

CalNex Forecast Notes - Thursday, June 3, 2010

Anticipated Activities of Platforms

NOAA P3

Thu: last night flight (SoCal) began 1am

Fri & Sat: No Flights

Sun: resume day flights (likely target SJV)

NOAA Twin Otter

Thu:

5:30am PDT take-off to loosely coordinate with P3 return from night flight; NO3 measurements with AMAX-DOAS;

~10:00am PDT take-off to survey pollution in LA Basin

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

Thursday, 3 June: Transit Richmond to Sacramento

Fri:, 4 Jun: Sacramento

Sat: 5 Jun: Transit Sacramento to Martinez

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

Thu: "Shakedown" Flight for G-1 but B-200 doubtful with clouds

Fri: No Flight - Media Day

Local Features

Fri: air quality deteriorating but likely to be in good range still in SJV; in SoCal, moderate O3 background production rate and descending air with CO & O3 in 500m RDF model for Friday afternoon

Sat: 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: air quality deteriorating in SJV - USG levels likely in southern portion of SJV; O3 aloft (~1500ft) possible in "bathtub ring" around southern SJV; O3 air quality anticipated to be USG or higher in eastern LA basin and north into Santa Clarita Valley;

recommend that P3 Sunday flight to southern SJV try sampling Santa Clarita Valley, SJV (also looking for O3 in ring aloft), and Mojave Desert on return flight.

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

Thursday June 3

- Upper ridge builds over SoCal with offshore gradients
- Mainly zonal flow in the north with trough over PacNW
- Precip possible for North Coast/Sac Valley late, mainly the higher terrain

Friday June 4

- Ridge noses northward, offshore gradients continue for SoCal
- Zonal flow remains over N CA, weaker transport flow south

Weekend-Early Next Week

- Ridge builds northward but zonal flow remains over the north
- Models have backed off on ridge strength
- Model differences for next week; low confidence in strong ridging

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

LA/Bakersfield AIRNOW Site Comparison

Good LA/Bakersfield O3 AQ during FX period

Moderate LA and Good Bakersfield PM2.5 AQ during FX period

O3 analysis underestimates O3 at Riverside and Bakersfield and PM2.5 at Riverside

LA/SF AIRNOW Ensemble

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

Initial SF Long-range transport to south then turning Northeastward with alignment with LA ensembles on Fri. Significant N/S dispersion for ensembles ending Sun

500m RDF FX 00Z 06/04 (Thu Afternoon)

Low CO airmass over Central CA. New IC CO enhancement onshore over Northern CA. Moderate O3 P-L from LA over Baja
Moderate (5-10 ppbv/day) background O3 P-L over LA& SF
LA O3 P-L plume associated with 50-60% PBL Exposure

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. Moderate O3 P-L from LA over Four Corners
Moderate (5-10 ppbv/day) background O3 P-L over LA & SF
Descent over Southern CA associated with elevated CO/O3

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

New IC CO/O3 enhancement over N CA. Low CO/O3 airmass elsewhere over CA. Moderate O3 P-L from LA over NV
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/O3

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

New IC CO/O3 enhancement remaining largely offshore. Low CO/O3 airmass over southern 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/AZ associated with low CO/O3

Area Forecast Details

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

Thursday

- NW 5 to 10kt gives way to SW around mid to late AM; W to SW 10kt in the aftn; becomes 5kt in the evening
- MBL 500 ft and below

Friday

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

Saturday

- W to NW 5 to 10kt increases to 10 to 15 kt in the aftn and continues
- MBL below 500 ft

Sunday

- NW 10kt strengthens through the day to 20 to 25kt in the late PM

Extended

- Moderate NW wind continues for Monday and become even stronger overnight; wind max at 30kt on Tuesday aftn

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

- COAMPS/GFS:
 - Northern SV - SE 5kt downslope becomes S 5 to 10kt mid AM; shifts SW in late aftn
 - Southern SV - SW 5kt delta through Carquinez until early PM; turns WSW 5 to 10kt;
- CANSAC: Calm wind in late afternoon over southern SV
- AM PBL around 500 ft; PBL 2,000 to 3,000 ft
- Mostly cloudy: cirrostratus throughout the day; altostratus increases and overcast by late afternoon; 30% chance of rain
- Max aftn temp: 25C; Good air quality: max-8hr mean O3 in 0.04 ppm range

Friday

- COAMPS & GFS
 - Northern SV - SE 5kt turns S to 10kt around late morning; lightens below 5 kt at night
 - Southern SV - S to SW 5kt turns WSW around aftn; SW below 5kt at night
- CANSAC: Light and variable in the early AM
- AM PBL around 500 to 1,000ft; PM PBL around 2,000 to 3,000ft
- Mostly cloudy: thick cirrostratus with some altostratus; stratus with base at 2km expected in the morning; partially clears in early afternoon to become scattered cirrus; 50% chance of rain
- Max aftn temp: 25C; Good air quality: max-8hr mean O3 in 0.03 ppm range

Saturday

- COAMPS/GFS
 - ESE below 5kt; turns S to W in mid AM; S wind still below 5kt
 - SW below 5kt; turns W in the aftn; may swing back toward S or stay W at night
- AM PBL: 500ft; PM PBL 1,500 to 2,500ft
- Periods of cirrus in the morning, decreases during the day; some cirrostratus moves through in the late aftn/evening hours
- Max aftn temp: 30C; Good air quality with max-8hr mean O3 in 0.05 ppm range

Sunday

- GFS

- Northern SV - SE 5kt becomes SW by late aftn and continues through evening
- Southern SV - SW 5kt becomes WSW in late AM and continues through evening
- Mostly clear, with some cirrus
- Max aftn temp: 32C; moderate air quality with max-8hr mean O3 in 0.06 ppm range

Extended

- Pres gradient increases, wind shifts NW early AM; light NW on Monday and Tuesday overpowers any downslope and onshore from delta;
- Clear sky except for cirrus; max aftn temp reaching mid 30s C
- Air quality mid-range of moderate

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

Thursday June 3

Surface Winds: The surface observations this morning show light to moderate N flow over the northern SJV and light to moderate NW over the central and southern the SJV. The wind profilers at Chowchilla and Visalia indicate light to moderate NW flow throughout the atmospheric profile and the profiler at Lost Hills indicates light NW flow below 2,000 feet AGL and moderate N flow above. The profiler at Tracy was not updated. CANSAC shows moderate NW flow over the valley floor and upslope flow over foothill areas throughout the day. Light to moderate onshore flow through Delta and over Altamont pass in the morning becoming N flow by 17:00.

Boundary Layer Mixing: The wind profilers indicate no temperature inversion this morning. CANSAC indicates that mixing should improve to 3,000 to 6,500 feet over Fresno, Kings, Tulare, and Kern Counties with best heights over Tulare County.

Air Quality: Good air quality is expected across the SJV. (Dominant pollutant 8-hour ozone)

Friday June 4

Surface Winds: Early morning CANSAC runs show weak to light flow across the foothills and light to moderate NW flow across the valley floor. Flow over the foothills becomes upslope by 11:00 am. Calm to weak flow through Delta becomes light SW then moderate onshore as the day progresses. Weak to light flow over Altamont pass early morning becomes onshore and strenghtens as day progresses.

Boundary Layer Mixing: CANSAC shows that mixing will improve to 3,000 feet to 6,500 feet with best heights over eastern Merced and eastern Stanislaus Counties.

Air Quality: Good air quality is expected across most of the SJV (Dominant pollutant 8-hour ozone).

Saturday June 5

Surface Winds: 2:00 AM CANSAC run shows downslope flow from Sierras, Tehachapis, and Tejon Pass and upslope flow over Cottonwood Pass with light to moderate NW flow on valley floor through the entire morning. Downslope flow becomes upslope by 11:00 am. **The 8:00 AM run shows very light to calm conditions across the foothill areas.** Light onshore flow across the Delta flowing mainly into San Joaquin county throughout the day with very light flow affecting southern Sacramento County. Light N flow across Altamont Pass strengthens as the day progresses.

Boundary Layer Mixing: CANSAC shows that mixing should improve to 3,000 to 5,000 feet over Fresno, Kings, Tulare, and Kern Counties with best heights over Fresno County.

Air Quality: Expect Moderate across most the SJV, with possible USG. Dominant pollutant 8-hour ozone.

Sunday and Monday June 6-7

Surface Winds: Sunday:GFS shows thermal low over AZ, southeast CA, surface low over Pacific NW, and surface high over eastern Pacific. Surface winds to be predominately from the NW across SJV. Monday: GFS shows thermal low in place similar to Monday. Surface high pressure becoming dominant over eastern Pacific and surface wind predominantly from NW over SJV. Expect winds to be thermally driven in afternoon. Hot temperatures forecast for SJV.

Boundary Layer Mixing: Mixing expected to range between 2,000 and 4,000 feet.

Air Quality: Expected to range moderate to unhealthy for sensitive groups due to ozone (8-hour average concentrations). Ozone exceedances possible in southern SJV.

****Potential Targets for next Flight Day****

Deteriorating air quality this weekend and early next week across SJV. Poorest air quality due to 8-hour ozone expected in southern SJV so Kern County will be best target.

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

6/1 - 6/2: Good air quality

This morning: Warm, 69 F, NW flow at 8 am in SLO, SE flow top of Temblor Range

VBG inversion @158 m, 9.6 C, NW 7knt @ 542 m, 19.6 C, N 21knt
Fort Ord – Inversion top 1500 ft, delta 5deg C, light west wind @ 1500 ft AGL

Thursday 6/3- Tuesday 6/8: Air quality deteriorates interior ridgetops/valleys, zonal flow N CA, increasing heights S CA, strengthening inversion, NW flow along coast, NE flow aloft Sat-Mon

Tuesday – GFS Geopotential ht 594 dm @500mb, 850mb temp 24 C, NE flow aloft

Air quality: Good air quality with the following exceptions - blowing dust midday/afternoons-Oceano Dunes/Nipomo Mesa thru Monday, Moderate air quality interior ridgetops/valleys (Temblor Range/Carrizo Plain) this weekend & Mon-Tues due to increasing ozone.

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)

+ Thursday afternoon (00Z 4 June)

- Marine Low Clouds

* OVC/BKN St/StCu w/ light rain Crescent City to Point Arena

* BKN/SCT St/StCu Point Arena to Point Arguello

* CLR Point Arguello to Santa Barbara

* BKN/SCT St/StCu Santa Barbara to San Diego

- SOCAL Marine Layer Winds

* NW 10-25 kts outer waters

* W 5-10 kts inner waters

+ Friday morning (12Z 4 June)

- Marine Low Clouds
 - * OVC/BKN St/StCu w/ rain Crescent City to Point Reyes
 - * BKN/SCT St/StCu Point Reyes 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

+ Friday afternoon (00Z 5 June)

- Marine Low Clouds
 - * OVC/BKN St/StCu w/ 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

Note: Significant difference in offshore extent of LA Basin plume with much more offshore flow within the inversion above the shallow marine layer.

+ Saturday afternoon (00Z 6 June)

- Marine Low Clouds

- * OVC/BKN St/StCu w/ rain Crescent City to Cape Mendocino

- * BKN/SCT St/fog Cape Mendocino to Point Point Arguello

- * SCT/CLR St/fog Point Arguello 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

- * OVC/BKN StCu/Cu Crescent City to Point Arena

- * OVC/BKN St/fog Point Arena to Point Arguello

- * SCT/CLR St/fog Point Arguello to Point Mugu

- * OVC/BKN St/fog Point Mugu to San Diego

- SOCAL Marine Layer Winds

- * NW 10-25 kts outer waters

- * SE 5-10 kts inner waters

Note: Significant difference in offshore extent of LA Basin plume with much more offshore flow within the inversion above the shallow marine layer.

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

- Marine Low Clouds

- * SCT/CLR StCu Crescent City to Point Arena

- * BKN/SCT St/fog Point Arena to Point Point Arguello

- * SCT/CLR St/fog Point Arguello to San Diego

- SOCAL Marine Layer Winds

- * NW 10-20 kts outer waters

- * WSW 5-10 kts inner waters

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

Thursday: Miramar AM sounding inversion base 2067 feet; LAXP < 1600 ft base with light S to SE winds in low levels from eddy, stronger N flow above; AM fog & stratus to Inland Empire valleys; ridge aloft amplifies today; stronger W-E gradients; mostly sunny afternoon for a few degrees of warming inland (temps 90+ inland); moderate to possible USG ozone

Friday: Strong upper level high sets up over the desert southwest; shallower marine layer (1000-1500 ft) - night & morning low clouds/fog confined to near coast & coastal valleys; weak coastal eddy will bring light S & SE morning winds along coast; 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 - marine layer confined to near coast; some inland SoCAB areas will reach mid-90 degrees F by Saturday afternoon; ozone to USG or higher inland over weekend

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, or higher

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