

DISCOVER-AQ OUTLOOK Sunday January 27, 2013

The conditions at Palmdale **today** (Sunday) are overcast and windy with observed gusts to 30 kts with the passage of a surface cold front through the SJV today, exiting the SJV region early tomorrow (Monday) morning. The upper level trough is moving slower than expected than in yesterday's forecast and is now forecast to move east of the SJV region early tomorrow morning. Drier and colder air moves into the area tonight into tomorrow. It is possible frost will develop Monday night. PM2.5 levels in the SJV have been gradually declining over the last three days which has seen off and on light rain. The passage of this surface cold front should flush out any remaining aerosol from the valley and "reset the aerosol clock". A ridge is expected to move gradually into California beginning tomorrow, but will not take hold until Wednesday and Thursday, leaving to mostly sunny conditions. The recent rain has elevated soil moisture levels so that fog may form any morning this week in the SJV, particularly Wednesday and Thursday. With light winds, the PM2.5 levels are expected to build this week.

The winds are expected to subside this evening in Palmdale, though they are forecasted to pick up again by mid-morning tomorrow from the NNW at 15 kts with gusts to 21 kts, which may have possible implications for the planned ER-2 takeoff and landing.

For **Monday**, cirrus approach the PODEX area. The NWS forecaster (Oxnard) predicts the leading edge of the cirrus to be over 32.8N, the top portion of the PODEX flight area, by 10 am. No clouds are expected at lower levels. In the SJV, there is a chance of clouds lingering in the morning with patchy fog, but clearing as the dry air moves in throughout the day. The NWS forecaster (Handford) cautions about cumulus forming especially in south (e.g. Bakersfield) and east along foothills.

For **Tuesday**, no cirrus is predicted between 4 am and the afternoon in the PODEX area, but contrails could be a factor. Offshore gales are expected to keep lower levels clear. Warming at 850 mb will build an inversion at the lower levels, which may lead to the formation of stratus instead of stratocumulus at lower levels. In the SJV, patchy morning fog possible, probably burning off by 10 am. The GFS is bringing in some cirrus on the back side of the trough, but the NAM clears out earlier. The NWS forecaster expects thinning cirrus throughout the day as the ridge builds.

For **Wednesday & Thursday**, the upper level ridge dominates weather over the SJV with patchy morning fog likely.

DISCOVER-AQ / PODEX forecast briefing

January 27, 2013

Melanie Follette-Cook

Bryan Duncan

Fresno:

TODAY	TONIGHT	MONDAY	MONDAY NIGHT	TUESDAY	TUESDAY NIGHT	WEDNESDAY	WEDNESDAY NIGHT	THURSDAY
								
Mostly Sunny High: 55 °F	Mostly Clear Low: 36 °F	Mostly Sunny High: 52 °F	Patchy Fog Low: 34 °F	Patchy Fog High: 58 °F	Areas Fog Low: 37 °F	Areas Fog High: 61 °F	Areas Fog Low: 39 °F	Areas Fog High: 63 °F

Hanford:

TODAY	TONIGHT	MONDAY	MONDAY NIGHT	TUESDAY	TUESDAY NIGHT	WEDNESDAY	WEDNESDAY NIGHT	THURSDAY
								
Mostly Sunny High: 56 °F	Mostly Clear Low: 34 °F	Mostly Sunny High: 54 °F	Patchy Frost Low: 31 °F	Morning Frost High: 58 °F	Areas Fog Low: 34 °F	Areas Fog High: 61 °F	Areas Fog Low: 37 °F	Areas Fog High: 63 °F

Bakersfield:

TODAY	TONIGHT	MONDAY	MONDAY NIGHT	TUESDAY	TUESDAY NIGHT	WEDNESDAY	WEDNESDAY NIGHT	THURSDAY
								
Mostly Sunny High: 53 °F	Partly Cloudy Low: 36 °F	Mostly Sunny High: 53 °F	Mostly Clear Low: 35 °F	Sunny High: 56 °F	Mostly Clear Low: 37 °F	Sunny High: 60 °F	Mostly Clear Low: 39 °F	Sunny High: 63 °F

Current Conditions

FRESNO CA



Overcast
46°F
8°C

Humidity 71%
Wind Speed NW 10 MPH
Barometer 30.05 in (1017.5 mb)
Dewpoint 37°F (3°C)
Visibility 10.00 mi
Wind Chill 41°F (5°C)

Last Update on 27 Jan 4:53 am PST

HANFORD CA

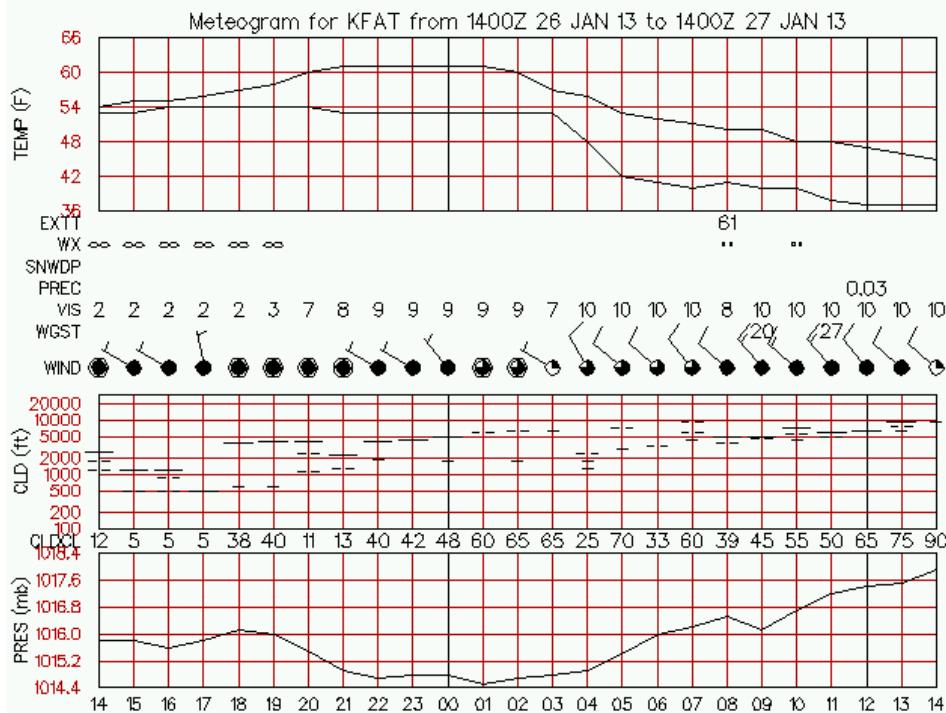


Overcast
46°F
8°C

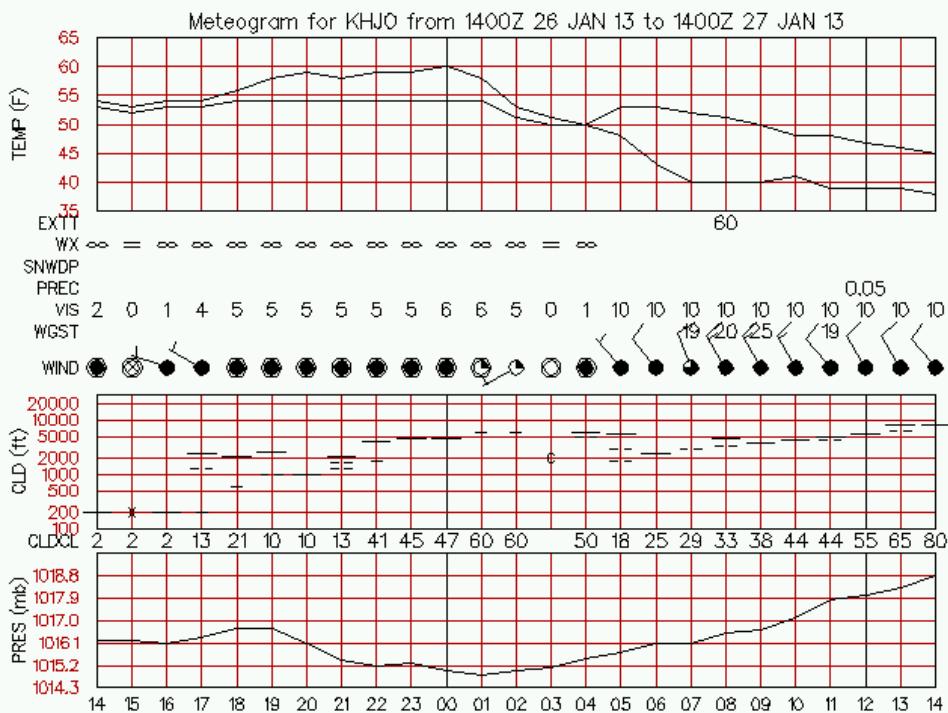
Humidity 76%
Wind Speed NNW 12 MPH
Barometer 30.07 in (1018.3 mb)
Dewpoint 39°F (4°C)
Visibility 10.00 mi
Wind Chill 40°F (4°C)

Last Update on 27 Jan 4:53 am PST

▼ Plymouth State Weather Center ▼



▼ Plymouth State Weather Center ▼



Current Conditions

BAKERSFIELD CA



Overcast

47°F

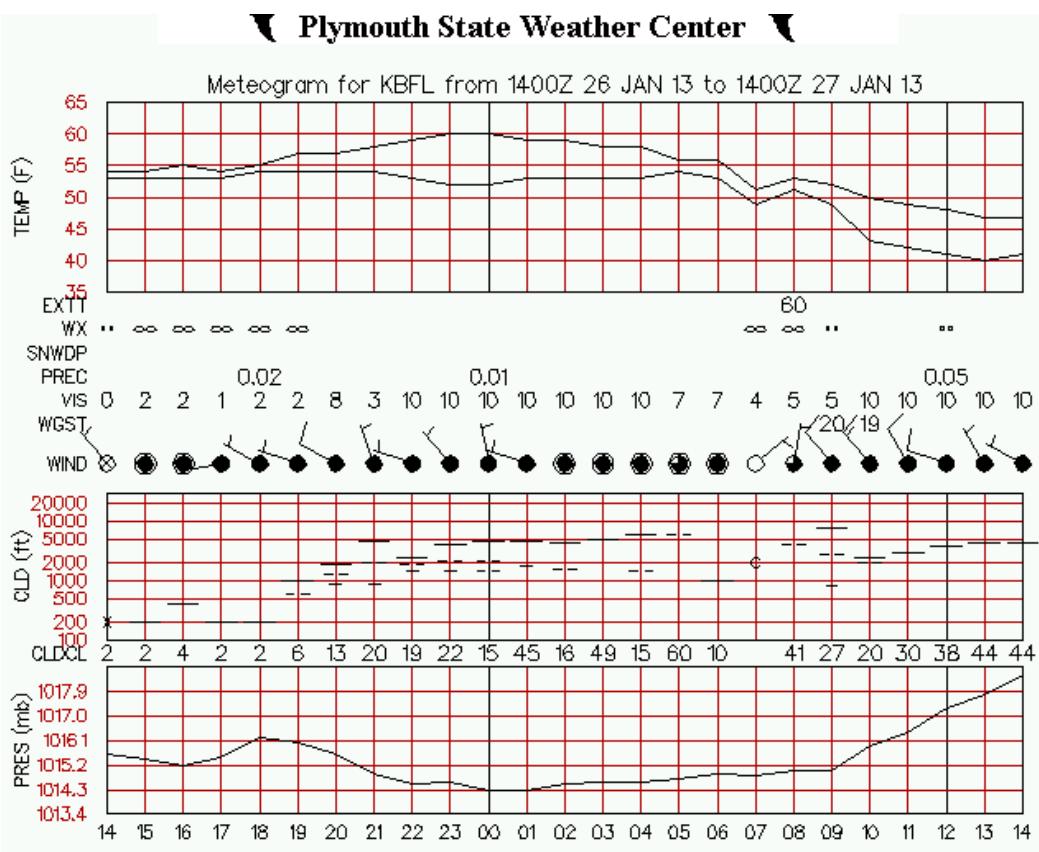
8°C

Humidity 76%
Wind Speed NNW 8 MPH
Barometer 30.06 in (1017.8 mb)
Dewpoint 40°F (4°C)
Visibility 10.00 mi
Wind Chill 43°F (6°C)

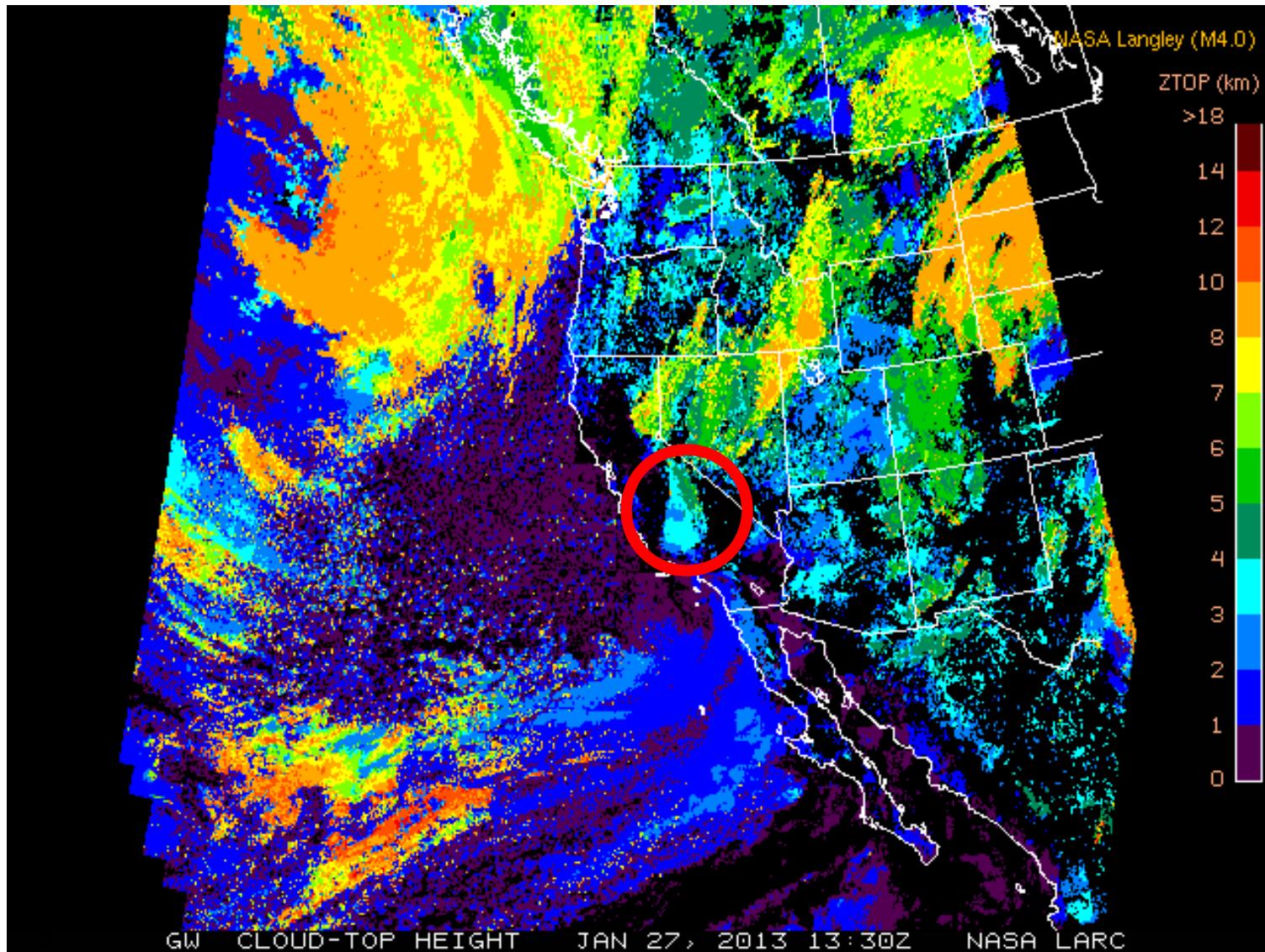
Last Update on 27 Jan 4:54 am PST

⚡ Plymouth State Weather Center ⚡

Meteogram for KBFL from 1400Z 26 JAN 13 to 1400Z 27 JAN 13

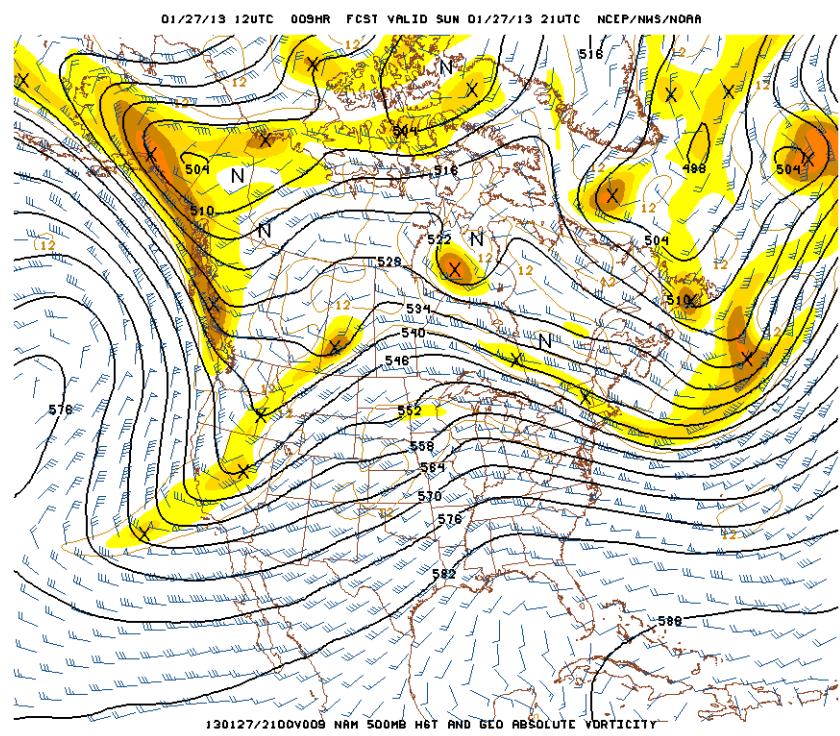
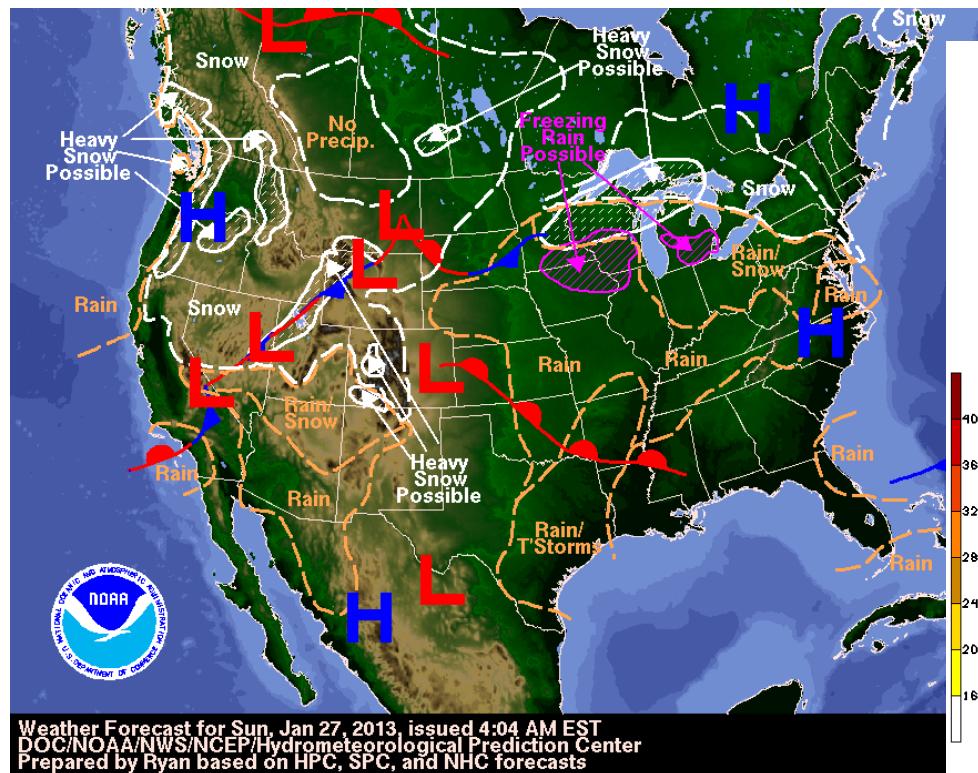


GOES WEST: Cloud Top Height at 1330 UTC Today



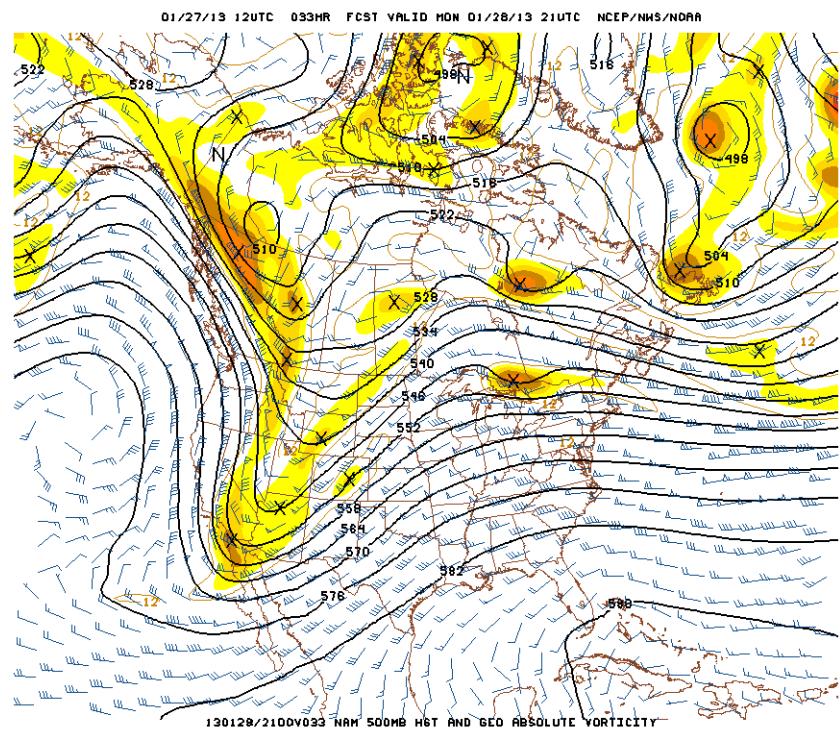
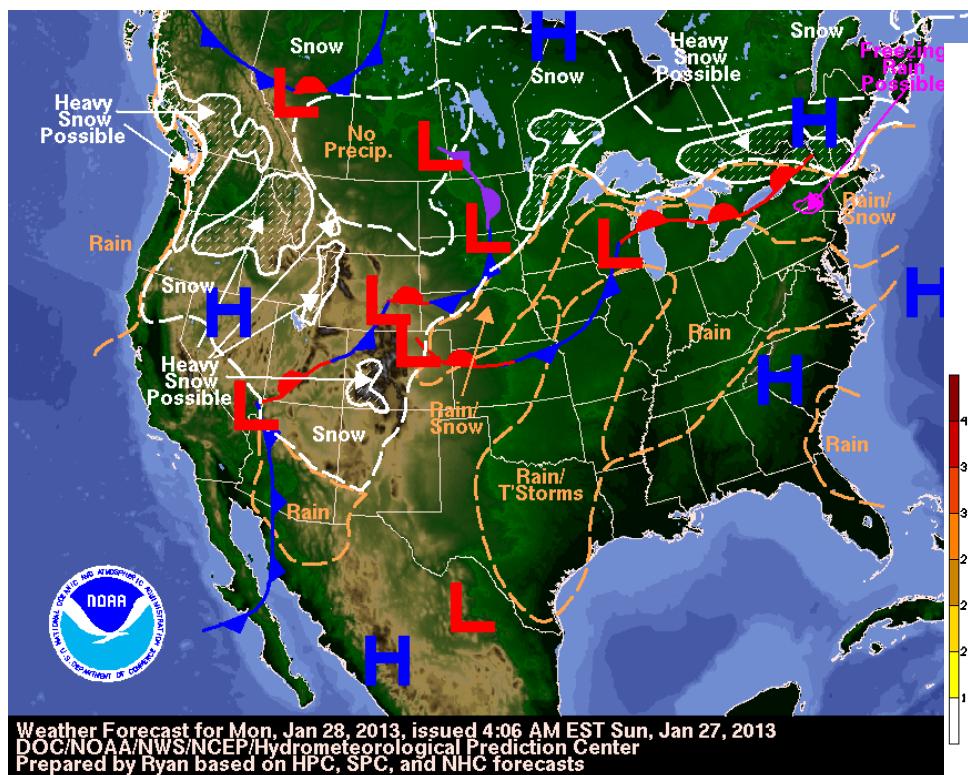
Today:

The surface cold front passes through the SJV today, bringing low clouds and chances of light precipitation. Drier and colder air associated with the upper level ridge moves into the area tonight into tomorrow.



Monday:

The upper level trough is moving slower than expected and is now forecast to move east of the SJV region early Monday morning. This new air mass brings colder air into the region, resulting in possible frost warnings for Monday night.



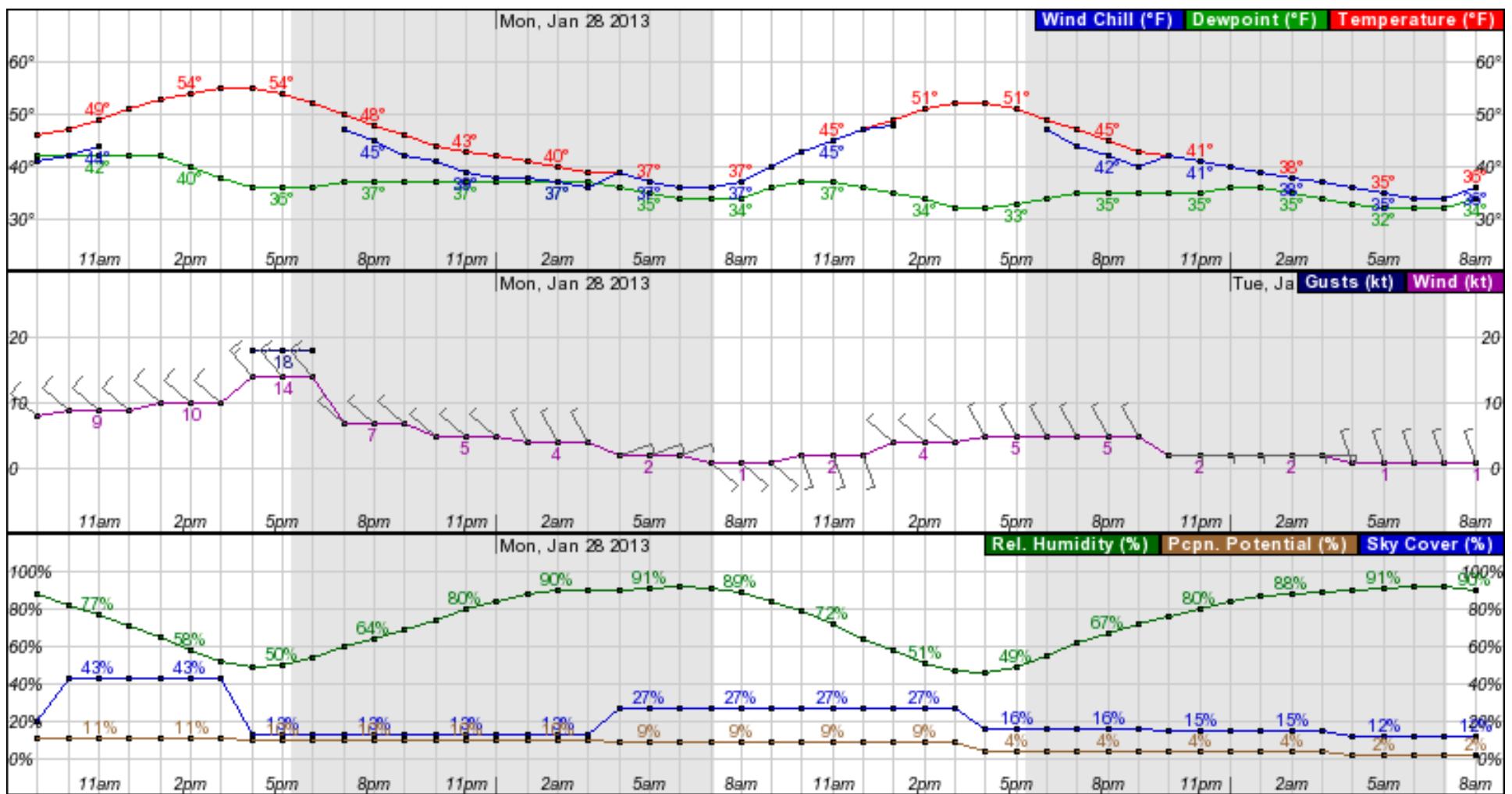
Fresno

Today: Mostly cloudy

Monday: Mostly sunny

Today →

Tomorrow →



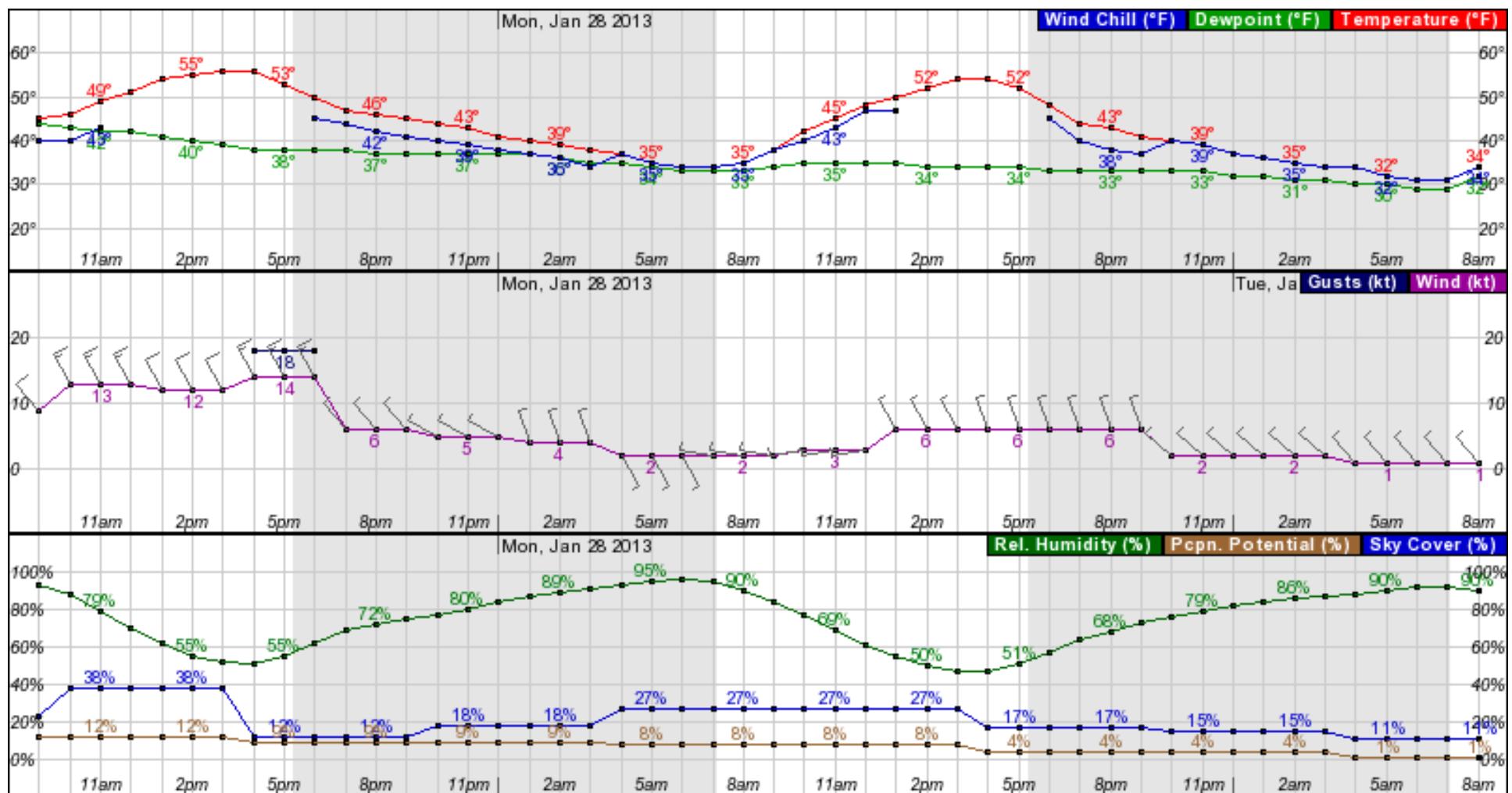
Hanford

Today: Cloudy

Monday: Mostly sunny

Today →

Tomorrow →



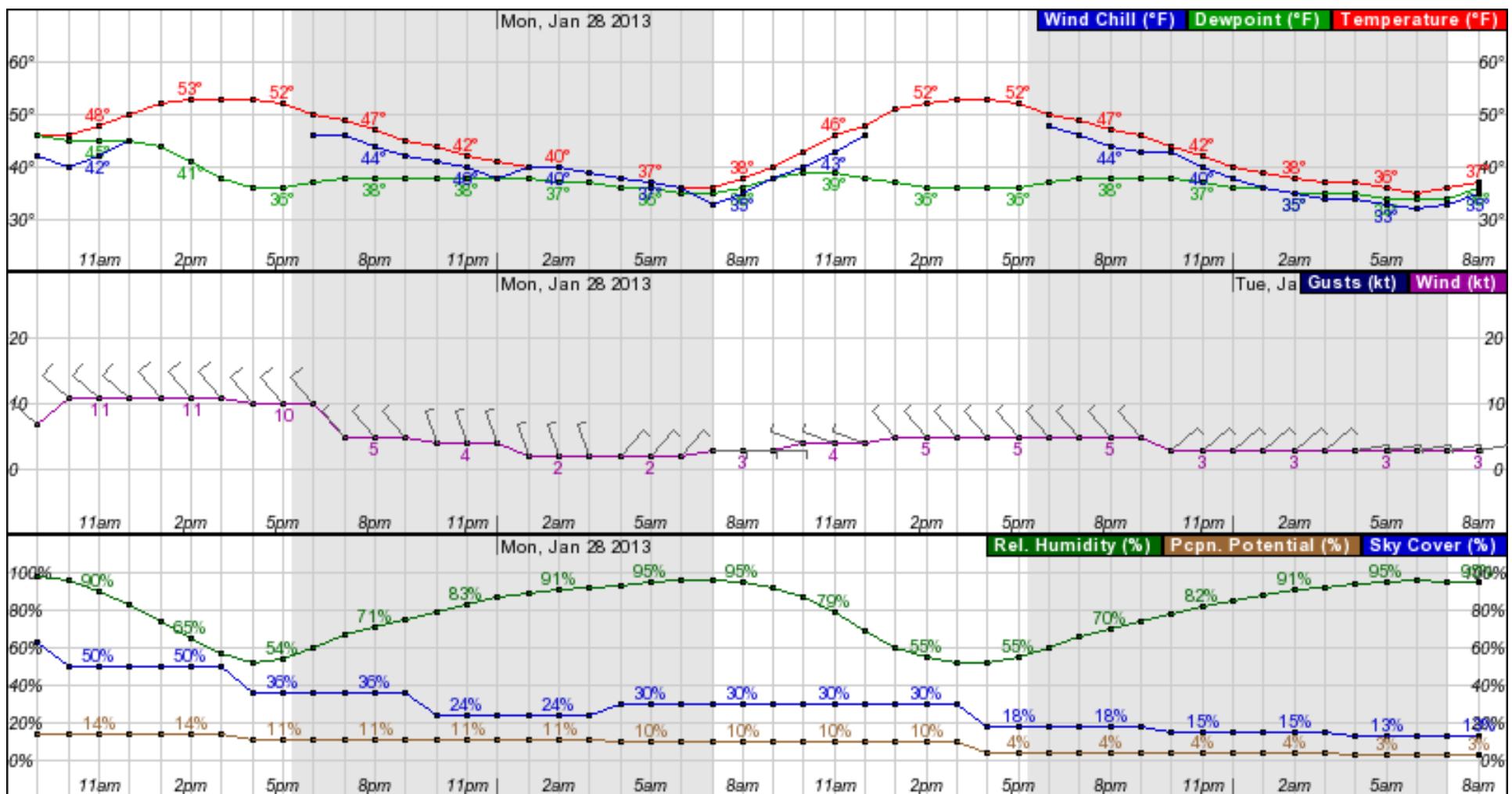
Bakersfield

Today: Mostly cloudy

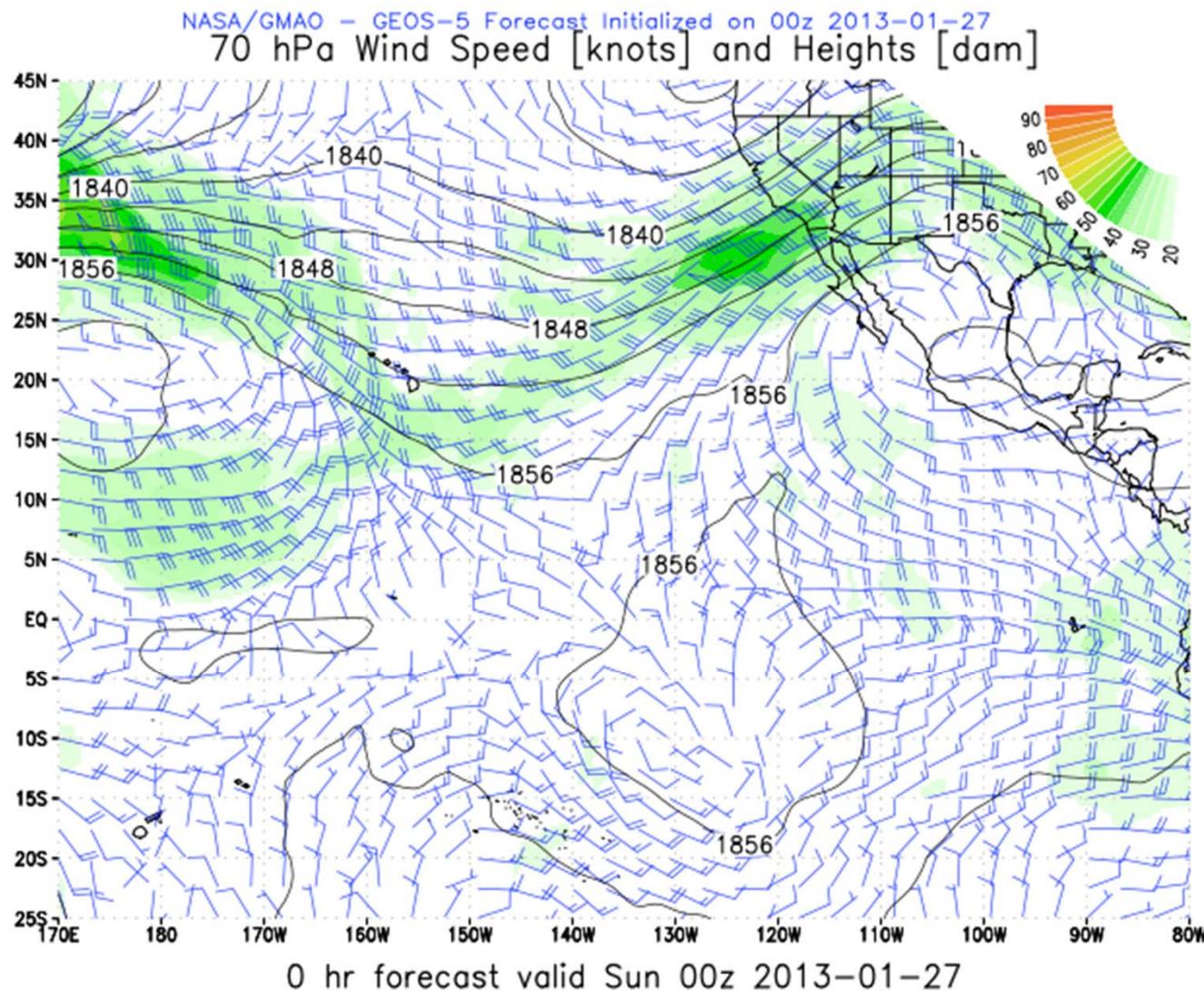
Monday: Mostly sunny – morning RH 95%

Today →

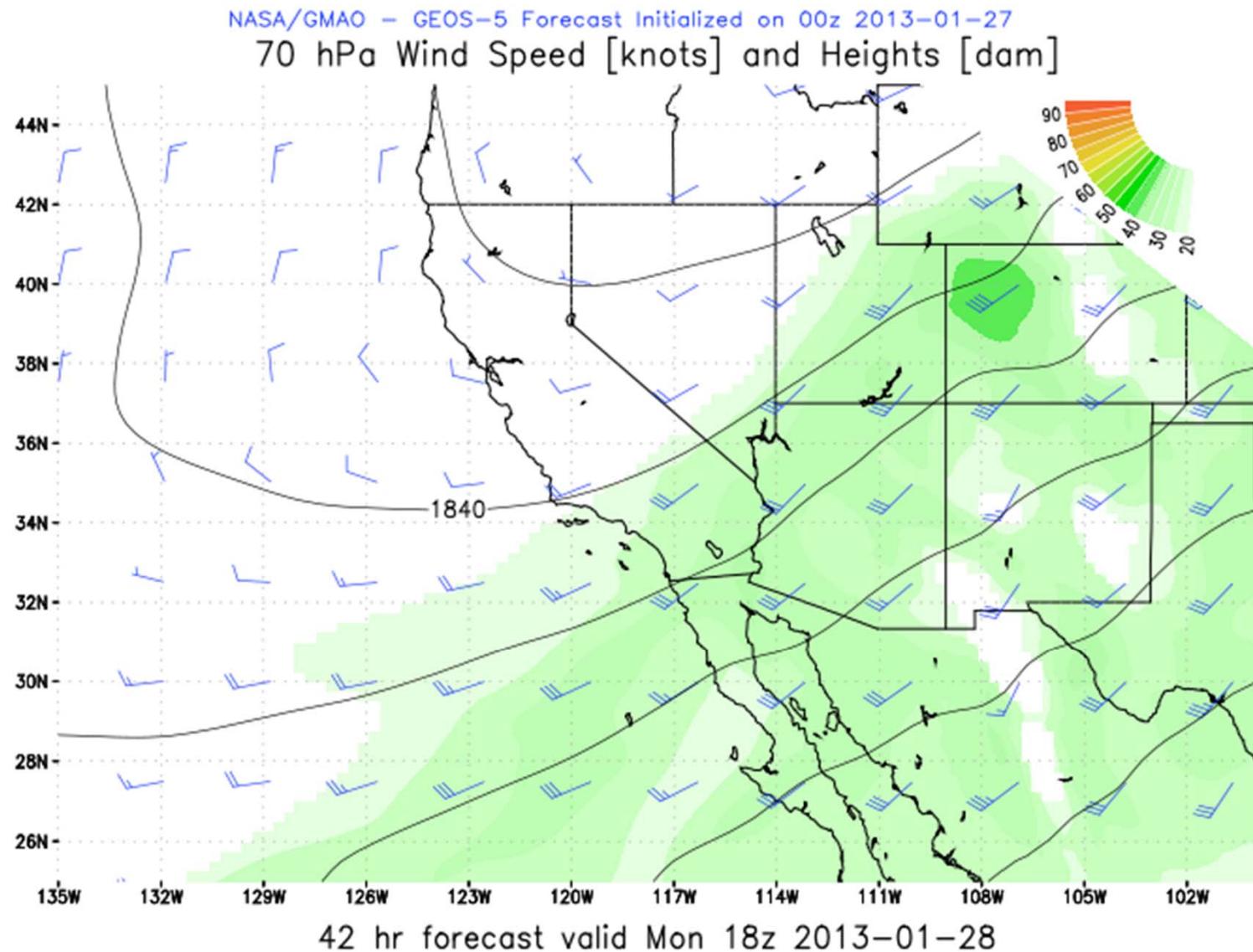
Tomorrow →



GEOS-5: Monday 18Z = 10 PST

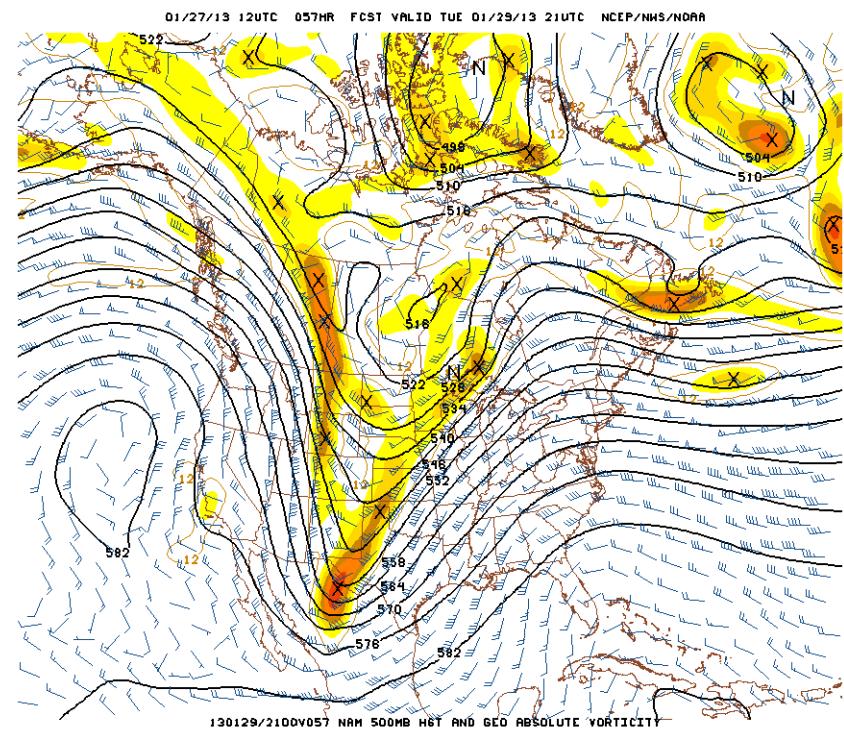
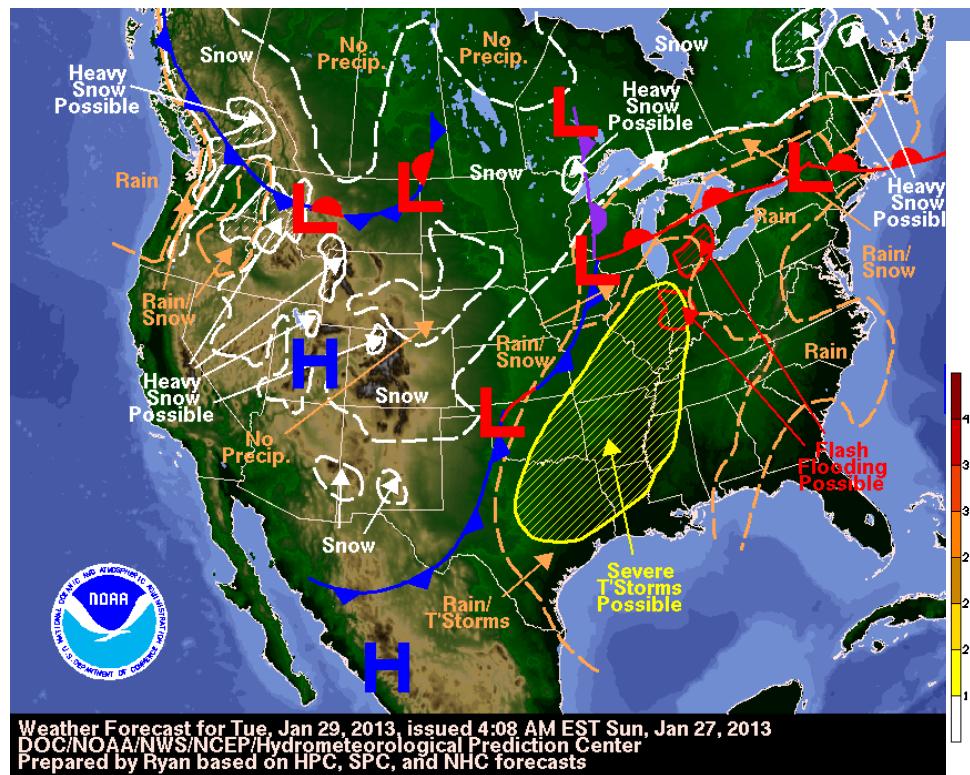


GEOS-5: Monday 18Z = 10 PST



Tuesday:

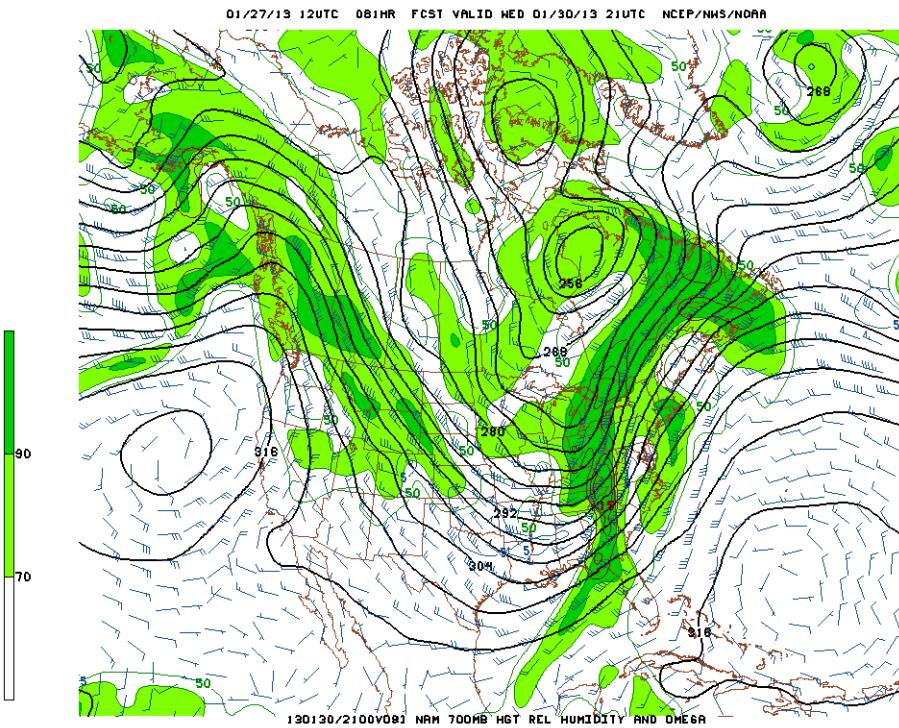
The increased ground moisture from the rain coupled with the upper level ridge expected to approach the west coast Tuesday sets the stage for late night and morning fog.



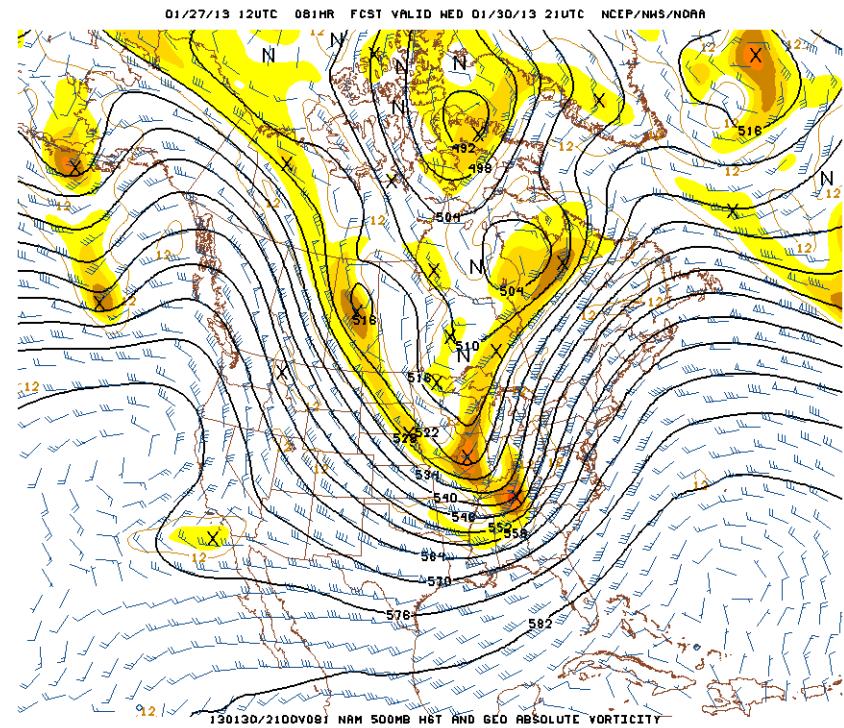
Wednesday:

The upper level ridge continues to influence our forecast area as a short wave trough begins to develop near Alaska.

**700 mb NAM
Wednesday 1 PM**



**500 mb NAM
Wednesday 1 PM**



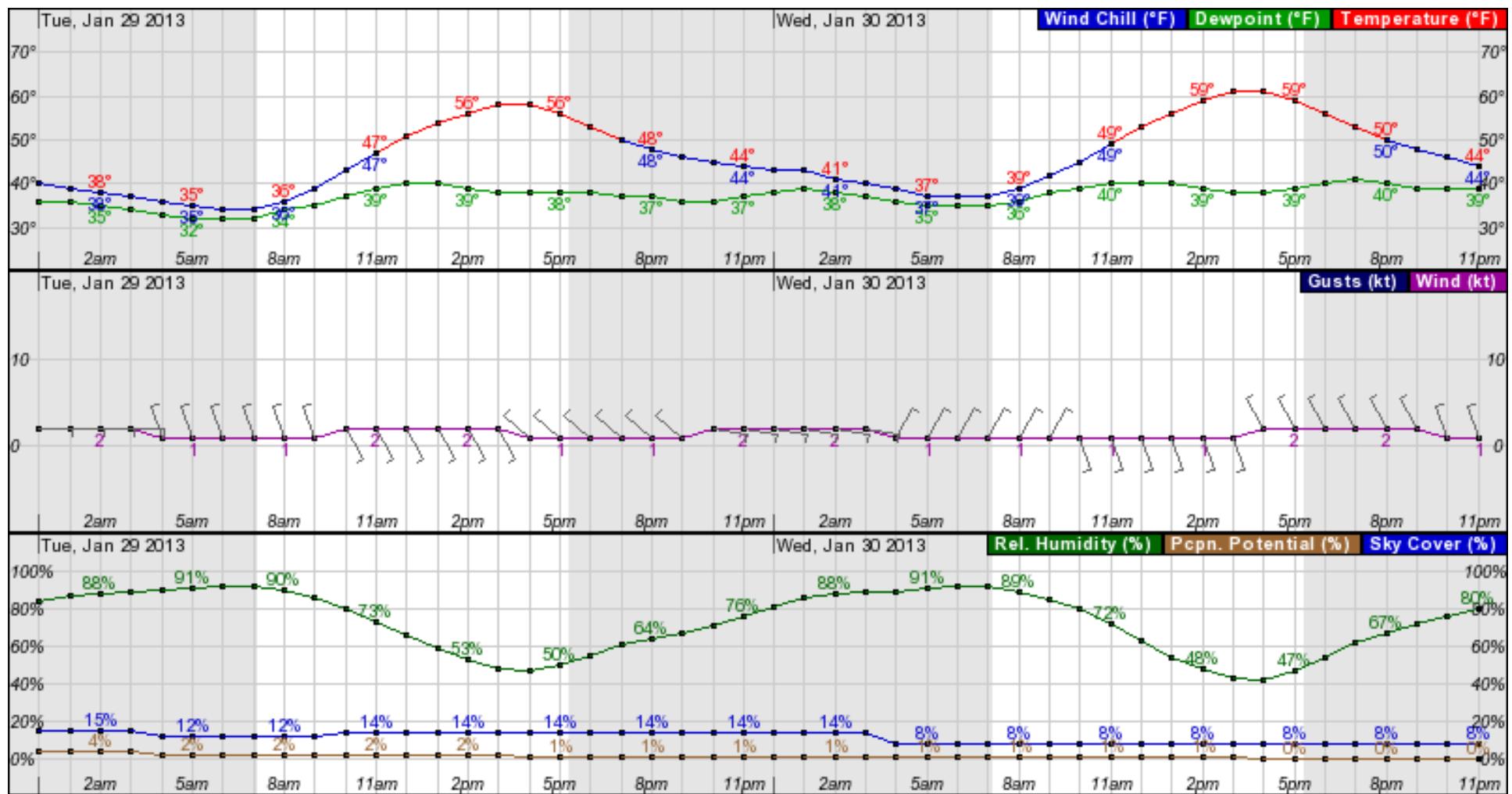
Fresno

Tuesday: Sunny

Wednesday: Sunny

Tuesday →

Wednesday →



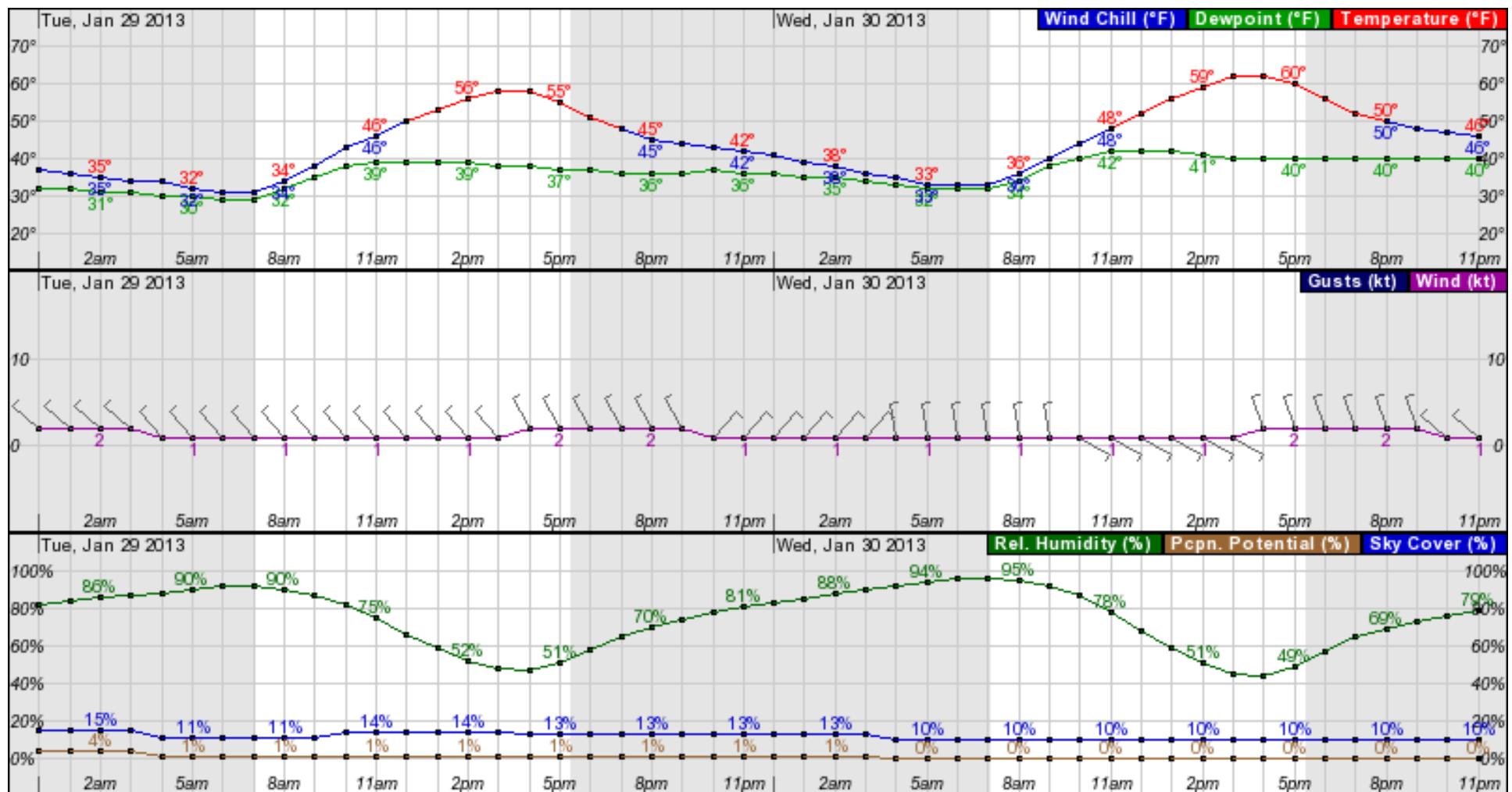
Hanford

Tuesday: Sunny

Wednesday: Sunny – morning RH approaches 95%

Tuesday →

Wednesday →



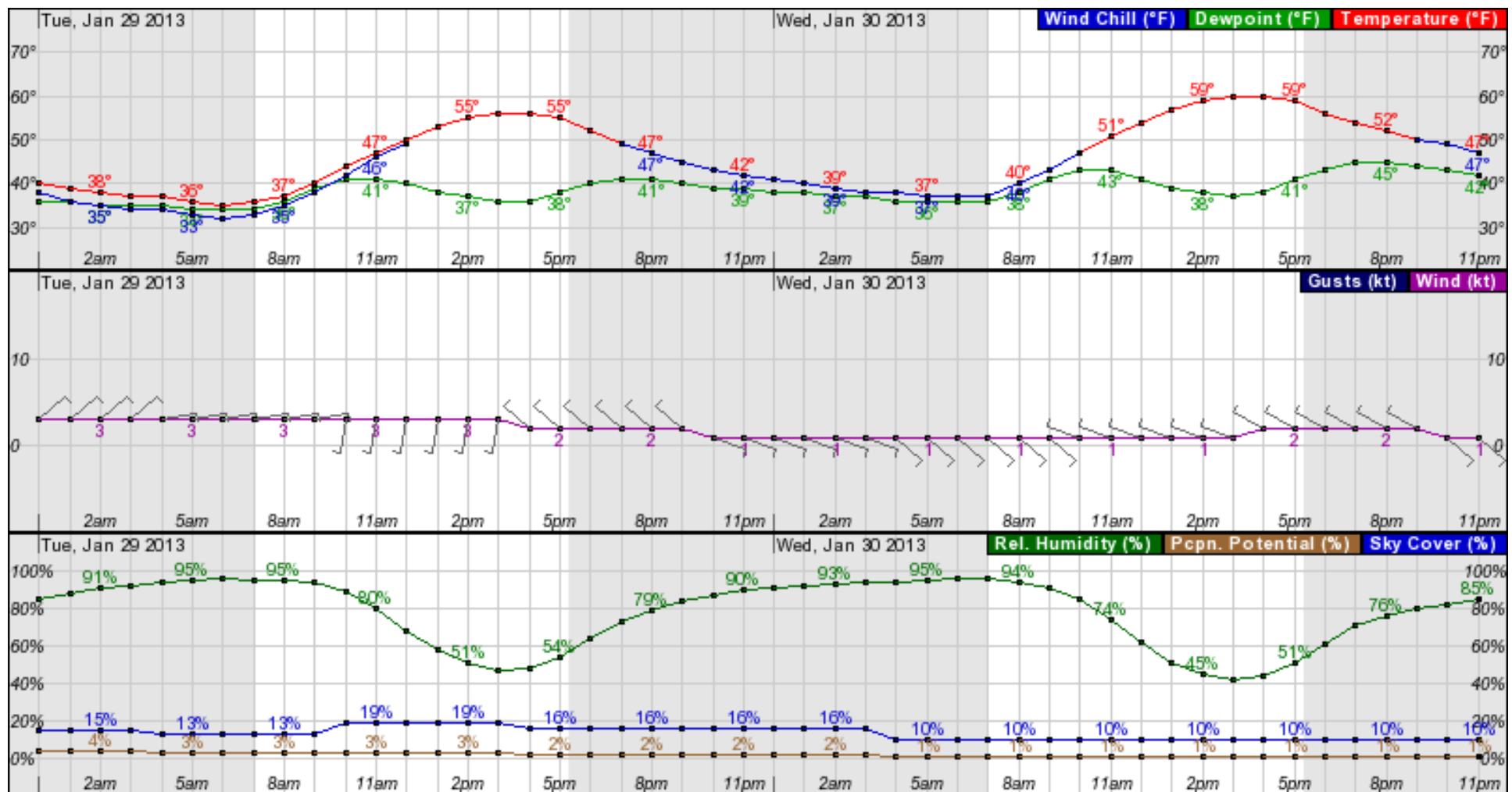
Bakersfield

Tuesday: Sunny – morning RH 95%

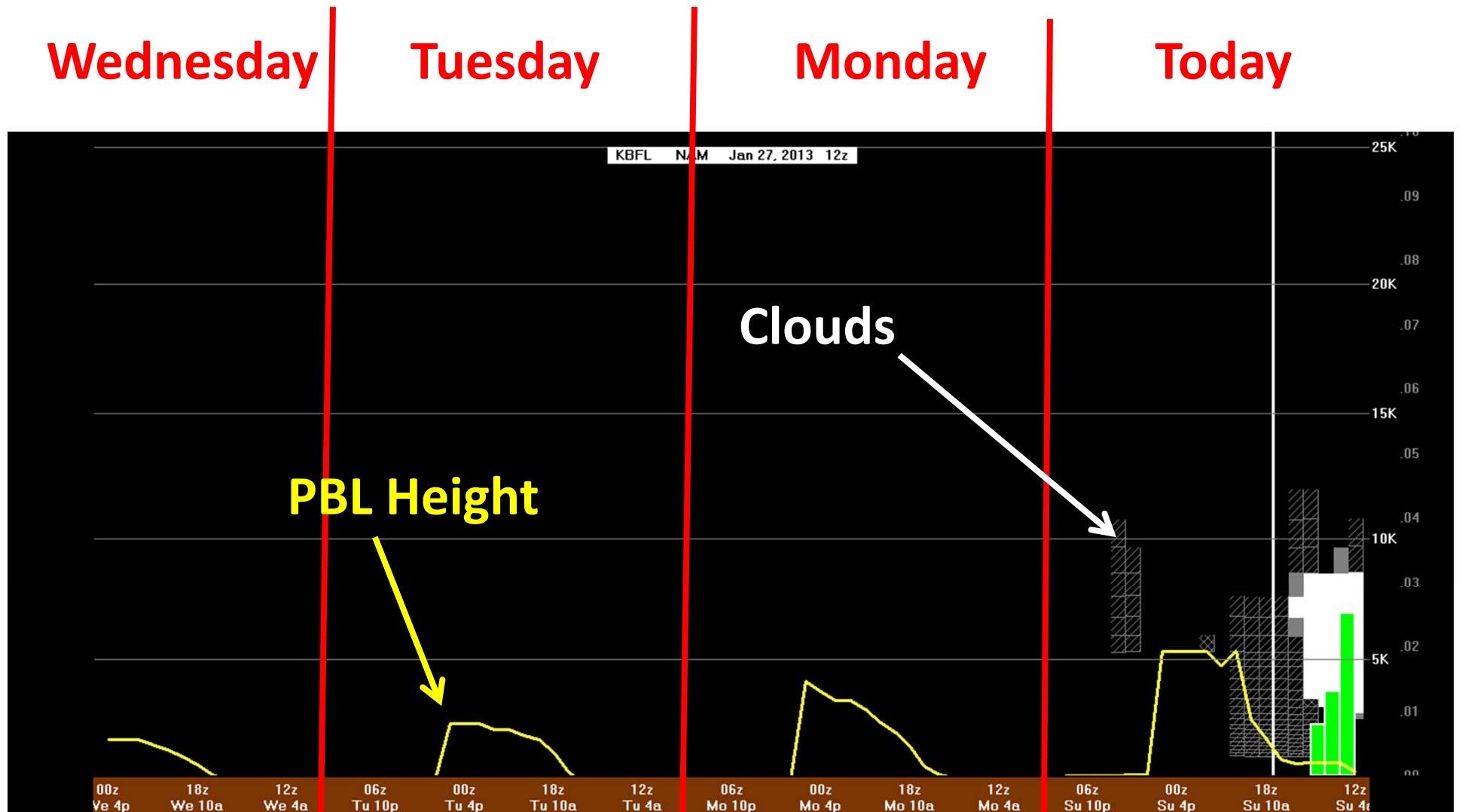
Wednesday: Sunny – morning RH 95%

Tuesday →

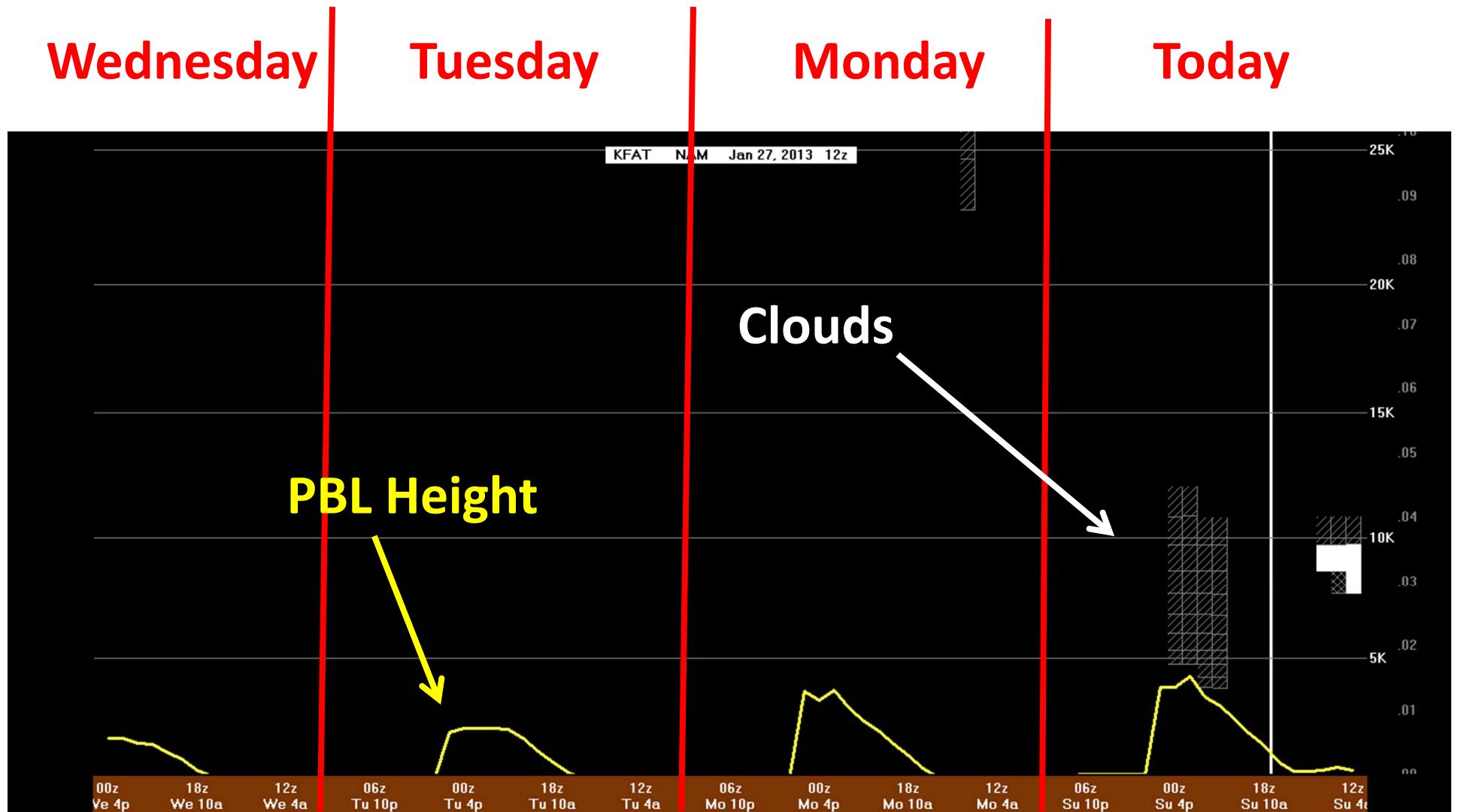
Wednesday →



Bakersfield : BUFKIT NAM 12 UTC Sunday January 27



Fresno : BUFKIT NAM 12 UTC Sunday January 27



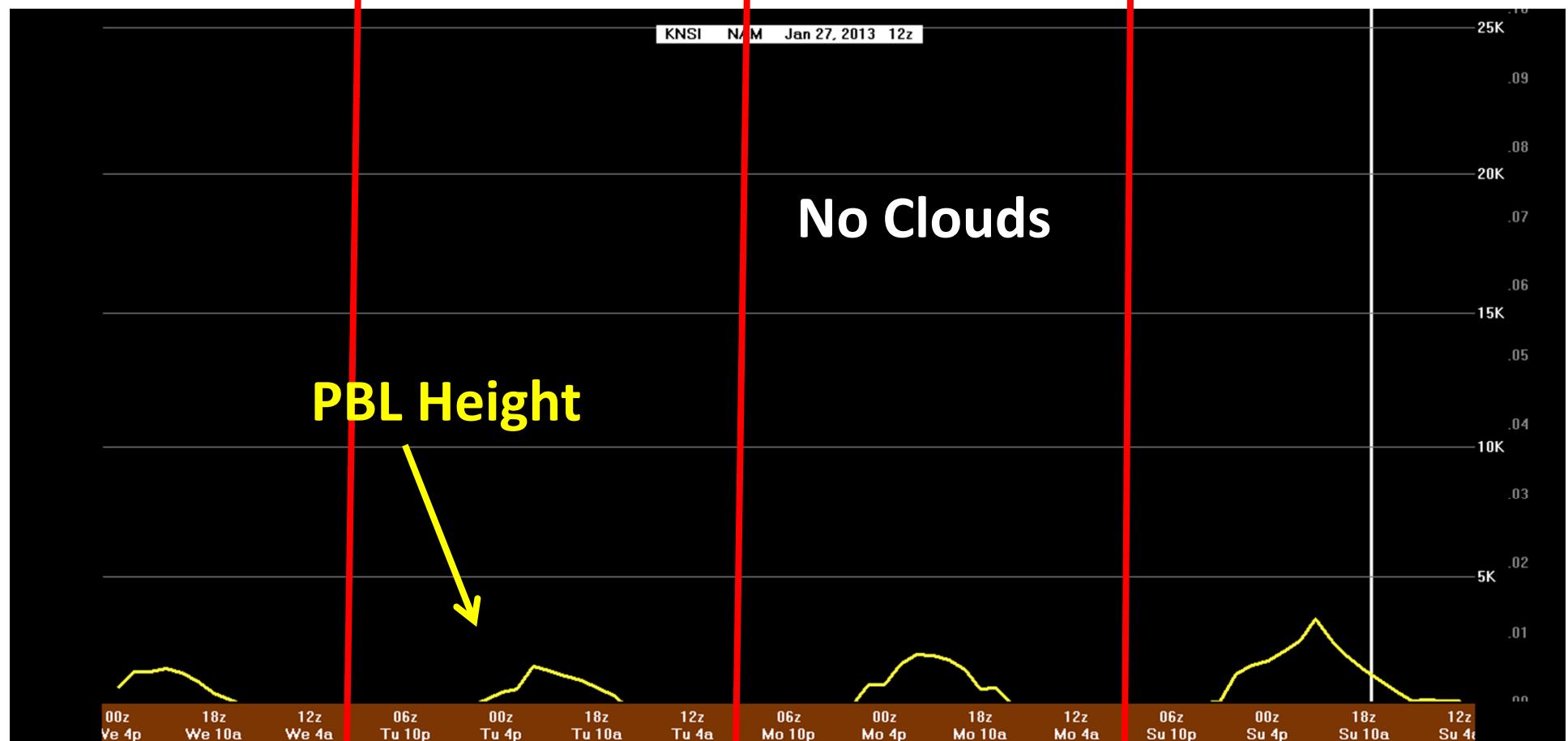
San Nicolas : BUKIT NAM 12 UTC Sunday January 27

Wednesday

Tuesday

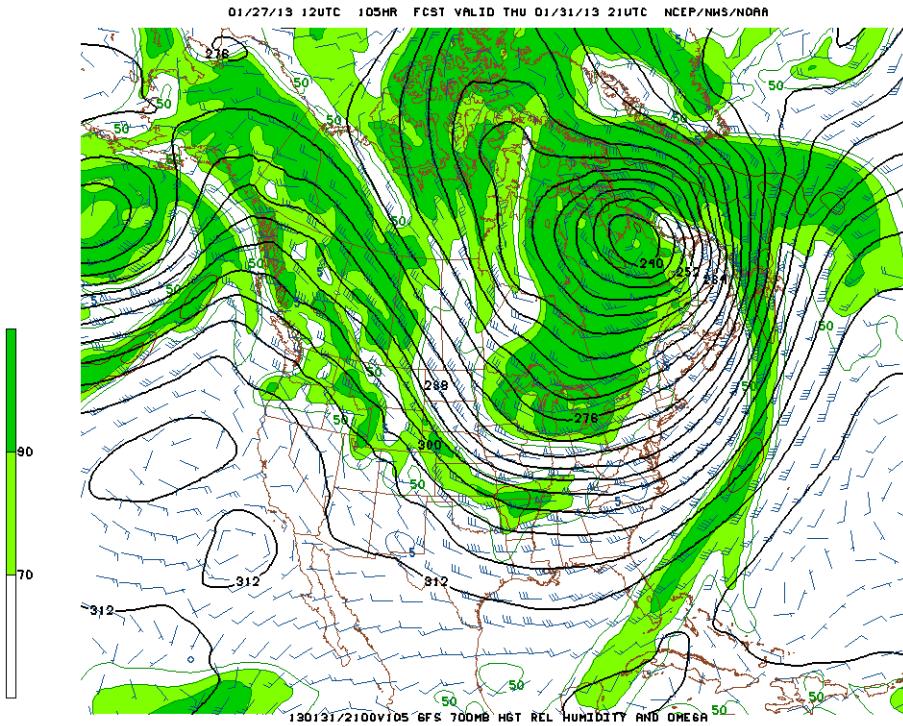
Monday

Today

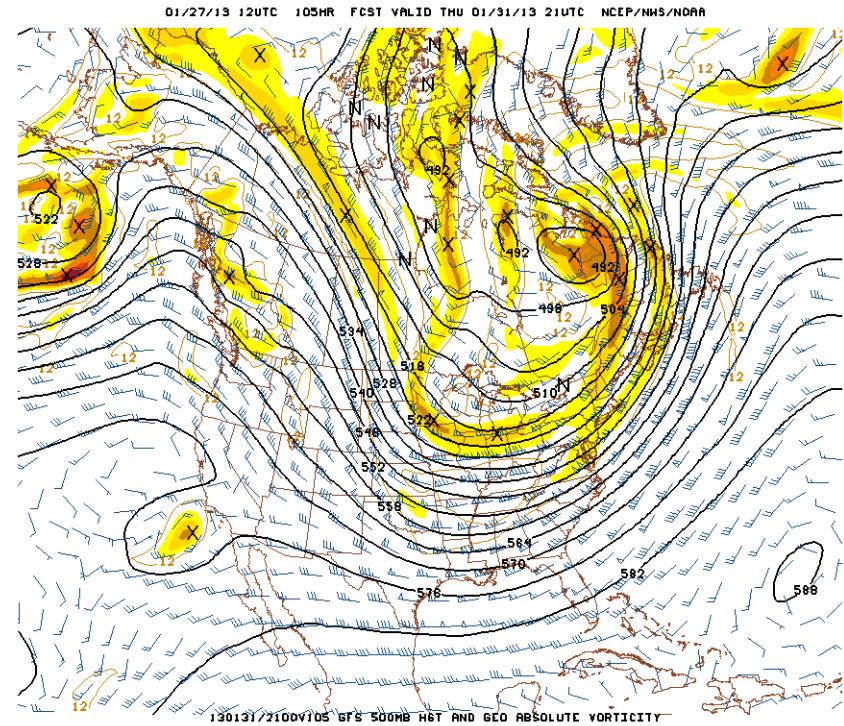


Thursday

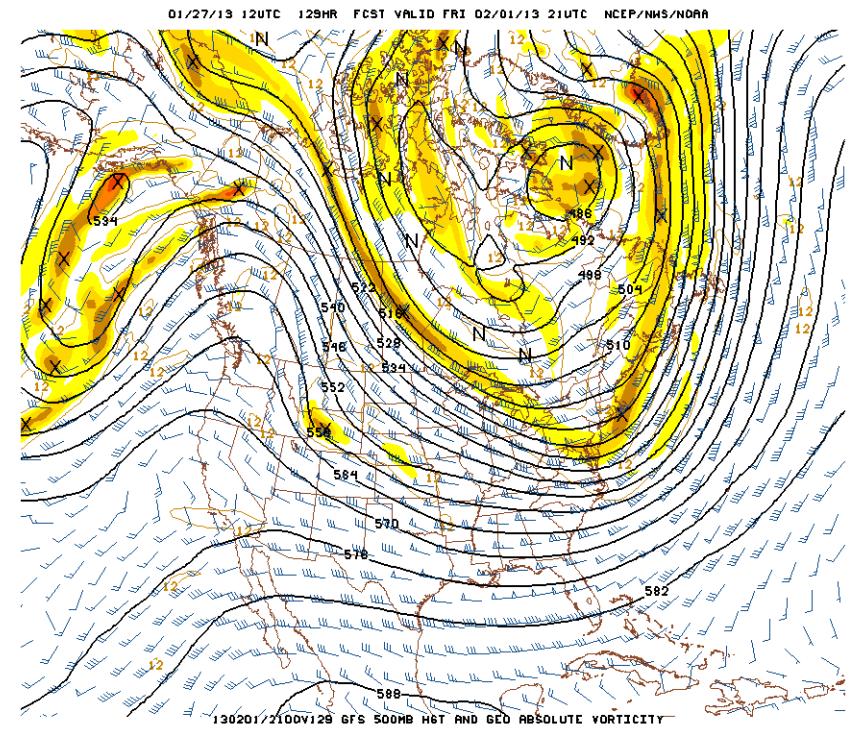
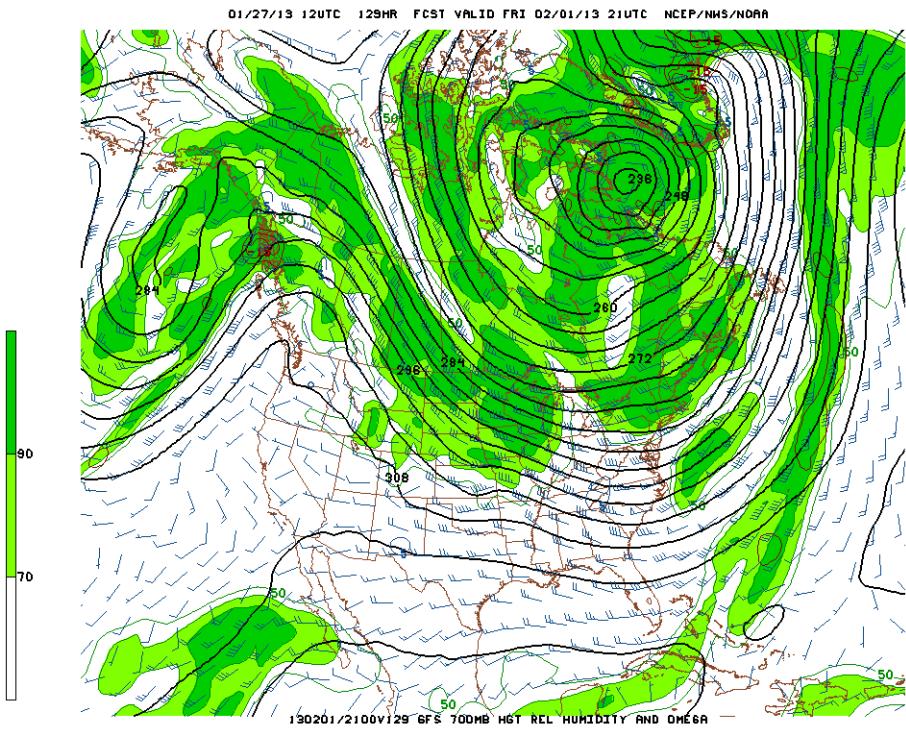
**700 mb GFS
Thursday 1 PM**



**500 mb GFS
Thursday 1 PM**



Friday



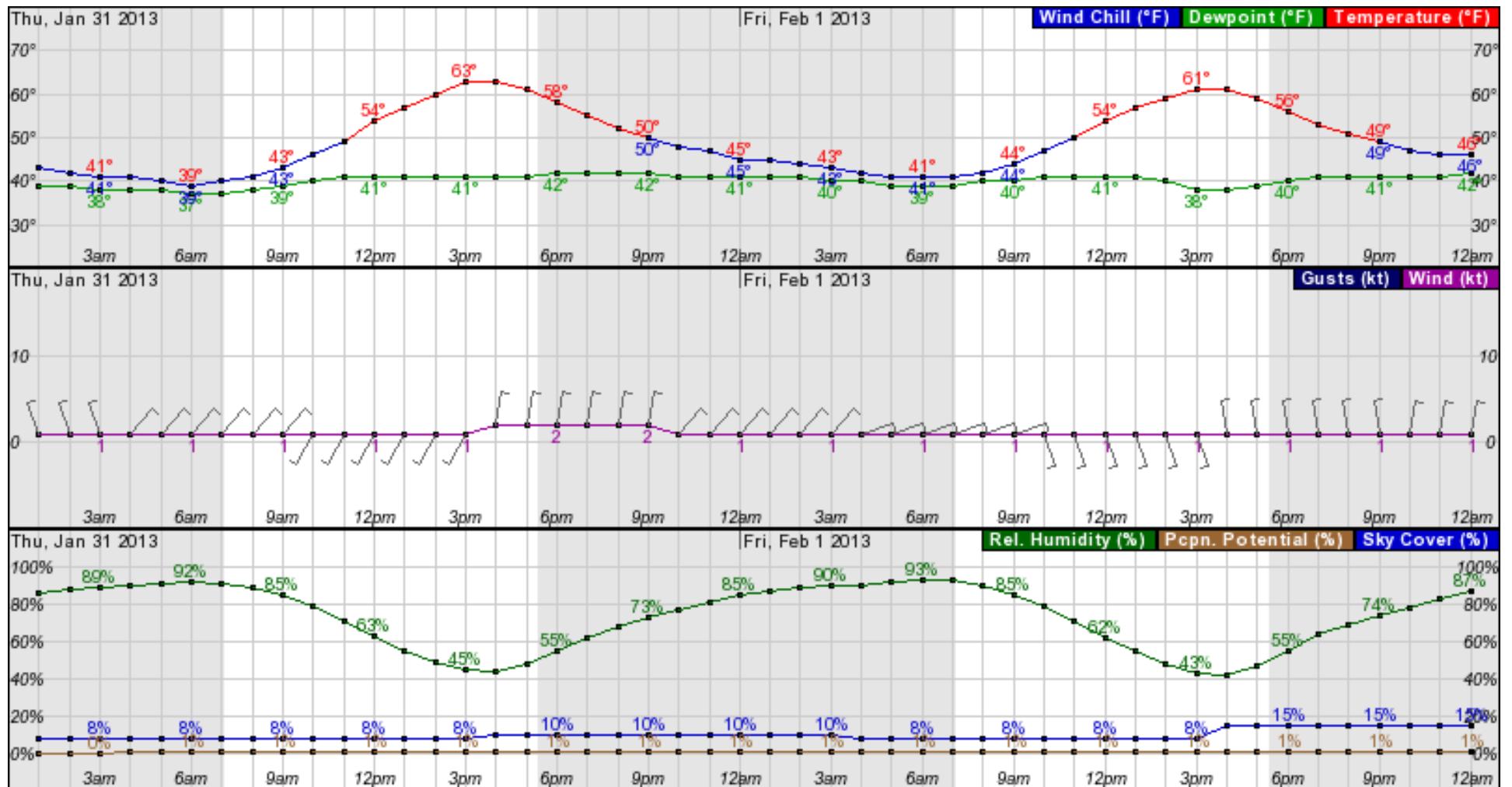
Fresno

Thursday: Sunny

Friday: Sunny

Thursday →

Friday →



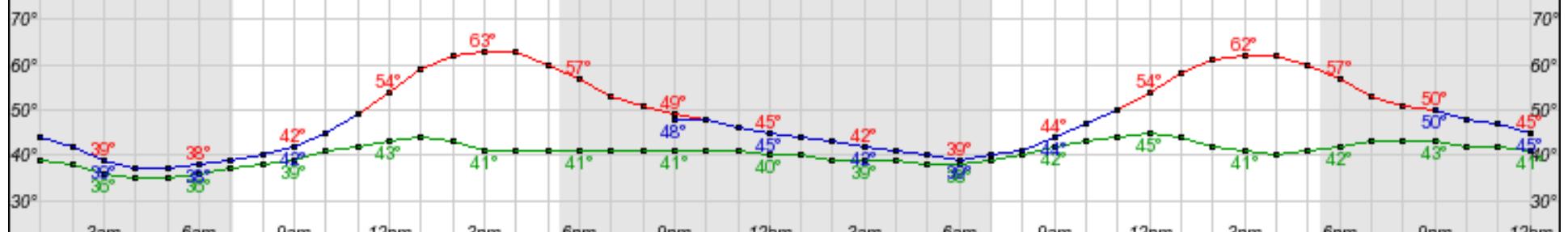
Hanford

Thursday: Sunny

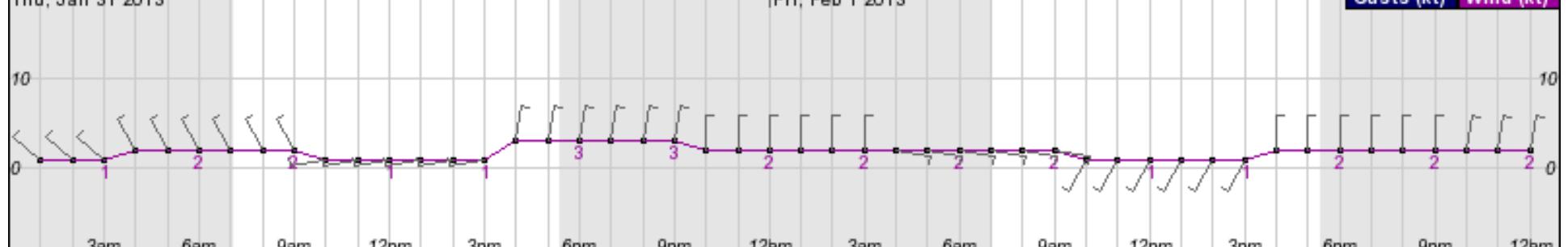
Friday: Sunny – morning RH >95%

Thursday →

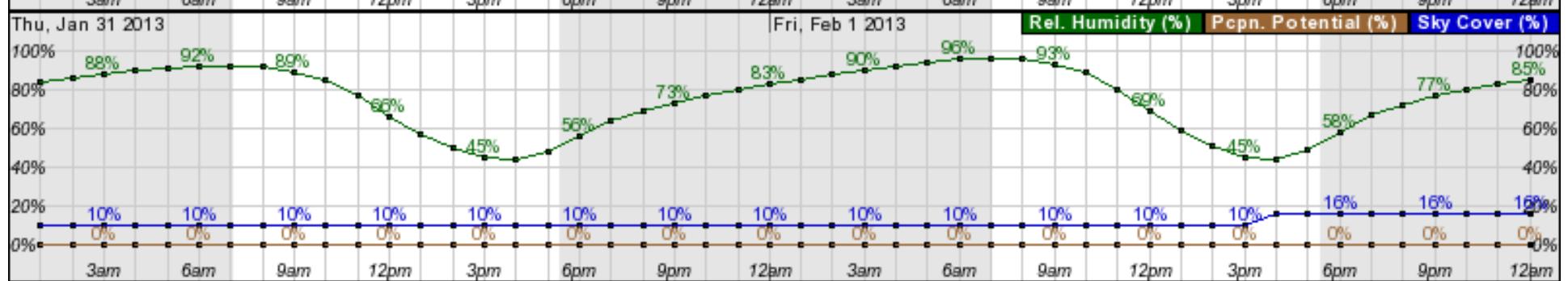
Thu, Jan 31 2013



Thu, Jan 31 2013

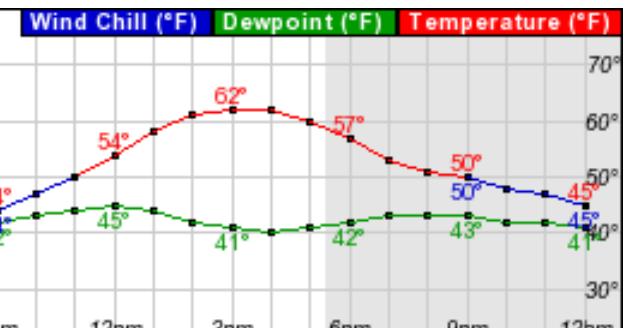


Thu, Jan 31 2013

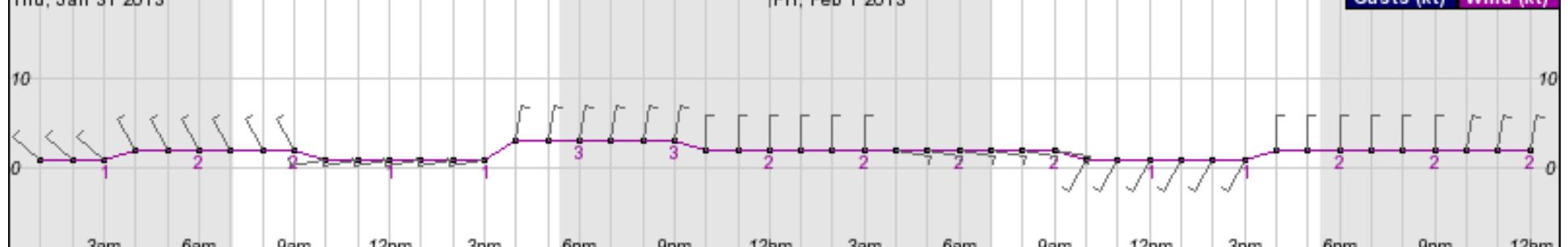


Friday →

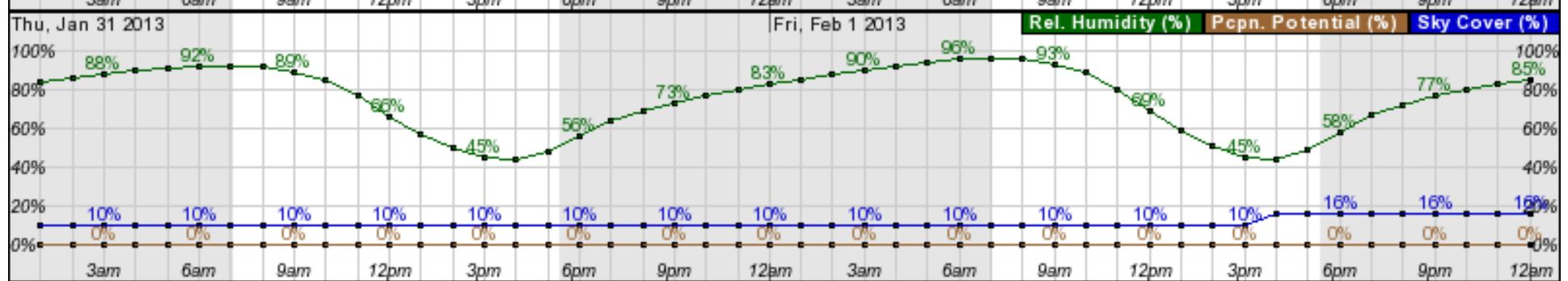
Fri, Feb 1 2013



Fri, Feb 1 2013



Fri, Feb 1 2013



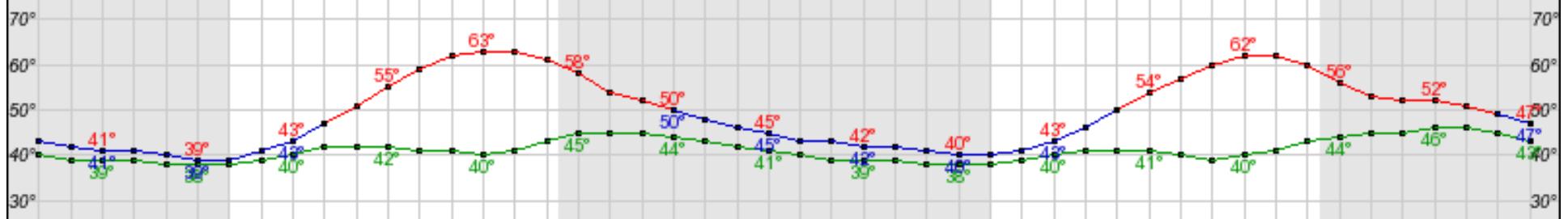
Bakersfield

Thursday: Sunny – morning RH >95%

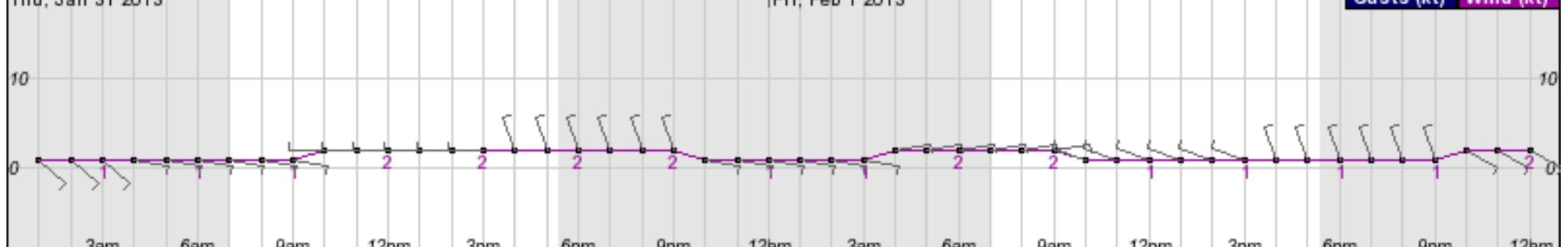
Friday: Sunny

Thursday →

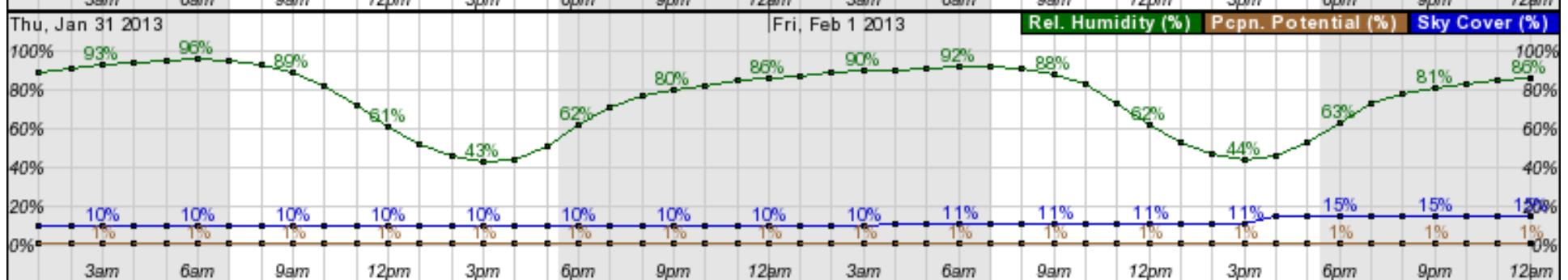
Thu, Jan 31 2013



Thu, Jan 31 2013

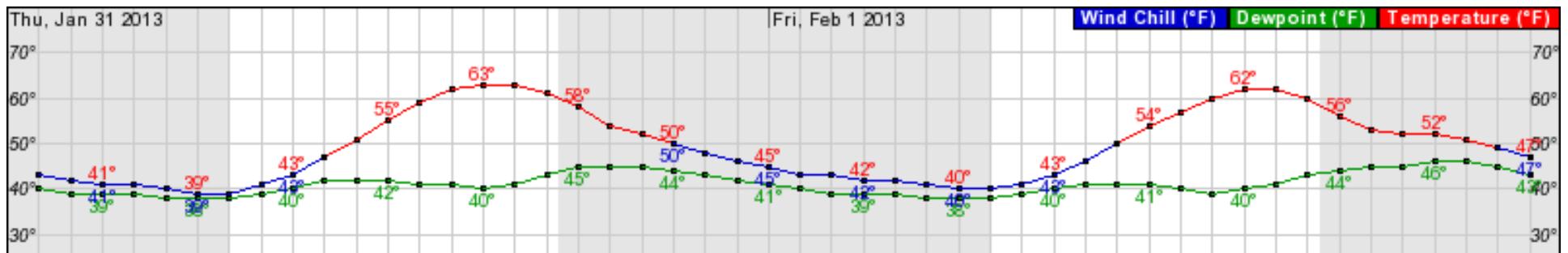


Thu, Jan 31 2013

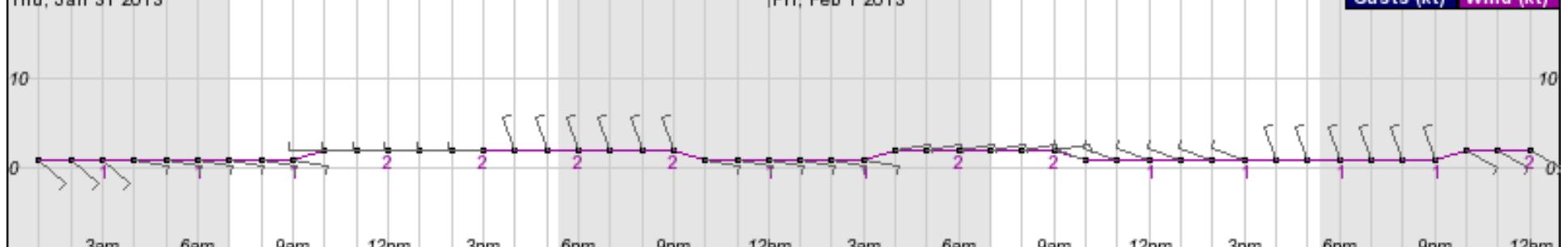


Friday →

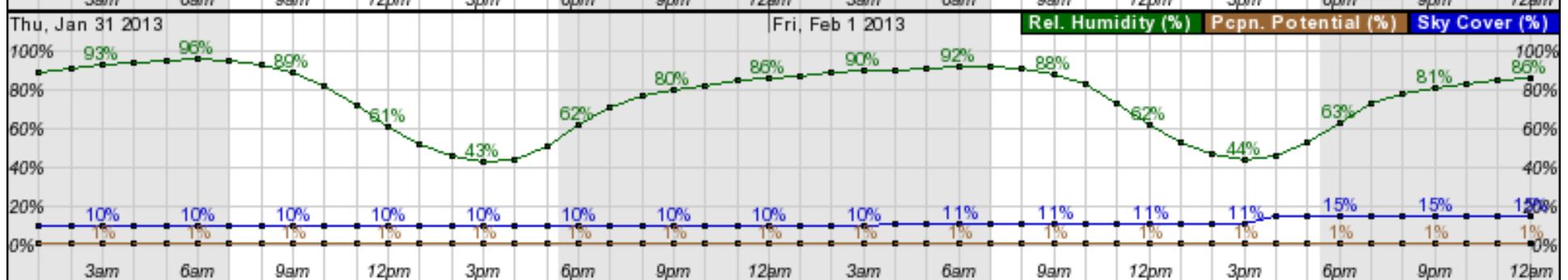
Fri, Feb 1 2013



Fri, Feb 1 2013



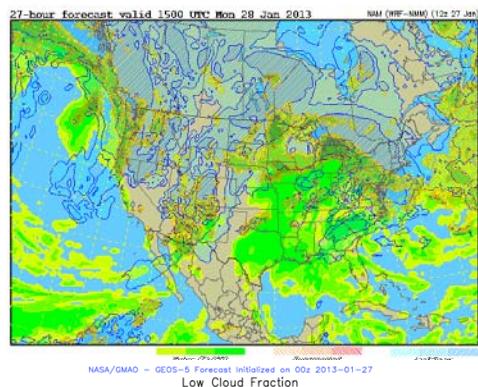
Fri, Feb 1 2013



Tomorrow: NAM – mostly clear all day, high level clouds approach north end of the valley by 4 pm, high clouds over PODEX area by 4 pm; GEOS-5 – Low level clouds in the morning, clearing out by midday

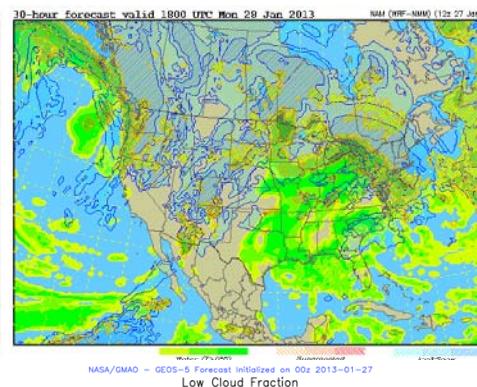
7 am

Integrated liquid and frozen hydrometeors (all levels)



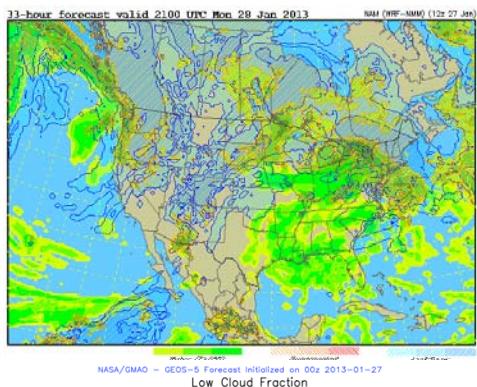
10 am

Integrated liquid and frozen hydrometeors (all levels)



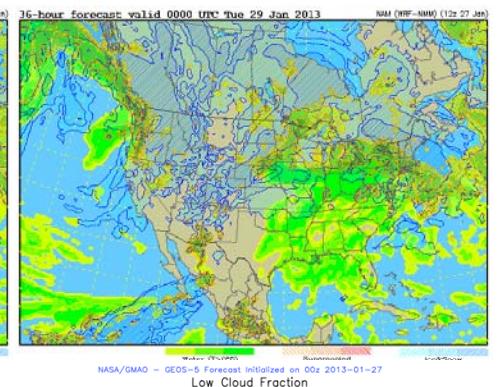
1 pm

Integrated liquid and frozen hydrometeors (all levels)

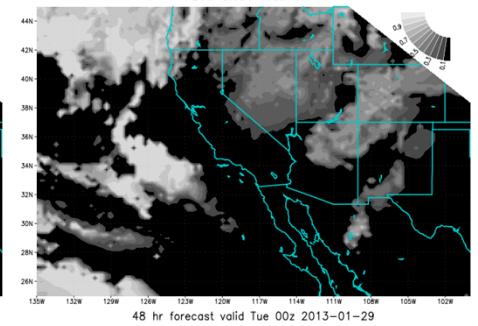
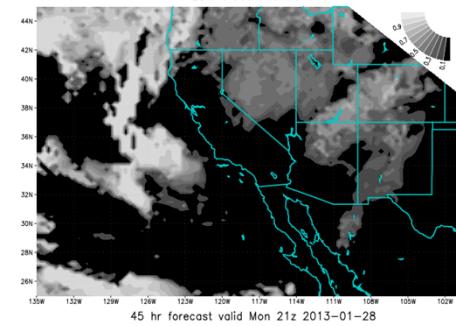
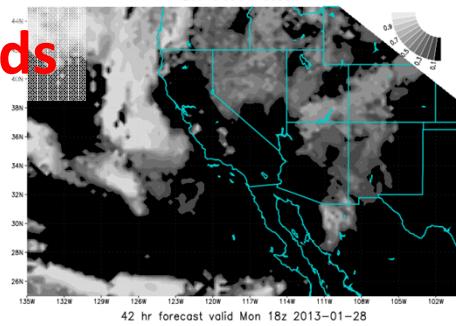
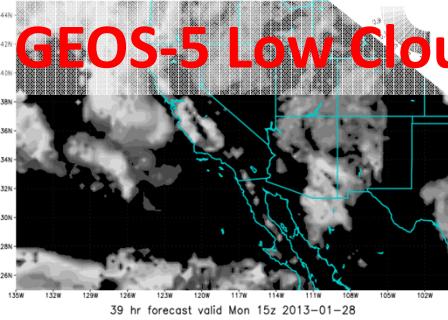


4 pm

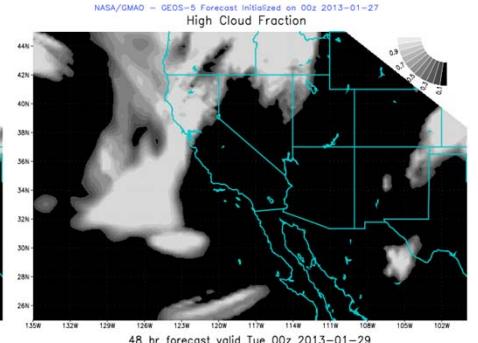
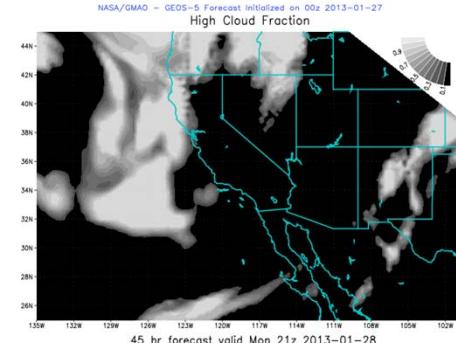
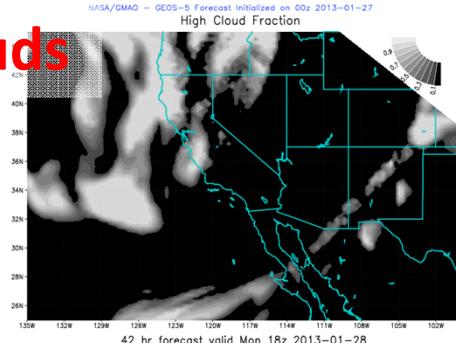
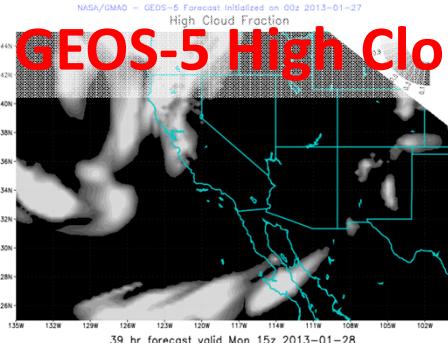
Integrated liquid and frozen hydrometeors (all levels)



GEOS-5 Low Clouds



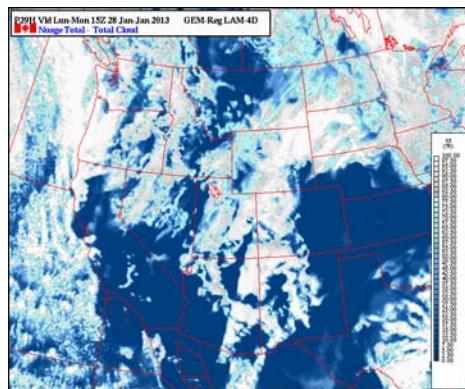
GEOS-5 High Clouds



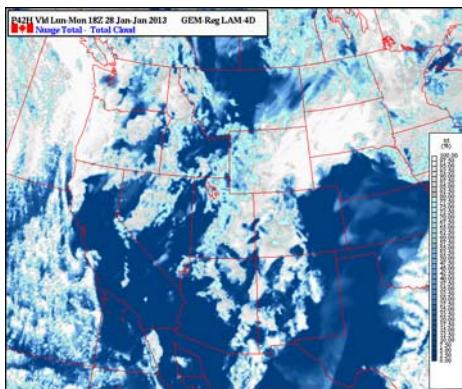
Tomorrow: Canadian – scattered clouds; GFS – clear skies over SJV, low clouds near PODEX region, high level clouds approach PODEX region

7 am

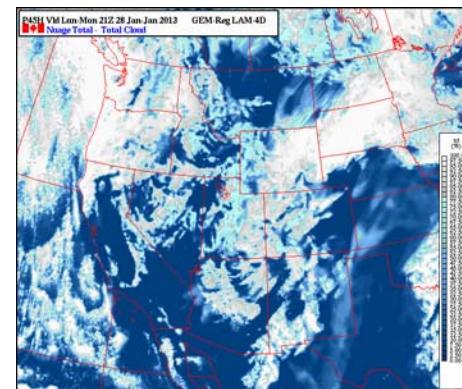
Canadian



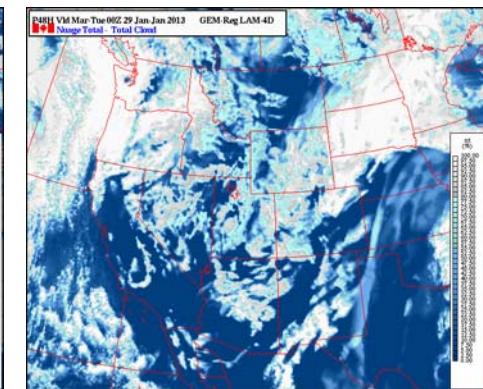
10 am



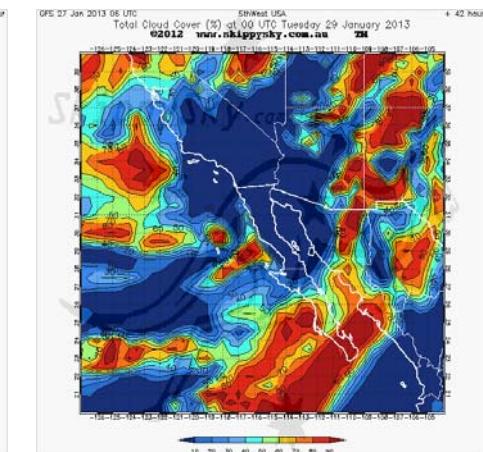
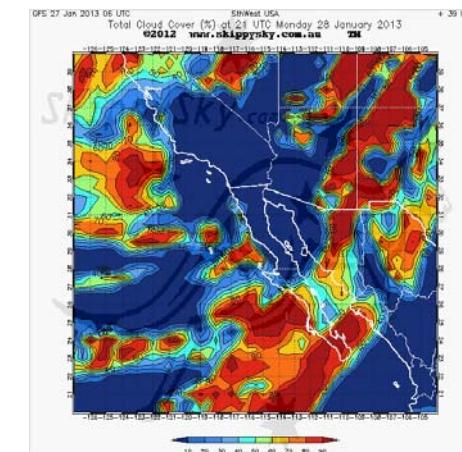
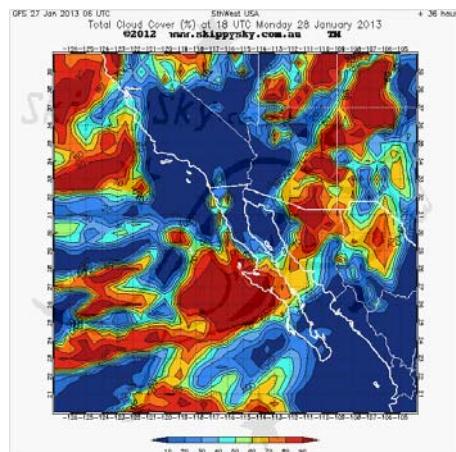
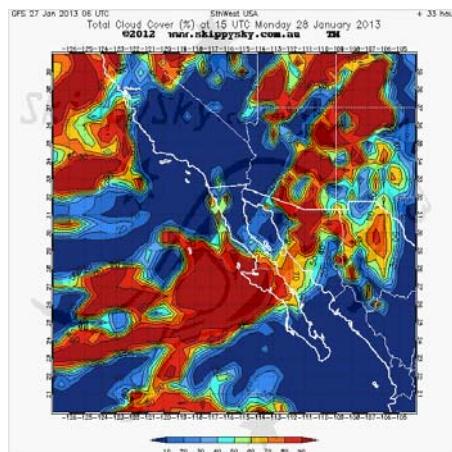
1 pm



4 pm



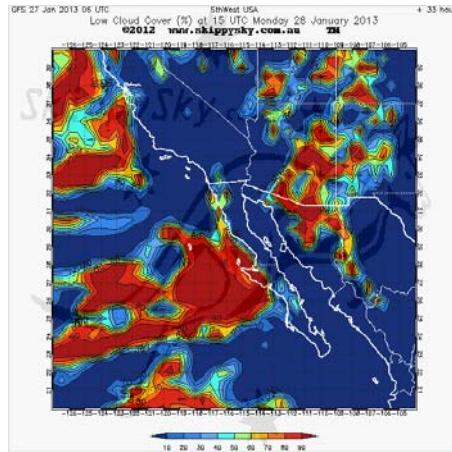
GFS



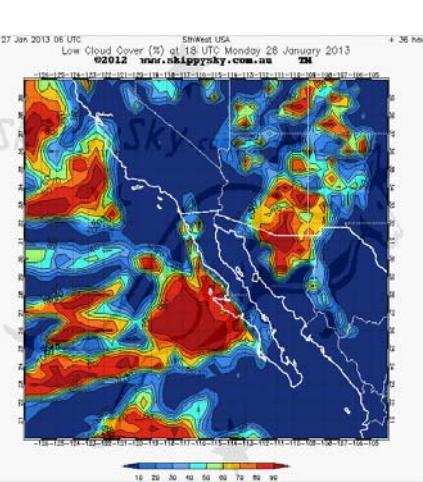
Tomorrow: GFS forecasts some high level clouds near PODEX region

7 am

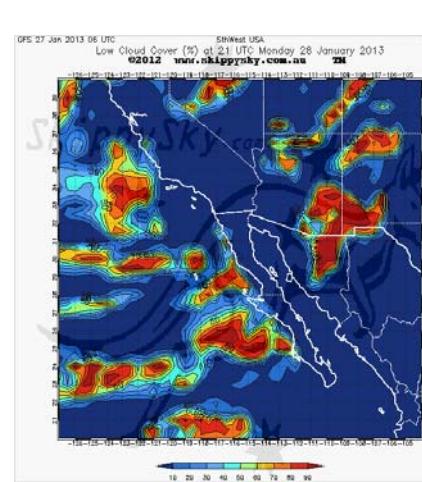
GFS – low cloud



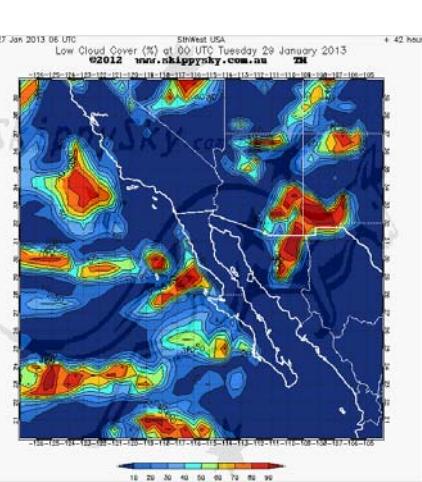
10 am



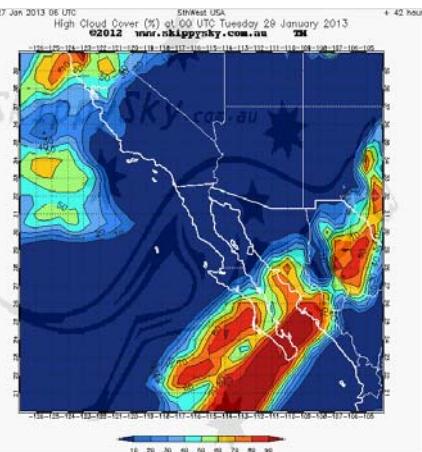
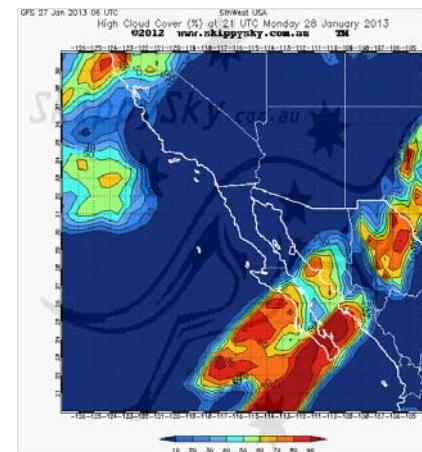
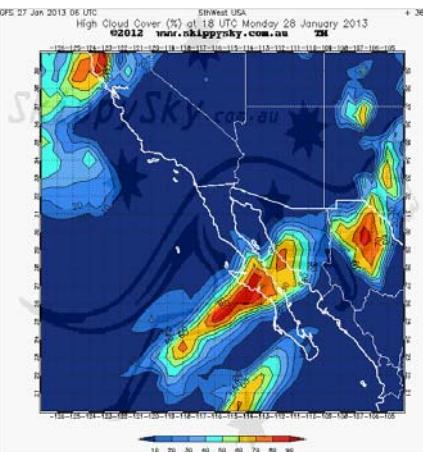
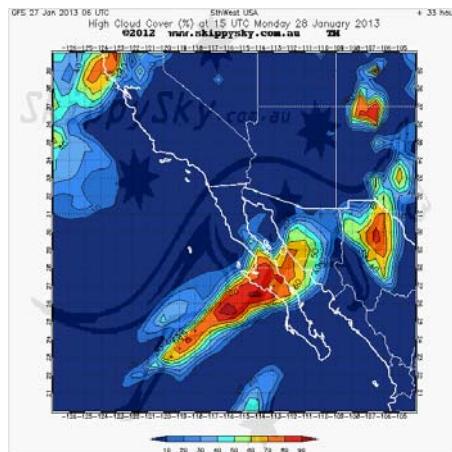
1 pm



4 pm



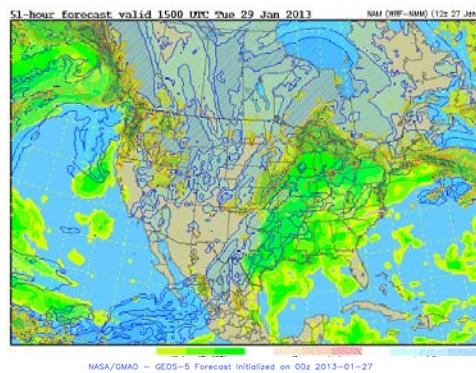
GFS – high cloud



Tuesday: NAM – high clouds over SJV at 7 am; GEOS-5 – No low or mid level clouds in forecast, high level clouds most of the day

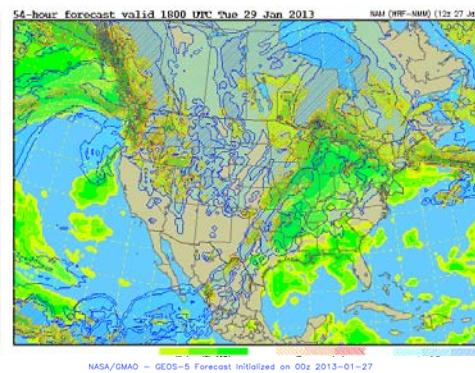
7 am

Integrated liquid and frozen hydrometeors (all levels)



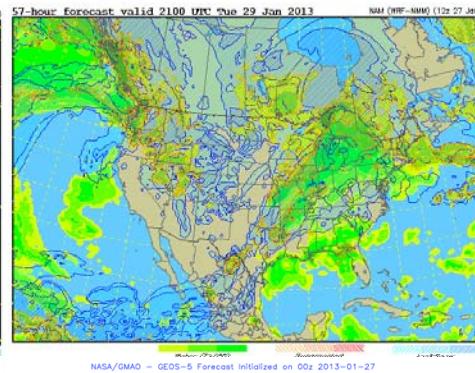
10 am

Integrated liquid and frozen hydrometeors (all levels)



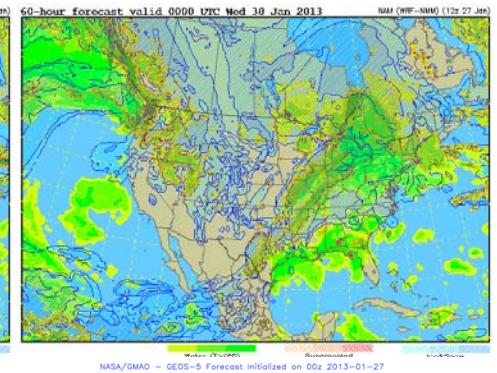
1 pm

Integrated liquid and frozen hydrometeors (all levels)

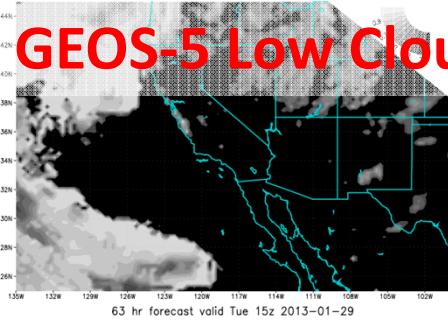


4 pm

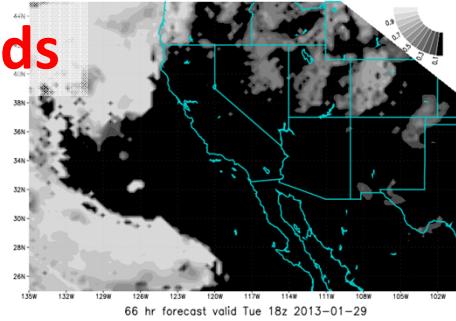
Integrated liquid and frozen hydrometeors (all levels)



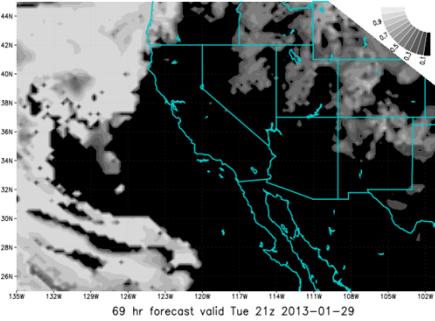
GEOS-5 Low Clouds



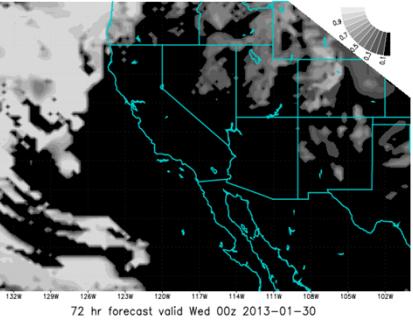
Low Cloud Fraction



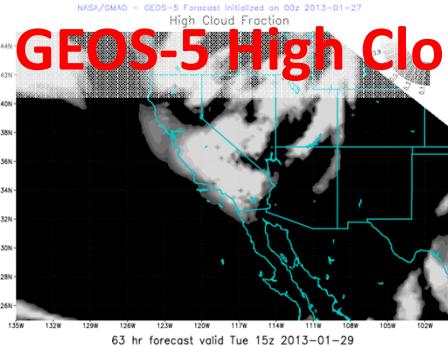
Low Cloud Fraction



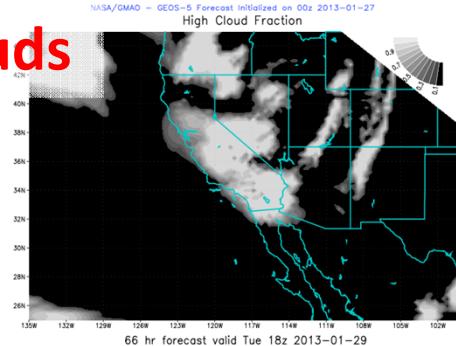
Low Cloud Fraction



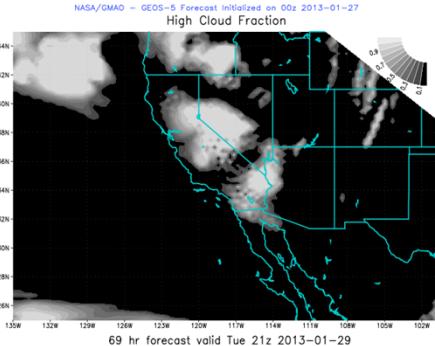
GEOS-5 High Clouds



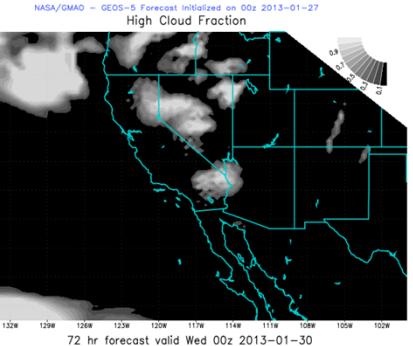
High Cloud Fraction



High Cloud Fraction

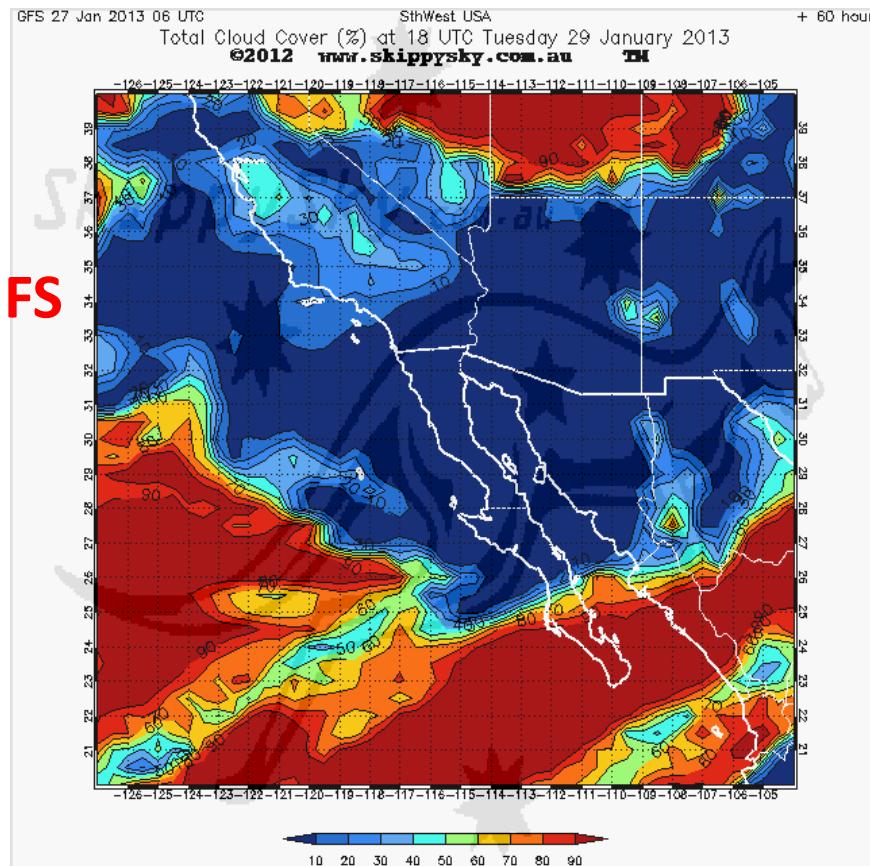


High Cloud Fraction

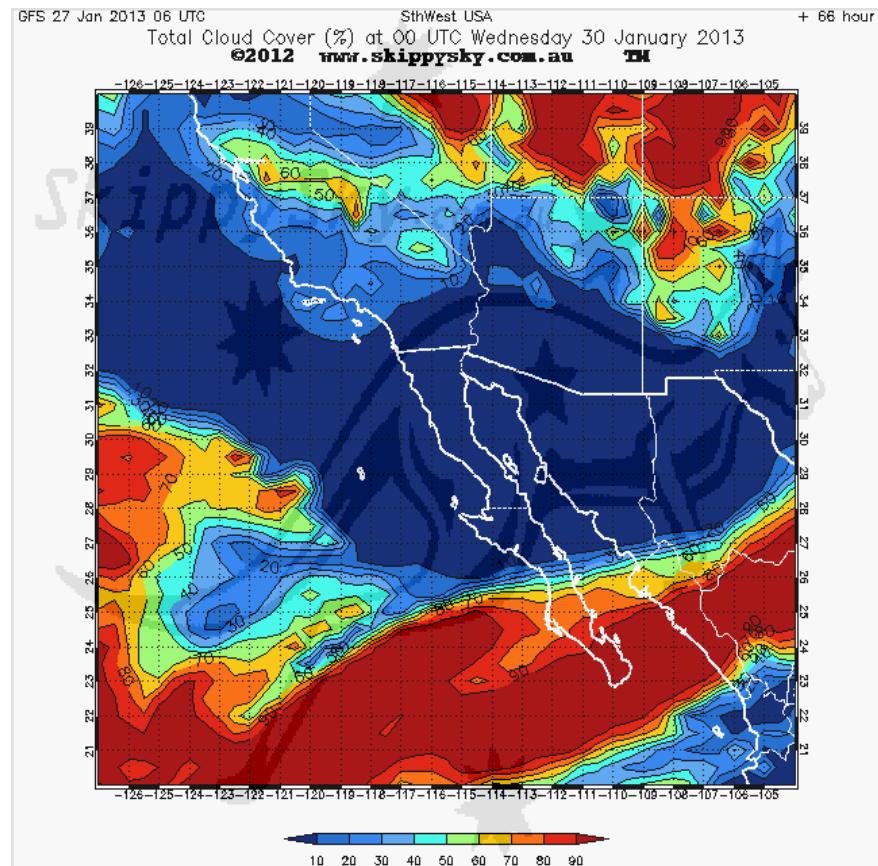


Tuesday: GFS – High cloud cover all day

10 am



4 pm

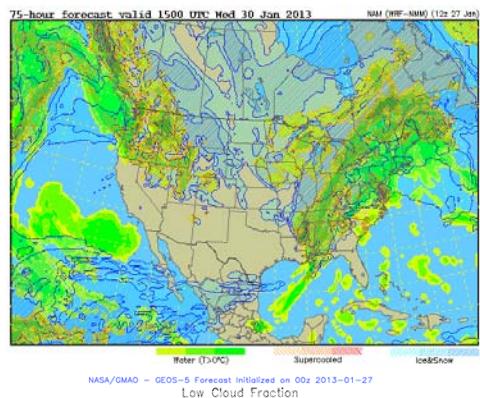


GFS

Wednesday: NAM – clear skies; GEOS-5 – forecasts clear skies

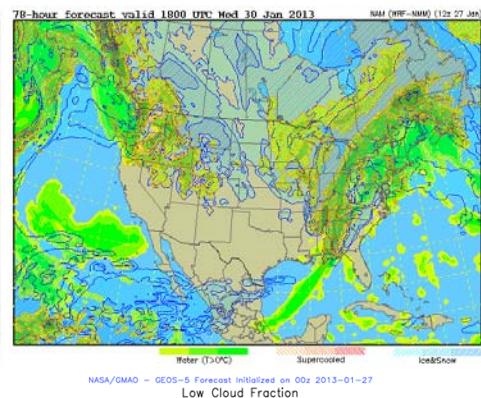
7 am

Integrated liquid and frozen hydrometeors (all levels)



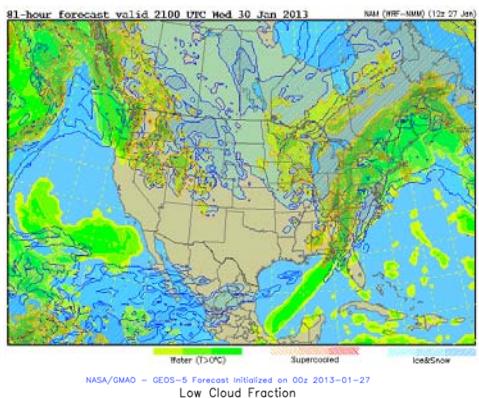
10 am

Integrated liquid and frozen hydrometeors (all levels)



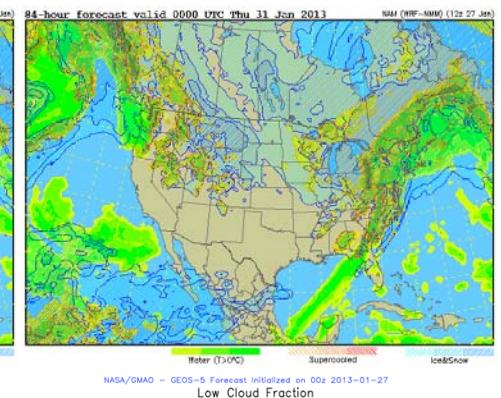
1 pm

Integrated liquid and frozen hydrometeors (all levels)

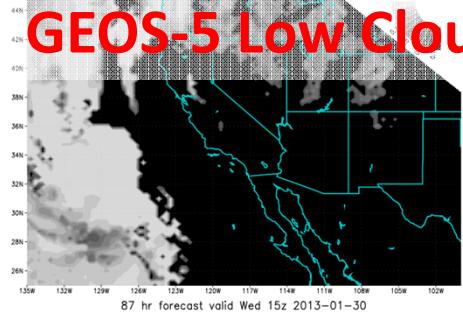


4 pm

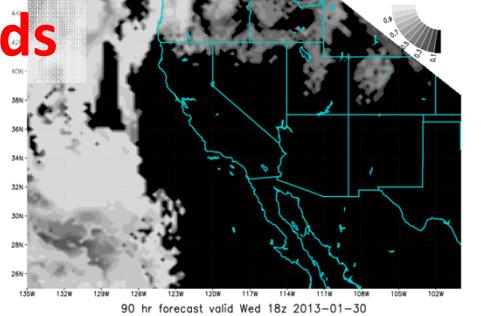
Integrated liquid and frozen hydrometeors (all levels)



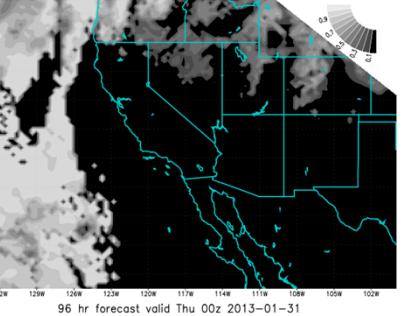
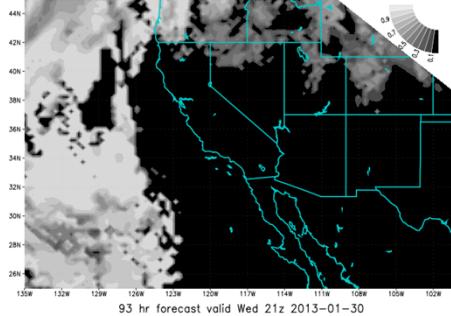
GEOS-5 Low Clouds



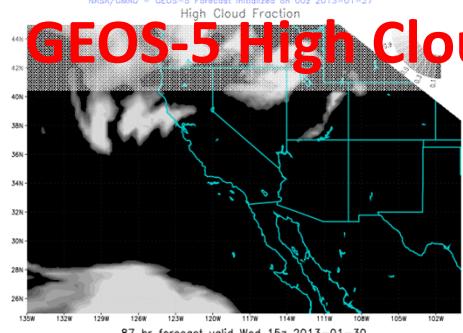
NASA/GMAO — GEOS-5 Forecast Initialized on 00z 2013-01-27
Low Cloud Fraction



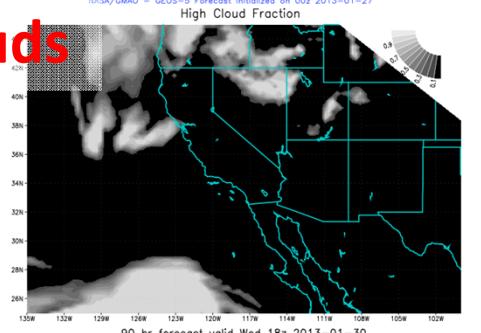
NASA/GMAO — GEOS-5 Forecast Initialized on 00z 2013-01-27
Low Cloud Fraction



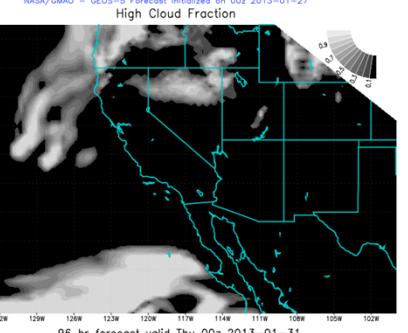
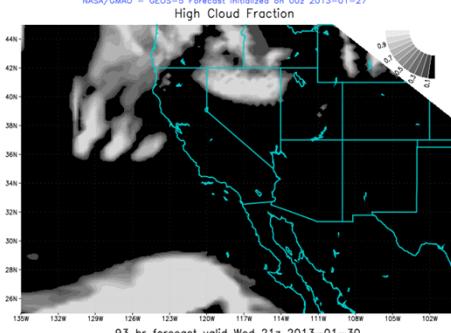
GEOS-5 High Clouds



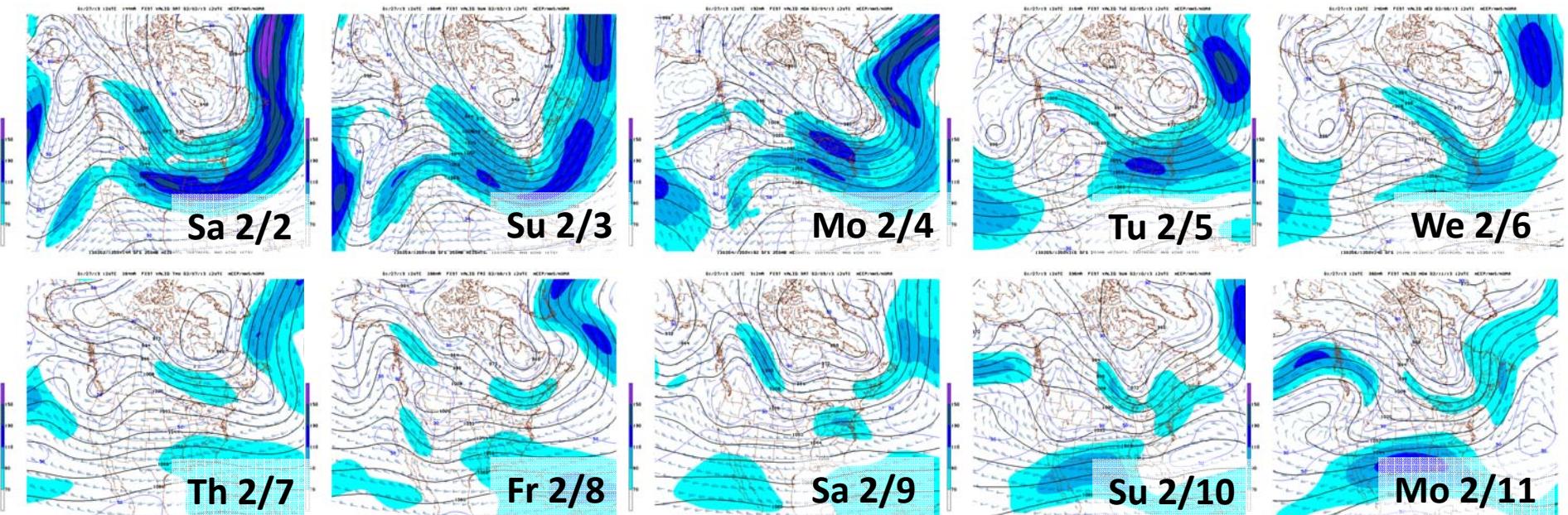
NASA/GMAO — GEOS-5 Forecast Initialized on 00z 2013-01-27
High Cloud Fraction



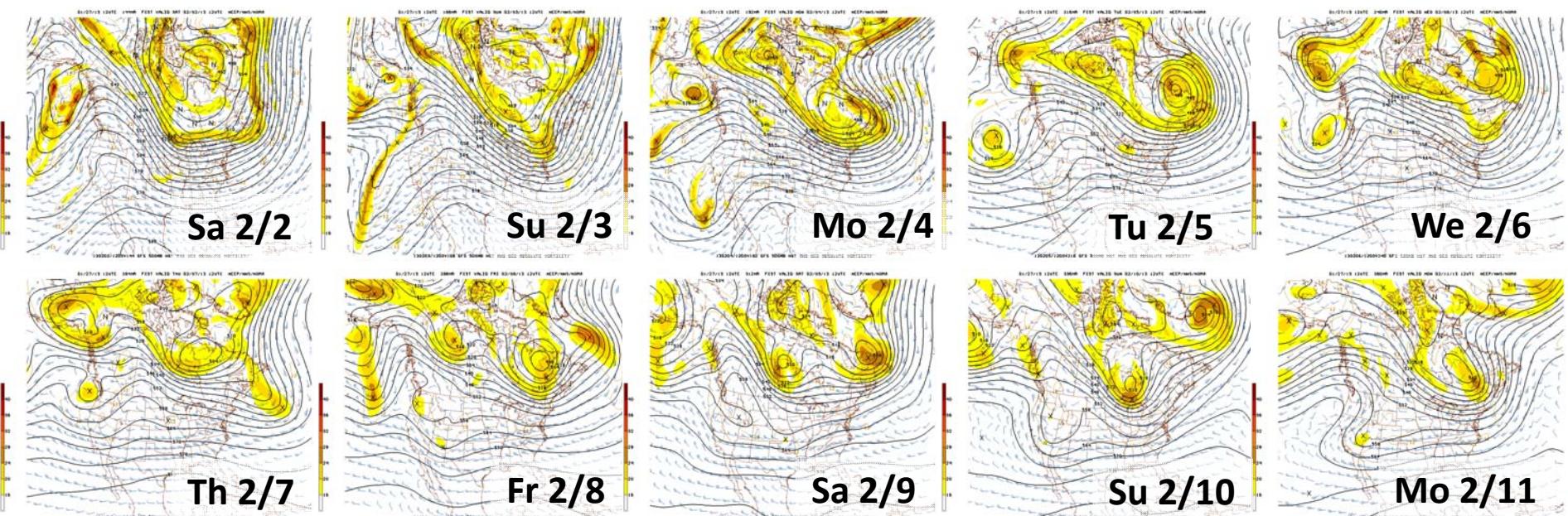
NASA/GMAO — GEOS-5 Forecast Initialized on 00z 2013-01-27
High Cloud Fraction



GFS - 250 mb winds - Extended forecast

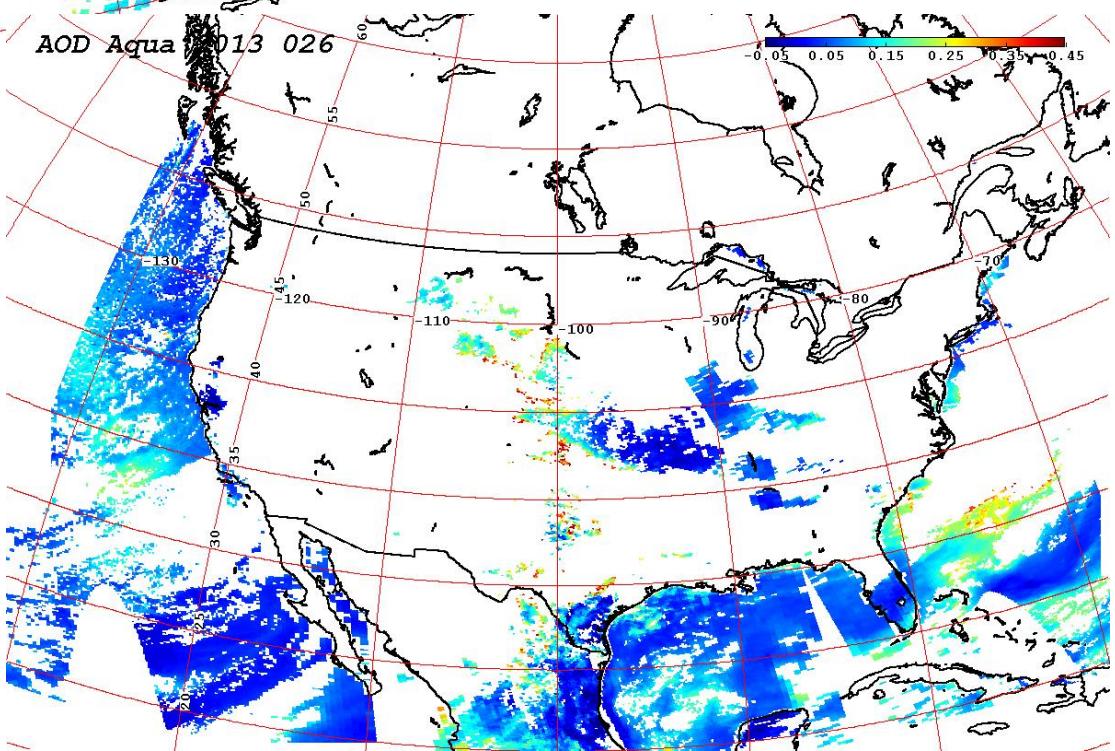
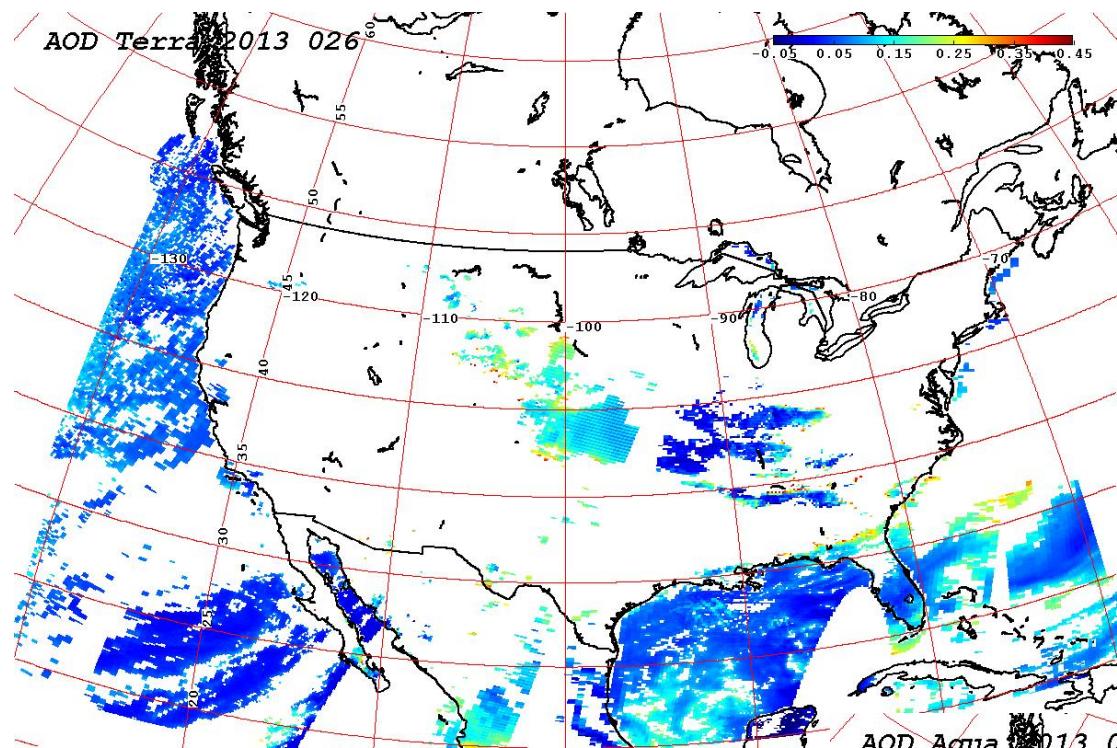


GFS - 500 mb vorticity - Extended forecast

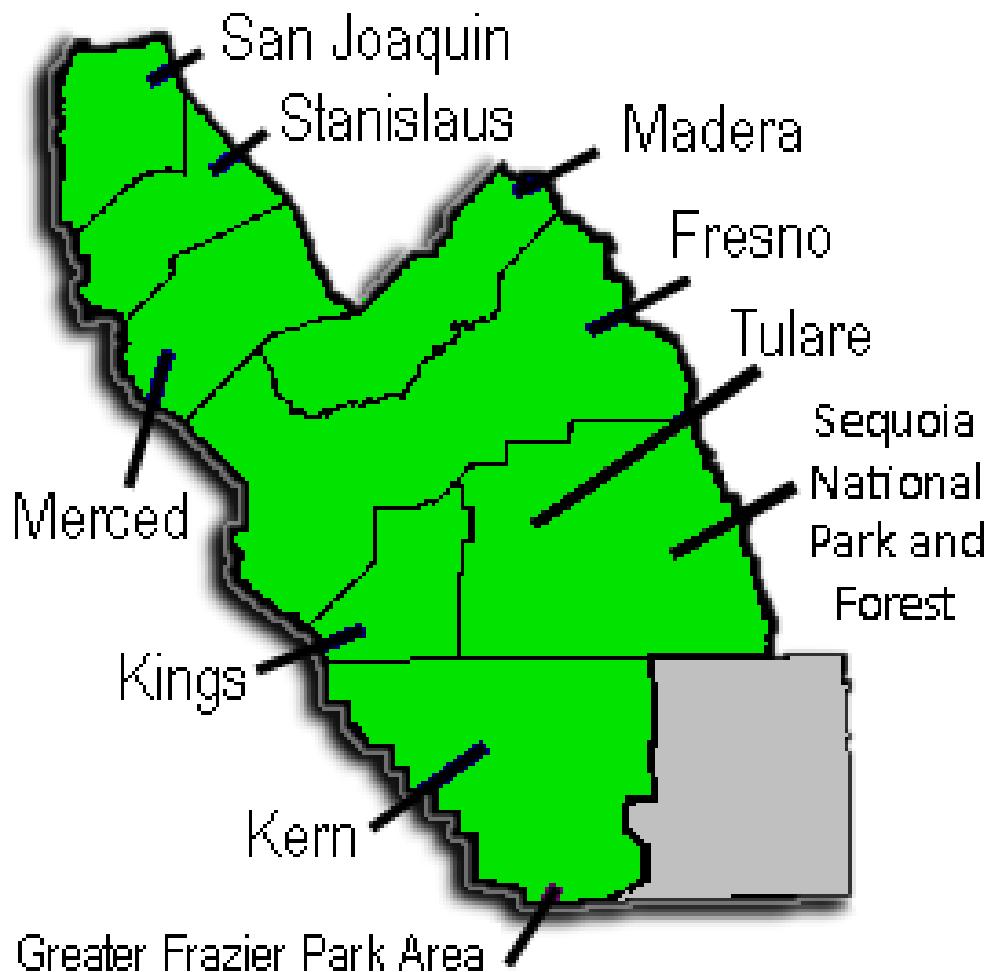


AREA FORECAST DISCUSSION NATIONAL WEATHER SERVICE SAN JOAQUIN VALLEY - HANFORD CA 305 AM PST SUN JAN 27 2013

.SYNOPSIS... LOW CLOUDS WILL LINGER THROUGHOUT MUCH OF THE SAN JOAQUIN VALLEY AND THE FOOTHILL REGIONS OF THE SIERRA AND THE KERN COUNTY MOUNTAINS TODAY. A WEAK STORM SYSTEM WILL BRING A CHANCE OF LIGHT PRECIPITATION TO MAINLY THE HIGHER TERRAIN TODAY. A DRIER AND COLDER AIRMASS WILL MOVE IN BEHIND THIS STORM SYSTEM TONIGHT AND MONDAY. && .DISCUSSION... AT 10Z /0200 PST/ THIS MORNING...THE SURFACE COLD FRONT WAS MOVING THROUGH THE SOUTHERN SAN JOAQUIN VALLEY. SHOWERS HAVE DEVELOPED ALONG AND BEHIND THE FRONT...AND WINDS HAVE GUSTED TO AROUND 25-30 MPH WITH FRONTAL PASSAGE. ONE CONCERN IS THAT THE WINDS WILL FUNNEL THROUGH THE PASSES OF THE KERN COUNTY MOUNTAINS TODAY...WITH GUSTS TO 45+ MPH BOTH THROUGH THE PASSES AND IN THE DESERT AREAS BELOW THE PASSES. HAVE ISSUED A WIND ADVISORY FOR THE KERN COUNTY MOUNTAIN PASSES AND DESERT AREAS BELOW THE PASSES FROM 12Z /0400 PST/ THIS MORNING THROUGH 06Z MONDAY /2200 PST THIS EVENING/. SATELLITE AND RADAR LOOPS INDICATE THAT THE LEADING EDGE OF THE UPPER-LEVEL TROUGH WAS LOCATED OVER THE SACRAMENTO DELTA WITH THE OVERRUNNING HIGH CLOUD BAND OVER THE HANFORD WARNING/FORECAST AREA. STILL EXPECT A SLIGHT CHANCE OF SHOWERS TODAY IN THE COLD AIRMASS BEHIND THE FRONT...WITH BETTER CHANCES OVER THE MOUNTAINS AND ALSO THE SOUTH END OF THE SAN JOAQUIN VALLEY WHERE LOW CLOUDS POOL. THE LATEST MODELS FORECAST THE UPPER-LEVEL TROUGH TO MOVE A BIT MOST SLOWLY THAN PREVIOUS RUNS...WITH THE TROUGH AXIS OVER THE CENTRAL CALIFORNIA INTERIOR AROUND 00Z MONDAY /1600 PST TODAY/. THE TROUGH IS FORECAST TO MOVE EAST OF THE REGION BY 12Z /0400 PST/ MONDAY. THE UPPER-LEVEL TROUGH WILL BE THE LAST IN A SERIES OF WEATHER SYSTEMS AFFECTING THE CENTRAL CALIFORNIA INTERIOR. BEHIND THE FRONT...A POOL OF COLD AIR WAS MOVING INTO THE HANFORD WARNING/ FORECAST AREA. AT 10Z...THE TEMPERATURE AT THE MERCED REGIONAL AIRPORT WAS DOWN 15 DEGREES FROM 10Z SATURDAY...AND THE DEWPOINT WAS DOWN 17 DEGREES. WITH THE COLD AIRMASS POOLED OVER THE CENTRAL AND SOUTHERN SAN JOAQUIN VALLEY...THERE COULD BE PATCHY FROST IN THE COLDEST VALLEY LOCATIONS TONIGHT IF THERE IS ANY CLEARING TO ALLOW FOR RADIATIONAL COOLING. THERE WILL BE A BETTER CHANCE FOR FROST MONDAY NIGHT. WITH MORE GROUND MOISTURE FROM THE RAIN...THE STAGE WILL BE SET FOR LATE NIGHT AND MORNING FOG ONCE THE SKIES CLEAR AND AN UPPER-LEVEL RIDGE BUILDS INTO THE STATE FROM THE PACIFIC OCEAN TUESDAY. AN UPPER-LEVEL SHORT-WAVE MOVING THROUGH THE PACIFIC NORTHWEST IS FORECAST TO FLATTEN THE RIDGE THURSDAY...BUT THE RIDGE WILL REBOUND AND REMAIN OVER THE REGION THROUGH FRIDAY. THE GFS BRINGS A STRONGER UPPER-LEVEL EAST-PACIFIC TROUGH TOWARD THE COAST NEXT SATURDAY... PUSHING THE RIDGE EAST OF CALIFORNIA...BUT THE ECMWF KEEPS THE TROUGH FURTHER OFFSHORE AND DEVELOPS A SPLIT FLOW OVER CALIFORNIA. FOR NOW...GOING WITH PERSISTENCE FOR THE FORECAST FOR DAY 7.



SJV APCD Daily Forecast – for TODAY (Jan 27)

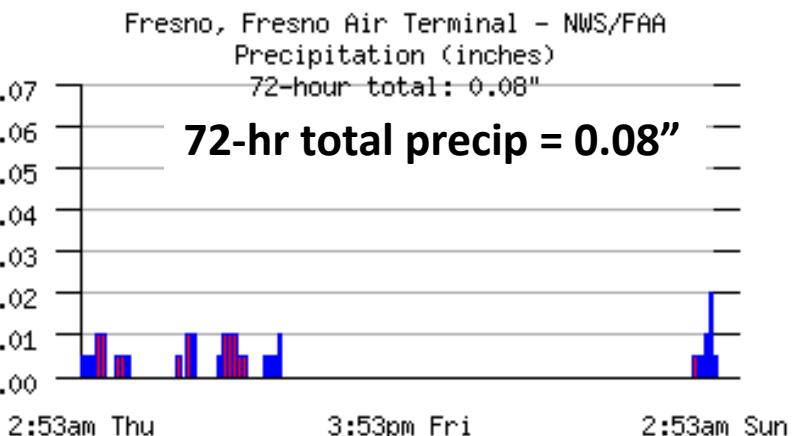
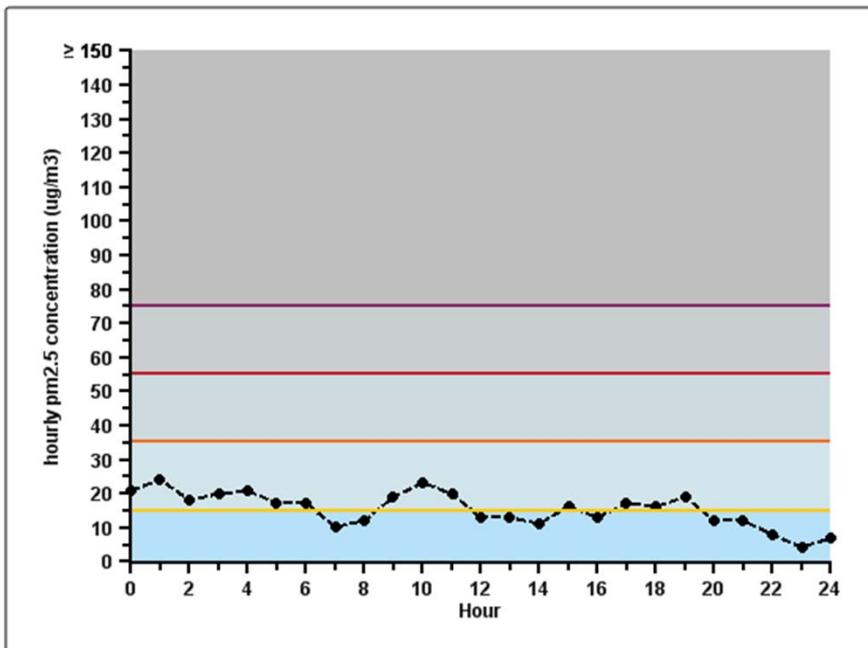


ROAR LEVEL	Ozone (O ₃)	Particulate Matter (PM 2.5)
LEVEL 1 Good	1-59 ppb	1-15 µg/m ³
LEVEL 2 Moderate	60-75 ppb	16-35 µg/m ³
LEVEL 3 Unhealthy for Sensitive Groups	76-95 ppb	36-55 µg/m ³
LEVEL 4 Unhealthy	96-115 ppb	56-75 µg/m ³
LEVEL 5 Very Unhealthy	>115 ppb	>75 µg/m ³

Fresno-Garland

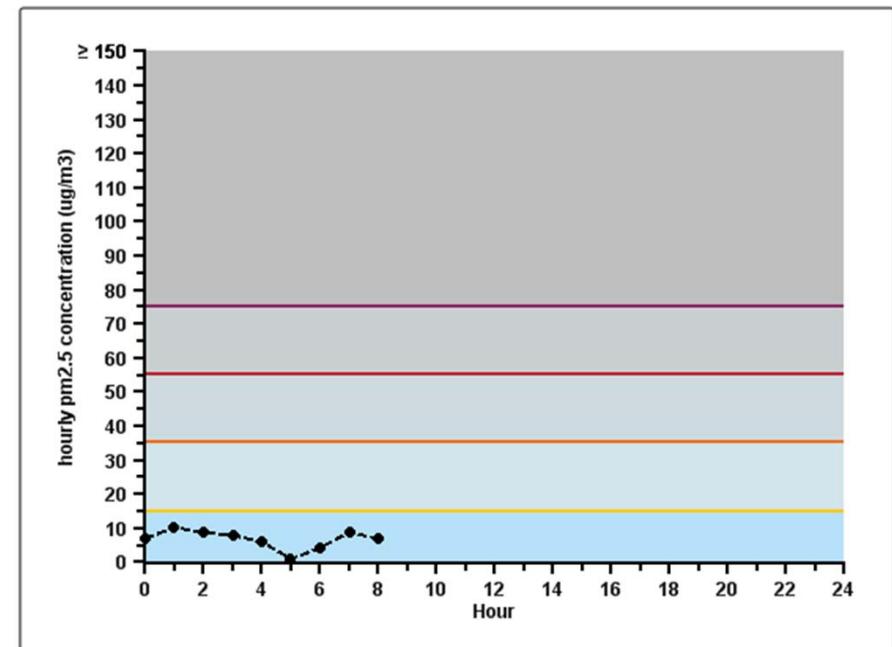
January 26th Yesterday

Air District Real-Time Outdoor Activity Risk



January 27th Today

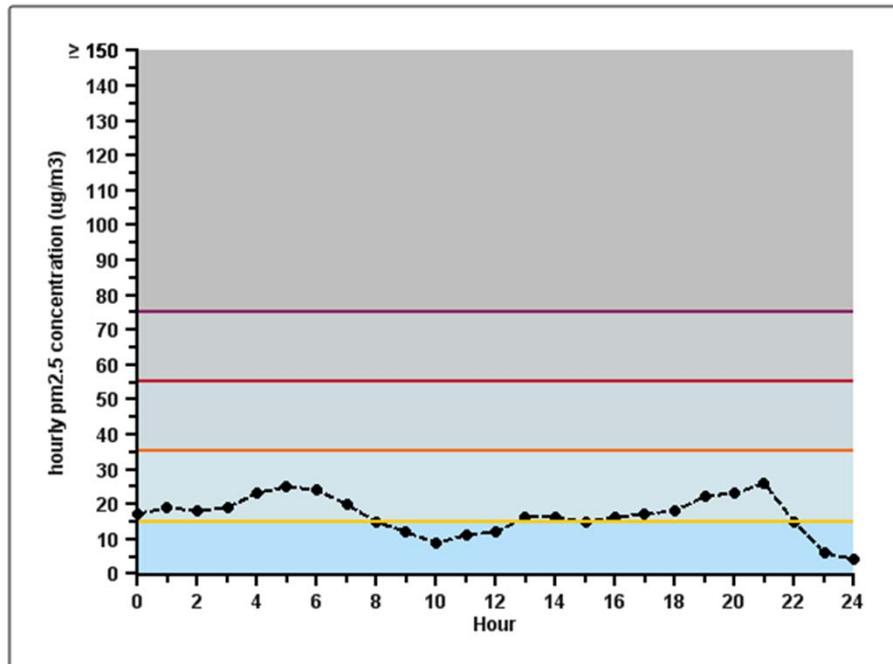
Air District Real-Time Outdoor Activity Risk



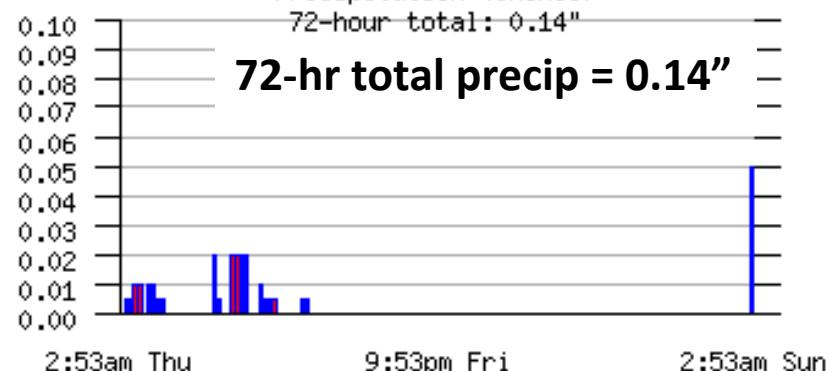
Corcoran

January 26th Yesterday

Air District Real-Time Outdoor Activity Risk

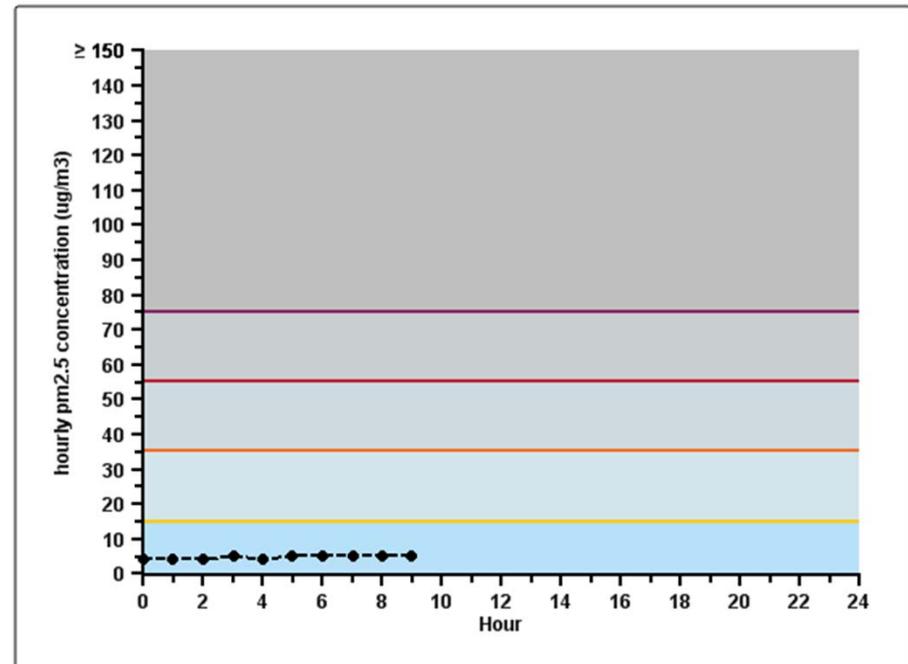


Hanford, Hanford Municipal Airport - NWS/FAA
Precipitation (inches)



January 27th Today

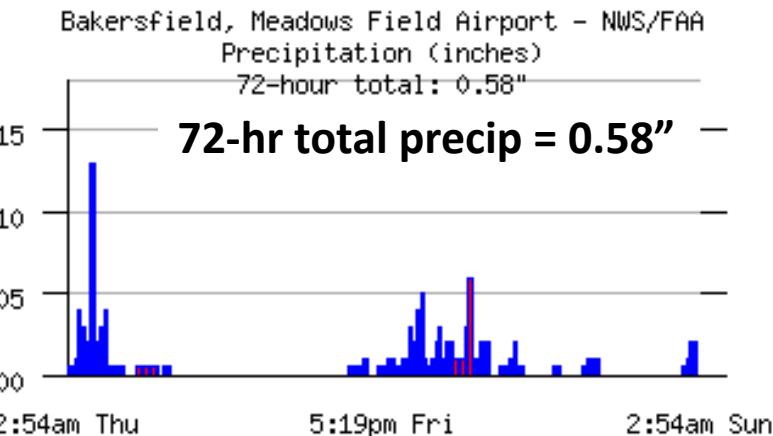
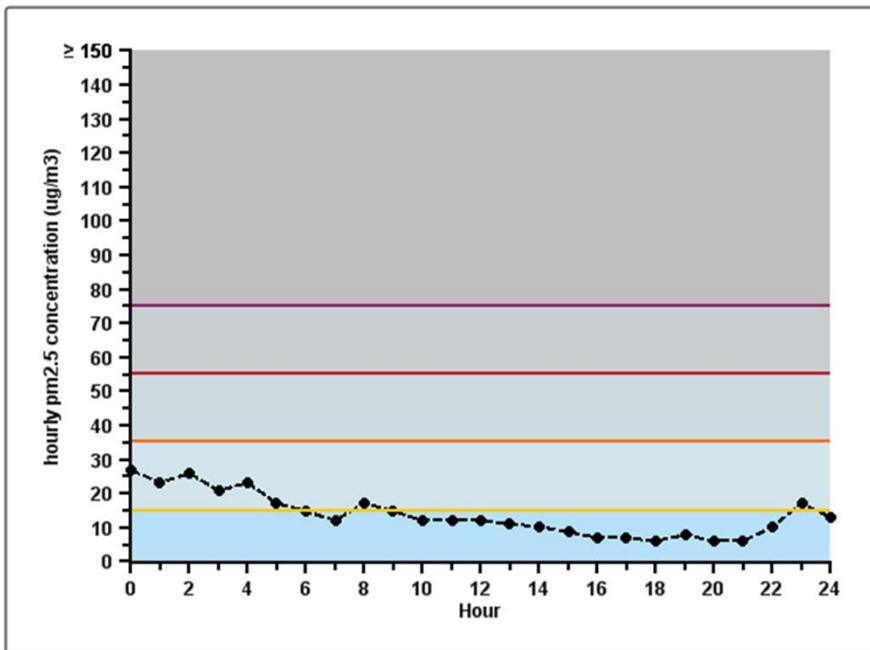
Air District Real-Time Outdoor Activity Risk



Bakersfield Municipal Airport

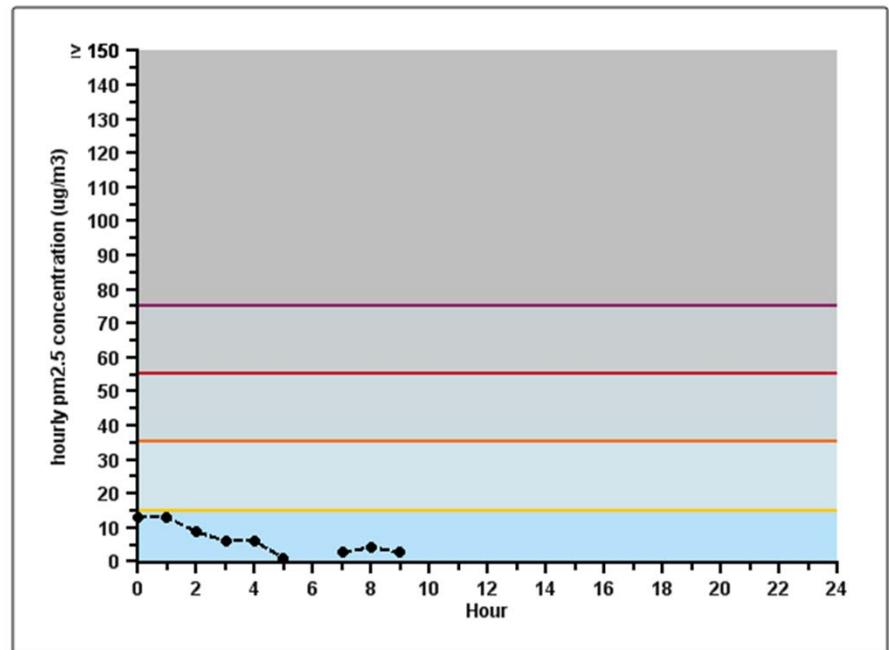
January 26th Yesterday

Air District Real-Time Outdoor Activity Risk

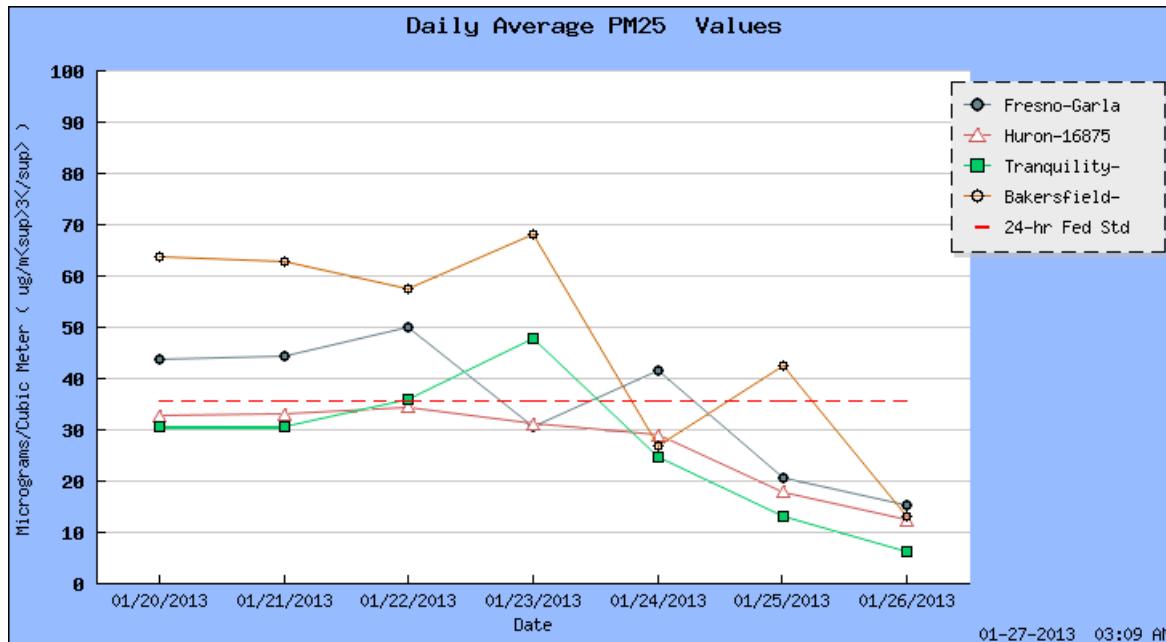


January 27th Today

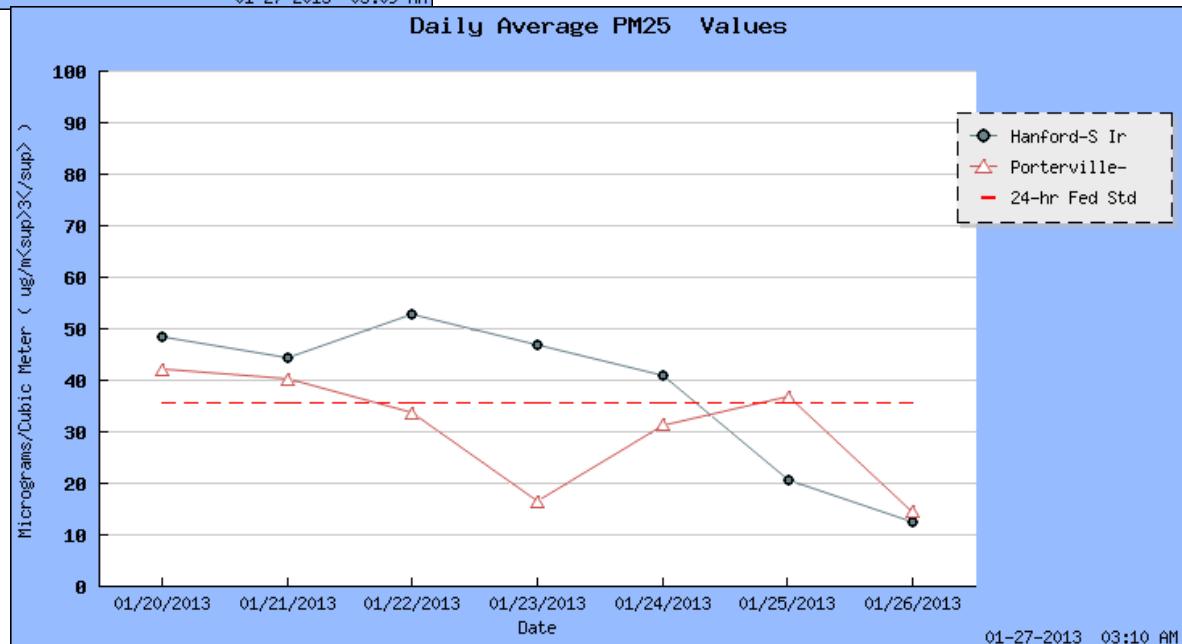
Air District Real-Time Outdoor Activity Risk



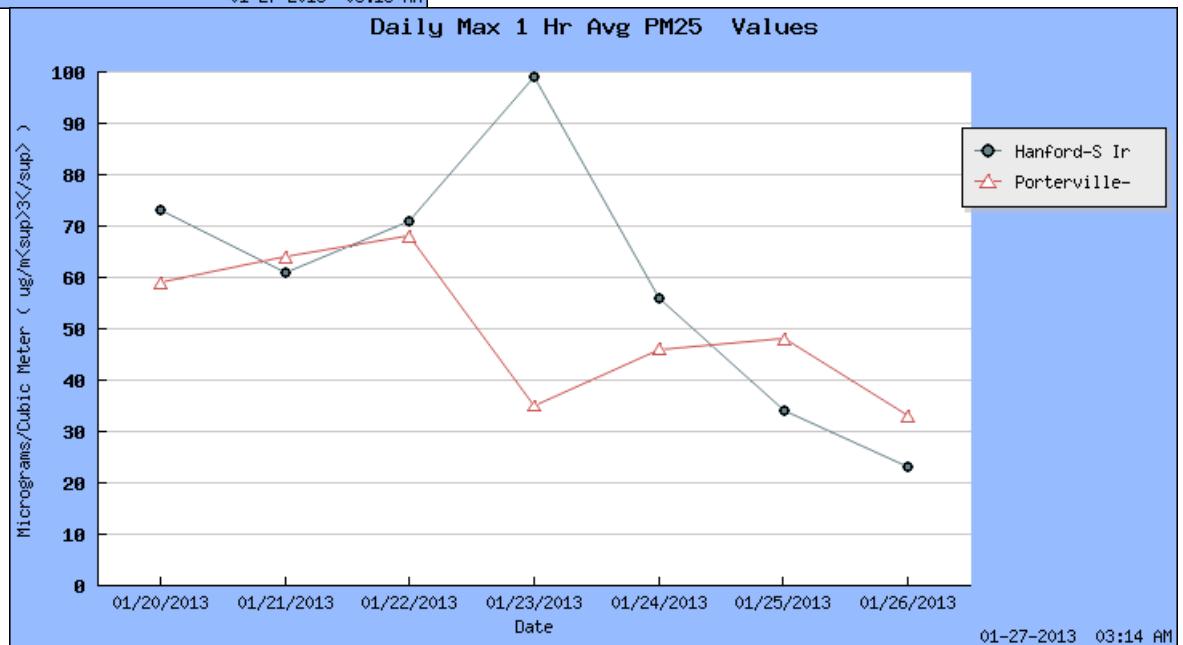
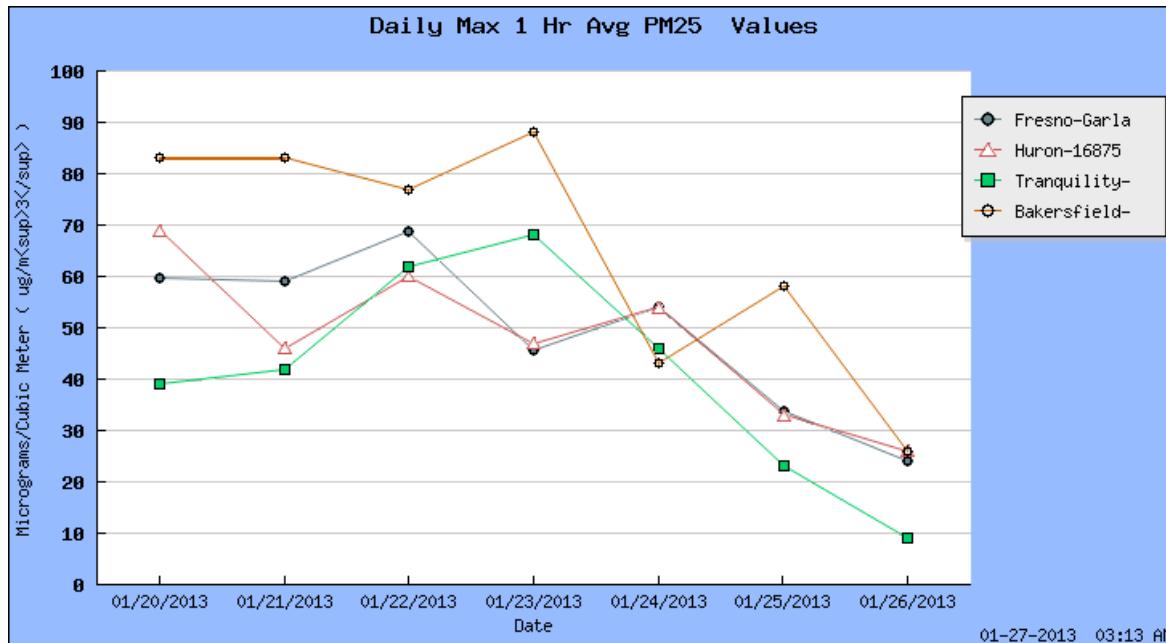
Daily PM2.5 Avg: CARB Sites



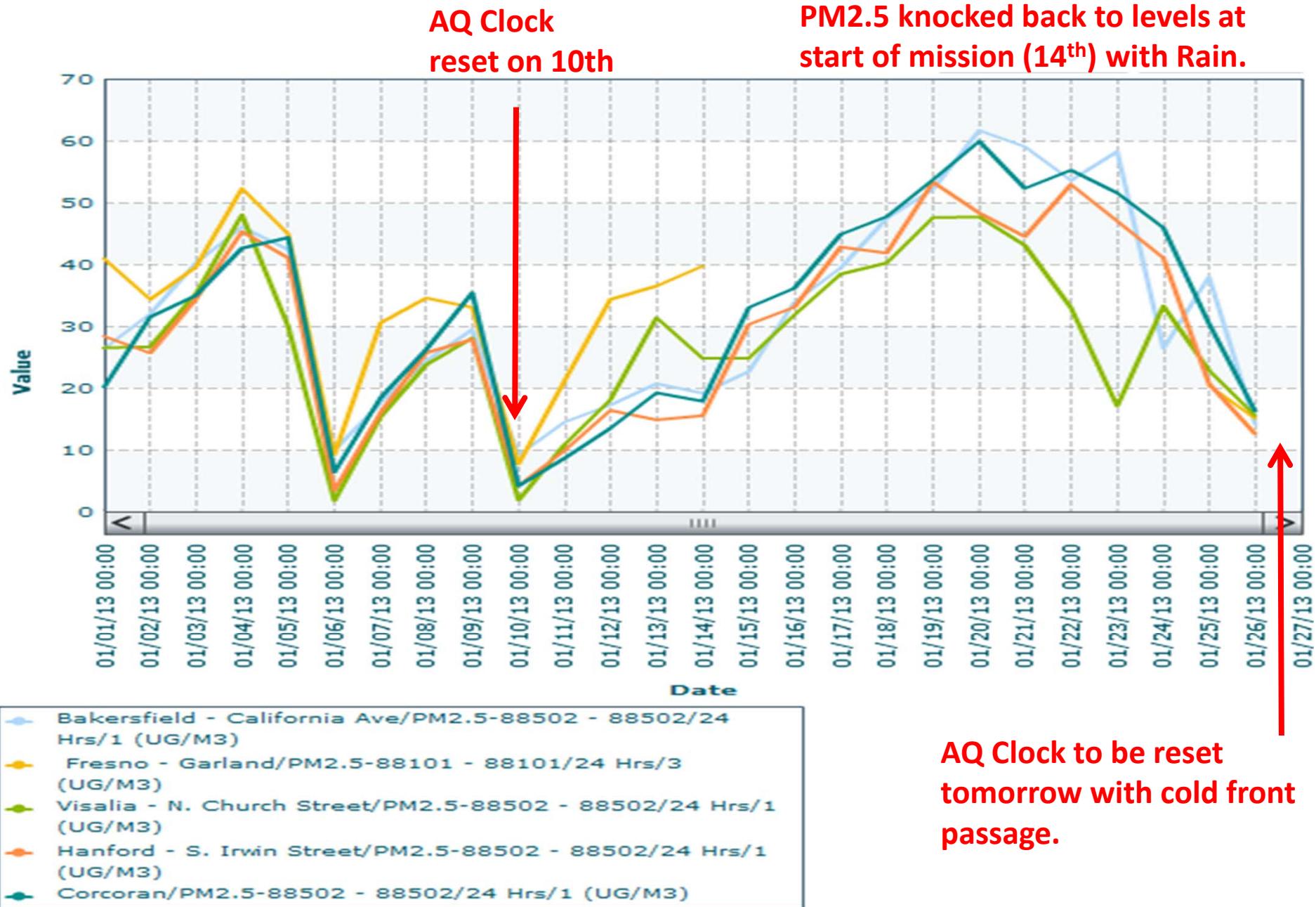
Last few days of light rain has slowly cleaned out PM2.5 in SJV, effectively “resetting AQ clock”.



Daily PM2.5 Max 1 Hr Avg: CARB Sites

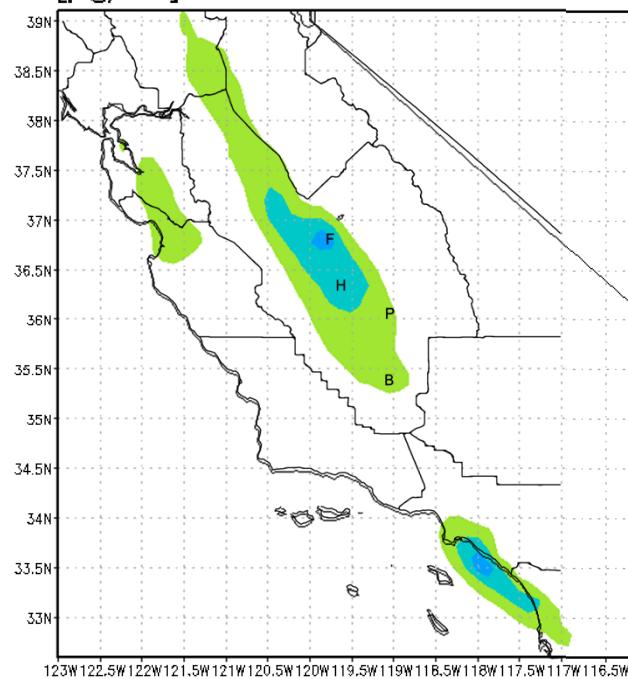


AirNowTech Data: Daily PM_{2.5} since January 1st

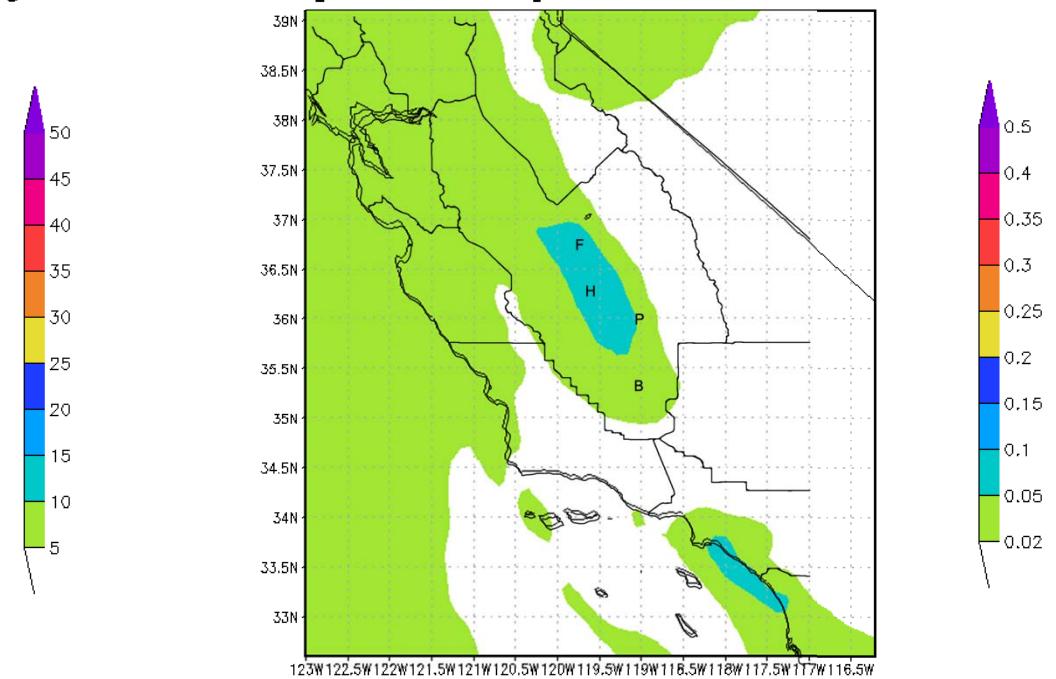


NOAA CMAQ: Monday 10 am = 18 Z

PM25 [$\mu\text{g}/\text{m}^3$] at surface Valid 18 JAN 28 2013

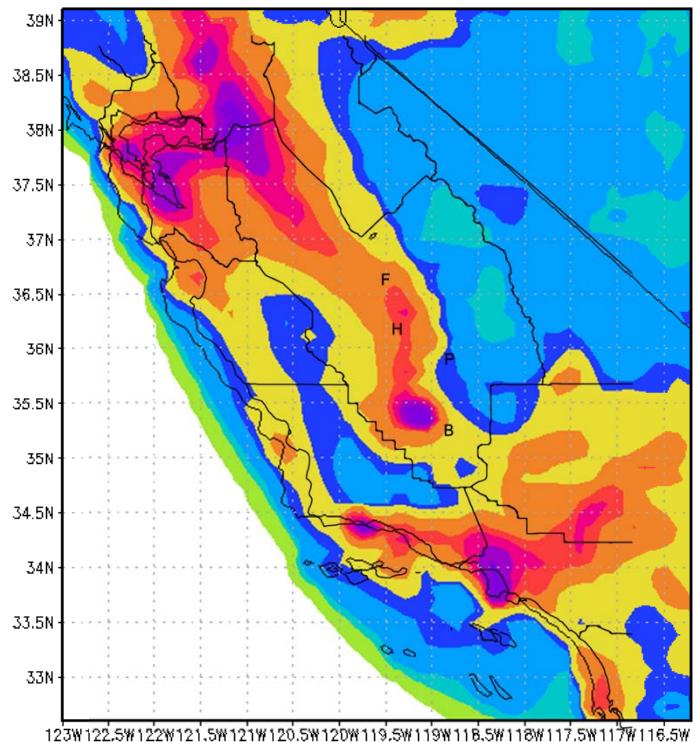


Column AOD [Dimensionless] at surface Valid 18 JAN 28 2013

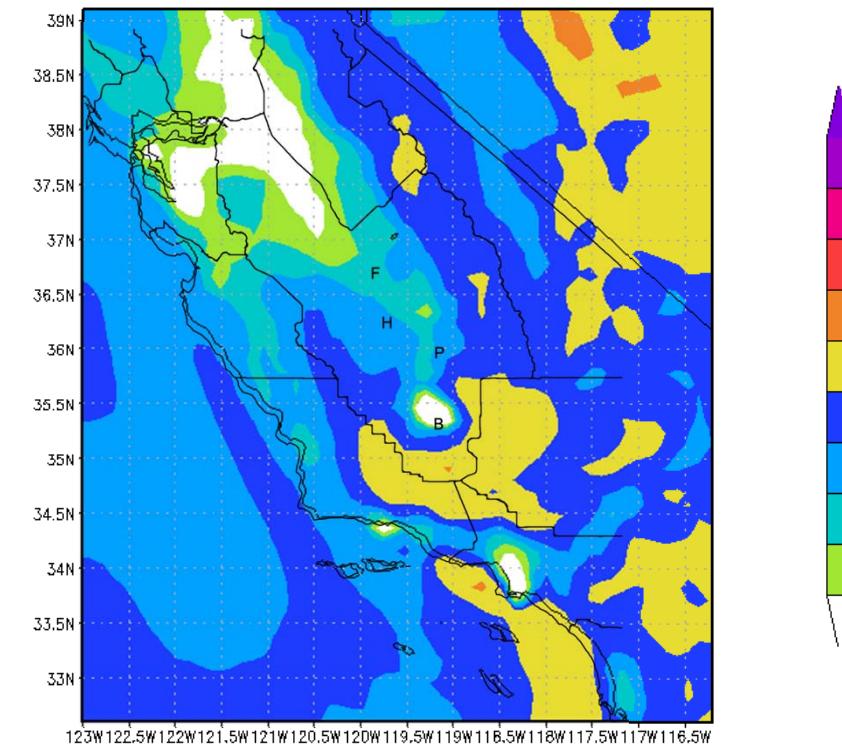


NOAA CMAQ: Monday 10 am = 18 Z

NO₂ [ppb] at 1013 [hPa] Valid 18 JAN 28 2013

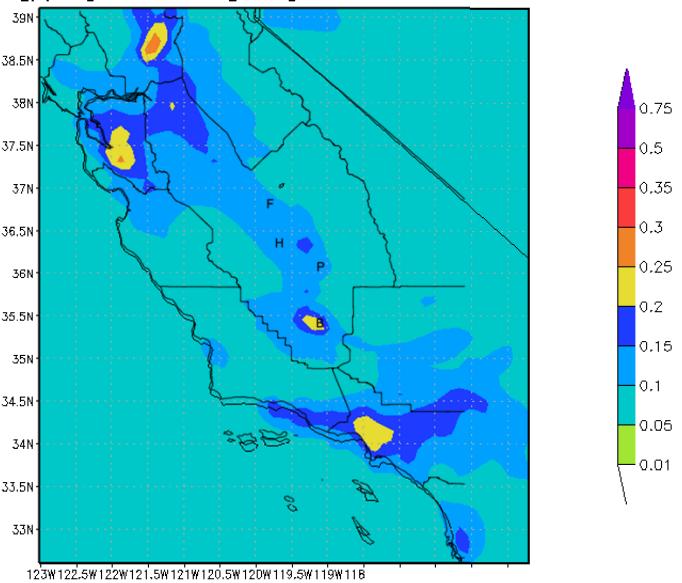


O₃ [ppb] at 1013 [hPa] Valid 18 JAN 28 2013

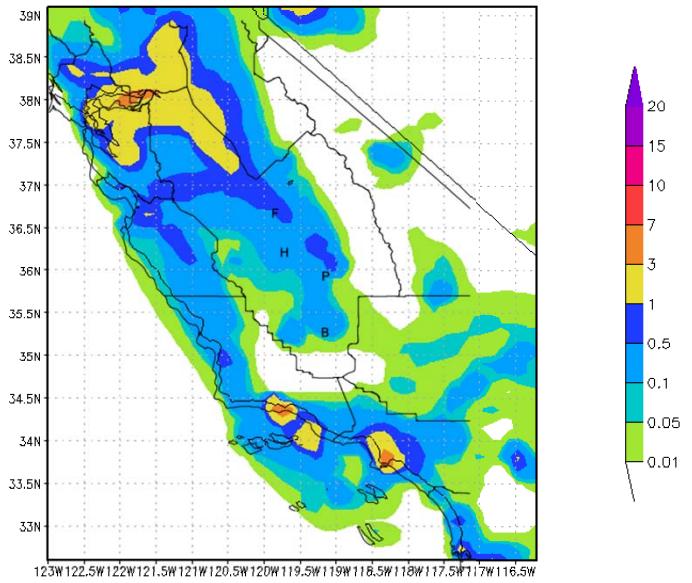


NOAA CMAQ: Monday 10 am = 18 Z

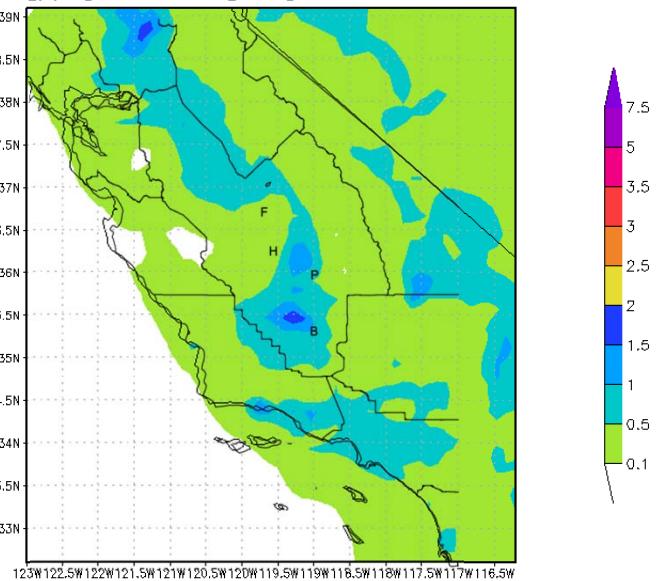
CO [ppm] at 1013 [hPa] Valid 18 JAN 28 2013



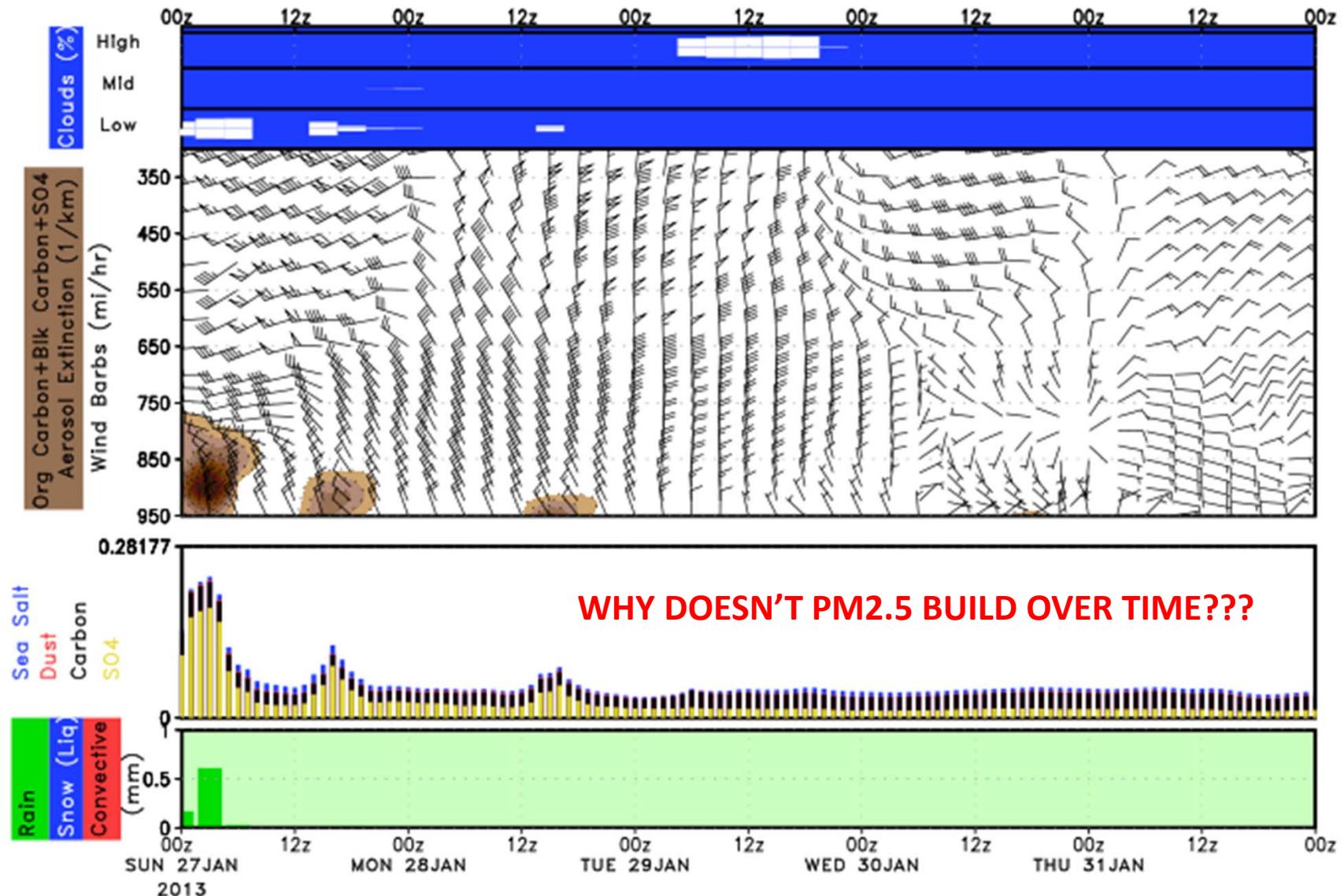
SO2 [ppb] at 1013 [hPa] Valid 18 JAN 28 2013



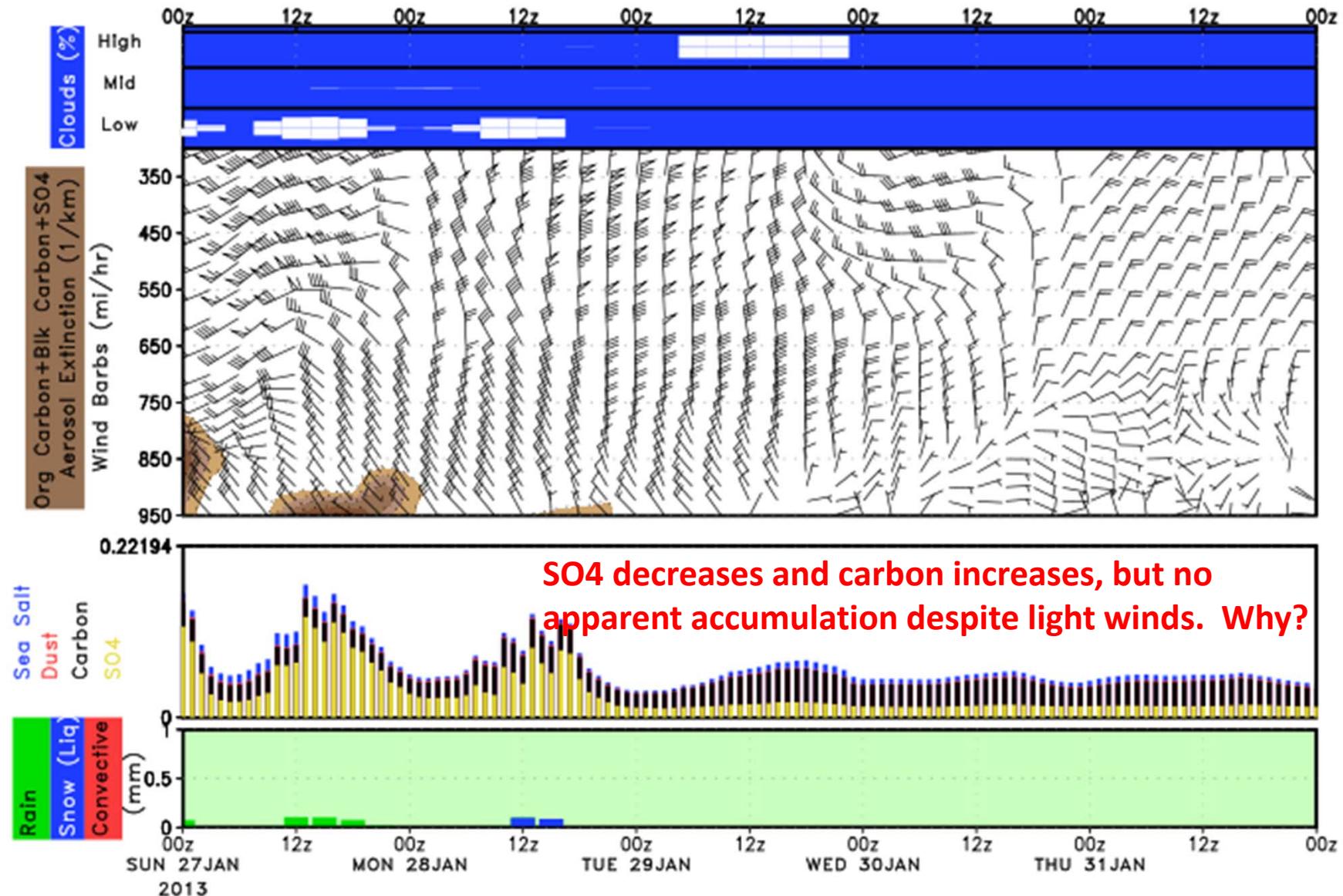
FORM [ppb] at 1013 [hPa] Vali



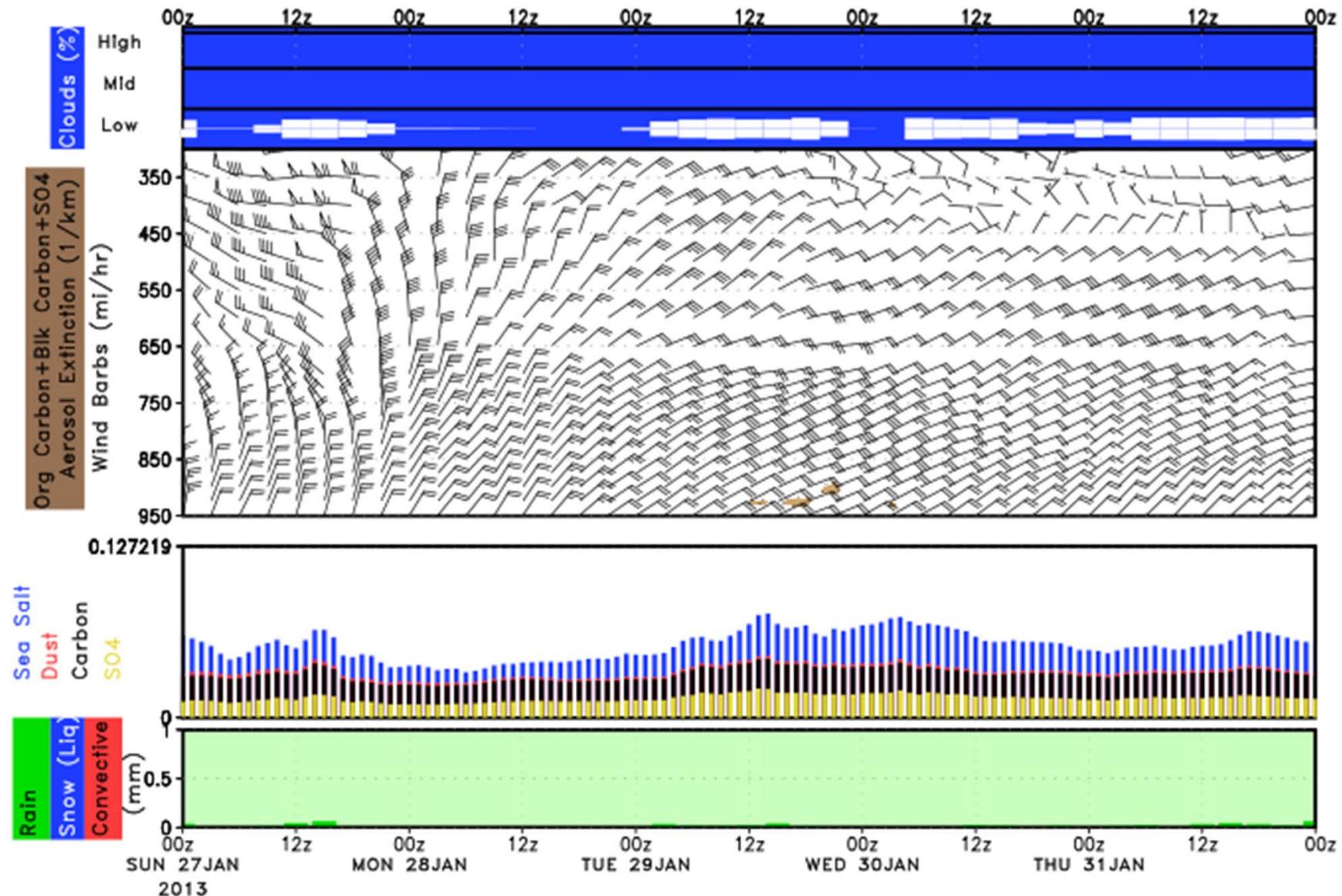
GMAO GEOS5: Bakersfield



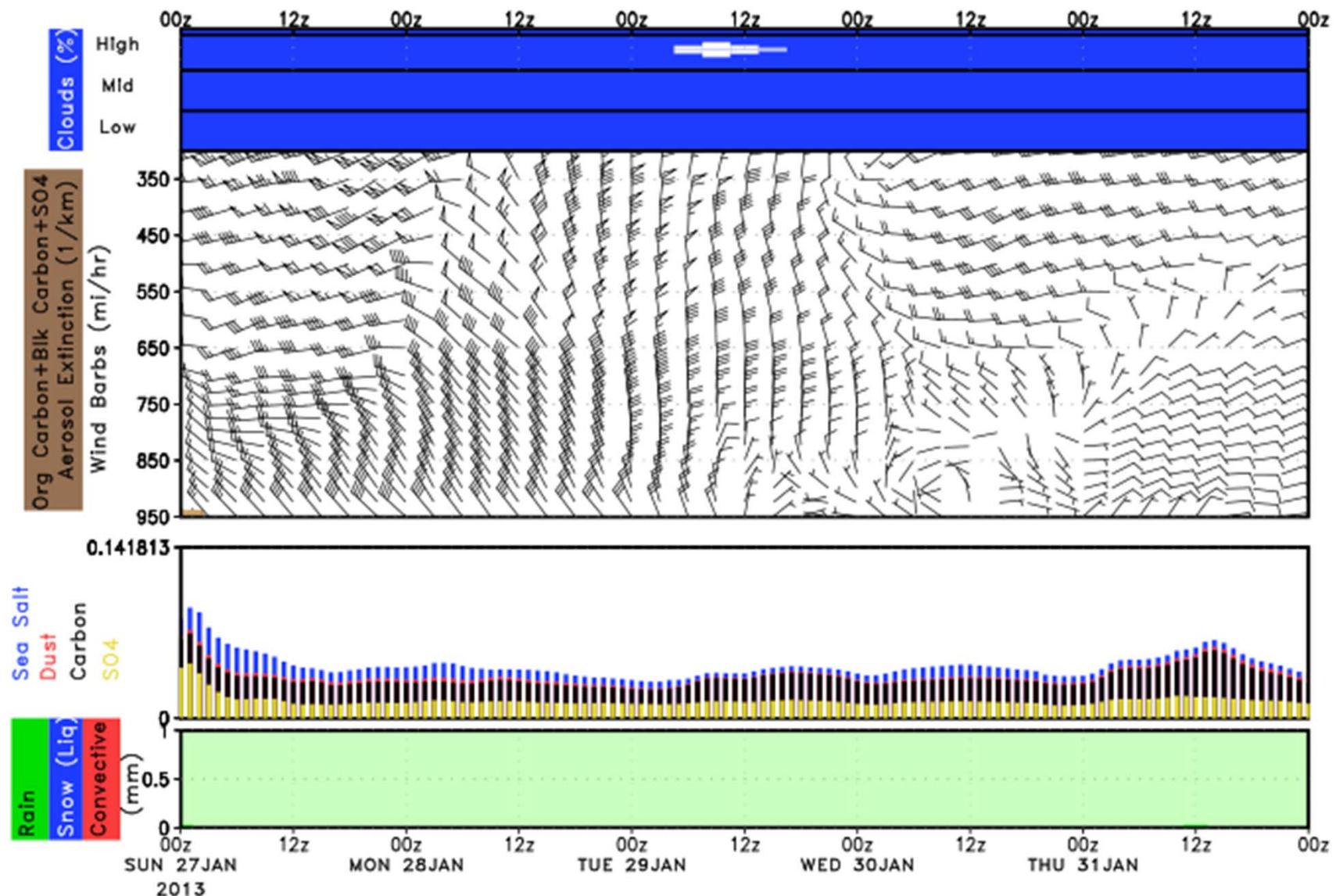
GMAO GEOS5: Fresno

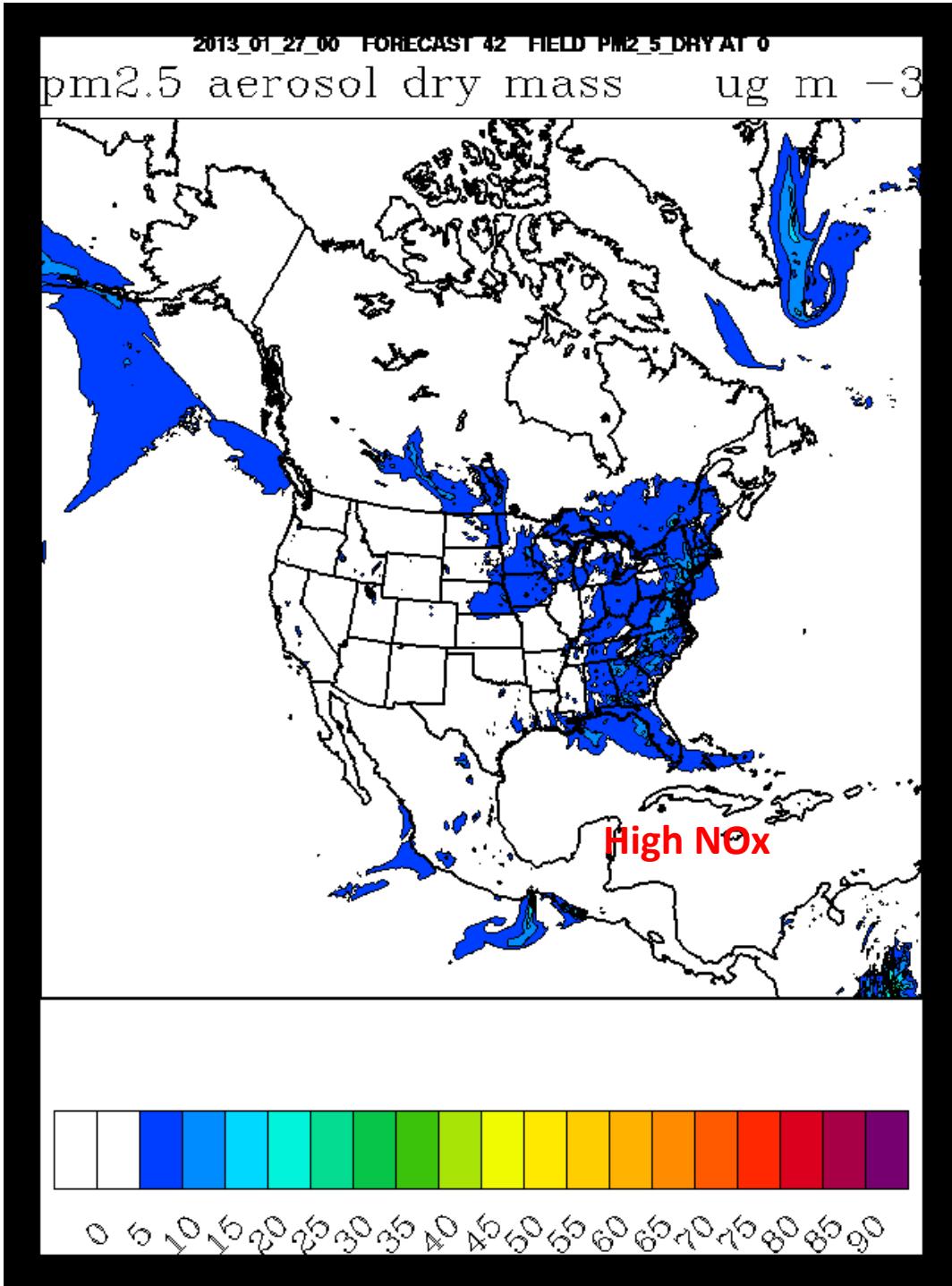


GMAO GEOS5: Ocean 30 N 130 W



GMAO GEOS5: San Nicolas Is.





Monday 10 am = 18 Z



Recommendations

Monday – PODEX – cirrus approaches PODEX area, NWS predicts leading edge of cirrus to be over 32.8N by 10 am. No clouds expected at lower levels.

SJV – Chance of clouds lingering in the morning and patchy fog, but clearing as dry air moves in. NWS cautious about cumulus forming especially in south (e.g. Bakersfield) and east along foothills.

Tuesday – PODEX - No cirrus predicted between 4 am and the afternoon, but contrails could be a factor. Offshore gales keep lower levels clear, but lots of warming at 850 mb builds an inversion at the lower levels. This warming might lead to the formation of stratus vs stratocumulus.

SJV – Patchy morning fog possible, probably burning off by 10 am. The GFS is bringing in some cirrus on the back side of the trough, but the NAM clears out earlier. NWS forecaster expected thinning cirrus throughout the day as the ridge builds.

Wednesday & Thursday – Upper level ridge dominates weather over the valley, patchy morning fog likely.