and gradually lowering humidities for a few days.

A dry cold front moved through the region on the 15th, dropping temperatures well below normal. This front also brought Red Flag conditions to the Sierra Nevada and Kern County Mountains as winds frequently gusted over 35 mph (a few places in Southern Tulare County and Eastern Kern County gusted over 60 mph) along with humidities in the single digits and lower teens. Another trough of low pressure moved through the area on the 22nd, and again was followed by an easterly flow aloft as high pressure built into Northern California. East to southeast sustained winds of 20 to 25 mph were reported through the passes in Kern County, with wind gusts to 32 mph in the south end of the San Joaquin Valley. Overall for the month, temperatures averaged about a degree above normal, except in the western Kern County Mountains where temperatures were 3 degrees below normal, mostly due to smoke from the Day Fire spreading over the area. Precipitation was below normal all areas.

October

The first half of October was dominated by a trough of low pressure over the region. Some light showers occurred over the region on the 1st and 2nd and again on the 5th. A low pressure system brought a few thunderstorms to the southern San Joaquin Valley on the 13th. The low moved onshore near Los Angeles on the 14th shifting the focus of thunderstorms into the Tulare and Kern County Mountains and Desert. Some of the thunderstorms had heavy rain, with Democrat RAWS receiving nearly an inch of rain in only a few hours. This system was followed by gusty winds up to 48 mph through the Kern County Mountains and Desert on the 16th. A stable weather pattern developed over California for the last half of the month, with temperatures warming back into the 80s to near 90 in the San Joaquin Valley by the 21st and 22nd. For the month, temperatures averaged 1 to 3 degrees below normal. Precipitation in the San Joaquin Valley ranged from 12 percent of normal at Fresno to 97 percent of normal at Bakersfield. In the mountains, precipitation ranged from 35 to near 100 percent of normal.

November

An upper level low that moved through the region at the end of October brought a chilly start to November, but only very light amounts of precipitation. However, it was enough moisture to trigger the beginning of fog season for the San Joaquin Valley. Two more weather systems passed through the area on the 10th and 13th, but again only brought light amounts of precipitation, mainly from Fresno County northward. The system on the 13th also brought wind gusts of 50 to 60 mph in the Kern County Mountains and Desert. High pressure moved behind the trough and stayed

through Thanksgiving. This brought fog to the San Joaquin Valley, but kept dry conditions in the mountains. With such dry conditions over the area, fire season was extended beyond the normal ending of Mid-November. The next storm system arrived at the end of the Thanksgiving weekend. Precipitation was light and tapered off quickly south of Fresno County. The month closed with strong surface high pressure over Idaho bringing a cold, dry airmass into Central California.

Precipitation for the month of November ranged from 20 to 40 percent of normal from Fresno County northward and only 3 to 20 percent of normal south. Temperatures ranged from normal to about 2.5 degrees above normal.

December

The strong high pressure over the region at the end of November continued through the first part of December. This brought an offshore flow over the region with very low humidities over the mountains. Red Flag Warnings were issued on the 4th through the 7th for the Tulare and Kern County Mountains as humidities dropped into the single digits for extended periods. Maximum humidities over much warning area were only in the teens to lower 20s. Humidities began to increase late on the 7th and 8th as moisture began to move in ahead of a strong Pacific storm system. Ahead of this low pressure system, strong southeast winds developed in the San Joaquin Valley bringing strong warming. Fresno and Bakersfield both hit record high temperatures on the 8th and with the high of 77 degrees being the warmest ever recorded in Fresno in December. As the storms moved through on the 9th, it brought nearly 2 feet of snow near Yosemite to 13 inches as far south as Giant Forest in Tulare County and a few inches into the northern Kern County Mountains. Lower elevations received from half an inch to over 1.5 inches of rain. This was enough precipitation to finally end fire season and the Hanford office reverted to one forecast a day Monday through Friday effective December 11th.

A winter storm moved through the region on the 16th, followed by another on the 22nd and a third on the 26th. Each of these storms brought snow amounts in the Sierra ranging from half a foot to a foot and a half. For the month, precipitation amounts ranged from 75 to 150 percent of normal. Temperatures ranged from 2 degrees below normal to 2 degrees above normal.

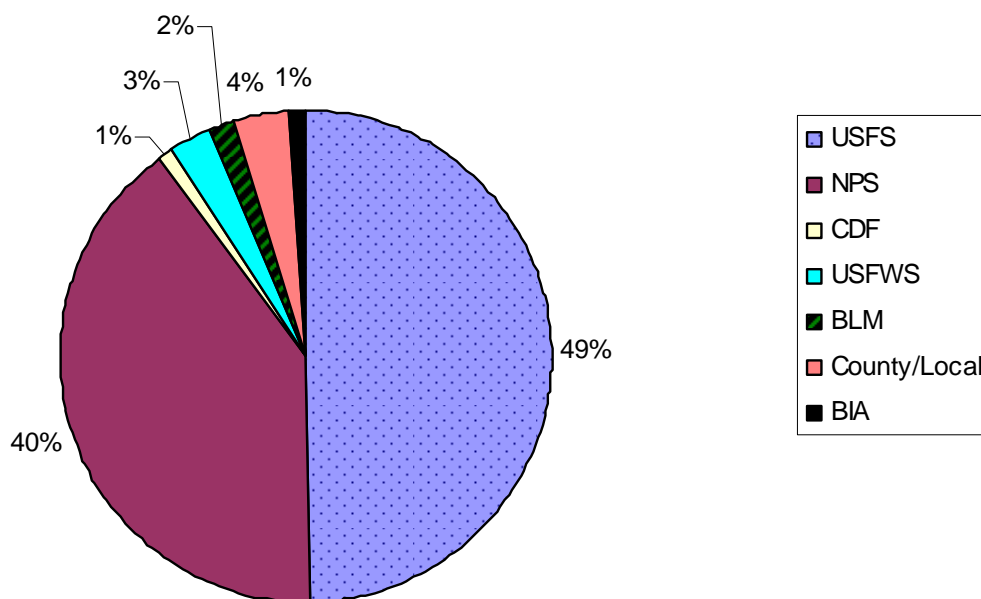
II. Spot Forecasts

The following Spot Forecasts were prepared by the National Weather Service San Joaquin Valley Office in 2006:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
RX	3	5	1	2	16	36	4	0	0	28	47	18
Wildfire/WFU	0	0	0	0	3	12	81	134	86	0	0	6
Hazmat/Other	0	0	0	1	0	0	1	1	0	0	2	0

Total RX spots: 154
 Total Wildfire/WFU spots: 322
 Total Hazmat/Other spots: 5
 Yearly Total: 481
 Monthly average: 40
 Average yearly total 1997-2006: 355

2006 Spot Forecasts by Agency



III. ATMU Dispatches

The San Joaquin Valley Office responded to the following Incident Meteorologist (IMET) requests during 2006:

<u>Incident Name</u>	<u>IMET</u>	<u>Dispatch Dates</u>	<u>Fire Weather District</u>
Canyon Fire CDF Santa Clara Unit	Cindy Bean	7/10/06 - 7/18/06	Sacramento, CA
Black Crater Fire Deschutes NF	Cindy Bean	7/25/06 - 8/8/06	Pendleton, OR
Bar Complex Shasta-Trinity NF	Cindy Bean	8/25/06 - 9/4/06	Eureka, CA
Uncles Complex Klamath NF	Cindy Bean	9/12/06 - 9/26/06	Medford, OR

Total IMET days out of the office: 50

IV. Teaching Assignments

The San Joaquin Valley Office participated as instructors at the following Courses in 2006:

<u>Course Name</u>	<u>Location</u>	<u>Agency Served</u>	<u>Instructor</u>
S-290	Bakersfield, CA January 23-25	USFS	Cindy Bean
S-290	Fort Hunter Liggett June 22	USFS	Cindy Bean
S-290	Ione, CA July 17-18	CDF	Dan Gudgel
S-290	Ione, CA July 31 - August 1	CDF	Dan Gudgel

V. Training

The following training was completed by the San Joaquin Valley office in 2006:

IMET Workshop, Boise, ID, March 2006 - Cindy Bean
Dan Harty (trainee)

VI. Red Flag Warning Verification

*Note: warnings are issued for individual forecast zones.
e.g., a Red Flag Warning issued for 3 zones will count as
3 warnings.*

Total Events

Number of Red Flag Warnings issued:	9
Number of Red Flag Warnings verified:	7
Number of missed events:	0

Probability of Detection (POD):	100%
False Alarm Ratio (FAR):	22%
Critical Success Index (CSI):	78%

The Red Flag events can be further broken down into events issued for Dry Thunderstorms and events issued for winds and low relative humidity.

Dry Thunderstorm Events

Number of Red Flag Warnings issued:	0
Number of Red Flag Warnings verified:	0
Number of missed events:	0

Probability of Detection (POD):	0%
False Alarm Ratio (FAR):	0%
Critical Success Index (CSI):	0%

Wind and Low Humidity Events

Number of Red Flag Warnings issued:	9
Number of Red Flag Warnings verified:	7
Number of missed events:	0

Probability of Detection (POD):	100%
False Alarm Ratio (FAR):	22%
Critical Success Index (CSI):	78%