

CalNex Forecast Notes - Friday, May 14, 2010

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

Friday May 14

- Weak ridging keeping transport flow light N/NW
- Onshore surface flow on the coast
- Slope-driven flow in the Valleys

Saturday May 15

- Little change from Friday
- Onshore flow increases a bit
- Transport flow turns W late

Sunday May 16

- Onshore flow increases more
- Trough just offshore

Monday-Tuesday May 17-18

- Trough axis moves through late Monday
- Rain starts on the North Coast and spreads SE
- Light amounts expected through Tuesday
- Precip confined mainly N of Monterey

Anticipated Activities

W-P3

Fri: offshore cloud study & SoCAB w/ King Air (ship fuel switch axed)

Sat: No Flight

Sun: southern San Joaquin Valley

Mon: tentative No Fly

Tue: tentative No Fly

Wed: platforms comparison flights
evening & night flights begin May 22

NASA King Air

Fri: coordinated flights w/ P3

R/V Atlantis

Fri: LaJolla, moving toward Pt. Conception overnight

Sat: Pt. Hueneme/Pt. Conception area

Sun:

Local Features:

Sunday:

Southern SJV: O3 levels mod to USG; perhaps some O3 aloft (2000-3000') from Sat as winds light; models differ on outflow through Tejon Pass

Mojave Desert: elevated production of bkg O3 in Mojave Desert; might be good to take eastern route (Tehachapi & Cajon Passes) back to Ontario

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

LA/SF AIRNOW Site Comparison

Predict Moderate O3&PM2.5 LA AQ during FX period

Predict Good O3, Good/Moderate PM2.5 SF AQ during FX period

RAQMS likely underpredicting LA O3 P-L during later part of FX period

LA/SF AIRNOW Ensemble

Intermediate (24hr) LA transport route to southeast turning East during FX period. Stagnation over western AZ for ensemble ending Sat. Advection into NV for ensemble ending Sun/Mon

SF Ensemble shows rapid southward transport to Baja for ensembles ending Sat. Stagnation over Southern CA /AZ boarder for ensemble ending Sun. Increased dispersion on Mon

500m RDF FX 00Z 05/15 (Fri Afternoon)

Advection of SF pollution South and LA pollution to the East at 500m.

Extent of region of Lagrangian mean descent off the Southern CA coast reduced compared to previous FX

Moderate (5-10 ppbv/day) background O3 P-L East of LA and South of SF
CONUS PBL air advected southward off MX coast

500m RDF FX 00Z 05/16 (Sat Afternoon)

Intercontinental CO enhancement remaining offshore, advection of SF and LA pollution to the East at 500m

Moderate (5-10 ppbv/day) background O3 P-L East of LA&SF
Some PM2.5 enhancement SE of LA

500m RDF FX 00Z 05/17 (Sun Afternoon)

Intercontinental CO enhancement moving onshore, advection of SF and LA pollution to the North East at 500m

Elevated (10-15 ppbv/day) background O3 P-L NE of LA, reduction in SF O3 P-L compared to previous FX
Some PM2.5 enhancement over Southern CA

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

New Intercontinental CO enhancement offshore, advection of SF and LA pollution to the North East at 500m
Moderate (5-10 ppbv/day) background O3 P-L NE of LA&SF
Some PM2.5 enhancement over Southern CA

Forecast Details

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

Note: smaller red font in parenthesis e.g., (10kt) indicates prediction from previous forecast which differs from the forecast today

Friday

- 10 to 15 kt NW wind becoming stronger
- Onshore through the delta into SV and SJV, splitting 40/60 respectively
- MBL less than 500ft

Saturday

- NW 15 kt wind
- Onshore flow toward SV and SJV, 50/50 bifurcation
- MBL less than 500ft

Sunday

- NW 10kt, gradually weakens and shifting W, shifting S overnight
- Onshore flow bifurcation 70/30 (SV/SJV)
- PBL around 500 ft, increases to 1,000 then decrease

Monday

- S 15kt wind in the morning, W 10kt in the afternoon; NW 5 kt in the evening

Tuesday & Wednesday

- NW 5 to 15 kt on Tuesday; NW wind become W 10kt in the morning, and NW in the early evening

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

Note: smaller red font in parenthesis e.g., (subsiding N wind limit downslope flow to eastern SV) indicates prediction from previous forecast which differs from the forecast today

Friday

- Light E wind (northern SV) and light SW wind (southern SV); light S to light W after sunrise
- Light PM downslope flow
- PM PBL 6,000 ft

Saturday

- Light SE (northern SV) and S (southern SV); 5kt S to W wind after sunrise
- Onshore throughout the day;
- Minimal PM downslope flow reaching SV
- AM PBL 1,000 ft; PM PBL 2,000 ft (northern SV) to 5,000 ft (southern SV)
- Peak O3 day for this forecast period

Sunday

- Wind strengthen, S to W 5 to 10 kt, 5kt in the evening
- Onshore flow all day
- AM PBL 1,000 ft PBL around 4,500 ft

Monday

- SW 5 to 10kt; SE 5kt by the afternoon
- No downslope flow

Tuesday

- SE to SW 5 to 10 kt on Tuesday and Wednesday

San Joaquin Valley - Jon Klassen (jon.klassen@valleyair.org)

Friday May 14

Surface Winds: The surface observations this morning show calm to light NW wind flow in the northern and central SJV, with light SE flow in the southern SJV. The wind profilers also show a general NW wind flow at the higher elevations. CANSAC shows a light NW flow across the SJV throughout the day, with stronger flow in the northern SJV due to inflow via the Delta and the Altamont Pass.

Boundary Layer Mixing: The aircraft sounding from Fresno showed a temperature inversion of 9 F from the surface up to 1,000 feet. Bakersfield showed a temperature inversion of 7 F from the surface up to 1,000 feet. Mixing should improve to 5,500 feet along the eastern portion of the SJV, and up to 2,500 feet on the western portion of the SJV.

Air Quality: Expected to be mostly in the Moderate category, with perhaps a few locations with USG.

Saturday May 15

Surface Winds: CANSAC shows even lighter winds than Friday. Conditions should be stable and stagnant. Flow is expected to increase in the northern SJV by the late afternoon due to inflow via the Delta and Altamont Pass.

Boundary Layer Mixing: Mixing should be slightly worse than Friday due to building pressure, but should still improve to 3,000 feet in most parts of the SJV.
Air Quality: Expected to be Moderate across the SJV, with possibly a few spots with USG.

Sunday May 16

Surface Winds: Like Saturday, CANSAC again shows very light NW winds due to stability. These conditions will carry throughout the day, except for the northern SJV where winds will increase from the NW by the late afternoon.

Boundary Layer Mixing: CANSAC shows mixing similar to Saturday...improving to 3,000 feet throughout most parts of the SJV.

Air Quality: Expected to be Moderate to USG throughout the SJV.

Monday May 17

Surface Winds: GFS shows surface winds to be predominately southerly during the day, and turning from the northwest by the evening. A weak trough will be moving through the area.

Boundary Layer Mixing: Mixing conditions should improve as the day progresses to the incoming trough.

Air Quality: Expected to be mostly Moderate throughout the SJV, with perhaps some Good in the northern SJV.

Tuesday May 18

Surface Winds: GFS shows mostly NW flow throughout the day.

Boundary Layer Mixing: Conditions should be similar to Monday due to the passing system.

Air Quality: Expected to be mostly Moderate throughout the SJV, with perhaps some Good in the northern SJV.

Potential Targets for next Flight Day

For Sunday, the air quality in Kern County is expected to be USG. CANSAC shows flow into Kern County from SLO, and outflow from Kern County into LA Basin via Tejon Pass (see slide). This would be a good chance to capture an ozone episode.

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

5/14/2010 - 9 am PST

Yesterday 5/13: NW flow coast. Interior ridges NNE flow early – W in PM. Good air quality. Increase in afternoon ozone Carrizo Plains and Temblor Range ridgetops.

Current Wx: SE flow this AM top of Temblor Range. Stratus along central coast, coastal plains, Salinas Valley & over the top of Pacheco Pass. NW flow along coast - clearing downwind of headlands @ Avila Beach, downwind of Pt Sal, Pt Arguello, Santa Ynez Range. Weak impulse off central coast shows up on satellite as comma shaped high clouds approaching coastline. Marine layer at Ft Ord ~ 2000ft deep Inv 10C VBG: elevated inv 7C@398m AGL, 17.4C @ 914m AGL

Synopsis 5/14 – 5/16: June gloom is with us on the coast. Fair Wx. - Night and morning low clouds along coast with hazy afternoon sun and mostly clear inland, with stratus into valleys early morning. NW sfc flow along coast – peaking midday and afternoon. Stratus clearing downwind of headlands in NW flow. Increase in ozone Temblor/Diablo Ranges & Valleys due to transported ozone/precursors.

Today Friday 5/14: Trough over Great Basin. NW flow sfc along coast. Flow aloft NE in AM, W in afternoon, then E flow late. Stratus night and morning coastal plain and offshore, clear inland. Easterly flow allows ozone/precursor transport to interior ridges.

Saturday: Zonal flow. SE flow aloft most of day. Stratus night and morning coastal plain and offshore, clear inland. Southeasterly flow allows ozone/precursor transport to interior ridges.

Sunday: Approaching trough E Pac. Stratus night and morning coastal plain and offshore, clear inland. SE flow aloft AM - SW flow aloft PM.

Monday: Trough axis over CA coast, deeper marine layer, inversion weakening. Stratus night and morning coastal plain and offshore, clear inland.

Tuesday: Weak ridge

Wednesday: Weak ridge

Air quality: Increasing ozone, deteriorating dispersion Friday & over the weekend, moderate air quality interior ridges/valleys due to increasing ozone/precursor transport.

Significant features for study: Increasing ozone valleys/ridges of Temblor & Diablo Ranges Friday-Sunday

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

+ Friday afternoon (00Z 15 May)

- Marine Low Clouds
 - * BKN/OVC St Crescent City to Point Arguello
 - * CLR/SCT St Point Arguello to Point Mugu
 - * BKN/OVC St Point Mugu to San Diego
- SOCAL Marine Layer Winds
 - * W 8-12 kts inner waters
 - * WNW 10-20 kts outer waters

+ Saturday morning (12Z 15 May)

- Marine Low Clouds
 - * BKN/OVC St Crescent City to Point Arguello
 - * CLR/SCT St Point Arguello to Santa Barbara
 - * BKN/OVC St Santa Barbara to San Diego
- SOCAL Marine Layer Winds
 - * Santa Barbara Channel eddy likely
 - * Eddy between Catalina and Santa Cruz Island likely
 - * LT VAR inner waters
 - * NW 10-20 kts outer waters

+ Saturday afternoon (00Z 16 May)

- Marine Low Clouds

- * BKN/OVC St Crescent City to Point Arguello
- * CLR/SCT/BKN patchy St Point Arguello to San Diego
- SOCAL Marine Layer Winds
 - * W 8-12 kts inner waters
 - * WNW 10-20 kts outer waters

+ Sunday morning (12Z 16 May)

- Marine Low Clouds
 - * BKN/OVC St/StCu Crescent City to Point Arguello
 - * CLR/SCT St Point Arguello to Santa Barbara
 - * BKN/OVC St Santa Barbara to San Diego
- SOCAL Marine Layer Winds
 - * LT VAR inner waters
 - * NW 10-15 kts outer waters

+ Sunday afternoon (00Z 17 May)

- Marine Low Clouds
 - * BKN/OVC St/StCu Crescent City to Point Arguello
 - * CLR Point Arguello to Palos Verdes
 - * BKN/OVC St Palos Verdes to San Diego
- SOCAL Marine Layer Winds
 - * W 8-12 kts inner waters
 - * WNW 10-15 kts outer waters

+ Monday morning (12Z 17 May)

- Marine Low Clouds
 - * BKN/OVC St/StCu Crescent City to Point Arguello
 - * SCT/BKN St Point Arguello to Santa Barbara
 - * BKN/OVC St Santa Barbara to San Diego
- SOCAL Marine Layer Winds
 - * LT VAR inner waters
 - * NW 10-15 kts outer waters

+ Monday afternoon (00Z 18 May)

- Marine Low Clouds
 - * BKN/OVC St/StCu Crescent City to Point Arguello
 - * CLR/SCT St Point Arguello to Palos Verdes
 - * BKN/OVC St Palos Verdes to San Diego

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

- **Friday:** weak trough lingers; dry NW flow aloft; warmer; stronger inversion; marine layer reformed; eddy off coast; AM stratus across the coastal plain to near the inland valleys; mostly sunny afternoon; Miramar AM inversion base 2600 feet, LAXP & IRVP coastal profilers show ~1800 foot inversion base; today's mixing at Downtown LA around 3400 feet; temperatures will warm a few degrees inland but still cool at coast; mostly Moderate, but chance of reaching USG ozone at inland mountains and maybe Santa Clarita
- **Saturday:** flat/weak ridging aloft builds slowly; ~ warmest day this week - low to mid 80s inland valleys (slightly above normal temps); AM coastal eddy likely; stronger onshore flow afternoon; stronger inversion & marine layer - more inland

intrusion of AM stratus into coastal plain; sunny afternoon; mostly Moderate AQ but USG ozone possible inland

- **Sunday:** similar to Saturday; weak trough begins to approach to north, still some weak ridging over So Calif (still fairly flat); slightly cooler; onshore flow increases; still slightly above normal temperatures inland; mostly Moderate AQ but USG ozone likely inland
- **Monday:** weak trough approaches for minor cooling; deeper marine layer; possibly more gusty onshore winds; temperatures below seasonal norm; good to moderate ozone levels.
- **Tuesday:** Trough axis moves through SoCAB overnight with weak front across the area; deeper marine layer; precip unlikely, except some AM drizzle possible; temperatures below normal; good to moderate ozone
- **Wednesday & Thursday:** ridge builds for warming