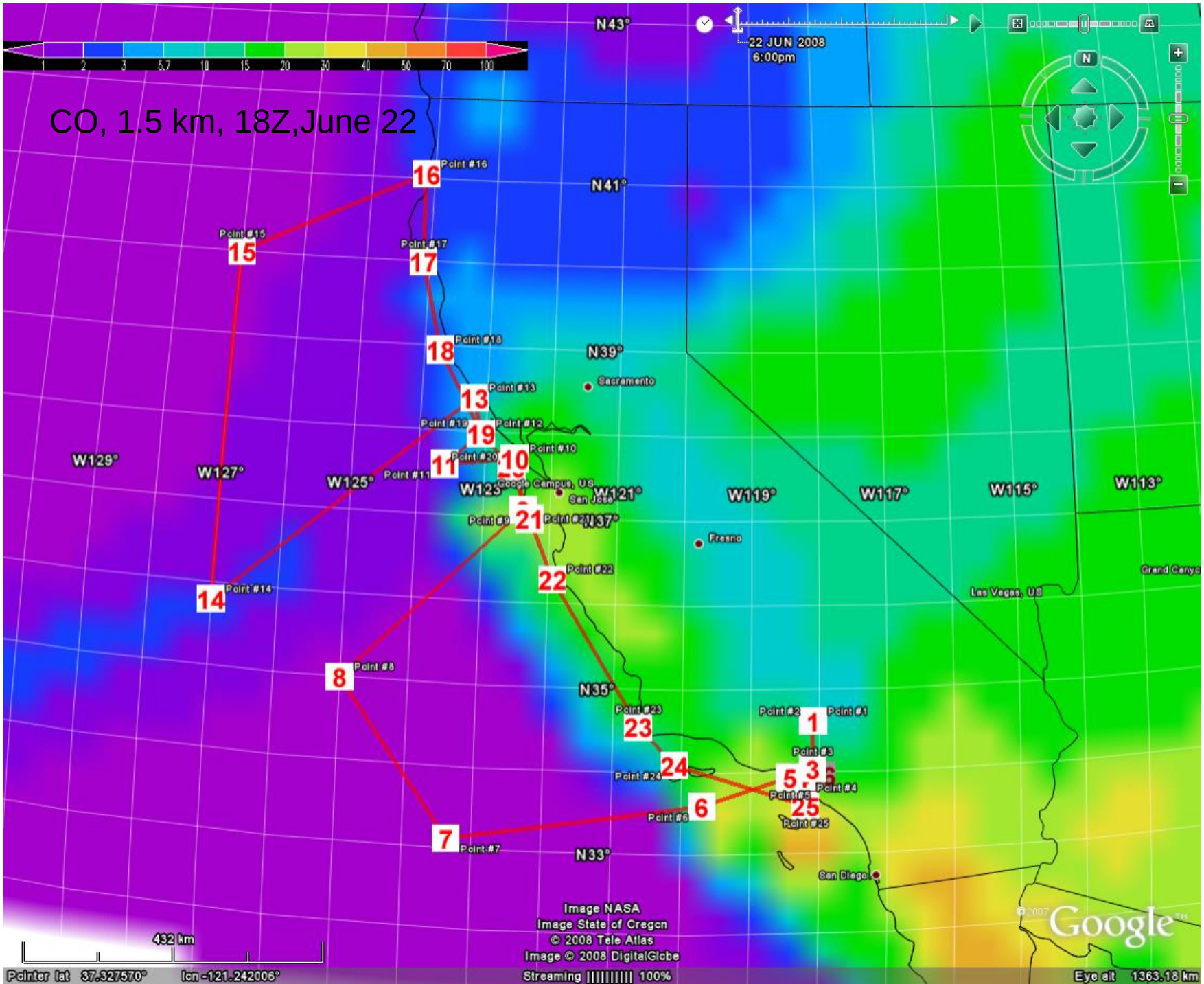
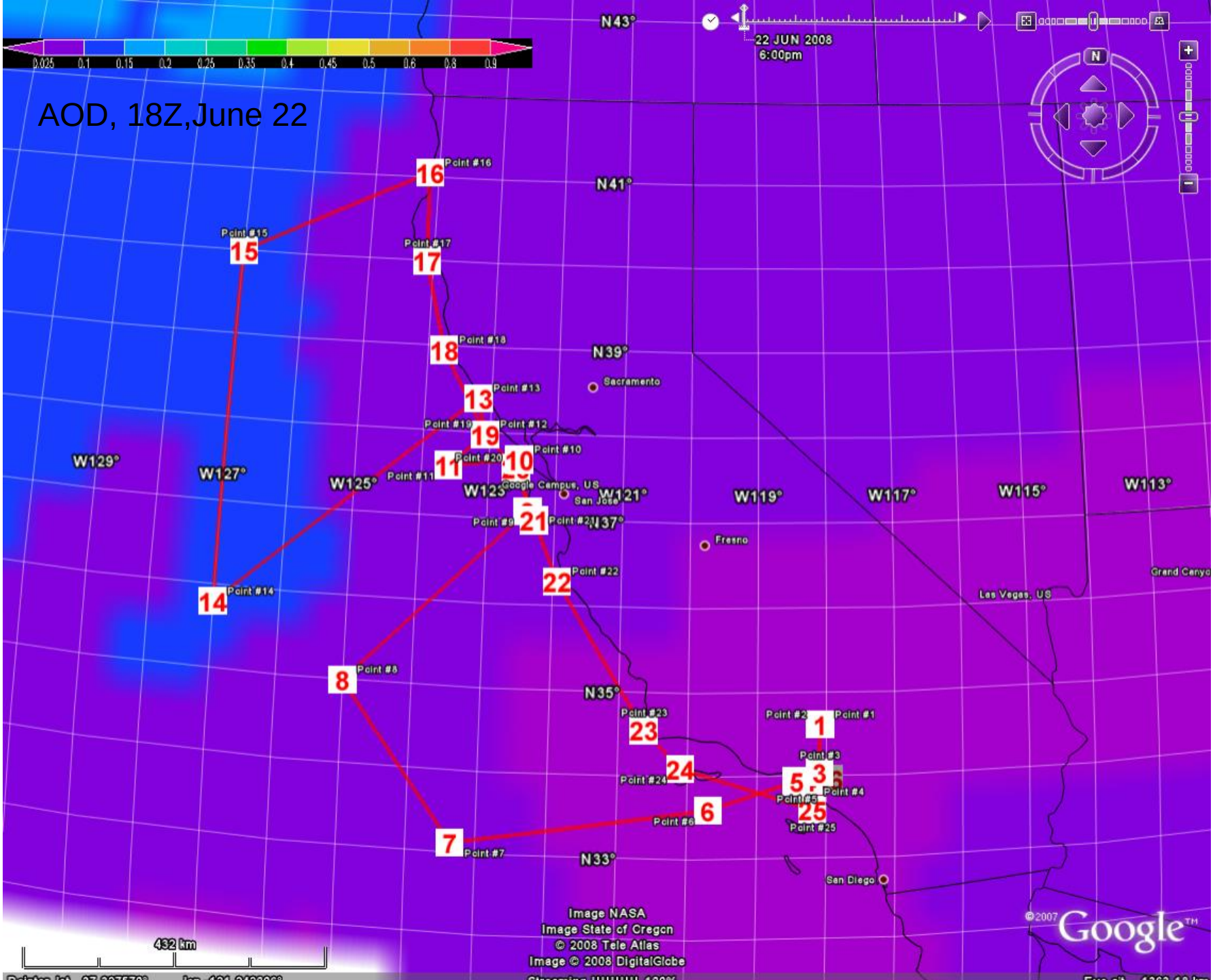
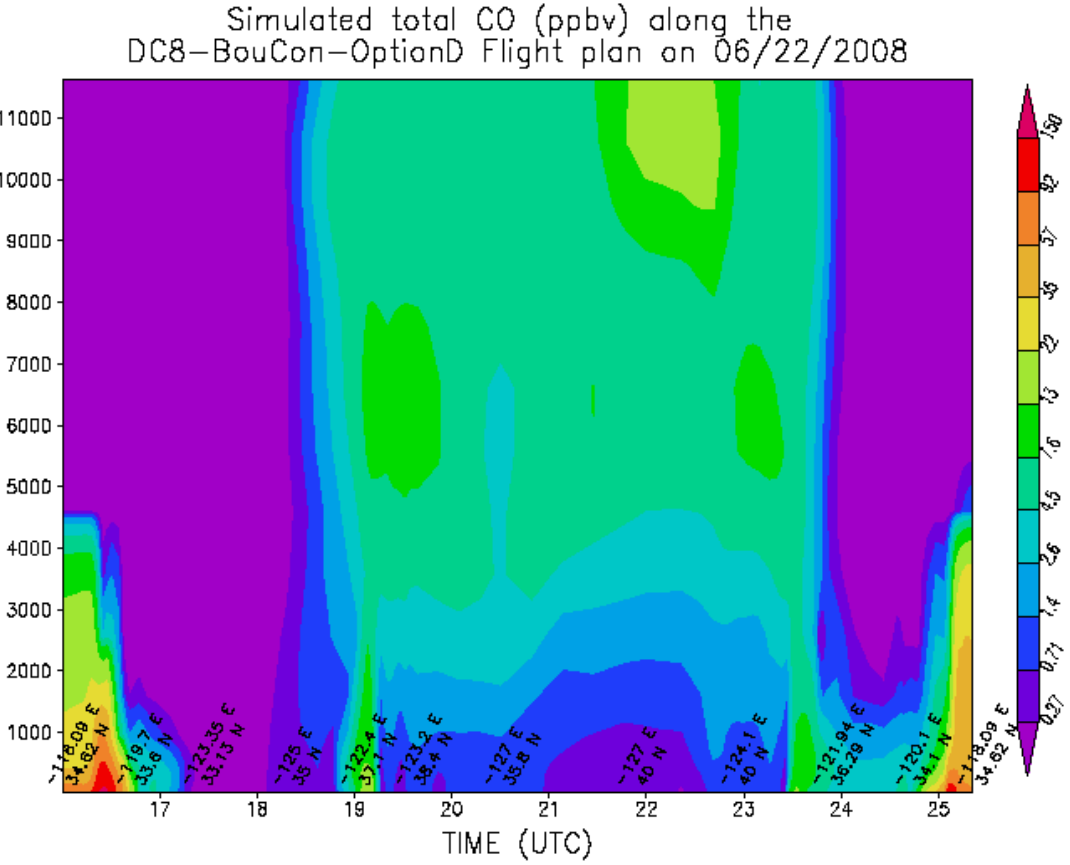
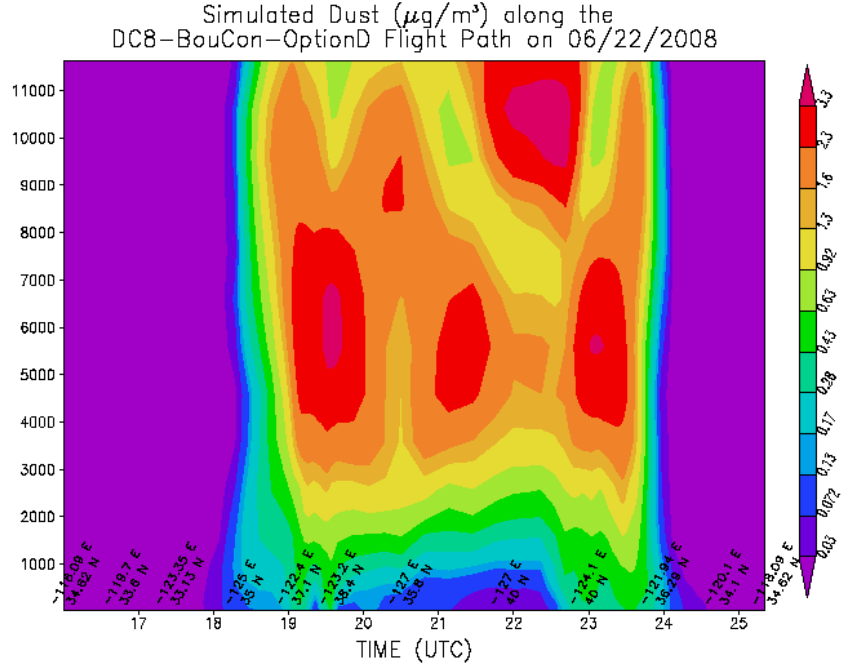
STEM model

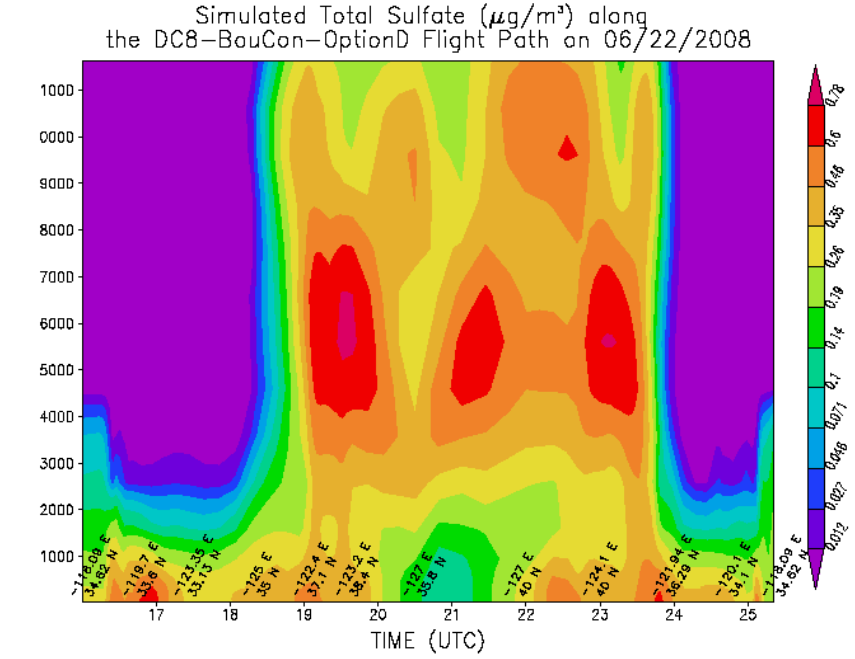
06-21-2008 meeting

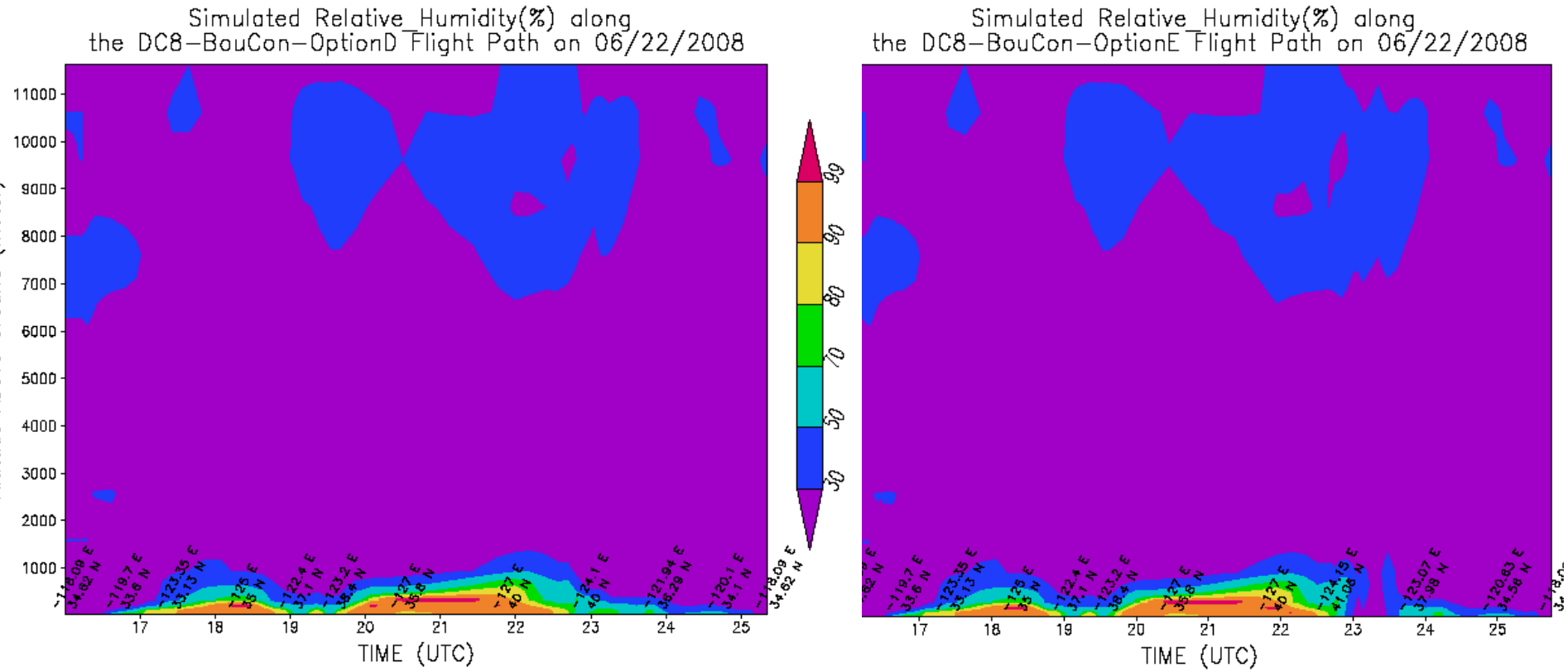

CO, 1.5 km, 18Z,June 22
22 JUN 2008
6:00pm
N43°
N41°
N39°
N37°
N35°
N33°
W129°
W127°
W125°
W123°
W121°
W119°
W117°
W115°
W113°
Point #16
Point #15
Point #17
Point #18
Point #13
Point #19
Point #12
Point #20
Point #10
Point #11
Point #9
Point #21
Point #22
Point #14
Point #8
Point #23
Point #2
Point #1
Point #3
Point #24
Point #4
Point #5
Point #6
Point #25
Point #7
Sacramento
Google Campus, US
San Jose
Fresno
Las Vegas, US
San Diego
Grand Canyo
Image NASA
Image State of Oregon
© 2008 Tele Atlas
Image © 2008 DigitalGlobe
432 km
Pointer lat 37.327570°
lon -121.242006°
Streaming |||||||||| 100%
Eye alt 1363.18 km
Google

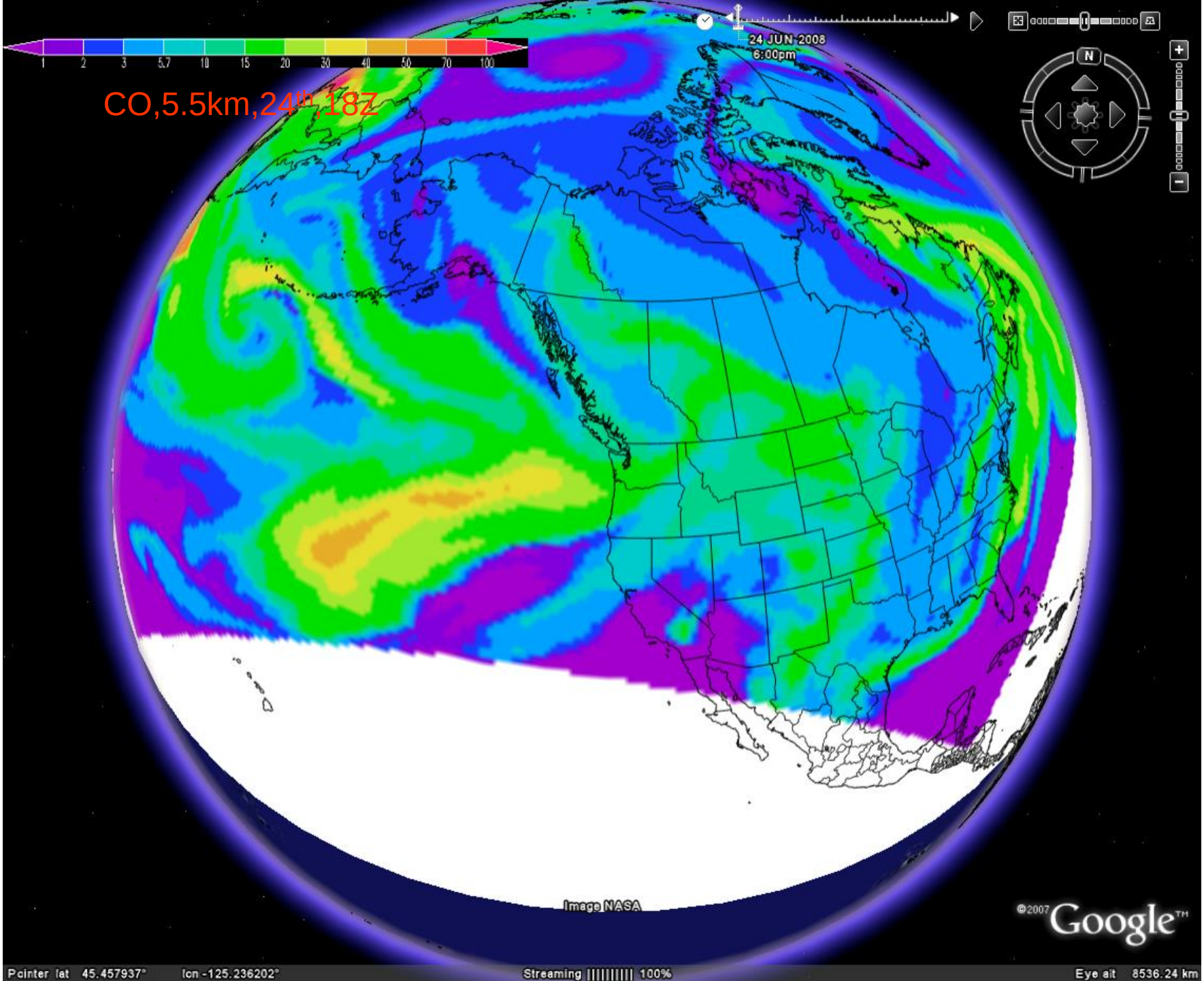

AOD, 18Z,June 22
0.025
0.1
0.15
0.2
0.25
0.35
0.4
0.45
0.5
0.6
0.8
0.9
22 JUN 2008
6:00pm
N43°
N41°
N39°
N37°
N35°
N33°
W129°
W127°
W125°
W123°
W121°
W119°
W117°
W115°
W113°
Point #1
Point #2
Point #3
Point #4
Point #5
Point #6
Point #7
Point #8
Point #9
Point #10
Point #11
Point #12
Point #13
Point #14
Point #15
Point #16
Point #17
Point #18
Point #19
Point #20
Point #21
Point #22
Point #23
Point #24
Point #25
Sacramento
Google Campus, US
San Jose
Fresno
Las Vegas, US
Grand Canyo
San Diego
432 km
Image NASA
Image State of Oregon
© 2008 Tele Atlas
Image © 2008 DigitalGlobe
©2007 Google™

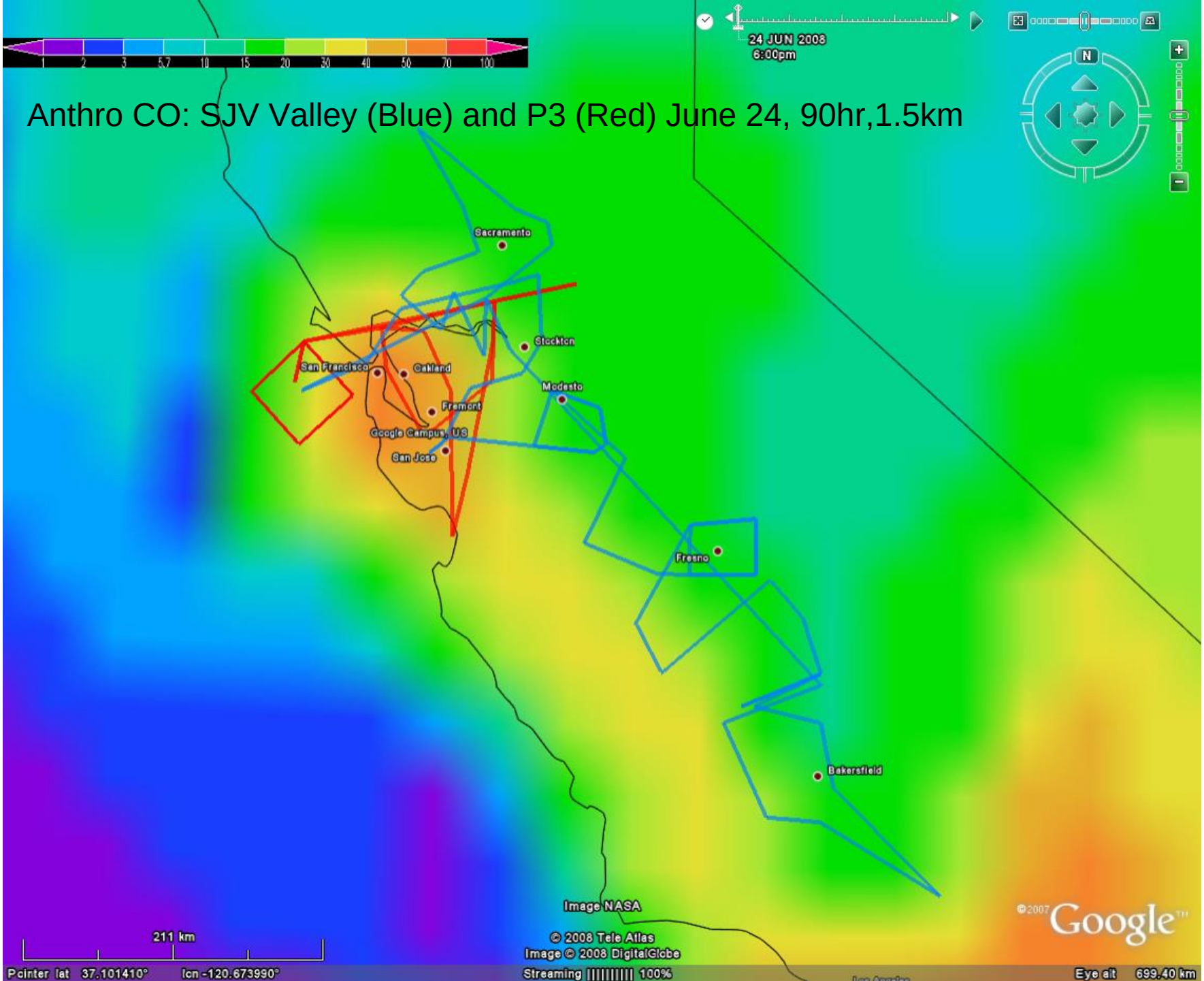

Simulated total CO (ppbv) along the
DC8-BouCon-OptionD Flight plan on 06/22/2008
TIME (UTC)


Simulated Dust (μg/m³) along the
DC8-BouCon-OptionD Flight Path on 06/22/2008
TIME (UTC)

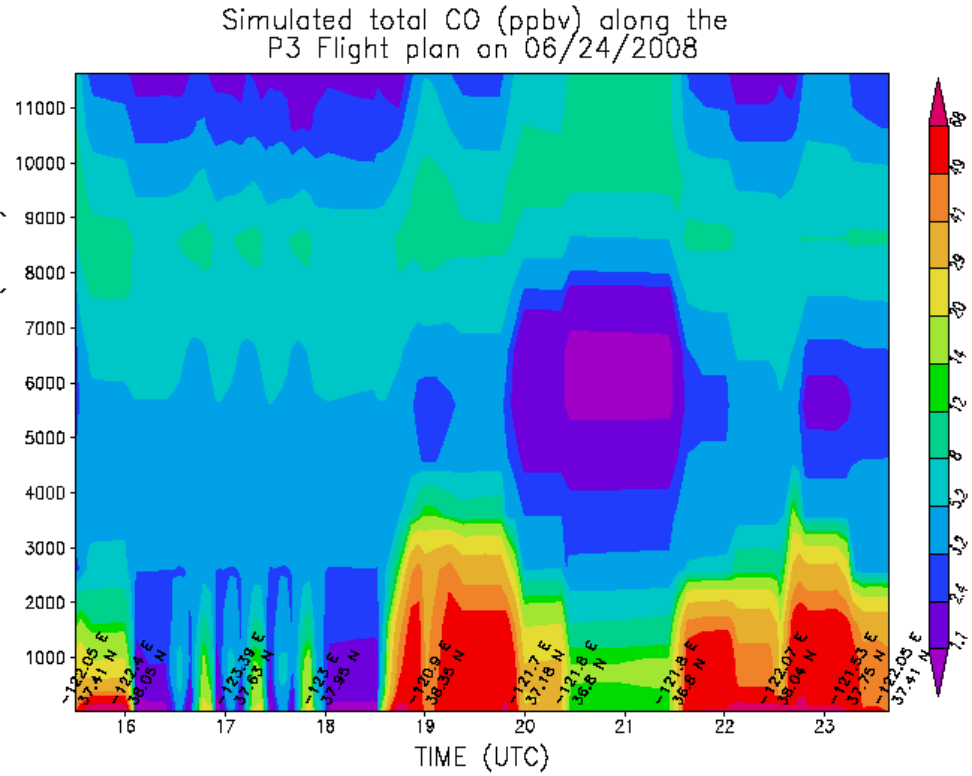

Simulated Total Sulfate (μg/m³) along
the DC8-BouCon-OptionD Flight Path on 06/22/2008
TIME (UTC)

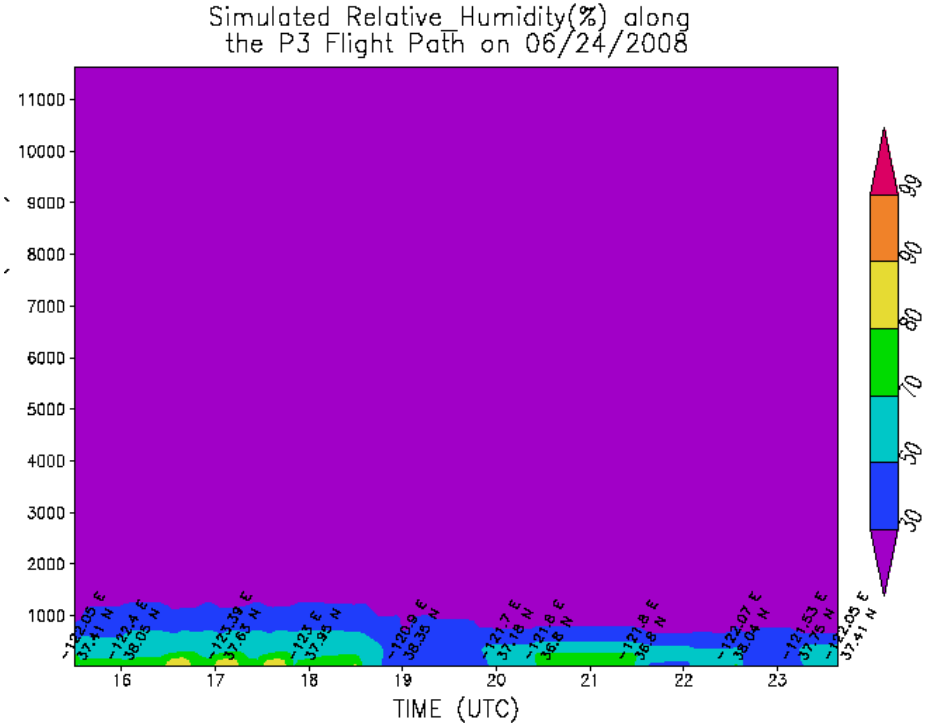

Simulated Relative_Humidity(%) along
the DC8-BouCon-OptionD Flight Path on 06/22/2008
Simulated Relative_Humidity(%) along
the DC8-BouCon-OptionE Flight Path on 06/22/2008
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
17
18
19
20
21
22
23
24
25
TIME (UTC)
30
50
70
80
90
99

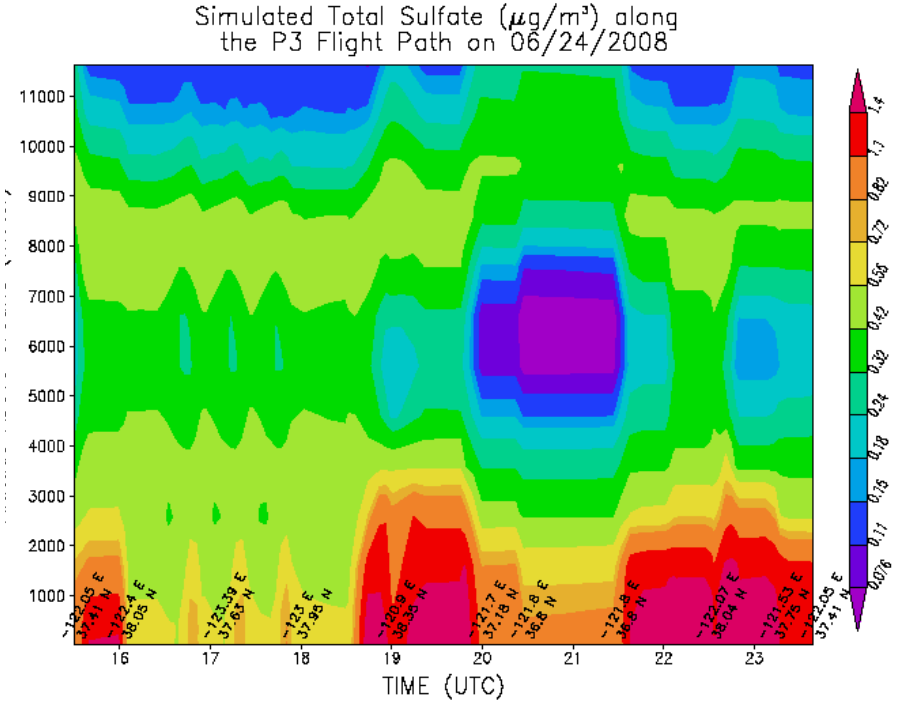

CO,5.5km,24th,18Z
1
2
3
5.7
10
15
20
30
40
50
70
100
24 JUN 2008
6:00pm
N
Image NASA
©2007 Google™
Pointer lat 45.457937° lon -125.236202°
Streaming 100%
Eye alt 8536.24 km


Anthro CO: SJV Valley (Blue) and P3 (Red) June 24, 90hr,1.5km
1
2
3
5.7
10
15
20
30
40
50
70
100
24 JUN 2008
6:00pm
N
Sacramento
Stockton
San Francisco
Oakland
Modesto
Fremont
Google Campus, US
San Jose
Fresno
Bakersfield
Image NASA
© 2008 Tele Atlas
Image © 2008 DigitalGlobe
211 km
©2007 Google
Pointer lat 37.101410° lon -120.673990°
Streaming |||||||||| 100%
Eye alt 699.40 km

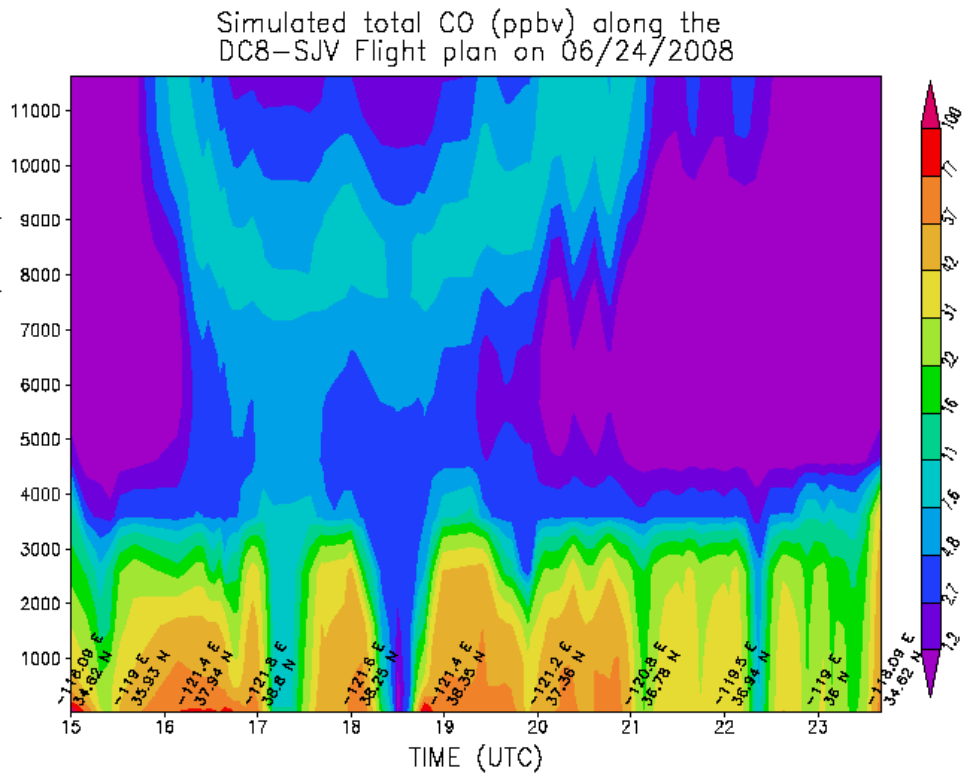
P3 flight Curtains for 24th

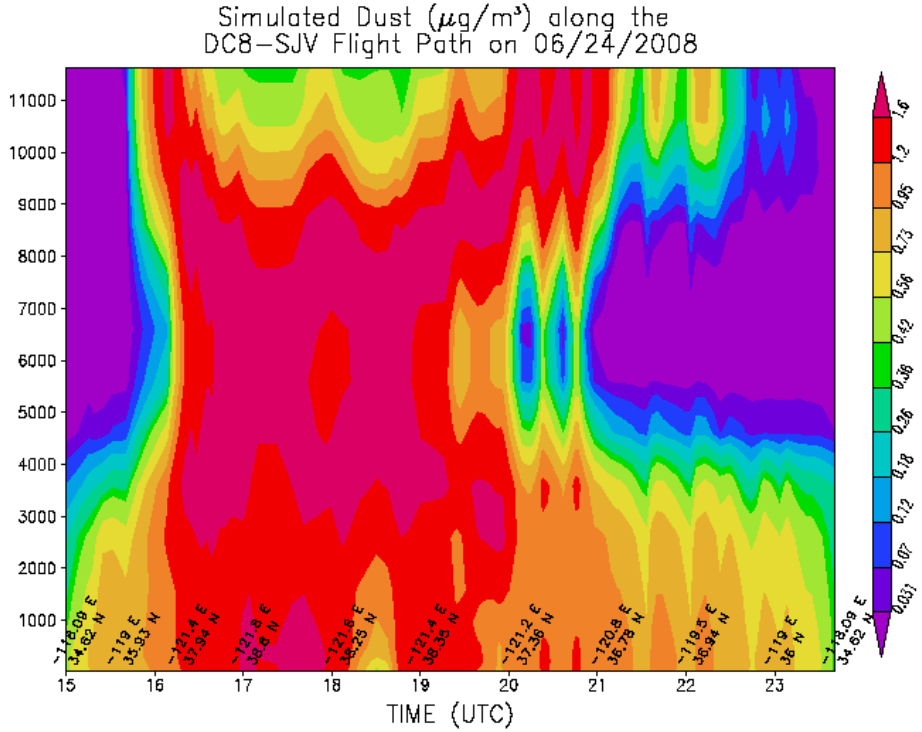


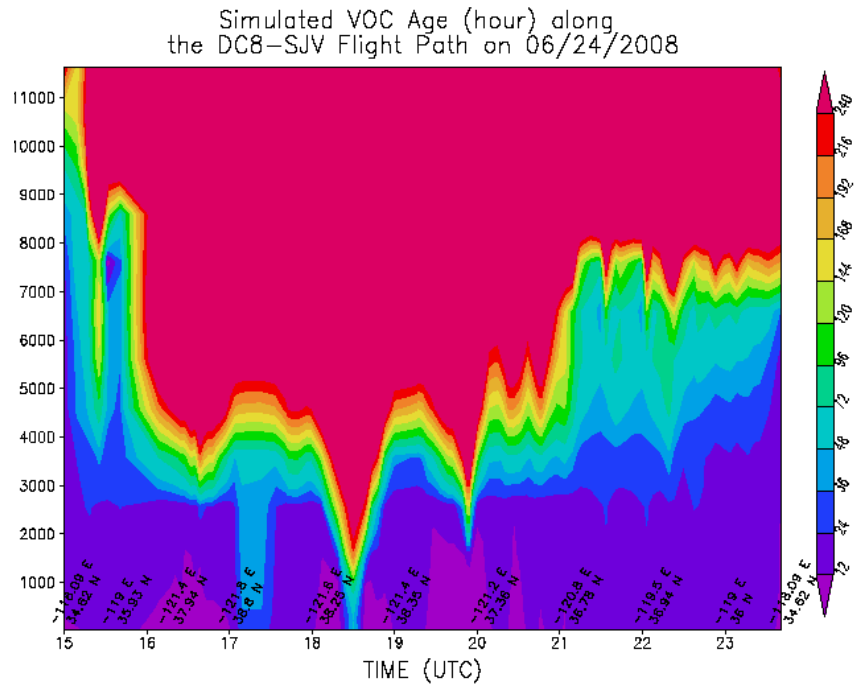




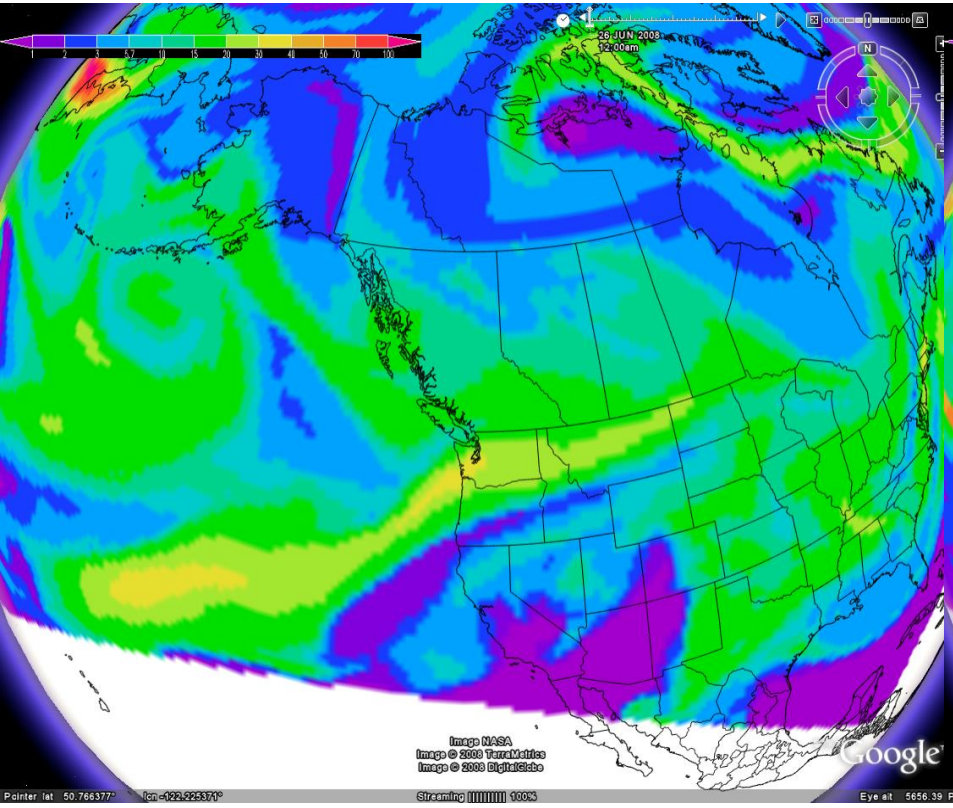
SJV for 24th

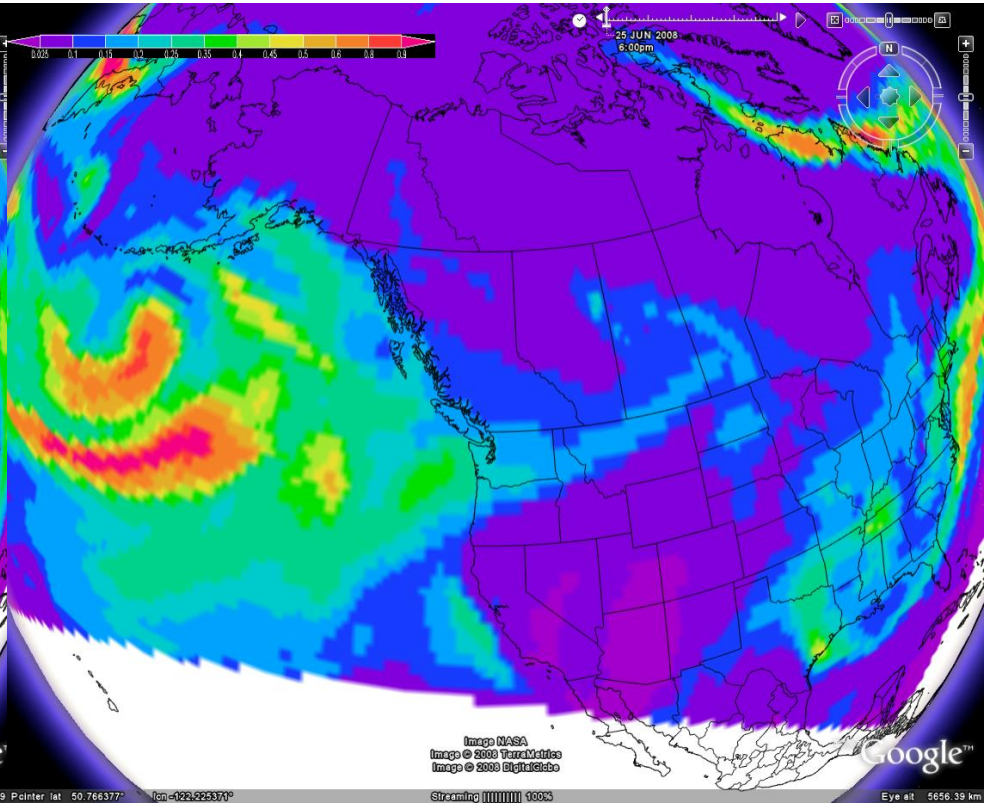

Simulated total CO (ppbv) along the
DC8–SJV Flight plan on 06/24/2008
TIME (UTC)


Simulated Dust (μg/m³) along the
DC8–SJV Flight Path on 06/24/2008
TIME (UTC)


Simulated VOC Age (hour) along
the DC8–SJV Flight Path on 06/24/2008
TIME (UTC)

Transit: Cold lake, 0Z





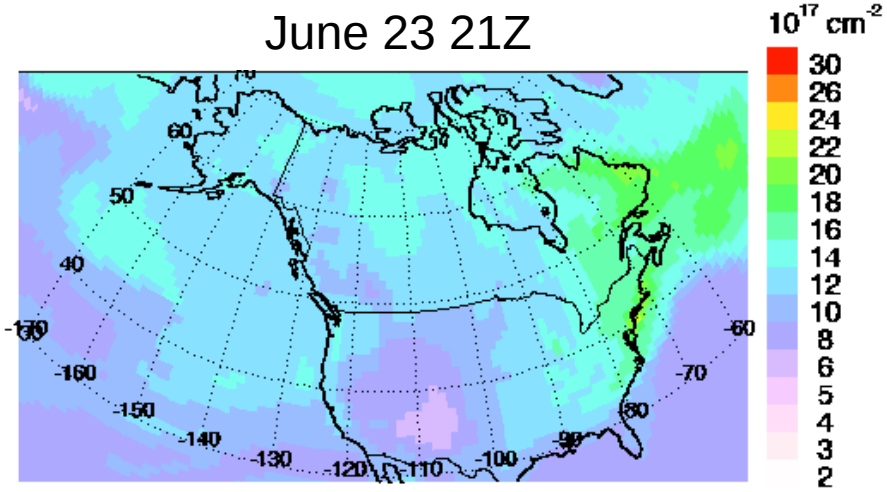
CO, 0Z 26th , 5.5 km layer

AOD, 0Z

CAM-Chem/DART June 23-26 21Z (fx from 06-19)

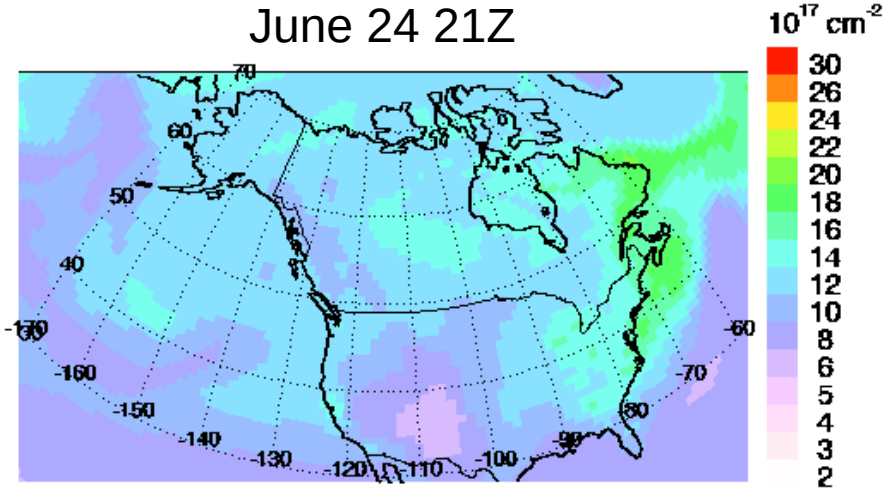
CO Column

June 23 21Z



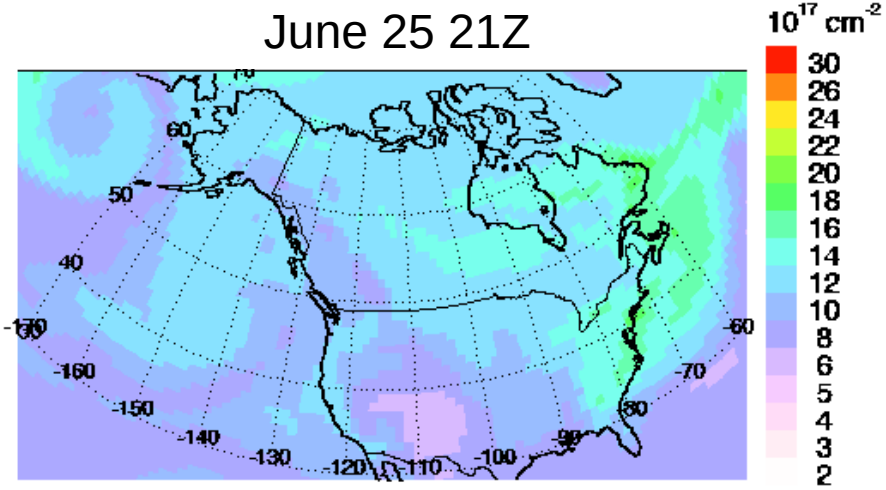
CAM Forecast from 20080619

June 24 21Z



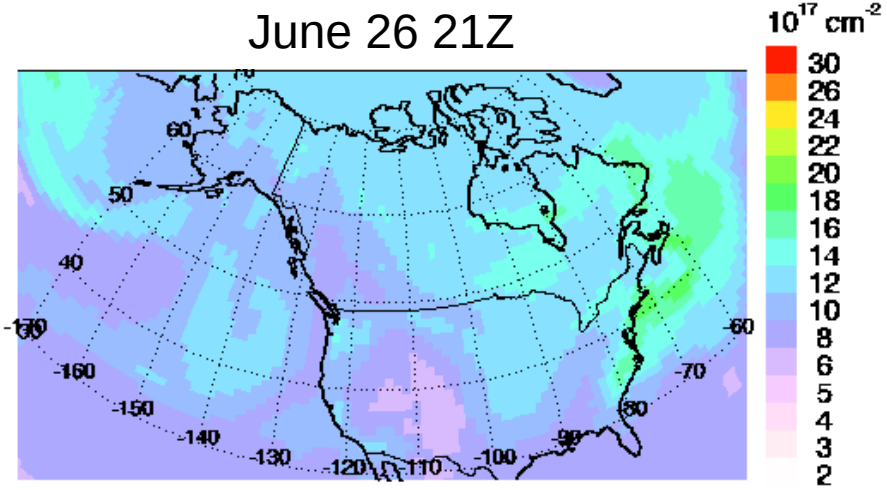
CAM Forecast from 20080619

June 25 21Z



CAM Forecast from 20080619

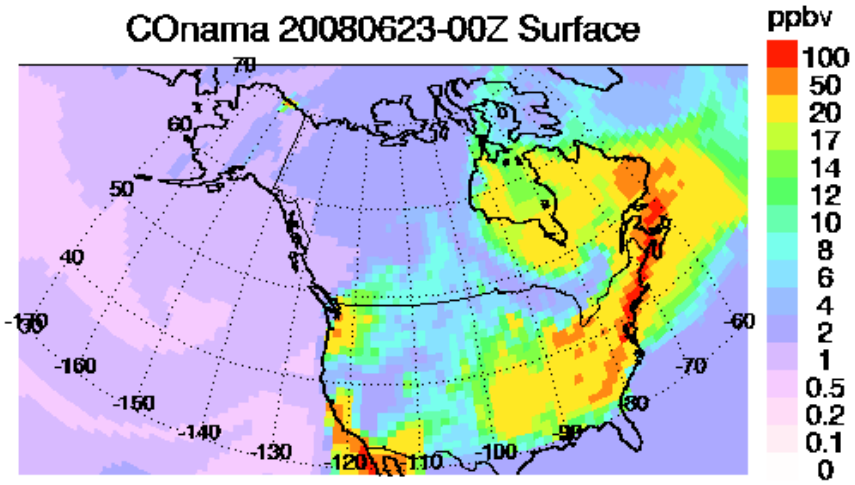
June 26 21Z

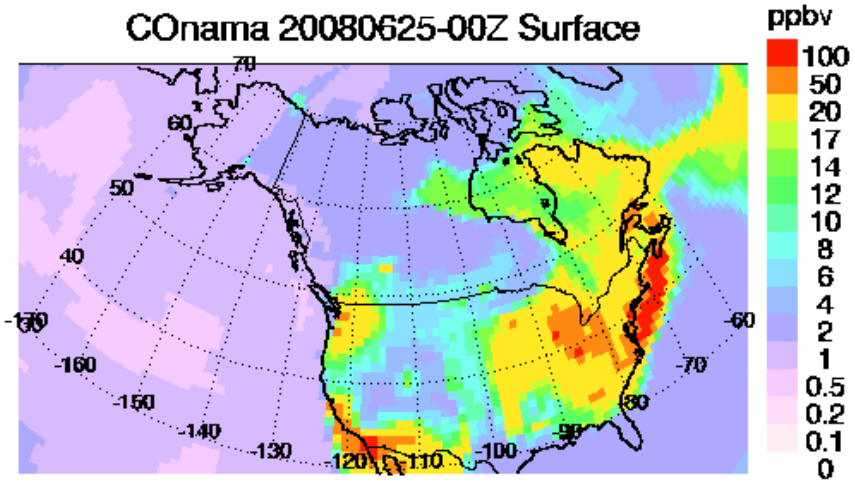


CAM Forecast from 20080619

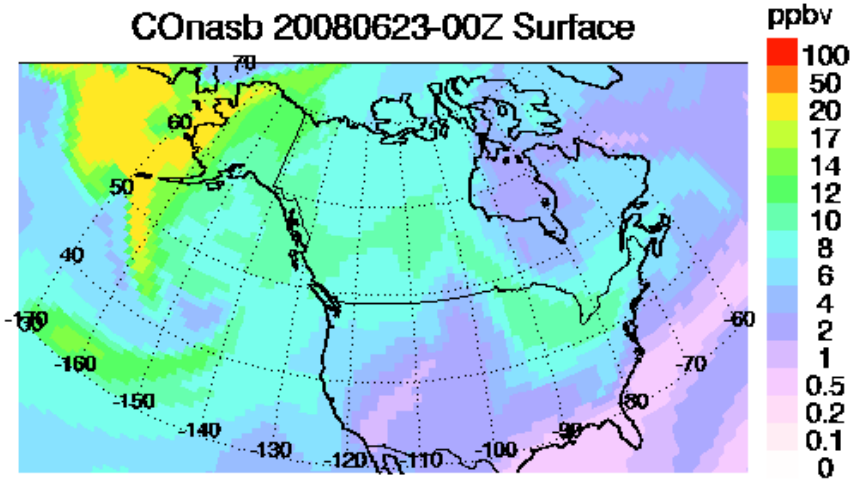
CAM-Chem/DART June 22, 24 21Z (fx from 06-19)

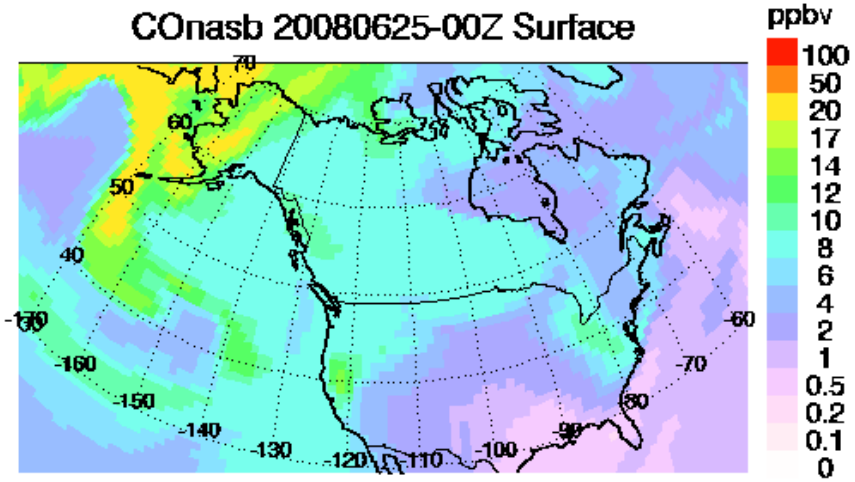
June 22 21Z N.America Anthro June 24 21Z





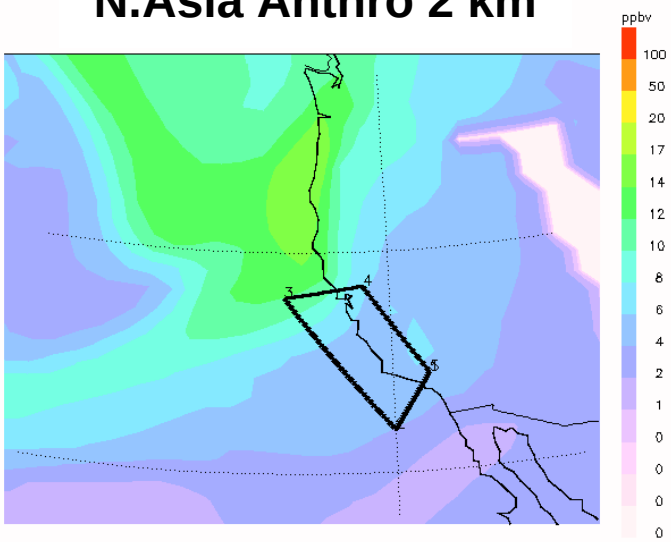
N.Asia Fires



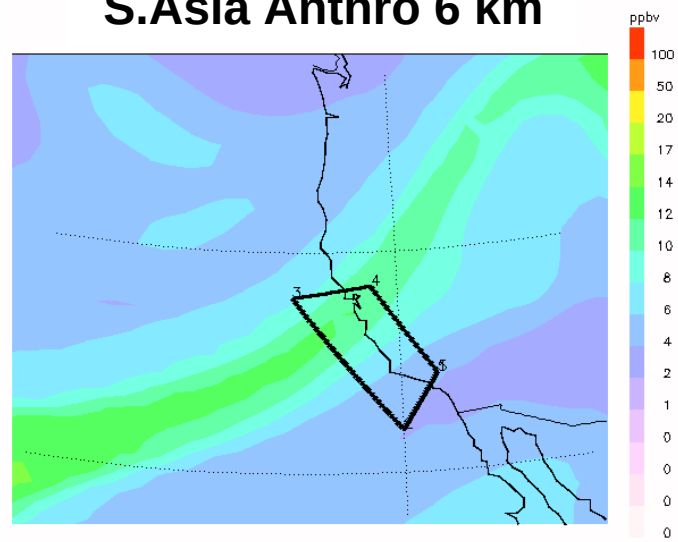


CAM-Chem/DART 2008-06-24 21Z (06-20 fx)

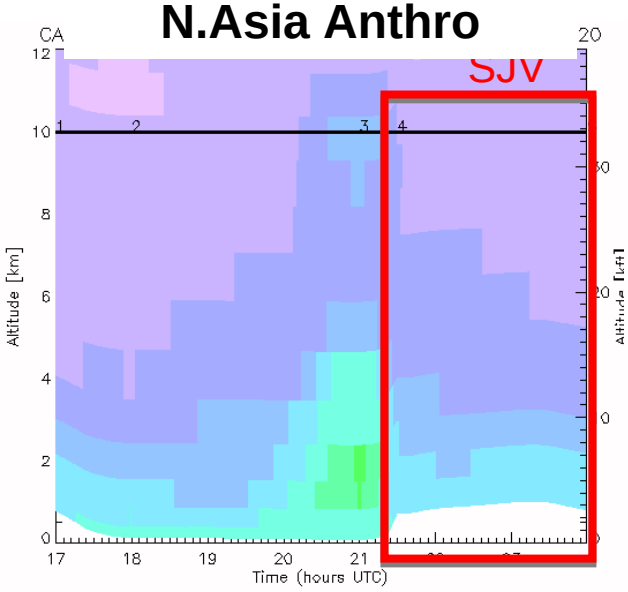
N.Asia Anthro 2 km



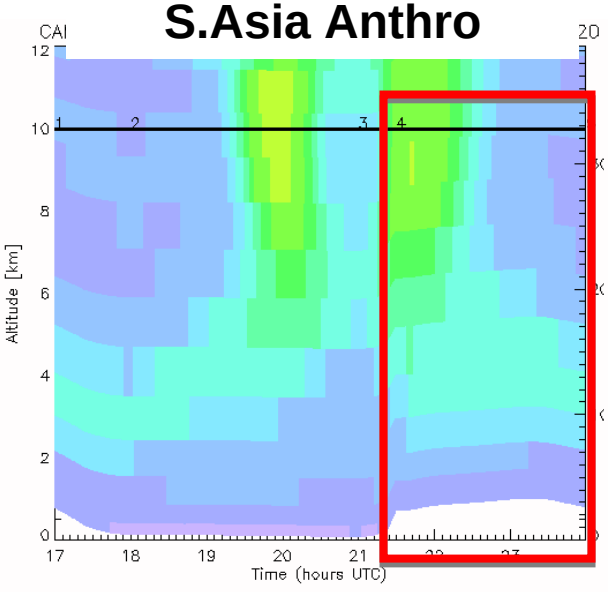
S.Asia Anthro 6 km



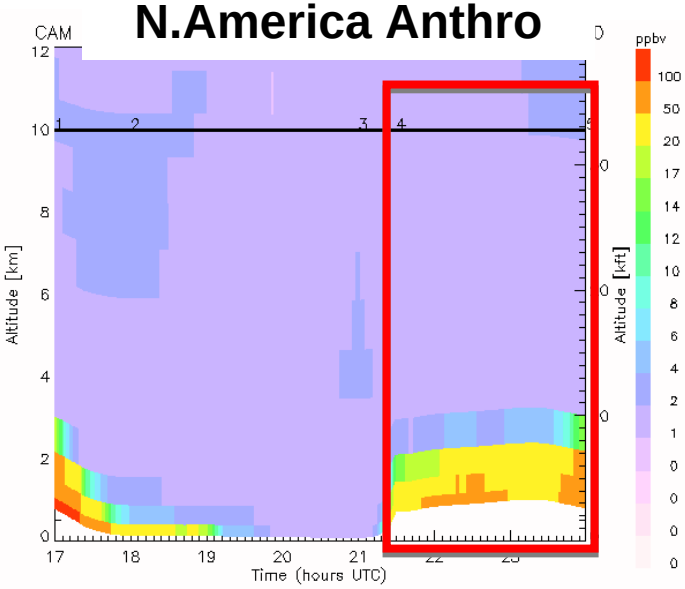
N.Asia Anthro



S.Asia Anthro

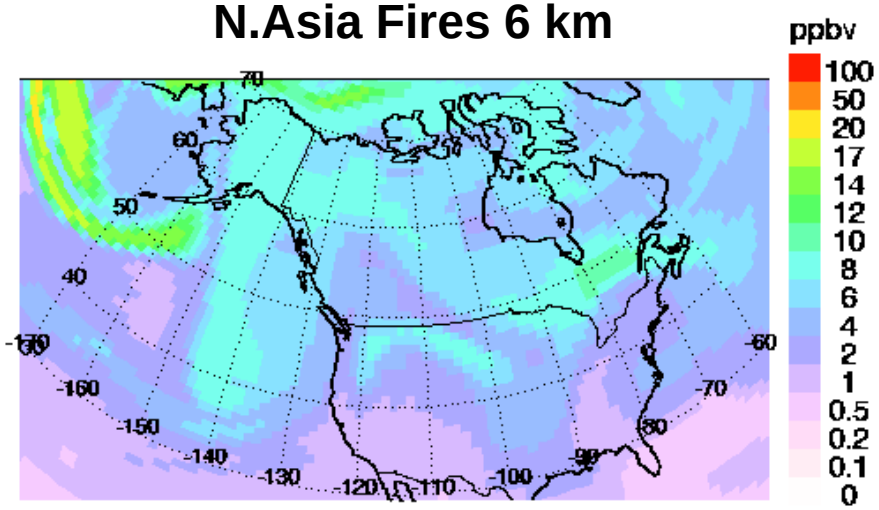


N.America Anthro



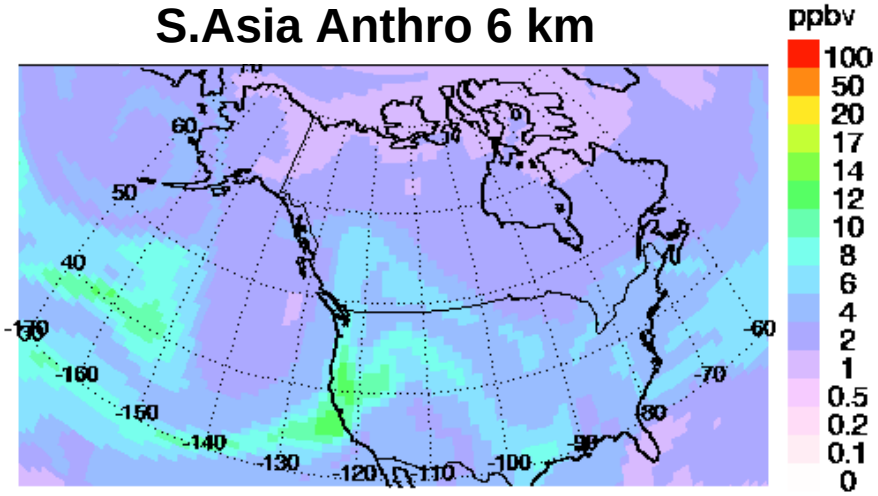
CAM-Chem/DART Outlook for Transit 06-26

N.Asia Fires 6 km



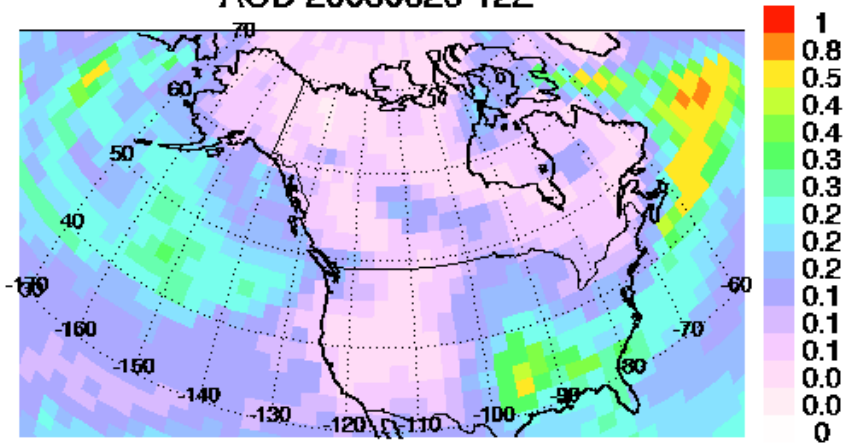
CAM Forecast from 20080619

S.Asia Anthro 6 km



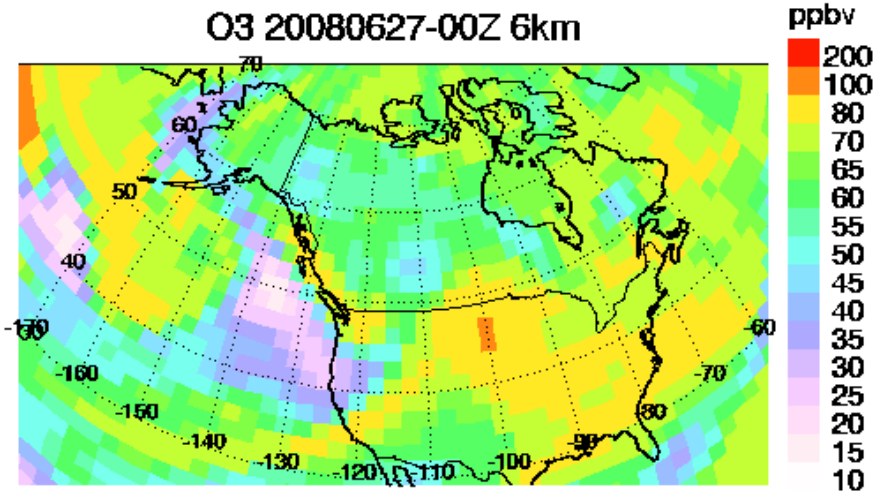
CAM Forecast from 20080619

AOD 20080626-12Z



CAM Forecast from 20080620

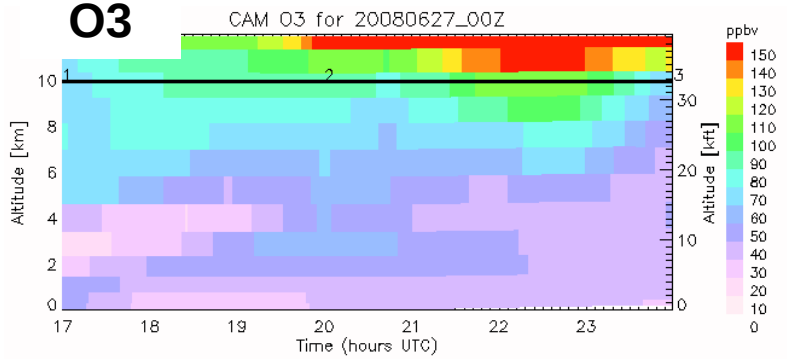
O3 20080627-00Z 6km



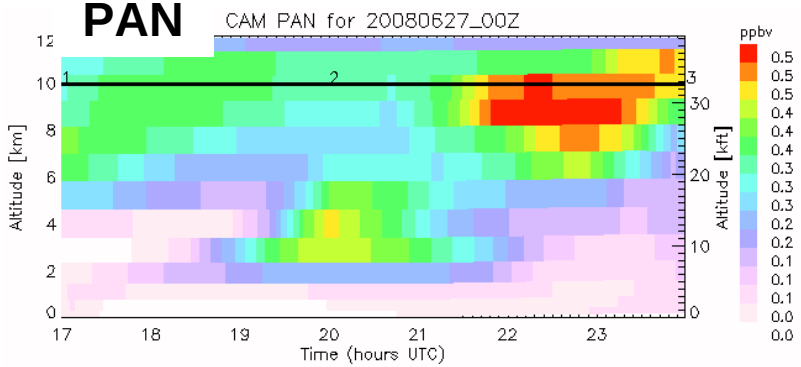
CAM Forecast from 20080619

CAM-Chem/DART Outlook for Transit 06-26

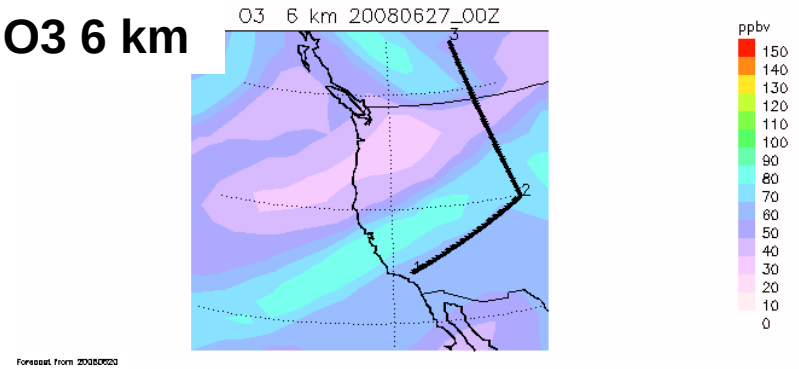
O3



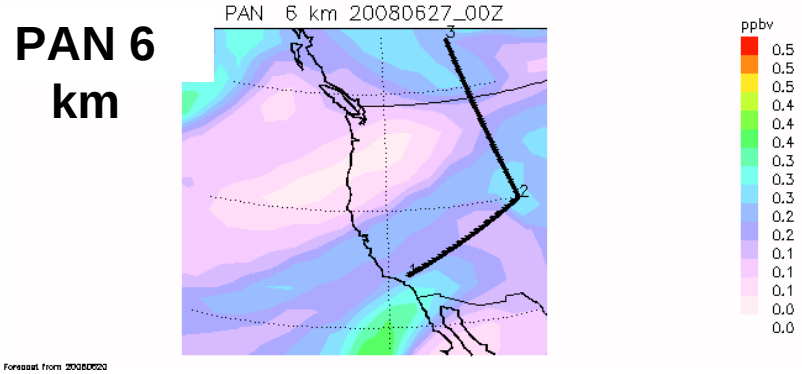
PAN



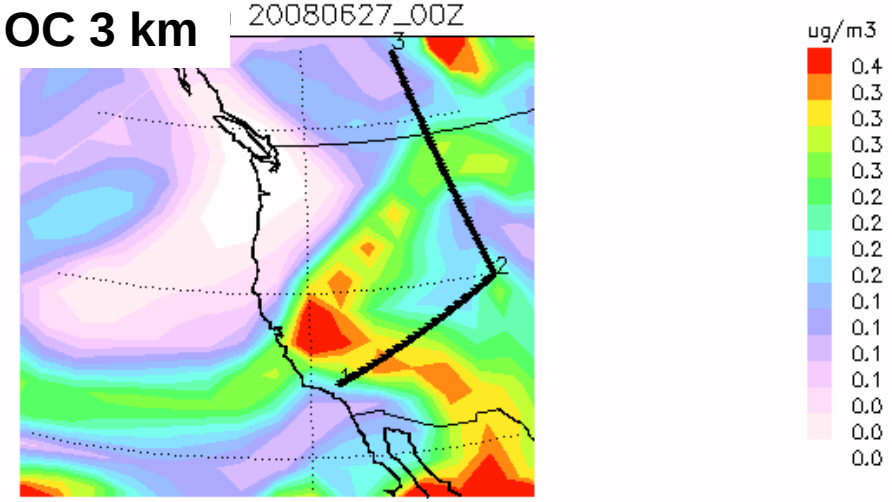
O3 6 km



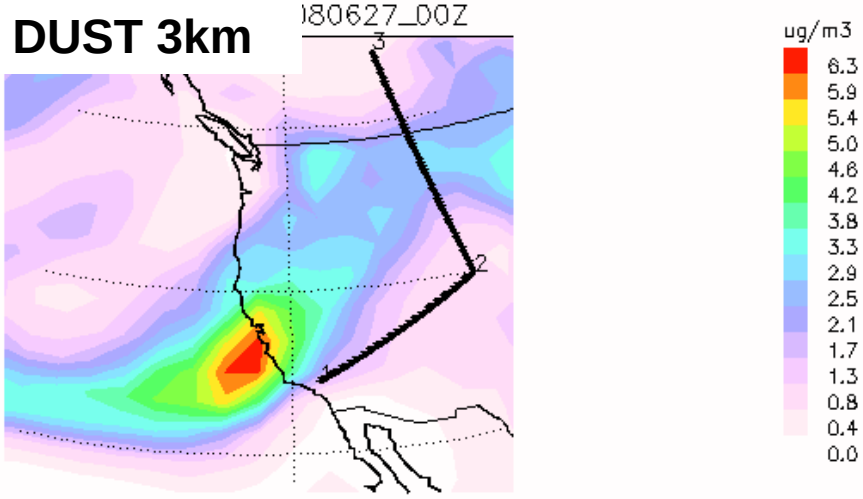
PAN 6 km



OC 3 km



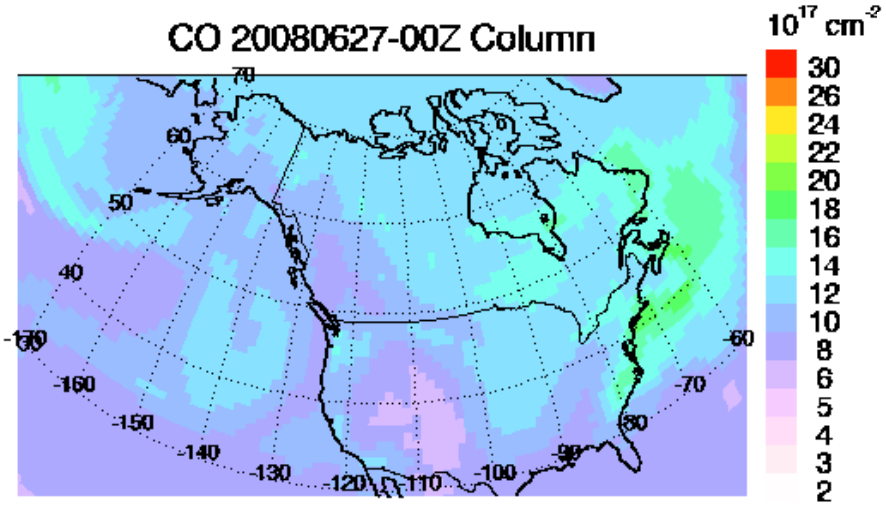
DUST 3km



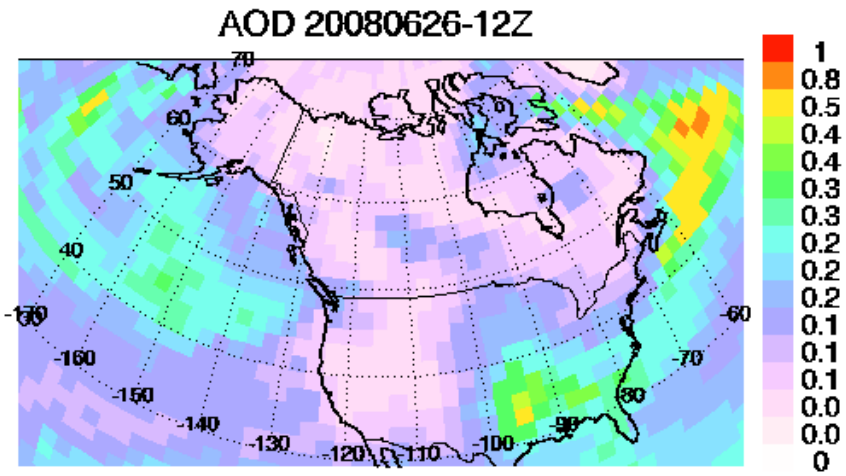
CAM-Chem/DART

June 26 21Z (fx from 06-19)

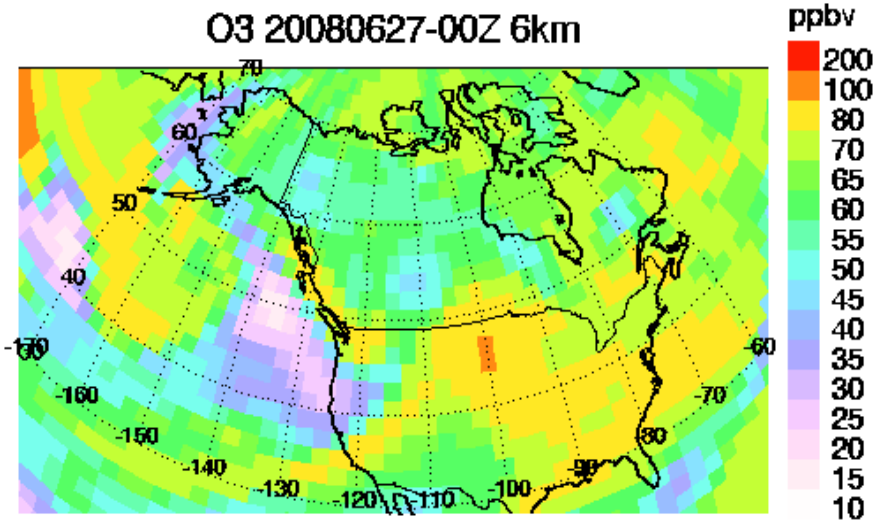
CO Column



CAM Forecast from 20080619

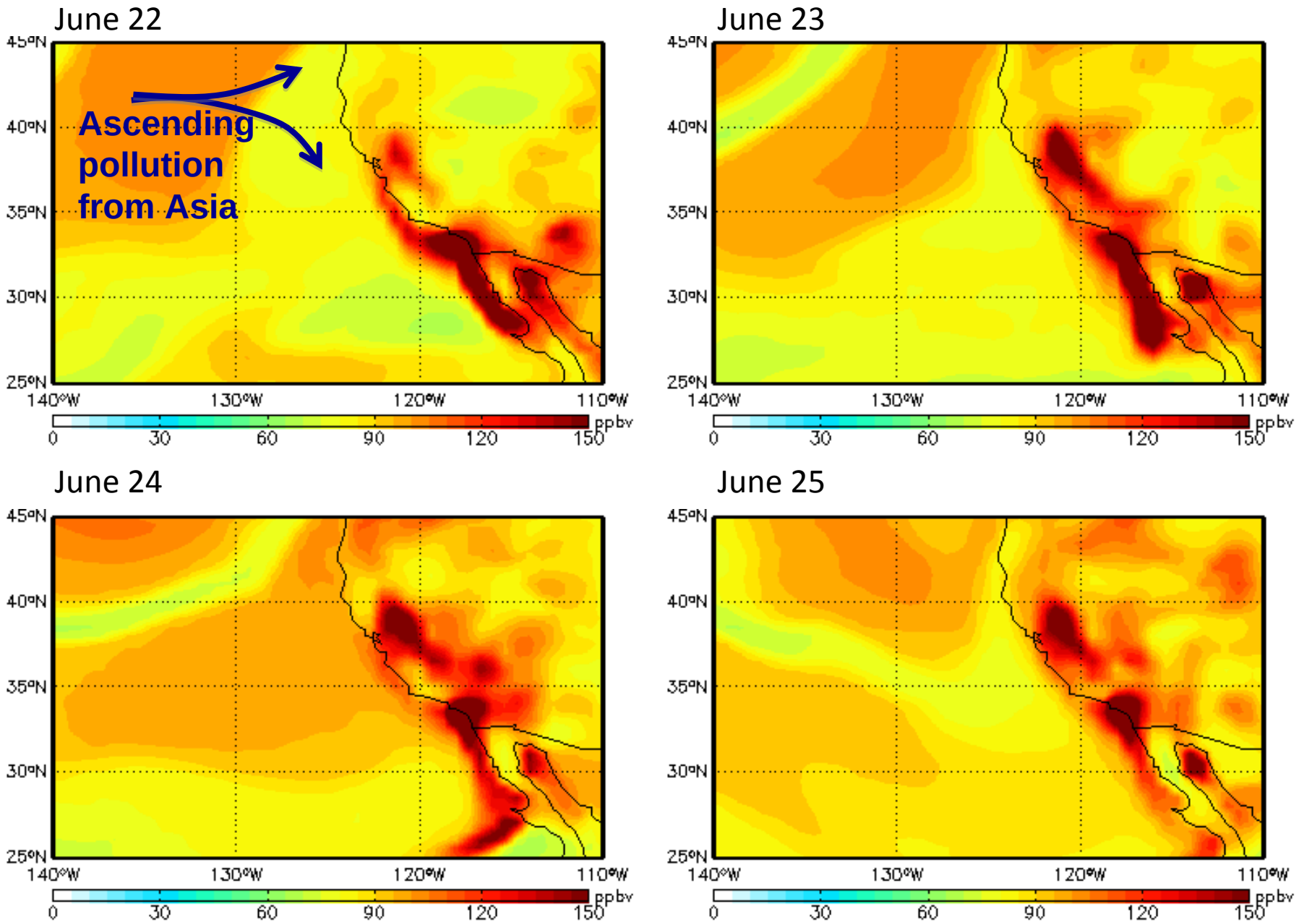


CAM Forecast from 20080620



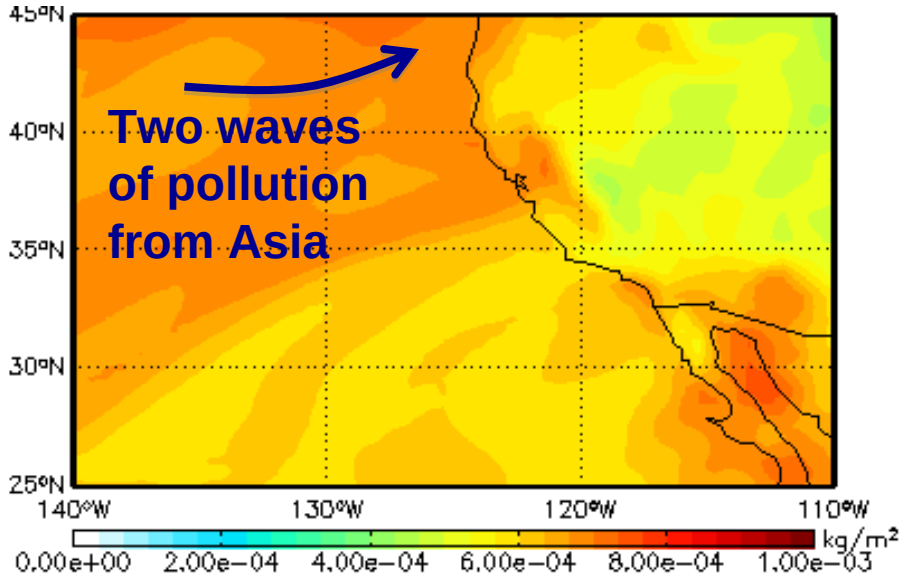
CAM Forecast from 20080619

GEOS-5 Outlook: Surface CO at 19:30Z

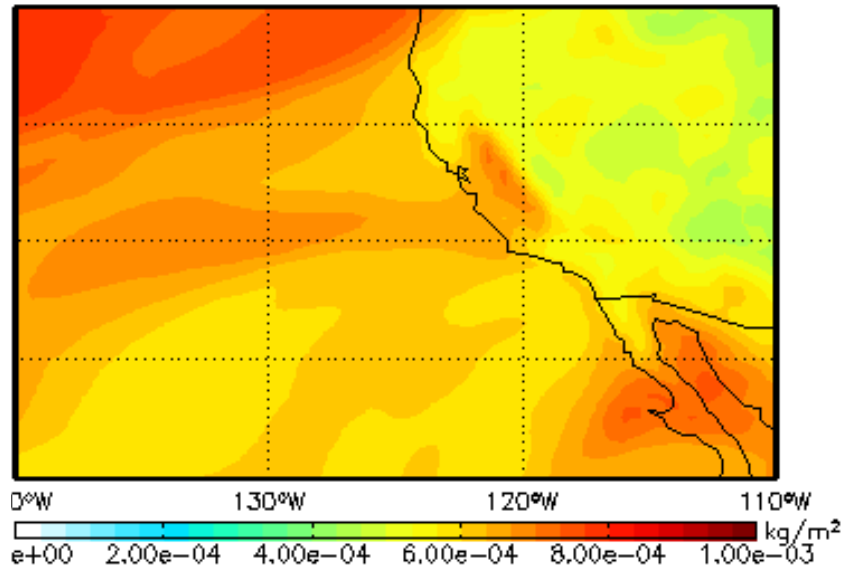


GEOS-5 Outlook: Total Column CO at 19:30Z

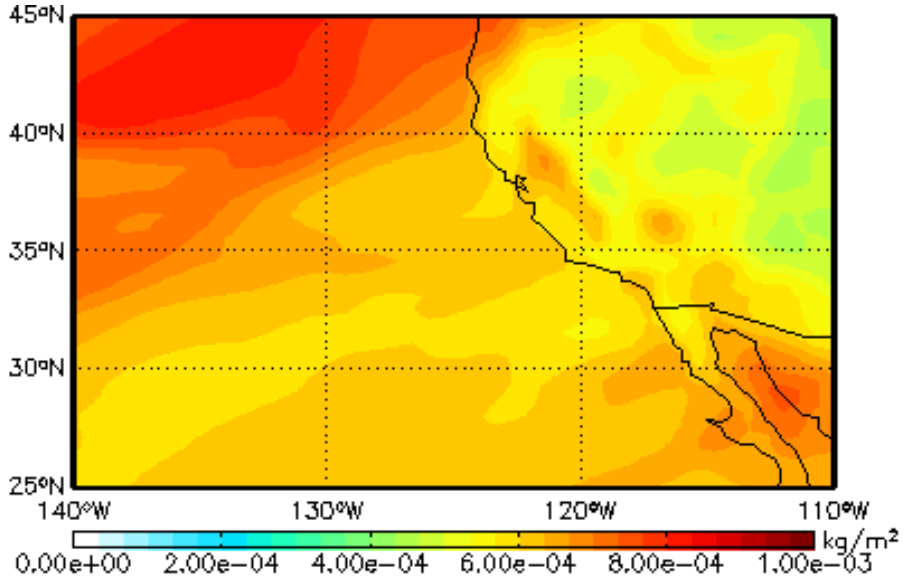
June 22



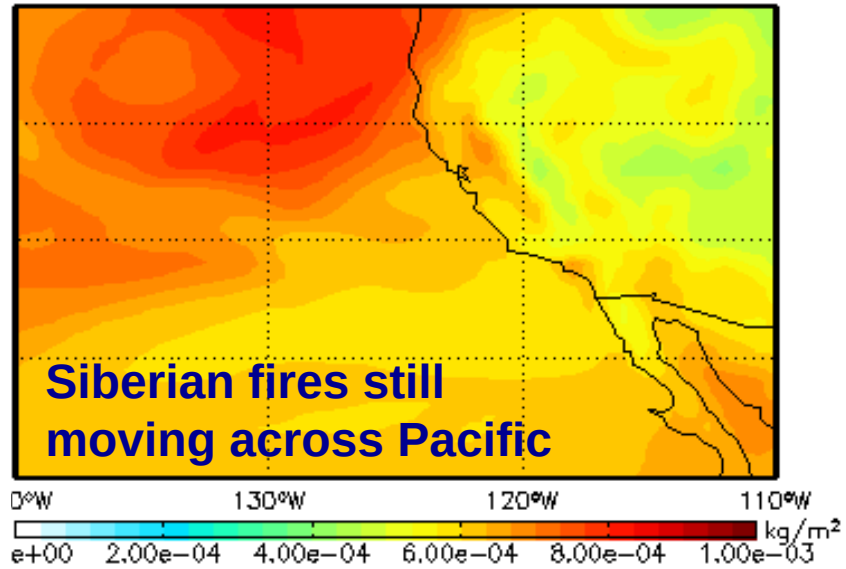
June 23



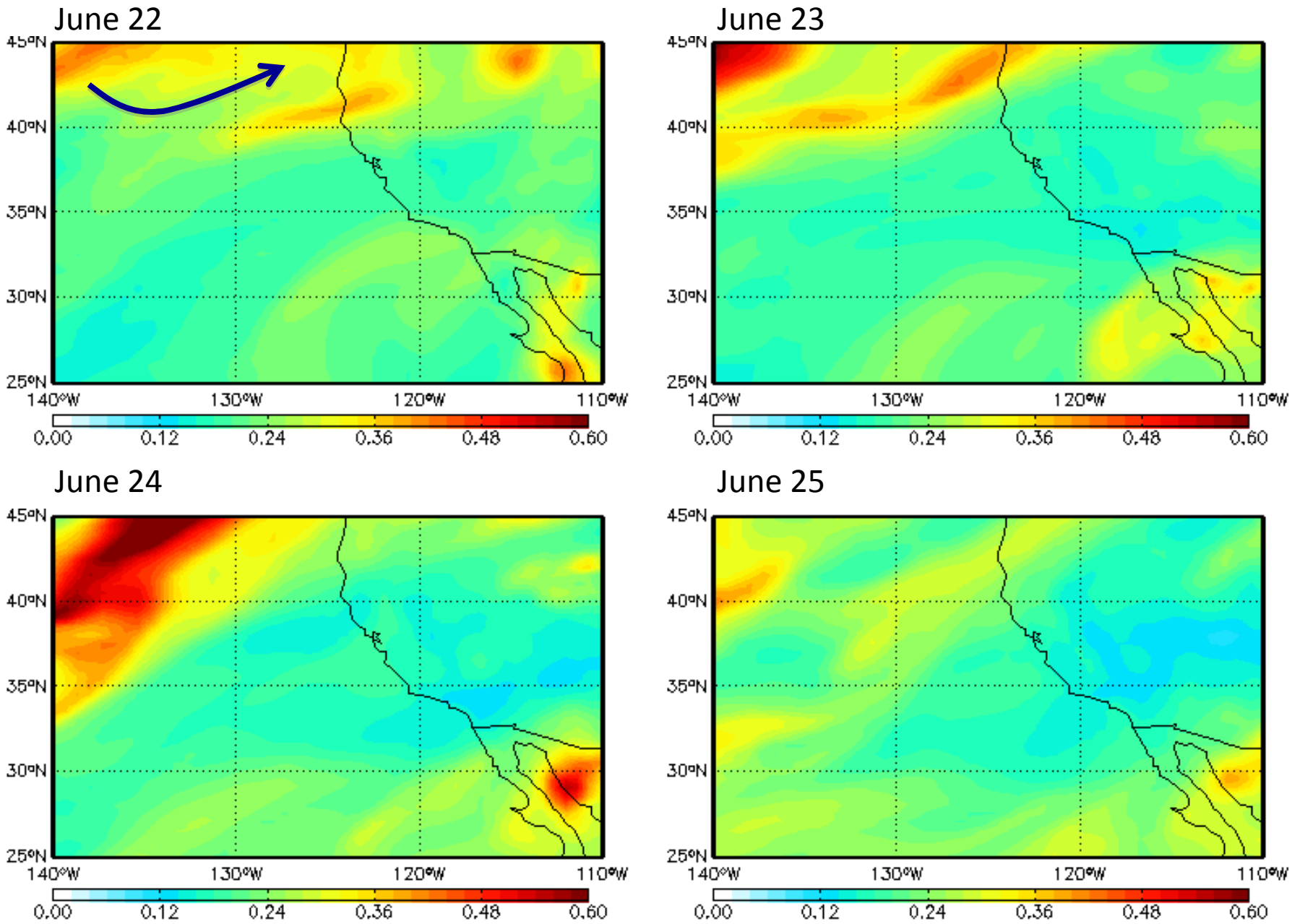
June 24



June 25



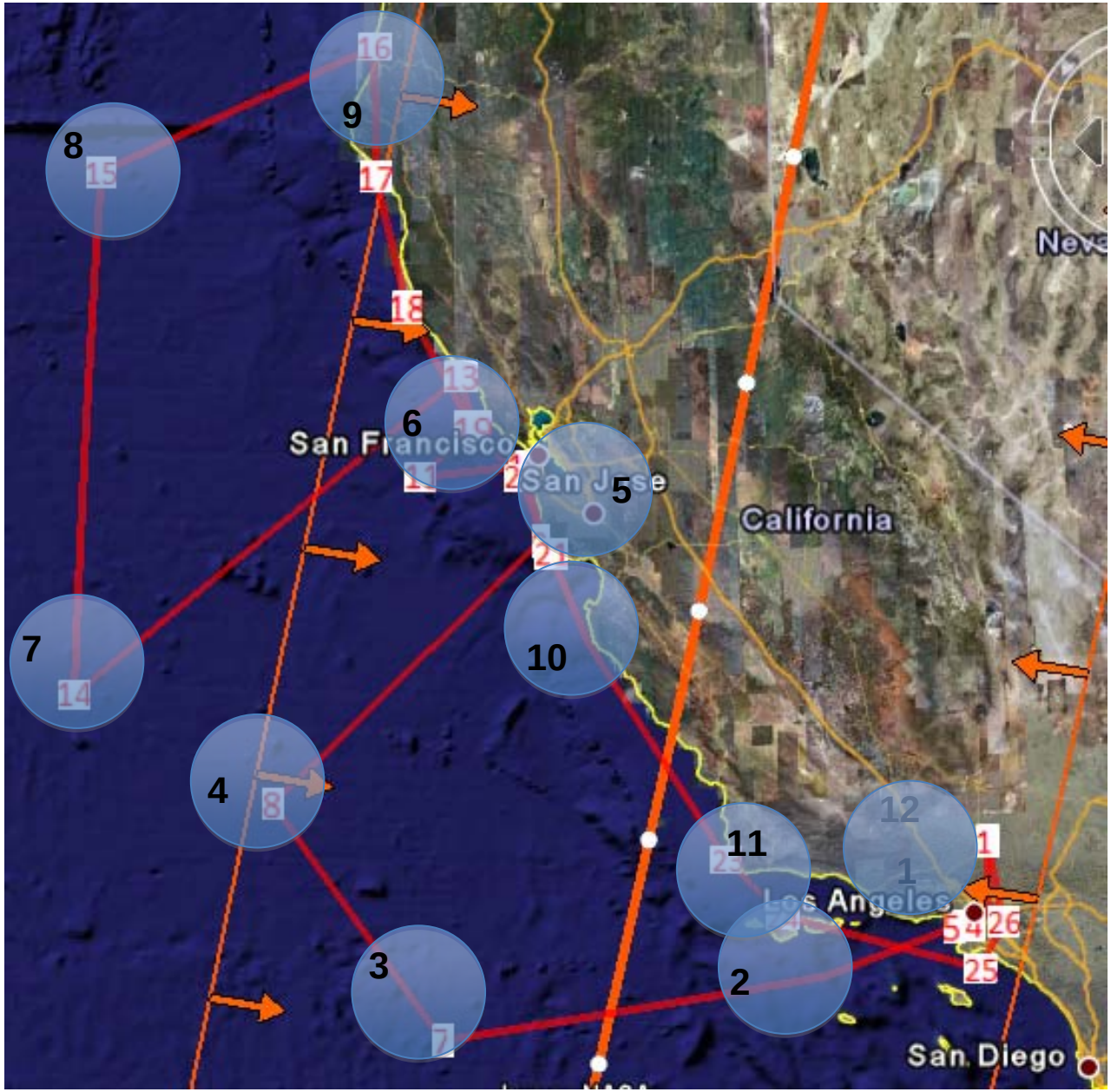
GEOS-5 Outlook: AOT at 19:30Z



GEOS-5 forecast 20080622

Initialized at 20080621_06Z

Proposed Flight Plan: Boundary Condition Survey Version D 06/22/2008



Nominal Altitudes:

1 kft over land.

0.5 kft over water.

Variable Altitude 0.5 – 30 kft between point 7 and 8 and between 14 – 15. Point 7 and 8 at 25 kft. Point 8 and 15 at 30 kft.

MOPITT Spiral at point 8:

30 – 0.5 kft.

Spiral at point 15:

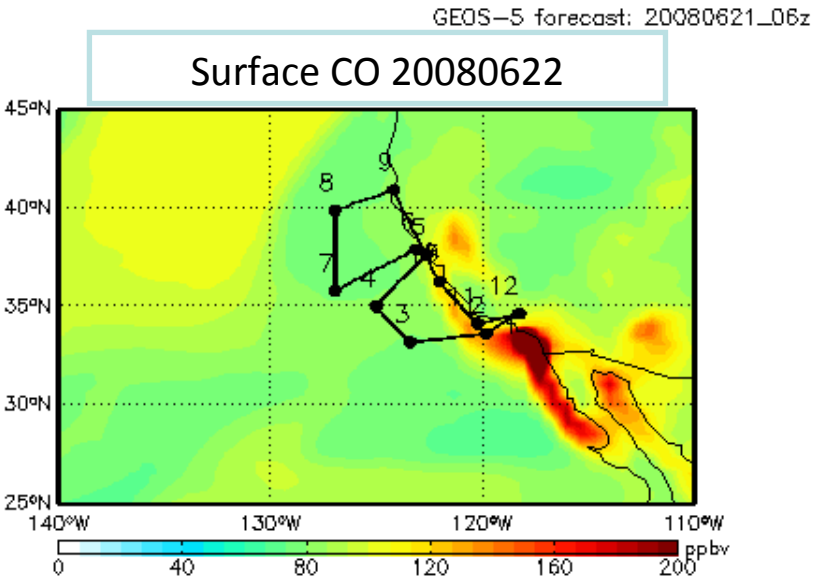
30 – 0.5 kft.

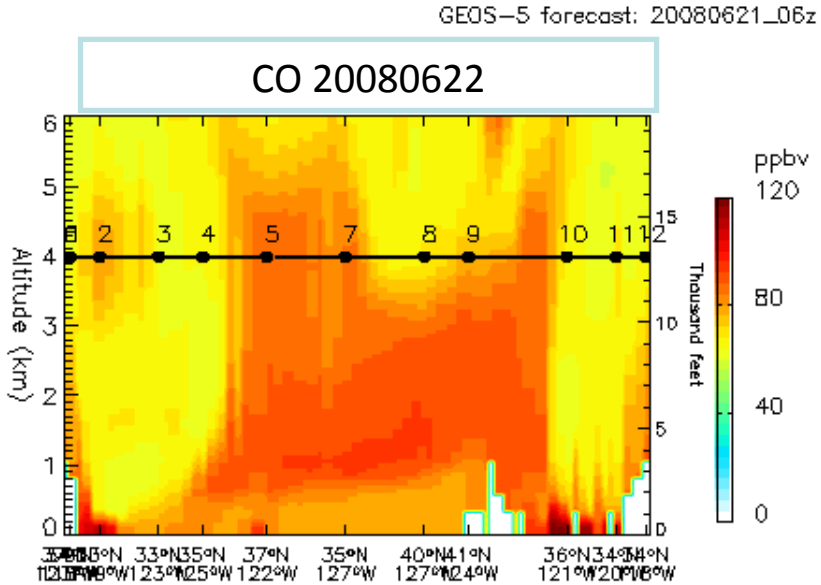
Trinidad Spiral at 16: 0.5 – 20 kft. At predetermined time to coordinate with Ozonesonde launch.

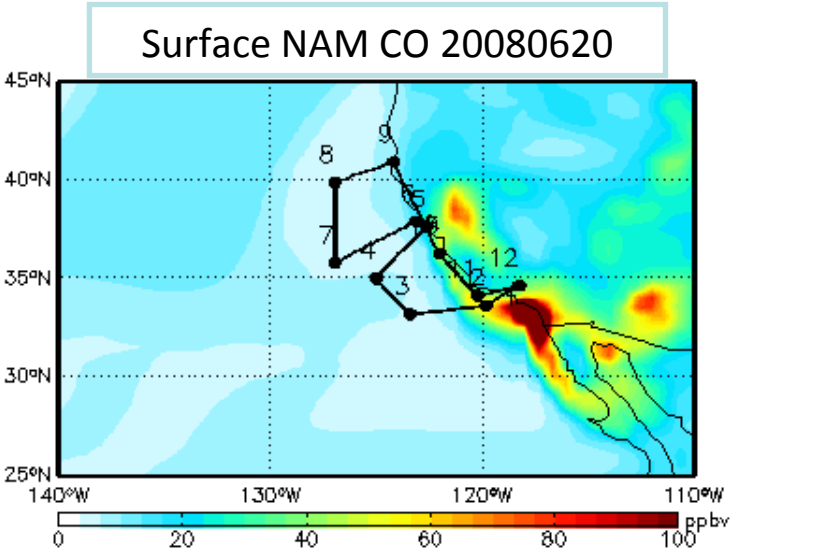
Estimated flight time: 9:30

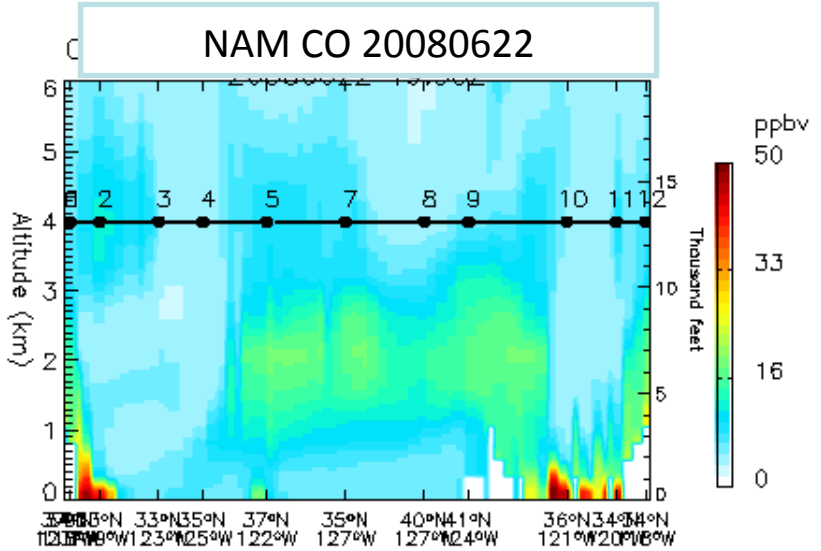
Estimated take-off: 9:00 PDT

CO – total and NAM

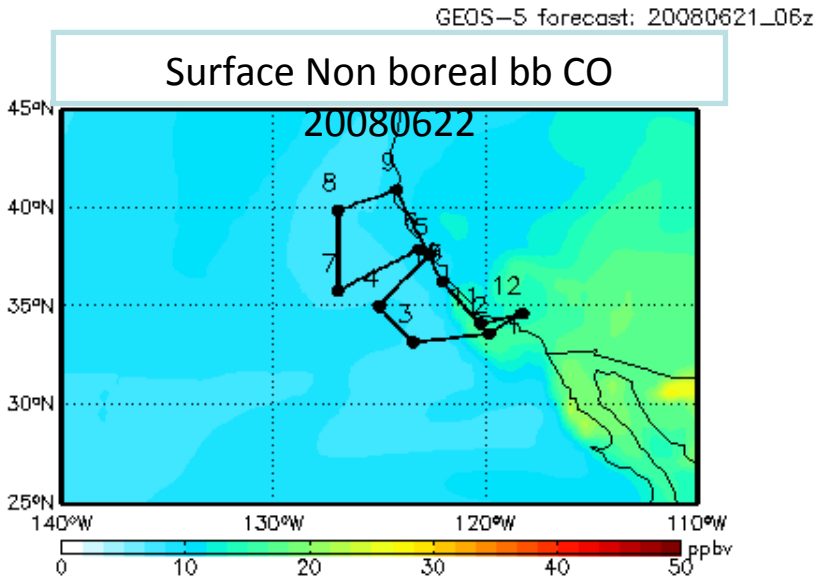


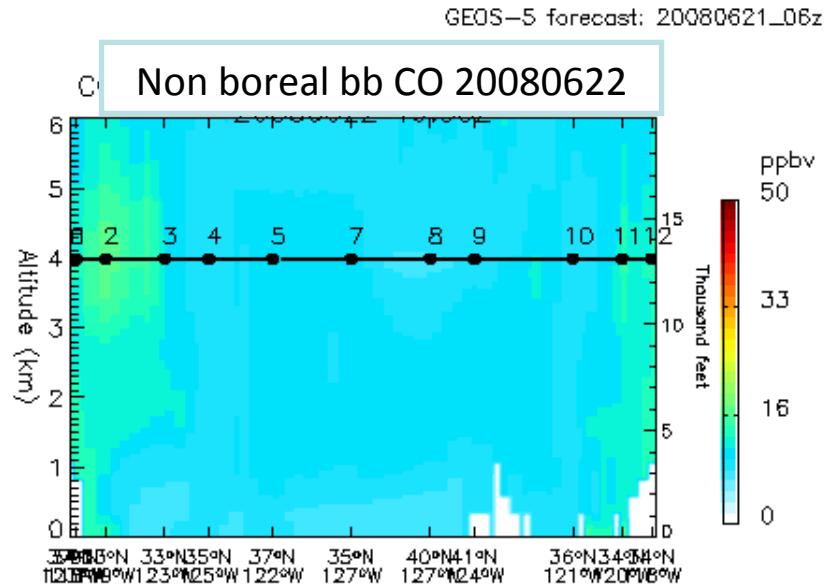


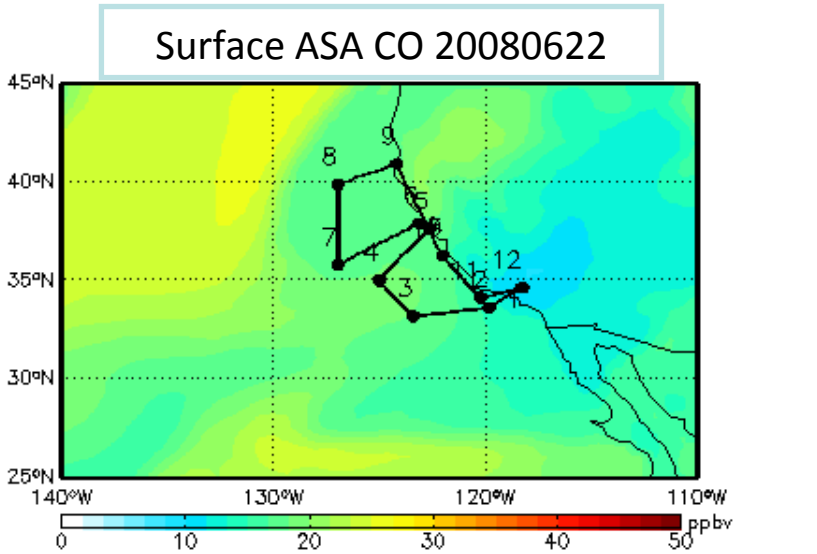


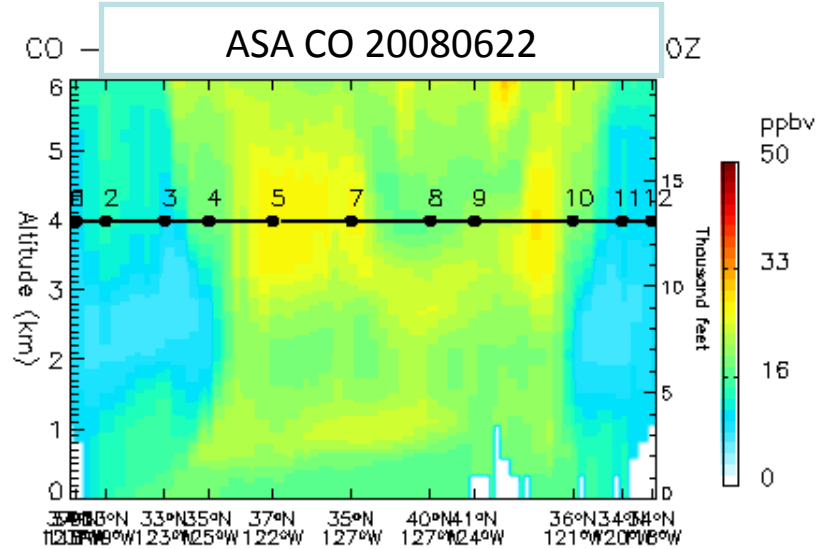


CO – Non boreal BB and ASA

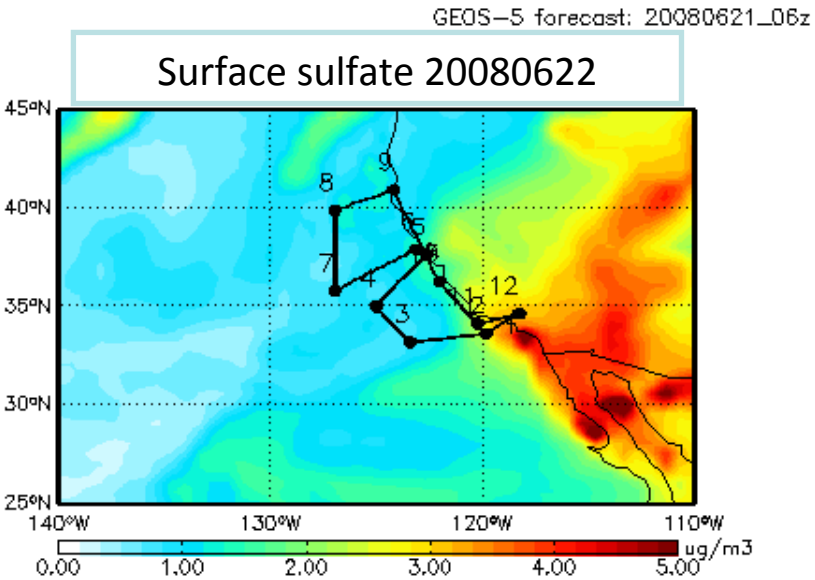


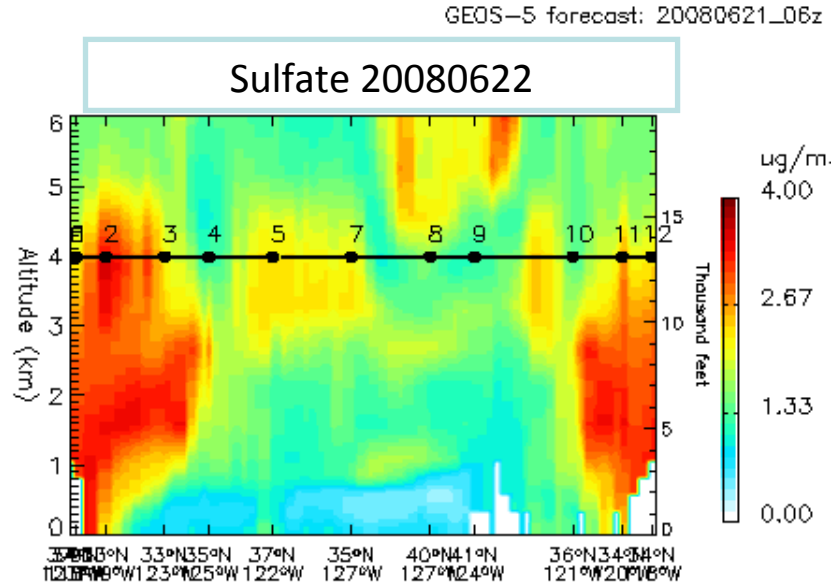


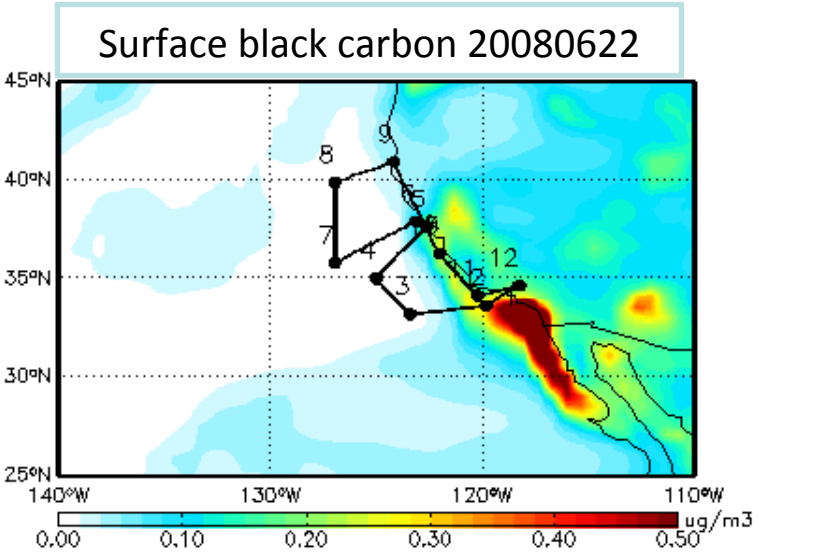


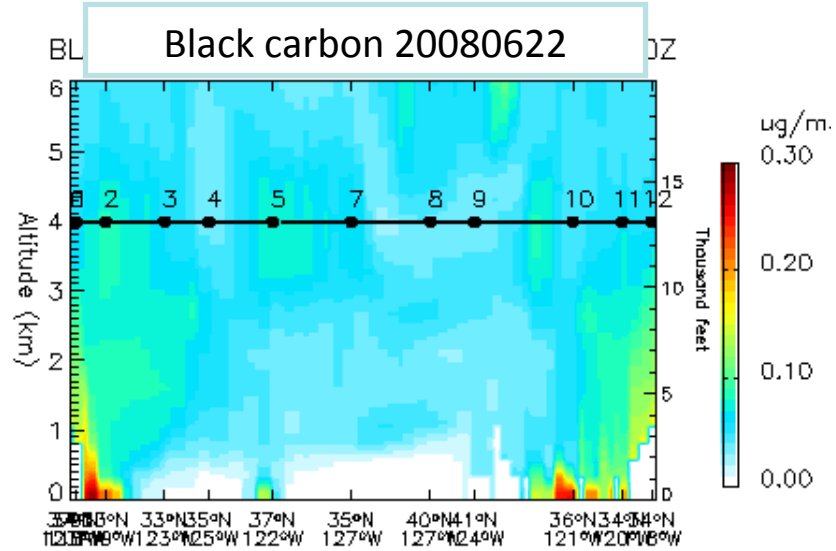


Sulfate and black carbon

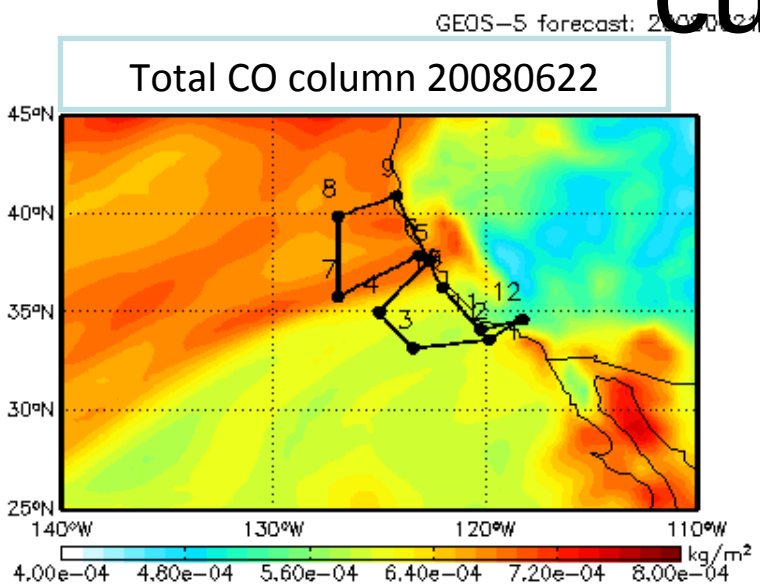


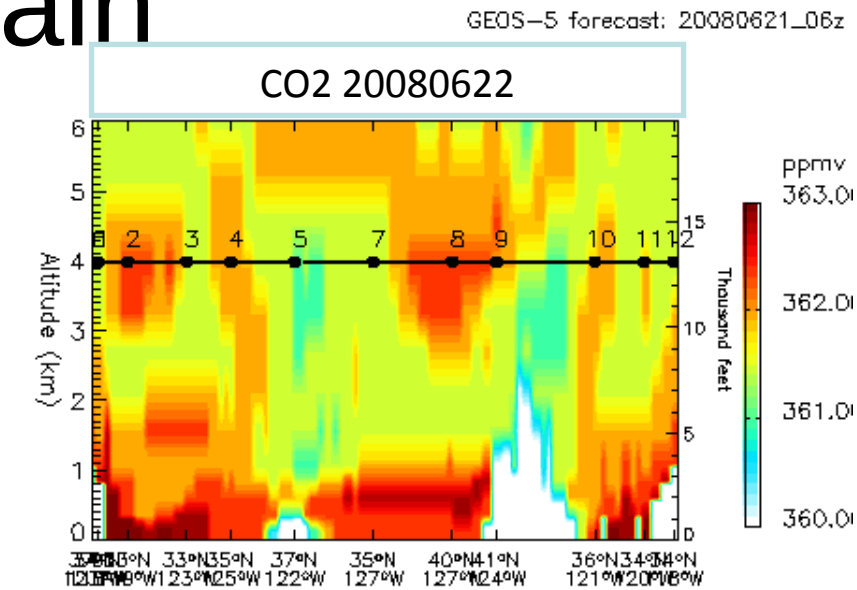


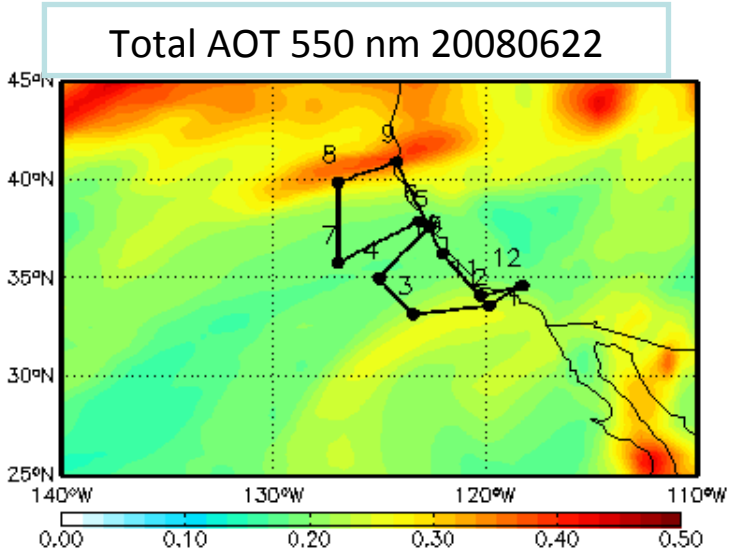


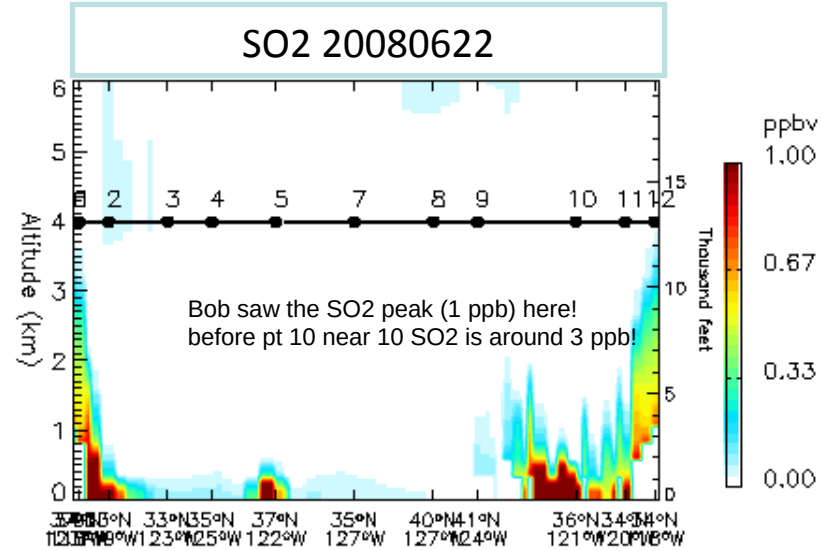


Column CO, AOT, CO2 & SO2 curtain









GEOS-5 forecast 20080624

Initialized at 20080621_06Z

Central Valley Survey Flight Plan (Final)
06/20/2008

Nominal Altitude:

Point 1 – 4: 20 kft.

Point 5 – 40: 1 – 3 kft.

MOPITT Spiral at point 4 from 20 to 2 kft and then descent to 1 kft.

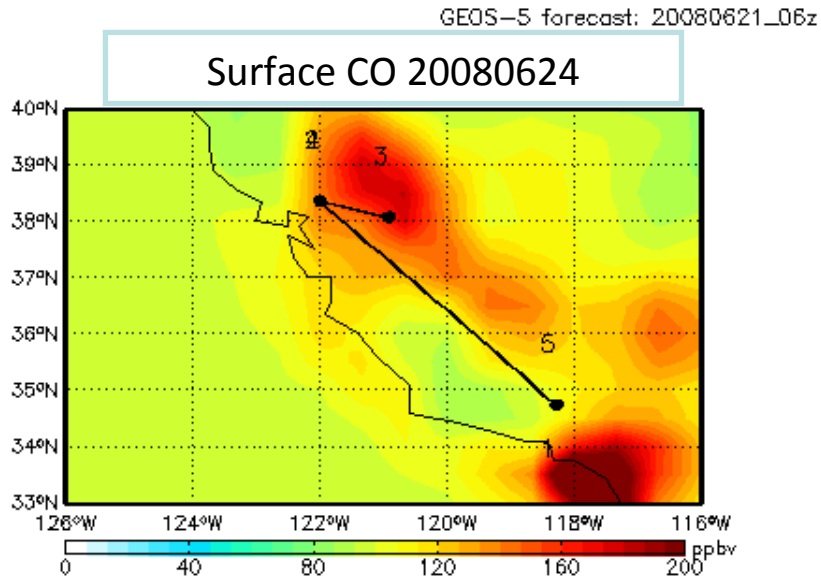
SF Bay Spiral at point 5 from 1 to 5 kft and back to 1 kft.

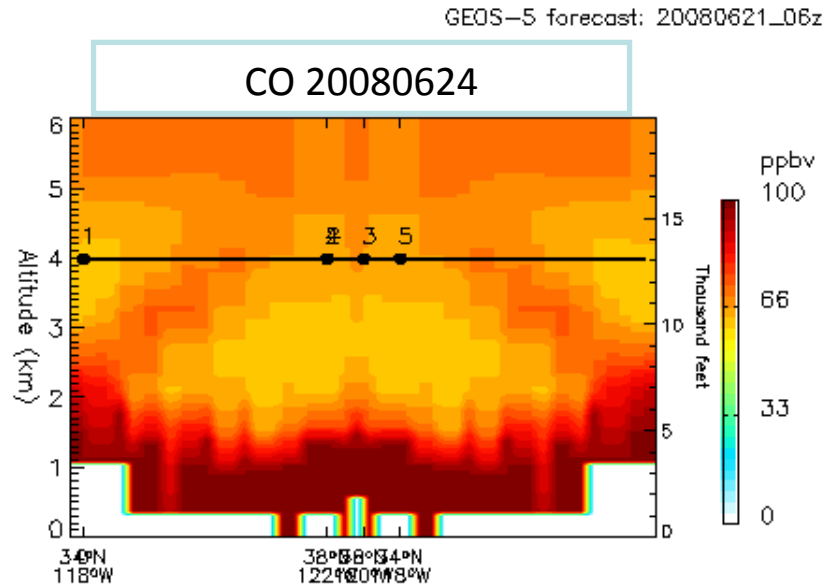
Proposed take-off at 10:25

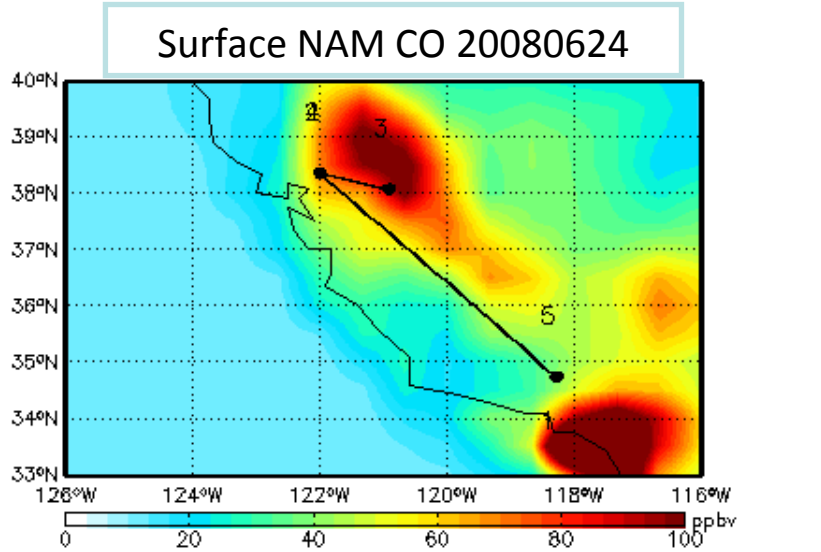
Estimated Flight time: 6:00

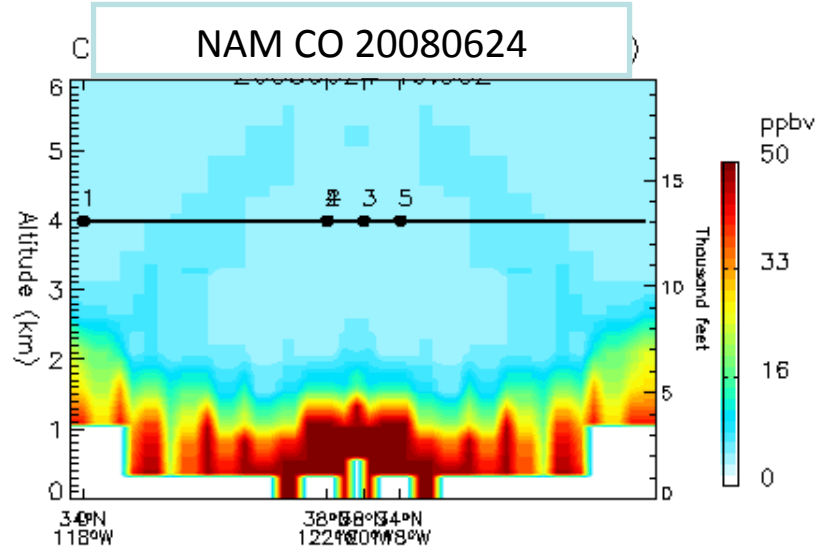
On-route 20 kft cooling pop-up as needed.

CO – total and NAM

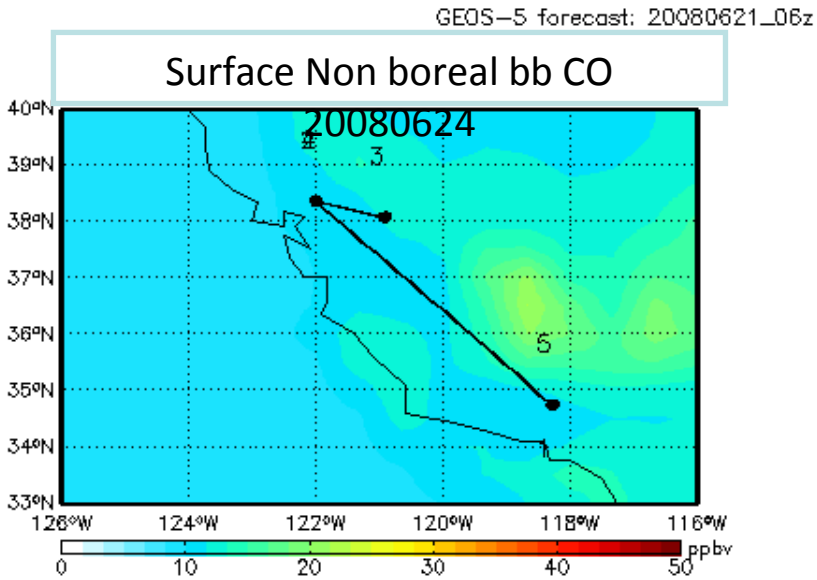


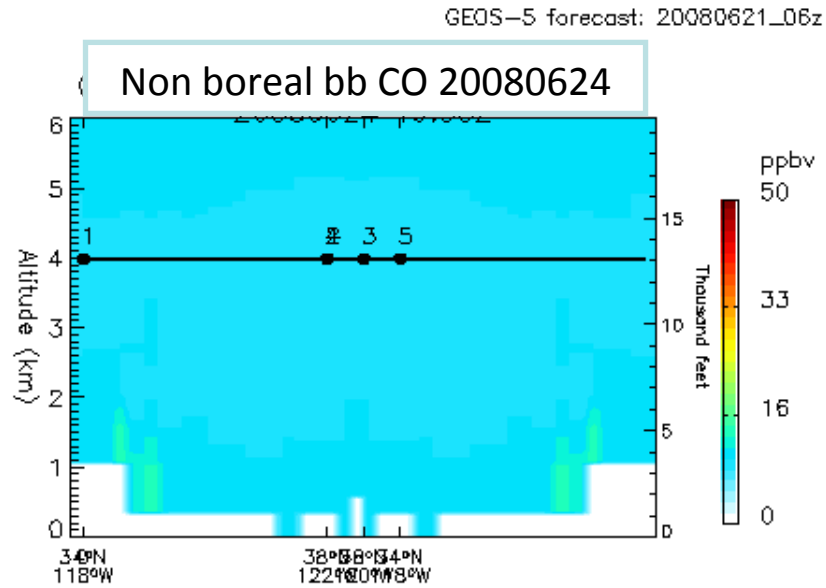


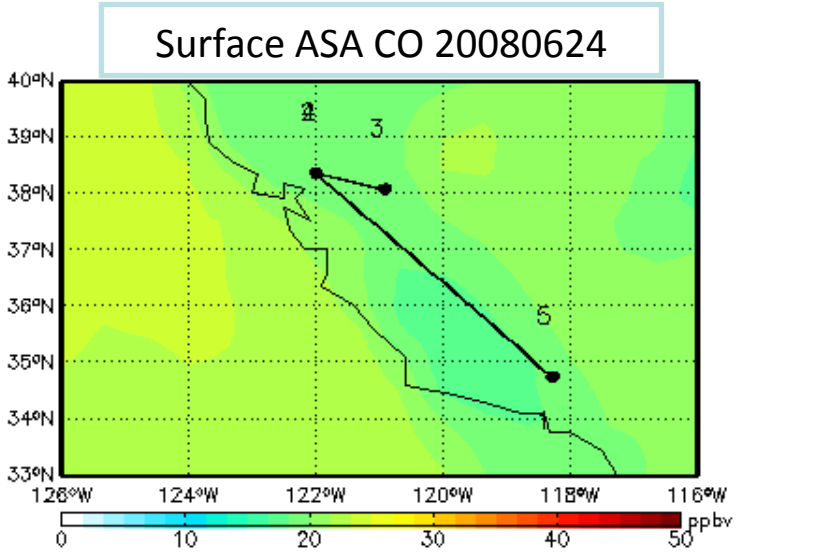


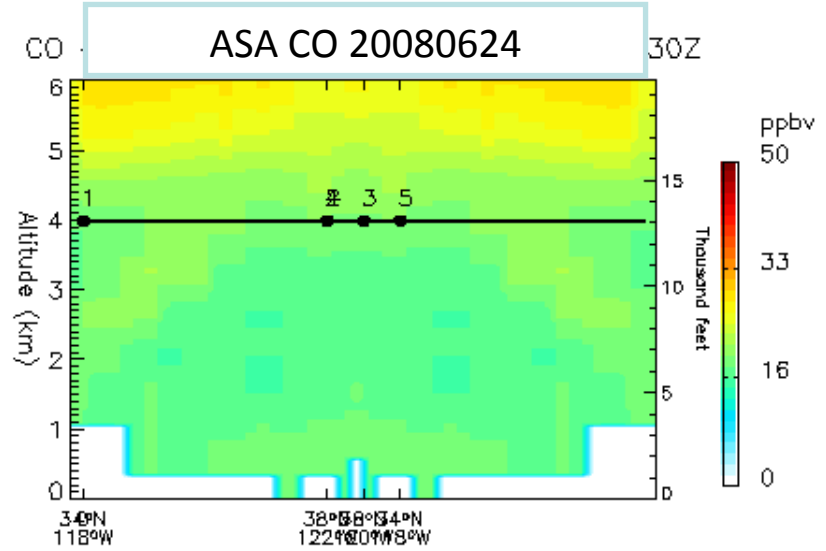


CO – Non boreal BB and ASA

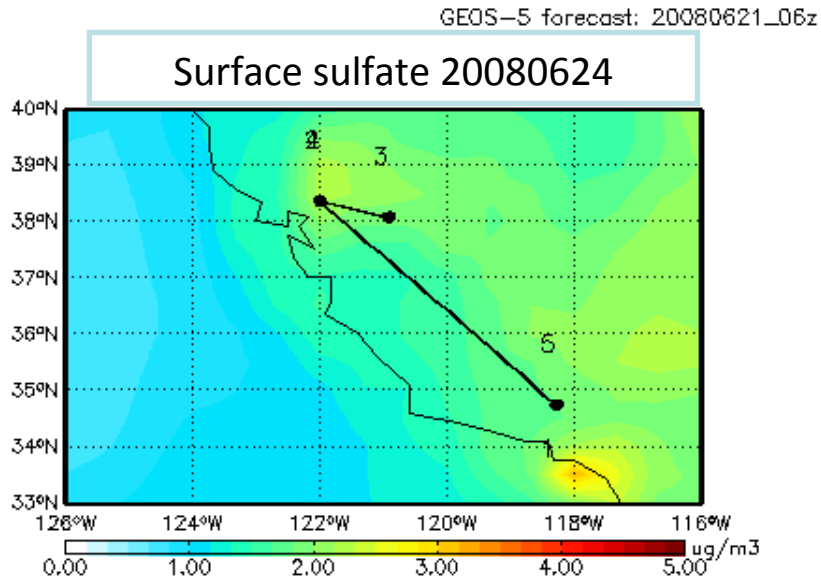


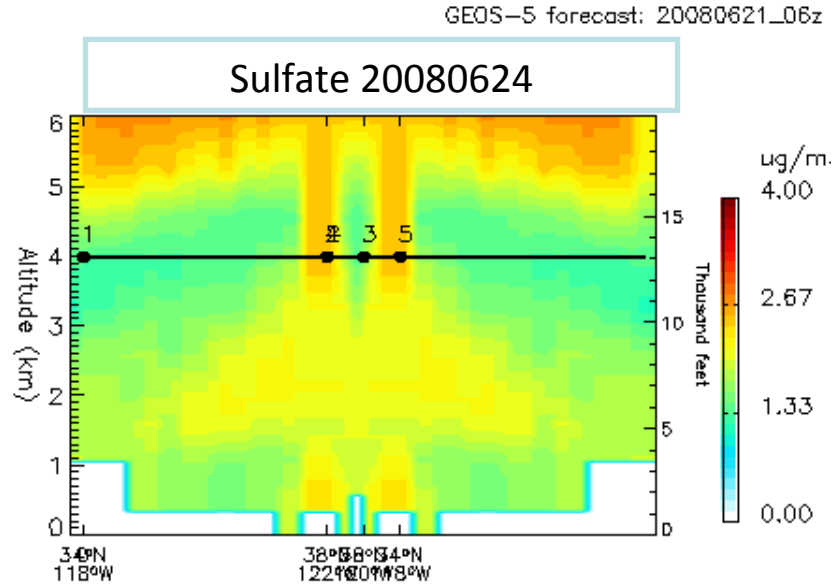


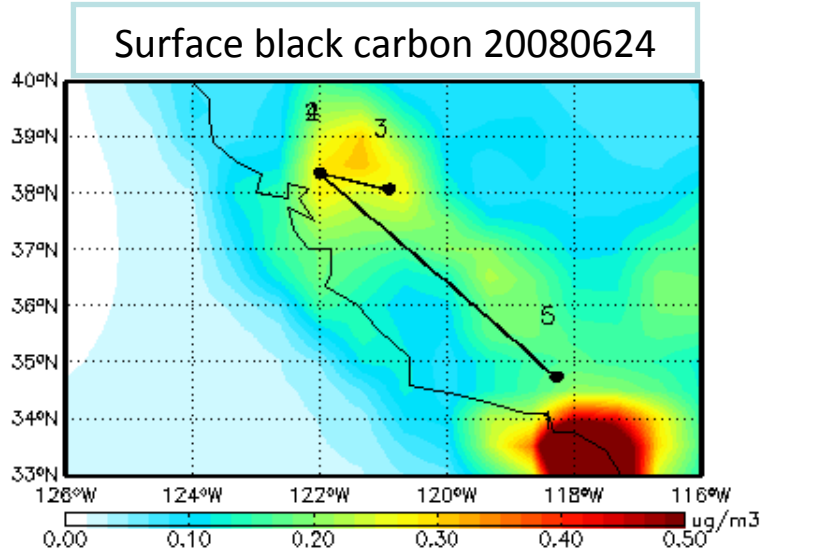


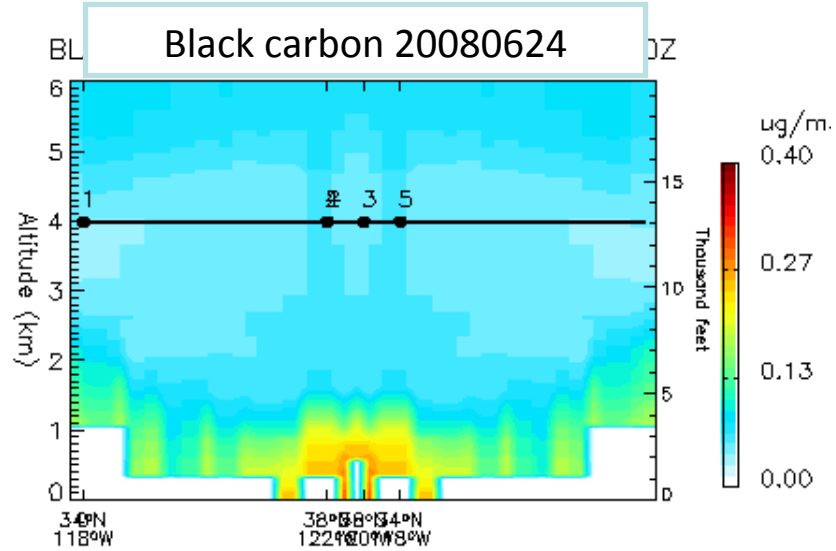


Sulfate and black carbon

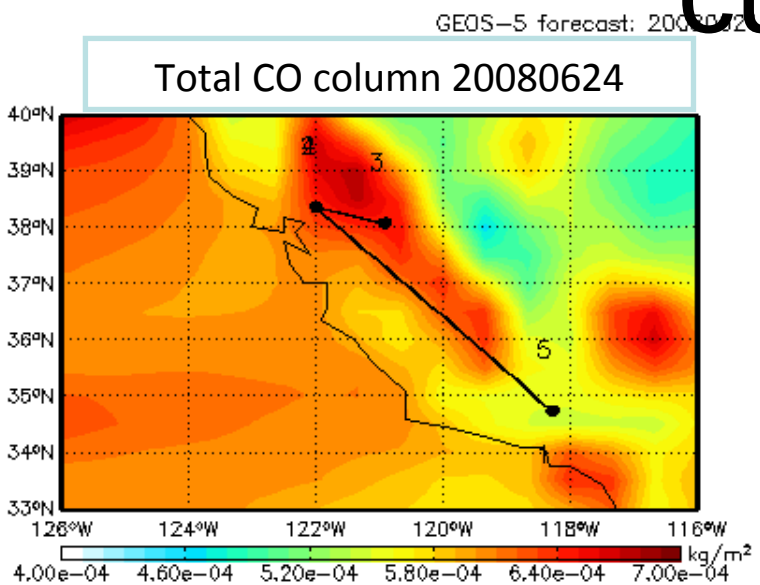


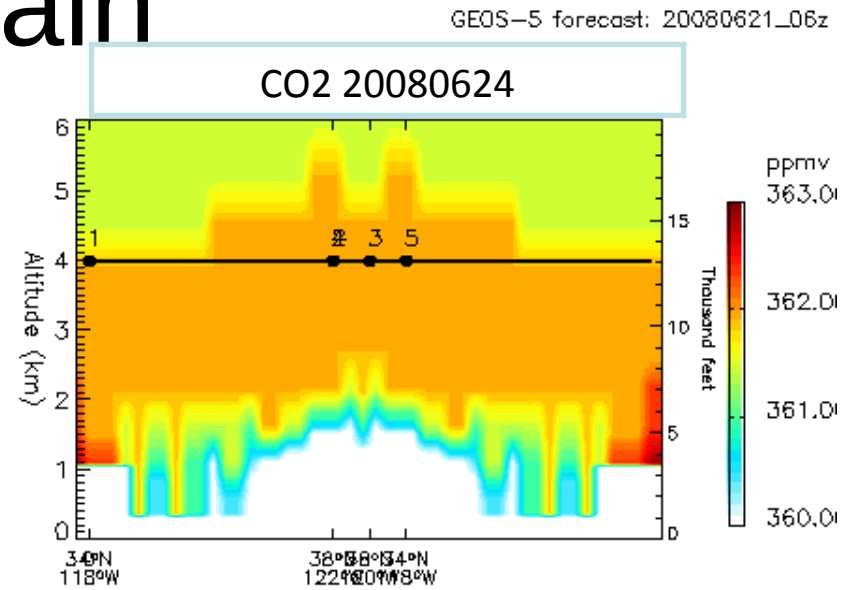


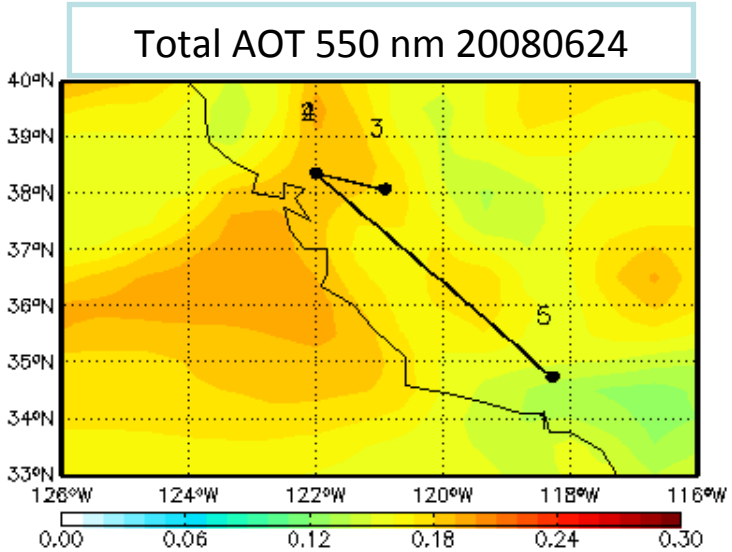


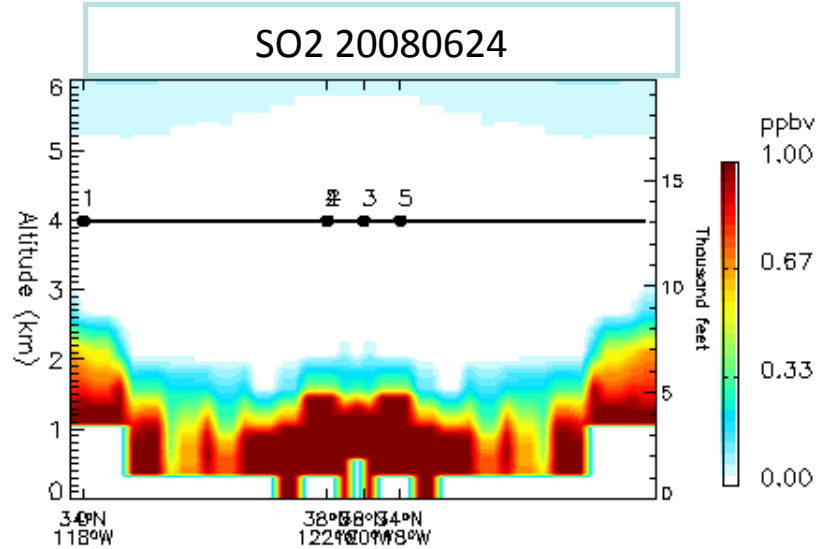


Column CO, AOT, CO2 & SO2 curtain



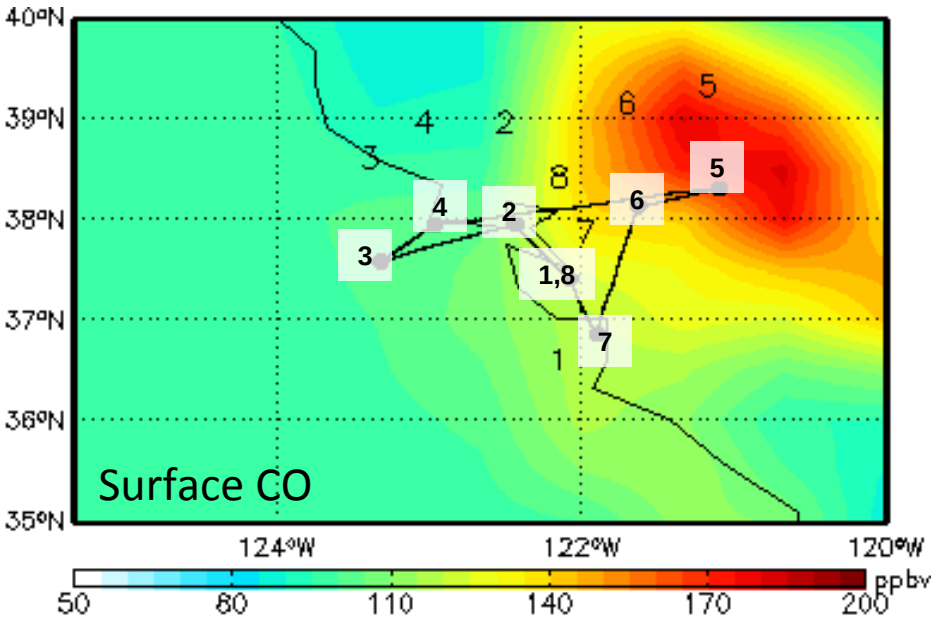




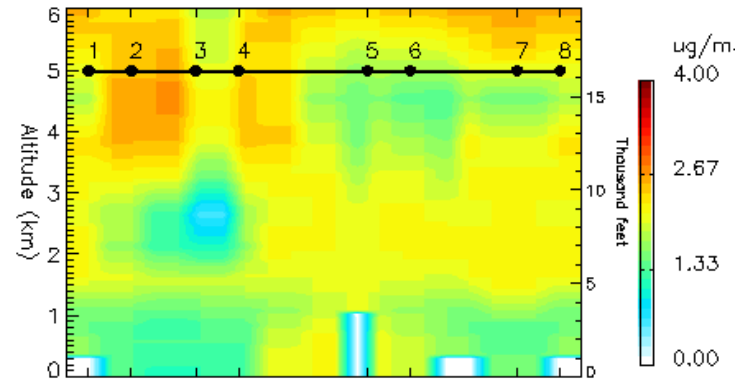


P3B "Plan B" flight on 6/24:

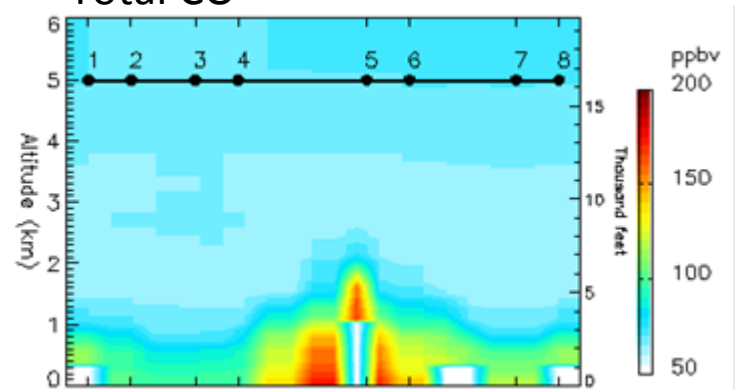
- CO trapped in the BL over land; mostly N.Am.
- Relatively clean over the ocean
- Sulfate aerosol at higher alt; mostly Asian



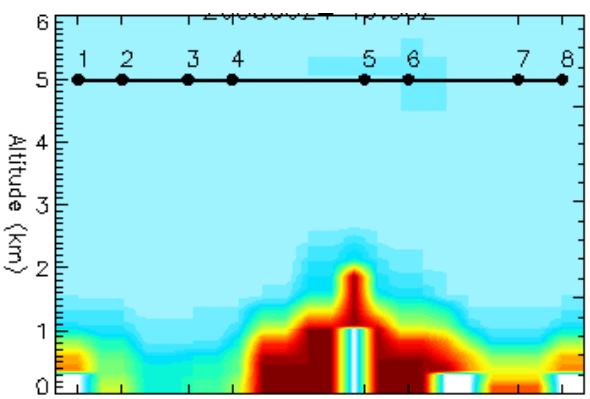
Sulfate aerosol



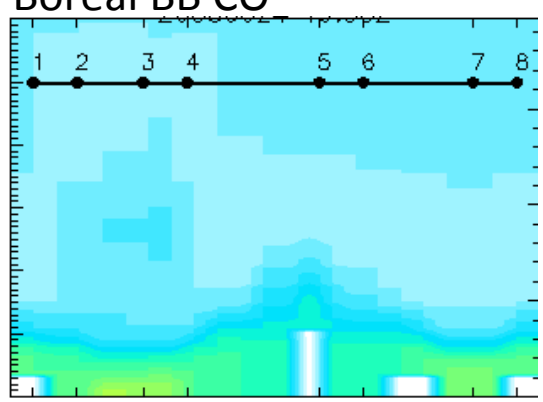
Total CO



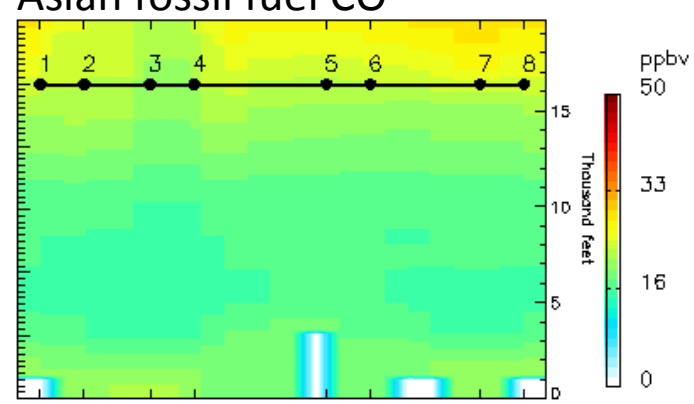
N. American ff CO



Boreal BB CO

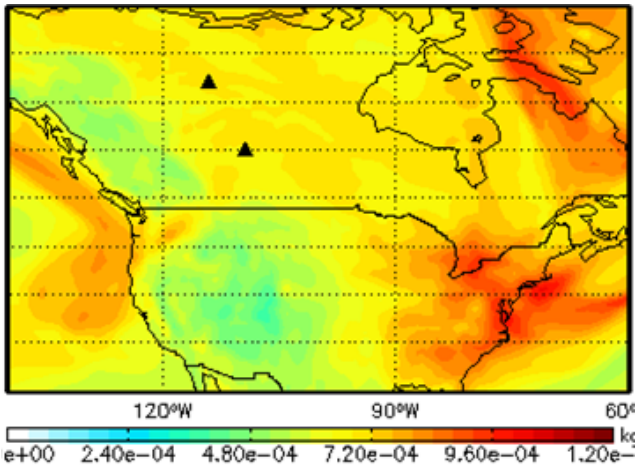


Asian fossil fuel CO

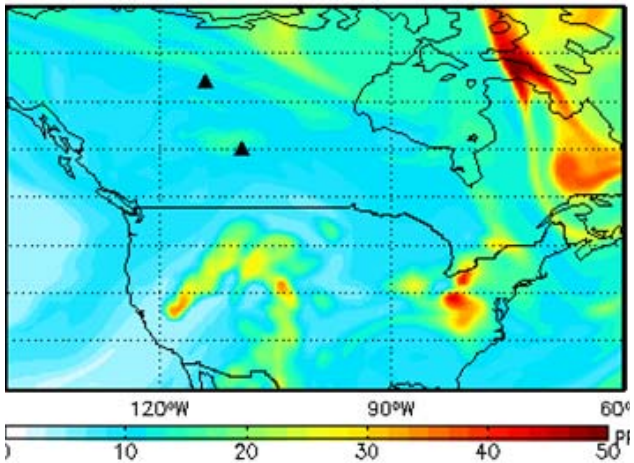


Transit flight “first look” – 6/26 4:30Z

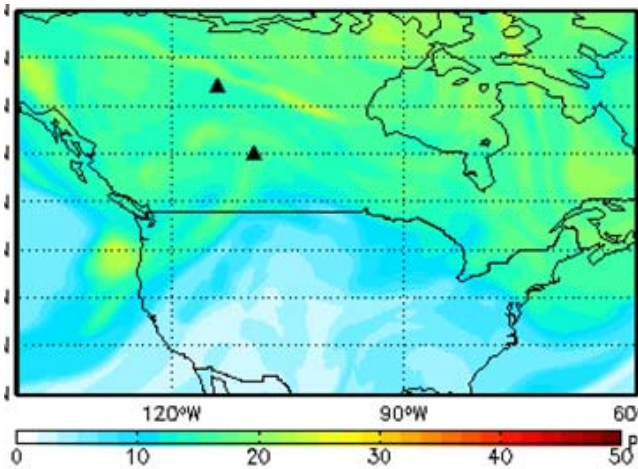
CO column



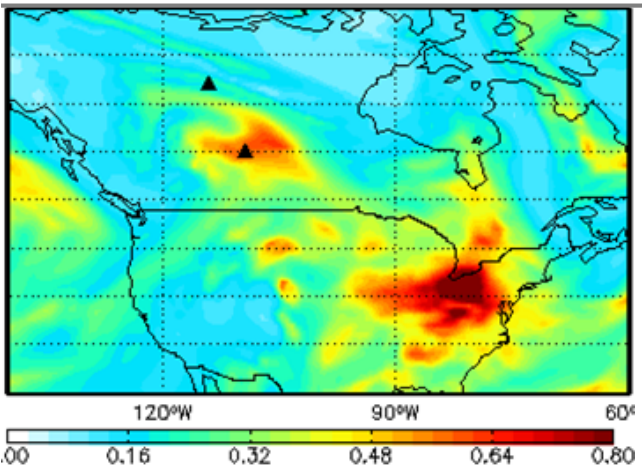
500 hPa N Am ff CO



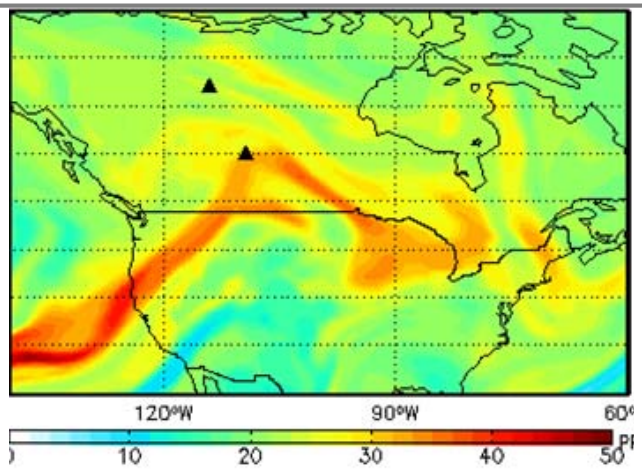
500 hPa Boreal BB CO



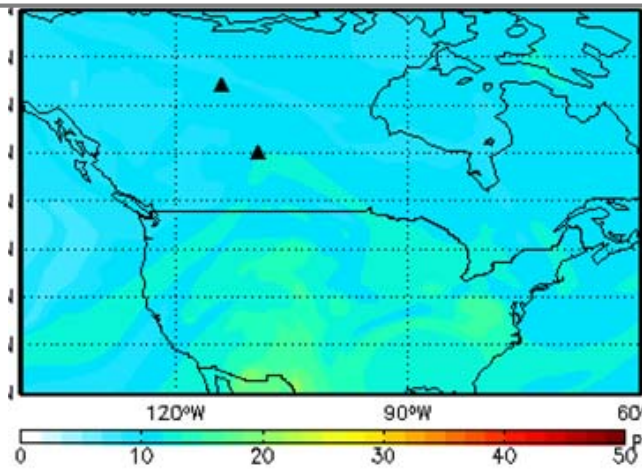
Total AOT



500 hPa Asian ff CO

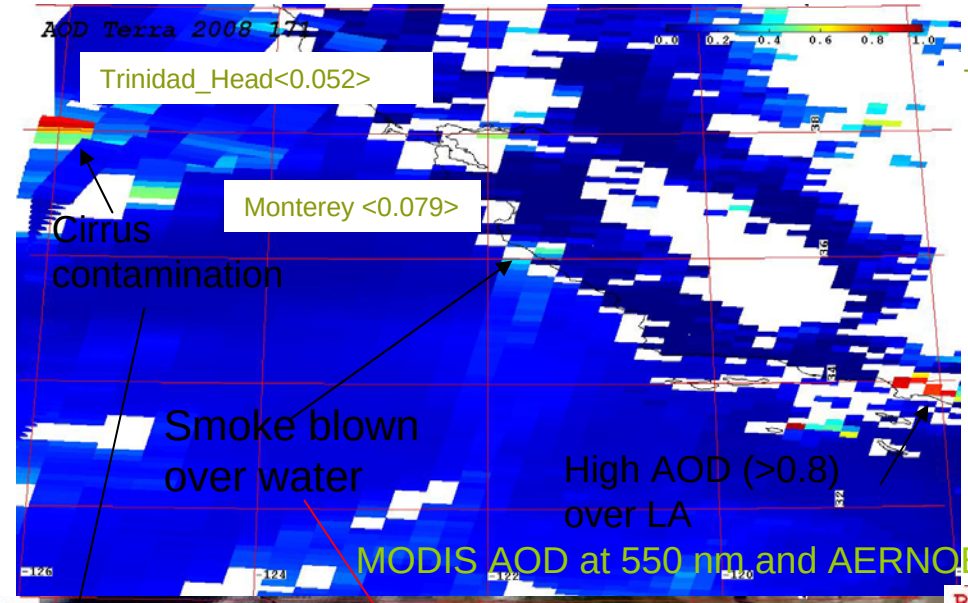


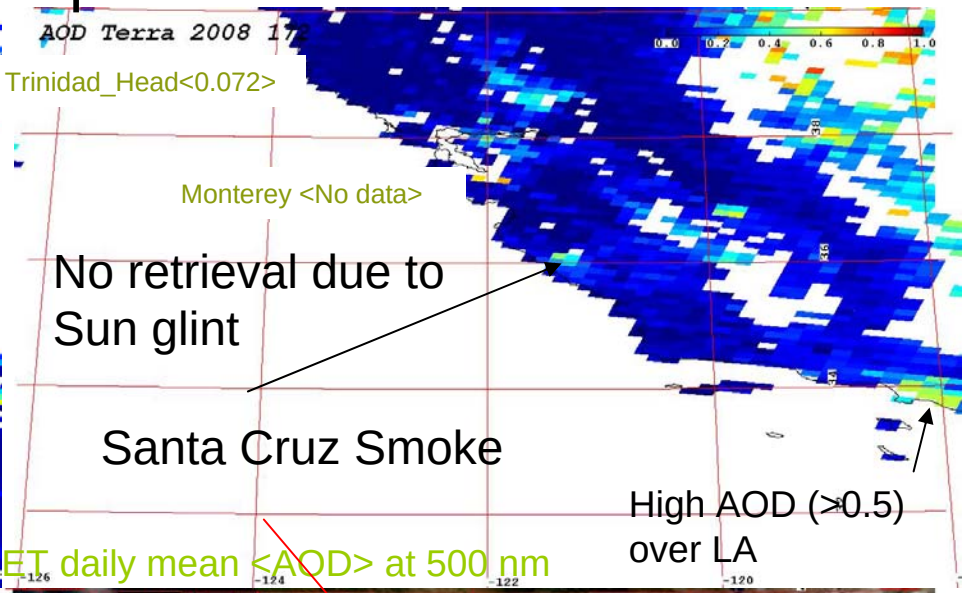
500 hPa Non-boreal BB CO



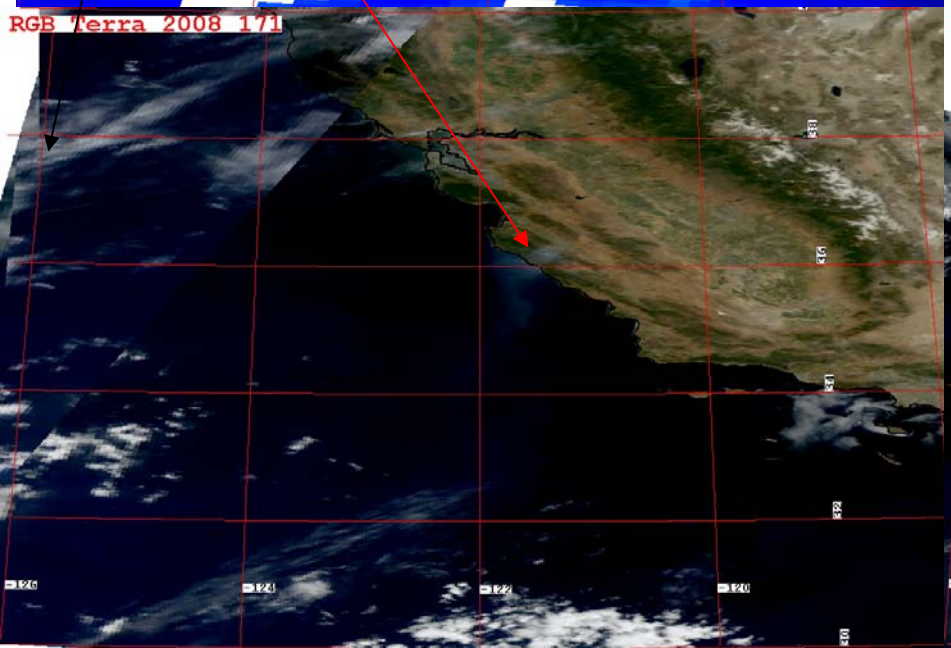
Day 171 & 172 (June 19 & 20) Thu. (Left) and Fri. (Right)

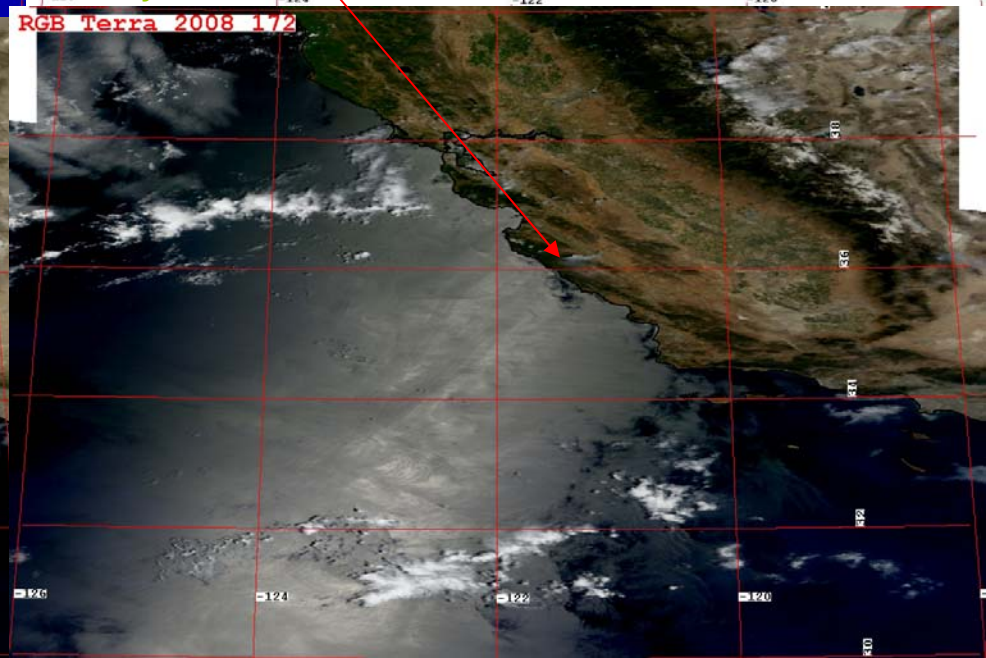
MODIS AOD Hot Spots in California





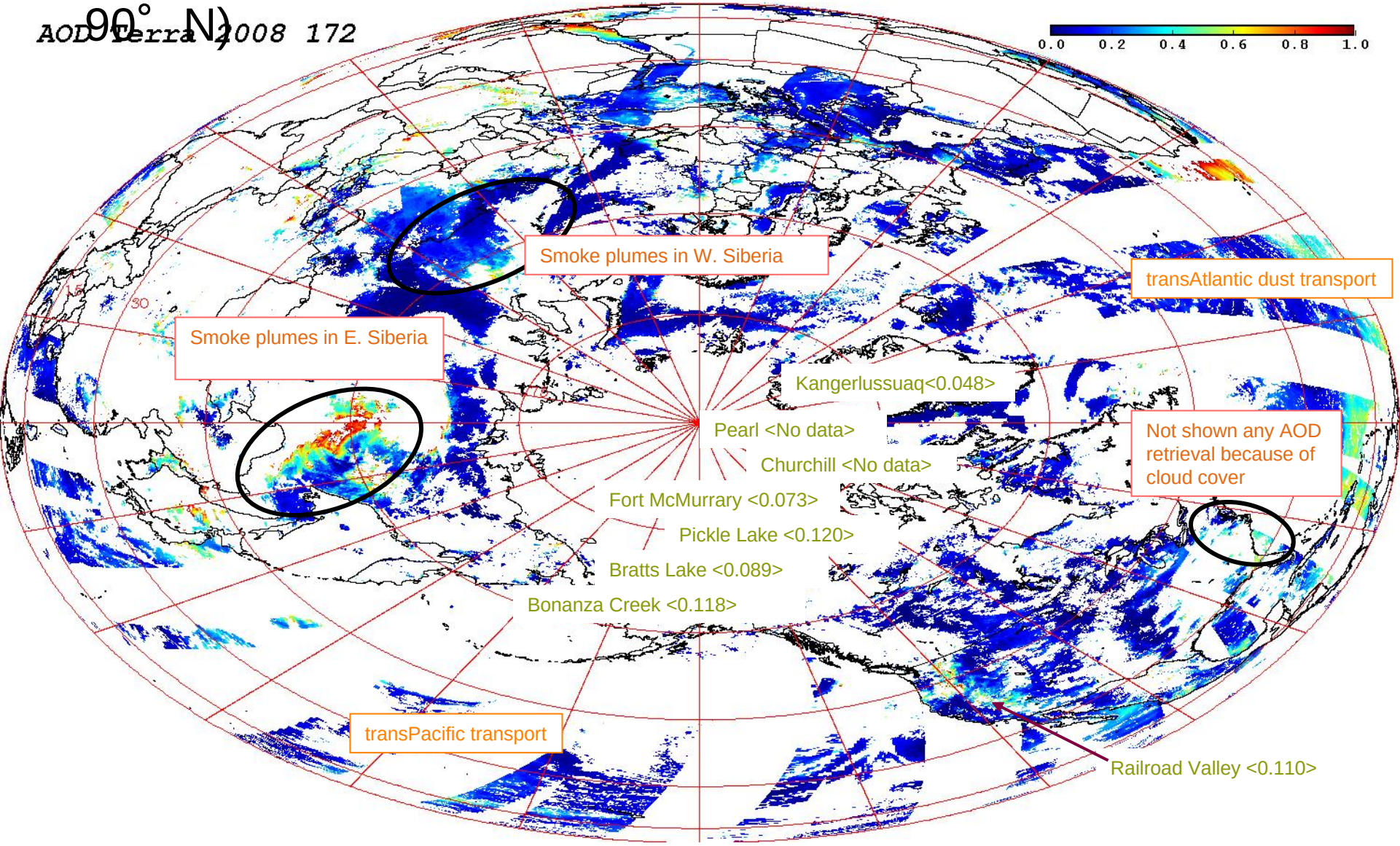
MODIS AOD at 550 nm and AERNOET daily mean <AOD> at 500 nm





Day 172 (June 20) Thursday

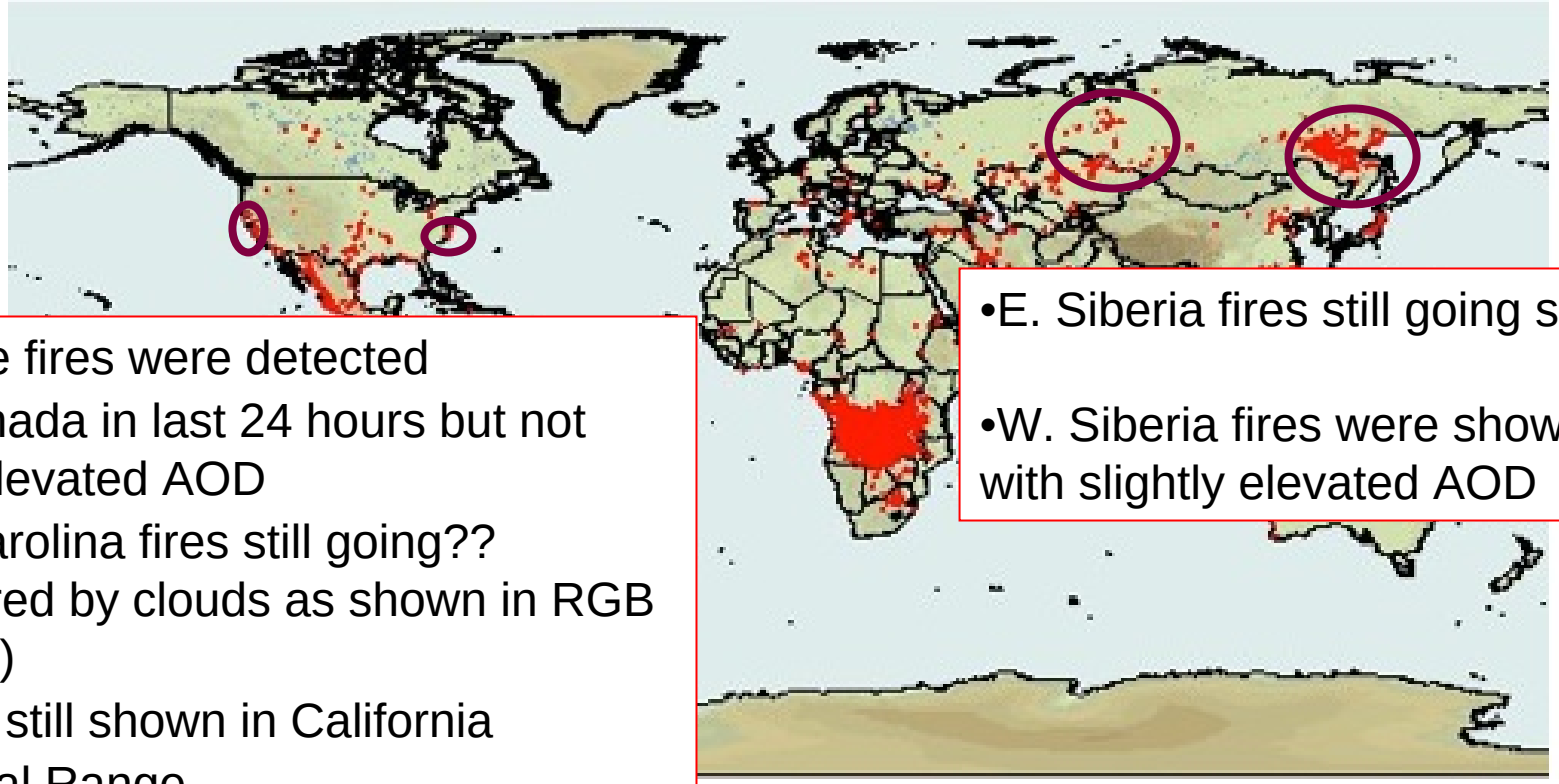
MODIS AOD Hot Spots in Northern Hemisphere (0° - 90° N)



MODIS AOD at 550 nm and AERNOET daily mean <AOD> at 500 nm

MODIS Global Active Fire Count Map In Last 24 hours

(20080619 - 20080621)



•Some fires were detected in Canada in last 24 hours but not with elevated AOD

•N. Carolina fires still going?? (covered by clouds as shown in RGB image)

•Fires still shown in California Coastal Range

•E. Siberia fires still going strong

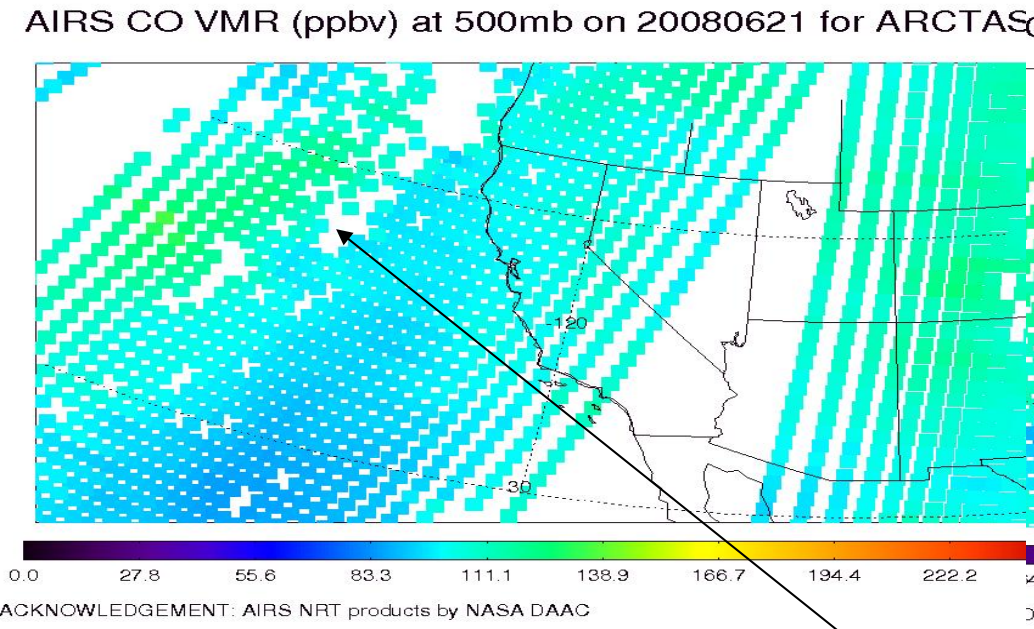
•W. Siberia fires were shown with slightly elevated AOD

http://maps.geog.umd.edu/activefire_html

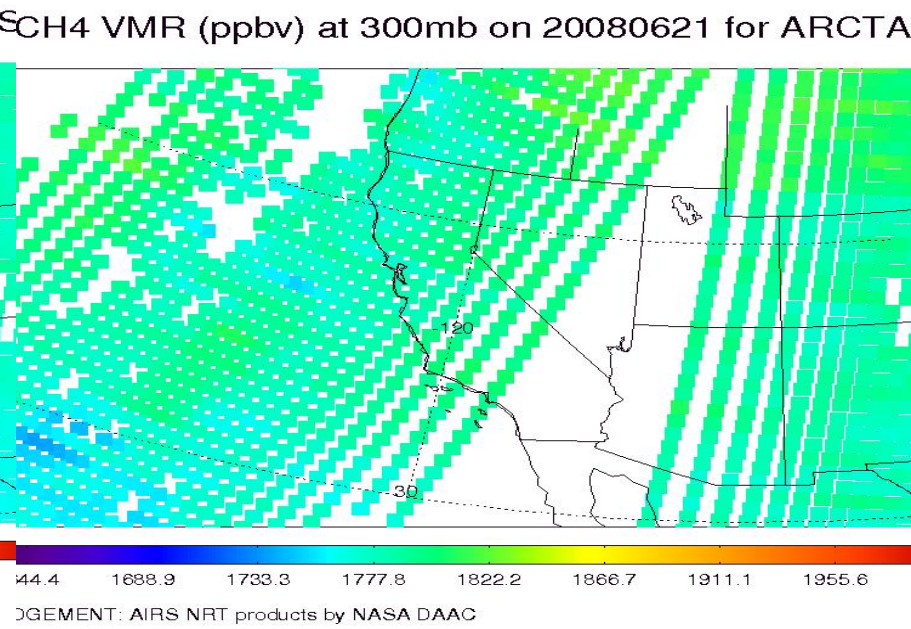
Circles indicate fires that produced elevated AOD noted on previous slides

AIRS Support for CARB

NRT AIRS CO mr 500mb June 21

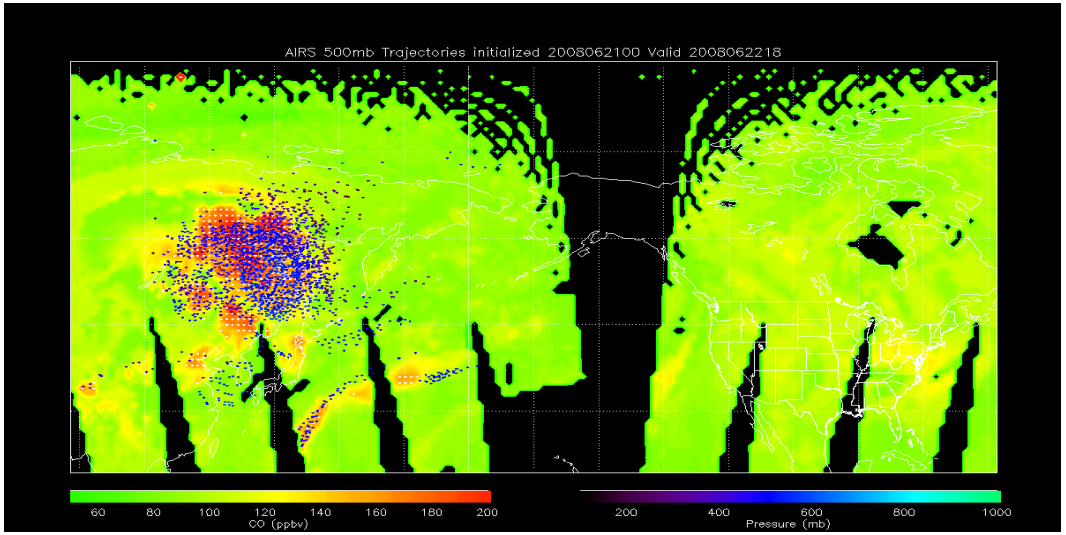


NRT AIRS CH4 mr 300mb June 21

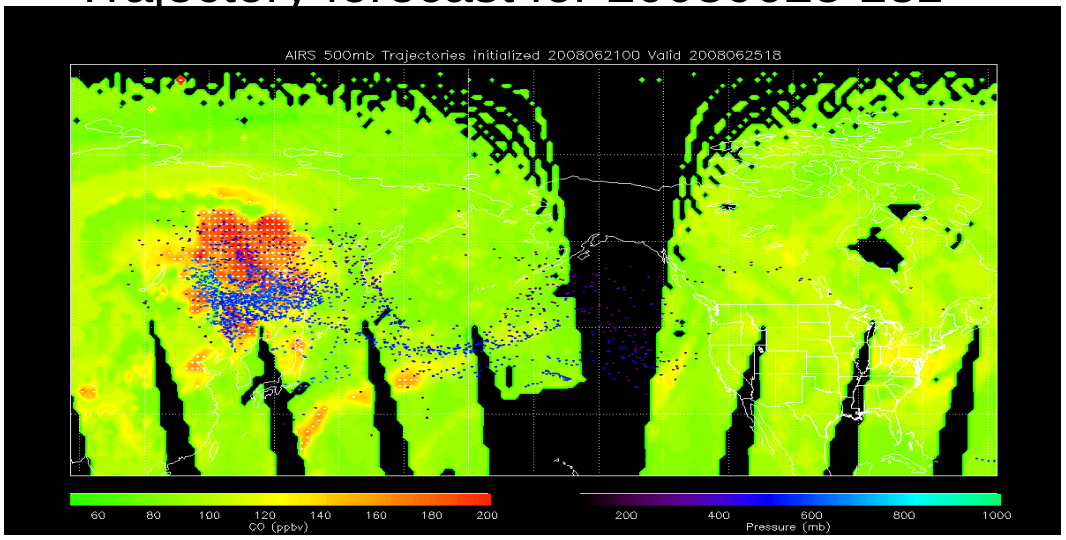


- Some transport possible by tomorrow 6/22.
- Relatively low CO values (< ~100ppbv) over CA based on nighttime measurements.
- CH4 is slightly less than 1800ppbv in average.

Trajectory forecast for 20080622 18z



Trajectory forecast for 20080625 18z



- Transport from new fires possibly reach NA after 6/25.
- Transport into CA for 6/22 is shown as AIRS elevated CO plumes off the west coast.