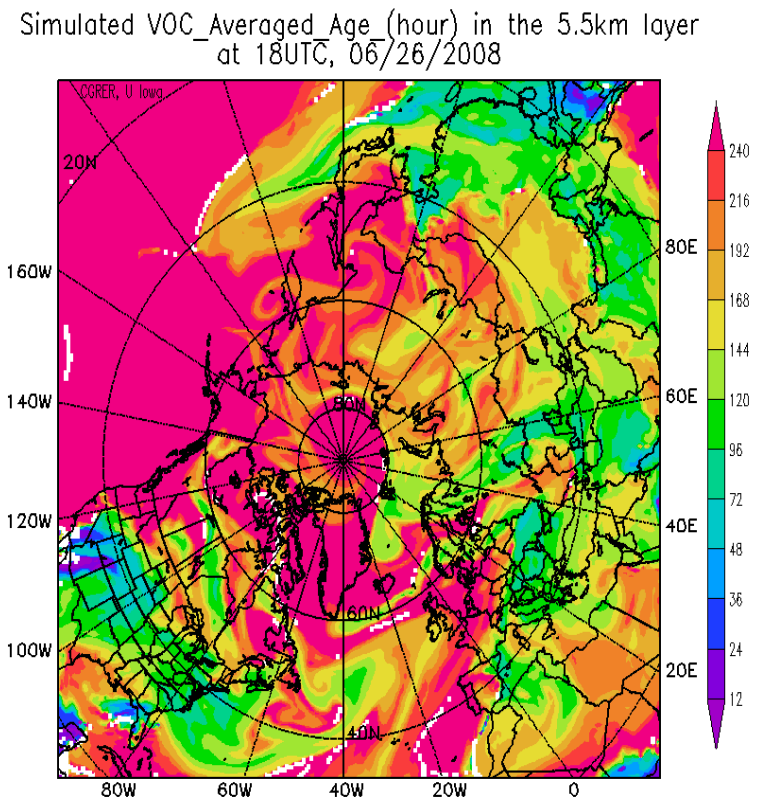
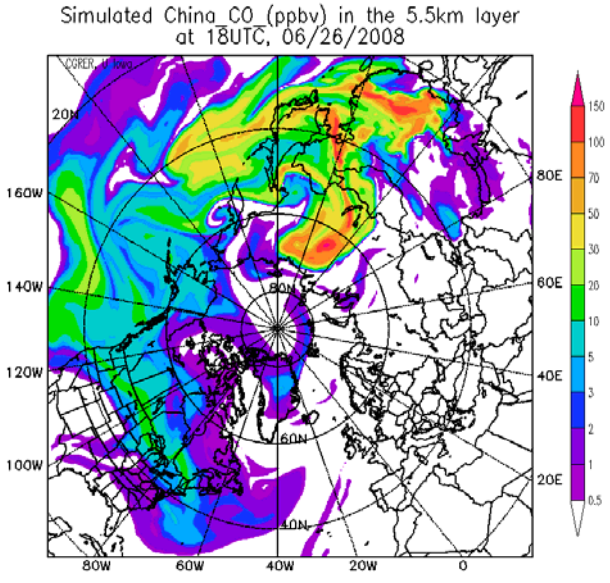
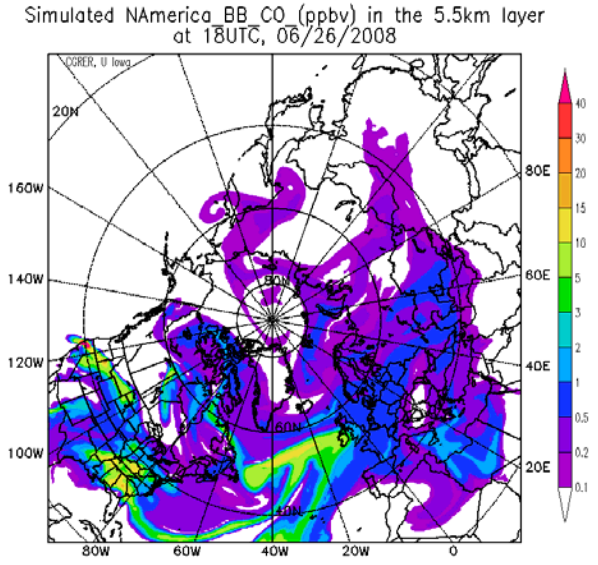
# IOWA STEM model forecast

06/24/08

# Outlook


Simulated VOC_Averaged_Age_(hour) in the 5.5km layer
at 18UTC, 06/26/2008
CCRER, U Iowa
20N
160W
140W
120W
100W
80E
60E
40E
20E
80N
60N
40N
80W
60W
40W
20W
0
240
216
192
168
144
120
96
72
48
36
24
12

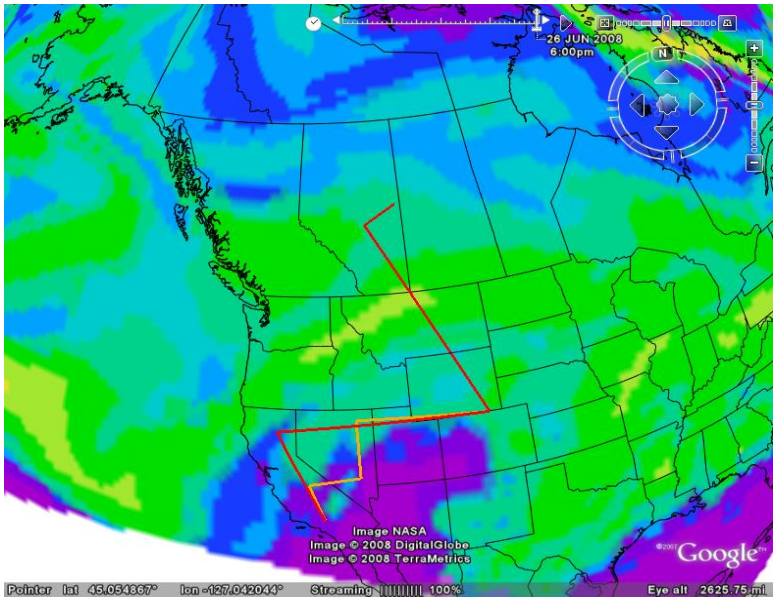

Simulated China_CO_(ppbv) in the 5.5km layer
at 18UTC, 06/26/2008
CCRER, U Iowa
20N
160W
140W
120W
100W
80E
60E
40E
20E
80N
60N
40N
80W
60W
40W
20W
0
150
100
70
50
30
20
10
5
3
2
1
0.5

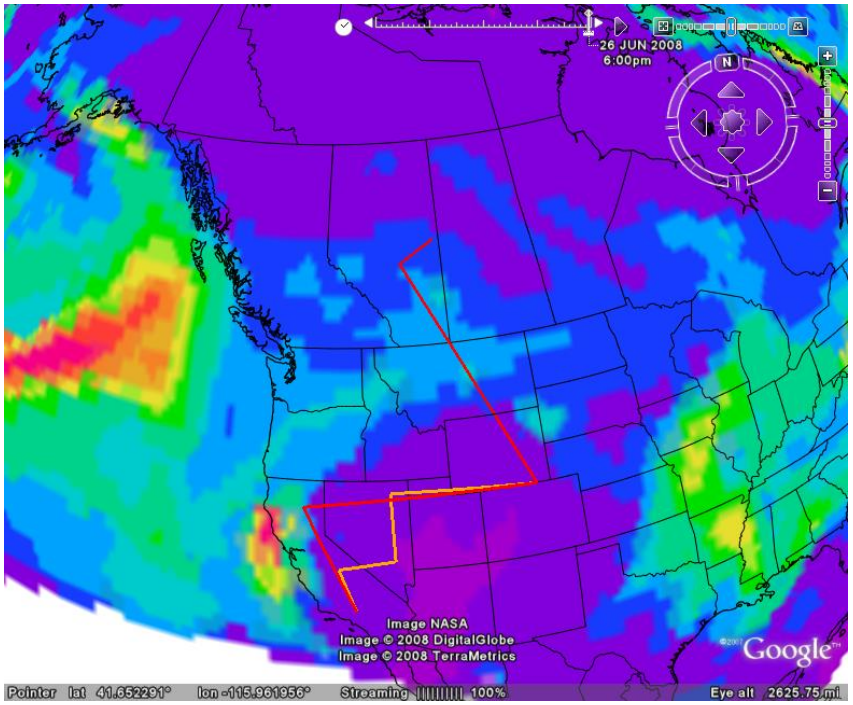

Simulated NAmerica_BB_CO_(ppbv) in the 5.5km layer
at 18UTC, 06/26/2008
CCRER, U Iowa
20N
160W
140W
120W
100W
80E
60E
40E
20E
80N
60N
40N
80W
60W
40W
20W
0
40
30
20
15
10
5
3
2
1
0.5
0.2
0.1

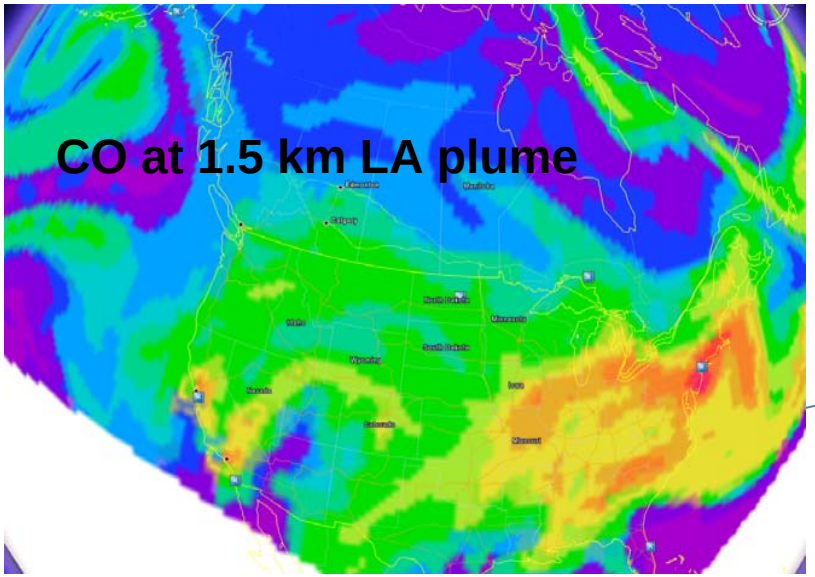
Red – PlanA
Orange - PlanB

AOD

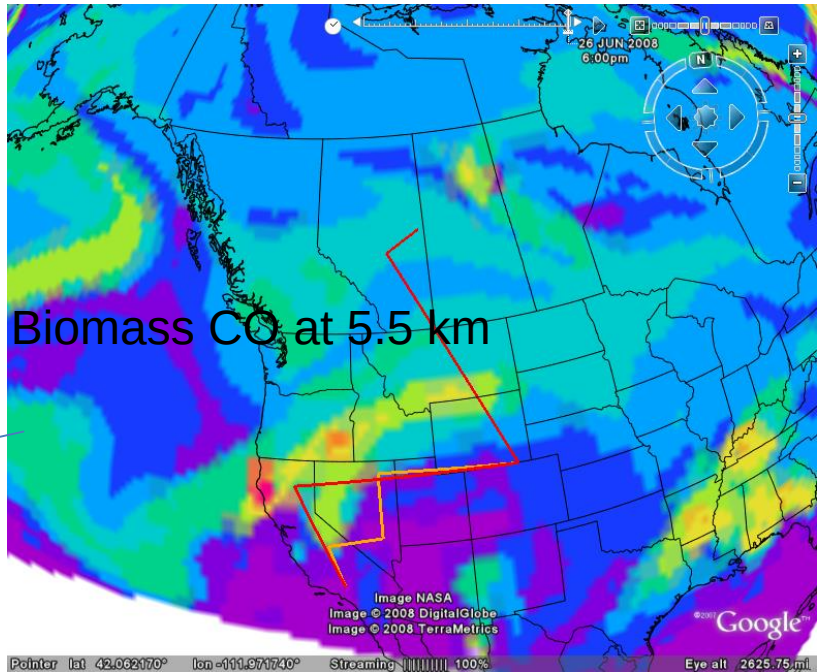
CO at 5.5 km



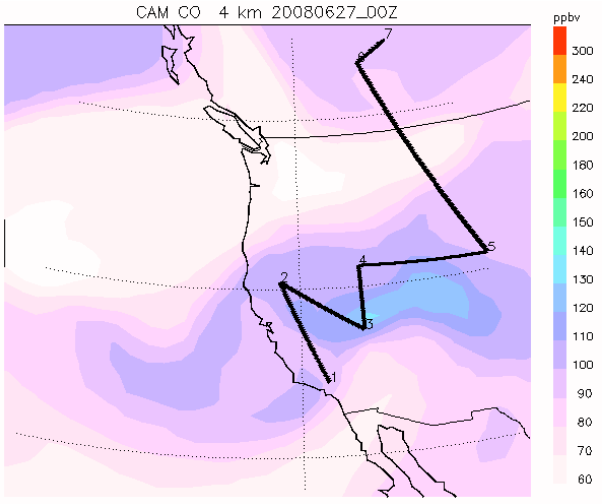




Biomass CO at 5.5 km

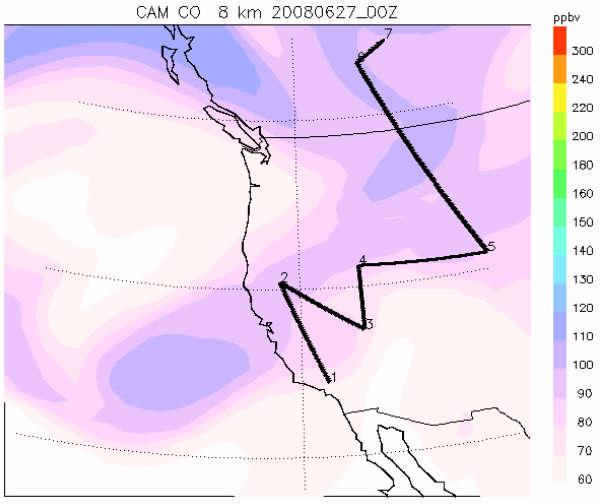


# CAM-Chem/DART June 24 21Z (fx from 06-23)

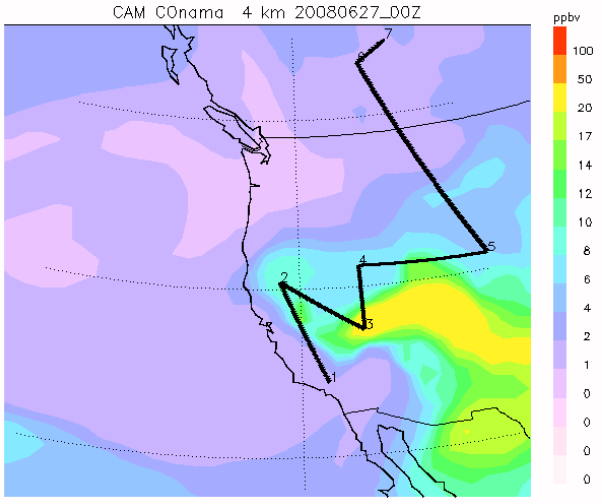
## CO 4km



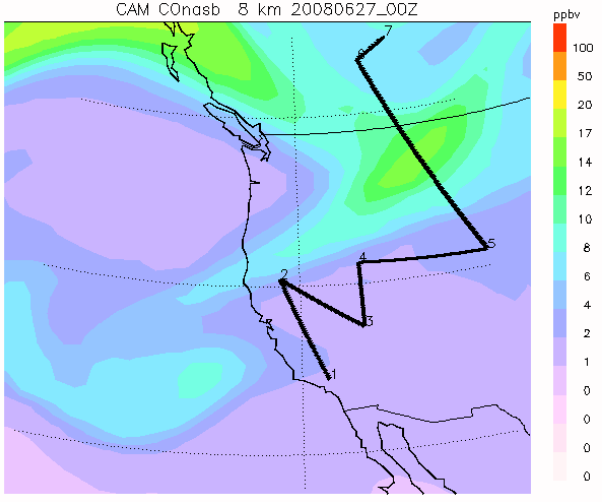

## CO 8km



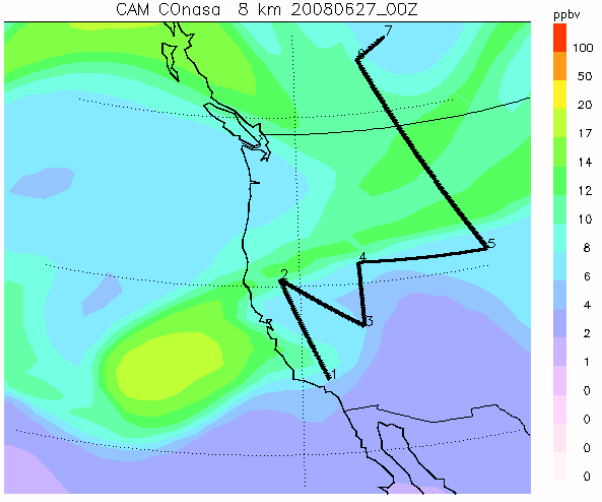

## N.America Anthro 4km



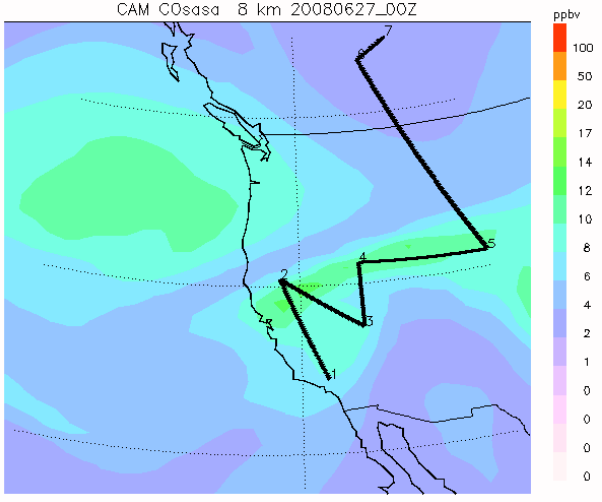

## N.Asia Fires 8 km




## N.Asia Anthro 8km

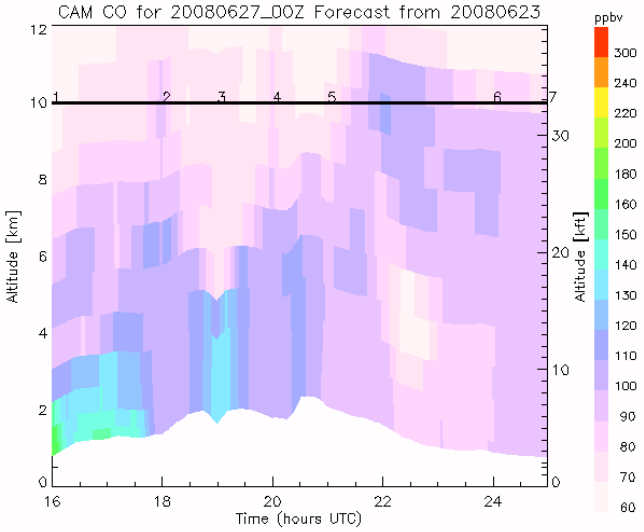



## S.Asia Anthro 8km

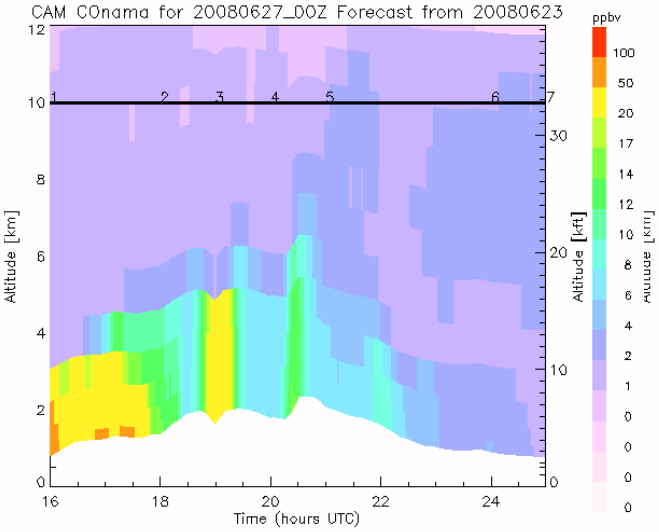


# CAM-Chem/DART 2008-06-24 21Z (06-23 fx)

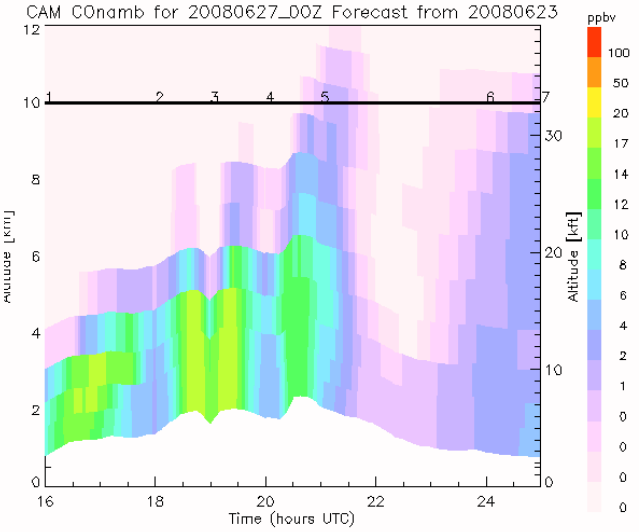
## CO



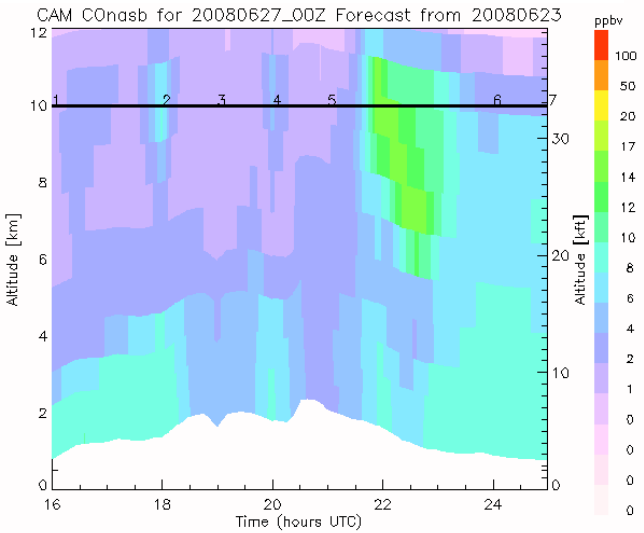

## N.America Anthro



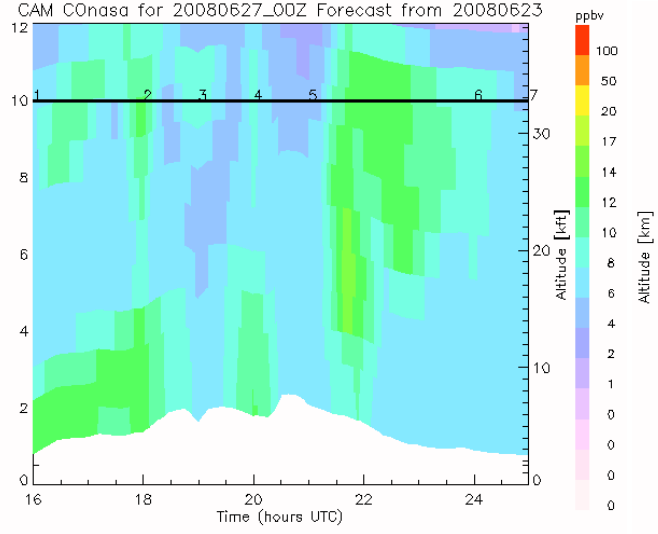

## N.America Fires



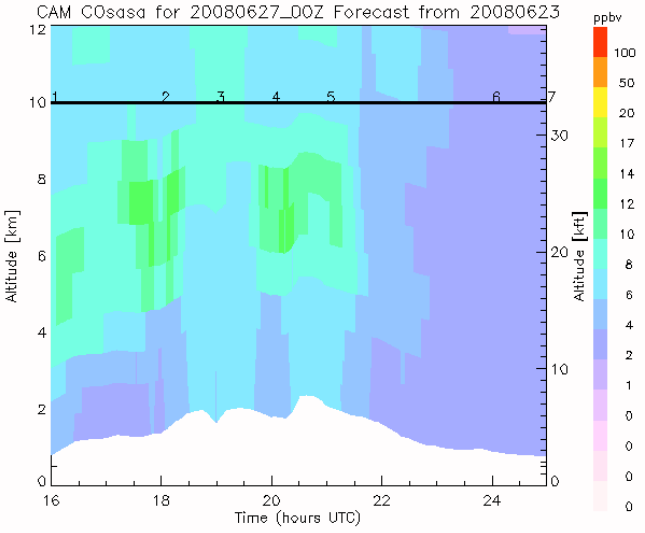

## N.Asia Fires




## N.Asia Anthro

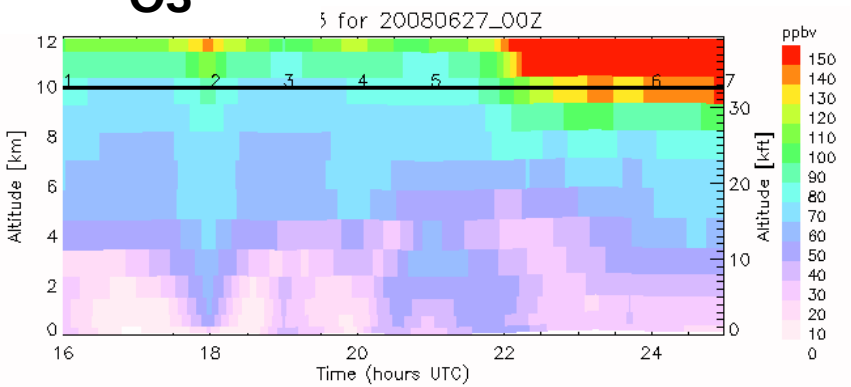


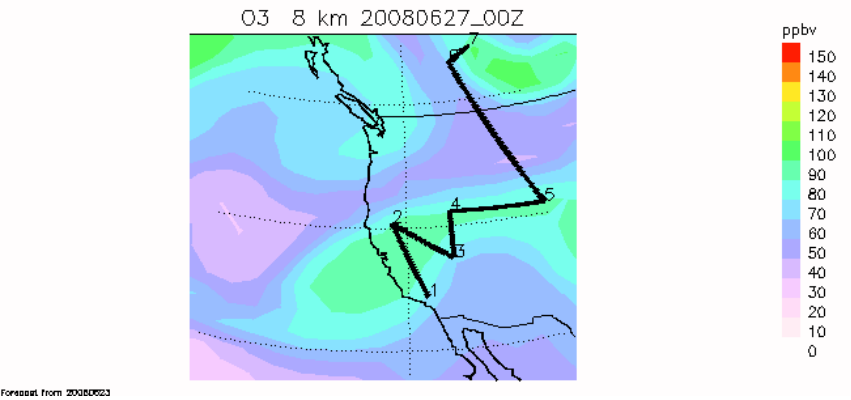

## S.Asia Anthro



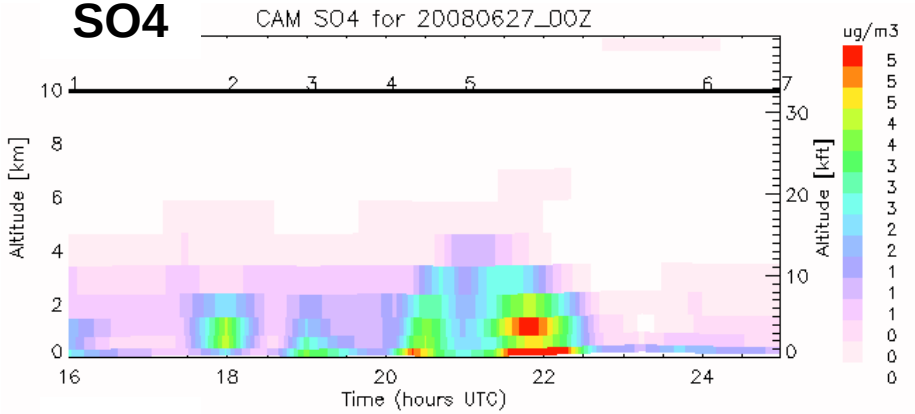
# CAM-Chem/DART 2008-06-24 21Z (06-23 fx)

## O3

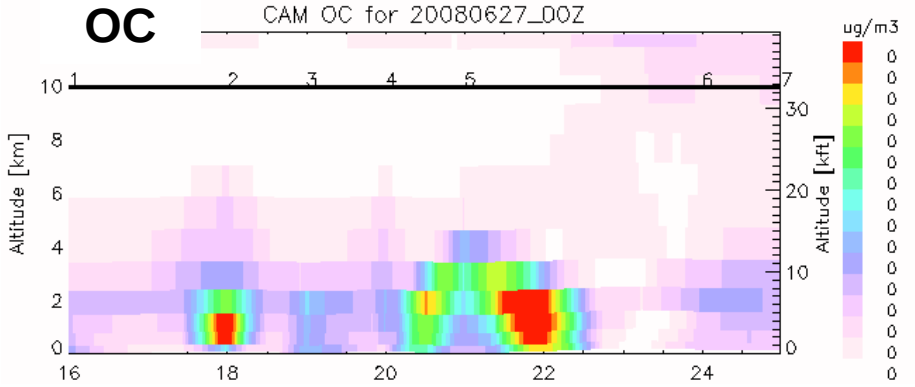


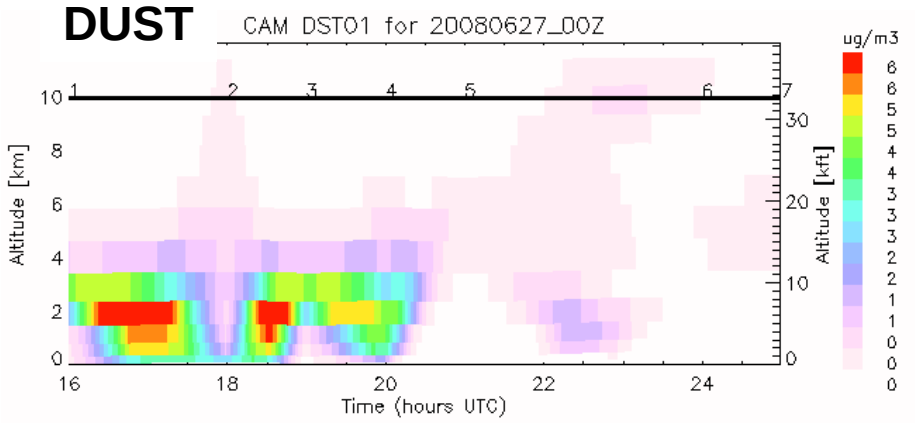

## SO4




## OC

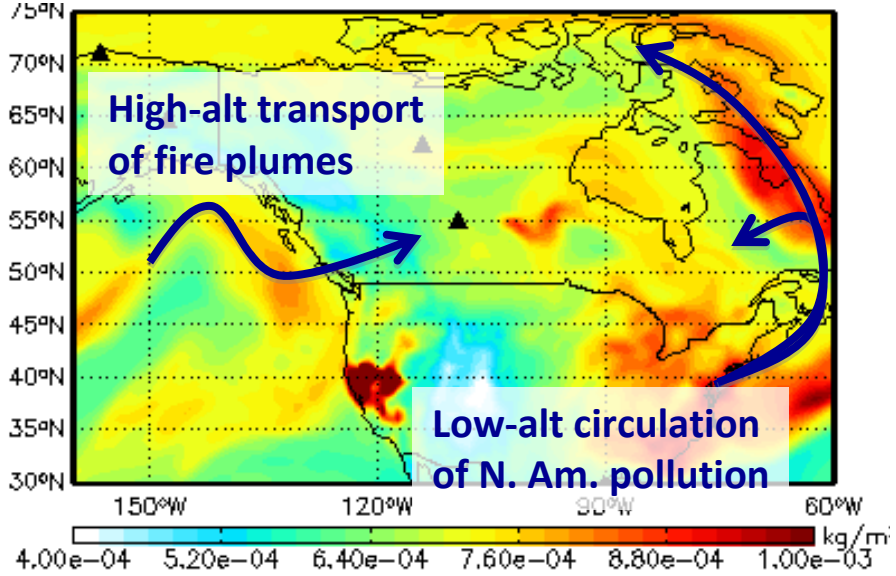



## DUST

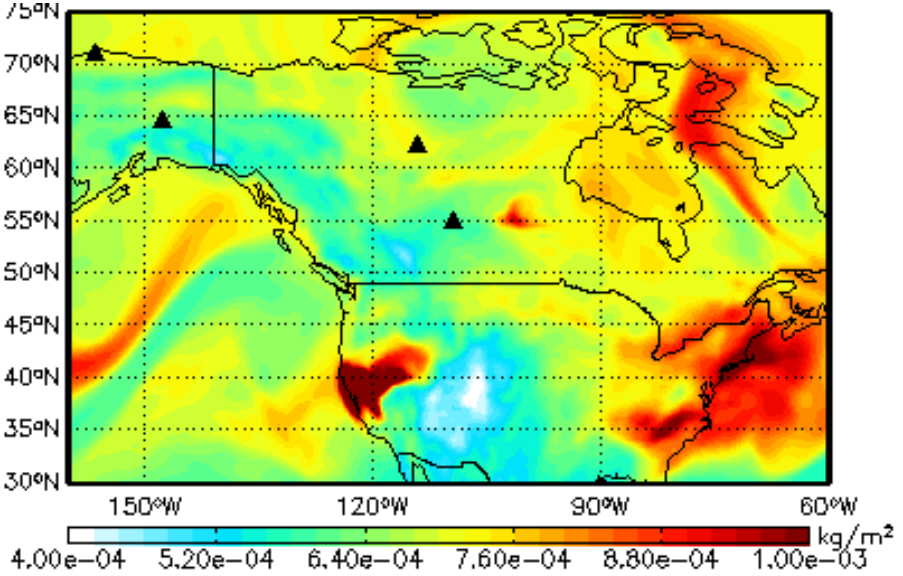


# GEOS-5 Outlook: Total Column CO at 19:30Z

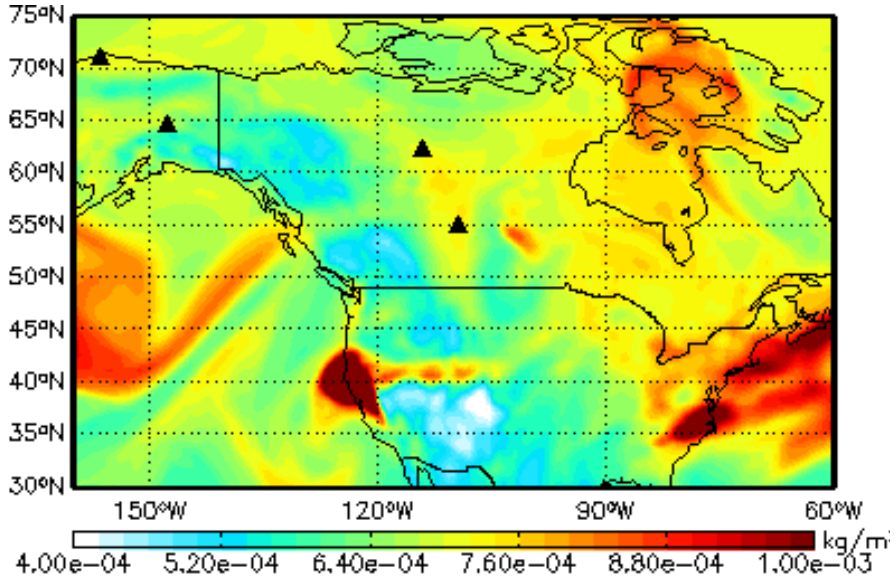
June 25



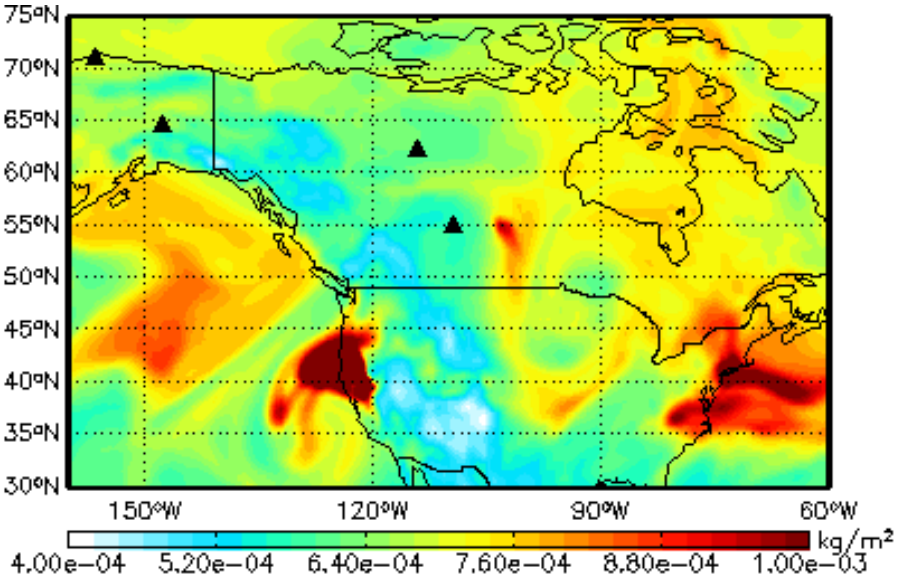

June 26




June 27

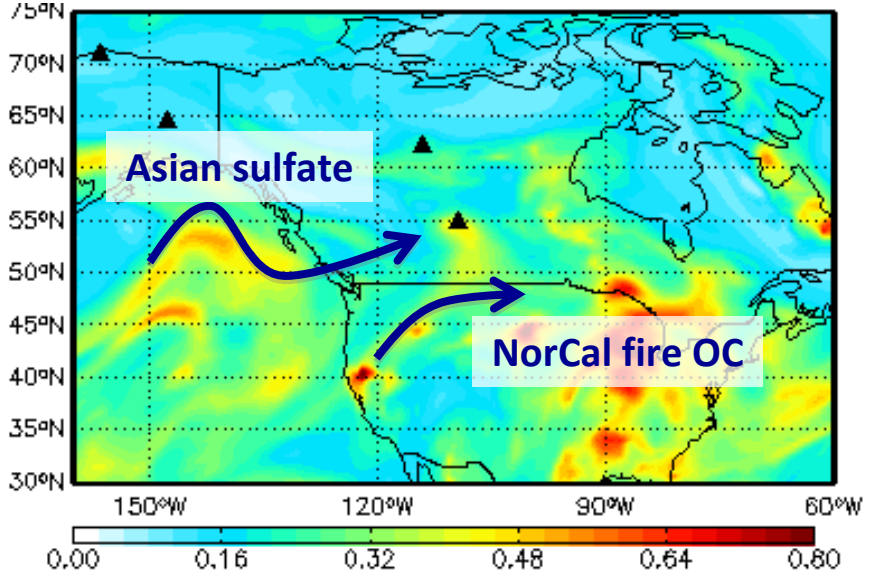



June 28

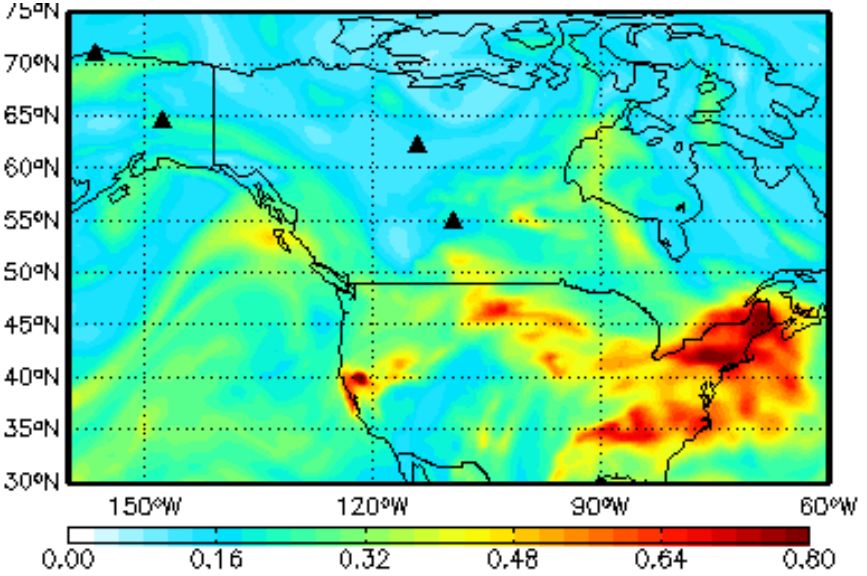


# GEOS-5 Outlook: AOT at 19:30Z

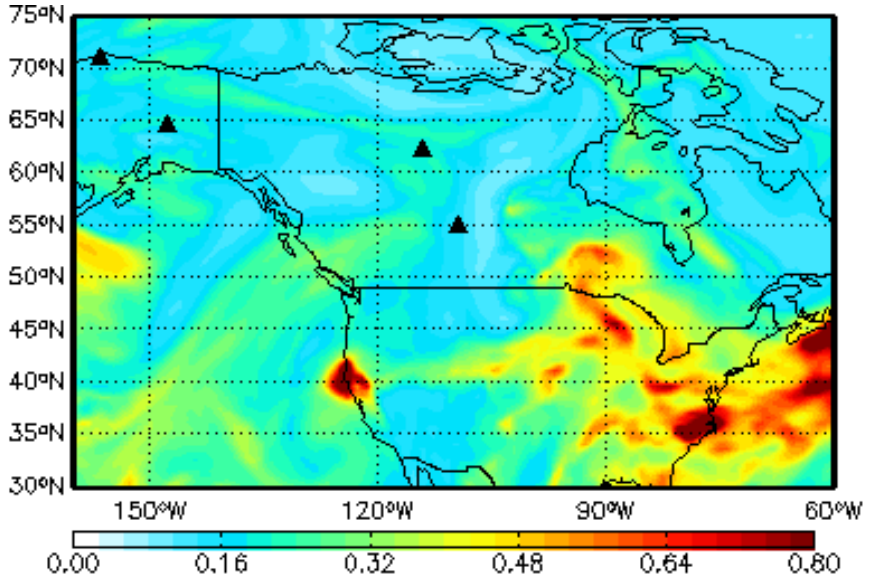
June 25



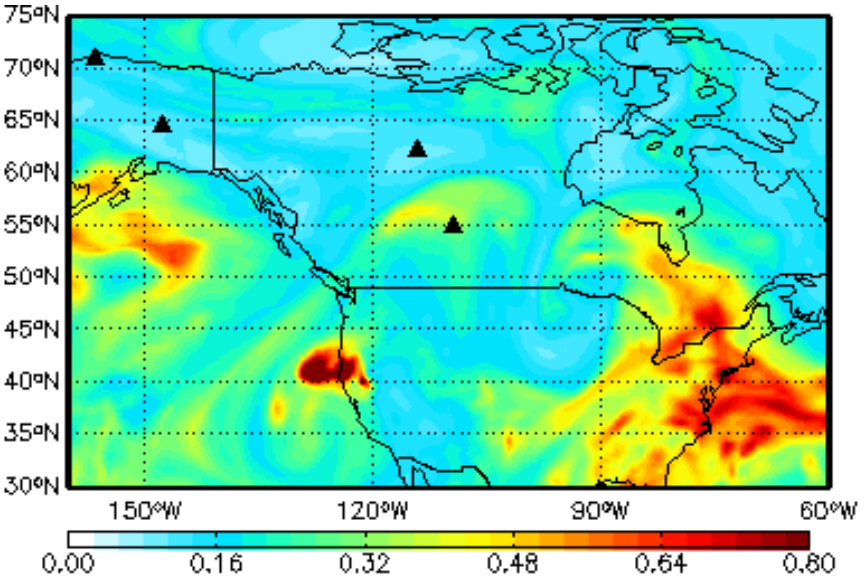

June 26




June 27

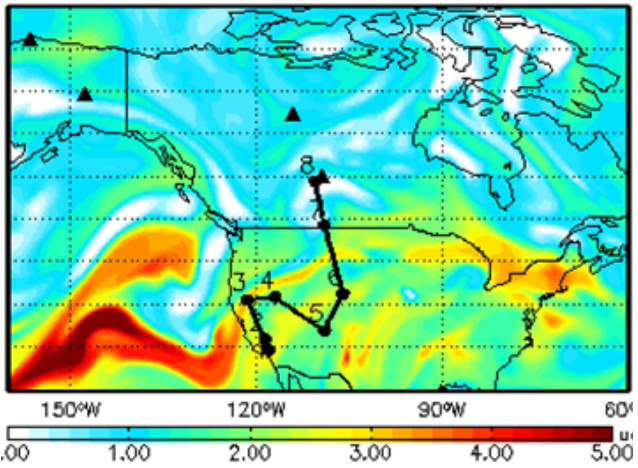



June 28

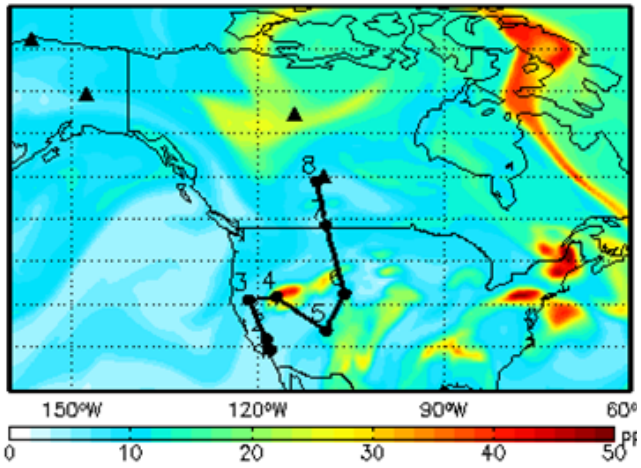


# Transit flight – 6/26 19:30Z (all at 500 hPa)

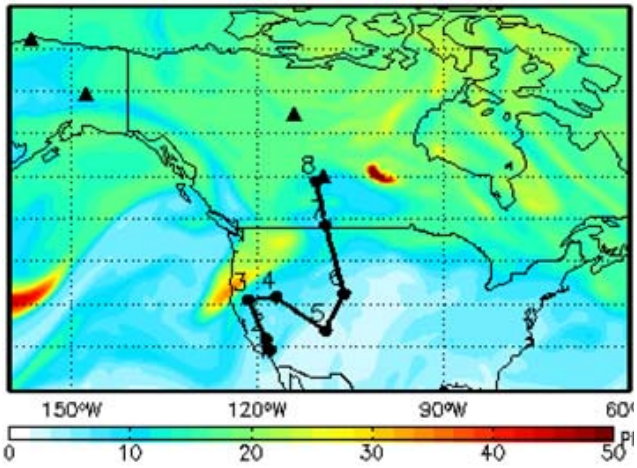
Sulfate aerosol



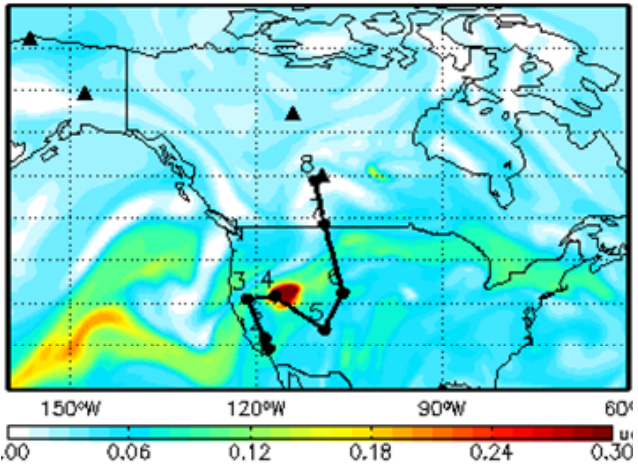

N American fossil fuel CO



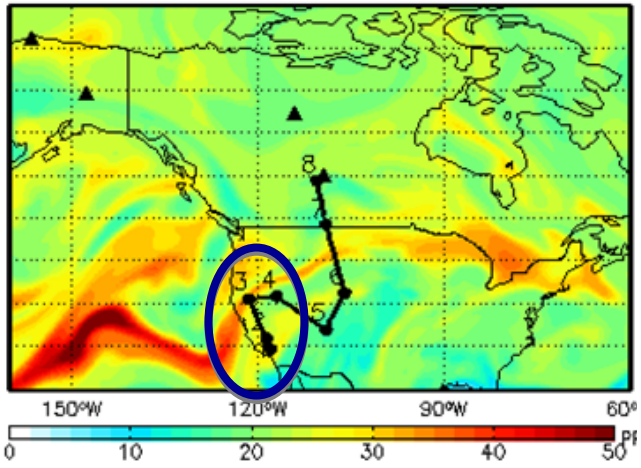

Boreal biomass burning CO



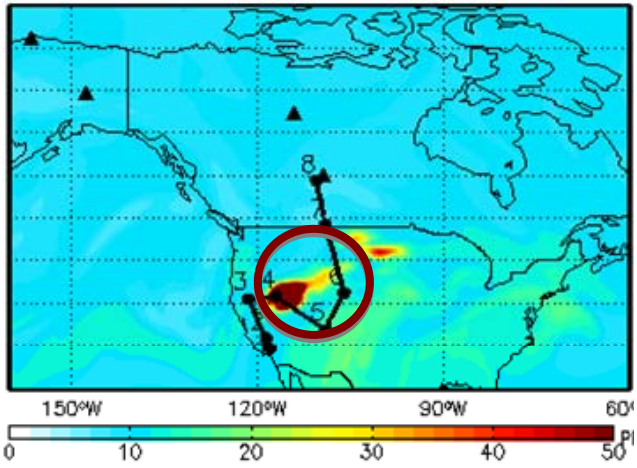

Black carbon aerosol




Asian fossil fuel CO




Non-boreal biomass burning CO

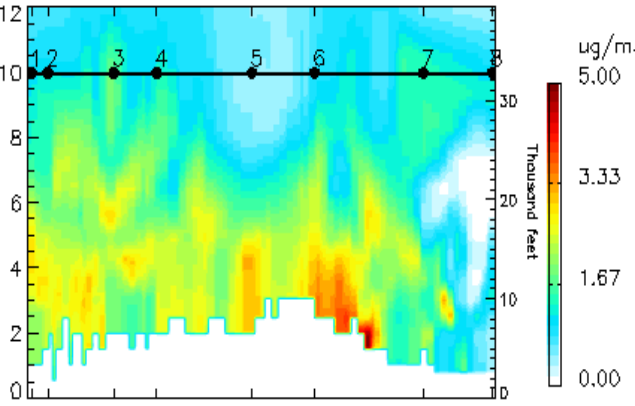



**Asian plume now crosses start of flight track**

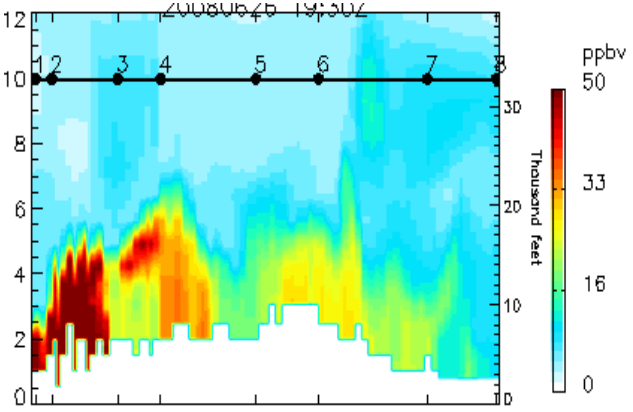
**Flight track currently intersects both the center and outflow of the fire plume**

# Transit flight – 6/26 19:30Z (all at 500 hPa)

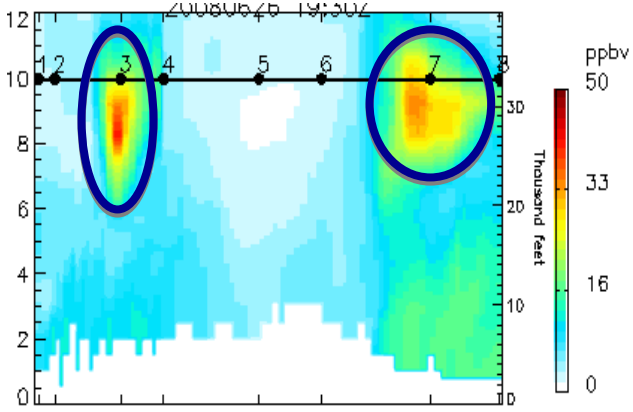
Sulfate aerosol



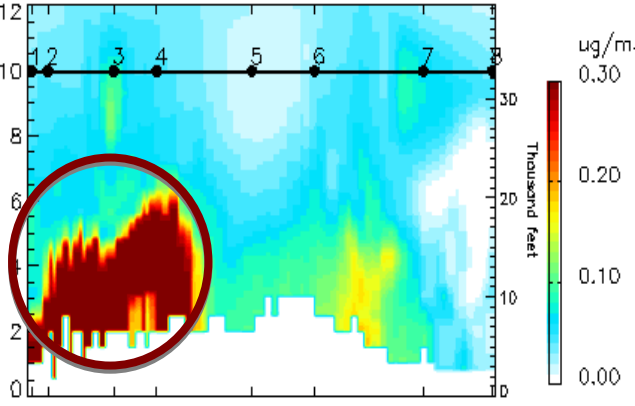

N American fossil fuel CO



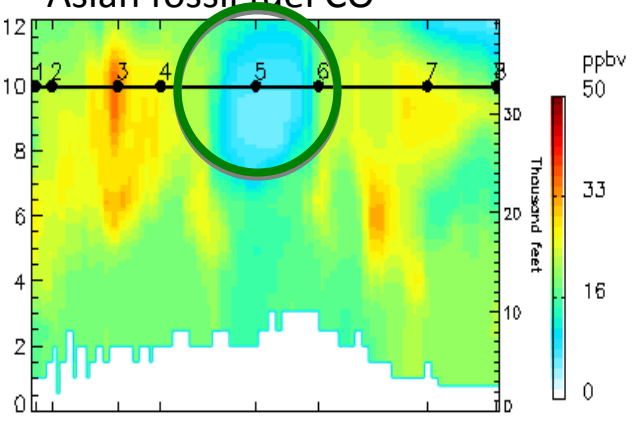

Boreal biomass burning CO



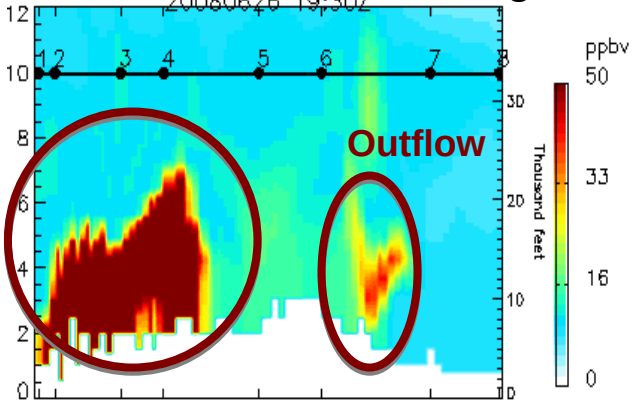

Black carbon aerosol




Asian fossil fuel CO

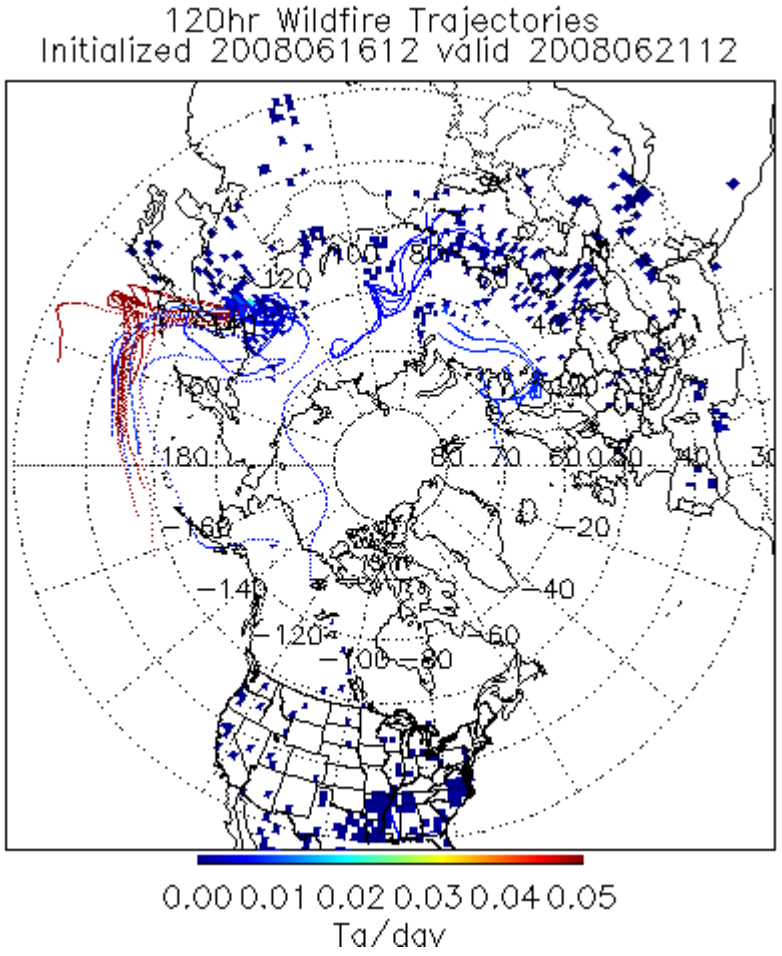



Non-boreal biomass burning CO



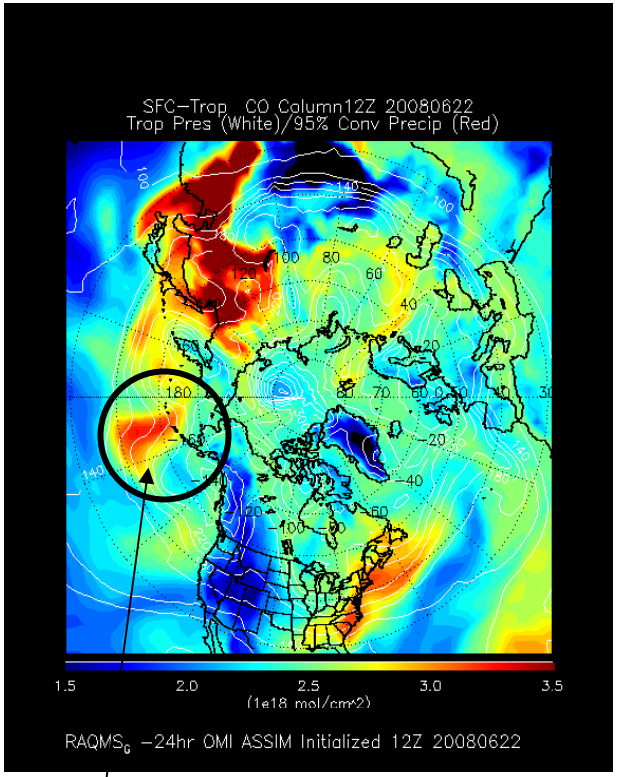

- **Siberian fire plumes transported at high altitude (generally with Asian pollution)**
- **Lots of black carbon and CO from fires in Northern California**
- **Diffuse Asian pollution throughout except 4 corners region**

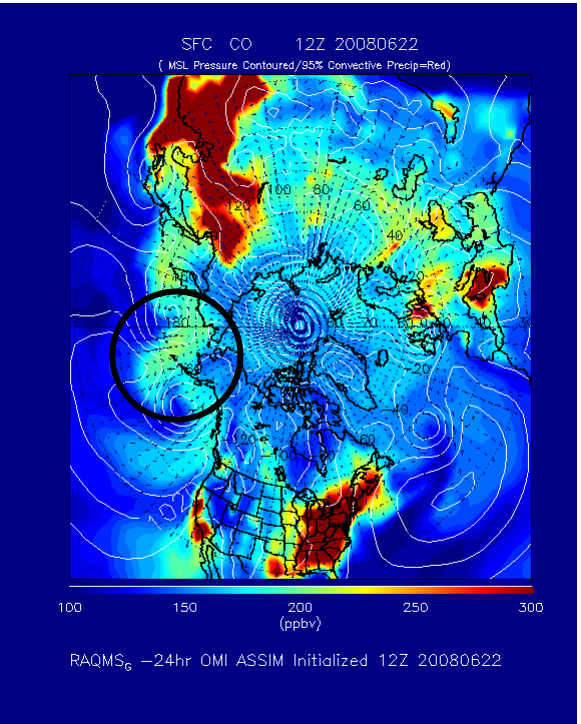
# RAQMS wildfire Trajectories from Siberian Fires

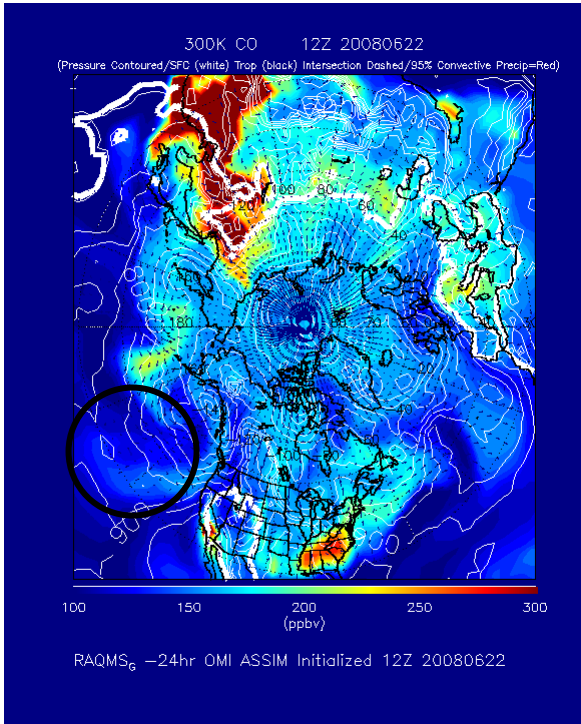



Significant BB emissions from N Asia transported to 180E/50N
By 12Z 06/21

# RAQMS CO Analysis 06/22 : Focus on Pacific Sector

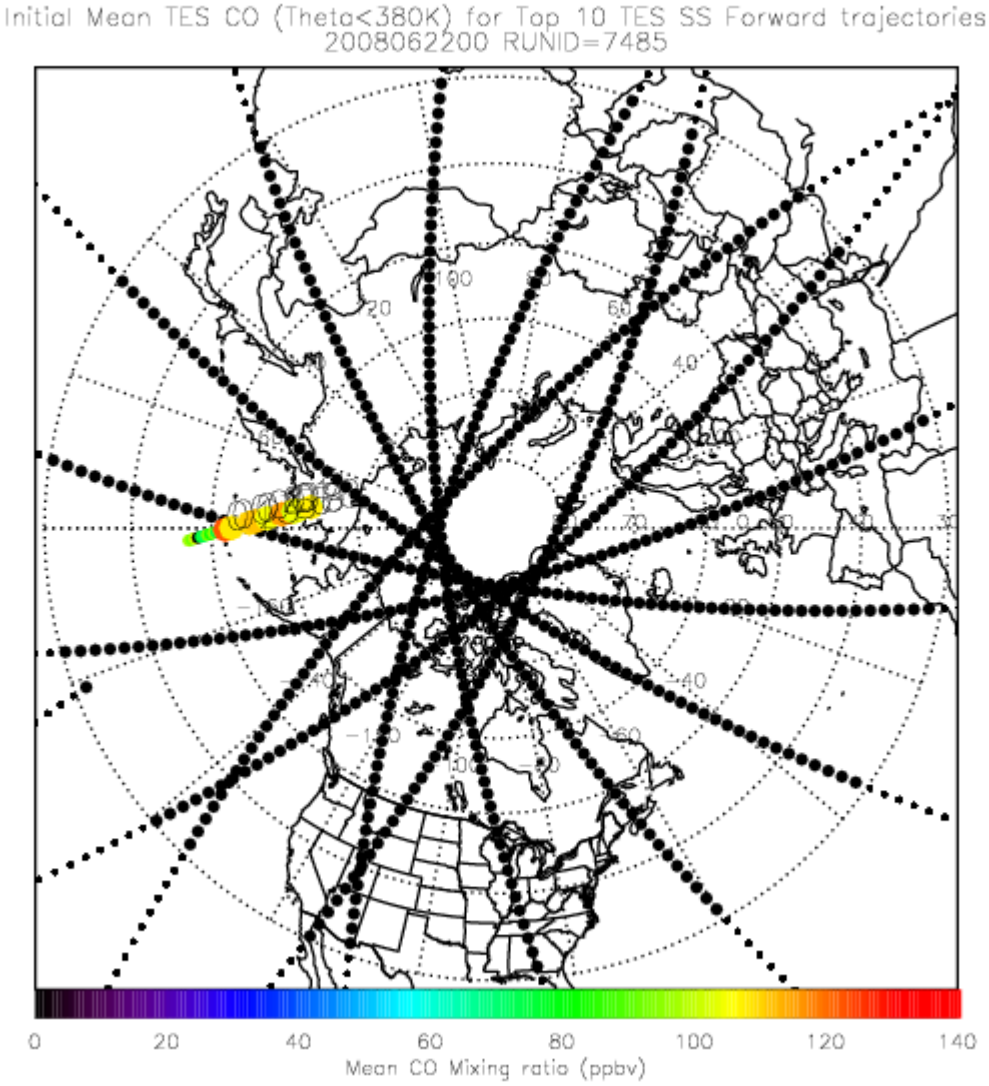


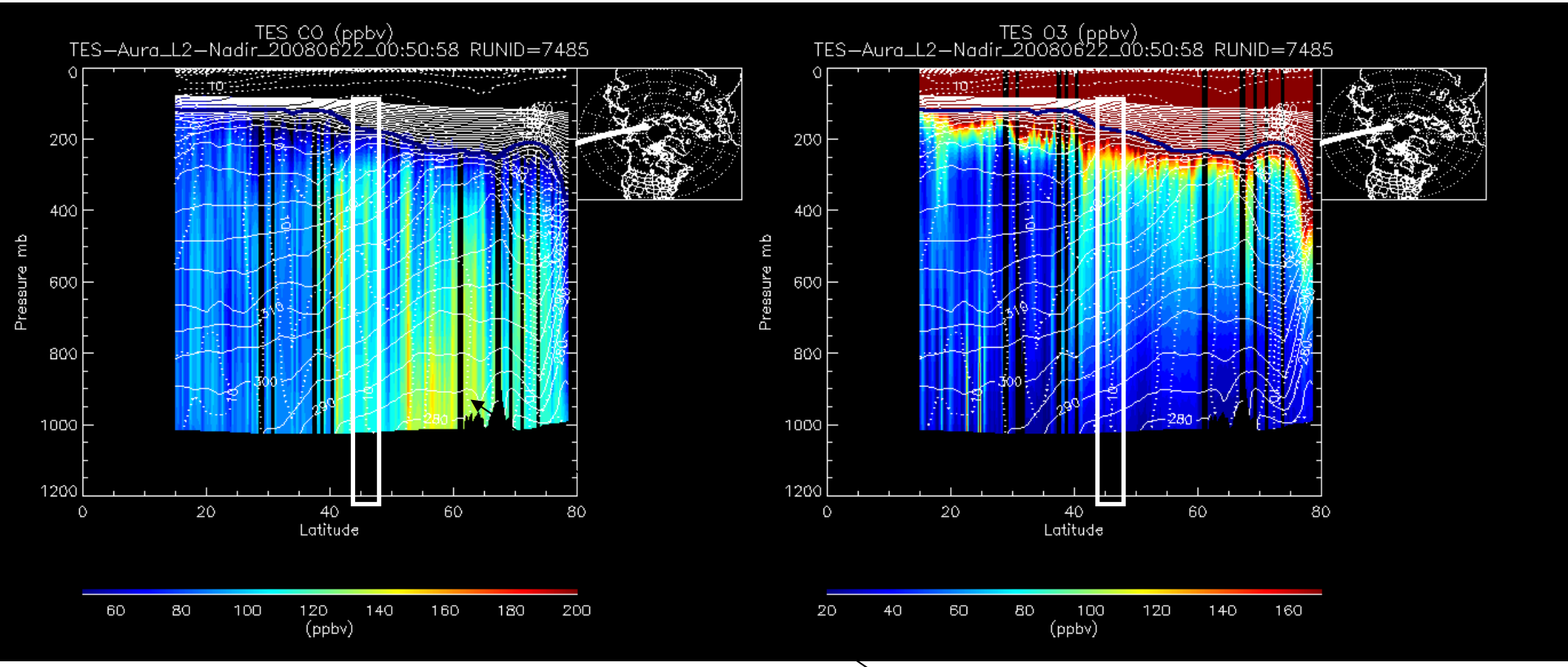




RAQMS 12Z 06/22 CO analysis shows High CO plume from N Asian BB South of Aleutian Islands

# TES observed CO Near Siberian Fires on 6/22



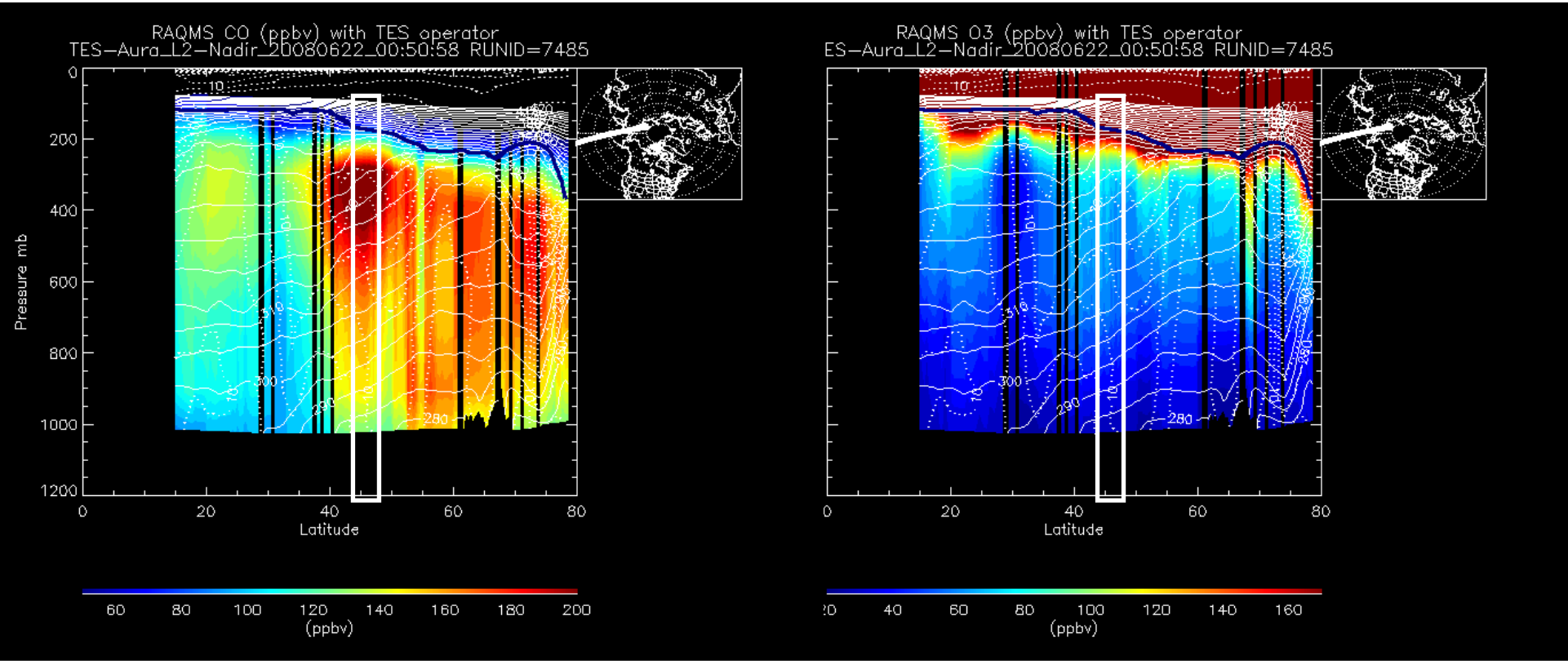
# TES CO (left) and O3 (right) curtains from selected SS orbit




White box shows region of selected profile showing enhanced CO (~ 130) and enhanced ozone (~80) in the upper troposphere and

enhanced CO but very low ozone in lower troposphere

# RAQMS* CO (left) and O3 (right) curtains from selected SS orbit

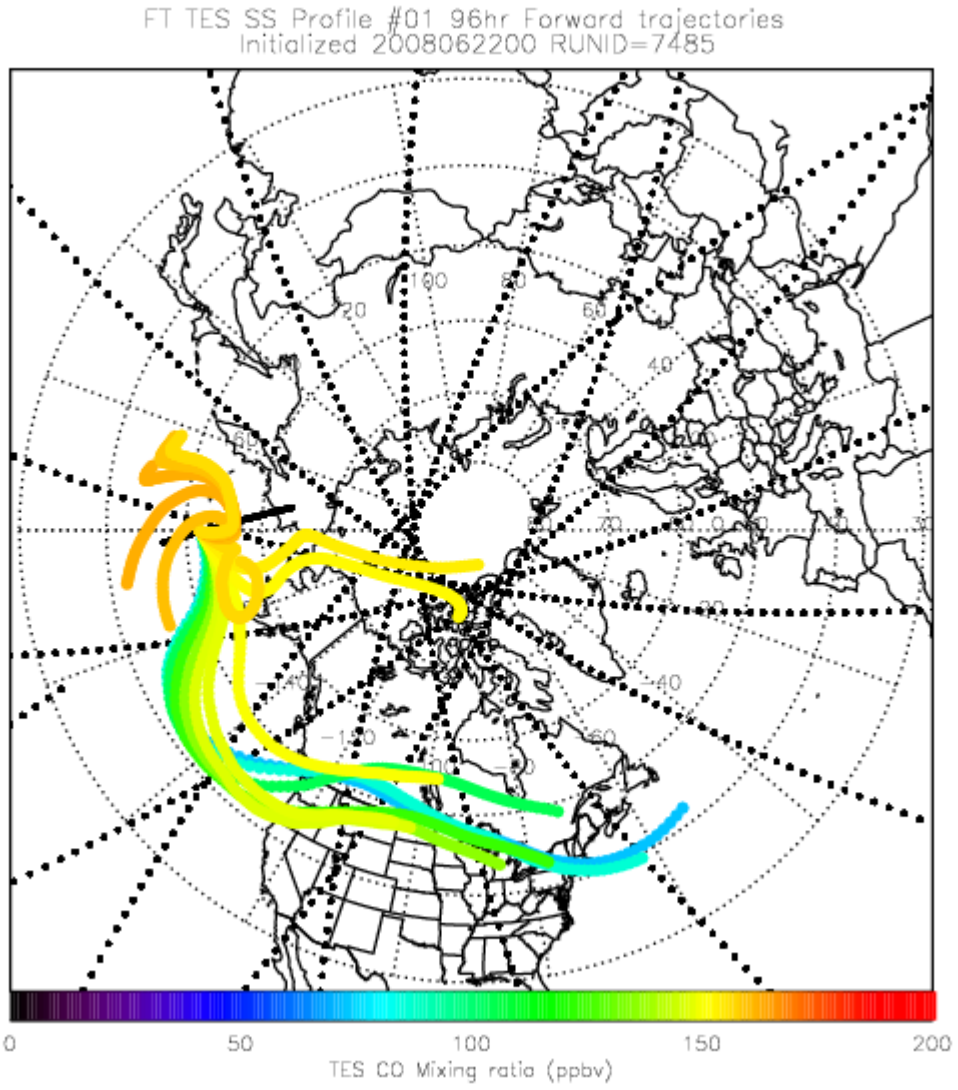



White box shows region of selected profile

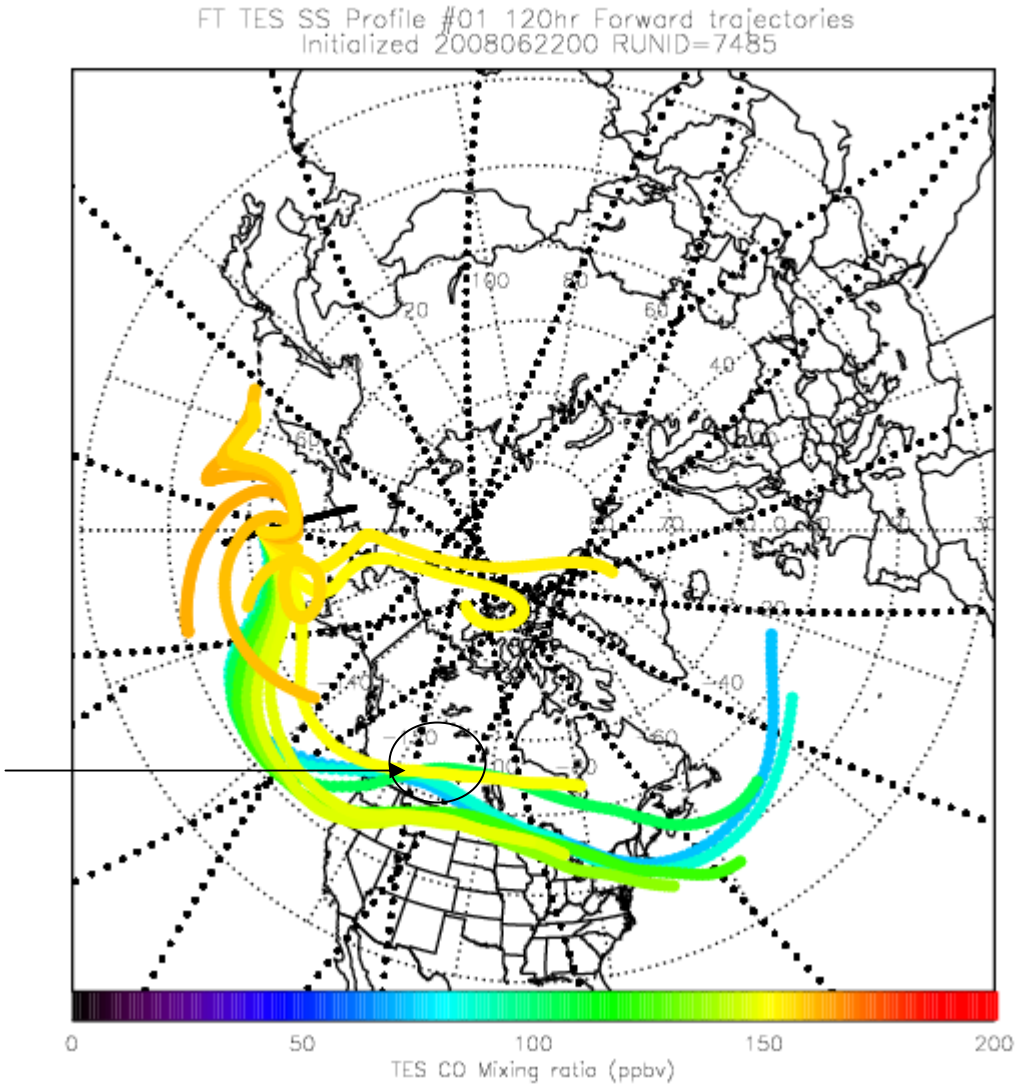
CO too high but RAQMS ozone consistent with TES ozone

*With TES sensitivity operator applied

# TES SS Forward Trajectories “Profile 1” Valid 00Z 6/26 (Thur afternoon local time)

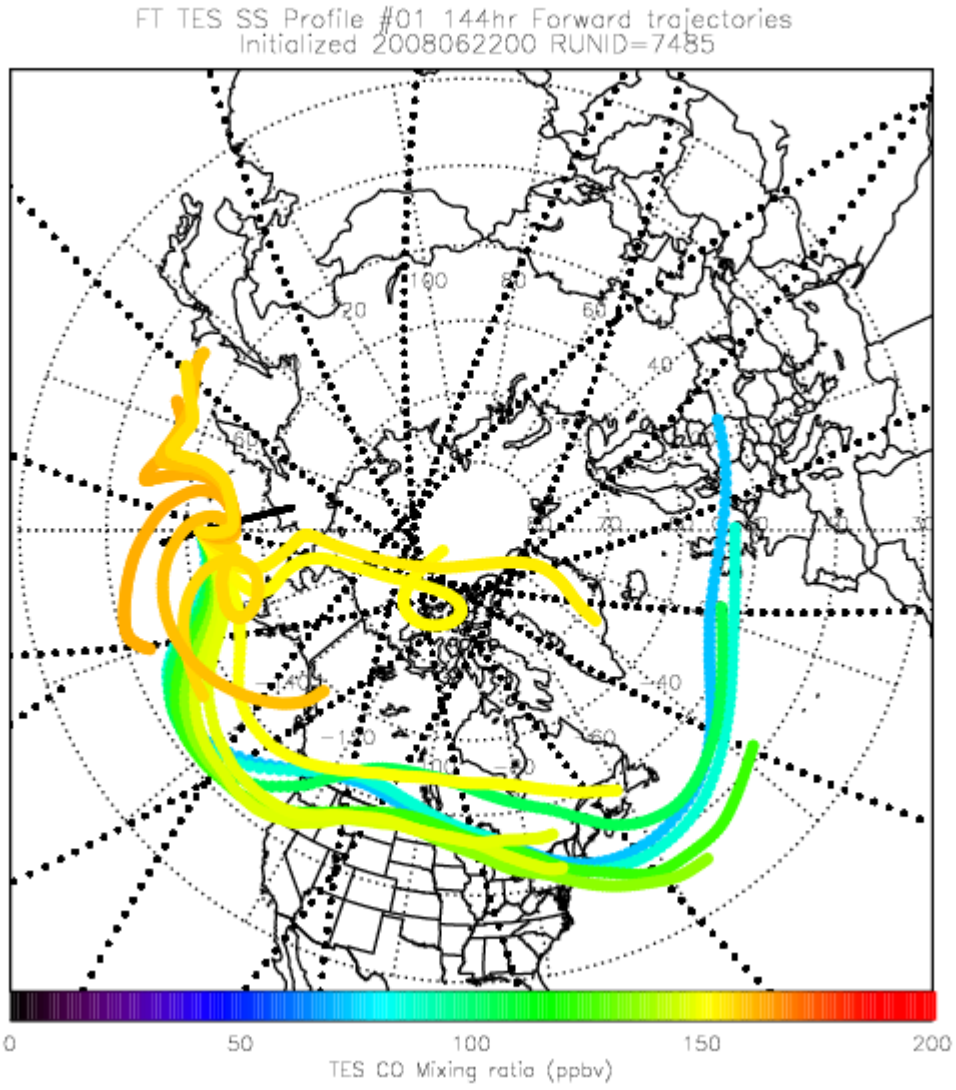


# TES SS Forward Trajectories “Profile 1” Valid 00Z 6/27 (Friday afternoon local time)

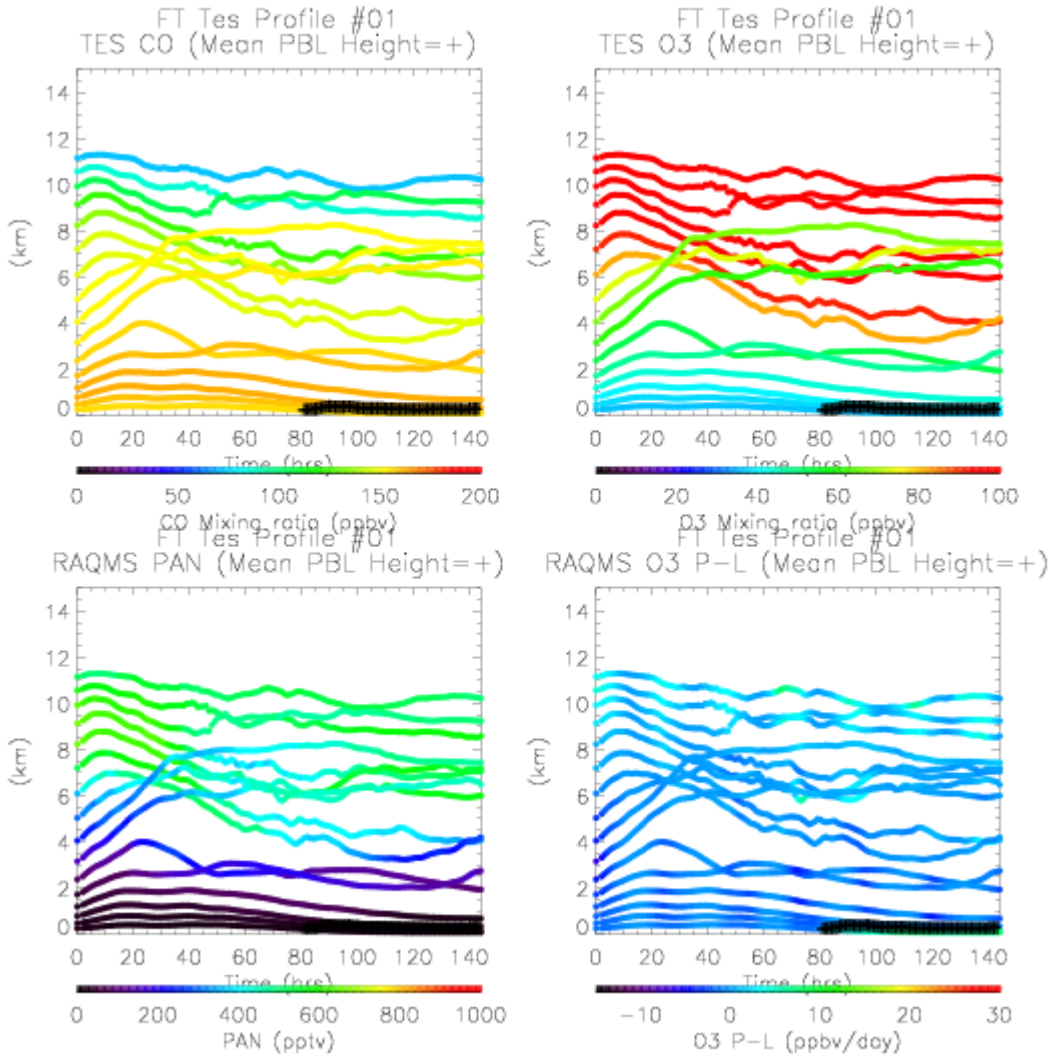



Asian plume should be observable near Cold Lake

# TES SS Forward Trajectories “Profile 1” Valid 00Z 6/28 (Sat afternoon local time)

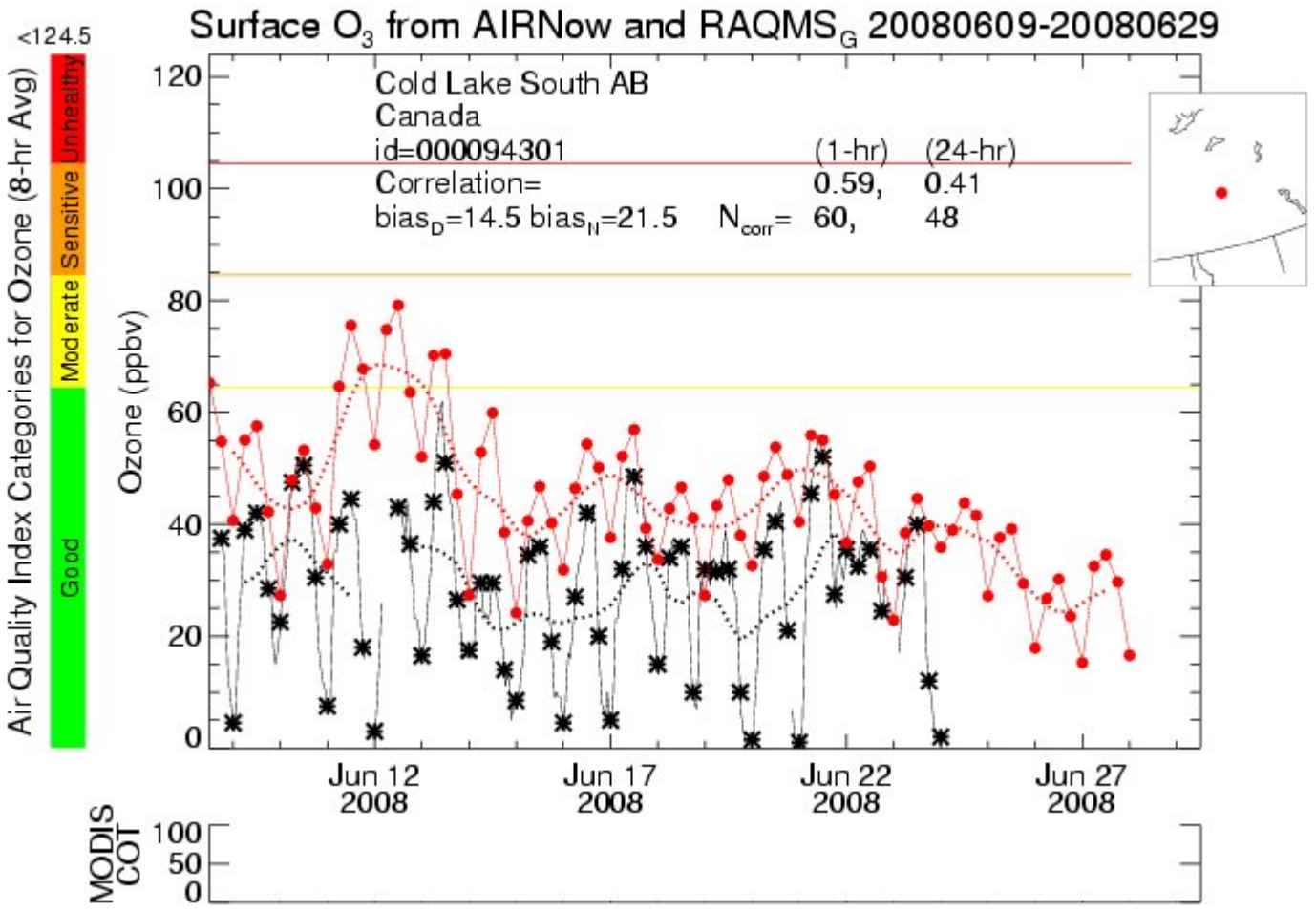


# Chemical evolution along “SS Profile 01” forward trajectories




Upper tropospheric CO enhancements from N Asian BB burning sampled by TES on 06/22 show descent over N. America and conversion of PAN to NOx

RAQMS (red) and US EPA AIRNow (black) SFC O3
At Cold Lake AB




RAQMS is currently overestimating surface ozone by 14.5 ppbv
At Cold Lake