CALIFORNIA
FIRE WEATHER
ANNUAL OPERATING PLAN

2006

CALIFORNIA FIRE WEATHER ANNUAL OPERATING PLAN 2006

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CALIFORNIA ANNUAL OPERATING PLAN 2006

I. INTRODUCTION

This document serves as the California Fire Weather Annual Operating Plan (AOP) for the National Weather Service (NWS) and the interagency fire management community operating under the California Wildfire Coordinating Group (CWCG). The general relationship between the NWS and the interagency fire management community is set forth in the following documents:

Interagency Agreement for Meteorological Services Among the Bureau of Land Management, Bureau of Indian Affairs, U.S. Fish and Wildlife Service, and National Park Service of the U.S. Dept. of Interior, the Forest Service of the U.S. Dept. of Agriculture, and the National Weather Service of the U.S. Dept. of Commerce (National MOA or National Agreement);

Interagency Agreement Between the California Wildfire Coordinating Group and the National Weather Service;

National Weather Service NWSI 10-4: Fire Weather Services;

2006 National Mobilization Guide; and

2006 California Mobilization Guide

The AOP provides specific procedural and policy information regarding the delivery of meteorological services to the fire management community in California.

II. CHANGES FOR 2006

A new fire weather web portal is available for use: http://www.wrh.noaa.gov/sto/cafw/. Please bookmark this page. New Emergency Communication Center Dispatch Area (ECCDA) forecasts are available from this web site, as are all NWS fire weather zone forecasts for California. Direct links to Predictive Services products are also available. Shortly after the finalization of the ECCDA project, the daily Fire Weather summaries from the GACC Predictive Service Units will cease. The GACCs will then develop a graphics based product highlighting significant operational Fire Weather concerns of Days 1-2. This should be available by mid July. Please see the Joint Responsibilities section of the AOP for more detail.

FARSITE weather data will be generated automatically for all spot forecasts starting this season (after June 15th). Data can also be generated without a spot forecast by the NWS on request. Please see the NWS Services and Responsibilities section for more information.

At customer request, the following fire weather zone forecast changes have been made:

WFO Sacramento has split fire weather zone 269 in two. Zone 269 is the number of the northern half of the current zone and number 211 represents the southern half of the current zone.

Complete information is available here: http://www.weather.gov/os/notification/scn06-13calif_fire_zone_chg.txt

WFO Eureka has realigned most fire weather zone for northwest California. Complete information is available here: http://www.weather.gov/os/notification/scn06-13calif_fire_zone_chg.txt

WFO San Diego has changed the names of the fire weather zones in southwest California to better reflect geography. Complete information is available here: http://www.weather.gov/os/notification/scn06-17san_diego_firezone_name_chg.txt

Red Flag Criteria has been slightly modified for portions of the Southern California deserts. Please refer to Section D of the Joint Responsibilities section for the latest Red Flag Criteria tables.

More CANSAC products have become available in the past year. There is now an Air Quality products section, which includes expanding BlueSky capabilities.

Be sure to check Appendix F for the latest list of NFDRS Trend forecast sites and responsible NWS offices.

III. SERVICE AREAS FOR NWS OFFICES AND FIRE WEATHER CENTERS

Fire weather forecast services are provided by forecasters at National Weather Service offices and in Predictive Services Units at the Redding and Riverside Geographic Area Coordination Centers. All Red Flag Warnings and Fire Weather Watches, all spot forecasts for wildfires, and all forecasts used to develop National Fire Danger Rating System (NFDRS) indices, are issued by the NWS. Both groups provide spot forecasts for prescribed burns, narrative and/or graphical forecasts for planning purposes, and have trained Incident Meteorologists (NWS) or Technical Specialists (PSU). Details on these services are contained in the plan.

A. NWS Weather Forecast Offices (WFOs) Serving California (Bold indicates shared counties.)

WEATHER FORECAST OFFICE	COUNTIES (including local fire depts.) WITHIN THE FIRE WEATHER FORECAST DISTRICT	FEDERAL AND STATE AGENCIES USING THE FIRE WEATHER FORECASTS
Medford WFO http://www.weather.gov/medford	Siskiyou, Modoc	CDF: Siskiyou and Lassen-Modoc Units USFS: Klamath, Modoc, North Shasta Trinity NFs NPS: Lava Beds NM USFW: Lower Klamath Basin Refuge BLM: North NorCal BLM
Eureka WFO http://www.weather.gov/eureka	Del Norte, Humboldt, Trinity, Mendocino	CDF: Humboldt-Del Norte and Mendocino Units USFS: Six Rivers, West Shasta-Trinity, West Mendocino NFs BLM: West NorCal BLM NPS: Redwood NP BIA: Hoopa Valley Tribe

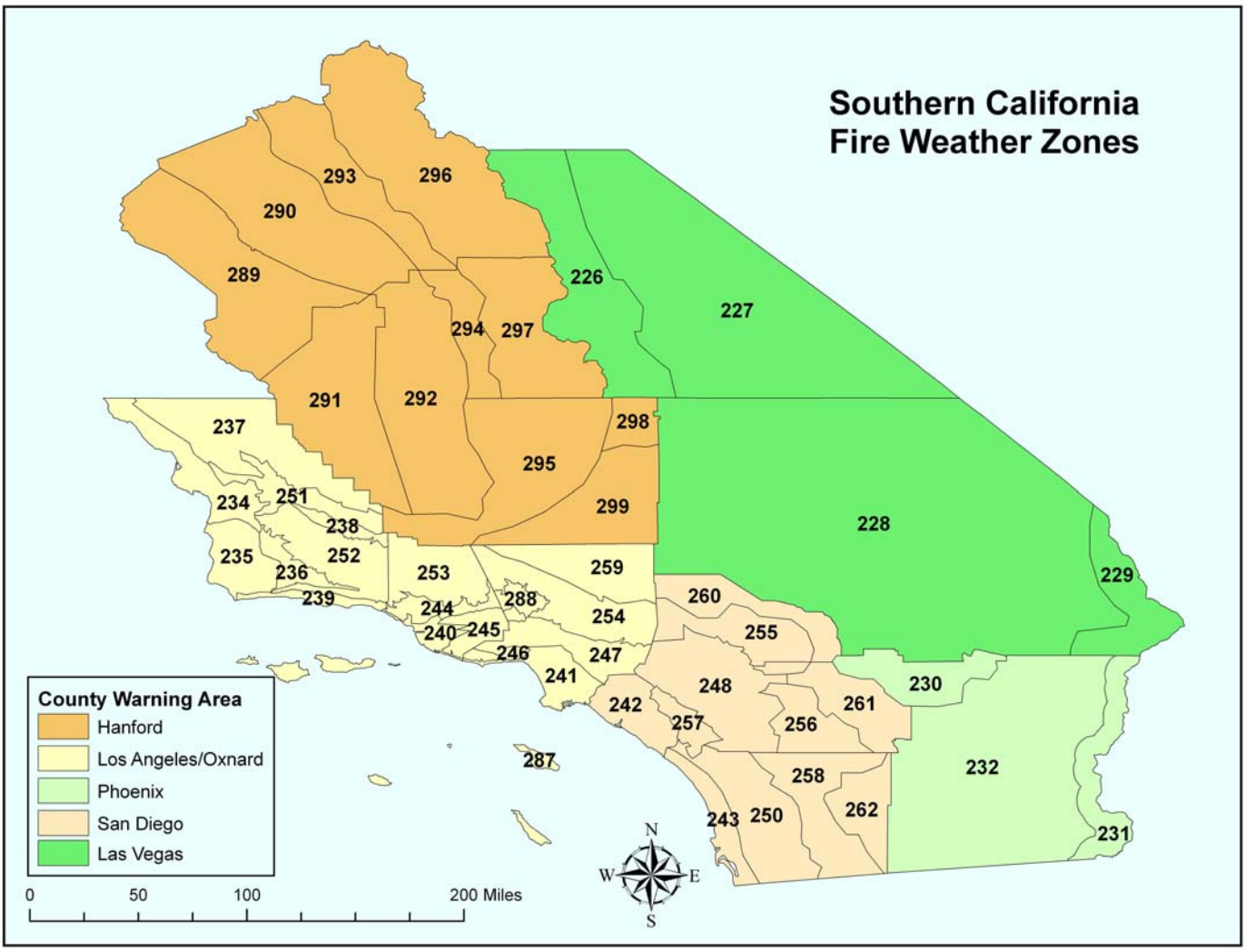
Sacramento WFO http://www.weather.gov/sacramento	Shasta, Tehama, Glenn, Colusa, Butte, Yuba, Sutter, Lake, Yolo, Sacramento, Calaveras, Amador, San Joaquin, Solano, Stanislaus **Western Portions of**: Plumas, Sierra, Nevada, Placer, El Dorado, Tuolumne, Alpine	USFS: South Shasta-Trinity, East Mendocino, West Lassen, West Plumas, West Tahoe, El Dorado, Stanislaus NFs BLM: South NorCal and North CenCal BLM NPS: Lassen NP, Whiskeytown NRA USFW: North Central Valley Refuges CDF: Shasta-Trinity, West Lassen-Modoc, Butte, East Sonoma-Lake-Napa, Tehama-Glenn, Amador-El Dorado, Tuolumne-Calaveras and West Nevada-Yuba-Placer Units

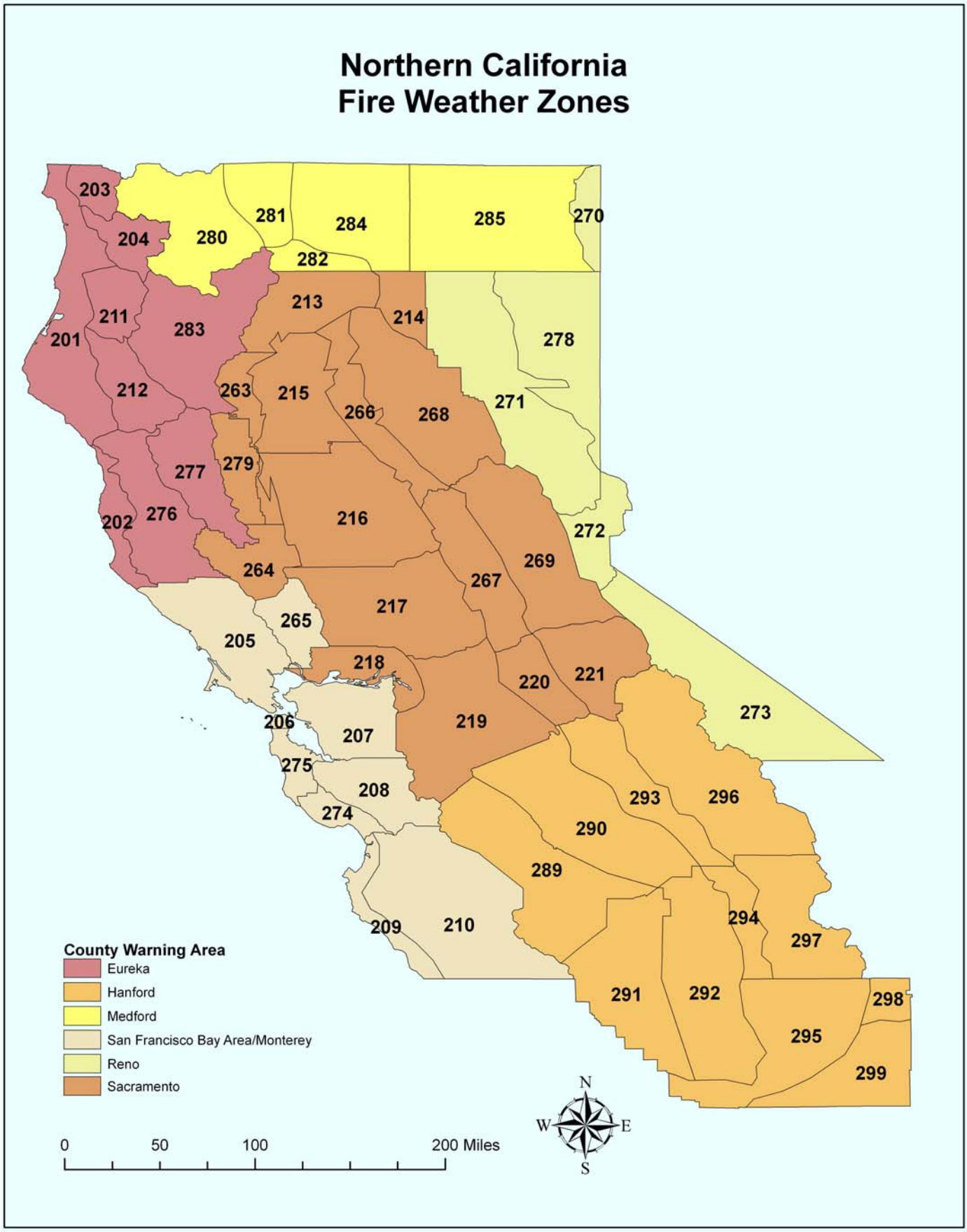
Reno WFO http://www.weather.gov/reno	Lassen, Mono **Eastern Portions of**: Modoc, Plumas, Sierra, Nevada, Placer, El Dorado, Alpine	BLM: NE and East NorCal and Northeast CenCal BLM USFS: East Lassen, East Plumas, East Tahoe, Humboldt-Toiyabe, Northern Inyo NFs and Tahoe Basin Management Unit (USFS) CDF: East Lassen-Modoc Unit and East Nevada-Yuba-Placer Units
San Francisco Bay Area/Monterey WFO http://www.wrh.noaa.gov/mtr/	Sonoma, Napa, Marin, Contra Costa, Alameda, San Mateo, Santa Clara, Santa Cruz, Monterey, San Benito	CDF: West Sonoma-Lake-Napa, San Benito-Monterey, Santa Clara and San Mateo-Santa Cruz Units NPS: Point Reyes NRA, Golden Gate NRA, Pinnacles NM USFS: North Los Padres NF DOD: Ft Hunter-Liggett
Hanford WFO http://www.weather.gov/hanford	Mariposa, Merced, Madera, Fresno, Kings, Tulare, Kern **SE Tuolumne Co** in Yosemite NP	NPS: Yosemite andSequoia/Kings NP BLM: Western CenCal BLM USFW: South Central Valley Refuges USFS: Sierra and Sequoia NFs CDF: Tulare, Madera-Mariposa-Merced and Fresno-Kings Units
Los Angeles/Oxnard WFO http://www.weather.gov/losangeles	San Luis Obispo, Santa Barbara, Ventura, Los Angeles	CDF: San Luis Obispo Unit NPS: Channel Islands NP, Santa Monica Mountains NRA DOD: Vandenberg AFB USFS: Angeles and South Los Padres NF USFW: Southern California Refuges

San Diego WFO http://www.weather.gov/sandiego	Orange, San Diego **SW San Bernardino Co.** Western Riverside Co.	USFS: San Bernardino NF CDF: San Diego, Western San Bernardino and Western Riverside Units; California State Parks LD BLM: South Coast BLM USFW: Southern California Refuges USFS: Cleveland and San Bernardino NFs

Phoenix WFO http://www.weather.gov/phoenix	Eastern Riverside Co.	BLM: California Desert BLM USFW: Southern California Refuges NPS: Joshua Tree NP
Las Vegas WFO http://www.weather.gov/lasvegas	San Bernardino (except Southwest) Inyo	CDF: Northern San Bernardino and Eastern Riverside Units USFS: Southern Inyo NF BLM: California Desert BLM NPS: Mojave National Preserve, Death Valley NP USFW: Southern California Refuges

B. National Weather Service Fire Weather Zones





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C. Predictive Services Units Serving California

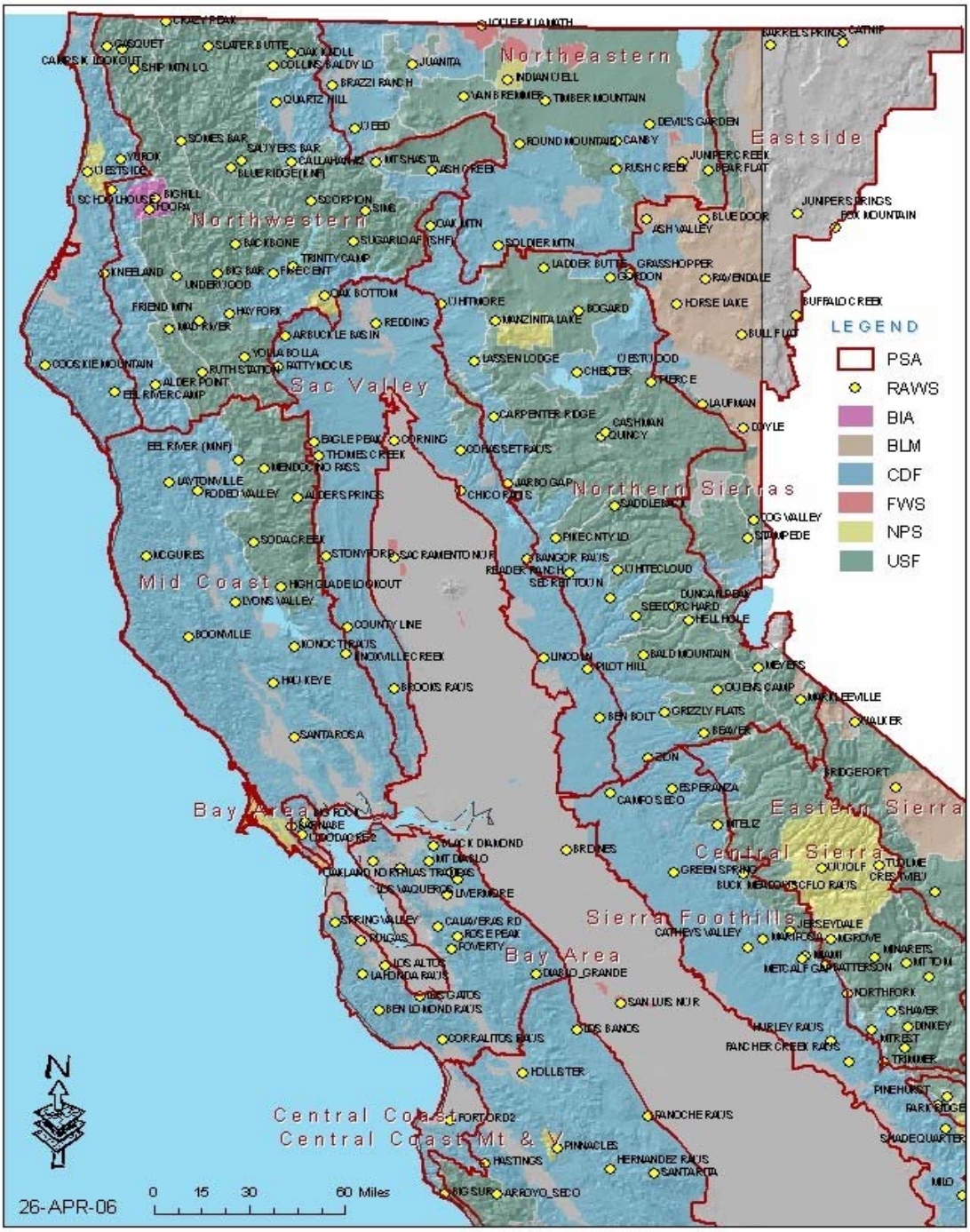
Predictive Service Unit	Predictive Service Areas within this PSU
Redding http://gacc.nifc.gov/oncc/predictive/weather/index.htm	North Coast PSA Mid Coast to Mendocino PSA Bay Area PSA Northwestern Mtn PSA Sac Valley / Foothills PSA NE California PSA Northern Sierra PSA Eastside PSA
Riverside http://gacc.nifc.gov/oscc/predictive/weather/index.htm	Eastern Sierra Mountains and Valleys PSA Central Sierra PSA Southern Sierra PSA Sierra Foothills PSA Central Coast Mountains and Valleys PSA Central Coast PSA Southern California Central Mountains PSA Southern California Coast and Valleys PSA Southern California Southern Mountains PSA Southern California Deserts PSA

D. Participating Agencies

DOC/NOAA/National Weather Service
USDA Forest Service – Pacific Southwest Region (except Hawaii)
DOI Bureau of Land Management – California State Offices
DOI National Park Service – Pacific West Region
DOI US Fish and Wildlife Service – Pacific Region
DOI Bureau of Indian Affairs – Pacific Region
California Department of Forestry and Fire Protection
California Wildfire Coordinating Group (including contract counties and city fire departments)

E. Predictive Service Area Maps

Redding PSU



Predicitve Service Area's & RAWS for Southern California

IV. NWS SERVICES AND RESPONSIBILITIES

Information on current operational NWS fire weather forecast products follows. Significant changes to these forecast services or deployment of new operational forecast services will be coordinated through the California Wildfire Coordinating Group (Reference NWSI 10-403). Any non-operational forecast products will be clearly labeled as "Experimental" or "Prototype".

A. Individual Forecast Office Information

Weather Forecast Office	High Season Forecasts	Morning Forecast	Afternoon Forecast	Low Season Forecasts	NWS Forecast Zones
Extreme Northern California – Medford	Usually by June 1 to November 1; Customer coordinated depending on weather/fuels	7:30 a.m.	3:30 p.m.	Daily 3:30 p.m.	280-282, 284, 285
Northwest California – Eureka		7:30 a.m.	3:30 p.m.	M-F 3:30 p.m. also M at 8 a.m. *	201-204, 211, 276212, 276,277, 283
North Central California – Sacramento		7:30 a.m.	3:30 p.m.	M-F 3:30 p.m. also M at 8 a.m. *	213-2210, 263, 264, 266-269
Extreme Eastern California – Reno		7:30 a.m.	3:30 p.m.	Daily 7 a.m.	270-273, 278
Central Coast California – San Francisco Bay Area/Monterey		7:00 a.m.	3:00 p.m.	M-F 3 p.m. also M at 7 a.m. *	205-210, 265, 274, 275
Central California Interior – Hanford		7:00 a.m.	3:30 p.m.	M-F 3p.m. (PST) or 3:30 (PDT) also M at 7 a.m. *	289-299
Southwest California – Los Angeles/Oxnard	Usually May 15 to December 1; Customer coordinated depending on weather/fuels	9:30 a.m.	3:30 p.m.	M-F 3:30 p.m. also M at 9:30 a.m. *	234-241, 244-247, 252,253, 254, 259, 288
Extreme Southwest California – San Diego		7:300 a.m.	2:30 p.m.	Daily by 97:300 a.m.	242, 243, 248, 250-253, 255-258
Southeast California – Phoenix		7:30 a.m.	3:30 p.m.	Daily 7:30 a.m.	230-232
Southeast California – Las Vegas		7:00 a.m.	3:30 p.m.	Daily 7 a.m.	226-229

* excludes Federal Holidays

B. Fire Weather Planning Forecasts

These provide general, zone-based information for daily preparedness and planning purposes. They are not to be used in lieu of spot forecasts.

Issuance times – During fire season, routine planning forecasts will be issued twice daily – once in the morning and once in the afternoon - seven days per week. During low fire season, NWS offices serving California issue one fire weather planning forecast each weekday morning, with minor variation based on local customer requirements. See the Individual Forecast Office Information table for specific issuance times for each NWS office. The beginning and ending dates of fire season forecasts vary by year, but are linked for North Ops and South Ops, and are based on customer feedback.

Update/Corrected forecasts - Forecasts will be updated or corrected upon issuance of a Fire Weather Watch or a Red Flag Warning, when the current forecast does not adequately describe significant weather expected in the future, or when typographical/format errors prevent proper interpretation of the forecast.

Access – Forecasts are available via WIMS, the California Fire Weather Page (http://www.wrh.noaa.gov/sto/cafw/), NWS office web sites and Predictive Services web sites. NWS office web pages may be linked from the Individual Forecast Information Table. Links to forecasts and NWS web pages also can be found on the National Fire Weather Page at: http://fire.boi.noaa.gov/

Content and Format – Forecasts will conform to the national standard narrative, per NWS Directive 10-401. Morning forecasts will focus on the following 36 hours and afternoon forecasts on the following 48 hours, with general extended outlooks in both cases out to at least five days. Forecasts are subdivided into meteorologically and topographically similar forecast areas called zones.

Each forecast will begin with pertinent headlines and a **non-technical** weather discussion. Headlines are required for Red Flag Warnings and Fire Weather Watches. Headlines are recommended for other situations that affect fire danger without meeting Red Flag criteria. Discussions should normally be no more than 8 lines in length.

Short-term forecast for the first 36 or 48 hours - Short-term forecasts are highly detailed and emphasize information which is needed for initial attack and day-to-day fire management. Each forecast zone or zone grouping contains the following elements, listed in the order they will appear:

- Headline(s) as appropriate
- Sky/Weather
- Temperature
- Relative Humidity
- Wind – 20-foot RAWS standard (slope/valley and ridgetop, as appropriate)
- Chance of Rain and/or Chance of Wetting Rain (CWR)
- Lightning Activity Level (LAL)

Forecasts may include the following optional elements based on local customer requirements:

- Haines Index
- Mixing Level or Mixing Height

- Marine Layer
- Transport Wind
- 10,000-foot Wind
- Ventilation Category (or numeric value)
- 24-hour Trends (of temperature and relative humidity)

Descriptions of forecast parameters can be found in Appendix A.

An example of a morning issuance is available in Appendix B1.

Extended Outlook to at least day five - Beyond 36-48 hours, the forecasts are used for resource planning. They contain general guidance information, keying on significant changes in temperature, humidity, wind, or weather needed for decision-making purposes.

C. NWS Spot Forecast

Spot forecasts are site-specific forecast products issued for wildfires, wildland fire use events (WFU), prescribed burns, search and rescue operations, areal spraying, etc., and are available upon request at any time. Spot forecasts are available to any federal, state, or municipal agency as described in NWSI 10-401. When smoke dispersion/ smoke management is a concern, prescribed burn spot forecasts can be requested from the Predictive Service Units at Redding or Riverside.

Spot forecast information is highly perishable. Using up-to-date spot forecasts is important. With this in mind, the NWS expects that the requested issuance time for spot forecasts will be within a few hours of when the requestor will begin using the forecast. If a significant delay occurs – particularly if there is anything in the forecast or in observed conditions which raises concern – it is recommended that the requestor call the NWS office and discuss the forecast with a meteorologist.

Issuance Times - Priority for the issuance and desired lead time is as follows:

Wildfire or HAZMAT spots - Forecasts for the original issuance or unscheduled updates will be made available as soon as possible and no longer than one hour after the request is received, unless a longer lead time is negotiated. Requests for scheduled updates for ongoing spots (such as for a shift briefing) should be submitted to the issuing office with as much lead time as possible and at least two hours before needed.

Prescribed burn or WFU spots - Forecasts for original issuances or scheduled updates should be made with as much lead time as possible, with requests made in the afternoon or evening for delivery of a prescribed burn spot the next morning being the recommended lead time.

Forecasts for unscheduled updates for prescribed burn spots, either due to a specific request based on weather at the site or due to monitoring invoked by the phrase, “Request Priority Monitoring” or similar in the remarks section of the spot forecast request, will be issued as soon as possible and no longer than two hours after it is recognized that an update is desirable.

All remaining spot forecasts - Forecasts for original issuances and routine or unscheduled updates will be issued as soon as possible, as negotiated with the requestor.

Updated Forecasts - Site-specific forecasts are considered one-time requests and are not routinely updated. However, if determined necessary, updates will be done within 24 hours of requested issuance time of the spot if the following occurs:

- Representative observations are available, the meteorologist has been made aware that monitoring is desired, and the meteorologist deems the current forecast does not adequately represent current or expected weather conditions which might affect the burn
  - OR -
- The meteorologist is specifically asked for a verbal or written update, such as when forecast conditions appear unrepresentative of the actual weather conditions.

Corrections - The spot forecast will be corrected when a typographical or format error is detected that prevents correct interpretation of the forecast. Corrections should be delivered to users in the same manner as the original spot forecast when possible.

Access – Use of the Internet is the standard for requesting and retrieving NWS spot forecasts and should be used when available. Spot forecasts can be accessed from the California Fire Weather Web page (http://www.wrh.noaa.gov/sto/cafw/), all NWS office fire weather web pages and Predictive Services web pages. When Internet access is not available, spot forecasts may be requested and disseminated via phone or fax using the backup spot forecast request form found in Appendix E.

At or before the time of a spot request, the requesting agency should provide information about the location, topography, fuel type(s), elevation(s), size, ignition time, and a contact name(s) and telephone number(s) of the responsible land management personnel. Also, quality representative observation(s) at, or near, the site of the planned prescribed burn, or wildfire, should be available to the responsible WFO along with the request for a spot forecast(s). Internet-based spot request programs and the backup form both provide blocks to fill these data in and will indicate which are absolutely essential to receive a spot forecast.

Upon completion, spot forecasts are posted to the appropriate Fire Weather Page of the NWS forecast office web site that received the request. NWS web sites may be linked from the Individual Forecast Information Table.

Content and Format – Exact content depends on user request. Headlines are always included if a Red Flag Warning or Fire Weather Watch is in effect at the time of issuance.

The forecast period is based on user request and will contain up to three periods, such as “TODAY”, “TONIGHT”, and “FRIDAY.” If requested, and if enough weather information is received to make it feasible, a more specific first period such as “AT 11 A.M. IGNITION” may be used. In these cases, the meteorologist will not just forecast for the planned ignition time, but will include significant changes expected in the forecast parameters for the rest of the usual period, e.g., 11 AM temperature and the expected daytime maximum temperature.

When requested, an outlook for a longer duration will be appended, such as “OUTLOOK FOR WEDNESDAY THROUGH FRIDAY” for a spot requested on Monday.

The most commonly requested forecast parameters are the following:

Discussion
Sky/Weather (including chance of rain)
Maximum/Minimum Temperature
Maximum/Minimum Relative Humidity
20-Foot or Eye-Level Winds

Unless otherwise requested, wind forecasts will be of the same type as given in the request, i.e., if eye-level wind observations are provided in the request, then eye-level wind forecasts will be provided in the spot forecast - and similar for 20-foot winds.

Other elements, such as transport winds, mixing depth, LAL, etc., may be included upon request

When information for several days in the future, rather than a near-term forecast, is needed, the routine planning forecast should be consulted. The interactive "weather planner" available from all NWS office web pages, can also be used for longer term planning. If it is determined from this that a longer-range spot forecast is desired, a spot for a general weather outlook for specific days may be requested.

The basic format of a spot forecast is shown in Appendix B2.

Spot Forecast Feedback Requirement - Agencies will follow-up requests for spot forecasts with a telephone call to the appropriate NWS forecast office to ensure receipt of the request. Requesting agencies are also highly encouraged to provide fire-line weather observations for the validation of weather forecast accuracy. For further explanation of the feedback process, see Section F, page 26.

FARSITE Data

For the 2006 fire season (after June 15th), all NWS Western Region Offices will offer automatic 7-day FARSITE weather data support with all wildfire spot forecast issuances. For prescribed burn spot forecasts, FARSITE data will be produced at the request of the agency. Please call the NWS office issuing the prescribed burn forecast directly to request this service, or place the request in the "Remarks Section" of the spot request form.. All FARSITE data will be available from the internet via the appropriate NWS office Fire Weather Page. Check for a "FARSITE Forecasts" button near the Spot Forecast Request link. The data will be in simple ASCI format. Examples of the two FARSITE support outputs ("weather" and "wind") are below. If you have any questions, please contact your servicing NWS office.

Weather:

ENGLISH
03 06 12 0700 1600 30 54 59 30 5620
03 07 63 0700 1600 27 44 84 63 5620
03 08 14 0700 1600 23 43 81 47 5620
etc., through seven days

Wind:

ENGLISH
03 06 0000 11 200 79
03 06 0300 12 200 84
03 06 0600 14 200 95
03 06 0900 15 200 95
03 06 1200 15 200 95
03 06 1500 14 200 90
03 06 1800 13 210 80
03 06 2100 10 220 80
03 07 0000 09 210 80
03 07 0300 08 210 80
03 07 0600 11 240 80
03 07 0900 11 260 80
03 07 1200 09 260 80
03 07 1500 09 270 77
03 07 1800 10 290 70
03 07 2100 11 320 70
etc., through seven days

D. Fire Weather Watches and Red Flag Warnings

NWS offices issue Fire Weather Watches and Red Flag Warnings for critical fire weather patterns that contribute to extreme fire danger and/or fire behavior.

A ***Fire Weather Watch*** is used to alert agencies to the high potential for development of a Red Flag event in the 12-72 hour time frame. The Watch may be issued for all or selected portions of a fire weather zone or zones. A watch may be issued in the first 12 hour time period only for an expected dry thunderstorm event.

A ***Red Flag Warning*** is used to inform agencies of the imminent or actual occurrence of Red Flag conditions. A Red Flag Warning is issued when there is high confidence that Red Flag criteria will be met within the next 24 hours, or if those criteria are already being met.

Criteria for Red Flag Warnings/Fire Weather Watches

Dry Lightning - A lightning event that is not accompanied by enough precipitation to significantly wet fuels that have been identified as critically dry. Significant precipitation is defined as ranging from .05 inches for grass or brush fuels to .15 inches for closed-canopy timber/heavy fuels.

Watches and warnings will be issued when dry lightning is expected to be widespread. Isolated events or events of short duration (i.e., events which start dry but become wet within an hour or two) do not need warnings but will be headlined in the forecast.

Wind and Humidity - Wind and humidity criteria are geared toward those situations which may result in rapid spread of wildfires. Because topography and vegetation play a big role in this, several sets of criteria are used across California. Where possible, issuance criteria have been meshed with those

used in adjacent states to meet the needs of agencies whose jurisdictions cross state lines. Criteria are listed in the Wind/Humidity Table.

Red Flag warning/fire weather watches in discussions and headlines - In the discussion portion of the Fire Weather Planning Forecast (FWF), NWS offices will mention critical weather patterns that might lead to conditions approaching or exceeding Red Flag criteria through the extended forecast. This will assist fire agencies in their allocating and moving resources in anticipation of increased fire activity. Fire Weather Watches and Red Flag Warnings will be headlined in spot forecasts, the fire weather narrative, and appropriate zone sections within the fire weather planning forecast. The headline will be in the same format as on the RFW product itself.

Collaboration with agencies - Fire Weather Watches and Red Flag Warnings normally will be issued only after conferring with the affected agencies or a representative subset of affected agencies, to include the Redding and Riverside Predictive Services Units. This will allow for input on fuel conditions and local concerns. However, the ultimate responsibility for the issuance of a watch/warning rests with the NWS forecaster.

Red Flag warning/fire weather watch access - If issuance of a Red Flag Warning or Fire Weather Watch requires an update of the general forecast, the NWS office will verbally notify the Redding and Riverside Predictive Services Units as soon as possible. During non-duty hours for the PSUs, contact the GACC Coordinator on Duty (COD).

Wind/Humidity Table

Area Description	NWS Fire Weather Zones	Criteria	
Southern California desert area excluding the Colorado River Valley	226-228, 230, 232, 260-262	Relative Humidity ≤ 15% and wind gusts GTE 35 mph for 3 hours or more	
Colorado River Valley	229,231	Relative Humidity ≤ 15%, with sustained winds (20 foot) ≥ 20 mph and/or frequent gusts ≥ 35 mph for 3 hours or more	
Antelope Valley and SE Kern County Deserts	298, 299, 259	Relative Humidity ≤ 15% and sustained (20-foot) winds ≥ 25 mph for a duration of 8 hours or more	
Southern California from mountains westward	234-258, 288-297	**Either** Relative Humidity ≤15%, with sustained winds ≥ 25 mph and/or frequent gusts ≥ 35 mph (duration of 6 hours or more)	**Or** Relative Humidity ≤ 10% (duration of 10 hours or more) regardless of wind
Northern California East of Cascade/Sierra Crest and Western Great Basin including the Modoc Plateau	214, 270-273, 278, 284, 285	**Tahoe Management Basin**: Three hours of wind gusts ≥ 30 mph and Relative Humidity ≤ 20%	**Rest**: Three hours of wind gusts ≥ 30 mph and Relative Humidity ≤15%.
Northern California West of the Cascade/Sierra Crest	201-213, 215-221, 263-269, 274-277, 280-282	See matrix below	

Wind/RH RFW Decision Matrix for Northern California West of the Sierra Crest

Matrix assumes daytime 10-hour fuel moisture ≤ 6% (measured at 1300), annual grasses are cured, and that no wetting rain (greater than 0.10 inch) has fallen in the last 24 hours.

Sustained 20-foot Wind Speed (Note: the wind event should be expected to last at least 8 hours). **W** indicates that the forecaster should consider a warning.

Relative Humidity	Sustained Wind 6-11 mph	Sustained Wind 12-20 mph	Sustained Wind 21-29 mph	Sustained Wind 30+ mph
Daytime Minimum RH 29-42% and/or Nighttime Maximum RH 60-80%				W
Daytime Minimum RH 19-28% and/or Nighttime Maximum RH 46-60%			W	W
Daytime Minimum RH 9-18% and/or Nighttime Maximum RH 31-45%		W	W	W
Daytime Minimum RH < 9% and/or Nighttime Maximum RH < 31%	W	W	W	W

Red Flag Warnings and Fire Weather Watches will remain in effect through the expiration time noted in the forecast, or until canceled or upgraded

Red Flag Warnings and Fire Weather Watches are available via WIMS, from the California Fire Weather web page (http://www.wrh.noaa.gov/sto/cafw/) and the web site of the issuing NWS office. Links to all forecasts and NWS office web pages can be found on the National Fire Weather Page at http://fire.boi.noaa.gov/.

Red Flag Warning/Fire Weather Watch format and contents - A short message (RFW) will be used for issuing, updating, and canceling all Fire Weather Watches and Red Flag Warnings, an example is in Appendix B3. That message will include:

- Headline including description of watch/warning, description of valid location, and time period for which watch/warning is valid.
- Short discussion detailing causes and nature of the event.

Red Flag Warning/Fire Weather Watch verification – Four items are verified for Red Flag Warnings:

- ***Probability of Detection (POD)*** = correct warnings / (correct warnings + missed warnings). If every event that should have been warned, was warned, then the verification score would be 1.0
- ***False Alarm Rate (FAR)*** = 1 – (correct warnings / (correct + incorrect warnings)). Perfect verification would be zero, indicating that every warning verified.
- ***Critical Success Index (CSI)*** = correct warnings / (correct + incorrect + missed warnings). Perfect verification would be 1.0.

- ***Lead Time*** = Number of hours between issuance of warning and occurrence of the event. Because of the uncertainty involved, lead time for dry lightning Red Flag Warnings tends to be much shorter than other Red Flag Warnings.

2006 Goals
(Synoptic Event Based Red Flag Warnings)

POD = 0.91
FAR = 0.27
CSI = 0.68
Lead Time = 10.0 hours

2006 Goals
(Dry Thunderstorm Based Red Flag Warnings)

POD = 0.70
FAR = 0.50
CSI = 0.50
Lead Time = 6 hours

By January 31st of each year, every NWS office issues a fire weather annual summary for the previous season that includes Red Flag Watch and Warning verification. These reports are available from the fire weather web page of each NWS office.

Agency feedback on the accuracy and quality of Red Flag Warnings and Fire Weather Watches is strongly encouraged.

E. NFDRS Forecasts

The NWS provides weather forecasts for parameters that permit the NFDRS software to predict the next day's fire danger indices.

Criteria for Issuance – NWS will issue daily forecasts for use by the NFDRS during periods determined in consultation with land management agencies. Dates during which these forecasts are needed vary by year and by office. NFDRS observations from land management agencies must be complete and available in WIMS by 1330 LST/1430 LDT. These must be made available to the NWS from WIMS in collectives before 1400 LST/1500 LDT. NFDRS stations that do not have valid observations in WIMS on time will not have next day fire danger indices available.

Content and Format – Complies with NWSI 10-401 and is outlined in Appendix B4 for reference.

Procedures – For every NFDRS observation received from WIMS at the 1400 LST (1500 LDT) collective, forecast weather parameters for 1300 LST (1400 LDT) the next day will be produced. This will occur through zone trend or station trend forecasts. Regardless of the forecast methodology, NWS will take appropriate measures to ensure that forecast values for NFDRS stations do not unduly deviate from historical possibility for those stations. Towards this end, zone and station trend forecasts will be favored over station specific (point) forecasts.

Verification Goals – The following goals have been agreed to for California:

Temperature Error ≤ 5 degrees Fahrenheit
Relative Humidity Error ≤ 8%
Wind Speed Error ≤ 4 mph
Fuel Moisture Error ≤ 2% (June through September)

10-Hour Fuel Moisture Trends – The U.S Forest Service Region 5 uses the Sale Activity Level (SAL) Program to regulate timber sales and other contracts on public lands. SAL uses forecast 10-minute wind speed trend and forecast 10-hour fuel stick trend. As a result, a10-hour fuel moisture trend should be provided by the NWS. In order for this to occur, the NFDRS trend forecast should make no entries in the trend forecast for max and min temperature or max and min humidity, but instead it should include a 10-hour fuel moisture trend.

If no entry is made for the forecast 10-hour fuel moisture trend, WIMS will use computed 10 hour fuel moisture from a RAWS algorithm and will determine a trend. **Problems arise** with this approach since the trend varies from station to station and the computed value is lower than what would be provided from a weighed stick. This results in a higher SAL number and more restrictions.

Project Activity Level (PAL), which uses forecast Energy Release Component and Ignition Component, will replace SAL in Region 5 contracts in the future. PAL does not require a 10 hour fuel stick trend.

F. Participation in Interagency Groups

NWS offices providing service within California are expected to provide representation at the regional AOP meeting held at least annually. Proxy representation is acceptable. NWS offices are also expected to host at least one meeting per year with local fire management units to strengthen the customer relationship and address local concerns.

G. Additional Services

NWS will provide and maintain a cadre of trained IMETs.

H. Forecaster Training

The NWS recognizes the need for specialized training in fire weather meteorology for forecasters. Any NWS meteorologist producing fire weather products must meet the requirements set forth in NWS Directive 10-405 and the following currency requirements set forth by the CWCG:

Prepare and issue at least 15 fire weather forecasts in the last 12 months at the current duty station; and
Prepare and issue the lesser of at least 10% of office spots or at least 5 spots in the past 12 months; and
Successful completion of all WFO fire weather drills and/or training seminars in the past 12 months.

If fire weather currency lapses, the forecaster must work no less than three (3) shifts with a forecaster who is current, handling all fire weather duties.

V. WILDLAND FIRE AGENCY SERVICES AND RESPONSIBILITIES

Wildland Fire Agencies' programs provide Geographic Area and national products for the strategic role of resource prioritization and utilization. Some specific responsibilities of Wildland Fire Agencies are listed below:

A. Operational Support and Predictive Services – GACC meteorologists at the PSUs in Redding and Riverside combine forecast information from NWS and other sources into area-wide summaries and briefings. These meteorologists work in conjunction with Fire Intelligence to form the Predictive Services group, which produces integrated fire weather / fire danger assessments for California. The intent of Predictive Services is to provide strategic, regional, and sub-regional information to assist in preparedness, movement, and allocation of fire-fighting resources.

The Predictive Service units at Redding and Riverside provide fire danger and fire potential forecasts and outlooks within California beyond the "next day" NFDRS forecasts provided by the NWS. All products are available online, and can be obtained from either the North Ops PSU web site at http://www.fs.fed.us/r5/fire/north/fwx http://gacc.nifc.gov/oncc/predictive/weather/index.htm or the South Ops PSU web site at http://www.fs.fed.us/r5/fire/south/fwx http://gacc.nifc.gov/oscc/predictive/weather/index.htm.

1. **Routine Predictive Services Products** – (Examples provided in Appendix C)

   a. Daily Product - Fire Weather Discussion / Fire Danger Forecast: one each for the Northern and Southern California Geographic Areas. This text product is written at Redding for the North and at Riverside for the South. Its purpose is to take the large quantity of forecast information provided by the five NWS forecast offices in each Geographic Area and meld it, along with Fire Danger and any other necessary information, into a single forecast product for Geographic Area. These forecasts are subdivided into the Predictive Service Areas (PSAs) of the fire agencies. They have only one weather discussion and a larger scope, which combined with shorter overall length, make them a suitable alternative for dispatchers disseminating weather information to field operations. The "meteorology of the day" is coordinated between the PSUs and the NWS offices in a daily conference call at 0830 local time.

   Issuance Schedule: 0930 and 1530 local time daily during fire season, and M-F during the off season.

   NOTE: This GACC product will cease approximately June 30, following the completion of the NWS ECCDA project earlier in June.

   b. New by mid July – Operational Days 1-2 graphic product (To replace 1a. above) Estimated startup: mid July

   c. 7-Day Significant Fire Potential Product: This product forecasts the potential for significant fires out through the next seven days. In California, we use our 'large fires' criteria (which can vary by Predictive Service Area) as the definition of "significant". The product has a table which consists of:

   1) **Fuel Dryness**
      - Moist Fuels (Green) – Little if any threat for large fires.

- Dry Fuels (Yellow) – Low threat for large fires when a Significant Weather Trigger is absent.
- Very Dry Fuels (Brown) – Moderate threat for large fires when a Significant Weather Trigger is absent.

2) **Significant Weather Triggers**
   - Lightning
   - Wind
   - Unseasonably Hot and Dry

3) **High Risk Day** (Red) - occurs when "Dry" or "Very Dry" Fuel Dryness conditions coexist with a Significant Weather Trigger. The combination of these two factors will create conditions that historically have resulted in large fires across California.

The product also contains a narrative section consisting of a Weather Synopsis, a Fire Potential discussion, and a Resource Capability summary.

Issuance Schedule: 1000 local time daily during fire-season

d. Monthly Fire Weather / Fire Danger Outlook: These combine all available weather, climate, fuels, and fire danger information in order to make a prediction of fire business across the Geographic Area for the coming month. The assessments try, when possible, to highlight the periods and potential for large fire activity and resource utilization, relative to normal. An effort toward validating Monthly Outlooks will beginan thislast fire season, using ERC Fuel Model G.

Issuance Schedule: Year around, prepared a few days prior to start of the new month.

e. Fire Season Assessments: These are estimates of fire potential for longer periods, ranging from three months to an entire fire season in duration. A nationwide collaboration of meteorologists, climatologists, and fuels-and-fire danger experts takes place in the late winter or early spring. This is where season-to-date precipitation, snow pack, temperature and fuels information is amalgamated and a consensus climate forecast is produced by the experts, extending well into the fire season. It is expected that the assessments will be updated as needed back at the Geographic Areas – see below for California.

Issuance Schedule: A pre-season assessment (preliminary) is done at a national workshop in late March or early April. In California, the main update will normally come in either late May or June, with a second adjustment about mid fire season, <u>if necessary</u>.

2. Other Predictive Services Products, Projects and Services

a. Prescribed Burn Spot Forecasts - The Predictive Services Units will provide site-specific prescribed burn (spot) forecasts, for any requesting agency, where smoke dispersion and/or smoke management are concerns. The PSUs have an increasing role in helping the fire agencies accomplish their prescribed burn acreage targets, while minimizing impacts on air

quality. Along with this program, the PSUs will work closely with the California Air Resources Board (CARB), the Air Districts, and Air Pollution Control officers. The PSUs will sponsor daily conference calls at 1300 local time, with prescribed burn managers, CARB, and the air districts. These calls help coordinate burning, especially during "marginal burn days" as outlined in the most recent Title 17.

b. CANSAC Update - The California and Nevada Smoke and Air Consortium (CANSAC) http://www.cefa.dri.edu/COFF/coffframe.php started posting products to the current website in June 2004. Since that time the Operational Applications Group (OAG) has worked closely with modeler Julide Koracin and other CEFA personnel, to continually expand and improve on the graphics package. The main Products array, with 36-, 12-, and 4-km resolution maps, continues to be found at http://www.cefa.dri.edu/COFF/cansac_output.php. The 4-km output can be used to initialize 1-km resolution wind models. had its operational 'kickoff event' at DRI in Reno in May 2004. Products first appeared on the website in June 2004, and the Operational Applications Group (OAG) has worked closely with CANSAC Modeler Julide Koracin and other CEFA personnel since then, to enhance and expand the graphics package. The CANSAC home page has recently been given a new look (go to http://www.cefa.dri.edu/COFF/coffframe.php). The current array of CANSAC graphics products at the 36-km, 12-km, and 4-km resolutions is under Products, at: http://www.cefa.dri.edu/COFF/cansac_output.php. The 4-km output can potentially be used to initialize 1-km resolution wind models.

Advances within the past year include:

- Introduction of Fire Danger Rating products in early 2005
- Introduction of an Air Quality products section in December 2005
- Initial Blue Sky capability is now in place within this section
- At 4-km resolution, the surface wind field, 2-m temperatures, and relative humidity all now Have close up 'quadrant' graphics available. These have proven extremely popular thus far.
- An initial CANSAC users workshop was held at McClellan Training Center in Feb. 2006.

CANSAC's primary goals remain threefold: The production of high-resolution meteorological output for use in operational fire weather work/ ARB burn decisions, air quality monitoring, and smoke transport/ BlueSky type applications. The first goal is well on the road to fulfillment, and significant gains are expected toward the other two goals in 2006-2006. Funding has recently been found to obtain the additional storage hardware (RAID unit) needed for hourly output, a prerequisite for BlueSky runs. For an example of BlueSky applications (from the PacNW) go to http://www.blueskyrains.org/.

The next CANSAC Board meeting is anticipated for this July, probably on the 19th. Following the retirement of Chair Tom Hatcher in January 2006, Susie Stingley (USFS) is the new Chairperson. The Board remains composed of one representative each from the various members. As listed on the CANSAC Home page, the nine contributing member organizations currently include: USDA Forest Service Region 5, the Pacific SW Research Station (i.e. Riverside Fire Lab), BLM California, BLM Nevada, US Fish and Wildlife Service, National Park Service, California Air Resources Board, California Dept of Forestry and Fire Protection, and

San Joaquin Valley Unified Air Pollution Control District. The Board of Directors remains chaired by Tom Hatcher of the USFS, and is com-posed of one representative each from the various members. The OAG, and Technical Advisory Group (TAG) are the two workgroups, and the National Weather Service now has a representative on each Group.

c. Other Ongoing or New Projects - The Predictive Services Units at Redding and Riverside are also involved in the following:

- Effort underway to get 'seamless' forecasts from NWS for each ECC/Dispatch area of responsibility
- Drawdown levels project, for resource decision-making / prioritization
- Preparedness Levels (i.e. monitoring of PL, and associated required actions)
- Use of the MM5 to provide weather streams for Farsite runs and other planning products to the GACC/ incidents (successfully tested in 2003)
- Phase II of the Hourly Fire Danger Rating. Project involves an hourly FD climatology for each Fire Danger Rating Area (FDRA) and a 24-hour FD looping capability, among other things. Still gathering funding within CWCG.
- RAWS quality controlled (QC) data disk recently updated through 20054

B. Program Management - Management of federal land management and fire agencies' fire weather programs and responsibilities.

1. RAWS/NFDRS – The Regional RAWS Coordinators of the various agencies manage the interagency RAWS program within California. This includes regular monitoring of data quality and assisting with station maintenance and acquisition issues. It also involves development of and assistance in providing RAWS training classes. Current agency RAWS coordinators in California include:

USFS	Beth Little	(530) 226-2710
BLM South	Tom Rolinski	(951) 782-4849
BLM North	Steve Leach	(530) 226-2730
NPS	Corky Conover	(559) 565-3129
CDF	Doug Forrest `	(916) 653-6608

2. Liaison – The PSU Program Manager at each Geographic Area (North and South) will be the primary liaison between field fire managers and various service providers including the NWS, the private sector, and the research community.

C. PSU Meteorologists Proficiency and Currency

1. Proficiency

a) Completion of S-190, S-290, and S-390
b) Work no less than five (5) shifts handling all operational products. This includes the preparation and issuance of:
- Daily morning Fire Weather/Fire Danger product
- Afternoon update to above morning product
- 7-Day Significant Fire Potential Product

- Smoke Transport and Stability Forecast
- All Site-specific (spot) forecasts requested, for burns where smoke dispersion or smoke management is a concern

c) Conduct at least 2 each, and 10 total, of the following:

- Daily coordination calls with other GACC office (Redding or Riverside)
- 0830 PDT conference call with the NWS
- 1030 PDT Briefing for Ops/ECC personnel
- 1300 PDT CARB/burners conference calls
- Special briefings and conference calls for CDF and Federal agencies

d) Work with Intel Officer and be able to produce all Predictive Services products (using in-office guidelines or help sheets, as necessary). Included in this are the:

- Monthly Weather Assessments, issued by late in the prior month
- Seasonal Weather and Fire Season Assessments, before early-to-mid high fire season

e) The PSU Program Manager will sign-off on proficiency.

2. Currency

a) The forecaster has prepared and issued at least 12 of the operational products (listed in 1.b.) during the past three months. At least 3 of the 12 should be site-specific (spot) forecasts.

b) If IMET qualified, must maintain proficiency in accordance with NWCG Technical Specialist standards.

D. Technology Transfer – GACC meteorologists will work to integrate advanced technology analytical and prediction systems into fire management planning and operations. Some efforts will include:

- Regional numerical modeling of weather and smoke dispersion. The PSUs are integral players in CANSAC, which run an MM5 mesoscale weather model with 4-km resolution across CA and NV. Hourly output will soon be available on CANSAC, allowing for Bluesky runs on individual burns later this year.
- Continue use of FireFamily-plus in briefing fire Managers/ ECC on fuels and fire danger conditions
- Proper use of RAWS and NFDRS, and assistance with WIMS..
- Research and development to advance fire meteorology.

E. Agency Computer Systems – Where fire management computer systems like WIMS are locally available, access to the systems will be granted to the NWS to provide or develop services, as needed. Costs will be borne by the Interagency Wildland Fire Agencies for requirements that are beyond the distribution of weather information through a central communications gateway.

F. Fire Weather Observations

1. RAWS and NFDRS Observations

Fire weather observations for stations that desire next-day forecasts will be entered into WIMS no later than 1330 PST (1430 PDT). Observations from Remote Automated Weather Stations (RAWS) sites will be the latest data available from satellite interrogation. RAWS and NFDRS stations are expected to be sited and maintained according to NWCG PMS 426-3 “National Fire Danger Rating System Weather Station Standards”. The website to view this document, and any recent updates to it, is http://www.fs.fed.us/raws/standards/. Proper siting of weather stations has always been a high priority in California. The GACC meteorologists are available to assist land or fire managers in selecting proper sites. Annual RAWS maintenance requirements should be adhered to strictly.

2. Fireline Observations and Spot Forecast Feedback

Fireline Observations – Representative observations are required when requesting a spot forecast, whether for a wildfire, prescribed burn, or other project/need. Distance is not the only factor in determining whether an observation site is considered representative. Observations taken only half a mile from the burn site, but beyond a ridgetop and in another drainage, may not be representative for a variety of reasons (e.g. changes in aspect, elevation, local wind direction, vegetative cover, etc.). On the other hand, observations from a fixed RAWS three miles away from the project site could still be quite representative, if it is similar in elevation, aspect, local wind flow, vegetative cover, etc.

Fire agency personnel will take standard fireline observations of temperature, relative humidity, wind direction and speed, and weather/sky condition consistent with guidance provided in NFES 2140 “Weather Station Handbook – An Interagency Guide for Wildland Managers.”

Fire agency personnel are encouraged to discuss the fire or burn with the meteorologist preparing the spot forecast to alert the forecaster to details which would not otherwise be apparent, such as variations in humidity in a large and complex site, when winds switched from upslope to downslope, and similar items which will enhance the quality of the resulting spot forecast.

Spot Forecast Feedback and Validation – Feedback on spot forecasts is requested to validate forecasts and improve accuracy; it should be provided to the appropriate weather office (NWS or PSU) within 12-24 hours of the issuance of any spot forecast for prescribed burn or wildland fire use purposes. Feedback on forecasts issued for wildfires is encouraged. The effort to provide feedback applies mainly to Belt Weather Kit or Kestral observations, since RAWS data are more readily available to the forecaster via the Internet for feedback.

Spot Feedback - The character of temperature, humidity, and wind affecting the burn period. Information made available to the NWS within 24 hours of forecast issuance or before issuance of the next spot forecast, whichever is first.

At a minimum, the following must be included (assuming daytime burn):

- Maximum temperature
- Minimum relative humidity
- Significant afternoon winds (speed and direction)
  In the event of nighttime burning, conditions affecting the burn period could include minimum temperature and maximum relative humidity.

Acceptable methods of providing feedback or validation:

- Phone call to appropriate NWS or PSU office
- Faxed copies of fireline (belt weather) observations
- Submission of information (see example) via "Feedback" section of Internet spot forecast
- Faxed or electronically transmitted copies of hourly weather data from an on-site portable weather station
- Notification of deployment of a portable GOES telemetered RAWS onsite, so NWS can download data from the Internet

G. Reimbursement for NWS Provided On-site Support and Training Assistance – Federal agencies will reimburse the NWS for all costs incurred by the agency for IMET support and training assistance, per the procedures set forth in the National Agreement. The State of California has an agreement with the NWS, which is used for cost reimbursement.

VI. JOINT RESPONSIBILITIES

A. California Fire Weather Web Page – An interagency fire weather web page for California is available this season: http://www.wrh.noaa.gov/sto/cafw/. Please bookmark this page. Emergency Communication Center Dispatch Area (ECCDA) Forecast Summaries are available from this web site. These simplified fire weather summaries are meant to be used for fire agency radio broadcasts while at the same time providing the most essential daily weather information: Sky/Weather, Maximum and Minimum Temperature, Maximum and Minimum Relative Humidity, 20-Foot Winds, CWR, LAL and Haines Index (where used). Any Red Flag Watch or Warning headlines shown in the ECCDA Forecast Summaries are linked to the actual watch or warning product. In addition, all forecast segments within an ECCDA are listed at the beginning of the forecast and can be mouse clicked to jump immediately to that segment.

ECCDA Forecast Summaries will be available daily by 9:45 a.m. and 4 p.m. during high fire season and once per day Monday through Friday (excluding holidays) during the low season. The ECCDA Forecast Summaries are planned to replace some of the Predictive Service Area forecast text. Like PSA forecast summaries, the ECCDA Forecast Summaries will not be updated. Therefore, fire agency personnel should consult the latest FWF and/or RFW issuances for updated information at other times and will be directed to do so on the California Fire Weather web page.

Quick access to all Red Flag and NWS fire weather planning forecasts for California is provided by using the "tabs" across the top of the welcome page. Direct links to many useful services are provided on the left hand side bar. These include:

- Spot forecast requests for wildfires, WFUs and prescribed burns

- All NWS watches and warnings for California and the nation
- Current ROMAN data and other current weather information
- Daily weather summaries, 7-Day outlooks and all other Predictive Service information
- NIFC / NICC
- Background maps showing the relationship between fire weather zones and ECCDAs

The goal of the NWS and fire agencies is to develop this site into a "one stop shopping" page for California fire weather as much as we can, while keeping the page straightforward and easy to navigate. We need your feedback and suggestions to improve the web site. Please follow the links at the top of the page to provide feedback.

B. Training - Meteorological training can be provided by both NWS and GACC meteorologists. The NWS forecast offices primarily handle local courses that occur within their County Warning Areas. The PSUs' primary role is with regional and national level courses. Requests for these (regional and national) courses should be directed to either the Redding or Riverside PSU. Each NWS office and PSU should have at least one person qualified to teach courses up through Intermediate Fire Behavior (S-290/390).

Requests for training from NWS offices should be directed to that office's Fire Weather focal point or Meteorologist-In-Charge. If the office is not able to provide an instructor for a course, that office will assume the responsibility for finding an instructor. Requests for training from the PSUs should be directed to either the Training Coordinator or Team Leader of the PSU. In all cases, sufficient advance notice (≥ six weeks whenever possible) should be given to allow for scheduling and proper preparation.

Costs incurred by NWS in providing training assistance (other than salary costs for a normal non-holiday weekday) will be borne by the requesting agency. Costs incurred by PSU instructors are covered in their annual budget, without need for reimbursement. Below is a table outlining the weather instructor availability for 2006:

Name Of Office	Instructors qualified to teach **S-290**	Other Classes that at least one meteorologist from this office is qualified to instruct (*S-390 did not have a weather section at the time of AOP issuance.)
Redding PSU	Brenda Belongie John Snook Steve Leach	S-190, S-390*, S-490, S-491, S-590, RX-300, RX-410 WIMS, S-144, ECCO, NFDRS
Riverside PSU	Tom Rolinski Ron Hamilton	S-190, S-390*, S-490, S-491, RX-300, WIMS, NFDRS
Eureka	Nancy Dean Jeff Tonkin Mark Burger	S-190, S-390*, S-490, S-590
Hanford	Cindy Bean Dan Gudgel	S-190, S-390*, RX-300
Las Vegas NV	Jim Harrison Andy Bailey	S-190
Medford	Frederic Bunnag Michael Stavish Dennis Gettman Rick Holtz	S-190, S-490

Monterey	Ryan Walbrun Ian Morrison	S-190
Oxnard	Rich Thompson Dave Gomberg	S-190
Phoenix	Valerie Meyers	None
Reno	Rhett Milne James Wallmann Brian Brong	S-190, S-390*
Sacramento	Basil Newmerzhycky Mike Smith	S-190, S-390*, S-490, S-590, RX-300
San Diego	Mike Lavis Rob Balfour	S-190, S-390*, S-490

C. Incident Response – In addition to following direction in the National Mob Guide the following direction is clarification for Command Centers in California.

When an Incident Meteorologist is requested for an incident, **the request will be placed to the GACC.** The GACC will notify the National Fire Weather Operations Coordinator at NIFC so that the ECC does not have to be concerned. Priority will be given to IMET requests. (Larry Van Bussum or his acting: Office 208-334-9862 or Cell 208 863-2582).

The GACC's will maintain a list of qualified IMET's and trainees in ROSS by Weather Forecasting Office identifier, and provide dispatching services for the NWS in California. This list will be updated annually based on the list that is published in the CA Fire Weather Annual Operating Plan. IMET's will be dispatched by the GACC's in CA just as if they are GACC employees.

When the NWS Staff Meteorologist at NIFC determines who will fill the incident request, the information will be relayed back to the GACC. If the IMET is within the requesting Geographic area, the IMET will be mobilized using ROSS.

If the IMET is in the CA GACC that is not hosting the incident, the request will be placed through Selection Area to the other GACC.

If the identified IMET is not in a California Weather Forecasting Office the IMET request will be edited to add a Name Request and placed up to NICC who will place the request to the appropriate GACC.

The following list designates which California GACC will status and dispatch personnel for the California Weather Forecasting Offices. Status can be maintained Available/Local until requested to reduce work.

North Ops	**South Ops**
Eureka WFO	Hanford WFO
Sacramento WFO	Los Angeles/Oxnard WFO
San Francisco/Monterey WFO	San Diego WFO
Honolulu WFO	
Pago Pago/American Samoa WFO	

IMET personnel from Medford WFO, Reno WFO, Phoenix WFO and Las Vegas WFO shall be requested through NICC to their respective GACC using Name Request.

The procedures for requesting IMETs will follow the guidelines outlined in the National MOA, Administrative Procedures section of the current National Mobilization Guide, Personnel section of the current California Mobilization Guide, and CDF Procedure No. 302.

The following information will be provided to the requested IMET:

- Name of fire
- Location of fire
- Directions to location where the IMET is to report and location of Incident Base.
- Name of Incident Commander, Plans Chief, and Fire Behavior Analyst, if available.
- Request and Resource Order number for IMET

Additionally, the user agency is responsible for providing adequate shelter to allow the equipment and fire weather meteorologist to function efficiently. This would include a location that is free of excessive dust, heat and moisture, protection from wind and other elements, table, and chair. Transportation and shelter arrangements should be made at the time of request; 120 volt AC power is desirable.

Below is a list of IMETs, Technical Specialists, and All-hazard Meteorological Response System (AMRS) in the Northern and Southern California Area:

Northern and Southern California Area IMETs and Technical Specialists:
(T) designates a trainee

NWS IMETs:

Location	Name	Agency	ROSS Unit ID
Eureka, CA	Jeff Tonkin	NWS	CA-EKAW
Eureka, CA	Mark Burger	NWS	CA-EKAW
Eureka, CA	Brett Lutz (T)	NWS	CA-EKAW
Hanford, CA	Cindy Bean	NWS	CA-HNXW
Hanford, CA	Dan Harty (T)	NWS	CA-HNXW
Las Vegas, NV	Jim Harrison	NWS	NV-VEFW
Medford, OR	Frederic Bunnag	NWS	OR-MFRW
Medford, OR	Dennis Gettman	NWS	OR-MFRW
Monterey, CA	Ryan Walbrun	NWS	CA-MTRW
Monterey, CA	Ian Morrison (T)	NWS	CA-MTRW
Oxnard, CA	Rich Thompson (T)	NWS	CA-LOXW
Phoenix, AZ	Valerie Meyers (T)	NWS	AZ-PSRW
Reno, NV	James Wallmann	NWS	NV-REVW
Reno, NV	Chris Jordan (T)	NWS	NV-REVW
Sacramento, CA	Basil Newmerzhycky	NWS	CA-STOW
Sacramento, CA	Mike Smith	NWS	CA-STOW
San Diego, CA	Rob Balfour	NWS	CA-SGXW
San Diego, CA	Mike Lavis (T)	NWS	CA-SGXW

PSU Technical Specialists:

Redding, CA	John Snook	USFS	CA-NZF
Redding, CA	Brenda Belongie	USFS	CA-NZF
Redding, CA	Steve Leach (T)	BLM	CA-NZF
Riverside, CA	Tom Rolinski	BLM	CA-OSC
Riverside, CA	Matt Shameson	USFS	CA-OSC

Northern and Southern California Area ATMUs (theodolite):

Cache	ID
Redding, CA	CA-01, CA-03, CA-05, CA-07
Ontario, CA	CA-02, CA-04, CA-06

AMRS Cache Sites
Each NWS office serving California has at least one AMRS.

D. Briefings – Either NWS or GACC meteorologists will conduct briefings upon request, time and resources permitting.

E. Coordination Conference Calls – Coordination conference calls will be conducted, as needed, between the PSUs and the WFOs during fire season. See Appendix D for further details on these calls.

F. WIMS IDs for NFDRS Stations – All NFDRS observation stations are assigned a six-digit station identification number for use in WIMS. The Northern California or Southern California PSUs must be contacted for assignment of a six-digit number for any new station, or for any changes in location made to existing stations that already have a WIMS ID number. This function will be handled through the PSUs and the USFS Regional RAWS Coordinator – Region 5, Beth Little. The PSUs will notify the NWS of any new or relocated NFDRS stations.

VII. AGENCY SIGNATURES / EFFECTIVE DATES OF THE AOP

This AOP shall be effective on the date the last signature is placed on this page and will remain in effect until the date the last signature is placed on this page the following year. Updates or amendments may be added in the interim upon agreement of all signatories. Usually the effective dates are May 1 through May 1 the following year.

Agency Signatures

_____

Ralph Domanski Date
Acting Chair, California Wildfire Coordinating Group

_____

Elizabeth Morse Date
NWS State Liaison Official

APPENDIX A - Forecast Parameter Definitions

1. **General Parameters**

Sky/weather – Cloud cover and weather. Weather could include rain, snow, showers, thunderstorms, etc. Cloud cover is as follows:

Clear/Sunny	6% or less cloud cover
Mostly Clear/Mostly Sunny	7% - 31% cloud cover
Partly Cloudy/Partly Sunny	32% - 69% cloud cover
Mostly Cloudy	70% - 94% cloud cover
Cloudy/Overcast	95% or greater cloud cover

Temperature and 24 hour trend – Dry bulb temperature extreme, either daytime or nighttime, and trend of extreme from previous 24 hours.

Humidity and 24 hour trend – Relative humidity extreme, either daytime or nighttime, and trend of extreme from previous 24 hours.

Wind - 20 foot RAWS standard – Surface wind speed and direction as altered by local terrain and surface roughness and measured per instrumentation and siting standards set by NWCG for the RAWS program and NFDRS. In practice, surface wind forecasts produced based on the ASOS standard will be reduced by 20% to obtain 20 ft. winds, except in cases where wide open rangeland or desert is predominant. This same comparison will be used in considering stations other than RAWS to validate forecasts.

Ridgetop winds – Synoptic scale wind speed and direction at or just above mean ridgetop level.

Chance of Rain – Probability of occurrence or areal coverage of 0.01” or greater liquid equivalent precipitation.

Chance of Wetting Rain (CWR) – Probability of occurrence or areal coverage of 0.10” or greater liquid equivalent precipitation.

Haines Index – A numerical means to indicate the potential for existing wildfires to experience large growth and or extreme fire behavior (i.e. crowning, spotting, and rapid rates of spread). The Index combines both the instability and dryness of the air by examining the lapse rate between two pressure levels in the atmosphere and the dryness at the lower level. For most of the western United States, the levels used are 700 mb (about 10,000 ft) and 500 mb (about 18,000 ft). The drier and more unstable the atmosphere, the higher the Haines Index and the potential for extreme fuel driven fire behavior. Haines Index values vary from 2 to 6 and classifications are shown below:

HAINES INDEX	POTENTIAL FOR LARGE FIRE GROWTH
2-3	Very Low
4	Low
5	Moderate
6	High

(Haines Index does not include the effects of wind on fire spread.)

2. **Lightning Activity Level (LAL)**

LIGHTNING ACTIVITY LEVEL GUIDE FOR FIRE WEATHER OBSERVERS					
LAL	Cloud and Storm Development	Areal Coverage	Individual storm cell cloud to ground lightning discharges		
			Counts [1]cg/5 min	Counts [1]cg/15 min	Average [1]cg/min
1	No thunderstorms	None	----	----	----
2	Cumulus clouds are common but only a few reach the towering stage. A single thunderstorm must be confirmed in the rating area. The clouds mostly produce virga but light rain will occasionally reach ground. Lightning is very infrequent.	<15 %	1-5	1-8	<1
3	Cumulus clouds are common. Swelling and towering cumulus cover less than 2/10 of the sky. Thunderstorms are few, but 2 to 3 occur within the observation area. Light to moderate rain will reach the ground, and lightning is infrequent.	15-24 %	6-10	9-15	1-2
4	Swelling cumulus and towering cumulus cover 2-3/10 of the sky. Thunderstorms are scattered but more than three must occur within the observation area. Moderate rain is commonly produced, and lightning is frequent.	25-50 %	11-15	16-25	2-3
5	Towering cumulus and thunderstorms are numerous. They cover more than 3/10 and occasionally obscure the sky. Rain is moderate to heavy, and lightning is frequent and intense.	>50 %	>15	>25	>3
6	Dry lightning outbreak. (LAL of 3 or greater with majority of storms producing little or no rainfall.)	>15 %	----	----	----

[1] Cloud-to-ground lightning discharges

APPENDIX B - NWS Forecast Examples

1. **NWS Fire Weather Planning Forecast** – Morning Issuance Example

FNUS56 KSTO DDHHMM
FWFSTO

FIRE WEATHER PLANNING FORECAST (FOR name of area, optional)
NATIONAL WEATHER SERVICE SACRAMENTO CA
730 AM PDT MON MAY 2 2006

...HEADLINE... (Required for Red Flag Warnings and Fire Weather Watches and significant features at other times)

.DISCUSSION... (Concise, clear, non-technical explanation of the current/forecasted fire weather)

CAZFWZ213-214-DDHHMM-
EASTERN TRINITY AND SHASTA NF-
FIRE WX ZONES 213 214
TIME-DATE (example: 730 AM PDT MON MAY 2 2006)

.TODAY...
SKY/WEATHER.....
MAX TEMPERATURE.....
    24 HR TREND..... (optional)
MIN HUMIDITY.....
    24 HR TREND..... (optional)
WIND (definition)..... (include definition of wind, e.g. 20-ft/10-min avg, slope/valley/ridge)
LOCAL OPTIONAL ELEMENTS.. (transport winds, mixing heights, LAL, CWR, Haines Index, etc.)

.TONIGHT...
SKY/WEATHER.....
MIN TEMPERATURE.....
    24 HR TREND..... (optional)
MAX HUMIDITY.....
    24 HR TREND..... (optional)
WIND (definition)..... (include definition of wind, e.g. 20-ft/10-min avg, slope/valley/ridge)
LOCAL OPTIONAL ELEMENTS..(transport winds, mixing heights, LAL, CWR, Haines Index, etc.)

.TOMORROW...
SKY/WEATHER.....

MAX TEMPERATURE.....
.
24 HR TREND.....(optional)
MIN HUMIDITY.....

24 HR TREND.....(optional)
WIWIND (definition)..... (include definition of wind, e.g. 20-ft/10-min avg, slope/valley/ridge)
LOCAL OPTIONAL ELEMENTS..(transport winds, mixing heights, LAL, CWR, Haines Index, etc.)
(forecast for next geographical descriptor and fire weather zone group)
=
$$

.FORECAST DAYS 3 THROUGH 5...(... (winds must be included days 3-5; other elements per locally-established policy)
.DAY 3...(... (days can be combined, e.g., .FRIDAY THROUGH SUNDAY)
.DAY 4...
.DAY 5...

.OUTLOOK FOR DAY MONTH DATE THROUGH DAY MONTH DATE (optional per locally-established policy: for example, days 6-14, 30 and 90 day outlooks when issued)
=
$$

2. NWS Spot Forecast

THE FOLLOWING IS AN EXAMPLE ONLY:

FNUS76 KHNX DDHHMM
FWSHNX

SPOT FORECAST FOR (NAME) BURN.....USFS
NATIONAL WEATHER SERVICE SAN JOAQUIN VALLEY
830 AM PST MON AUG 29 2006

IF CONDITIONS BECOME UNREPRESENTATIVE… PLEASE CONTACT YOUR NWS FORECAST OFFICE

DISCUSSION...A LOW PRESSURE SYSTEM NEAR THE CALIFORNIA-NEVADA BORDER WILL MOVE SLOWLY INTO SOUTHERN NEVADA MONDAY AFTERNOON. ALTHOUGH THIS WILL ALLOW SOME DRYING TO OCCUR OVER THE BURN…THE AIRMASS WILL REMAIN UNSTABLE THROUGH THE DAY WITH ENOUGH MOISTURE LINGERING TO PRODUCE PARTLY CLOUDY SKIES. WIND WILL ALSO REMAIN LIGHT THROUGH THE DAY BUT FAVOR AN EASTERLY DIRECTION AS THE LOW DEPARTS.

FOR PLANNED IGNITION TIME OF 1100 PST 11/4/03

SKY/WEATHER.....PARTLY CLOUDY
TEMPERATURE.....40-45 AT IGNITION TIME…RISING TO A MAX OF 52-56.
RELATIVE HUMIDITY..60-70% AT IGNITION TIME…LOWERING TO A MIN 53-58%
WIND (20-FOOT).....VARIABLE LESS THAN 5 MPH AT IGNITION TIME. WINDS WILL REMAIN LIGHT AND VARIABLE THROUGHOUT THE DAY.
WIND (RIDGE LVL)...NORTHEAST TO EAST 4-8 MPH.
OPTIONAL ELEMENTS..(PER REQUEST)

FOR MONDAY NIGHT
SKY/WEATHER.....PARTLY CLOUDY EARLY…BECOMING CLEAR OVERNIGHT.
TEMPERATURE.....MIN 34-38
RELATIVE HUMIDITY..MAX 90-100%
WIND (20-FOOT).....VARIABLE LESS THAN 5 MPH. WINDS WILL FAVOR A LIGHT EAST DIRECTION IN THE EARLY EVENING.
WIND (RIDGE LVL)...EAST 4-8 MPH IN THE EVENING…BECOMING VARIABLE LESS THAN 5 MPH OVERNIGHT.
OPTIONAL ELEMENTS..(PER REQUEST)

OUTLOOK FOR TUESDAY
SKY/WEATHER.....MOSTLY SUNNY.
TEMPERATURE.....MAX 58-63
RELATIVE HUMIDITY..MIN 45-50%
WIND (20-FOOT).....BECOMING UPSLOPE TO UPCANYON 4-6 MPH BY NOON WITH BRIEF GUSTS TO 10 MPH IN THE AFTERNOON.
WIND (RIDGE LVL)...NORTHEAST 5-10 MPH IN THE MORNING…BECOMING SOUTHWEST 10-15 MPH IN THE AFTERNOON.
OPTIONAL ELEMENTS..(PER REQUEST)

3. NWS Red Flag Warning / Fire Weather Watch

THE FOLLOWING ARE EXAMPLES ONLY:

RED FLAG WARNING
NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD
900 AM PDT MON AUG 30 2006

CAZ253-254-302230-
/O.NEW.KLOX.FW.W.0005.040830T1600Z-040830T2200Z/
VENTURA COUNTY MOUNTAINS-
LOS ANGELES COUNTY MOUNTAINS-
900 AM PDT MON AUG 30 2006

…RED FLAG WARNING IN EFFECT UNTIL 3 PM TUESDAY FOR STRONG NORTHEAST WINDS AND LOW HUMIDITIES FOR THE MOUNTAINS OF VENTURA AND LOS ANGELES COUNTIES…

THE NATIONAL WEATHER SERVICE IN LOS ANGELES/OXNARD HAS ISSUED A RED FLAG WARNING IN EFFECT UNTIL 3 PM TUESDAY FOR STRONG NORTHEAST WINDS AND LOW HUMIDITIES FOR THE MOUNTAINS OF VENTURA AND LOS ANGELES COUNTIES. A STRONG UPPER LEVEL RIDGE OF HIGH PRESSURE COMBINED WITH MODERATE OFFSHORE FLOW NEAR THE SURFACE WILL BRING HOT AND DRY CONDITIONS ACROSS THE WARNING AREA. LATER THIS MORNING…NORTHEAST WINDS ARE EXPECTED TO INCREASE TO 25 TO 35 MPH WITH GUSTS TO 50 MPH THROUGH PASSES AND CANYONS…WITH SIMILAR WIND SPEEDS EXPECTED THROUGH TUESDAY. MEANWHILE…HUMIDITY VALUES ARE EXPECTED TO FALL BETWEEN 10 AND 15 PERCENT FOR A SIX TO EIGHT HOUR DURATION EACH DAY…WITH POOR OVERNIGHT RECOVERIES EXPECTED. THE COMBINATION OF STRONG NORTHEAST WINDS…LOW HUMIDITY VALUES…AND CRITICALLY DRY FUEL CONDITIONS HAS PROMPTED THE ISSUANCE OF A RED FLAG WARNING FOR THE MOUNTAINS OF LOS ANGELES AND VENTURA COUNTIES.

PLEASE ADVISE THE APPROPRIATE OFFICIALS OR FIRE CREWS IN THE FIELD OF THIS RED FLAG WARNING.

WWUS86 KHNX DDHHMM
RFWHNX

FIRE WEATHER WATCH
NATIONAL WEATHER SERVICE SAN JOAQUIN VALLEY – HANFORD CA
1010 AM PDT TUE JUL 5 2006
VTEC
FWZ296-297-060200-

...FIRE WEATHER WATCH FOR SCATTERED DRY THUNDERSTORMS FOR THE SOUTHERN SIERRA NEVADA FROM YOSEMITE SOUTHWARD THROUGH SEQUOIA NATIONAL FOREST THIS AFTERNOON THROUGH 7PM TONIGHT...

FIRE WEATHER ZONES AFFECTED:
ZONE 296 SIERRA NEVADA FROM YOSEMITE TO KINGS CANYON NATIONAL PARK
ZONE 297 TULARE COUNTY MOUNTAINS

DISCUSSION: THE NATIONAL WEATHER SERVICE HAS ISSUED A FIRE WEATHER WATCH FOR DRY LIGHTNING. SOUTH TO SOUTHEAST FLOW ALOFT WILL ALLOW MONSOONAL MOISTURE TO BEGIN WORKING ITS WAY INTO THE SOUTHERN SIERRA NEVADA TODAY. THIS MOISTURE ALONG WITH INCREASED INSTABILITY WILL RESULT IN SCATTERED THUNDERSTORMS OVER THE SIERRA THIS AFTERNOON AND EARLY EVENING…MAINLY OVER THE HIGHER ELEVATIONS. HOWEVER…THE LOWER LEVELS OF THE ATMOSPHERE REMAIN DRY AND SOME OF THE THUNDERSTORMS MAY CONTAIN LITTLE OR NO RAIN. THUS A FIRE WEATHER WATCH FOR DRY LIGHTNING HAS BEEN ISSUED.

PLEASE ADVISE THE APPROPRIATE OFFICIALS OR FIRE CREWS IN THE FIELD OF THIS FIRE WEATHER WATCH.

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4. NFDRS

a. ZONE/FCST Shows whether this forecast is 24-hour trend (ZONE) or specific forecast values (FCST). Trend forecasts (ZONEs) show how parameters will change over the next 24 hours for a group of stations contained in a given NFDRS trend zone. Note that a trend zone consists of several points rather than an area. The NFDRS trend forecast applies to every station within the trend zone. The WIMS catalogue determines which stations are within a trend zone. Occasionally a station within an NFDRS trend zone is not expected to trend the same way as the rest of the stations in the zone. In those cases, specific point forecast values (FCST) should be made for that station while a zone trend forecast is done which applies to the rest of the stations in the zone group. Specific forecast values (FCST) always are placed after the trend forecasts (ZONEs).

b. **YYMMDD** Year, month, and day valid forecast time.
c. **NO** NFDRS Zone Number (or individual NFDRS station number)
d. **13** Always 1300 LST
e. **WX** Weather valid at 1300 LST tomorrow. Valid entries are:

0	clear
1	scattered clouds (1/8 to 4/8)
2	broken clouds (5/8 to 7/8)
3	overcast clouds (more than 7/8)
4	foggy
5*	drizzle
6*	raining
7*	snowing or sleeting
8	showers (in sight or at the station)
9	thunderstorm

***(Categories 5, 6, or 7 sets NFDRS components and indices to 0...use only with widespread precipitation)**

f. **TEMP** Temperature in deg F valid at 1300 LST for FCST or temperature trend + or - for ZONE
g. **RH** Relative humidity in % valid at 1300 LST for FCST or RH trend + or - for ZONE
h. **LAL1** Lightning Activity Level 1300 LST to 2300 LST
i. **LAL2** Lightning Activity Level 2300 LST to 2300 LST (next day)
j. **WIND** Wind speed in mph valid at 1300 LST for FCST or wind speed trend + or - for ZONE **(20 ft level/10 min avg)**
k. **10HR** 10-hour time lag fuel moisture in % valid at 1300 LST for FCST or trend + or - for ZONE
l. Tx Max temperature from 1300 LST to 1300 LST tomorrow
m. Tn Min temperature from 1300 LST to 1300 LST tomorrow
n. RHx Max relative humidity from 1300 LST to 1300 LST tomorrow
o. RHn Min relative humidity from 1300 LST to 1300 LST tomorrow
p. **PD1** Precipitation duration in hours 1300 LST to 0500 LST
q. **PD2** Precipitation duration in hours 0500 LST to 1300 LST
r. **WETFLAG** Y or N. Indicates whether liquid water will be on the fuels at 1300 LST. **(Use with caution – a "Y" will set all the NFDRS indices to zero!)**

The NFDRS forecast will follow the comma delimited format as shown:

ZONE,NO,YYMMDD,13,WX,TEMP(trend),RH(trend),LAL1,LAL2,WIND(trend),10HR(trend),PD1,PD2,WETFLAG
FCST,NO,YYMMDD,13,WX,TEMP,RH,LAL1,LAL2,WIND,10HR,TX,TN,RHx,RHn,PD1,PD2,WETFLAG

An example of the product, formatted for transmission into AWIPS, is displayed below:

FNUS85 KBOI DDHHMM
FWMBOI

ZONE,403,011027,13,1,-3,0,1,1,0,0,,,,,0,0,N	Zone trend (zone 403)
ZONE,404,011027,13,0,3,0,1,1,0,0,,,,,0,0,N	Zone trend (zone 404)
ZONE,102708, 011027,13,0,4,-5,1,1,,,,,0,0,N	Station trend **(WIMS cannot handle these for California)**
FCST,102709,011027,13,0,84,15,1,1,12,5,87,60,50,12,0,0,N	Station specific - **This must FOLLOW the ZONE forecasts.**

Note: Tx, Tn, RHx, and RHn are not necessary in ZONE forecasts but must be used if an individual station which is normally part of a zone group is pulled out of the zone.

5. Example ECCDA Forecast

FIRE WEATHER FORECAST FOR FORTUNA ECC DISPATCH
NATIONAL WEATHER WEATHER SERVICE - EUREKA CA
217 PM PDT WED APR 19 2006

Click on the link(s) below to go directly to forecast segments:
INTERIOR HUMBOLDT AND DEL NORTE COUNTIES INCLUDING SIX RIVERS NF AND HOOPA VALLEY
NORTH COAST INCLUDING PORTIONS OF CA NPS AND REDWOOD PARKS

.DISPATCH AREA DISCUSSION...
LOW PRESSURE WILL APPROACH NORTHWEST CALIFORNIA THURSDAY...
BRINGING INCREASED CLOUDINESS AND A SLIGHT CHANCE FOR
PRECIPITATION ALONG THE COAST. AS THE SYSTEM MOVES INLAND
FRIDAY AND SATURDAY...COOLER WEATHER WITH INCREASED RAIN
AND HIGH ELEVATION SNOW CHANCES CAN BE EXPECTED. A FEW
THUNDERSTORMS ARE POSSIBLE OVER THE MOUNTAINS ON FRIDAY.
DRY WEATHER IS EXPECTED SUNDAY BEFORE ANOTHER SYSTEM
APPROACHES THE REGION ON MONDAY.

THE FORECAST FOR:
INTERIOR HUMBOLDT AND DEL NORTE COUNTIES INCLUDING SIX RIVERS NF AND HOOPA VALLEYINLAND
PORTION OF SMITH RIVER DRAINAGE WITHIN SIX RIVERS NF
211 PM PDT WED APR 19 2006

.TONIGHT...
SKY/WEATHER.....MOSTLY CLEAR. PATCHY FOG AFTER 12 AM.
MIN TEMPERATURE.....37-40
MAX HUMIDITY.....100 PERCENT VALLEYS AND 60-70 PERCENT HIGHER
TERRAIN.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTHWEST WINDS 5 TO 8 MPH SHIFTING TO THE
NORTHEAST 3 TO 5 MPH LATE IN THE EVENING.
RIDGES/UPR SLOPES....NORTHWEST WINDS 5 TO 8 MPH SHIFTING TO THE
EAST 3 TO 5 MPH LATE IN THE EVENING.

.THURSDAY...
SKY/WEATHER.....PARTLY CLOUDY UNTIL 12 PM...THEN MOSTLY CLOUDY.
PATCHY FOG UNTIL 10 AM.
MAX TEMPERATURE.....65-71.
MIN HUMIDITY.....55-65 PERCENT.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTHEAST WINDS 3 TO 4 MPH SHIFTING TO THE
WEST 5 TO 8 MPH LATE IN THE MORNING.
RIDGES/UPR SLOPES....SOUTHEAST WINDS 3 TO 4 MPH SHIFTING TO THE
SOUTHWEST 5 TO 8 MPH LATE IN THE MORNING.

.FRIDAY...
SKY/WEATHER.....CHANCE OF RAIN...THEN SHOWERS LIKELY.
MAX TEMPERATURE.....60-63.
MIN HUMIDITY.....56-66 PERCENT.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTH WINDS 3 TO 8 MPH.
RIDGES/UPR SLOPES....NORTH WINDS 3 TO 8 MPH.

.EXTENDED...
.SATURDAY...PARTLY CLOUDY WITH CHANCE OF SHOWERS. LOWS IN THE UPPER 30S. HIGHS IN THE LOWER 60S. NORTH WINDS 3 TO 6 MPH.
.SUNDAY...PARTLY CLOUDY WITH SLIGHT CHANCE OF SHOWERS. LOWS IN THE UPPER 30S. HIGHS IN THE MID TO UPPER 60S. NORTHEAST WINDS 3 TO 6 MPH.
.MONDAY...PARTLY CLOUDY WITH SLIGHT CHANCE OF RAIN. LOWS NEAR 40. HIGHS IN THE MID 60S. SOUTHWEST WINDS 3 TO 6 MPH.

$$

THE FORECAST FOR:
NORTH COAST INCLUDING PORTIONS OF CA NPS AND REDWOOD PARKS
211 PM PDT WED APR 19 2006

.TONIGHT...
SKY/WEATHER.....MOSTLY CLEAR UNTIL 12 AM...THEN MOSTLY CLOUDY.
PATCHY FOG AFTER 12 AM.
MIN TEMPERATURE.....40-43.
MAX HUMIDITY.....100 PERCENT.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTH WINDS 4 TO 7 MPH.
RIDGES/UPR SLOPES....NORTH WINDS 3 TO 6 MPH.

.THURSDAY...
SKY/WEATHER.....MOSTLY CLOUDY. PATCHY FOG. SLIGHT CHANCE OF DRIZZLE OR RAIN.
MAX TEMPERATURE.....55-58.
MIN HUMIDITY.....64-74 PERCENT.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTH WINDS 4 TO 6 MPH SHIFTING TO THE WEST 5 TO 8 MPH LATE IN THE MORNING.
RIDGES/UPR SLOPES....NORTH WINDS 3 TO 6 MPH SHIFTING TO THE WEST 5 TO 8 MPH LATE IN THE MORNING.

.FRIDAY...
SKY/WEATHER.....MOSTLY CLOUDY. CHANCE OF RAIN...THEN CHANCE OF SHOWERS.
MAX TEMPERATURE.....54-57.
MIN HUMIDITY.....67-77 PERCENT COAST AND 52-66 PERCENT INLAND.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTH WINDS 3 TO 8 MPH.
RIDGES/UPR SLOPES....NORTH WINDS 3 TO 8 MPH.

.EXTENDED...
.SATURDAY...PARTLY CLOUDY WITH CHANCE OF SHOWERS. LOWS IN THE LOWER 40S. HIGHS IN THE MID 50S. NORTH WINDS 7 TO 17 MPH.
.SUNDAY...PARTLY CLOUDY. LOWS NEAR 40. HIGHS IN THE MID 50S.

NORTH WINDS 4 TO 8 MPH.
.MONDAY...PARTLY CLOUDY WITH SLIGHT CHANCE OF RAIN. LOWS IN THE
LOWER 40S. HIGHS IN THE MID 50S. SOUTHWEST WINDS 4 TO 8 MPH.

$$
THE FORECAST FOR:
INLAND PORTION OF THE KLAMATH RIVER DRAINAGE WITHIN SIX RIVERS NF AND UKONOM DISTRICT OF KLAMATH NF AND HOOPA VALLEY
211 PM PDT WED APR 19 2006

.TONIGHT...
SKY/WEATHER.....MOSTLY CLEAR. PATCHY FOG AFTER 12 AM.
MIN TEMPERATURE.....37-40
MAX HUMIDITY.....100 PERCENT VALLEYS AND 60-70 PERCENT HIGHER
TERRAIN.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTHWEST WINDS 5 TO 8 MPH SHIFTING TO THE
NORTHEAST 3 TO 5 MPH LATE IN THE EVENING.
RIDGES/UPR SLOPES....NORTHWEST WINDS 5 TO 8 MPH SHIFTING TO THE
EAST 3 TO 5 MPH LATE IN THE EVENING.

.THURSDAY...
SKY/WEATHER.....PARTLY CLOUDY UNTIL 12 PM...THEN MOSTLY CLOUDY.
PATCHY FOG UNTIL 10 AM.
MAX TEMPERATURE.....65-71.
MIN HUMIDITY.....55-65 PERCENT.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTHEAST WINDS 3 TO 4 MPH SHIFTING TO THE
WEST 5 TO 8 MPH LATE IN THE MORNING.
RIDGES/UPR SLOPES....SOUTHEAST WINDS 3 TO 4 MPH SHIFTING TO THE
SOUTHWEST 5 TO 8 MPH LATE IN THE MORNING.

.FRIDAY...
SKY/WEATHER.....CHANCE OF RAIN...THEN SHOWERS LIKELY.
MAX TEMPERATURE.....60-63.
MIN HUMIDITY.....56-66 PERCENT.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTH WINDS 3 TO 8 MPH.
RIDGES/UPR SLOPES....NORTH WINDS 3 TO 8 MPH.

.EXTENDED...
.SATURDAY...PARTLY CLOUDY WITH CHANCE OF SHOWERS. LOWS IN THE
UPPER 30S. HIGHS IN THE LOWER 60S. NORTH WINDS 3 TO 6 MPH.
.SUNDAY...PARTLY CLOUDY WITH SLIGHT CHANCE OF SHOWERS. LOWS IN
THE UPPER 30S. HIGHS IN THE MID TO UPPER 60S. NORTHEAST WINDS
3 TO 6 MPH.
.MONDAY...PARTLY CLOUDY WITH SLIGHT CHANCE OF RAIN. LOWS NEAR 40.
HIGHS IN THE MID 60S. SOUTHWEST WINDS 3 TO 6 MPH.

$$

THE FORECAST FOR:
INLAND PORTION OF VAN DUZEN AND MAD RIVER DRAINAGES WITHIN SIX RIVERS NF
211 PM PDT WED APR 19 2006

.TONIGHT...
SKY/WEATHER.....MOSTLY CLEAR. PATCHY FOG AFTER 12 AM.

MIN TEMPERATURE.....37-40
MAX HUMIDITY.....100 PERCENT VALLEYS AND 60-70 PERCENT HIGHER TERRAIN.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTHWEST WINDS 5 TO 8 MPH SHIFTING TO THE NORTHEAST 3 TO 5 MPH LATE IN THE EVENING.
RIDGES/UPR SLOPES....NORTHWEST WINDS 5 TO 8 MPH SHIFTING TO THE EAST 3 TO 5 MPH LATE IN THE EVENING.

.THURSDAY...
SKY/WEATHER.....PARTLY CLOUDY UNTIL 12 PM...THEN MOSTLY CLOUDY. PATCHY FOG UNTIL 10 AM.
MAX TEMPERATURE.....65-71.
MIN HUMIDITY.....55-65 PERCENT.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTHEAST WINDS 3 TO 4 MPH SHIFTING TO THE WEST 5 TO 8 MPH LATE IN THE MORNING.
RIDGES/UPR SLOPES....SOUTHEAST WINDS 3 TO 4 MPH SHIFTING TO THE SOUTHWEST 5 TO 8 MPH LATE IN THE MORNING.

.FRIDAY...
SKY/WEATHER.....CHANCE OF RAIN...THEN SHOWERS LIKELY.
MAX TEMPERATURE.....60-63.
MIN HUMIDITY.....56-66 PERCENT.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTH WINDS 3 TO 8 MPH.
RIDGES/UPR SLOPES....NORTH WINDS 3 TO 8 MPH.

.EXTENDED...
.SATURDAY...PARTLY CLOUDY WITH CHANCE OF SHOWERS. LOWS IN THE UPPER 30S. HIGHS IN THE LOWER 60S. NORTH WINDS 3 TO 6 MPH.
.SUNDAY...PARTLY CLOUDY WITH SLIGHT CHANCE OF SHOWERS. LOWS IN THE UPPER 30S. HIGHS IN THE MID TO UPPER 60S. NORTHEAST WINDS 3 TO 6 MPH.
.MONDAY...PARTLY CLOUDY WITH SLIGHT CHANCE OF RAIN. LOWS NEAR 40. HIGHS IN THE MID 60S. SOUTHWEST WINDS 3 TO 6 MPH.

$$

THE FORECAST FOR:
NORTH COAST INCLUDING PORTIONS OF CA NPS AND REDWOOD PARKS
211 PM PDT WED APR 19 2006

.TONIGHT...
SKY/WEATHER.....MOSTLY CLEAR UNTIL 12 AM...THEN MOSTLY CLOUDY. PATCHY FOG AFTER 12 AM.
MIN TEMPERATURE.....40-43.
MAX HUMIDITY.....100 PERCENT.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTH WINDS 4 TO 7 MPH.
RIDGES/UPR SLOPES....NORTH WINDS 3 TO 6 MPH.

.THURSDAY...
SKY/WEATHER.....MOSTLY CLOUDY. PATCHY FOG. SLIGHT CHANCE OF DRIZZLE OR RAIN.
MAX TEMPERATURE.....55-58.
MIN HUMIDITY.....64-74 PERCENT.
20-FOOT WINDS.....

VALLEYS/LWR SLOPES...NORTH WINDS 4 TO 6 MPH SHIFTING TO THE
WEST 5 TO 8 MPH LATE IN THE MORNING.
RIDGES/UPR SLOPES....NORTH WINDS 3 TO 6 MPH SHIFTING TO THE
WEST 5 TO 8 MPH LATE IN THE MORNING.

.FRIDAY...
SKY/WEATHER.....MOSTLY CLOUDY. CHANCE OF RAIN...THEN CHANCE OF
SHOWERS.
MAX TEMPERATURE.....54-57.
MIN HUMIDITY.....67-77 PERCENT COAST AND 52-66 PERCENT INLAND.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTH WINDS 3 TO 8 MPH.
RIDGES/UPR SLOPES....NORTH WINDS 3 TO 8 MPH.

.EXTENDED...
.SATURDAY...PARTLY CLOUDY WITH CHANCE OF SHOWERS. LOWS IN THE
LOWER 40S. HIGHS IN THE MID 50S. NORTH WINDS 7 TO 17 MPH.
.SUNDAY...PARTLY CLOUDY. LOWS NEAR 40. HIGHS IN THE MID 50S.
NORTH WINDS 4 TO 8 MPH.
.MONDAY...PARTLY CLOUDY WITH SLIGHT CHANCE OF RAIN. LOWS IN THE
LOWER 40S. HIGHS IN THE MID 50S. SOUTHWEST WINDS 4 TO 8 MPH.

$$

APPENDIX C – Predictive Services Product Examples

1. Daily PSU Product (Note –this product is planned to be discontinued in mid July)

NORTHERN CALIFORNIA FIRE WEATHER DISCUSSION AND FIRE DANGER FORECAST
0930 PDT TUESDAY MAY 3, 2006
REDDING FIRE WEATHER CENTER

*** THIS WEATHER PRODUCT CONSOLIDATES THE FIRE WEATHER FORECASTS OF THE NATIONAL WEATHER SERVICE (NWS) INTO A GEOGRAPHIC AREA PRODUCT. SIGNIFICANT DISCREPANCIES ARE COORDINATED WITH THE NWS. ***

CURRENT NATIONAL WEATHER SERVICE FIRE WEATHER WATCHES/ RED FLAG WARNINGS: Click here

Discussion: Clouds are increasing across the area a low pressure trough nears the central California coast. This system will bring isolated light showers to the southern sections of the area with only a slight chance north. A colder stronger system is due in by Thursday, with more rain, and unseasonably low snow levels of 3500 to 4000 feet. This system will be out of the area by late Saturday. Another weak system will brush the far north end of the state Monday.

HAINES Index	LOW	MID	HIGH
Medford	3	3	2
Oakland	4	5	5
Reno	N/A	M	2

Confidence factors are defined as follows: 5- 90-100%...4-80-89%…3-70-79%…2-60-69% …1-50-59%

North Coast PSAFDRAs 100 and 105
TODAY: Confidence Factor….4
Weather: Cloudy with isolated light showers mainly south. Showers will end tonight.
Max Temps: 50s and 60s.
Humidity: Minimums 35 to 45% which will occur this morning.
Winds: Valleys and lower slopes: West to northwest 3 to 6 mph.
Upper slopes and ridges: West to northwest 4 to 11 mph.
LAL: 1
FIRE DANGER: Available during fire season.

WEDNESDAY AND THURSDAY: Confidence Factor… 5
Weather: Increasing clouds late Wednesday with rain Thursday. Snow level 3500 to 4500 feet.
Max Temps:. 50s and 60s Wednesday. Cooling Thursday, with the higher elevations in the 40s and lower elevations in the 50s to lower 60s.
Humidity: Minimums 33 to 46% Wednesday and above 50% Thursday.
Winds: Valleys and lower slopes: South to southwest 6 to 12 mph, shifting to northwest to north 7 to 15 mph Thursday afternoon.
Upper slopes and ridges: South to southwest increasing to 12 to 18 mph gusts 24 mph Wednesday afternoon shifting to northwest to north 14 to 24 mph gusts 30 mph Thursday afternoon.
LAL: 1
FIRE DANGER: Available during fire season.

And similar forecast sections for the following seven PSAs:
Mid Coast PSAFDRAs 140, 150, 154, 162, 175, 180, and 185:
Bay Area PSAFDRAs 185, 190, 490, 518, 520, 530, 540, and 553:
Northwestern Mtns PSAFDRAs 110, 112, 113, 115, 120, 130, 165, 200, 202, 204, 208, 230, 238, 240, 241, and 243:
Sacramento Valley and Surrounding Foothills PSAFDRAs 170, 177, 245, 246, 247, 270, 280, 300, and 305:
Northeastern California PSAFDRAs 210, 214, 216, 220, 249, 255, and 258:
Northern Sierras PSAFDRAs 244, 248, 250, 262, 282, 285, 290, 293, 330, 335, 340, 345, and 350:
Eastside PSAFDRAs 260, 265, 268, 295, 380, and 383:

2. Operational Days 1-2 Graphic Product

(To replace number 1 above. TBD: Estimated by mid July)

3. Daily-issued 7-Day Significant Fire Potential Product

Legend:

Fuel Dryness

- **Moist** - Little if any threat for large fires.
- **Marginal** - Low threat for large fires when significant weather is absent.
- **Dry** - Moderate threat for large fires when significant weather is absent.

Significant Weather

- **Lightning** - LALs of 3 or higher.
- **W** **Wind** - Sustained speeds of 20 mph or greater.
- **HD** **Hot and Dry** - Temperatures much above normal with humidity 15% or less.

"High Risk" Days

- The combination of either Marginal or Dry Fuel condtions along with a Significant Weather Trigger.

7 Day Significant Fire Potential

Issued: Thursday, July 08, 2004

Predictive Service Areas	Thu Jul 08	Fri Jul 09	Sat Jul 10	Sun Jul 11	Mon Jul 12	Tue Jul 13	Wed Jul 14
Eastern Sierra						⚡	⚡
Central Sierra						⚡	
Southern Sierra						⚡	
Sierra Foothills							
Central Coast Mtns & Vlys							
South Coast							
South Central Mountains							
Southern Mountains							
Deserts							

Weather Synopsis:
A trough currently over California will give way to a strengthening area of high pressure over Arizona and New Mexico. This will cause temperatures to warm over much of the area by late in the weekend with a warming trend continuing into much of next week. Moisture from the southeast will increase over the Sierras by early next week bringing a chance of thunderstorms to those areas by then.

Fire Potential:
With the anticipation of warmer temperatures later this weekend and next week, general fire activity will likely be increasing as fuel conditions worsen. Probabilities for large fire development will increase considerably over the higher terrain of the Sierra range Tuesday and Wednesday as lightning activity increases.

Resource Capability:
Currently, sufficient resources are available for light to moderate initial attack however should significant fire activity develop next week, additional resources will likely be requested.

For more information on this product, click here

4. MONTHLY FIRE WEATHER / FIRE DANGER OUTLOOK

May 2006

1. REPORTING UNIT: Northern California Geographic Area

2. DATE: April 26, 2006

THIS COMING MONTH	BELOW NORMAL		NORMAL		ABOVE NORMAL	
THIS SEASON	BELOW NORMAL		NORMAL		ABOVE NORMAL	

4. FIRE WEATHER OUTLOOK

Review of April 2006 weather (through the 26th):

The trends predicted on the April Outlook for northern CA worked out quite well, as we saw a transition from wet and cool weather in the first half of the month to a significantly warmer and drier second half. Precipitation in the first half of April was even more than expected, reaching to as much as 400% of normal. With relatively cool temperatures the snowpack in higher mountain areas continued to increase through mid-month. **Figure 1**depicts precipitation percent-of-normal from April 1 to 25, while **Figure 2** shows temperature departures from normal over the same period. In North Ops, only the NW corner of CA had less than 150% of normal April precipitation, with a small portion of Siskiyou Co. below normal. April was not a particularly windy month, with variable wind directions in the light to moderate speed categories. The last storm before mid-month did produce stronger southerly winds, with gusts 40-55 mph in the windier exposed areas. A composite map for lightning strikes for April 1-26 (not shown) indicates quite a bit of activity occurred in the southeast half of the Geographic Area, especially within an 80-mile radius of Lake Tahoe.

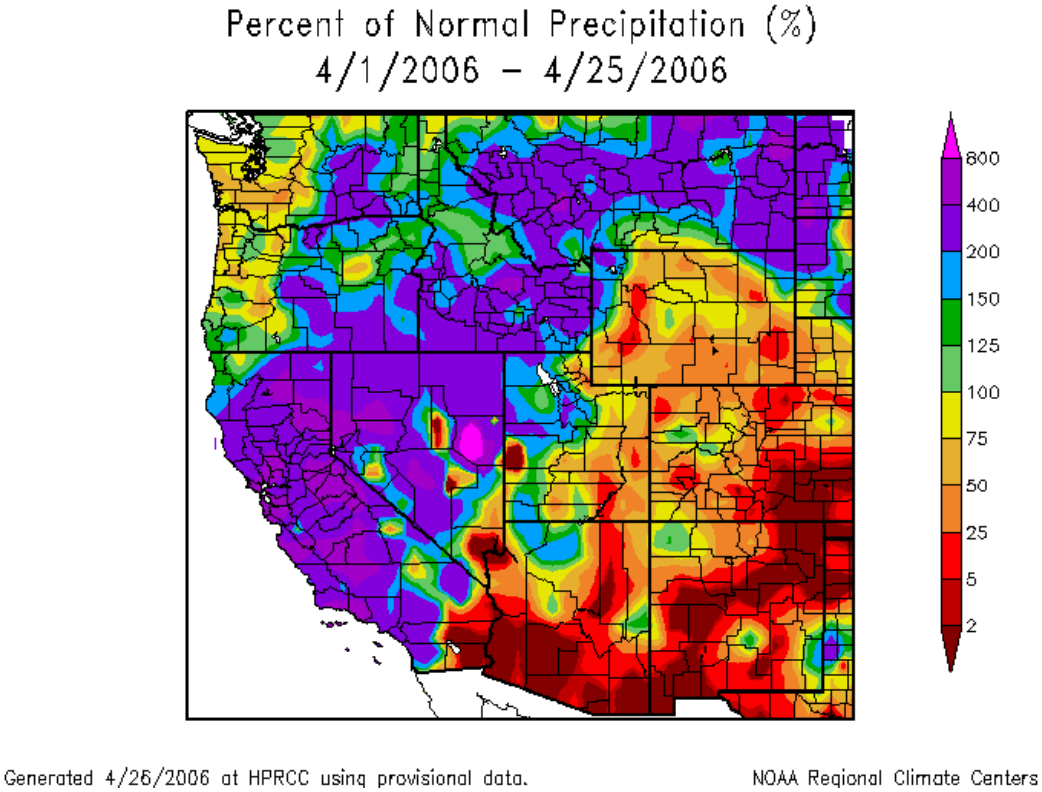

Figure 1

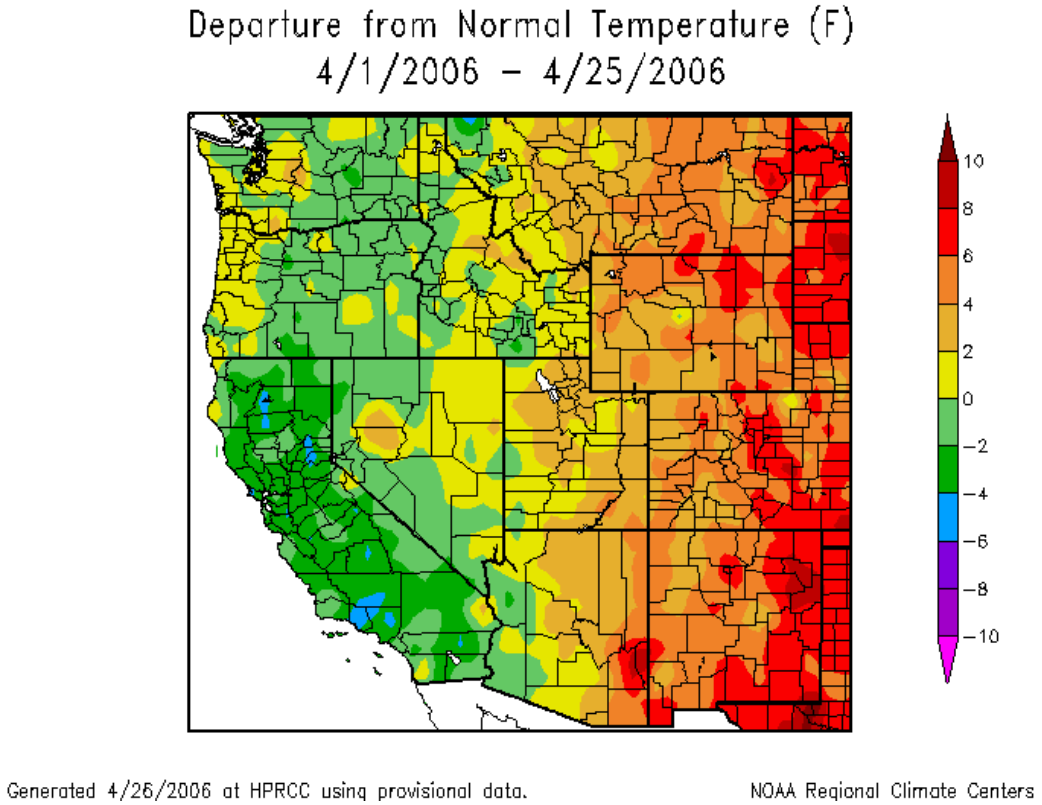

Figure 2

FORECAST DISCUSSION FOR MAY 2006:

A La Nina pattern (cooler than normal east-Pacific ocean water) that reached borderline-moderate strength has been gradually fading in the past two months, after it peaked in about late February. The lagged effects of this La Nina change likely helped deliver northern CA from the recent seven week long cool, moist pattern. The longer-range weather maps for the first third of May have lately been fairly consistent with maintaining a fairly strong high pressure influence over northern CA. Other longer-range models, as well as historical analogies using month-by-month precip patterns at Redding, also favor at least a slightly warmer and drier than average May. This is the basis for the forecasts below, which have a confidence level of 60-70% (fairly high for monthly projections).

Look for the mountain snowpack below 6000' to diminish steadily in May, with slower reductions of the deep snow-pack at elevations above that. Typically May is a month with several 1-3 day foehn wind (north to east) events in North Ops, and that is expected to be the case this year. These type winds keep lower elevations warmer and drier than normal (including coastal areas). If they do turn out to have above-normal frequency or duration this May, they will aid the curing rate of what is currently a lush annual grass crop in low-elevation valleys. At this point, an educated guesstimate for May lightning activity would be for a near-normal activity overall. A predominance of stable weather patterns would work toward keeping lightning less than normal, but the melting snow fields in the high country can also boost humidity locally in the afternoons, aiding weak convective activity.

5. FUELS

FINE - GRASS STAGE	GREEN		CURED			
NEW GROWTH	SPARSE		NORMAL		ABOVE NORMAL	

LIVE FUEL MOISTURE (sage, deciduous, conifer): **NA**

1000 HOUR DEAD FUEL MOISTURE: **Above 20% all areas** (per 4/25 WFAS map)

6. ACTUAL OCCURRENCE / ACRES BURNED YEAR TO DATE:

Fires	**Acres**	**approximations**
~80	**~3000**	

WRITTEN FORECAST SUMMARY FOR MAY 2006:

Geographic Area	Northern California
Precipitation Outlook	Ranging from 40-90% of normal.
Temperature Outlook	**Inland:** ranging from + 1.0 to +3.5 º F departure from normal. **Coast:** near normal to + 1.5º departures
Fuels and Fire Danger Concerns	Lower elevations: No real concerns… Brush will continue greening up, while annual grasses finish greening and begin curing. Moisture content of large dead fuels should dry gradually during dry periods, and will generally remain at or above normal levels for May. Higher elevations: No concerns… Snowpack will reduce, with greenup beginning shortly after when fuels become snow-free. Large dead fuels will remain moist or snow-covered thru May.
Prescribed fire implications	May should provide some good windows for prescribed burning in several fuel types. Some high elevation projects or those on higher north aspects may need to wait until June.
Miscellaneous	The GACC has adequate resources at this time.

For additional input regarding forecast May weather, see the NWS 30- and 90-day temp and precipitation maps for the month. The recently updated forecasts can be found at this URL: **http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/page2.gif**.

5. SEASONAL OUTLOOKS

The latest Seasonal assessments can be found at the following URLs:

North: http://gacc.nifc.gov/oncc/predictive/outlooks/seasonal_outlook.pdf
South: http://gacc.nifc.gov/oscc/predictive/outlooks/myfiles/assessment.pdf

March 2006

1. **REPORTING UNIT**: **Northern California Geographic Area**

2. **DATE**: **March 1 2006**

POTENTIAL FOR SERIOUS/CRITICAL FIRE PROBLEMS:

THIS COMING MONTH	BELOW NORMAL		NORMAL		ABOVE NORMAL	
THIS SEASON	BELOW NORMAL		NORMAL		ABOVE NORMAL	

RECENT WEATHER AND TRENDS:

The Northern CA weather assessment for February has verified quite well. The first 10 days of February were drier than normal Area-wide, then we saw a switch to an occasionally wetter pattern. The current fair weather pattern will be followed by one more rainy period Feb. 27-28. Figure 1 shows this year's Feb. 1-23 precip, as a percentage of normal. Mean temperatures have averaged 0.5 to 4.0ºF above normal across most of North Ops in February, with a cold exception in parts of Lassen Co. where temps have been 4-6º F below normal. The warmest spot in the north state has been in the central Sacramento Valley, at 4-6º F above normal.

The storms that brought February's precipitation were almost exclusively slow-moving closed lows, and none had widespread strong winds. With the mild temps, and adequate to plentiful precipitation so far this winter, low elevations are showing a normal to taller-than-normal annual grass crop of plush green. The end of January snowpack ranged from just under normal near the Trinity Alps to 120-140% of normal in the northern Sierra. The end-of-February percentages in the north, when they soon become available, could show some hefty dips. This is due to the relative dryness in those northern PSAs, as shown in Figure 1.

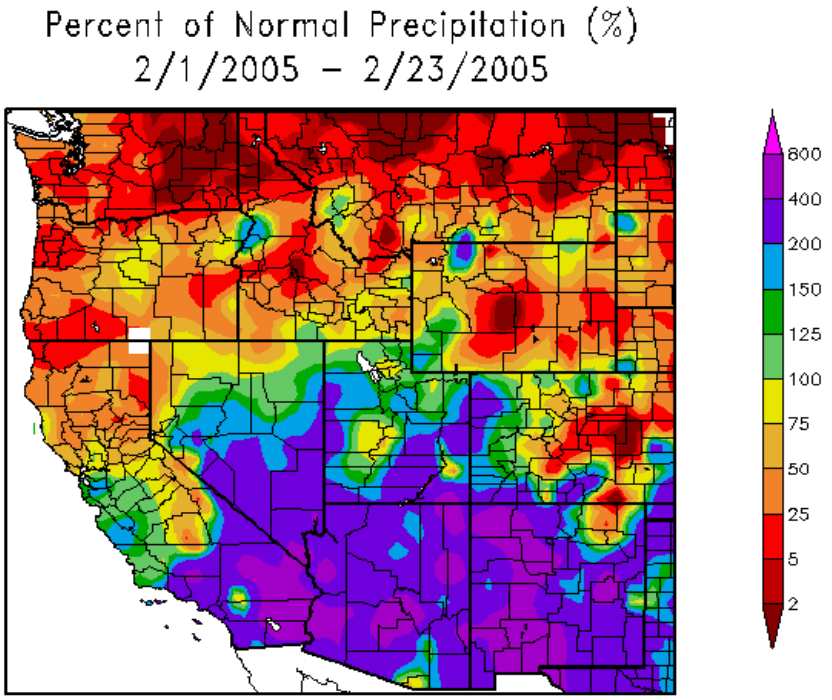

Figure 1

DISCUSSION:

Last March had record-setting warmth, and saw a previously solid snowpack dwindle rapidly. At this time, we don't expect an exceptionally warm March again this year. However, mean temperatures (overall) will likely average at least a little above normal, owing to the continued presence of large-scale high pressure aloft over the NW portion of the continental U.S.. The latest weather map runs show a continued prominent split in the Pacific flow during at least the first third of March. This will generally keep northern CA out of the Pacific storm track after March 2nd to possibly mid-month. That pattern will likely adjust to one that is at least slightly wetter during the second half of March.

5. FUELS

FINE - GRASS STAGE	GREEN		CURED			
NEW GROWTH	SPARSE		NORMAL		ABOVE NORMAL	

LIVE FUEL MOISTURE (sage, deciduous, conifer):

1000 HOUR DEAD FUEL MOISTURE:

6. ACTUAL OCCURRENCE /ACRES BURNED YEAR TO DATE: Fires Acres

WRITTEN SUMMARY:

MARCH 2006 FORECAST: **NORTHERN CALIFORNIA GEOGRAPHIC AREA**

Precipitation: Probably no significant wet spells, but a dry period of up to 10-12 days is possible during the first half of the month. Closed lows will likely continue to play a prominent role in any precip events. Northern California monthly precip totals are forecast to fall into a 50-90% of normal range by month's end.

Temperature Outlook: Near to a little above March normals (Temperature DFNs predicted to fall a 0 to +3.0ºF range).

Fuels and Fire Danger Concerns: None during March

Prescribed Fire Implications: Fuels are at present generally moist, or snow-covered. With the above weather pockets of prescribed burning could open up at mid/lower elevations by month's end.

Miscellaneous: Since the early 1960s when Redding (near the geographic center of North Ops) receives below normal precipitation in both January and February, March too is often drier than normal (in 8 of 13 cases). When you factor in a substantially wet December from the year just prior (such as we had in 2004) March still remained drier than normal in 3 of 4 cases.

For additional input regarding March weather, see the NWS 30- and 90-day temp and precip maps for the month. The recently updated forecasts can be found at this URL:

http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/page2.gif.

California Seasonal Fire Weather/ Fire Danger Outlook

April 2006

California Executive Summary

This preliminary outlook is a product of the National Seasonal Assessment Workshop held April 4 -7, 2006 in Boulder, Colorado. The interagency workshop brought together experts in the field of climatology, meteorology, fuels, and fire danger.

The objective of this workshop was to assess all factors that will affect wildland fire potential during the 2006 wildland fire season. The outlook is based on past developments, current conditions, trends, and predictions for the next six months (April through September).

The objectives of the California Executive Summary are to:

- Summarize winter and early spring weather and fuel conditions to date.
- Provide a first-look prognosis of the 2006 wildland fire potential in California, based on available fire weather and fuel predictions.
- Highlight any areas of concern related to fuel conditions across the state.
- Highlight management implications and concerns.
- Provide the framework for the more comprehensive outlook in late June.

This summary was generated prior to the significant weather months of April and May. Therefore, while it should aid California wildland fire managers in 2006 fire season preparedness, and add early insight, it is not the final word. A more comprehensive California Seasonal Fire Weather/ Fire Danger Outlook will be published in separate North Ops and South Ops documents, which will come by the end of May in South Ops and by late June in North Ops. These documents will give increased detail regarding all aspects of the coming fire season. They will also provide any necessary updates to the July through October climate forecasts used at the writing of this executive summary. In addition to this outlook, the GACC Predictive Service Units (PSU) issue detailed monthly assessments of fire weather and fire danger.

Recent and Predicted Weather

A La Nina pattern (cooler than normal tropical eastern Pacific) which developed rapidly this past winter and peaked near moderate strength in February, resulted in varying precipitation amounts across the state. In North Ops, precipitation through February ranged from 70% of normal in the south, to 140% of normal in the wettest areas in the north. By March, a shift to a very wet and cool pattern occurred and brought near record breaking snowfall across the higher elevations for the month. Currently, North Ops has received 120 to 200% of normal precipitation for the season, with the mid to high-elevation snowpack much above average.

The bulk of the cool season has been much drier in southern California, with precipitation amounts varying generally between 50% of normal in the south to a little more than 120% of normal across the central portions of the state. Recent rains over the last four to six weeks have alleviated some of the drier conditions across southern portions of California.

Above normal rainfall and below normal temperatures will continue across much of California through at least late April. A transition to a warmer and drier pattern, relative to normal, is anticipated to occur sometime in May. Near normal temperatures and precipitation are then expected statewide for the latter half of May and into June, with the possibility of North Ops rising to a few degrees above normal. For the summer period, we can expect a continuation of near normal temperatures in the coastal areas, but the interior portions of the state will likely experience near to slightly above normal

temperatures. For this period, precipitation is forecast to be at or a little below normal, but it should be noted that average rainfall during the summer for much of the state is insignificant. The confidence factor in these weather forecasts is about average.

Fuels Discussion

Dead fuels are currently either snow-covered or have moisture contents near to above normal, especially in the northern two-thirds of the state. A continuing area of concern is the large amount of bug-killed timber on the national forests from about the Sequoia NF southward. The arrangement of these fuels is changing from aerial to surface, as dead trees continue to fall. Snowpacks and continued wet weather will delay greenup dates for live fuels, particularly at mid and upper elevations. One effect will be that live fuel moistures will remain at high levels longer into the fire season than normal.

Fire Season Outlook

With the recent increase in late season precipitation and delayed greenup, the onset of this year's fire season will generally be later than normal in North Ops and may be later than normal in portions of South Ops. The current and expected weather and fuel conditions will lead to below normal fire potential over the central and northern Sierras, and in portions of northwest California well into fire season. Near normal fire potential is expected elsewhere across the state.

Management Implications

- With the anticipated later start to the fire season, there should not be a need to bring on resources any earlier than normal.
- California resources will likely be available for out-of-state incidents during the early part of fire season.
- Prescribed burn windows in northern California maybe of normal or longer length, but would start and end later than usual. However, a delayed window will be impacted by potential resource drain to incidents in other regions.
- Funding level reductions could result in diminished initial attack resource capability, thus increasing burned acres to above average levels.

BELOW NORMAL
NORMAL
NORMAL
BELOW NORMAL
NORMAL
NORMAL
2006 CALIFORNIA FIRE SEASON OUTLOOK
April 7, 2006

Team Members

John Snook – Fire Weather Meteorologist, Redding Interagency Fire Weather Center, USDA Forest Service

Tom Rolinski – Fire Weather Meteorologist, Riverside Interagency Fire Weather Center, USDI Bureau of Land Management

Bruce Risher – Intelligence Officer, USDA Forest Service, Southern California Geographic Area Coordination Center

Mark Steele – Intelligence Officer, USDA Forest Service, Northern California Geographic area Coordination Center.

Also contributing: Ron Hamilton, Mike Lococo, Beth Little, Larry Hood, Russ Gripp

APPENDIX D – High Season Coordination Calls

Predictive Services Units and National Weather Service Coordination Calls

Coordination conference calls will be conducted as needed between the Predictive Services Units (PSUs) and the National Weather Service (NWS) Weather Forecast Offices (WFOs) during fire season. The purpose of the call is to produce seamless products between WFOs and also between the PSU and WFOs. Calls should be brief and to the point.

Calls will be at 0830 PDT during the fire season.

The Predictive Services Units meteorologist will facilitate the call.

Normally, there will be two calls. One will be for the north and the other for the south. There are 3 WFOs that have forecast areas in both the north and the south. Routinely, Monterey will be on the north and south calls, andwhile Reno and Sacramento will be on the north call. In some instances, one statewide call will be conducted.

Deployed IMETs should be included in the calls.

The PSUs will place an unpublished message on their Internet web page by 0800 PDT to inform the WFOs if a call is necessary, and which WFOs need to be on it.

The focus of the calls will be in the short term (72 hours).

Calls will be conducted when one or more of the following is occurring:

- Fire Weather Watch/Red Flag Warning is in effect.
- A critical fire weather pattern is expected to develop.
- Large wildfires or wildfires with IMETs deployed
- California is in Planning Level IV or V.
- The PSU assessment conflicts with the WFO forecast, or there is a discrepancy between adjoining WFO forecasts. The PSUs will use the NWS IFPS “trigger points” for guidance. (However, coordination may be appropriate at lower thresholds.)
    - MaxT/MinT — 5 deg F except 7 deg F in complex terrain
    - RH — 5% except 10% in complex terrain
    - Prob. Of Precip — 20%
    - Wind Speed (2 min) — 12 MPH except 18 MPH in complex terrain
    - Wind Direction — 45 deg except 60 deg in complex terrain.
    - LAL — 2 except for a valid discrepancy between wet and dry thunderstorms
    - Haines Index — 2 except for 3 in complex terrain.

APPENDIX E – Backup Spot Forecast Request Form (WS FORM D-1)

WS FORM D-1
(1-2005)
(Supersedes Previous Editions)

SPOT REQUEST
(See reverse for instructions)

U.S. Department of Commerce
NOAA
National Weather Service

Please call the NWS Weather Forecast Office (WFO) when submitting a request and also after you receive a forecast to ensure request and forecast were received.
Please provide feedback to WFO on forecast.

1. Time†	2. Date	3. Name of Incident or Project	4. Requesting Agency

5. Requesting Official	6. Phone Number	7. Fax Number	8. Contact Person

9. Ignition/Incident Time and Date

10. Size (Acres)

11. Type of Incident
- ☐ Wildfire
- ☐ Prescribed Fire
- ☐ Wildland Fire Use (WFU)
- ☐ HAZMAT
- ☐ Search And Rescue (SAR)

12. Reason for Spot Request (choose one only)
- ○ **Wildfire**
- ○ **Non-Wildfire** Under the Interagency Agreement for Meteorological Services (USFS, BLM, NPS, USFWS, BIA)
- ○ **Non-Wildfire** State, tribal or local fire agency working in coordination with a federal participant in the Interagency Agreement for Meteorological Services
- ○ **Non-Wildfire** Essential to public safety, e.g. due to the proximity of population centers or critical infrastructure.

13. Latitude/Longitude:

14. Elevation (ft, Mean Sea Level)
Top: **Bottom:**

15. Drainage

16. Aspect

17. Sheltering
- ☐ Full
- ☐ Partial
- ☐ Unsheltered

18. Fuel Type: __Grass __Brush __Timber __Slash __Grass/Timber Understory __Other_____
Fuel Model: 1,2,3 4,5,6,7 8,9,10 11,12,13 2,5,8

19. Location and name of nearest weather observing station (distance & direction from project):

20. Weather Observations from project or nearby station(s): (Winds should be in compass direction e.g. N, NW, etc.)

Place	Elevation	†Ob Time	20 ft. Wind Dir	20 ft. Wind Speed	Eye Level Wind. Dir	Eye Level Wind. Speed	Temp. Dry	Temp. Wet	Moisture RH	Moisture DP	Remarks *(Relevant Weather, etc)*

21. Requested Forecast Period
Date

Start _____

End _____

Forecast needed for:
- ☐ Today
- ☐ Tonight
- ☐ Day 2
- ☐ Extended

22. Primary Forecast Elements (Check all that are needed) *(for management ignited wildland fires, provide prescription parameters):*

	Needed:
Sky/Weather	☐
Temperature	☐
Humidity	☐
20 ft Wind	☐
Valley	☐
Ridge Top	☐
Other (Specify in #23)	☐

23. Remarks (other needed forecast elements, forecast needed for specific time, etc.)

24. Send Forecast to: ATTN:	25. Location:	26. Phone Number: Fax Number:

27. Remarks (Special requests, incident details, Smoke Dispersion elements needed, etc.):

EXPLANATION OF SYMBOLS: † Use 24-hour clock to indicate time. Example: 10:15 p.m. = 2215; 10:15 a.m. = 1015
Indicate local standard time or local daylight time

WS FORM D-1, January 2005 INSTRUCTIONS:

I. Incident Personnel:

1. Complete items 1 through 27 where applicable.
   a. Example of weather conditions on site:

13. Weather Observations from project or nearby station(s):

Place	Elevation	†Ob Time	20 ft. Wind		Eye Level Wind.		Temp.		Moisture		Remarks *(Relevant Weather, etc.)*
			Dir	Speed	Dir	Speed	Dry	Wet	RH	DP	
Unit G-50	1530'	0830	NW	6-8	NW	3-5	32		72		Observations from unit RAWS station, 50% cloud cover.

   b. If the incident (HAZMAT, SAR) involves marine, put the wave/swell height and direction in the Remarks section.

2. Transmit in numerical sequence or fax to the appropriate Weather Forecast Office. (A weather forecaster on duty will complete the special forecast as quickly as possible and transmit the forecast and outlook to you by the method requested)
3. Retain completed copy for your records.
4. **Provide feedback to NWS utilizing separate page.** Be sure to include a copy of the spot forecast with any feedback submission including forecaster's name. Feedback to NWS personnel is imperative to assist with future forecasts. Remember, feedback on correct forecasts is equally as valuable as feedback on incorrect forecasts! If spot forecast is significantly different than conditions on site, a second forecast may be required.

II. ALL RELAY POINTS should use this form to insure completeness of date and forecast. A supply of this form should be kept by each dispatcher and all others who may be relaying requests for forecasts or relaying completed forecasts to field units.

III. Forms are available from your local National Weather Service Weather Forecast Office. They may also be reproduced by other agencies as needed, entering the phone number and radio identification if desired.

NOTICE: Information provided on this form may be used by the National Weather Service for official purposes in any way, including public release and publication in NWS products. False statements on this form may be subject to prosecution under the False Statement Accountability Act of 1996 (18 U.S.C. § 1001) or other statutes.

APPENDIX F - NFDRS Table - Site Information, Owners, and NWS Responsibilities

EKA = NWS Eureka, HNX = NWS Hanford, VEF = NWS Las Vegas, LOX = NWS Oxnard, MFR = NWS Medford, MTR = NWS Monterey, REV = NWS Reno, STO = NWS Sacramento, SGX = NWS San Diego

Name	NFDRS ID	Agency	Unit	WFO	Trend Zone Number	Latitude	Longitude	Elevation
Acton	045438	Local	LAC	LOX	506	34.44583	-118.212	2600
Alder Point	040423	CDF	HUU	EKA	556	40.1866666	-123.5902777	923
Alder Springs	041101	USFS	MNF	STO	595	39.65	-122.725	4475
Alpine	045701	USFS	CNF	SGX	509	32.83361111	-116.7391667	2041
Ammo Dump	045738	Local	MVU	SGX	508	33.3813888	-117.2856667	1068
Anza	045616	CDF	RRU	SGX	513	33.555	-116.6730555	3920
Arbuckle Basin	040632	CDF	SHU	STO	595	40.398333	-122.8116666	1900
Arroyo Grande	044915	CDF	SLU	LOX	500	35.1919965	-120.4317199	600
Arroyo Seco	044301	USFS	LPF	MTR	522	36.23	-121.492	980
Ash Creek	040244	USFS	SHF	MFR	584	41.278	-121.978	3200
Ash Mountain	044701	NPS	KNP	HNX	529	36.491	-118.824	1700
Ash Valley	040726	BLM	SUD	REV	572	41.058	-120.706	5090
Backbone	040513	USFS	SHF	EKA	591	40.8891667	-123.1422222	4700
Bald Mountain	042603	USFS	ENF			38.903	-120.698	4613
Bangor	041201	CDF	BTU	STO	596	39.380877	-121.38621	840
Barnaby	042308	NPS	MRN	MTR	559	38.03	-122.75	1240
Batterson	044207	USFS	SNF	HNX	528	37.378	-119.628	3100
Bear Peak	044730	BLM	BBD	HNX	530	35.884	-118.051	8228
Bear Valley	045007	CDF	KRN	MTR	562	35.2160	-118.62495	4936
Beaumont	045617	CDF	RRU	SGX	510	33.93041667	-116.949833	2611
Beaver	042601	USFS	ENF	STO	538	38.488	-120.325	5000
Bell Canyon	045735	Local	ORC	SGX	509	33.541666	-117.591666	700
Ben Bolt	042612	CDF	AEU	STO	552	38.6013889	-120.929722	1500
Ben Lomond	043809	CDF	CZU	MTR	549	37.132	-122.17	2630
Benton	043708	BLM	BBD	REV	518	37.843	-118.478	5450
Beverly Hills	045442	Local	BHL	LOX	501	34.125	-118.412	1260
Big Bar	040501	USFS	SHF	EKA	591	40.743	-123.25	1500
Big Hill	040402	BIA	HIA			41.1	-123.633	3570
Big Pine Flat	045102	USFS	BDF	SGX	511	34.3194444	-117.0078333	6861
Big Pines	045401	USFS	ANF	LOX	507	34.3788889	-117.6919444	6917
Big Rock	042310	Local	MRN	MTR	559	38.0483	-122.57	1500
Big Sur	044302	USFS	LPF	MTR	521	36.2355556	-121.785	450
Black Diamond	043008	Local	EBY	MTR	547	37.95	-121.88444	1600
Blackrock	044722	USFS	SQF	HNX	534	36.093	-118.2613889	8200
Blue Door	040725	BLM	SUD	REV	572	41.056	-120.336	5615
Blue Ridge	040203	USFS	KNF	MFR	586	41.273	-123.19	5956

Bogard RS	040703	USFS	LNF	REV	598	40.59	-121.08	5680
Booneville	041001	CDF	MEU	EKA	557	38.98745	-123.3474	840
Bradley	044303	CDF	BEU	MTR	523	35.88725	-120.92385	443
Branch Mountain	044901	USFS	LPF	LOX	525	35.184	-120.083	3773
Brazie Ranch	040242	CDF	SKU	MFR	588	41.6852778	-122.5941667	3000
Breckenridge Lookout	045009	USFS	SQF	HNX	534	35.451	-118.581	7548
Bridgeport	043702	USFS	HTF	REV	576	38.246667	-119.2197222	6480
Briones	043010	Local	EBY	MTR	547	37.934166	-122.11777	1450
Brooks	042202	CDF	LNU	STO	558	38.7194444	-122.142222	360
Buck Meadows	043603	USFS	STF			37.823	-120.098	3200
Bull Flat	040728	BLM	SUD	REV	572	40.481	-120.114	4395
Burns Canyon	045125	BLM	CDD	SGX	516	34.208	-116.621	6000
Buttercup		BLM	CDD			32.73972222	-114.8838889	217
Cahuilla		BLM	CDD			32.9736111	-115.1736111	278
Calaveras Rd	043405	Local	SCU	MTR	547	37.5531	-121.8441	1230
Callahan	040204	USFS	KNF	MFR	587	41.315	-122.8	3136
Cameron	045704	USFS	CNF	SGX	513	32.721	-116.463	3443
Camp 9	045440	Local	LAC	LOX	506	34.3619	-118.421667	4000
Campo Seco	043102	Local	AEU			38.2236111	-120.8663889	399
Canby	040303	USFS	MDF	MFR	589	41.434	-120.868	4312
Carpenter Ridge	041213	CDF	BTU	STO	597	40.06875	-121.58374	4812
Carrizo	044916	BLM	BBD	LOX	525	35.096	-119.773	2490
Case Mountain	045733	BLM	BBD	HNX	529	36.4108333	-118.8091667	6450
Case Springs	045731	Local	MCP	SGX	508	33.445	-117.418	2320
Cashman	040916	USFS	PNF	STO	599	40.01	-120.91611	4520
Casitas	045308	USFS	LPF	LOX	504	34.40805556	-119.3702778	640
Catheys Valley	044114	CDF	MMU	HNX	528	37.465	-120.077	1200
Cedar Grove	044719	NPS	KNP	HNX	534	36.78778	-118.65916	4720
CFLO	044195	NPS	YNP	HNX	531	37.77	-119.82	6644
Cheeseboro	045313	NPS	CNP	LOX	505	34.1902777	-118.717222	1650
Chester	040904	USFS	LNF	STO	597	40.287	-121.237	4525
Chico	041210	CDF	BTU	STO	596	39.71191	-121.78174	230
Chilao	045436	USFS	ANF	LOX	507	34.333	-118.033	5450
Chimney Peak	044721	BLM	BBD	HNX	530	35.90	-118.0	6240
Chuchupate	045302	USFS	LPF	LOX	503	34.808	-119.0125	4900
Claremont	045443	Local	LAC	SGX	509	34.137	-117.707	1645
Clark	045624	CDF	RRU	SGX	509	33.8266667	-117.303333	1720
Clear Creek	045405	USFS	ANF	LOX	506	34.271111	-118.1525	3000
Cohasset	041211	CDF	BTU	STO	596	39.87124	-121.7696667	1670
Collins Baldy	040237	USFS	KNF	MFR	587	41.777	-122.948	5493
Converse	045105	USFS	BDF	SGX	511	34.189	-116.917	5618
Cooskie Mountain	040422	BLM	UKD	EKA	560	40.258	-124.25	2950
Corning	040814	CDF	TGU	STO	595	39.939	-122.169866	294

Corona	045618	USFS	CNF	SGX	509	33.8744444	-117.5491667	640
Corralitos	043802	CDF	CZU	MTR	550	36.9911111	-121.7977777	450
County Line	041410	BLM	UKD			39.019	-122.412	2085
Crane	044102	NPS	YNP	HNX	531	37.766	-119.816	6644
Cranston	045603	USFS	BDF	SGX	512	33.74027778	-116.8413889	1950
Crazy Peak	040106	USFS	SIF	MFR	621	41.59	-123.37	3970
Crestview	043709	USFS	INF	REV	518	37.745	-118.983	7600
Del Valle	045445	Local	LAC	LOX	505	34.431	-118.666	1278
Delilah	044512	USFS	SQF	HNX	529	36.80	-119.103	5156
Democrat	045002	USFS	SQF	HNX	530	35.531667	-118.630	2356
Descanso	045707	USFS	CNF	SGX	513	32.856667	-116.63927	3480
Devils Garden	040309	CDF	LMU	MFR	590	41.522	-120.668	5022
Devils Postpile	044208	USFS	INF			37.63	-119.093	7560
Devore	045113	CDF	BDU	SGX	510	34.221224	-117.4030556	2080
Diablo Grande	043502	CDF	SCU			37.329	-121.301667	1850
Dinkey	044521	USFS	SNF	HNX	533	37.066667	-119.15	5668
Dog Valley	043102	USFS	TYF	REV	541	39.56194444	-120.04777	5976
Doyle	040724	BLM	SUD	REV	572	40.022	-120.106	4240
Duncan	041901	USFS	TNF	STO	536	39.143889	-120.50889	7100
Eagle Peak	040802	USFS	MNF	STO	595	39.929	-122.646	3713
Eel River	041005	USFS	MNF	EKA	557	39.833	-123.083	1500
Eel River Camp	040421	CDF	HUU	EKA	556	40.18316667	-123.8237333	470
El Cariso	045619	USFS	CNF	SGX	509	33.652	-117.407	3038
El Mirage	NA	BLM	CDD			34.634	-117.55	2880
Esperanza	043208	CDF	TCU	STO	539	38.243055	-120.51444	2512
Fancher Creek	044516	CDF	FKU	HNX	528	36.88416	-119.466944	920
Fawnskin	045101	USFS	BDF	SGX	511	34.266	-116.899	6900
Fence Meadow	044503	USFS	SNF	HNX	532	36.966	-119.183	5048
Figueroa	045201	USFS	LPF	LOX	500	34.7347	-120.04	3200
Fish Creek Mountains	045802	BLM	CDD			32.983	-116.058	760
Five Mile	044308	BLM	CDD			35.87166667	-117.9183333	4150
Foresthill 2	041908	USFS	TNF	STO	535	39.09138889	-120.7316667	4277
Fort Hunter Ligget	044317	USFS	LPF	MTR	522	36.011667	-121.2383333	1100
Fort Ord	109692	BLM	BEU	MTR		36.5994444	-121.7525	768
Fountain Springs	044731	CDF	TUU	HNX	529	35.891	-118.916	791
Fremont Canyon	045736	Local	ORC	SGX	509	33.78	-117.67	1781
Friend Mtn	040512	USFS	SHF	EKA	591	40.505	-123.343	4000
Gasquet	040102	USFS	SRF	EKA	560	41.84583333	-123.9791667	500
Golden	45119			VEF	312			
Goose Valley	045724	USFS	CNF	SGX	509	33.07055	-116.8427	1530
Gordon	040730	USFS	LNF	REV	598	40.7586111	-120.8961111	6200
Granite Mountain	045124	BLM	CDD			34.536	-117.026	4720

Grasshopper	040721	CDF	LMU	REV	598	40.78	-120.778333	6050
Green Springs	043613	CDF	TCU	STO	539	37.83306635	-120.49666	1020
Grizzly Flat	042613	USFS	ENF	STO	539	38.61872222	-120.5613889	3760
Hastings	044319	CDF	BEU			36.3888	-121.5514	1824
Hawkeye	042010	CDF	LNU	MTR	559	38.734286	-122.83808	2000
Hayfork	040503	USFS	SHF	EKA	591	40.548	-123.165	2323
Hell Hole	042608	USFS	ENF	STO	538	39.078	-120.418	5240
Hernandez	044409	CDF	BEU	MTR	524	36.383055	-120.853889	3752
High Glade	041402	USFS	MNF	STO	595	39.205	-122.805	4840
High Sierra	044520	USFS	SNF	HNX	533	37.31472222	-119.03925	7403
Hollister	044406	CDF	BEU	MTR	523	36.8422222	-121.362222	423
Hoopa	040408	BIA	HIA	EKA	555	41.048	-123.673	400
Horse Lake	040727	BLM	SUD	REV	572	40.631	-120.503	5100
Horse Thief Springs	045129	BLM	CDD			35.771	-115.909	5000
Hunter Mountain	NA	NPS	DVP			36.563	-117.474	6720
Hurley	044517	CDF	FKU	HNX	529	37.00	-119.60	1260
Indian Well	040233	NPS	BNP	MFR	590	41.75	-121.5	4770
Indian Wells Canyon	045016	BLM	CDD			35.685	-117.8894444	4000
Jarbo Gap	041214	CDF	BTU			39.7422222	-121.4630556	1700
Jawbone	045013	BLM	CDD			35.295	-118.226	4300
Jerserydale	044105	USFS	SNF	HNX	528	37.544	-119.835	3600
Johnsondale	044707	USFS	SQF	HNX	534	35.9717	-118.545	4700
Juanita Lake	040240	USFS	KNF	MFR	589	41.484	-122.066	5400
Julian	045708	CDF	MVU	SGX	513	33.0760022	-116.6075	4240
Juniper Creek	040308	BLM	SUD	REV	572	41.332	-120.473	4372
Keenwild	045604	USFS	BDF	SGX	513	33.667	-116.767	4920
Kernville	045005	USFS	SQF	HNX	530	35.755	-118.416	2720
Kettleman Hills	044602	BLM	BBD	HNX	526	36.033	-120.056	801
Klamath NWR		FWS	SKU			41.95333333	-121.5819444	4531
Knoxville Creek	041409	BLM	UKD			38.888	-122.411	2200
Konocti	041411	CDF	LNU	STO	558	38.918333	-122.71667	2100
La Honda	043304	CDF	CZU	MTR	549	37.30527766	-122.2538888	425
La Panza	044914	CDF	SLU	LOX	525	35.38111	-120.1875	1630
Ladder Butte	040723	USFS	LNF	STO	597	40.808	-121.305	5750
Las Flores	045733	Local	MCP	SGX	508	33.289	-117.439	100
Las Tablas	044904	CDF	SLU	LOX	520	35.6505556	-120.915	950
Las Trampas	043009	Local	EBY	MTR	547	37.833889	-122.066944	1760
Lassen Lodge	040815	CDF	TGU	STO	597	40.3430556	-121.719444	4000
Laufman	040709	USFS	PNF	REV	572	40.137	-120.345	4858
Laural Mountain	045015	BLM	CDD			35.47833333	-117.6988889	4390
Laytonville	041019	CDF	MEU			39.6975	-123.4538889	1500
Leo Carrillo	045447	Local	LAC	LOX	501	34.04556	-118.93583	50
Lincoln	041907	CDF	NEU			38.8825	-121.268333	200

Little Tujunga	045411	USFS	ANF	SGX	509	34.2936111	-118.2405556	1390
Livermore	043406	CDF	SCU	MTR	547	37.711944	-121.8136	800
Los Altos	043912	Local	SCU			37.355	-122.142	645
Los Banos	044003	CDF	MMU	HNX	526	37.052	-121.048	350
Los Gatos	043913	Local	SCC	MTR	549	37.203	-121.943	800
Los Prietos	045203	USFS	LPF	LOX	500	34.536	-119.783	1020
Los Vaqueros	043013	Local	SCU	MTR	524	37.83333	-121.6666667	200
Lost Horse	045614	NPS	JTP	VEF	312	34.018	-116.188	4200
Lowden	NA	BLM	BLM			40.68972222	-122.8313889	3120
Lower Klamath	040310	FWS	SKU			41.99916667	-121.7002778	4098
Lyons Valley	041408	BLM	UKD			39.125	-123.125	3200
Lytle Creek	045108	USFS	BDF	SGX	510	34.23388889	-117.4820778	2792
Malibu Hills	045433	Local	LAC	LOX	501	34.05833	-118.63333	1575
Mallory Ridge	043011	Local	SCU	MTR	547	37.817	-121.779	2040
Manzanita Lake	040609	USFS	LNF	STO	597	40.543	-121.582	5750
Maple Creek	040424	CDF	HUU	EKA	560	40.796	-123.937	1680
Marin	042306			MTR	559	37.911	-122.613	20
Mariposa	044106	CDF	MMU	HNX	528	37.502	-120.985	2100
Mariposa Grove	044113	NPS	YNP	HNX	531	37.514	-119.604	6400
Markleeville	042802	USFS	TOF	REV	576	38.6833	-119.76667	5501
McGuires	041017	CDF	MEU	EKA	557	39.35267	-123.601167	400
Means Lake	NA	BLM	CDD			34.39055555	-116.5169444	2900
Mendocino Pass	041018	USFS	MNF	EKA	557	39.8044444	-122.945	5420
Metcalf Gap	044209	CDF	MMU	HNX	528	37.40972	-119.766944	3300
Meyers	042607	USFS	TMU	REV	542	38.845	-120.015	6310
Miami	044110	USFS	SNF	HNX	532	37.419	-119.744	4327
Mid Hills	045128	BLM	CDD			35.166	-115.415	5413
Middle Peak	042311	Local	MRN	MTR		37.927	-122.587	2440
Mill Creek - ANF	045435	USFS	ANF	LOX	507	34.383	-118.067	4970
Mill Creek - BDF	045109	USFS	BDF	SGX	510	34.083	-117.035	2950
Milo	044708	CDF	TUU	HNX	529	36.23245	-118.8705333	1960
Minarets	044203	USFS	SNF	HNX	532	37.409	-119.348	5180
Modoc NWR		FWS	LMU			41.458889	-120.3536111	4380
Mojave River Sink	045122	BLM	CDD			35.058	-116.083	950
Montecito	045218	USFS	LPF	LOX	500	34.452	-119.635	1500
Mormon Rock	045114	USFS	BDF	SGX	511	34.316667	-117.502222	3300
Mount Elizabeth	043605	USFS	STF	STO	539	38.057	-120.241	4933
Mount Tom	044511	USFS	SNF	HNX	533	37.3816667	-119.1694444	9018
Mount Zion	042701	CDF	AEU	STO	552	38.389444	-120.651111	2960
Mountain Rest	044505	USFS	SNF	HNX	529	37.053	-119.3711111	4100
Mt. Diablo	043012	Local	SCU			37.8733333	-121.91	3649
Mt. Laguna	045709	USFS	CNF	SGX	513	32.87972222	-116.4202778	5760
Mt. Shasta	040217	USFS	SHF	MFR	584	41.315	-122.316667	0
North Fork	044204	USFS	SNF	HNX	528	37.233	-119.506	2733

Oak Bottom	040636	NPS	WRA	STO	595	40.650556	-122.605556	1326
Oak Creek	043705	BLM	BBD	VEF	517	36.843	-118.259	4855
Oak Grove	045710	USFS	CNF	SGX	513	33.393	-116.795	2752
Oak Knoll	040218	USFS	KNF	MFR	587	41.852	-122.846	1940
Oak Mountain	040635	USFS	SHF	STO	593	41.012	-121.983	1700
Oak Opening	044717	USFS	SQF	HNX	529	36.175	-118.701	3240
Oakland North	043402	Local	OKL	MTR	550	37.875	-122.21666	1300
Oakland South	043403	Local	OKL	MTR	550	37.788333	-122.1616666	1000
Ojai	045315	Local	VNC			34.44833333	-119.2302778	765
Opal Mountain	045127	BLM	CDD			35.157	-117.177	3240
Owens Camp	042611	USFS	ENF	STO	538	38.733	-120.245	5240
Owens Valley	044803	CDF	BDU	VEF	517	37.39	-118.550556	4640
Ozena	045310	USFS	LPF	LOX	503	34.68194	-119.353889	3670
Panamint	044806			VEF	312			
Panoche Rd	044514	CDF	FKU	HNX	524	36.63	-120.63833	500
Park Ridge	044713	NPS	KNP	HNX	532	36.724	-118.942	7540
Parkfield	044310	CDF	BEU	MTR	524	35.898889	-120.4319444	1535
Pattymocus	040812	USFS	SHF	EKA	594	40.288	-122.87	3500
Peppermint	044726	USFS	SQF	HNX	534	36.072	-118.534	7167
Pierce	040992	USFS	PNF	REV	598	40.133	-120.95	5700
Pike County Lookout	041701	USFS	PNF	STO	599	39.475	-121.202	3714
Pilot Hill	042609	CDF	AEU	STO	552	38.83167	-121.0116667	1200
Pine Hills	045711	USFS	CNF	SGX	513	33.01638889	-116.6338889	1000
Pinehurst	044508	USFS	SNF	HNX	529	36.68527778	-119	4060
Pinnacles	044410	NPS	PNP	MTR	524	36.47083333	-121.1472222	1322
Piru	045319	Local	VNC			34.4044444	-118.81	624
Pole Mountain	042008			MTR	562	38.50	-123.12	2204
Poppy Park	045439	Local	LAC	LOX	519	34.7325	-118.38333	2760
Potrero	045730	CDF	MVU	SGX	513	32.6091645	-116.6080556	2350
Poverty	043914	Local	SCU			37.443	-121.771	2067
Pulgas	043309	Local	CZU	MTR	549	37.475	-122.298	644
Quartz Hill	040239	CDF	SKU	MFR	587	41.5997222	-122.9327778	4238
Quincy Rd	040910	USFS	PNF	STO	599	39.967	-120.934	3500
Ranchita	045729	CDF	MVU	SGX	513	33.21222	-116.5052778	4180
Rattlesnake	044728	NPS	KNP	HNX	534	36.412	-118.425	8600
Ravendale	040714	BLM	SUD	REV	572	40.731	-120.316	5298
Reader Ranch	041809	CDF	NEU			39.30458333	-121.1182667	1967
Redding	040611	USFS	SHU	STO	595	40.5158	-122.290556	500
Rice Valley	045620	BLM	CDD			34.062	-114.707	820
Rock Camp	045111	USFS	DBF	SGX	511	34.28805556	-117.2125	4900
Rock Creek	043710	USFS	INF	REV	518	37.551	-118.667	7040
Rock Springs	042301			MTR	559	37.911	-122.613	1972
Rodeo Valley	041015	CDF	MEU	EKA	557	39.666667	-123.32167	2425
Rose Peak	043404	Local	EBP	MTR	547	37.5019444	-121.735555	3060

Rose Valley	045314	USFS	LPF	LOX	502	34.536	-119.184	3331
Round Mountain	040221	CDF	LMU	MFR	590	41.42	-121.4583333	5258
Rush Creek	040312	USFS	MDF	MFR	590	41.294	-120.864	4800
Ruth	040508	USFS	SRF	EKA	555	40.2505556	-123.3158333	3360
Sac NWR	041102	FWS	LNU	STO	595	39.417222	-122.1825	120
Saddleback	041304	USFS	TNF	STO	536	39.6375	-120.8652778	6670
Saddleback Butte	045444	Local	LAC	LOX	519	34.668	-117.8208	2590
Salt Wells	45120			VEF	312			
San Clemente Island		Local	Local			32.84	-118.3875	935
San Luis NWR	044004	FWS	MMU	HNX	526	37.1822222	-120.7938889	65
San Miguel	045737	FWS	NWR	SGX	509	32.685	-116.966736	425
Santa Barbara Island	NA	NPS	CNP			33.483	-119.033	176
Santa Cruz Island	045216	NPS	CNP			33.996	-119.75	250
Santa Fe Dam	045437	Local	LAC	LOX	501	34.12083	-117.94583	500
Santa Rita	044408	BLM	BBD	MTR	524	36.348	-120.598	5000
Santa Rosa	042009	CDF	LNU	MTR	559	38.478889	-122.711944	560
Santa Rosa Island	045217	NPS	CNP			33.968	-120.072	1298
Santa Rosa Plateau	045623	CDF	RRU	SGX	513	33.5033333	-117.2302778	1980
Saugus	045412	Local	LAC	LOX	505	34.425	-118.525	1450
Sawyers Bar	040222	USFS	KNF	MFR	586	41.3	-123.129	2192
School House	040425	NPS	RNP	EKA	560	41.1383333	-123.9055556	2640
Scorpion	040502	USFS	SHF	EKA	591	41.112	-122.698	4400
Secret Town	041808	CDF	NEU			39.1837	-120.8847	2720
Shadequarter	044724	CDF	TUU	HNX	534	36.567222	-118.9555	4069
Shaver	044522	CDF	FKU	HNX	528	37.144444	-119.2581	5800
Ship Mtn	040198	USFS	SRF	EKA	556	41.73583333	-123.792778	2200
Simi Valley	045317	Local	VNC			34.2911111	-118.814444	914
Sims	040618	USFS	SHF	STO	593	41.073	-122.373	2400
Sky Oaks	042307			MTR	559	37.968	-122.603	700
Slater Butte	040225	USFS	KNF	MFR	585	41.847	-123.354	4670
Soda Creek	041406	USFS	MNF	EKA	557	39.433	-122.983	1773
Soldier Mtn	040630	CDF	SHU	STO	593	40.92638889	-121.5813889	3760
Somes Bar	040231	USFS	KNF	MFR	586	41.379	-123.479	920
South Fork	045012	BLM	BBD	HNX	530	35.983	-118.583	3000
Spring Valley	043309	Local	CZU			37.562	-122.436	1075
Squaw Lake	045801	BLM	CDD			32.90833333	-114.4944444	300
Squaw Springs	045012	BLM	CDD			35.37	-117.568	3620
Stampede	041804	USFS	TNF	REV	541	39.483	-120.054	6600
Sugarloaf (KNP)	044729	NPS	KNP	HNX	534	36.727	-118.675	8120
Summit	040633	NPS	LNP	STO	597	40.5022	-121.423611	6922

Talega	045739	Local	PDF	SGX	508	33.4780556	-117.485833	1203
Tanbark	045421	USFS	ANF	SGX	509	34.167	-117.767	2600
Target Range	045732	Local	MCP			33.372	-117.359	918
Temescal - CNF	045611	USFS	CNF	SGX	509	33.7625	-117.4827778	1125
Temescal - LPF	045307	USFS	LPF	LOX		34.4805556	-118.75556	1140
Thomes Creek	040816	CDF	TGU	STO	595	39.855833	-122.609722	1040
Thousand Oaks	045328	Local	VNC			34.21	-118.87	795
Timber Mountain	040306	USFS	MDF			41.629444	-121.2980556	4960
Trimmer	044510	USFS	SNF	HNX	529	36.9	-119.3	1540
Trinity Camp	040516	CDF	SHU	EKA	591	40.678889	-122.8330556	3350
Tuolumne Meadows	043611	NPS	YNP	HNX	531	37.868	-119.319	9200
Uhl	044712	USFS	SQF	HNX	529	35.89	-118.633	3720
Underwood	040519	USFS	SRF	EKA	555	40.72194444	-123.4952778	2600
Valley Center	045734	CDF	MVU	SGX	509	33.2261111	-116.992222	1370
Valyermo	045423	USFS	ANF	SGX	514	34.44555556	-117.85111	3780
Van Bremmer	040243	USFS	KNF	MFR	590	41.634	-121.784	4928
Vandenberg	045220	USFS	SBC	LOX	500	34.75861	-120.4861111	1050
Vincent	045425	Local	LAC	LOX	506	34.49	-118.14	
Walker	043707	USFS	TYF	REV	576	38.56527778	-119.4591667	5440
Walker Pass	045014	BLM	BBD	HNX	530	35.664	-118.056	5572
Warm Springs	045426	USFS	ANF	LOX	506	34.583	-118.55	4930
Wawona	044109	NPS	YNP	HNX	531	37.533	-119.65	3960
Weaverville	040510	USFS	SHF	EKA	591	40.735	-122.9433	2100
Weed Airport	040228	CDF	SKU	MFR	588	41.478889	-122.458	2930
Westwood	040719	CDF	LMU	STO	597	40.298889	-120.8916667	6200
Whitaker Peak	045448	Local	LAC	LOX	506	34.6	-118.73	4120
White Cloud	041806	USFS	TNF	STO	536	39.302	-120.842	4320
White Wolf	043612	NPS	YNP	HNX	531	37.851	-119.65	8000
Whitmore	040615	CDF	SHU	STO	596	40.6202777	-121.90388	2450
Whittier Hills	045446	Local	LAC	LOX	501	33.983888	-118.006	950
Wiley Ridge	045335	CDF	VNC			34.371667	-118.839722	1665
Wolverton	044732	NPS	KNP	HNX	534	36.445	-118.701	5240
Woodacre	042309	Local	MRN	MTR	559	37.9905556	-122.6447222	1400
Yosemite Valley	044111	NPS	YNP	HNX	531	37.75	-119.583	4000
Yucca Valley	045112	CDF	BDU	SGX	516	34.123333	-116.407778	3260
Yurok		USFS	HUU			41.2897222	-123.8575	495

APPENDIX G - Contact Information for WFOs and PSUs

NORTHERN CALIFORNIA PSU/ PREDICTIVE SERVICES UNIT
6101 Airport Road, Redding, CA 96002-9423
FAX Number: (530) 226-2742
Web Site Address: http://gacc.nifc.gov/oncc/predictive/weather/index.htm
Office E-mail: redding.fwx@fire.ca.gov
Office Hours: late March to mid November: 7am – 5pm daily; rest of year: 7am – 5pm M-F

Name	Position	Work	E-Mail
John Snook (Acting)	USFS GACC Meteorologist/Team Leader	(530) 226-2730	jsnook@fs.fed.us
Mike Lococo	Fire Intelligence Officer	(530) 226-2810	mlococo@fs.fed.us
John Snook	USFS GACC Meteorologist	(530) 226-2730	jsnook@fs.fed.us
Brenda Belongie	USFS GACC Meteorologist	(530) 226-2730	bbelongie@fs.fed.us
Steve Leach	BLM GACC Meteorologist	(530) 226-2730	sleach@ca.blm.gov

SOUTHERN CALIFORNIA PSU/ PREDICTIVE SERVICES UNIT
2524 Mulberry Street, Riverside, CA 92501-2200
FAX Number: (90951) 276-6439
Web Site Address: http://gacc.nifc.gov/oscc/predictive/weather/index.htm
Office E-mail: riverside.fwx@fire.ca.gov
Office Hours: Fire season: 7am–5pm daily. Low season: 7am – 5pm M-F

Name	Position	Work	Pager	Cell	E-Mail
Ron Hamilton	USFS GACC Team Lead	(951) 276-6520	(951)320-6164	(951)203-8173	rhamilton01@fs.fed.us
Tom Rolinski	BLM GACC Meteorologist	(951) 782-4849	(951)405-0162	(951)850-3594	Tom.Rolinski@ca.blm.gov
Harold Coffer	USFS GACC Meteorologist	(951) 782-4848	(951)405-2318		hcoffer@fs.fed.us
Matt Shameson	USFS GACC Meteorologist	(951) 782-4850	(951)405-9750		mshameson@fs.fed.us
Vacant	Fire Intelligence Officer	(951) 320-6107	(951)405-2248		
Bruce Risher	Logistics Coordinator	(951) 320-6107113	(951)405-224	(951)2917-9751	bruce.risher@fire.ca.gov

EUREKA NWS WEATHER FORECAST OFFICE
300 Startare Drive, Eureka, CA 95501-6000
FAX Number: (707) 443-6195
Web Site Address: http://www.weather.gov/eureka
Backup Offices: WFO Monterey and WFO Medford

Name	Position	Unlisted Direct	E-Mail
Jeff Tonkin	Fire Weather Program Mgr/ IMET	(707) 442-2171	jeff.tonkin@noaa.gov
Brett Lutz	IMET (trainee)	(707) 442-2171	brett.lutz@noaa.gov
Troy Nicolini	Warning Coord Meteorologist	(707) 443-5610x223	troy.nicolini@noaa.gov
Nancy Dean	Meteorologist-In-Charge/IMET	(707) 443-5610x222	nancy.dean@noaa.gov

HANFORD/ SAN JOAQUIN VALLEY NWS WEATHER FORECAST OFFICE
900 Foggy Bottom Road, Hanford, CA 93230-5236
FAX Number: (559) 584-1152
Web Site Address: http://www.weather.gov/hanford
Backup Office: WFO Sacramento

Name	Position	Unlisted Direct	E-mail
Cindy Bean	Fire Weather Program Mgr/ IMET	(559) 584-9505	cynthia.bean@noaa.gov
Dan Harty	IMET (trainee)	(559) 584-9051	daniel.harty@noaa.gov
Dan Gudgel	Warning Coord. Meteorologist	(559) 584-0583	daniel.gudgel@noaa.gov
Steve Mendenhall	Meteorologist-In-Charge	(559) 584-0583	steven.mendenhall@noaa.gov

LAS VEGAS NWS WEATHER FORECAST OFFICE
7851 Industrial Rd., Las Vegas, NV 89139-6628
FAX Number: (702) 263-9759
Web Site Address: http://www.weather.gov/lasvegas
Backup Offices: WFO Reno and WFO Elko

Name	Position	Unlisted Direct	E-mail
Jim Harrison	Fire Weather Program Mgr/ IMET	(702) 263-9750	jim.harrison@noaa.gov
Andy Bailey	Warning Coord. Meteorologist	(702) 263-9746x223	andy.bailey@noaa.gov
Kim Runk	Meteorologist-In-Charge	(702) 263-9746x222	kim.runk@noaa.gov

LOS ANGELES/ OXNARD NWS WEATHER FORECAST OFFICE
520 N. Elevar Street, Oxnard, CA 93030
FAX Number: (805) 988-6613
Web Site Address: http://www.weather.gov/losangeles
Backup Office: WFO San Diego

Name	Position	Unlisted Direct	E-Mail
Dave Gomberg	Fire Weather Program Mgr	(805) 988-6626/6619	david.gomberg@noaa.gov
Joe Sirard	Asst. Program Manager	(805) 988-6626/6619	joe.sirard@noaa.gov
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Eric Boldt	Warning Coord. Meteorologist	(805) 988-6615x223	eric.boldt@noaa.gov
Mark Jackson	Meteorologist-in-Charge	(805) 988-6615x222	mark.jackson@noaa.gov

MEDFORD NWS WEATHER FORECAST OFFICE
4003 Cirrus Drive, Medford, OR 97504
FAX Number: (541) 776-4333
Web Site Address: http://www.weather.gov/medford
Backup Office: WFO Eureka

Name	Position	Unlisted Direct	E-mail
Frederic Bunnag	Fire Weather Program Mgr/ IMET	(541) 776-4332	frederic.bunnag@noaa.gov
Dennis Gettman	IMET (trainee)/SOO	(541) 776-4303x224	dennis.gettman@noaa.gov
Ryan Sandler	Warning Coord. Meteorologist	(541) 776-4303x223	ryan.sandler@noaa.gov
John Lovegrove	Meteorologist-In-Charge	(541) 776-4303x222	john.lovegrove@noaa.gov

PHOENIX NWS WEATHER FORECAST OFFICE
PAB 500, P.O. Box 52025, Phoenix, AZ 85072-2025
FAX Number: (602) 267-8051
Web Site Address: http://www.weather.gov/phoenix
Backup Office: WFO Tucson

Name	Position	Unlisted Direct	E-mail
Valerie Meyers	Fire Weather Program Mgr/ IMET (trainee)	(602) 275-7417	valerie.meyers@noaa.gov
David Runyan	Warning Coord Meteorologist	(602) 275-7004x223	david.runyan@noaa.gov
Tony Haffer	Meteorologist-In-Charge	(602) 275-7004x222	anton.haffer@noaa.gov

RENO NWS WEATHER FORECAST OFFICE
2350 Raggio Parkway, Reno, NV 89512-3900
FAX Number: (775) 673-8110
Web Site Address: http://www.weather.gov/reno
Backup Office: WFO Elko

Name	Position	Unlisted Direct	E-mail
Brian Brong	Fire Weather Program Mgr	(775) 673-8105	brian.brong@noaa.gov
James Wallmann	IMET	(775) 673-8105	james.wallmann@noaa.gov
Chris Jordan	IMET (trainee)	(775) 673-8105	christopher.jordan@noaa.gov
Rhett Milne	Warning Coord Meteorologist	(775) 673-8100x223	rhett.milne@noaa.gov
Jane Hollingsworth	Meteorologist-In-Charge	(775) 673-8100x222	jane.hollingsworth@noaa.gov

SACRAMENTO NWS WEATHER FORECAST OFFICE
3310 El Camino Ave, Room 227, Sacramento, CA 95821
FAX Number: (916) 979-3052
Web Site Address: http://www.weather.gov/sacramento
Backup Office: WFO San Joaquin Valley/Hanford

Name	Position	Unlisted Direct	E-mail
Basil Newmerzhycky	Fire Weather Program Mgr/IMET	(916) 979-3047	basil.newmerzhycky@noaa.gov
Mike Smith	IMET	(916) 979-3047	michael.c.smith@noaa.gov
Kathy Hoxsie	Warning Coord Meteorologist	(916) 979-3041x223	kathryn.hoxsie@noaa.gov
Elizabeth Morse	Meteorologist-In-Charge	(916) 979-3041x222	elizabeth.morse@noaa.gov

SAN DIEGO NWS WEATHER FORECAST OFFICE
11440 W. Bernardo Ct, Ste 230, San Diego, CA 92127
FAX Number: (858) 675-8717
Web Site Address: http://www.weather.gov/sandiego
Service Backup Office: WFO Los Angeles/Oxnard

Name	Position	Unlisted Direct	E-mail
Mike Lavis	Fire Weather Prog Mgr/IMET	(858) 675-8705	michael.lavis@noaa.gov
Rob Balfour	IMET/Asst Fire Weather Prog Mgr	(858) 675-8705	rob.balfour@noaa.gov
Ed Clark	Warning Coord. Meteorologist	(858) 675-8700x223	edwin.clark@noaa.gov
Jim Purpura	Meteorologist-In-Charge	(858) 675-8700x222	jim.purpura@noaa.gov

SAN FRANCISCO BAY AREA NWS WEATHER FORECAST OFFICE
21 Grace Hopper Ave, Stop 5, Monterey, CA 93943
FAX Number: (831) 656-1747
Web Site Address: http://www.wrh.noaa.gov/mtr
Service Backup Office: WFO Los Angeles/Oxnard

Name	Position	Unlisted Direct	E-mail
Ryan Walbrun	Fire Weather Program Mgr/ IMET	(831) 656-1718	ryan.walbrun@noaa.gov
Ian Morrison	IMET (trainee)	(831) 656-1718	ian.morrison@noaa.gov
David Soroka	Warning Coord. Meteorologist	(831) 656-1710x223	david.soroka@noaa.gov
David Reynolds	Meteorologist-In-Charge	(831) 656-1710x222	david.reynolds@noaa.gov