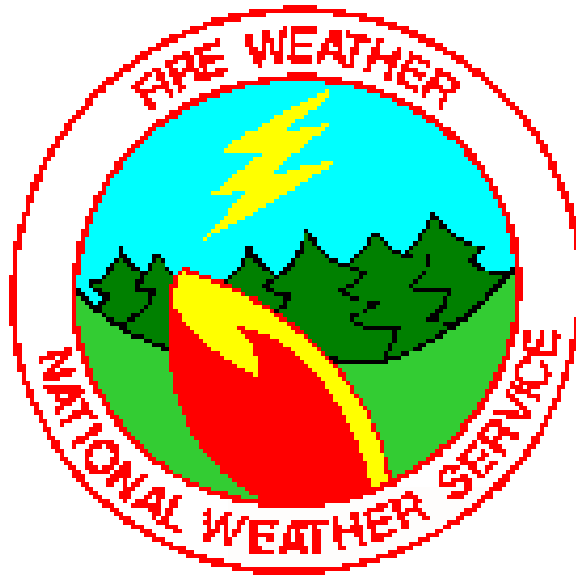


2007 Fire Weather Annual Summary



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

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I. Summation of the 2007 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

A Pacific storm moved through the region January 3rd and 4th bringing as much as two feet of snow to the high country of the Southern Sierra Nevada, as well as strong winds to the Kern County Mountains and Desert. After that, a cold, dry pattern set up over central California and continued through the 25th. In late January, a low pressure system dropped out of the Gulf of Alaska and became nearly stationary off the central California coast. This system first brought warmer southerly winds to the region, then up to 8 inches of snow to parts of the Tehachapi Mountains and the Sierra Nevada on the 27th and 28th, with rain at lower elevations. Overall for the month, temperatures averaged 2 to 4 degrees below normal with precipitation averaging only 20 to 30 percent of normal. It was the 12th driest month on record at Bakersfield and the 26th driest at Fresno. By the end of the month, the snow pack in the Sierra Nevada was only at 40 percent of normal.

February

During the first week of February 2007, an upper level ridge of high pressure brought warm and dry weather to central California. A series of 3 Pacific storm systems moved through the region between the 6th and the 14th. The first two of these systems brought precipitation mainly from Fresno County northward, with the 3rd system finally bringing precipitation across Kern County. These storms brought about 2 feet of snow to the high Sierra. Dry weather prevailed from the 14th through 21st, although a storm system tracked into southern California, brushing Kern County with rain on the 18th and 19th. A cold storm that originated over the Gulf of Alaska tracked southeastward across the state on the 22nd and 23rd and brought several inches of snow to the Sierra foothills and in the Tehachapi mountains above 2000 feet, while up to 2 feet of snow fell over the highest elevations of the Sierra Nevada. This storm system also brought generous rainfall amounts to the San Joaquin Valley along with thunderstorms. More storm moved through on the 25th through the 27th, dropping several more inches of snow in the foothills down to 1600 feet and 2 to 3 feet of snow above 6000 feet. Over 4 inches of snow fell in the Kern County Mountains above 5000 feet.

Although precipitation was more plentiful in February, it was not enough to replenish the seasonal deficit, which averaged 2 to 3 inches below normal. By the close of the month, seasonal snowpack was about 60 percent of normal.

March

Precipitation in March was well below normal. This further added to the seasonal precipitation deficit. For much of the first 3 weeks of the month, an upper level ridge of high pressure over the Desert Southwest kept storm systems well to the north of California resulting in unseasonably warm weather over the central California interior. The jet stream finally buckled around the 20th and brought rain and snow to the region. However, the upper level ridge rapidly rebuilt over central California for a return to dry weather and well above normal temperatures through the 25th.

A second storm system brought about a foot of snow to the high Sierra on the 26th and 27th. Wind gusts ranged from about 40 mph in the San Joaquin Valley to near 75 mph in the Kern County mountain passes. Overall, temperatures for the month averaged 3 to 4 degrees above normal with precipitation only around 30 percent of normal. By the end of the month, the snow pack over the southern Sierra Nevada was only at 39 percent of normal for the season.

April

April 2007 was also drier than normal. Several storms moved through central California on the 11th and the 14th producing light precipitation. However, heavier rain and snow fell across Kern County on the evening of the 14th through the 15th. Snowfall amounts of 8 to 9 inches were reported in the Tehachapi Mountains. These storms also brought wind gusts of 35 to 45 mph in the San Joaquin Valley with gusts over 60 mph in the Kern County Mountains and Desert. A deep upper level trough brought additional precipitation to the region on the 21st and 22nd, falling as rain even over the higher elevations of the Sierra Nevada. By the 25th, a strong high pressure built into California and brought dry weather and a pronounced warming trend. The last 4 days of the month brought summer-like temperatures to the central California interior and rapid snowmelt over the high Sierra. As the month drew to a close, the snow pack over the southern Sierra Nevada was reduced to only 24 percent of normal. Precipitation amounts varied from 40 to 60 percent of normal from about Fresno County northward to 110 to 130 percent of normal over Kern County.

May

May continued to be dry, with the only measurable rain falling on the 4th as a trough of low pressure moved through the region. A ridge of high pressure moved over California on the 5th bringing much above normal temperatures through the 12th. Temperatures returned to near normal for a few days as a dry low pressure trough moved through, then temperatures warmed again. An upper level low off the Pacific Northwest coast kept an onshore flow over central California from the 17th to the 19th keeping temperatures near normal. As the low moved inland on the 20th and 21st it brought gusty winds to the San Joaquin Valley and to the Kern County mountains and desert. This system also brought a few showers to the Sierra Nevada crest, but measurable rainfall was sparse. High pressure once again brought above normal temperatures from the 24th through the 26th and then near normal temperatures for the remainder of the month as an onshore flow pattern returned.

Temperatures for the month averaged 2 to 3 degrees above normal. Precipitation was less than 20 percent of normal, except at Yosemite where it was near 40 percent of normal.

June

The first few days of June were dry with above normal temperatures. A strong Pacific storm moved through the region on the 5th, bringing gusty winds. Precipitation was confined to the Southern Sierra Nevada, with snow falling on Tioga Pass on the 5th and on the Kern Plateau on the 6th. High pressure quickly rebuilt on the 7th and temperatures warmed again. Temperatures climbed to the century mark or higher in the San Joaquin Valley and Sierra Foothills for the first time this season on the 14th and 15th. The ridge of high pressure shifted to the Four Corners region by the 16th, where it remained for the remainder of the month while an upper level low pressure system stalled off the coast of British Columbia. Much of the last 2 weeks of the month were characterized by slightly below normal temperatures and an onshore flow pattern with a prevailing southwesterly flow aloft.

At the climate stations: The rainfall season (July 1 to June 30) ended up with only 47 percent of normal precipitation at Bakersfield and 55 percent of normal precipitation at Fresno.

July

Strong high pressure aloft brought a heat wave at the beginning of July. The Sierra Nevada and Kern County deserts saw temperatures below 5000 feet push into the triple digits, with Yosemite Valley hitting 100 degrees on the 3rd and 109 and 110 degrees on the 4th and 5th. Lake Isabella also climbed to 112 degrees on the 5th, and the San Joaquin Valley had temperatures from 100 to 112 degrees. These hot temperatures continued through the 7th. At the beginning of this heat episode, the humidity in the Tulare and Kern County mountains (mainly Sequoia National Forest) dropped into the single digits for prolonged periods. This resulted in Red Flag conditions on the 4th and 5th.

Monsoonal moisture surged northward along the Sierra Nevada on July 9th. The moisture was deep enough that dry thunderstorms were very limited. Monsoonal moisture surges brought isolated thunderstorms to the Sierra Nevada again on the 14th and 15th and 23rd and 24th.

August

Central California remained between a strong upper level ridge over the Four Corners region and an upper level trough off the British Columbia coast in August. The tug of war between these two systems kept a prevailing southwesterly flow aloft over the region for most of the month. On a few occasions winds aloft shifted to a southeasterly direction and brought monsoonal moisture northward into Sierra. The most significant influx of tropical moisture occurred during the last weekend of the month when remnants of what was once Hurricane Dean produced isolated thunderstorms in the San Joaquin Valley, adjacent foothills and higher elevations of the Sierra. Another surge of tropical moisture during the last few days of the month brought a recurrence of isolated thunderstorms. In the San Joaquin Valley and foothills, thunderstorms were accompanied by frequent lightning during the early morning hours of the 30th.

September

The first few days of the month were hot under a strong ridge of high pressure. Monsoonal moisture generated a few thunderstorms over the Kern County desert and along the Sierra Crest on the 1st. One of these thunderstorms produced a weak tornado in the vicinity of Rosamond. After Labor Day until about the 13th, temperatures averaged close to normal under a stagnant upper air pattern. During mid month, an upper level low slowly deepened over the Pacific Northwest and carved out an unseasonably strong trough along the West coast during the 3rd week of the month. As the pattern was changing, humidities in Sequoia National Forest and the southern portion of Sequoia National Park dropped into the single digits for prolonged periods on the 12th through the 15th. At several stations, humidities rose above 10 percent for only a few hours each night. This unseasonably strong system brought the first measurable rain since April to the San Joaquin Valley on the 21st and 22nd and brought a few inches of snow to the high Sierra. The slow moving trough kept temperatures well below normal from the 19th to the 24th. Temperatures finally warmed to slightly above normal on the 26th and 27th before another dry cold frontal passage dropped temperatures back to May-like levels on the 28th.

October

A series of upper level troughs moved across the Pacific Northwest during the first few weeks of October and occasionally brought precipitation to the central California interior while keeping temperatures slightly below normal. Most of these troughs were accompanied by locally strong and gusty winds over the higher elevations of the Sierra and in the Kern County mountains and desert. On the afternoon of the 16th, strong winds produced blowing dust and near zero visibility in the vicinity of Mojave.

A sharp change in the weather pattern occurred on the 21st as strong high pressure aloft built into California. Temperatures warmed 12-15 degrees from the 21st to the 23rd, and a strong offshore surface pressure gradient set up over southern California. The dry, windy, and unseasonably warm conditions resulted in numerous wildfires across southern California. By the 29th, this ridge shifted eastward to the Four Corners region and an upper level low formed off the west coast and pulled remnants of tropical storm Kiko northward into California. As the upper level low moved inland, it spawned severe thunderstorms in the San Joaquin Valley. Several thunderstorms produced strong winds, large hail and street flooding in the San Joaquin Valley. Flooding was also reported west of Tehachapi and in portions of Yosemite Valley.

November

The month was warmer and drier than normal. In fact, only one day, November 11th, brought measurable precipitation as a cold front moved across the region. Although this front had a subtropical moisture connection, precipitation amounts were rather paltry by November standards. Otherwise, the storm track remained well north of central California for much of the month while an upper level ridge of high pressure resided over southern California and Arizona. An upper level trough dropped into the Great Basin early on the 23rd, while surface high pressure moved into southern Idaho. This resulted in a northeast flow over the Southern Sierra Nevada, both aloft and at the surface. Strong winds developed over the Sierra crest near Yosemite National

Park, with gusts at Tioga Pass reaching 74 mph. This Mono Wind event toppled numerous trees in Yosemite National Park. This system also brought very dry air with it resulting in Red Flag conditions and many locations having 12 to 24 hours of relative humidities at or below 10 percent.

As the month drew to a close, a storm system developed off the central California coast and brought tropical moisture as far north as the Kern County mountains on the 30th. The seasonal snowpack was off to a very slow start for the winter at 3 percent of normal.

December

An upper level ridge of high pressure remained centered over the Eastern Pacific during most of the month and produced a northerly flow aloft over California. This allowed cold fronts to drop frequently southward along the coast, although most of them were moisture-starved by the time they reached central California. On at least two occasions, cold upper level low pressure systems that originated in western Canada tracked southward and deepened over the state. The first of these systems brought one to two feet of snow to the higher elevations of the Sierra Nevada from the 5th through the 7th. This storm also brought up to a half inch of rain to the San Joaquin Valley and brought the first snowfall of the season to the higher elevations of Kern County. Another storm tracked similarly across California on the 17th through the 20th with generous amounts of snow in the mountains and rain in the lower elevations. In spite of the beneficial moisture these two storms brought, the seasonal precipitation deficit remained large. At the end of December, the snowpack over the Southern Sierra Nevada was only 12 percent of normal.

The storm that moved through on the 5th through the 7th brought enough rain and snow to allow the Hanford National Weather Service office to revert to an offseason forecast schedule effective December 10th.

II. Spot Forecasts

The following Spot Forecasts were prepared by the National Weather Service San Joaquin Valley Office in 2007:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
RX	42	6	22	18	28	15	1	2	5	41	19	24
Wildfire	0	0	0	3	7	20	10	30	17	1	10	1
WFU	0	0	0	0	0	0	14	1	6	0	14	0
Hazmat/ SAR/Other	0	0	0	0	2	0	1	3	0	0	2	0

Total RX spots: 223

Total Wildfire spots: 99

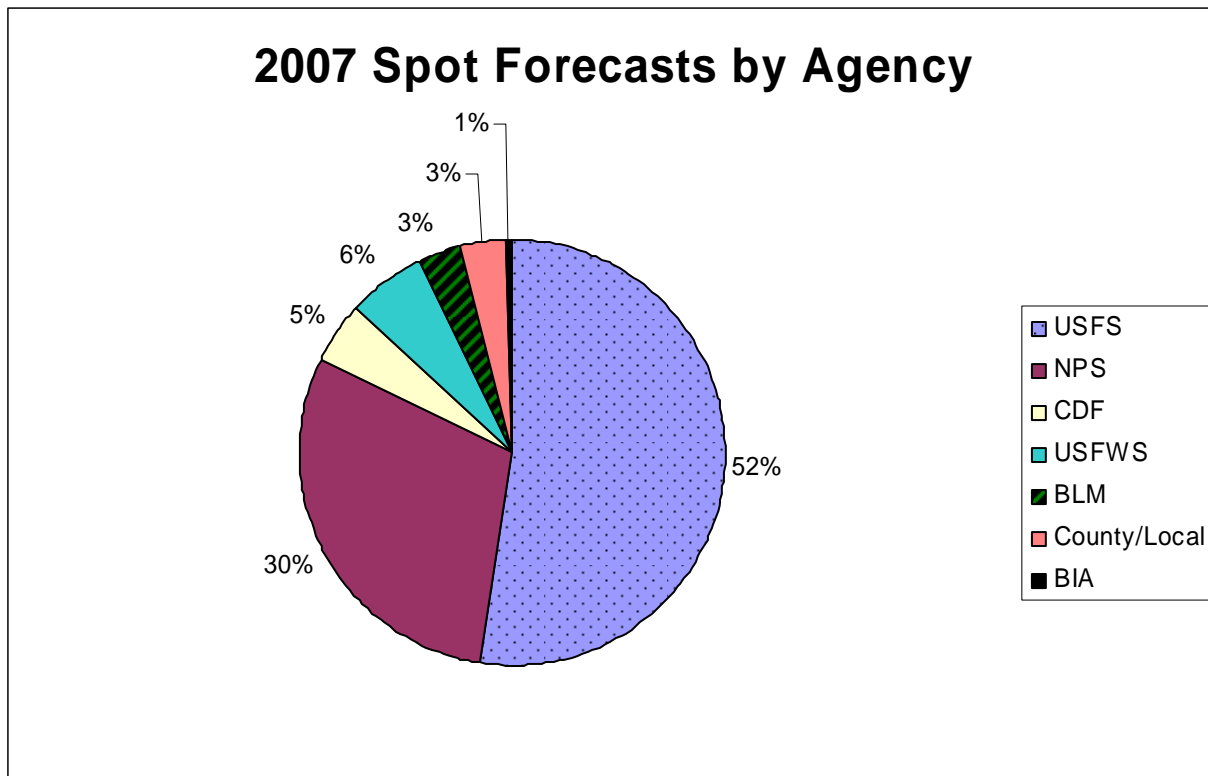
Total WFU spots: 35

Total Hazmat/Other spots: 8

Yearly Total: 365

Monthly average: 30.4

Average yearly total 1998-2007: 359.7



III. ATMU Dispatches

The San Joaquin Valley Office responded to the following Incident Meteorologist (IMET) requests during 2007:

<u>Incident Name</u>	<u>IMET</u>	<u>Dispatch Dates</u>	<u>Fire Weather District</u>
Goldledge Fire Sequoia NF	Cindy Bean	6/4/07 - 6/8/07	Hanford, CA
Antelope Complex Plumas NF	Dan Harty(T)	7/8/07 – 7/14/07	Reno, NV
Wind Ridge Fire Colville NF	Dan Harty(T)	7/19/07 – 7/25/07	Spokane, WA
Trapper Ridge Fire Boise NF	Dan Harty(T)	7/31/07 – 8/7/07	Boise, ID
Middle Fork Fire Boise NF	Dan Harty(T)	8/8/07 – 8/13/07	Boise, ID
Zaca Fire Los Padres NF	Cindy Bean	8/19/07 – 9/2/07	Oxnard, CA
Vista Fire Sequoia NF	Dan Harty	8/24/07 – 8/27/07	Hanford, CA
Krassel WFU Payette NF	Dan Harty	9/3/07 – 9/18/07	Boise, ID
Butler 2 Fire San Bernardino, NF	Cindy Bean	9/16/07 – 9/25/07	San Diego, CA
Harris Fire Cal Fire, Monte Vista Unit	Cindy Bean	10/22/07 – 10/31/07	San Diego, CA
Slide Fire San Bernardino NF	Dan Harty	10/30/07 – 11/10/07	San Diego, CA

Total IMET days out of the office: 100

IV. Teaching Assignments

The San Joaquin Valley Office participated as instructors at the following Courses in 2007:

<u>Course Name</u>	<u>Location</u>	<u>Agency Served</u>	<u>Instructor</u>
S-290	Hanford, CA March 20-21	Kings County Fire	Cindy Bean
S-290	Bakersfield, CA May 14-15	Kern County Fire/ Bakersfield City Fire	Cindy Bean
S-390	Clovis, CA May 21	CDF	Cindy Bean
S-290	Fresno, CA November 13-14	California Fire Chiefs Association	Cindy Bean

V. Training

The following training was completed by the San Joaquin Valley office in 2007:

IMET Workshop, Boise, ID, March 2007 - Cindy Bean
Dan Harty (trainee)

S-390 Clovis, CA, May 21-25, 2007 – Dan Harty

IMET Certification August 14, 2007 – Dan Harty

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:	17
Number of Red Flag Warnings verified:	13
Number of missed events:	2

Probability of Detection (POD):	87%
False Alarm Ratio (FAR):	24%
Critical Success Index (CSI):	68%

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:	5
Number of Red Flag Warnings verified:	1
Number of missed events:	0

Probability of Detection (POD):	100%
False Alarm Ratio (FAR):	80%
Critical Success Index (CSI):	20%

Wind and Low Humidity Events

Number of Red Flag Warnings issued:	12
Number of Red Flag Warnings verified:	12
Number of missed events:	2

Probability of Detection (POD):	86%
False Alarm Ratio (FAR):	0%
Critical Success Index (CSI):	86%