The rain ended before sunrise and the skies became partly sunny by mid-morning in Palmdale today. Moisture continues to be pumped into the SJV by a cut-off low that moved inland from the southern CA coast. The trough near the Pacific NW moves into Northern CA and brings chance of showers to Kern County this morning, and slight chance of precipitation for the SJV valley this afternoon. 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 which may linger into Monday. This event should flush out the aerosol from the valley and “reset the aerosol clock”. The trough lags over CA into Monday bringing northeast flow aloft. Cold, dry air is expected to be advected into SJV region; however, the forecaster at the Hanford NWS expects some low clouds to linger in the valley, particularly the southern portion (Bakersfield), which is at odds with the models. An upper level ridge is forecast to build off the coast of CA by ~mid-week, but 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. Consequently, clouds will need to be monitored closely during the forecast period. With a stable airmass over the region, areas of fog in the SJV will be possible beginning Tuesday night and continuing through the forecast period; the recent rainfall has elevated soil moisture.
DISCOVER-AQ / PODEX forecast briefing

January 26, 2013

Melanie Follette-Cook
Bryan Duncan
### Fresno:

<table>
<thead>
<tr>
<th>Day</th>
<th>Weather Conditions</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Today</td>
<td>Slight Chc Showers</td>
<td>High: 62°F</td>
</tr>
<tr>
<td>Tonight</td>
<td>Chance Showers</td>
<td>Low: 45°F</td>
</tr>
<tr>
<td>Sunday</td>
<td>Slight Chc Showers</td>
<td>High: 56°F</td>
</tr>
<tr>
<td>Sunday Night</td>
<td>Slight Chc Showers</td>
<td>Low: 37°F</td>
</tr>
<tr>
<td>Monday</td>
<td>Partly Sunny</td>
<td>High: 57°F</td>
</tr>
<tr>
<td>Monday Night</td>
<td>Partly Cloudy</td>
<td>Low: 36°F</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Mostly Sunny</td>
<td>High: 57°F</td>
</tr>
<tr>
<td>Tuesday Night</td>
<td>Areas Fog</td>
<td>Low: 38°F</td>
</tr>
<tr>
<td>Wednesday</td>
<td>Areas Fog</td>
<td>High: 61°F</td>
</tr>
</tbody>
</table>

### Hanford:

<table>
<thead>
<tr>
<th>Day</th>
<th>Weather Conditions</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Today</td>
<td>Slight Chc Showers</td>
<td>High: 59°F</td>
</tr>
<tr>
<td>Tonight</td>
<td>Slight Chc Showers</td>
<td>Low: 45°F</td>
</tr>
<tr>
<td>Sunday</td>
<td>Slight Chc Showers</td>
<td>High: 57°F</td>
</tr>
<tr>
<td>Sunday Night</td>
<td>Slight Chc Showers</td>
<td>Low: 35°F</td>
</tr>
<tr>
<td>Monday</td>
<td>Mostly Sunny</td>
<td>High: 57°F</td>
</tr>
<tr>
<td>Monday Night</td>
<td>Partly Cloudy</td>
<td>Low: 33°F</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Mostly Sunny</td>
<td>High: 57°F</td>
</tr>
<tr>
<td>Tuesday Night</td>
<td>Areas Fog</td>
<td>Low: 34°F</td>
</tr>
<tr>
<td>Wednesday</td>
<td>Areas Fog</td>
<td>High: 61°F</td>
</tr>
</tbody>
</table>

### Bakersfield:

<table>
<thead>
<tr>
<th>Day</th>
<th>Weather Conditions</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Today</td>
<td>Chance Showers</td>
<td>High: 58°F</td>
</tr>
<tr>
<td>Tonight</td>
<td>Slight Chc Showers</td>
<td>Low: 47°F</td>
</tr>
<tr>
<td>Sunday</td>
<td>Chance Showers</td>
<td>High: 53°F</td>
</tr>
<tr>
<td>Sunday Night</td>
<td>Slight Chc Showers</td>
<td>Low: 37°F</td>
</tr>
<tr>
<td>Monday</td>
<td>Partly Sunny</td>
<td>High: 52°F</td>
</tr>
<tr>
<td>Monday Night</td>
<td>Partly Cloudy</td>
<td>Low: 34°F</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Mostly Sunny</td>
<td>High: 55°F</td>
</tr>
<tr>
<td>Tuesday Night</td>
<td>Mostly Clear</td>
<td>Low: 37°F</td>
</tr>
<tr>
<td>Wednesday</td>
<td>Sunny</td>
<td>High: 60°F</td>
</tr>
</tbody>
</table>
Current Conditions

**FRESNO CA**
- Temperature: 55°F (13°C)
- Humidity: 94%
- Wind Speed: WNW 5 MPH
- Barometer: 30.00 in
- Dewpoint: 54°F (12°C)
- Visibility: 1.75 mi
- Last Update: 26 Jan 8:04 am PST

**HANFORD CA**
- Temperature: 54°F (12°C)
- Humidity: 100%
- Wind Speed: calm
- Barometer: 30.00 in
- Dewpoint: 54°F (12°C)
- Visibility: 3.00 mi
- Last Update: 26 Jan 8:35 am PST

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**Plymouth State Weather Center**

Meteogram for KFAT from 1600Z 25 JAN 13 to 1600Z 26 JAN 13

Meteogram for KHJO from 1600Z 25 JAN 13 to 1600Z 26 JAN 13
Current Conditions

BAKERSFIELD CA

54°F
Humidity 100%
Wind Speed calm
Barometer 29.99 in
Dewpoint 54°F (12°C)
Visibility 1.25 mi
Last Update on 26 Jan 8:37 am PST

Plymouth State Weather Center

Meteogram for KBFL from 0000Z 25 JAN 13 to 1800Z 26 JAN 13

Temperature (°F)
Pressure (in)
Wind Speed (mph)
Cloud Cover (Cu)
Precipitation (in)

GOES Imagery : Visible
GOES Imagery: Cloud top height
Today:
As forecasted, the upper level low opened, moved east, and is now near Baja California. Circulation around the low continues to draw moisture in the SJV region. The trough near the Pacific NW moves into Northern CA and brings chance of showers to Kern County this morning, and slight chance of precipitation for the SJV valley this afternoon.
Tomorrow (Sunday):
The now merged southern upper level low and Pacific NW trough moves through Central CA on Sunday. Might trigger showers Sunday into Monday.
Fresno
Today: Mostly cloudy
Sunday: Mostly cloudy

Today → Tomorrow →
Hanford
Today: Mostly cloudy
Sunday: Mostly cloudy

Today → Tomorrow →
Bakersfield
Today: Mostly cloudy
Sunday: Mostly cloudy

Today → Tomorrow →
Monday:
The trough lags over CA into Monday bringing northeast flow aloft. Cold, dry air expected to be advected into SJV region.
Tuesday:
An upper level ridge is forecast to build off the coast of CA by ~mid-week. With a stable airmass over the region, areas of fog in the SJV will be possible beginning Tuesday night and continuing through the forecast period.
Fresno
Monday: >50% cloud cover forecast
Tuesday: Clearer
Hanford
Monday: ~50% cloud cover forecast
Tuesday: Clearer

Monday ➔ Tuesday ➔
Bakersfield
Monday: >50% cloud cover forecast, RH > 95% indicating chance of morning fog
Tuesday: Clearer
Bakersfield: BUFKIT NAM 12 UTC Saturday January 26

Tuesday | Monday | Sunday | Today

Clouds

PBL Height
Fresno: BUFKIT NAM 12 UTC Saturday January 26

Sunday

Clouds

PBL Height

Today

Tuesday

Monday
Wednesday

700 mb GFS
Wednesday 1 PM

500 mb GFS
Wednesday 1 PM
Thursday

700 mb GFS
Thursday 1 PM

500 mb GFS
Thursday 1 PM
Fresno
Wednesday: Mostly sunny
Thursday: Mostly sunny

Wednesday → Thursday →
Hanford
Wednesday: Mostly sunny
Thursday: Mostly sunny
Bakersfield
Wednesday: Mostly sunny
Thursday: Mostly sunny
Tomorrow: NAM – low level clouds in the morning clearing by 10a, mid level clouds by 4p, no high level clouds; GEOS-5 – low clouds all day, few high clouds, more by afternoon

7 am
Integrated liquid and frozen hydrometeors (all levels)

10 am
Integrated liquid and frozen hydrometeors (all levels)

1 pm
Integrated liquid and frozen hydrometeors (all levels)

4 pm
Integrated liquid and frozen hydrometeors (all levels)
Tomorrow: Canadian – clouds forecasted over SJV throughout the day; GFS – low level clouds throughout SJV region.
Monday: NAM – no low level clouds in forecast, some mid level at southern end of SJV at 4p, some high level at northern end of SJV by 4p; GEOS-5 – Possible fog in morning, but gone by 10a, low clouds return in early afternoon. High level clouds approaching from the north, but never get to SJV.

7 am
Integrated liquid and frozen hydrometeors (all levels)

10 am
Integrated liquid and frozen hydrometeors (all levels)

1 pm
Integrated liquid and frozen hydrometeors (all levels)

4 pm
Integrated liquid and frozen hydrometeors (all levels)
Monday: GFS – forecasts mostly clear skies
Tuesday: NAM —; GEOS-5 — no low level clouds in forecast, some mid level around 10 am, high level clouds all day
GFS - 250 mb winds - Extended forecast

GFS - 500 mb vorticity - Extended forecast
GEOS-5: Sunday 18Z = 10 PST
GEOS-5: Sunday 18Z = 10 PST
Too cloudy for AOD observations from MODIS yesterday, January 25\textsuperscript{th}. 
Daily PM2.5 Avg: CARB Sites

Daily Average PM25 Values

- Fresno-Garla
- Huron-Lehr
- Tranquility-
- Bakersfield-
- 24-hr Fed Std

Fresno, Fresno Air Terminal - NWS/FAA
Precipitation (inches)
72-hour total: 0.05"

Hanford, Hanford Municipal Airport - NWS/FAA
Precipitation (inches)
72-hour total: 0.09"

Bakersfield, Meadows Field Airport - NWS/FAA
Precipitation (inches)
72-hour total: 0.54"

Two days of light rain lowering PM2.5 in SJV. No washout though.
Daily PM2.5 Max 1 Hr Avg: CARB Sites

Max 1-hr moderating a little too.

Sunday’s cold front should “reset AQ clock” in SJV.

Fresno, Fresno Air Terminal - NWS/FAA
Precipitation (inches)
72-hour total: 0.05"

Hanford, Hanford Municipal Airport - NWS/FAA
Precipitation (inches)
72-hour total: 0.09"

Bakersfield, Meadows Field Airport - NWS/FAA
Precipitation (inches)
72-hour total: 0.54"
SJV APCD Daily Forecast – for TODAY (Jan 26)
Fresno-Garland

January 25th Yesterday

Air District Real-Time Outdoor Activity Risk

January 26th Today

Air District Real-Time Outdoor Activity Risk
Corcoran

January 25\textsuperscript{th} Yesterday

January 26\textsuperscript{th} Today
Bakersfield Municipal Airport

January 25th Yesterday

Air District Real-Time Outdoor Activity Risk

January 26th Today

Air District Real-Time Outdoor Activity Risk

Bakersfield, Meadows Field Airport - NWS/FAA
Precipitation (inches)
72-hour total: 0.54"
AirNowTech Data: Daily PM$_{2.5}$ since January 1$^{st}$

- AQ Clock reset on 10th
- AQ Clock knocked back to levels at start of mission (14$^{th}$) with Rain.
- AQ Clock to be reset tomorrow with cold front passage.
GMAO GEOS5: Bakersfield
GMAO GEOS5: Fresno

Frontal passage resets AQ clock.
GMAO GEOS5: San Nicholas
GMAO GEOS5: Ocean 38 N 125 W
GMAO GEOS5: Ocean 30 N 130 W
Sunday 10 am = 18 Z
NOAA CMAQ: Sunday 10 am = 18 Z

Column AOD [Dimensionless] at surface Valid 18 JAN 27 2013
Sunday 10 am = 18 Z

PM25 $[\mu g/m^3]$ at surface Valid 18 JAN 27 2013
Sunday 10 am = 18 Z

CO [ppm] at 1013 [hPa] Valid 18 JAN 27 2013
Saturday 10 am = 18 Z

NO2 [ppb] at 1013 [hPa] Valid 18 JAN 27 2013
Saturday 10 am = 18 Z

FORM [ppb] at 1013 [hPa] Valid 18 JAN 27 2013
Recommendations

Sunday – frontal passage – cloudy and rainy conditions over SJV in advance of the front.

Monday – NWS forecaster and models disagree on speed of cloud clearing behind the front. NAM, GFS, and GEOS5 indicate relatively clear skies, while NWS predicts low level cloud cover through even Tuesday.

Tuesday – NWS forecaster and models continue to disagree about cloud forecast. NAM and GEOS5 indicate high level cloud cover throughout the day, the NWS office predicts possibility of lingering low level clouds and high level clouds coming in Tuesday night into Wednesday.

Wednesday & Thursday – clearer skies forecast, but fog chances begin to increase as ridge sets up off the west coast of US.