DISCOVER-AQ OUTLOOK January 25, 2013

Cloudy and rainy conditions persisted in Palmdale today. Moisture continues to be pumped into the region by a cut-off low off the southern CA coast. A small window of opportunity for a PODEX flight over marine stratocumulus (with D-AQ aircraft as well) exists for Saturday, but inconclusive forecasts for the existence of high level cirrus in addition to marine stratocumulus led to a no-go call for tomorrow (Saturday).

The cold front associated with a cyclonic system coming out of the Gulf of Alaska is forecast to pass through the SJV on Sunday, bringing clouds and a chance of further precipitation. This event will flush out the aerosol from the valley and "reset the aerosol clock". The models show uncertainty as to if there will be lingering stratocumulus in the SJV behind the front on Monday.

Tuesday and Wednesday are forecast to be clear (cloud cover <~35%) across the valley. A new Pacific Coast ridge is forecast to reestablish early next week, leading to increases in aerosol. However, this ridge is not expected to be as strong as the one we dealt with previously, and minor short waves may ride over the ridge leading to complications in the forecasting next week. In addition, given all of the precipitation over the weekend, a close eye will be kept on the possibility of morning fog over the SJV.

DISCOVER-AQ / PODEX forecast briefing

January 25, 2013

Melanie Follette-Cook

Bryan Duncan

Ken Pickering

Chris Loughner

Fresno:

TODAY	TONIGHT	SATURDAY	SATURDAY NIGHT	SUNDAY	SUNDAY NIGHT	MONDAY	MONDAY NIGHT	TUESDAY
20%	20%	20%	20%	30%	20%	20%		
Slight Chc Showers	Slight Chc Showers	Slight Chc Showers	Slight Chc Showers	Chance Showers	Slight Chc Showers	Slight Chc Showers	Partly Cloudy	Mostly Sunny
High: 63 °F	Low: 46 °F	High: 62 °F	Low: 44 °F	High: 56 °F	Low: 37 °F	High: 54 °F	Low: 37 °F	High: 55 °F

Hanford:

TODAY	TONIGHT	SATURDAY	SATURDAY NIGHT	SUNDAY	SUNDAY NIGHT	MONDAY	MONDAY NIGHT	TUESDAY
30%	30%	20%	20%	30%	20%	20%		
Chance Showers	Chance Showers	Slight Chc Showers	Slight Chc Showers	Chance Showers	Slight Chc Showers	Slight Chc Showers	Partly Cloudy	Mostly Sunny
High: 63 °F	Low: 45 °F	High: 62 °F	Low: 42 °F	High: 57 °F	Low: 35 °F	High: 55 °F	Low: 33 °F	High: 55 °F

Bakersfield:

TODAY	TONIGHT	SATURDAY	SATURDAY NIGHT	SUNDAY	SUNDAY NIGHT	MONDAY	MONDAY NIGHT	TUESDAY
40%	50%	30%	30%	40%	30%			
Chance Showers	Chance Showers	Chance Showers	Chance Showers	Chance Showers	Chance Showers	Partly Sunny	Partly Cloudy	Mostly Sunny
High: 61 °F	Low: 46 °F	High: 61 °F	Low: 46 °F	High: 53 °F	Low: 36 °F	High: 52 °F	Low: 36 °F	High: 52 °F

Catalina Island:

TODAY	TONIGHT	SATURDAY	SATURDAY NIGHT	SUNDAY	SUNDAY NIGHT	MONDAY	MONDAY NIGHT	TUESDAY
90%	70%	30%	40%	40%	20%			
Showers	Showers Likely	Chance Showers	Chance Showers	Chance Showers	Slight Chc Showers	Mostly Sunny	Breezy	Sunny
High: 60 °F	Low: 53 °F	High: 60 °F	Low: 48 °F	High: 56 °F	Low: 44 °F	High: 53 °F	Low: 43 °F	High: 59 °F

Current Conditions

FRESNO CA

Fog

53°F

12°C

Humidity	93%
Wind Speed	calm
Barometer	30.18 in (1021.9 mb)
Dewpoint	51°F (11°C)
Visibility	0.50 mi

Last Update on 25 Jan 6:53 am PST

HANFORD CA

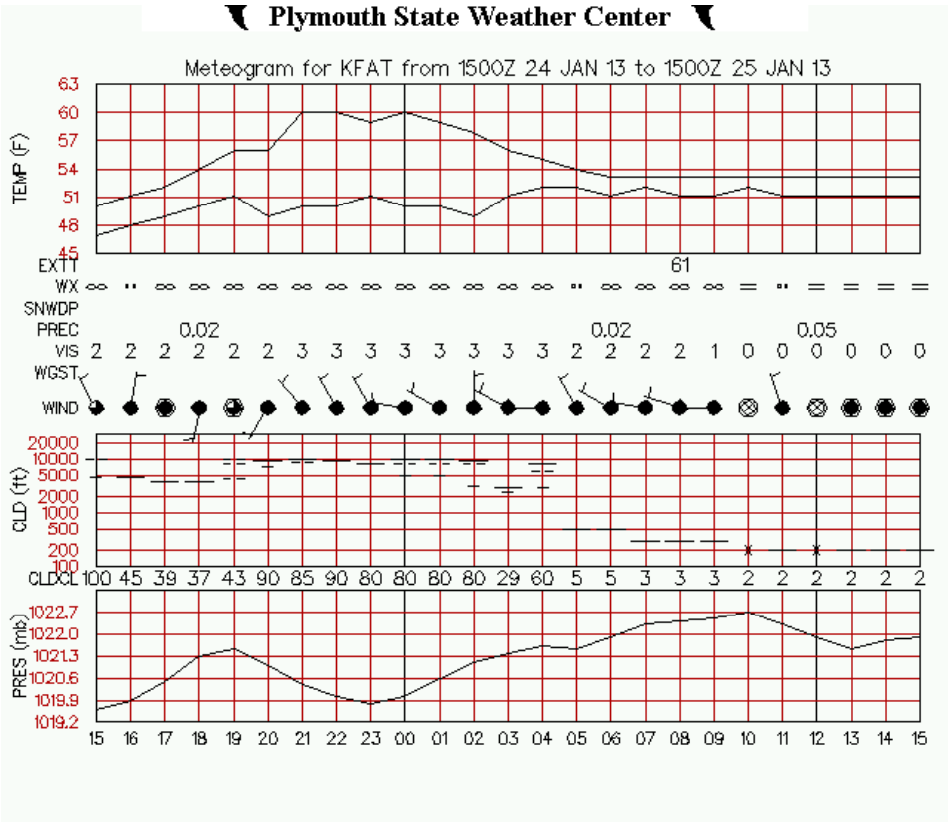
Fog

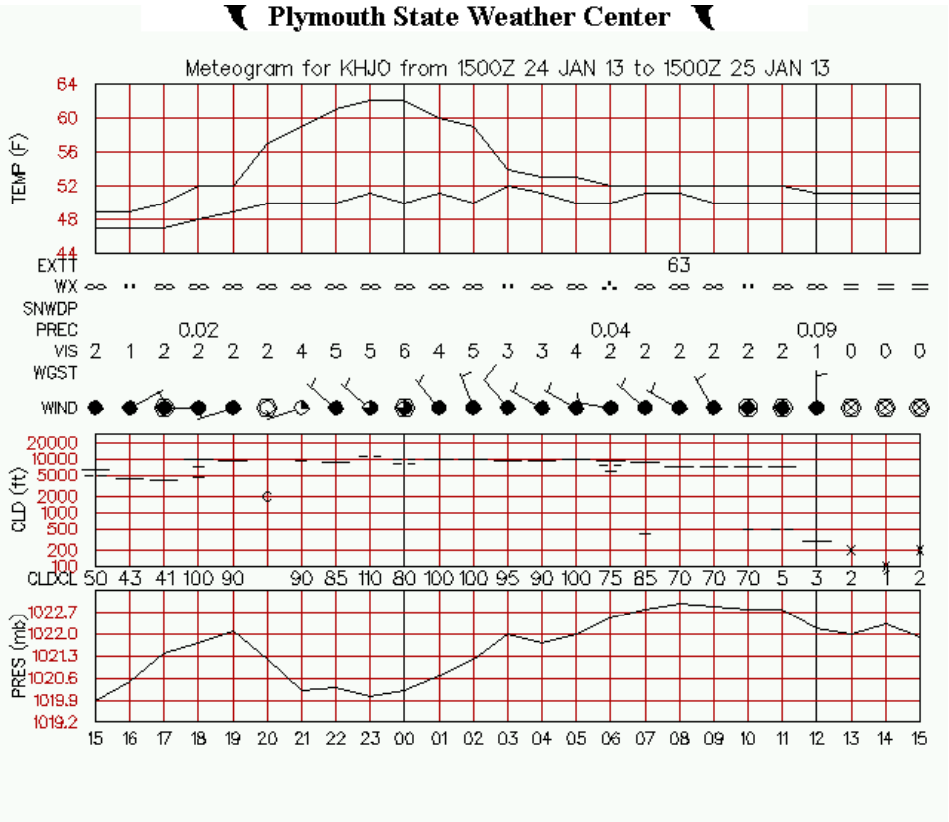
51°F

11°C

Humidity	96%
Wind Speed	calm
Barometer	30.17 in (1021.9 mb)
Dewpoint	50°F (10°C)
Visibility	0.25 mi

Last Update on 25 Jan 6:53 am PST





Current Conditions

BAKERSFIELD CA

Fog

52°F

11°C

Humidity	97%
Wind Speed	W 3 MPH
Barometer	30.17 in (1021.3 mb)
Dewpoint	51°F (11°C)
Visibility	0.75 mi

Last Update on 25 Jan 6:54 am PST

AVALON, CATALINA AIRPORT CA

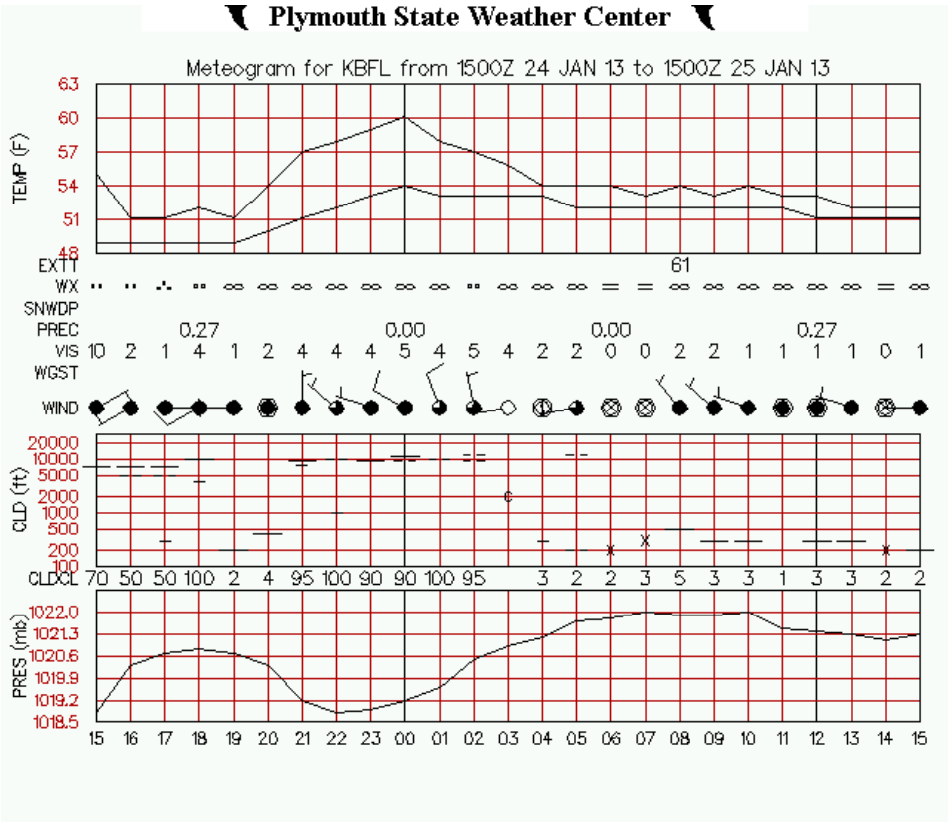
Overcast

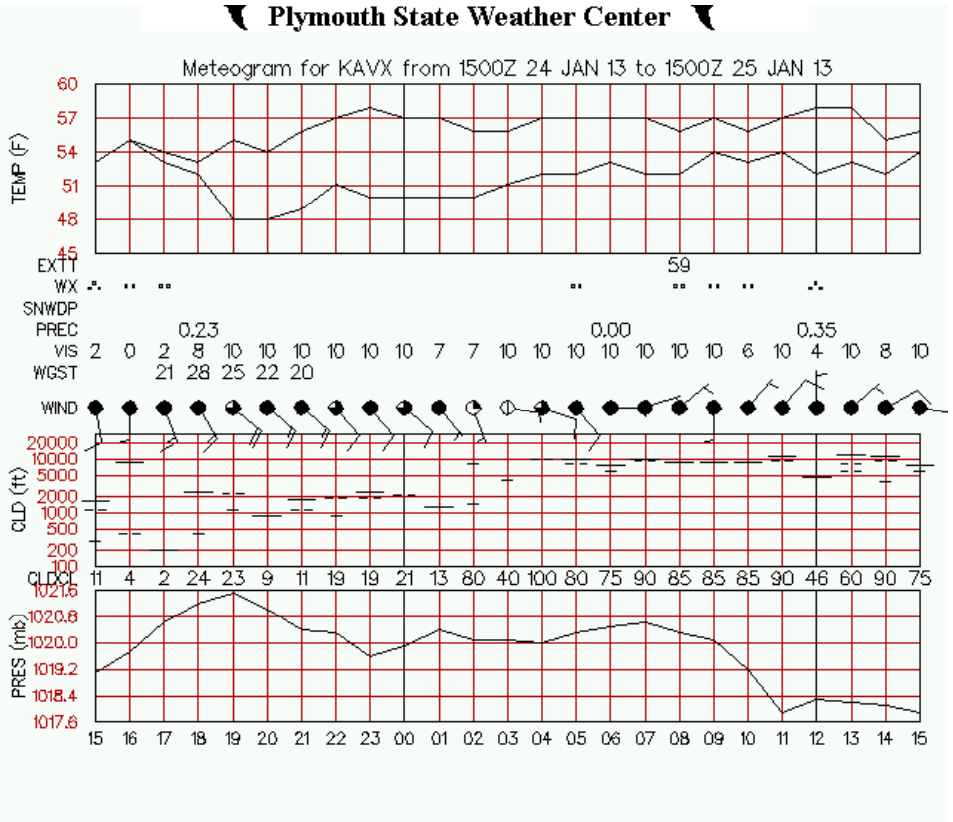
56°F

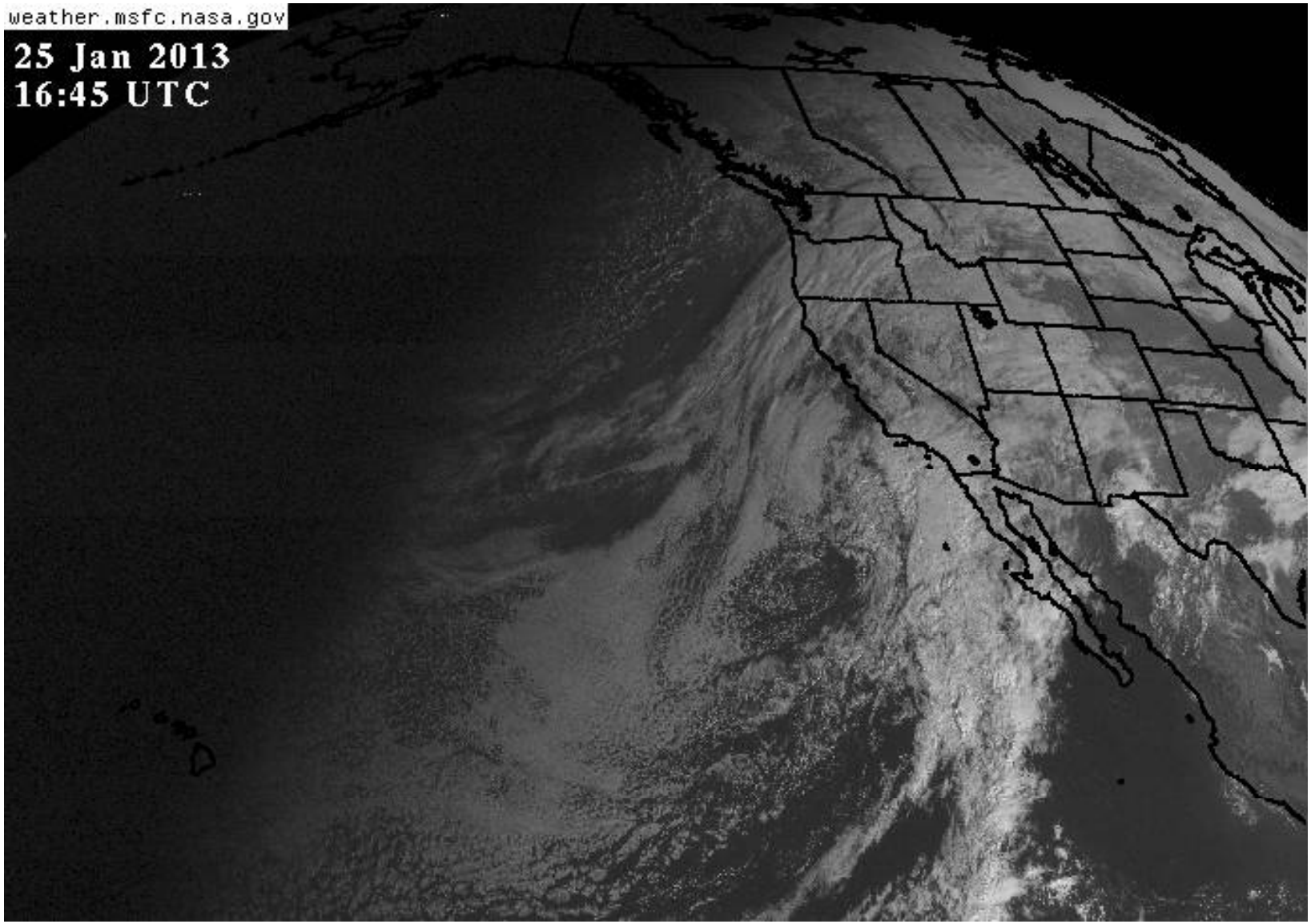
13°C

Humidity	93%
Wind Speed	E 16 MPH
Barometer	30.08 in (1017.9 mb)
Dewpoint	54°F (12°C)
Visibility	10.00 mi

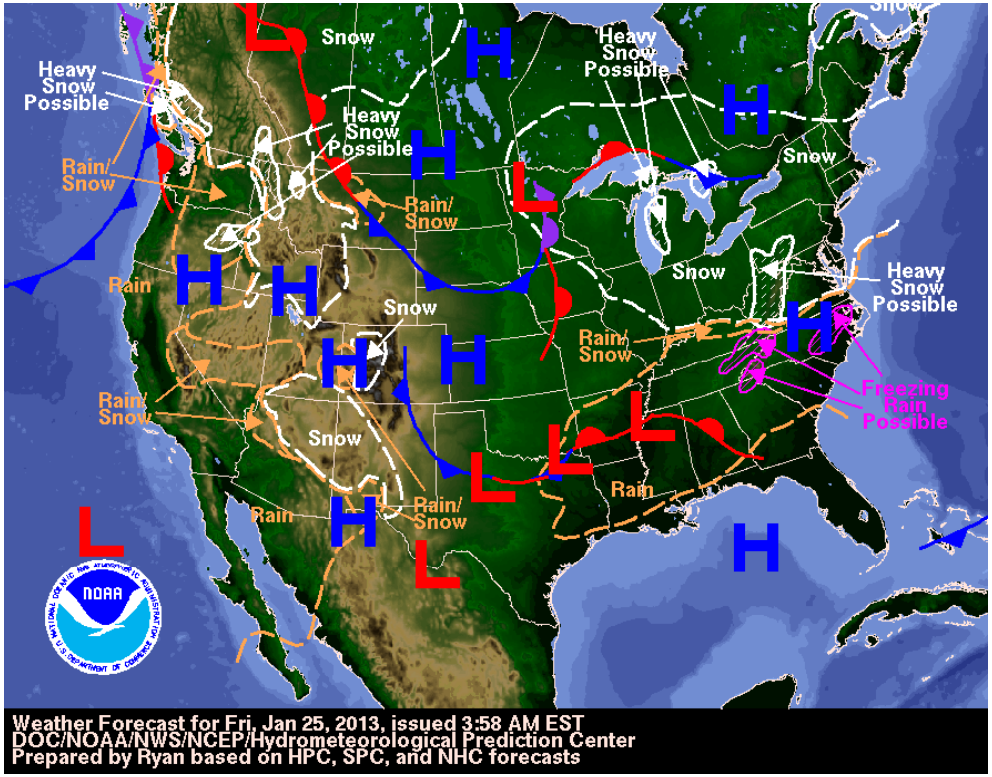
Last Update on 25 Jan 6:51 am PST

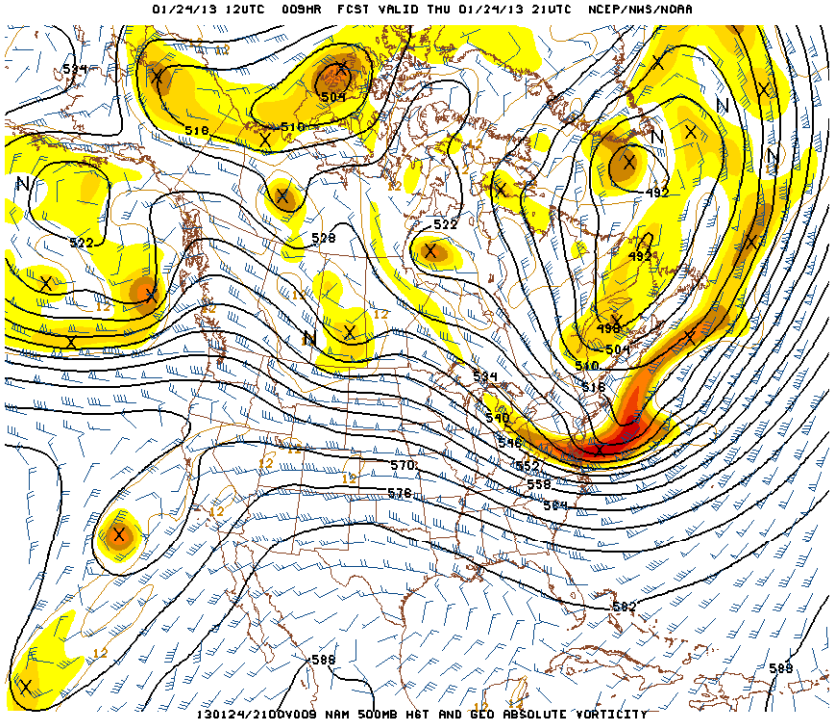




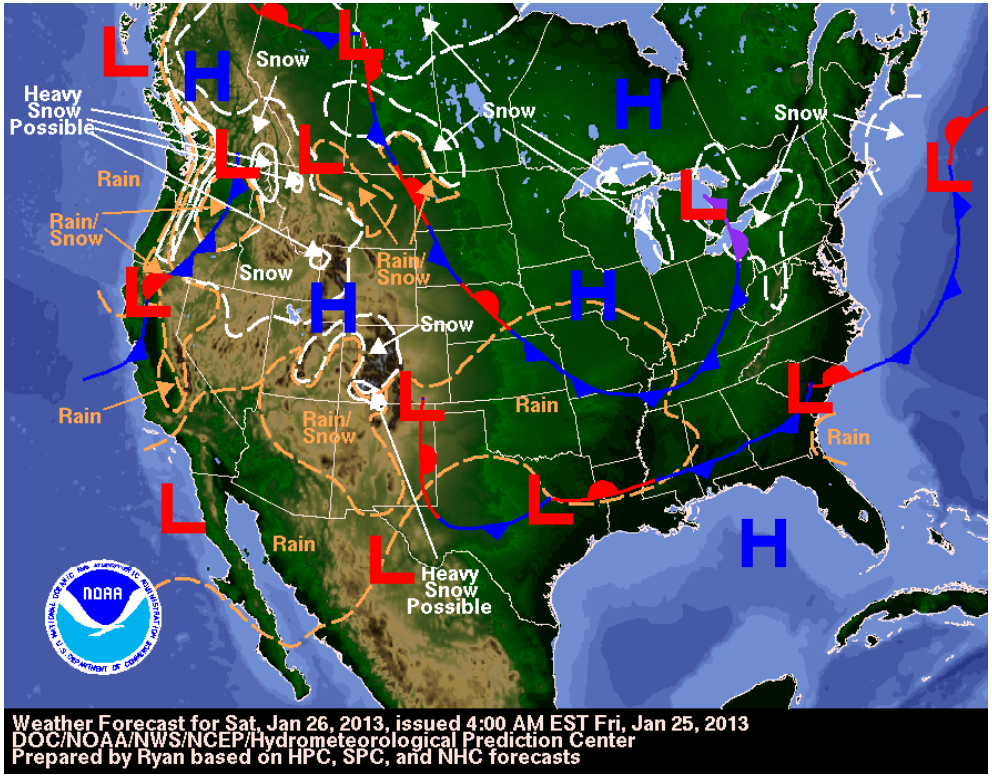

weather.msfc.nasa.gov
25 Jan 2013
16:45 UTC

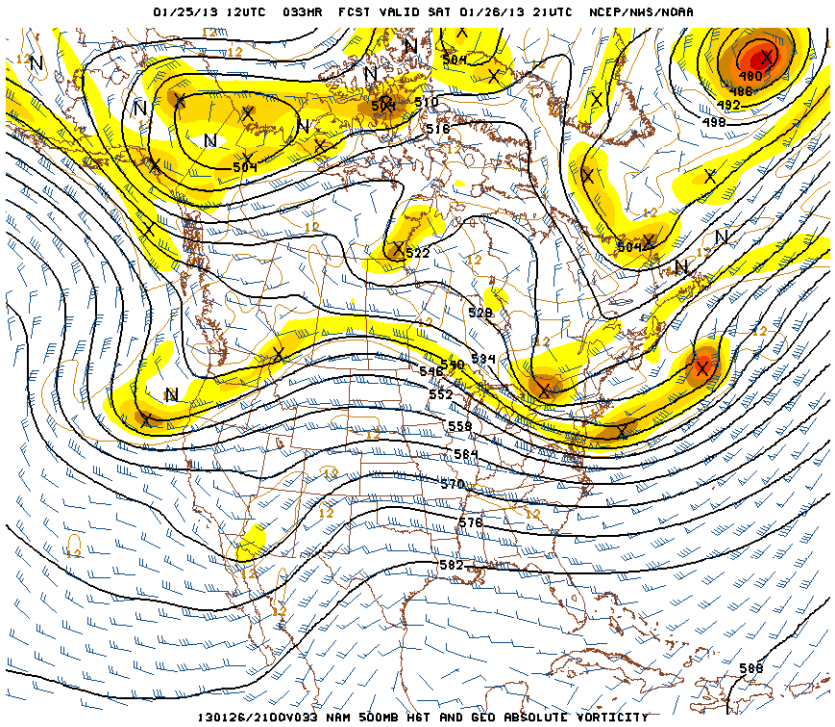
Today: Upper level low remains off coast bringing tropical moisture into Southern CA, remains nearly stationary as the other upper level low approaches Pacific NW. The low is forecast to open and move eastward overnight.





Tomorrow: Upper level trough moves into Pacific NW as cold front approaches from the northwest. Forecast calls for dry conditions around LA. Precipitation associated with what remains of the cut off low should leave our area sometime between 6 and 9 am.



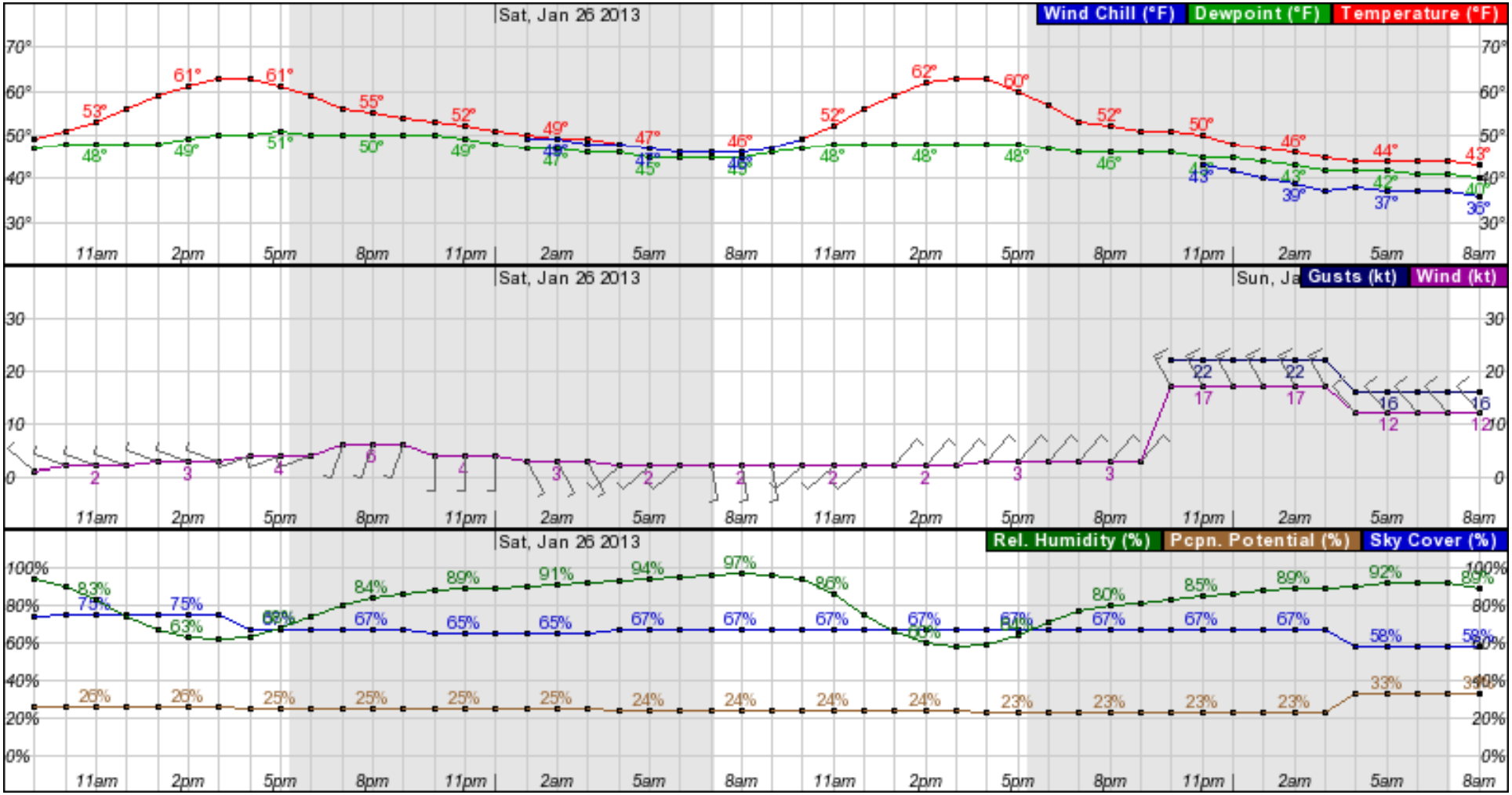


Hanford

Today: Mostly cloudy.

Saturday: Mostly cloudy.

Today → **Tomorrow →**

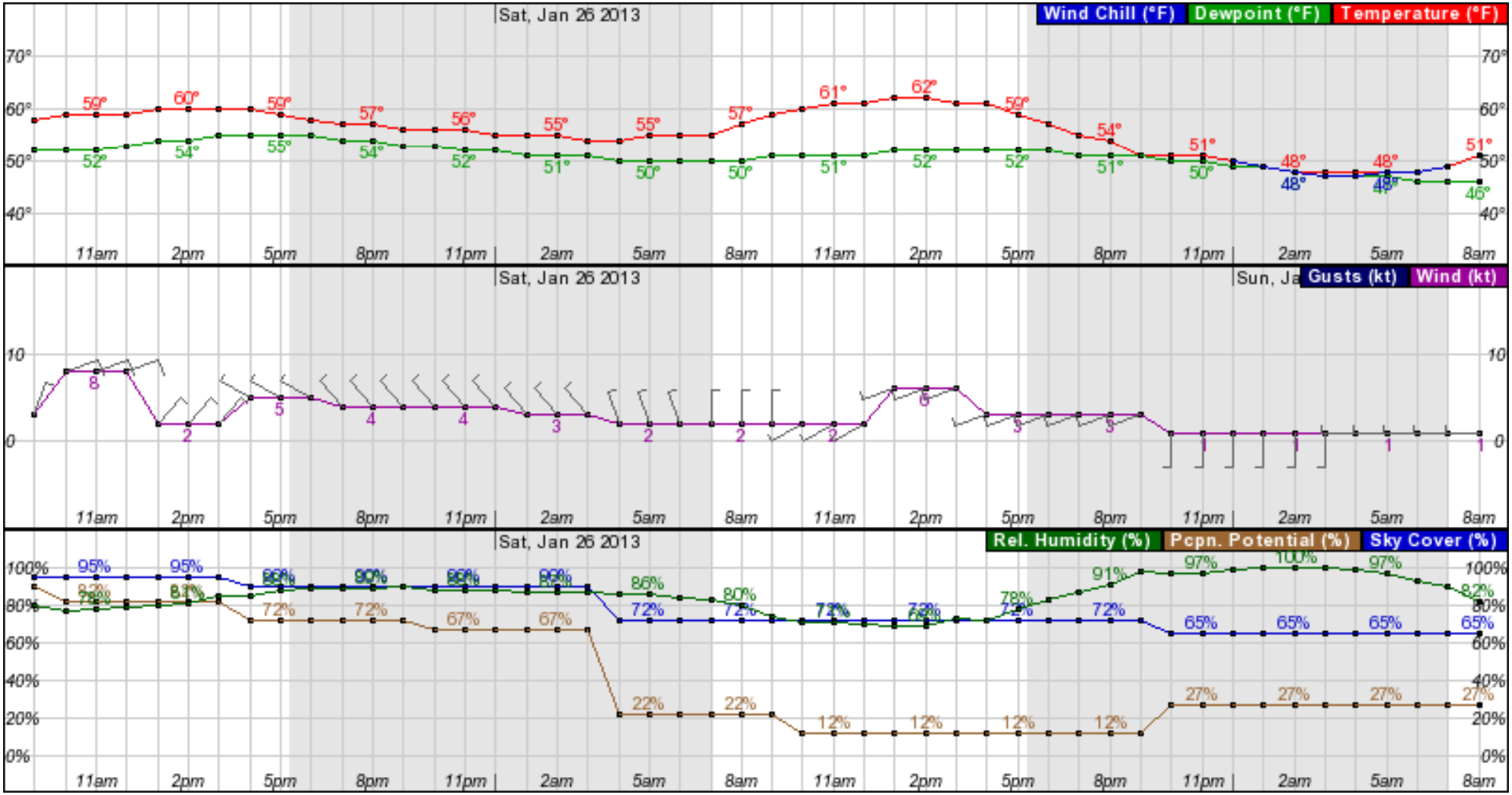


Oxnard

Today: Mostly cloudy.

Saturday: Mostly cloudy.

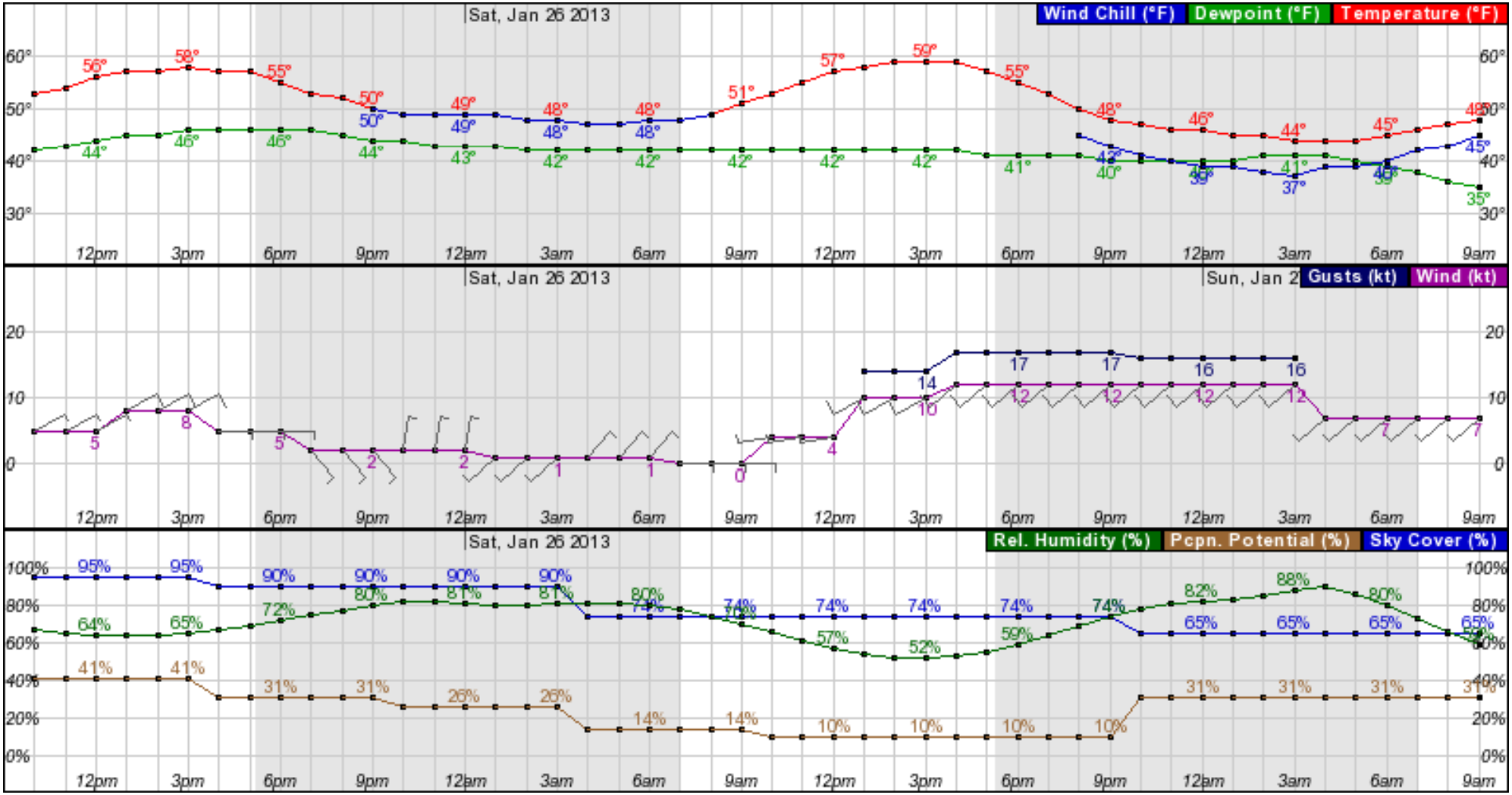
Today → **Tomorrow →**



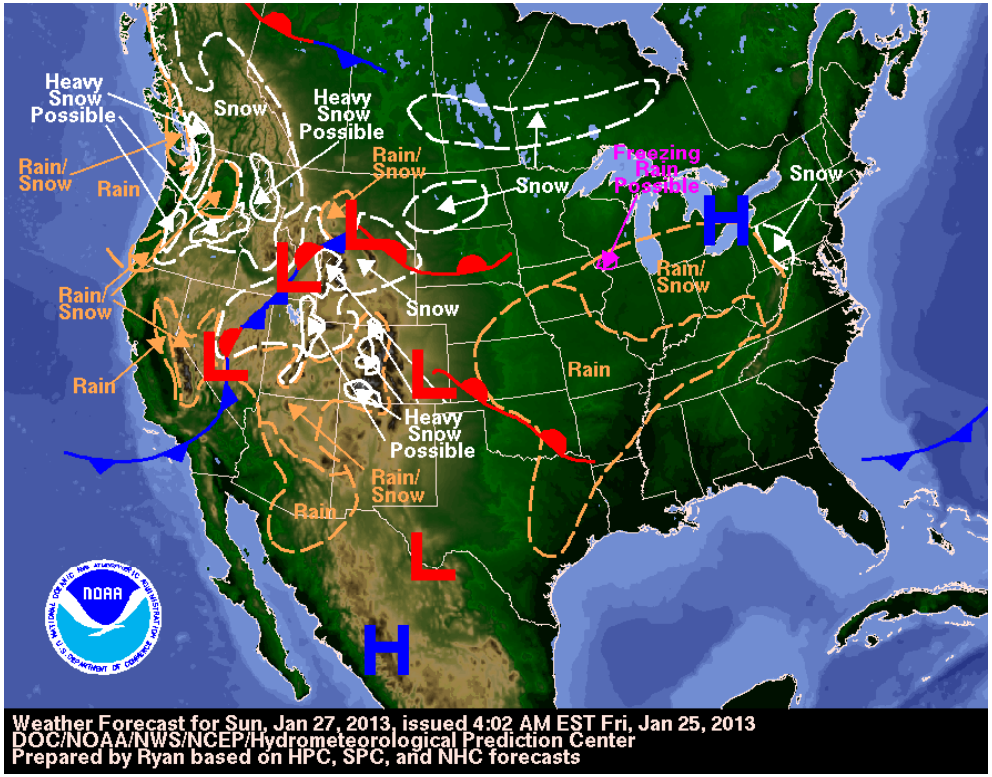
Palmdale

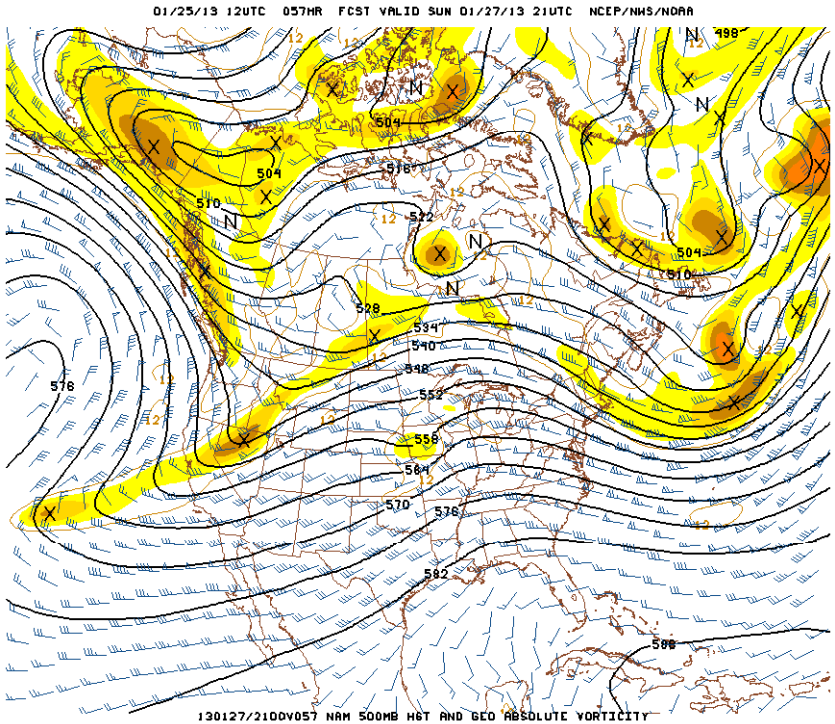
Saturday: Slight chance of precipitation in the morning, probably ending by 9-10 am. Windier towards the early evening, possible gusts to 14 kt at 1-3p, increasing to 17 kt at 4p

Today → **Tomorrow →**



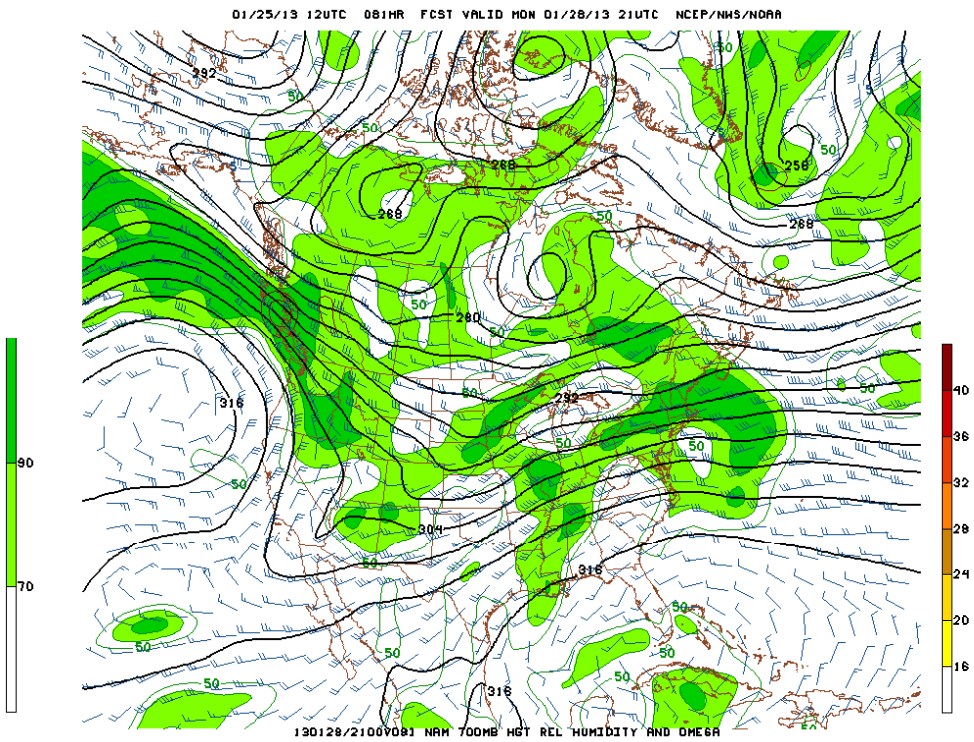
Sunday: Much colder and dryer upper level trough approaches the area Sunday. Brings a slight chance of showers, but mostly in the mountains.



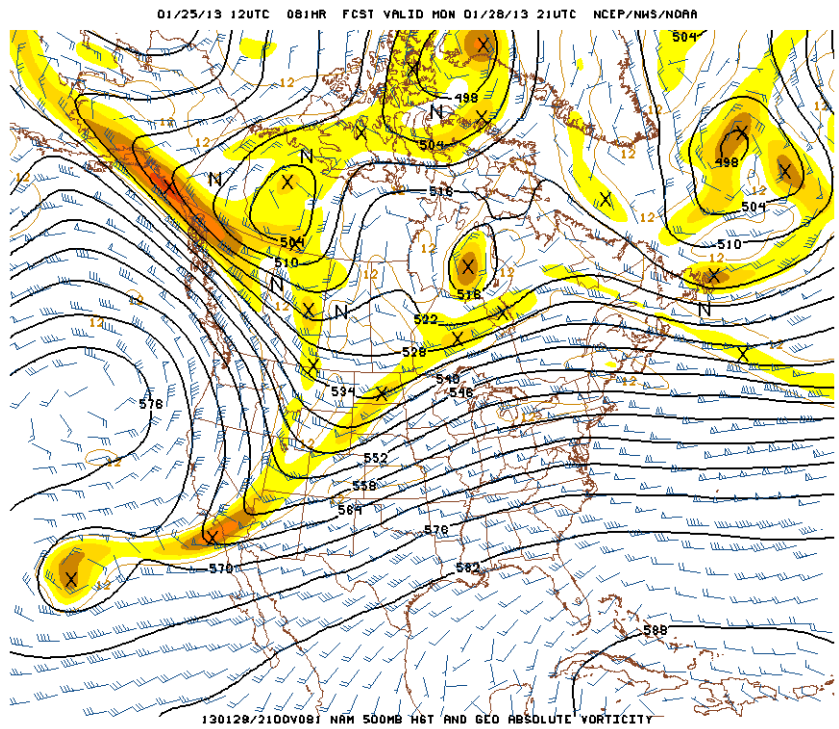


Monday: Forecast to be the coldest day with max temps 10 degrees below normal. Cloudiness may decrease as drier air moves in.

700 mb NAM
Monday 1 PM



500 mb NAM
Monday 1 PM

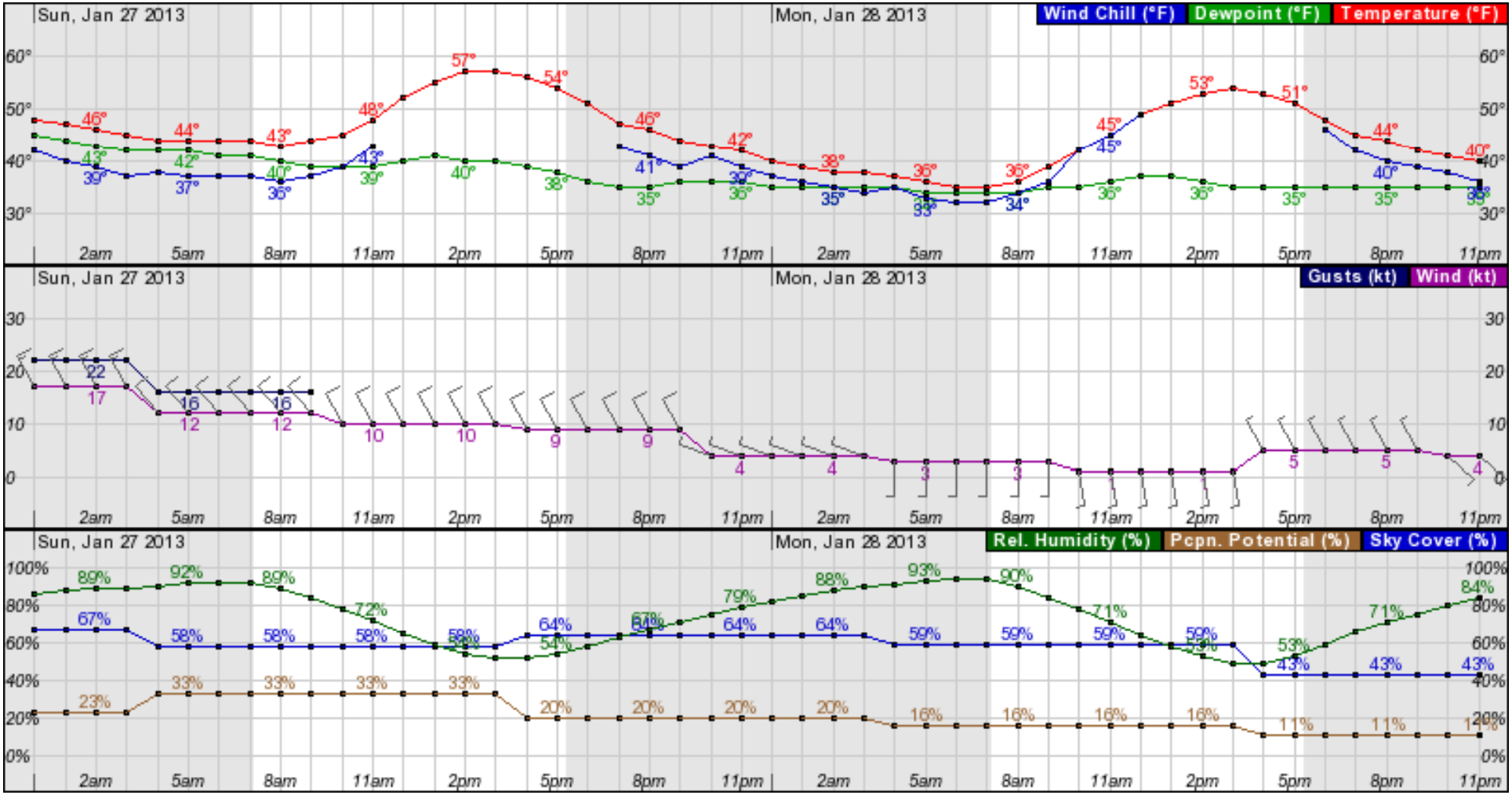


Hanford

Sunday: Mostly cloudy, windy.

Monday: Cloudy.

Sunday → **Monday→**

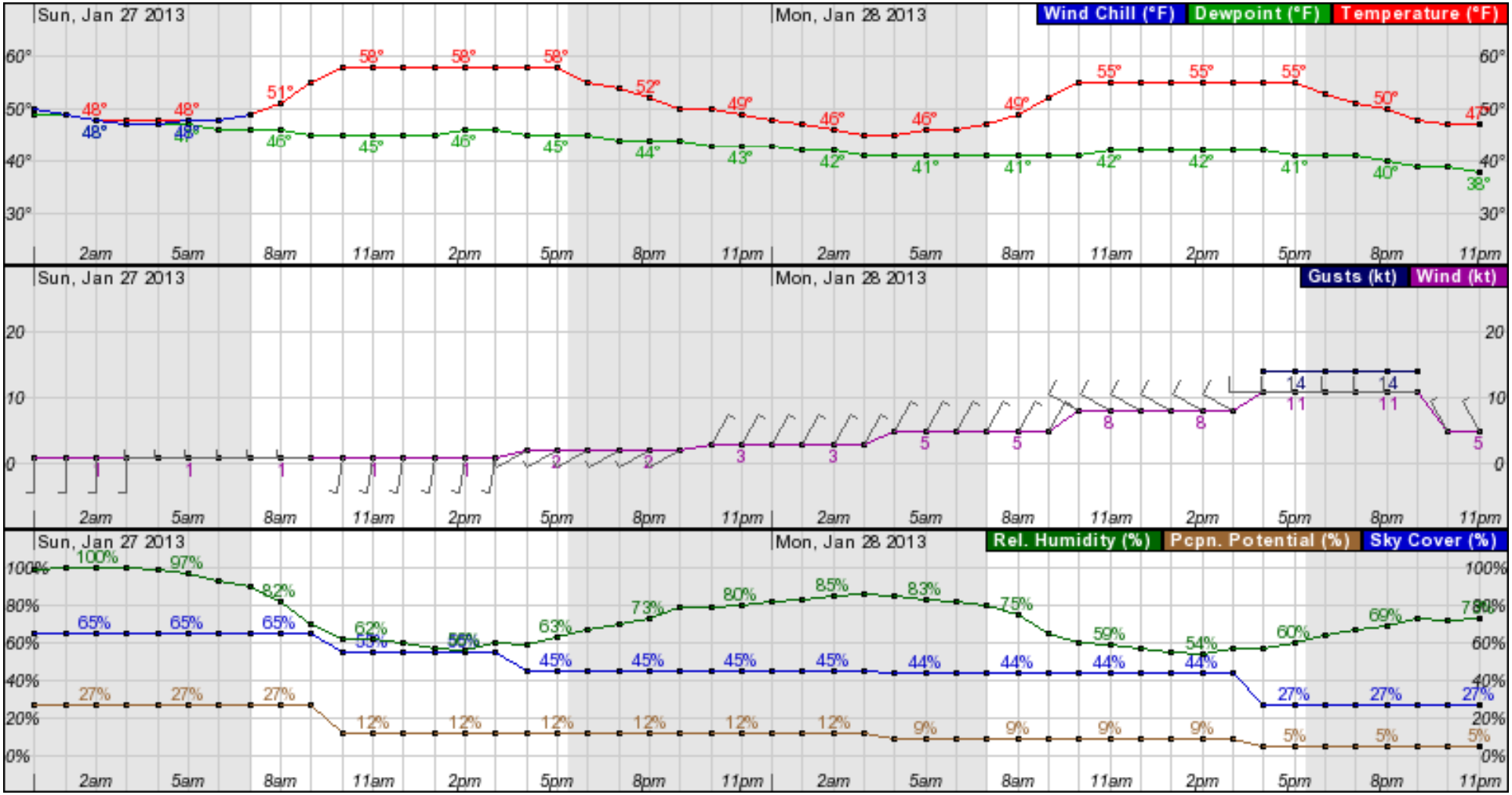


Oxnard

Sunday: Mostly cloudy

Monday: Clearer

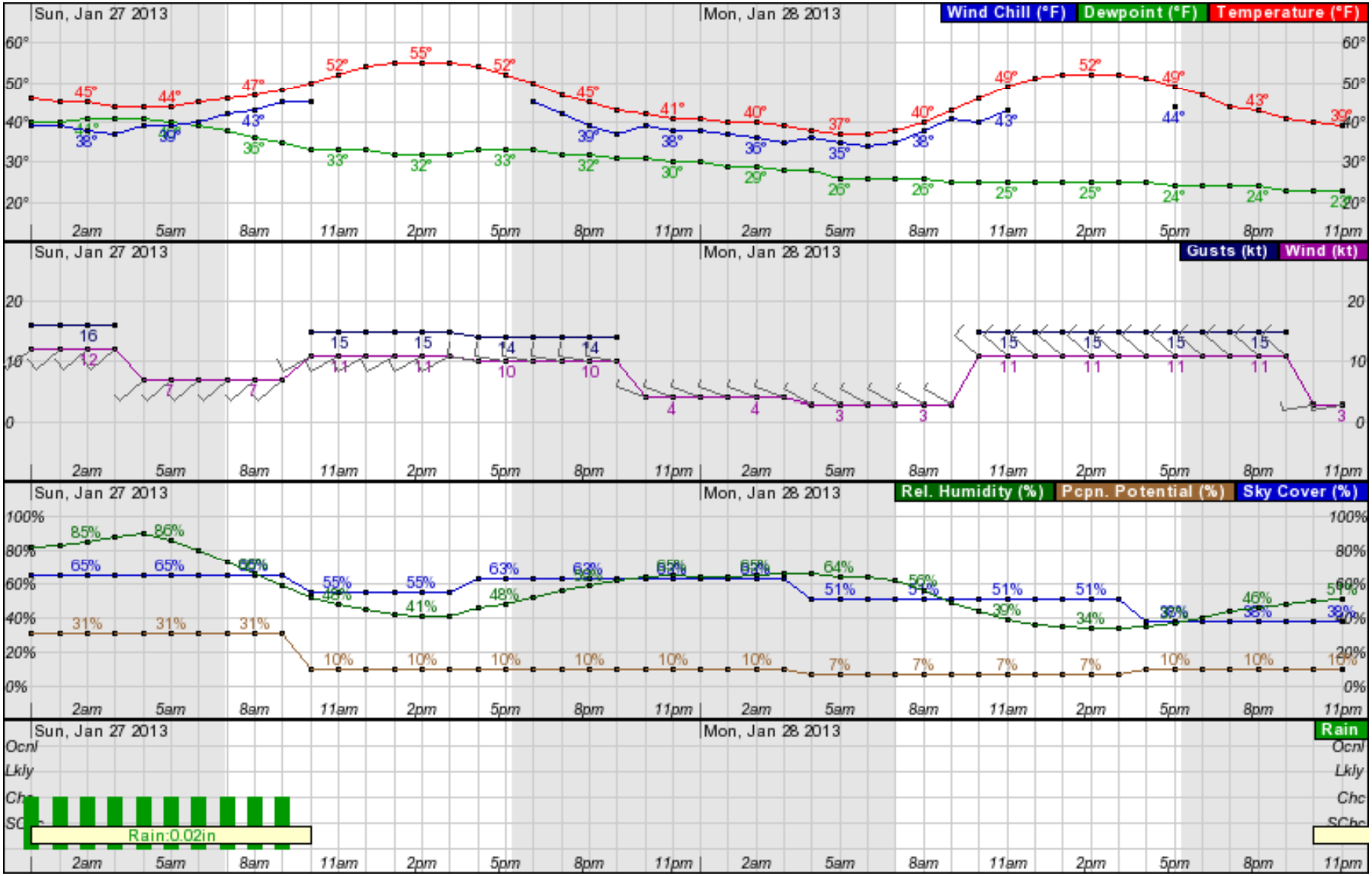
Sunday → **Monday→**



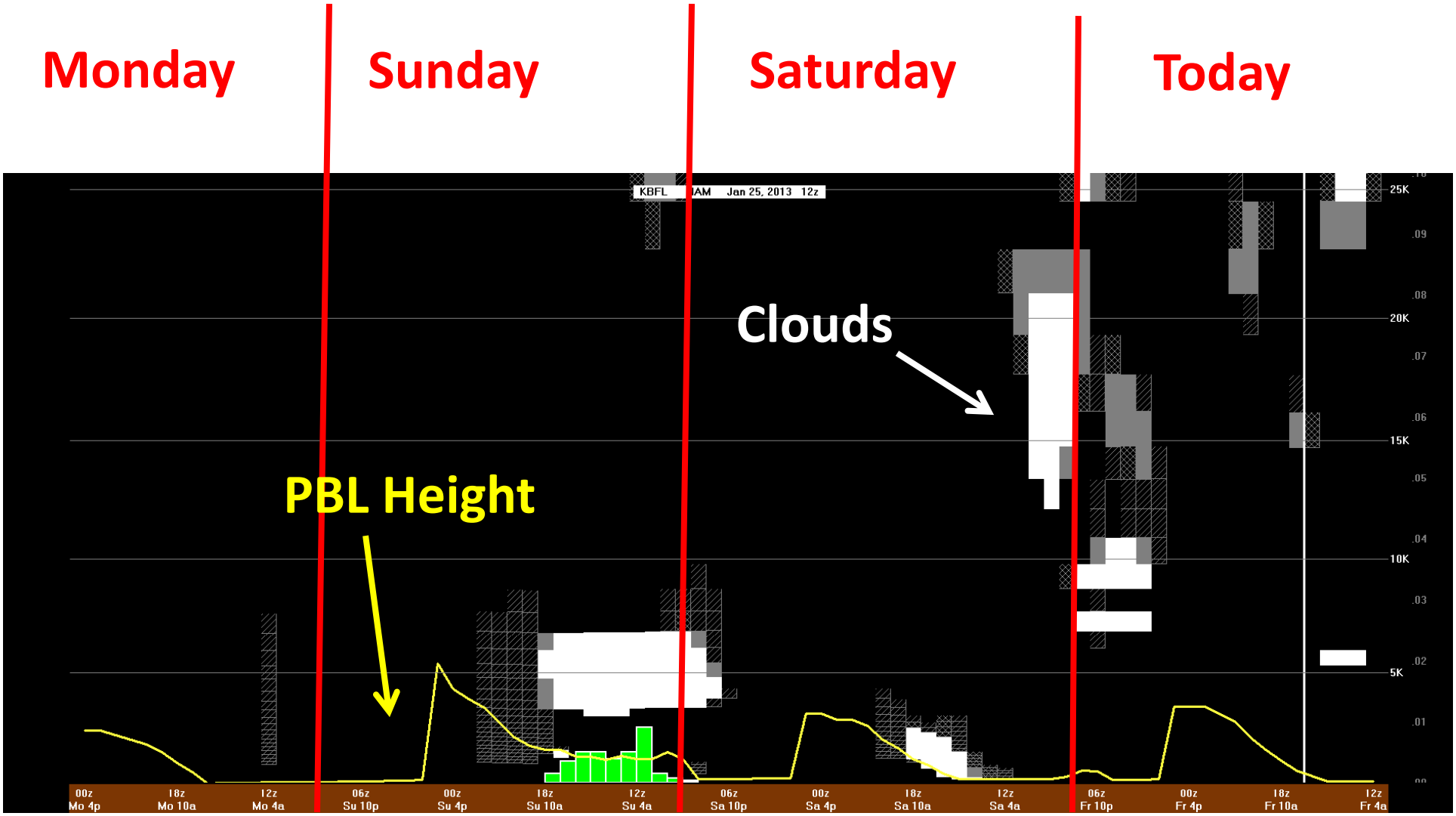
Palmdale

Sunday: wind gusts of 14-15 kt forecast for afternoon

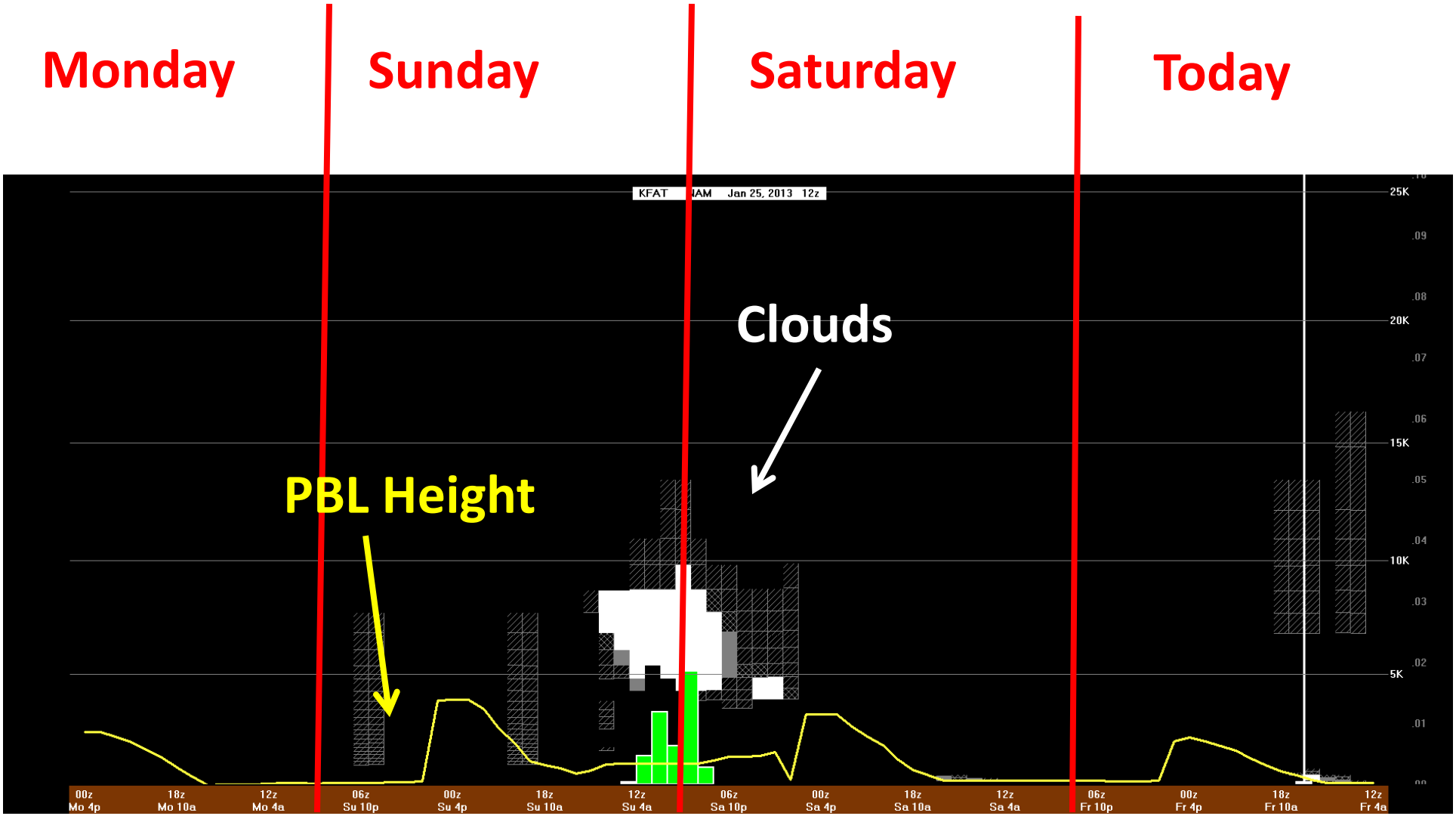
Sunday → **Monday→**



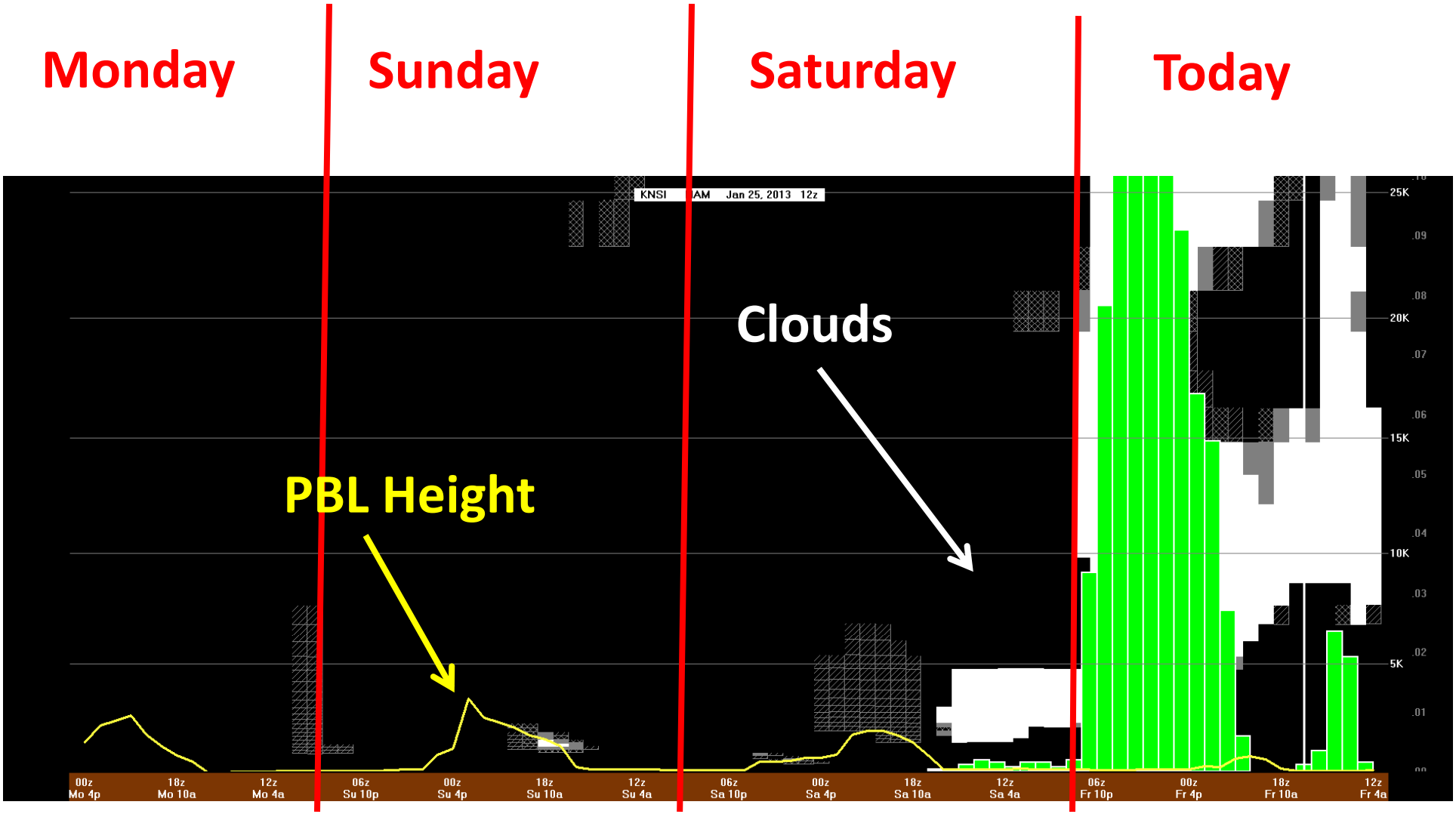
Bakersfield : BUFKIT NAM 12 UTC Friday January 25



Fresno : BUFKIT NAM 12 UTC Friday January 25

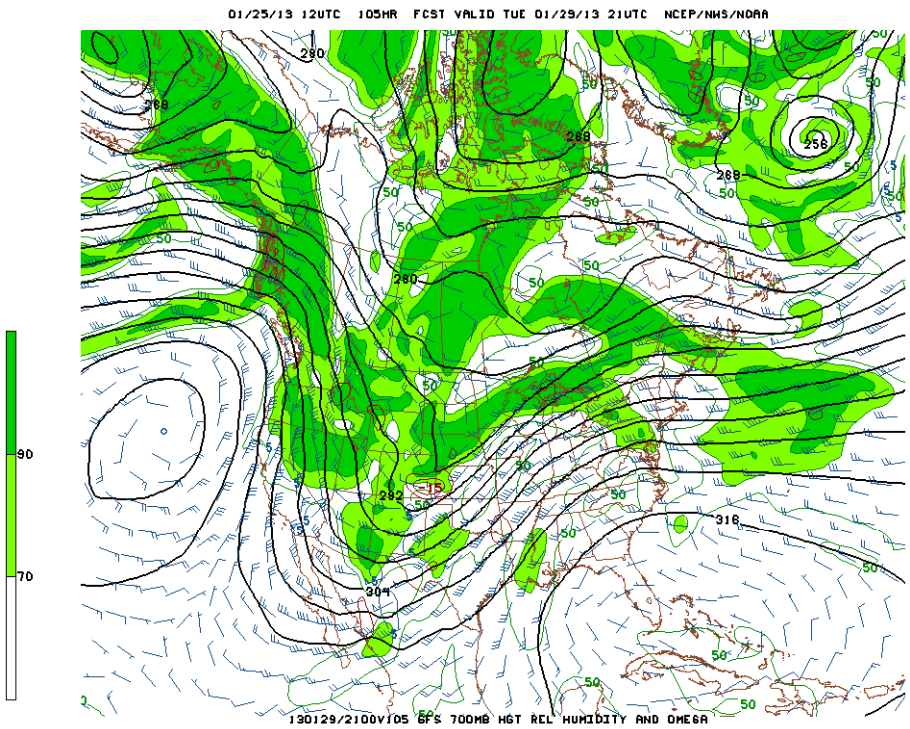


San Nicholas : BUFKIT NAM 12 UTC Friday January 25

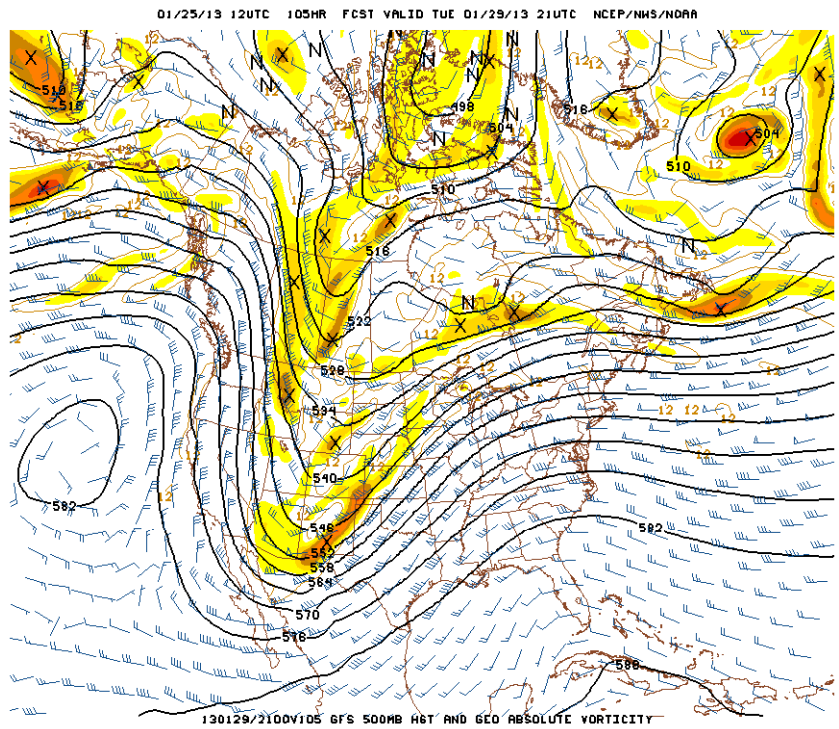


Tuesday: Trough moves east over the US

700 mb GFS
Tuesday 1 PM

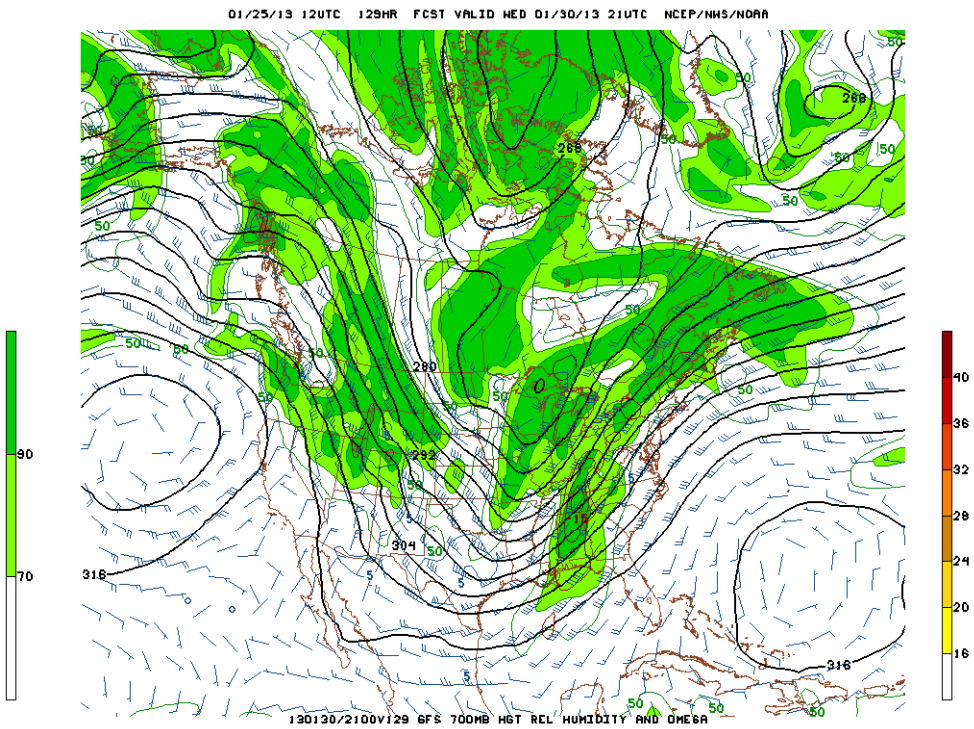


500 mb GFS
Tuesday 1 PM

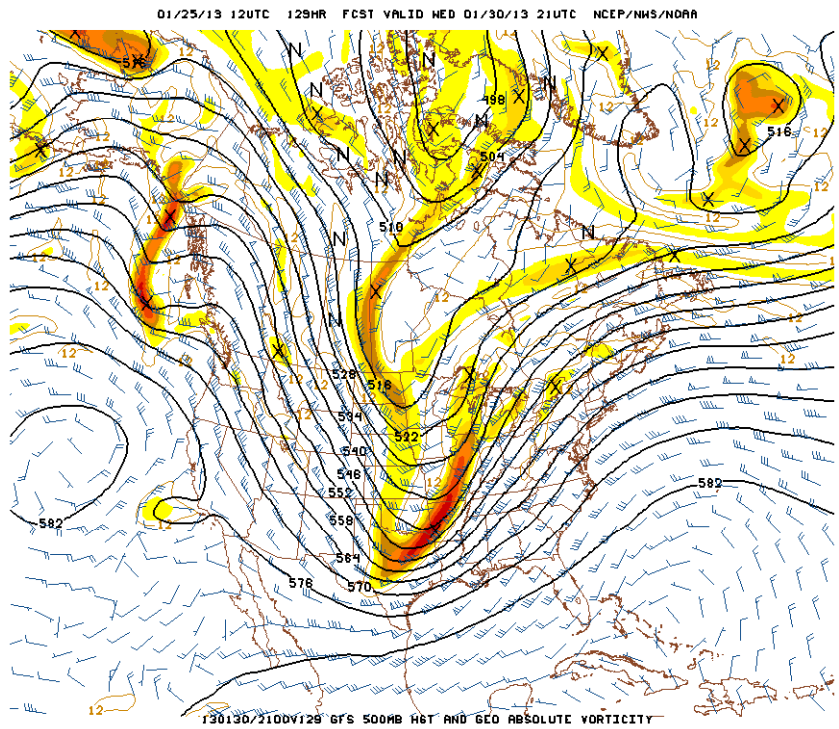


Wednesday: Pattern similar to previous day, but possible short wave trough formation off coast of Canada that could affect our area later in the week

700 mb GFS
Wed 1 PM



500 mb GFS
Wed 1 PM

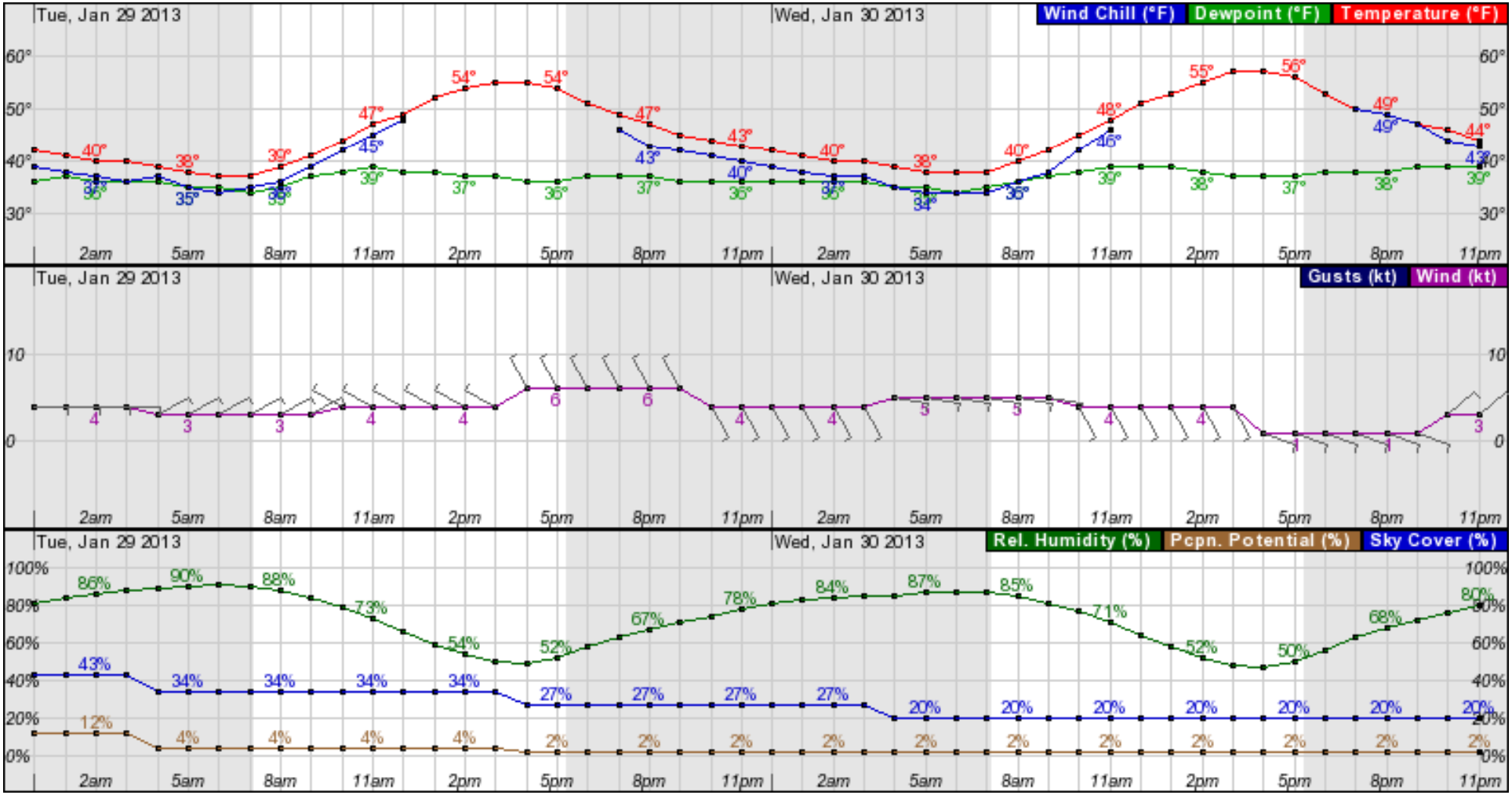


Fresno

Tuesday: low cloud cover %

Wednesday: even clearer than previous day

Tuesday → **Wednesday→**

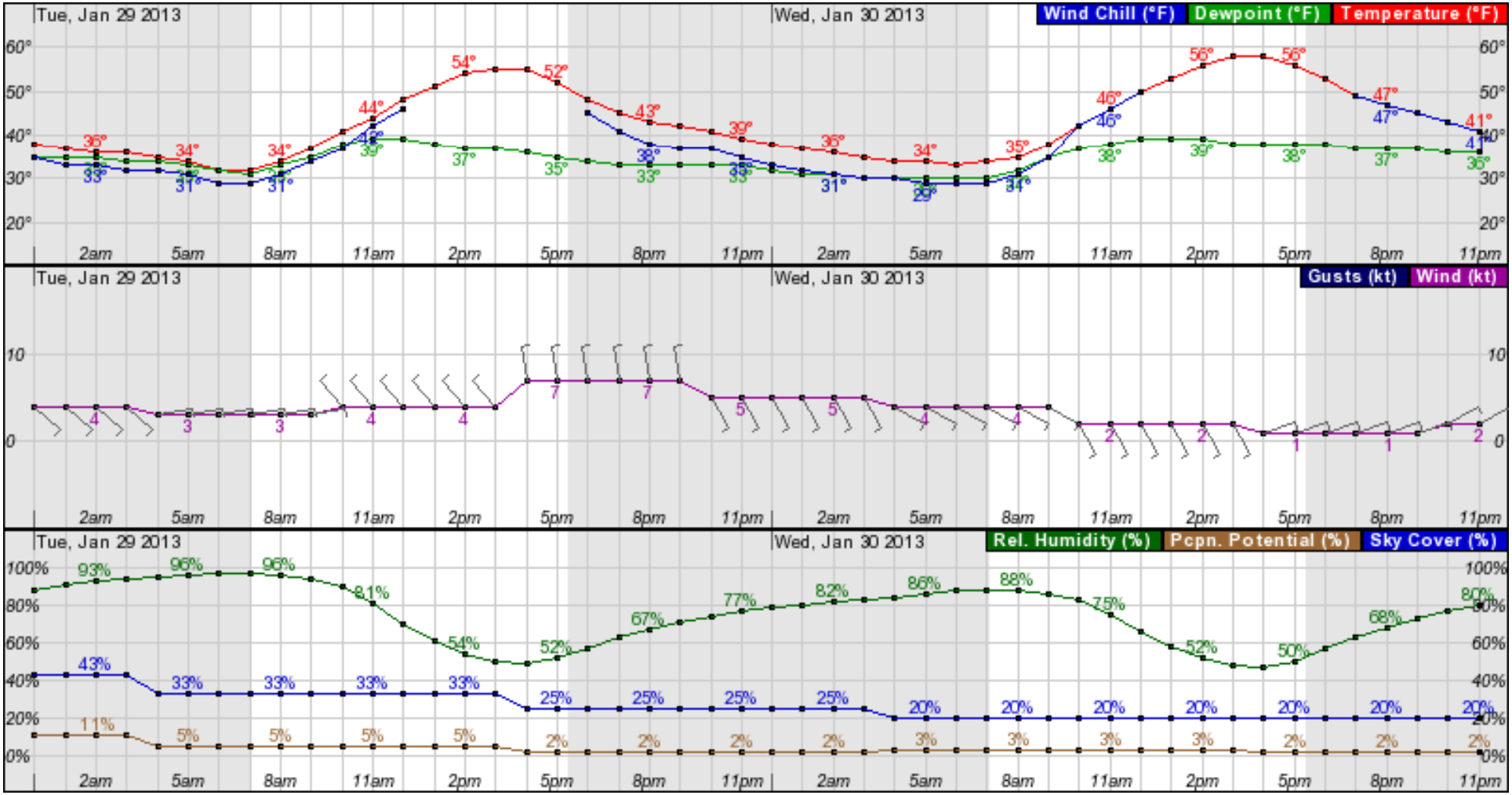


Hanford

Tuesday: low cloud cover %

Wednesday: even clearer than previous day

Tuesday → **Wednesday→**

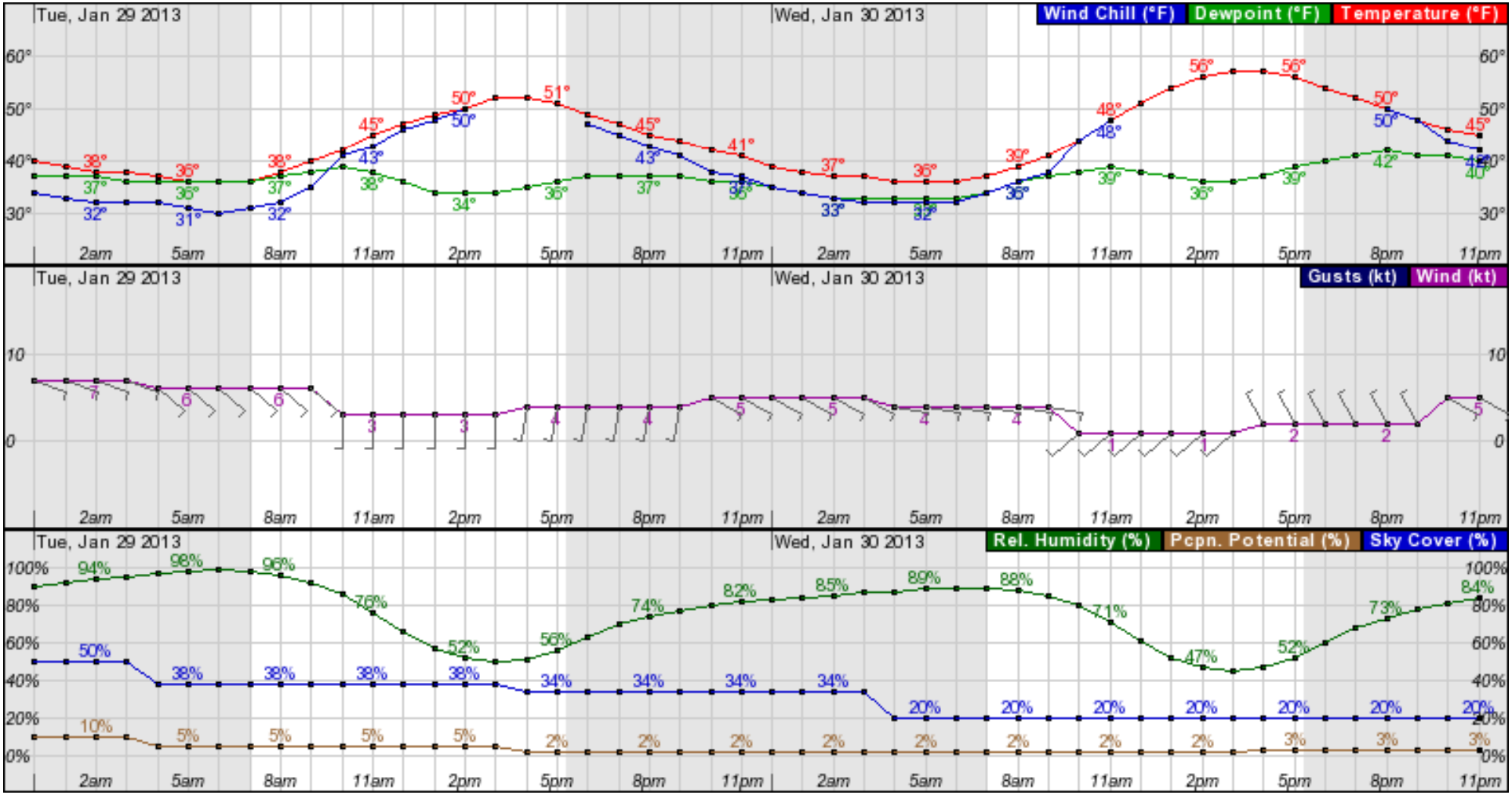


Bakersfield

Tuesday: low cloud cover %

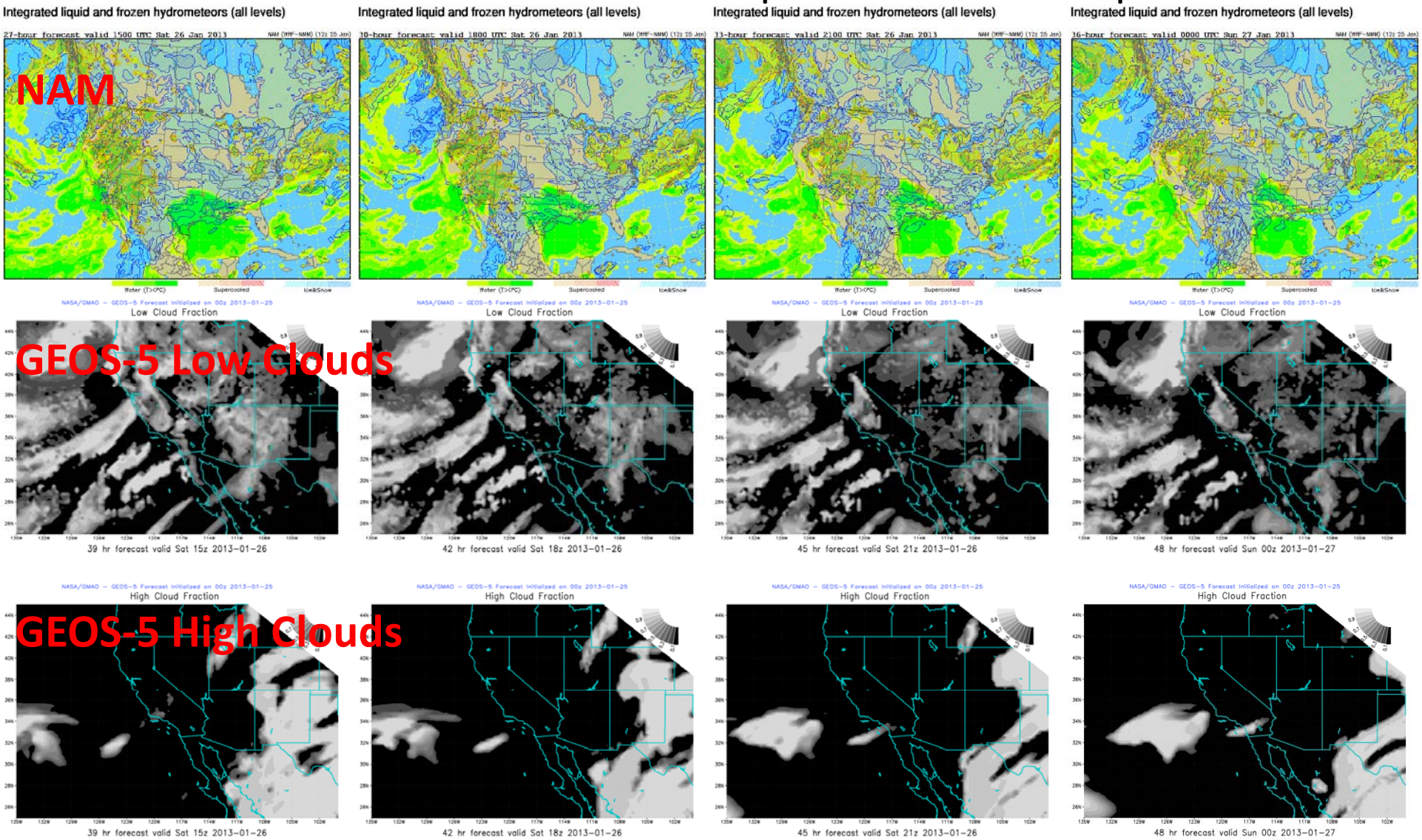
Wednesday: even clearer than previous day

Tuesday → **Wednesday→**



Tomorrow: NAM – low clouds all day; GEOS-5 – low clouds all day, few high clouds, more by afternoon

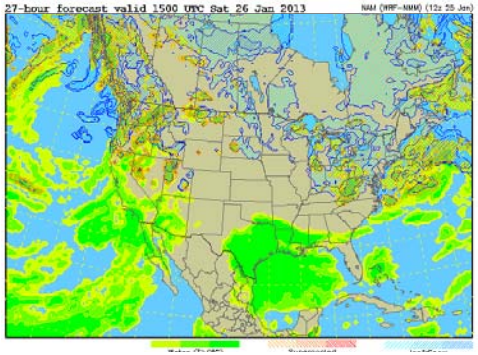
7 am | 10 am | 1 pm | 4 pm



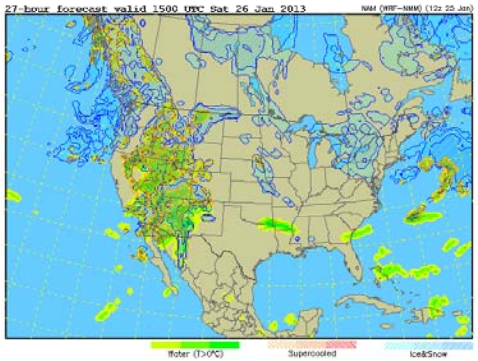
NAM tomorrow

7 am

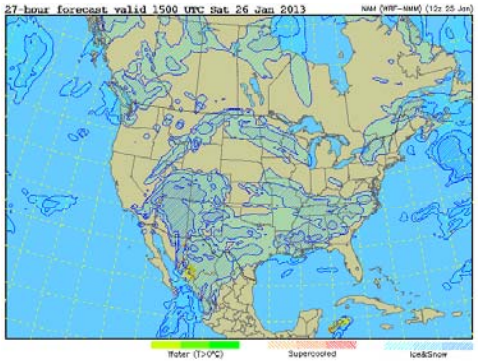
Integrated liquid and frozen hydrometeors (below 6 Kft MSL)



Integrated liquid and frozen hydrometeors (6-12 Kft MSL)

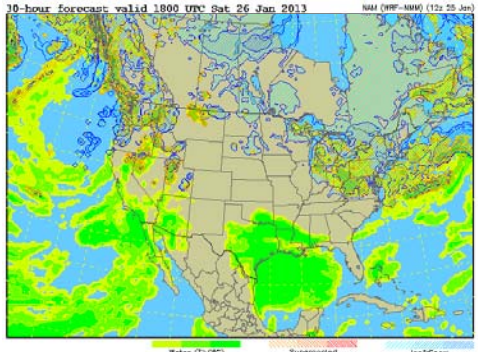


Integrated liquid and frozen hydrometeors (above 18 Kft MSL)

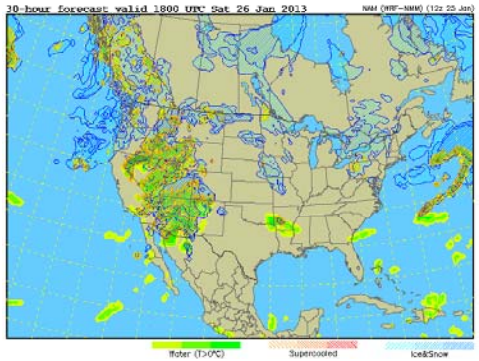


10 am

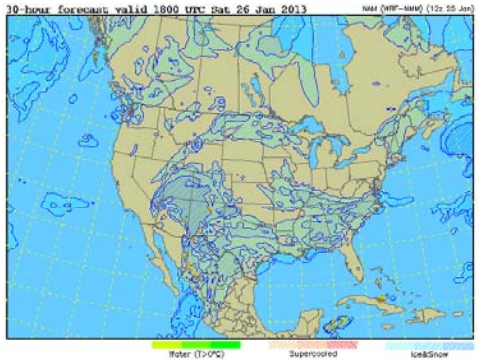
Integrated liquid and frozen hydrometeors (below 6 Kft MSL)



Integrated liquid and frozen hydrometeors (6-12 Kft MSL)

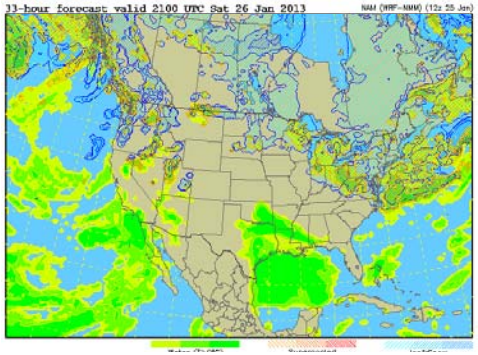


Integrated liquid and frozen hydrometeors (above 18 Kft MSL)

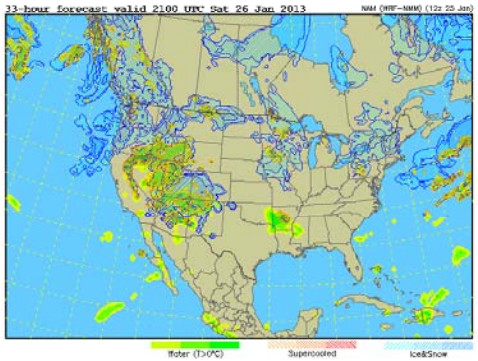


1 pm

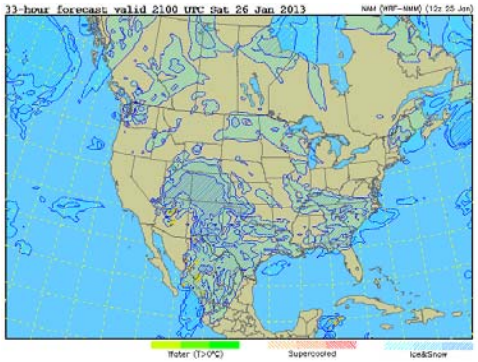
Integrated liquid and frozen hydrometeors (below 6 Kft MSL)



Integrated liquid and frozen hydrometeors (6-12 Kft MSL)

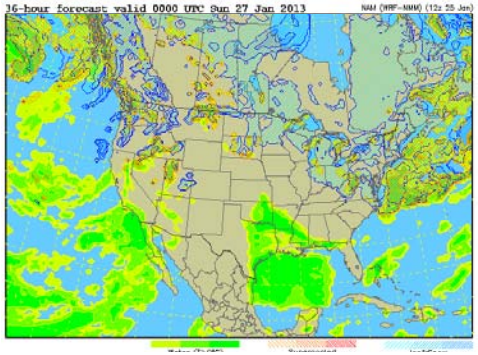


Integrated liquid and frozen hydrometeors (above 18 Kft MSL)



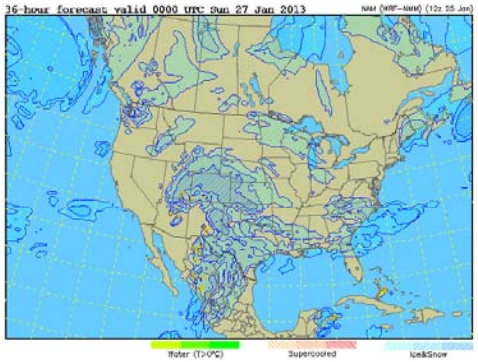
4 pm

Integrated liquid and frozen hydrometeors (below 6 Kft MSL)



Integrated liquid and frozen hydrometeors (6-12 Kft MSL)

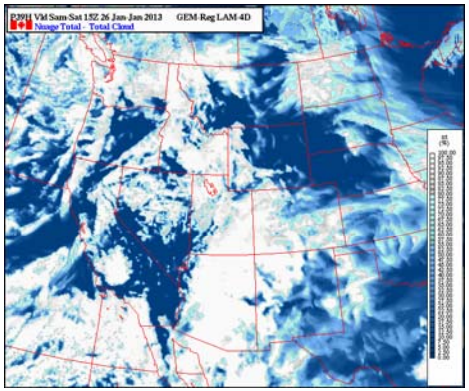
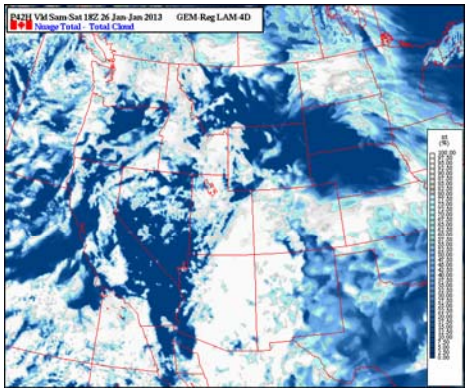
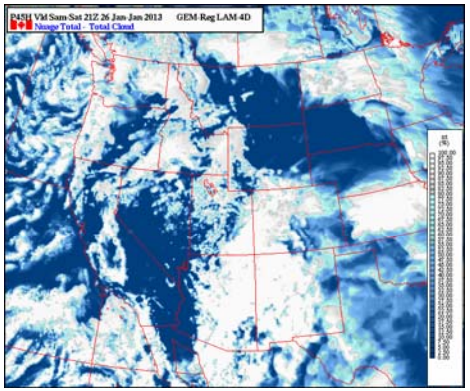
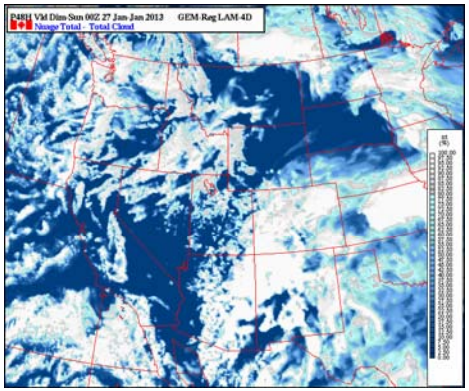
Integrated liquid and frozen hydrometeors (above 18 Kft MSL)



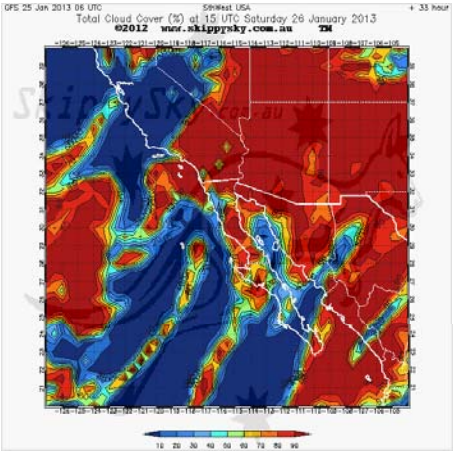
Tomorrow: GFS – mid and high level clouds off LA coast in morning, gone by 1p

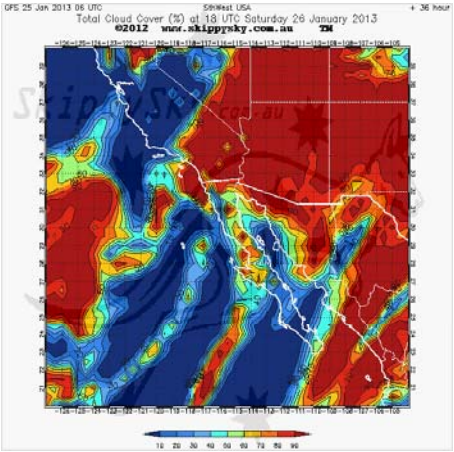
7 am 10 am 1 pm 4 pm

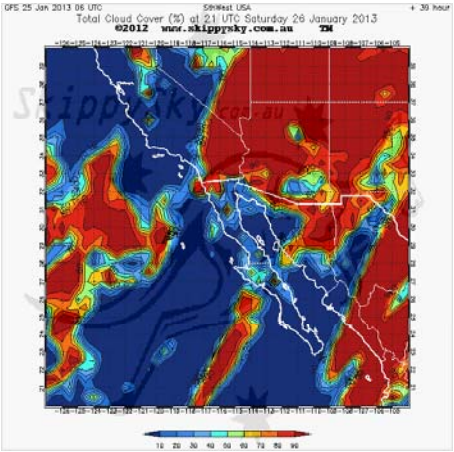
Canadian

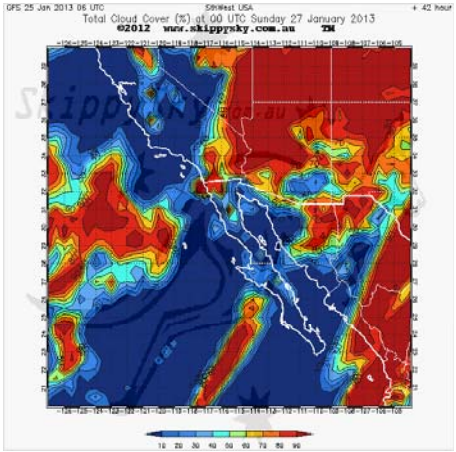





GFS



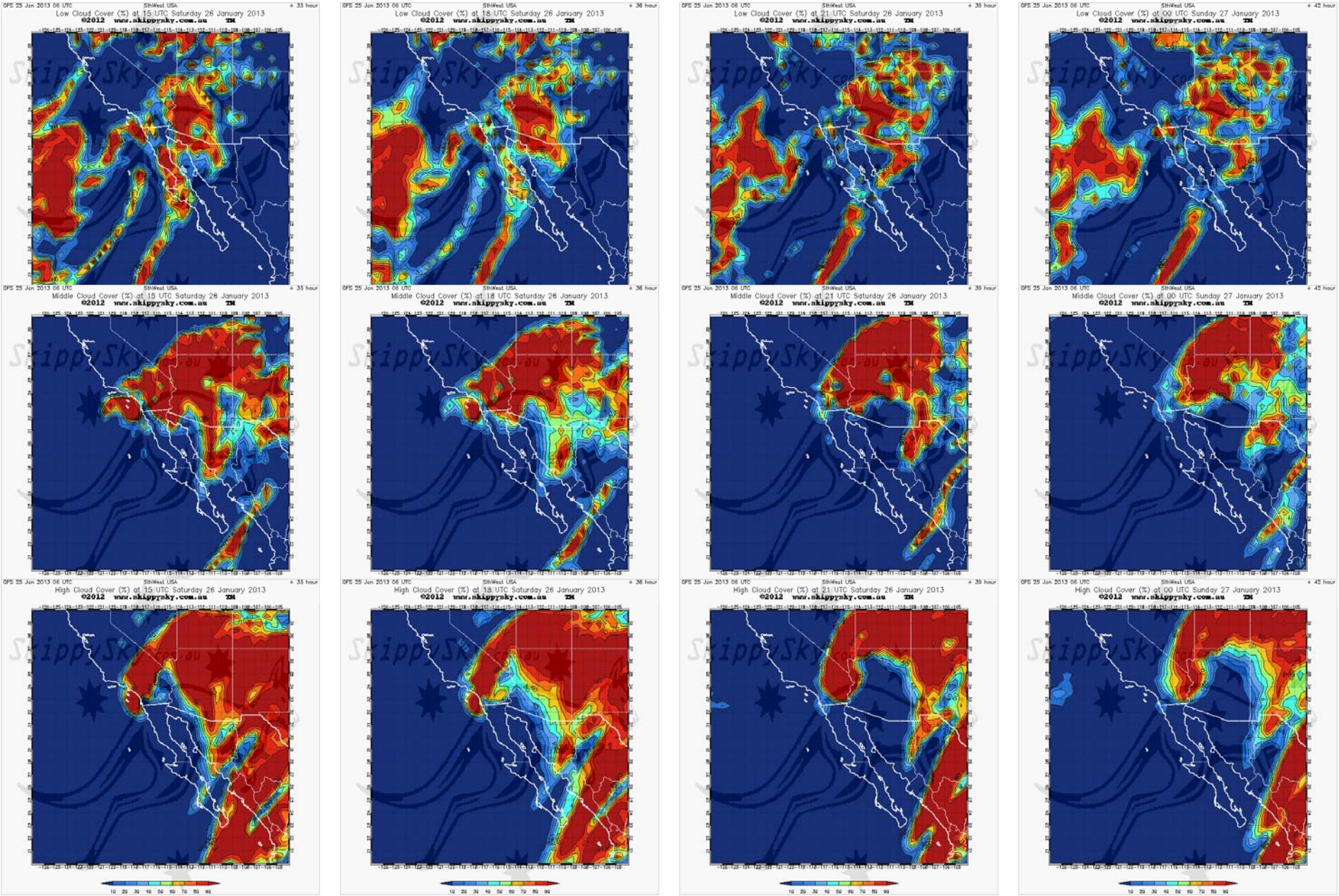






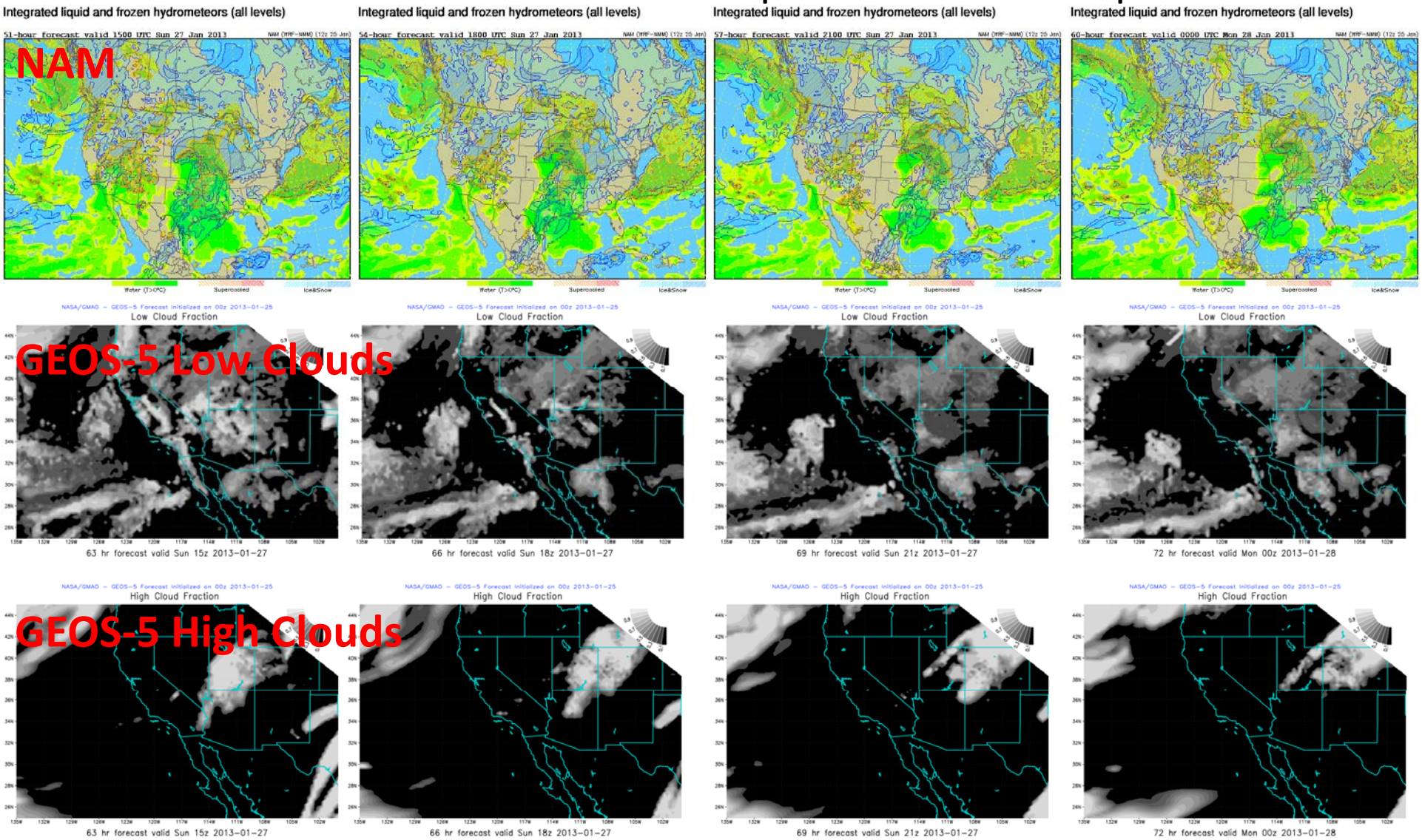
GFS tomorrow

7 am | 10 am | 1 pm | 4 pm



Sunday: NAM – low clouds in the morning, some mid-level (6-12 Kft) in northern SJV by 4p, high level clouds (>18Kft) over SJV in the morning; GEOS-5 – low clouds in the morning

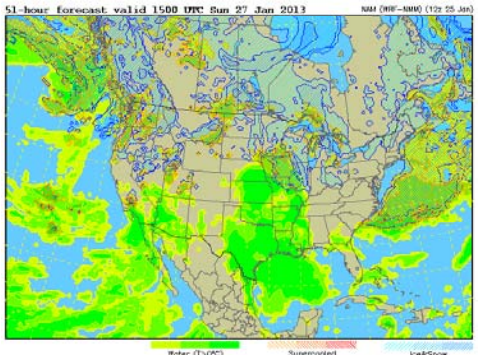
7 am | 10 am | 1 pm | 4 pm



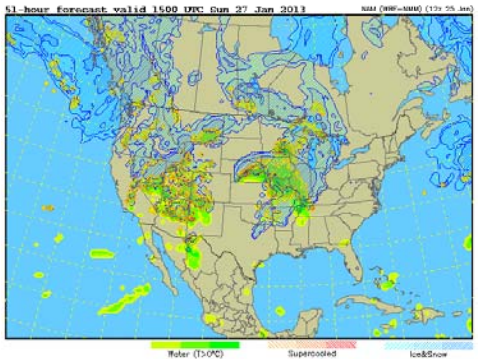
NAM Sunday

7 am

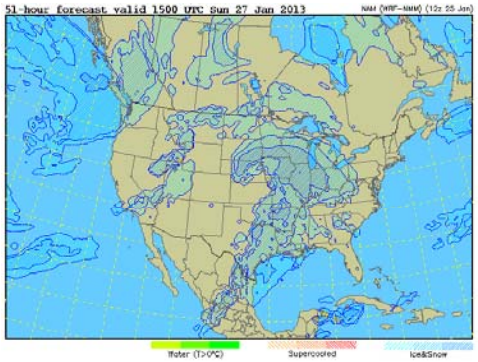
Integrated liquid and frozen hydrometeors (below 6 Kft MSL)



Integrated liquid and frozen hydrometeors (6-12 Kft MSL)

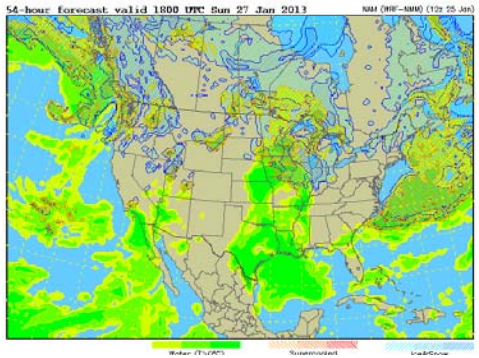


Integrated liquid and frozen hydrometeors (above 18 Kft MSL)

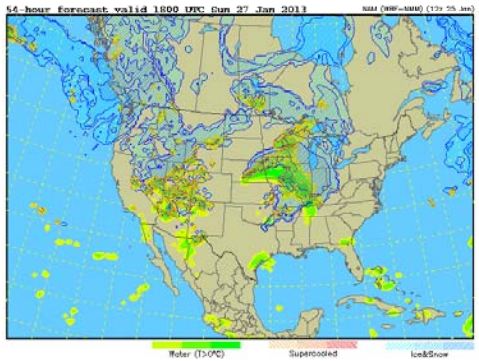


10 am

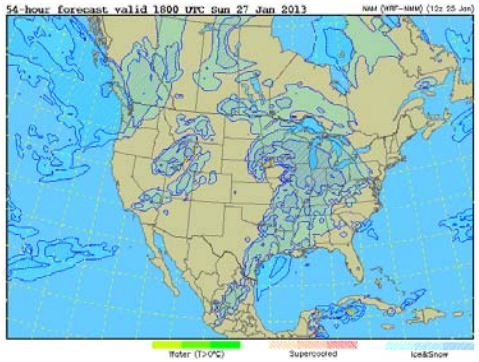
Integrated liquid and frozen hydrometeors (below 6 Kft MSL)



Integrated liquid and frozen hydrometeors (6-12 Kft MSL)

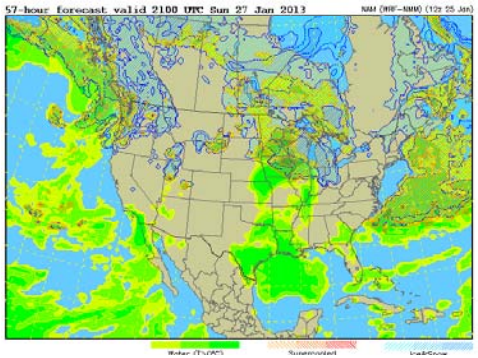


Integrated liquid and frozen hydrometeors (above 18 Kft MSL)

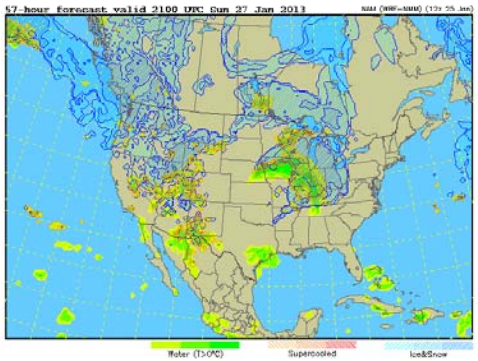


1 pm

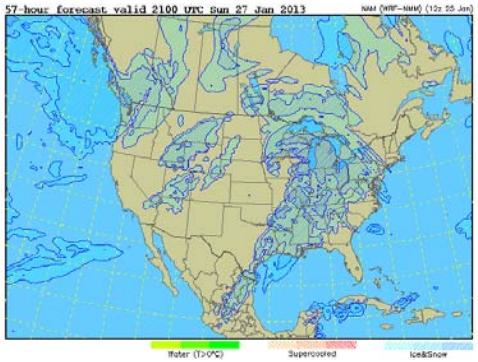
Integrated liquid and frozen hydrometeors (below 6 Kft MSL)



Integrated liquid and frozen hydrometeors (6-12 Kft MSL)

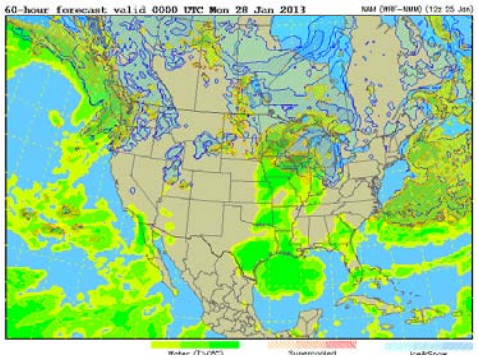


Integrated liquid and frozen hydrometeors (above 18 Kft MSL)

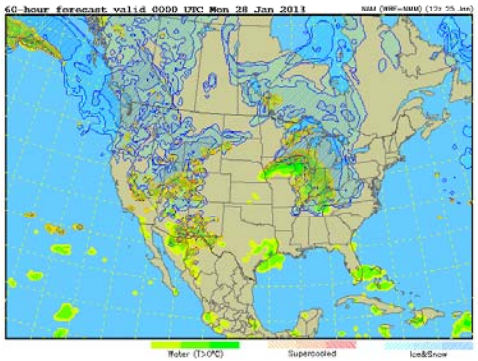


4 pm

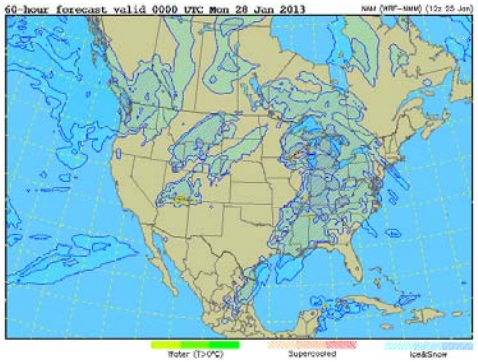
Integrated liquid and frozen hydrometeors (below 6 Kft MSL)



Integrated liquid and frozen hydrometeors (6-12 Kft MSL)

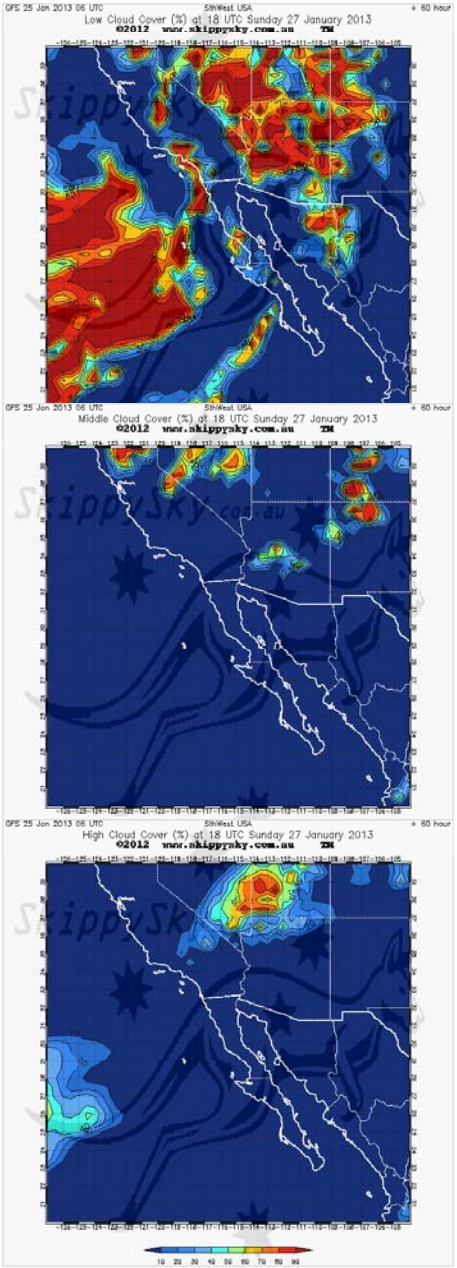


Integrated liquid and frozen hydrometeors (above 18 Kft MSL)

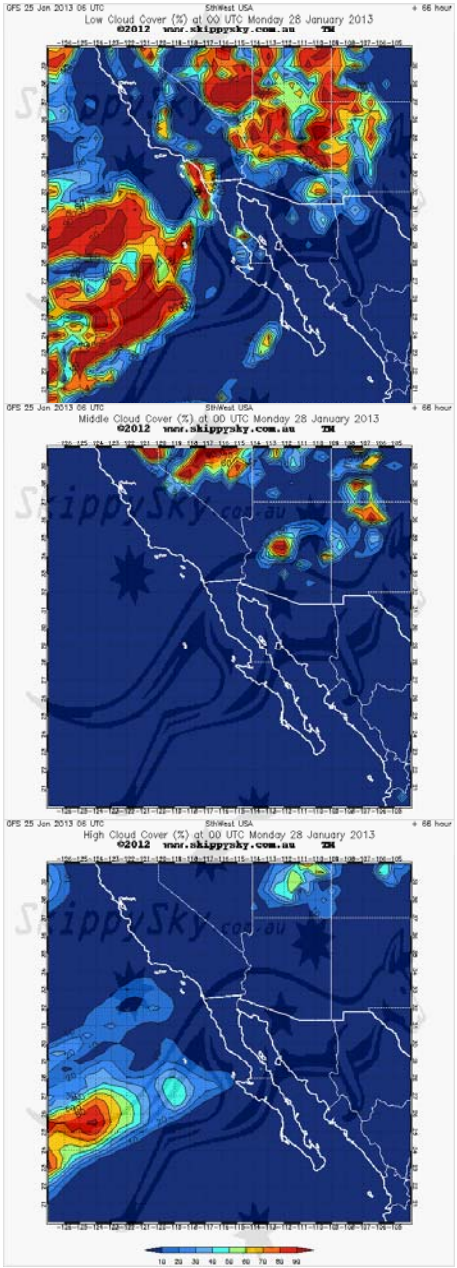


GFS Sunday

10 am

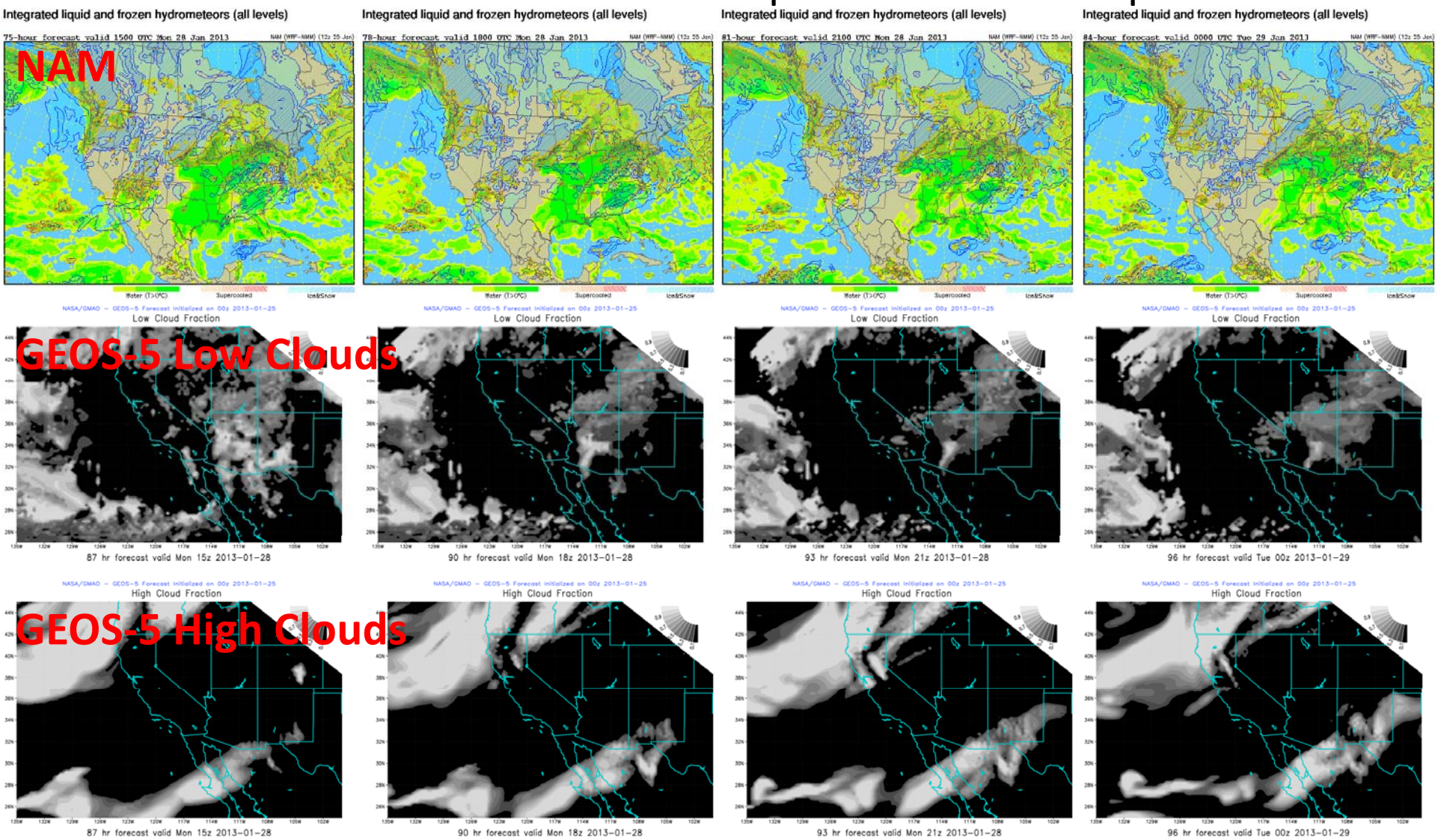


4 pm

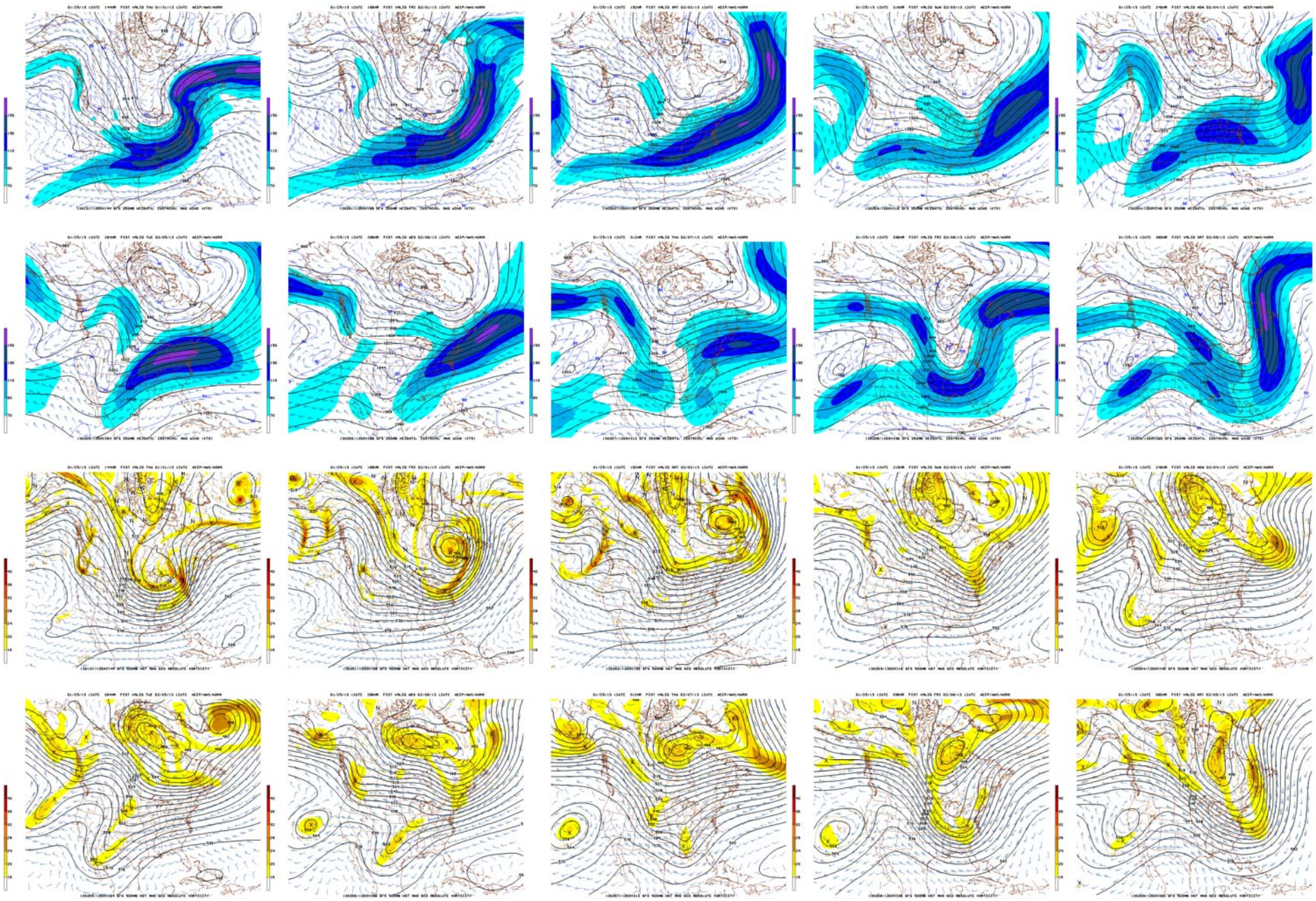


Monday: NAM – clear at all levels; GEOS-5 – some low clouds in the morning

7 am | 10 am | 1 pm | 4 pm



Thu 31 Jan – Sat 9 Feb: 250 mb (top 2 rows) and 500 mb (bottom 2 rows) charts



AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE SAN JOAQUIN VALLEY - HANFORD CA
203 PM PST FRI JAN 25 2013

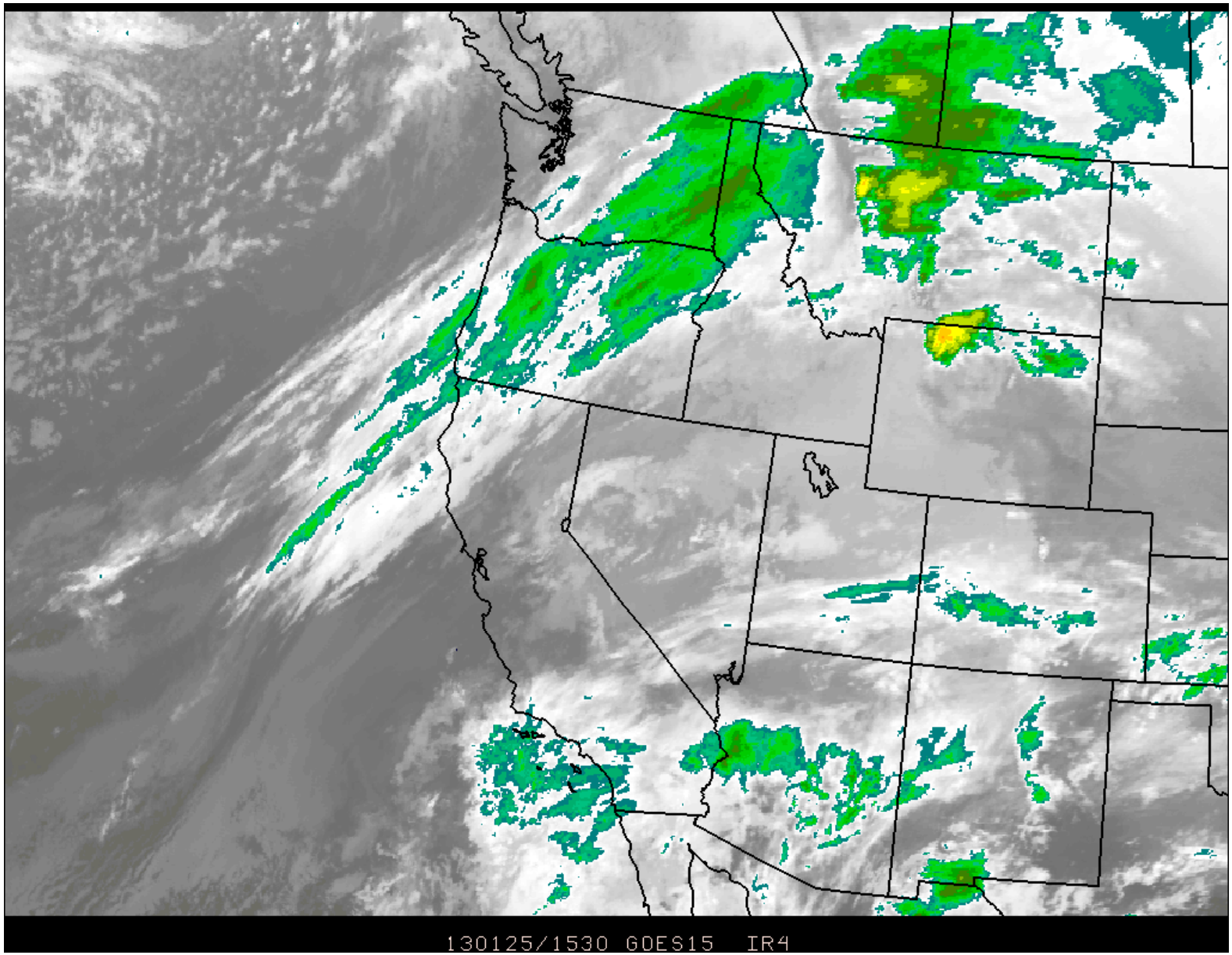
SYNOPSIS...SEVERAL WEATHER DISTURBANCES ASSOCIATED WITH AN UPPER-LEVEL LOW STAYING OFF THE COAST OF CALIFORNIA WILL MOVE OVER THE REGION DURING THE NEXT FEW DAYS. OFF AND ON CHANCES OF PRECIPITATION WILL CONTINUE THROUGH EARLY NEXT WEEK. &&

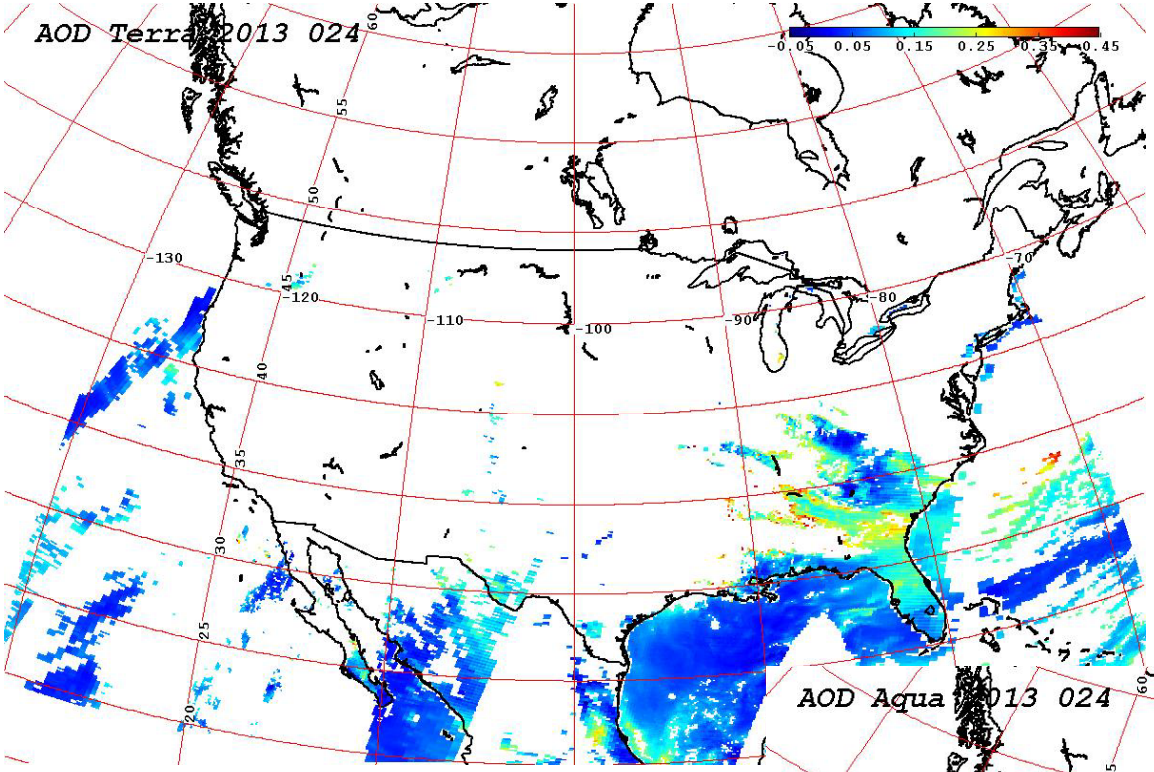
.DISCUSSION...THE FOG LAYER THAT BROUGHT REDUCED VISIBILITIES TO MUCH OF THE SAN JOAQUIN VALLEY THIS MORNING HAS LIFTED INTO A STRATUS DECK. MEANWHILE...MID/HIGH CLOUDS HAVE BEEN SPREADING NORTHWARD INTO OUR CWFA WITH RADAR COMPOSITES INDICATING SCATTERED SHOWERS OVER THE KERN COUNTY MOUNTAINS AND DESERTS. THIS MOISTURE IS BEING PULLED UP BY A CUTOFF UPPER LOW CURRENTLY CENTERED OFF THE NORTHERN BAJA COAST NEAR 30N/122W WHICH IS MOVING SLOWLY EASTWARD. IN THE MEANTIME IMPULSES WILL CONTINUE TO TRACK NORTHWARD INTO OUR AREA THROUGH SATURDAY MORNING AND KEEP THE LIKELIHOOD OF SHOWERS OVER THE KERN COUNTY MOUNTAIN AND DESERTS WITH LESSER CHANCES ELSEWHERE ACROSS OUR CWFA. SNOW LEVELS WILL RANGE FROM 7500 TO 8000 FEET AS THIS MOISTURE IS OF TROPICAL ORIGIN. IT IS POSSIBLE THE STRATUS DECK MAY HANG OVER THE SAN JOAQUIN VALLEY THROUGH SATURDAY AS DYNAMICS WILL BE LACKING TO MIX OUT THE LOWER LEVELS.

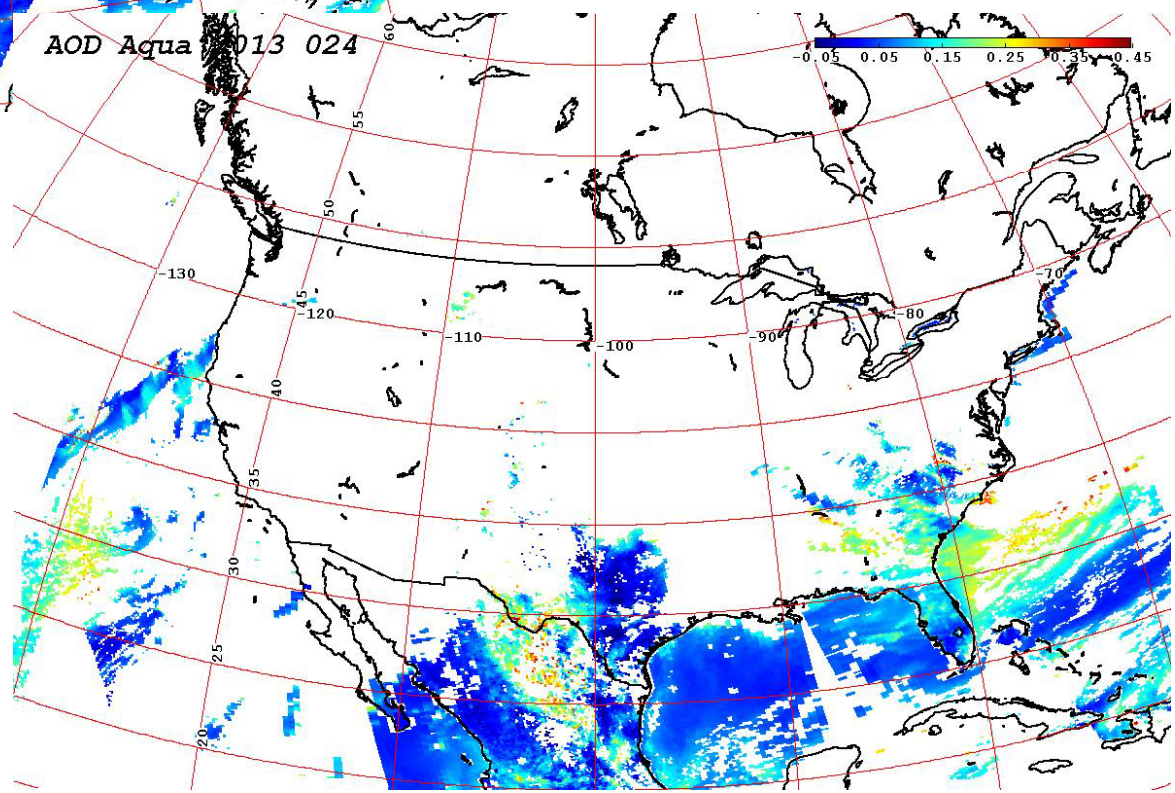
12Z WRF/GFS INDICATE THE LOW WILL MOVE INLAND JUST SOUTH OF THE US/MEXICO BORDER ON SATURDAY. AS A RESULT...WRAP AROUND BACKWASH MOISTURE MAY PROVIDE FOR SOME LIGHT PRECIPITATION ACROSS OUR CWFA. THE WRF AND GFS BOTH INDICATE UPPER TROUGH WILL DROP OUT OF THE GULF OF AK ON SATURDAY AND PUSH THROUGH CENTRAL CA SUNDAY AFTERNOON AND EVENING. SINCE THIS SYSTEM DOES NOT HAVE MUCH MOISTURE WITH IT...ANY PRECIPITATION PROVIDED BY THIS SYSTEM WILL BE LIGHT AND THEREFORE DO NOT EXPECT WIDESPREAD IMPACTS TO TRAVEL. A COOLER AIRMASS BEHIND THIS SYSTEM WILL PUSH INTO OUR AREA BY SUNDAY EVENING WHICH WILL MIX OUT THE STRATUS DECK OVER THE VALLEY...BRING A PERIOD OF BREEZY CONDITIONS TO THE KERN COUNTY MOUNTAINS AND DESERTS ON SUNDAY AFTERNOON AND EVENING...AND LOWER SNOW LEVELS TO 3000 TO 3500 FEET BY THE TIME MOST OF THE PRECIPITATION ENDS ON MONDAY MORNING.

THE MEDIUM RANGE MODELS HAVE COME TO SLIGHTLY BETTER AGREEMENT WITH HIGH PRESSURE BUILDING OFF THE CA COAST ON TUESDAY AND KEEPING A DRY NORTHWEST FLOW OVER CENTRAL CA FOR THE REMAINDER OF NEXT WEEK. AS A RESULT...CONFIDENCE IS IMPROVING FOR THE FORECAST FOR NEXT WEEK WHICH IS DRY FROM THROUGH THE END OF NEXT WEEK WITH DAYTIME TEMPERATURES RISING ABOVE SEASONAL NORMALS BY WEDNESDAY.

GOES Imagery : IR

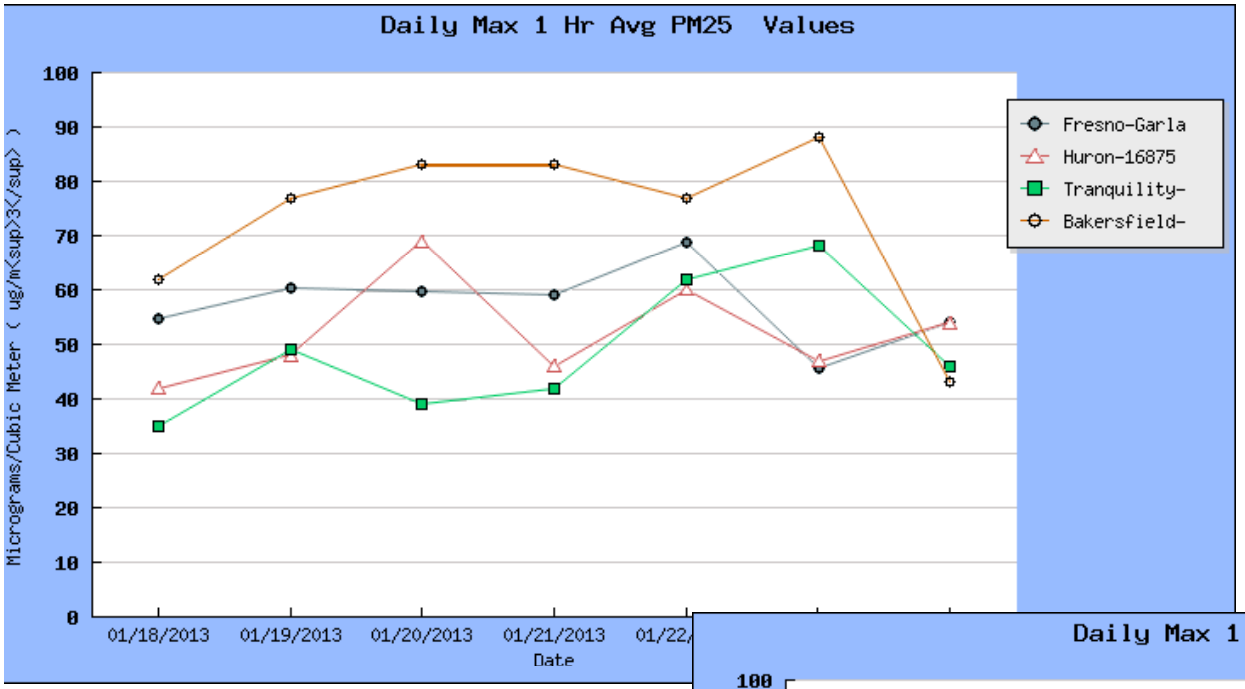


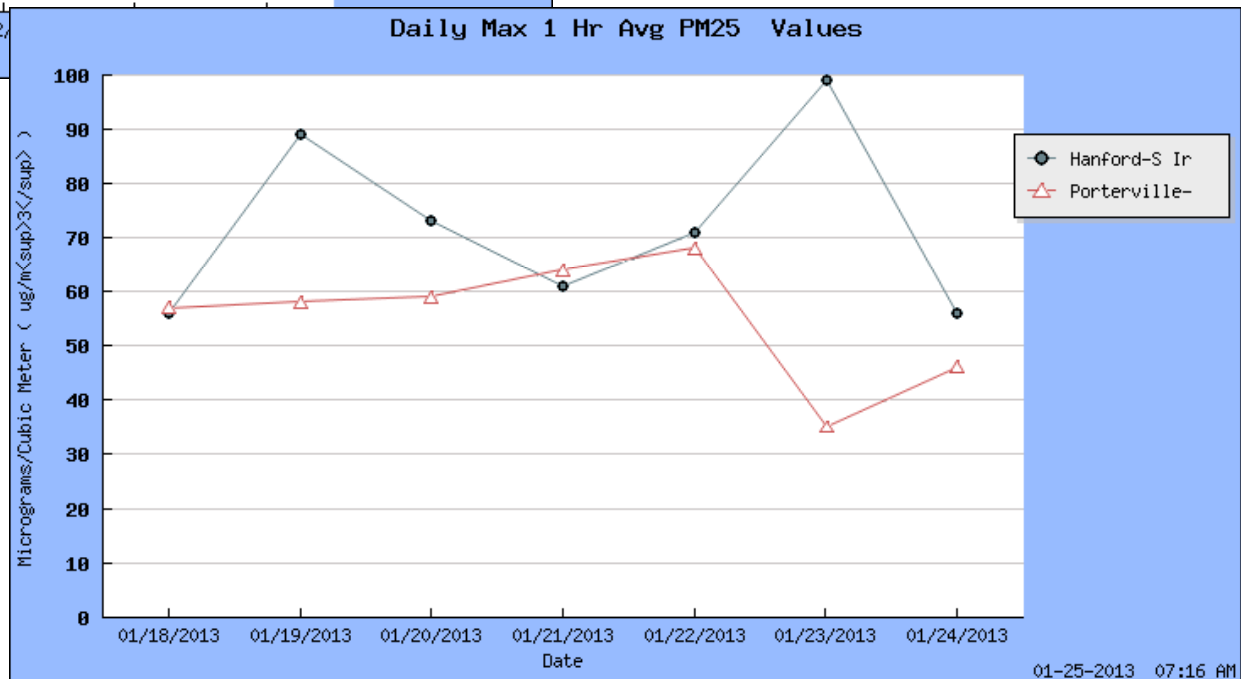




Too cloudy for AOD observations from MODIS yesterday, January 24th.

Daily PM2.5 Max 1 Hr Avg: CARB Sites

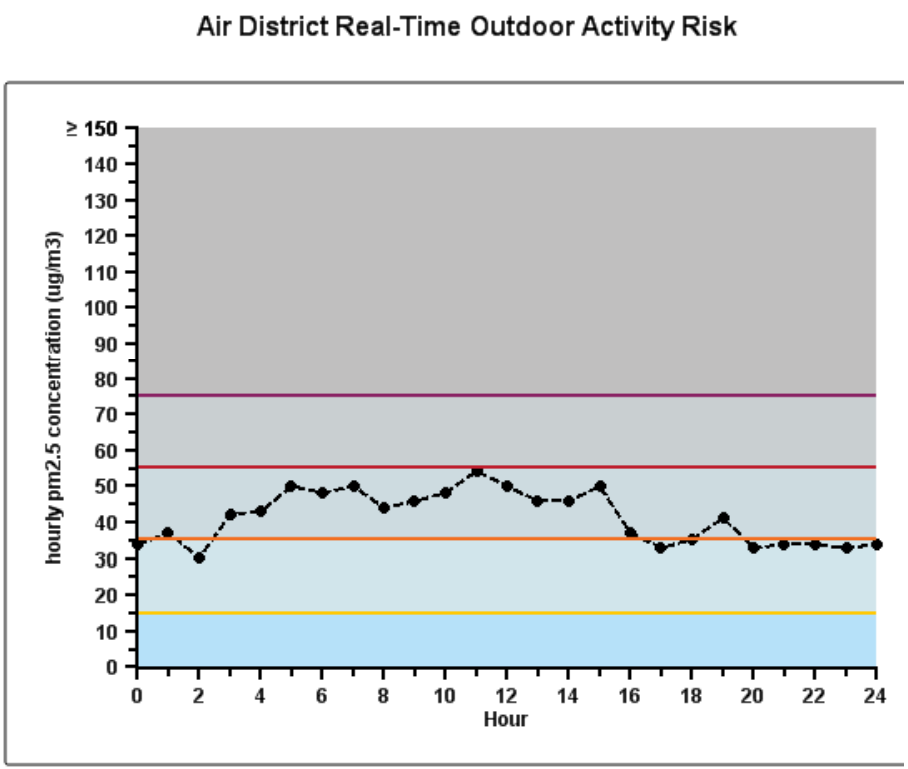




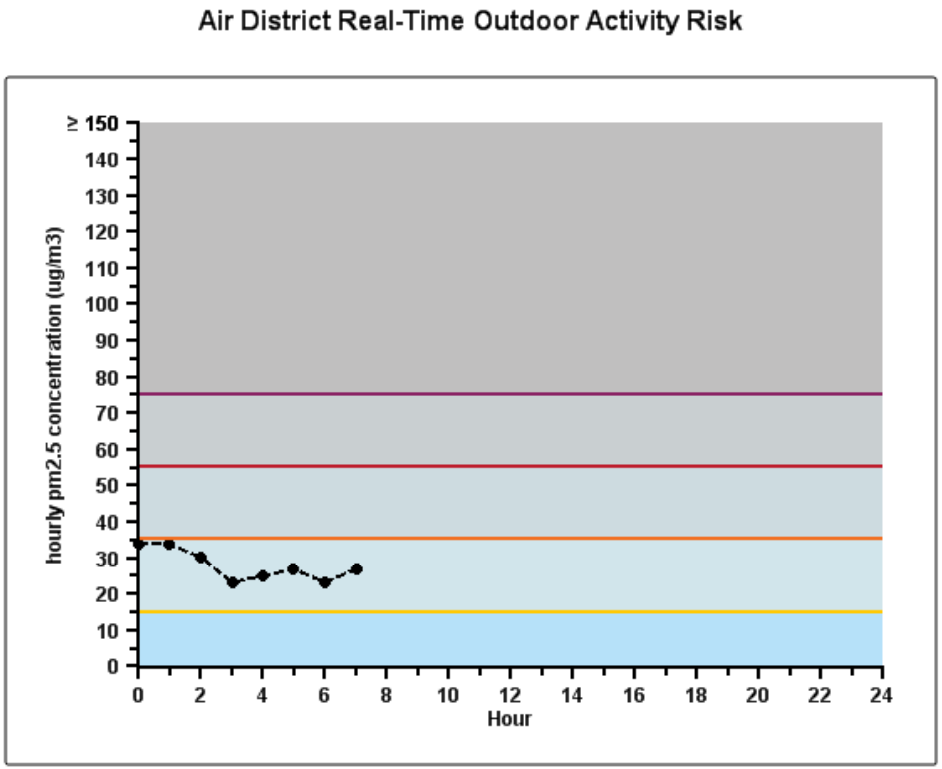
Yesterday's rain only lowered PM2.5 by a little – no washout event. Sunday's cold front should "reset AQ clock".

Fresno-Garland

January 24th Yesterday

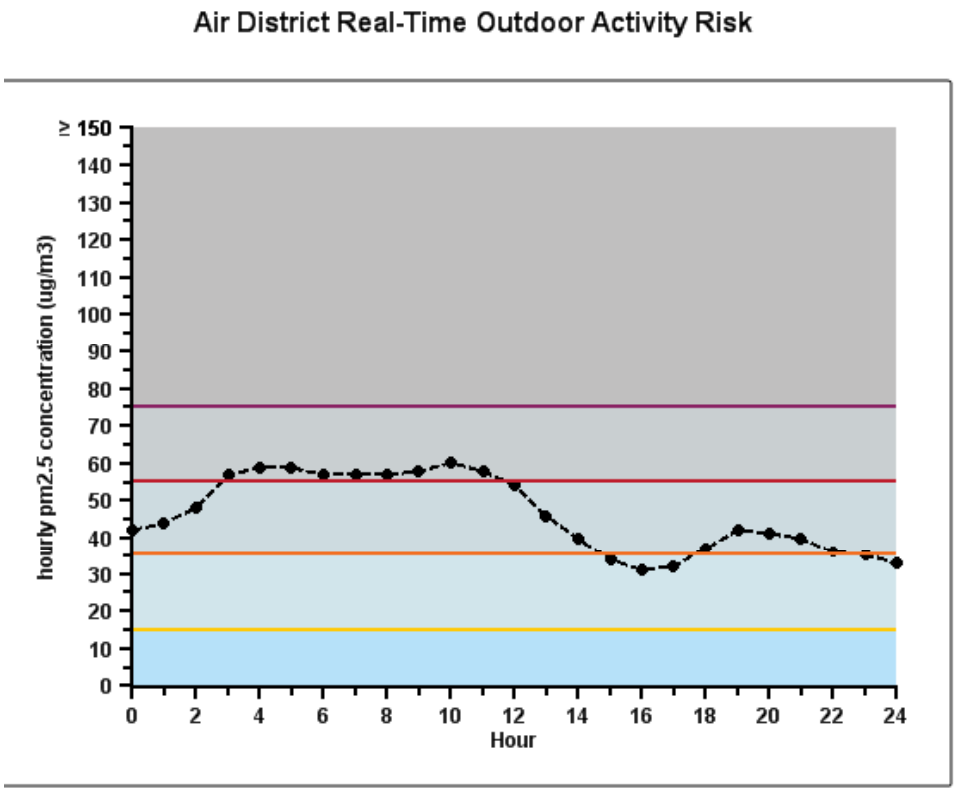


January 25th Today

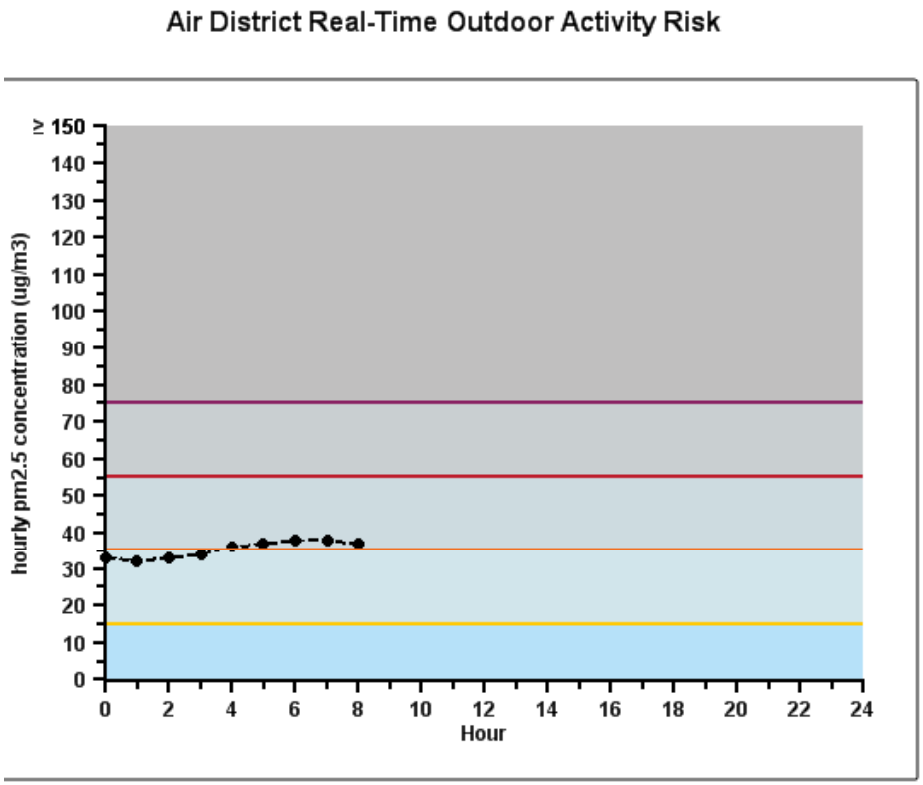


Corcoran

January 24th Yesterday

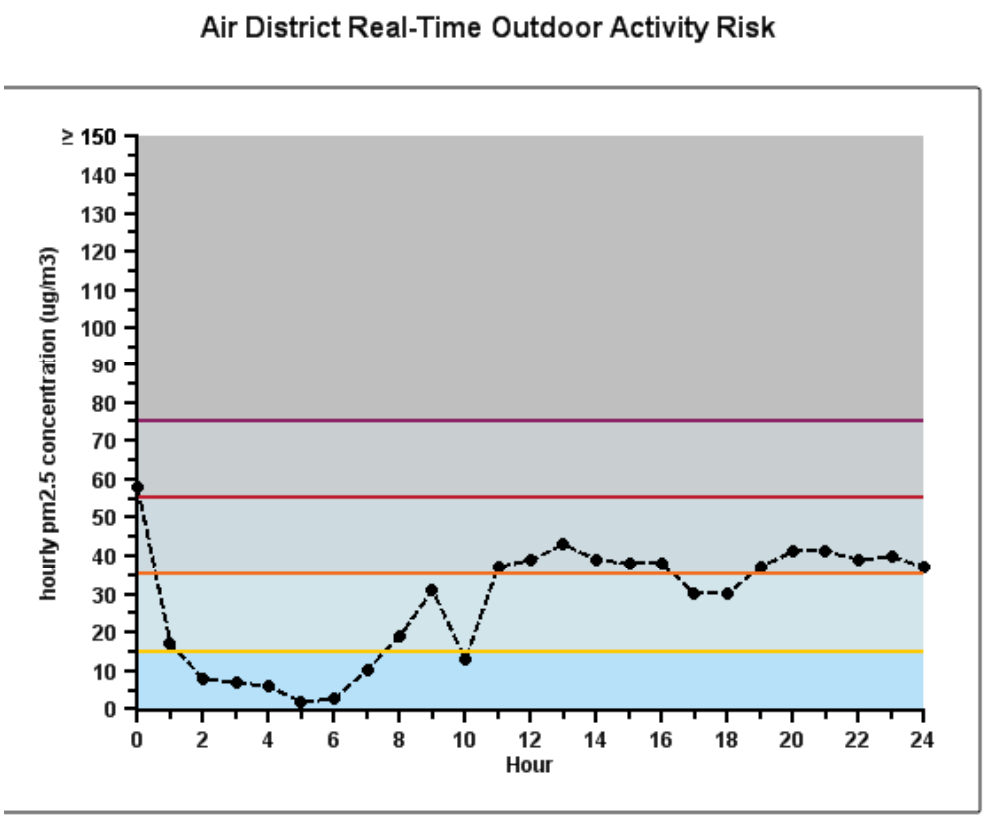


January 25th Today

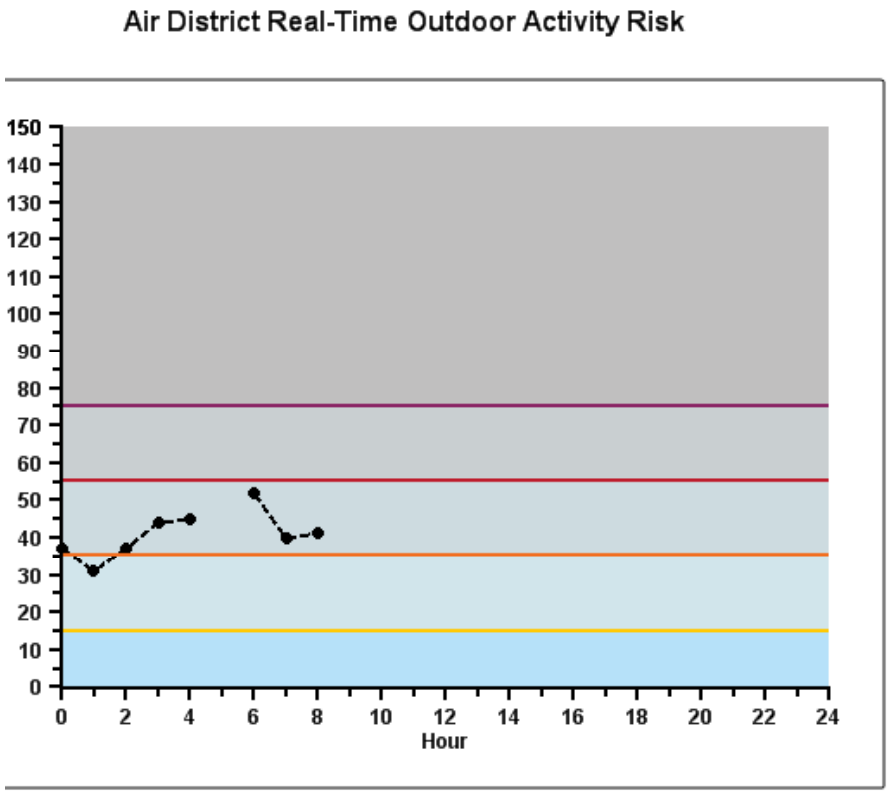


Bakersfield Municipal Airport

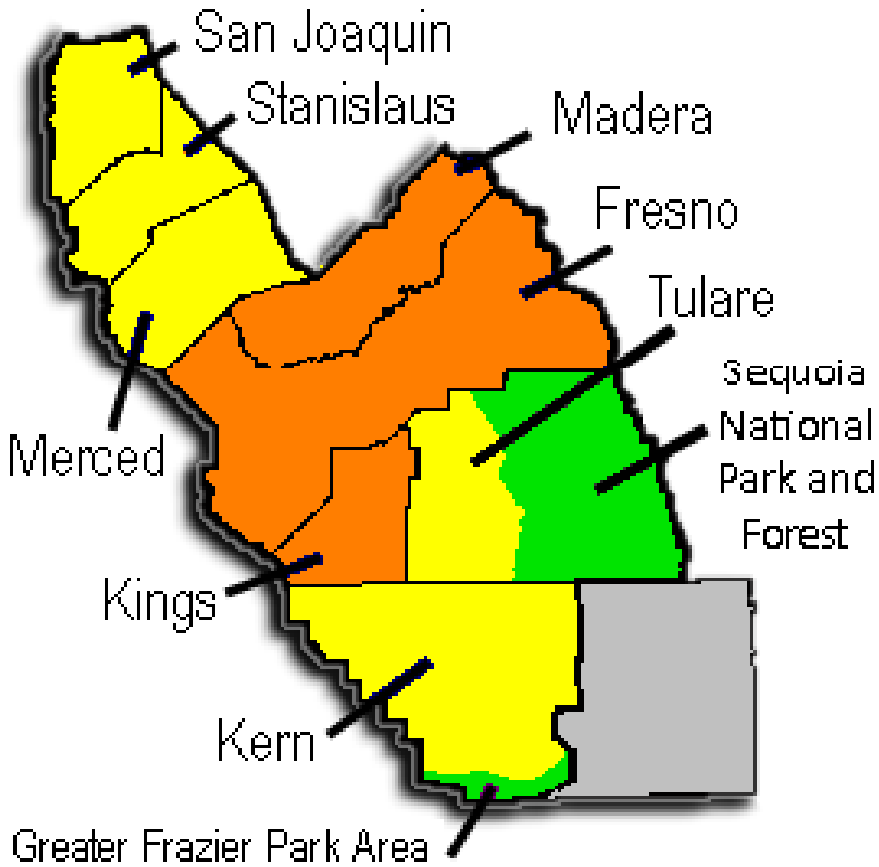
January 24th Yesterday



January 25th Today

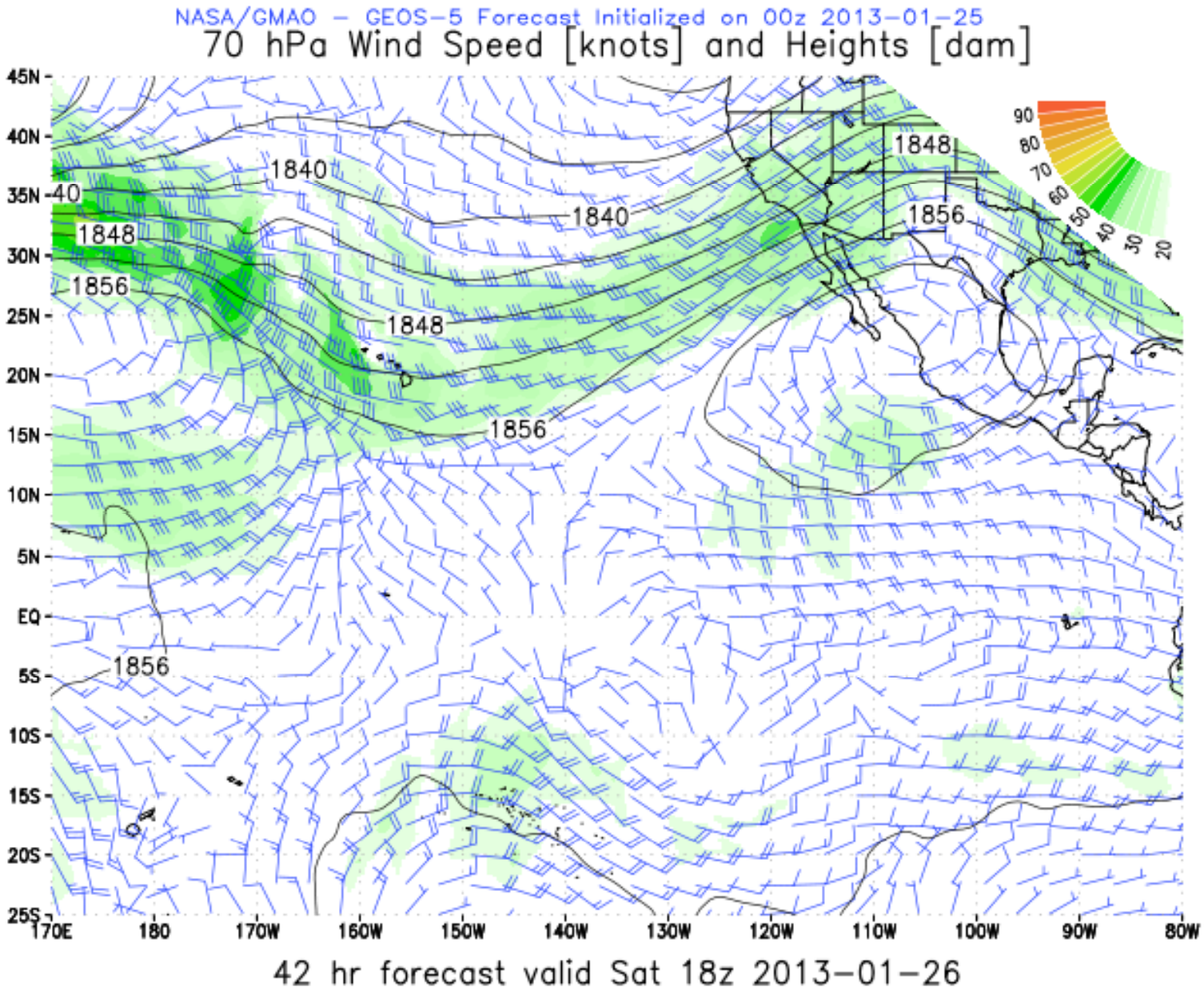


SJV APCD Daily Forecast – for TODAY (Jan 25)

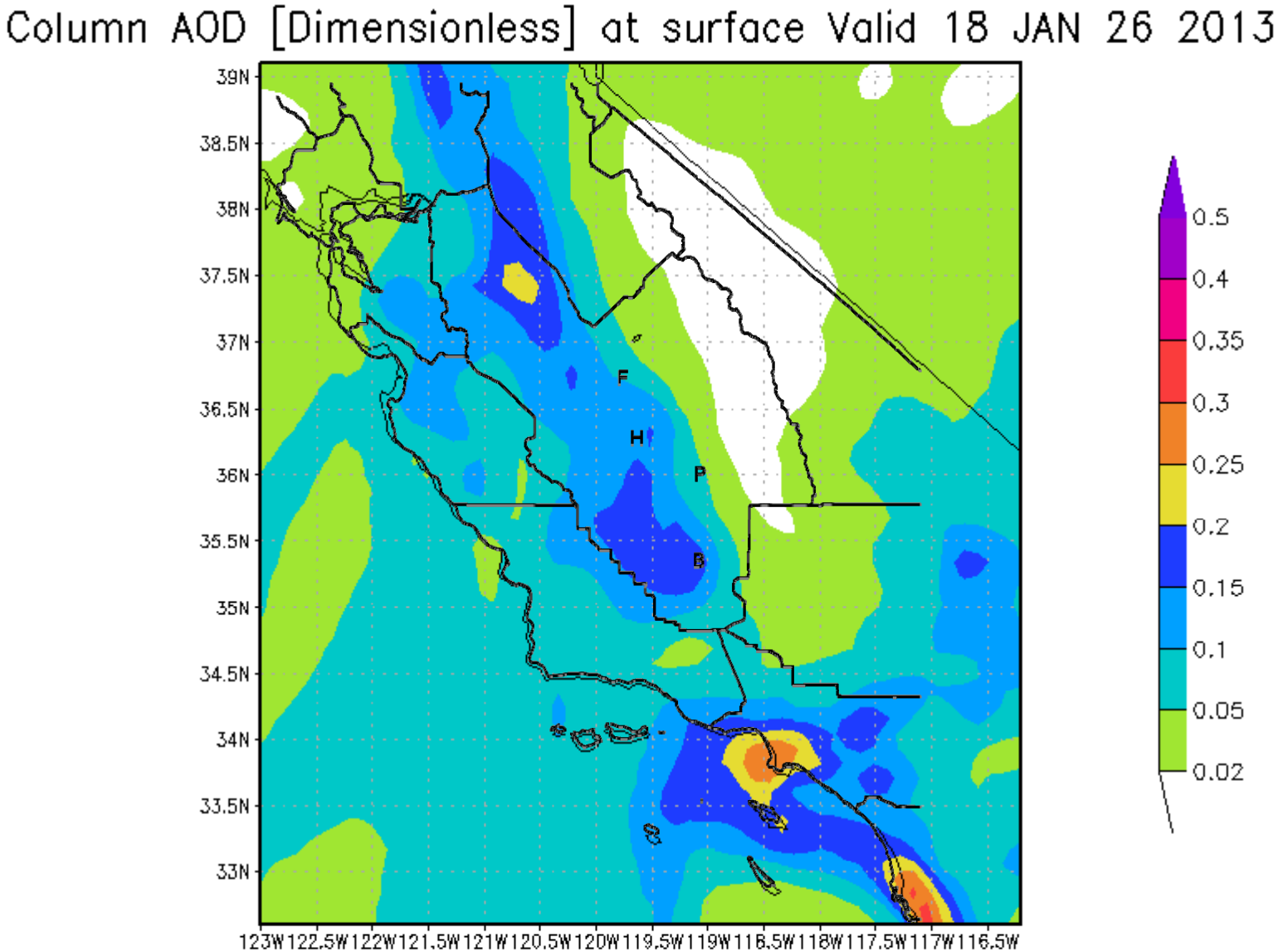


ROAR LEVEL	Ozone (O^3)	Particulate Matter (PM 2.5)
LEVEL 1 Good	1-59 ppb	1-15 µg/m³
LEVEL 2 Moderate	60-75 ppb	16-35 µg/m³
LEVEL 3 Unhealthy for Sensitive Groups	76-95 ppb	36-55 µg/m³
LEVEL 4 Unhealthy	96-115 ppb	56-75 µg/m³
LEVEL 5 Very Unhealthy	>115 ppb	>75 µg/m³

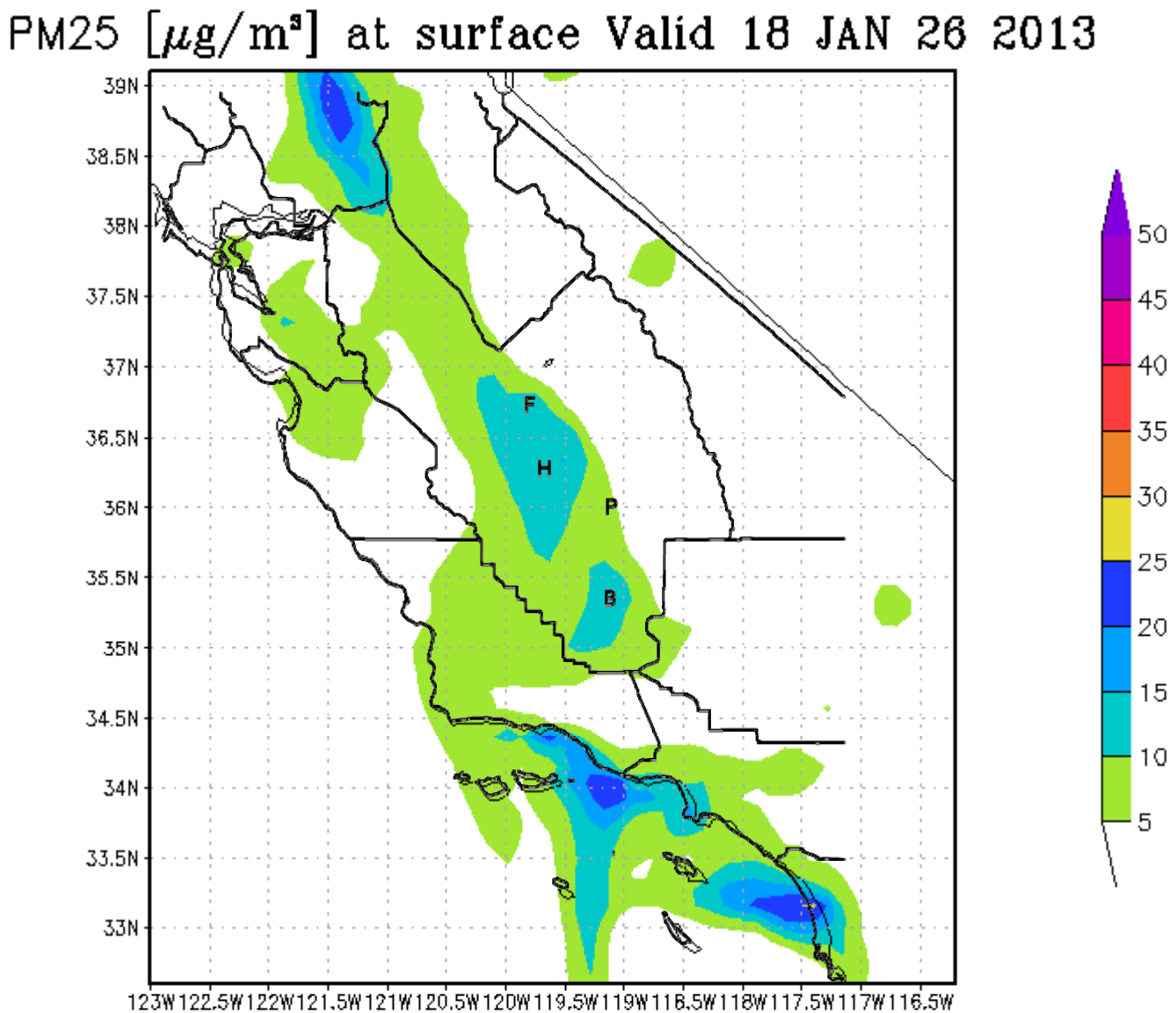
GEOS-5: Saturday 18Z = 10 PST



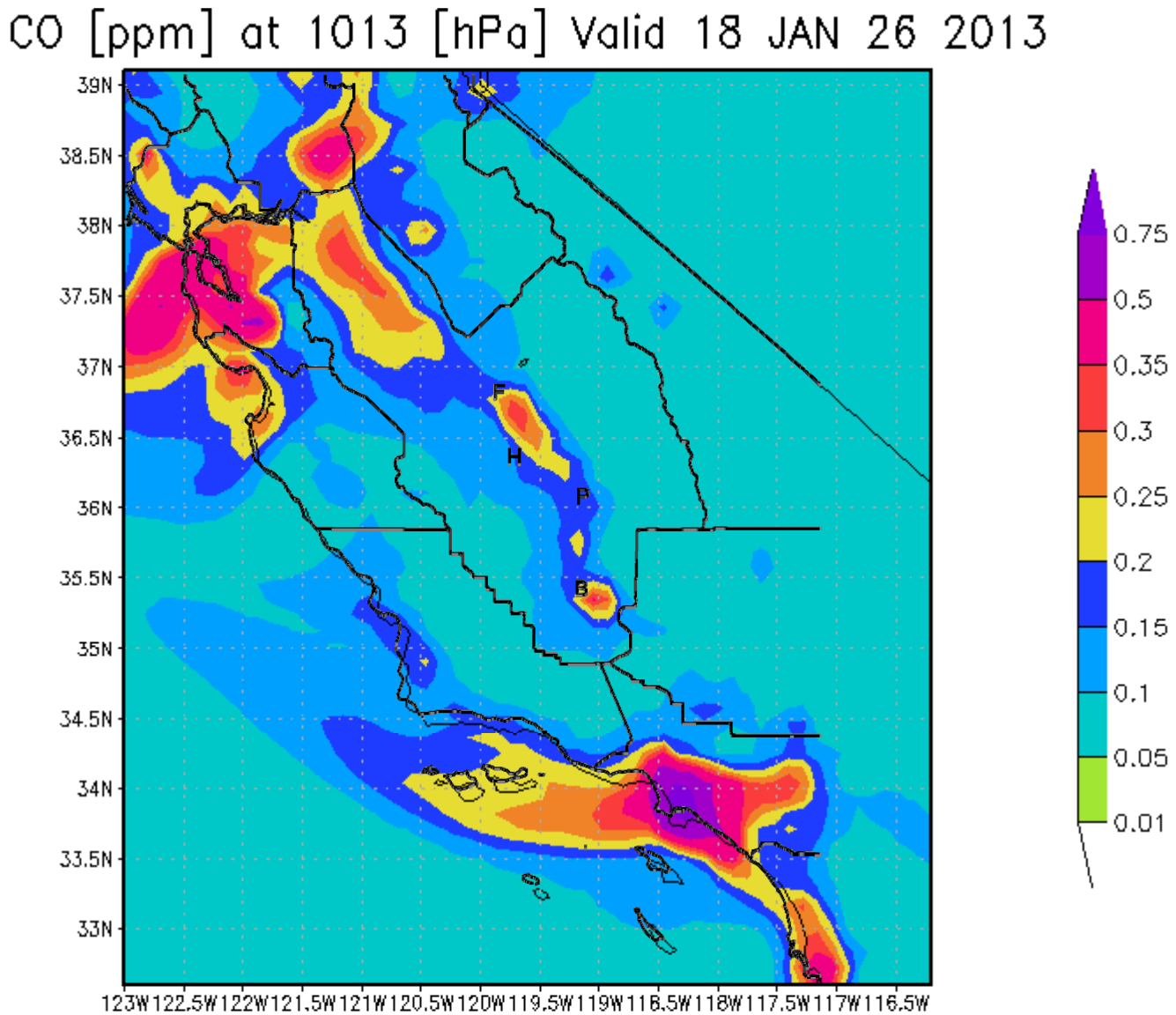
NOAA CMAQ: Saturday 10 am = 18 Z



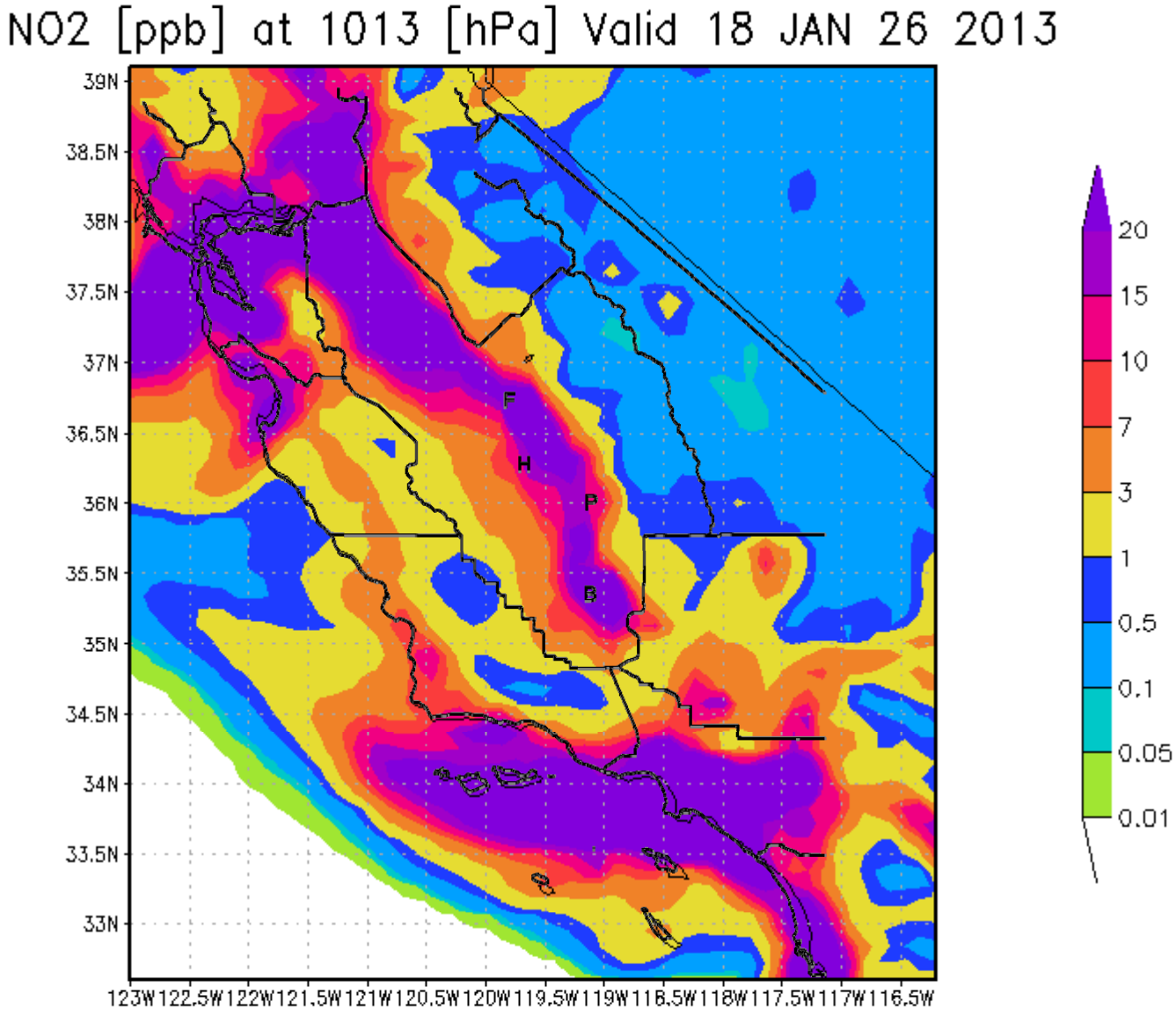
Saturday 10 am = 18 Z



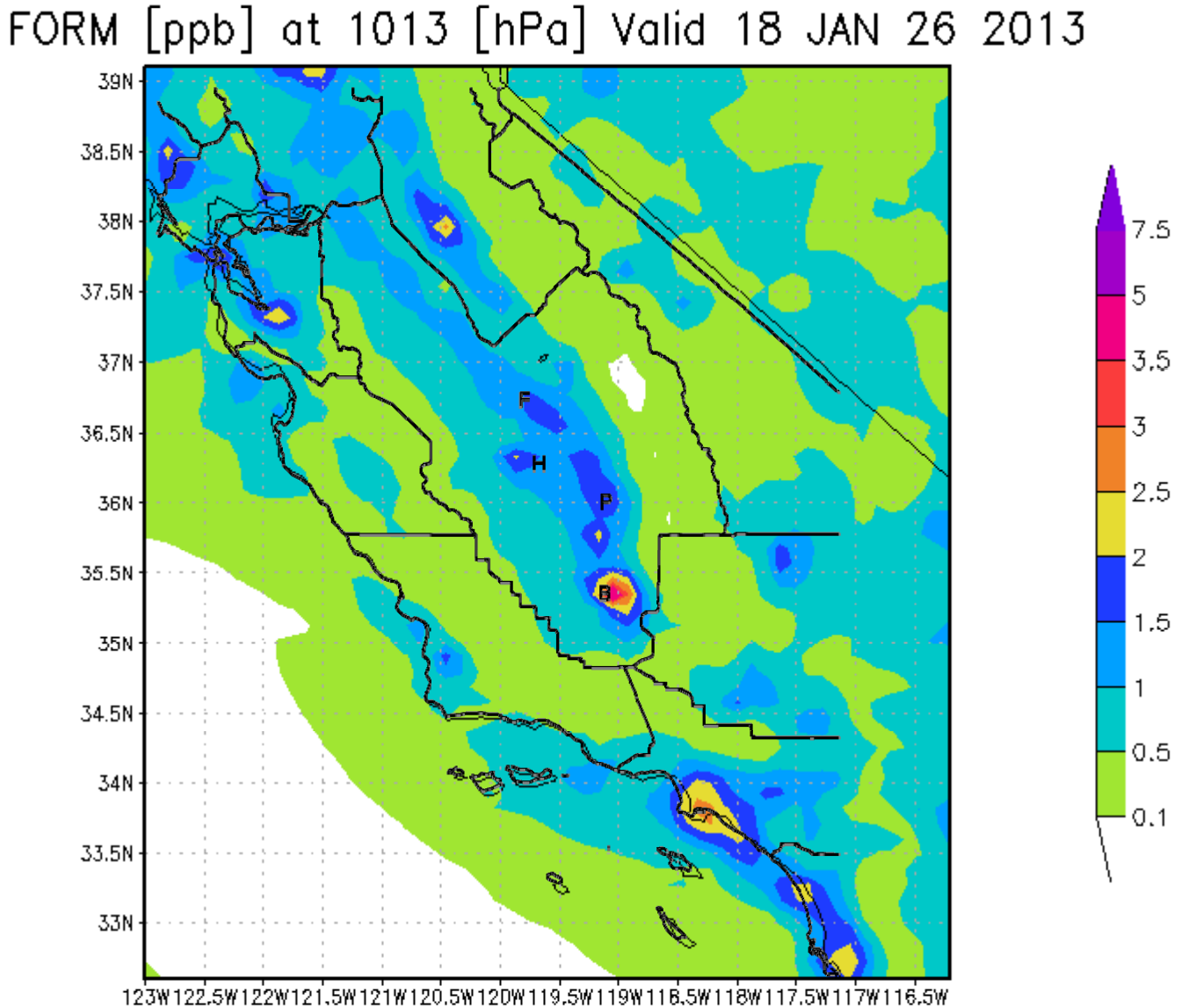
Saturday 10 am = 18 Z



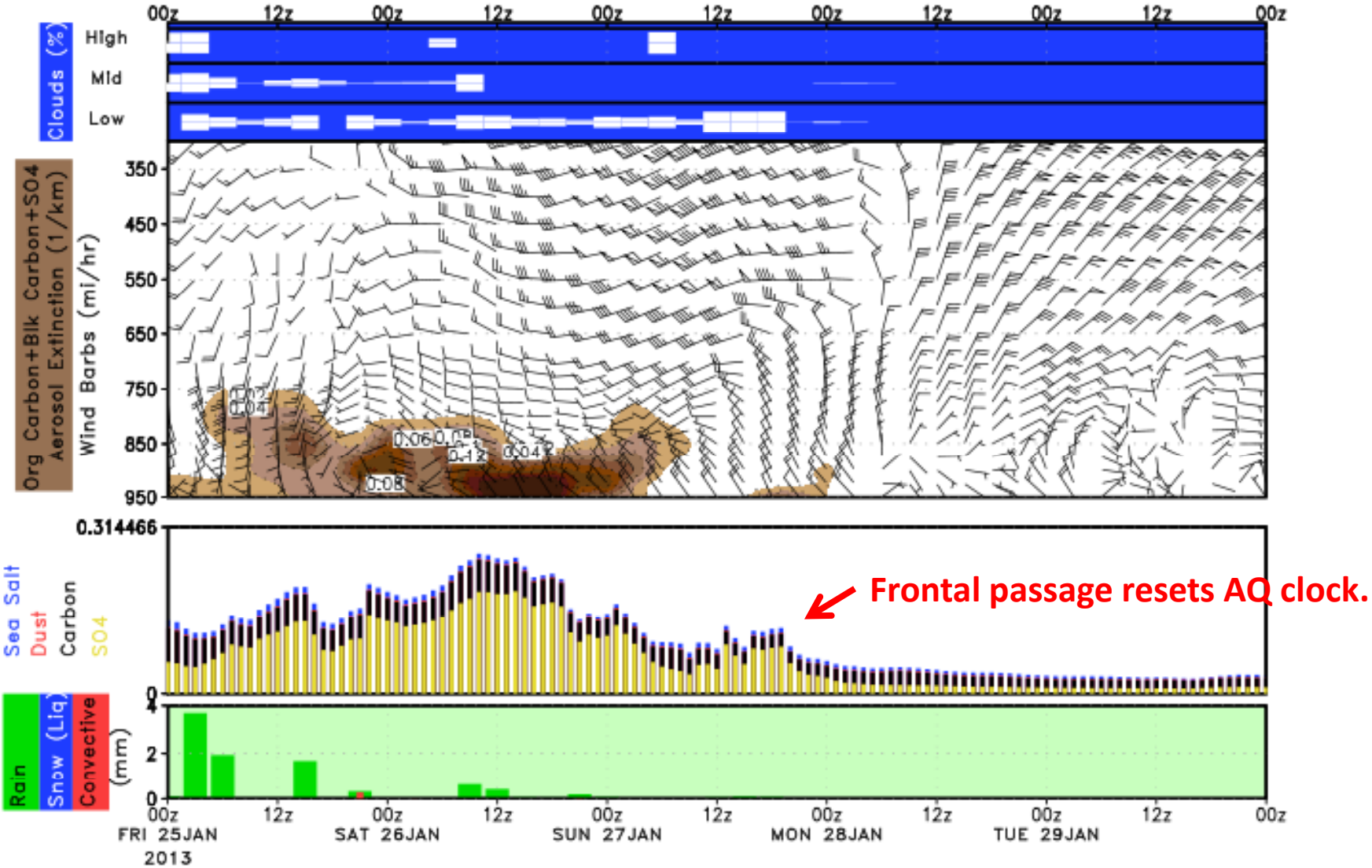
Saturday 10 am = 18 Z



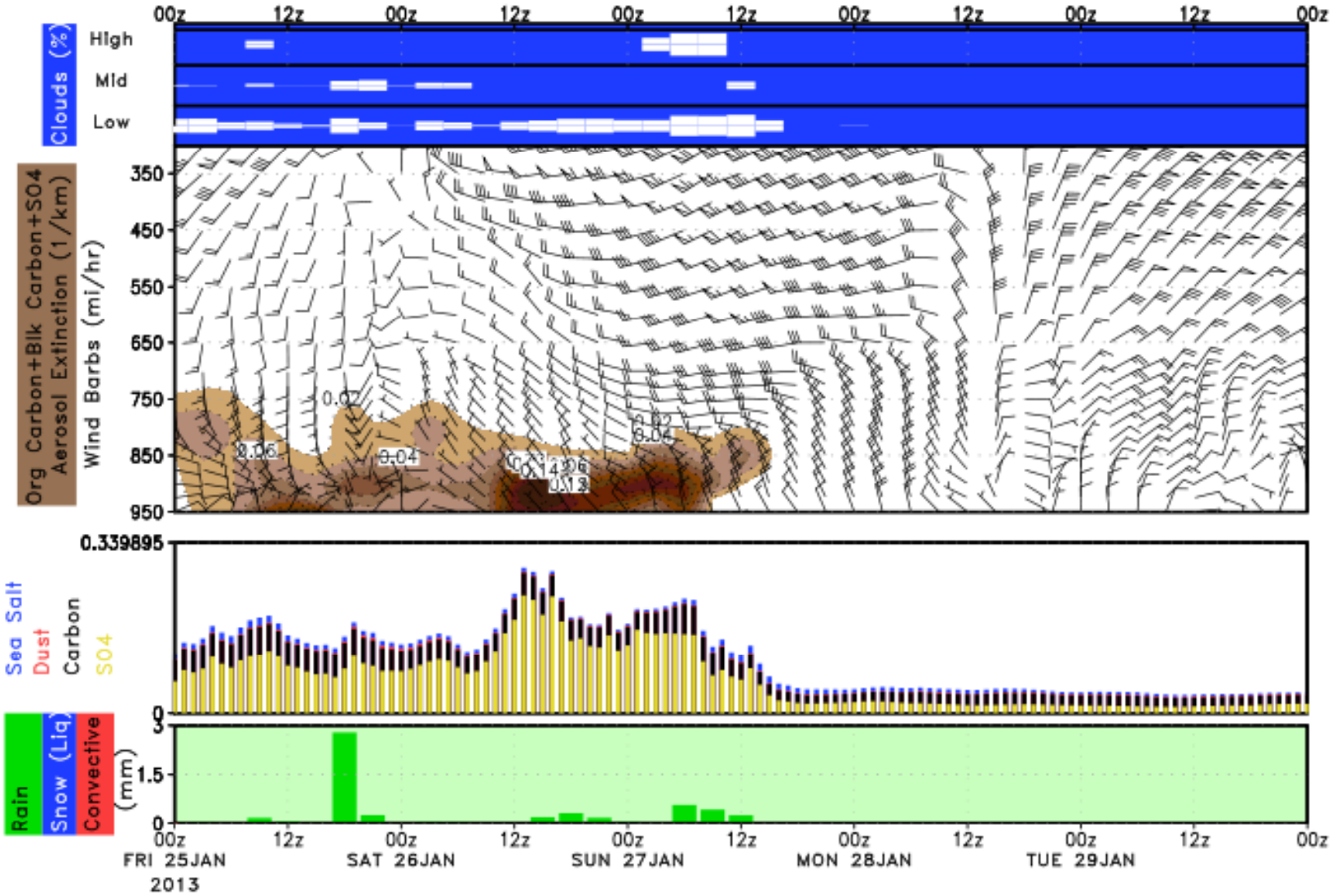
Saturday 10 am = 18 Z



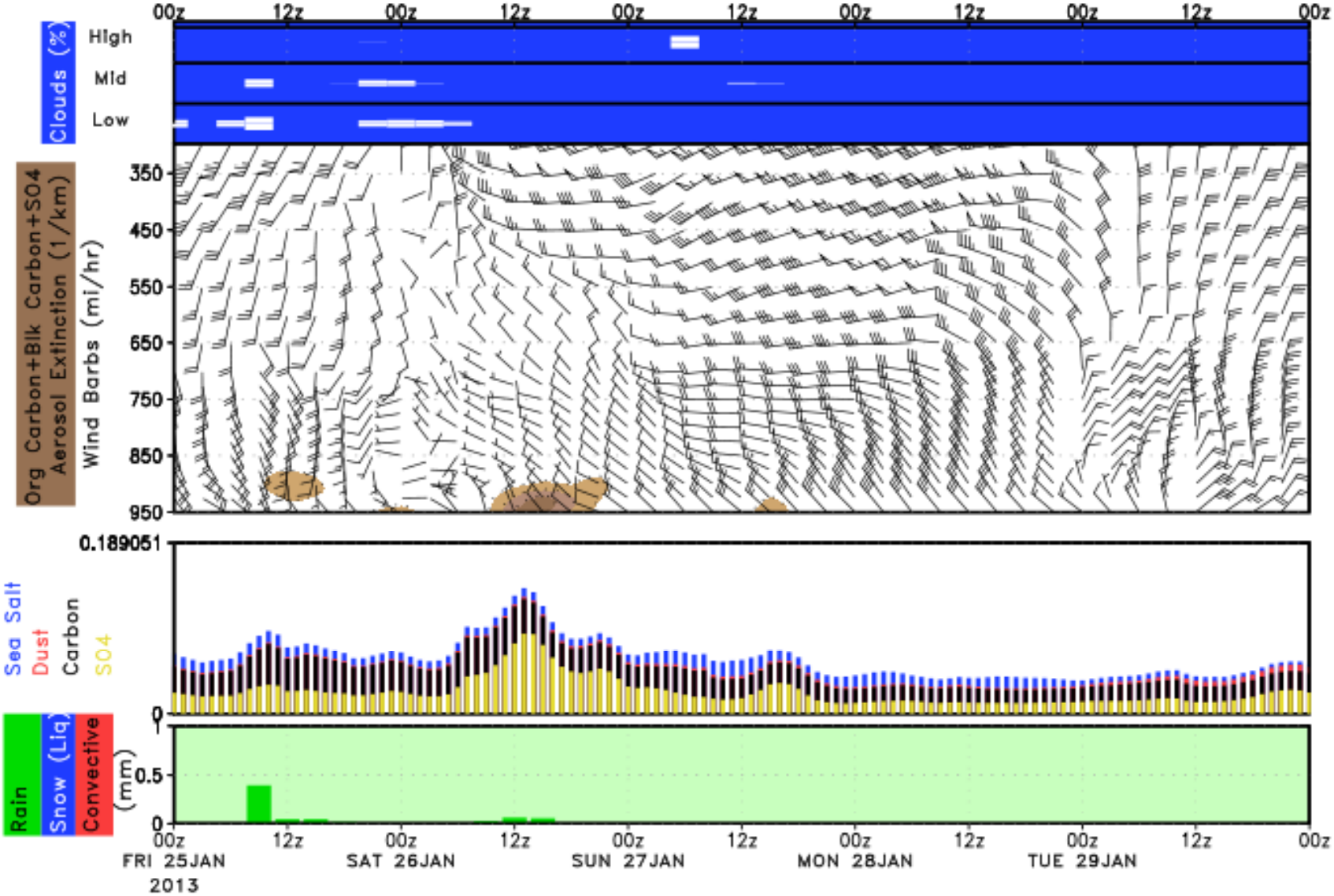
GMAO GEOS5: Fresno



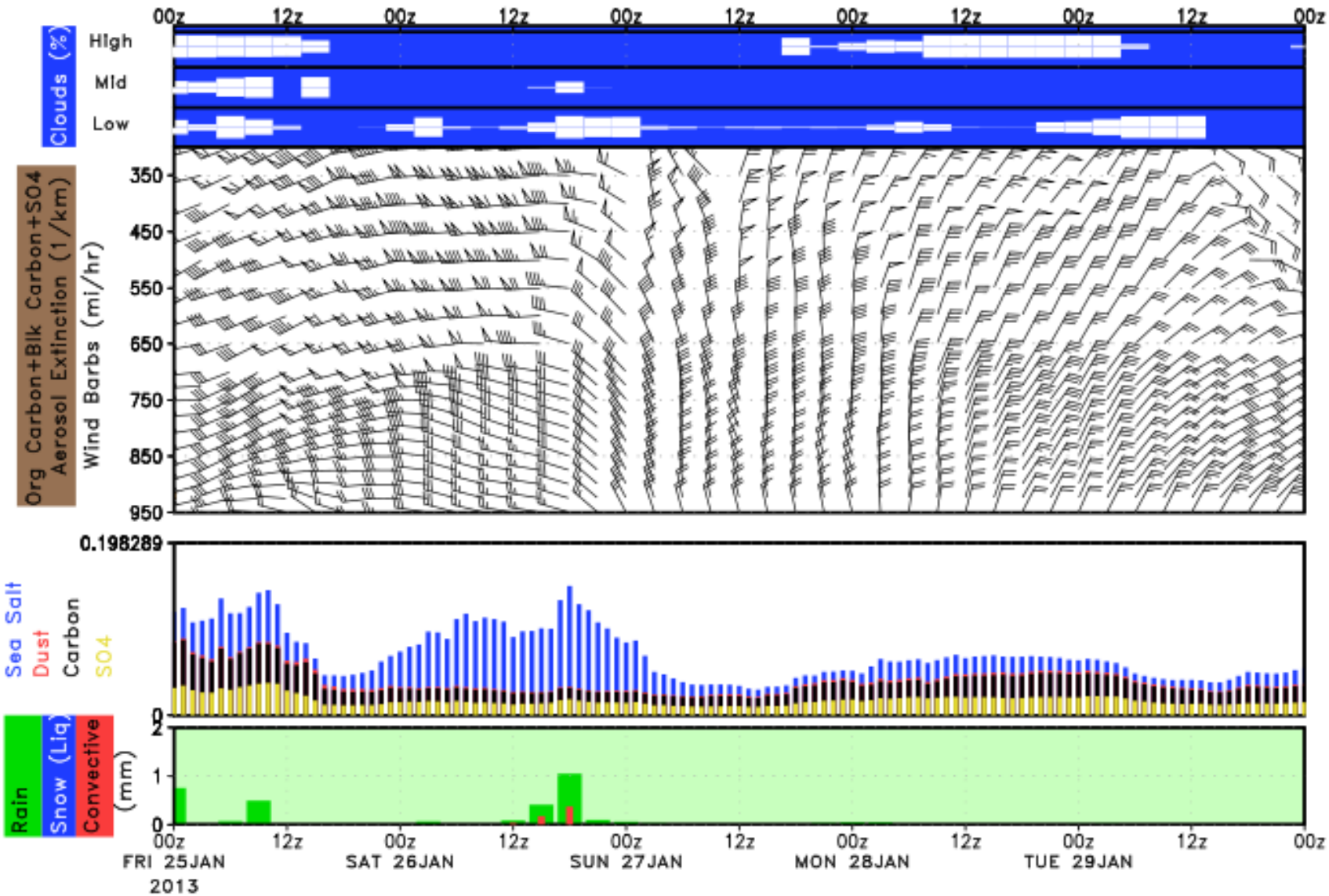
GMAO GEOS5: Bakersfield



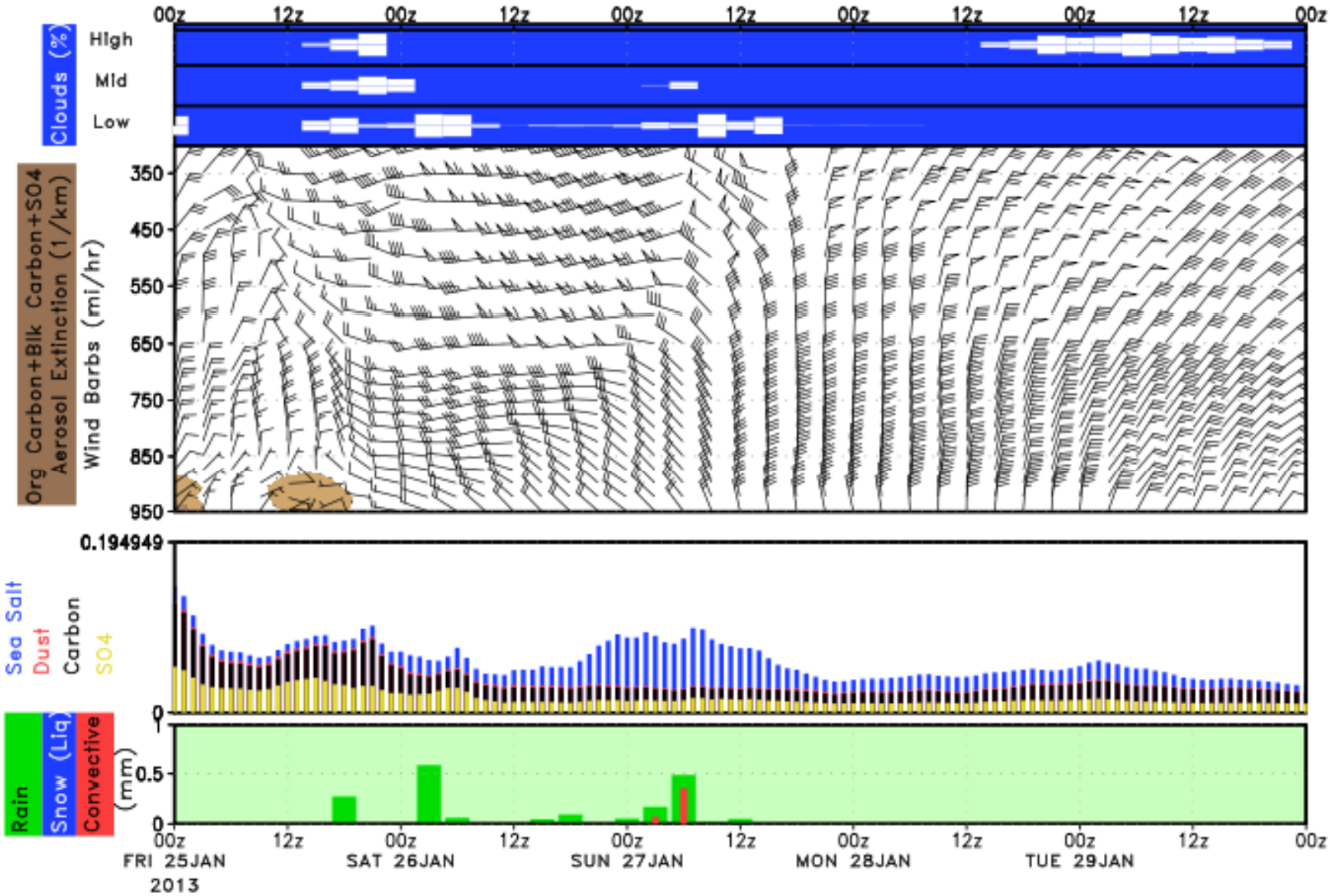
GMAO GEOS5: San Nicholas



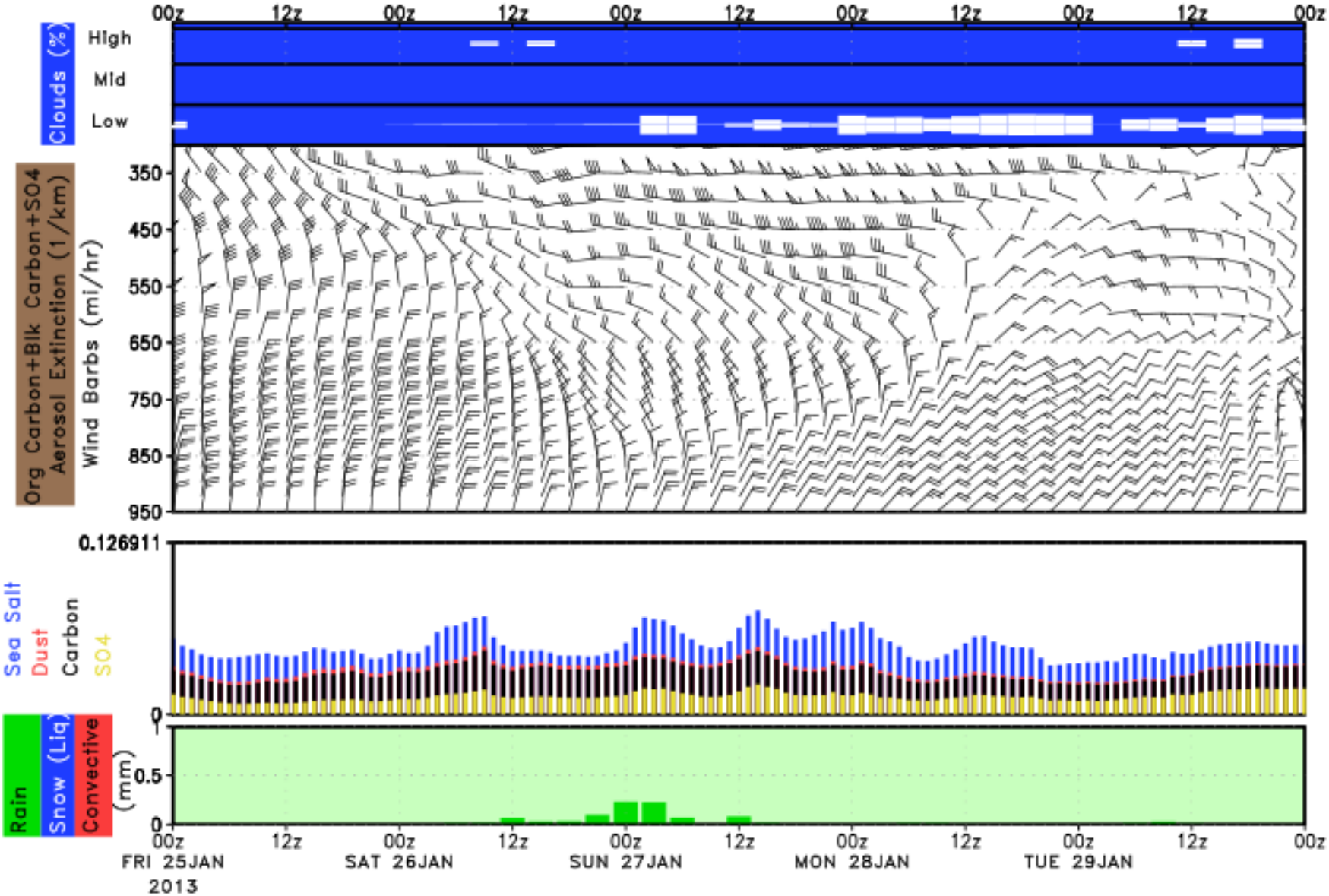
GMAO GEOS5: Ocean 40 N 130 W



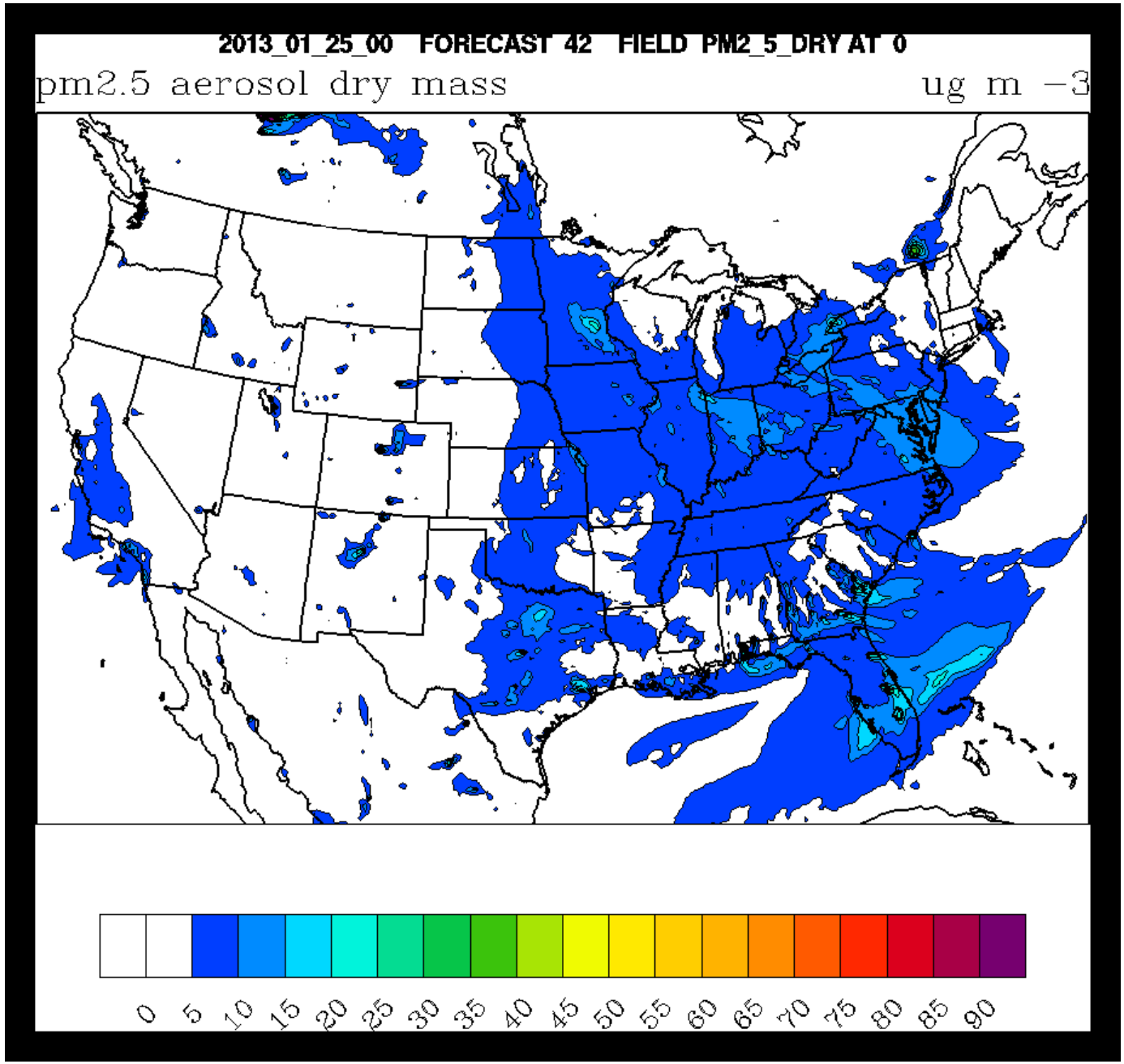
GMAO GEOS5: Ocean 38 N 125 W



GMAO GEOS5: Ocean 30 N 130 W



Saturday 10 am = 18 Z



Recommendations

Saturday – Model outlook looks good for a PODEX flight tomorrow morning, but chance of rain in the morning and possible windy conditions in Palmdale in early evening (gusts to 14 kt at 1-3p, increasing to 17 kt at 4p)
Sunday – frontal passage – windy conditions (gusts ≥ 15 kt) forecast for Palmdale in the afternoon
Monday – Models are inconsistent with how fast clouds clear out behind the front. NAM indicates clear skies over region while the NWS forecaster predicts cloudy skies behind cold front due to lingering stratocumulus over region.
Tuesday & Wednesday – clearer skies forecast