

## CalNex Forecast Notes - Monday, June 14, 2010

### Anticipated Flights

#### NOAA P3

Mon: flight likely (Sac Valley focus)

Tue: flight likely

#### NOAA Twin Otter

Tue: flight likely (Central Valley)

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

Mon: flights likely

Tue: flights likely

### Local Features

#### Monday

##### **Sacramento**

Moderate (or borderline USG) AQ

Sac plume transport N, but flow from south of Sac toward T1 site

COAMPS predicts offshore flow thru delta and NW flow over Sac but surface obs indicating onshore already

##### **San Joaquin Valley**

Potential pool of ozone aloft (~1200-1500') along west side of valley; USG O3 air quality possible in southern counties

Upwind of SJV - Lawrence Livermore controlled burn of grassland continuing

#### Tuesday

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

**San Joaquin** - low CO and high O3 from long range transport at 500m

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

## **Wednesday**

strong NW flow from Sac Vly to San Joaquin Vly

## **Synoptic Overview for California**

### **Monday June 14**

- Trough over the Great Basin, weak ridge over CA
- Onshore flow increases late for north and south

### **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

### **Beyond...**

- Weak ridge down south for Thurs
- Weak trough pattern continues statewide for the weekend

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

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

Moderate O3/PM2.5 LA AQ during FX period

Moderate tending towards Good O3 and Moderate PM2.5 SAC AQ

Moderate tending towards Good O3 AQ

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

LA Long-range transport to south for ensembles ending Tue/Wen. Increased dispersion

For LA ensembles ending Thu

SF ensemble transport to South on Tues. North/South dispersion for ensembles ending Wen/thu.

### **5km RDF FX 00Z 06/15 (Mon Afternoon)**

IC polluted air moving out of CA into CO at 5km. New IC polluted airmass arriving in northern CA.

**500m RDF FX 00Z 06/15 (Mon Afternoon)**

High CO/O3 air over Central CA. High (>60%) CONUS PBL Exposure and associated O3 P-L offshore of Baja.

Moderate (5-10ppbv/day) background O3 P-L over and North of SF. Elevated (10-15ppbv/day) O3 P-L over and south of LA

**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. Moderate (5-10ppbv/day) background O3 P-L over SF. Low (~5ppbv/day) O3 P-L over LA

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

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

## Area Forecast Details

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

#### S Sac Valley, N SJV, Delta, Bay Area -

Monday morning COAMPS over predicts surface N flow in Sacramento Valley, surface ENE flow through Bay Area, and surface offshore flow. Compare with 850 mb

For this period CANSAC surface wind predictions verified better for San Francisco Bay Area and Sacramento Valley

[http://www.cefa.dri.edu/COFF/cansac\\_output.htm](http://www.cefa.dri.edu/COFF/cansac_output.htm)

#### Monday

- NW downslope for western SV, SE downslope for northern SV, and SSW onshore flow (from NE Bay) for southern SV, 5kt and below, resulting an eddy centers west of Davis that is most apparent at 18Z
- Onshore flow increases by late mrgng from north of Oakland mostly heading into SV, heads to SJV as well in the aftn
- In late aftn, SW 10kt onshore flow via Solano County hits Cool, some onshore flow travels upvalley as S 10kt wind

- Onshore flow lighten and travels mostly upvalley at night with mix of downslope flow - SW 5kt for southern SV and SE for northern SV
- AM PBL 500 to 1,000ft; PM PBL 4,000 (N. SV) to 6,000ft (S. SV), max at 2Z
- MBL 500ft
- Supposed 35Kft cirrostratus (but currently clear) clears out at night
- Max aftn temp 33C; moderate air quality
- YTD's max-8hr O3 at 54 at Sloughhouse (~15 mi SE of Sac)

## **Tuesday**

- Same morning wind pattern as Monday except stronger onshore from E Bay
- Early aftn wind becomes light and variable for N. SV, turns W 5kt in S. SV, SW onshore flow from E. Bay decreases and turns W and SW in delta area
- In late aftn/early evening, SW 5 to 10kt onshore from N. Bay strengthen and reaches lower Sac County where it turns W 5kt, otherwise light and variable for the rest of SV
- N 10 to 15kt wind sweeps down N. SV at late night, onshore flow continues for S. SV
- AM PBL 500 to 1,500ft; PM PBL 7,000 (S. SV) to 9,000ft (N. SV), max at 3Z
- MBL 500 to 2,000ft decreases to 500ft
- Mostly clear, some cirrus and cumulus near Sac County in daytime
- Max aftn temp 31C; moderate air quality

## **Wednesday**

- Wind in N. SV strengthen to N15 to 20kt; N 10 to 15kt wind reaches S. SV, outflow to SJV, and cut off delta flow in early AM, Bay Area has NNW 20 to 25kt off the coast, light N in most of the bay
- N wind continues through the day, decreases to 10 to 15kt in the N. SV and 5 to 10kt in S. SV
- W onshore attempts to make its way inland in the afternoon, slow to reach the valley, will turn SE toward SJV after coastal passes
- AM PBL 500 to 1,500ft; PM PBL 7,000 to 8,000ft, max at 1Z
- MBL 1,500 ft decrease to 500ft
- Mostly clear in the region, a few cumulus in foothills, and cirrus in late aftn
- Max aftn temp 27C, good air quality

## **Thursday**

- N wind lightens, W onshore flow makes it way into valley in the afternoon
- Max aftn temp 30C; good air quality

## **Extended**

- Onshore flow continues, strongest on Fri aftn;
- Max aftn temp around 28 to 30C; good air quality

## **San Joaquin Valley - Jennifer Ridgway (Jennifer.Ridgway@valleyair.org)**

(updated June 14, 2010 at 9:00 AM)

### **Monday June 14:**

**Surface Winds:** The morning surface obs show light and variable winds across the SJV, temperatures in the 70s, and clear skies. Profiler at Walnut Grove shows primarily moderate N flow (NW flow below 400 feet and W flow between 1,200 and 1,600 feet AGL). The morning profiler from Chowchilla depicts light NW flow up to 3,000 feet with light variable flow above. Visalia profiler depicts light SE flow up to 1,600 feet becoming N above. The morning profiler in Lost Hills shows light SW to W flow up to 1,300 feet becoming N above. The 0Z CANSAC shows onshore flow through Delta into Sac County and northern San Joaquin county strengthening through day into evening. **Onshore flow over Altamont Pass early morning converges with upslope flow late morning then onshore resumes in the afternoon.** Onshore flow throughout day over Pacheco Pass. Light variable flow over central and western portion of valley and light S flow over eastern portion of valley predicted this morning. W flow over Merced County, NW flow over rest of central and southern valley by afternoon. **Inflow over Cottonwood pass late morning through evening.** Outflow over Tehachapi pass throughout the day. Outflow over Tejon pass morning and afternoon becomes inflow after sunset. NWS forecast clear skies.

**Boundary Layer Mixing:** Morning sounding at Fresno indicates a strong temperature inversion of 11 degrees F from surface up to 1,000 feet AGL. Maximum boundary layer mixing depths 3,000 to 6,500 feet with best over Kern, central Fresno and Madera Counties, and western Stanislaus County. Lowest mixing depths 300 to 1,500 feet over Merced and San Joaquin Counties.

**Air Quality:** Moderate AQ is predicted for a majority of the SJV, with the exception of **Fresno, Tulare and Kern Counties (USG AQ is predicted) due to Ozone.**

### **Tuesday June 15:**

**Surface Winds:** 0Z CANSAC shows light to moderate onshore flow through Delta into Sac County and northern San Joaquin County throughout the day. **Flow from San Joaquin county into Sac County during morning hours (5:00 to 8:00).** Moderate onshore flow over Altamont and Pacheco Passes throughout the day and night. Weak to light and variable flow across SJV early morning becomes light to moderate NW flow as day progresses. Light variable flow sets in on east side of valley by evening. **Inflow over Cottonwood Pass throughout the day and evening.** Outflow over Tejon and Tehachapi Pass most of the day and evening. NWS forecast clear skies.

**Boundary layer mixing depths:** Maximum boundary layer mixing depths 3,000 to 6,500 feet with best over western Kern and western Kings Counties.

**Air Quality:** Good AQ expected in northern and central SJV and moderate to USG AQ expected in southern SJV due to Ozone.

### **Wednesday June 16**

**Surface Winds:** 0Z CANSAC shows moderate NNW flow across Delta, Altamont, and Pacheco Passes from morning to 17:00 with **flow from Sac county into San Joaquin county**. Light NW flow from Fresno County northward on west side and light variable on east side and in southern SJV during morning. NW flow spreads southward to Tulare and Kings Counties by 17:00. Light and variable flow in Kern county morning to 17:00. **Inflow over Cottonwood Pass during morning becomes outflow by afternoon**. Light and variable flow becomes outflow over Tejon Pass by 17:00. Outflow over Tehachapis morning to 17:00. NWS forecast clear skies.

**Boundary Layer Mixing:** Mixing depths 3,000 to 6,500 feet with best depths over western Kern and southcentral Fresno and Madera counties. Lower depths on west side of valley with lowest 1,000 to 1,500 feet over western Fresno and Madera Counties.

**Air Quality:** Good AQ expected valley-wide due to Ozone.

### **Thursday - Friday, June 17 - 18:**

GFS shows NW flow over SJV on Thursday, SW flow over SJV on Friday under zonal flow pattern. Mixing depth expected to be slightly lower than Wednesdays due to increasing stability. AQ expected Good in northern SJV and Good to Moderate in central and southern SJV due to Ozone. NWS forecast clear skies.

### **\*Potential Targets for Next Flight\***

**Monday:** Onshore flow over Altamont Pass early morning converges with upslope flow late morning then onshore resumes in the afternoon. Inflow over Cottonwood Pass. Possible USG AQ in Kern, Tulare, and Fresno Counties due to Ozone.

**Tuesday:** Early morning flow from San Joaquin County into Sac County. Inflow over Cottonwood Pass.

**Wednesday:** Inflow from Sac County to San Joaquin County. Morning inflow over Cottonwood Pass becomes outflow by afternoon.

**Central Coast - Gary Acermont** (gacermont@co.slo.ca.us)

### **Morning of June 14:**

SW surface flow top of Temblor Range

55 ppb average ozone (Midnight to 5AM) - top of Temblor Range - possible feature for study

SE surface flow Carrizo Plain

## **Expect cleanout from Trough Tues/Weds**

### **SoCal Coastal Waters**

#### **+ Monday afternoon (00Z 15 June)**

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

#### **+ Tuesday morning (12Z 15 June)**

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

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

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

- SOCAL Marine Layer Winds

- \* NW 10-20 kts outer waters
- \* LT VAR inner waters

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

- Marine Low Clouds

- \* CLR StCu Crescent City 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

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

- Marine Low Clouds

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

- SOCAL Marine Layer Winds

- \* NW 5-10 kts outer waters
- \* ESE 5-10 kts inner waters

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

- Marine Low Clouds

\* SCT/CLR StCu Crescent City to San Diego

- SOCAL Marine Layer Winds

\* NW 10-20 kts outer waters

\* W 5-10 kts inner waters

**South Coast Basin - No Forecast Today**