CalNex Forecast Notes - Monday, May 31, 2010

Anticipated Activities of Platforms

WP-3D
Mon Down Day - No flight
Tue possible night flight: SJV or LA?
Wed possible night flight SJV or LA?

NOAA Twin Otter
Mon takeoff 15 PDT to survey eastern part of LA Basin
and characterize outflow of pollutants into Mojave Desert.
Tue likely midday LA Basin - Mojave timed with satellite
Wed: Likely hard down day.
Thur (?) takeoff ~0530 PDT, loosely coordinated with P3.

R/V Atlantis:
Monday Santa Barbara Channel, headed N
Monday Night N of Pt Conception
Enroute to SF, due in SF by Sat June 8

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 - Adam Gerber; agerber@arb.ca.gov

Monday May 31
- Weak PacNW trough over N CA
- Transport flow W/SW

Tuesday June 1
- Zonal flow
- Transport flow turns W/NW

Wednesday June 2
- Ridge expands in SoCal, however will remain flat in Northern CA
- Onshore flow

Thursday through Saturday June 3-5
- Trough out of Gulf of AK forecast to spin shortwaves into PacificNW
- Transport flow to remain onshore
- Flat Ridging in SoCal
- By Saturday GOA Low seems to retrograde N, zonal flow to continueSynoptic

Overview for California: Adam Gerber;

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

LA/Bakersfield AIRNOW Site Comparison

Good O3 AQ at LA and Bakersfield during FX period
Moderate LA and Good Bakersfield PM2.5 AQ during FX period
O3 analysis shows significant underestimate for O3. PM2.5 analysis in good agreement with OBS.

LA/SF AIRNOW Ensemble

Initial LA Long-range transport to south during first 24hrs then turning northward for ensembles ending Tue. Long-range transport to UT for ensembles ending Wen/Thu
Initial SF Long-range transport to south then turning east ward. Increased dispersion for ensembles ending Wen/Thu

500m RDF FX 00Z 06/01 (Mon Afternoon)

High pressure off shore bringing in low CO/O3 into Northern CA. New IC CO/O3 enhancement offshore
Moderate (5-10 ppbv/day) background O3 P-L over LA. Low (~5ppbv/day) O3 P-L over SF
Descent over and south of LA

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
Descent over Southern CA

500m RDF FX 00Z 06/03 (Wen Afternoon)
Low CO/O3 airmass over Northern CA. Moderate O3 P-L from LA over AZ/NM
Moderate (5-10 ppbv/day) background O3 P-L over LA. Low (~5ppbv/day) O3 P-L over SF
Descent East of Point Comfort associated with New IC CO/O3

500m RDF FX 00Z 06/04 (Thu Afternoon)
Low CO/O3 airmass over most of CA. 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
Descent over Point Comfort associated with Low CO/O3

Area Forecast Details

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

Monday
- NW 20kt lightens to 10kts by late morning; continues 15kt at night
- PBL 500 to 1,000 ft

Tuesday
- NW 15kt wind decrease to 10kt around mid morning; becomes 5 to 10kt at night
- PBL 1,000 to 1,500 ft; rise to 3,000 ft and lowers to 500ft

Wednesday
- WNW 5 to 10kt turns SW around mid morning; W to SW for 5 to 10kt for the rest of the day
- PBL 500 ft and below

Thursday
- SW 10 to 15 kt

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

Tuesday
- Light variable wind from SE to SW in the morning, becomes SW 5 to 10kt in the early afternoon, which draws air in from the delta and Marrin County; becomes W 5 to 10kt before returning to calm condition at night
- AM PBL 500 to 1,000ft;
- Decreasing clouds compared to Monday, some cirrus remains
- Max aftn temp: 25C
- Moderate air quality: max-8hr mean O3 in 0.06 ppm range

Wednesday

- Light variable wind in early AM with downslope flow and delta onshore flow influence in early AM; SW 5 to 10kt around late morning; light variable wind in the evening
- Cirrostratus throughout the day
- Max aftn temp: 27C
- AM PBL around 500ft; PM PBL 2,500 to 3,500 ft
- Moderate air quality: max-8hr mean O3 in 0.06 ppm range

Thursday

- Light onshore flow and some downslope flow in early AM; light wind for the rest of the day
- Increasing stratus, overcast later in the day
- Moderate air quality

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

Monday May 31

Surface Winds: The surface observations this morning show light south to southeasterly wind flow from near Fresno County southward. Light west to northwesterly winds are present from San Joaquin to Madera Counties. The wind profilers at Chowchilla and Visalia indicate light northwesterly wind flow up to 3,000 feet, shifting and strengthening from the south to southeast above. This afternoon CANSAC shows NW wind flow across the entire SJV, with inflow from Pacheco, Altamont and the Delta. Outflow is toward the Deserts and SLO at 0Z. Synoptically driven wind flow will be present over the High Sierra's. Light northwesterly wind flow will be present over the SJV this evening and during the overnight hours. Downsloping will be minimized this evening due to the synoptic flow pattern.

Boundary Layer Mixing: Surface based inversion will prevent adequate mixing this morning. With afternoon heating, maximum mixing depths are expected to range from 4,000 and 5,000 feet. Mixing will once again be minimal this evening under surface based inversions.

Air Quality: Good to moderate air quality is forecast today.

Tuesday June 1

Surface Winds: Similar wind conditions will be present on Tuesday (see Monday's discussion).

Boundary Layer Mixing: CANSAC shows maximum mixing depths between 2,500 and 3,500 feet in the northern SJV increasing to near 5,000 feet in Kern County

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

Wednesday June 2

Surface Winds: CANSAC shows as the winds aloft begin to weaken, the downslope flow will re-establish itself over the Sierra's Light east to southeasterly flow will be present over the eastern parts of the SJV. Residual inflow through the Delta / Altamont pass will cause light northwesterly winds over the northern SJV. A potential re-circulation pattern may develop this day. (albeit weak).

Boundary Layer Mixing: CANSAC shows that maximum mixing ranging from 2,500 feet 4,500 feet. The overnight inversion should be present through the period.

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

Thursday June 3 and Friday June 4

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

SoCal Coastal Waters - Lee Eddington

+ Monday afternoon (00Z 1 June)

- Marine Low Clouds

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

* OVC/BKN St/StCu Point Arena to Palos Verdes

* BKN/SCT St/StCu Palos Verdes to San Diego

- SOCAL Marine Layer Winds

* NW 10-20 kts outer waters

* S-SW 5-10 kts inner waters

+ Tuesday morning (12Z 1 June)

- Marine Low Clouds

* BKN/SCT St/StCu Crescent City to San Diego

- SOCAL Marine Layer Winds

* NW 10-20 kts outer waters

* SE 5-10 kts inner waters

+ Tuesday afternoon (00Z 2 June)

- Marine Low Clouds

* OVC/BKN St/StCu Crescent City to Cape Mendocino

* SCT/CLR StCu Cape Mendocino to Palos Verdes

* BKN/SCT St/StCu Palos Verdes 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 Monterey

 * CLR Monterey 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 Crescent City to Cape Mendocino

 * OVC/BKN St/fog Cape Mendocino to Point Conception

 * SCT/CLR St/fog Point Conception to Malibu

 * BKN/SCT St/fog Malibu 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/fog Cape Mendocino to Point Conception

* CLR Point Conception to Santa Barbara

* OVC/BKN St/fog Santa Barbara to San Diego

- SOCAL Marine Layer Winds

* NW 10-20 kts outer waters

* LT VAR 0-5 kts inner waters

+ Thursday afternoon (00Z 4 June)

- Marine Low Clouds

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

* OVC/BKN St/fog Cape Mendocino to Point Conception

* CLR Point Conception to Palos Verdes

* BKN/SCT St Palos Verdes to San Diego

- SOCAL Marine Layer Winds

* NW 10-20 kts outer waters

* W 5-10 kts inner waters

South Coast - Kevin Durkee - not available