

## CalNex Forecast Notes - Friday, June 4, 2010

### Anticipated Activities of Platforms

#### NOAA P3

**Fri & Sat:** No Flights

**Sun:** resume day flights (likely target SJV)

#### NOAA Twin Otter

**Fri:** LA Basin and Mojave Desert; possible flight to southern SJV

**Sat - Mon:** daily flights to track pollution evolution

**Tue:** No Flight **Wed:** transit to Sacramento, sampling Central Valley

**Thu - Mon:** No Flights - maintenance

#### R/V Atlantis

**Fri, 4 Jun:** Sacramento; Transit Sacramento to Martinez

**Sat: 5 Jun:** Martinez

#### DOE G-1 & NASA B-200 (CARES - <http://campaign.arm.gov/cares>)

**Fri:** No Flight - Media Day

**Sat & Sun:** morning and afternoon flights

### Local Features

#### Sat:

**Sac:** air flow will carry Sac plume SE and miss Cool receptor site

**SoCal:** O3 increasing (USG to unhealthy in east LA basin); tracer model

indicates LA pollution offshore in inversion @~205m in bight in mornings throughout weekend (Sun has maximum outflow)

**Sun:**

**Sac:** Sac plume to east, skirting south of receptor site

**SJV:** air quality deteriorating in SJV - USG levels likely in southern portion of SJV; O3 aloft (~1500ft) possible in "bathtub ring" around southern SJV; descending air with high O3 over southern SJV (peaks on Mon)

**SoCal:** tracer model of LA pollution indicates strongest offshore push of weekend; O3 air quality anticipated to be USG or higher in eastern LA basin and north into Santa Clarita Valley

**Mon:** ridge weakening slightly in SJV & SoCal but features similar to Sunday

**Recommendation:** that flight track(s) include LA plume in bight on Sunday and southern SJV on Monday (high O3 in descending air mass and also local/transported O3 around 1500' in ring around mtns in southern SJV); Santa Clarita Valley and Mojave Desert also of interest during SJV flight(s).

**Wed:** if flight range permits, TO flight to Sac could look for O3 along west side of SJV and along coastal ridge line

**California Synoptic Overview** - Jason Branz; jbranz@arb.ca.gov

**Friday June 4**

- Trough passes CA to the north
- Zonal flow remains over the north, ridging to the south
- Offshore gradients in the south

**Saturday June 5**

- Desert SW ridge strengthens, nudges N/W
- Zonal flow pushed north, confined to northern 1/3 of CA
- Offshore in the south, weak downslope in the north

**Sunday June 6**

- Ridge is pushed S/E by another PacNW trough
- Onshore flow increases for the north
- Offshore grads continue in the south

**Next Week...**

- Zonal flow for the north, ridge for the south

- Run to run model consistency is not good
- Ridge pushed out again by late week?

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

### **LA/Bakersfield AIRNOW Site Comparison**

FX Good tending towards Moderate LA O3 AQ  
Good Bakersfield O3 AQ during FX period  
Moderate LA PM2.5 AQ Good Bakersfield PM2.5 AQ during FX period

### **LA/SF AIRNOW Ensemble**

Initial LA Long-range transport to east during first 24hrs then turning northward to UT for ensembles ending Sat/Sun. Increased N/S dispersion for ensembles ending Mon  
Significant N/S dispersion for SF ensembles ending Sat/Sun. Transport to South for SF ensembles ending Mon

### **500m RDF FX 00Z 06/05 (Fri Afternoon)**

Low CO/O3 airmass over most of CA except for narrow plume extending SW east of LA. Narrow band of Moderate O3 P-L from LA  
Descent over Southern CA associated with elevated CO/O3  
Moderate (5-10 ppbv/day) background O3 P-L over LA & SF

### **500m RDF FX 00Z 06/06 (Sat Afternoon)**

New IC CO/O3 enhancement over N CA. Low CA CO elsewhere. O3 increasing over Central CA. Moderate O3 P-L from LA over AZ  
Moderate (5-10 ppbv/day) background O3 P-L over LA. Low (~5ppbv/day) background O3 P-L over SF  
Descent over Southern CA associated with low CO

### **500m RDF FX 00Z 06/07 (Sun Afternoon)**

New IC CO/O3 enhancement remaining largely offshore. Low CA CO elsewhere. O3 continues to increase over all of CA.  
Moderate (5-10 ppbv/day) background O3 P-L over LA. Low (~5ppbv/day) background O3 P-L over SF  
Descent over Southern CA associated with low CO

### **500m RDF FX 00Z 06/08 (Mon Afternoon)**

IC CO/O3 enhancement remaining largely offshore. High CO/O3 airmass over Central CA. O3 shows large increase over Central CA.  
Moderate (5-10 ppbv/day) background O3 P-L over LA. Low (~5ppbv/day)

background O3 P-L over SF  
Descent over Central CA associated with elevated CO/O3

### **Area Forecast Details**

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

##### **Friday**

- S to SW 5 to 10kt; turns W 5kt in the aftn and NW 5 to 10 kt in late PM
- MBL 500 to 1,000 ft lowers to less than 500ft

##### **Saturday**

- NW 5 to 10kt in early AM becomes W and increases to 10kt in the aftn; NW 10kt in the evening
- MBL below 500ft

##### **Sunday**

- NW 10kt strengthens through the day to 20kt in the aftn and 20kt continues overnight
- MBL below 500ft

##### **Monday**

- NW 20kt strengthens to 25kt in the aftn

##### **Extended**

- Moderate NW dies down overnight on Tuesday; light NW on Wednesday

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

##### **Friday**

- COAMPS & GFS
  - Northern SV - SE 5kt turns S 5 kt around late morning; very light in the aftn gradually shifts N; remains below 5kt at night
  - Southern SV - S to SW 5kt turns W around aftn; very light W at night
- CANSAC: W wind only on western edge of valley
- AM PBL around 500 to 1,000ft; PM PBL around 2,000 to 3,000ft
- Mostly cloudy: cirrostratus with some altostratus; stratus with base at 2km in the mrng; altocumulus clears in aftn, scattered cirrus remains at night; 50% chance of rain
- Max aftn temp: 26C
- Good air quality: max-8hr mean O3 in 0.04 ppm range

## **Saturday**

- COAMPS/CANSAC
  - ESE below 5kt (northern SV) and variable wind (southern SV) becomes calm after sunrise - no pressure gradient
- COAMPS: NW 5kt early aftn; peaks at 10kt in late aftn; NW to NE (northern SV) or NW 5kt (southern SV) at night
- CANSAC: NW 5kt to 10kt in late AM or early aftn, very light in late aftn, SW 5 to 10kt delta flow returns for southern SV in evening (likely scenario if GFS surface isobar map is accurate)
- AM PBL: 500ft; PM PBL 2,000 to 4,000ft
- Scattered cirrus and altocumulus in the mornng, mostly clear in the aftn
- Max aftn temp: 29C; good air quality: max-8hr mean O3 in 0.05 ppm range

## **Sunday**

- CANSAC/GFS
  - Northern SV - light S around 5kt or below
  - Southern SV - SW 5kt becomes W around mid-AM (still from delta); W 5kt continues (CANSAC: up to 10kt in the aftn);
- COAMPS - still thinking north wind (not likely)
- AM PBL mostly 500ft; PM PBL 2,000 fo 4,000ft
- Mostly clear, with some cirrus
- Max aftn temp: 30C; moderate air quality with max-8hr mean O3 in 0.06 ppm range

## **Monday**

- GFS: NW 5kt becomes W in the afternoon; possibly S to SW 5kt in the evening
- Mostly clear except for cirrostratus in the mornng and thins in the late aftn
- Max aftn temp: 31C, moderate air quality, max-8hr mean O3 in 0.06 ppm range

## **Extended**

- Light to moderate S to SW with SE downslope in the early Tuesday AM; moderate SW wind on Wednesday, lightens at night
- Cirrostratus and altocumulus on Tue; overcast with altostratus (5km base) on Wed mornng
- Max aftn temp high 20s C; possible return to good air quality

**San Joaquin Valley** - Jon Klassen (Jon.Klassen@valleyair.org)

### **Friday June 4**

***Surface Winds:*** *The surface observations this morning show light to*

moderate NW flow throughout the SJV. The wind profilers in the SJV show a N to NW flow above the surface across the Valley. CANSAC shows inflow via Altamont and Pacheco passes by the late morning, and NW flow increasing as the day progresses. Typical outflow over the Tehachapi Pass is expected by the late afternoon and into the evening.

**Boundary Layer Mixing:** For the morning aircraft soundings, Fresno shows an inversion of 6 F from the surface to 1,500 feet, and Bakersfield shows an inversion of 3 F from the surface to 500 feet. CANSAC indicates that mixing should improve to 1,500 feet in the northern SJV, and to 3,500 feet in the central and southern SJV by the afternoon.

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

### **Saturday June 5**

**Surface Winds:** CANSAC shows a moderate NW flow throughout the day with a predominant Delta inflow into the SJV, with an outflow from the southern SJV into SLO County and over the Tehachapi Pass by the afternoon.

**Boundary Layer Mixing:** CANSAC shows that mixing will improve from 2,500 to 3,500 feet across most parts of the SJV by the afternoon.

**Air Quality:** Moderate ozone air quality is expected across most of the SJV.

### **Sunday June 6**

**Surface Winds:** CANSAC shows inflow through the Delta throughout the day, with moderate NW wind flow increasing into the afternoon. Again, a typical southern SJV outflow into SLO County and over the Tehachapi is expected.

**Boundary Layer Mixing:** CANSAC shows that mixing will improve from 2,500 to 3,500 feet across most parts of the SJV by the afternoon.

**Air Quality:** Expected to be mostly Moderate ozone throughout the SJV, with possible USG ozone.

### **Monday and Tuesday June 7-8**

**Surface Winds:** GFS shows surface winds to be predominately from the NW.

**Boundary Layer Mixing:** Mixing conditions could improve slightly due to a weakening of the ridge.

**Air Quality:** Expected to be mostly Moderate ozone throughout the SJV.

### **\*Potential Targets for next Flight Day\***

The anticipated poor air quality in the southern SJV by Sunday could be interesting to capture.

**Yesterday 6/3** - Good air quality, except moderate AQ Nipomo due to blowing dust. Zonal flow.

**This morning:** Warm, 72 F, NNW 10 mph at 8 am in SLO, SE flow, 12 mph hrly avg top of Temblor Range,

Light SE flow Carrizo Plain, Mostly clear over land, stratus offshore

VBG inversion Yesterday @158 m, 9.6 C, NW 7 knt  
@ 542 m, 19.6 C, N 21knt  
Today @191 m, 10.8 C, NW 12 knt @ 549 m,  
20 C, N 25knt

Fort Ord – Inversion –Yesterday top 1500 ft, delta 5deg C,  
light west wind @ 1500 ft AGL  
Today top 1200 ft, delta 4deg C,  
light west wind @ 1000 ft AGL

**Today** – Controlled burn Camp Roberts – Monterey-SLO County line at Hwy 101

**Friday 6/4** - Zonal flow Strong NW flow along coast

**Saturday** - GFS Geopotential ht 594 dm @500mb late evening, Zonal flow N CA, High pressure builds S CA, NE flow aloft, Strong NW flow along coast

**Sunday** - GFS Geopotential ht 594 dm @500mb, Cutoff low to SW (GFS), NE flow aloft, Strong NW flow along coast,  
**Upper 90s F/near 100 F inland valleys**

**Monday** - 850mb temp peaks at 24 C Cutoff low to SW.

**Tuesday** – Friday GFS Geopotential hts @500mb gradually drop

**Air quality:** Good air quality with the following exceptions - blowing dust midday/ afternoons-Oceano Dunes/Nipomo Mesa thru Sunday, Moderate air quality interior ridgetops/valleys (Temblor Range/Carrizo Plain) this weekend.

**Significant features for study: Blowing dust Oceano Dunes/**

**Nipomo Mesa. Ozone increases along Temblor Range, Carrizo Plains, ridgelines along west side of SJV.**

**SoCal Coastal Waters** - Lee Eddington (lee.eddington@navy.mil)

**+ Friday afternoon (00Z 5 June)**

- Marine Low Clouds

- \* OVC/BKN St/StCu w/ light rain Crescent City to Point Reyes
- \* OVC/BKN St/StCu Point Reyes to Point Arguello
- \* SCT/CLR St/StCu Point Arguello to Point Mugu
- \* BKN/SCT St/fog Point Mugu to San Diego

- SOCAL Marine Layer Winds

- \* NW 10-25 kts outer waters
- \* W 5-10 kts inner waters

**+ Saturday morning (12Z 5 June)**

- Marine Low Clouds

- \* OVC/BKN St/StCu Crescent City to Point Arguello
- \* SCT/CLR Point Arguello to Santa Barbara
- \* OVC/BKN St/fog Santa Barbara to San Diego

- SOCAL Marine Layer Winds

- \* NW 10-25 kts outer waters
- \* SE 5-10 kts inner waters

**+ Saturday afternoon (00Z 6 June)**

- Marine Low Clouds

- \* OVC/BKN St/StCu w/ light rain Crescent City to Cape Mendocino
- \* SCT/CLR St/fog Cape Mendocino to San Diego

- SOCAL Marine Layer Winds

- \* NW 10-25 kts outer waters
- \* W 5-10 kts inner waters

**+ Sunday morning (12Z 6 June)**

- Marine Low Clouds

- \* BKN/SCT St/StCu Crescent City to Point Mugu
- \* OVC/BKN St/fog Point Mugu to San Diego

- SOCAL Marine Layer Winds

- \* NW 10-20 kts outer waters
- \* E-SE 5-10 kts inner waters

**+ Sunday afternoon (00Z 7 June)**

- Marine Low Clouds

- \* SCT/CLR StCu Crescent City to Point Arena
- \* BKN/SCT St/fog Point Arena to Monterey
- \* SCT/CLR St/fog Monterey to San Diego

- SOCAL Marine Layer Winds

- \* NW 10-20 kts outer waters
- \* W 5-10 kts inner waters

**+ Monday morning (12Z 7 June)**

- Marine Low Clouds

- \* SCT/CLR StCu Crescent City to Ventura
- \* OVC/BKN/ St/fog Ventura to San Diego

- SOCAL Marine Layer Winds

- \* NW 10-20 kts outer waters
- \* E-SE 5-10 kts inner waters

**+ Monday afternoon (00Z 8 June)**

- Marine Low Clouds

- \* SCT/CLR StCu Crescent City to Point Conception
- \* BKN/SCT St/fog Point Conception to San Diego

- SOCAL Marine Layer Winds

- \* NW 10-15 kts outer waters
- \* WSW 5-10 kts inner waters

**South Coast** - Kevin Durkee (kdurkee@aqmd.gov)

**Thursday (yesterday):** Several areas of USG 8-hr ozone inland empire & deserts & Santa Clarita to max of 97 ppb 8-hr ozone at Crestline

see next slide for 1-hr peaks on SCAQMD MM5/CAMx with observed in circles

**Friday:** upper level high setting up over the desert southwest; only slightly shallower marine layer with coastal eddy (~1200-1500 ft) - AM low clouds/fog into coastal valleys; weakening onshore flow in afternoons through Saturday; NW flows will bring some gusty winds to mountains & deserts (esp Santa Ynez range & I-5 corridor); moderate to USG ozone

**Saturday:** temps increase; little stratus inland as subsidence lowers inversion - but persistent AM eddy will moderate this for marine stratus to coast & coastal valleys or further; good onshore E-W gradient and offshore N-S gradient; some gusty N & NW winds in mountains & deserts; some inland SoCAB areas will reach mid-90 degrees F by Saturday afternoon; ozone to USG with some Unhealthy possible inland

**Sunday:** temps increase through Sunday with upper level ridge peaking over the desert southwest; little stratus inland - marine layer confined to near coast; some inland SoCAB areas will reach near 100 degrees F by Sunday afternoon; ozone to USG likely and probably to Unhealthy at peak stations

**Monday+:** upper ridge start to move to east or weaken slightly for minor cooling, but still temps remain warm inland; ozone to USG possible