

CalNex Forecast Notes - Monday, May 17, 2010

California Synoptic Overview - Dar Mims (dmims@arb.ca.gov)

Monday May 17

- Trough axis entering CA; sliding south but slower than predicted yesterday
- Deepening marine layer and increased on-shore flow
- Precip confined mainly N of Pt Conception

Tuesday May 18

- Trough moves east into NV
- Transport and surface flow turns N/NW
- Ridge building late

Wednesday May 19

- Weak ridge builds in
- Strong NW winds

Thursday May 20+

- Large Gulf of Alaska trough moves in
- Cooler, windy weather heading into weekend.

Anticipated Activities

WP-3D

Mon: No Flight

Tue: No Flight

Wed: LA Basin and platforms comparison flights

Thu: No Flight

Fri: tentative Maersk vessel fuel switch

Sat: No Flight

note: evening & night flights begin May 23 for 10-14 days

NOAA Twin Otter

Wed: platforms comparison flights

NASA King Air

Wed: platforms comparison flights

R/V Atlantis

Mon: area between Pt. Conception and LaJolla

Local Features:

Wednesday: current forecasts call for extensive clouds in LA Basin in AM with inland clearing in PM - better conditions for intercomparison flights in afternoon

Friday: ship fuel switch measurements - too early to predict clouds with timing of systems moving through

Large Scale Transport Notes - Brad Pierce (brad.pierce@noaa.gov))**Intercontinental pollution coming onshore during later part of FX cycle****LA/SF AIRNOW Site Comparison**

Good O3 and Good changing to Moderate PM2.5 LA AQ during FX period
Good O3 and Good/Moderate PM2.5 SF AQ during FX period

LA/SF AIRNOW Ensemble

Intermediate (24hr) LA transport route east during FX period. Long-range transport turning from north to south during FX period.
Intermediate (24hr) SF transport route northeast during FX period. Long-range transport turning from north to south during FX period.

500m RDF FX 00Z 05/18 (Mon Afternoon)

New Intercontinental CO/O3 enhancement offshore, advection of SF and LA O3 P-L enhancement into NV/UT/ID at 500m
Low (<5 ppbv/day) background O3 P-L over LA&SF
Enhanced (10-15 ppbv/day) over NV/UT/ID
O3 enhancement (>60ppbv) advected into NV/UT

500m RDF FX 00Z 05/19 (Tues Afternoon)

New Intercontinental CO/PM2.5 enhancement offshore at 500m
Weak (~5 ppbv/day) background O3 P-L around LA&SF

500m RDF FX 00Z 05/20 (Wen Afternoon)

First Intercontinental CO/PM2.5 enhancement coming onshore, second wave still offshore
Moderate (5-10 ppbv/day) background O3 P-L around LA
Lagrangian mean descent over LA
O3 enhancement (>60ppbv) LA

500m RDF FX 00Z 05/21 (Thur Afternoon)

Second Intercontinental CO/PM2.5 enhancement coming onshore in Northern CA,
clean air descending over Southern CA
Moderate (5-10 ppbv/day) background O3 P-L over LA&SF

Area Forecast Details

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

Monday

- S 15 to 20 kt wind, W 10kt at night
- Onshore flow bifurcation: 70/30 (SV/SJV)
- MBL: Areas of 2,500 ft becomes 500 ft

Tuesday

- W 5 to 10kt; NW 10kt in the early evening
- Less onshore flow in early morning, and then 30/40/30 (SV/FH/SJV)
- MBL mostly below 1,000 ft

Wednesday

- Light NW turning SW 5 to 10kt in early morning; SW 10kt through the afternoon; NW 15 kt at night, gradually becoming stronger
- Flow Bifurcation 50/50 (SV/SJV) in early morning, then 20/40/40 (SV/FH/SJV)
- MBL 500 ft

Thursday

- NW 20kt becomes 30kt in the afternoon, back to 20kt at night;
- MBL 1,500 ft, will increase to 7,000 ft

Friday & Saturday

- NW 15 kt becomes 25 kt in the afternoon and continues at night; NW 20kt

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

Monday

- SW 10kt; SE 5 to 10 kt in the evening
- No downslope flow
- PM PBL at 3,500 ft

Tuesday

- SE 5 kt turning W 5 to 10kt around sunrise; SW 5kt for the rest of the day
- No downslope flow
- AM PBL 1,000 to 2,000 ft, PM PBL 5,500 ft

Wednesday

- S to W 5 to 10kt

- Some downslope flow
- AM PBL 500 ft; PM PBL 3,000 to 5,000 ft

Thursday

- SW 5 to 10 kt
- AM PBL 1,000 ft

Friday & Saturday

- SW turns NW 5kt in early morning; light W on Saturday

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

Monday May 17

Surface Winds: The surface observations this morning show light to moderate N to NW winds throughout the entire SJV. No wind profiler data was available today. CANSAC shows a light NW flow across a majority of the SJV throughout the day. Northwesterly winds will be strongest toward Tehachapi and Cottonwood pass toward this afternoon. Air inflow into SJV via SLO(San Luis Obispo), Pacheco, Altamont, Cottonwood, and Delta. Outflow toward the Desert. Overnight winds will be light and variable across the entire District.

Boundary Layer Mixing: The aircraft soundings from Fresno shows isothermal conditions below 5,000 feet. The Bakersfield morning sounding depicts a weak inversion of 4 degrees Fahrenheit from the surface up to 500 feet. Maximum mixing depths will vary around 3,000 to 3,500 feet today. An interesting feature is appearing at 5:00 PM this afternoon over north northwestern Kern and southwestern Tulare Counties. A slug of very low mixing depths of 300 to 500 feet.

Air Quality: Air quality is predicted to be in the good range District-wide today due to the vast amount of cloud cover limiting solar radiation.

Tuesday May 18

Surface Winds: CANSAC shows a initially light and variable wind flow present in the SJV during the morning hours. Strengthening northwesterly flow across the District during the afternoon hours.

Boundary Layer Mixing: Mixing should be limited during the overnight hours due to the formation of the inversion. Tomorrow, maximum mixing depths should be deeper due to more solar radiation. Maximum mixing depths are forecast between 4,500 to 5,500 feet.

Air Quality: Air quality is forecast to be in the good range District-wide tomorrow under adequate dispersion conditions.

Wednesday May 19

Surface Winds: Generally northwesterly winds are predicted for the entire SJV, with lighter winds predicted in Tulare and Kern Counties. Onshore flow will be

occurring through the Delta. Flow will be toward SLO and the Deserts during the afternoon hours.

Boundary Layer Mixing: CANSAC depicts lower mixing depths on Wednesday. The maximum mixing depths will range between 3,000 and 4,500 feet from Stanislaus county southward to Kern. Lower mixing depths are forecast for San Joaquin County between 600 to 1,000 feet.

Air Quality: Good Air Quality is predicted for a majority of the District, with moderate air quality developing in Kern and Tulare Counties due to ozone. Skies should be clearing on Wednesday.

Thursday May 20 and Friday May 21

Surface Winds: As the Pacific Northwest trough deepens over California, strong onshore flow will develop across the District. This flow will trigger a general northwesterly flow pattern across the SJV.

Boundary Layer Mixing: Mixing depths should steadily improve under better dispersive conditions because of the trough.

Air Quality: Air quality will be in the good range through the period.

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

AQ Friday – Sunday 5/14-16: 8 hr ozone max > 60 ppb ridgetops/ valleys of Temblor Range/Carrizo Plain (Moderate AQ)

Current Wx: Cloudy, drizzle, light showers Ozone dropped to background 33-44 ppb

Marine layer at Ft Ord > 4000ft deep VBG: elevated inv 6.0C@1049m AGL, 10.6C @ 1408m AGL

OAK: elevated inv 4.6C@885m AGL, 6.4C @ 996m AGL

Synopsis 5/17 – 5/23: NW flow increases Wednesday through Sunday afternoons. Blowing dust in afternoons – Oceano Dunes/Nipomo Mesa Wednesday through Sunday. Sundowner winds possible Gaviota- SBA Weds- Sunday

Today Monday 5/17: Trough axis over CA coast, deep marine layer. Light showers SW flow aloft

Tuesday: Trough over Great Basin. Chc showers early AM

Wednesday: Trough approaches CA. Stratus night and morning coastal plain and offshore, clear afternoon. NW flow aloft. Blowing dust in afternoon – Oceano Dunes/Nipomo Mesa

Thursday: Trough No CA, NW flow aloft . Blowing dust in afternoon/Moderate AQ – Oceano Dunes/Nipomo Mesa

Friday: Trough deepening over CA, NW flow aloft, Blowing dust in afternoon/ Moderate AQ – Oceano Dunes/Nipomo Mesa

Saturday: NW flow aloft. Blowing dust in afternoon/Moderate AQ – Oceano Dunes/ Nipomo Mesa

Air quality: Good air quality with exception - Blowing dust in afternoons/Moderate AQ – Oceano Dunes/Nipomo Mesa - Thursday through Sunday.

Significant features for study: Blowing dust Oceano Dunes/Nipomo Mesa peaking midday/afternoons - max PM10 Thursday – Sunday

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

+ Monday afternoon (00Z 18 May)

- Marine Low Clouds

* BKN/OVC St/StCu light rain/drizzle Crescent City to San Diego

- SOCAL Marine Layer Winds

* W 5-10 kts inner and outer waters

+ Tuesday morning (12Z 18 May)

- Marine Low Clouds

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

- SOCAL Marine Layer Winds

* W 0-10 kts inner waters

* WNW 5-15 kts outer waters

+ Tuesday afternoon (00Z 19 May)

- Marine Low Clouds

* SCT/BKN StCu Crescent City to San Diego

- SOCAL Marine Layer Winds

* W 10-15 kts inner waters

* WNW 10-20 kts outer waters

+ Wednesday morning (12Z 19 May)

- Marine Low Clouds

- * BKN/OVC St/StCu Crescent City to Cape Mendocino
- * SCT/BKN St/StCu Cape Mendocino to Palos Verdes
- * BKN/OVC St Palos Verdes to San Diego

- SOCAL Marine Layer Winds

- * LT VAR inner waters with easterly flow N LA to Ventura county
- * WNW 10-20 kts outer waters

+ Wednesday afternoon (00Z 20 May)

- Marine Low Clouds

- * OVC NiSt rain Crescent City to San Francisco
- * CLR San Francisco to Palos Verdes
- * SCT/BKN StCu Palos Verdes to San Diego

- SOCAL Marine Layer Winds

- * W 5-10 kts inner waters
- * WNW 15-25 kts outer waters

+ Thursday morning (12Z 20 May)

- Marine Low Clouds

- * SCT/BKN StCu/Cu w/ rain showers Crescent City to San Francisco
- * SCT/BKN StCu San Francisco to Point Arguello
- * CLR Point Arguello to Palos Verdes
- * SCT/BKN StCu Palos Verdes to San Diego

- SOCAL Marine Layer Winds

- * ESE 0-10 kts inner waters
- * WNW 10-25 kts outer waters

+ Thursday afternoon (00Z 21 May)

- Marine Low Clouds

- * CLR Crescent City to San Diego

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

- **Monday:** Deep marine layer (Miramar AM inversion base @ 3900 feet); large trough with vort max & cold front bringing clouds, drizzle/light rain throughout SoCAB this AM; Temperatures cool (10-20 degrees below weekend highs); windy mountains and deserts; AQ Good-Moderate (mostly PM2.5)
- **Tuesday:** Weather system moves slowly; marine layer deepens; chance of light rain through Tuesday Morning; slightly warmer afternoon temperatures, but still well below normal; cloudy through day; windy mountains & deserts; AQ Good-Moderate
- **Wednesday:** ridge builds for a patchy marine layer; shallower inversion; AM clouds to coast with some inland penetration, especially if coastal eddy in AM; mostly clear

after noon inland; temperatures increase 10 or more degrees F (low 80s inland); increasing ozone - mostly Moderate

- **Thursday:** weak trof to N starts to weaken the ridge over So Cal for more zonal flow; Basin temperatures remain at or slightly above seasonal norms
- **Friday - Tuesday:** troughing for deeper marine layer, cooler temps; marine layer may have trouble forming on with trough on Friday for patchy low clouds offshore; some gusty winds possible mountains & deserts; mostly Moderate ozone, but some USG with sun inland - mainly Central San Bernardino Mountains & into deserts