

CalNex Forecast Notes - Updated Thursday, May 20, 2010

Anticipated Activities of Platforms

WP-3D:

Fri: take off at 8:30 pdt, Maersk vessel fuel switch off San Nic Isl, intercept intercontinental transport, modis overflight 1055 pdt for cloud retrieval verification: see comments on clouds under South Coast, stratus likely sufficiently broken for ship plume sample, upper and mid level clouds likely not a serious problem.

Sat: No Flight

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

NOAA Twin Otter: Possible weekend flight

CIRPAS Twin Otter - Thursday: sampling planned over BKF super site, watch cloud cover. At 10pdt extensive low clouds along the Tehachapi's but likely to erode sufficiently in vicinity of BKF by early afternoon.

NASA King Air

R/V Atlantis: LA harbor vicinity Thur, LA Bight Friday

Local Features:

Thursday: CIRPAS Twin Otter planned for overflight of BKF super site; watch current clouds, extensive low clouds along Tehachapis this morning, likely to erode by early afternoon

Friday: P3 ship fuel switch measurements, and other legs, strong winds in outer waters - broken stratus.

Planned spiral and level leg at 1055 PDT in conjunction with MODIS overflight for verification of cloud retrievals, likely will have a band of high clouds to avoid but not extensive. Leg will likely also sample intercontinental transport of ozone and CO. Friday cloud outlook from South Coast discussion:

COAMPS shows morning low clouds offshore to south with weak eddy in southern bight, clearing by the afternoon -- but AM dry slot with N gradients in northern bight;

cooler temps Friday compared to Thursday (to mid 70s inland Basin); stronger onshore flow in afternoon; winds increase Friday afternoon, gusty in the mountains and deserts; windy & dry in southern deserts for NWS fire weather watch;

NAM 18Z Friday cloud model shows AM stratus band off southern coast and a narrow band of cirrus from just south of Palos Verdes offshore toward the WSW. See: <http://www.ral.ucar.edu/weather/model/index.php?model=eta> choosing "Clouds: all levels" option

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

Thursday May 20

- Shortwave trough moves into NV
- Longwave trough remains offshore of WA state
- Northerly winds Sac/SJ Valleys
- Offshore gradients for southern CA

Friday May 21

- Longwave trough sinks southward
- Shortwave trough rotates around into northern CA
- Stronger onshore flow through the Delta
- Offshore flow continues in the south

Saturday May 22

- Longwave trough moves SE into OR
- Another shortwave trough moves through northern/central CA
- Onshore flow picks up in the south late Saturday

Sunday-Tuesday May 23-25

- Longwave trough weakens a bit, moves E into Great Basin
- Transport flow shifts NW
- Another strong trough looms for mid-week

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/PM2.5 SJ AQ during FX period

Recent O3 analysis in good agreement at LA/SJ. PM2.5 analysis high at SJ and low at LA

LA/SF AIRNOW Ensemble

LA Long-range transport turning from south to north during FX period.

SF Long-range transport bifurcated for ensembles ending Fri afternoon turning south during FX period.

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/NV, high O3 air descending over Southern CA

Significant (~80ppbv) O3 enhancement over South CA associated with Lagrangian mean descent

Combination of Intercontinental + LA pollution advected into CO

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

Low (<5 ppbv/day NE of Salt Lake

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

Second Intercontinental CO enhancement over western US, mixture of Intercontinental+Western US pollution along cold front

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

Significant (~70ppbv) O3 enhancement over Western CO

PM2.5 enhancement over Western CO

500m RDF FX 00Z 05/24 (Sun Afternoon)

Second Intercontinental CO enhancement over western US, mixture of Intercontinental+Western US pollution along cold front

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

Enhanced (10-15 ppbv/day) O3 P-L along Cold front

Significant (~60ppbv) O3 enhancement over NM

PM2.5 enhancement over NM and along Cold Front

Area Forecast Details

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

Thursday

- NW 15kt becomes 25kt in the afternoon, slightly relaxes overnight
- MBL 1,500 ft, will increase to 2,500 ft

Friday

- NW 20kt in early morning, weakens to 15 to 20kt in the morning and afternoon, resumes 20 to 25kt in the evening
- MBL mostly 3,000 ft, areas of 8,000ft

Saturday

- NW 20kt becomes 15kt in early morning, increases to 25kt in the evening
- MBL 3,000 ft gradually lowers to 1,500 ft

Sunday

- NW 25kt all day, decreases at late night

Monday & Tuesday

- NW wind lightens, shift SW in anticipation of trough, may shift N at night on Monday; mostly W and NW on Tuesday

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

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
- Aftn and evening NW flow cuts off onshore delta influence, cool NW flow into Carquinez Strait to deflect other NW flow
- PM PBL 5,000 to 8,000 ft
- Max aftn temp: 23C
- Cloudiness: Mostly clear; 0% chance of precipitation
- Air Quality: Good; max 8-hr mean O3 in 0.05ppm range

Friday

- WNW 5 to 10 kt, occasionally 15 kt in the afternoon; NW 5kt at late 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, in excess of 8,000 ft per COAMPS
- Max aftn temp: 20C
- Increasing cloudiness in the day; altostratus lowering to stratus in the afternoon; breaks into cumulus at night; 20% chance of precipitation; less than 1 inch of precipitable water
- Air Quality: Good; max 8-hr mean O3 in 0.04ppm range

Saturday

- NW 5kt, briefly W 10kt for southern SV in the afternoon
- Onshore through Coastal Range
- AM PBL 1,000 ft; PM PBL 7,000 ft
- Max aftn temp: 17C
- Altoculumus moves through the area; 0% chance of precipitation
- Air Quality: Good; max 8-hr mean O3 in 0.04ppm range

Sunday

- NW wind, mostly light; SW onshore flow in the late evening
- Aftn max temp: 20C
- Altoculumus moves out of area in the morning; cirrus moves into the area in the evening; 0% chance of precipitation
- Good air quality

Monday & Tuesday

- SW onshore on Monday and Tuesday
- Good air quality

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

THURSDAY MAY 20

Surface Winds

Wind Profilers: The profilers at Tracy, Chowchilla, and Visalia indicate moderate to strong NW flow throughout the atmospheric profiles. The profiler at Lost Hills light NW flow up to to 2,300 feet becoming light to moderate N flow above.

SJV Surface Obs: 8:00 Temperatures in the 50s moderate NW winds across the valley. Mostly sunny everywhere except Fresno and Bakersfield where skies are cloudy.

CANSAC 00Z

Light to moderate W flow across Delta and over Altamont Pass, and NW flow over Pacheco Pass into SJV early morning predicted to become strong N flow as day progresses. Moderate NW flow across valley in the morning becoming light to moderate by 17:00. Outflow over Cottonwood, Tejon, and Tehachapi Passes all day. Flow over Cottonwood becomes N flow by 23:00.

Boundary Layer Mixing -- Note: Minimal to no mixing does occurs after sunset and prior to sunrise due to the absence of surface heating.

Morning Aircraft Soundings: The morning sounding for Fresno indicated a minor temperature inversion of 2 degrees

F from 500 feet up to 2,000 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 5,000 feet by 17:00. Best heights over the central parts of the SJV particularly south central Fresno and northwestern Tulare Counties. Areas with lower heights are in W est Fresno and Merced Counties (1,500 feet)

Air Quality -- Air quality good under good dispersion. Watching for blowing dust. No ozone exceedances expected.

FRIDAY MAY 21

Surface Winds

CANSAC 00Z

Moderate to strong onshore flow predicted through Delta and over Altamont and Pacheco Passes throughout the day and night. Valley floor: Light to moderate W flow in San Joaquin County, Light NW flow south to Kern County, Light S flow over southern Kern County early morning. Early morning inflow over Cottonwood Pass, outflow over Tejon and Tehachapi Passes. Moderate NW flow by 17:00. Interesting light and variable spot in Kern County during afternoon. Outflow over Passes during afternoon. Inflow over Cottonwood Pass again by 23:00, outflow over Tejon and Tehachapi Passes by 23:00.

Boundary Layer Mixing

CANSAC 00Z run:

Expect height to improve to 6,500 feet range, the best areas central Tulare County, western Merced County, eastern Stanislaus County, and southern San Joaquin County.

Air Quality -- Air quality good under good dispersion. Watching for blowing dust. No ozone exceedances expected.

SATURDAY MAY 22

Surface Winds

CANSAC 00Z

Light to moderate onshore flow through Delta and across Altamont and Pacheco Passes early morning. Flow weakens through the Delta in the afternoon. Interesting shift in flow in the Delta and northwestern San Joaquin County by 17:00. Light NW flow strengthens throughout the day, becomes light in Kern County by 17:00. Inflow over Cottonwood Pass early morning becoming outflow by afternoon. Outflow over Tejon and Tehachapi Passes throughout the day.

Boundary Layer Mixing

CANSAC 00Z run: Expect height to improve to the 6,500 feet range, the best areas likely to be along the

highway 99 corridor from Tulare County northward, and in western parts of Kern County. Lowest heights (1,000 feet) in western San Joaquin County.

Air Quality -- Air quality good under good dispersion. Watching for blowing dust. No ozone exceedances expected.

SUNDAY MAY 23

(GFS 00Z): Surface charts show pressure gradients starting to relax. NW flow across SJV.

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

Boundary Layer Mixing Heights expected to improve to 5,000 feet range.

Air Quality -- Air quality good under good dispersion. No ozone exceedances expected.

MONDAY MAY 24

(GFS 00Z): Surface charts show relaxed pressure gradients with light W flow across valley.

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

Boundary Layer Mixing Heights expected to improve to 4,000 - 5,000 feet range.

Air Quality -- Air quality good under good dispersion. No ozone exceedances expected.

Potential Targets

Friday light and variable flow over Kern County. Saturday interesting shift in flow over Delta and northwestern San Joaquin County.

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

Synopsis 5/20 – 5/25:

-Strong NW flow along the coast, NW flow aloft coast, Thursday 5/20 through Tuesday 5/25 afternoons.

-Blowing dust in afternoons – Oceano Dunes/Nipomo Mesa Thursday through Tuesday.

-NE flow eastern San Luis Obispo County ridgetops/Temblor Range

-Sundowner winds possible Gaviota- SBA Thursday - Tuesday

-Stratus coast AM - clearing inland PM

Thursday: Trough No. CA, NW flow aloft coast. Blowing dust in afternoon/Moderate AQ – Oceano Dunes/Nipomo Mesa - Stratus coast AM - clearing inland PM - NE flow eastern San Luis Obispo County ridgetops/Temblor Range

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 - NE flow eastern San Luis Obispo County ridgetops/Temblor Range

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

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

Monday: Trough CA, NW flow aloft. Blowing dust in afternoon– Oceano Dunes/Nipomo Mesa

Tuesday: Trough CA, NW flow aloft. Blowing dust in afternoon/Moderate AQ – Oceano Dunes/Nipomo Mesa

Air quality: Good air quality with exception - Blowing dust midday/afternoons-Oceano Dunes/Nipomo Mesa - Moderate AQ – Wednesday through Sunday & Tuesday

Significant features for study: Blowing dust Oceano Dunes/Nipomo Mesa peaking midday/afternoons - Thursday 5/20 – Tuesday 5/25, max PM10 Fri-Sat midday/afternoons

SoCal Coastal Waters – Detailed notes normally prepared by Lee Eddington (Lee.Eddington@navy.mil) are not available today but see slides for COAMPS modeled winds and clouds. Observations are included for comparison

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

- Thursday: weak trof to N starts to weaken the ridge over So Cal for a relatively flat pattern with zonal flow aloft; Little stratus offshore this morning with dry northerly northerly flow from strong N-S surface gradient; band of low clouds from southern LA County valleys to south over Orange County and the San Diego County coast - clearing quickly; Miramar AM inversion base 1000 ft, Central LA mixing to 2900 ft this afternoon; fog/haze this AM in valleys - Moderate PM2.5 short-wave trough & front moved through overnight to increase northerly gradients and cold air advection for gusty winds in the LA & Ventura County mountains (esp. I-5 corridor Santa Ynez Range, Santa Barbara coast, Santa Clarita and San Fernando Valleys, Santa Monica Mtns & Antelope Valley) with wind advisories/warnings through this evening; Inland temperatures remain warm today (low 80s; 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 to south with weak eddy in southern bight, clearing by the afternoon - - but AM dry slot with N gradients in northern bight; cooler temps Friday compared to Thursday (to mid 70s inland Basin); stronger onshore flow in afternoon; winds increase Friday afternoon, gusty in the mountains and deserts; windy & dry in southern deserts for NWS fire weather watch;

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Friday's NWS Oxnard Zone Forecast for Catalina Island:

- .FRIDAY...LOW CLOUDS AND FOG IN THE MORNING THEN MOSTLY SUNNY. HIGHS IN THE UPPER 60S. AREAS OF WEST WINDS 15 TO 25 MPH IN THE AFTERNOON.
- Saturday: inversion lifts & weakens with trough, but AM clouds may be minimal & confined to near the coast with dry N gradient (?); cooler; gusty winds mountains & deserts; mostly Moderate ozone for the next few days, but some USG possible with sun inland - mainly Central San Bernardino Mountains & into deserts
- Sunday: deeper marine layer; possible AM drizzle & slight chance of light showers on northern slopes of LA/San Bernardino Mtns; front passage late Sunday could destroy inversion (?); cool temps
- Monday: trough weakens for warming & shallower marine layer
- Tuesday: little change from Monday
- Wednesday: another upper trough approaching west coast