

CalNex Forecast Notes - Saturday, May 8, 2010

California Synoptic Overview - Dennis King (dking@arb.ca.gov)

Saturday May 8

- Zonal pattern over CA
- On shore flow along the entire coastline
- Mixing heights will be good in all areas
- Off shore winds are from the Northwest
- Northwest winds off shore keep stratus away from coast

Sunday May 9

- Short wave moves into Northern CA
- Light rain possible north of Yuba City
- Valley gradients tightens in N.CA, weaker in S.CA

Monday May 10

- The short wave from Sunday has moved off to the east
- Another wave moves into Northern CA
- Rain continues throughout morning, ends during afternoon
- Leading edge of ridge pushes over Northern CA
- Strong north winds along coast and inland valleys

Tuesday May 11

- Ridging continues
- Gradient relaxed from Monday
- Mixing begins to deteriorate as high pressure builds
- Marine layer returns by Tuesday

Wednesday May 12

- Ridge builds into CA
- Winds relatively light, generally from N or NE over CA interior
- Stronger N winds along the Sierra ridge tops
- Light NW along the coast, except stronger on North coast

Anticipated activity for P3

Fri: Flew SJV

Sat: Fly in South Coast Basin and SE Desert

Sun/Mon: No Flights

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

LA/SF AIRNOW Site Comparison

- Good SF O3/PM2.5 AQ during FX period
- Good O3 and Moderate PM2.5 LA AQ during FX period
- RAQMS significantly underestimates O3/PM2.5 levels at Riverside during previous 4 days

LA AIRNOW Ensemble Prediction ending 00Z 05/09 (Sat Afternoon)

- Nightly exposure to enhanced PBL NO_y emissions leads to daily max O3 P-L ~20ppbv/day along LA ensemble
- Significant underestimates in O3 P-L at LA source site lead to low bias at intermediate and receptor sites

LA/SF AIRNOW Ensemble (Sun-Tues)

- Intermediate (24hr) transport route of LA Ensemble moving from south to east during FX period. Receptor region moving from AZ/CO to TX.
- SF Ensemble rapidly advected Southward by Sunday Afternoon. More eastward dispersion on Monday. Evidence of stagnation over CA/NV/AZ boarder on Tuesday.

500m RDF FX 00Z 05/09 (Sat Afternoon)

- Clean air descending over Southern CA. Next intercontinental polluted airmass arriving off shore at 500m. Low (<5 ppbv/day) background O3 P-L over LA
- Previous Background O3 P-L enhancement remains over Western AZ leading to Lagrangian mean O3 enhancement

500m RDF FX 00Z 05/10 (Sun Afternoon)

- Next intercontinental polluted airmass remains offshore at 500m.
- Low (<5 ppbv/day) background O3 P-L over LA
- CO/O3/PM2.5 enhancement over Southern CA

500m RDF FX 00Z 05/11 (Mon Afternoon)

- Intercontinental polluted airmass still offshore at 500m. Descent of polluted air over Southern CA and Mexico
- Low (<5 ppbv/day) background O3 P-L over LA
- CO/O3/PM2.5 enhancement advected South over Baja

500m RDF FX 00Z 05/12 (Tues Afternoon)

- Intercontinental polluted airmass circulating within High offshore at 500m. Broad region of descended PM2.5 enhancements over AZ/NM
- Weak (~5 ppbv/day) background O3 P-L over LA

1.5km RDF CO/PM2.5 (Sat-Tues)

- Intercontinental polluted (high CO) airmass moves onshore over FX period. Enhanced SO4+BCOC at 1.5km is possible source of regional PM2.5 enhancements at 500m

Regional Forecasts

NO CURRENT FORECAST for 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

NO CURRENT FORECAST for 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

San Joaquin Valley - Surface Winds Jennifer Ridgway

jennifer.ridgway@valleyair.org

Blue = Northern SJV, Brown = Central SJV, Green = Southern SJV, Purple = Valley Floor

SATURDAY MAY 8

Wind Profilers: The profilers at Tracy, Visalia, and Lost Hills indicate light to strong W to NW wind flow throughout the atmospheric profile. The profiler at Chowchilla indicates light NW and W wind flow up to 2,400 feet AGL with light to moderate to S wind flow above.

SJV Surface Obs: 8:00 Temperatures in the mid and high 50s and light to moderate N to NW winds across most of the valley. Clear skies.

CANSAC 00Z

- [Delta](#)—Moderate to strong W flow into the SJV predicted throughout the morning, afternoon, and night.
- [Altamont Pass](#)— Moderate to strong W flow into the SJV predicted throughout the morning, afternoon, and night.
- [Pacheco Pass](#)--Moderate to strong W flow into the SJV predicted throughout the morning, afternoon, and night.
- [Cottonwood Pass](#)— Light SW flow into SJV predicted in the morning becoming light E in the afternoon then moderate NE by 17:00.
- [Tejon Pass](#)— Moderate NW flow predicted over the Pass in the morning becoming moderate to strong NW by 17:00.
- [Tehachapi Pass](#)— Moderate SW flow into SJV predicted throughout the day.
- [Valley Floor](#)— Light variable to NW winds predicted in the morning becoming moderate to strong in the afternoon. Winds predicted light in Kern County during the night with NW and SW flows converging around the Bakersfield metro area by 23:00.

SUNDAY MAY 9

CANSAC 00Z

- [Delta](#)—Light to moderate W and SW flow into SJV predicted in the morning becoming moderate to strong W in the afternoon then light SW overnight.
- [Altamont Pass](#)—Light to moderate W flow into the SJV predicted throughout the morning, afternoon, and night.
- [Pacheco Pass](#)—Light to moderate W flow into the SJV predicted throughout the morning, afternoon, and night.
- [Cottonwood Pass](#)—Light variable flow predicted in the morning becoming moderate N and NE in the afternoon and moderate W by evening.
- [Tejon Pass](#)—light NW flow over the pass predicted in the morning becoming moderate N and NW in the afternoon then moderate W and NW flow by during by 23:00

•[Tehachapi Pass](#)—Moderate NW flow toward deserts predicted throughout the day and night.

•[Valley Floor](#)—Light to moderate NW flow predicted across the valley most of the day and evening with areas of light NE flow on the west side in the afternoon and evening. Light NW flow in San Joaquin and Stanislaus Counties and moderate NW flow southward predicted by 23:00.

MONDAY MAY 10

CANSAC 00Z

•[Delta](#)—Light SW flow into the SJV predicted in the morning becoming moderate to strong W flow by 17:00.

•[Altamont Pass](#)— Light to moderate SW flow into the SJV predicted in the morning becoming moderate to strong W in the afternoon and evening.

•[Pacheco Pass](#)— Light to moderate SW flow into the SJV predicted in the morning becoming moderate to strong W in the afternoon and evening.

•[Cottonwood Pass](#)—Light SW flow into SJV predicted in the morning and afternoon becoming strong W flow by 17:00.

•[Tejon Pass](#)—Light to moderate NW flow over the pass predicted in the morning becoming moderate N flow in afternoon and evening.

•[Tehachapi Pass](#)—Moderate W flow toward deserts predicted in the morning becoming W and NW in the afternoon and evening.

•[Valley Floor](#)— Light S flow in San Joaquin and Stanislaus Counties and light NW flow southward predicted in the morning. Light NW flow across the valley predicted in the afternoon becoming moderate by 17:00.

TUESDAY MAY 11

(GFS 00Z): Surface charts show tight pressure gradients throughout the day and evening. Moderate NW winds across SJV.

http://www.rap.ucar.edu/weather/model/displayMod.php?var=gfs_sfc_mslp&hours=hr072hr084hr096hr108hr120

WEDNESDAY MAY 12

(GFS 00Z): Surface charts show pressure gradients relaxing with light N winds over SJV in the morning becoming light NW by 00Z.

http://www.rap.ucar.edu/weather/model/displayMod.php?var=gfs_sfc_mslp&hours=hr072hr084hr096hr108hr120

San Joaquin Valley Boundary Layer Mixing

jennifer.ridgway@valleyair.org

Note: Mixing does not occur after sunset and prior to sunrise due to the absence of surface heating.

SATURDAY MAY 8

Morning Aircraft Soundings: The morning soundings for Fresno and Bakersfield were not available. The wind profiler at Chowchilla this morning indicates a virtual temperature inversion of 4 degrees Fahrenheit from the surface up to approximately 1,000 feet AGL.

CANSAC 00Z run: Mixing predicted to improve to 5,000 feet by 17:00. Best heights over the central parts of the SJV. Areas with lower heights are in SW part of Fresno County and Stanislaus and San Joaquin Counties.

SUNDAY MAY 9

CANSAC 00Z run: Mixing predicted to improve to 6,500 feet by 17:00. Best heights over the central Fresno County and areas of San Joaquin and Stanislaus Counties. Lowest heights predicted over central Merced County, northern Madera County, southwest Fresno County and Kings County.

MONDAY MAY 10

CANSAC 00Z run: Mixing predicted to improve to 5,000 feet across most of the central portion of the SJV by 17:00.

TUESDAY MAY 11

Heights expected to be good.

WEDNESDAY MAY 12

Height expected to be good.

SJV Air Quality

jennifer.ridgway@valleyair.org

SATURDAY MAY 8

Air quality good under good dispersion. No exceedances expected.

SUNDAY MAY 9

Air quality good under good dispersion. No exceedances expected.

MONDAY MAY 10

Air quality good to moderate. No exceedances expected.

TUESDAY MAY 11

Air quality good to moderate. No exceedances expected.

WEDNESDAY MAY 12

Air quality good to moderate. No exceedances expected.

Potential Targets

Air quality is expected to deteriorate Wednesday into Thursday and possibly reach the Unhealthy for Sensitive Groups range in Kern County. Kern County is a potential target on Thursday due to poor dispersion and air quality.

NO CURRENT FORECAST for Central Coast - Gary Arcemont
(garcemont@co.slo.ca.us)

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

NO CURRENT FORECAST for South Coast - Kevin Durkee
(kdurkee@aqmd.gov)