DISCOVER-AQ OUTLOOK Monday January 28, 2013

The conditions at Palmdale today (Monday) are sunny and breezy in the wake of a surface cold front. The deep, upper level trough to the east of California is moving slowly east. PM2.5 levels in the SJV are low – the AQ clock has been reset. A ridge is beginning to move gradually into California and will take hold Wednesday and Thursday, allowing PM2.5 to build. However, this ridge is weaker than last week's ridge and subtropical air is expected to move back into the region over the weekend. Consequently, PM levels should not be as high as during last week's event. The recent rain has elevated soil moisture levels so that fog may form any morning this week in the SJV, particularly Thursday and Friday when it may be thick and slow to burn off. The SJV Air Control Board contact mentioned that if the fog is particularly "wet" (i.e., wetting surfaces) then PM2.5 levels may be knocked back a bit. Code orange conditions are expected Thursday and possibly Wednesday.

Tuesday – PODEX - The amount of cirrus tomorrow will be the same or less than today over the ocean. Minimal low clouds are forecast for the PODEX region as offshore flow pushes them from the coast. The deep, upper level trough dominating the weather pattern is lingering and causing the models some confusion with respect to when the clouds are going to clear out. SJV – Thin cirrus approaches from the north (>30Kft). Patchy morning fog is expected, burning off by ~8 am.
Wednesday – PODEX – Current forecast shows no cirrus. A low level cloud deck is expected, but current forecasts have the edge too far offshore for the ER2 to reach. If the upper level trough moves faster than expected, then the clouds could be pushed closer to shore as the ridge builds over California and winds become light.
SJV - Clear skies, patchy morning fog expected again, burning off early.
Thursday – Clear skies. As the ridge builds over our area, morning fog expected to be deeper, burning off later than on previous days (i.e., 10 am or 11 am in some places).
Friday – Deep morning fog is forecasted in the SJV. Models begin to diverge, some bringing in possible precipitation towards the weekend as subtropical air moves into the region.

DISCOVER-AQ / PODEX forecast briefing

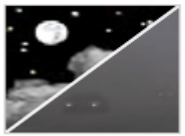
January 28, 2013

Melanie Follette-Cook
Bryan Duncan

Fresno:

TODAY	TONIGHT	TUESDAY	TUESDAY NIGHT	WEDNESDAY	WEDNESDAY NIGHT	THURSDAY	THURSDAY NIGHT	FRIDAY
Sunny	Patchy Fog	Patchy Fog	Areas Fog	Areas Fog	Areas Fog	Areas Fog	Areas Fog	Areas Fog
High: 53 °F	Low: 35 °F	High: 56 °F	Low: 37 °F	High: 61 °F	Low: 40 °F	High: 64 °F	Low: 43 °F	High: 66 °F

Hanford:

TODAY	TONIGHT	TUESDAY	TUESDAY NIGHT	WEDNESDAY	WEDNESDAY NIGHT	THURSDAY	THURSDAY NIGHT	FRIDAY
								
Sunny	Patchy Frost	Morning Frost	Areas Fog	Areas Fog	Areas Fog	Areas Fog	Areas Fog	Areas Fog
High: 54 °F	Low: 33 °F	High: 56 °F	Low: 33 °F	High: 61 °F	Low: 38 °F	High: 64 °F	Low: 40 °F	High: 65 °F

Bakersfield:

TODAY	TONIGHT	TUESDAY	TUESDAY NIGHT	WEDNESDAY	WEDNESDAY NIGHT	THURSDAY	THURSDAY NIGHT	FRIDAY
Sunny	Partly Cloudy	Sunny	Clear	Sunny	Mostly Clear	Sunny	Mostly Clear	Sunny
High: 52 °F	Low: 34 °F	High: 54 °F	Low: 38 °F	High: 61 °F	Low: 40 °F	High: 64 °F	Low: 43 °F	High: 70 °F

Palmdale:

TODAY	TONIGHT	TUESDAY	TUESDAY NIGHT	WEDNESDAY	WEDNESDAY NIGHT	THURSDAY	THURSDAY NIGHT	FRIDAY
Slight Chc Showers	Mostly Clear	Sunny	Mostly Clear	Sunny	Mostly Clear	Sunny	Mostly Clear	Sunny
High: 50 °F	Low: 32 °F	High: 57 °F	Low: 39 °F	High: 63 °F	Low: 40 °F	High: 68 °F	Low: 43 °F	High: 69 °F

FRESNO CA

Partly Cloudy

35°F

2°C

Humidity	85%
Wind Speed	calm
Barometer	30.16 in (1021.4 mb)
Dewpoint	31°F (-1°C)
Visibility	10.00 mi

Last Update on 28 Jan 6:53 am PST

HANFORD CA

Fair

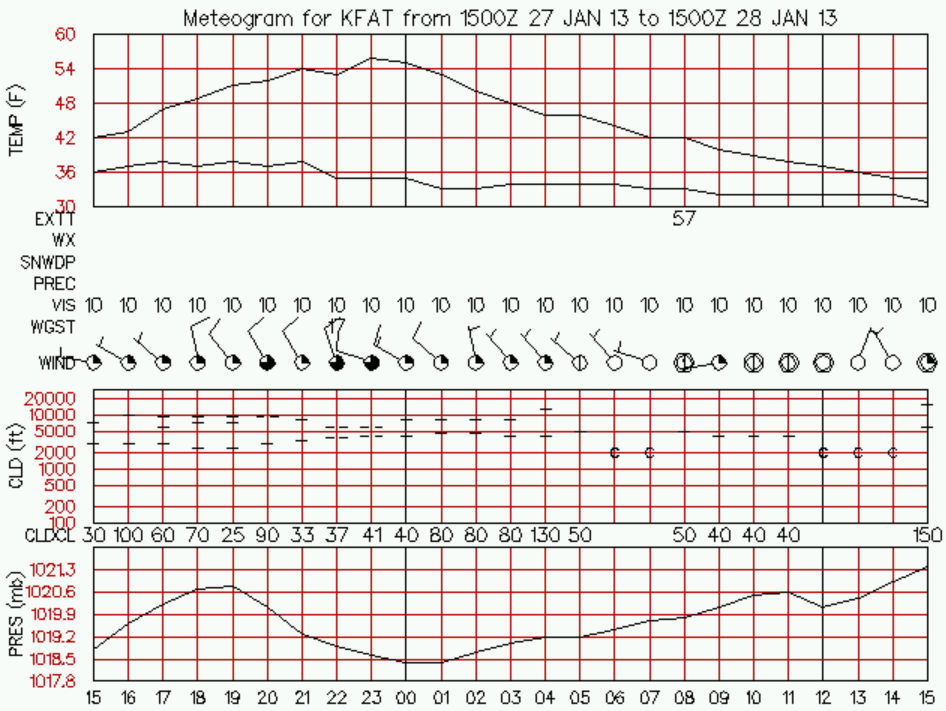
31°F

-1°C

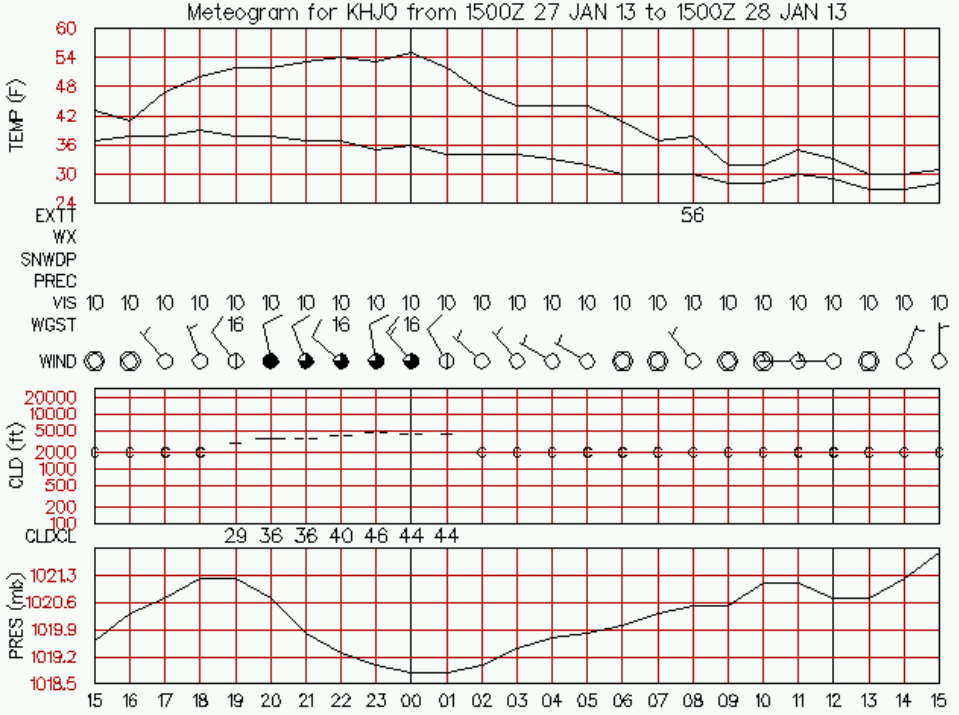
Humidity	89%
Wind Speed	VRBL 7 MPH
Barometer	30.17 in (1021.9 mb)
Dewpoint	28°F (-2°C)
Visibility	10.00 mi
Wind Chill	24°F (-4°C)

Last Update on 28 Jan 6:53 am PST

Plymouth State Weather Center



Plymouth State Weather Center



BAKERSFIELD CA

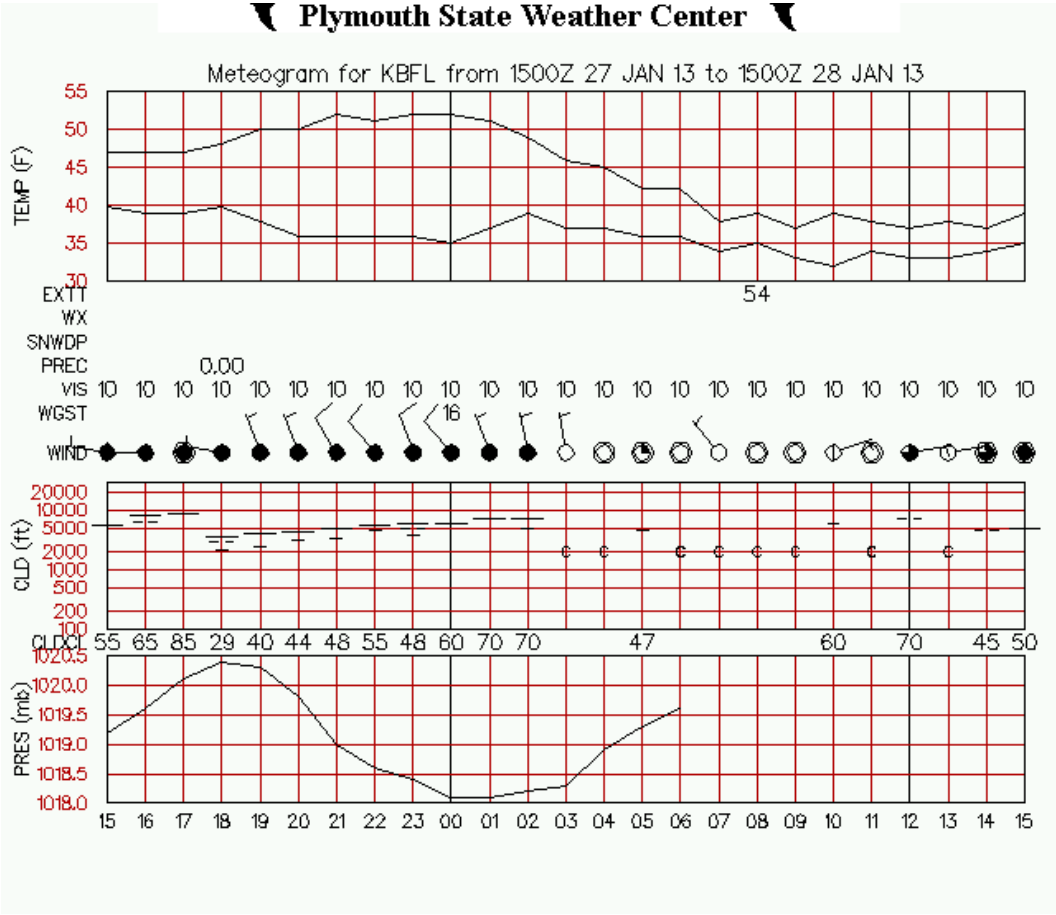
Overcast

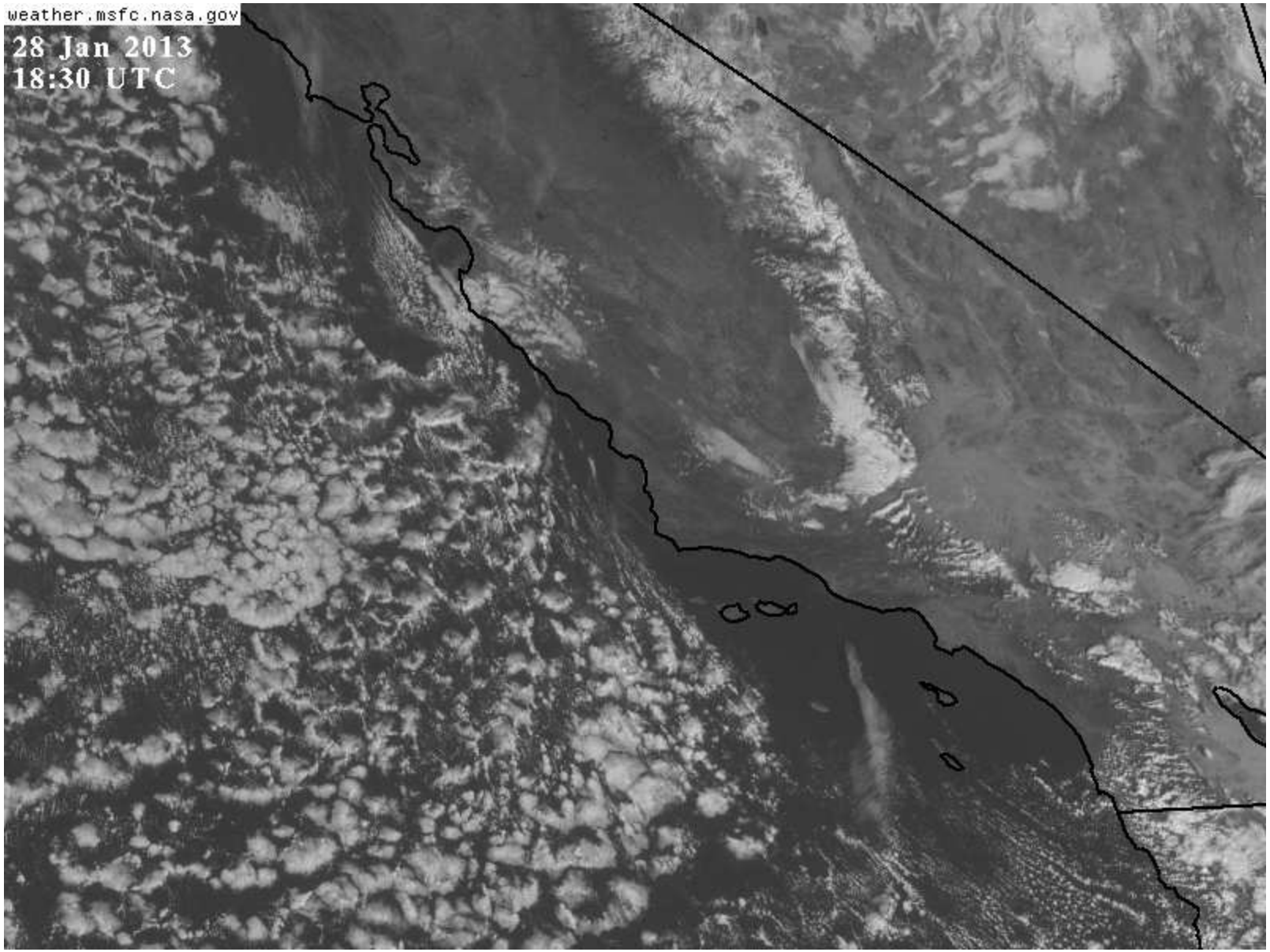
39°F

4°C

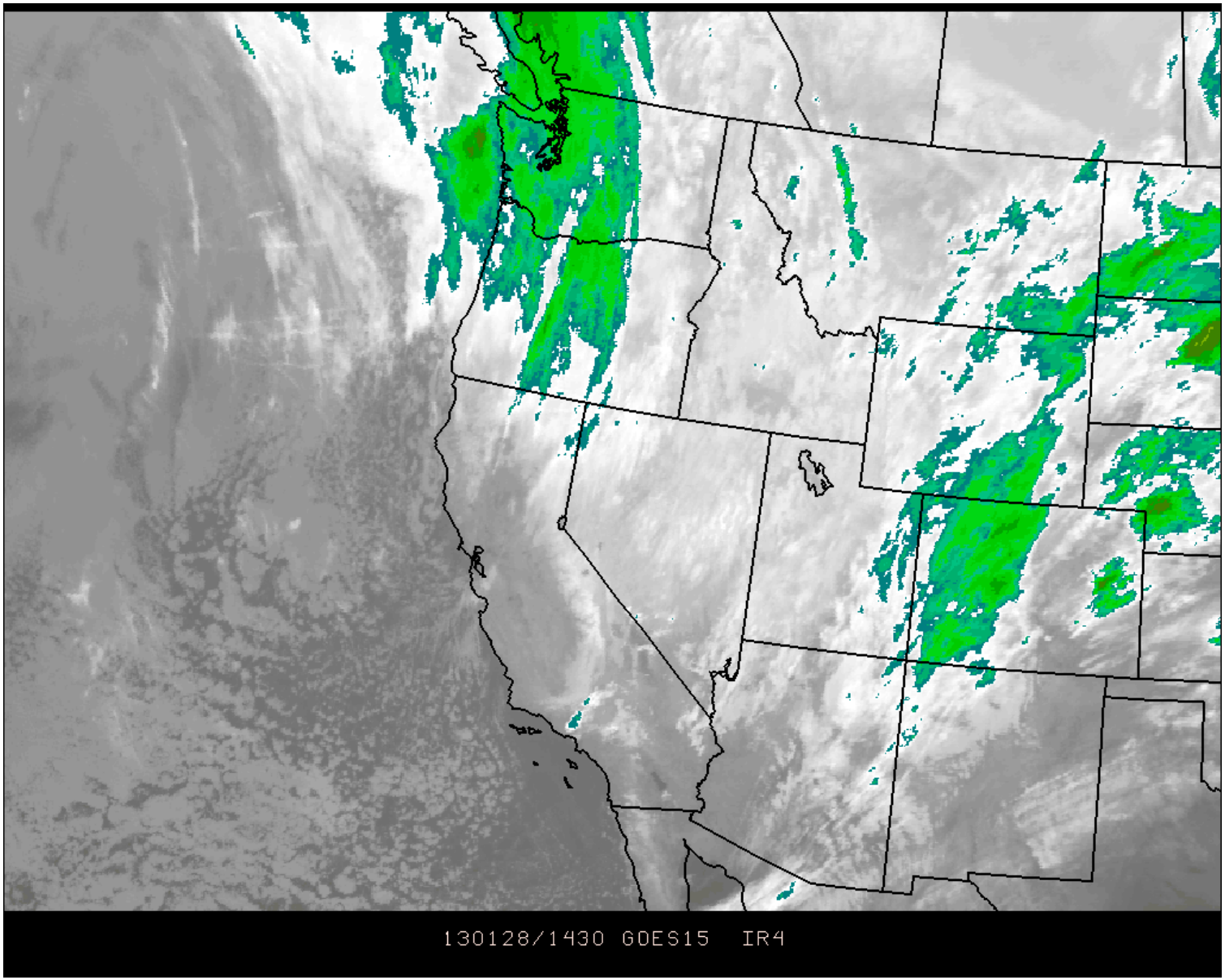
Humidity	86%
Wind Speed	calm
Barometer	NA
Dewpoint	35°F (2°C)
Visibility	10.00 mi

Last Update on 28 Jan 6:54 am PST

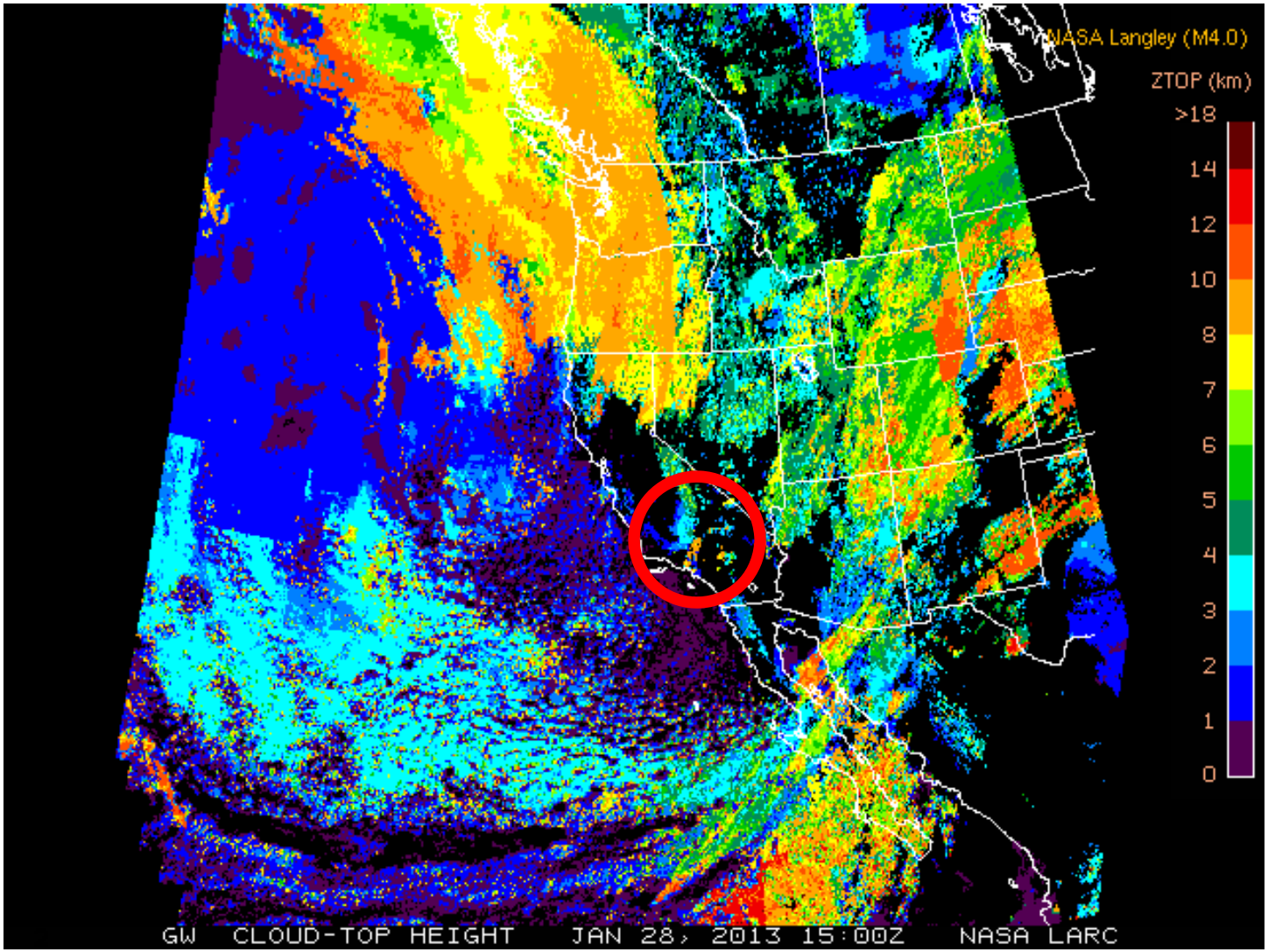



weather.msfc.nasa.gov
28 Jan 2013
18:30 UTC

GOES WEST: IR at 1430 UTC Today



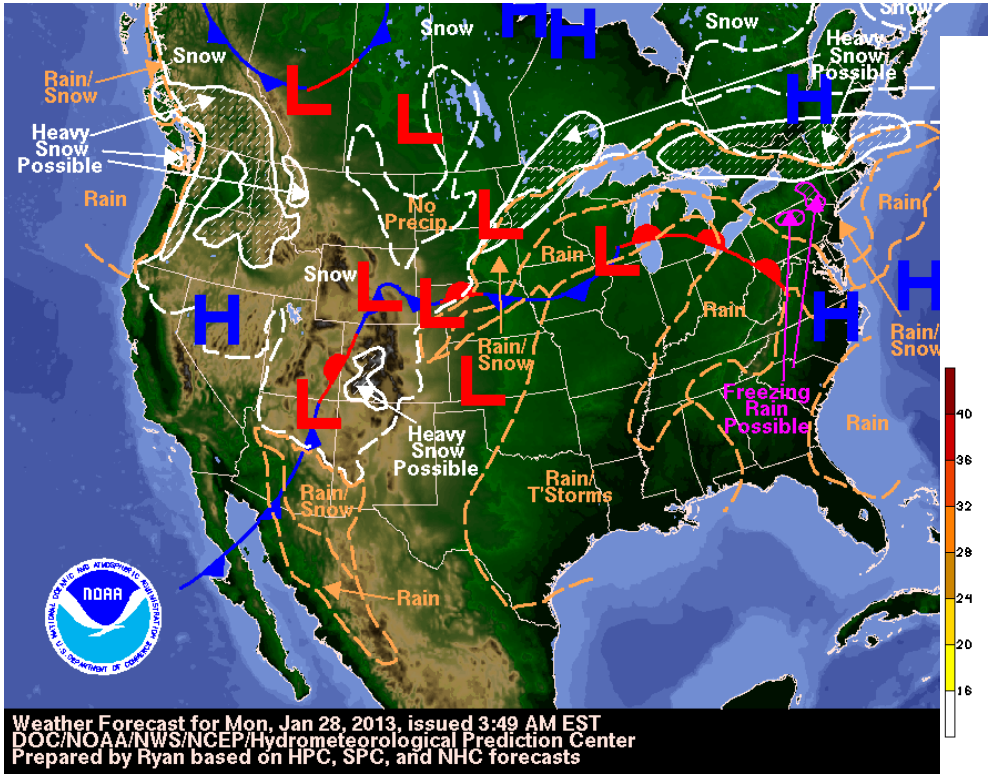
GOES WEST: Cloud Top Height at 15Z Today

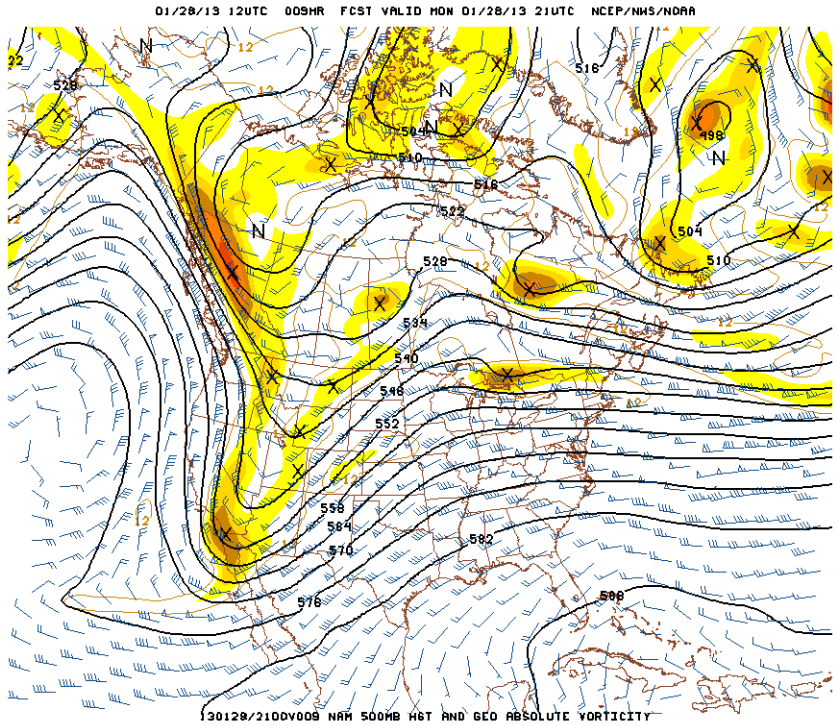


Today:

SJV - Upper level trough passes through the SJV region, bringing breezy conditions to the valley. Flow out of the N/NW pushes the low level cloud cover towards the southern end of the valley possibly keeping Bakersfield overcast throughout the day, but the rest of the valley should clear to <50% cloud cover by the time DISCOVER-AQ reaches it. There is also the chance of high level clouds forming near the north end of the valley by the end of the day.

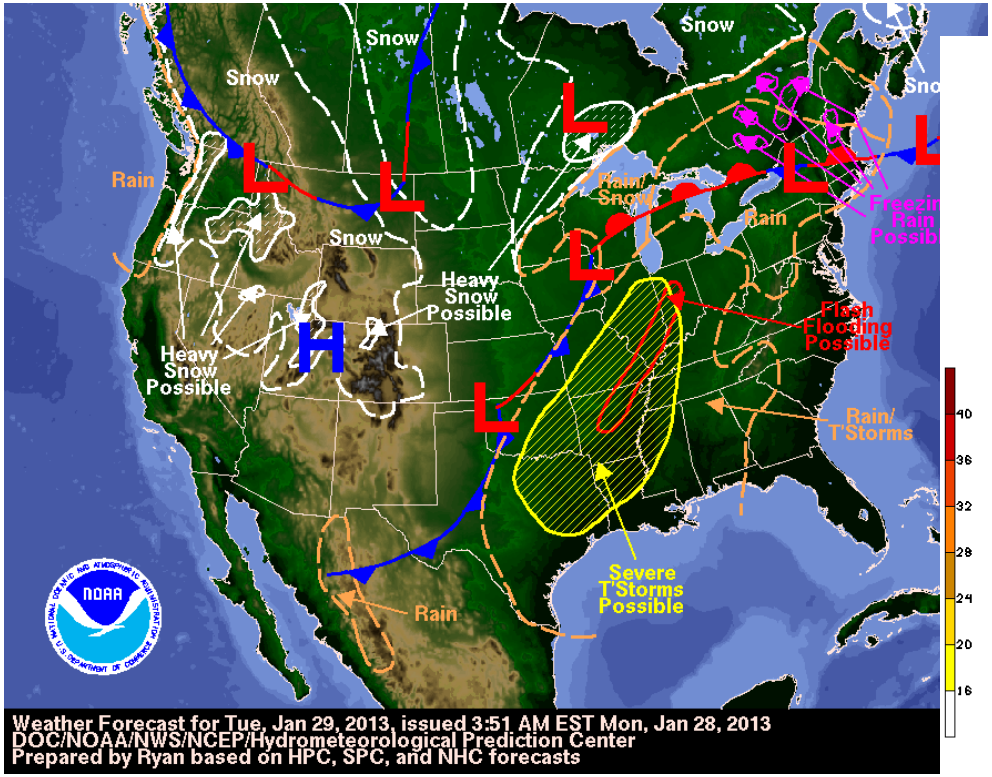
PODEX – Cirrus seen this morning is expected to decrease leaving clear skies by ~10a. Moisture at the 500mb and 350 mb levels decreases throughout the late morning and afternoon. IR imagery this morning indicates stratocumulus clouds off coast of LA around PODEX flight region.

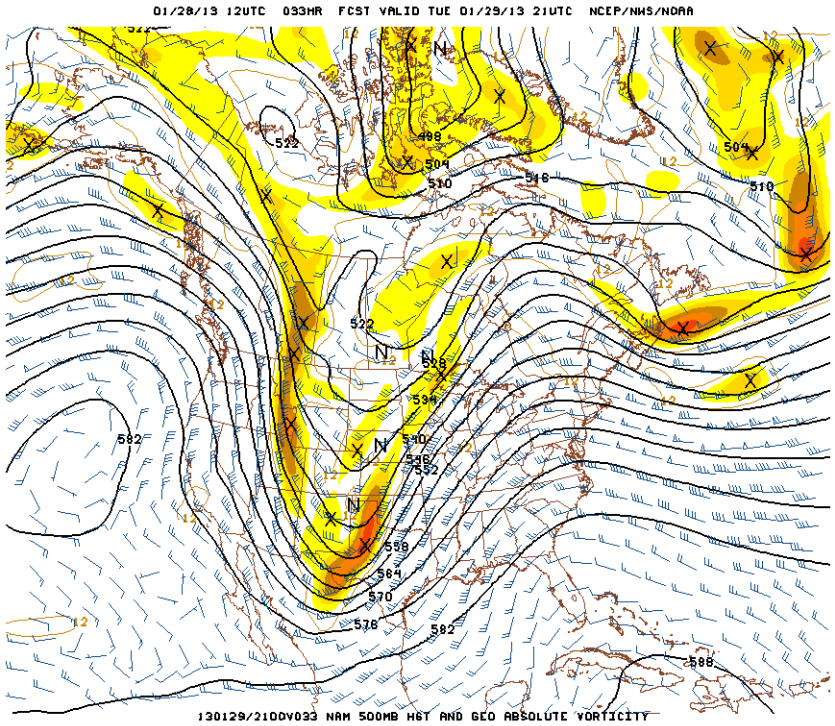




Tomorrow (Tuesday):

SJV – Northerly flow continues along with gradual warming in central CA.



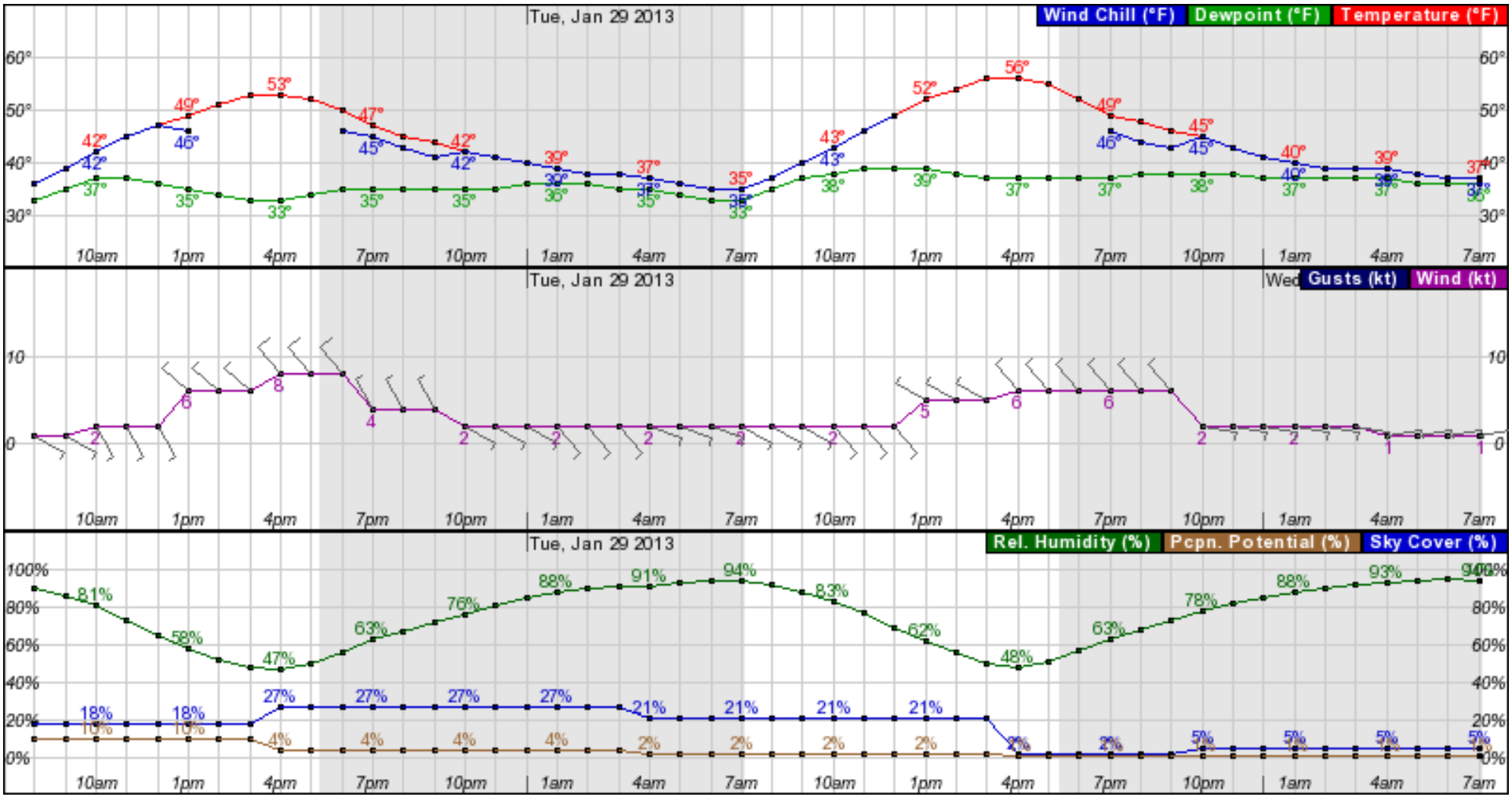


Fresno

Today: Mostly sunny

Tuesday: Mostly sunny, morning RH 94%

Today → **Tomorrow →**

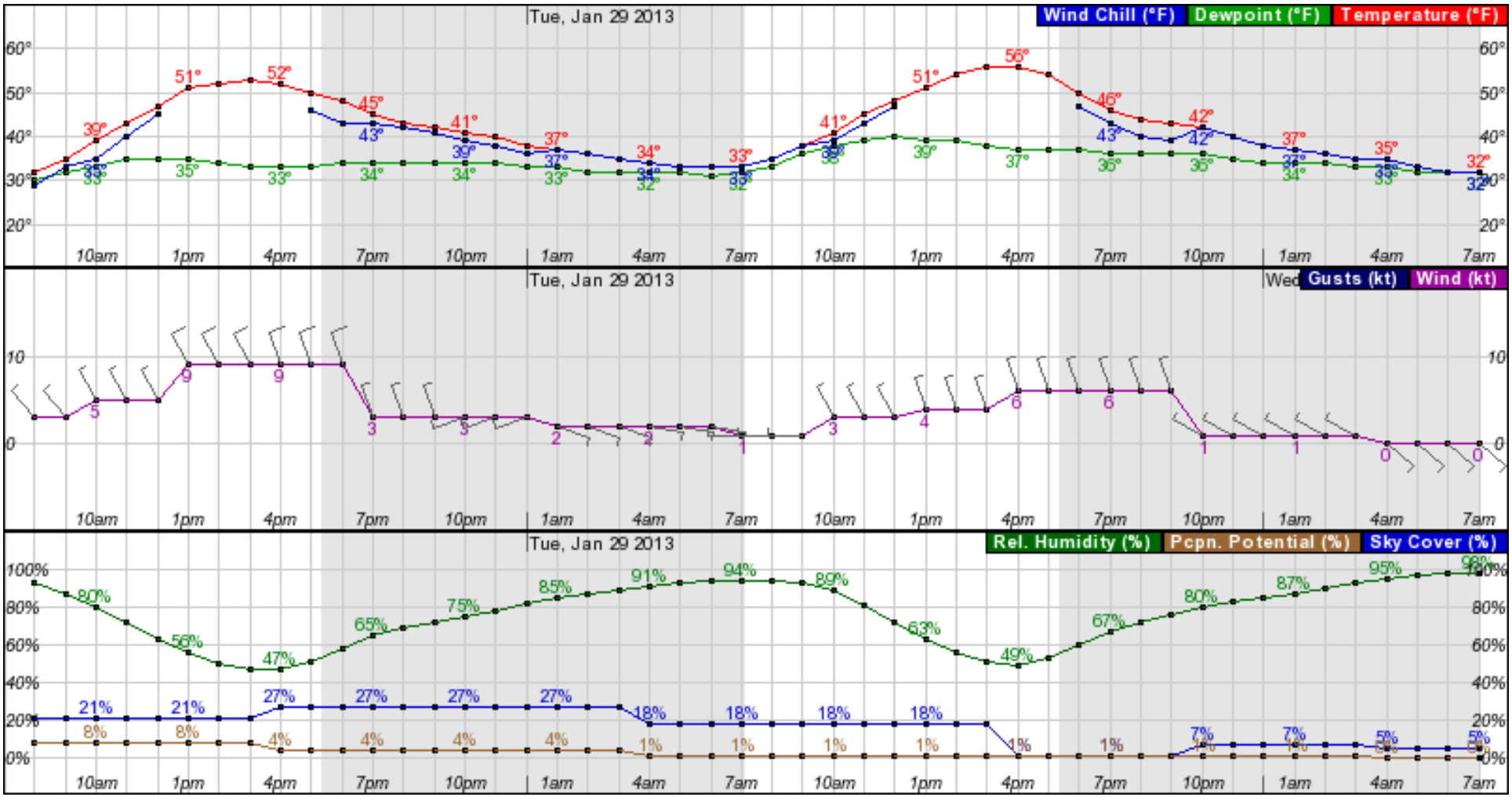


Hanford

Today: Mostly sunny

Tuesday: Mostly sunny, morning RH 94%

Today → **Tomorrow →**

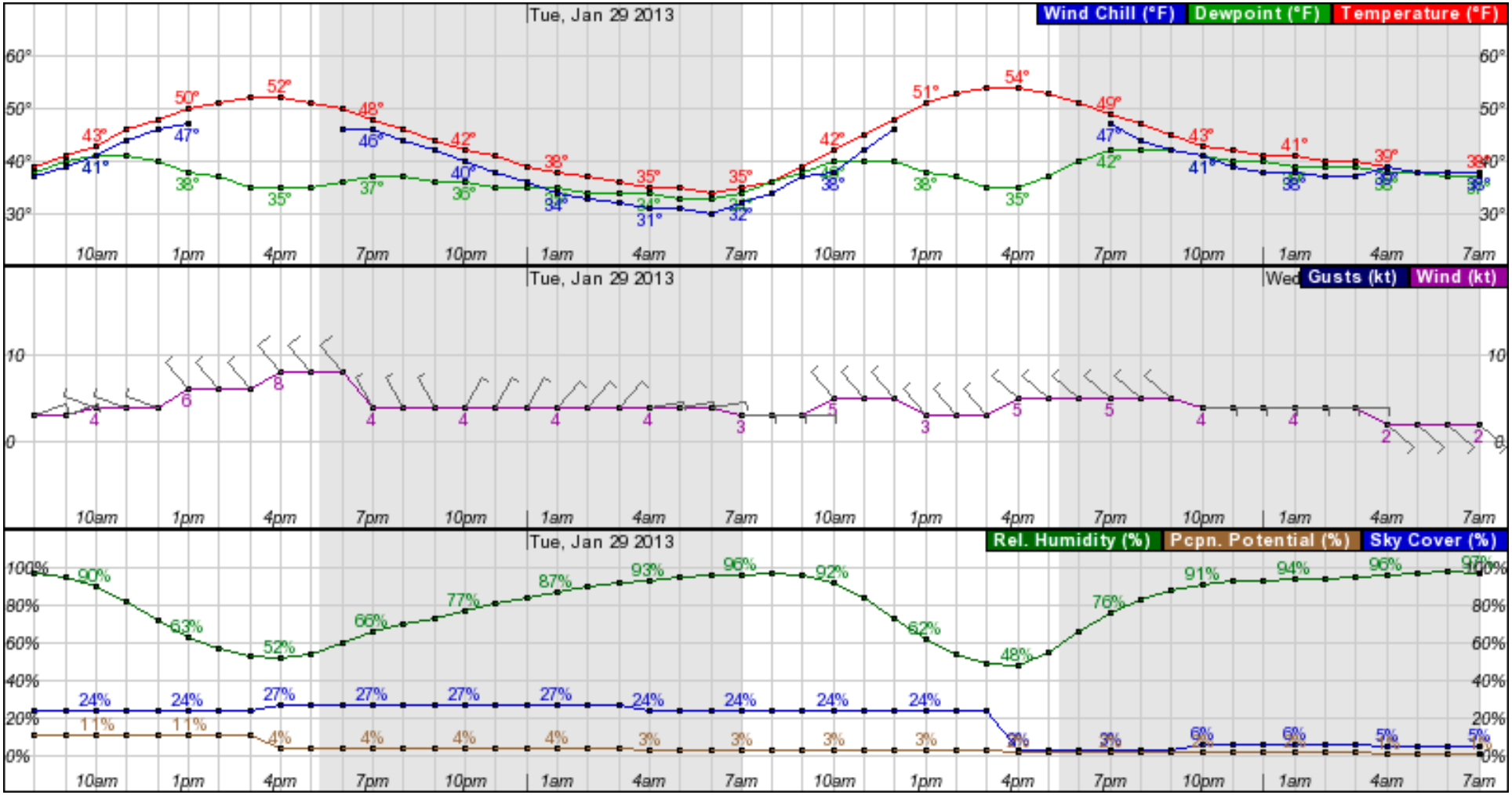


Bakersfield

Today: Mostly sunny (disagreeing with NWS forecaster we spoke with this morning)

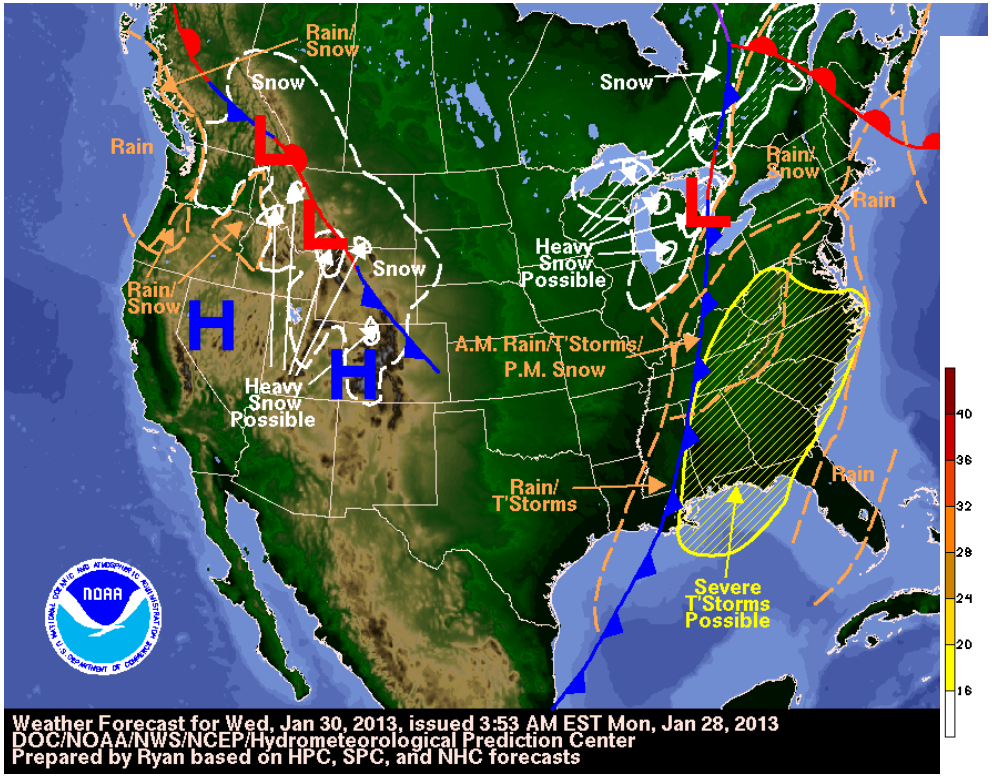
Tuesday: Mostly sunny, morning RH > 95%

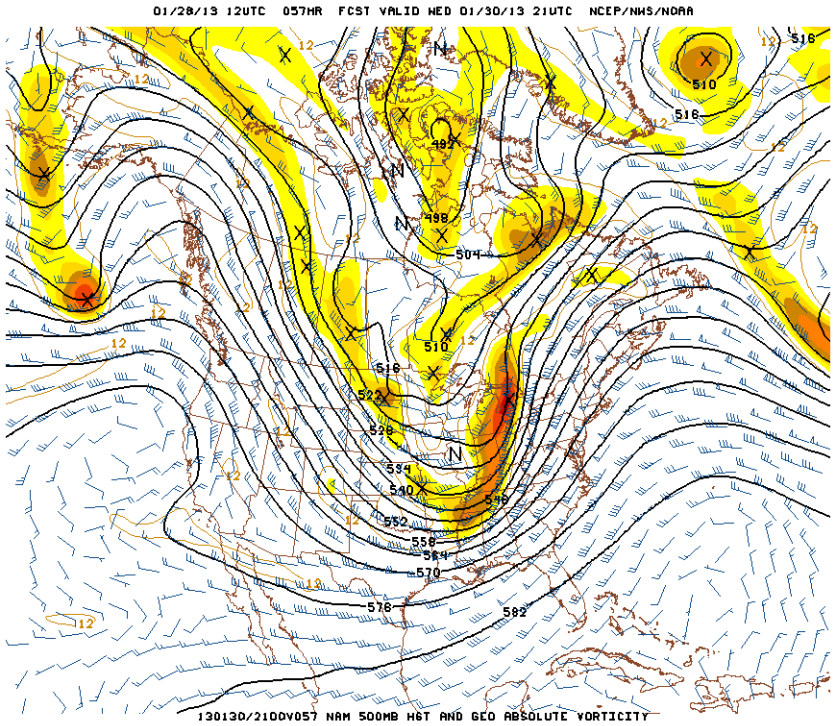
Today → **Tomorrow →**



Wednesday:

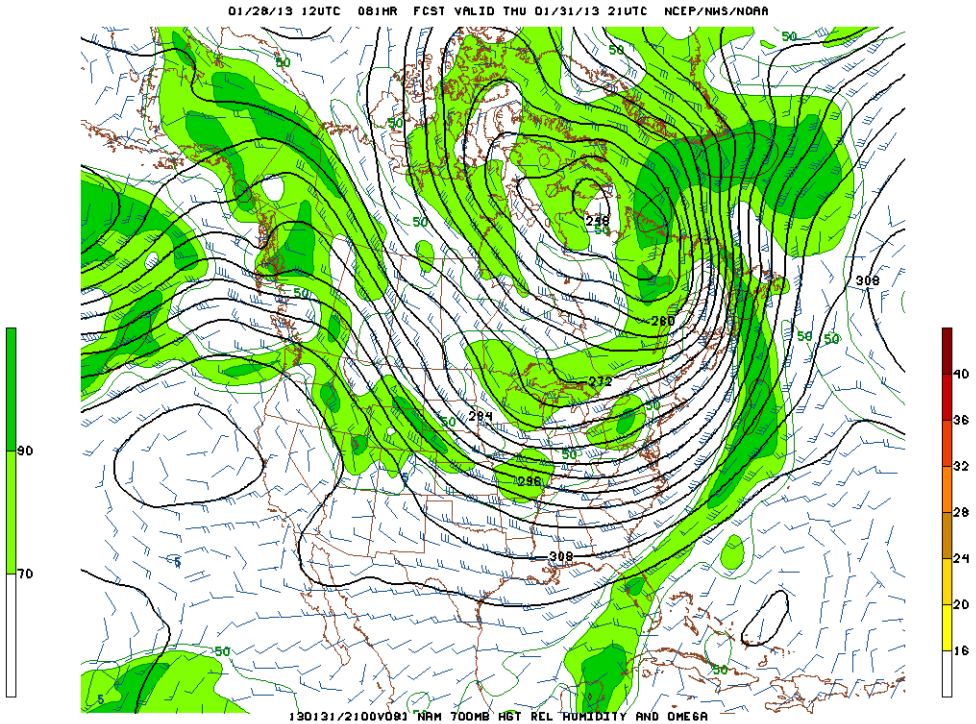
SJV – Northerly flow continues along with gradual warming in central CA.

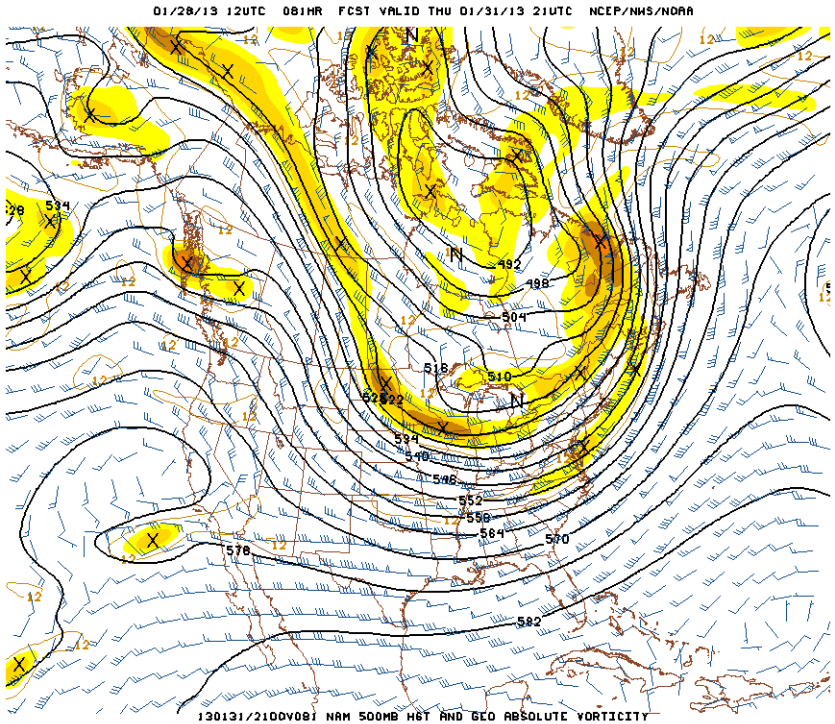




Thursday:

SJV – Northerly flow continues along with gradual warming in central CA.



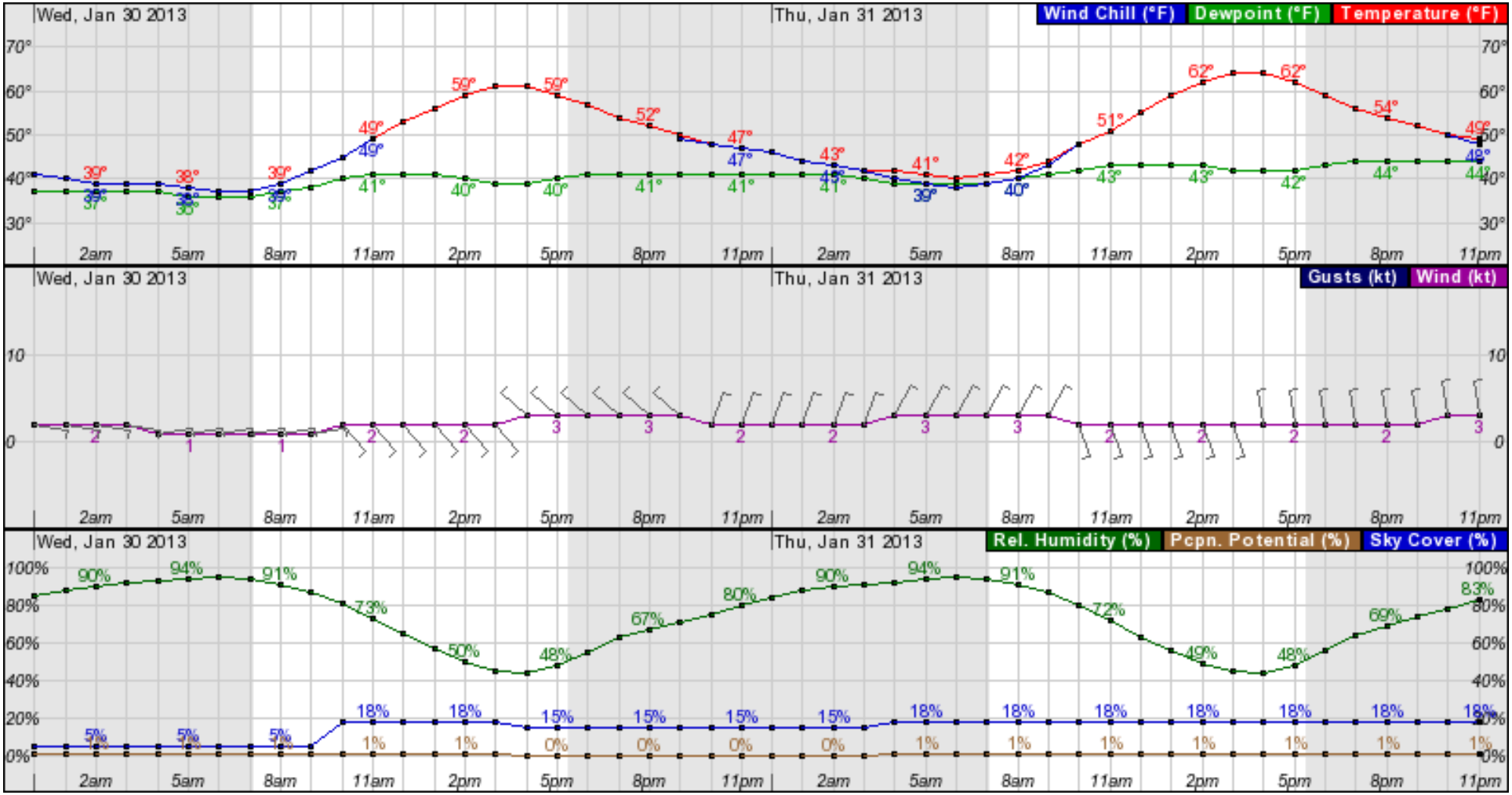


Fresno

Wednesday: Mostly sunny, light winds – chance of morning fog

Thursday: Mostly sunny, light winds – chance of morning fog

Wednesday → **Thursday →**

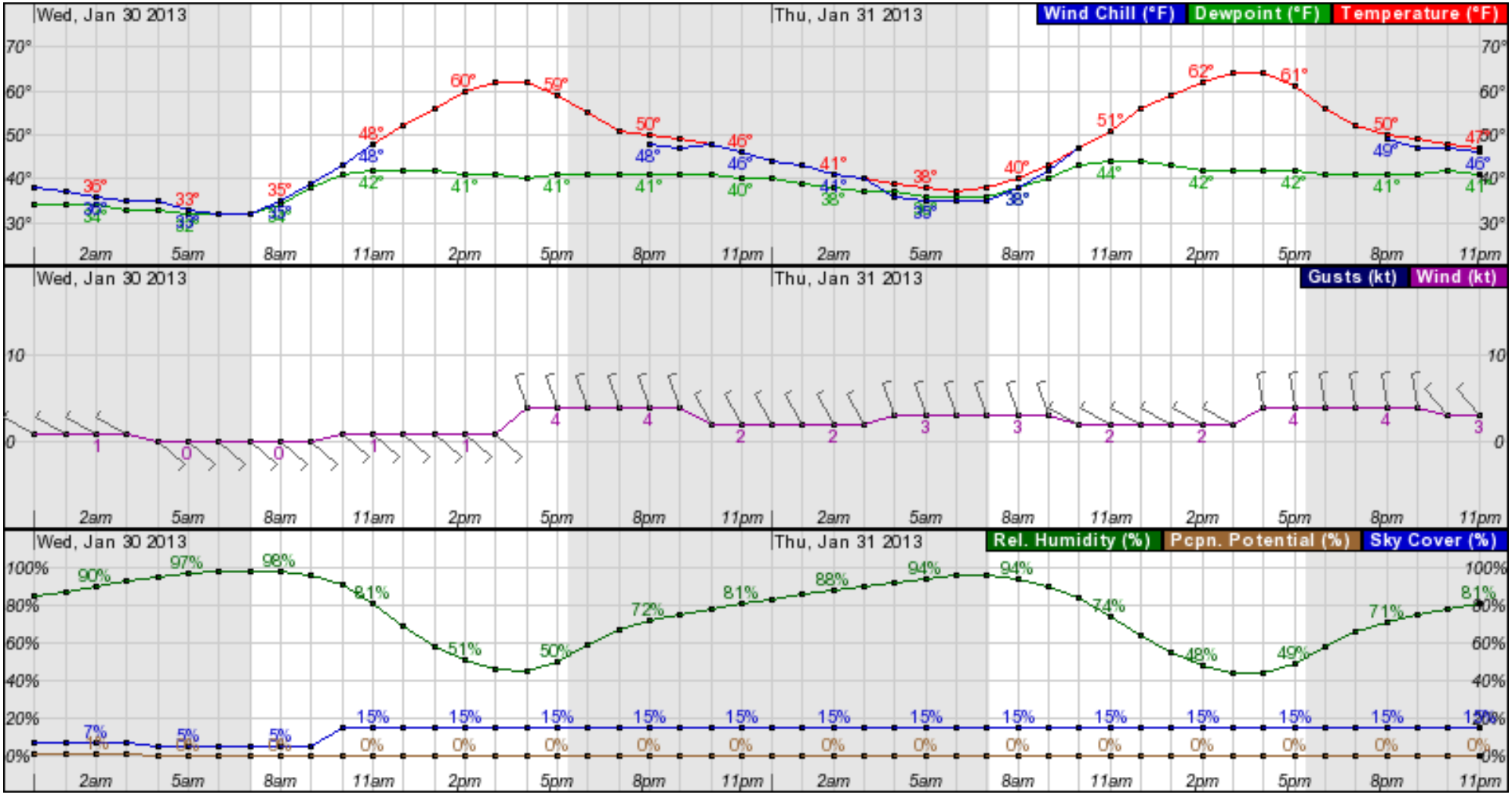


Hanford

Wednesday: Mostly sunny, high RH, light winds – chance of morning fog

Thursday: Mostly sunny, high RH, light winds – chance of morning fog

Wednesday → **Thursday →**



Bakersfield

Wednesday: Mostly sunny, high RH, light winds – chance of morning fog

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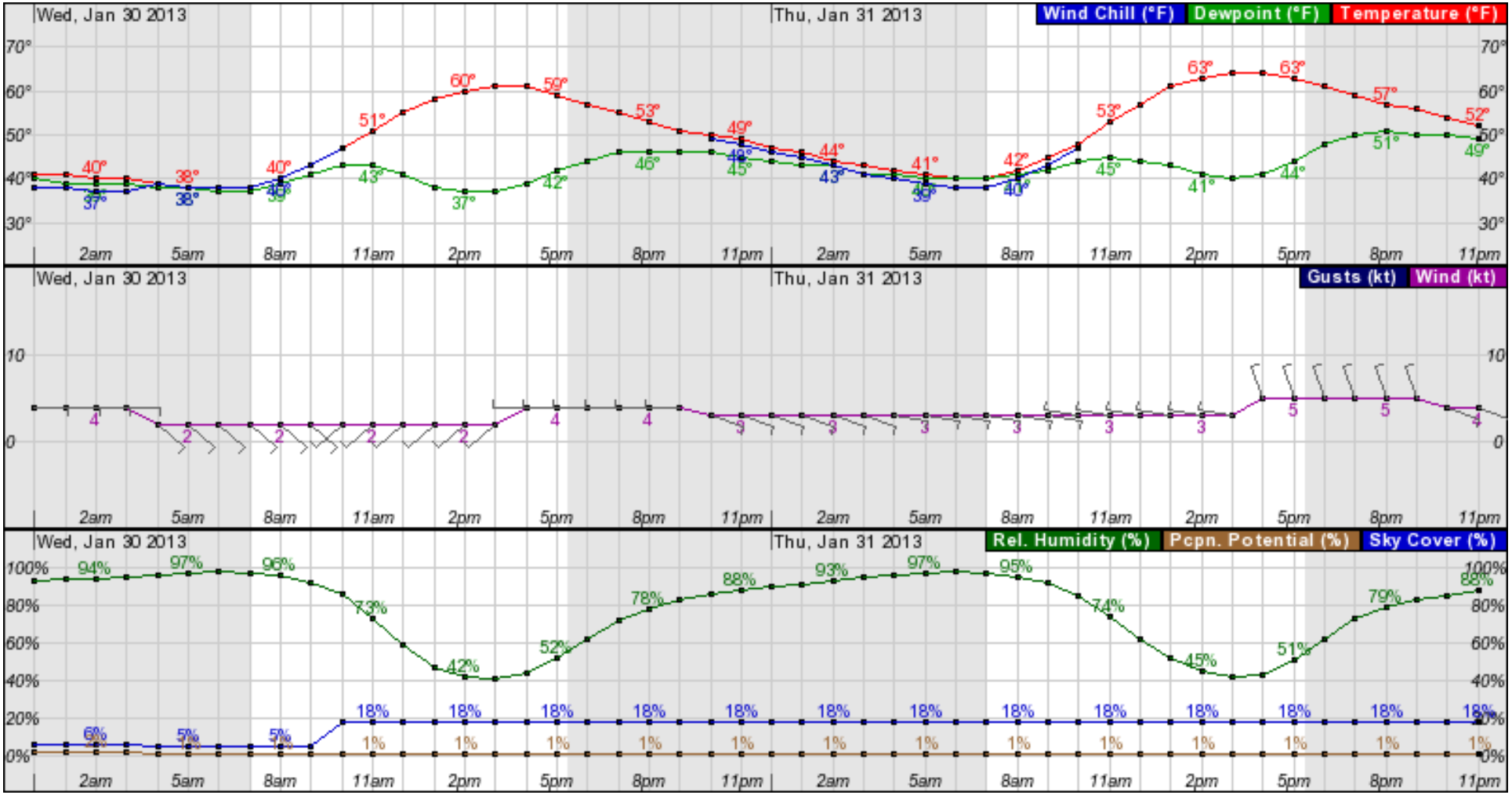
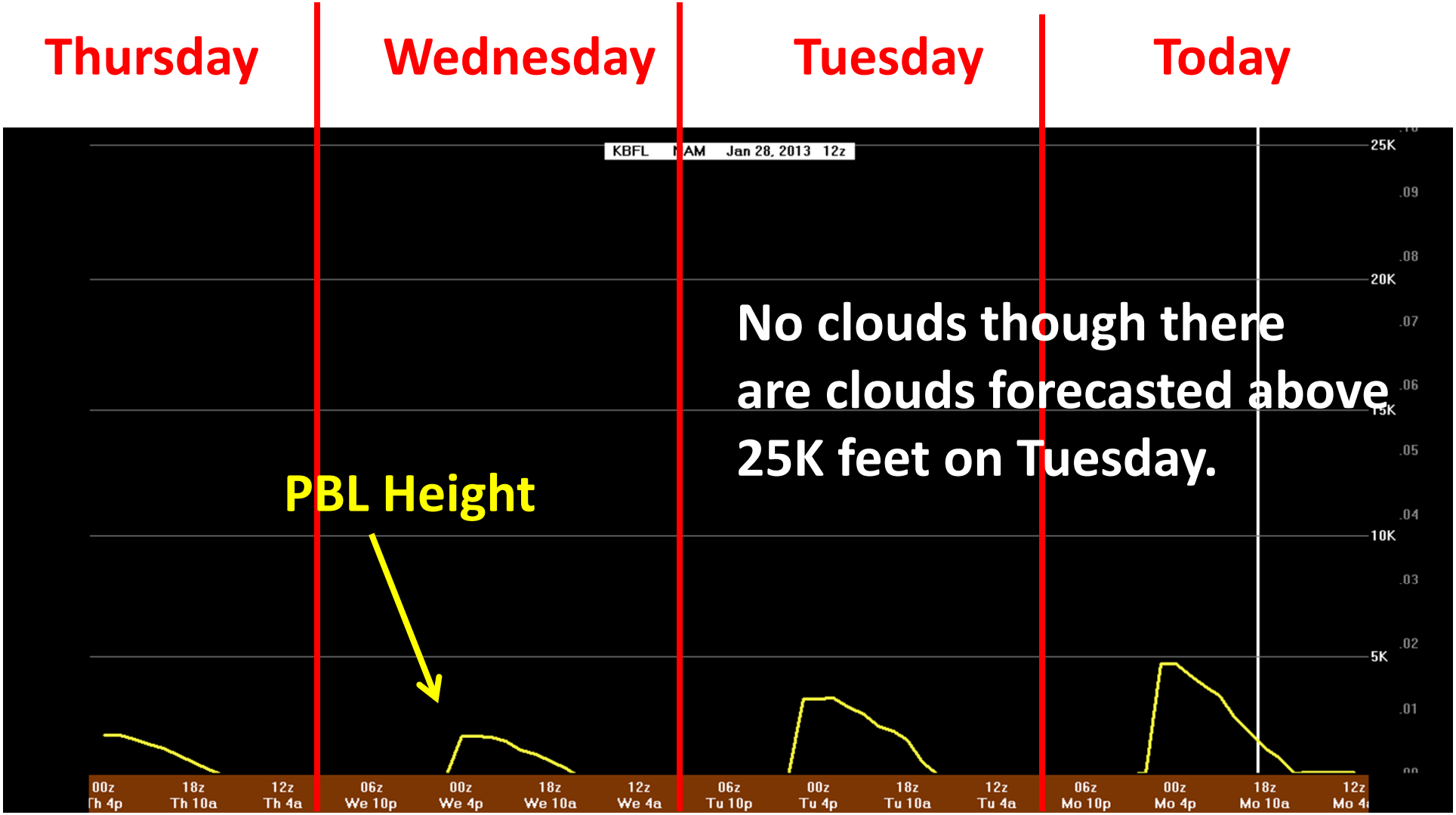
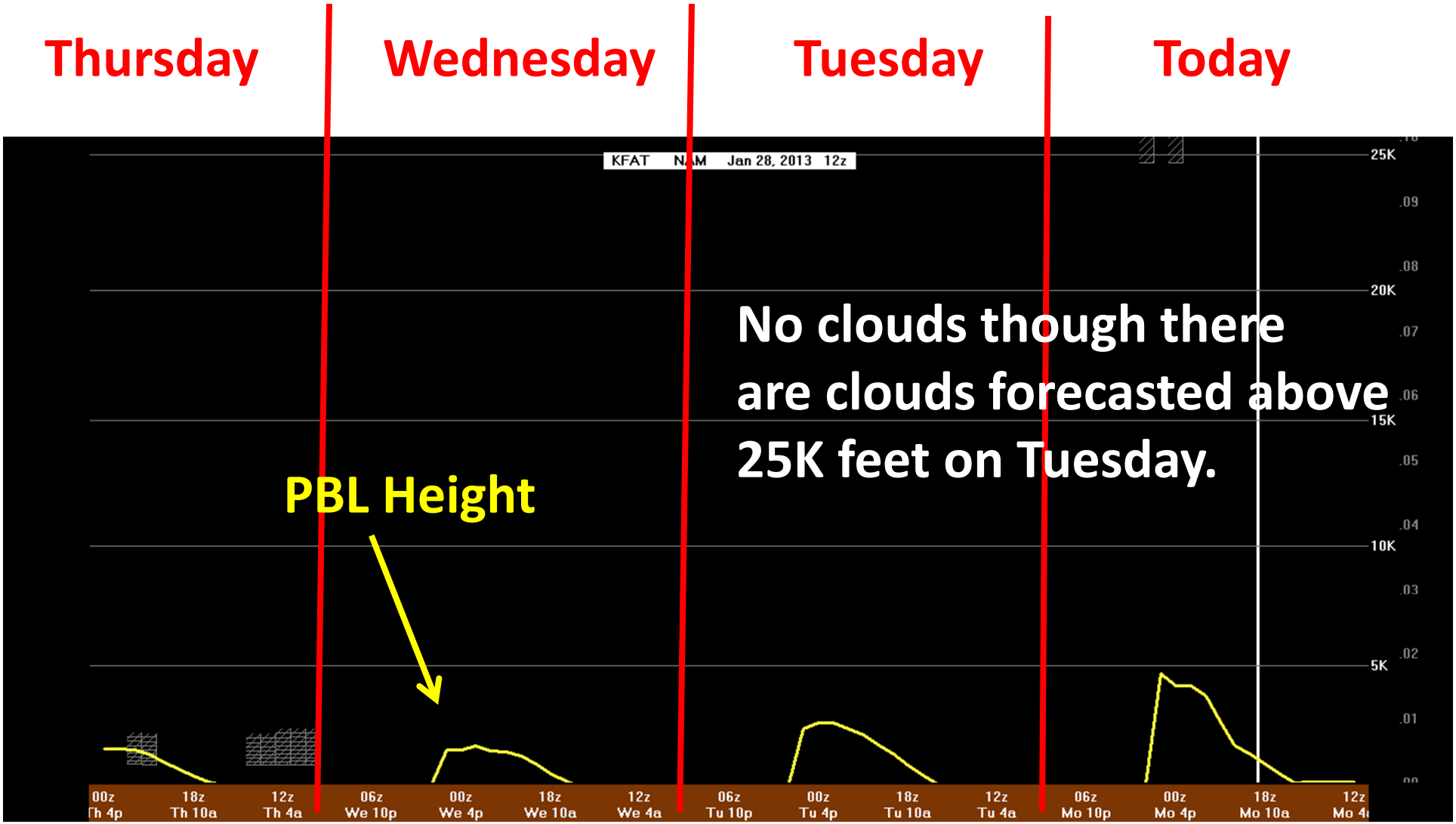
Wednesday → **Thursday →**



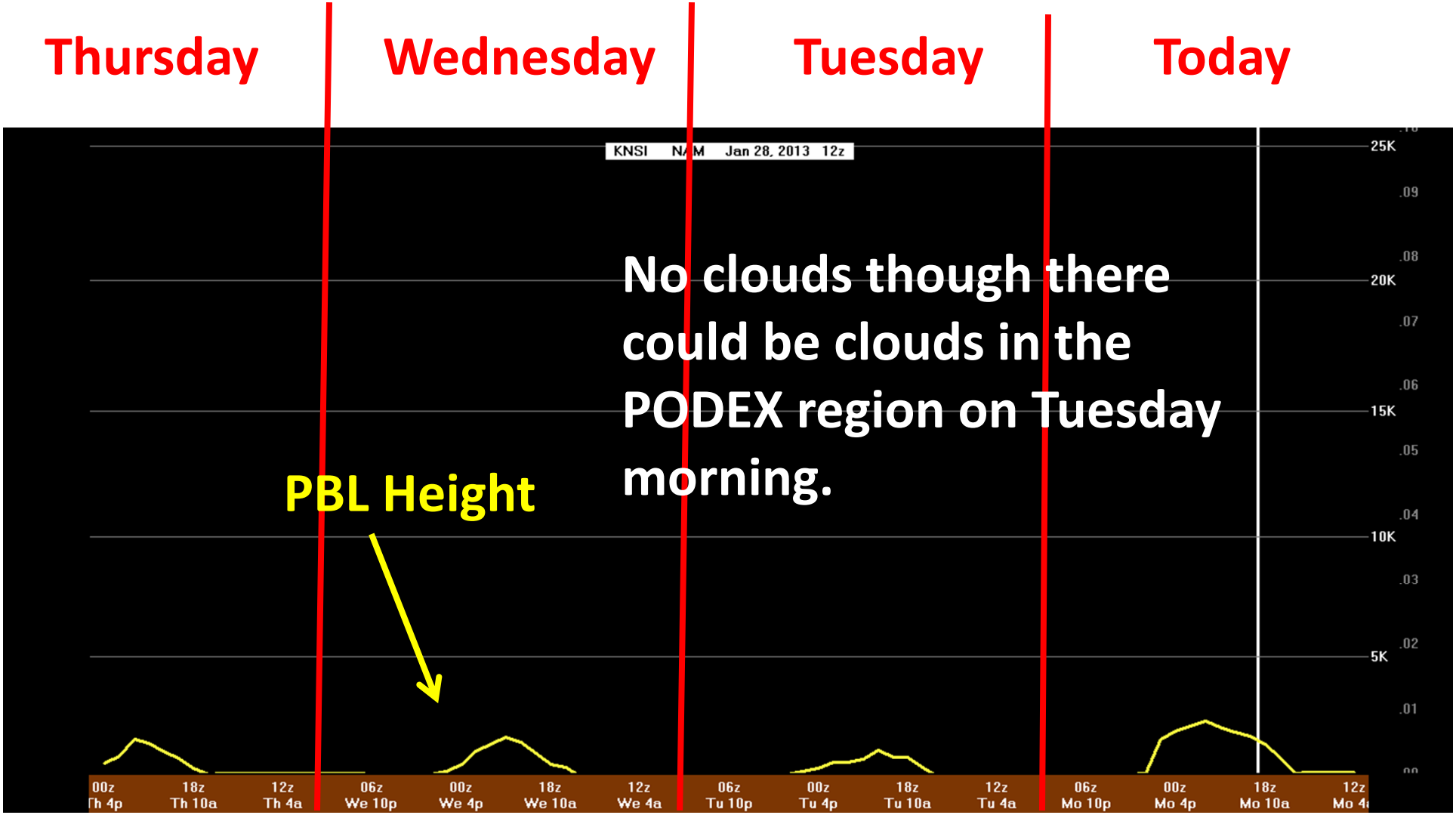
Bakersfield : BUFKIT NAM 12 UTC Monday January 28



Fresno : BUFKIT NAM 12 UTC Monday January 28



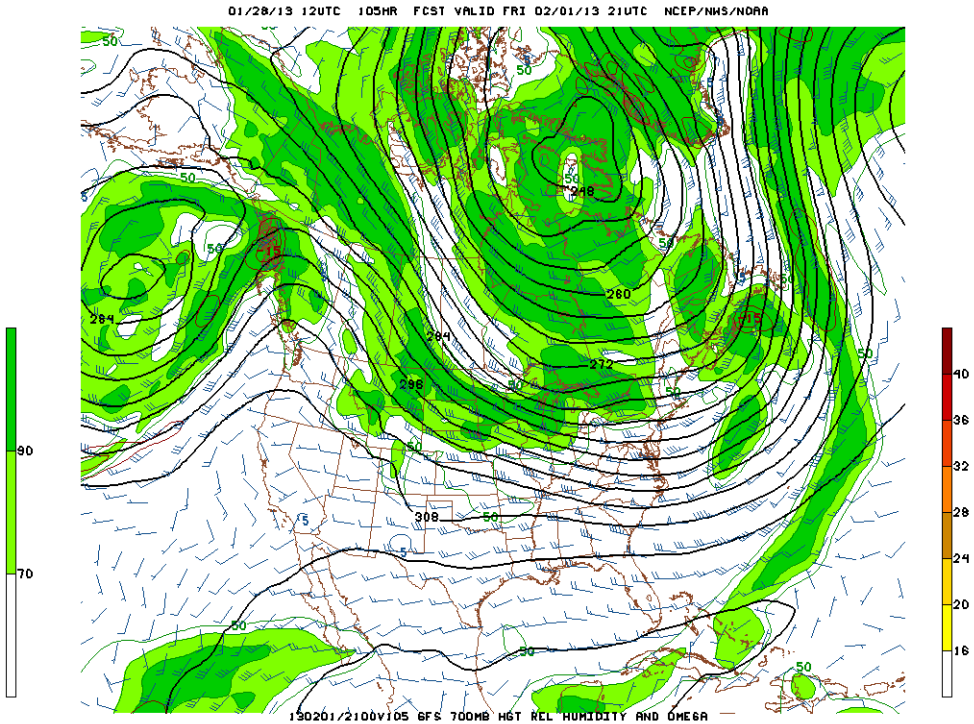
San Nicolas : BUFKIT NAM 12 UTC Monday January 28



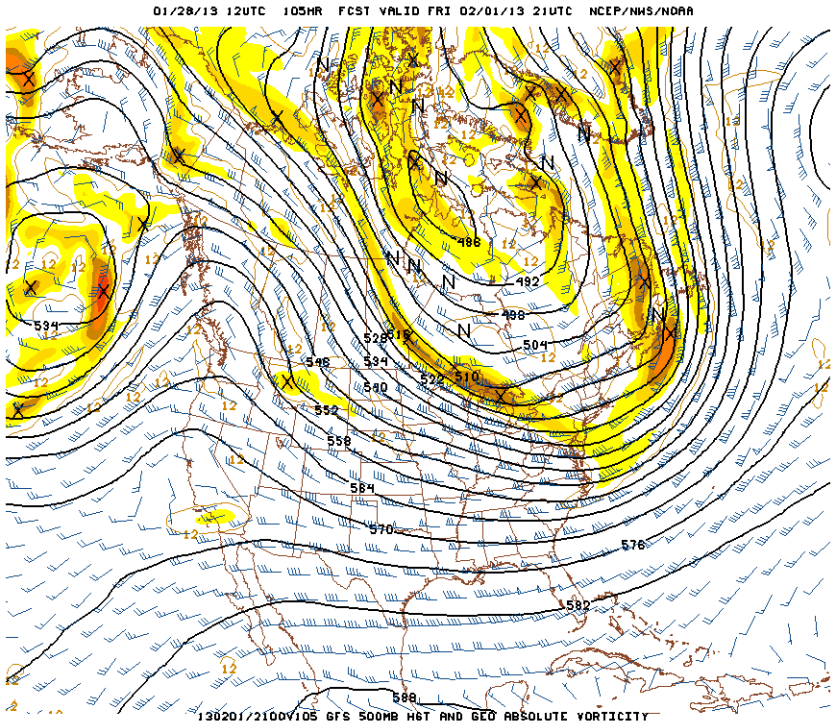
Friday:

Ridge axis forecasted to be directly over SJV region bringing warmest day of the week.

700 mb GFS
Friday 1 PM



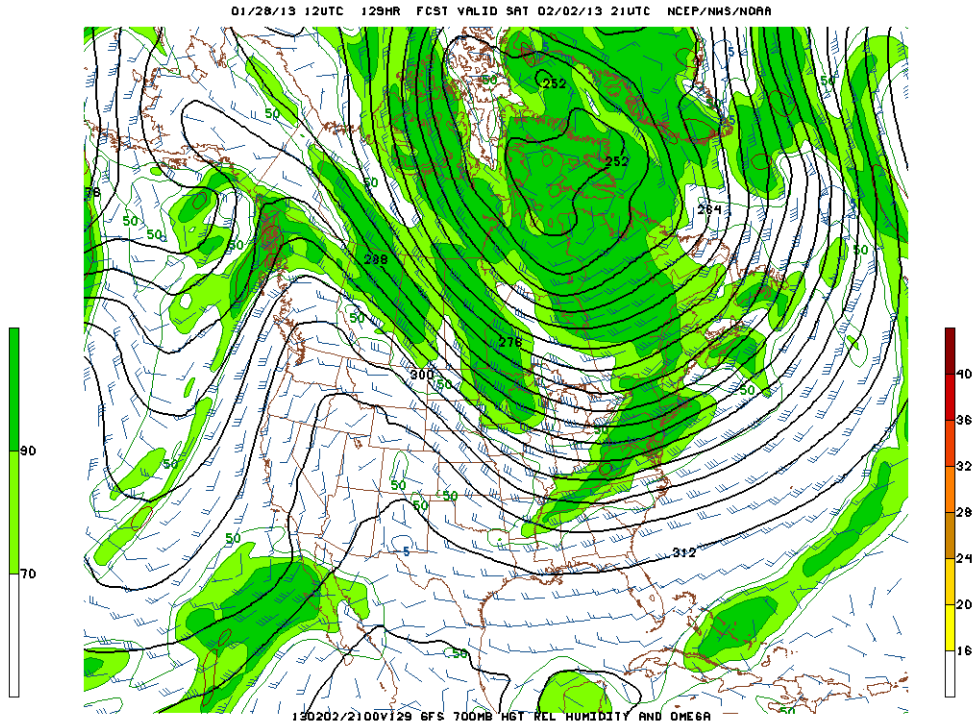
500 mb GFS
Friday 1 PM



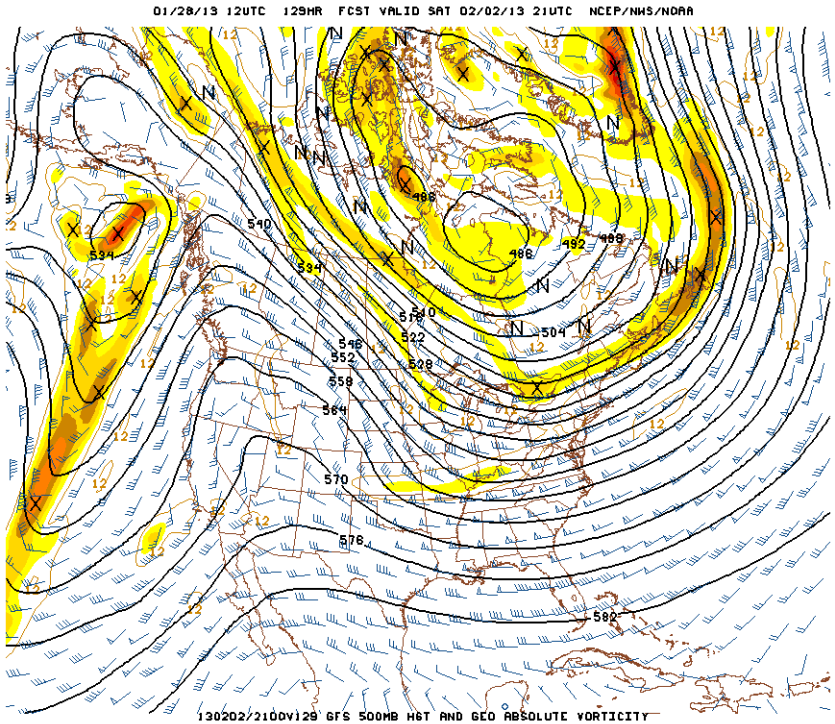
Saturday:

According to NWS discussion, the models diverge on their solution for the weekend. The GFS has apparently had better luck with recent systems and currently forecasts a wetter scenario, therefore chances of precipitation have been introduced for the weekend.

700 mb GFS
Saturday 1 PM



500 mb GFS
Saturday 1 PM

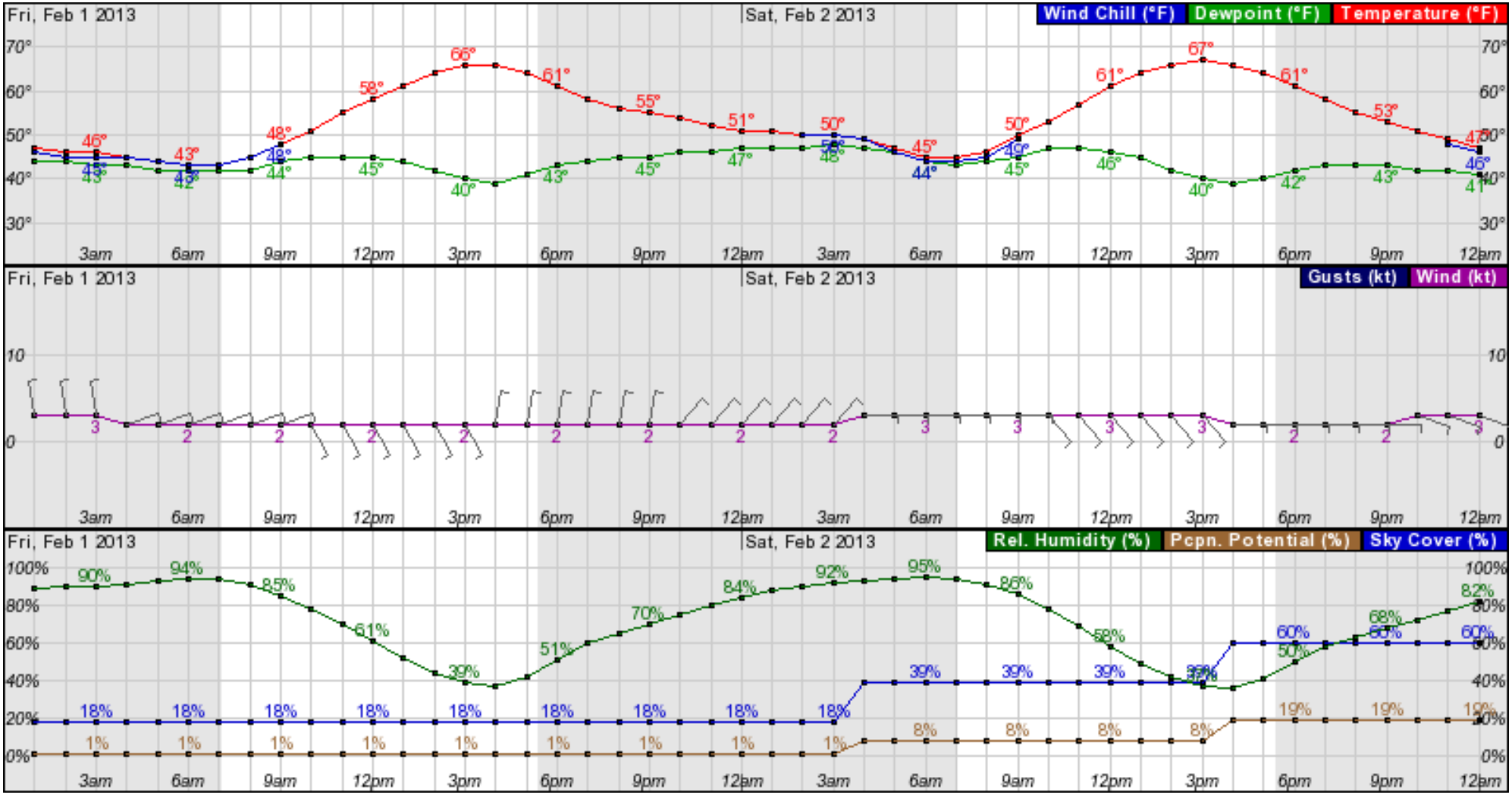


Fresno

Friday: Mostly sunny, high RH, light winds – chance of morning fog

Saturday: Increasing cloud cover, high RH, light winds – chance of morning fog

Friday → **Saturday →**



Hanford

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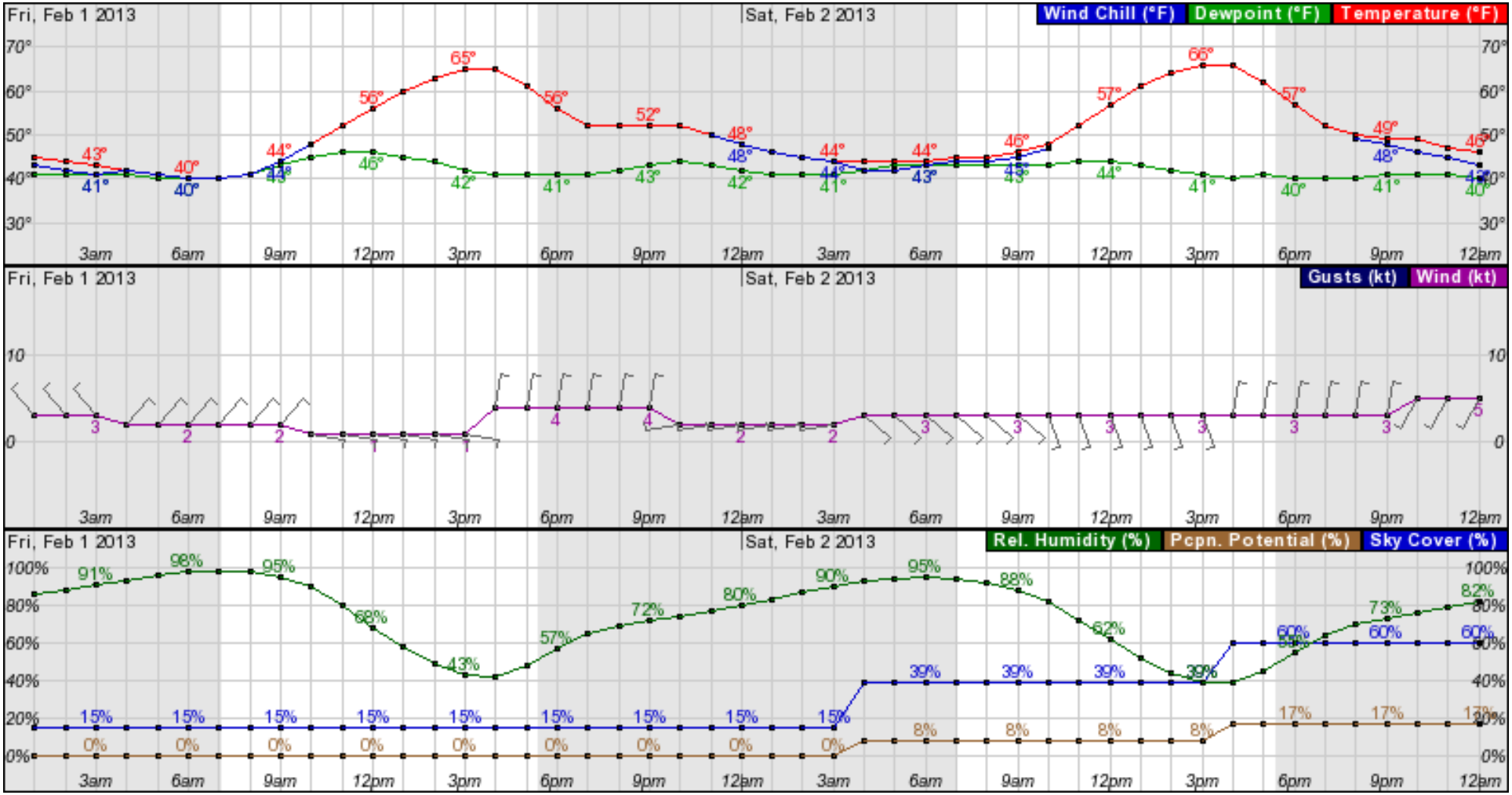
Friday → **Saturday →**



Bakersfield

Friday: Mostly sunny, high RH, light winds – chance of morning fog

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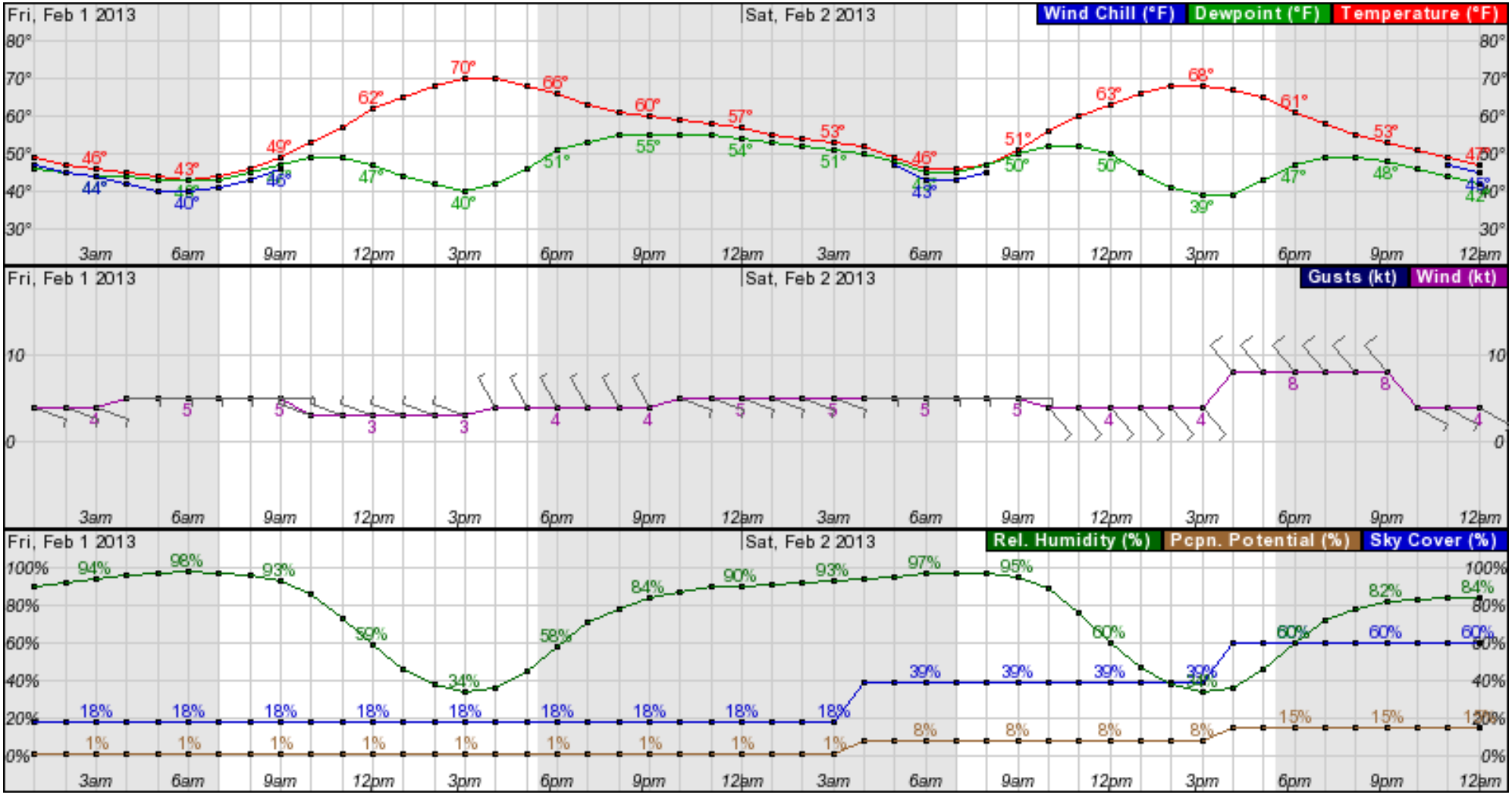
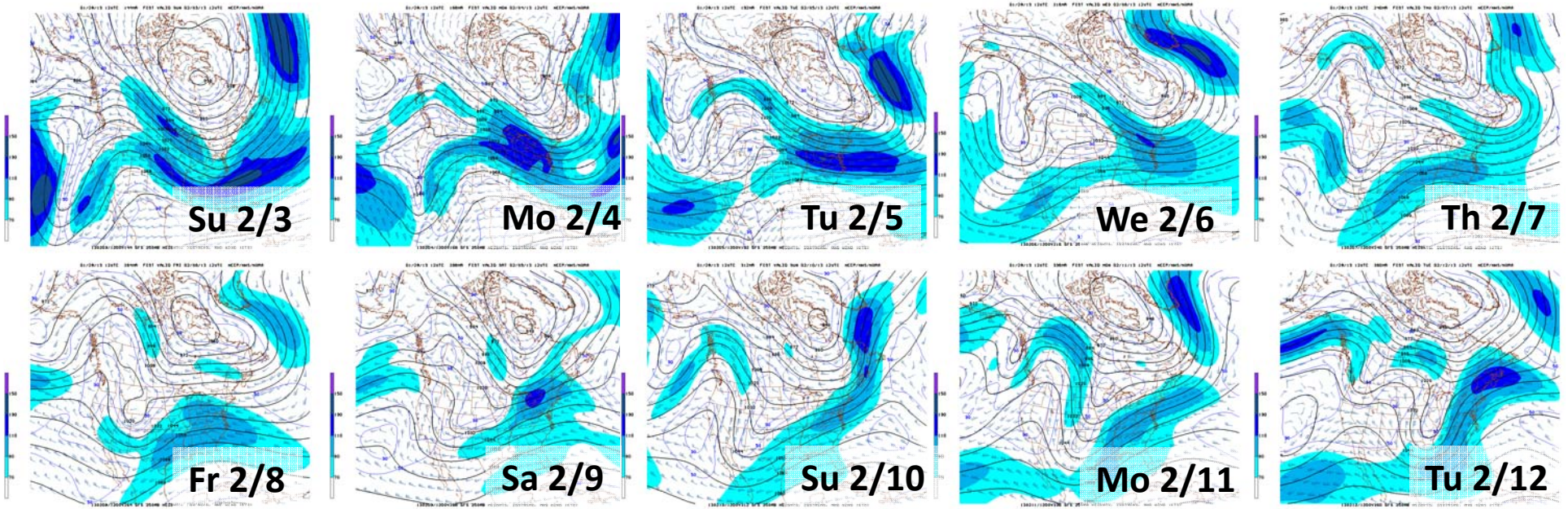
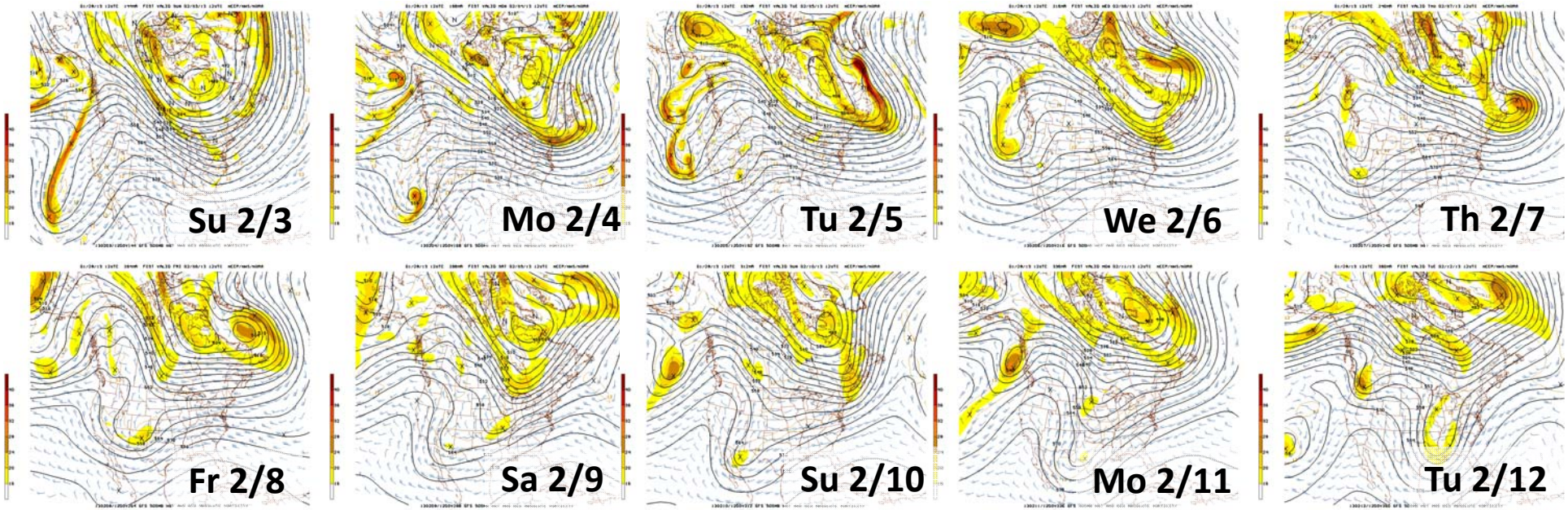
Friday → **Saturday →**



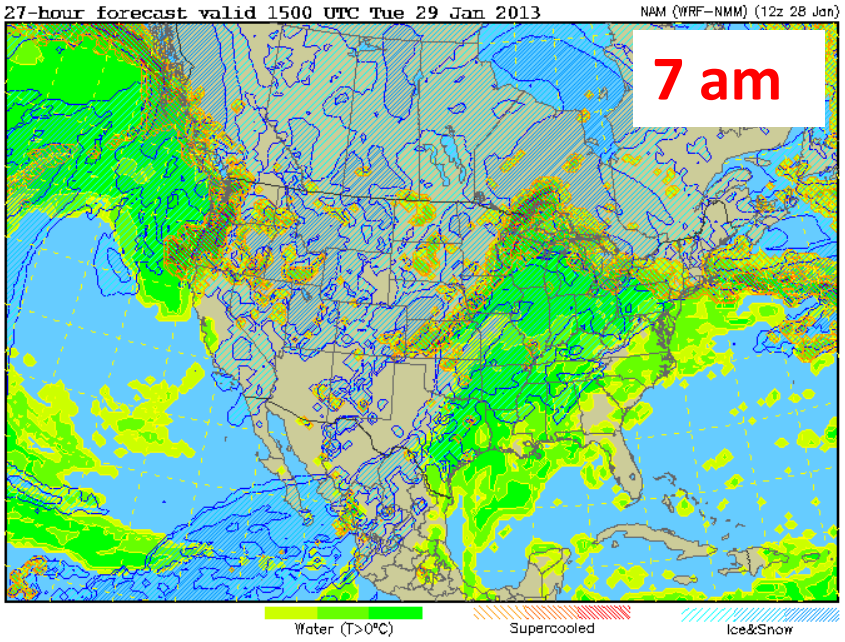
GFS - 250 mb winds - Extended forecast

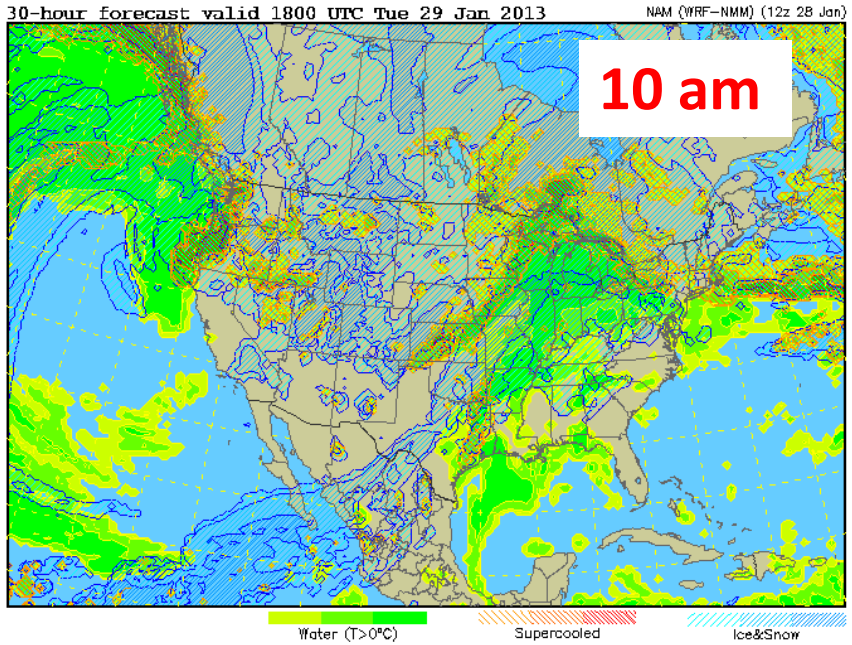


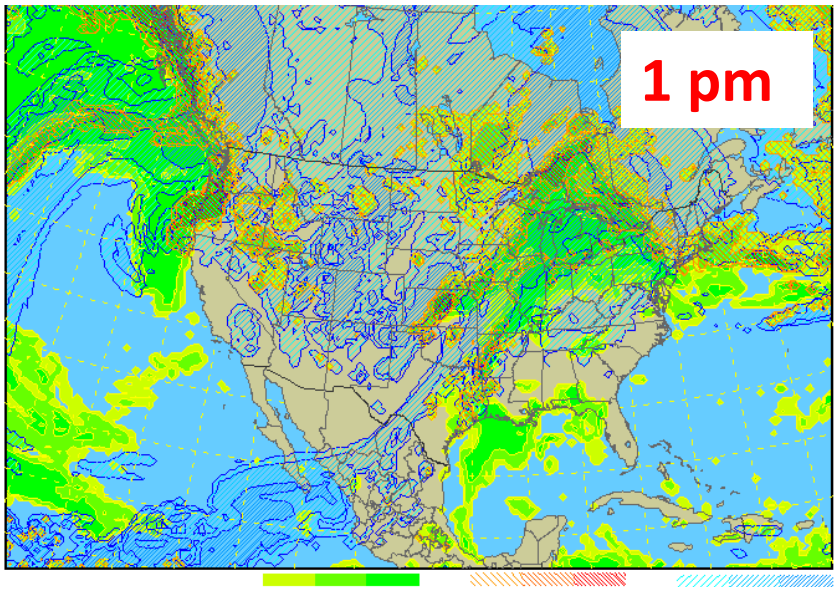
GFS - 500 mb vorticity - Extended forecast

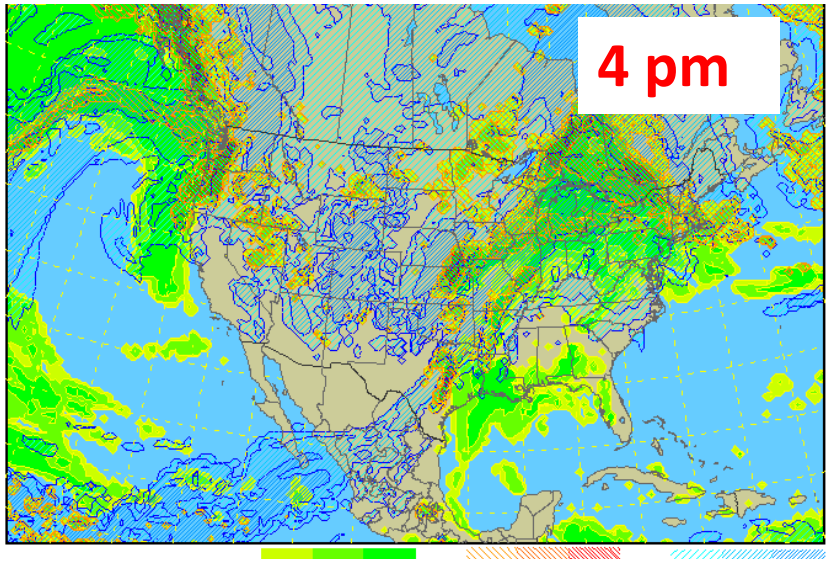


Tomorrow: The NAM forecasts that high clouds will plague the SJV. Some cirrus is predicted in the morning over the PODEX region, but clear skies the rest of the day.
NOTE – NO 0Z GEOS5 forecast to report today – issue with NASA computers



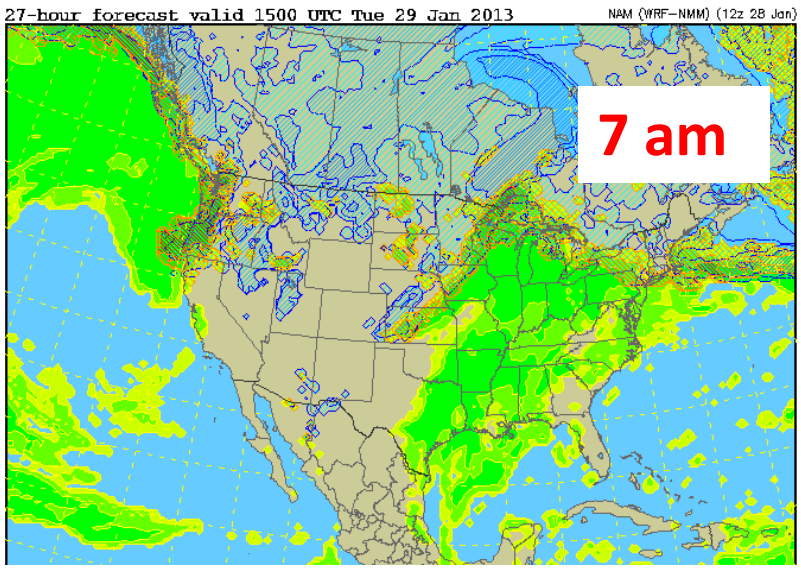




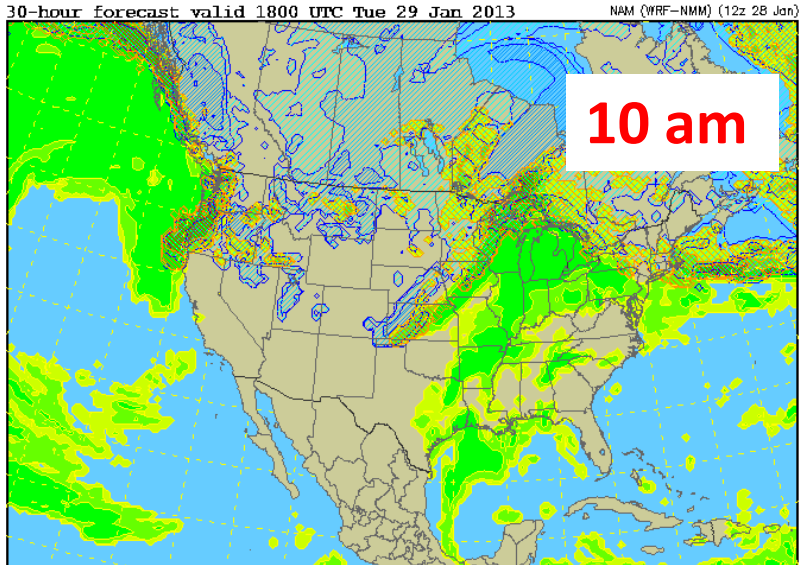


Tomorrow: NAM shows no low level clouds (<6Kft) forecasted for Tuesday

Integrated liquid and frozen hydrometeors (below 6 Kft MSL)



Integrated liquid and frozen hydrometeors (below 6 Kft MSL)



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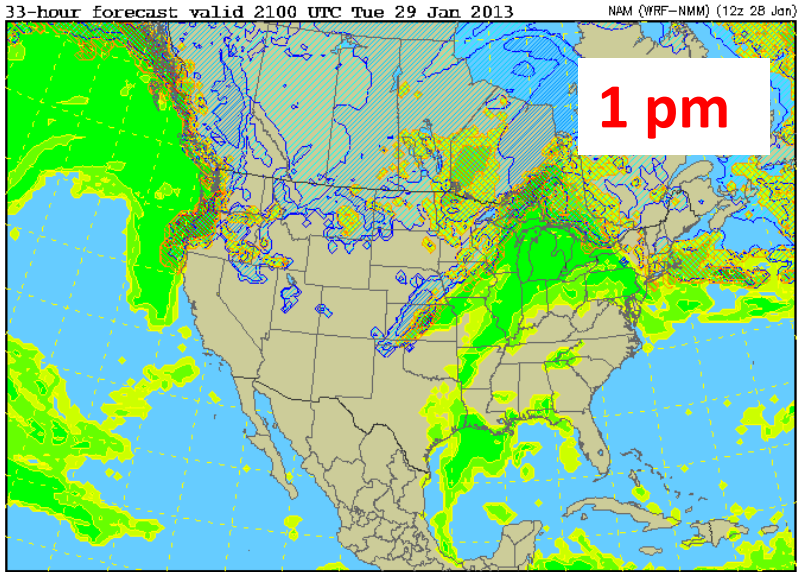
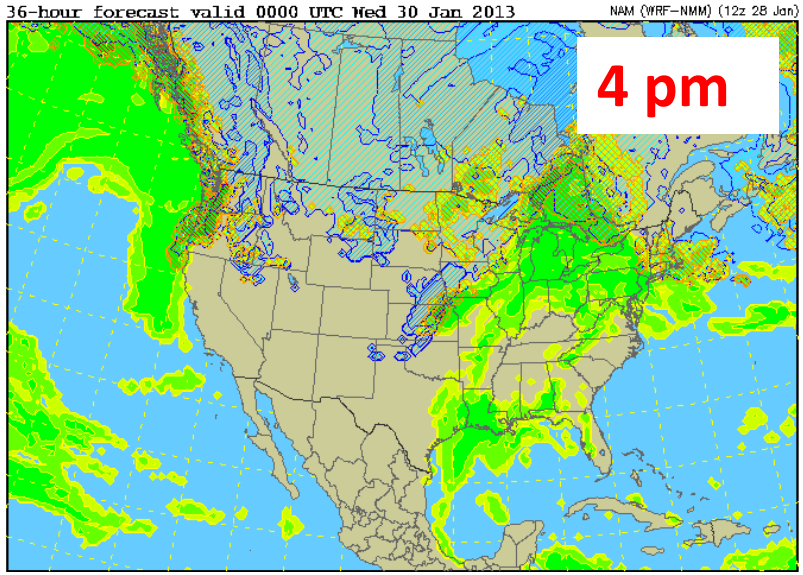
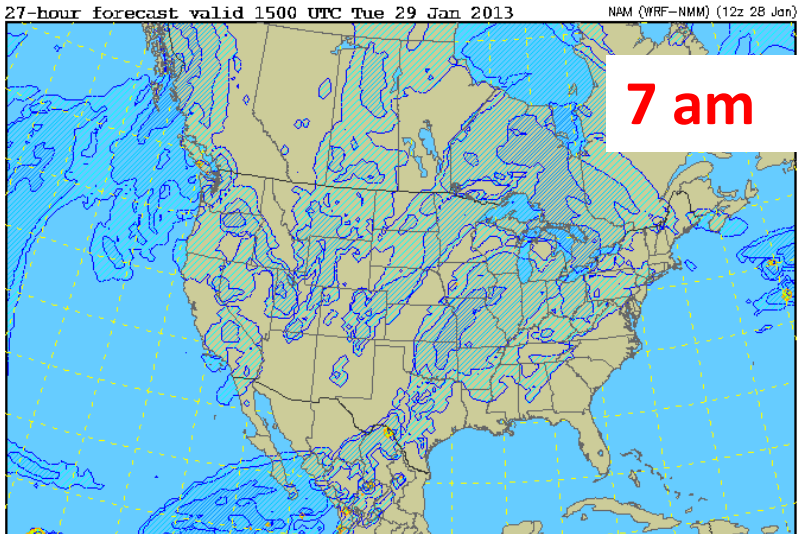


Integrated liquid and frozen hydrometeors (below 6 Kft MSL)

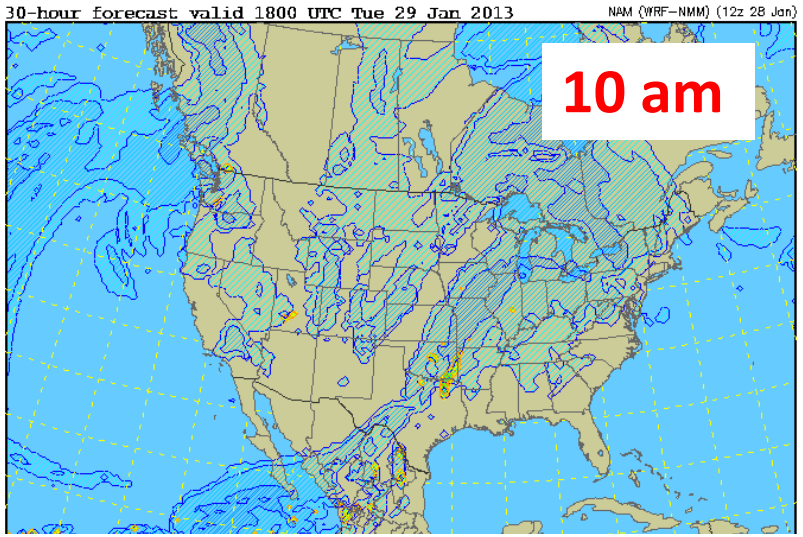


Tomorrow: NAM shows high level clouds (>18Kft) over the SJV throughout the day and over the PODEX region at 7 am, clearing out by 10 am.

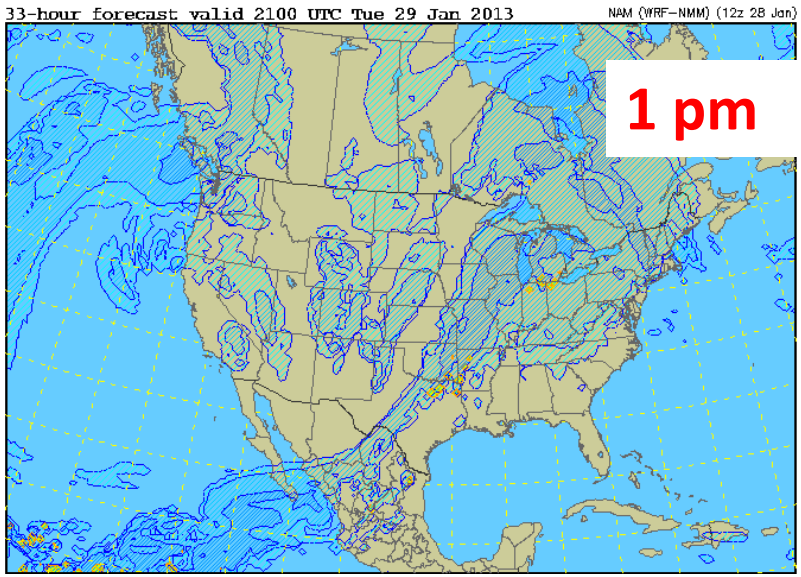
Integrated liquid and frozen hydrometeors (above 18 Kft MSL)



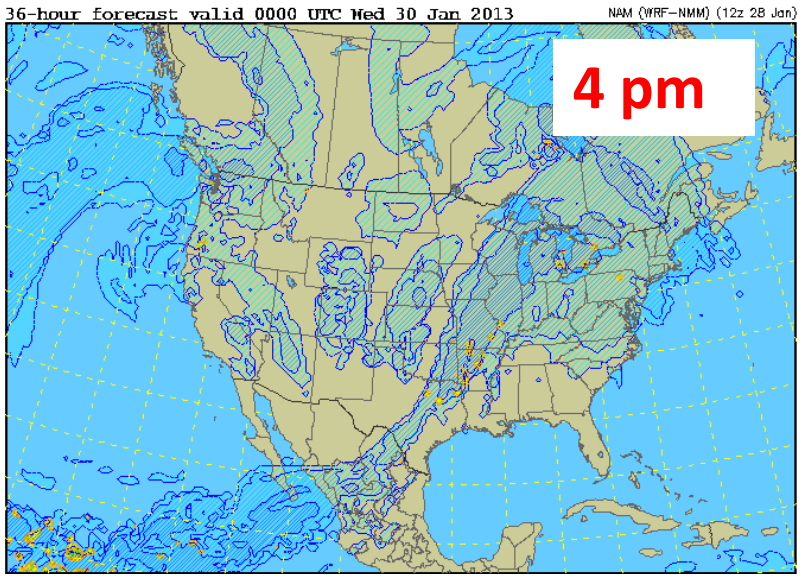
Integrated liquid and frozen hydrometeors (above 18 Kft MSL)



Integrated liquid and frozen hydrometeors (above 18 Kft MSL)



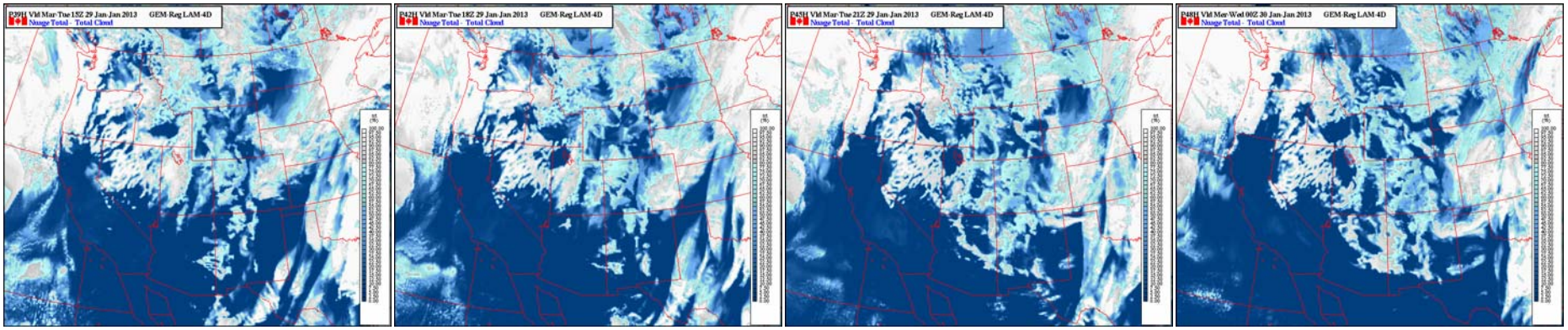
Integrated liquid and frozen hydrometeors (above 18 Kft MSL)



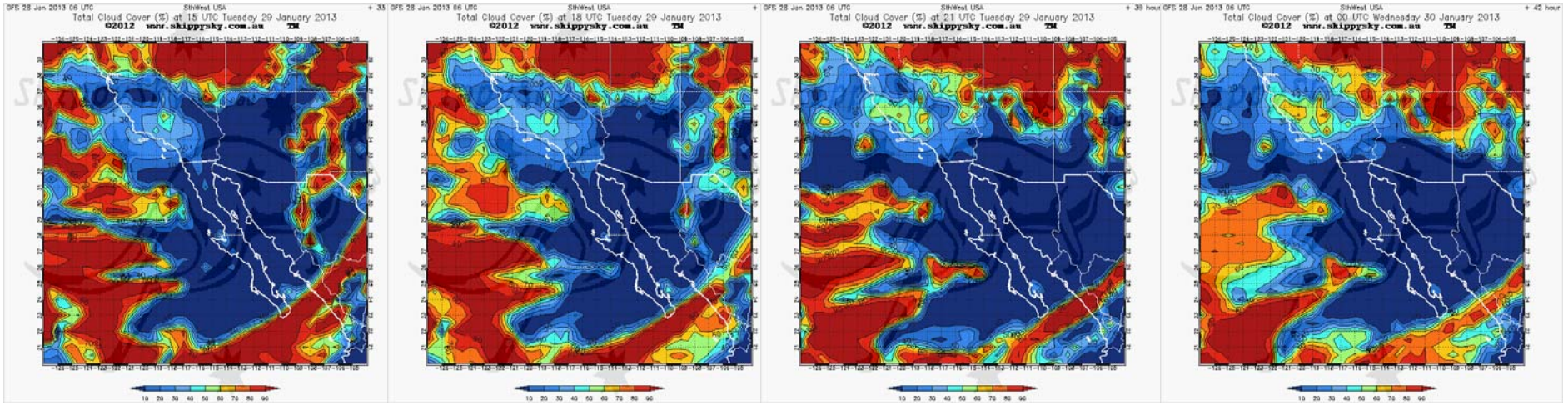
Tomorrow: Canadian – Thin clouds over the SJV; GFS – High levels clouds over the SJV and PODEX region

7 am 10 am 1 pm 4 pm

Canadian

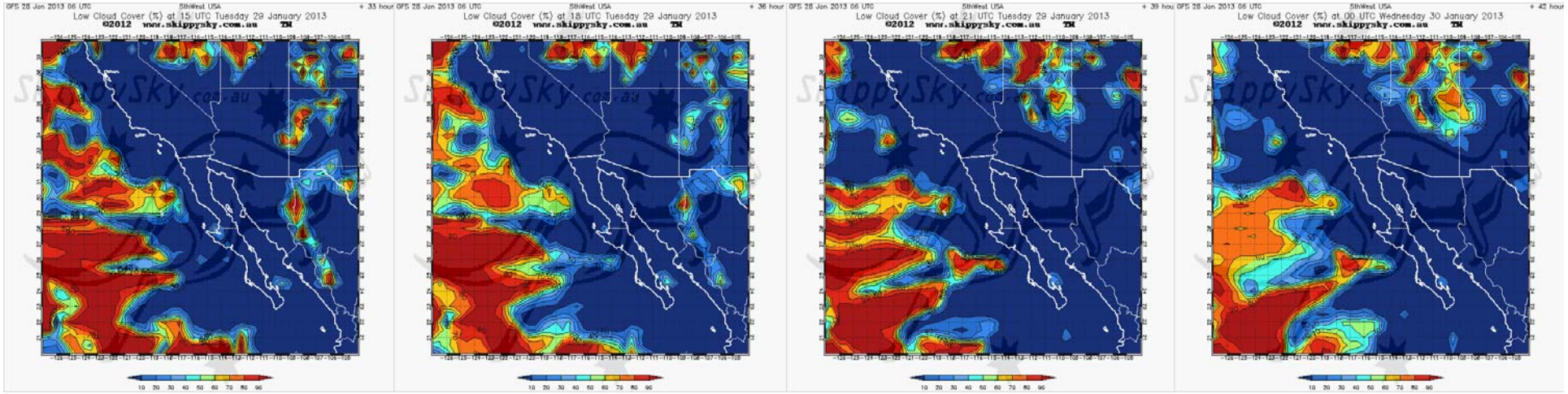


GFS

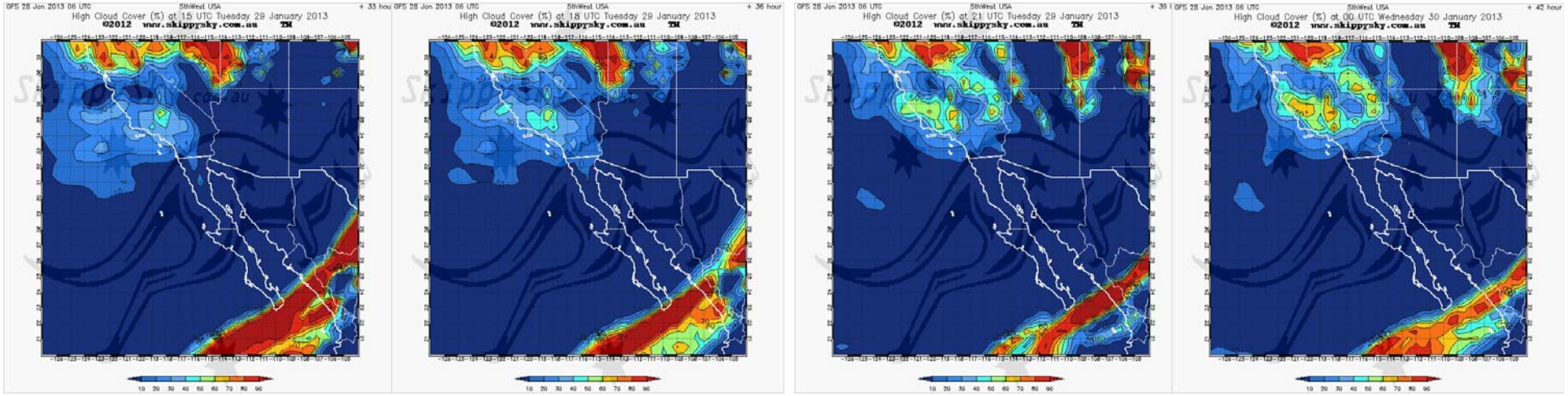


7 am 10 am 1 pm 4 pm

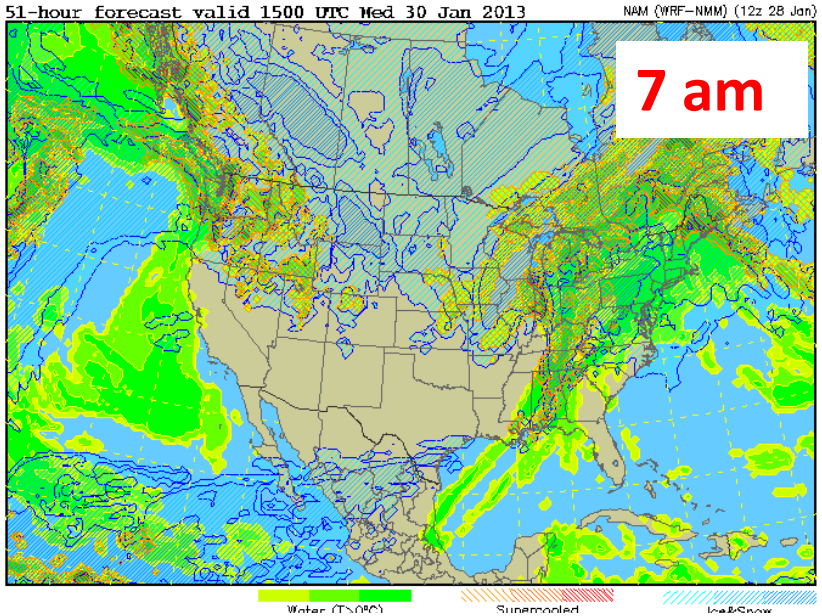
GFS – Low level

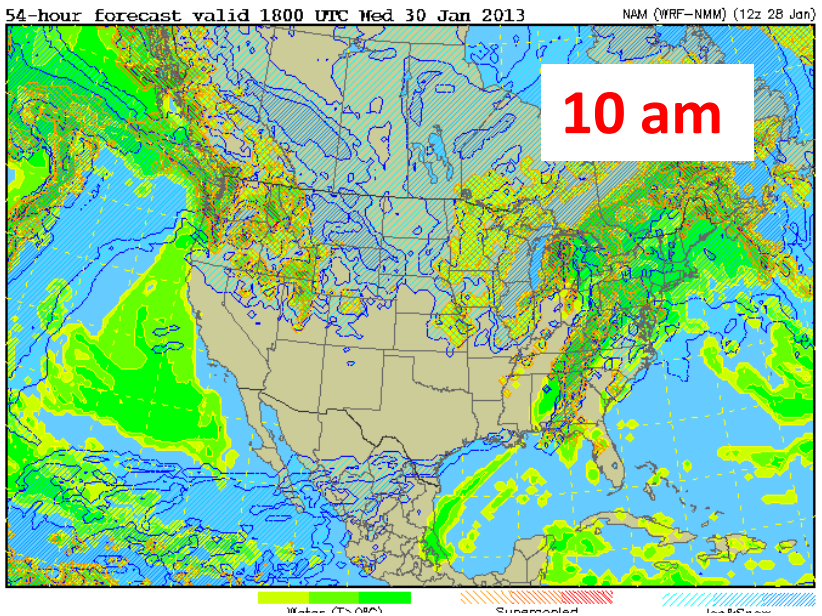


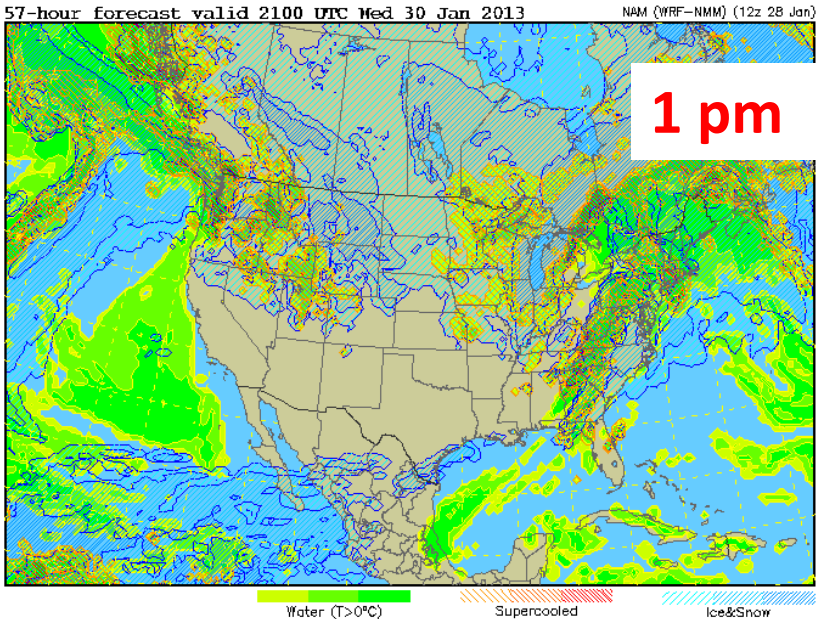
GFS – High level

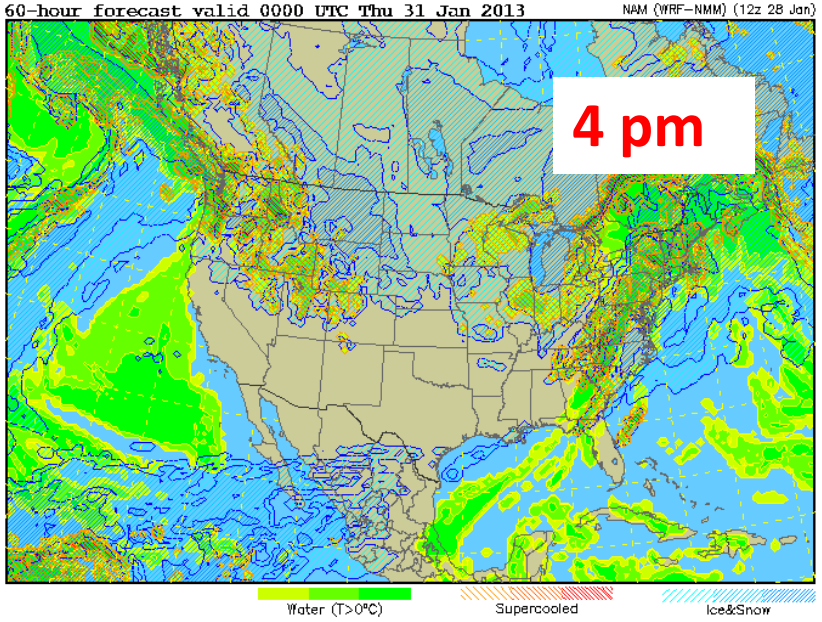


Wednesday: The NAM forecasts clear skies over the SJV and PODEX region with low clouds to the west of the PODEX region. This may be a good "dark water" flight day.



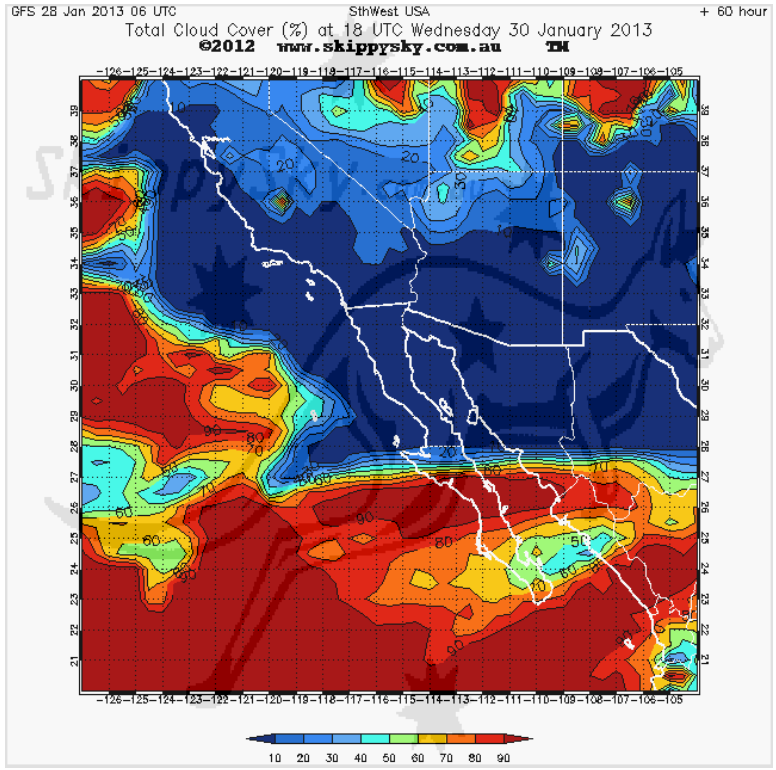




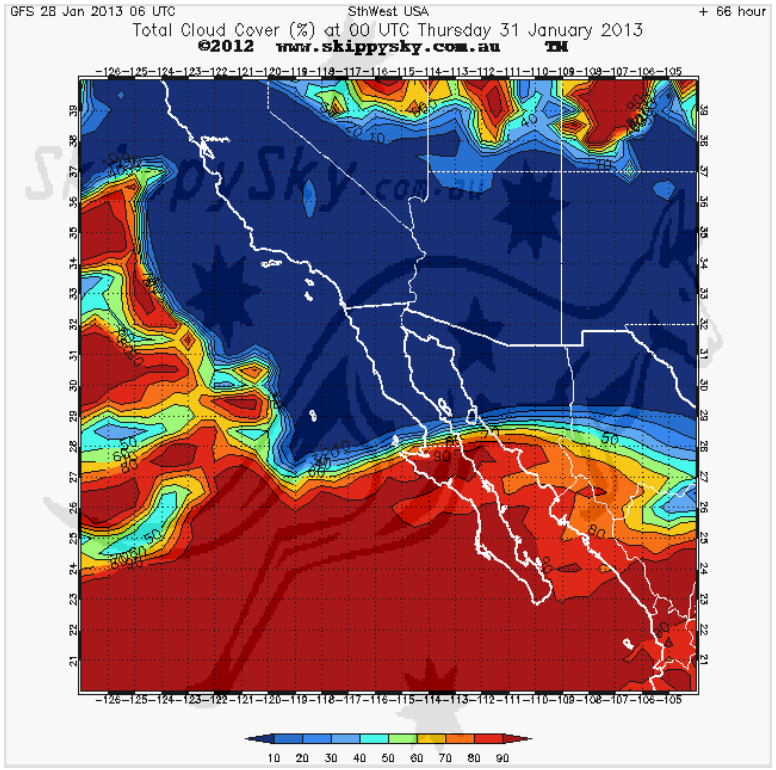


Wednesday: GFS – High level clouds over the SJV in the morning

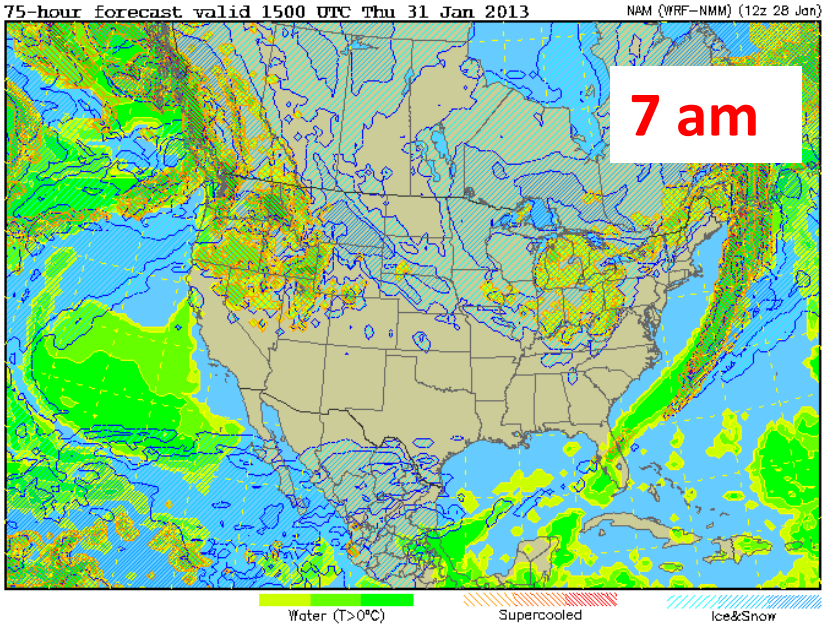
10 am

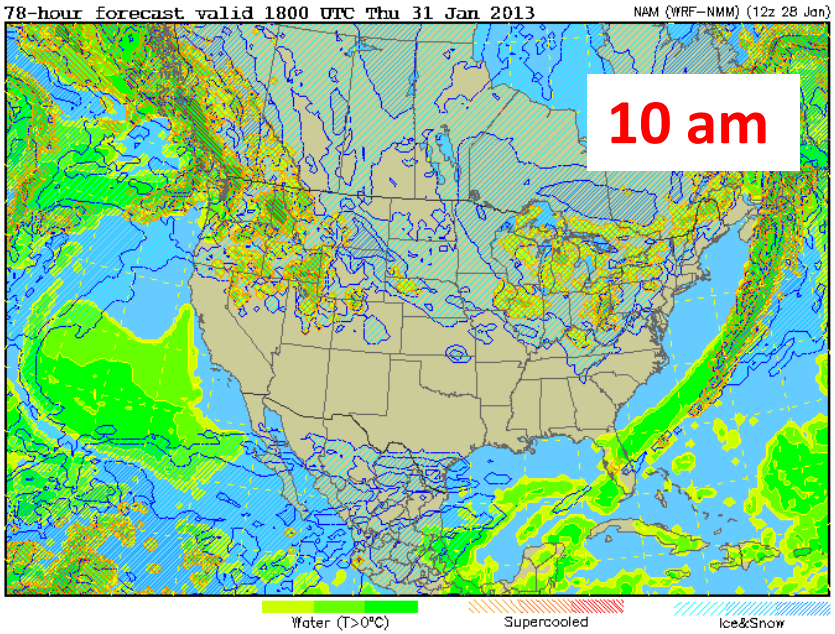


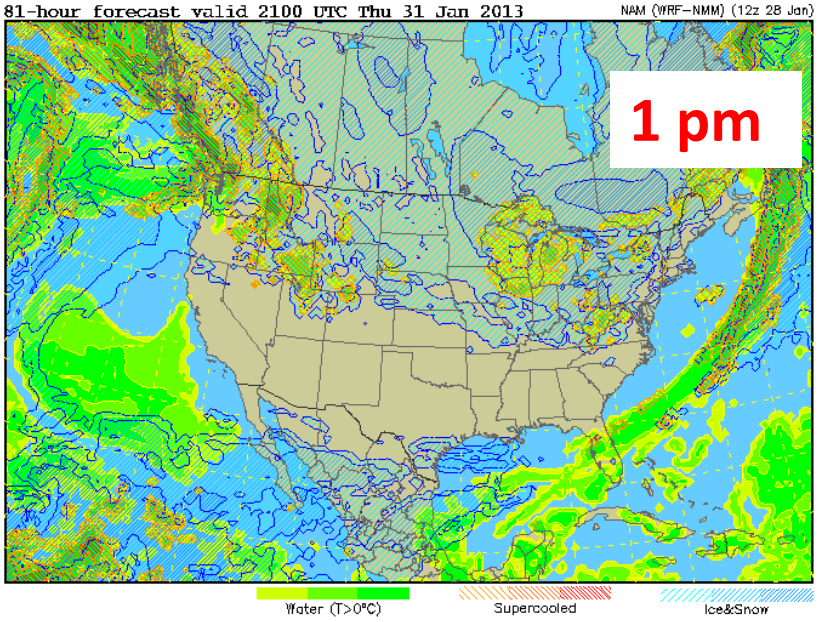
4 pm

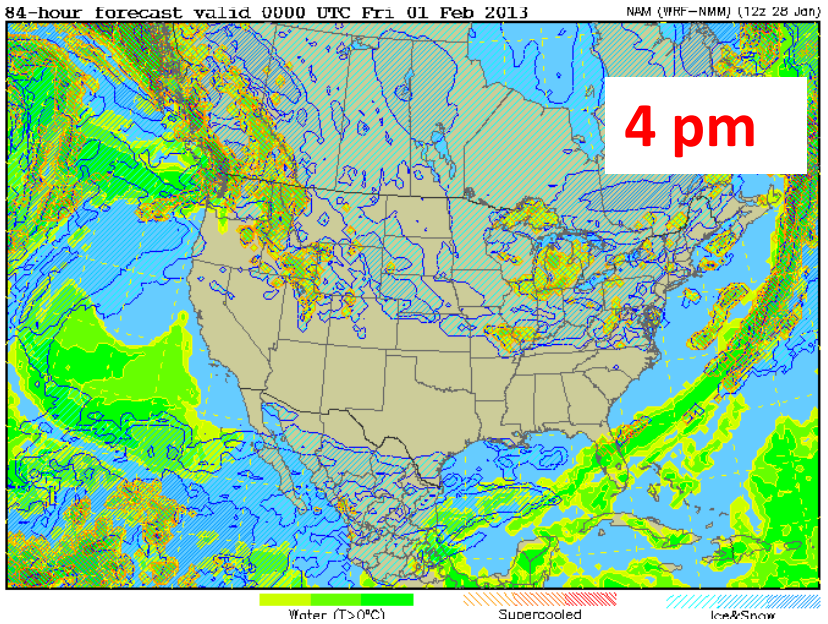


Thursday: The NAM forecasts that Thursday's conditions is very similar to Wednesday's.









AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE SAN JOAQUIN VALLEY - HANFORD CA
340 AM PST MON JAN 28 2013

.SYNOPSIS... SOME LOW CLOUDS AND A SHOWER OR TWO OVER THE SIERRA TODAY. OTHERWISE...DRY AND COOLER CONDITIONS AS HIGH PRESSURE BEGINS TO BUILD IN OVER THE AREA. &&

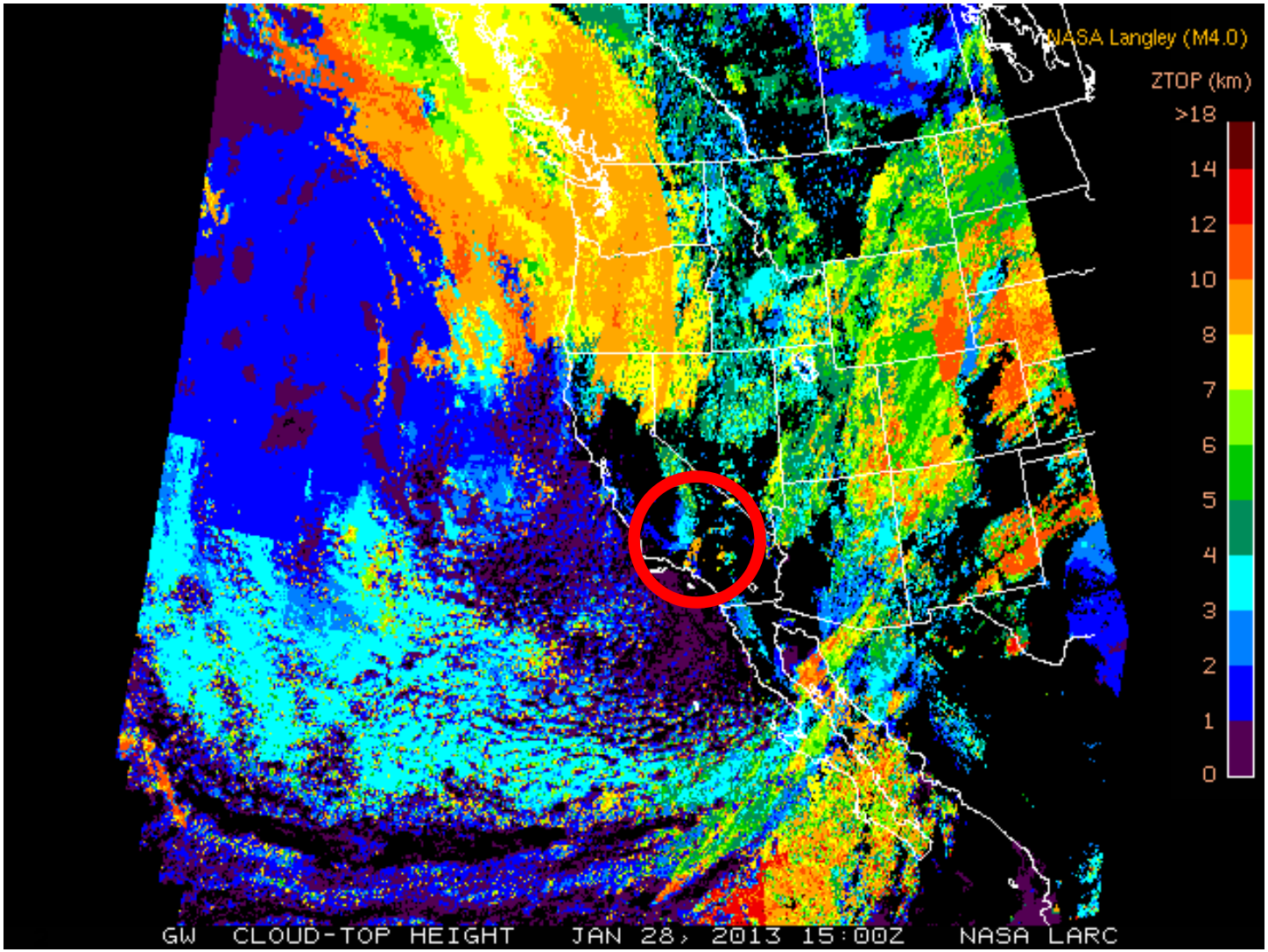
.DISCUSSION... UPPER TROUGH AXIS HAS MOVED THROUGH AND COLDER AIR IS BEING USHERED IN BY A STRONG UPPER LEVEL JET THAT IS WRINGING OUT ALL AVAILABLE MOISTURE ALONG THE SIERRA AS A FEW SNOW SHOWERS HAVE DEVELOPED AND WILL CONTINUE OFF AND ON THROUGH THE DAY AS THE LEFT FRONT QUAD OF THE THE JET MAX COMES THROUGH AND PROVIDE ENOUGH LIFT FOR SOME SCT SN SHRA.

IT WILL ALSO BE BREEZY BELOW THE PASSES IN THE KERN COUNTY MOUNTAINS AND DESERT REGIONS NEAR MOJAVE AND WE ARE EXPECTING IT TO REMAIN JUST BELOW ADV LEVELS...SO NO WWA WAS ISSUED.

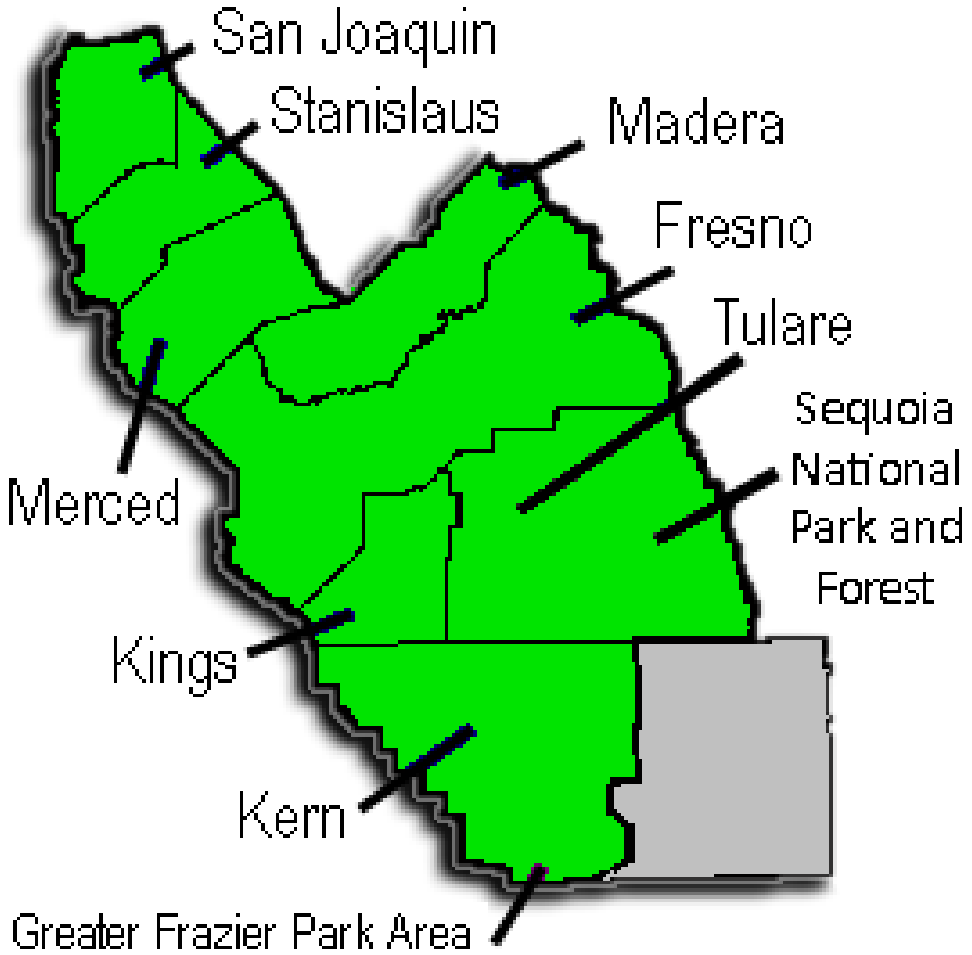
THINGS WILL QUIET DOWN AGAIN TONIGHT AS THE UPPER JET IS EXPECTED TO PASS THROUGH TODAY. NORTHERLY FLOW WILL CONTINUE THROUGH THURSDAY WITH A GRADUAL WARMING TREND IN STORE FOR THE CEN CA INTERIOR. THE RIDGE AXIS IS EXPECTED OVER THE AREA ON FRI AND IT IS EXPECTED TO BE THE WARMEST DAY OF THE WEEK.

MODELS DIVERGE ON THEIR SOLN FOR THE WEEKEND AND WE ARE TRENDING TOWARDS THE WETTER GFS ATTM AND INTRODUCED POPS FOR THE WEEKEND. THE ECM IS DRY AND KEEPS THE CLOSED LOW CENTER OFF THE COAST...THE MORE PROGRESSIVE GFS HAS HAD BETTER LUCK WITH RECENT SYSTEMS AND THE ECM HAS COME AROUND AS WE GOT CLOSER TO THE EVENT.. WE ARE EXPECTING THE SAME FOR THIS WEEKEND. &&

GOES WEST: Cloud Top Height at 15Z Today

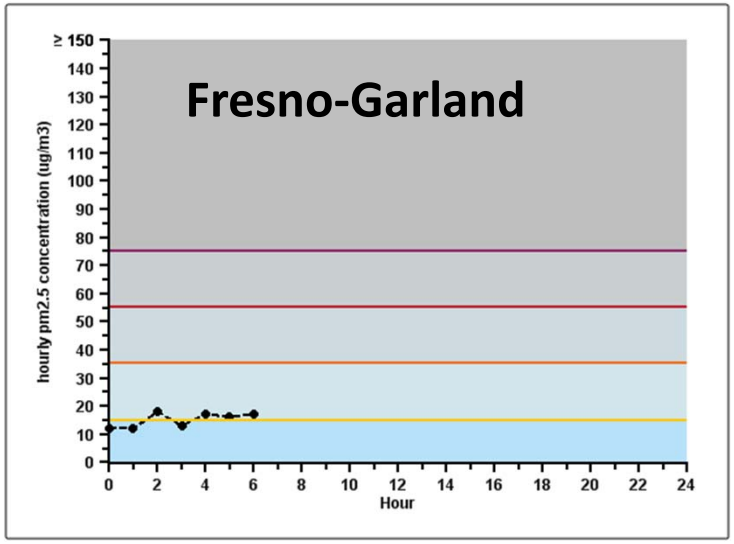


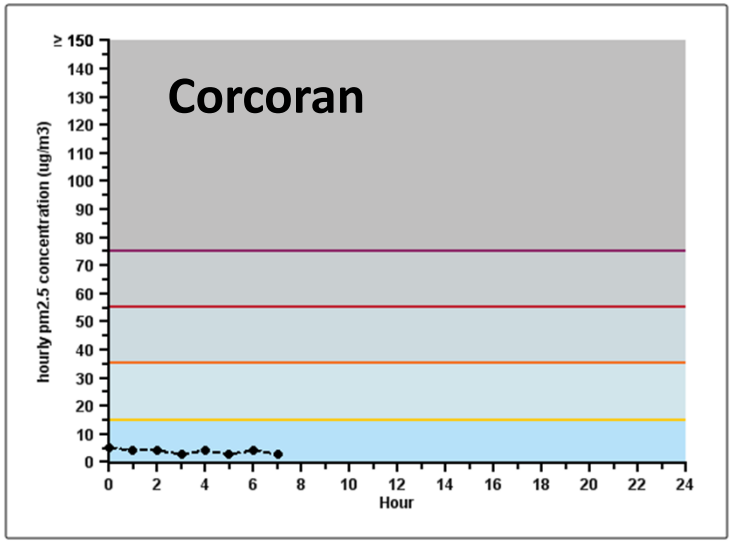
SJV APCD Daily Forecast – for TODAY (Jan 28)



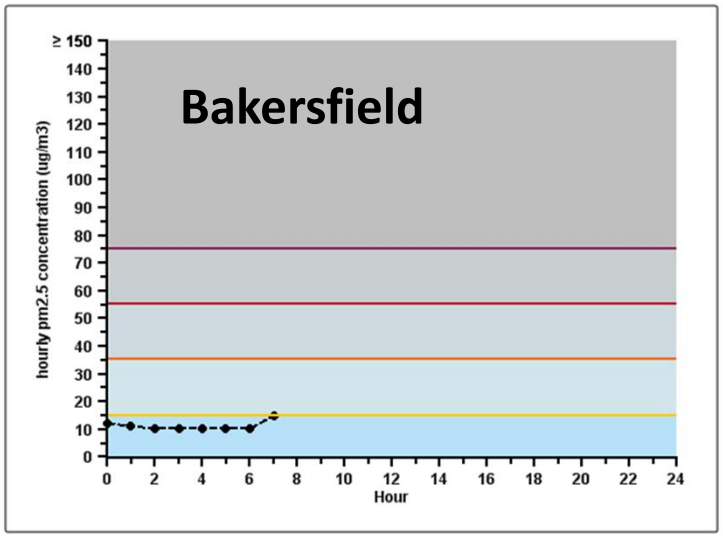
ROAR LEVEL	Ozone (O^3)	Particulate Matter (PM 2.5)
LEVEL 1 Good	1-59 ppb	1-15 µg/m³
LEVEL 2 Moderate	60-75 ppb	16-35 µg/m³
LEVEL 3 Unhealthy for Sensitive Groups	76-95 ppb	36-55 µg/m³
LEVEL 4 Unhealthy	96-115 ppb	56-75 µg/m³
LEVEL 5 Very Unhealthy	>115 ppb	>75 µg/m³

January 28th Today





Despite the rain and cold front passage, PM2.5 levels at Fresno-Garland and Bakersfield are increasing and are code yellow this morning.



Recommendations

Tuesday – PODEX - The amount of cirrus tomorrow will be the same or less than today. Minimal low clouds are forecast for the PODEX region. The upper level trough dominating the weather pattern is lingering and causing the models some confusion with respect to when the clouds are going to clear out.

SJV – Thin cirrus from the north (>30Kft). Patchy morning fog expected, burning off by ~8 am.

Wednesday – PODEX – Current forecast shows no cirrus. Low level cloud deck expected, but current forecasts have the edge too far offshore. If the upper level trough moves faster than expected, then the clouds could be pushed closer to shore. As of now the flow is too northerly, keeping them too far west.

SJV - Clear skies, patchy morning fog expected again, burning off early.

Thursday – Clear skies. As ridge builds over our area, morning fog expected to be deeper, burning off later than on previous days (10 am or 11 am in some places

Friday – Deep morning fog forecasted. Models begin to diverge, some bringing in possible precip towards the weekend.