

CalNex Forecast Notes - Wednesday, May 19, 2010

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

Wednesday May 19

- Short wave trough brushes Northern CA
- Cold front moves through Bay Area/Sac Valley
- Precip possible Bay Area northward
- Weak ridge for central/southern CA with offshore gradients

Thursday May 20

- Large upper low from GOA drops S toward PacNW
- Ridge is pushed farther south
- Transport flow turns W
- Onshore flow increases especially south

Friday-Sunday May 21-23

- Large upper trough slowly pushes southward
- Smaller disturbances rotate around the trough through the weekend
- Precip chances from Monterey northward on Saturday
- Onshore surface flow for all coastal areas through the weekend

Local Features:

Friday:

- **Large scale descent of ozone offshore of Southern California**
- **Ship fuel switch experiment vicinity of San Nicolaus Island, expect sustained winds of 20-25 kt near San Nic; outer water winds to exceed 30 kt.**
- **Model cloud predictions of cloudiness are uncertain under influence of synoptic trough.**
- **Blowing dust plumes in So. SLO county - Nipomo Mesa Dunes area 11 -1700 pdt**

Anticipated Platform Activities

WP-3D

Wed: LA Basin and platforms comparison flights

Thu: No Flight

Fri: tentative Maersk vessel fuel switch; take off at 8:30 pdt

Sat: No Flight

Sun: first evening flight, likely late afternoon - evening to start, then over course of 10 - 14 days transitioning to later evening to sunrise.

NOAA Twin Otter

Wed: Transit from Colorado to Ontario

CIRPAS Twin Otter

Wed: platforms comparison flight

NASA King Air

Wed: platforms comparison flight

R/V Atlantis

Tentative, continuing in LA harbor vicinity

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

Intercontinental pollution coming onshore Friday

LA/SJ AIRNOW Site Comparison

Good O3, Moderate PM2.5 LA AQ during FX period

Good O3, Good to Moderate PM2.5 AQ during FX period

LA/SF AIRNOW Ensemble

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

Intermediate (24hr) SF transport route northeast on Thur. Long-range transport showing significant dispersion for ensembles ending Sat.

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

First Intercontinental CO/PM2.5 enhancement coming onshore, second wave still offshore

Some (~60ppbv) O3 enhancement over LA

Lagrangian mean descent over LA

Moderate (5-10 ppbv/day) background O3 P-L around LA

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

Second Intercontinental CO/PM2.5 enhancement coming onshore in Northern CA, clean air descending over Southern CA

Weak (~5 ppbv/day) background O3 P-L over LA&SF

500m RDF FX 00Z 05/22 (Fri Afternoon)

Second Intercontinental CO/PM2.5 enhancement onshore in Northern CA, high O3 air descending over Southern CA

Low (<5 ppbv/day) background O3 P-L over SF&LA

Moderate (5-10ppbv/day) NE of Salt Lake

Lagrangian mean descent over Southern CA

Significant (~80ppbv) O3 enhancement over South CA

Combination of Intercontinental + LA pollution?

500m RDF FX 00Z 05/23 (Sat Afternoon)

Second Intercontinental CO enhancement onshore in Northern CA, mixture of Intercontinental+Western US pollution along cold front

Significant (~70ppbv) O3 enhancement over Western CO

PM2.5 enhancement over Western CO

Combination of Intercontinental + LA + SL pollution?

Low (<5 ppbv/day) background O3 P-L over LA&SF

Area Forecast Details

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

Wednesday

- Light NW turning SW 5 to 10kt around sunrise and through the early afternoon; NW 15 kt in the evening, gradually becoming stronger
- MBL below 500 ft, rises in the afternoon; max height 2,500 ft at night before dropping

Thursday

- NW 20kt becomes 30kt in the afternoon, slightly relaxes overnight
- MBL 1,500 ft, will increase to 2,500 ft

Friday

- NW 20 to 25kt all day, except weakens briefly to 15 to 20kt in the morning
- MBL mostly 3,000 ft, areas of 8,000ft

Saturday

- NW wind mostly 20kt, can reach 30kt in the evening

Sunday & Monday

- NW wind continues into Monday, gradient relaxes on Monday morning

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

Wednesday

- S to W 5 to 10kt (light SE for northern SV in early AM), shifts NW overnight
- Some downslope flow
- Steady increasing onshore flow through the Carquinez Strait to SV, flow peaks in afternoon and diminishes in the early evening
- AM PBL 500 ft; PM PBL 3,000 to 5,000 ft

Thursday

- Shifts from W to NW in early AM, NW 5 to 10kt in the morning decreasing to 5kt in the afternoon; W 5kt in the evening from Coast Range
- NNW flow cuts off onshore delta influence for Sac Valley but sends some to SJV
- AM PBL 1,000 ft; PM PBL 5,000 to 8,000 ft

Friday

- WNW 5 to 10 kt; NW 5kt at night
- Onshore flow through Coastal Range
- No AM downslope flow
- AM PBL 1,000 to 2,000ft , PM PBL 4,000 to 6,000 ft per GFS, may be higher according to COAMPS

Saturday

- Light wind from NW, pressure gradient relaxed

Sunday & Monday

- NW wind continues on Sunday; becoming SW on Monday

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

Wednesday May 19

Surface and Lower Air Profiler Winds: The surface observations this morning shows calm to light northwesterly winds present over the entire SJV. The lower air profilers this morning depicts light northwesterly wind flow throughout the atmospheric profile (up to 5,000 feet). The OZ CANSAC model run shows a light NW flow across a majority of the SJV throughout the day. A robust onshore flow will occur over the Delta, Pacheco and Altamont passes. Outflow from the SJV toward SLO and the Deserts. Overnight, light northwesterly wind flow will persist.

Boundary Layer Mixing: The aircraft sounding from Fresno depicts a weak inversion of 4 degrees Fahrenheit from the surface up to 1,500 feet. The Bakersfield morning sounding depicts a moderate inversion of 9 degrees Fahrenheit from the surface up to 1,000 feet. Maximum mixing depths this afternoon will vary around 2,500 to 5,000 feet today. Lower mixing depths are predicted over San Joaquin County (around 1,000 feet). Mixing depths will lower during the overnight hours and will range between 500 to 1,000 feet.

Air Quality: Air quality is predicted to be in the good range from Kings county northward, with moderate air quality forecast in Kern and Tulare Counties.

Thursday May 20

Surface Winds: The OZ CANSAC shows moderate northwesterly wind flow from Kings/Fresno County northward, with lighter wind flow present in Tulare and Kern counties. Light northerly flow in the Sac Valley will have cut-off the flow through the Delta around 0Z Friday. Residual inflow through the Altamount and Pacheco pass will continue. Flow from SAC toward San Joaquin county will occur under light to moderate northwesterly flow. Light outflow will be toward the Deserts and SLO.

Boundary Layer Mixing: Mixing depths will start off low in the morning and gradually grow to between 2,500 to 4,000 feet. Mixing will be more limited over the Sierra's tomorrow.

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

Friday May 21

Surface Winds: Onshore flow will be present during the morning hours, with minimal wind flow occurring in Kings, Tulare and Kern Counties. As the trough deepens over the West Coast, a more robust onshore flow will occur, with moderate to strong northwesterly winds developing over the entire SJV. Flow will be out toward the Deserts.

Boundary Layer Mixing: Overnight the inversion will reform. The OZ CANSAC depicts maximum mixing depths between 3,500 and 5,000 feet during the afternoon hours.

Air Quality: Good Air Quality is forecast District-wide due to good dispersion conditions.

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Saturday and Sunday May 22 and May 23

Surface Winds: As the 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 over the weekend under trough conditions.

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

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****Flight Features to note:** Air exchanges between Air Basins (specifically onshore flow). Low mixing heights forecast for San Joaquin County today.

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

Monday 5/18: Cloudy, light showers. Ozone dropped to background 31-44 ppb max 8 hr avg Temblor Range E flow AM, SW flow PM

Current Wx: Clear central coast, stratus E of Pt Conception, Cloudy north of Marin Co. Temblor Range E flow

VBG: sfc inv 9.8C@sfc 14.2 C @ 352m AGL, Ft Ord sfc inv sfc-3000 ft AGL 2 deg C, Lost Hills isothermal profile E flow aloft

Synopsis 5/19 – 5/25: Strong NW flow along the coast, NW flow aloft Wednesday 5/19 through Tuesday 5/25 afternoons. Blowing dust in afternoons – Oceano Dunes/Nipomo Mesa Wednesday through Sunday & Tuesday. Sundowner winds possible Gaviota- SBA Weds - Sunday Stratus coast AM - clearing inland PM

Today Wednesday 5/19: Weak ridge over CA. Trough approaches CA. NW flow aloft. Blowing dust in afternoon/Moderate AQ – Oceano Dunes/Nipomo Mesa

Thursday: Trough No. CA, NW flow aloft. Blowing dust in afternoon/Moderate AQ – Oceano Dunes/Nipomo Mesa - Stratus coast AM - clearing inland PM

Friday: Trough deepening over CA, NW flow aloft. Blowing dust in afternoon/Moderate AQ – Oceano Dunes/Nipomo Mesa - Stratus coast AM - clearing inland PM some areas, stratus lingering PM in some areas north central coast per COAMPS

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

Sunday: Trough - Nevada NW flow aloft. Blowing dust in afternoon/Moderate AQ – Oceano Dunes/Nipomo Mesa

Monday: Trough CA 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 - Wednesday through Sunday & Tuesday

Significant features for study: Blowing dust Oceano Dunes/Nipomo Mesa peaking midday/afternoons - Wednesday – Tuesday , max PM10 Fri-Sat afternoons

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

See slides for COAMPS plots of winds and clouds

Wed 12 Z observed nearshore winds are weak with a weak eddy centered near coastline in near LAX just N of San Pedro, extending from Malibu in the N to about Huntington in the south. In contrast COAMPS predicted stronger NNE offshore flow and a larger eddy centered farther offshore, NE of Catalina Island.

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

Wednesday: weak ridge builds today;
stronger, shallower inversion - Miramar AM sounding shows base at 3360 ft; max mixing height today predicted at 4600 ft at Downtown LA, although subsidence with the ridge may keep this lower;
weak coastal eddy offshore has helped bring low cloud penetration from the coast into the Inland Empire valleys this morning; clouds should burn off by this afternoon for clearing to the coast;
temperatures increase 10 or more degrees F from yesterday in inland areas (to low 80s inland);
good sea breeze this afternoon, gusty winds Antelope Valley;
increasing ozone inland - mostly Moderate, some USG possible inland

Thursday: weak trof starts to weaken the ridge over So Cal;
short-wave trough moves through overnight to increase northerly gradients and cold air advection for gusty winds in the LA & Ventura County mountains (esp. I-5 corridor & Santa Barbara coast) 6PM Wed - 9AM Thurs, then again Thursday night; weaker onshore flow in afternoon;
Inland temperatures remain warm; morning marine layer clouds remain mainly near the coast (less inland penetration); increasing ozone - mostly moderate but some USG inland possible

Friday: Upper low in Pacific Northwest; inversion base & marine layer should start to deepen in response to the the trough moving over CA; COAMPS shows morning low clouds offshore with weak eddy, clearing in the afternoon;
cooler temps Friday compared to Thursday; stronger onshore flow in afternoon;
winds increase Friday afternoon, gusty in the mountains and deserts; Friday's NWS Oxnard Zone Forecast for Catalina Island: FRIDAY...LOW CLOUDS AND FOG IN THE MORNING THEN MOSTLY SUNNY. WINDY. HIGHS IN THE UPPER 60S. AREAS OF WEST WINDS 20 TO 30 MPH IN THE AFTERNOON ON THE WEST SIDE OF THE ISLAND.

Saturday: deeper marine layer; possible AM drizzle; mostly Moderate ozone for the next few days, but some USG possible with sun inland - mainly Central San Bernardino Mountains & into deserts

Sunday: deep marine layer; possible AM drizzle

Monday: trough weakens for a little warming & shallower marine layer

Tuesday: little change from Monday

Long Term outlook from NWS (from Tuesday May 18)

NWS Oxnard: "A look at the longer range mdls continue to show a high amplitude blocking ridge across the east coast which keeps the long wave trof firmly over the west coast. All of which means warmer temps will be a long time coming."

NWS San Diego: "The weather pattern gets stuck with a nearly stationary broad 576 trough over the western states friday through possibly the end of the month. The weakly cyclonic flow of this trough will be enough to maintain 1003 mb surface low pressure over the far interior... resulting in mod-strong 1-12 mb onshore flow and a 3-5 kft deep, persistent marine layer. That means a lot of stratus west of the mountains and 5-10 degrees below normal temps area-wide. The mountains & deserts will also be windy at times, particularly this friday PM into Sunday AM and again Tuesday-Wednesday of next week, when wind advisories may be needed."