

## CalNex Forecast Notes - Tuesday, June 15, 2010

### Anticipated Flights

#### NOAA P3

**Tue:** flight?

#### NOAA Twin Otter

**Tue:** early afternoon flight (southern San Joaquin Valley); late afternoon flight (San Joaquin Valley)

**Wed:** No Flight

**Thu:** Central Valley

#### CARES DOE G-1 and NASA B200

**Tue:** 2 flights

**Wed:** No Flights

### Local Features

#### Tuesday

**Sacramento** - trajectories indicate Sac plume toward Cool

**San Joaquin** - low CO and high O3 from long range transport at 500m; Upwind of SJV - Lawrence Livermore controlled burn of grassland continuing (300 acres)

**South Coast** - outflow to deserts (stronger winds in desert)

#### Wednesday

NW flow from Sac Vly to SJ Vly

#### Thursday

**South Coast** - likely highest [O3]s of week

#### Friday

**San Joaquin** - descent of high O3 at 500m; good dynamic range in concentrations for potential comparison of platform measurements

## **Synoptic Overview for California**

### **Tuesday June 15**

- Longwave trough digs south from PacNW
- Onshore flow increases, marine layer deepens

### **Wednesday June 16**

- Trough moves into northern NV
- NW transport flow over CA
- Possible north wind event in the Sac/SJ valleys

### **Thursday June 17**

- Weak ridging tries to rebound down south
- W/SW transport flow
- Onshore flow north, weak offshore south

### **Beyond...**

- Weak trough pattern continues statewide for the weekend
- No strong ridging or stagnation for the next 7-10 days

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

Emissions from AK fires may influence Northern CA on Tues Afternoon.  
AK fires diminishing with fires in Saskatchewan and NW Territories continuing.

### **LA/SAC AIRNOW Site Comparison**

USG O3 AQ reached in Riverside. Good SAC O3 AQ during FX period  
Moderate PM2.5 AQ at Riverside and SAC during FX period  
Analysis underestimated O3 at Riverside and overestimated PM2.5 at SAC

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

LA Long-range transport to south for ensembles ending Wen. Increased dispersion for LA ensembles ending Thu. Long-range transport to NE for ensembles ending Fri.

North/South dispersion for SF ensembles ending Wen/Thu. Long-range transport more to south for ensembles ending Fri.

### **5km RDF FX 00Z 06/16 (Tue Afternoon)**

New IC polluted airmass descending over northern CA.

**500m RDF FX 00Z 06/16 (Tue Afternoon)**

Descent of high O3/low CO air over central CA. Moderate (5-10ppbv/day) background O3 P-L over LA&SF

**500m RDF FX 00Z 06/17 (Wen Afternoon)**

Descent of high O3/low CO air over Southern CA. Low O3 over Northern CA. Moderate (5-10ppbv/day) background O3 P-L over LA&SF

**500m RDF FX 00Z 06/18 (Thu Afternoon)**

Descent of high O3/low CO air over Baja. Some O3/CO enhancements offshore of Northern CA.

Moderate (5-10ppbv/day) background O3 P-L over LA&SF

**500m RDF FX 00Z 06/19 (Fri Afternoon)**

Descent of new high O3/low CO air over South Central CA  
Moderate (5-10ppbv/day) background O3 P-L over LA&SF

**Area Forecast Details****Sacramento Valley - Danny Kam (dkam@airquality.org)****Tuesday**

- Early AM: Bay Area NW coastal flow turns SW onshore pushing SF plume into E. Bay then to SV via Solano Cnty; some S. Bay flow in early AM travels thru SJ Cnty before reaching SV; SW8kt onshore flow for S. SV, outflow to upvalley; N10kt flow along western edge of valley; light SE downslope flow for N. SV
- Late AM: Onshore flow decreases, flow travels along delta and lower Sac Cnty before heading toward NNE foothills at SSW5kt
- Aftn: Bay Area coastal wind begins to reach 25kt, onshore flow splits more even toward the valleys, origin of SV onshore flow limited to N. of Oakland; SW5-10kt onshore continues for S. SV with outflow toward foothills in NE; light and variable wind in the rest of the valley
- Evening: Delta flow soon to be cutoff by northerly flow; SW. SV still has SW5kt onshore flow, outflow to NNE; N15-20kt in rest of the valley
- AM PBL 500 to 1,500ft; PM PBL 7,000 (S. SV) to 9,000ft (N. SV) and 3,500 to 5,000ft in foothills, max at 3Z
- MBL 500 to 2,000ft decreases to 500ft
- Mostly clear, some cirrus/cirrostratus in daytime
- Max aftn temp 30C; moderate air quality
- YTD max-8hr mean O3: Arburn - 62ppb, Cool - 51ppb
- PM2.5 Avg for this morning: Roseville - 18.3 ug/m3 (unusual)

### **Wednesday**

- Early AM: Bay Area mostly calm or light NW, little wind that reaches delta turns toward SE; wind in N. SV strengthen; N10kt reaches Sac Cnty;
- Early Aftn: Light NW wind in Bay Area catches N. wind and head toward SSE along coastal range; NW10kt in Solano Cnty, outflow toward SJV, and Sac Cnty, outflow to SE foothills; NW15kt wind continues in N. SV;
- Evening: Wind lightens, most valley location slightly above N5kt, outflow toward SSE
- Late PM: Increased WNW flow from N. Bay, mostly toward SE after delta; WNW5kt in S. SV
- AM PBL 1,000 to 1,500ft; PM PBL mostly 6,000ft with Sac Cnty at 7,000ft, max at 1Z
- MBL 1,500 ft decrease to 500ft
- Clear
- Max aftn temp 28C, good air quality

### **Thursday**

- Early AM: WNW flow in N. Bay becomes light as valley N wind briefly increases; S. SV picks up to NW5-10kt; N. SV at NNW10-15kt;
- Mid AM: Bay Area light and calm with light flow along Carquinez, N10kt in W. SV remains dominant flow; NNW5kt in Sac Cnty, also outflow to SE but toward E upslope by late AM
- Afternoon: Bay Area onshore flow increases, flow along Carquinez clips lower Sac Cnty and turns toward SE; wind in most valley locations dies to NNW5kt or below with Sac Cnty outflow toward E
- Late aftn: Onshore flow increases to 12kt, N. SV becomes light divergence zone
- AM PBL 500 to 2,000ft, PM PBL 3,500ft (N. SV) to 6,000ft (S.SV)
- MBL 1,000ft
- Mostly clear, except PM cirrus
- Max aftn temp 29C; good air quality

### **Friday**

- Onshore flow toward upvalley, strongest on Fri aftn
- Cirrus/altocumulus in early AM, cirrus in PM
- Max aftn temp 28C; good air quality

### **Extended**

- Onshore flow continues, no significant change
- Max aftn temp around 28 to 30C; good toward moderate air quality

**San Joaquin Valley** - Shawn Ferreria (Shawn.Ferreria@valleyair.org)  
(updated June 15, 2010 at 9:00 AM)

### **Tuesday June 15:**

**Surface Winds:** The morning surface obs show light and variable wind flow from Tulare and Kings county southward. Northwesterly winds are present from Fresno county northward, with strongest winds near the Delta. Temperature profile at Walnut Grove shows southwest to west flow up to 800 feet, shifting from the northeast (1,200 feet) to northwest above (1,600 feet). The morning profiler from Chowchilla depicts light to moderate NW flow up to 3,000 feet with light south to southwesterly flow above. The Bakersfield profiler depicts light to moderate northwesterly wind throughout the profile. The 0Z CANSAC shows onshore flow through Delta toward northern San Joaquin County. Inflow through the Pacheco, Altamont and Cottonwood passes will occur through most of the day, with outflow toward the Deserts. Light thermally driven northwesterly winds will develop over the SJV later today. Light northwesterly winds will continue into the overnight hours. Typical, up slope flow will occur in the mountainous areas during the daylight hours turning light downslope during the evenings.

**Boundary Layer Mixing:** The morning aircraft sounding from Fresno depicts a strong inversion of 10 degrees Fahrenheit from the surface up to 1,000 feet. The morning aircraft sounding from Bakersfield shows a strong inversion of 9 degrees Fahrenheit from the surface up to 500 feet. Maximum mixing depths will range between 2,500 and 5,500 feet today across the SJV.

**Air quality:** Moderate air quality is predicted from Madera County northward today. Potential USG will occur in Fresno, Tulare, Kings, and Kern Counties.

LLNL in San Joaquin County will conducting their prescribed burn today (roughly 300 acres).

### Wednesday June 16:

**Surface Winds:** A very weak eddy circulation may form in Kern County tomorrow morning. This feature will rapidly dissolve before 18Z. 0Z CANSAC shows light to moderate northwesterly winds during the morning hours, with flow from SAC toward northern San Joaquin around 12Z Wednesday morning. An interesting north to northwesterly wind flow feature appears to cut-off flow winds through the Pacheco pass. Flow through the Delta and Altamont are weak during the early morning hours (will remain weak during most of the day as the north to northwesterly flow dominates in the central valley). Light to moderate northwesterly winds will develop over the entire District by the afternoon hours. Outflow will be toward SLO and the Deserts. Winds will turn light and variable during the overnight hours.

**Boundary layer mixing depths:** Maximum boundary layer mixing depths will lower slightly to between 2,500 and 5,500 feet. Lowest mixing depths will be along the western parts of the SJV.

**Air Quality:** Good to moderate AQI is forecast for tomorrow due to slightly better wind flow conditions.

### Thursday, June 17 through Saturday June 19:

**Surface winds:** A predominate northwesterly wind flow pattern will occur over the SJV through the early part of the upcoming weekend. Onshore flow will be through the Delta, Altamont, and Pacheco passes. Outflow will be toward the Deserts via Tehachapi pass. Typical diurnally driven wind flow will be present over the Sierra's.

**Boundary layer mixing depths:** Maximum mixing depths will lower slightly, with Fresno county southward between 2,000 and 3,000 feet. Maximum mixing depths will be between 3,000 and 4,000 feet from Madera county northward to San Joaquin County. Friday and Saturday the mixing depths should improve slightly as the trough axis moves over to the region.

**Air Quality:** Air quality will remain in the good to moderate AQI range.

**Central Coast - Gary Acermont (gacermont@co.slo.ca.us)**  
(prepared 6/15/2010 – 8:10 am PST)

**6/14 AQ** - Good air quality, except moderate AQ Temblor Range (Red Hills), Carrizo Plain due to ozone.

**This morning:**

Stratus in SLO, stratus coastal plains, Monterey Bay, Santa Ynez Valley, Salinas Valley.

Clear Big Sur coast, Pt. Conception

Stratus offshore

SW flow, 6 mph hrly avg top of Temblor Range, NW flow 1 mph hr avg Carrizo Plains

Ozone clean out occurred overnight – Midnight to 5 am avg concentration dropped from 55 ppb yesterday to 39 ppb this morning.

**This week:** GFS indicates persistent trough west coast, prescribed burns SE Monterey County

June Gloom, Good air quality with some blowing dust Nipomo Mesa, moderate NW flow coast

OAK inversion - 12 Z Today @395 m, 8.0 C, SW 10 knt @ 973 m,  
19.8 C, WNW 22knt

Fort Ord inversion – 12 Z Today @450 m, 9 C, W 5 knt @ 950 m,  
16 C, NW 20 knt

VBG inversion - 12 Z Today @477 m, 7.6 C, NNW 11 knt @ 912 m,  
23.4 C, NNW 13knt

**Today Tuesday 6/15** - 80acre prescribed burn SE Monterey County, Trof Pac NW digging south, NW flow increases - Ozone in good range. CANSAC indicates NW flow coast, SW flow inland ridgetops /Temblor Range

**Wednesday** – Trof deepens over Cal - NW flow increases - Some blowing dust Nipomo Mesa – . CANSAC indicates NW flow coast, NE flow inland ridgetops /Temblor Range.

**Thursday** – Broad trof W. US - NW flow coast – Some blowing dust Nipomo Mesa – CANSAC indicates NW flow coast, NE flow inland ridgetops /Temblor Range

**Friday** – Trof coastal CA, vort max central coast (GFS)

**Sat/Sun** - Trof coastal CA

**Mon** – Cutoff low over central CA (GFS)

**Tues 6/22** - Trof coastal CA

**Air quality:** Good air quality - some blowing dust midday/ afternoons-Oceano Dunes/Nipomo Mesa

**Significant features for study:** Blowing dust Oceano Dunes/Nipomo Mesa.

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

**+ Tuesday afternoon (00Z 16 June)**

- Marine Low Clouds
  - \* SCT/CLR StCu Crescent City to Big Sur
  - \* OVC/BKN St/StCu Big Sur to Point Arguello
  - \* SCT/CLR StCu Point Arguello to Santa Barbara
  - \* BKN/SCT St/StCu Santa Barbara to San Diego

- SOCAL Marine Layer Winds
  - \* NW 10-20 kts outer waters
  - \* W 5-10 kts inner waters

**+ Wednesday morning (12Z 16 June)**

- Marine Low Clouds
  - \* SCT/CLR StCu Crescent City to San Luis Obispo
  - \* OVC/BKN St/StCu San Luis Obispo to San Diego

- SOCAL Marine Layer Winds
  - \* NW 10-20 kts outer waters

- \* SE 0-5 kts inner waters

**+ Wednesday afternoon (00Z 17 June)**

- Marine Low Clouds
  - \* SCT/CLR StCu Crescent City to Point Mugu
  - \* BKN/SCT St/StCu Point Mugu to San Diego
- SOCAL Marine Layer Winds
  - \* NW 10-25 kts outer waters
  - \* W 5-10 kts inner waters

**+ Thursday morning (12Z 17 June)**

- Marine Low Clouds
  - \* SCT/CLR StCu Crescent City to Point Mugu
  - \* OVC/BKN St/StCu Point Mugu to San Diego
- SOCAL Marine Layer Winds
  - \* NW 10-20 kts outer waters
  - \* ESE 5-10 kts inner waters

**+ Thursday afternoon (00Z 18 June)**

- Marine Low Clouds
  - \* SCT/CLR StCu Crescent City to Point Mugu
  - \* BKN/SCT St/fog Point Mugu to San Diego
- SOCAL Marine Layer Winds
  - \* NW 10-20 kts outer waters
  - \* W 10-15 kts inner waters

**+ Friday morning (12Z 18 June)**

- Marine Low Clouds
  - \* BKN/SCT StCu/Cu Crescent City to Point Arena
  - \* BKN/SCT St/StCu Point Arena to Point Arguello
  - \* SCT/CLR St/fog Point Arguello to Point Dume
  - \* OVC/BKN St/fog Point Dume to San Diego
- SOCAL Marine Layer Winds
  - \* NW 10-20 kts outer waters
  - \* SE 0-5 kts inner waters

**+ Friday afternoon (00Z 19 June)**

- Marine Low Clouds
  - \* SCT/CLR StCu Crescent City to Palos Verdes
  - \* BKN/SCT St/StCu Palos Verdes to San Diego

- SOCAL Marine Layer Winds
- \* NW 10-20 kts outer waters
- \* W 5-10 kts inner waters

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

**Monday AQ obs:** ozone to USG inland empire & Santa Clarita

**Tuesday:** broad trough aloft; coastal eddy; NKX AM sounding inversion base 1450 ft; marine layer/stratus/fog to inland empire valleys; coast will remain cool today with stratus; onshore flow; valleys will be warm again; mostly moderate ozone but USG possible (mainly San Bernardino Mtns)

**Wednesday:** upper level trough digs southward along west coast overnight; deeper AM marine layer; patchy AM drizzle possible from marine layer; cold air advection aloft may allow earlier stratus burn-off; temperatures 5-10 degrees cooler near coast & 3-4 degrees inland; increased onshore push; mostly good to moderate ozone

**Thursday:** Upper level pattern flattens; NAM shows offshore AM flow, GFS weaker; a little warmer - warmest day with inland valley temps to upper 90s; ozone should peak in inland valleys to USG

**Friday:** weak troughing aloft again Friday; cooler, especially near coast

**Saturday-Monday:** persistent long wave trough aloft; June gloom - night & morning low clouds & fog to inland valleys; cooler temperatures; onshore winds; mostly moderate ozone