CalNex Forecast Notes - Monday, May 10, 2010

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

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 Activities

Anticipated activity for P3

Mon: No Flight
Tues: Central Valley
Wed: Central Valley
Fri: ship plume investigation

Additional platform activities:

Ozonesondes - ~3pm releases starting today (daily except Sunday)
NASA King Air - arrives Wed/Thu
R/V Atlantis - operations on Fri
NOAA Twin Otter - arrives Sat

Local Features

Tues: good air quality in Central Valley; light to moderate winds
Wed: moderate air quality in Kern County

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

LA/SF AIRNOW Site Comparison

Good O3 and PM2.5 AQ at SF and LA during FX period
O3/PM2.5 levels reduced relative to previous period at Riverside on Sunday May 9th

LA/SF AIRNOW Ensemble
Intermediate (24hr) transport route of LA Ensemble to east during FX period. Receptor regions in CO
SF Ensemble shows two transport paths: eastward and southward on Tuesday/ Wednesday turning all southward on Thurs

500m RDF FX 00Z 05/11 (Mon Afternoon)
Intercontinental polluted airmass still offshore except for narrow plume at 500m.
Descent of polluted air over Southern CA and Mexico
Weak (~5 ppbv/day) background O3 P-L over LA
PM2.5 enhancement advected South over Baja

500m RDF FX 00Z 05/12 (Tues Afternoon)
Intercontinental polluted airmass circulating within High offshore at 500m. Relatively clean Intercontinental air descending ahead of it
Low (<5 ppbv/day) background O3 P-L over LA&SF
PM2.5 enhancement over AZ/NM

500m RDF FX 00Z 05/13 (Wen Afternoon)
Intercontinental polluted airmass circulating within High offshore at 500m. Relatively clean Intercontinental air descending ahead of it
Moderate (5-10 ppbv/day) background O3 P-L over SF
PM2.5 enhancement over NM/TX

500m RDF FX 00Z 05/14 (Thur Afternoon)
Clean Intercontinental air descending offshore, advection of SF and LA pollution to the South at 500m
Moderate (5-10 ppbv/day) background O3 P-L South of LA&SF
PM2.5 enhancement over NM/TX

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

Monday
- Moderate W to NW, 20 kt (occasonally to 30 kts)
- Onshore flow

- Region unstable, minimal MBL at 3,000 ft

Tuesday
- NW 20 kt, lightens briefly in the morning
- Onshore flow decrease
- MBL 3,000 ft; 1,000 ft in the afternoon

Wednesday
- NW 20 kt becoming 10 to 15 kt by noon; resumes NW 20 kt at night
- North wind from SV reaching SF bay in the monring
- Onshore flow at night primarily into SJV, decrease as downslope flow develops'
- MBL 1,000 ft; 500 ft in the afternoon

Thursday
- Light to moderate NW wind

Friday & Saturday
- Light NW wind

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

Monday
- Light SW becoming W 15 kts in the afternoon, W 5 kt at late night
- Region unstable, minimal PBL at 4,000 ft

Tuesday
- Light W, turns N 5 to 10 kt in the morning, 5 kt at night
- AM PBL at 500 ft with areas of 3,000 ft; PM PBL at 7,000 ft
- PM Downslope flow reaching the delta

Wednesday
- N wind 5 to 10 kt for southeastern SV, 10 to 15 kt for northwestern SV; steady 10 kt in the afternoon; 5 kts in the evening
- Light PM downslope flow to the valley
- AM PBL around 500 ft; PM PBL 4,000 ft; areas along foothills at 7,000 ft

Thursday
- Light N to E wind
- Moderate inversion, AM PBL below 500 ft; PM PBL around 4,000 ft

Friday & Saturday
- Light variable wind with upslope/downslope flow influence

San Joaquin Valley - Jennifer Ridgway (jennifer.ridgway@valleyair.org)

Surface Winds

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

MONDAY MAY 10

Wind Profilers: The profilers at Tracy indicates light S flow to W flow. Chowchilla light to moderate NW flow. Visalia light N flow. Lost Hills light N to NE flow up to approximately 4,000 feet with S flow above.

SJV Surface Obs: 8:00 Temperatures in the high 40s and mid 50s and calm conditions to light S and light W winds across most of the valley. Partly sunny skies.

CANSAC 00Z

- Delta— Light to moderate SW flow predicted in the morning becoming moderate to strong W during the night hours.
- Altamont Pass— Light to moderate W then SW flow into the SJV predicted in the morning becoming moderate to strong W through the night hours.
- Pacheco Pass—Light to moderate W flow into the SJV predicted in the morning becoming moderate to strong SW then W during the night hours.
- Cottonwood Pass— Light to moderate SW flow into SJV predicted in the morning becoming moderate to strong W flow by 17:00 and overnight.
- Tejon Pass— Light to moderate NW flow predicted over the Pass in early morning becoming moderate N by afternoon then strong W during the evening.
- Tehachapi Pass—Light to moderate W and NW flow toward the deserts predicted in the morning becoming moderate NW by late morning then strong W during the evening.
- Valley Floor— Light S winds in San Joaquin and Stanislaus Counties, W to NW flow toward the Central SJV and light and variable from Fresno County .southward. predicted in early morning. Eddies in south central San Joaquin County and west central Stanislaus County. Light to moderate W in Merced County and SW in Stanislaus County, E flow on west side of Fresno County, and NE flow in Kern County by late morning. Eddie in western Kings County. Strong W in the northern SJV and light to moderate NW in the central and southern SJV by 17:00.

TUESDAY MAY 11

CANSAC 00Z

- Delta—Light E and N flow predicted in early morning becoming moderate NW and W by 17:00. Light to moderate W flow during night hours.
- Altamont Pass—Light to moderate NW flow into the SJV predicted throughout the morning becoming W and NW by 17:00. Moderate to strong W flow during night hours.
- Pacheco Pass—Light to moderate W flow into the SJV predicted in early morning converging with N flow by late morning and until 17:00. Moderate W flow predicted during night hours.

- Cottonwood Pass—Light W and NW flow predicted in early morning becoming moderate NE in the afternoon becoming light and variable by 17:00 and overnight.
- Tejon Pass—Moderate NW flow over the pass predicted in the morning becoming moderate N and NW in the afternoon and early evening. Flow diverges: NW flow southward over pass and S flow northward into SJV by 23:00.
- Tehachapi Pass—Moderate to strong NW flow toward deserts predicted throughout the day and night.
- Valley Floor—Light and variable flow in the northern SJV and light to moderate NW flow in the central and southern SJV predicted in early morning becoming light to moderate NW in northern and central SJV and light and variable in southern SJV by 17:00.

WEDNESDAY MAY 12

CANSAC 00Z

- Delta—Light to moderate W flow into the SJV predicted in early morning becoming light N and NW flow by late morning then light to moderate NW and W flow by 17:00.
- Altamont Pass— Light to moderate W flow into the SJV predicted in early morning becoming N by late morning then light to moderate W flow by 17:00.
- Pacheco Pass— Light to moderate W flow into the SJV predicted in early morning becoming light N flow by late morning then light to moderate W by 17:00.
- Cottonwood Pass—Light and variable to NW flow into SJV predicted in early morning and afternoon becoming light to moderate NE flow by 17:00.
- Tejon Pass—Light S flow into SJV predicted in the morning becoming light to moderate N flow over the pass by 17:00.
- Tehachapi Pass— Light SW flow down valley side slopes into SJV and moderate NW flow over ridges toward deserts predicted in the morning becoming light to moderate NW flow toward deserts by 17:00.
- Valley Foor— Light and variable in the northern SJV and light SE to E flow in the central and southern SJV in early morning becoming light thermally driven NW flow by late afternoon.

THURSDAY MAY 13

(GFS 00Z): Surface charts show relaxed pressure gradients throughout the day and evening. Light NW winds at 12Z becoming N flow across SJV by 00Z.
http://www.rap.ucar.edu/weather/model/displayMod.php?var=gfs_sfc_mslp&hours=hr072hr084hr096hr108hr120

FRIDAY MAY 14

(GFS 00Z): Surface charts show relaxed pressure gradients with light N flow at 12Z becoming light NE flow across the SJV by 00Z.
http://www.rap.ucar.edu/weather/model/displayMod.php?var=gfs_sfc_mslp&hours=hr072hr084hr096hr108hr120

Boundary Layer Mixing:

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

MONDAY MAY 10

Morning Aircraft Soundings: The morning sounding for Fresno indicated a minor temperature
inversion of 2 degrees F from the surface up to 500 feet AGL. The sounding for Bakersfield indicated a minor temperature inversion of 5 degrees F from the surface up to 500 feet AGL.

CANSAC 00Z run: Mixing predicted to improve to 6,500 feet by 17:00. Best heights over the central parts of the SJV particularly Fresno and western Tulare Counties. Areas with lower heights are in SW
part of Stanislaus and San Joaquin Counties, eastern Tulare and Kern Counties.

TUESDAY MAY 11

CANSAC 00Z run: Expect height to improve to the 5,000 and 6,500 feet range, the best areas likely to be along the highway 99 corridor.

WEDNESDAY MAY 12

CANSAC 00Z run: Expect height to improve to the 5,000 and 6,500 feet range, the best areas likely to be along the highway 99 corridor.

THURSDAY MAY 13

FRIDAY MAT 14

Air Quality

MONDAY MAY 10

Air quality good under good dispersion. No exceedances expected.

TUESDAY MAY 11

Air quality good under good dispersion. No exceedances expected.

WEDNESDAY MAY 12

Air quality good to moderate. Dispersion will begin to deteriorate. No exceedances expected.

THURSDAY MAY 13
Air quality expected good to moderate, possibly Unhealthy for Sensitive Groups range for Kern County.

FRIDAY MAY 14
Air quality expected good to moderate, possibly Unhealthy for Sensitive Groups range for Kern, Tulare, Kings,and Fresno Counties.

Potential Targets
Kern County will probably be best target (moderate AQ) on Wednesday.
Kern, Tulare, Kings, and Fresno Counties potential targets on Thursday (moderate/USG AQ). Exceedances possible on Thursday.

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

NO FORECAST TODAY

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

NO FORECAST NOTES AVAILABLE
For details, refer to slides of model outputs in power point file.

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

- Monday: AM inversion base ~4000 feet, afternoon mixing > 5000 feet; trof aloft; no precip so far; cool temperatures (highs in upper 60s); some mountain and desert winds last night to 50 mph; windy at times, especially starting this afternoon through Wednesday morning - advisories fior mountains and deserts; mostly good air quality, with some moderate inland in afternoon; elevated PM10 in desert areas, especially Coachella Valley, due to blowing dust
- Tuesday: cold inside slider overnight; possible shower in northern mountains; cold air and winds (wind advisories likely, especially mountains and deserts); deep marine layer - possible AM drizzle; warming a little in afternoon as trof shifts to east; moderate ozone levels; areas of elevated PM10 due to blowing dust in deserts
- Wednesday: upper low moves out of Nevada; heights rise quickly aloft; lighter winds; weak offshore gradients; sunny and warmer (7-10 degrees warmer); increasing ozone, mostly moderate

- Thursday: weak ridging; weaker offshore flow AM; coastal eddy possible; warmer (temperatures above normal); ozone mostly moderate but USG possible in a couple of areas (inland, with afternoon sea breeze)
- Friday: more ridging aloft; warmer; marine layer may start to reform; USG ozone likely
- Saturday: warmest day this week - to mid 80s inland valleys; USG ozone likely

Northern California

Observed, Model-Interpolated Winds for SF Bay
http://sfports.wr.usgs.gov/cgi-bin/wind/windbin.cgi

and

COAMPS Wind Plots
http://www.sccoos.org/data/coamps/coamps.html