

CalNex Forecast Notes - Thursday May 27, 2010

Anticipated Activities of Platforms

WP-3D

Thursday, Friday: No Flights

Saturday: anticipated evening-night flight, 7 pm takeoff

Sunday: anticipated late night-early am flight, 10 PM takeoff

NOAA Twin Otter:

Next possible flight Friday

CIRPAS Twin Otter:

NASA King Air:

R/V Atlantis:

Tuesday nite: LA bight

Wednesday: LA bight

Thursday: LA bight

Friday: Port of LA

Local Features:

Friday: potential for NOAA Twin Otter to sample stratospheric intrusion and long range transport of polluted dusty air mass

Saturday: morning offshore outflow from South Coast suggests planned P3 evening flight will be able to examine more seasonally representative recirculation.

Sunday: Continued stagnation, higher concentrations and lighter flows compared to Saturday. Check next forecast cycle.

Next week: Weak trough Monday, opportunities for somewhat higher concentrations Tues - Wed. GFS suggests weak trough affecting N CA beginning Thur-Fri.

Thursday May 27

- Large upper low moves over Northern CA
- Showers/tstorms possible for Bay Area/Sac Valley
- Onshore surface flow both north and south

Friday May 28

- Upper low moves east into NV
- Transport flow turns N
- Gusty NW winds for SoCal mountains/deserts

Saturday May 29

- Offshore gradients develop for SoCal
- Upper ridge builds

Sunday-Monday May 30-31

- Upper ridge strengthens
- Transport flow weakens
- Weak trough brushes N CA on Mon
- Marine layer redevelops for coastal areas by Mon

GFS Notes - Extended Outlook Jim Pederson <jrpeders@arb.ca.gov>

Wed 1700 pdt

Aluetian low is a little deeper than previously predicted

Friday 17 pdt

Trof passes a little slower than previous day's prediction, weakens over NV/CA border

Sat 05 pdt

Trof axis over ID/UT

Ridge builds in to CA

Expect return of morning offshore winds

Generally NE flow in am

Sunday 05 pdt

Continued stagnation over CA

Sunday 17 pdt

NW flow to N and central coast, light winds in central valley and moderate zonal flow in south

Monday 05 pdt –

Current forecast of weak to moderate zonal flow diverges from yesterday's forecast

Tuesday 05 pdt
Weak zonal flow in S CA, stronger in N

Wed 05 pdt
stagnation over CA as low approaches BC/WA/OR

Thursday 05 pdt - prev fcst
today the GFS suggests a weak omega blocking pattern, with the approaching low likely to impact N California late Thur - Fri (yesterday the GFS suggested stronger set up of an omega blocking pattern, with approaching low shunted N.)

Large Scale Transport Notes - Brad Pierce (brad.pierce@noaa.gov))

LA/Bakersfield AIRNOW Site Comparison

Good tending to Moderate LA O3/PM2.5 AQ and good O3/PM2.5 Bakersfield AQ during FX period
Recent O3 analysis underestimating O3. PM2.5 good at both Arvin and Riverside.

LA/SF AIRNOW Ensemble

LA Long-range transport slowly to east during first 24 hr then north/south dispersion for ensembles ending Friday/Sat afternoon. South eastward transport for ensembles ending Sun afternoon.
SF Long-range transport to north east for ensembles ending Fri/Sat turning south for ensembles ending Sun.

500m RDF FX 00Z 05/28 (Thu Afternoon)

Local CO/O3 enhancement over Central CA. Descending polluted air over Mexico/AZ.
CO/O3 enhancement remains offshore
Moderate (~5-10 ppbv/day) background O3 P-L over LA
Low (<5ppbv/day) O3 P-L over SF

500m RDF FX 00Z 05/29 (Fri Afternoon)

Weak IC CO/O3 enhancement onshore near Point Conception.
Moderate (5-10 ppbv/day) background O3 P-L over LA & SF
Descent over South Central CA and Mexico

500m RDF FX 00Z 05/30 (Sat Afternoon)

Building high pressure off shore bringing in low CO/O3
Moderate (5-10ppbv/day) O3 P-L over LA. Low (~5 ppbv/day) background O3 P-L over SF
LA >80% exposure to CONUS PBL in previous 3 days

500m RDF FX 00Z 05/31 (Sun Afternoon)

Building high pressure off shore bringing in low CO/O3
Moderate (5-10ppbv/day) O3 P-L over LA. Low (~5 ppbv/day) background O3 P-L over SF
S CAL 60-80% exposure to CONUS PBL in previous 3 days

Area Forecast Details

San Francisco Bay Area - Danny Kam (dkam@airquality.org)

Thursday

- **SW 15kt turns W 5 to 10kt around mid morning; becomes NW late at night**
- **MBL 1,000 to 6,000 ft**

Friday

- **NW wind strengthen into 15kt by late morning, max at 20 to 25 kt in the late afternoon and evening**
- **MBL 3,000 to 6,000 ft decreases throughout the day to 1,000 ft at 00Z**

Saturday

- **NW 20kt continues and becomes 25kt in the afternoon, returns to 20kt at night**
- **MBL 500ft**

Sunday

- **Same scenario as Saturday**
- **AM PBL 1,000ft**

Extended

- **NW wind weakens on Monday, becomes westerly on Tuesday afternoon**

Sacramento Valley - Danny Kam (dkam@airquality.org)

Thursday

- **Light and variable wind early AM; S and SE wind between 5 to 10kt; W 5 to 10kt in the early afternoon as trough passes; W 5kt wind in the evening**
- **AM PBL 1,000 to 5,000 ft; PM PBL 7,000 to 10,000ft**

- Altostratus covering the area (becomes nimbostratus?); breaks into cumulonimbus scattered cumulus later in the day; 80% chance of rain
- Max aftn temp: 18C
- Good air quality: max 8-hr mean O3 in 0.04 ppm range

Friday

- Light variable wind becoming northerly; NW 5kt by late morning through end of day
- Light AM downslope flow
- AM PBL 500 to 2,000 ft; PM PBL 3,000 to 5,000 ft
- Max aftn temp: 21C
- Altostratus becomes mostly clear; 30% chance of precipitation
- Good air quality: max 8-hr mean O3 in 0.04 ppm range

Saturday

- N to NW 5 to 10kt, strongest in the afternoon
- Max aftn temp: 26C
- AM PBL 1,000 ft; PM PBL 4,000
- Thin, high cirrus, otherwise clear
- Good air quality: max-8hr mean O3 in 0.04 ppm range

Sunday

- Light variable wind with downslope flow
- AM PBL 1,000ft
- Cirrus and cirrostratus expected
- Max aftn temp: 28C
- Good air quality: max-8hr mean O3 in 0.05 ppm range

Extended

- Light variable wind, increasing onshore flow from the delta with less downslope flow
- Mostly sunny except for cirrostratus
- Higher O3 conc, but still good air quality

San Joaquin Valley – Jon Klassen (Jon.Klassen@valleyair.org)

Thursday May 27

Surface Winds: The surface observations this morning show calm to light and variable flow throughout most of the SJV, with a moderate N wind in the southern Valley. The wind profilers in the central Valley also show calm and variable conditions above the surface, with Tracy in the northern Valley showing a southerly flow, and Lost Hills in the southern Valley showing a northerly flow. CANSAC shows a flow into the northern SJV via the Delta and the Altamont Pass, with winds becoming light in the central and southern SJV as the day progresses. In the evening

hours, CANSAC shows flow from SLO County into Kern County. GFS shows a chance for precipitation today.

Boundary Layer Mixing: The wind profilers do not indicate temperature inversions this morning in the SJV. CANSAC indicates that mixing should improve to 5,500 feet throughout most portions of the SJV by the afternoon.

Air Quality: Expected to be Good throughout the District due to good dispersion from the passing trough.

Friday May 28

Surface Winds: CANSAC shows a moderate NW flow for the majority of the day throughout the SJV, and increasing as the day progresses. By the evening hours, CANSAC shows a strong outflow from the Valley portion of Kern County out into the Kern deserts over the Tehachapi Pass. Overnight flow over the mountainous terrain will be weak down slope due to the overall winds being from the W.

Boundary Layer Mixing: CANSAC shows that mixing should improve to 4,000 feet across most of the SJV by the afternoon. Not as good as Thursday due to building stability.

Air Quality: Good to Moderate air quality is expected across the SJV.

Saturday May 29

Surface Winds: CANSAC shows lighter NW winds due to stabilizing conditions. NW flow in the northern SJV via the Delta and the Altamont Pass will increase as the day progresses. In the evening hours, outflow out of southern Valley into the Kern deserts is expected via Tehachapi and Tejon Passes. As the evening progresses, flow will tend toward offshore, and as a result, air will exchange from Kern County into SLO County, and down sloping off of the Sierra Nevada Mountains will be enhanced.

Boundary Layer Mixing: CANSAC shows mixing will improve to 3,500 feet in the northern SJV, and to 2,500 feet in the central and southern SJV. During the overnight hours, the surface based inversion will reform, causing the pollutants formed during the afternoon hours to decouple from the surface.

Air Quality: Expected to be mostly Moderate throughout the SJV, with a chance for USG in the southern portion of the District. Residual ozone levels may remain at elevated terrain.

Sunday May 30 and Monday May 31

Surface Winds: GFS shows surface winds to be predominately light and from the N to NW throughout the day.

Boundary Layer Mixing: Mixing conditions should be similar to Saturday.

Air Quality: Expected to be Moderate to USG.

Potential Targets for next Flight Day

For Saturday evening, the air exchanges between the southern SJV, SLO County, and the Kern desert may be of interest. Down sloping off of the Sierra Nevada into the Valley may be good to capture.

Central Coast - Gary Arcemont (garcemont@co.slo.ca.us)

Prepared Wed 5/26/2010 – 1:30 pm PST

Thursday 5/27: Trough deepening over CA, Cloudy – Chance precipitation. NW flow aloft.

Friday: Trough over CA/NV, partly cloudy, NW flow aloft. Blowing dust in afternoon/Moderate AQ – Oceano Dunes/Nipomo Mesa, Sundowner winds possible in canyons Gaviota/Santa Barbara coast

Saturday: Trough over UT, NNE flow aloft. Mostly clear. Offshore flow brings warming to coast, and transport of ozone/precursors to coast/ridgetops. Ozone increases. NE flow eastern San Luis Obispo County ridgetops/Temblor Range.

Sunday: Zonal flow, short wave trough over CA. NE flow eastern San Luis Obispo County ridgetops/Temblor Range. 850 mb temps reach 18 deg C, temperature inversion strengthens. Ozone increases – deteriorating air quality interior valleys/ridgetops.

Monday: Zonal flow, short wave trough over NV. NE flow eastern San Luis Obispo County ridgetops/Temblor Range. Marine layer returns, stratus late. 850 mb temps reach 19 deg C

Tuesday 6/1- Friday 6/4: Ridge builds over Western US. Air quality deteriorates interior ridgetops/valleys – moderate AQ (ozone). 850 mb temps reach 21 deg C

Long range (GFS) – Sat 6/5 – Mon 6/7: Ridge remains in place – dispersion remains poor.

Air quality: Good air quality with the following exceptions - moderate air quality on Friday 5/28 due to blowing dust midday/ afternoons-Oceano Dunes/Nipomo Mesa, Moderate air quality interior ridgetops/valleys on Tuesday 6/1 to Friday 6/4 due to increasing ozone.

Significant features: Blowing dust Oceano Dunes/Nipomo Mesa peaking midday/ afternoons - Friday 5/28 , Ozone increases along Temblor Range ridgetops Saturday 5/29, Sunday 5/30, Monday 5/31. Ridge strengthens Tuesday-Friday and

air quality deteriorates Temblor Range ridgetops, Carrizo Plains, Eastern SLO County.

SoCal Coastal Waters

+ Thursday afternoon (00Z 28 May)

- Marine Low Clouds
- * SCT Cu/StCu w/ isolated rain showers Crescent City to San Diego
- SOCAL Marine Layer Winds
- * WNW 15-20 kts inner and outer waters

+ Friday morning (12Z 28 May)

- Marine Low Clouds
- * BKN/SCT StCu/Cu w/ slight chance of isolated rain shower Crescent City to Point Arena
- * SCT StCu Point Arena to San Diego
- SOCAL Marine Layer Winds
- * WNW 15-25 kts outer waters
- * WNW 0-10 kts inner waters

+ Friday afternoon (00Z 29 May)

- Marine Low Clouds
- * SCT/CLR StCu Crescent City to San Diego
- SOCAL Marine Layer Winds
- * WNW 20-30 kts outer waters

- * WNW 10-20 kts inner waters

+ Saturday morning (12Z 29 May)

- Marine Low Clouds

- * SCT/CLR StCu Crescent City to Palos Verdes

- * BKN/SCT St Palos Verdes to San Diego

- SOCAL Marine Layer Winds

- * WNW 10-25 kts outer waters

- * ENE-ESE 5-10 kts inner waters

+ Saturday afternoon (00Z 30 May)

- Marine Low Clouds

- * SCT/CLR StCu Crescent City to San Diego

- SOCAL Marine Layer Winds

- * WNW 15-25 kts outer waters

- * W 5-15 kts inner waters

+ Saturday evening (06Z 30 May)

- Marine Low Clouds

- * SCT/CLR St Crescent City to Point Sur

- * CLR Point Sur to La Jolla

- * OVC/BKN St/fog La Jolla to San Diego

- SOCAL Marine Layer Winds

- * WNW 10-20 kts outer waters
- * ENE-ESE 5-10 kts inner waters

+ Sunday morning (12Z 30 May)

- Marine Low Clouds
 - * SCT/CLR St/StCu Crescent City to Point Sur
 - * CLR Point Sur to Palos Verdes
 - * OVC/BKN St/fog Palos Verdes to San Diego
- SOCAL Marine Layer Winds
 - * E 5-10 kts inner waters extending out to channel islands
 - * NW-W 5-15 kts west of channel islands

South Coast - Kevin Durkee kdurkee@

●**Thursday: Miramar AM sounding shows weak inversion, based at 1570 feet, expect mixing today >3300 feet; continuing cloudy & unseasonably cool (a couple of degrees cooler than Wednesday); slight chance of light rain today, mostly on northern mountain slopes; low & mid-level moisture & clouds; onshore flow; gusty winds mountains & deserts; deeper moist layer; mostly good AQ**

●**Friday: Upper low moves over Great Basin; drier NW flow will start late Thursday night & Friday; warming starts, but only a few degrees higher; clouds decrease for mostly sunny afternoon; some gusty NW winds through day; northerly surface gradients peak Friday night for strong winds on Central Coast, Santa Ynez range, Antelope Valley & I-5 corridor & some in San Fernando & Santa Clarita Valleys; Moderate Ozone**

●**Saturday: Upper ridge builds; clear skies; northerly (offshore) surface gradients; warming 10-15 degrees for above normal temps - near 90 degrees F in warmer valleys; AQ mostly Moderate, but some USG possible**

●**Sunday: warming continues with easterly offshore component; onshore gradients in afternoon; more stratus/marine layer may return to coast Sunday night with AM coastal eddy likely; USG AQ likely in eastern SoCAB**

- **Monday & Tuesday:** temps remain above normal, but a little cooler Monday & Tuesday as a weak flat trough moves into West Coast; marine layer may return for more coastal AM stratus
- **Wednesday +:** optimistically heading into a more normal ridging/stagnant pattern Wednesday for the rest of the week for warming & greater chance of USG ozone inland