

DISCOVER-AQ OUTLOOK JANUARY 17, 2013

The Pacific Coast ridge continues to hold firm over our study area. The ridge line lies just off the coast today, and is expected to move ashore over the next couple of days. The ridge is keeping relatively clear skies over the region with low dew points at the surface due to subsiding dry air. A brief episode of fog occurred at Hanford this morning with visibility dropping to 0.5 miles at around 8 AM, quickly rebounding to 1.25 miles at 8:15. However, IFR conditions (< 3 mi. visibility or ceiling < 1000 ft.) persisted from 5 – 10 AM at this site. Visalia also experienced IFR conditions from 3 AM to 9:15 AM in mist this morning, but visibilities there never reached full fog values. Friday morning should have relatively similar conditions, but with perhaps a bit more fog especially farther south in the valley. With the ridge overhead over the weekend, expect more of the same, but with increased likelihood of more widespread and persistent morning fog. Today's MOS forecast has higher surface RH on Sat. AM than on Sunday, so there is some possibility that the fog may be more extensive Saturday AM. Some tropical moisture is beginning to show up on the west side of the ridge and is being advected toward the California coast today. We need to be on the lookout for cirrus tomorrow. Looking farther ahead, Monday looks about the same as Sunday. On Tuesday, a short-wave trough will approach from the NW and pass over CA on Wed, bring increased chances of cloudiness. The ridge will reestablish on Thur. and Fri. next week.

Air quality for PM_{2.5} reached Code Orange today in Fresno and is forecast to be similar tomorrow. Kings, Tulare, and Kern Counties will be near the border of Code Yellow and Orange.

Recommendation is to fly on Friday after a check of the fog situation early in the morning.

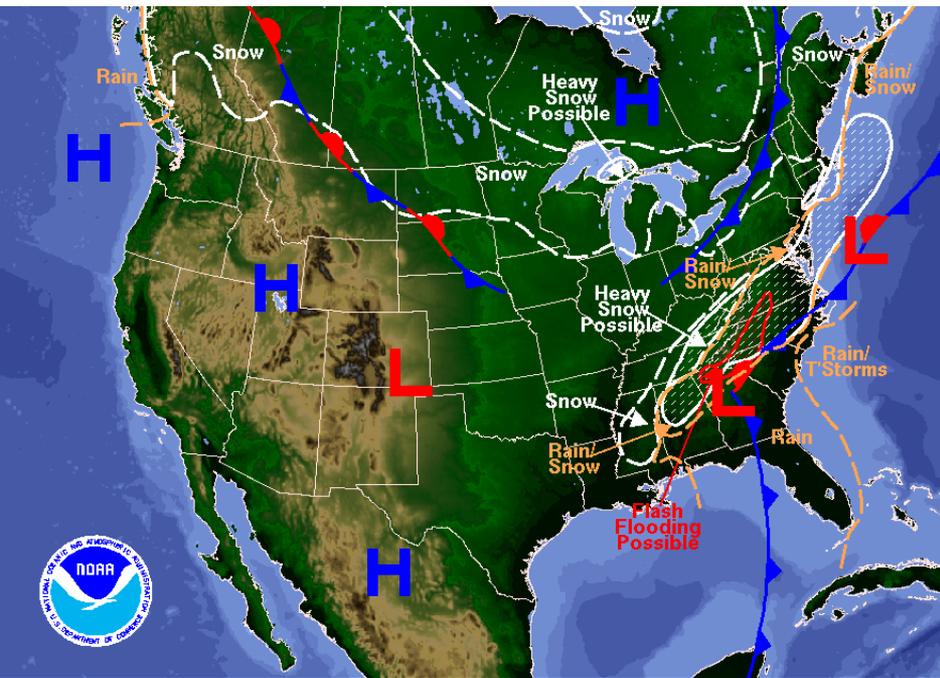
DISCOVER-AQ/PODEX Forecast Briefing

January 17, 2013

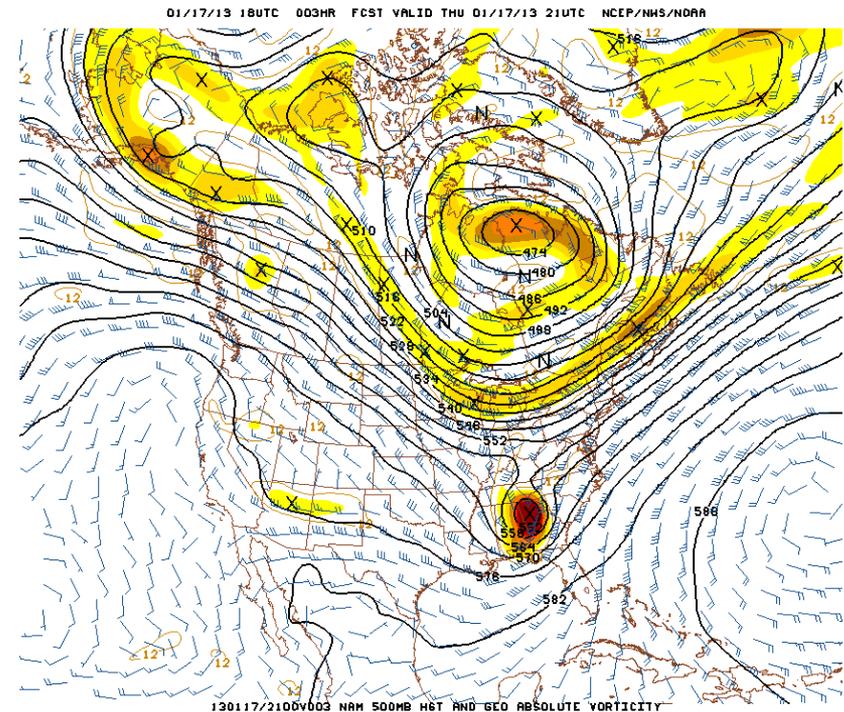
**Ken Pickering, NASA/GSFC
Chris Loughner, ESSIC/GSFC
Bob Chatfield, NASA/Ames**

Today : Sunny. Large upper level ridge to the west.

500 mb NAM at 1 PM.

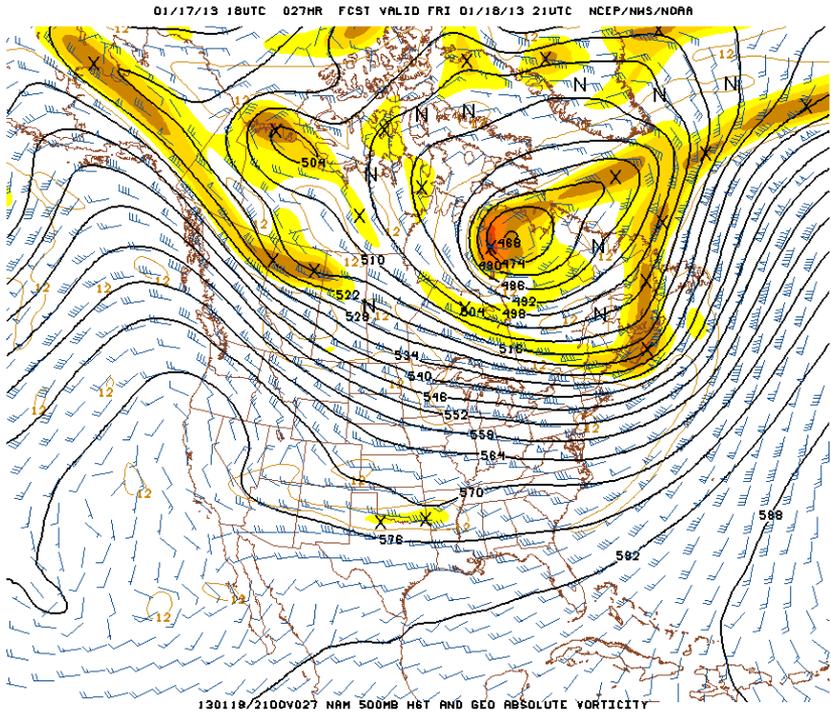
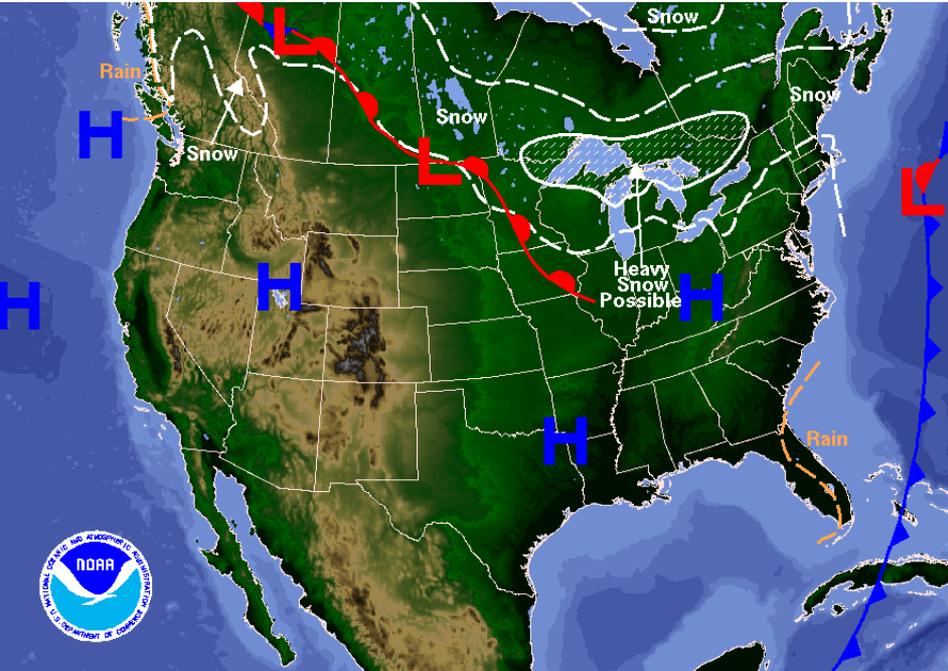


Weather Forecast for Thu, Jan 17, 2013, issued 3:38 AM EST
DOC/NOAA/NWS/NCEP/Hydrometeorological Prediction Center
Prepared by Monarski based on HPC, SPC, and NHC forecasts



Tomorrow: Sunny. Upper level ridge over CA.

500 mb NAM at 1 PM.

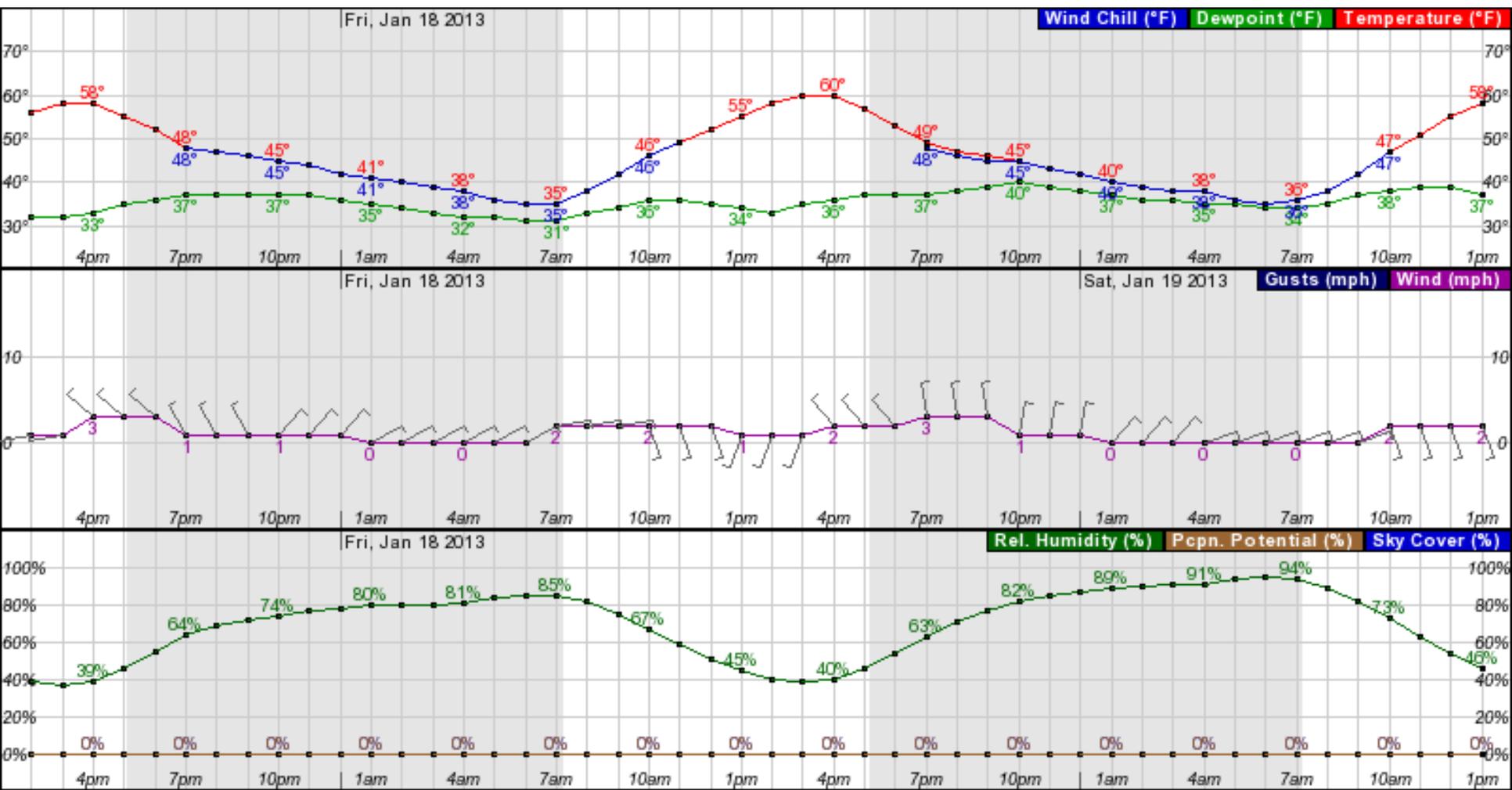


Fresno

Today: Sunny.

Tomorrow: Sunny. Chance of patchy morning fog.

Today → Tomorrow →

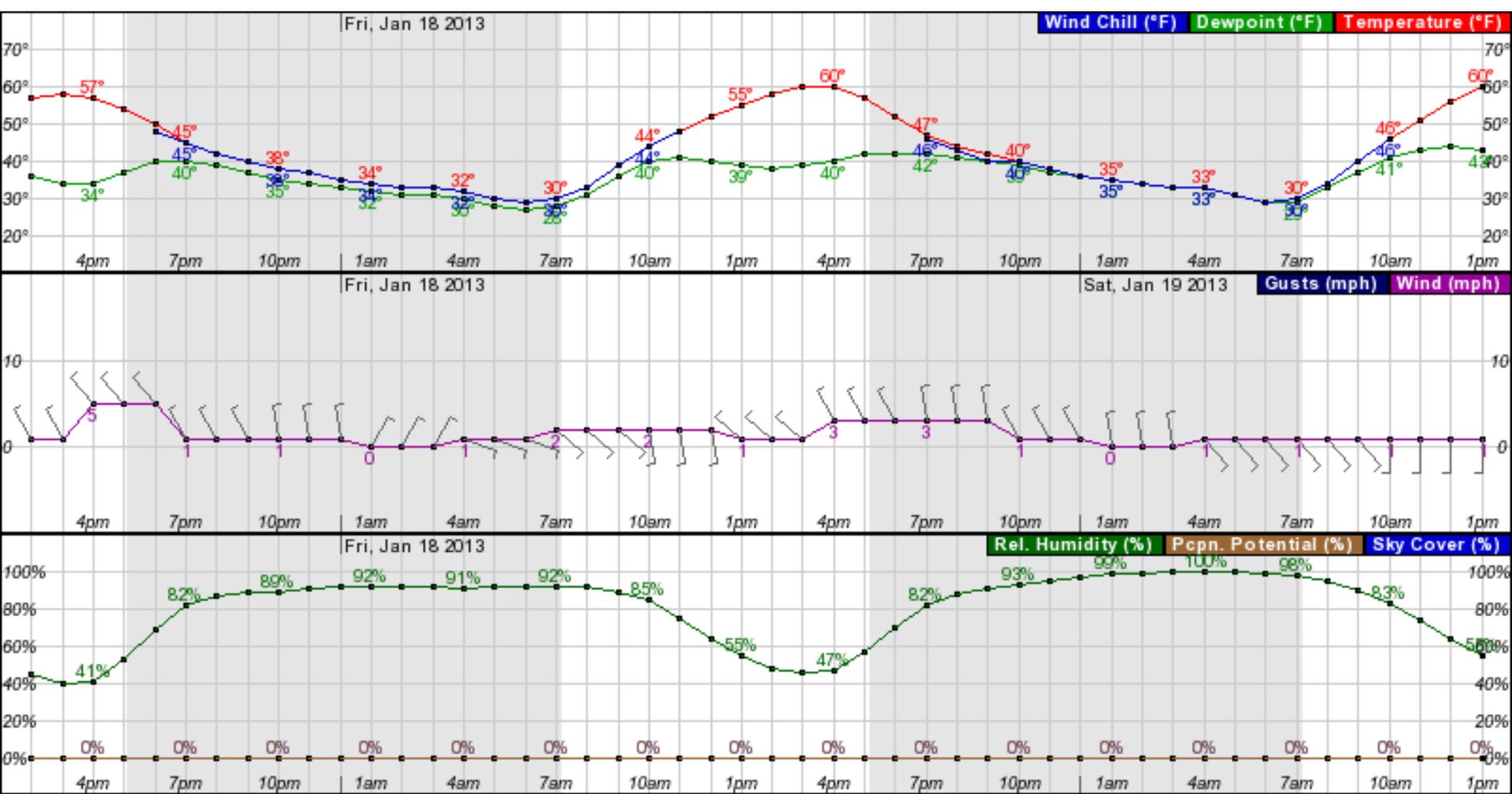


Hanford

Today: Sunny.

Tomorrow: Sunny with some morning fog.

Today → Tomorrow →

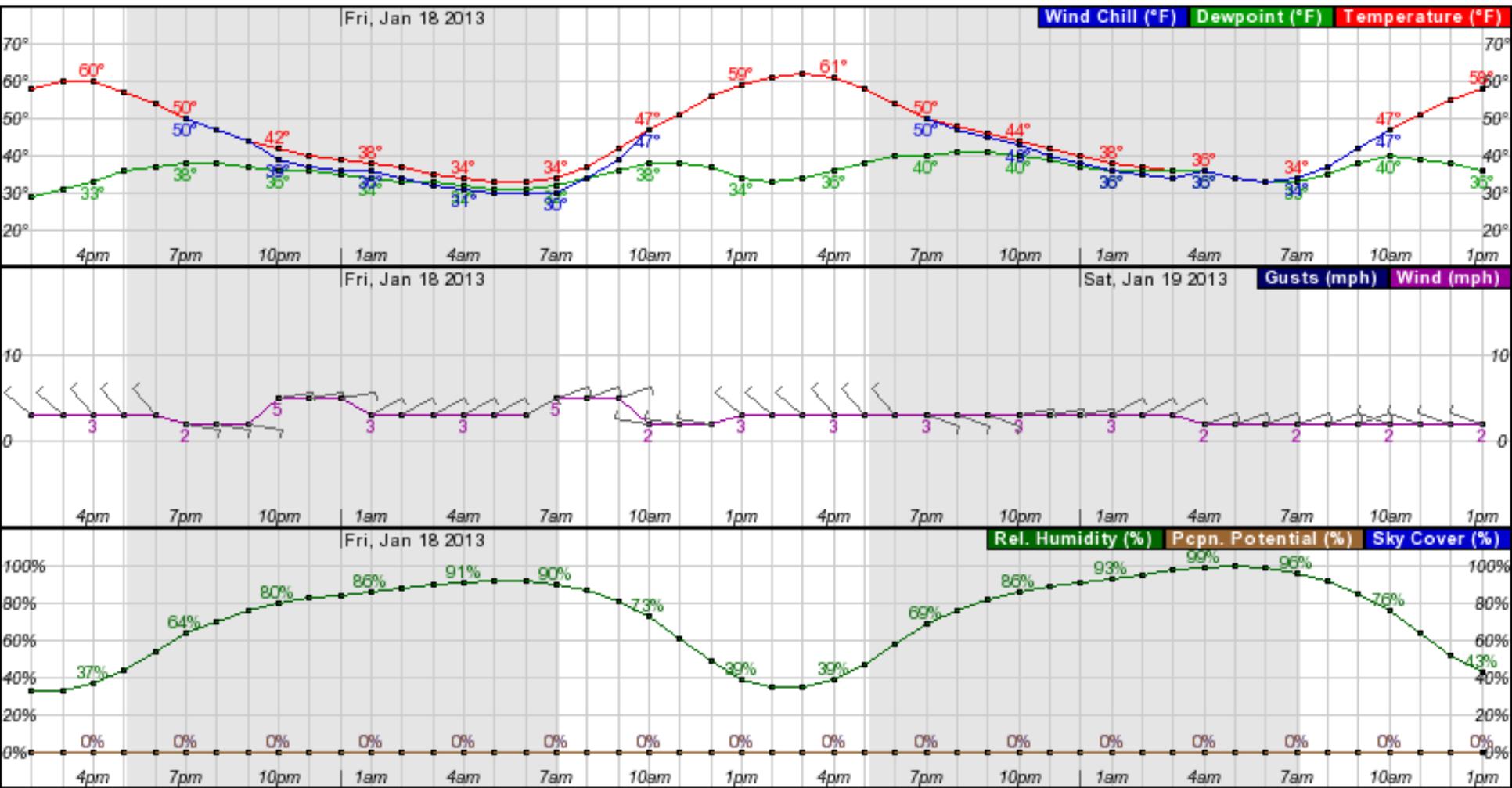


Bakersfield

Today: Sunny.

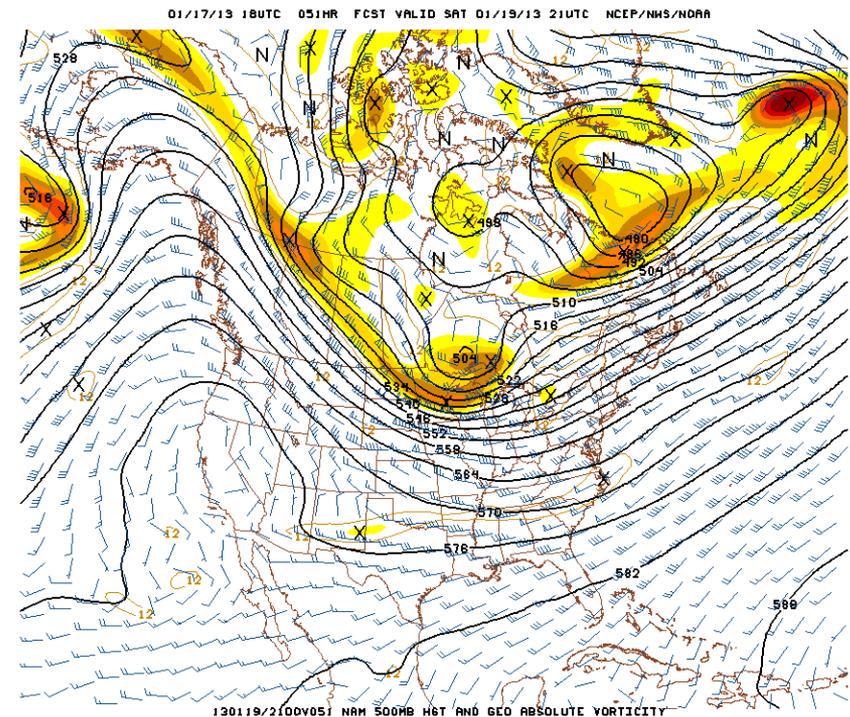
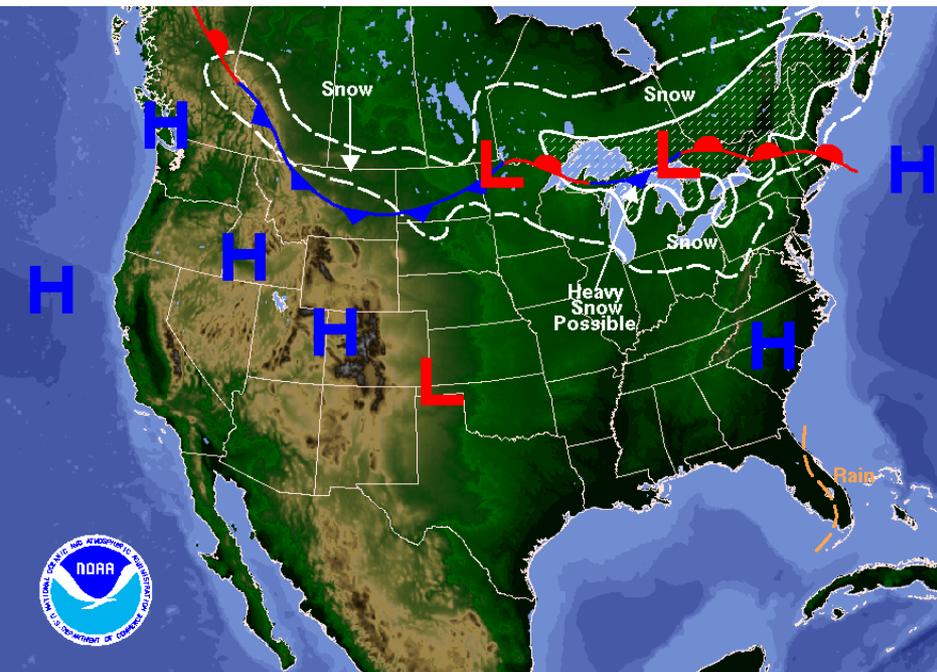
Tomorrow: Sunny with some patchy morning fog.

Today → Tomorrow →

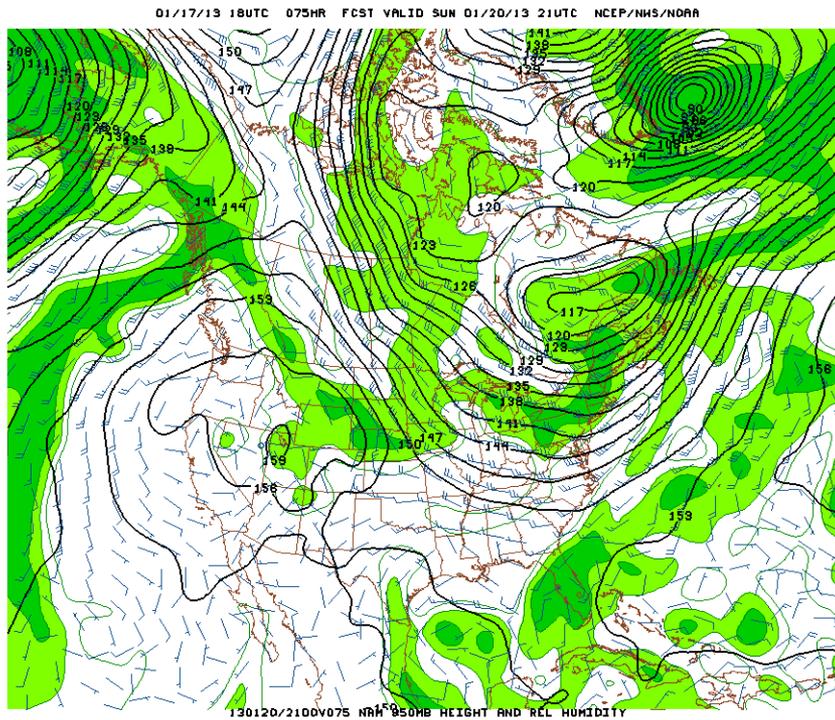


Saturday: Mostly sunny. Upper level ridge still over CA.

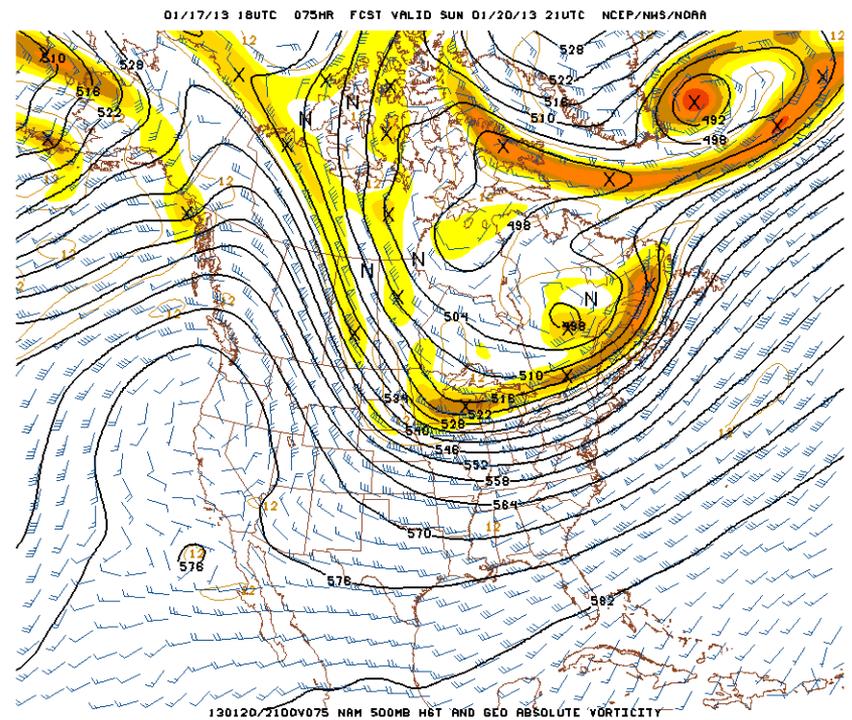
500 mb NAM at 1 PM.



850 mb NAM Sunday 1 PM



500 mb NAM Sunday 1 PM



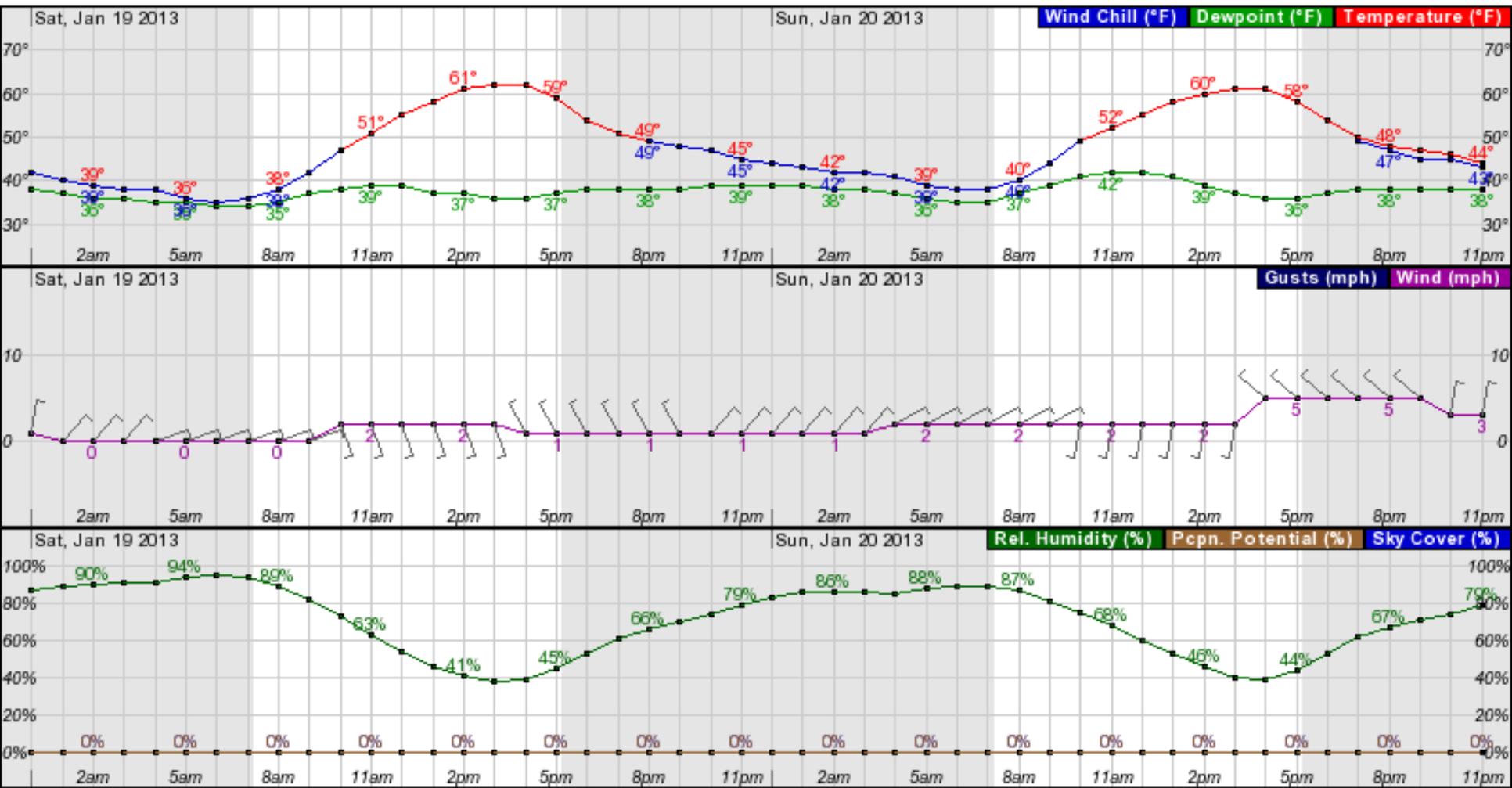
Fresno

Saturday: Sunny with some morning fog.

Sunday: Sunny with a chance of morning fog.

Saturday →

Sunday →



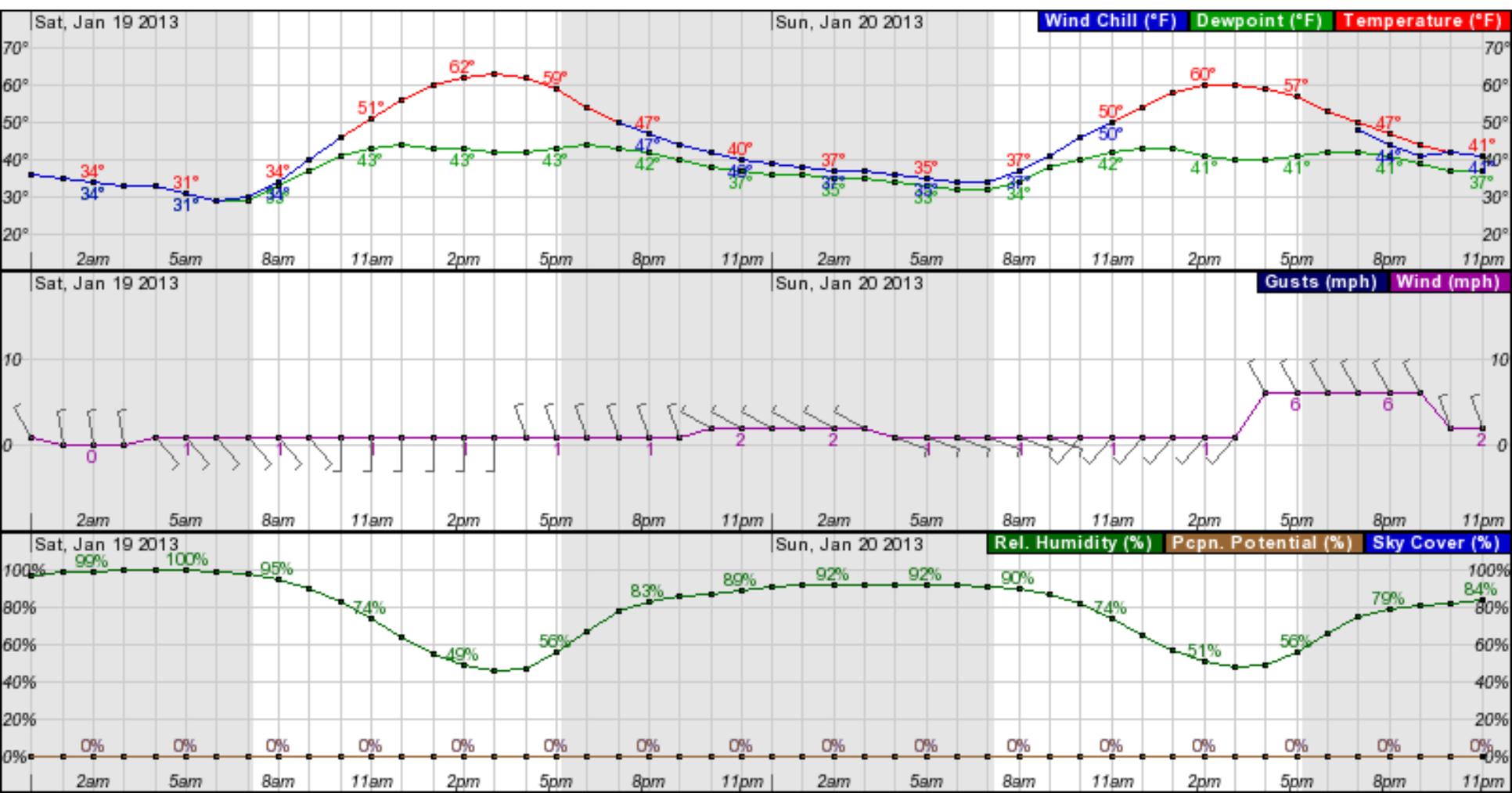
Hanford

Saturday: Morning fog – afternoon sun.

Sunday: Sunny with a some morning fog.

Saturday →

Sunday →



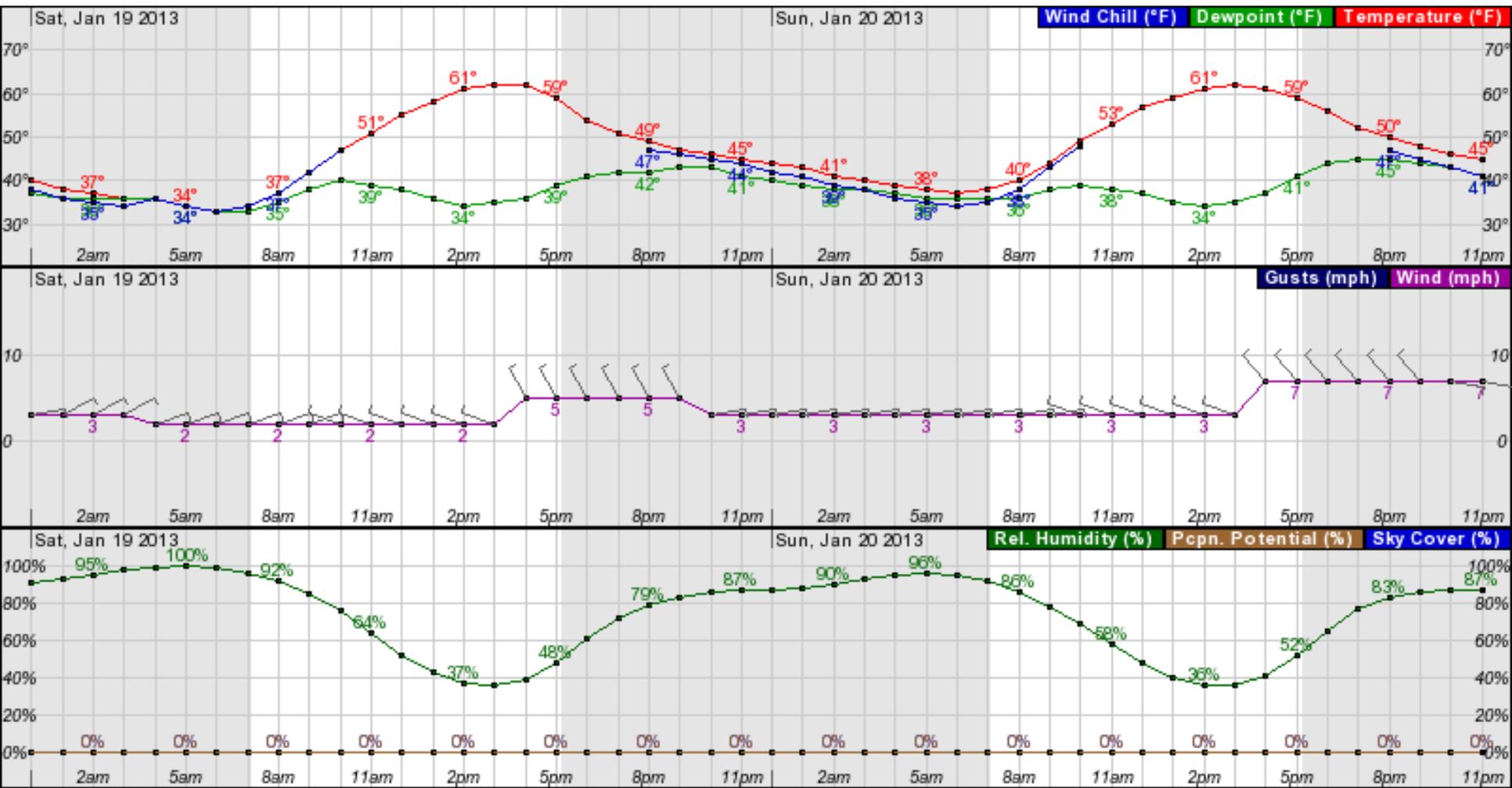
Bakersfield

Saturday: Foggy morning – sunny afternoon.

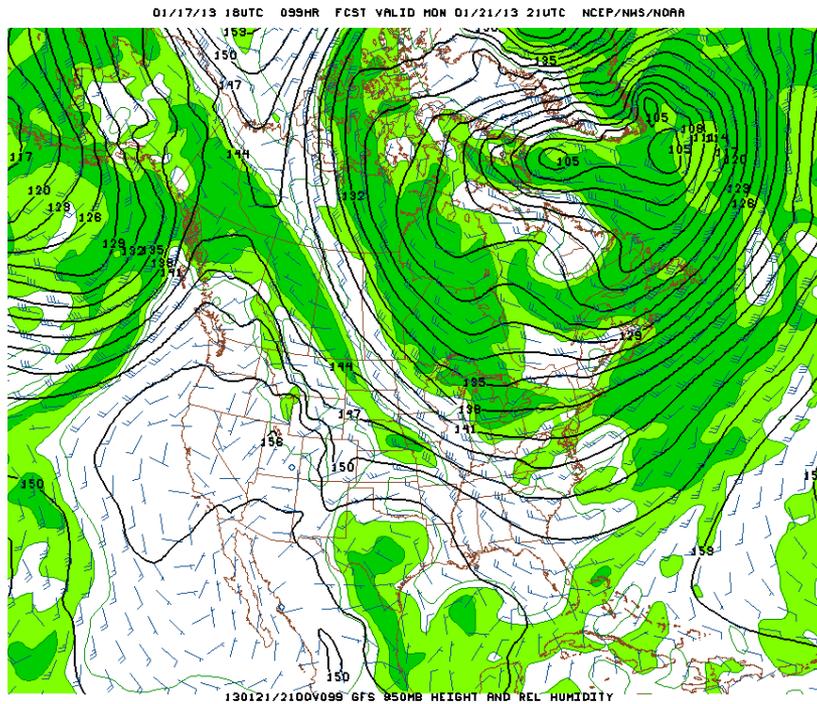
Sunday: Foggy morning – sunny afternoon.

Saturday →

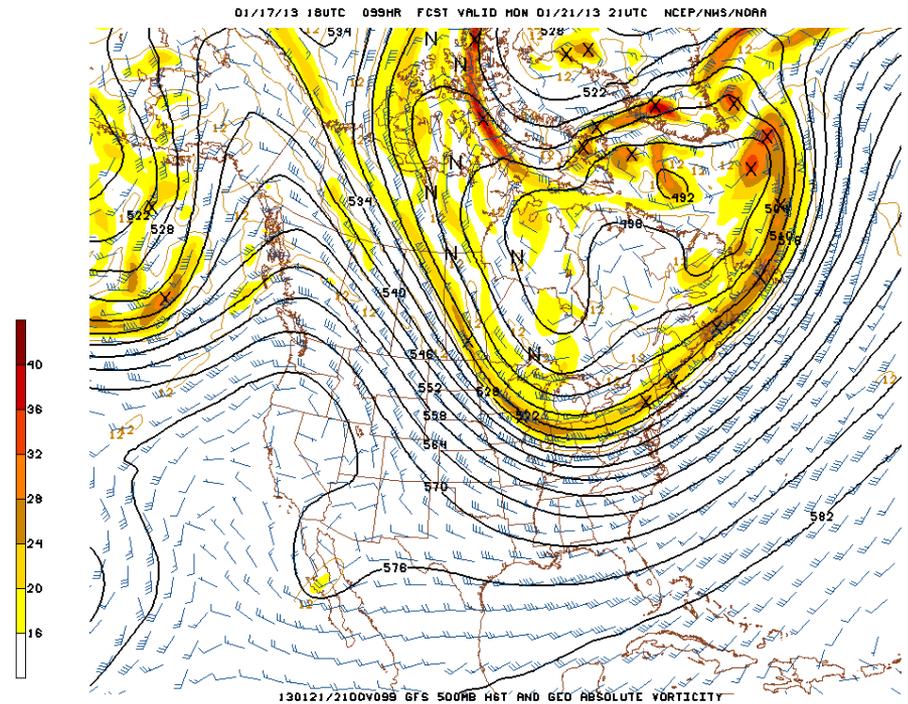
Sunday →



850 mb GFS Monday 1 PM



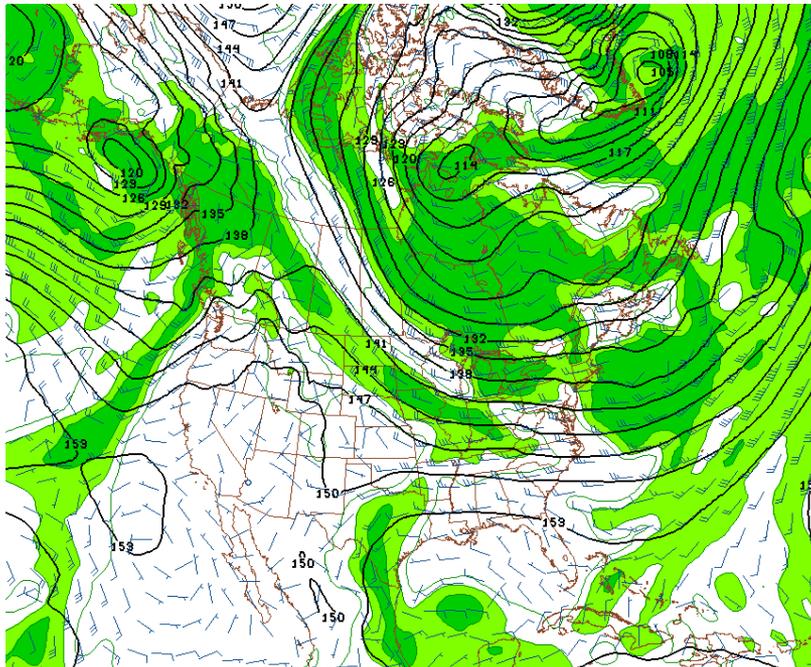
500 mb GFS Monday 1 PM



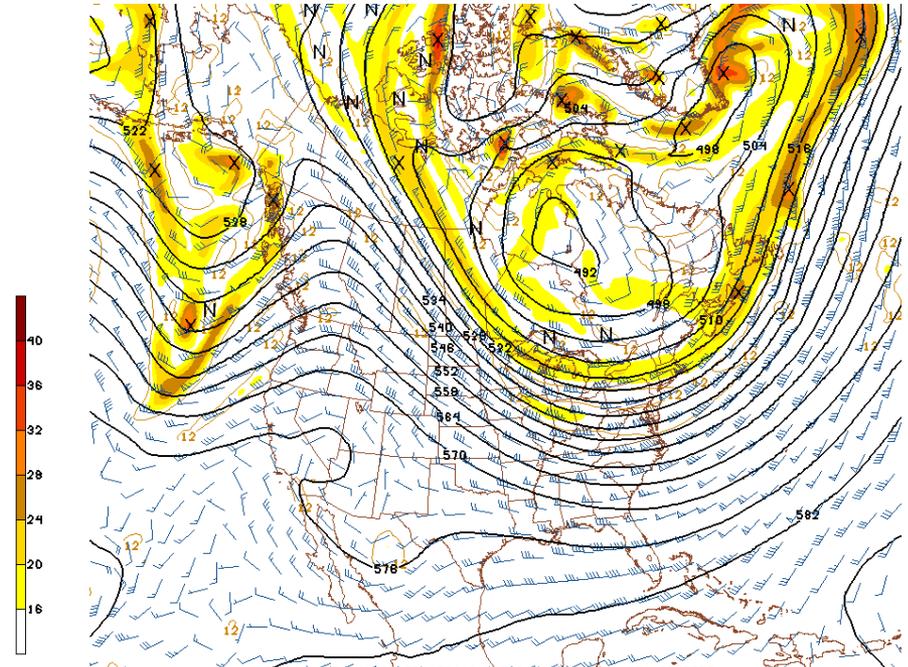
850 mb GFS Tuesday 1 PM

500 mb GFS Tuesday 1 PM

01/17/13 18UTC 123HR FCST VALID TUE 01/22/13 21UTC NCEP/NHS/NOAA



01/17/13 18UTC 123HR FCST VALID TUE 01/22/13 21UTC NCEP/NHS/NOAA



Tomorrow: NAM – no clouds; GEOS-5 – patchy morning fog and no afternoon clouds.

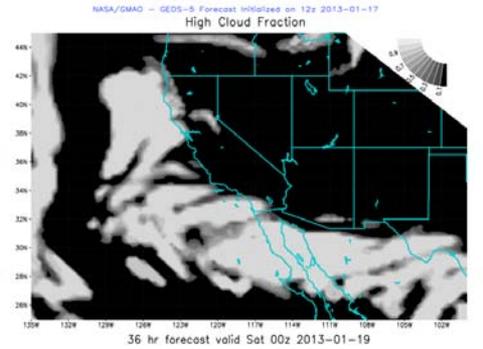
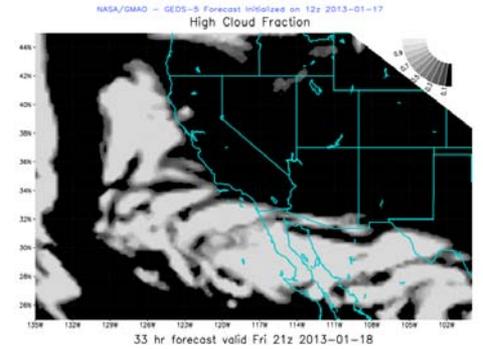
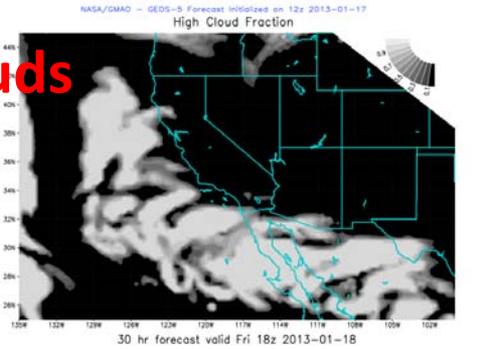
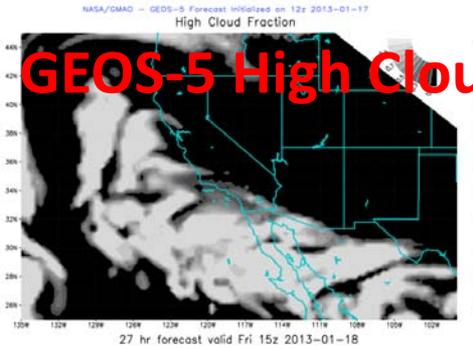
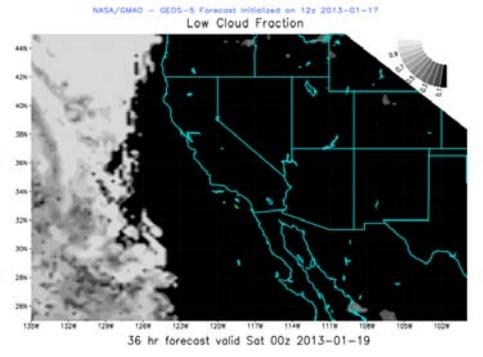
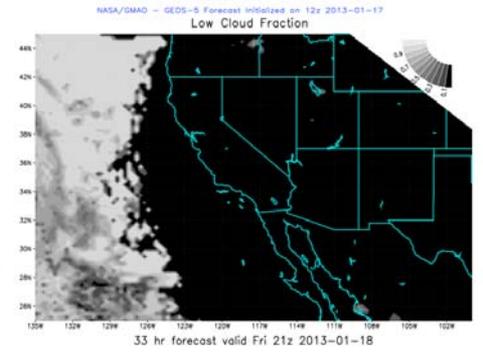
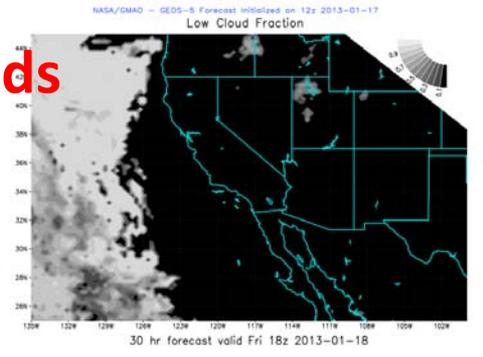
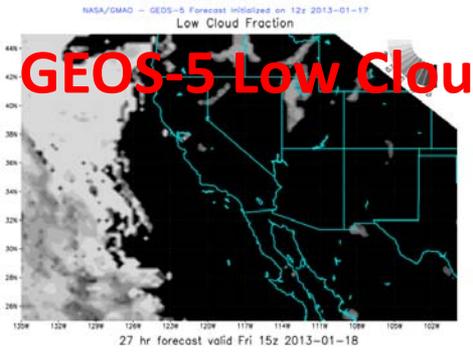
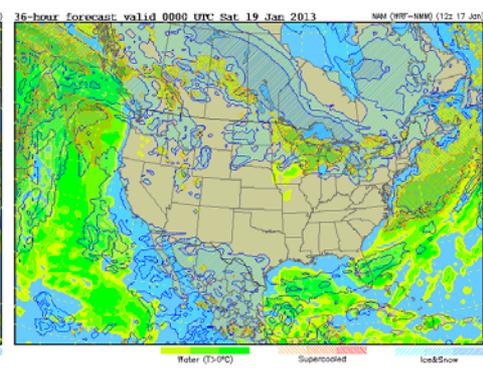
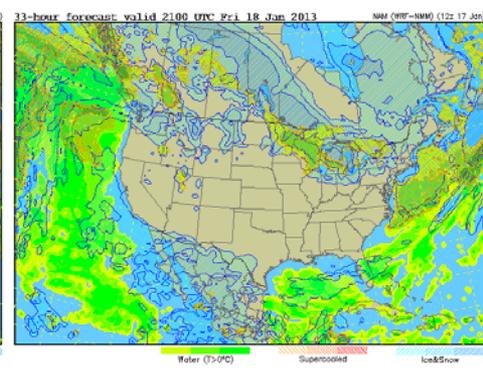
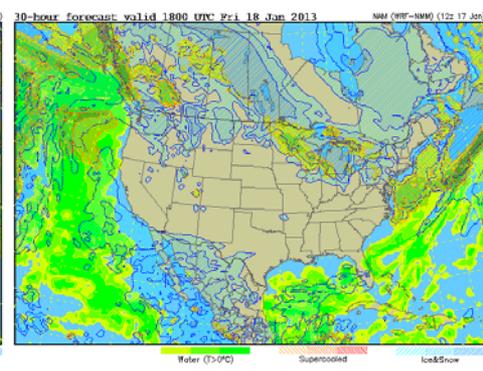
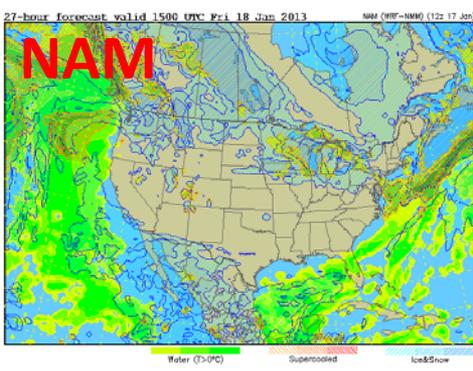
7 am

10 am

1 pm

4 pm

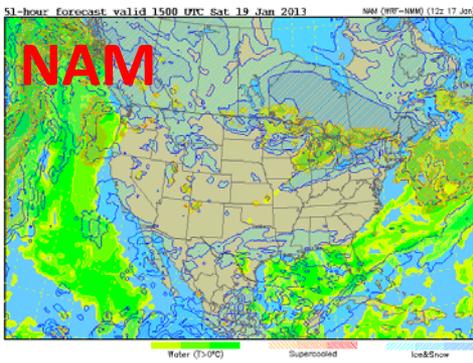
Integrated liquid and frozen hydrometeors (all levels)



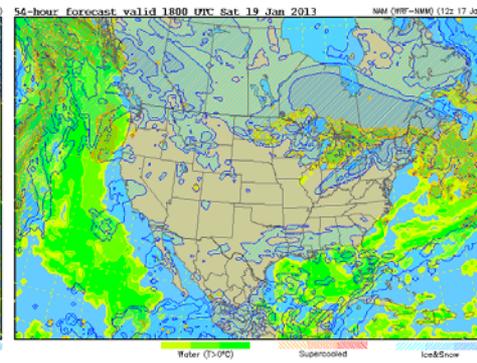
Saturday: NAM – no clouds; GEOS-5 – morning fog and mostly sunny with a few high clouds nearby.

7 am 10 am 1 pm 4 pm

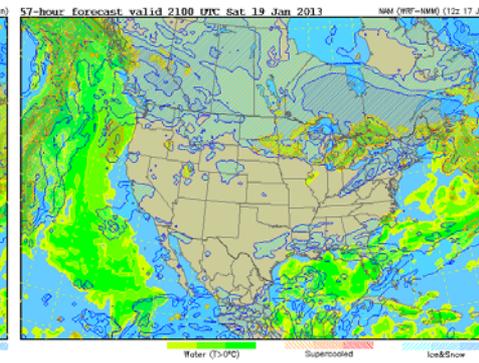
Integrated liquid and frozen hydrometeors (all levels)



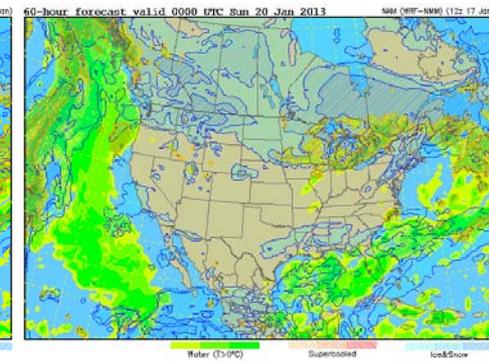
Integrated liquid and frozen hydrometeors (all levels)



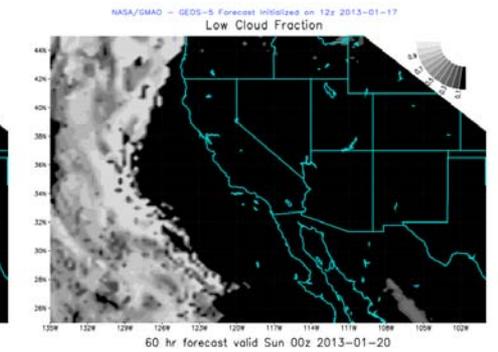
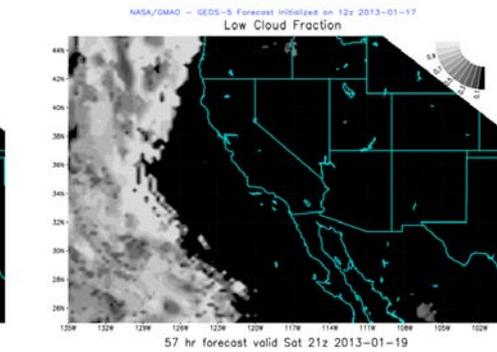
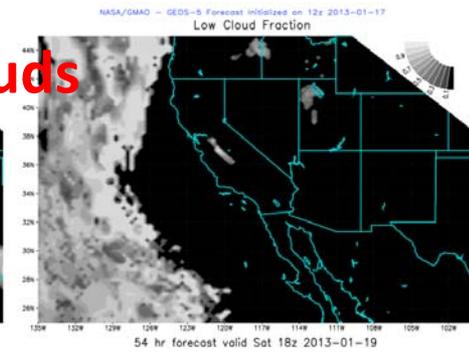
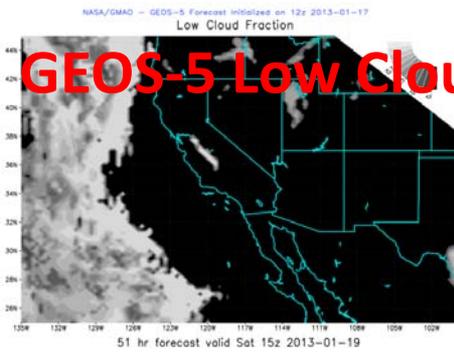
Integrated liquid and frozen hydrometeors (all levels)



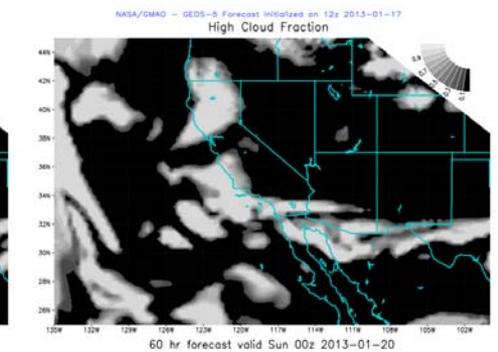
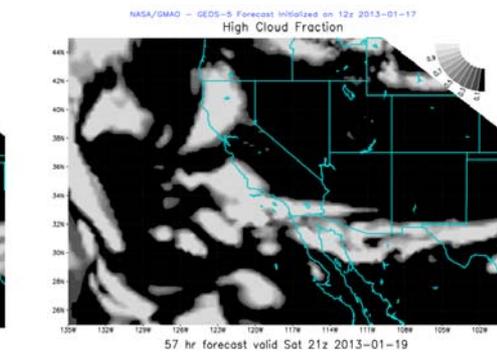
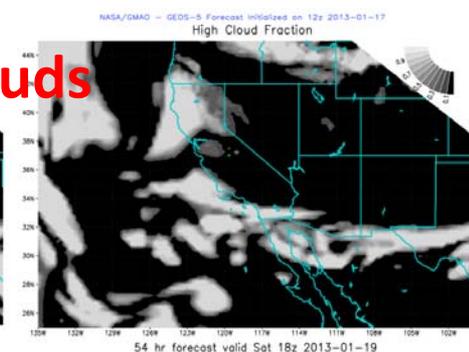
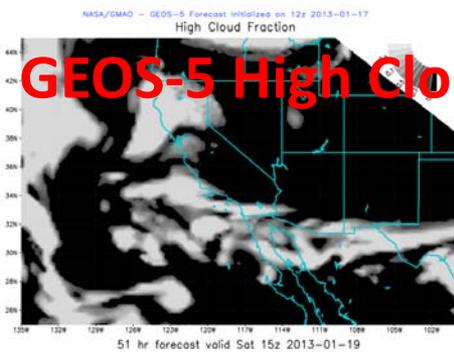
Integrated liquid and frozen hydrometeors (all levels)



GEOS-5 Low Clouds

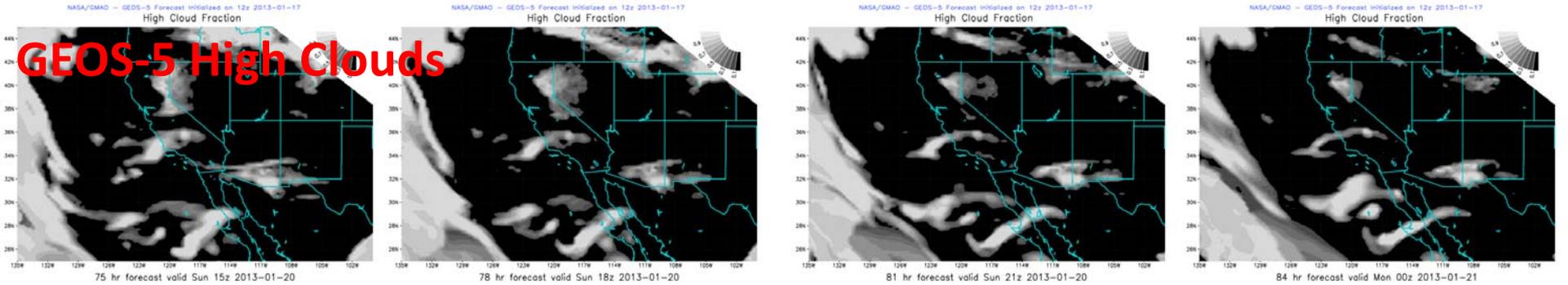
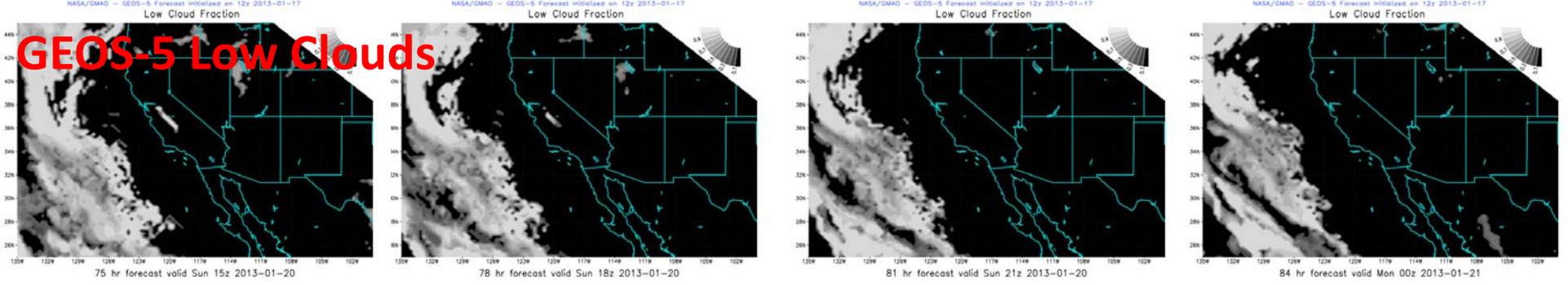
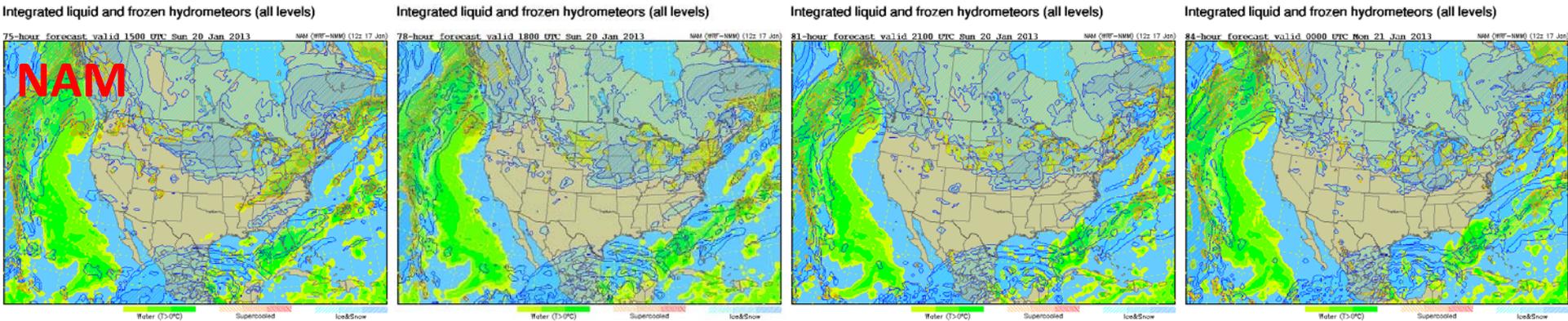


GEOS-5 High Clouds



Sunday: NAM – no clouds; GEOS-5 – morning fog and mostly sunny with a few high clouds nearby.

7 am 10 am 1 pm 4 pm



Longer Term

- Short-wave trough passes over CA on Tues/Wed. -- likely cloudiness
- Thurs, Fri. – new Pacific Coast ridge re-establishes itself

Fog vs. Relative Humidity Forecast

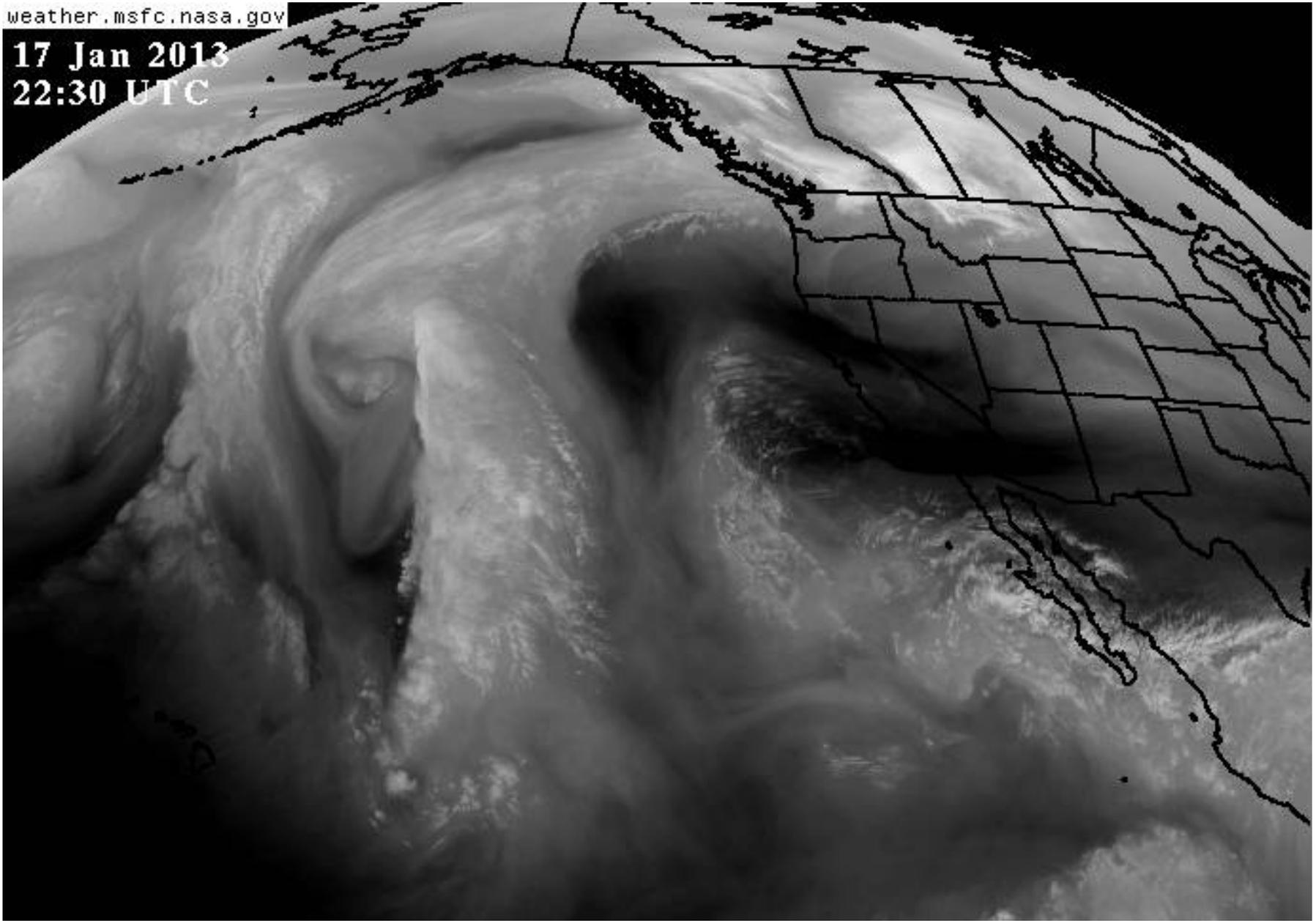
- Tuesday's relative humidity forecast for Wednesday morning:
 - Fresno: 82%
 - Hanford: 88%
 - Bakersfield: 69%
- No fog present Wednesday morning.
- Yesterday's relative humidity forecast for this morning:
 - Fresno: 89%
 - Hanford: 95%
 - Bakersfield: 79%
- Fog developed in Hanford around sunrise and then quickly dissipated.

Surface Relative Humidity at 7 AM PST

<u>Day</u>	<u>Hanford</u>	<u>Fresno</u>	<u>Bakersfield</u>
Thurs. (Fcst from Wed.)	95%	89%	79%
Thurs. (Obs)	93	85	78
Fri.	92	85	90
Sat.	95	89	92
Sun.	90	87	86
Mon.	91	86	94

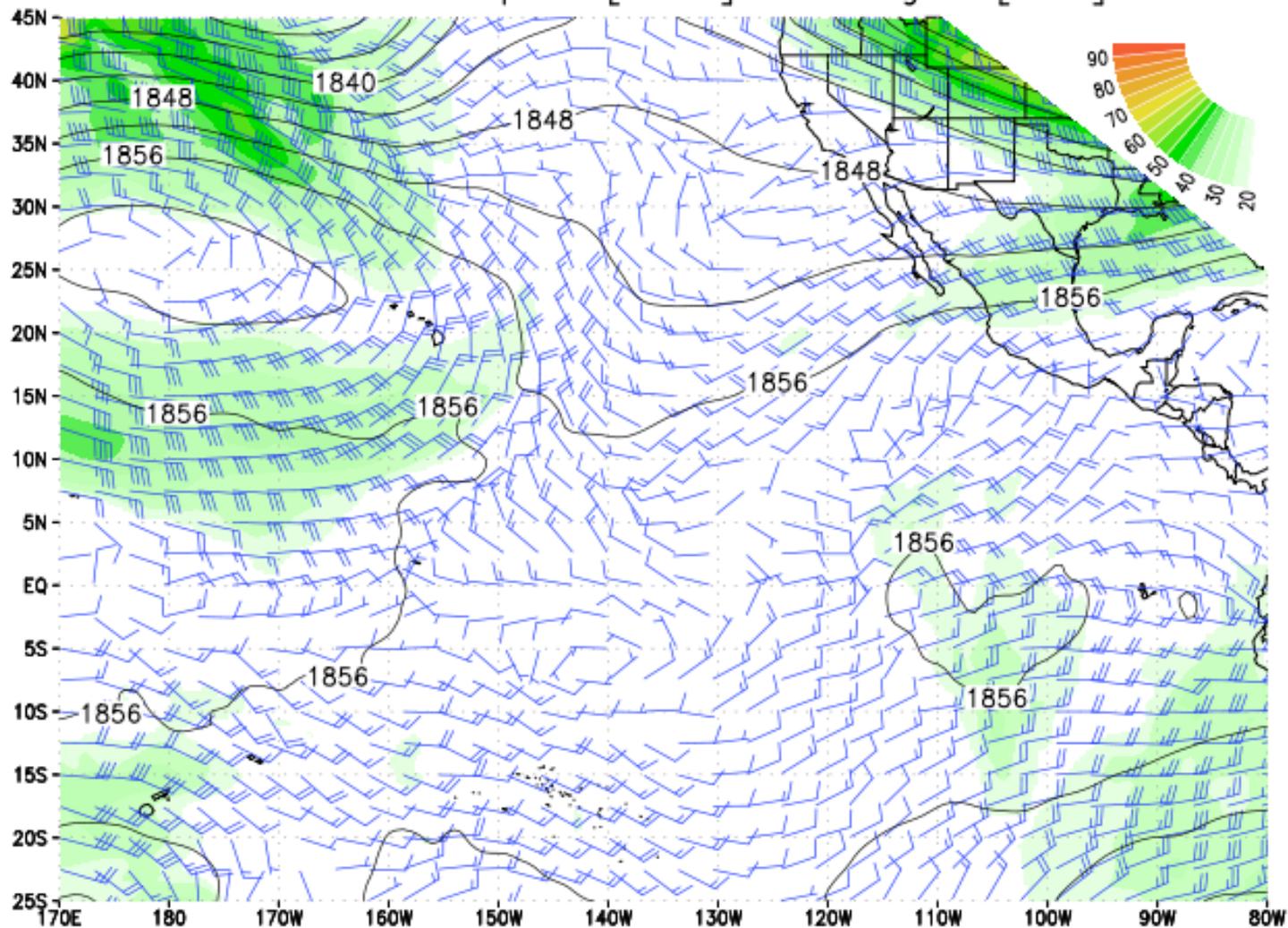
weather.msfc.nasa.gov

17 Jan 2013
22:30 UTC



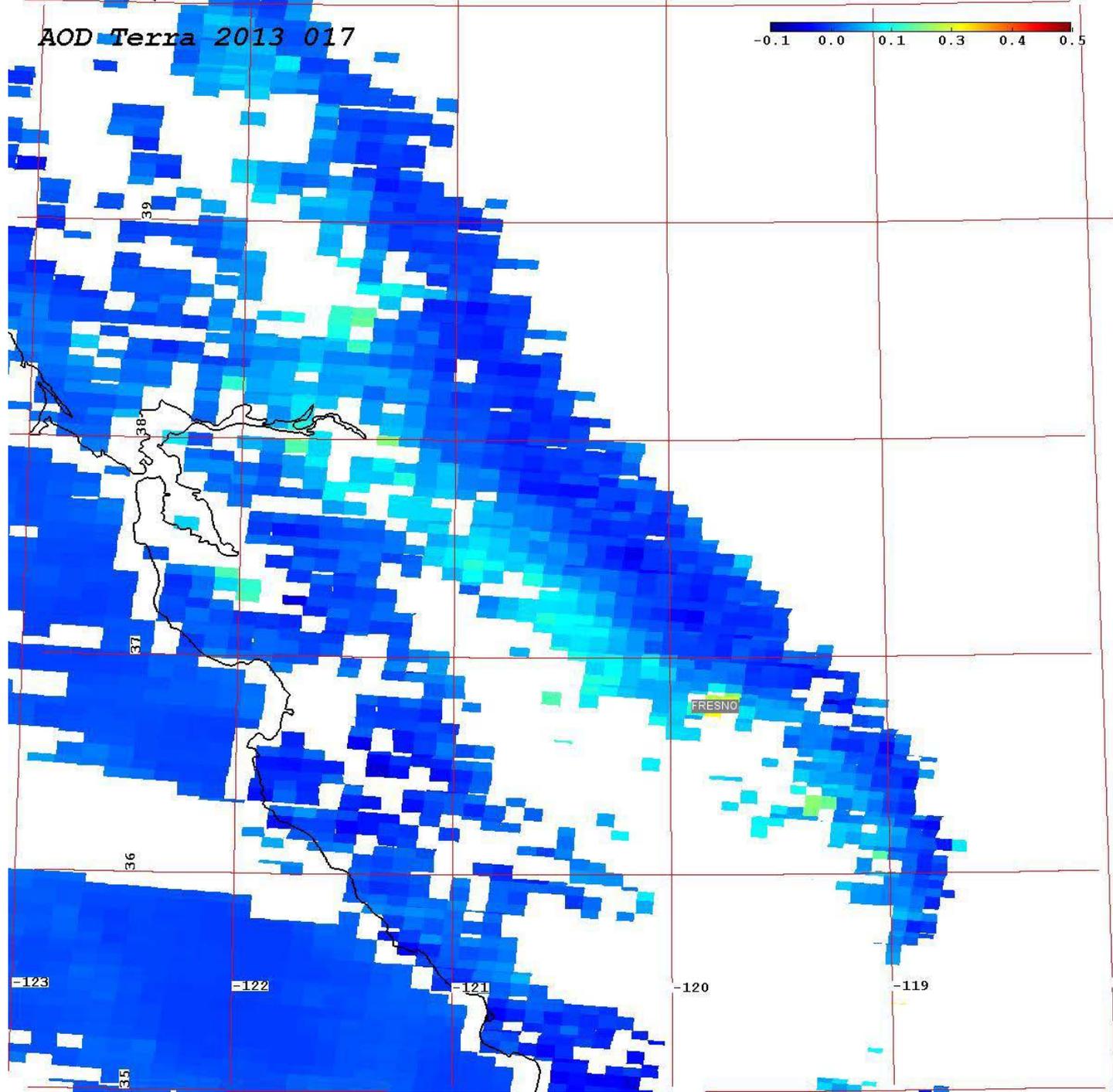
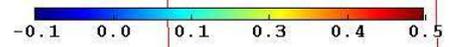
NASA/GMAO - GEOS-5 Forecast Initialized on 00z 2013-01-17

70 hPa Wind Speed [knots] and Heights [dam]



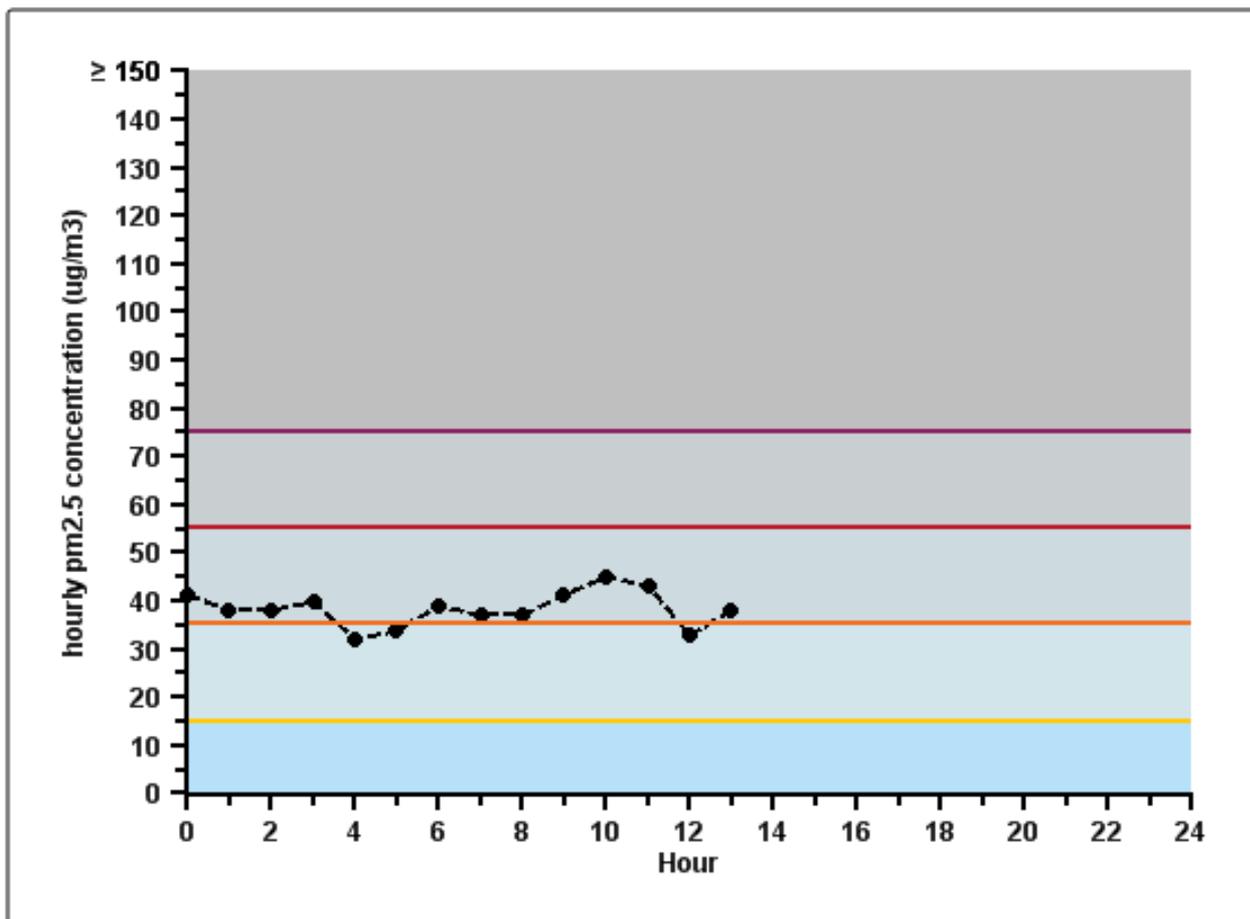
42 hr forecast valid Fri 18z 2013-01-18

AOD Terra 2013 017



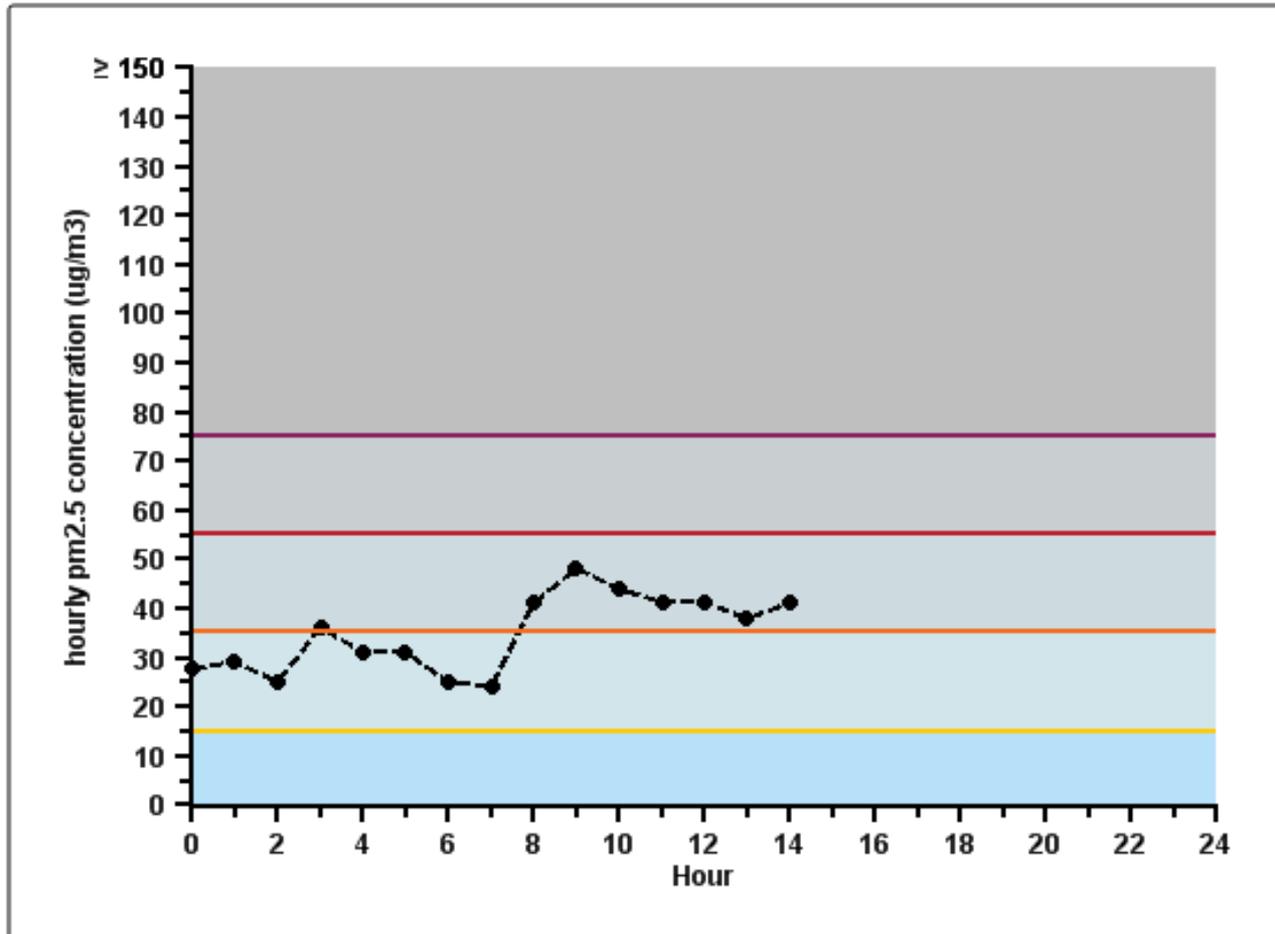
Fresno – Garland January 17, 2013

Air District Real-Time Outdoor Activity Risk

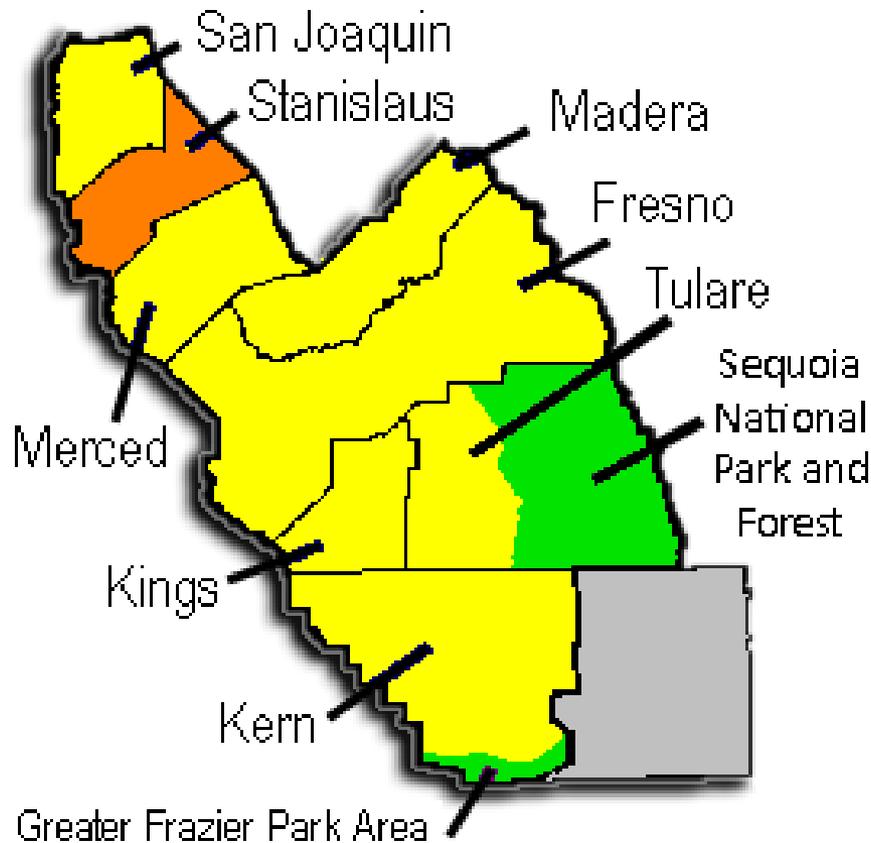


Bakersfield Munic. Airport - Jan. 17, 2013

Air District Real-Time Outdoor Activity Risk



SJVAPCD Air Quality Forecast for Jan. 17, 2013



ROAR LEVEL	Ozone (O ³)	24-hr avg. Particulate Matter (PM 2.5)
LEVEL 1 Good	1-59 ppb	1-15 µg/m ³
LEVEL 2 Moderate	60-75 ppb	16-35 µg/m ³
LEVEL 3 Unhealthy for Sensitive Groups	76-95 ppb	36-55 µg/m ³
LEVEL 4 Unhealthy	96-115 ppb	56-75 µg/m ³
LEVEL 5 Very Unhealthy	>115 ppb	>75 µg/m ³

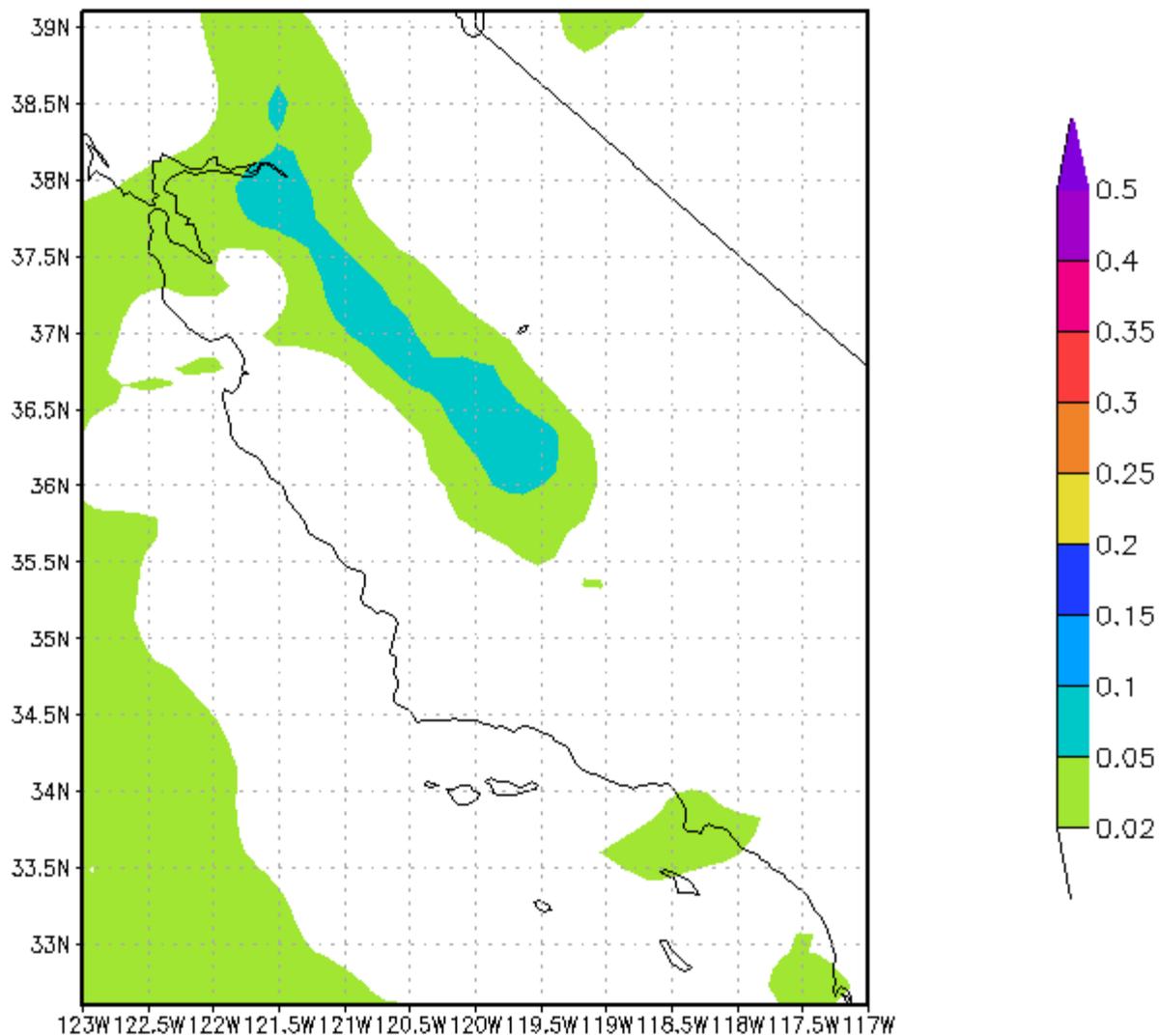
Tomorrow:

Expect Code Orange in Fresno Co.

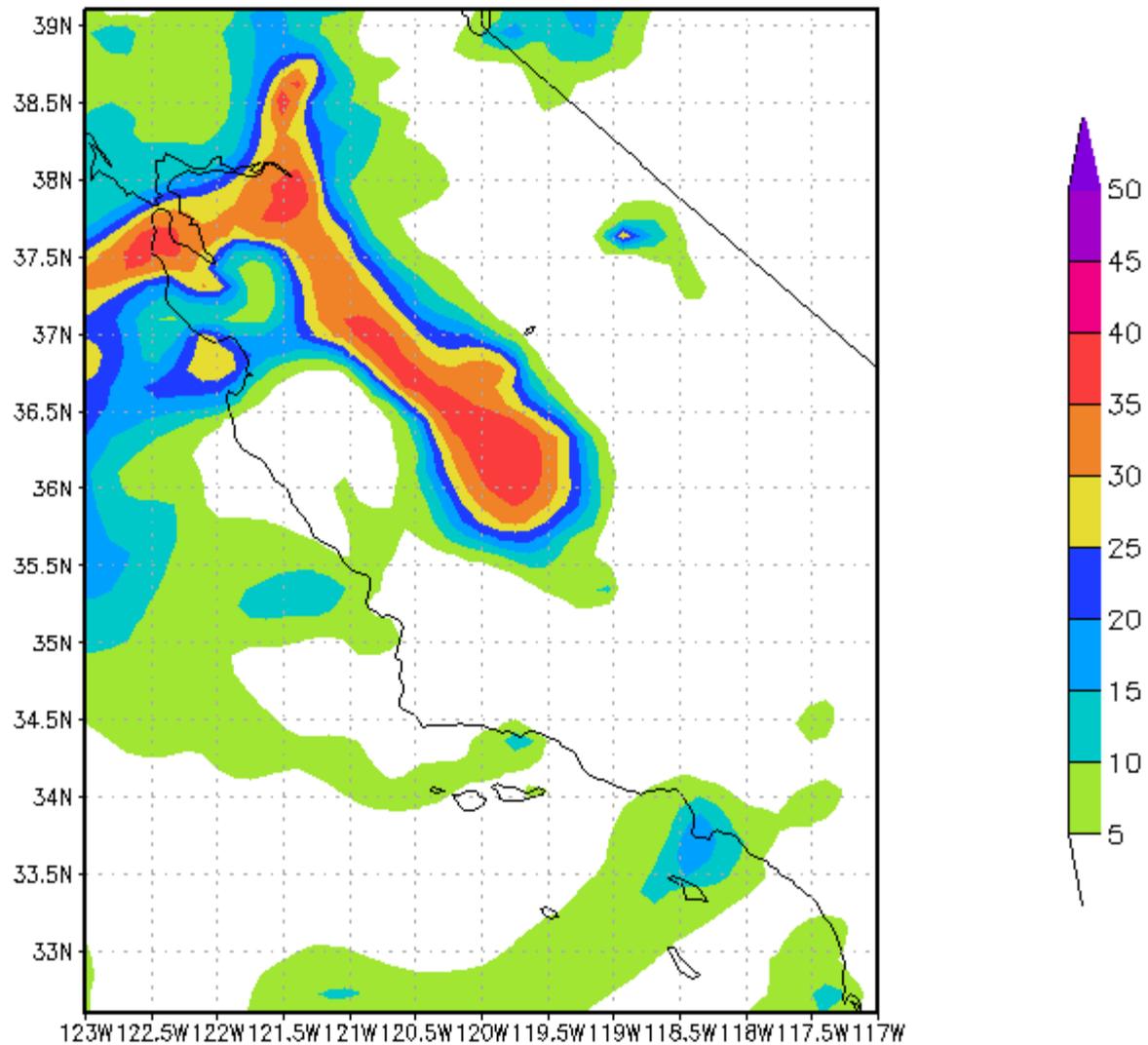
Yellow (near Orange) in Kings, Tulare, and

Kern Co.

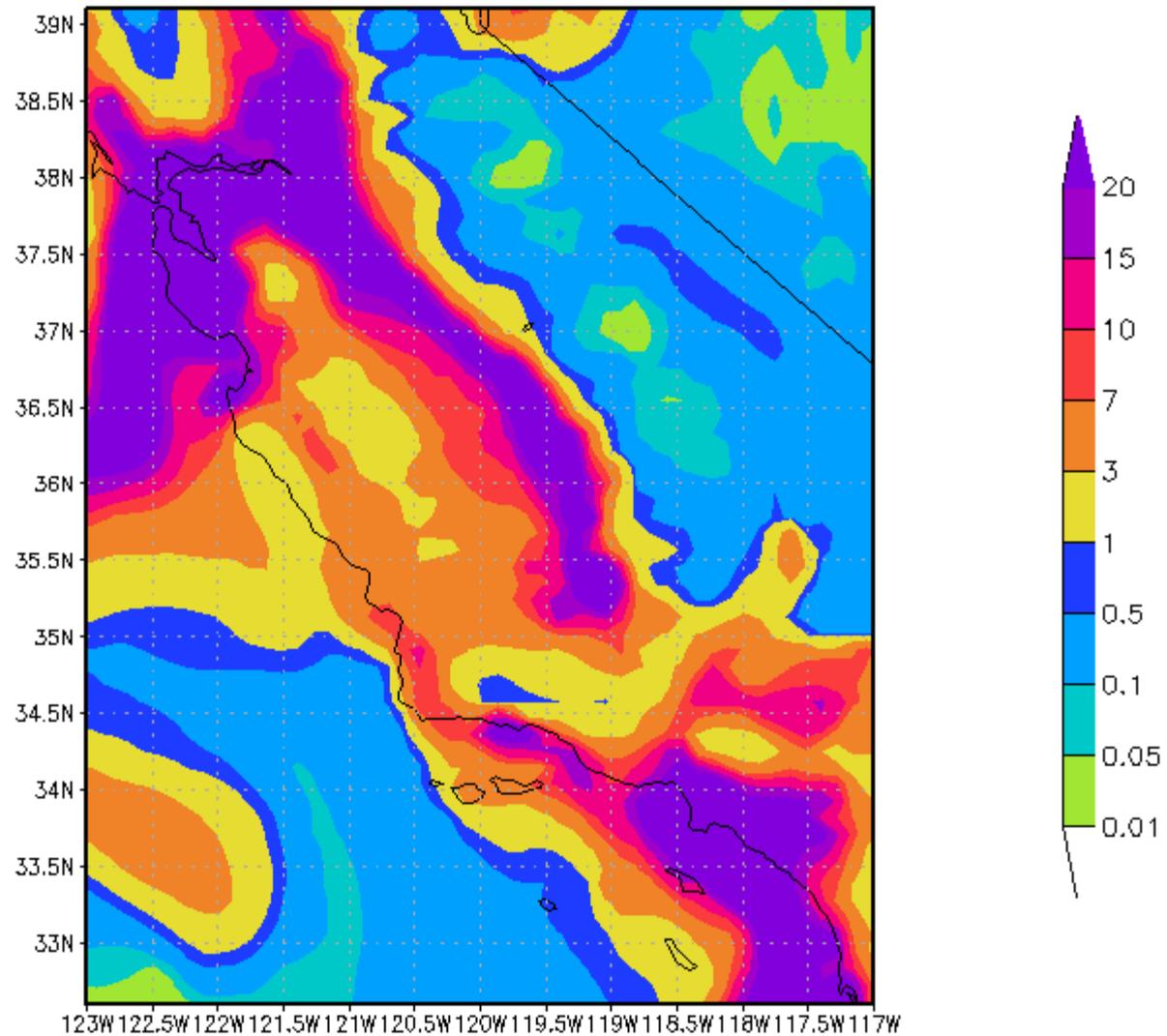
Column AOD [Dimensionless] at surface Valid 18 JAN 18 2013



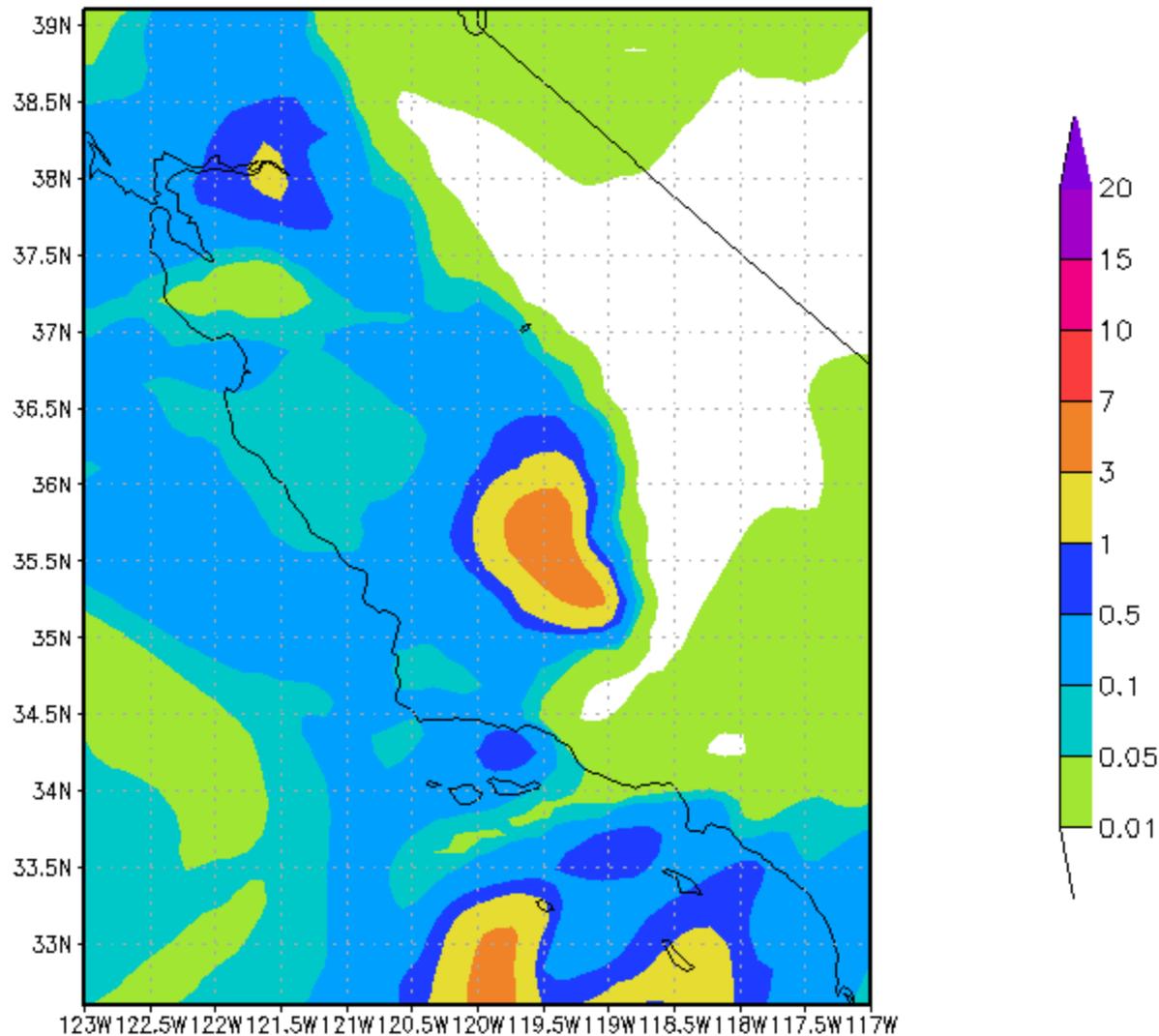
PM25 [$\mu\text{g}/\text{m}^3$] at surface Valid 18 JAN 18 2013



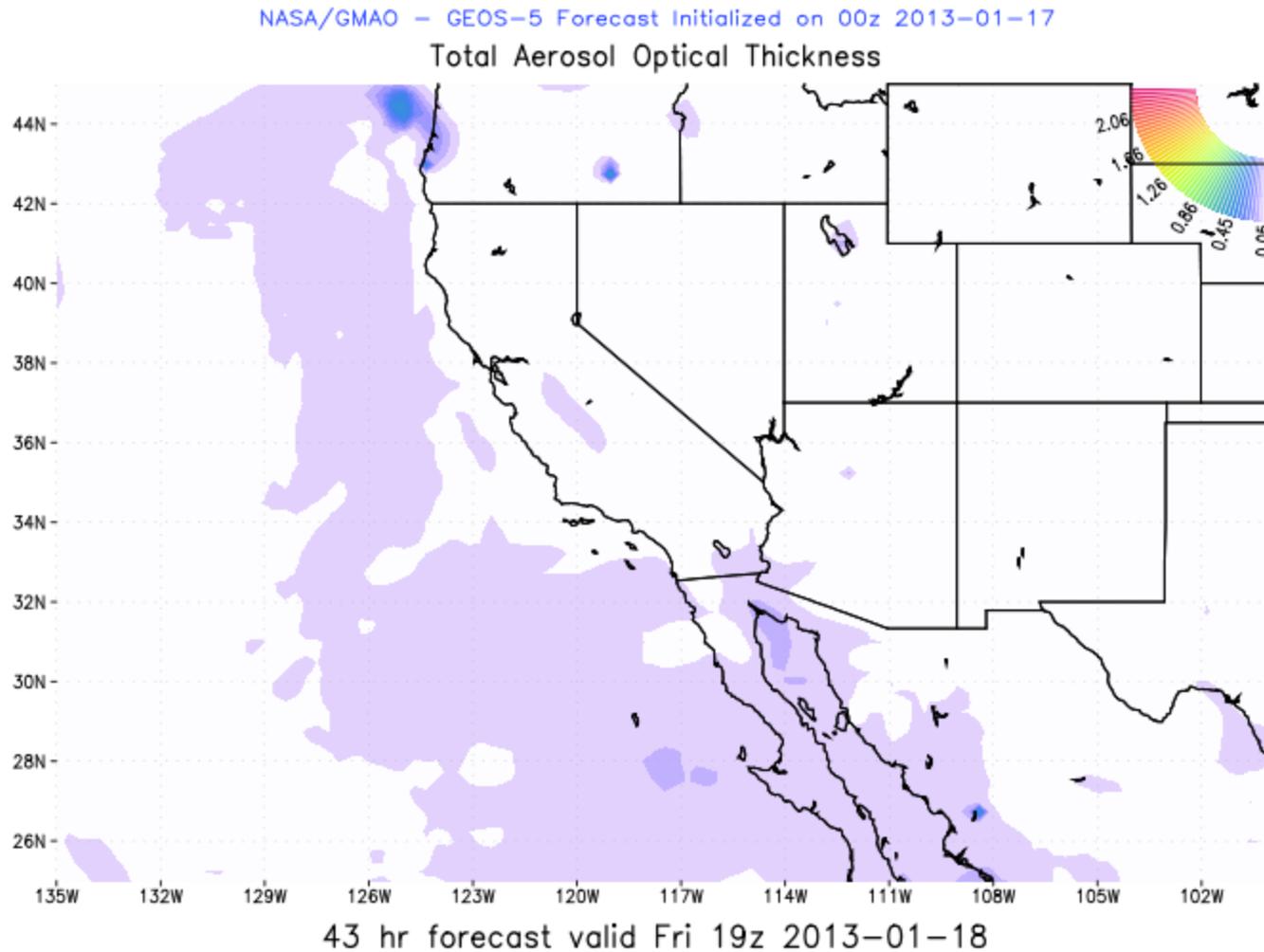
NO2 [ppb] at 1013 [hPa] Valid 18 JAN 18 2013



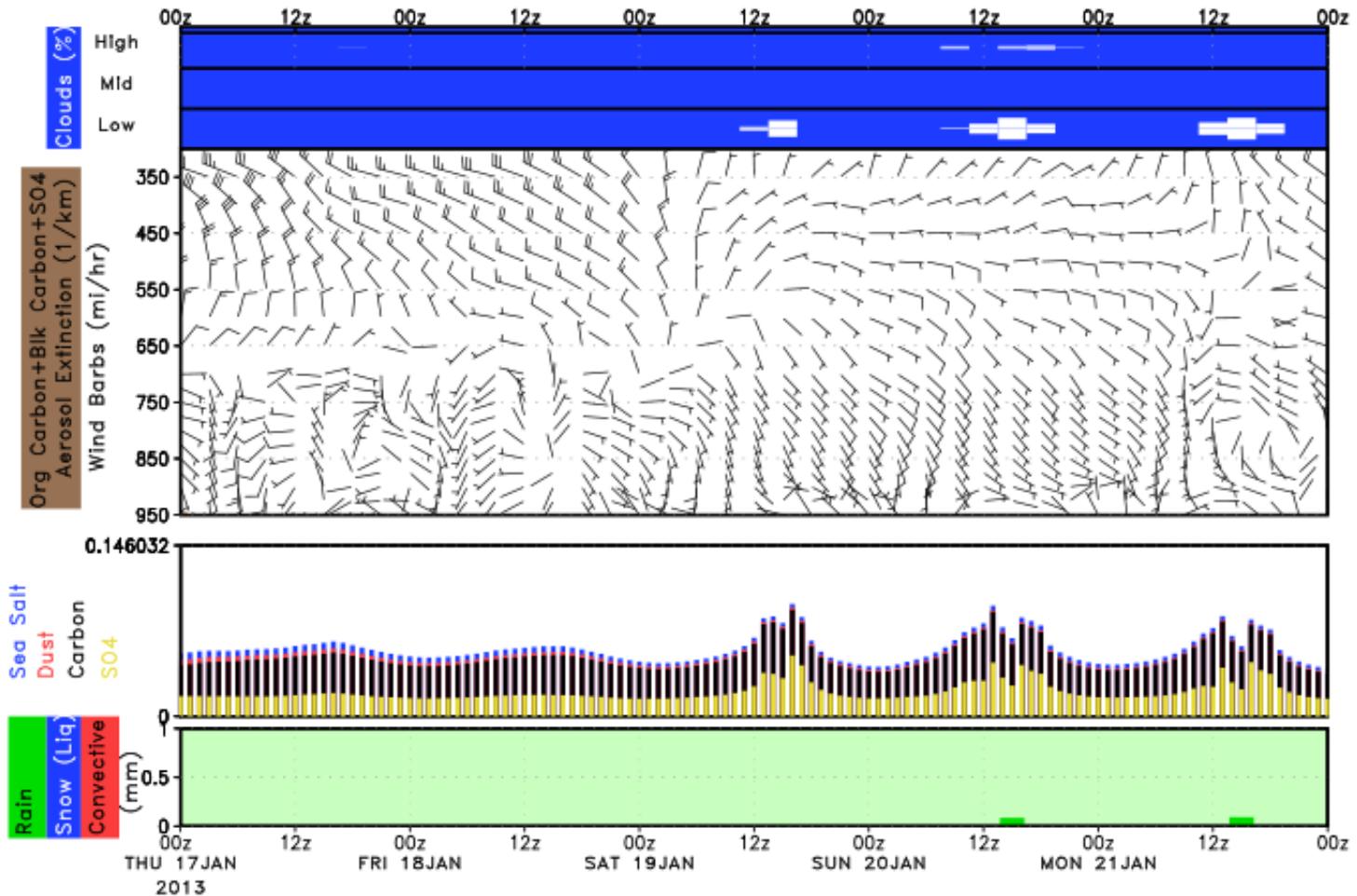
NO2 [ppb] at 900 [hPa] Valid 18 JAN 18 2013



gMAO shows slightly less extent of aerosol, but all values are low, ~ 0.2



GMAO Aerogram remains very very low, with HANFORD showing daily accumulation, more on Saturday, Sunday



Recommendations

- **Fly on Friday – may be patchy fog in early AM; updated forecast at 5:30 AM**
- **Perhaps slightly less chance of fog on Sunday than on Saturday? Lean toward a Sunday flight.**