

CalNex Forecast Notes - Tuesday, June 1, 2010

Anticipated Activities of Platforms

NOAA P3

Tue possible night flight SJV or LA

Wed possible P3 night flight SJV or LA

NOAA Twin Otter

Tue likely midday LA Basin - Mojave timed with satellite

Wed likely hard down day.

Thu (?) early ~0530pdt take off, loosely coordinated with P3

R/V Atlantis:

N of Pt Conception, enroute to SF/Sacramento

CARES <http://campaign.arm.gov/cares>

Wed Sacramento test flights

NASA B-200 and DOE G-1 aircraft

Local Features:

Tues-Wed:

Mon-Tue inflow to N SJV through delta and N passes.

SJV outflow stronger over Tehachapi's to Mohave Tue nite compared to Wed nite.

Potential for development of S SJV eddy Wed.

LA outflow to deserts stronger Tue nite than Wed nite, but with higher concentrations Wed.

NorCal onshore flow.

Thu +

Continued zonal flow in NorCal.

Ridge building in SoCal with warming by the weekend. GFS and ECMWF diverge slightly midweek with GFS predicting ridging, ECMWF predicting zonal flow in S continuing into Fri. But both predict ridging and warming by Sat, stronger in SoCal.

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

Tuesday June 1

Weak upper trough moving E

Transport flow turns W/NW

Marine stratus slow to clear in the south

Wednesday June 2

Weak trough holds over N CA with onshore flow
Ridge starts to build down south with offshore grads developing

Thursday June 3

Upper ridge holds in SoCal with offshore gradients
Mainly zonal flow in the north with a weak trough
Precip possible for North Coast/Sac Valley

Friday-Weekend

Four Corners high becomes established Fri/Sat
Zonal flow remains over far N CA, weak flow everywhere else
Air quality deteriorates over the weekend

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

Hazard Mapping System Fire and Smoke Product (<http://www.osdpc.noaa.gov/ml/land/hms.html>) shows smoke from wildfire along CA/Mexico Border

LA/SF AIRNOW Site Comparison

Good LA and Bakersfield O3 AQ during FX period
Moderate LA and Good Bakersfield PM2.5 AQ during FX period
O3 analysis underestimates O3 and PM2.5.

LA/SF AIRNOW Ensemble

Initial LA Long-range transport to east during first 24hrs then turning northward to UT for ensembles ending Wen/Thu. Regional stagnation for ensembles ending Fri
Initial SF Long-range transport to south then turning eastward. Decreased dispersion for ensembles ending Thu/Fri

500m RDF FX 00Z 06/02 (Tue Afternoon)

New IC CO/O3 enhancement onshore over Northern CA. Moderate O3 P-L from LA over UT/CO
Moderate (5-10 ppbv/day) background O3 P-L over LA. Low (~5ppbv/day) O3 P-L over SF

500m RDF FX 00Z 06/03 (Wen Afternoon)

Low CO/O3 air mass over Northern CA. New IC CO enhancement arriving from NE.
Moderate O3 P-L from LA over Four Corners
Moderate (5-10 ppbv/day) background O3 P-L over LA. Low (~5ppbv/day) O3 P-L over SF

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

Low CO airmass over Central CA. New IC CO enhancement off Northern CA coast.
Moderate O3 P-L from LA over AZ
Moderate (5-10 ppbv/day) background O3 P-L over LA. Low (~5ppbv/day) O3 P-L over SF

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

New IC CO/O3 enhancement over N CA and South of Point Conception. Moderate O3 P-L from LA over Four Corners
Moderate (5-10 ppbv/day) background O3 P-L over LA. Low (~5ppbv/day) O3 P-L over SF

Area Forecast Details

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

Wednesday

WNW 5 to 10kt turns SW around mid morning; W to SW for 5 to 10kt for the rest of the day

MBL 500 ft and below

Thursday

CANSAC: S to SW 5 to 10kt; wind speed increases to 10 to 15kt at night

COAMPS: W 5 to 10kt; wind speed more toward 5kt at night

MBL below 500ft

Friday

SW 10kt turns W 10kt in the afternoon and becomes northerly at night

Extended

Light NW on Saturday morning becomes moderate by the afternoon, moderate NW continues on Sunday

<http://sfports.wr.usgs.gov/cgi-bin/wind/windbin.cgi>

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

Wednesday

Light variable wind in early AM with downslope flow and delta onshore flow influence in early AM; COAMPS: WSW 5 kt and below for most of the day, occasionally 10 kt in the late afternoon; CANSAC: SW 5kt in the morning and SW 10kt starting in the afternoon through the evening; GFS: Max wind speed in aftn 12kt

Cirrostratus throughout the day

Max aftn temp: 27C

AM PBL around 500ft; PM PBL 4,500 to 6,500 ft

Moderate air quality: max-8hr mean O3 in 0.06 ppm range

Thursday

Light onshore flow and some downslope flow in early AM;

COAMPS and CANSAC: SW 5 kt in the late morning and increasing to nearly 10kt in the afternoon, between 5 to 10kt at night;

GFS: Max wind speed in aftn 8kt

AM PBL around 500 ft; PBL 2,000 to 4,000 ft

Cirrostratus blanketing region for the entire day, altostratus increases through the day; 30% chance of precipitation

Max aftn temp: 25C

Moderate air quality: max-8hr mean O3 in 0.06 ppm range

Friday

SW 5kt (northern SV has more southerly component and southern SV has more westerly component); S below 5kt

for northern SV and W 5kt for southern SV at night

Stratus increases in the morning; breaks into altocumulus in the early afternoon; 40% chance of precipitation especially in the AM period

Max aftn temp: 25C

Moderate air quality: max-8hr mean O3 in 0.06 ppm range

Extended

SE downslope for northern SV in early morning and onshore SW for southern SV, otherwise SWly flow with periods of W wind; wind speed generally 5kt and below Cirrus on Saturday, becomes clear on Sunday

Moderate air quality

Sacramento Valley Trajectory

Sacramento Valley Trajectory

San Joaquin Valley - Shawn Ferreria (Shawn.Ferreria@valleyair.org)

Tuesday June 1

Surface Winds: The surface observations this morning show light to moderate north to northwesterly wind flow over the entire SJV. The wind profilers at Visalia and Lost Hills indicate light northwesterly wind flow up to 3,000 feet, shifting and strengthening from the southwest to west above. This afternoon CANSAC shows moderate onshore flow continuing through the Delta, Pacheco, and Altamont passes. Strong outflow is toward the Deserts and weaker outflow toward SLO at 0Z. During the overnight hours, the northwesterly winds will slowly decrease. Downsloping flow over the Sierra's will commence overnight tonight. Light to moderate outflow will continue over the Tehachapi pass during the overnight hours.

Boundary Layer Mixing: Isothermal conditions exist over the SJV this morning. With afternoon heating, maximum mixing depths are expected to range from 3,000 and 4,000 feet. Mixing will once again be minimal this evening under re-establishing surface based inversions.

Air Quality: Good air quality is forecast for today.

Wednesday June 2

Surface Winds: Similar wind conditions in the morning will be present on Wednesday as compared to today, with the exception the flow will be weaker. Toward the afternoon hours, the flow through the Delta and Pacheco and Altamont passes will continue but the surface flow is forecast to exit the SJV toward the Coast from Fresno County southward. (No re-circulation patterns are evident on the 0Z CANSAC run for Wednesday morning). Northwesterly winds will slowly decreasing during the overnight hours (most evident from Fresno county southward). Residual northwesterly outflow will be present exiting the Tehacahpi and Tejon passes.

Boundary Layer Mixing: CANSAC shows maximum mixing depths between 2,000 and 3,000 feet in the northern SJV (Merced county northward) increasing to between 4,000 and 5,000 feet from Madera county southward to Kern County

Air Quality: Air quality is expected to be in the good to moderate AQI.

0Z Thursday - Wed Afternoon (northeasterly flow predicted by 0Z CANSAC model)

Thursday June 3

Surface Winds: The 0Z CANSAC shows winds similar to Wednesday.

Boundary Layer Mixing: CANSAC shows that maximum mixing ranging from 3,000 feet 5,000 feet. The overnight inversion should be present through the rest of the forecast period.

Air Quality: Air quality forecast to be in the good to moderate range.

Friday June 4 and Saturday June 5

Surface Winds: As high pressure slowly builds over the region, winds will become light and variable. The thermal trough will begin to re-establish itself during this period.

Boundary Layer Mixing: Mixing depths should gradually lower as high pressure strengthens over the region.

Air Quality: Expected to be mostly Moderate throughout the SJV, with air quality deteriorating towards the end of the week. This could result in USG AQI. (pattern not as strong as what was shown on the models yesterday.)

Potential Targets for next Flight Day

Analyze the transition from weak dispersion into deteriorating air quality conditions.

Central Coast - Gary Arcemont (garcemont@co.slo.ca.us) - not available
Prepared 6/1/2010 – 8:50 am PST
5/30 -5/31 Moderate air quality (ozone) Temblor Range, Carrizo Plains

This morning: Stratus in SLO, VBG inversion 1135 m -2.4 C, 1288 m 9.7 C, Fort Ord - Isothermal profile.
Short wave trough over CA, O3 cleanout overnight

Tuesday 6/1- Saturday 6/5: Air quality deteriorates interior ridgetops/valleys

Wednesday/Thursday – Zonal flow

Friday/Saturday – Increasing heights (>590 dm), strengthening inversion

Sunday-Tuesday: Geopotential hts > 592 dm, 850 mb temps 20-25 Deg C, expect significant increase in ozone
Temblor Range/Carrizo/Westside SJV ridges, poor dispersion

Air quality: Good air quality with the following exceptions - blowing dust midday/ afternoons-Oceano Dunes/Nipomo Mesa, Moderate air quality interior ridgetops/valleys on Wednesday 6/2 to Saturday 6/5 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

+ Tuesday afternoon (00Z 2 June)

- Marine Low Clouds

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

* SCT/CLR StCu Cape Mendocino to Pismo Beach

* BKN/SCT St/StCu Pismo Beach to San Diego

- SOCAL Marine Layer Winds

* NW 10-20 kts outer waters

* WSW 5-10 kts inner waters

+ Wednesday morning (12Z 2 June)

- Marine Low Clouds
- * OVC/BKN St w/ light rain Crescent City to Point Arena
- * OVC/BKN St Point Arena to Point Sur
- * SCT/CLR St/StCu Point Sur to Point Mugu
- * BKN/SCT St/StCu Point Mugu to San Diego
- SOCAL Marine Layer Winds
- * NW 10-25 kts outer waters
- * SE 5-10 kts inner waters

+ Wednesday afternoon (00Z 3 June)

- Marine Low Clouds
- * OVC/BKN St/StCu with rain Crescent City to Point Arena
- * BKN/SCT StCu Point Arena to Point Arguello
- * SCT/CLR StCu Point Arguello 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 3 June)

- Marine Low Clouds

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

- SOCAL Marine Layer Winds

- * NW 10-25 kts outer waters
- * SW-SE 0-5 kts inner waters

+ Thursday afternoon (00Z 4 June)

- Marine Low Clouds

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

- * OVC/BKN St/StCu Point Arena 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 San Francisco
- * SCT/CLR St/StCu San Francisco to Oceanside
- * BKN/SCT St/StCu Oceanside to San Diego

- SOCAL Marine Layer Winds

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

South Coast - Kevin Durkee

Tuesday: weak trough aloft; Miramar AM sounding - base 1950 ft with predicted deepening to ~3000 feet later this morning; extensive AM stratus offshore & into inland (RI & SB Co.) valleys; relatively strong onshore flow - gusty mountains & deserts; several degrees cooler than Monday; Moderate ozone

Wednesday: upper level ridging starts aloft & subtropical high expanding ; warming; shallower marine layer - night & morning coastal stratus into coastal valleys; weak onshore flow; ozone moderate to USG inland Basin

Thursday: ridge aloft amplifies; stronger W-E gradients, but N-S gradient becomes more offshore overnight & Thur AM; less low clouds, shrinking marine layer; AM low clouds & fog confined to coastal plain; several degrees of warming (temps 90+ inland); moderate to USG ozone

Friday+: Strong upper high sets up; shallow marine layer - night & morning low clouds/fog confined to near coast; northerly gradients for more warming & some winds; temps increase through Saturday; ozone to USG or higher inland over weekend