DISCOVER-AQ OUTLOOK Friday February 1, 2013

AQ: The axis of the ridge is over California. PM2.5 levels in the SJV are generally low to moderate, except that Fresno has had an extended period of (hourly) 40-55 ug/m3 over the last several nights. Corcoran also reached an hourly average of >60 ug/m3 overnight. The SJV APCD forecaster says that the cause is a shallow inversion and wood smoke. *The SJV APCD forecaster said that they don't understand why Stockton's PM2.5 doubled since Wednesday, but not at the other sites in the region. They asked for any insight from the DISCOVER-AQ data.* The forecaster said that she expects PM2.5 levels to remain similar through the weekend : code yellow – code orange. There shouldn't be a "clean-out" event of the SJV until next Wednesday or Thursday. *The SJV APCD wants to know the depth of pollution measured in the spirals.*

Saturday

SJV – Cloud deck lower, more like ~20K ft. Cloud layer expected to be ~50% opacity. Cloud models agree, showing lower levels clouds for tomorrow than today. Fog expected to linger longer tomorrow morning given anticipated cloud cover increase.

PODEX (LA) – Cirrus expected over the region. Lower level clouds are expected to be as close or closer to the coast given weakening offshore flow.

Sunday

SJV – Cloud models show high levels clouds over the SJV. Hanford NWS forecaster predicted they would be scattered (~25-50% cloud cover) and higher in altitude (~25K ft), similar to today's conditions. Sunday's fog situation is forecast to be similar to today.

PODEX (LA) – Cirrus expected over the region. Lower level clouds are expected to be as close or closer to the coast than on Saturday given weakening offshore flow.

Monday – SJV – Drying is indicated at mid and upper levels. Cloud forecast is to be clearer than Sunday. Morning fog should be similar to today (patchy, shallow, burning off around 10 am)

Tuesday – SJV – similar to Monday. Clouds expected to return Tuesday night.

Wednesday until the end of the week – SJV – Clouds expected Wed in advance of approaching trough. Precipitation is forecast for Thursday and Friday.

DISCOVER-AQ / PODEX
Forecast Briefing

February 1, 2013

Melanie Follette-Cook
Bryan Duncan

Fresno

TODAY	TONIGHT	SATURDAY	SATURDAY NIGHT	SUNDAY	SUNDAY NIGHT	MONDAY	MONDAY NIGHT	TUESDAY
Dense Fog	Patchy Fog	Patchy Fog	Patchy Fog	Patchy Fog	Patchy Fog	Patchy Fog	Partly Cloudy	Mostly Sunny
High: 67 °F	Low: 44 °F	High: 67 °F	Low: 44 °F	High: 66 °F	Low: 43 °F	High: 67 °F	Low: 44 °F	High: 65 °F

Hanford

TODAY	TONIGHT	SATURDAY	SATURDAY NIGHT	SUNDAY	SUNDAY NIGHT	MONDAY	MONDAY NIGHT	TUESDAY
Areas Fog	Patchy Fog	Patchy Fog	Patchy Fog	Patchy Fog	Patchy Fog	Patchy Fog	Partly Cloudy	Mostly Sunny
High: 66 °F	Low: 41 °F	High: 66 °F	Low: 41 °F	High: 65 °F	Low: 39 °F	High: 67 °F	Low: 41 °F	High: 66 °F

Bakersfield

TODAY	TONIGHT	SATURDAY	SATURDAY NIGHT	SUNDAY	SUNDAY NIGHT	MONDAY	MONDAY NIGHT	TUESDAY
Sunny	Partly Cloudy	Mostly Sunny	Mostly Cloudy	Partly Sunny	Mostly Cloudy	Mostly Sunny	Partly Cloudy	Mostly Sunny
High: 64 °F	Low: 44 °F	High: 64 °F	Low: 46 °F	High: 63 °F	Low: 44 °F	High: 66 °F	Low: 46 °F	High: 64 °F

Palmdale

TODAY	TONIGHT	SATURDAY	SATURDAY NIGHT	SUNDAY	SUNDAY NIGHT	MONDAY	MONDAY NIGHT	TUESDAY
Sunny	Partly Cloudy	Mostly Sunny	Mostly Cloudy	Partly Sunny	Mostly Cloudy	Mostly Sunny	Partly Cloudy	Mostly Sunny
High: 70 °F	Low: 41 °F	High: 69 °F	Low: 43 °F	High: 68 °F	Low: 42 °F	High: 67 °F	Low: 41 °F	High: 65 °F

Current Conditions

FRESNO CA

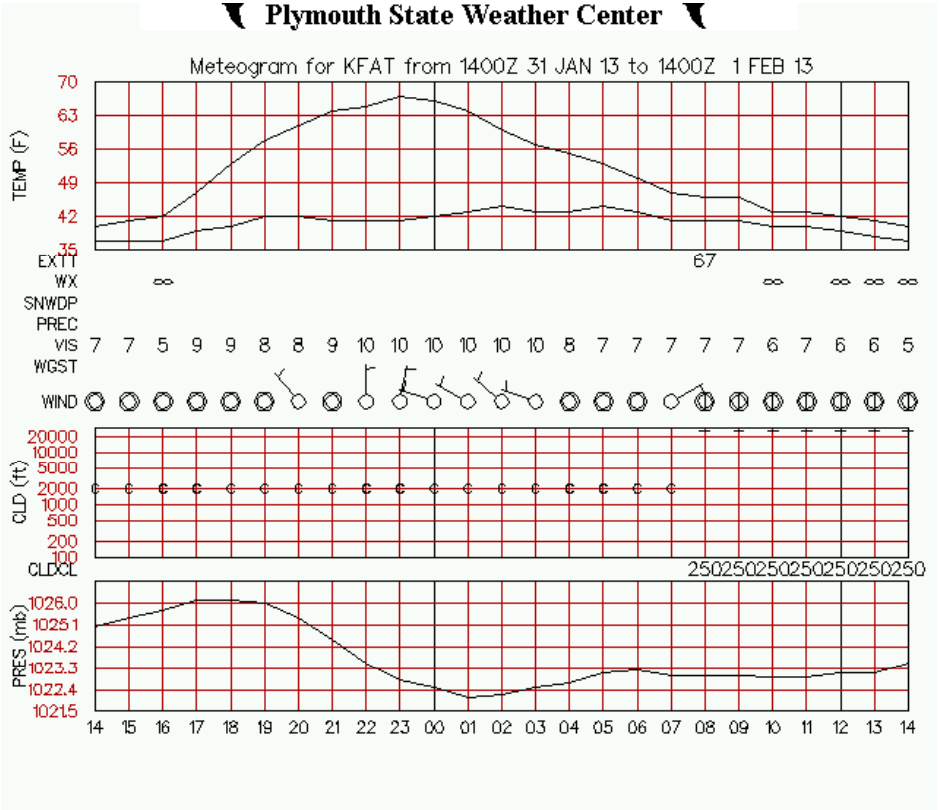
Fog

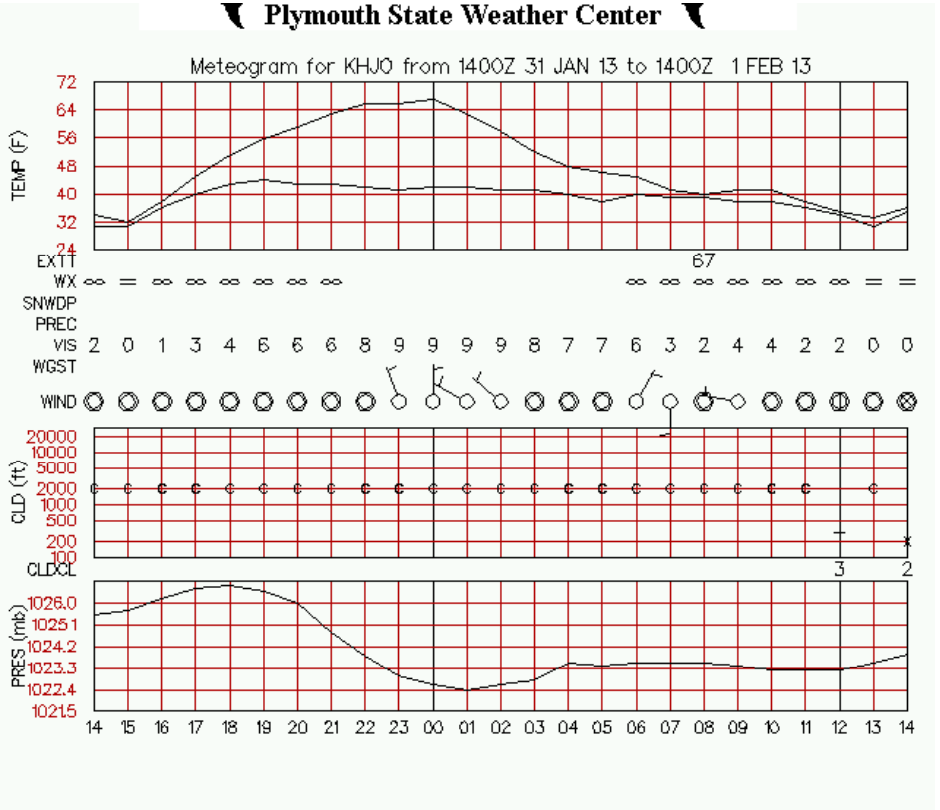
42°F

6°C

Humidity	89%
Wind Speed	calm
Barometer	30.23 in (1023.5 mb)
Dewpoint	39°F (4°C)
Visibility	5.00 mi

Last Update on 01 Feb 7:53 am PST





Current Conditions

BAKERSFIELD CA

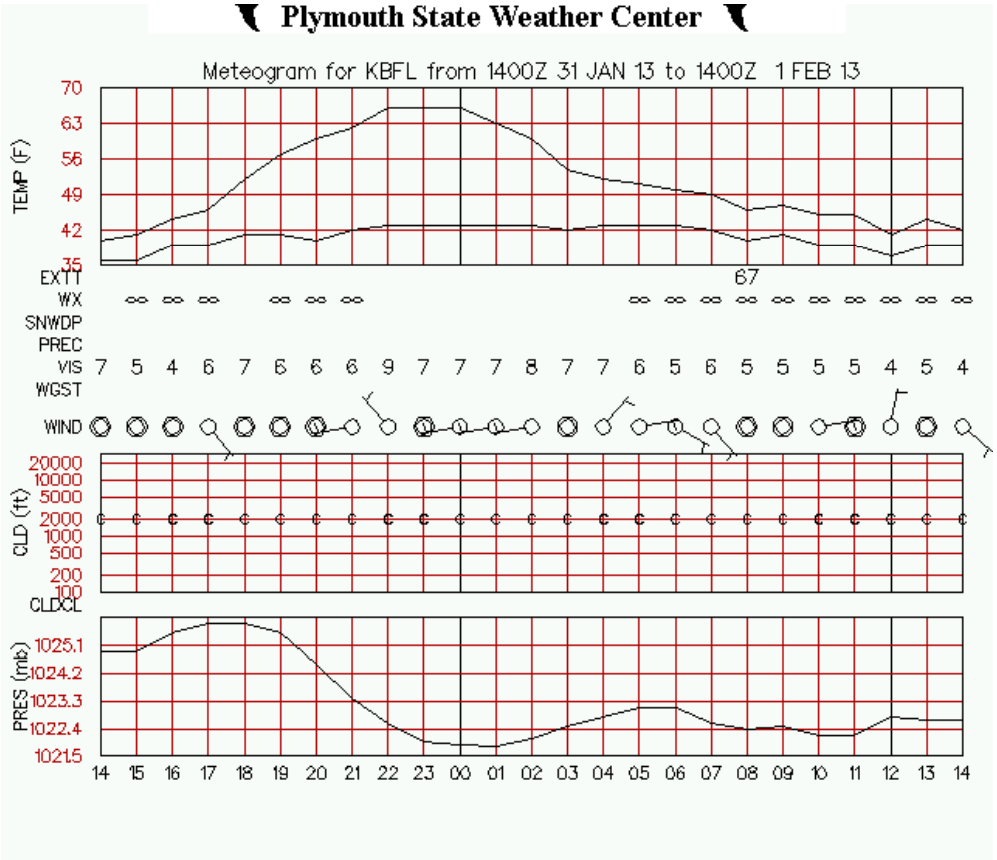
Fog

44°F

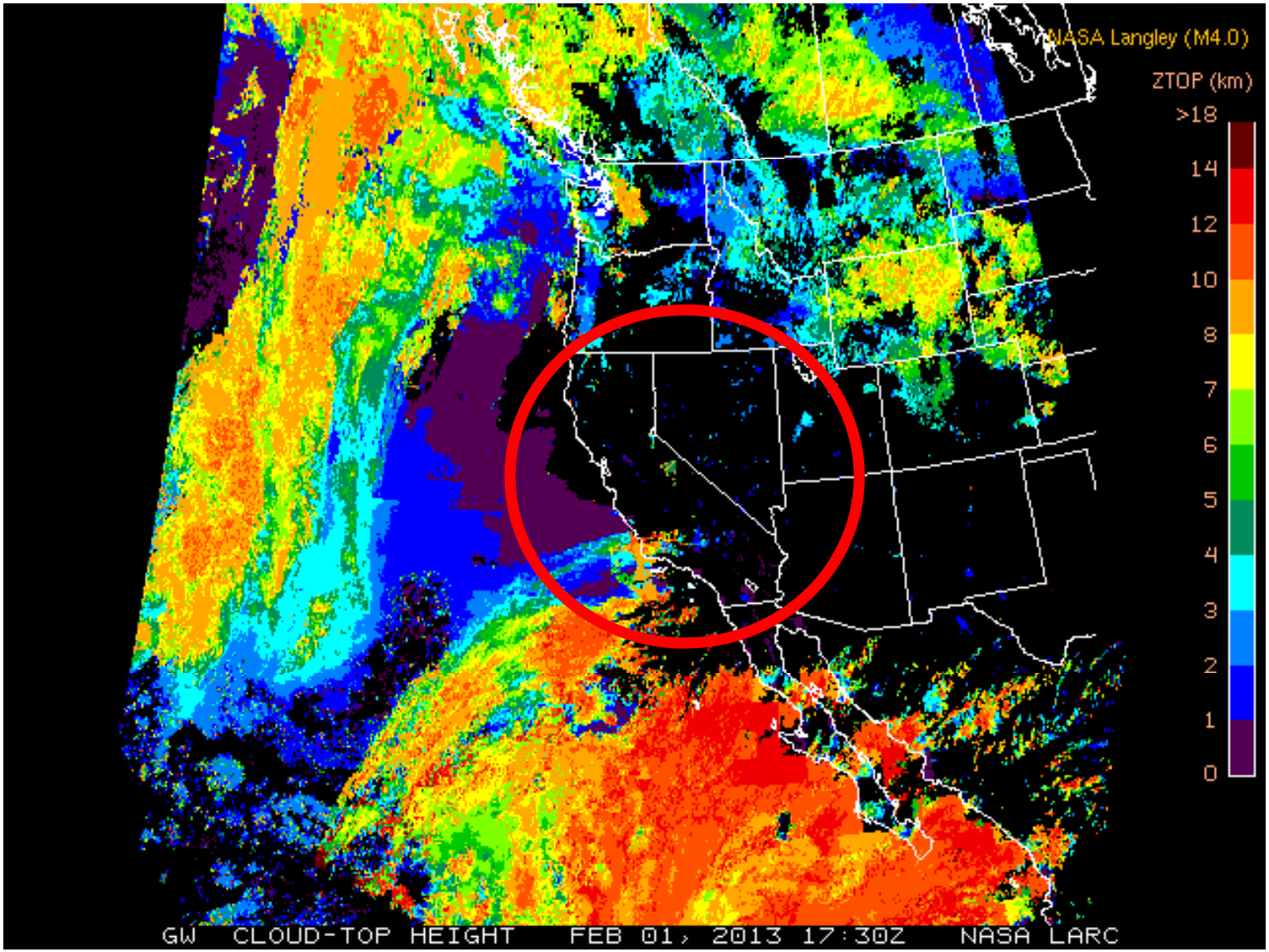
7°C

Humidity	85%
Wind Speed	calm
Barometer	30.22 in (1023.4 mb)
Dewpoint	40°F (4°C)
Visibility	4.00 mi

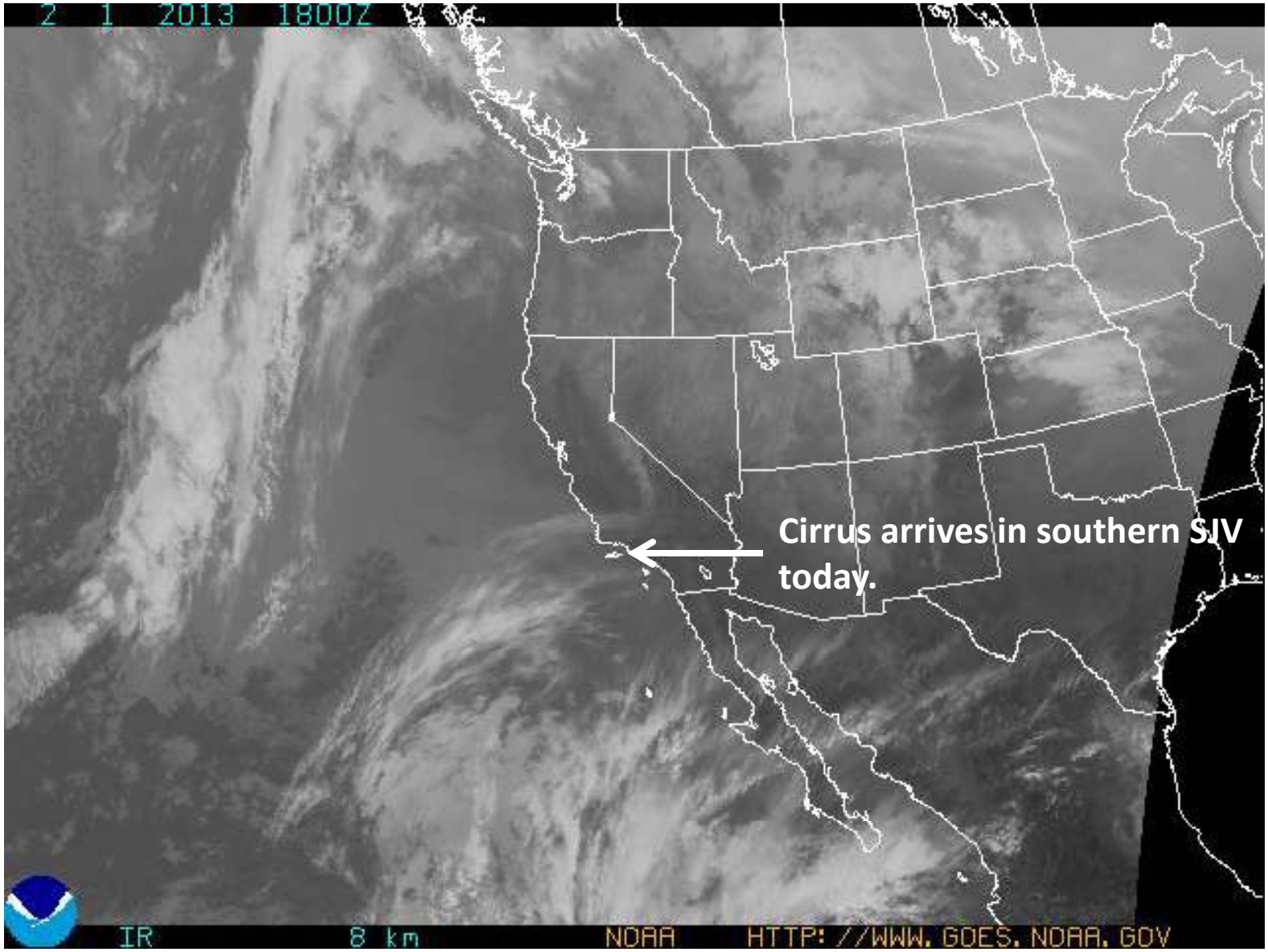
Last Update on 01 Feb 7:54 am PST



GOES: Cloud Top Height at 1600 UTC Today

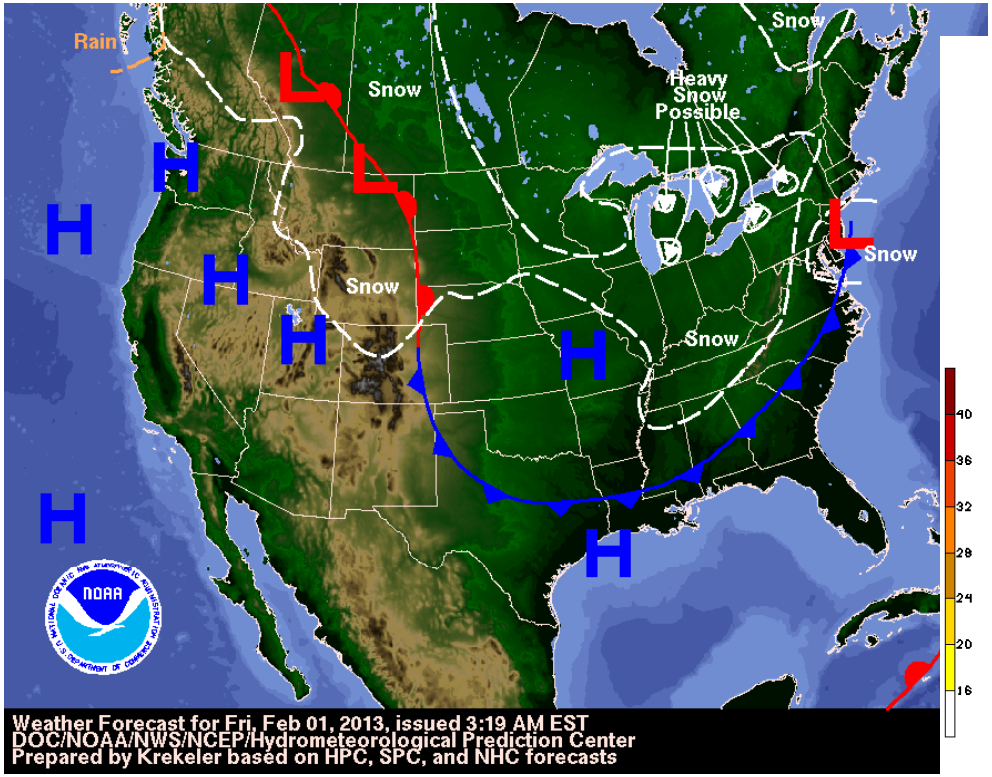


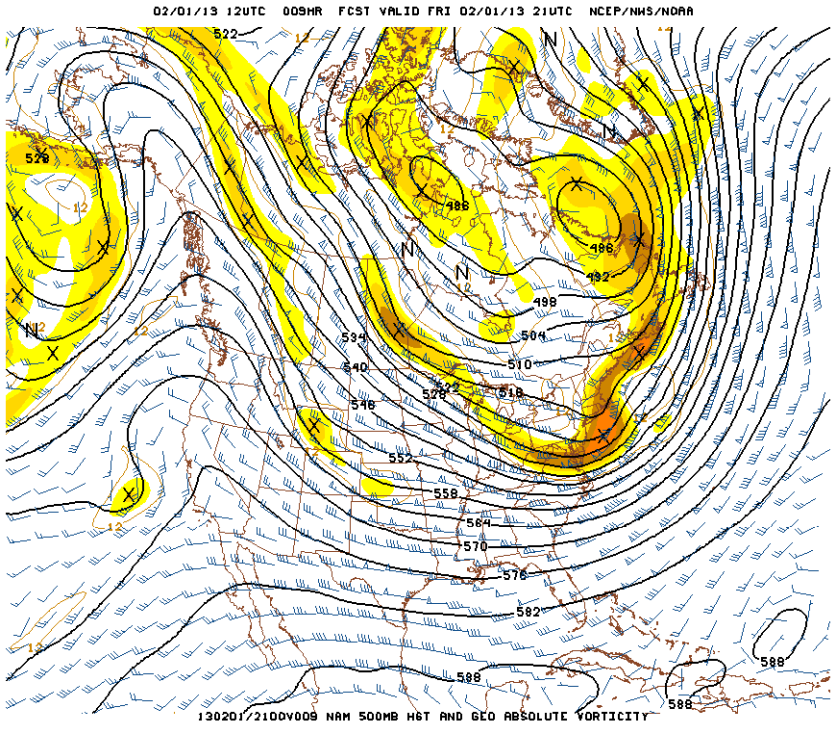
GOES: IR at 1800 UTC Today



Today:

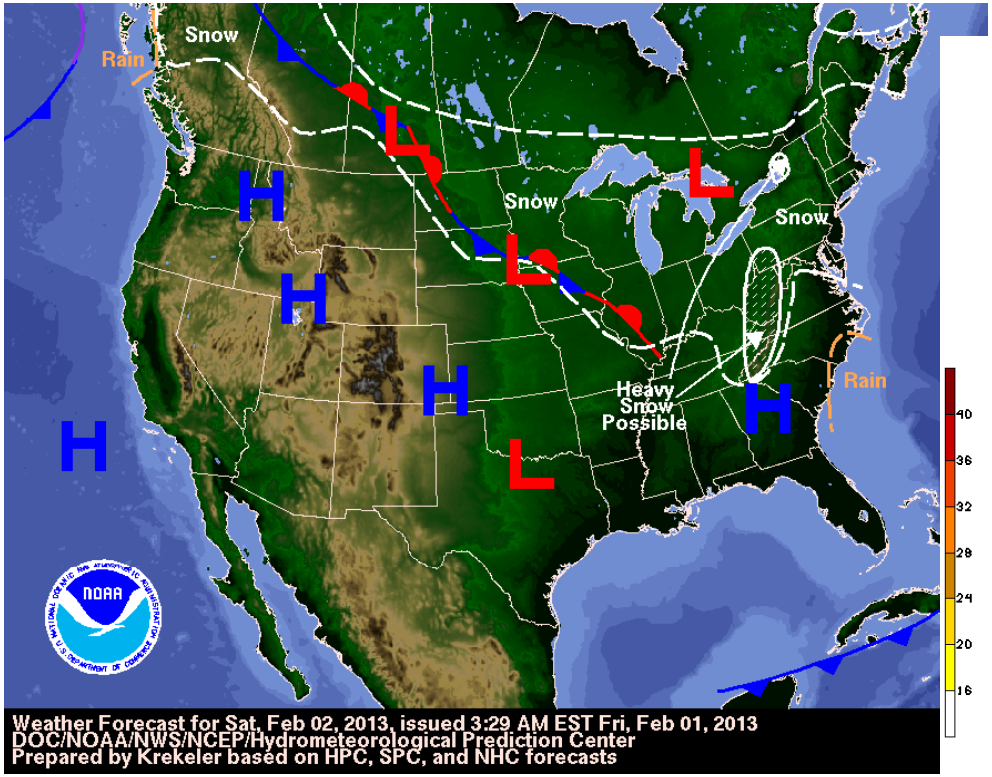
Central CA still under influence of the upper level ridge

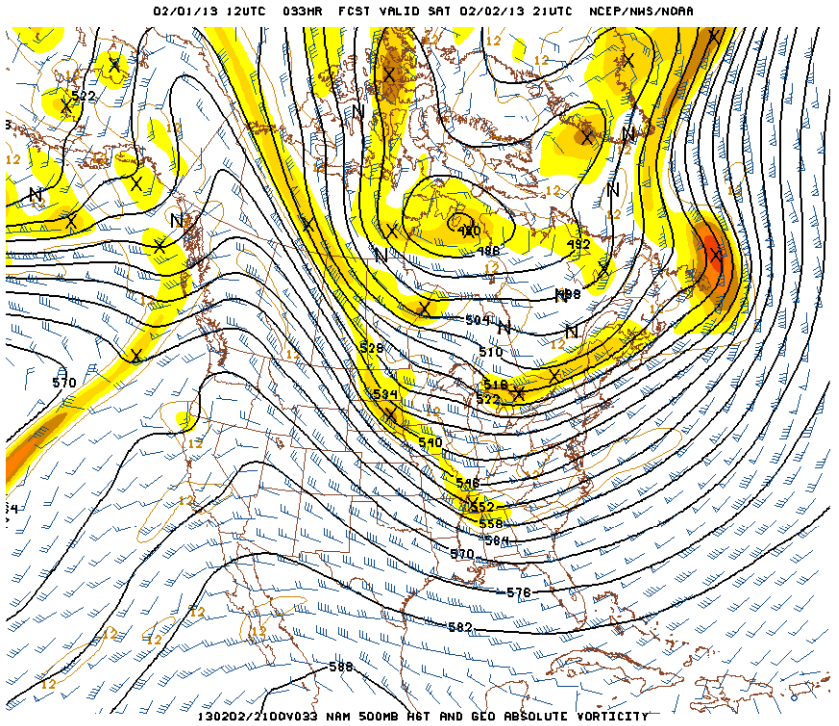




Tomorrow (Saturday):

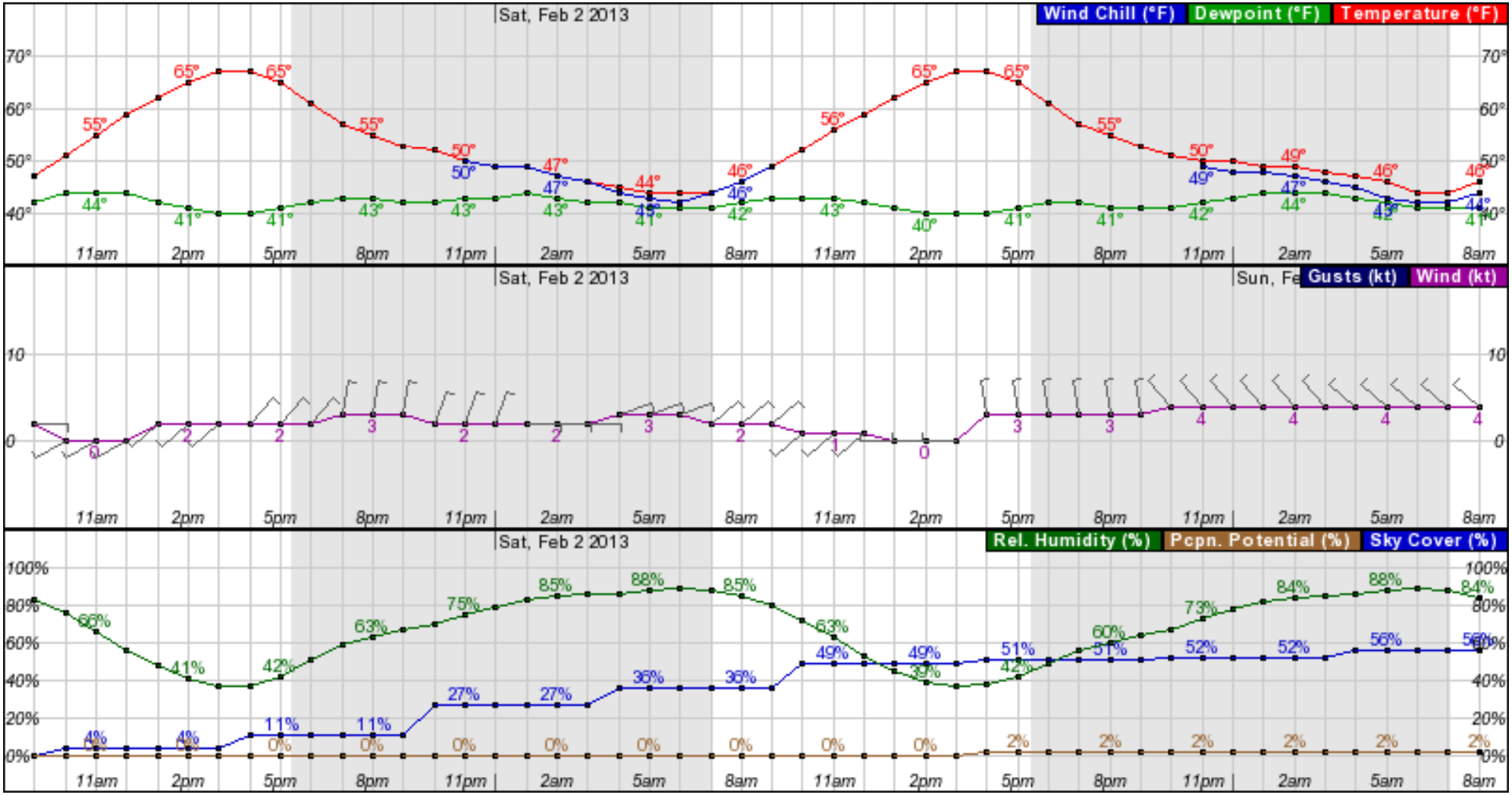
An upper level low is forecast to develop on Saturday as the trough in the East Pacific splits. This low will spin some upper level moisture into Central CA, increasing cloud cover.





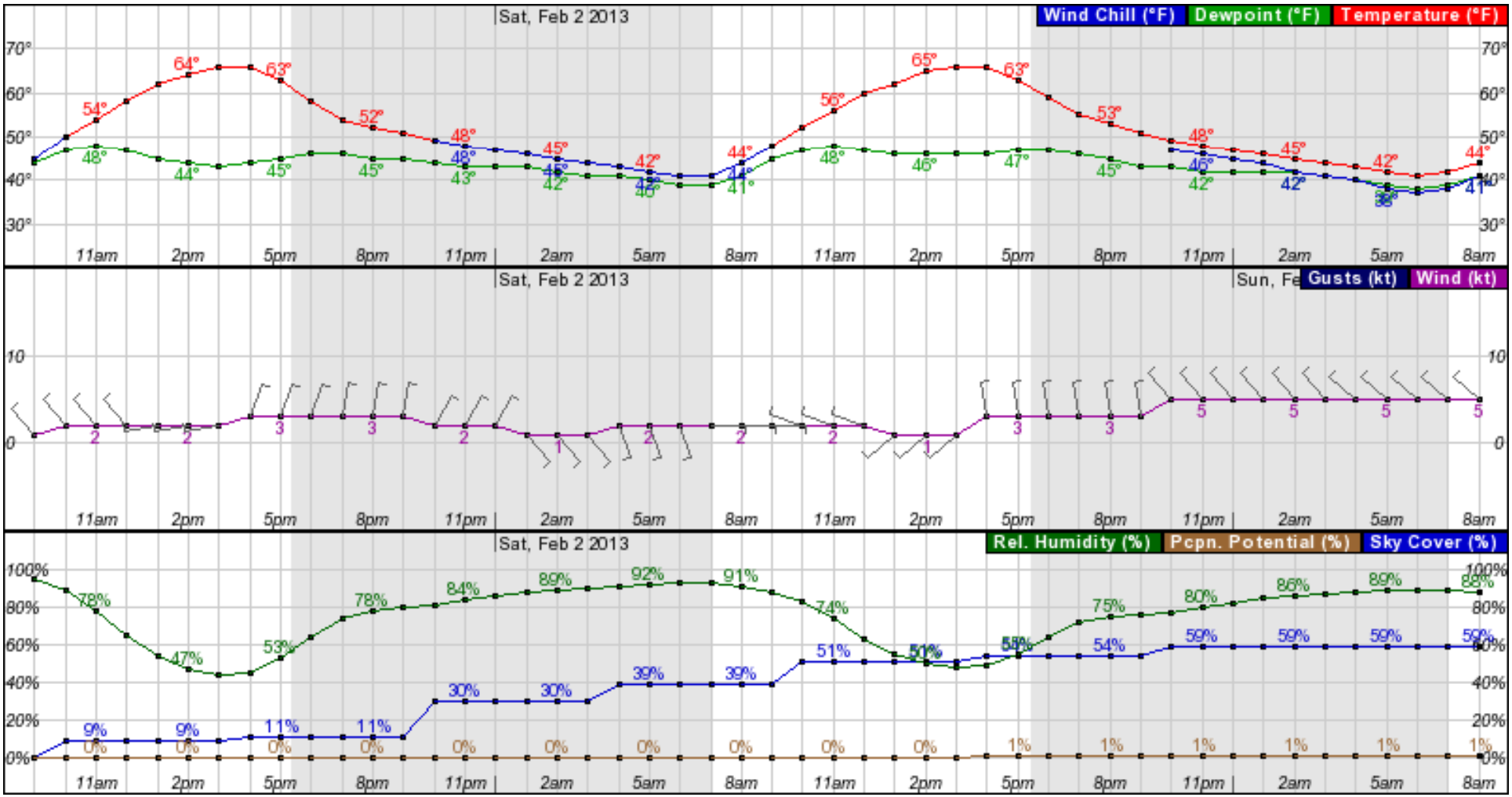
Fresno
Today: Sunny
Saturday: Cloud cover increasing to over 50%

Today → **Saturday →**



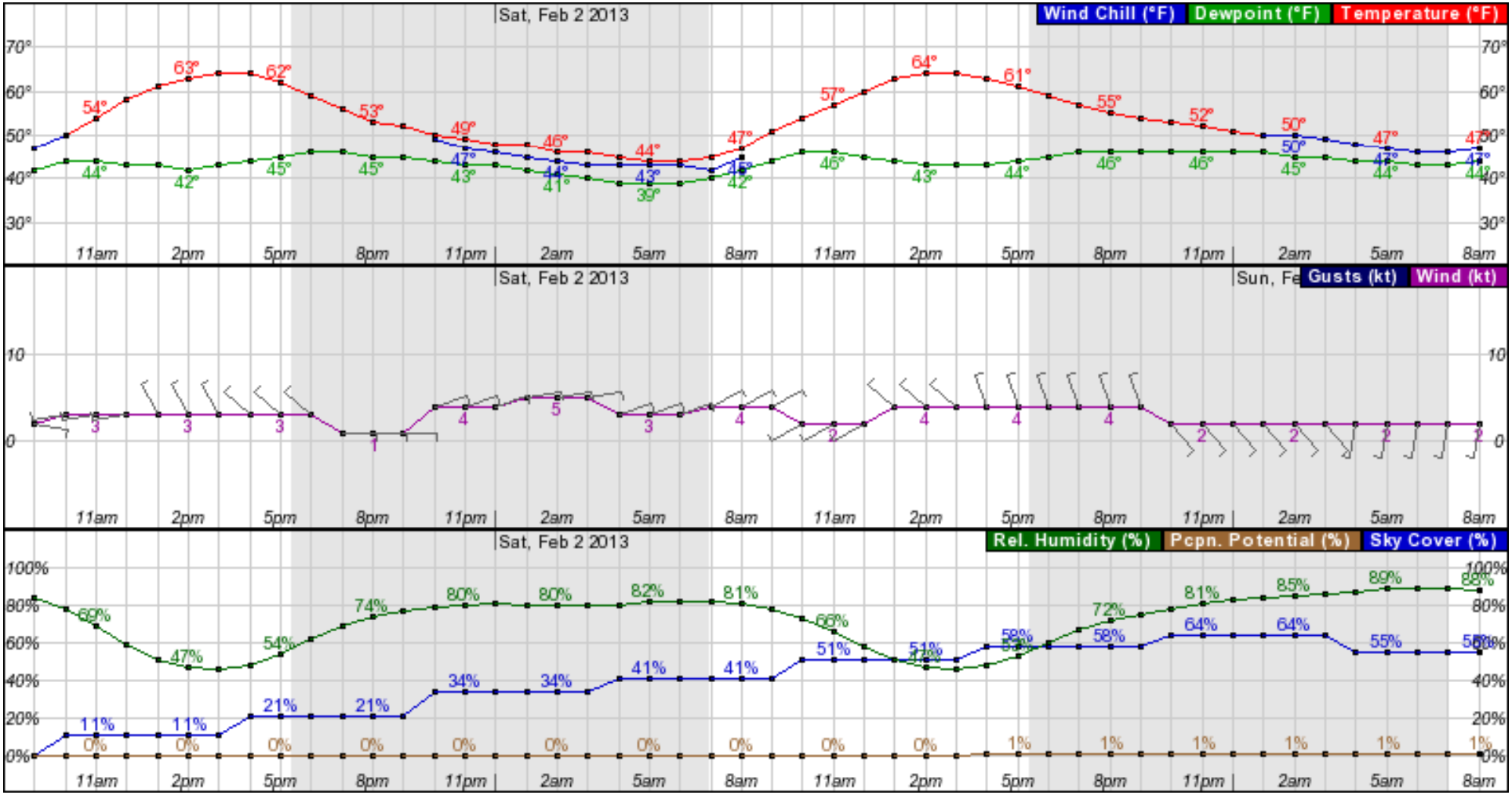
Hanford
Today: Sunny
Saturday: Cloud cover increasing to over 50%

Today → **Saturday →**

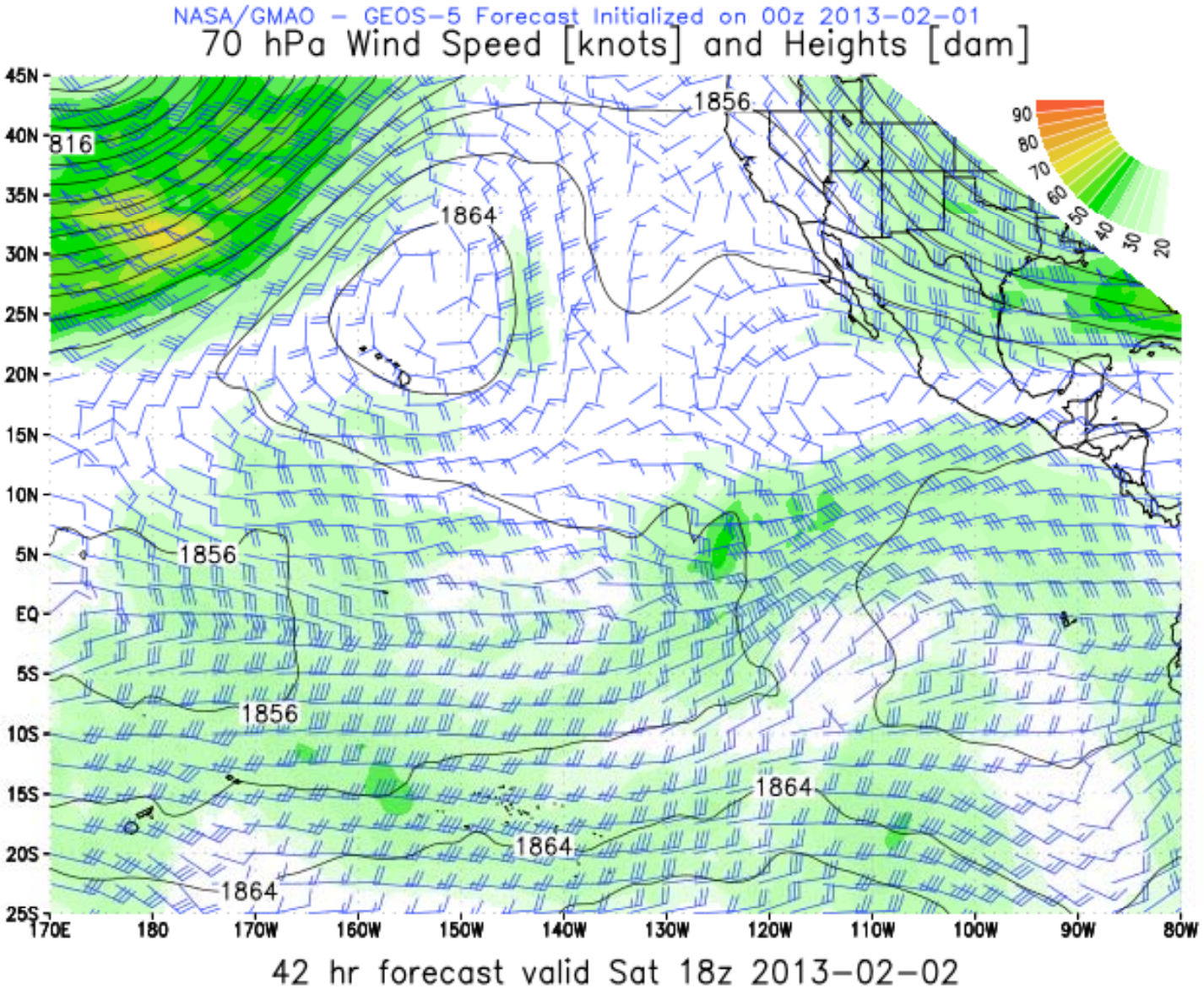


Bakersfield
Today: Sunny
Saturday: Cloud cover increasing to over 50%

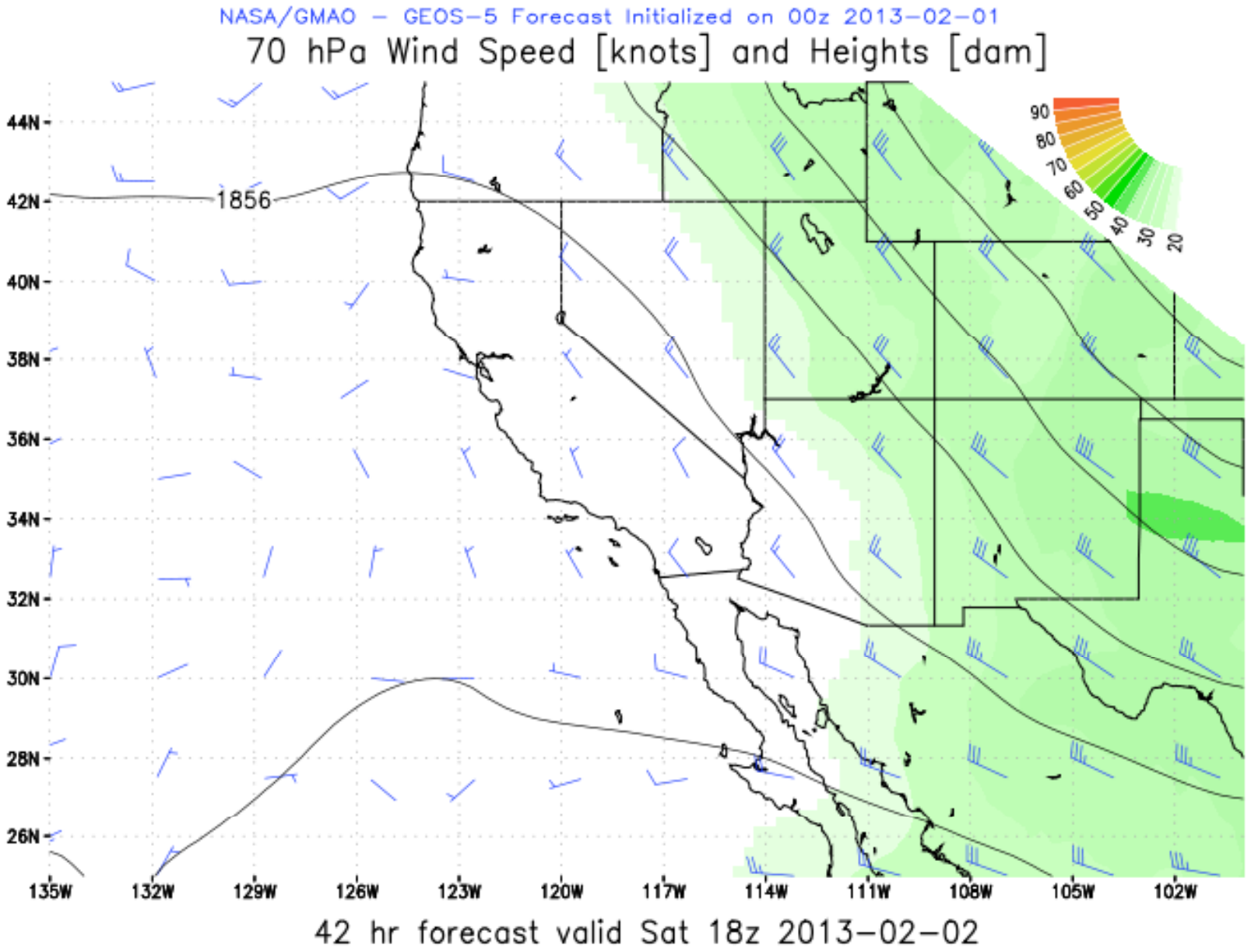
Today → **Saturday →**



GEOS-5: Saturday 18Z = 10 PST

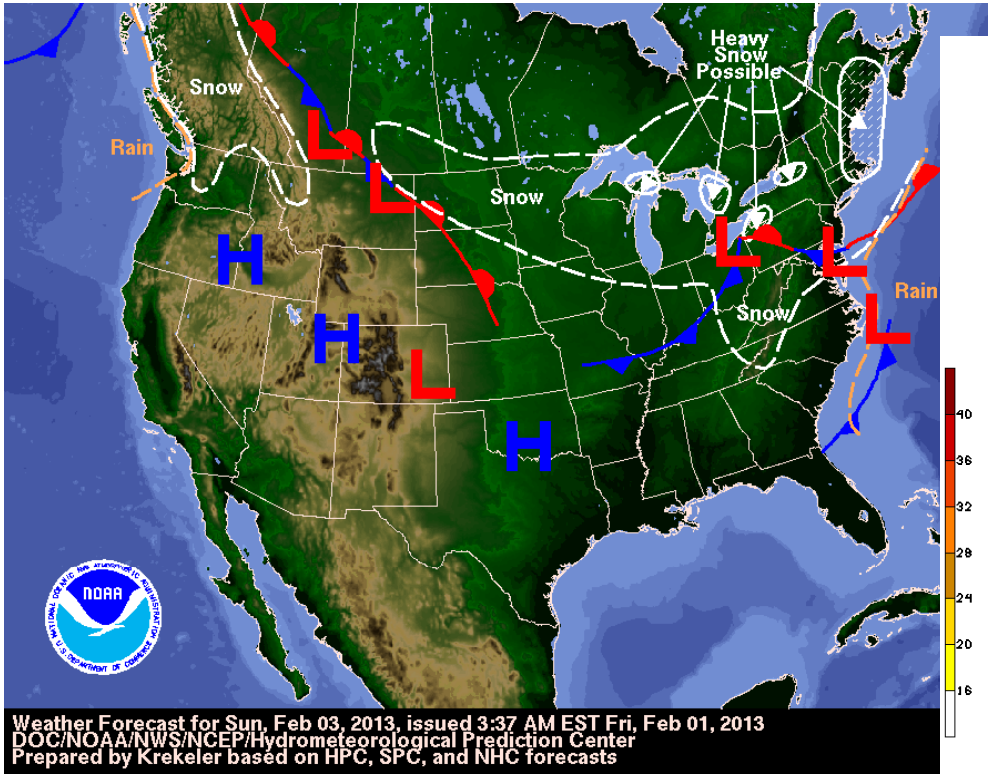


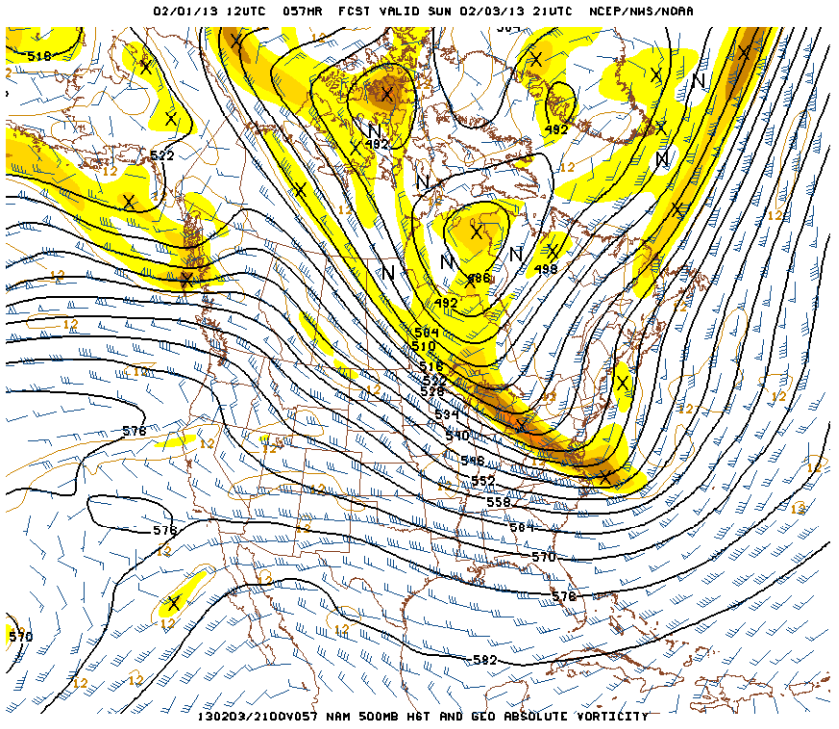
GEOS-5: Saturday 18Z = 10 PST



Sunday:

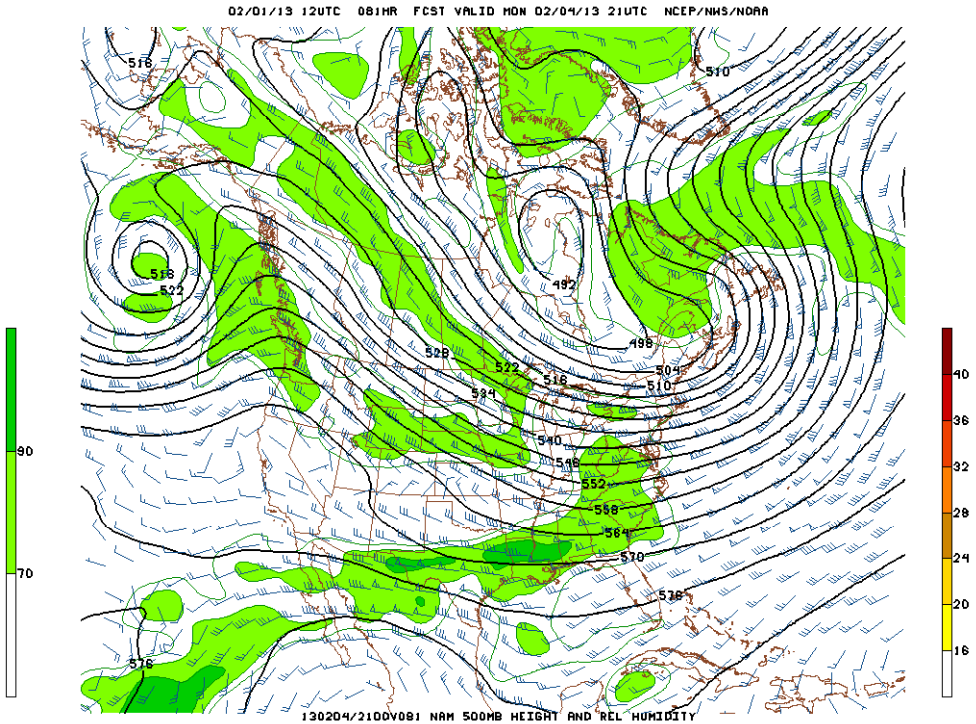
The northern component of the upper level trough is forecast to move through the Pacific NW as an upper level short wave. This wave will flatten the ridge on Sunday.

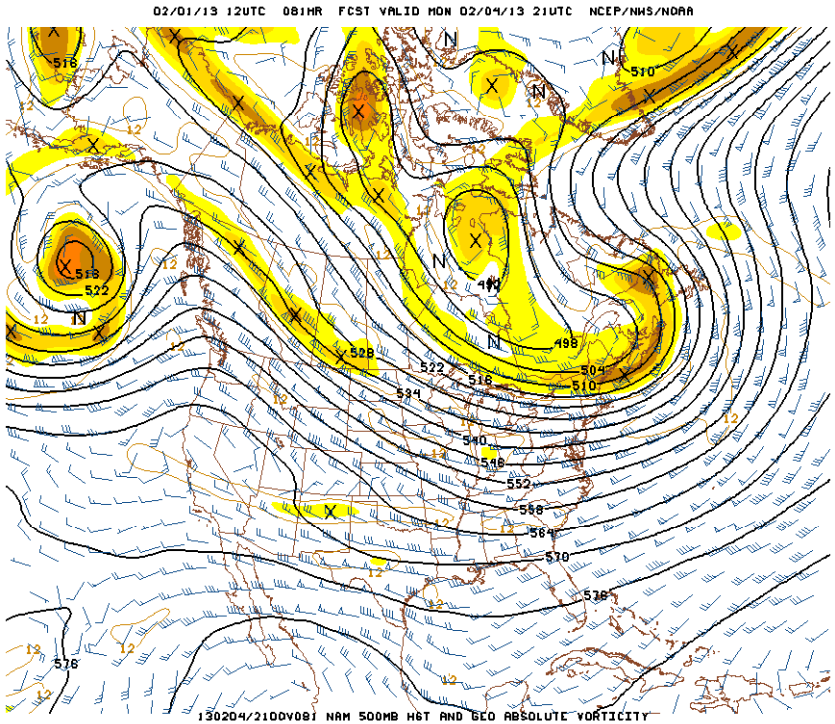




Monday:

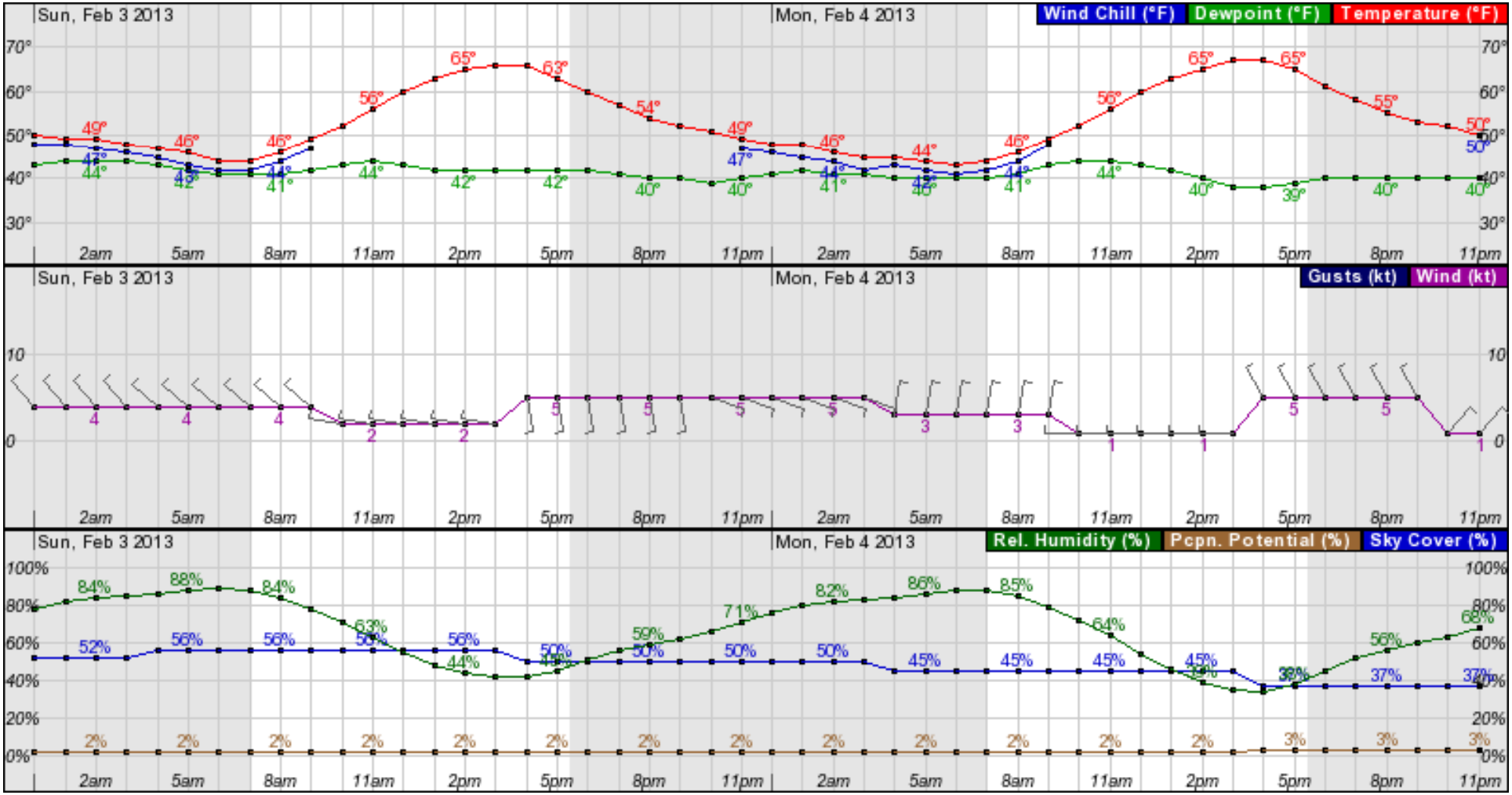
The ridge rebounds on Monday





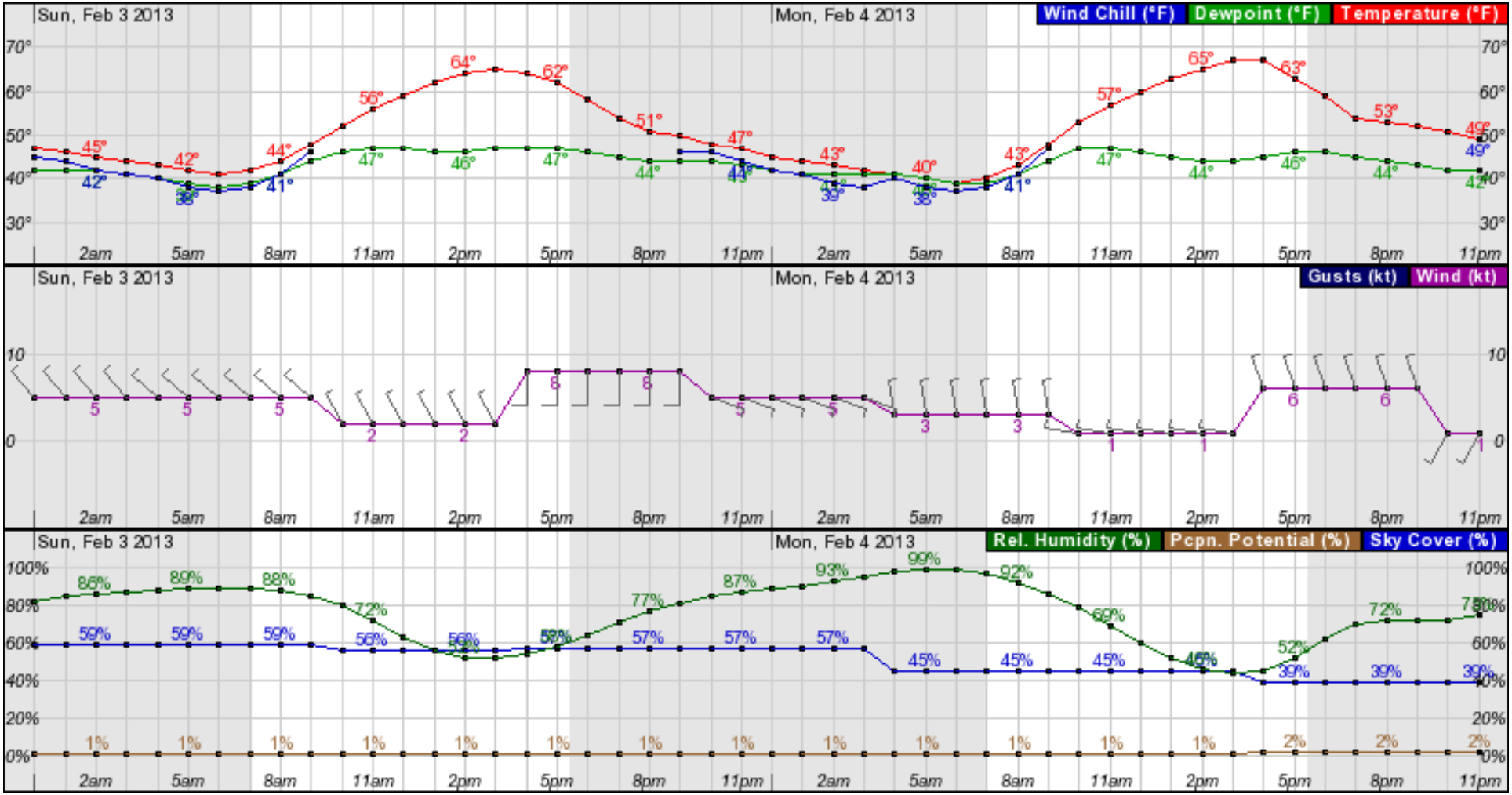
Fresno
Sunday: Cloud cover >50%
Monday: Cloud cover ~45%

Sunday → **Monday →**



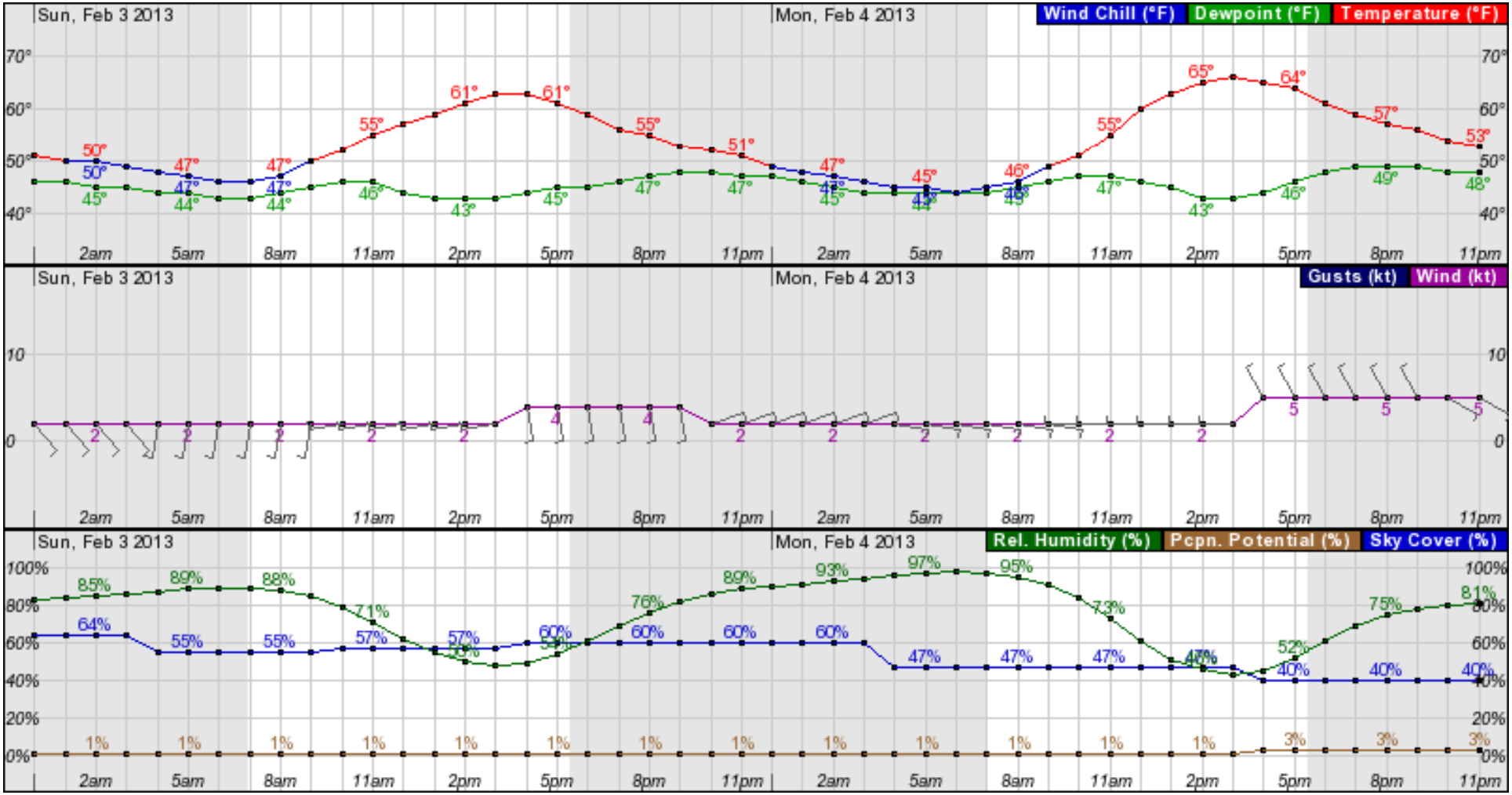
Hanford
Sunday: Cloud cover >50%
Monday: Cloud cover ~45%

Sunday → **Monday →**

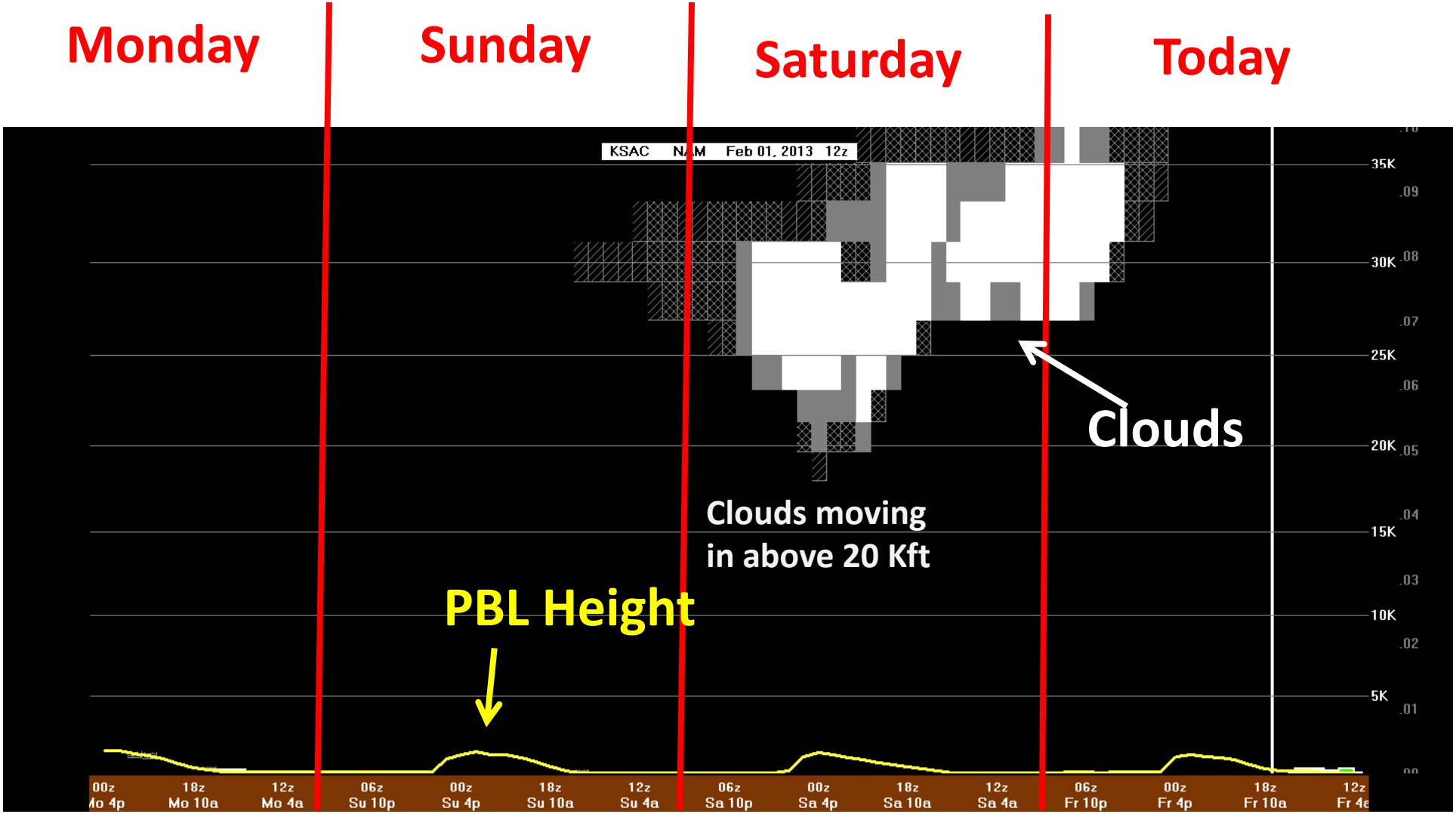


Bakersfield
Sunday: Cloud cover >50%
Monday: Cloud cover ~47%

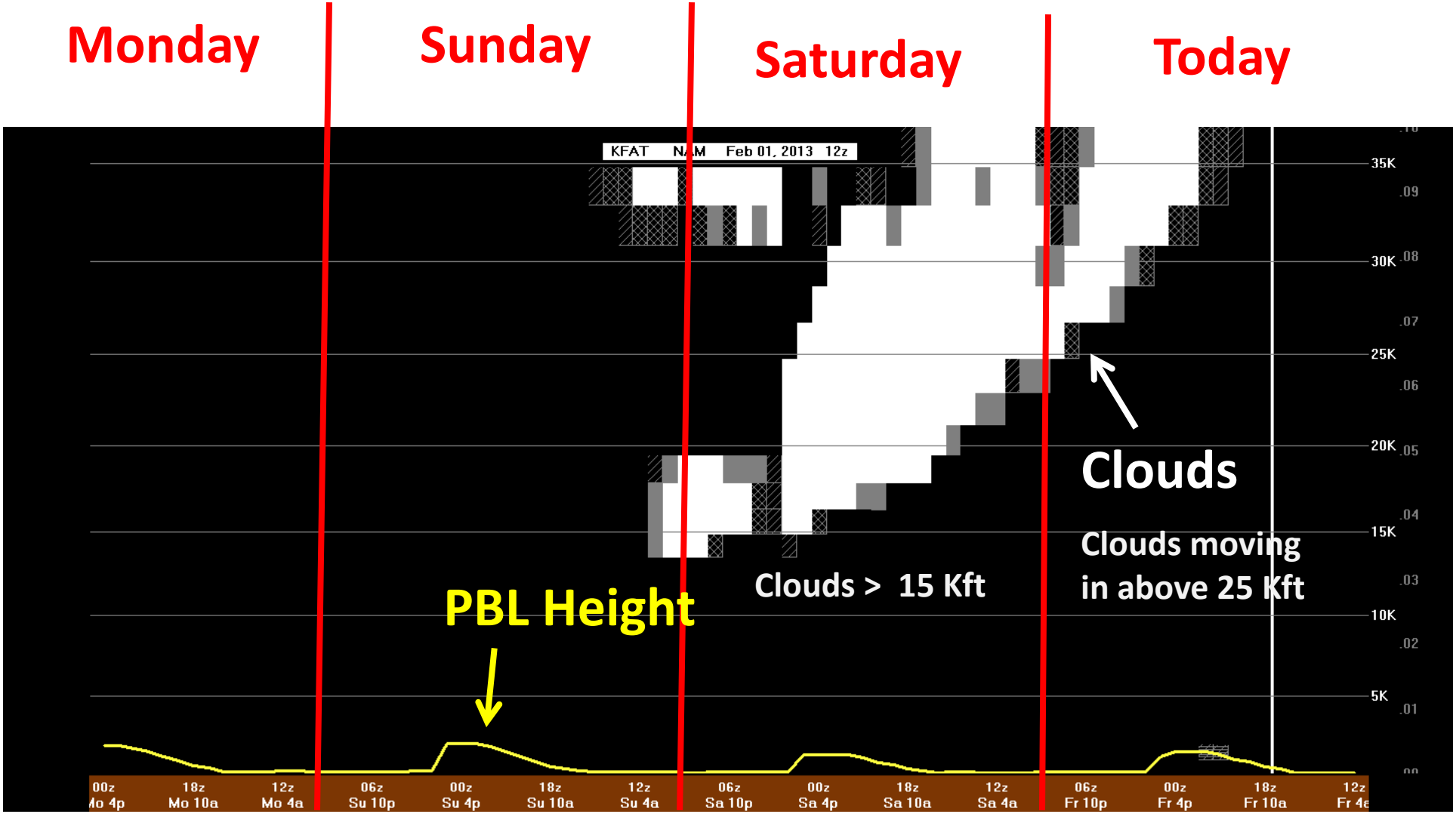
Sunday → **Monday →**



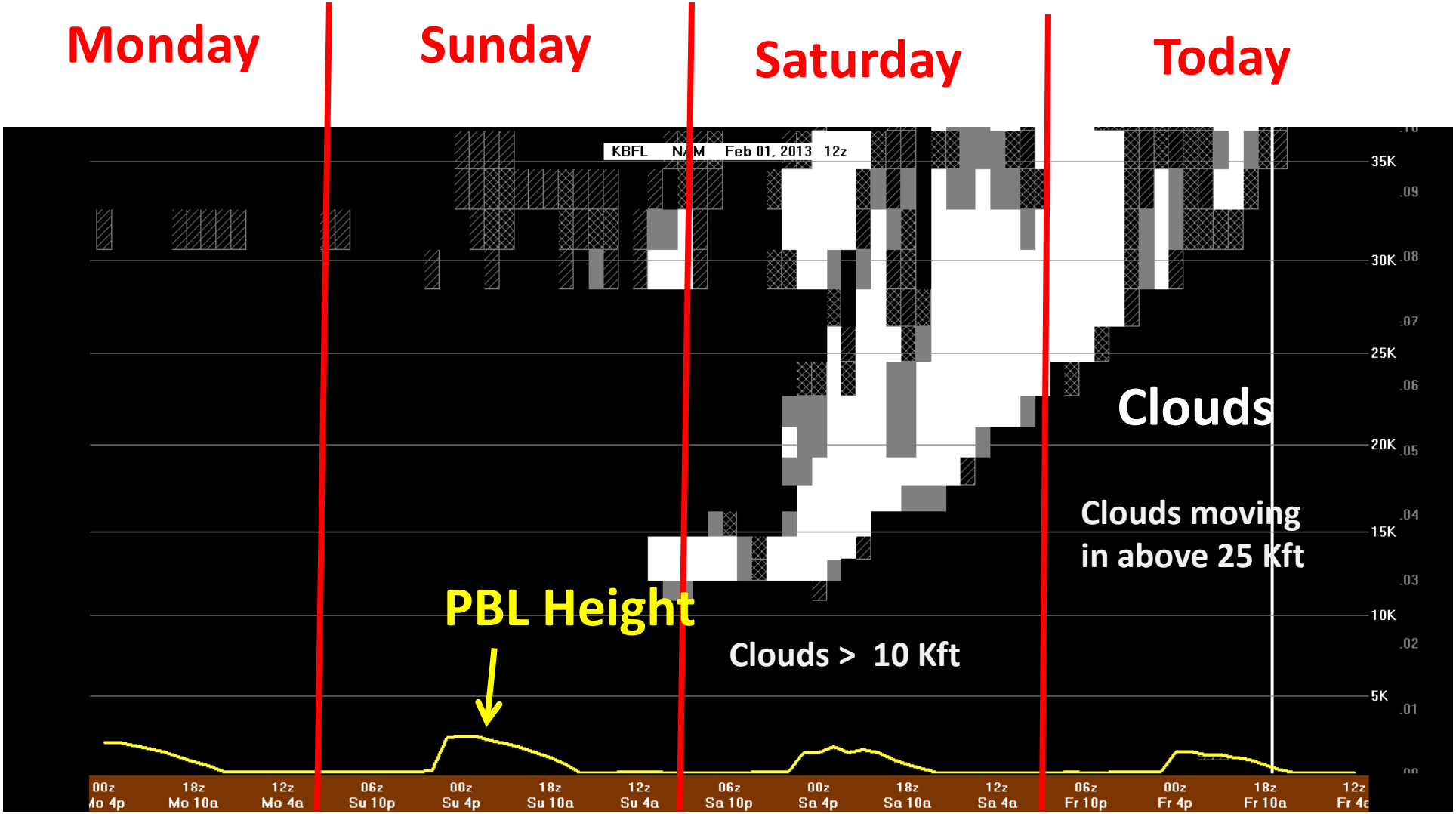
Sacramento : BUFKIT NAM 12 UTC Friday Feb. 1



Fresno : BUFKIT NAM 12 UTC Friday Feb. 1

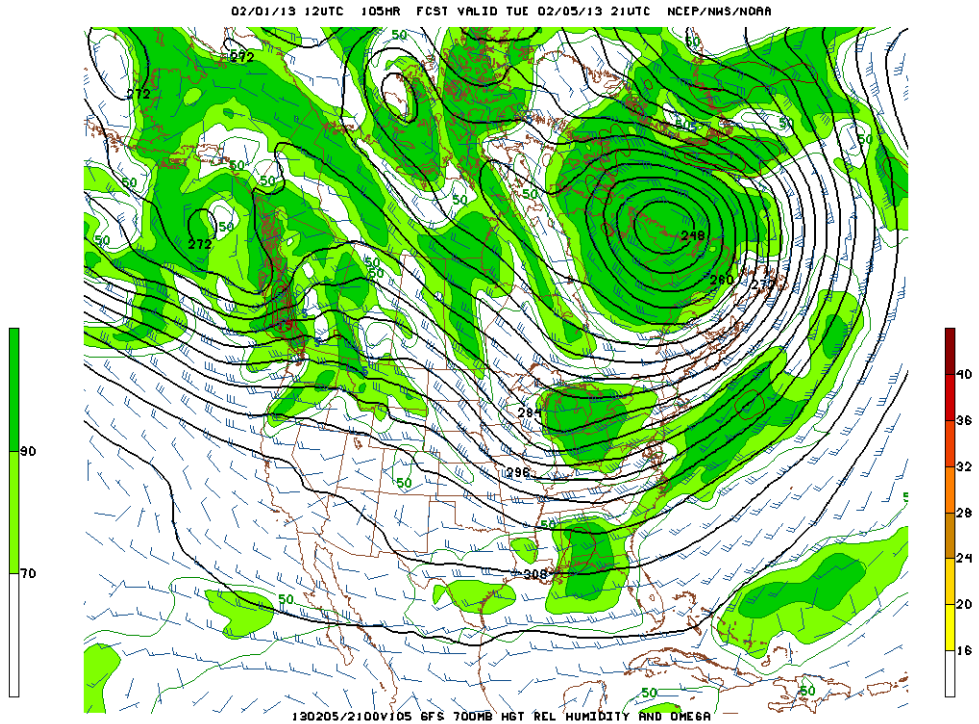


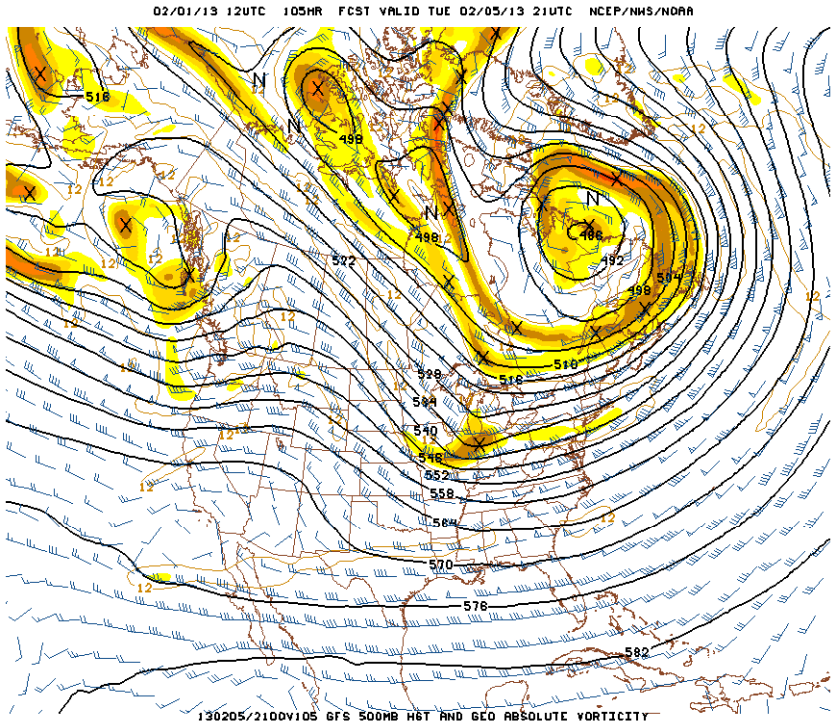
Bakersfield : BUFKIT NAM 12 UTC Friday Feb. 1



Tuesday:

An upper level trough will move through northern CA Tuesday night and Wednesday.

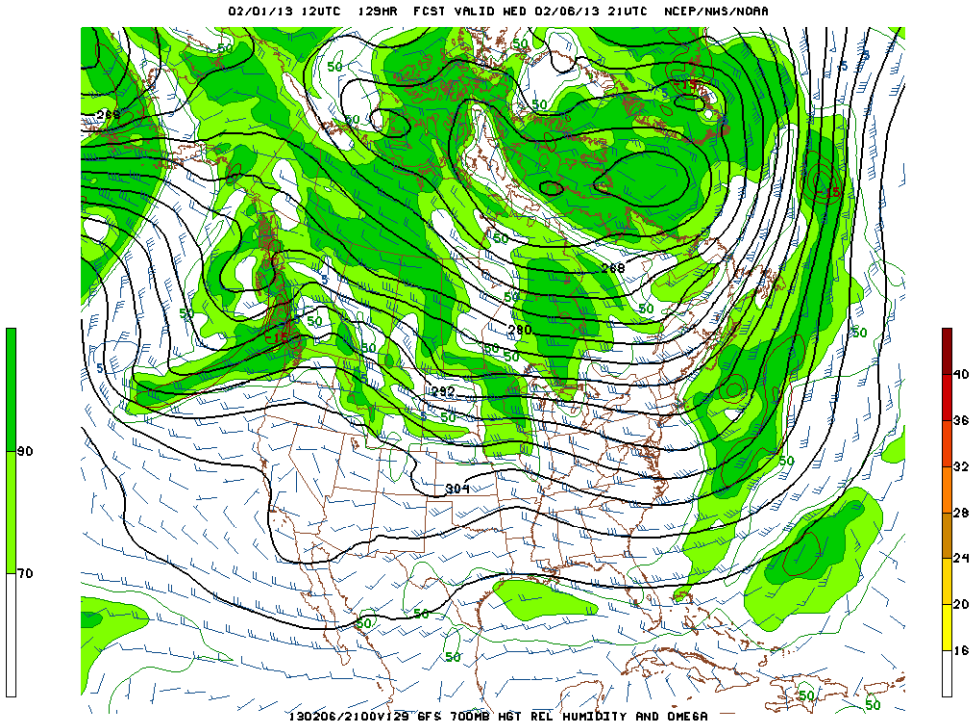


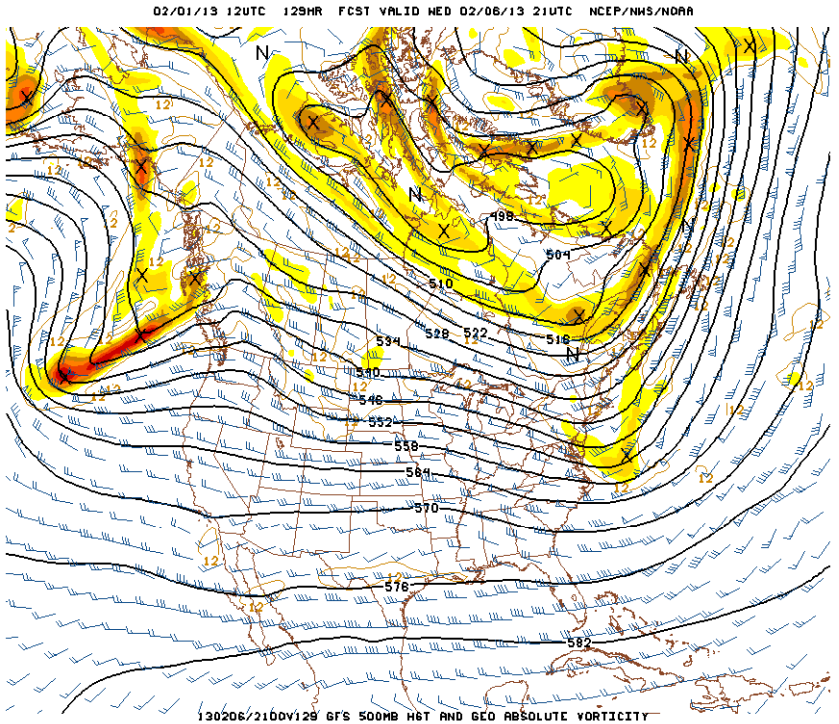


Wednesday and beyond:

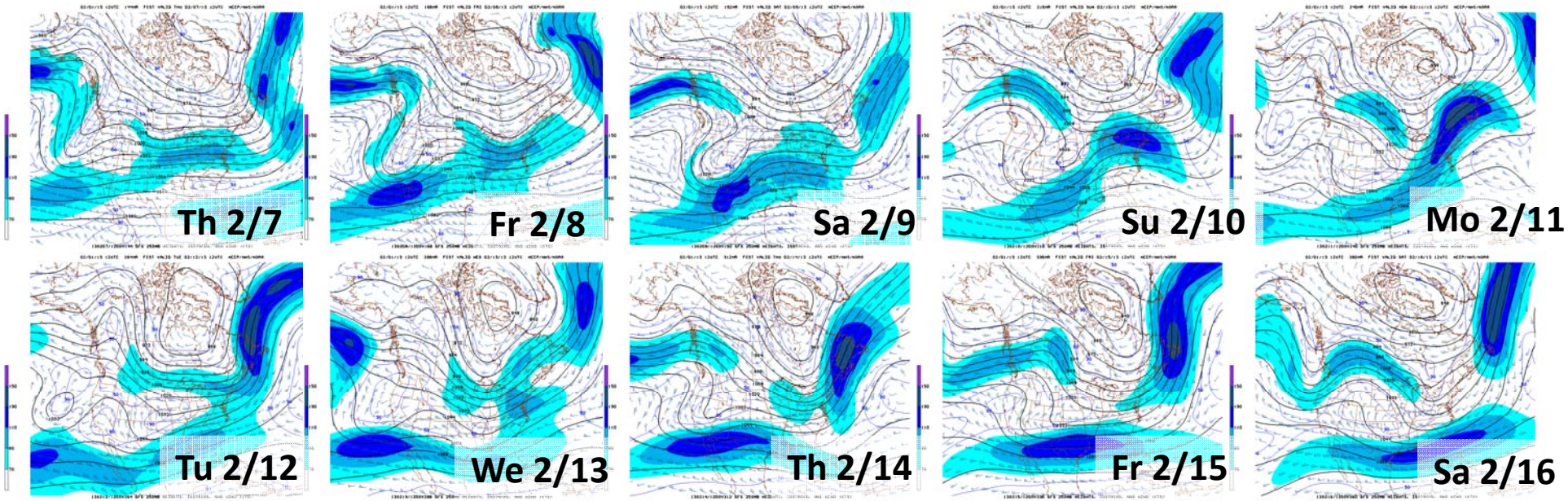
An upper level trough moves through northern CA Wednesday. This is a precursor system to a stronger trough which arrives on Thursday.

Models are disagreeing on how far south this trough will extend. The ECMWF has the precipitation further south, while the GFS keeps it north of Kern County. However, there is consensus that the precipitation will be significant – between 0.25 and 0.5”

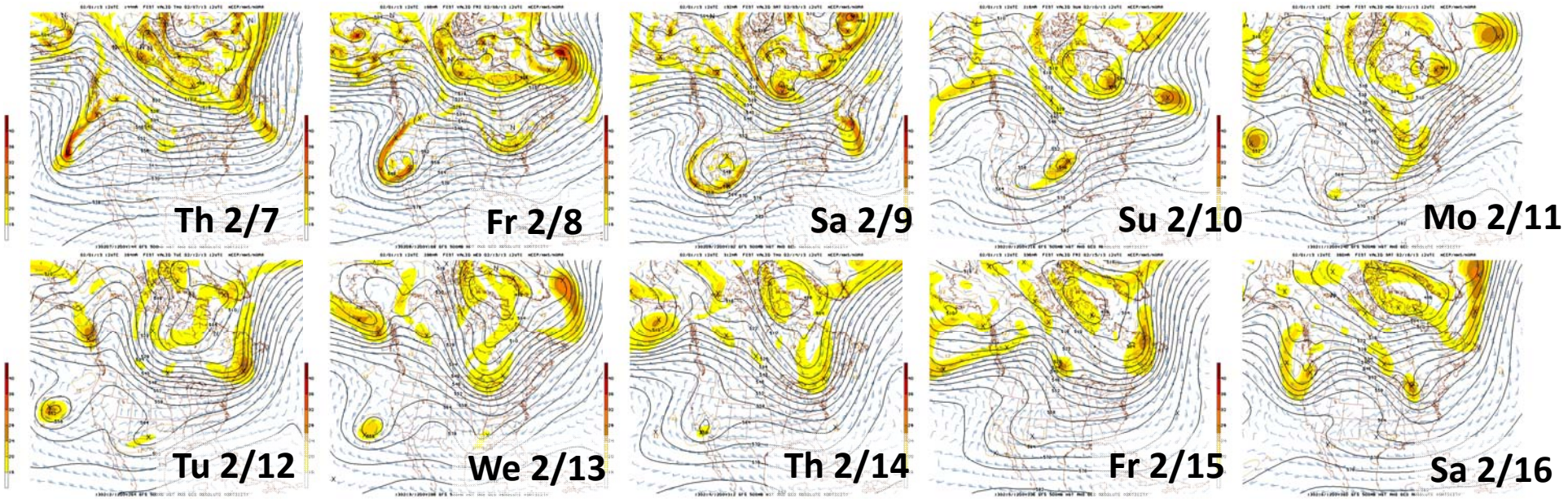




GFS - 250 mb winds - Extended forecast



GFS - 500 mb vorticity - Extended forecast

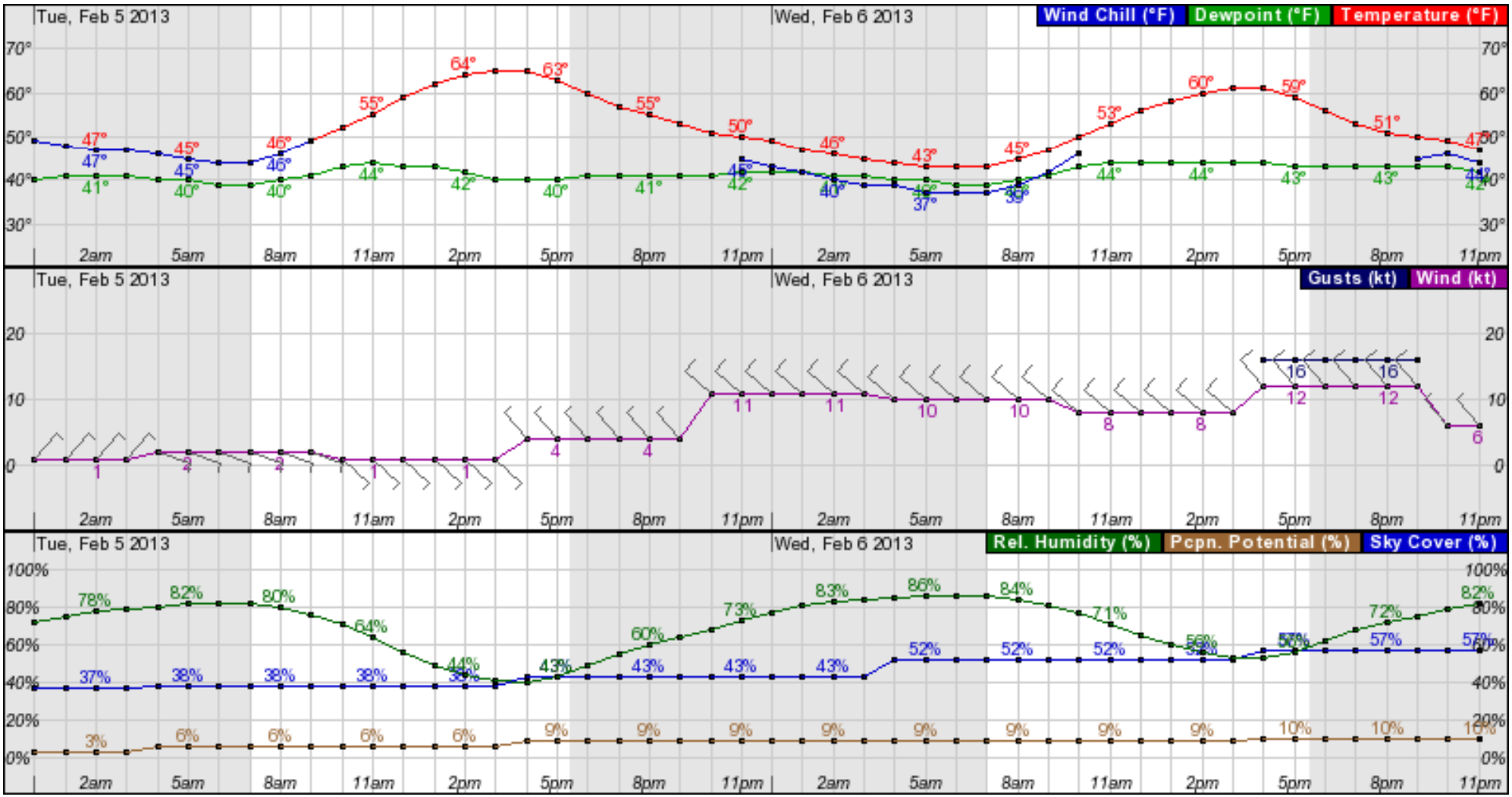


Fresno

Tuesday: Cloud cover <50%

Wednesday: Cloud cover >50%

Tuesday → **Wednesday →**

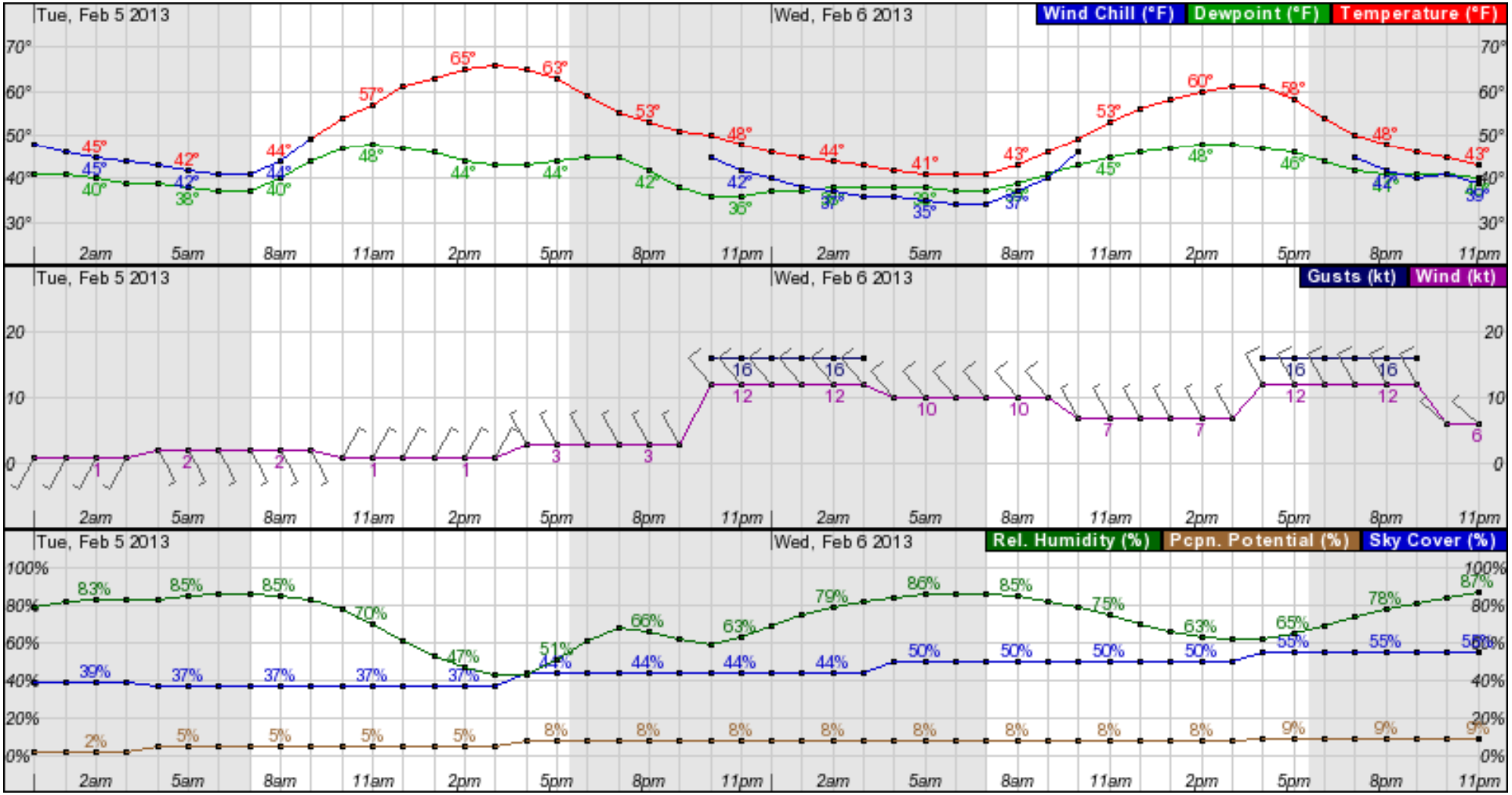


Hanford

Tuesday: Cloud cover <50%

Wednesday: Cloud cover >50%

Tuesday → **Wednesday →**

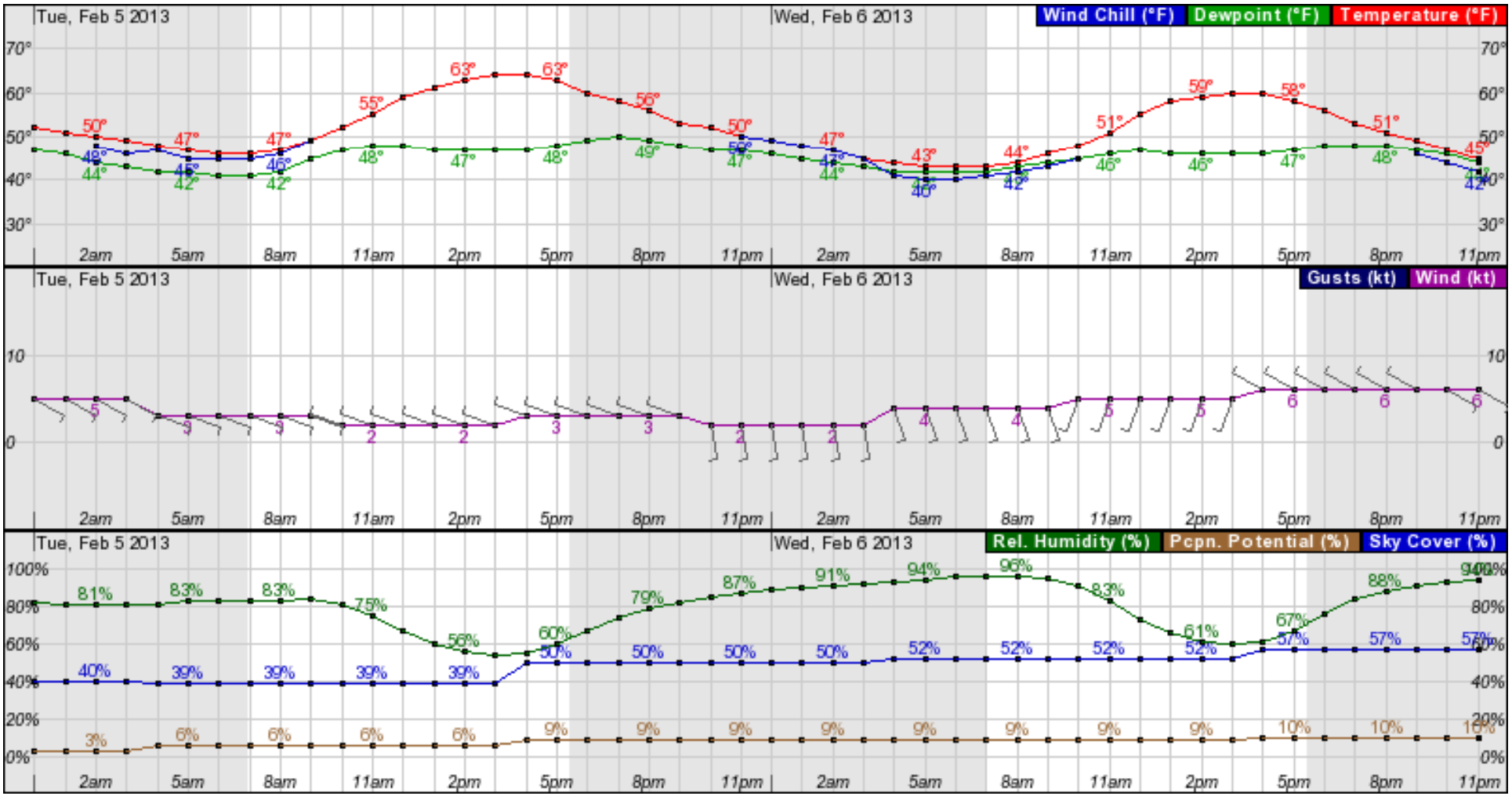


Fresno

Tuesday: Cloud cover <50%

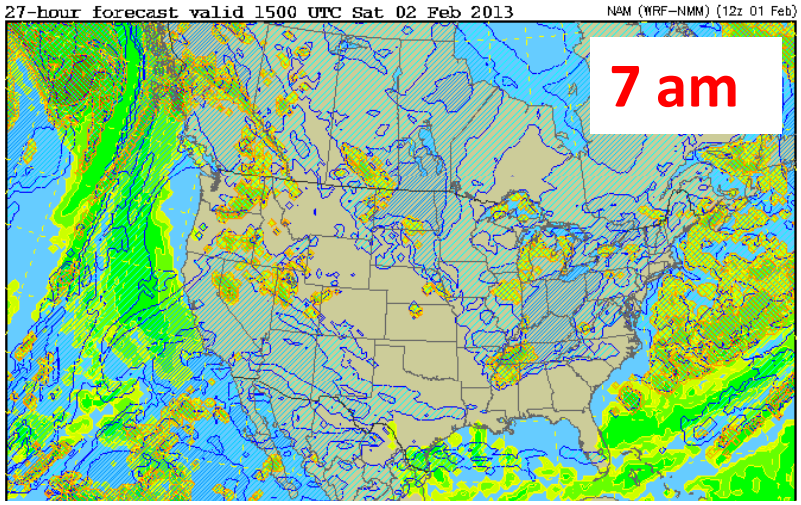
Wednesday: Cloud cover >50%

Tuesday → **Wednesday →**

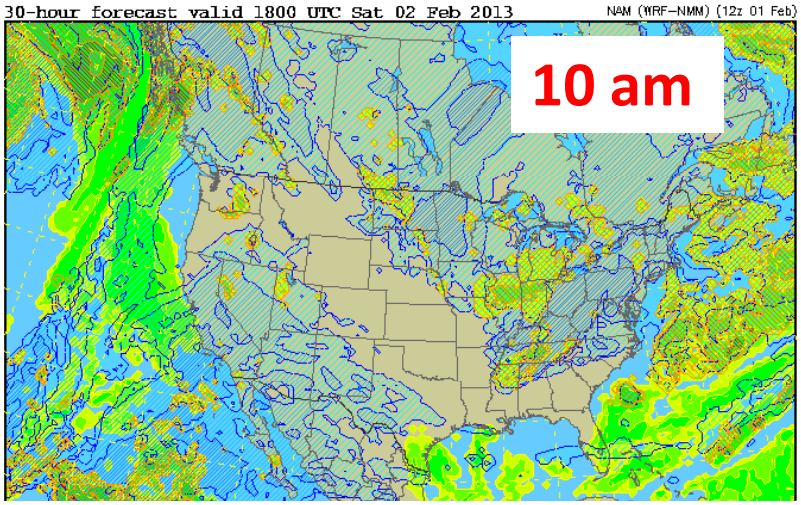


Tomorrow: NAM – High level clouds (>18K ft) over entire region all day.

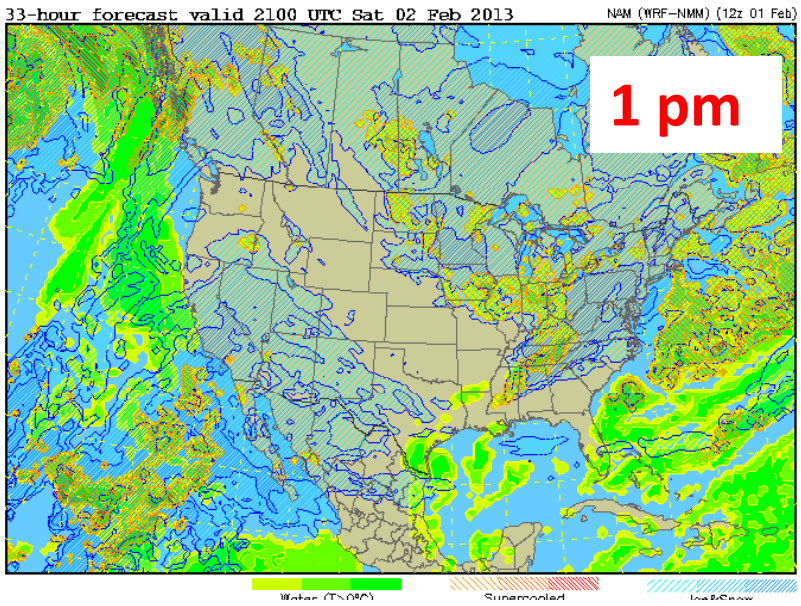
Integrated liquid and frozen hydrometeors (all levels)



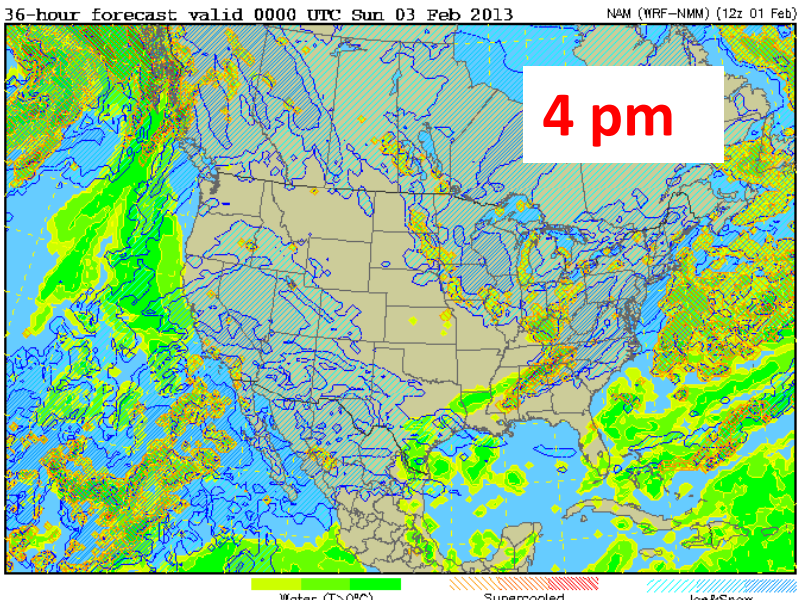
Integrated liquid and frozen hydrometeors (all levels)



Integrated liquid and frozen hydrometeors (all levels)

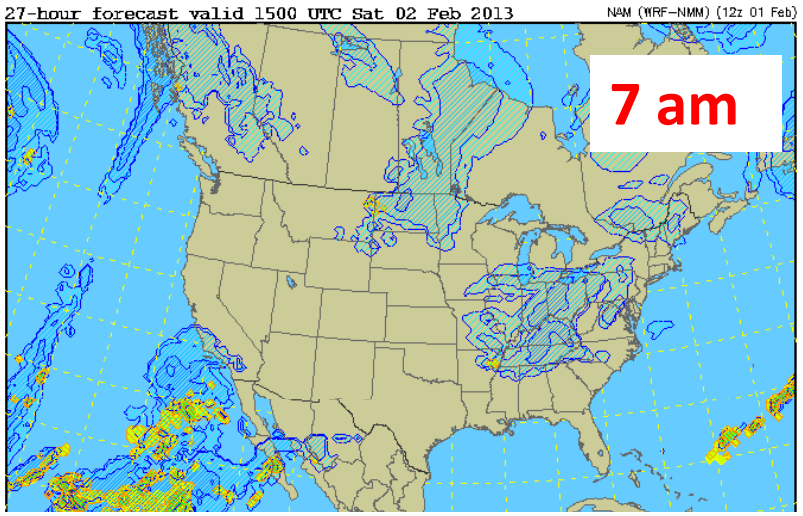


Integrated liquid and frozen hydrometeors (all levels)

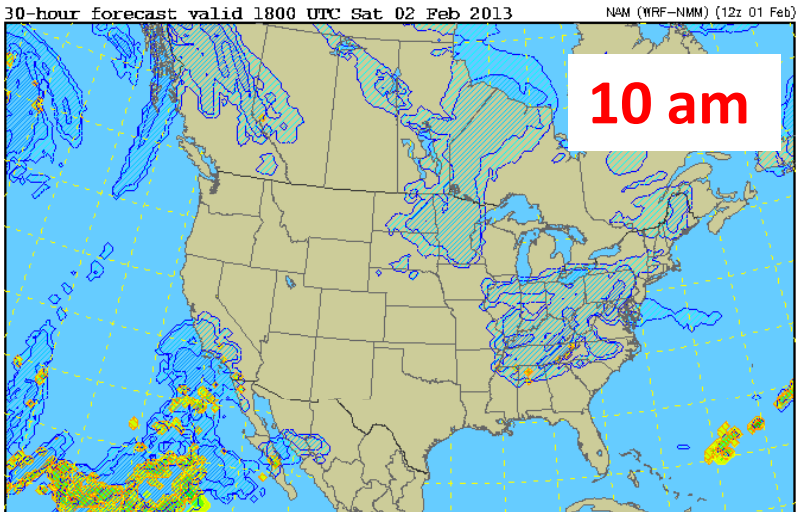


Tomorrow: NAM clouds (12-18K ft) – mid to upper level clouds over LA PODEX region, moving into our region by 10 am.

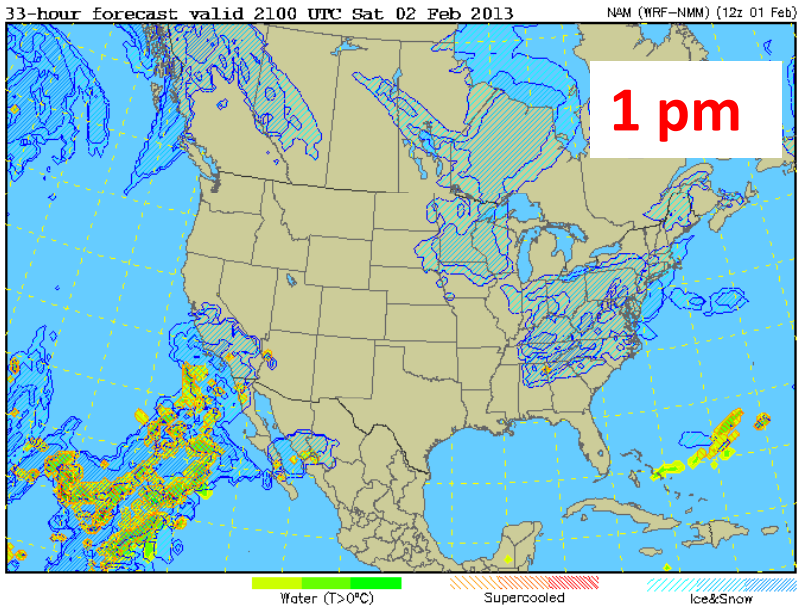
Integrated liquid and frozen hydrometeors (12-18 Kft MSL)



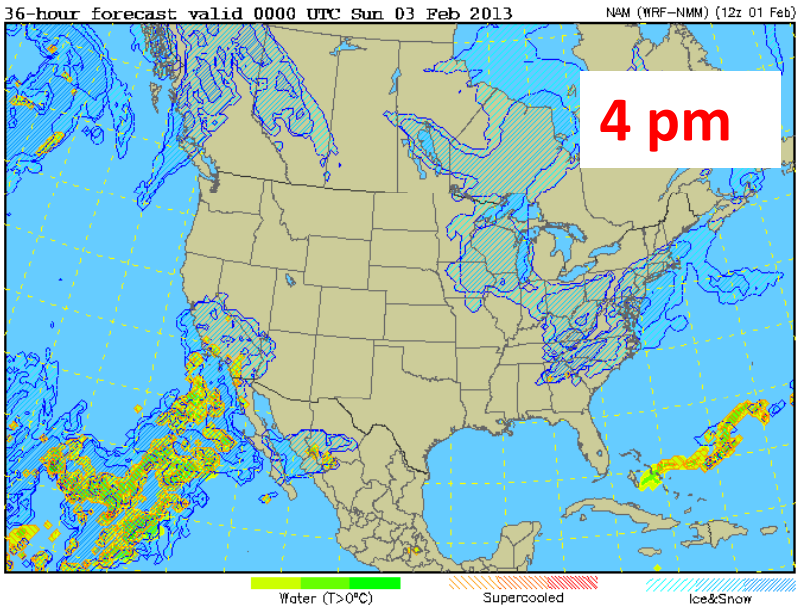
Integrated liquid and frozen hydrometeors (12-18 Kft MSL)



Integrated liquid and frozen hydrometeors (12-18 Kft MSL)



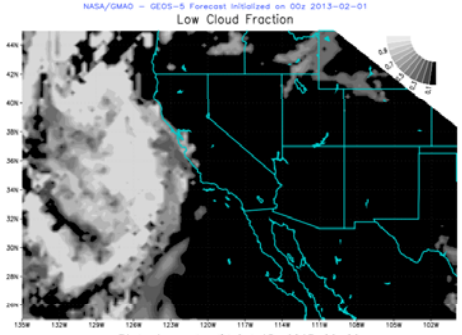
Integrated liquid and frozen hydrometeors (12-18 Kft MSL)

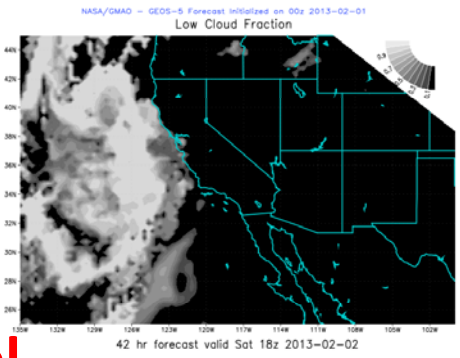


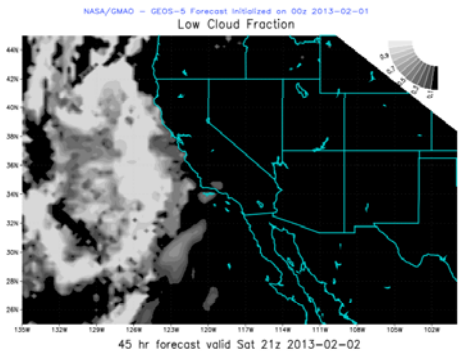
Saturday: GEOS5 – mid and high level clouds all day

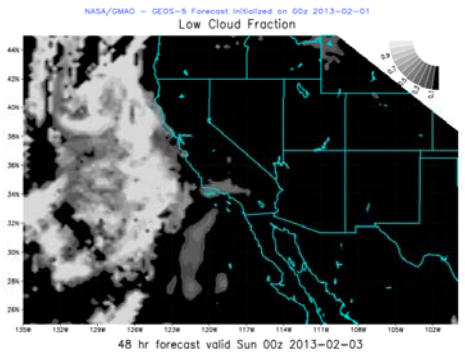
7 am | 10 am | 1 pm | 4 pm

GEOS5 – Low level

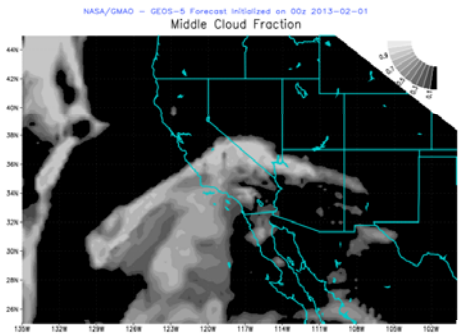


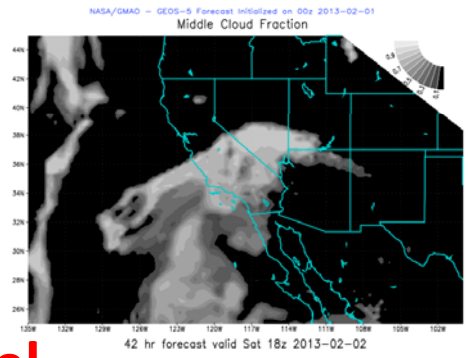


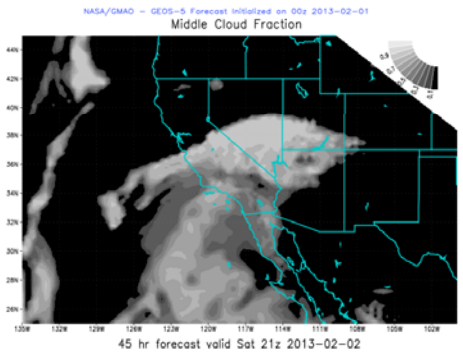


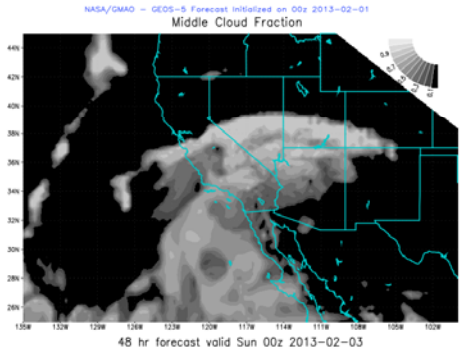


GEOS5 – Mid level

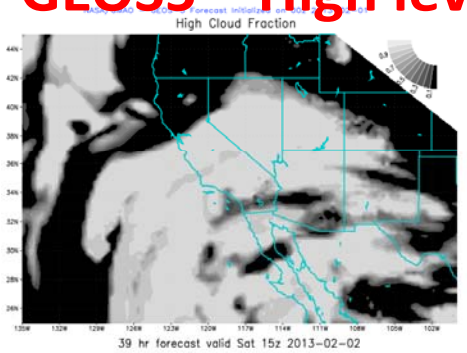


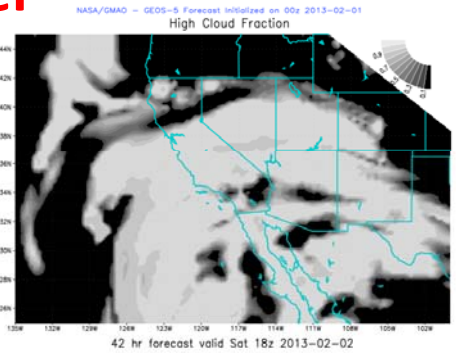


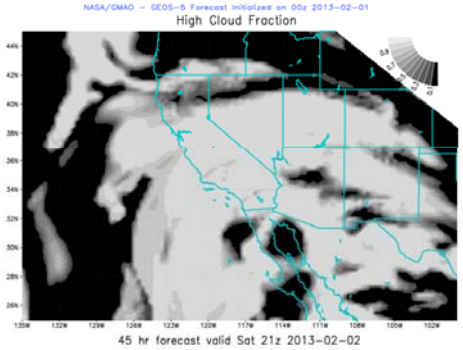


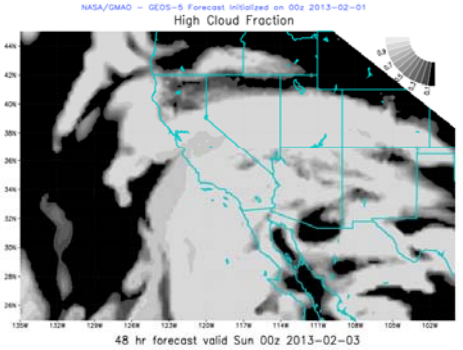


GEOS5 – High level





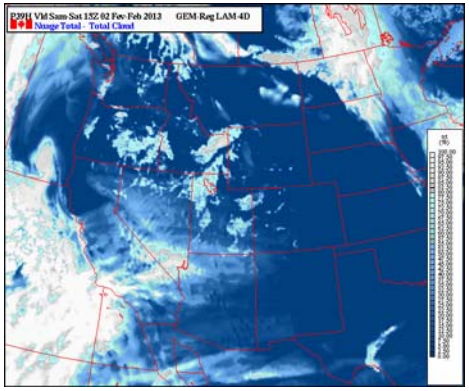
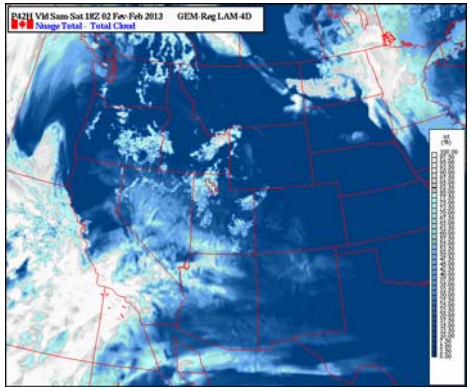
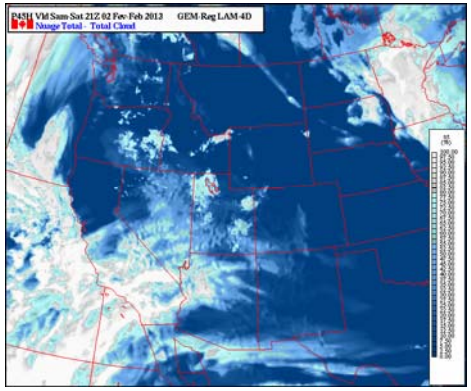
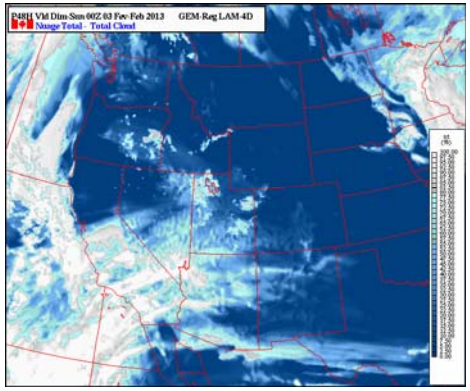




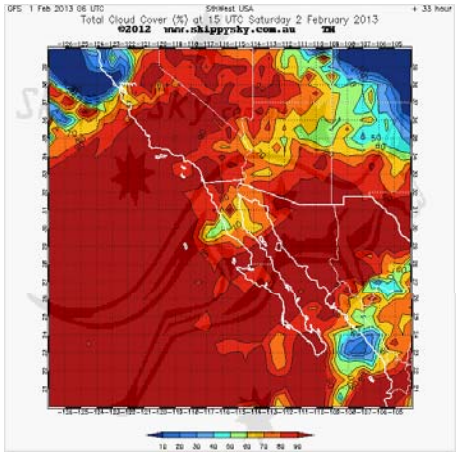
Tomorrow: Canadian – looks like thin, high clouds approaching from the south. Over PODEX region by 10 am and SJV by 1 pm; GFS – Same as Canadian model.

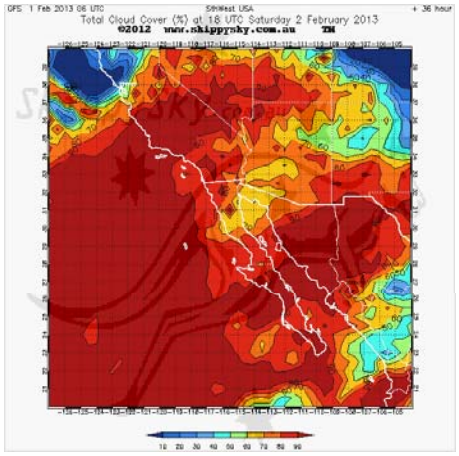
7 am 10 am 1 pm 4 pm

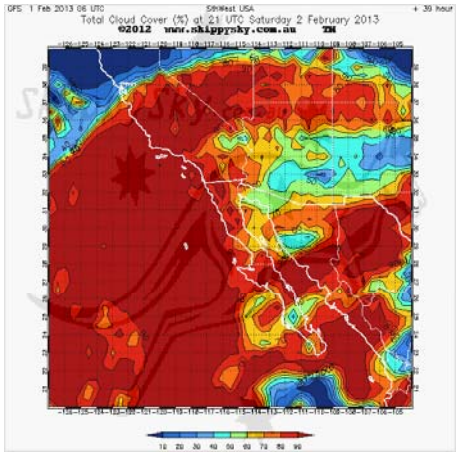
Canadian

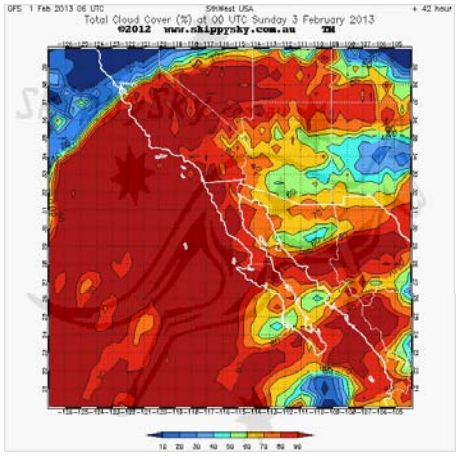





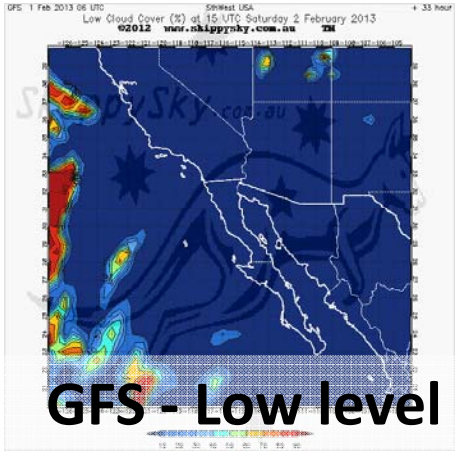
GFS – Total Cloud



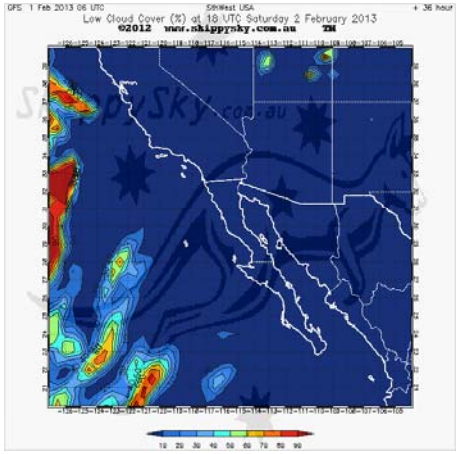


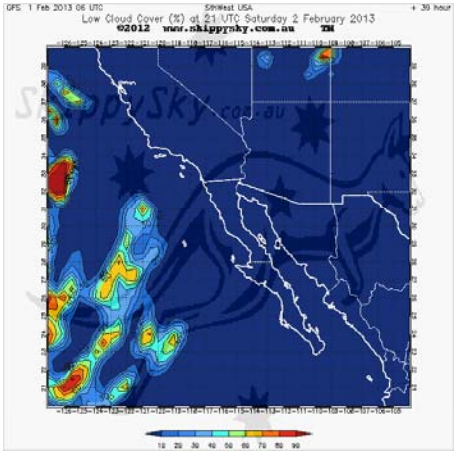


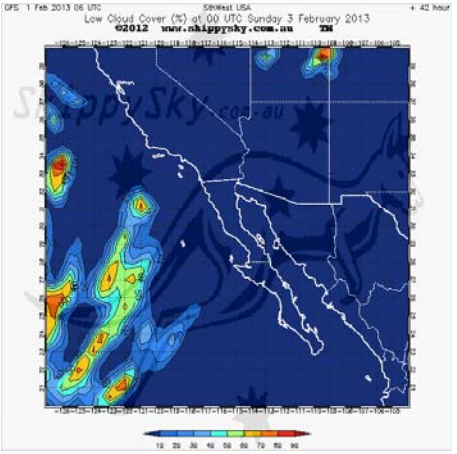


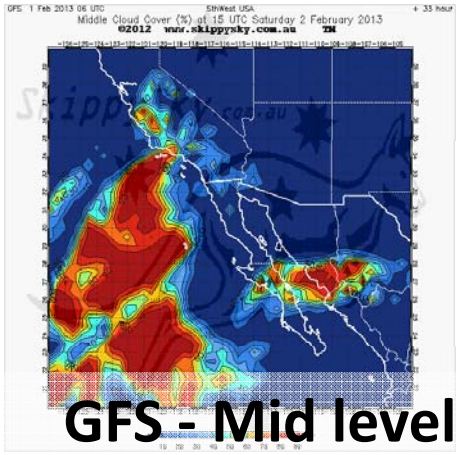


GFS - Low level

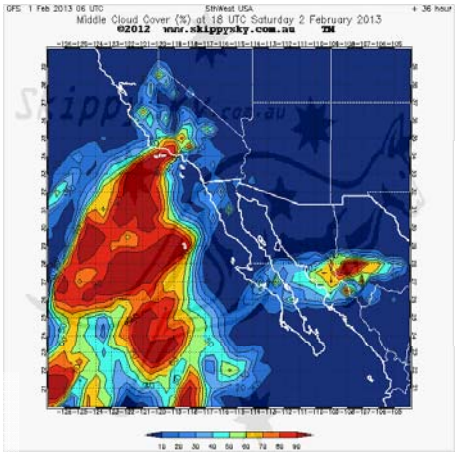


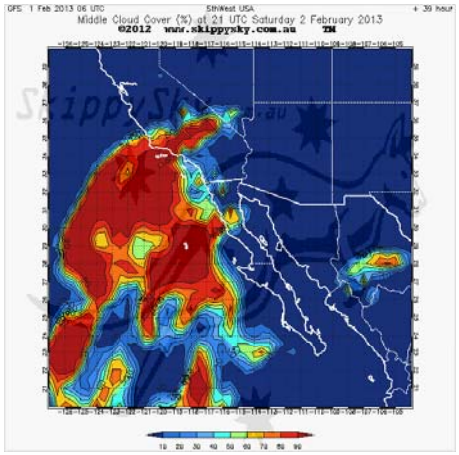


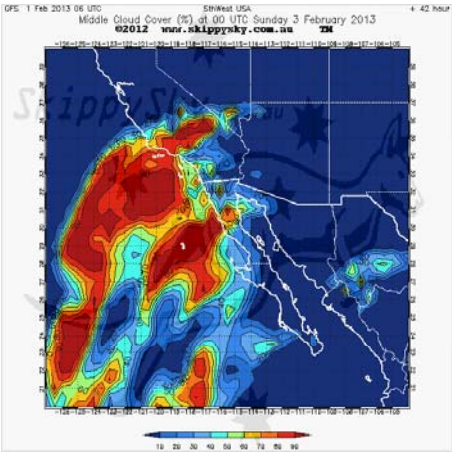


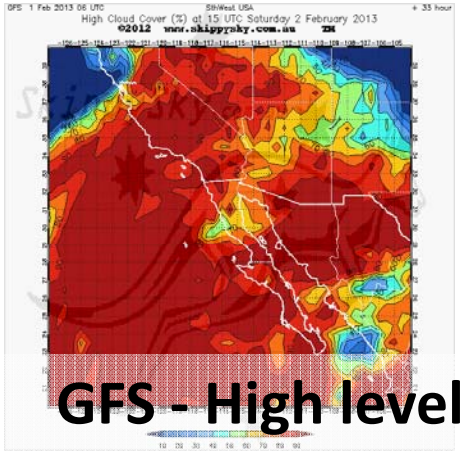


GFS - Mid level

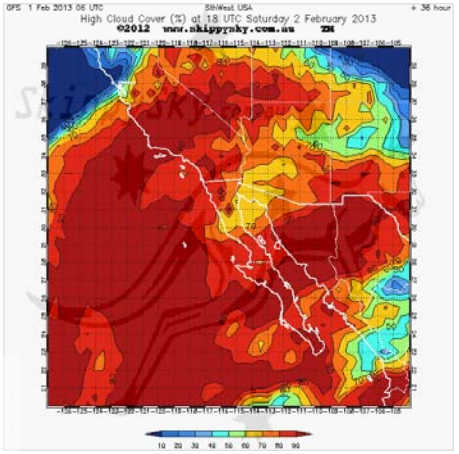


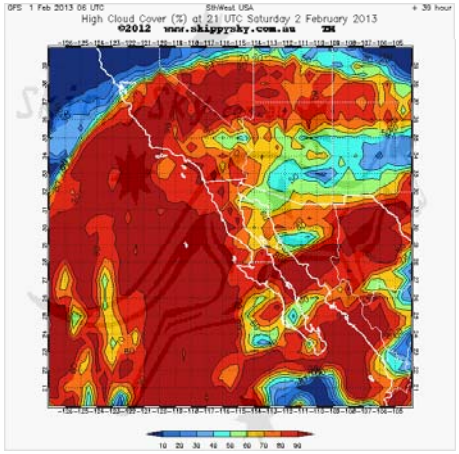


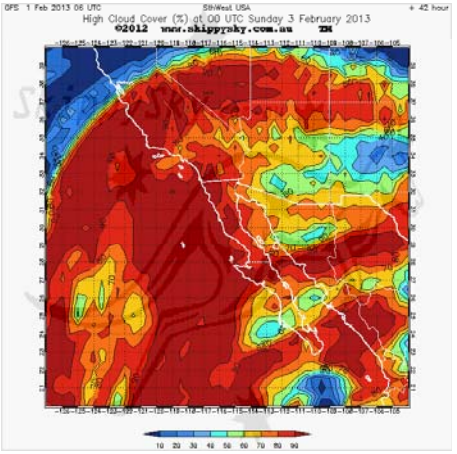




GFS - High level

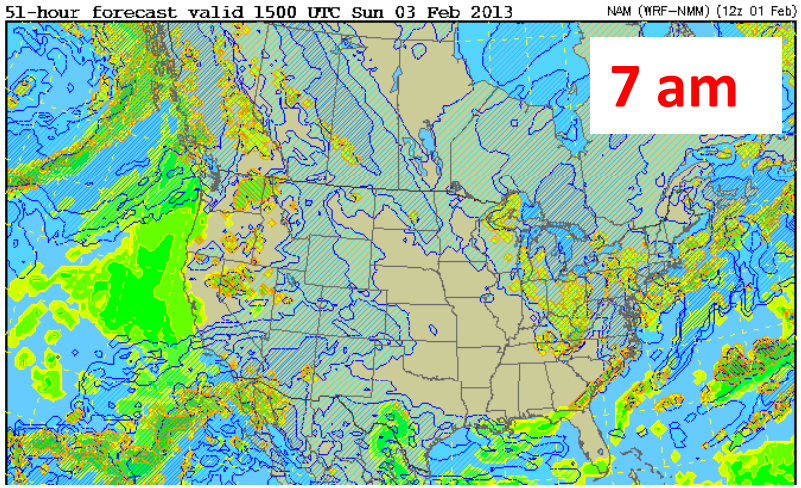




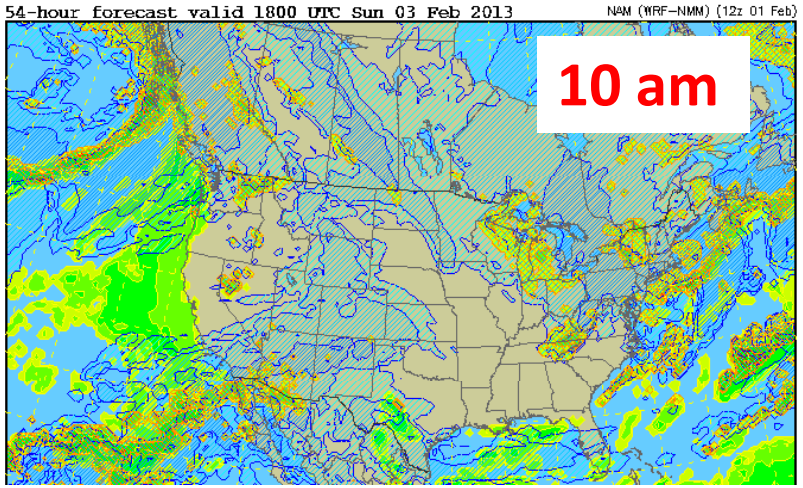


Sunday: NAM – High level clouds (>18K ft) over entire region all day. Low level clouds forecast to be very close to the coast.

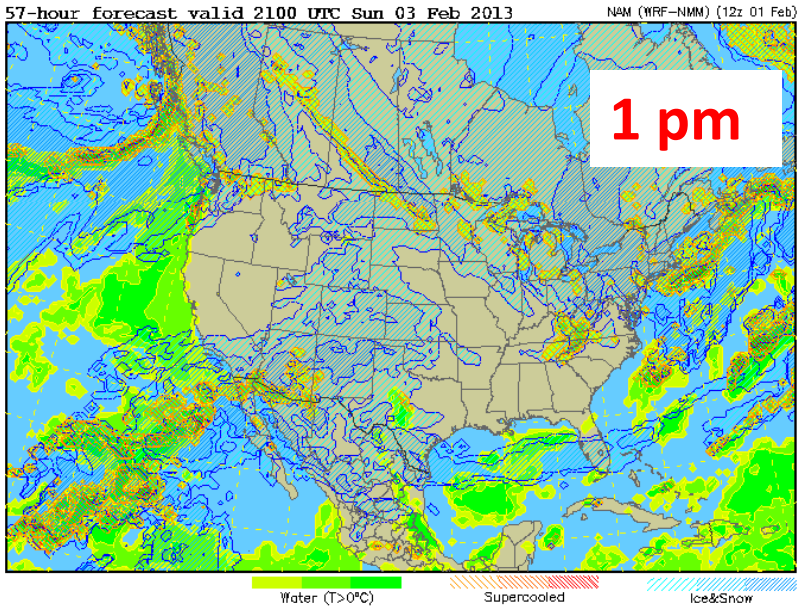
Integrated liquid and frozen hydrometeors (all levels)



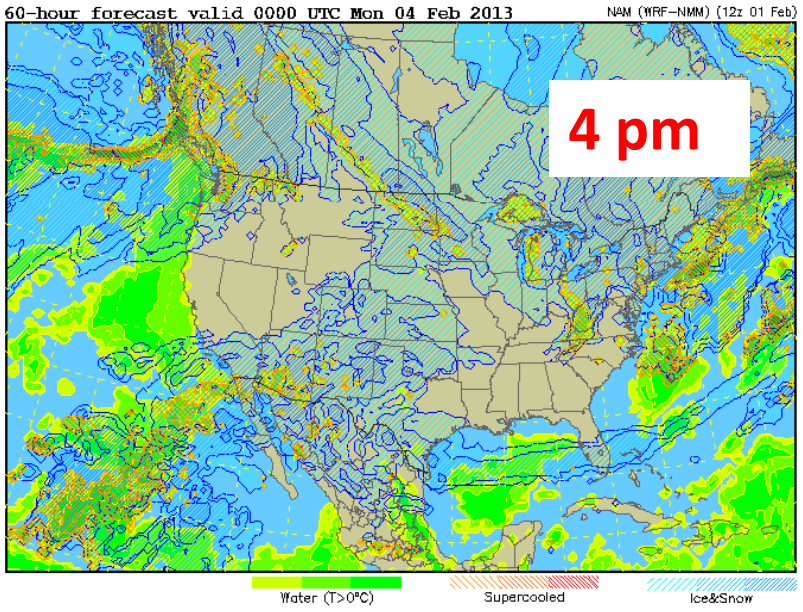
Integrated liquid and frozen hydrometeors (all levels)



Integrated liquid and frozen hydrometeors (all levels)



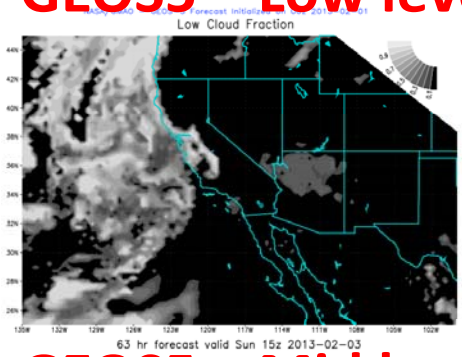
Integrated liquid and frozen hydrometeors (all levels)

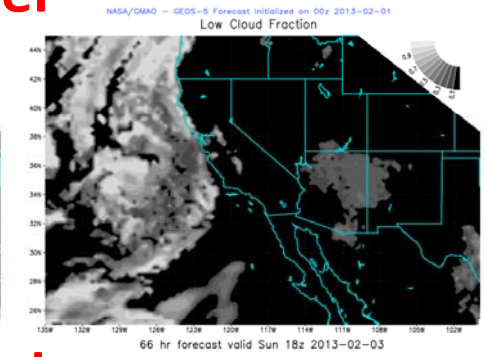


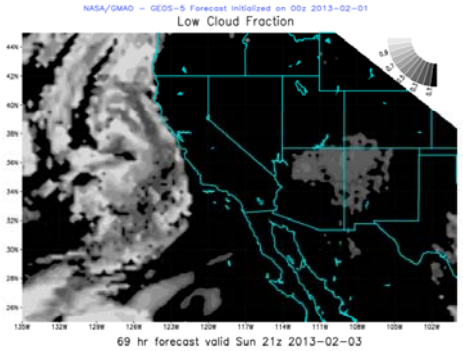
Sunday: GEOS5

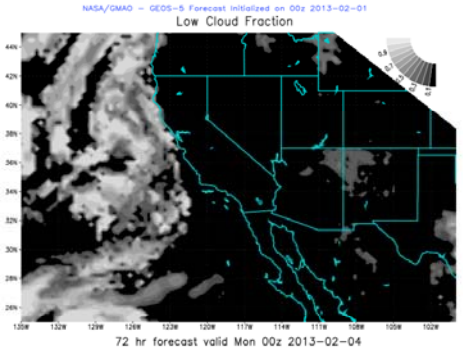
7 am | 10 am | 1 pm | 4 pm

GEOS5 – Low level

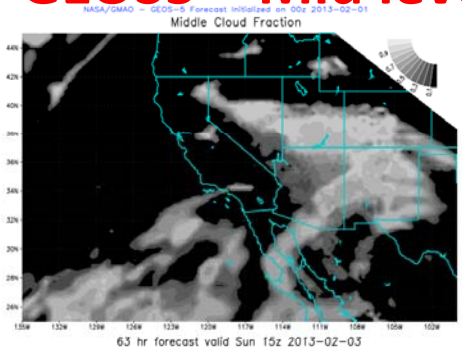


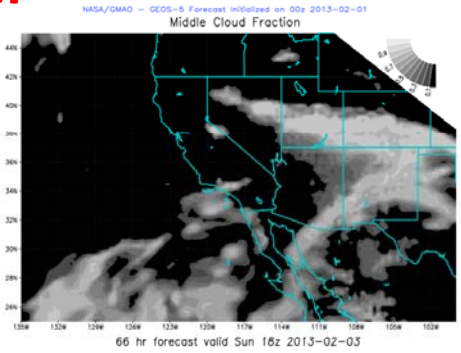


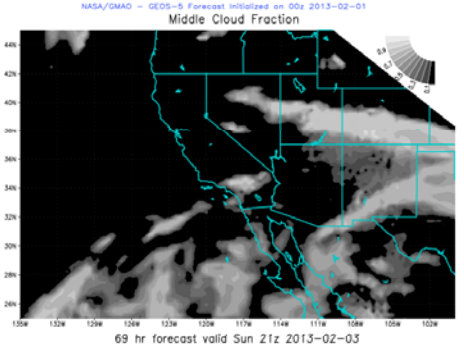


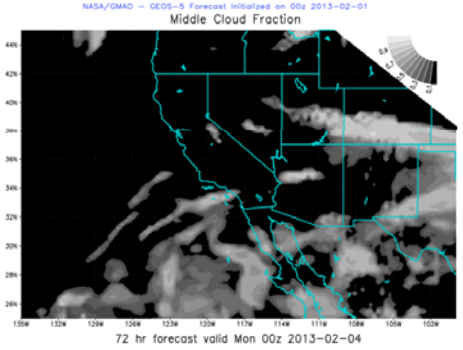


GEOS5 – Mid level

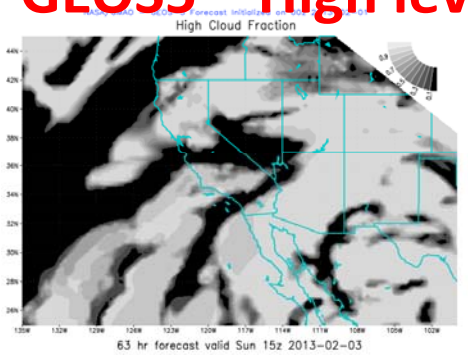


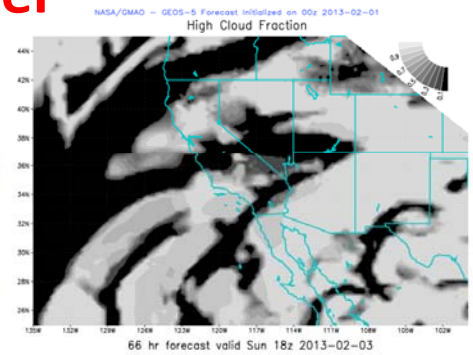


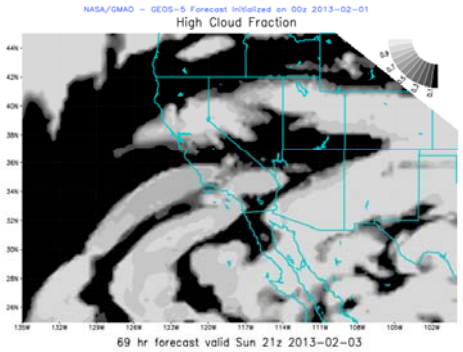


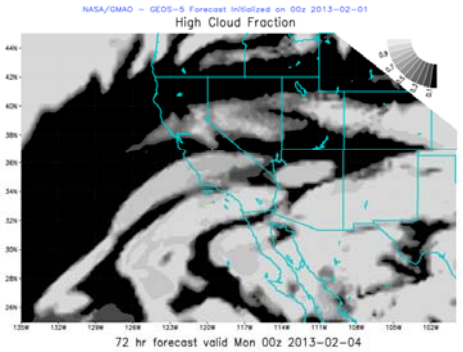


GEOS5 – High level

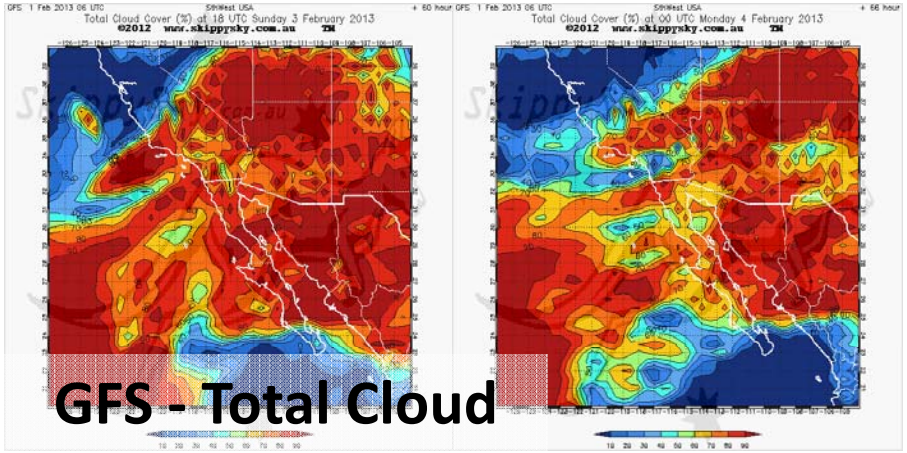




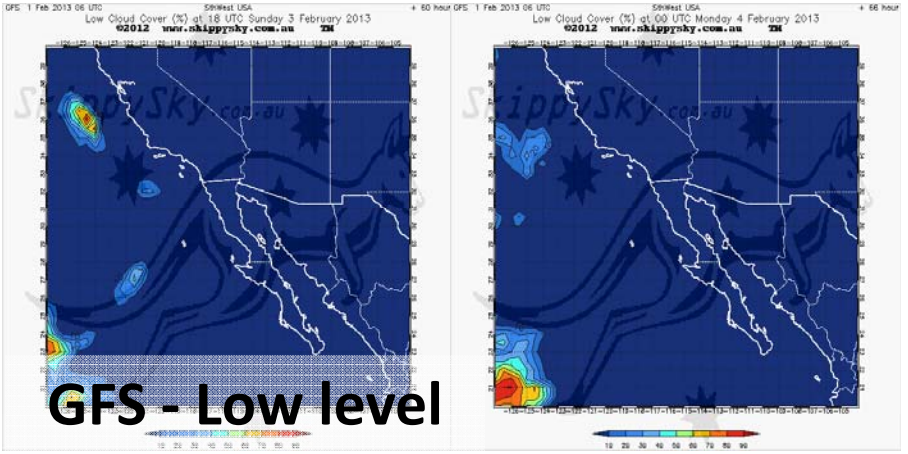


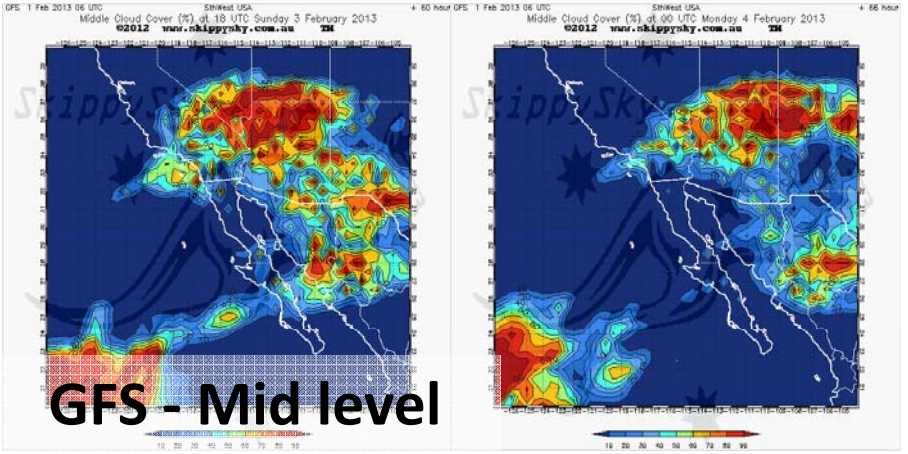


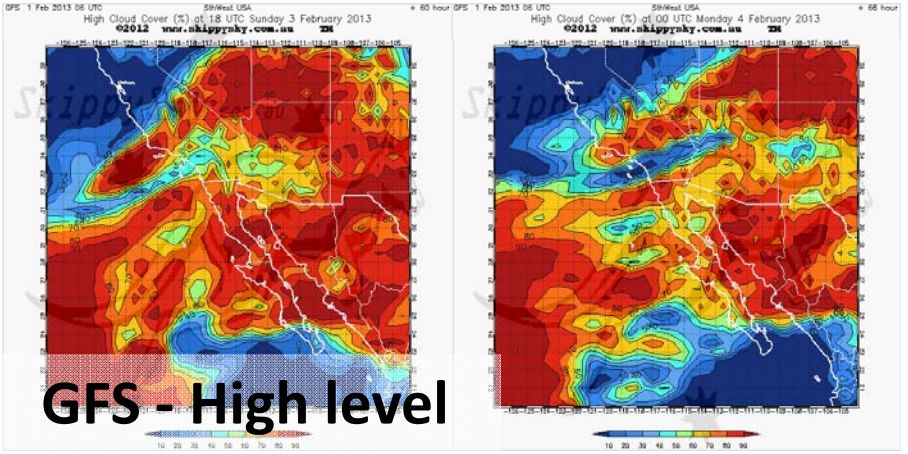
10 am 4 pm



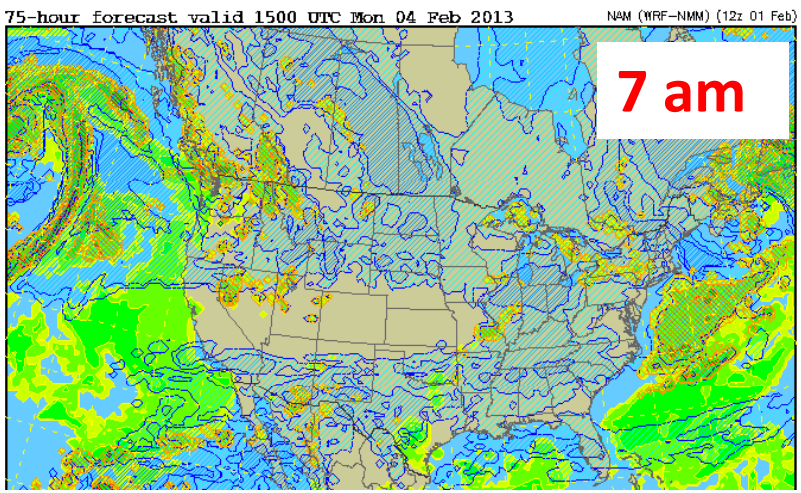
Sunday: GFS – high level cloud cover over entire region

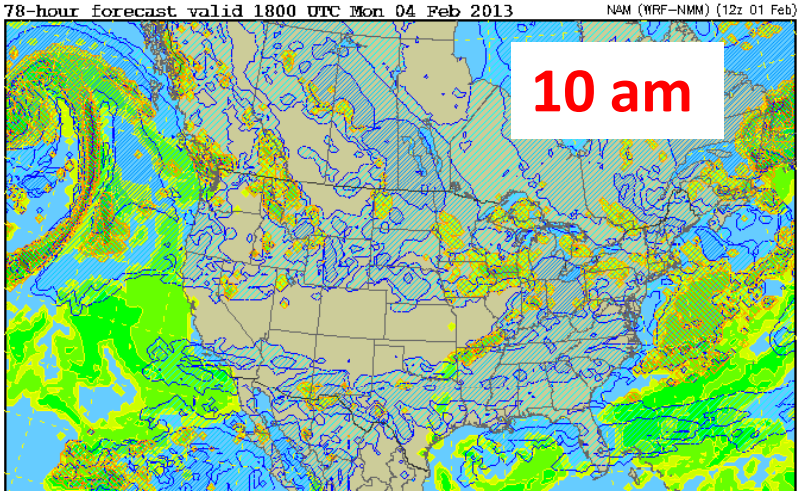




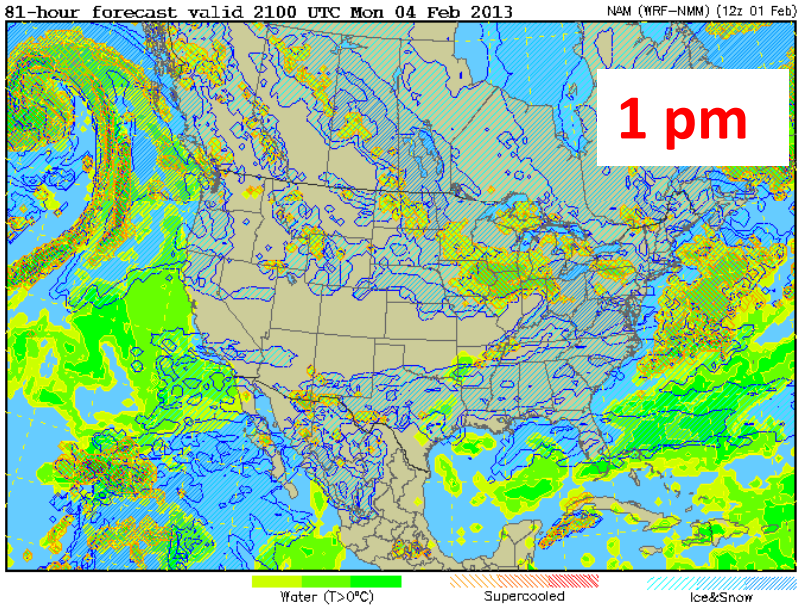


Monday: NAM – low level clouds (<6K ft) close to the coast, pushed back a bit from the LA PODEX region. High level clouds (>18K ft) forecast for the LA PODEX region all day. High level clouds over the SJV valley, clearing somewhat by the afternoon.

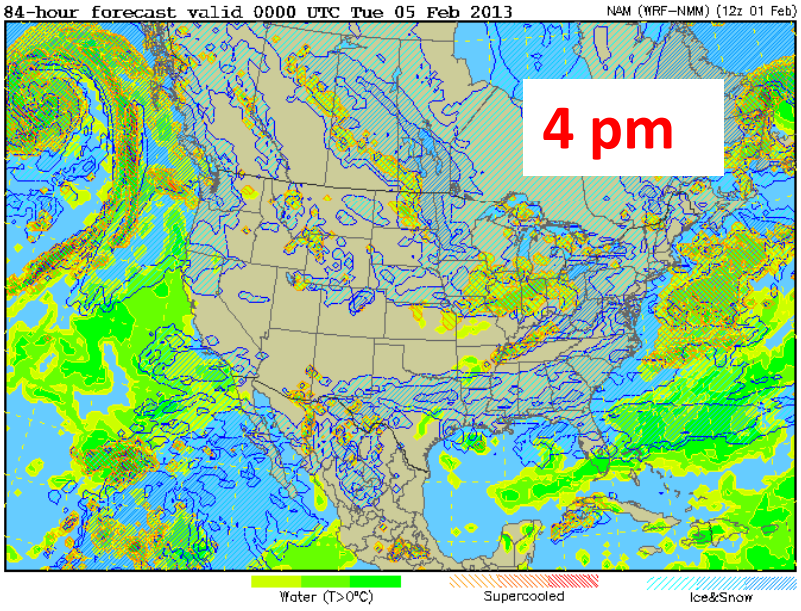




Integrated liquid and frozen hydrometeors (all levels)



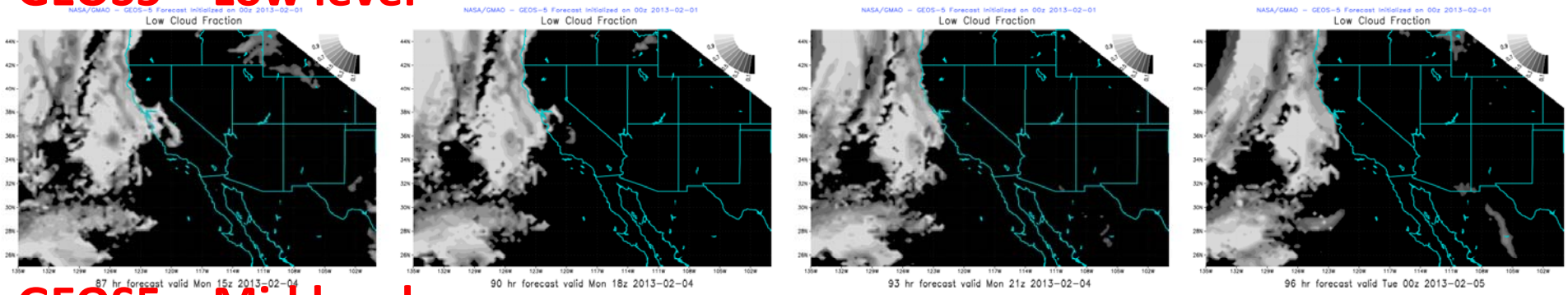
Integrated liquid and frozen hydrometeors (all levels)



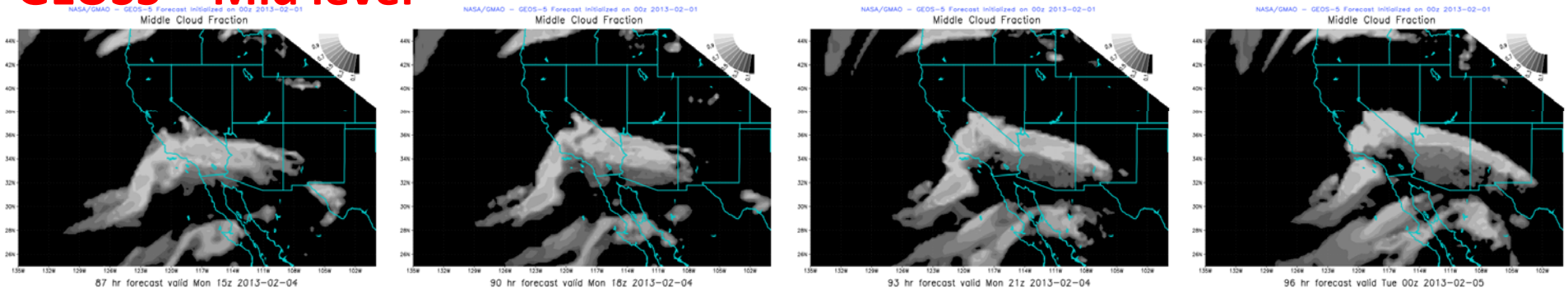
Monday: GEOS5 –

7 am 10 am 1 pm 4 pm

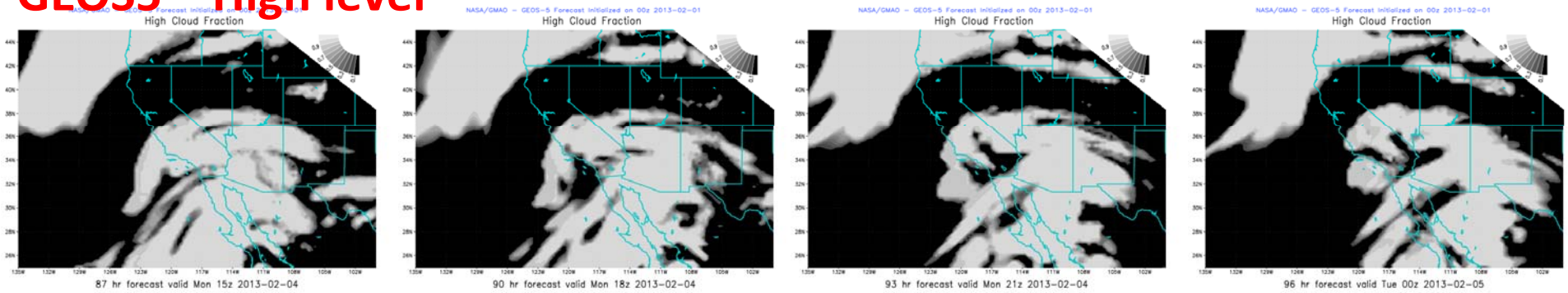
GEOS5 – Low level



GEOS5 – Mid level



GEOS5 – High level



AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE SAN JOAQUIN VALLEY - HANFORD CA
605 AM PST FRI FEB 1 2013
.UPDATE... ISSUED A DENSE FOG ADVISORY FOR THE CENTRAL AND SOUTHERN SAN JOAQUIN VALLEY THROUGH 19Z /1100 PST/ THIS MORNING. &&
.SYNOPSIS... LITTLE CHANGE IS EXPECTED AS HIGH PRESSURE WILL CONTINUE TO DOMINATE THE LOCAL WEATHER INTO THE FIRST PART OF NEXT WEEK. PATCHY NIGHT AND MORNING FOG IN THE SAN JOAQUIN VALLEY IS POSSIBLE THROUGH THE WEEKEND.

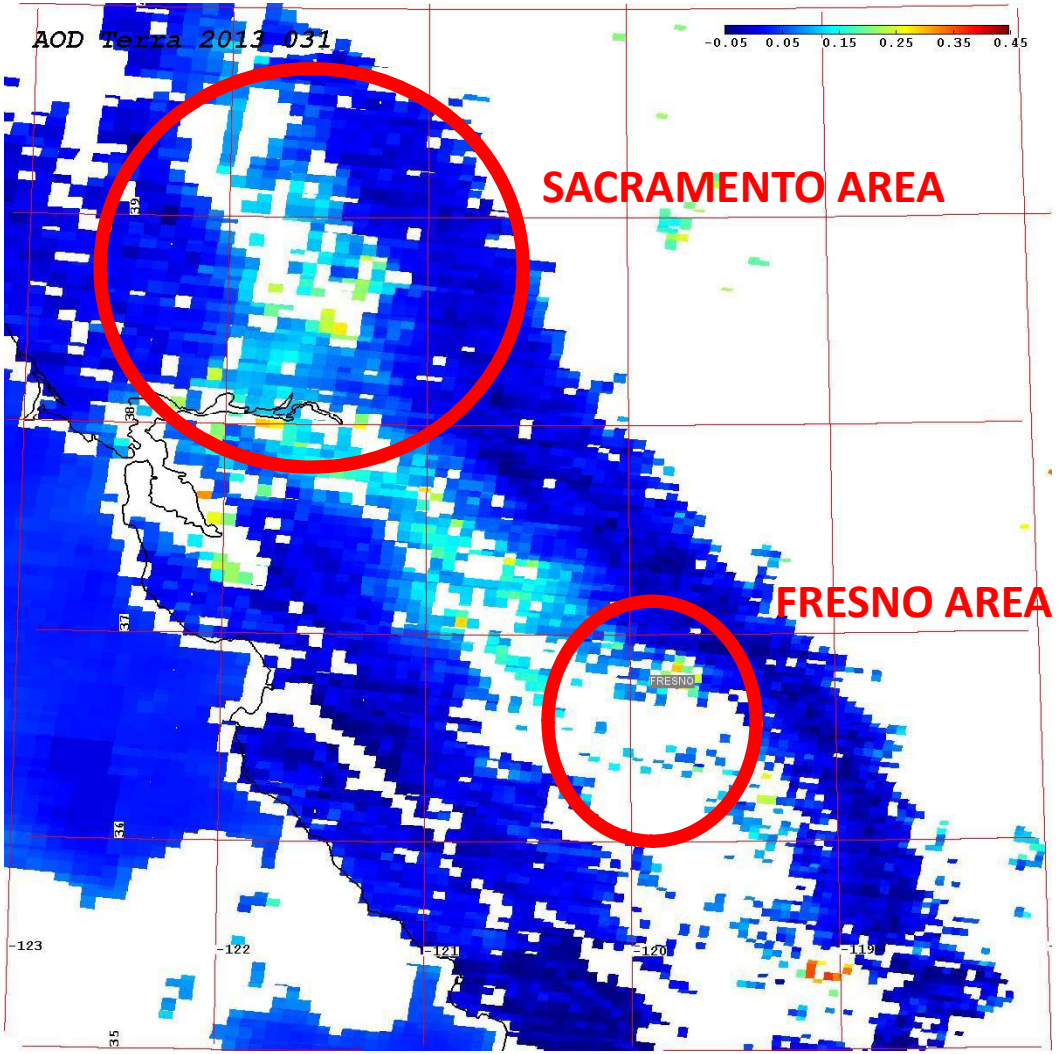
DISCUSSION...
AT 09Z /0100 PST/ THIS MORNING...SATELLITE LOOPS INDICATED THAT THE CENTRAL CALIFORNIA INTERIOR REMAINED UNDER THE INFLUENCE OF AN UPPER-LEVEL EAST-PACIFIC RIDGE. TEMPERATURES THURSDAY WERE A BIT WARMER THAN FORECAST...AND CENTRAL AND SOUTHERN SAN JOAQUIN VALLEY TEMPERATURES AT 09Z WERE AS MUCH AS 6 DEGREES WARMER THAN AT 09Z THURSDAY...AND DEWPOINTS WERE UP AS MUCH AS 4 DEGREES. AS A RESULT...EXPECT HIGH TEMPERATURES TODAY TO BE AT LEAST A COUPLE OF DEGREES WARMER THAN THURSDAY.

THE MODELS FORECAST AN UPPER-LEVEL LOW TO DEVELOP SATURDAY WEST OF BAJA CALIFORNIA AS AN EAST-PACIFIC TROUGH SPLITS. THIS LOW IS FORECAST TO SPIN SOME UPPER-LEVEL MOISTURE INTO THE CENTRAL CALIFORNIA INTERIOR FROM THE SOUTH...SO HAVE INCREASED SKY COVER OVER THE WEEKEND BECAUSE OF THE INFLUX OF CIRRUS.
THE NORTHERN COMPONENT OF THE TROUGH IS FORECAST TO MOVE THROUGH THE PACIFIC NORTHWEST OVER THE WEEKEND AS AN UPPER-LEVEL SHORT-WAVE. THIS SHORT-WAVE WILL FLATTEN THE RIDGE...RESULTING IN MINOR COOLING SUNDAY BEFORE THE RIDGE REBOUNDS MONDAY.

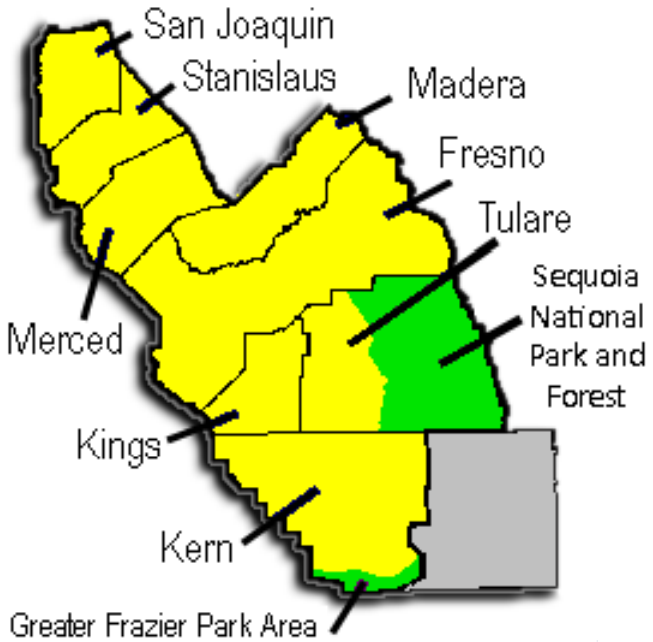
ANOTHER UPPER-LEVEL TROUGH WILL MOVE THROUGH NORTHERN CALIFORNIA TUESDAY NIGHT AND WEDNESDAY. THIS TROUGH WILL WEAKEN THE RIDGE AND BRING A SLIGHT CHANCE OF SNOW TO THE HIGHER ELEVATIONS OF THE SOUTHERN SIERRA NEVADA. THIS WILL BE A PRECURSOR SYSTEM TO A STRONGER TROUGH THAT WILL REACH CALIFORNIA NEXT THURSDAY.

ALTHOUGH THE LATEST MODEL RUNS HAVE DELAYED THE ARRIVAL OF THE MAIN TROUGH A BIT...THEY STILL FORECAST THIS TO BE A COLD STORM WITH 850-MB TEMPERATURES OVER FRESNO FALLING AS MUCH AS 12 C FROM 18Z /1000 PST/ THURSDAY TO 18Z FRIDAY. THE GFS AND ECMWF DO DIFFER A BIT ON TIMING AND THE ECMWF DIGS THE PRECIPITATION FURTHER SOUTH...ACROSS THE ENTIRE HANFORD WARNING/FORECAST AREA...THAN THE GFS /WHICH KEEPS PRECIPITATION NORTH OF KERN COUNTY/. HOWEVER...THE CONSENSUS IS DEVELOPING THAT THIS COULD BE A SIGNIFICANT PRECIPITATION EVENT WITH RAINFALL AMOUNTS BETWEEN 0.25 AND 0.50 INCH ON PARTS OF THE SAN JOAQUIN VALLEY FLOOR..AND POSSIBLY DROPPING SNOW ON THE PASSES THROUGH THE KERN COUNTY MOUNTAINS FRIDAY.

NOTE...ALTHOUGH SATURDAY...FEBRUARY 2ND...IS GROUNDHOG DAY...WINTER WILL NOT END UNTIL 0402 PDT /1102Z/ ON MARCH 20TH. && .
AIR QUALITY ISSUES... ON FRIDAY FEBRUARY 1 2013... FIREPLACE/WOOD STOVE BURNING IS PROHIBITED IN FRESNO... KERN AND KINGS COUNTIES. FURTHER INFORMATION IS AVAILABLE AT VALLEYAIR.ORG &&

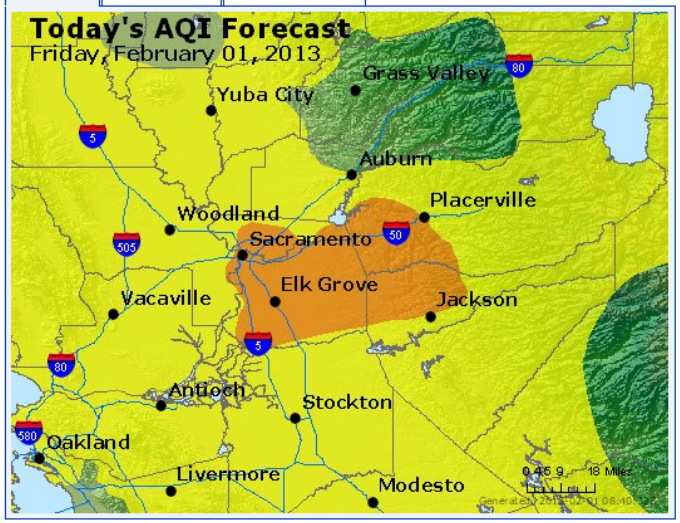

AOD Terra 2013 031
-0.05 0.05 0.15 0.25 0.35 0.45
SACRAMENTO AREA
FRESNO AREA
FRESNO
39
38
37
36
35
-123
-122
-121
-120
-119

SJV APCD Daily Forecast – for TODAY (February 1)



ROAR LEVEL	Ozone (O^3)	Particulate Matter (PM 2.5)
LEVEL 1 Good	1-59 ppb	1-15 µg/m³
LEVEL 2 Moderate	60-75 ppb	16-35 µg/m³
LEVEL 3 Unhealthy for Sensitive Groups	76-95 ppb	36-55 µg/m³
LEVEL 4 Unhealthy	96-115 ppb	56-75 µg/m³
LEVEL 5 Very Unhealthy	>115 ppb	>75 µg/m³

Forecast | Current AQI | AQI Animation



Good | Moderate | USG | Unhealthy | Very Unhealthy | Hazardous | ! Action Day

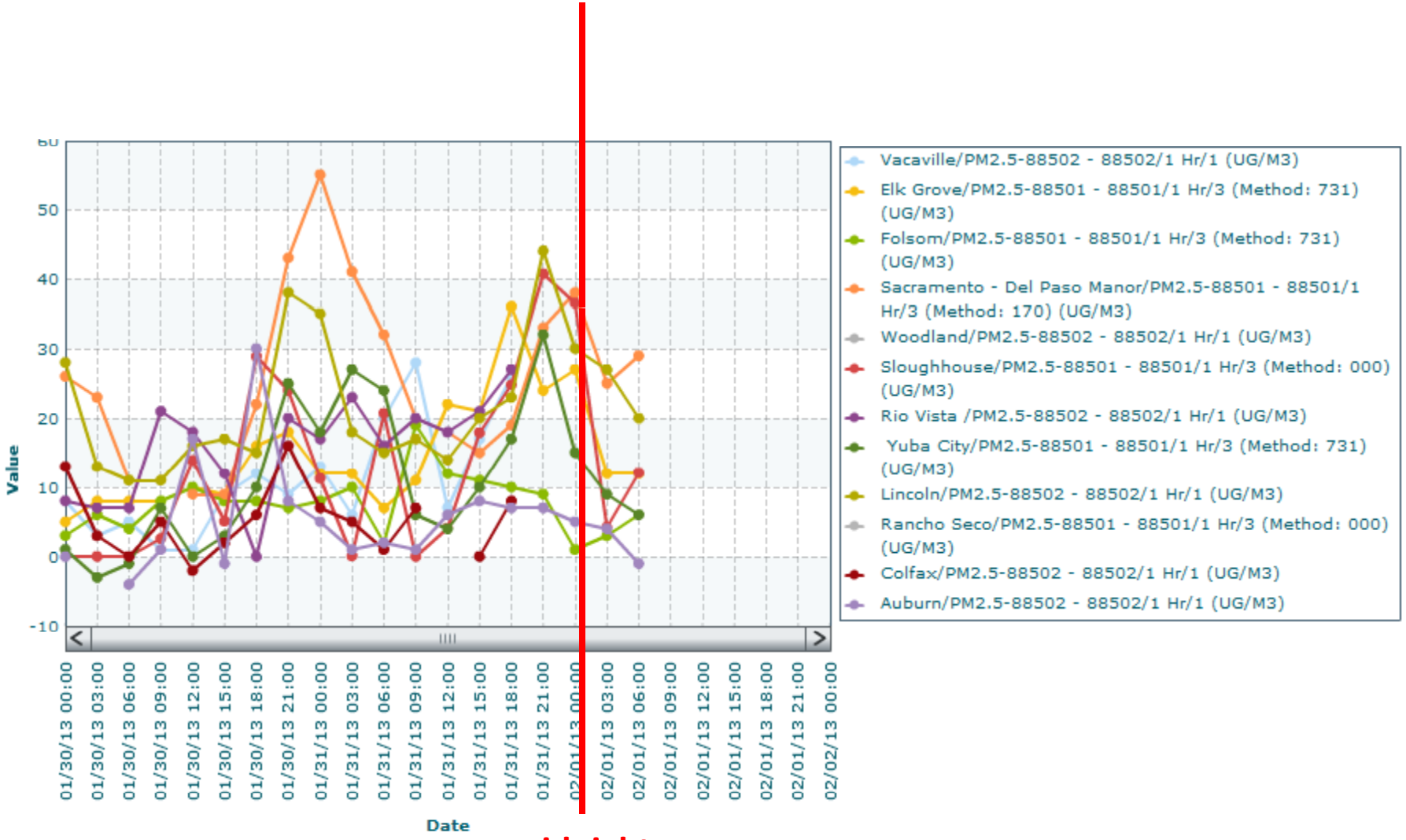
Air Quality Forecast

Today's High	Tomorrow's High
Air Quality Index (AQI)	Air Quality Index (AQI)
105 Unhealthy for Sensitive Groups	103 Unhealthy for Sensitive Groups
Health Message: People with heart or lung disease, older adults, and children should reduce prolonged or heavy exertion.	**Health Message:** People with heart or lung disease, older adults, and children should reduce prolonged or heavy exertion.
AQI - Pollutant Details	
Particles (PM2.5) 105 Unhealthy for Sensitive Groups	Particles (PM2.5) 103 Unhealthy for Sensitive Groups

Forecast Discussion: Thursday, an upper-level ridge of high pressure will build over northern California, reducing vertical mixing in the atmosphere. In addition, light winds will limit pollutant dispersion in the Sacramento region. Therefore, particle levels will be high-Moderate. Friday and Saturday, the upper-level ridge of high pressure will continue to limit vertical mixing in the atmosphere, and light winds will reduce pollutant dispersion. Furthermore, moisture associated with patchy morning fog will increase particle formation. These weather conditions, combined with pollutant carryover from day to day, will result in high-Moderate to Unhealthy for Sensitive Groups particle levels on both days.

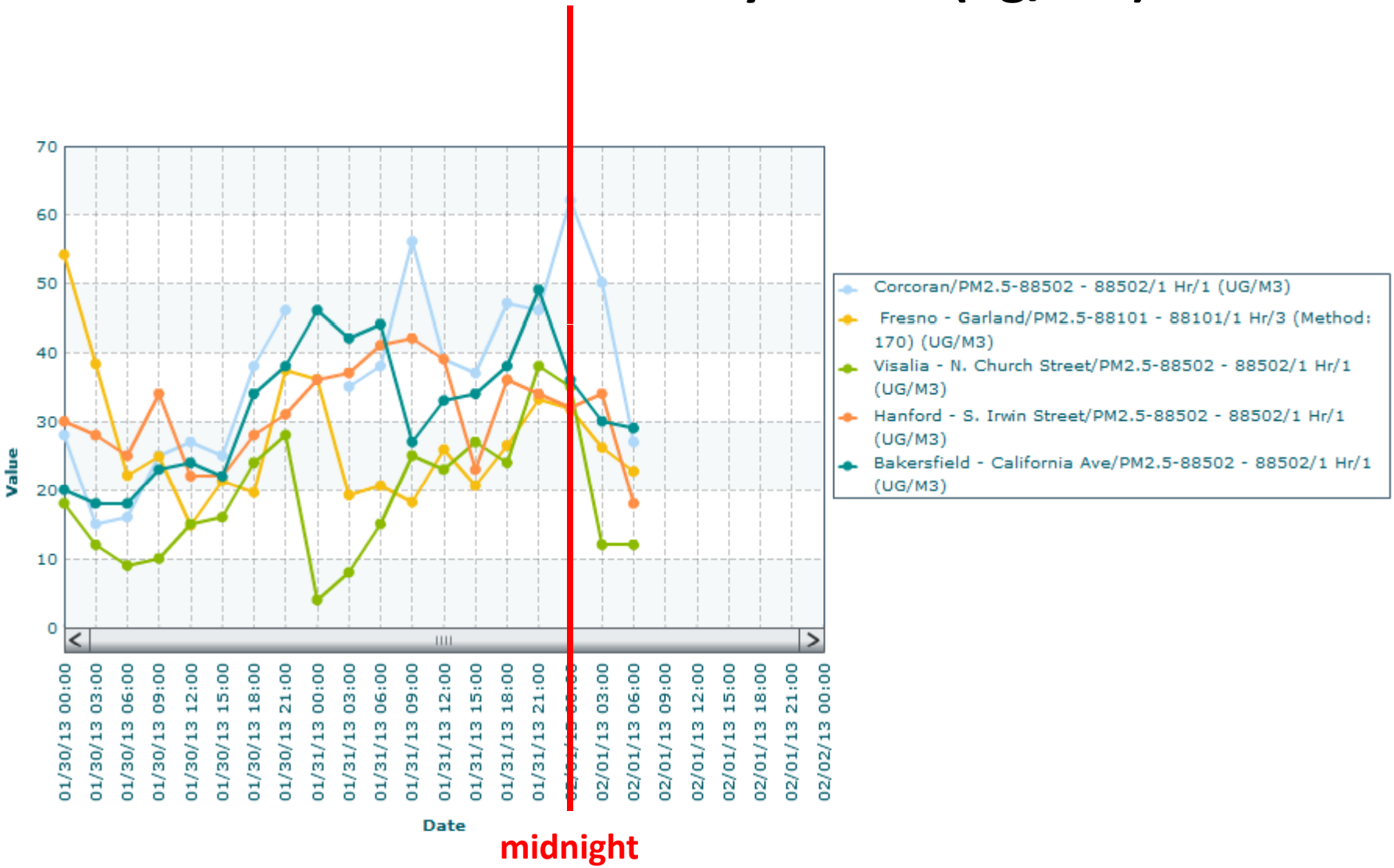
Current Conditions

Sacramento Metro: Hourly PM2.5 (ug/m3)



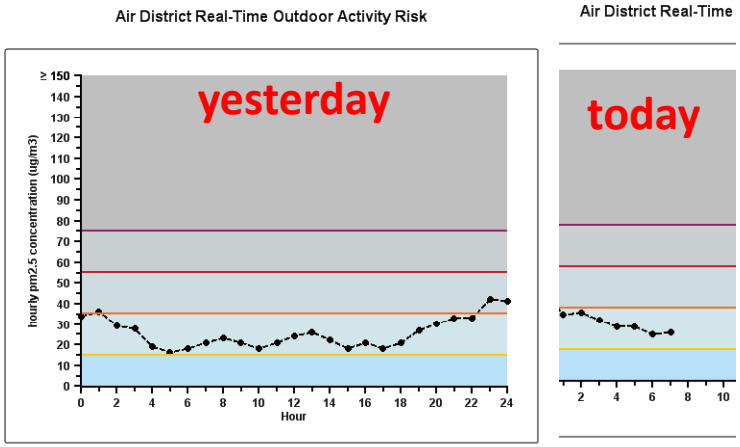
midnight

DISCOVER-AQ Sites: Hourly PM2.5 (ug/m3)

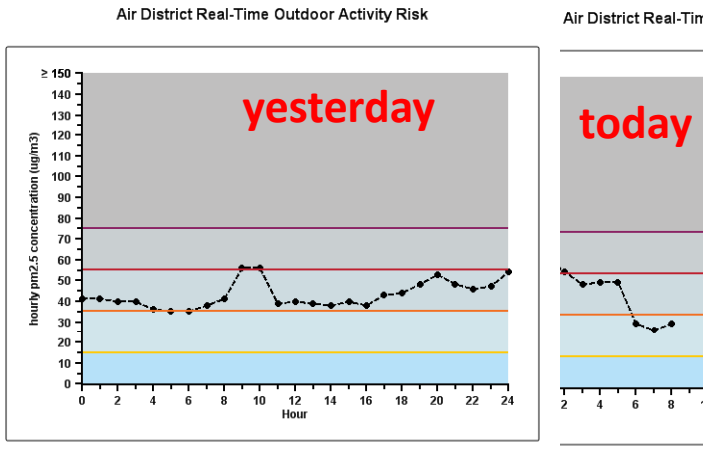


January 31 (Thursday) & February 1 (Today)

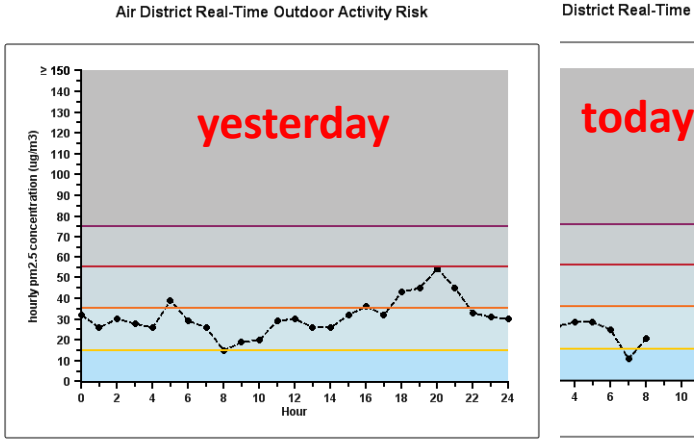
Fresno-Garland



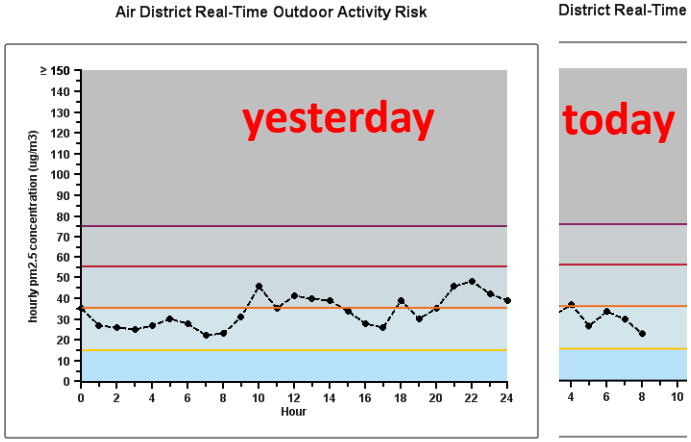
Corcoran



Bakersfield



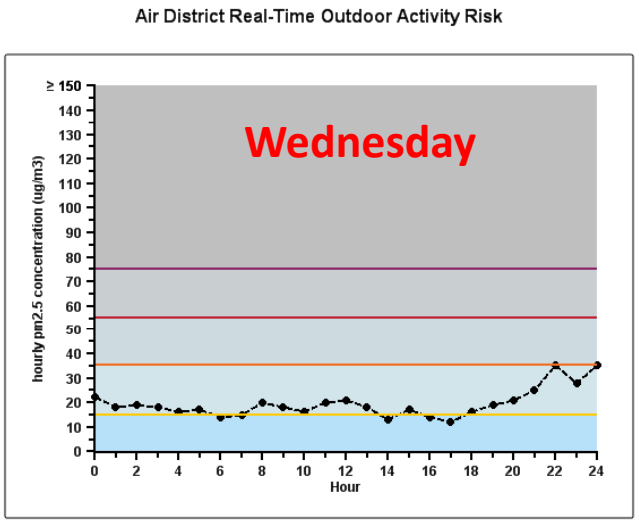
Stockton

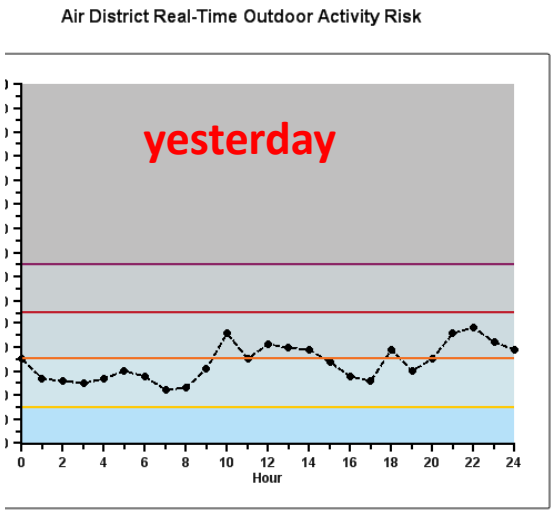


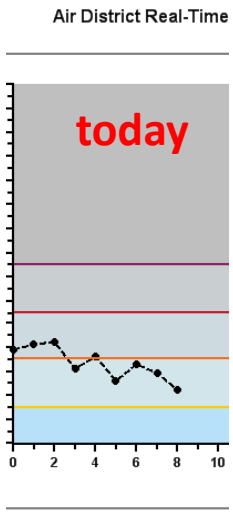
Stockton

The SJV APCD said that they don't understand why Stockton's PM2.5 doubled.

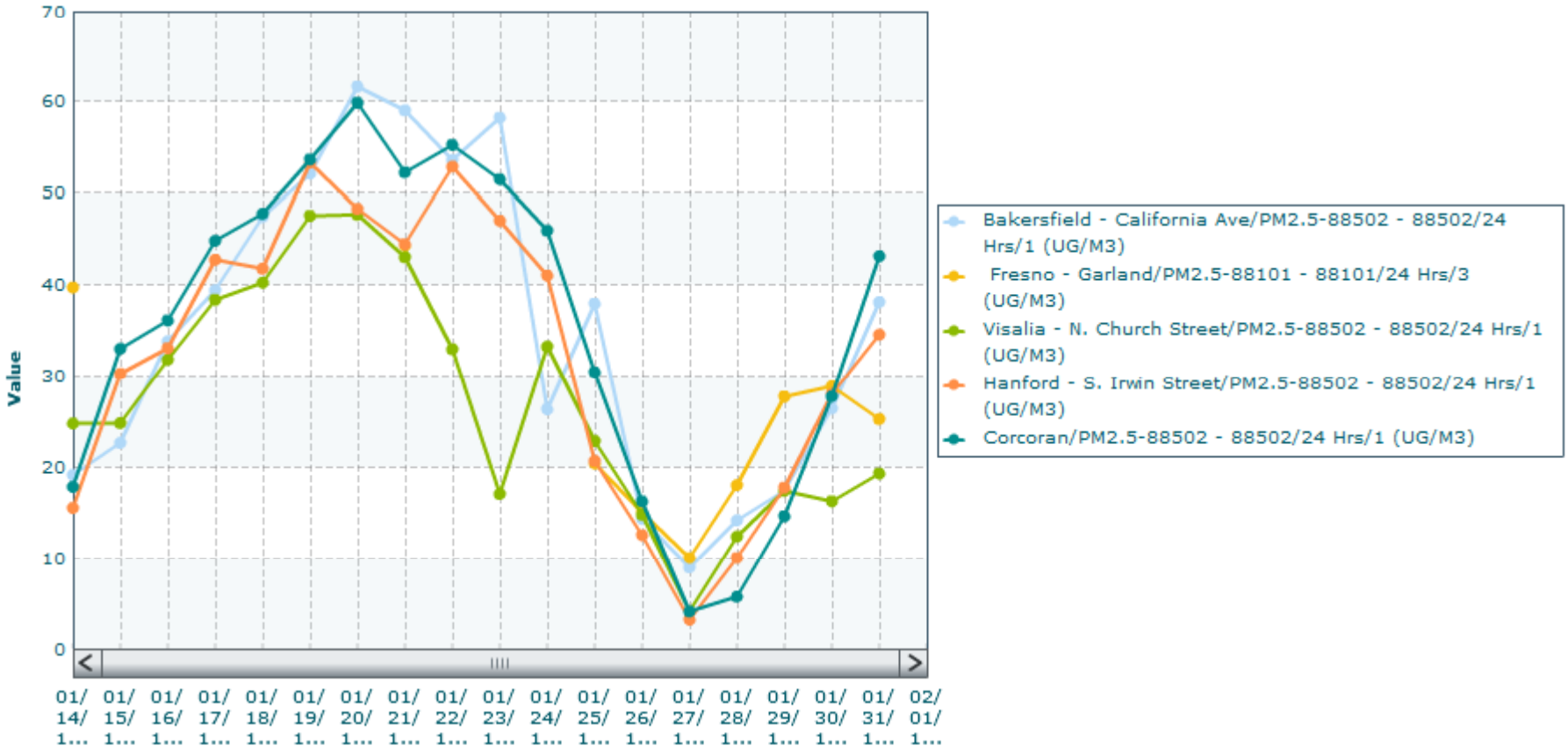
They want to know why levels increased significantly in Stockton, but not at other sites.







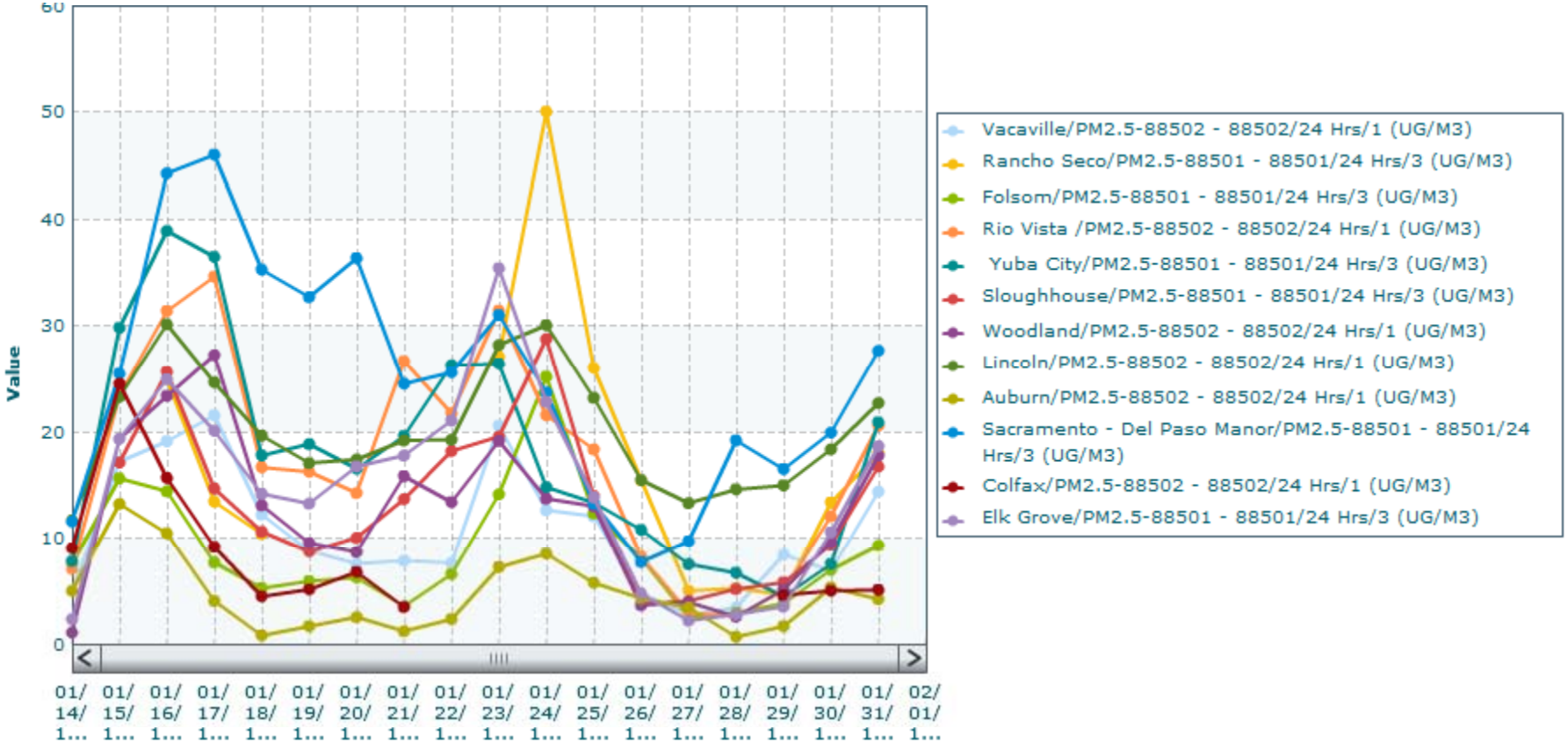
DISCOVER-AQ Sites: Daily PM2.5 (ug/m3)



1/14

1/31

Sacramento Metro Sites: Daily PM2.5 (ug/m3)



1/14 Date 1/31

SJV APCD Discussion Summary

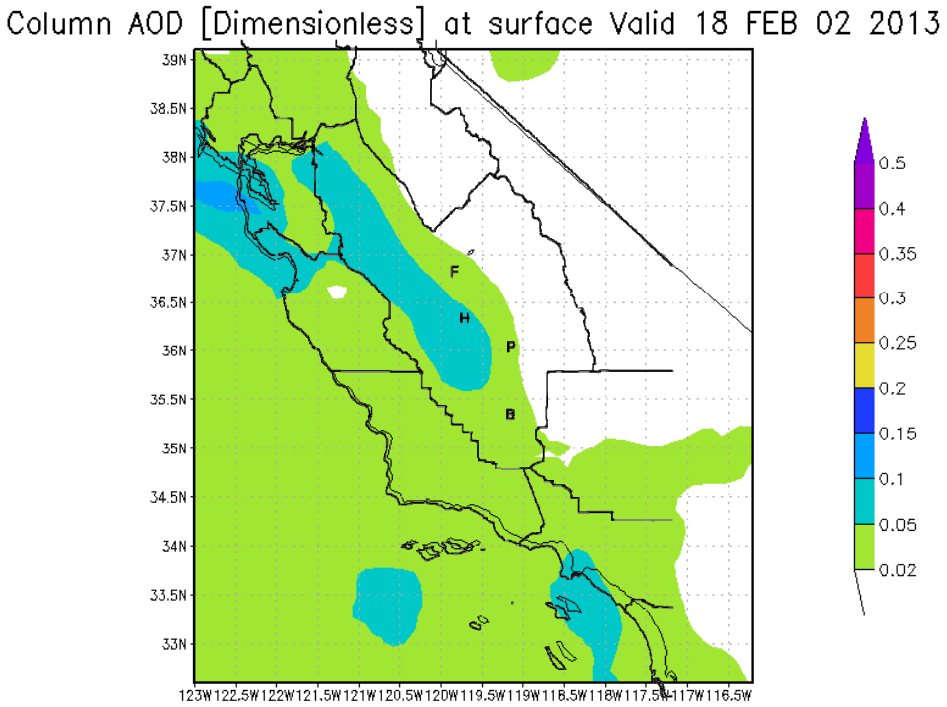
1) High PM2.5 at night due to fireplaces and inversion.

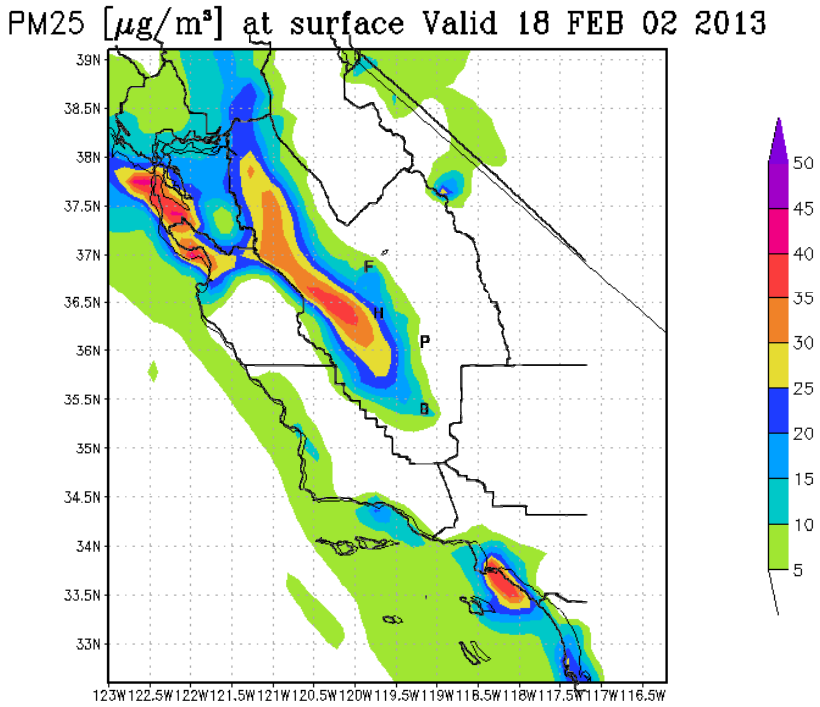
2) PM2.5 levels to remain similar through weekend : code yellow – code orange.

3) There shouldn't be a "clean-out" event of the SJV until next Wednesday or Thursday.

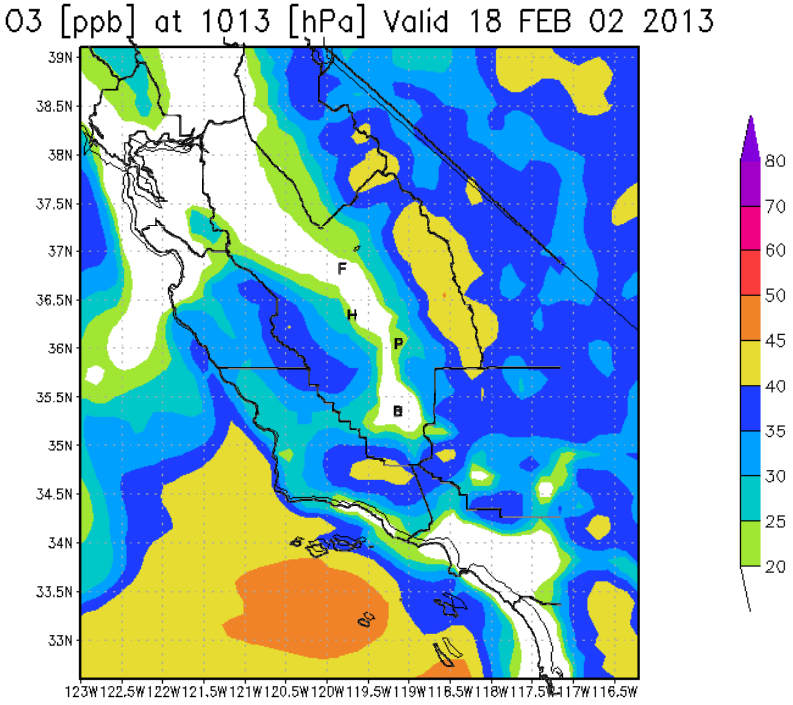
The SJV APCD want to know the depth of pollution measured in spirals.

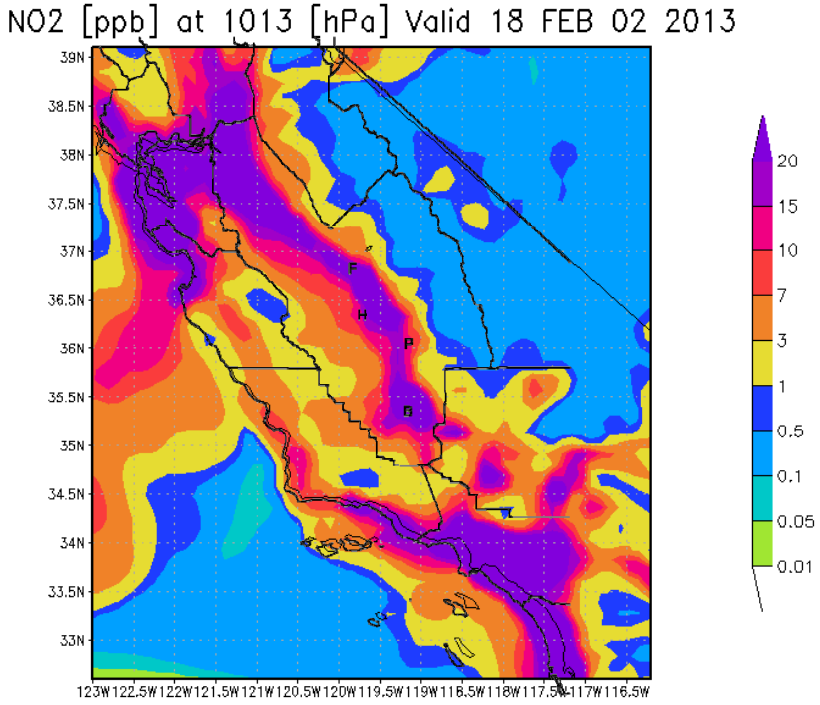
NOAA CMAQ: Saturday 10 am = 18 Z



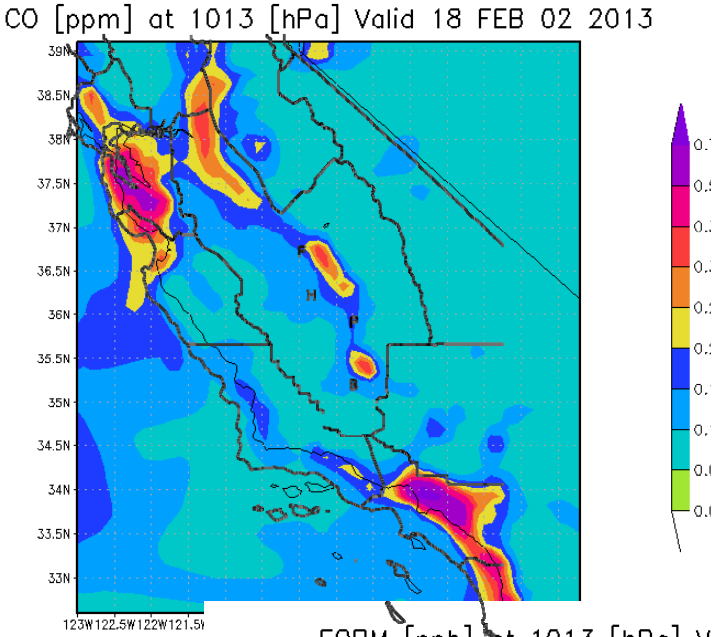


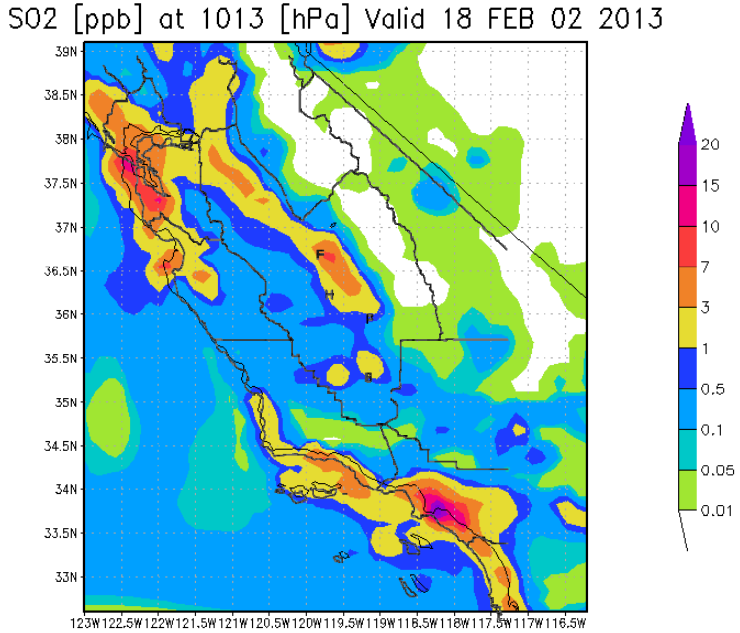
NOAA CMAQ: Saturday 10 am = 18 Z

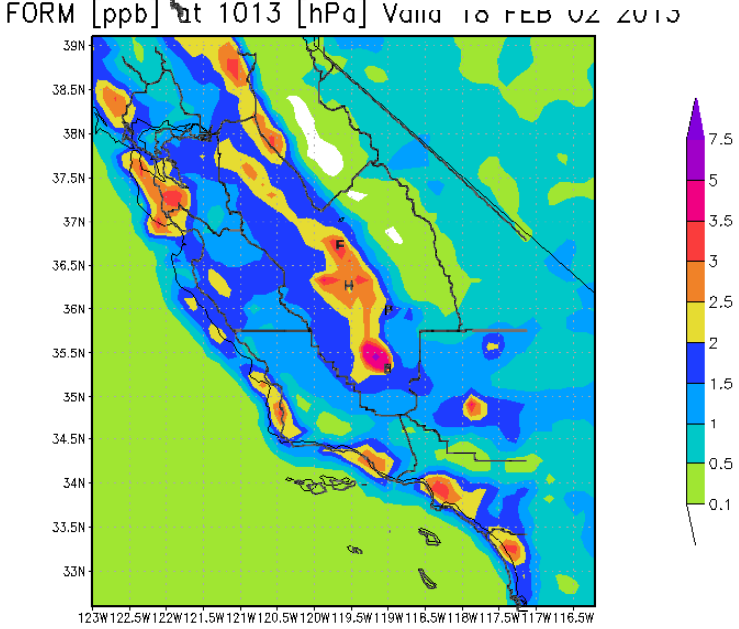




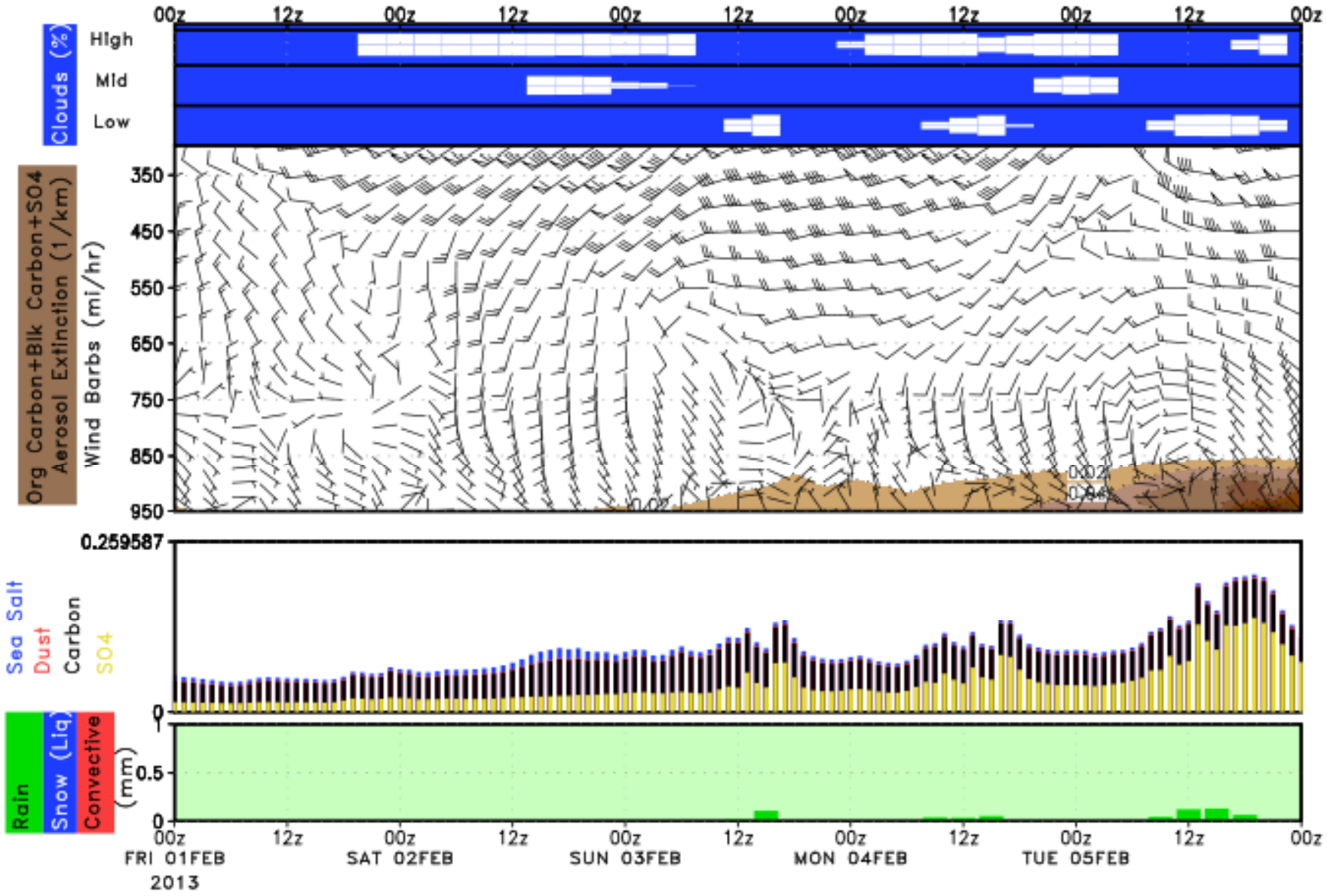
NOAA CMAQ: Saturday 10 am = 18 Z



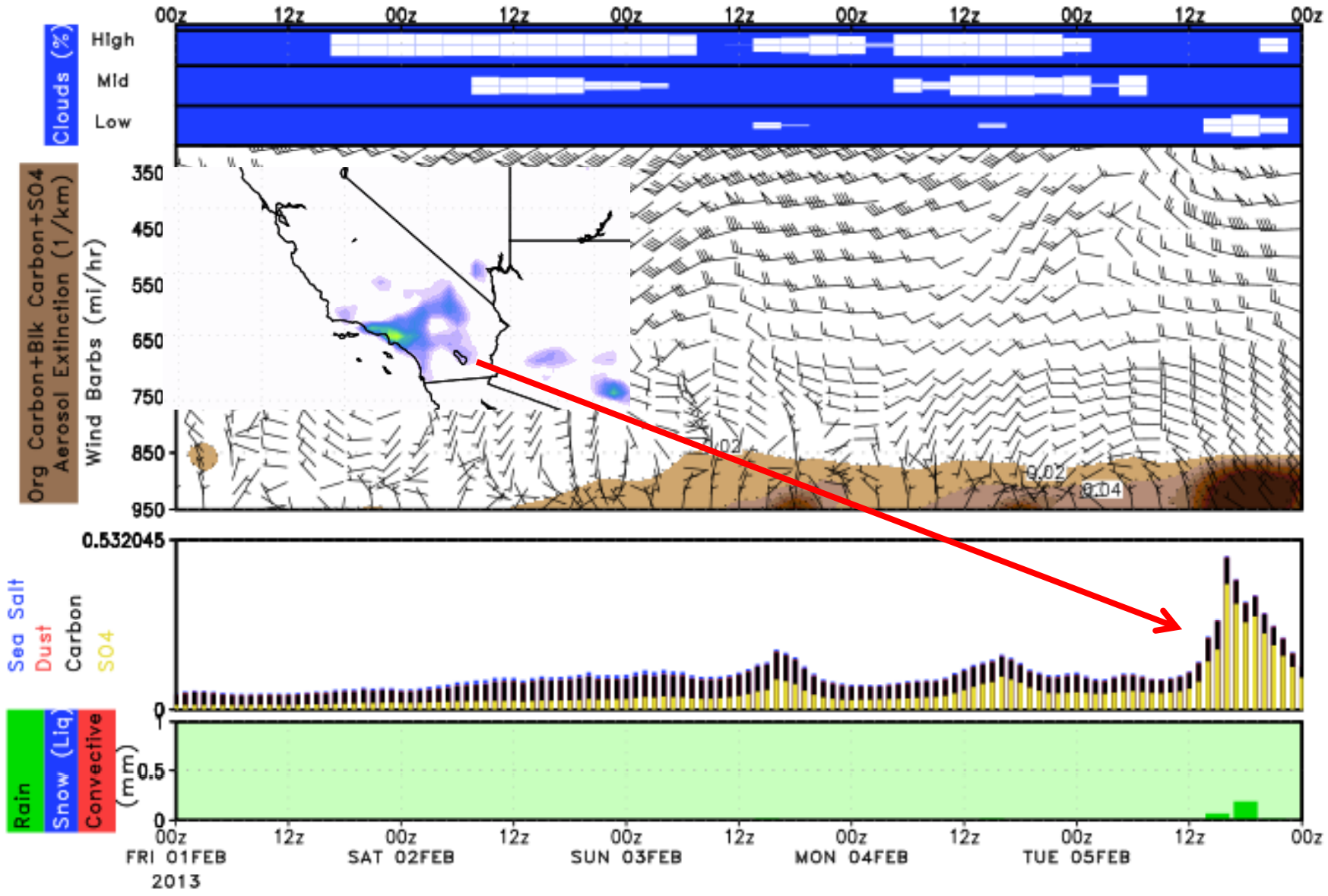




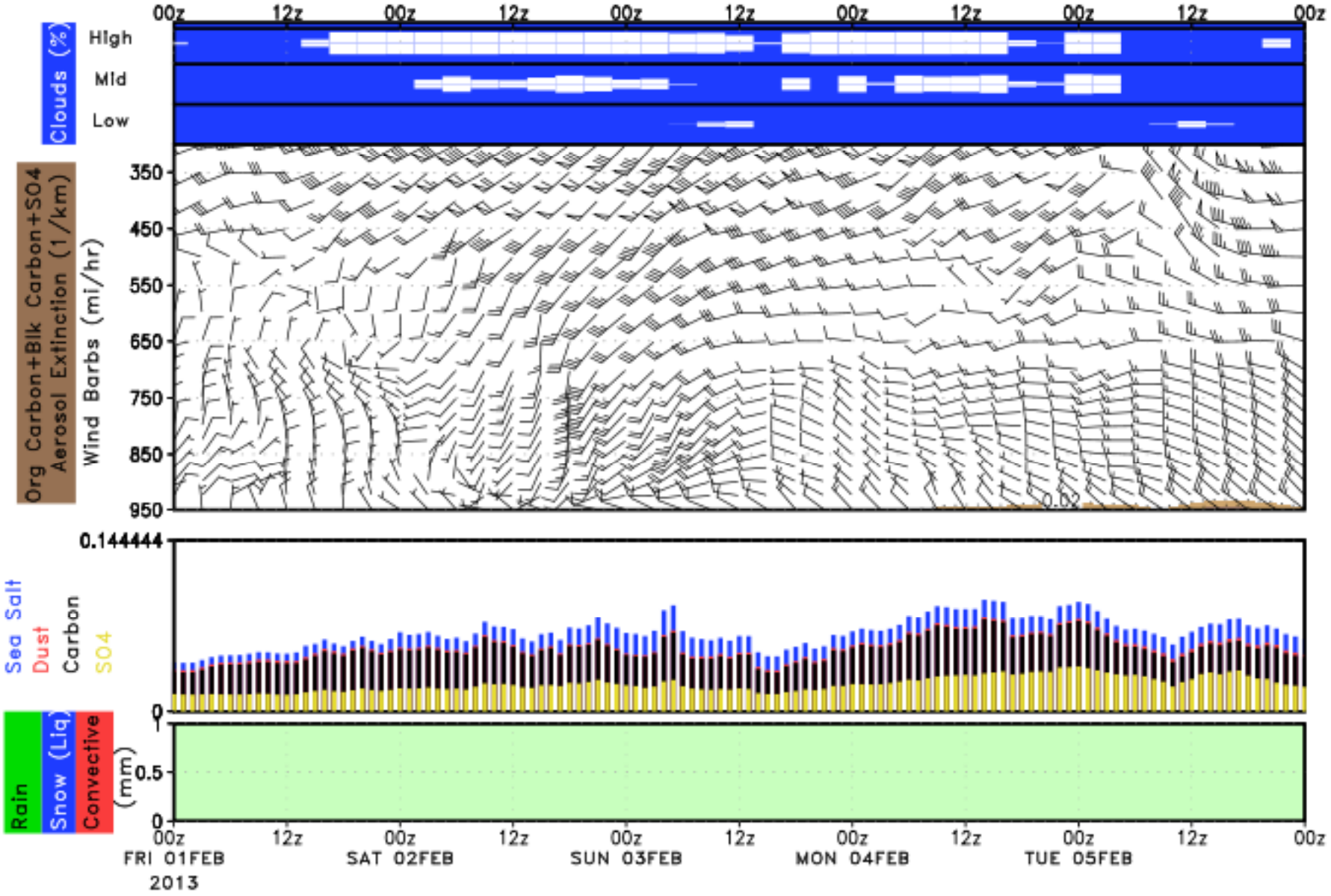
GMAO GEOS5: Fresno



GMAO GEOS5: Bakersfield



GMAO GEOS5: San Nicolas Is.



Recommendations

Saturday

SJV – Cloud deck lower, more like ~20K ft. Cloud layer expected to be ~50% opacity. Cloud models agree, showing lower levels clouds for tomorrow than today. Fog expected to linger longer tomorrow morning given anticipated cloud cover increase.

PODEX (LA) – Cirrus expected over the region. Lower level clouds are expected to be as close or closer to the coast given weakening offshore flow.

Sunday

SJV – Cloud models show high levels clouds over the SJV. Hanford NWS forecaster predicted they would be scattered (~25-50% cloud cover) and higher in altitude (~25K ft), similar to today's conditions. Sunday's fog situation is forecast to be similar to today.

PODEX (LA) – Cirrus expected over the region. Lower level clouds are expected to be as close or closer to the coast than on Saturday given weakening offshore flow.

Recommendations

Monday – SJV – Drying is indicated at mid and upper levels. Cloud forecast is to be clearer than Sunday. Morning fog should be similar to today (patchy, shallow, burning off around 10 am)

Tuesday – SJV – similar to Monday. Clouds expected to return Tuesday night.

Wednesday until the end of the week – SJV – Clouds expected Wed in advance of approaching trough. Precipitation is forecast for Thursday and Friday.