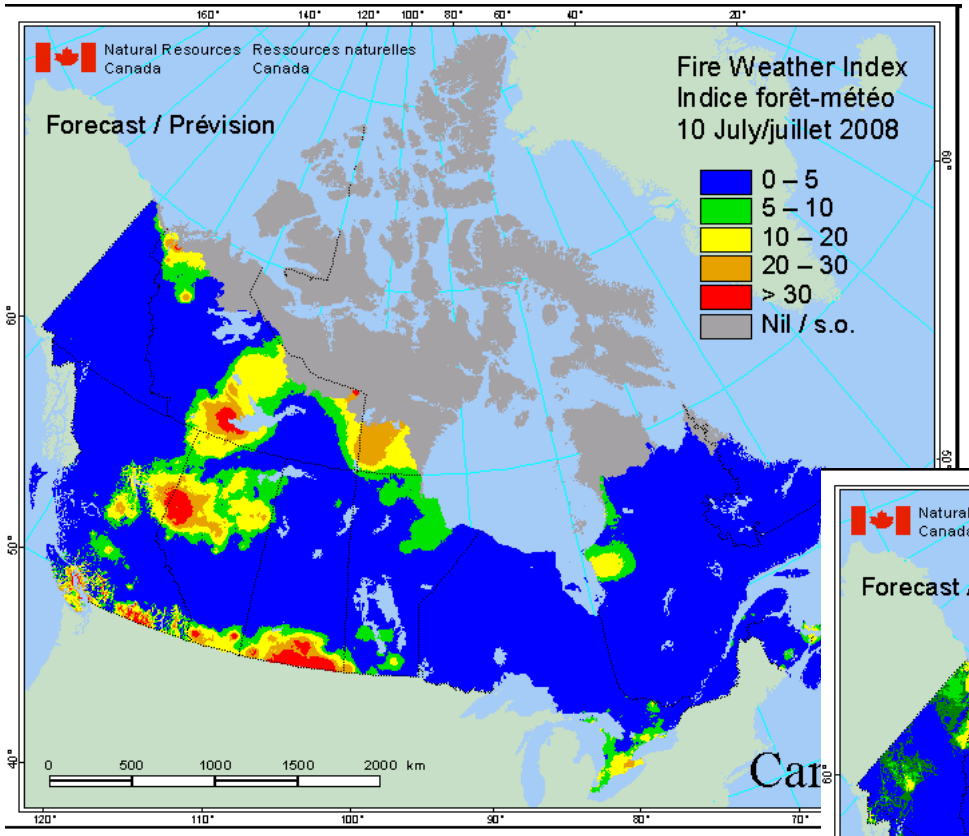
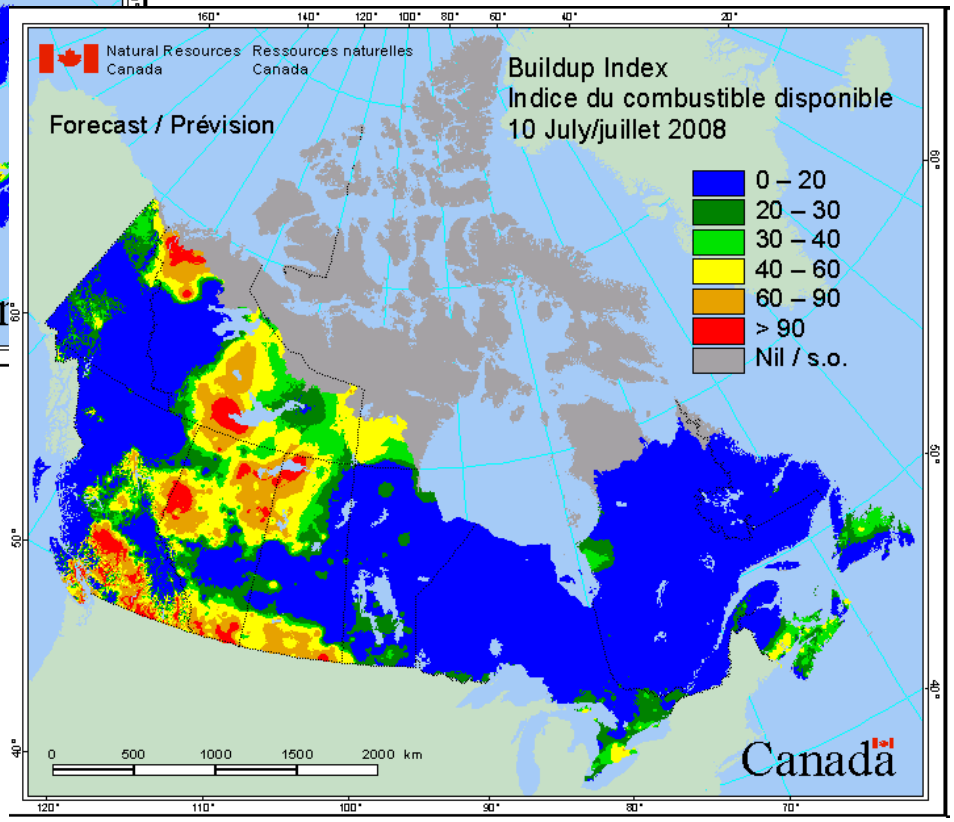
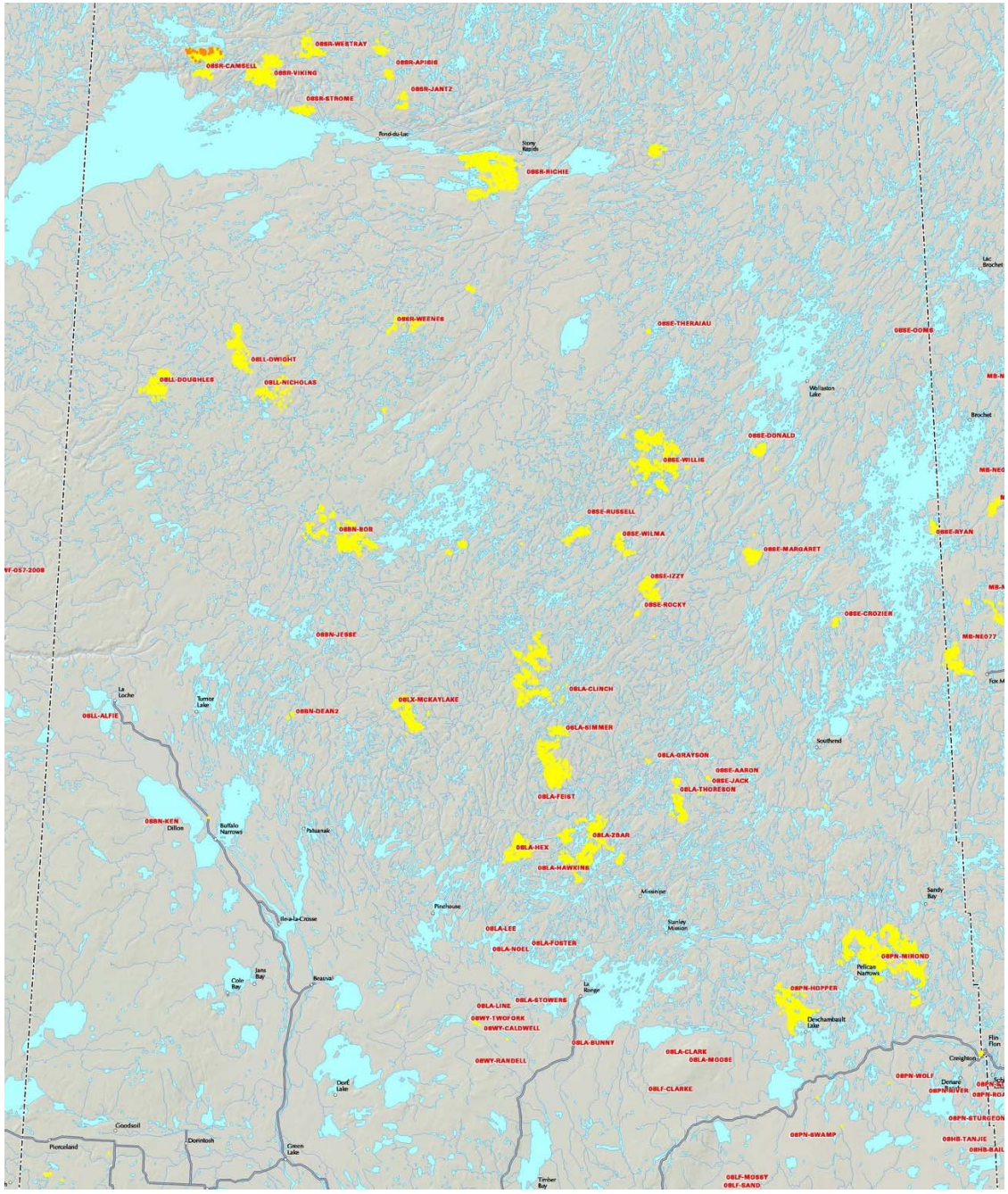
Fire Activity/Potential July 10/08

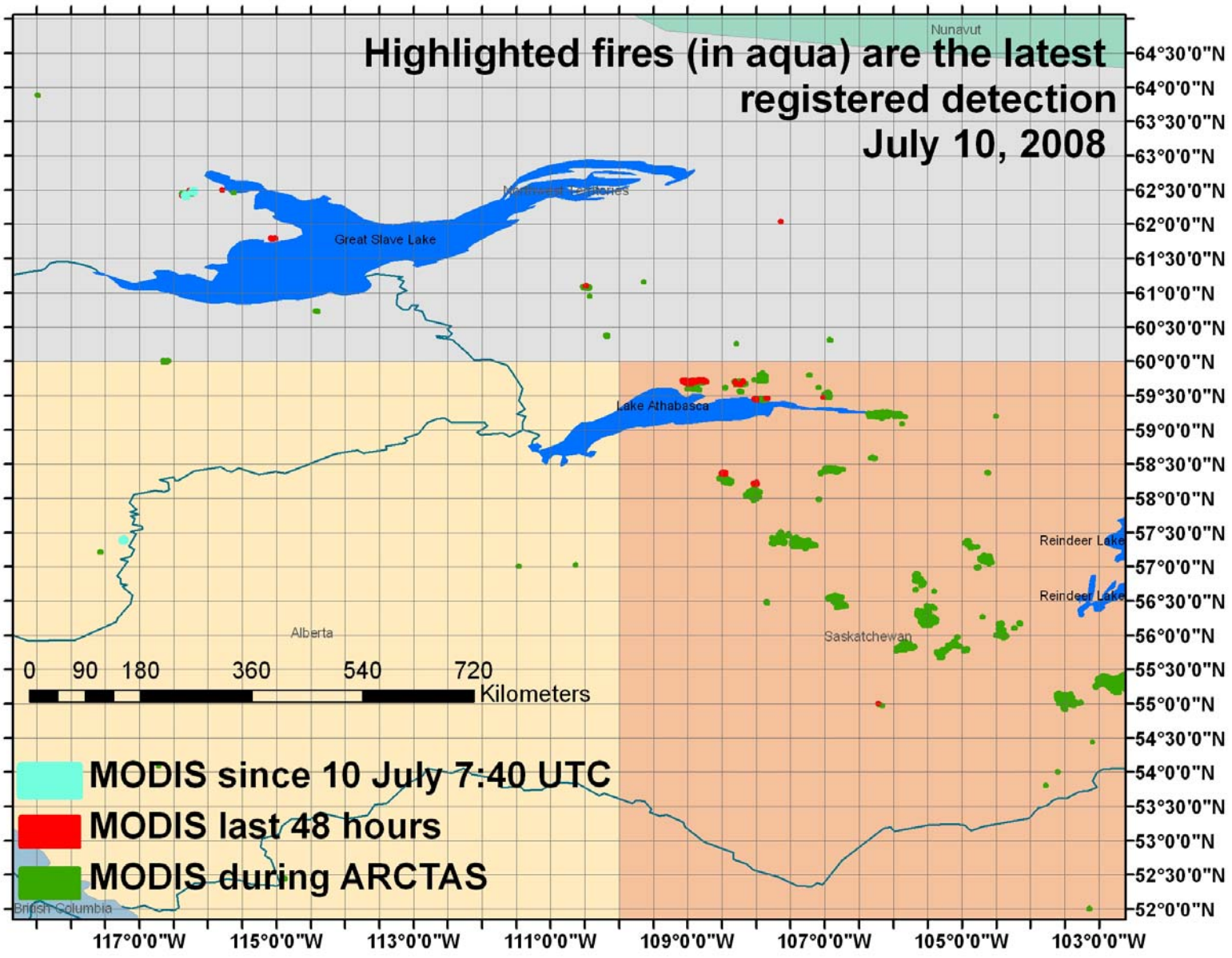
- Fires still burning around Lake Athabasca
- Not as active today as yesterday
- Sun/cloud and 40% chance of rain
- Significant smoke in California for transit to Palmdale


Natural Resources Canada
Ressources naturelles Canada
Forecast / Prévision
Fire Weather Index
Indice forêt-météo
10 July/juillet 2008
0 – 5
5 – 10
10 – 20
20 – 30
> 30
Nil / s.o.
0 500 1000 1500 2000 km


Natural Resources Canada
Ressources naturelles Canada
Forecast / Prévision
Buildup Index
Indice du combustible disponible
10 July/juillet 2008
0 – 20
20 – 30
30 – 40
40 – 60
60 – 90
> 90
Nil / s.o.
0 500 1000 1500 2000 km
Canada



Athabasca fires still active
No precipitation lately in this region


Highlighted fires (in aqua) are the latest registered detection
July 10, 2008
Nunavut
Great Slave Lake
Lake Athabasca
Alberta
Saskatchewan
Reindeer Lake
Reindeer Lake
British Columbia
0 90 180 360 540 720
Kilometers
MODIS since 10 July 7:40 UTC
MODIS last 48 hours
MODIS during ARCTAS
64°30'0"N
64°0'0"N
63°30'0"N
63°0'0"N
62°30'0"N
62°0'0"N
61°30'0"N
61°0'0"N
60°30'0"N
60°0'0"N
59°30'0"N
59°0'0"N
58°30'0"N
58°0'0"N
57°30'0"N
57°0'0"N
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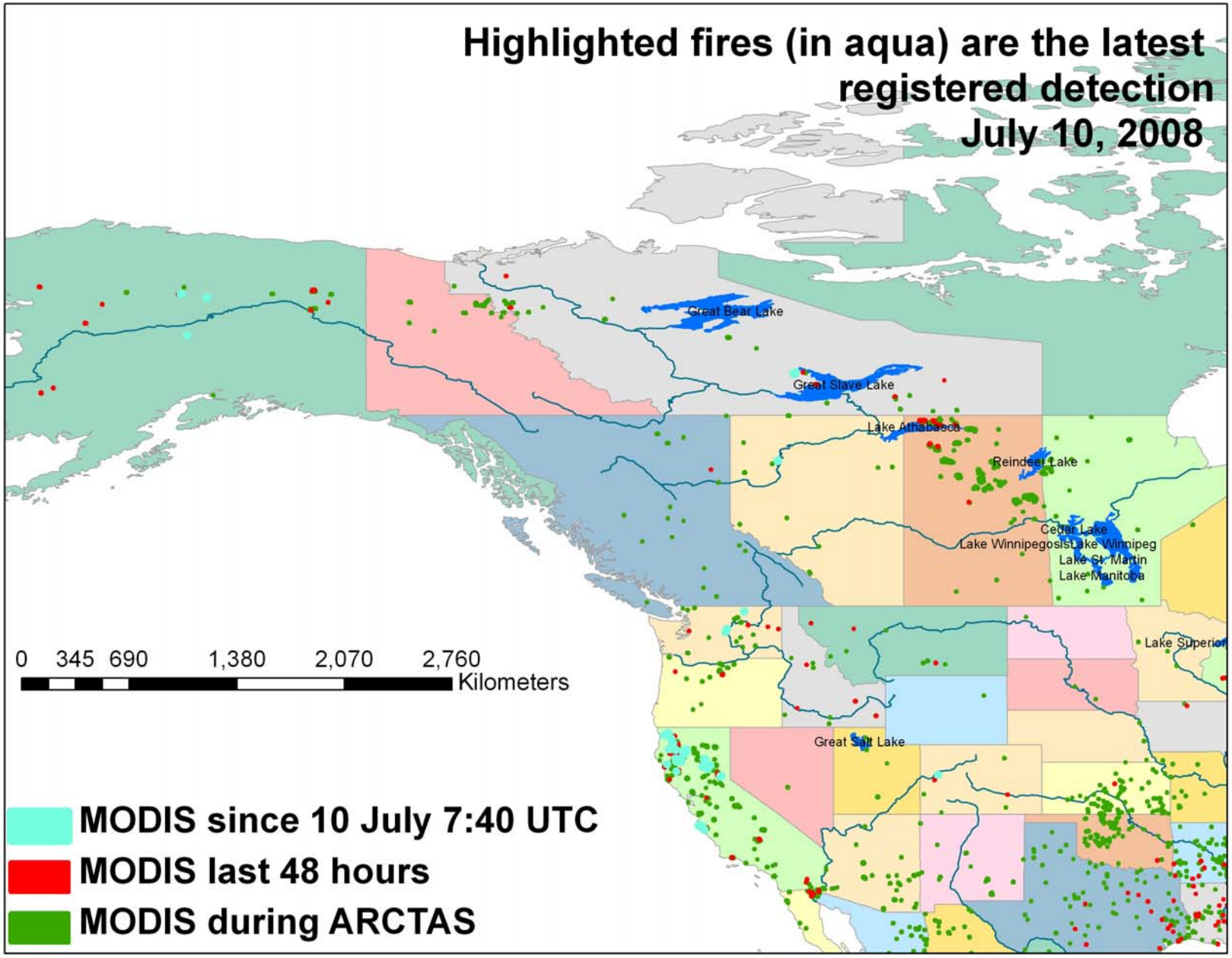
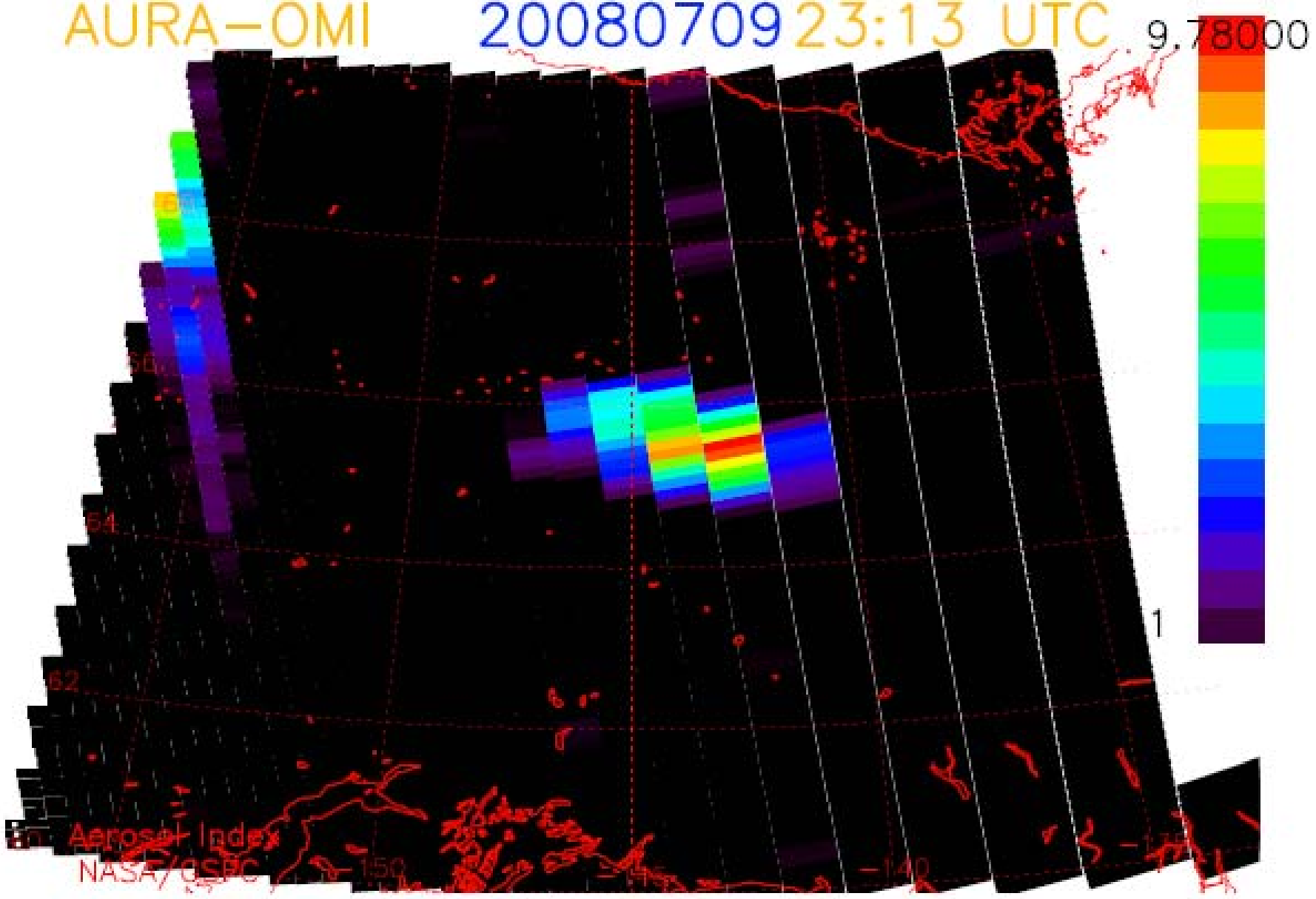
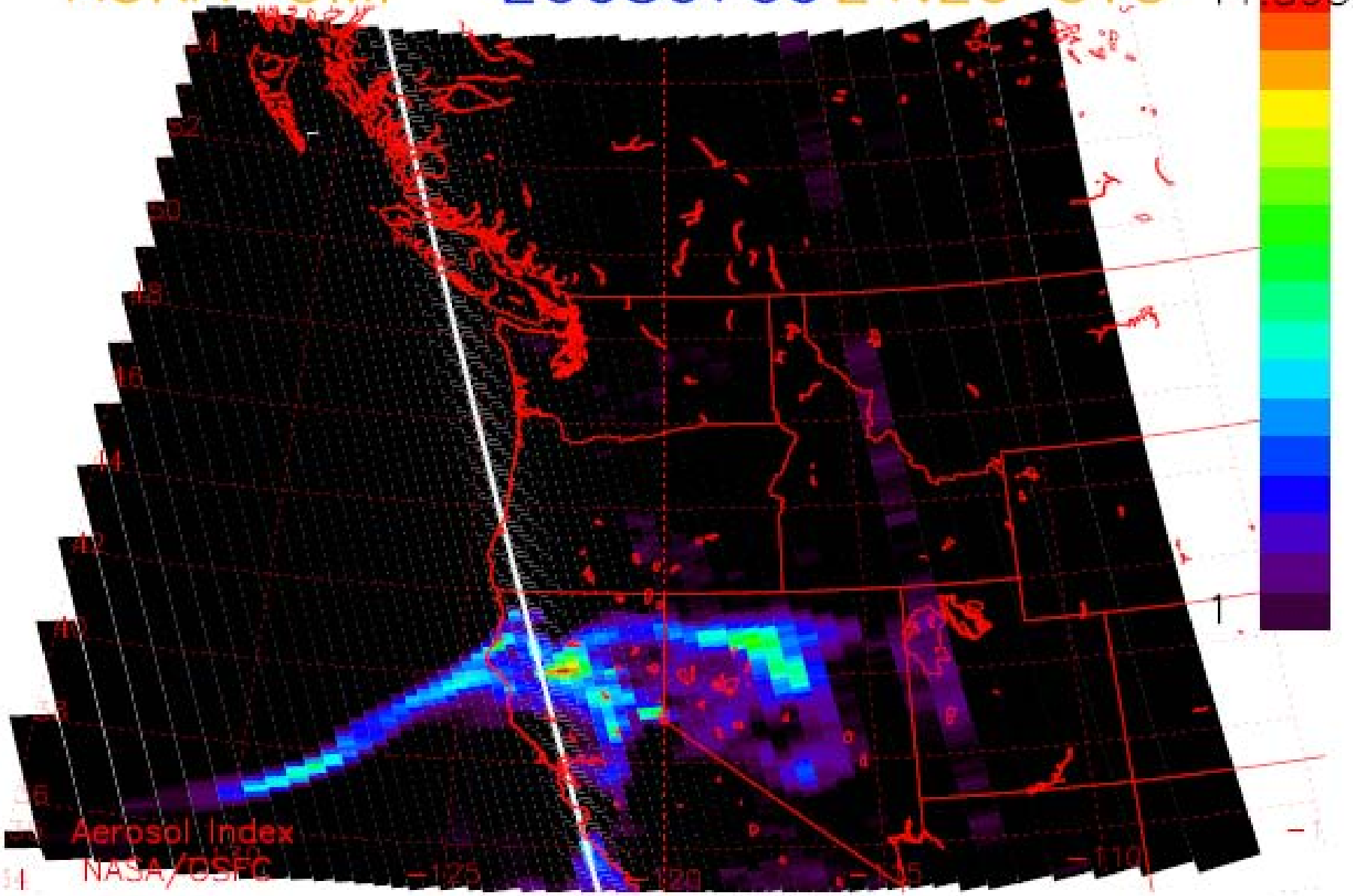
55°0'0"N
54°30'0"N
54°0'0"N
53°30'0"N
53°0'0"N
52°30'0"N
52°0'0"N
117°0'0"W
115°0'0"W
113°0'0"W
111°0'0"W
109°0'0"W
107°0'0"W
105°0'0"W
103°0'0"W


Highlighted fires (in aqua) are the latest registered detection
July 10, 2008
Great Bear Lake
Great Slave Lake
Lake Athabasca
Reindeer Lake
Cedar Lake
Lake Winnipegosis
Lake Winnipeg
Lake St. Martin
Lake Manitoba
Lake Superior
Great Salt Lake
0 345 690 1,380 2,070 2,760
Kilometers
MODIS since 10 July 7:40 UTC
MODIS last 48 hours
MODIS during ARCTAS


AURA–OMI
20080709 23:13 UTC
9.78000
1
Aerosol Index
NASA/GSFC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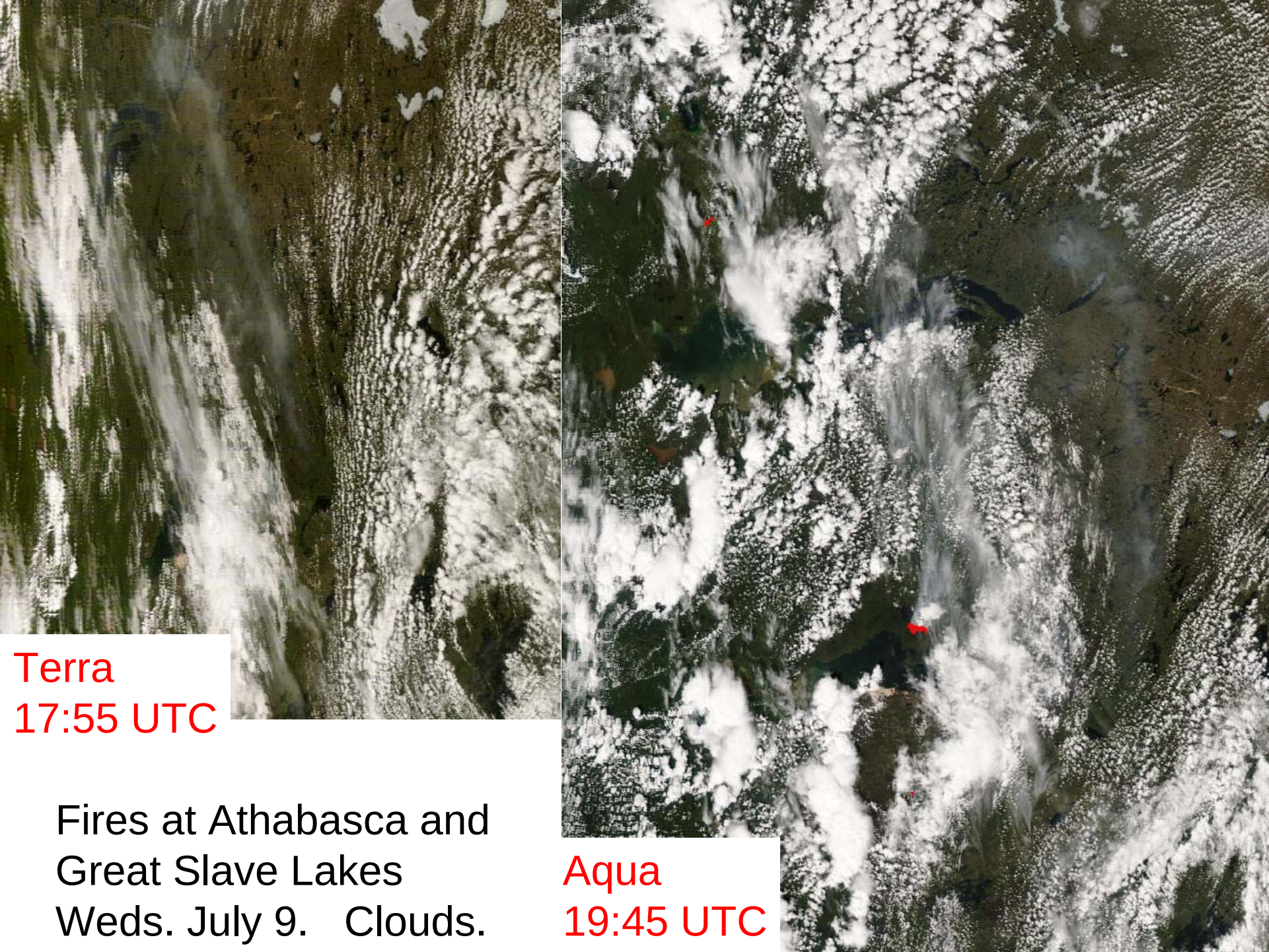
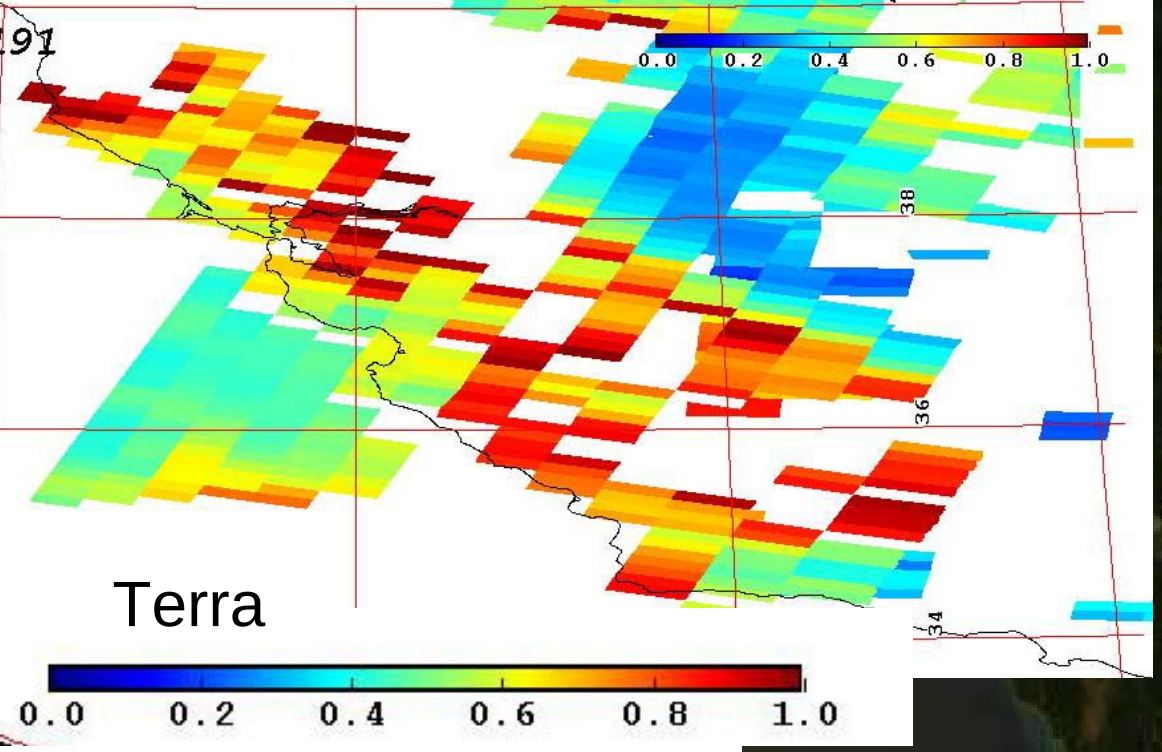
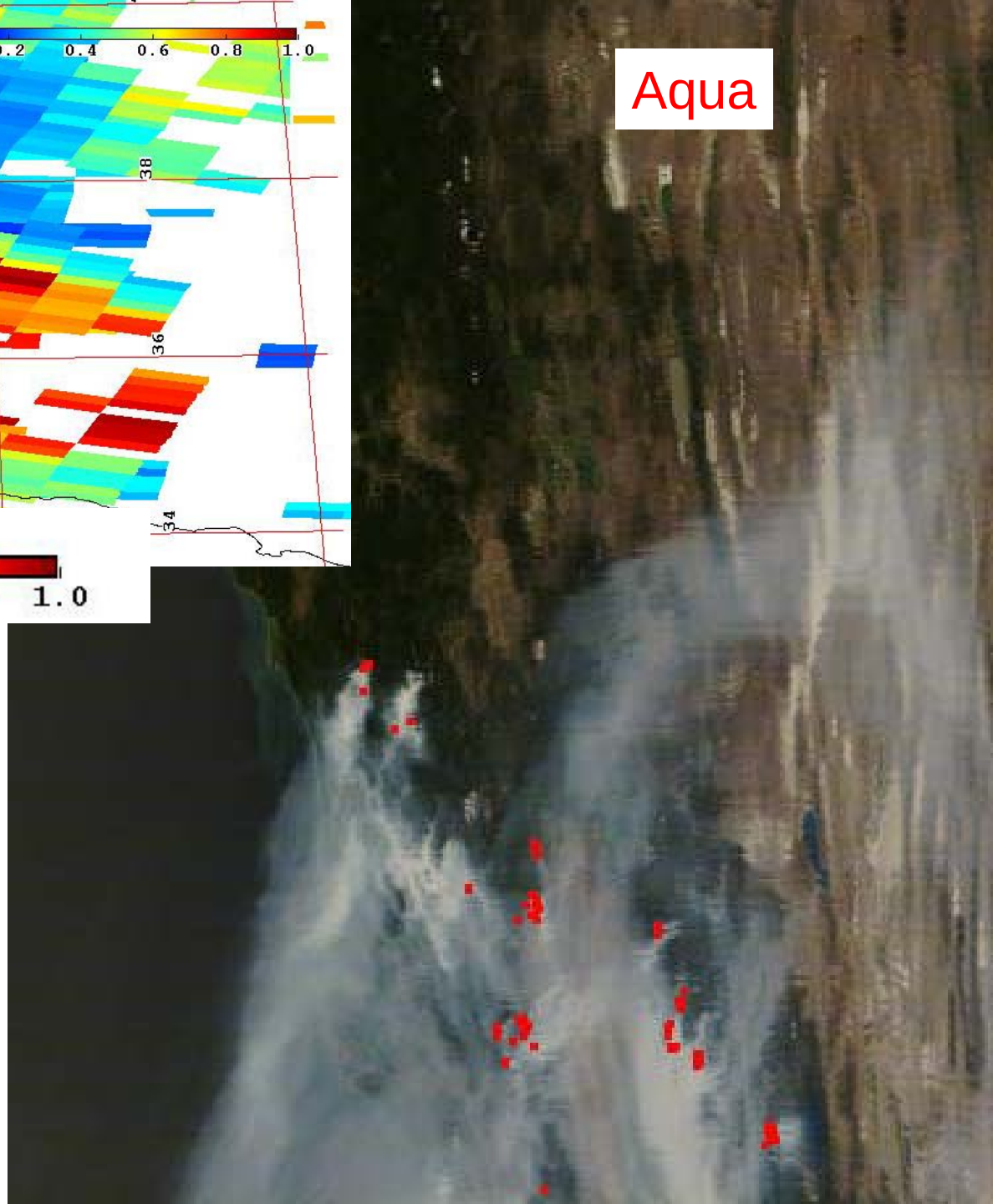
20080709 21:29 UTC
11.59
32
1
Aerosol Index
NASA/GSFC



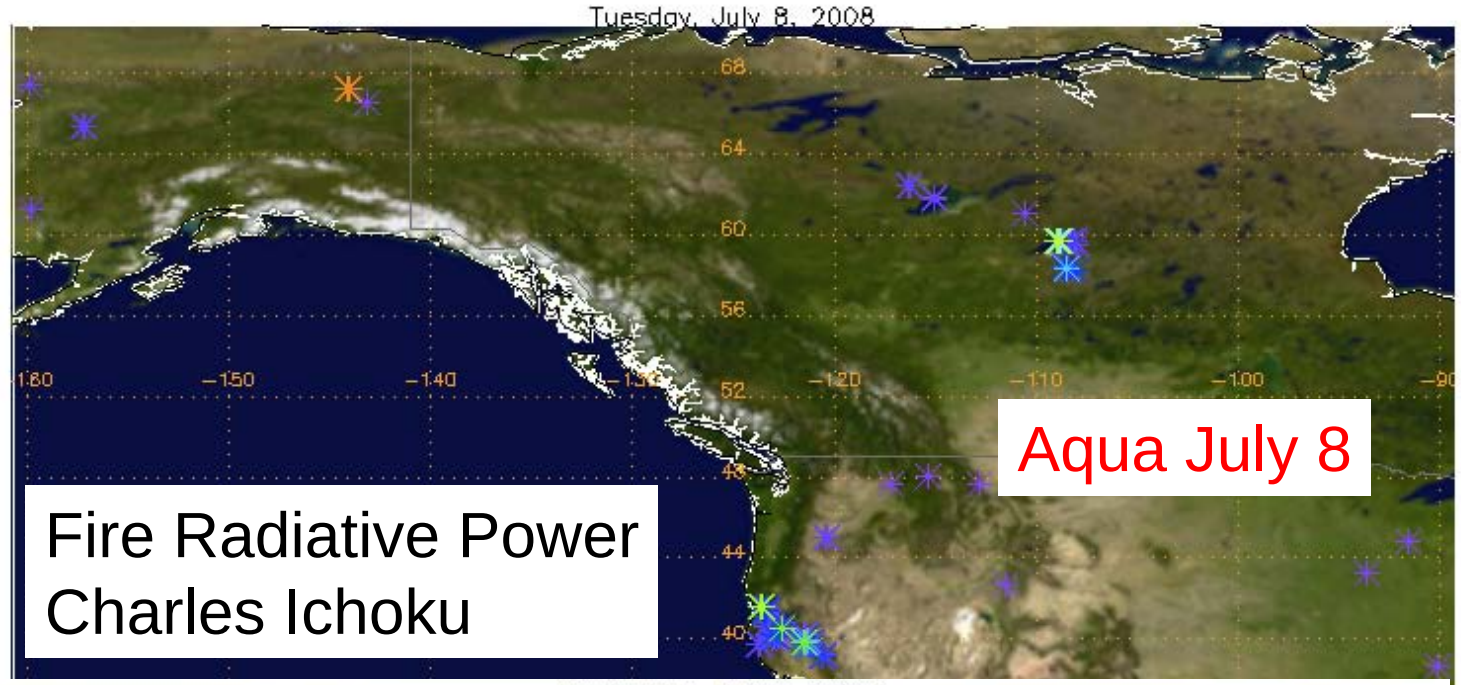
Fires at Athabasca and
Great Slave Lakes
Weds. July 9. Clouds.



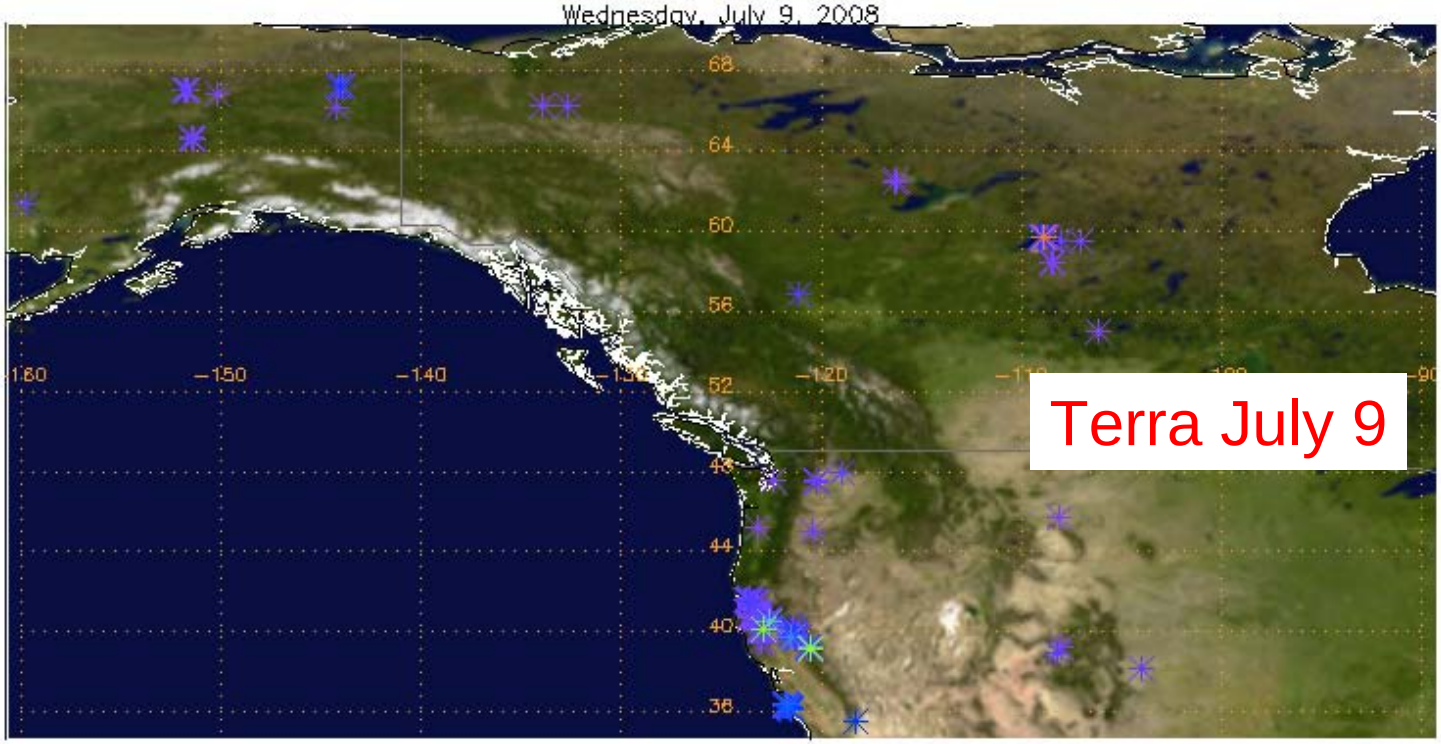


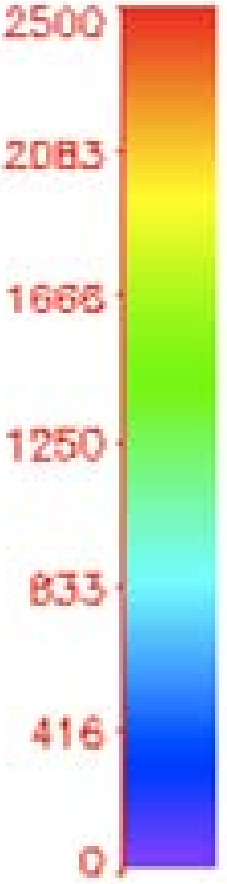
Weds. July 9

STILL missing some Great fires down south in Calif.



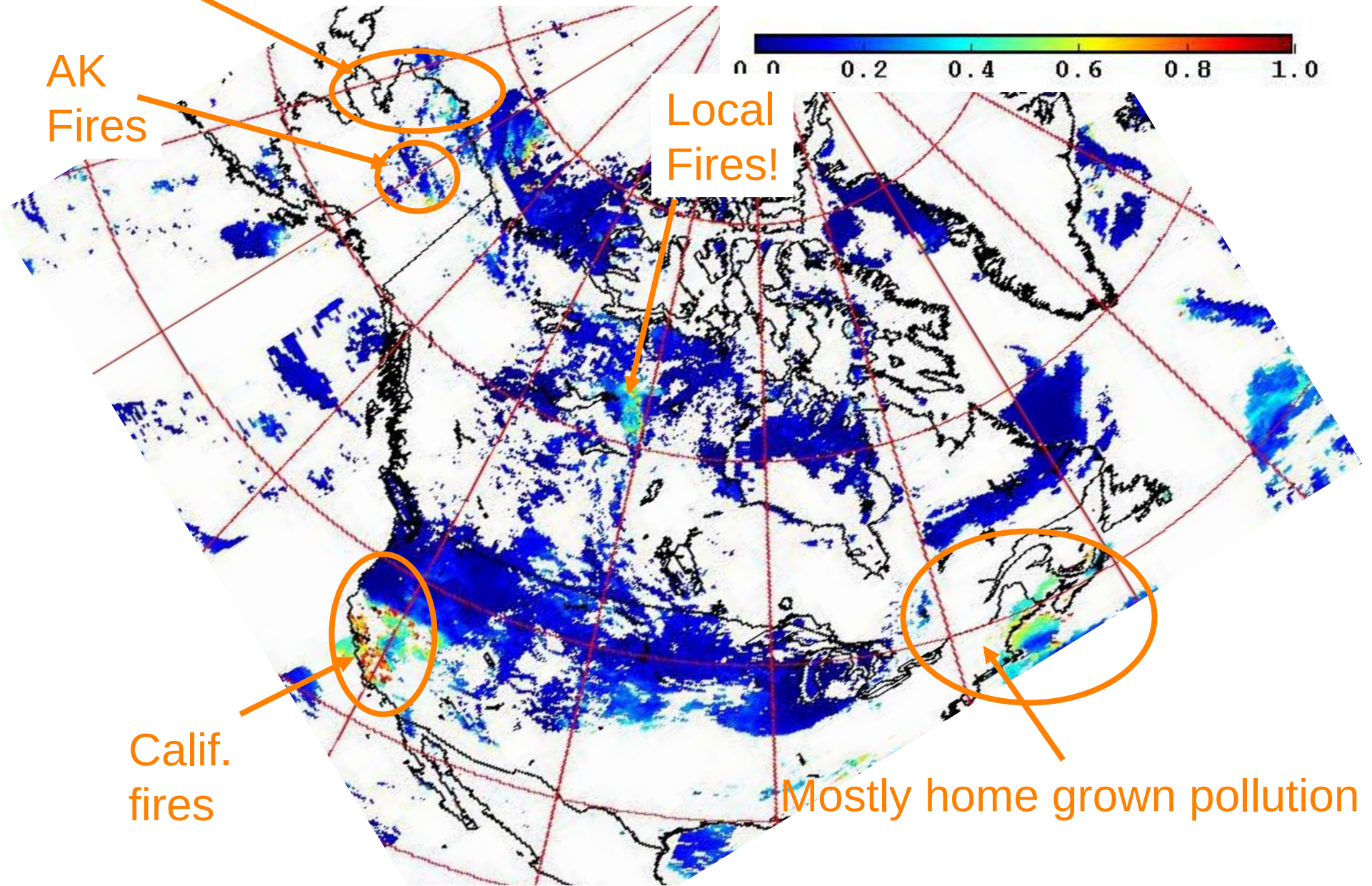
Fire Radiative Power
Charles Ichoku





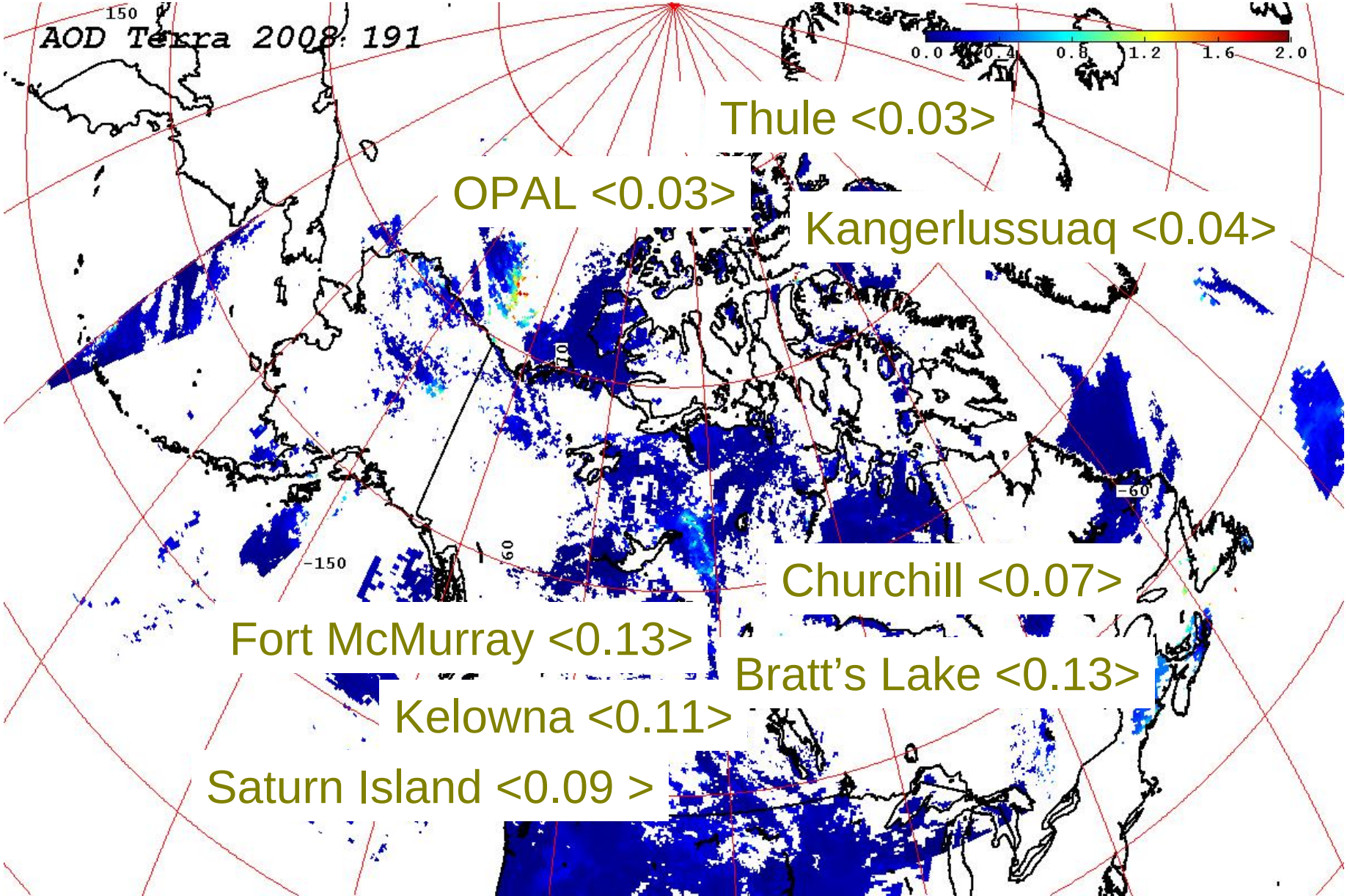
Day 191 (Wednesday) July 9

MODIS AOD Hotspots in North America

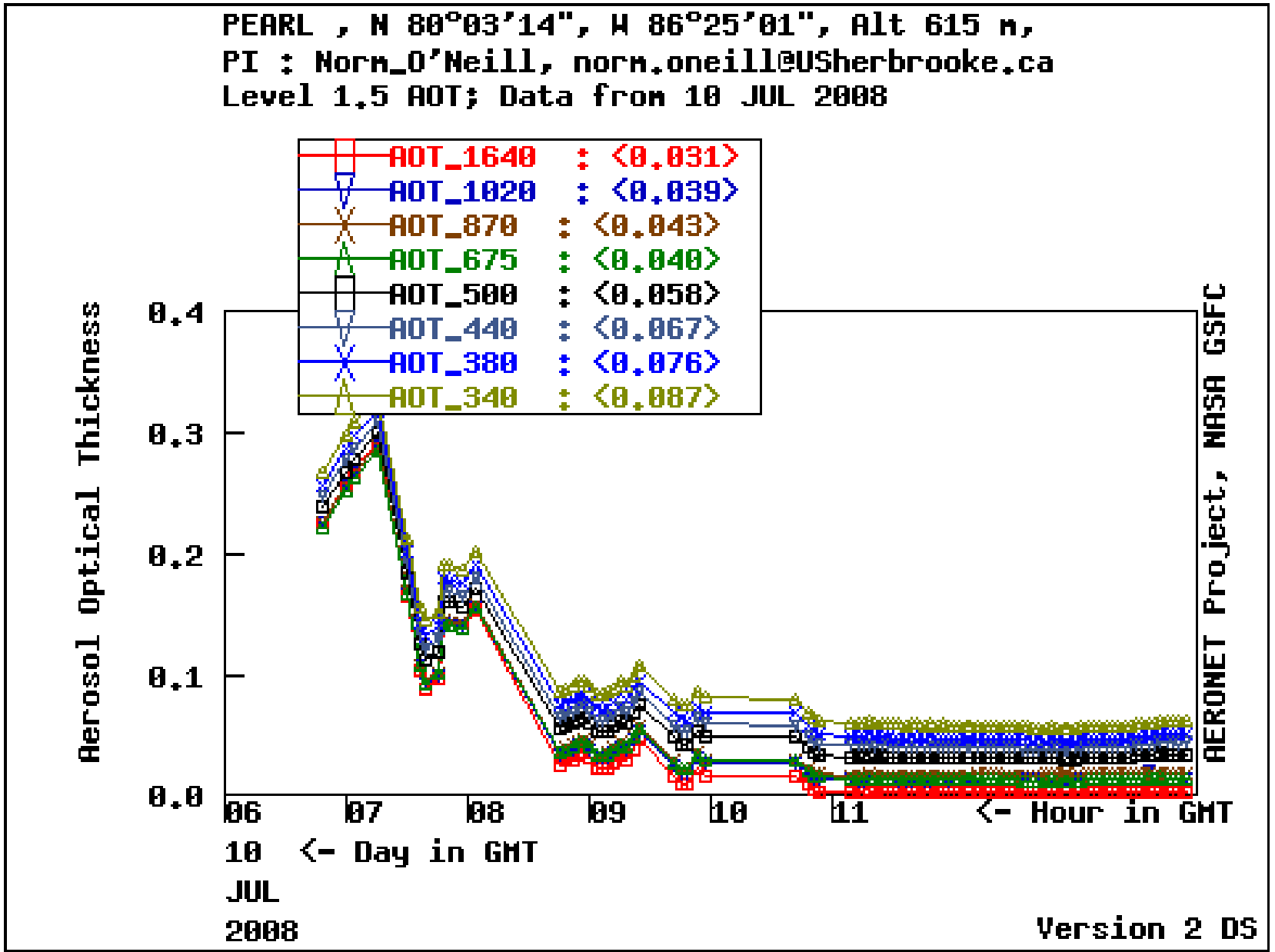


Day 191 (Wednesday) July 9

MODIS AOD Hotspots in North America

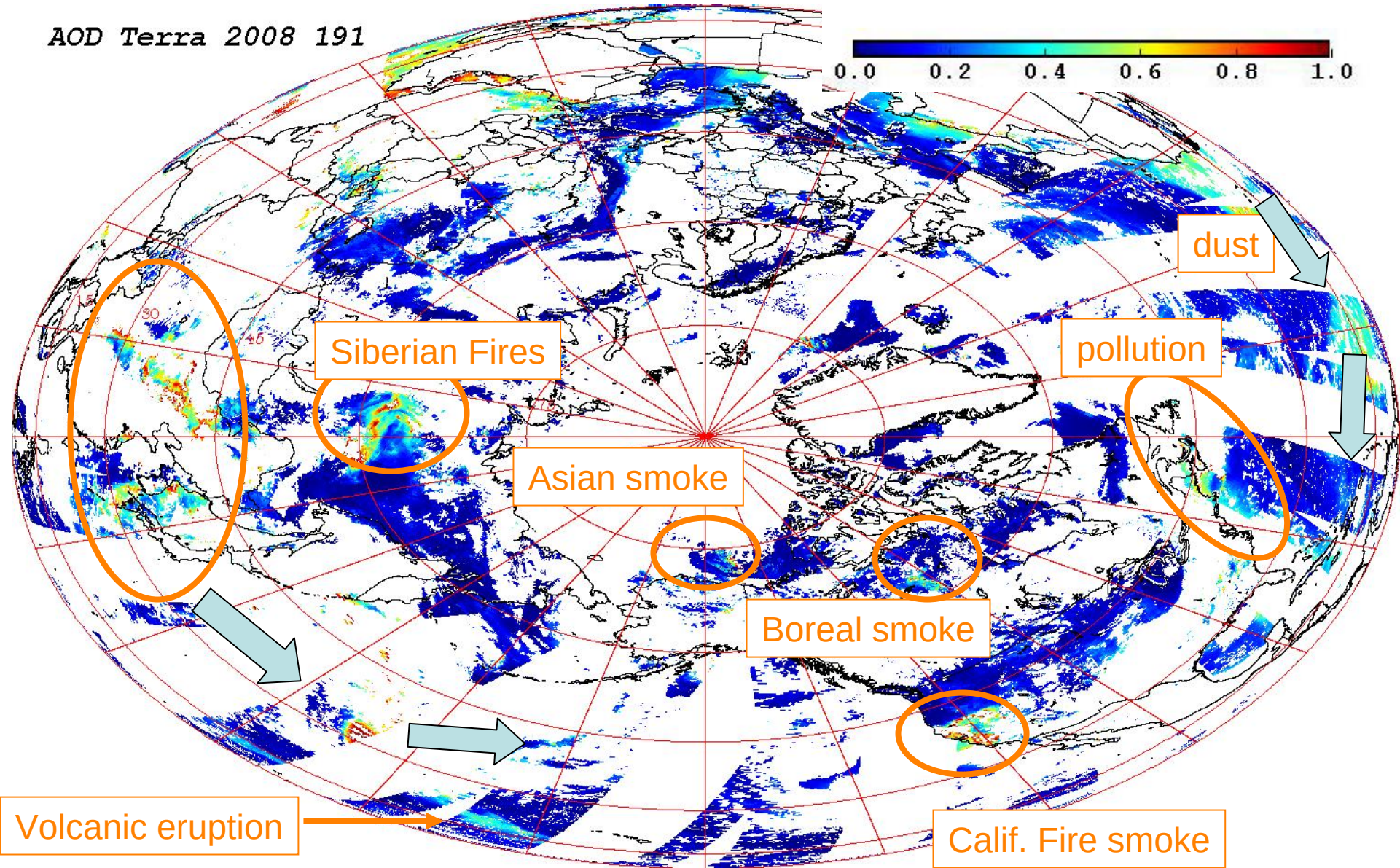


This morning at PEARL (OPAL)

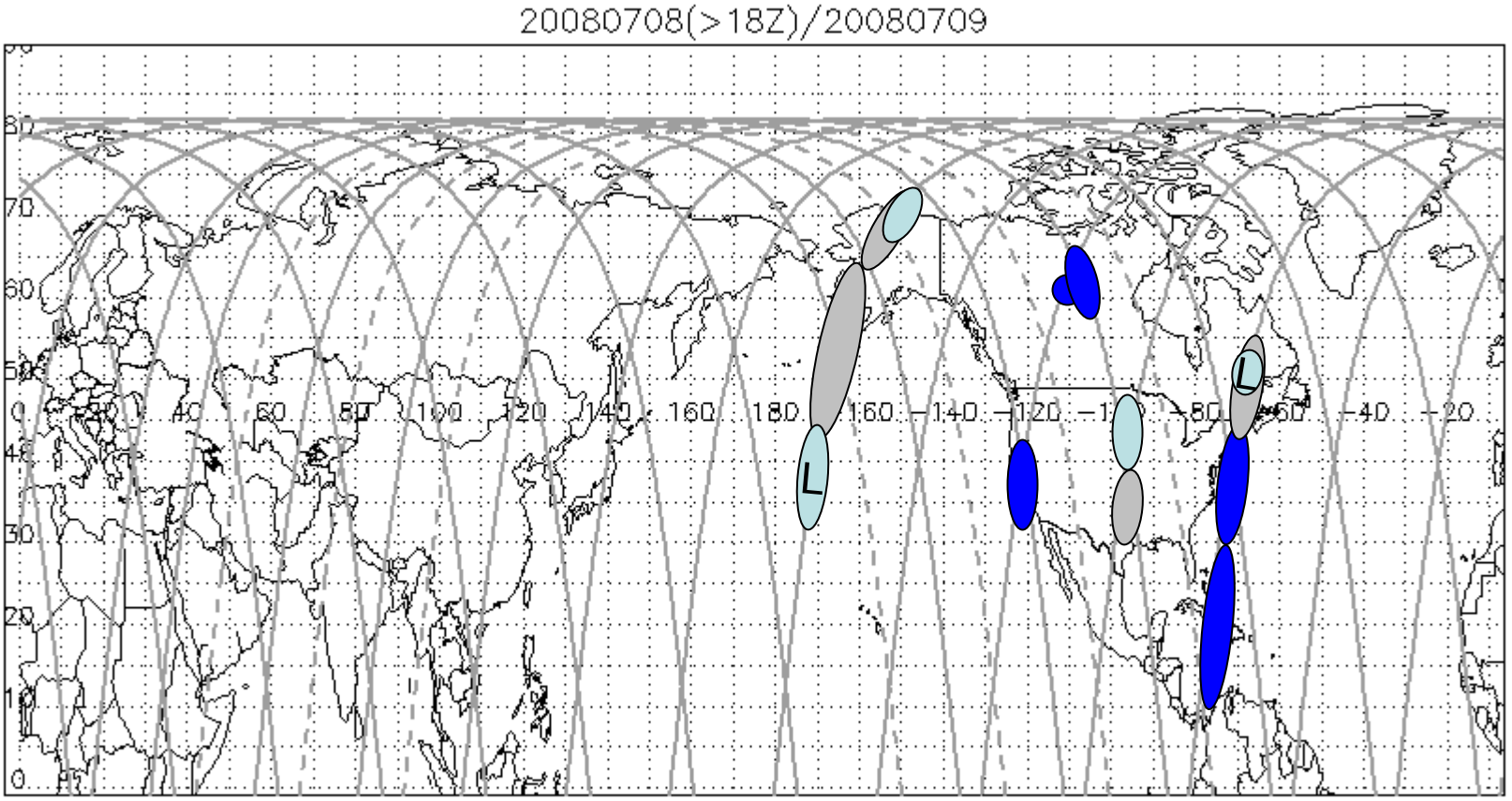


Day 191 (July 9) Wednesday

MODIS Hot Spots in Northern Hemisphere



Aerosol Layer Locations based on CALIPSO observation on 7/9



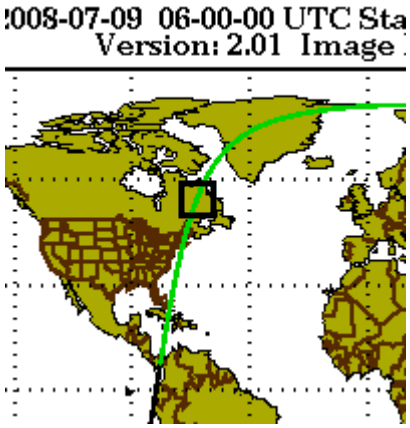
Cloud

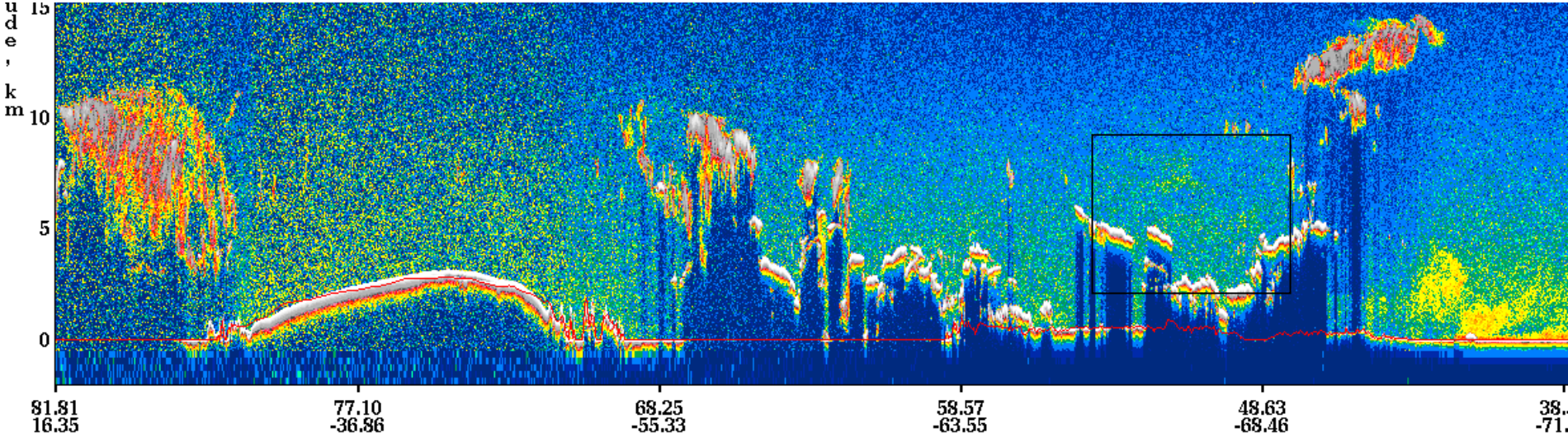
Aerosol Layer- low aerosol loading

Aerosol Layer- medium aerosol loading

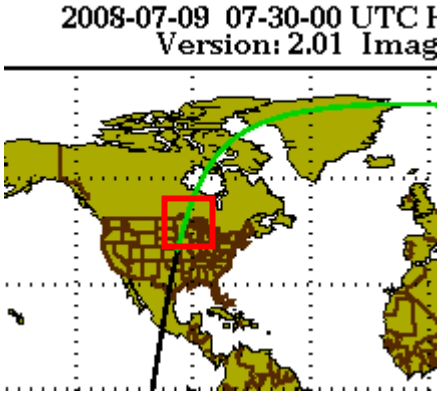
Aerosol Layer- high aerosol loading

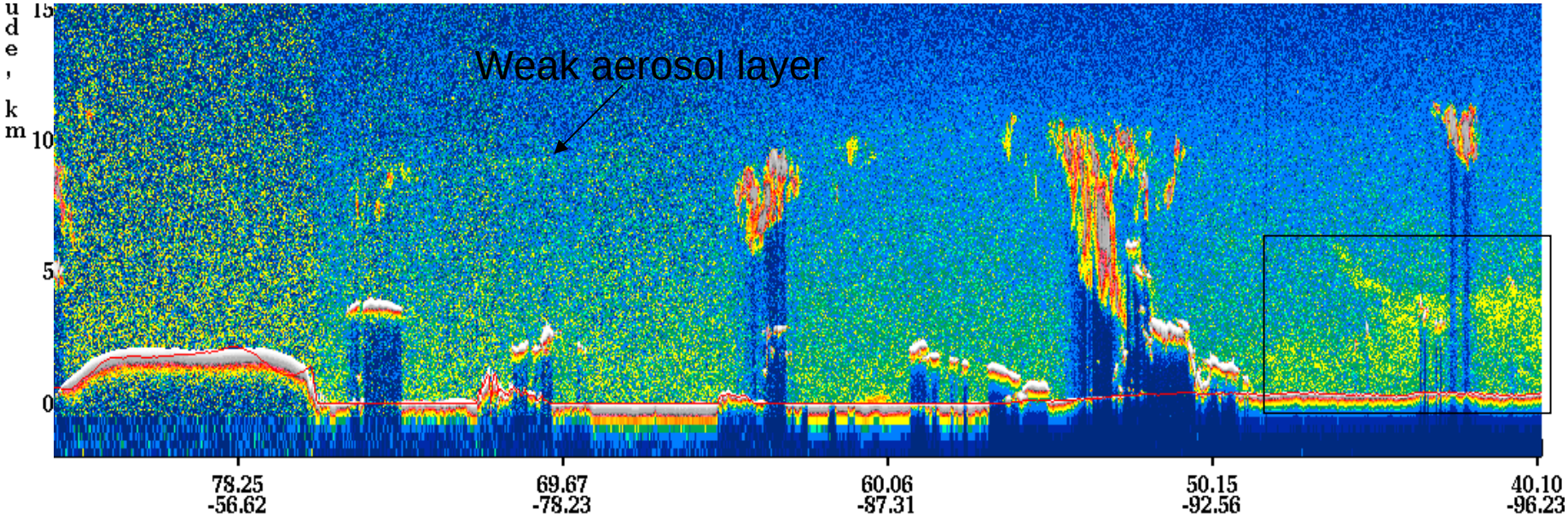
CALIPSO 7/9 6Z

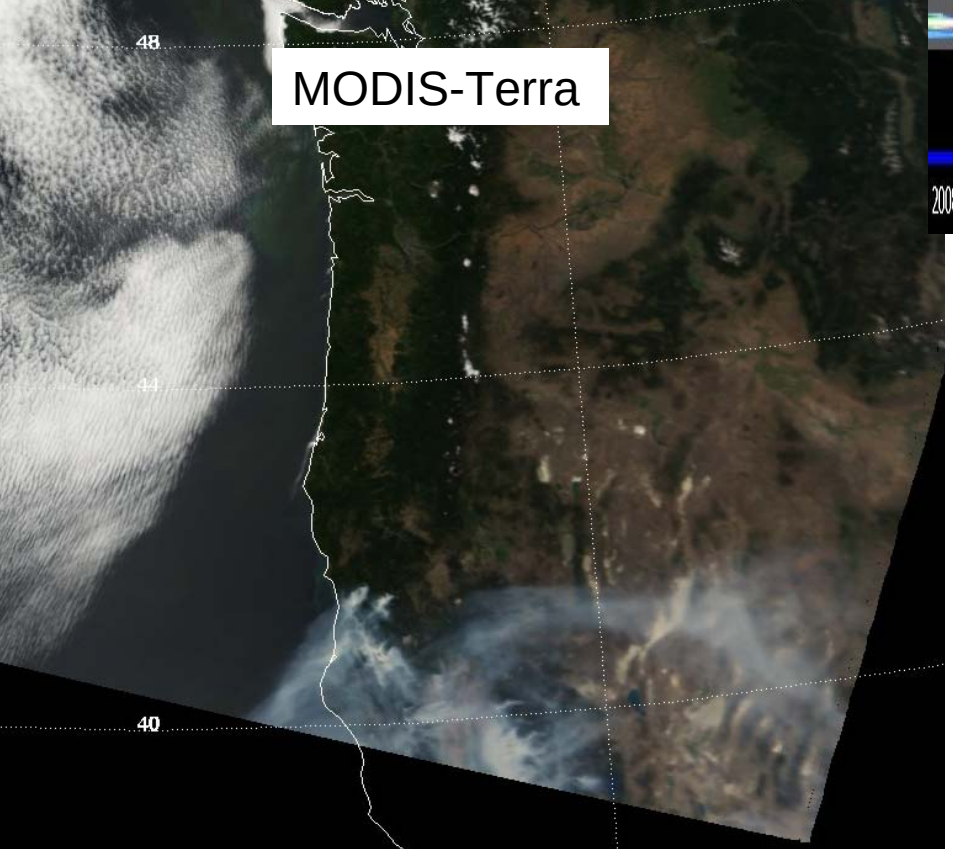


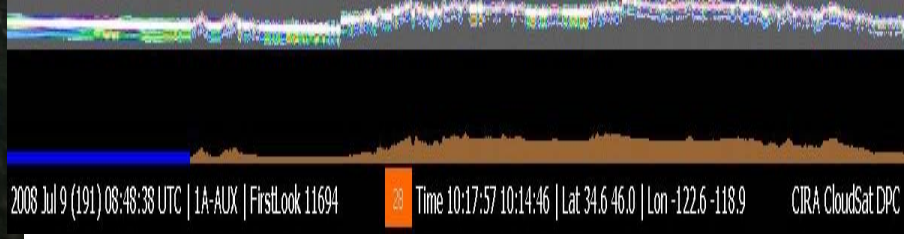


CALIPSO 7/9 7:30Z

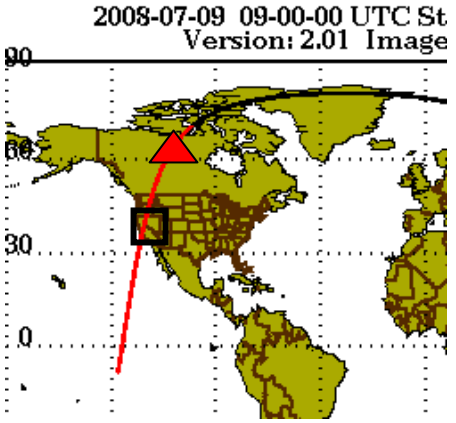




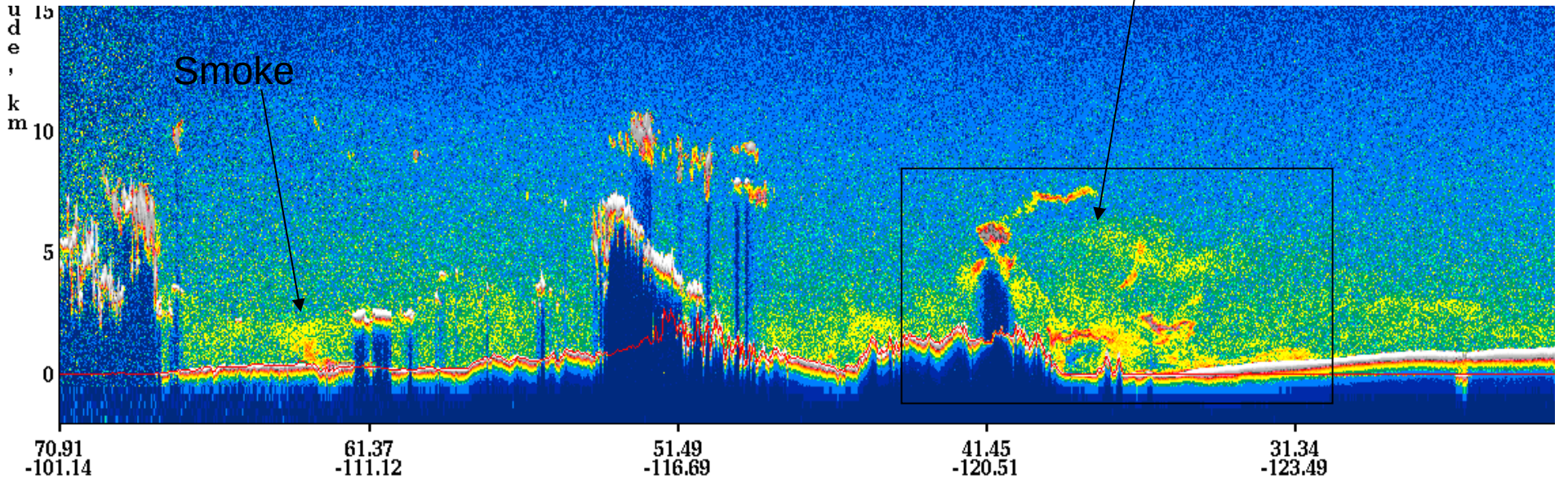


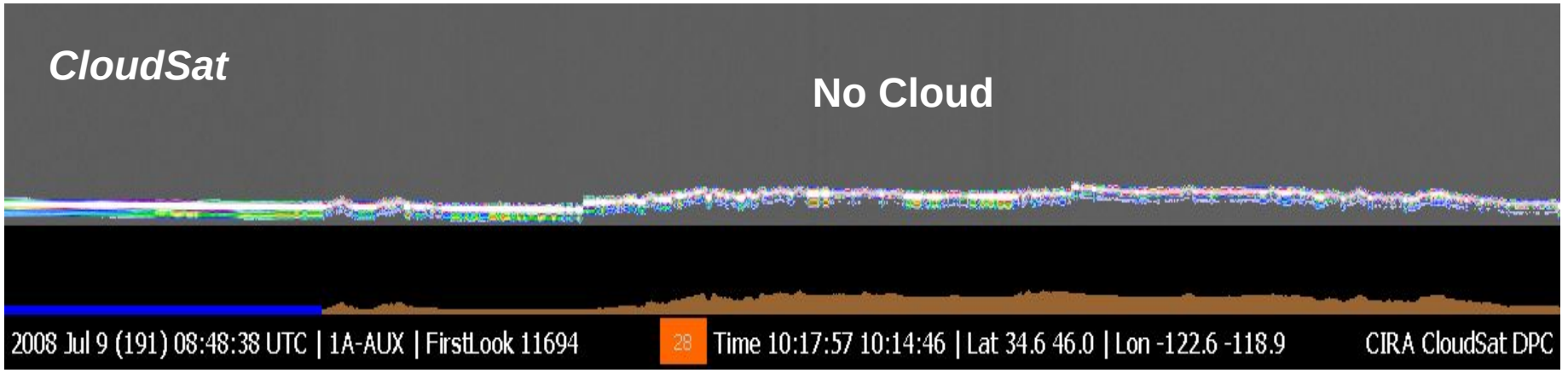


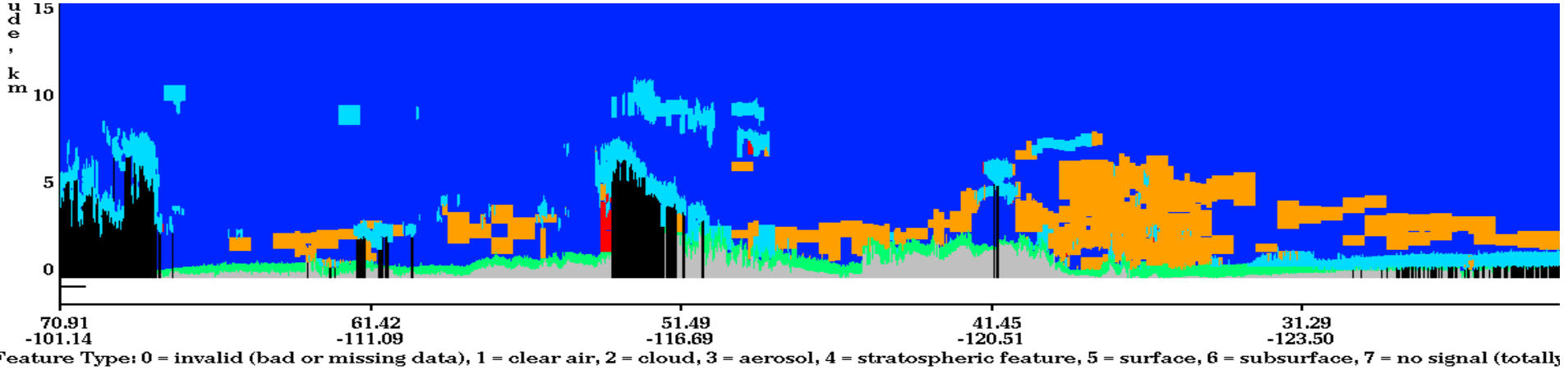
CALIPSO 7/9 9:00Z



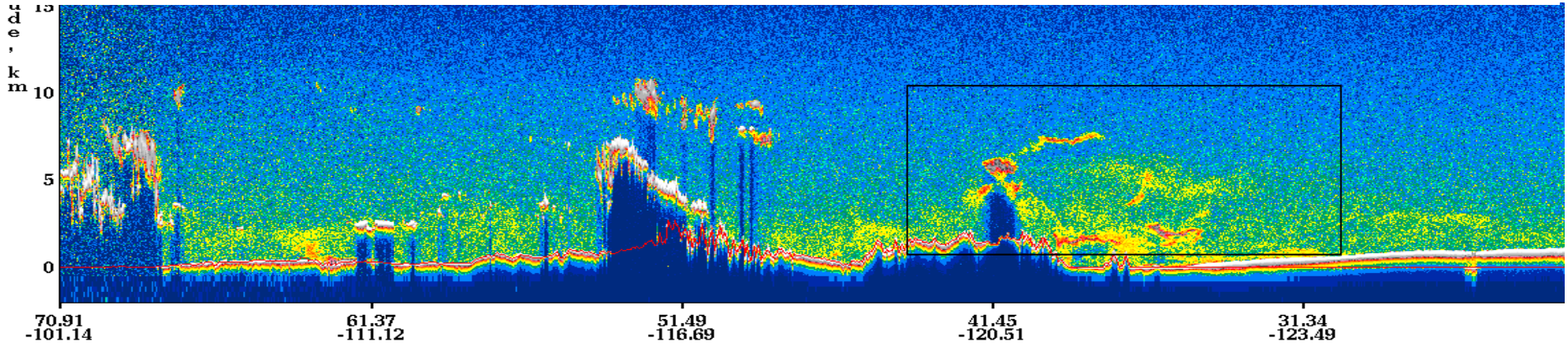
California smoke



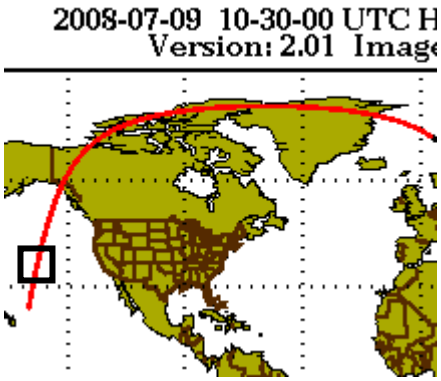


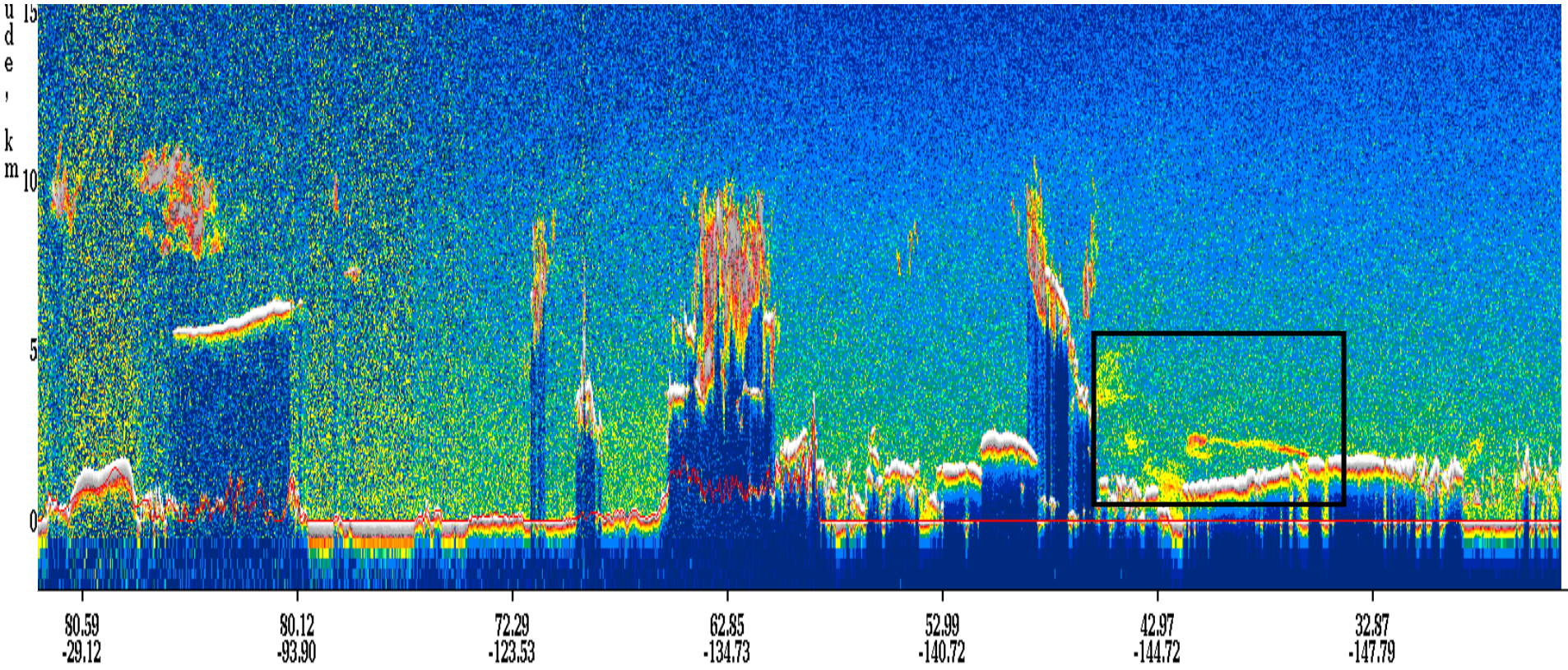


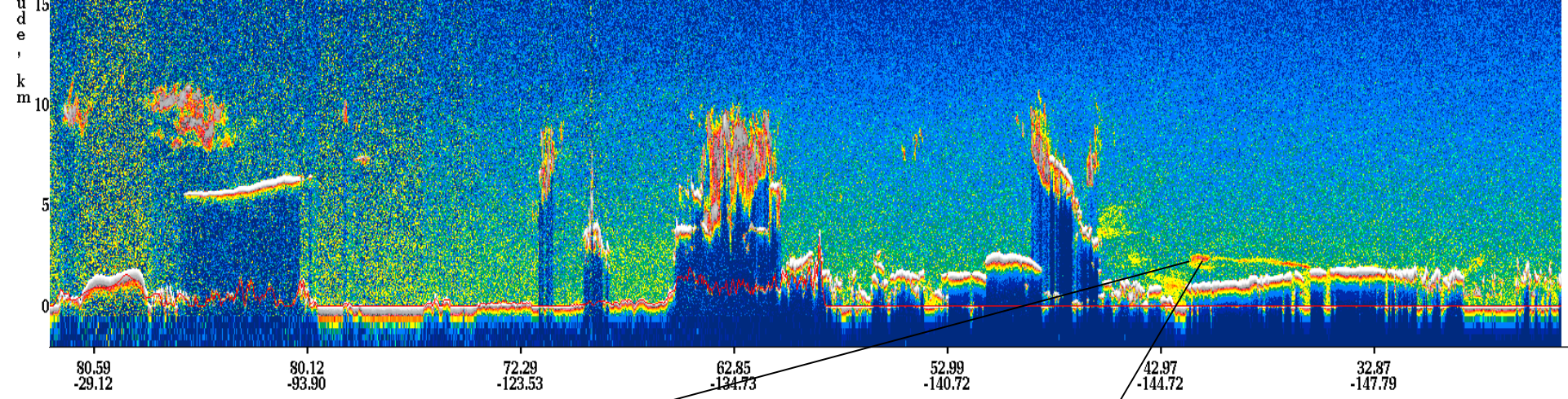
Feature Type: 0 = invalid (bad or missing data), 1 = clear air, 2 = cloud, 3 = aerosol, 4 = stratospheric feature, 5 = surface, 6 = subsurface, 7 = no signal (totally

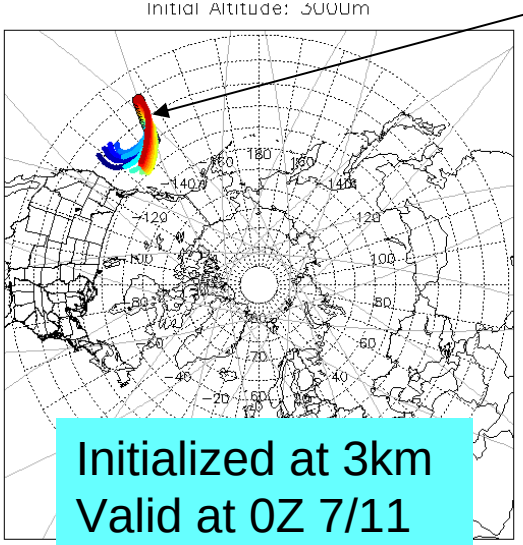


CALIPSO 7/9 10:30Z



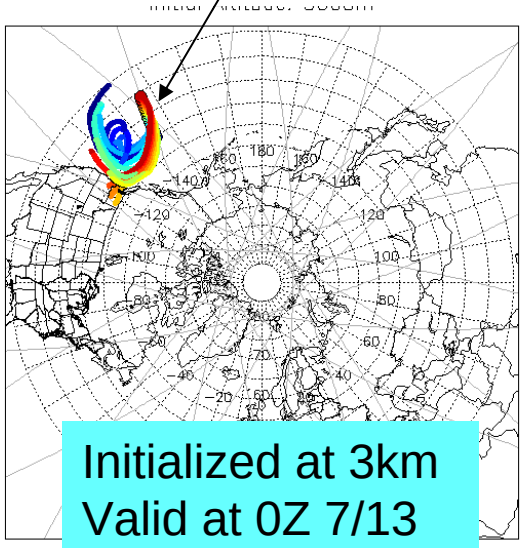




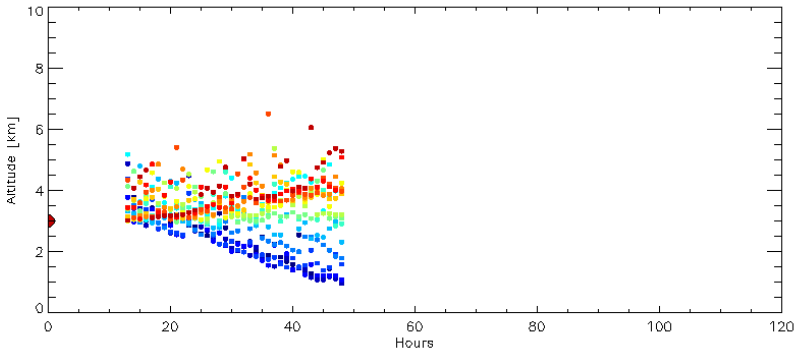


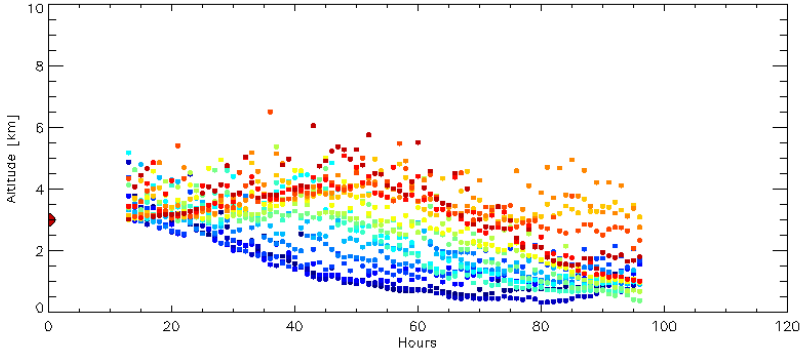
Initialized at 3km
Valid at 0Z 7/11

Trajectory analysis
provided by Brad Pierce
(NOAA/NESDIS)

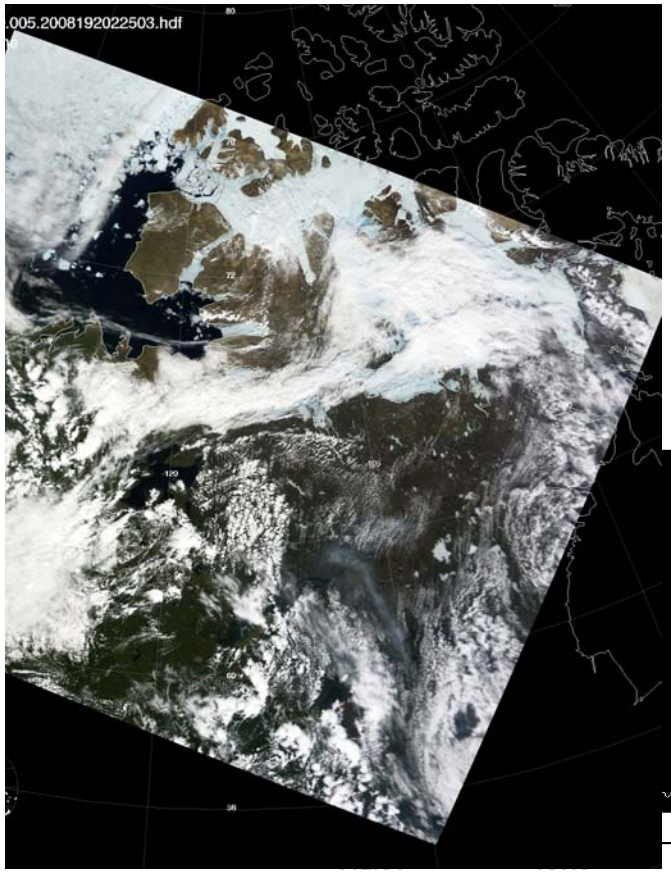


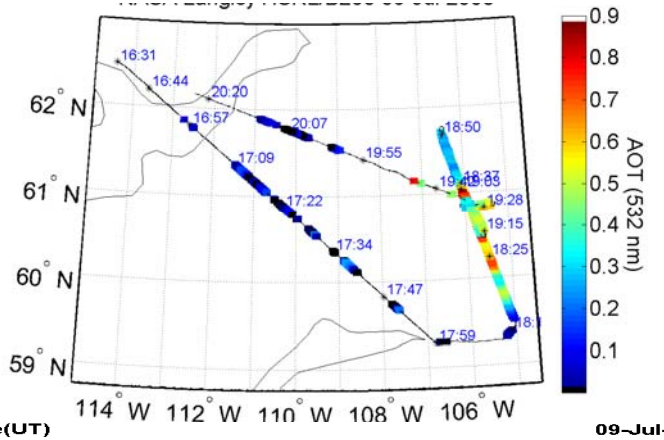
Initialized at 3km
Valid at 0Z 7/13

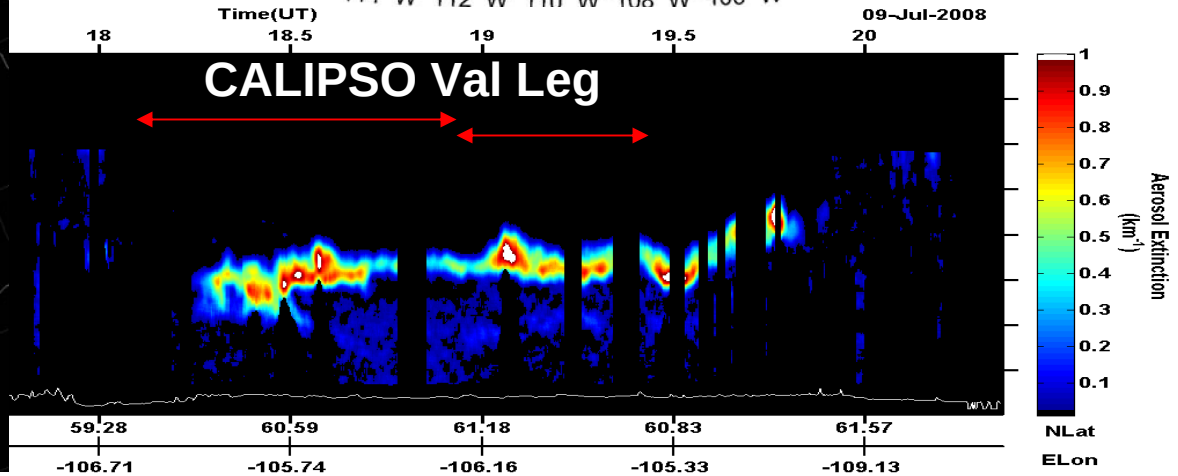


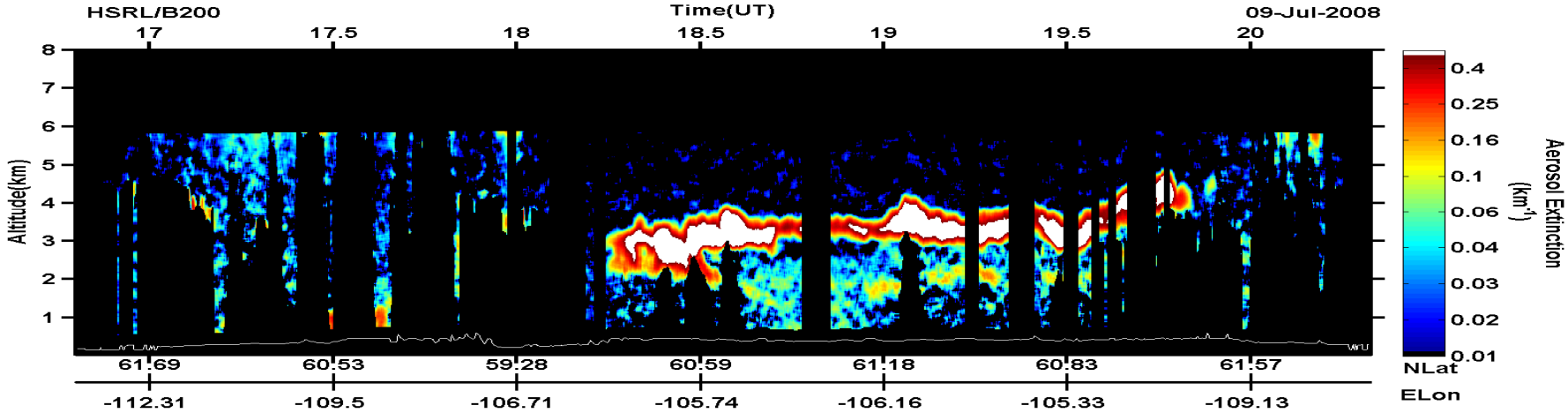


NASA Langley HSRL/B200 09-Jul-2008

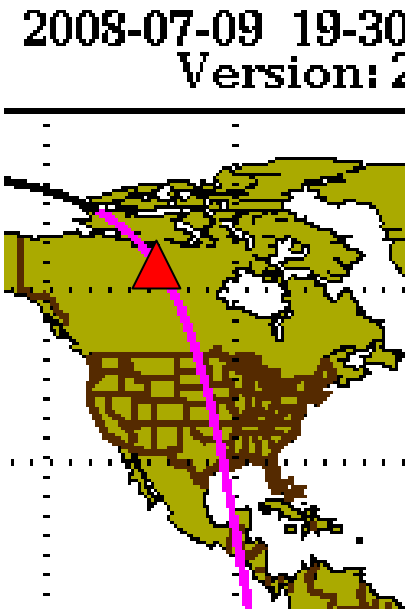


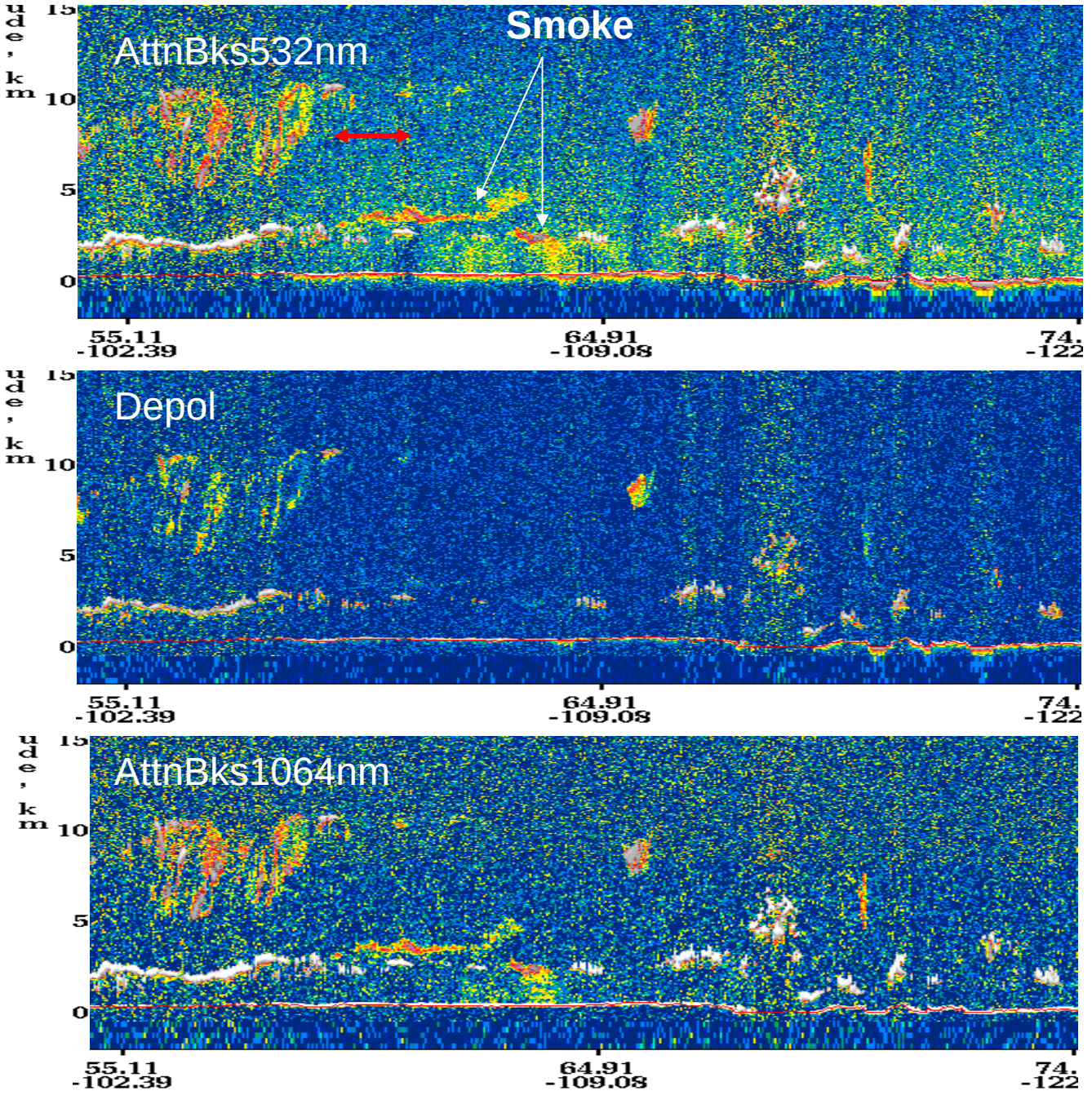






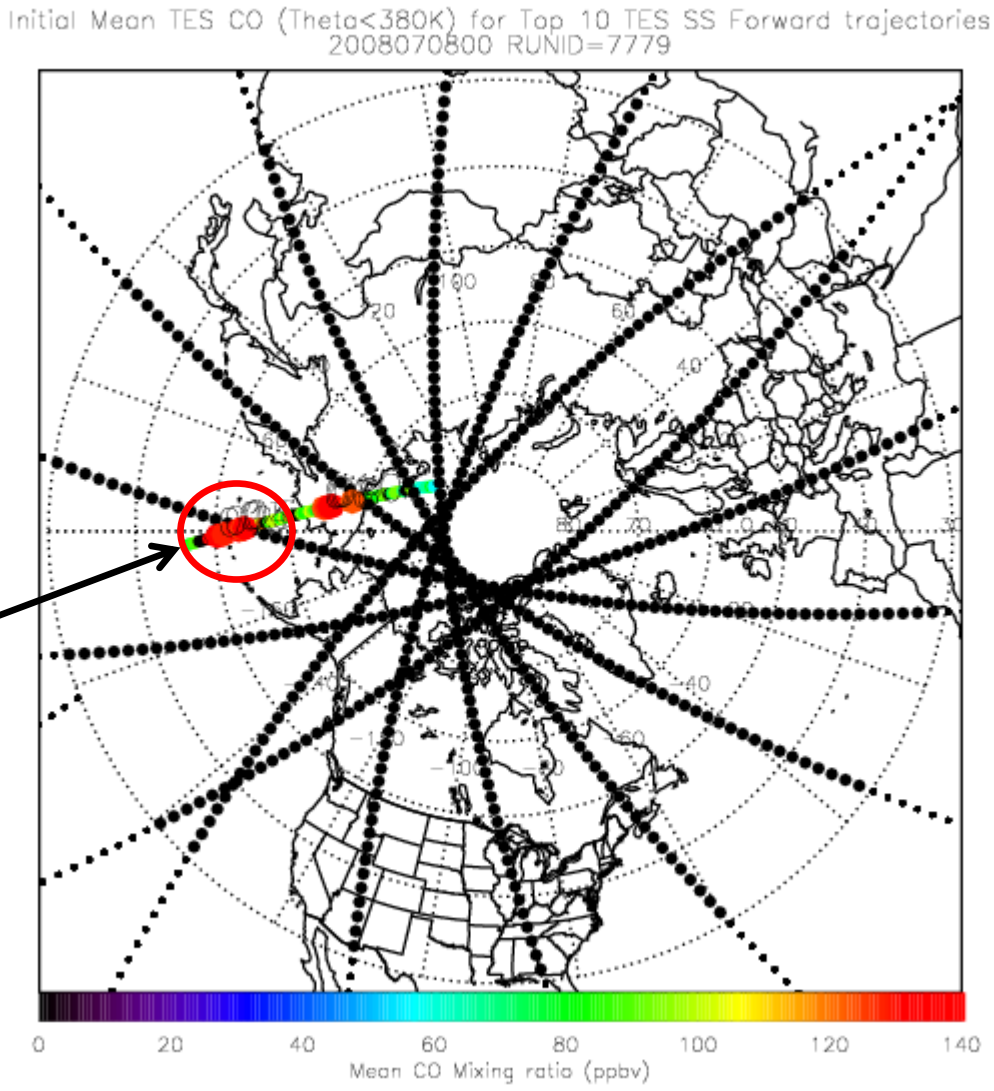
CALIPSO 7/9
19:30Z



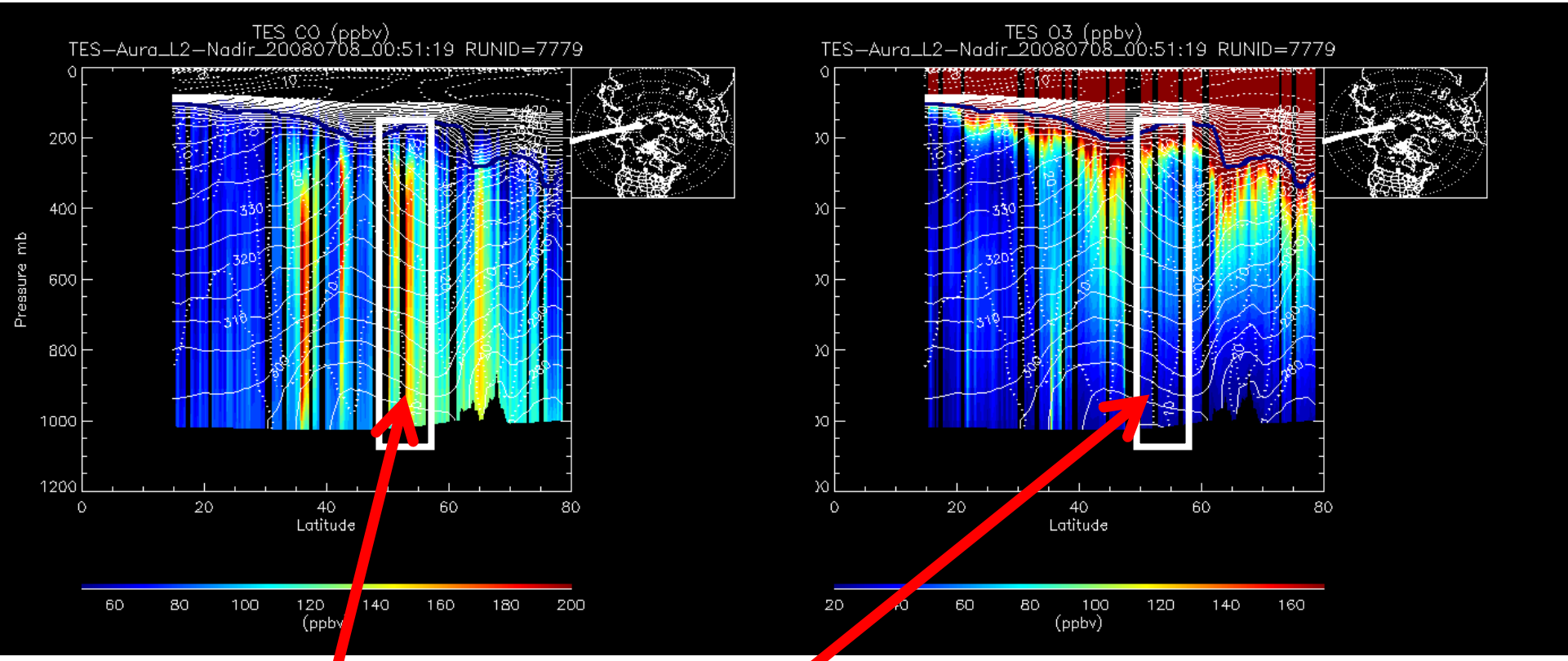


TES CO Mean Column Concentration from SS orbit 7779 (07/08)

This profile is the focus of the trajectory studies in the following slides

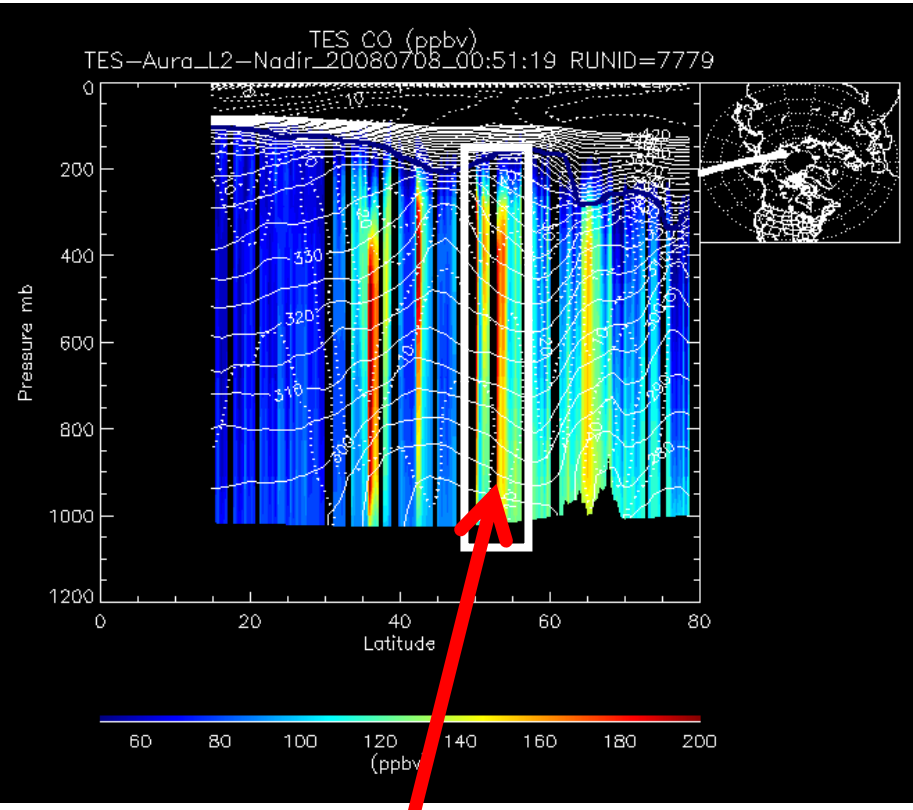


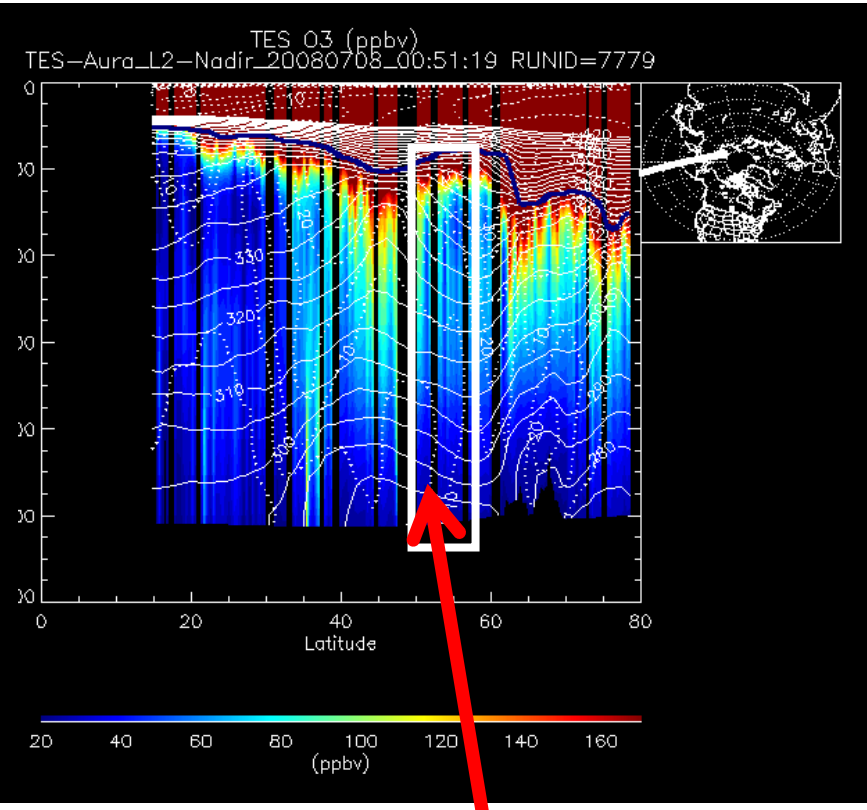
TES CO (left) and O3 (right) curtains from SS orbit 7779 (07/08)



This profile is the focus of the trajectory studies in the following slides

TES CO (left) and O3 (right) curtains from SS orbit 7779 (07/08)



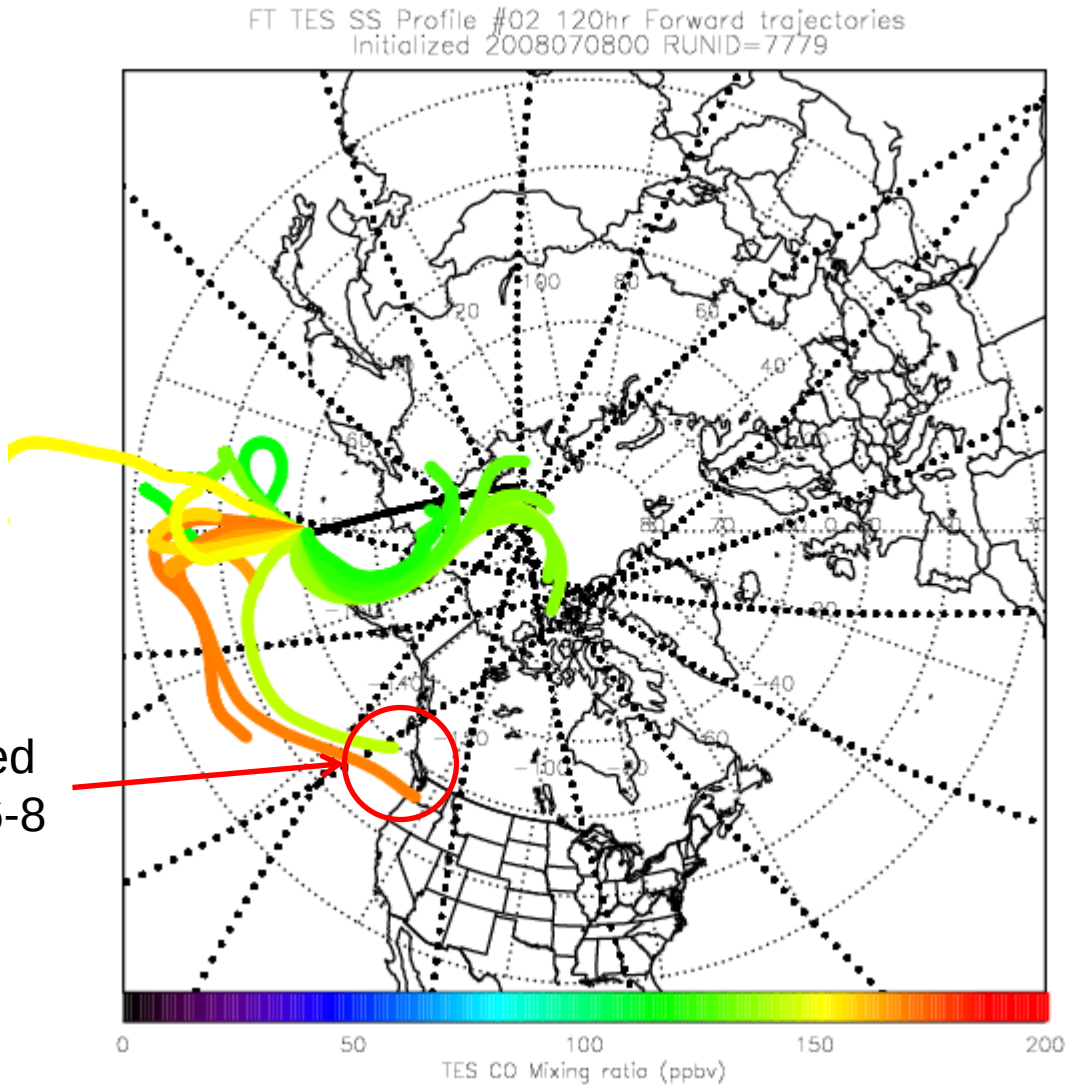


Enhancement in CO which seems to be associated with North Asian outflow

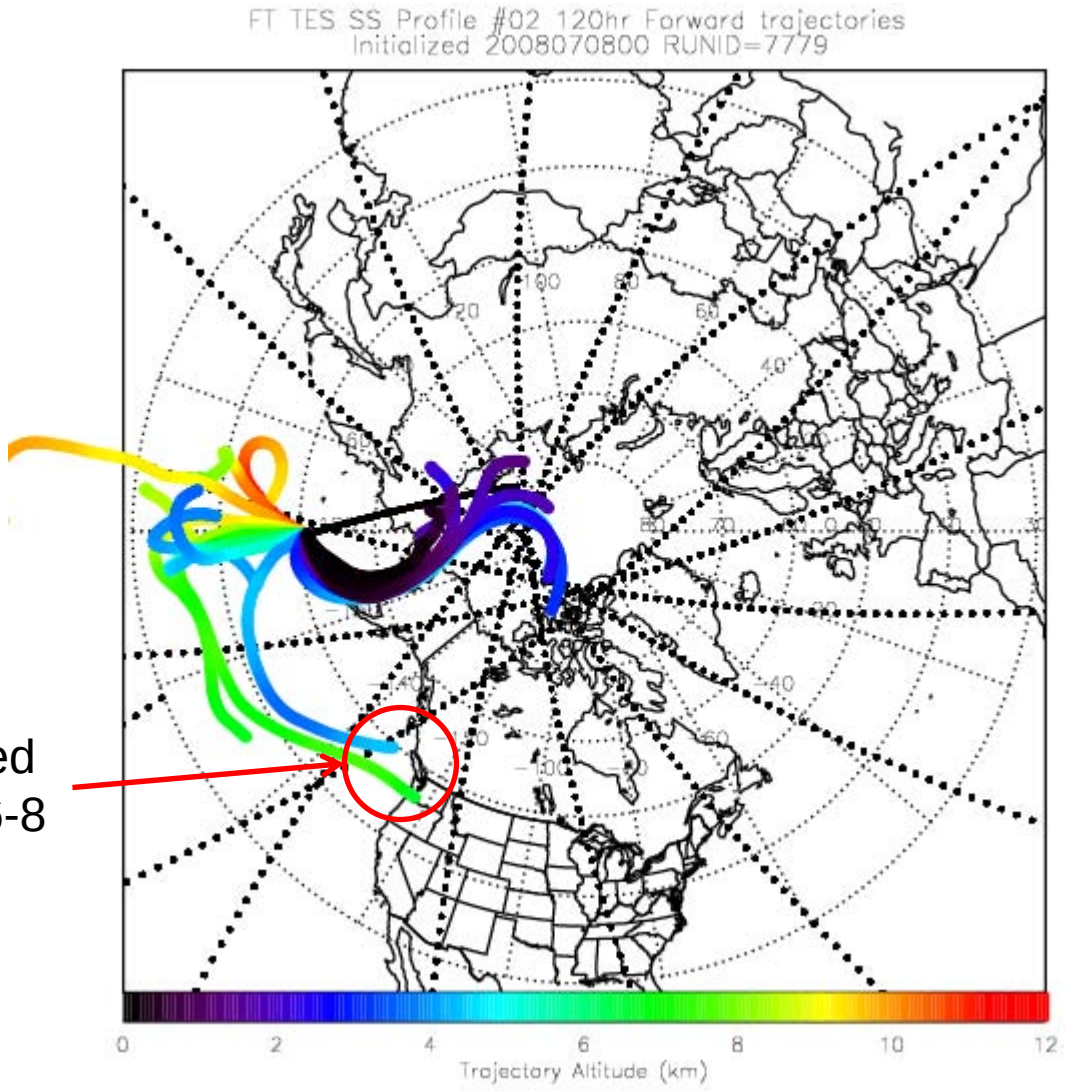
Apparent O3 minima within this region of enhanced CO.

TES SS 7779 Forward Trajectories “Profile 2” Valid 00Z 07/13 (07/12 Dryden return flight)

TES/RAQMS predicts enhanced CO air mass at 6-8 km



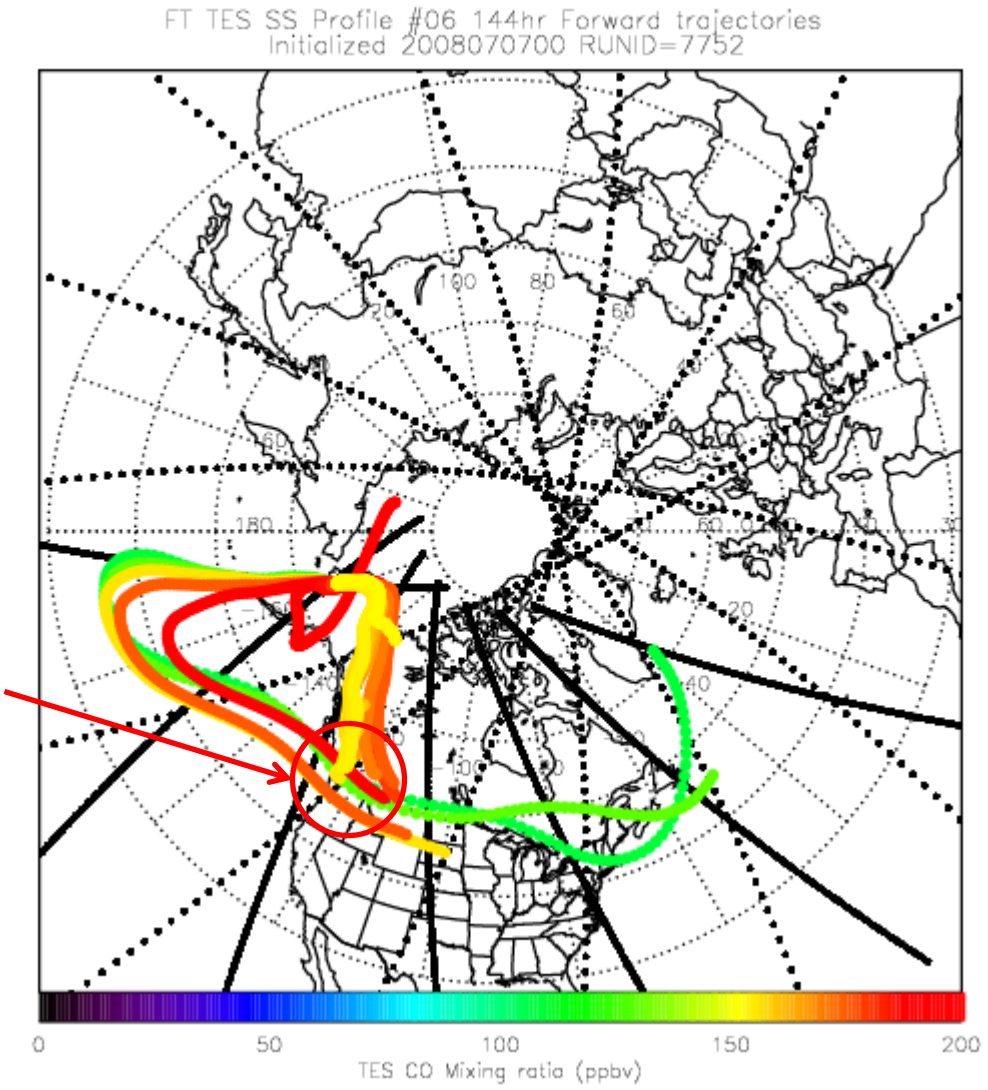
TES SS 7779 Forward Trajectories “Profile 2” Valid 00Z 07/13 (07/12 Dryden return flight)



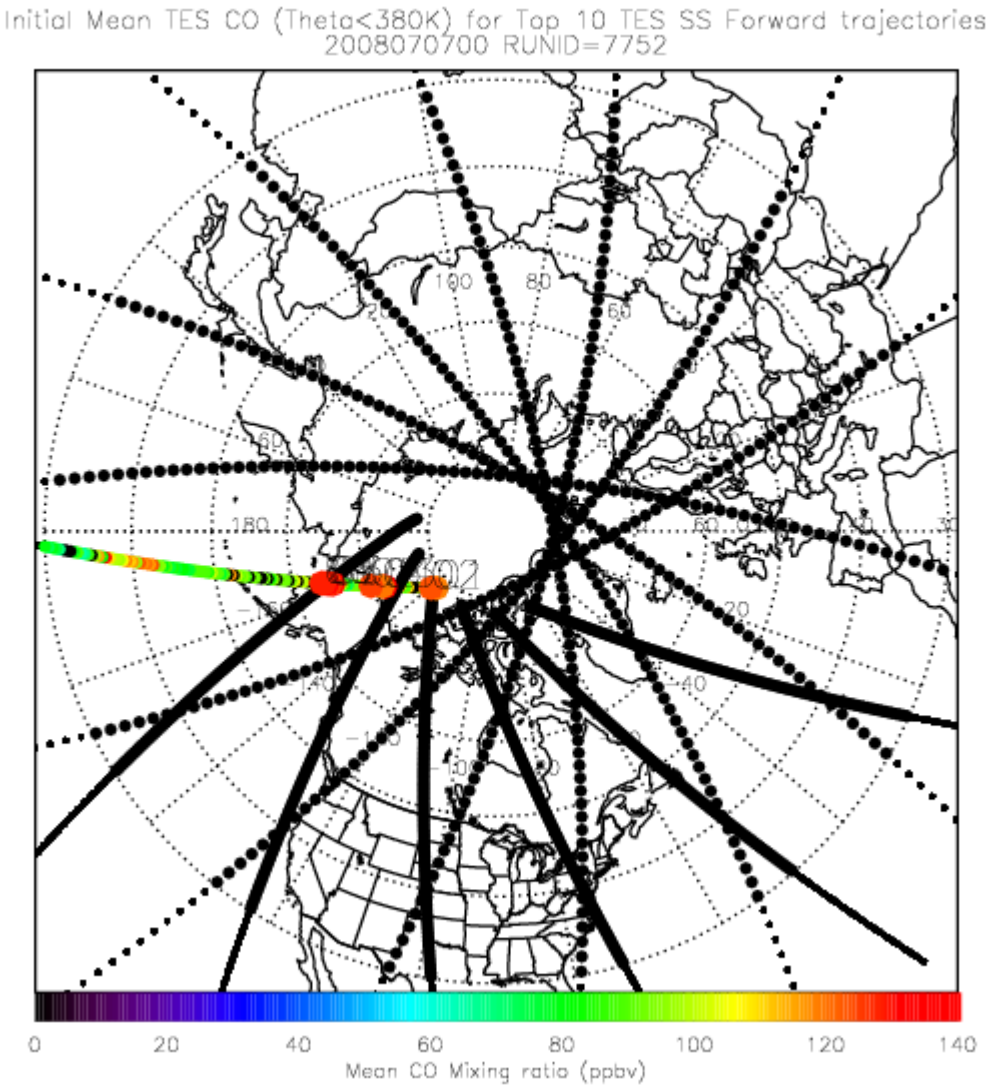
TES/RAQMS predicts enhanced CO air mass at 6-8 km

TES SS 7752 Forward Trajectories “Profile 9” Valid 00Z 07/13 (07/12 Dryden Transit)

TES+RAQMS predicts confluence of pollution plumes at varying altitude within this region on the 12th.

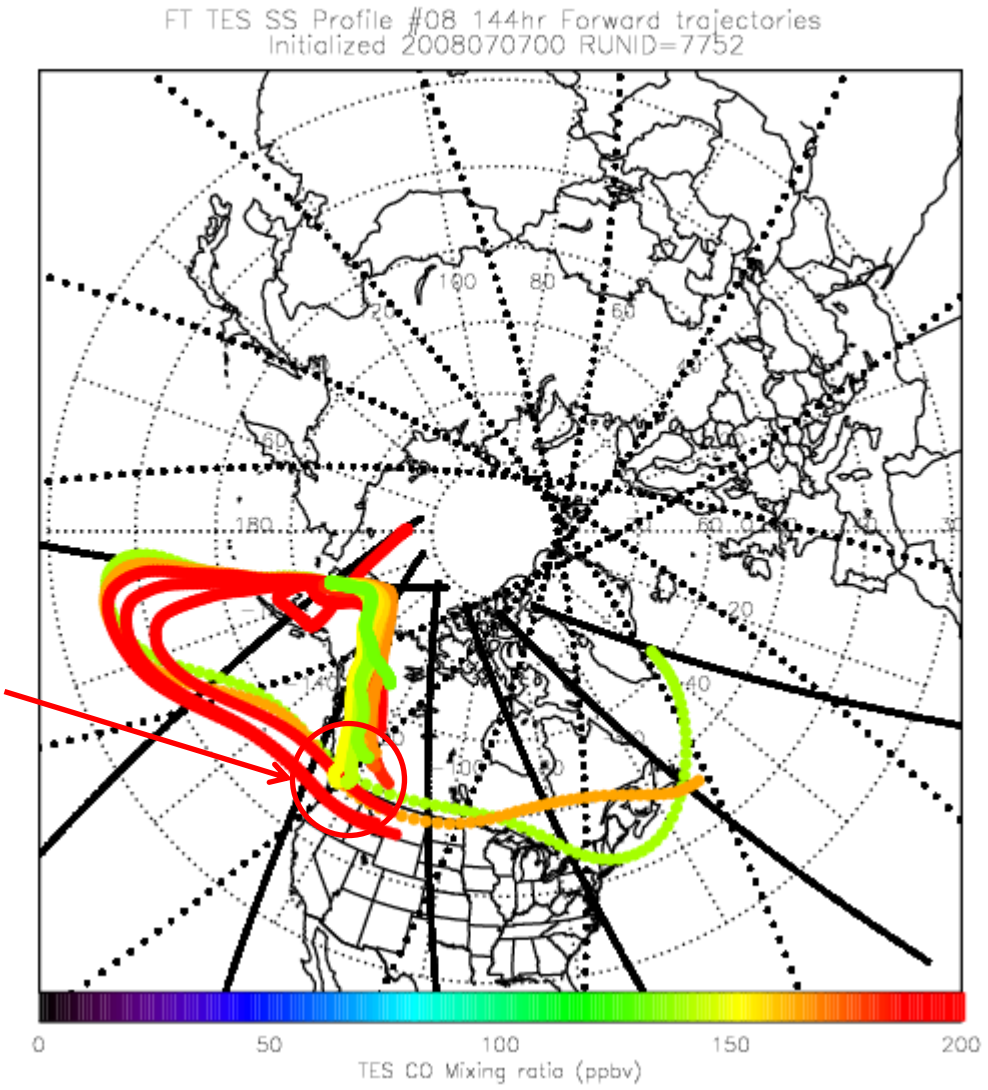


TES CO Mean Column Concentration from SS orbit 7752 (07/07)



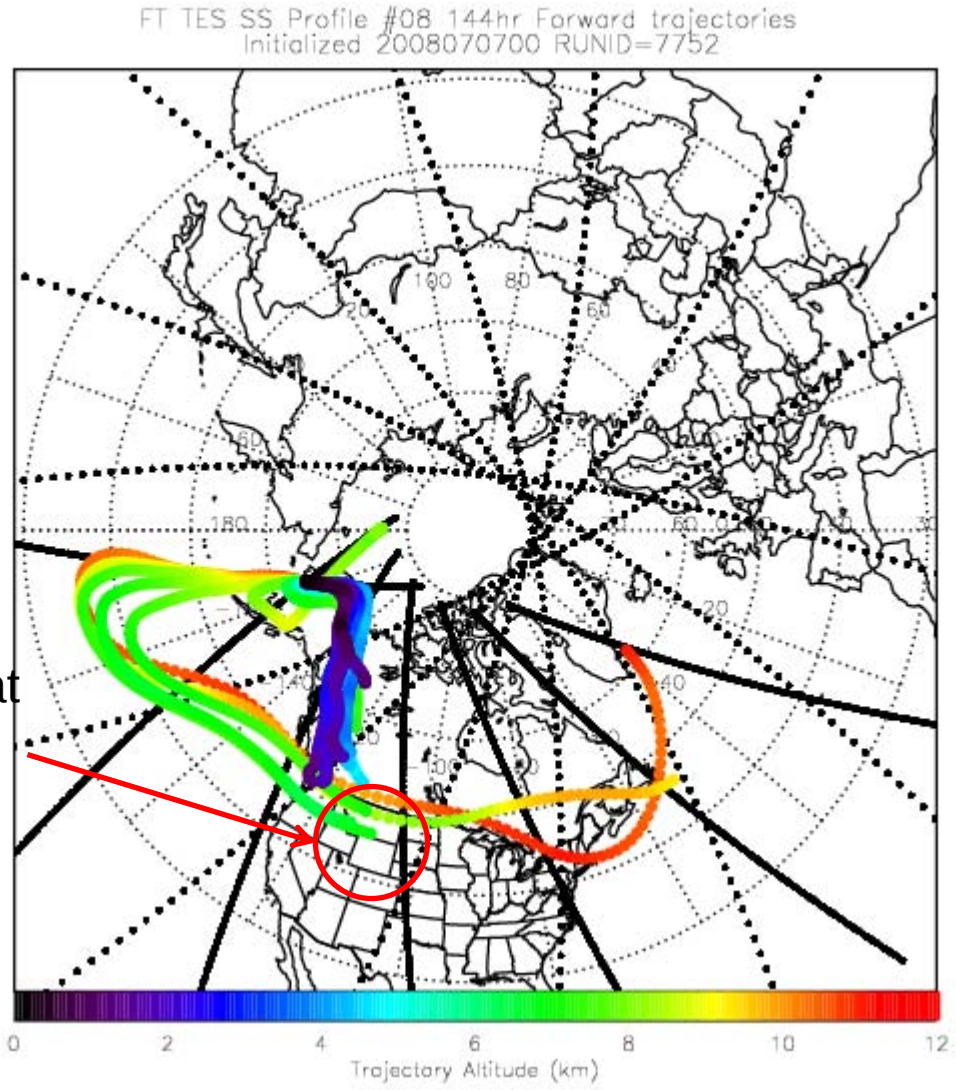
TES SS 7752 Forward Trajectories “Profile 9” Valid 00Z 07/13 (07/12 Dryden Transit)

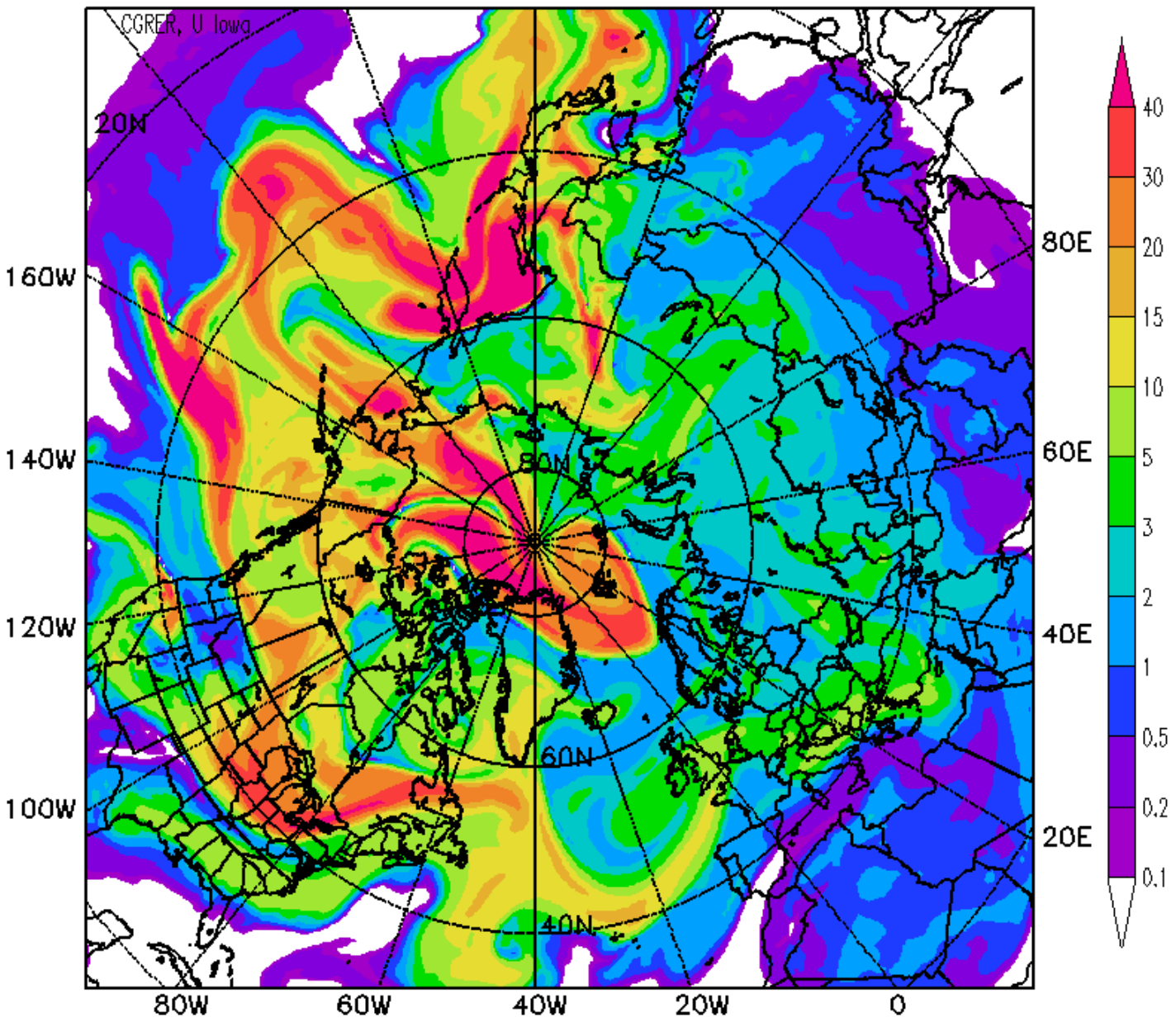
TES+RAQMS predicts confluence of pollution plumes at varying altitude within this region on the 12th.



TES SS 7752 Forward Trajectories “Profile 9” Valid 00Z 07/13 (07/12 Dryden Transit)

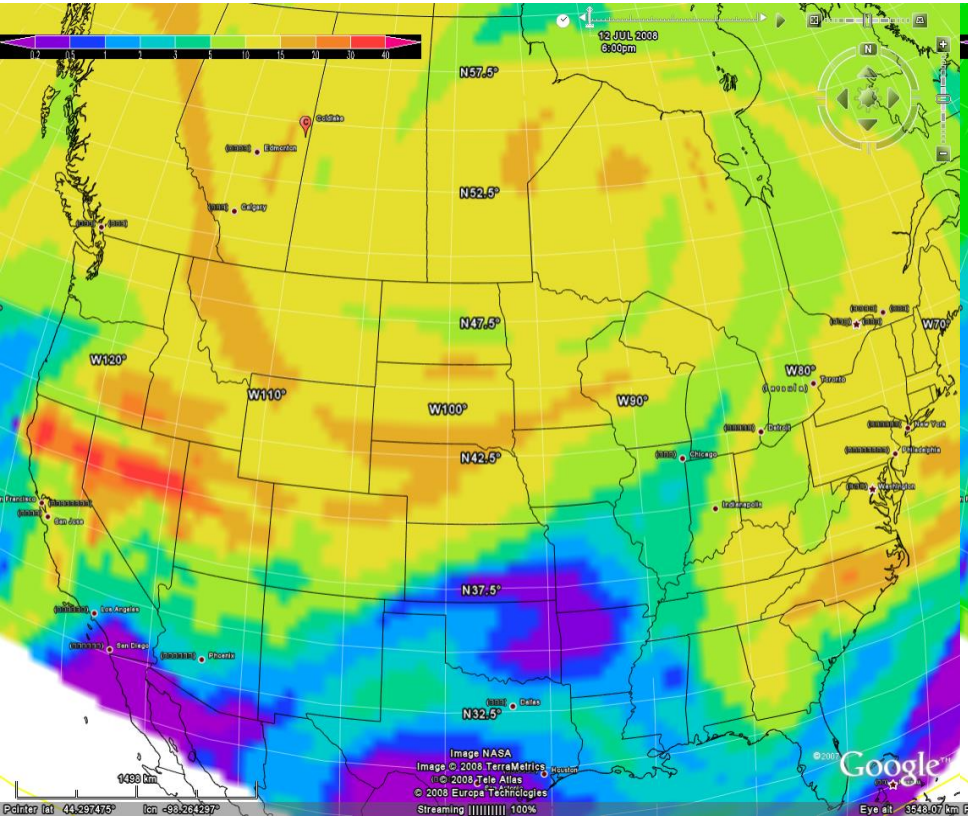
TES+RAQMS predicts confluence of pollution plumes at varying altitude within this region on the 12th.



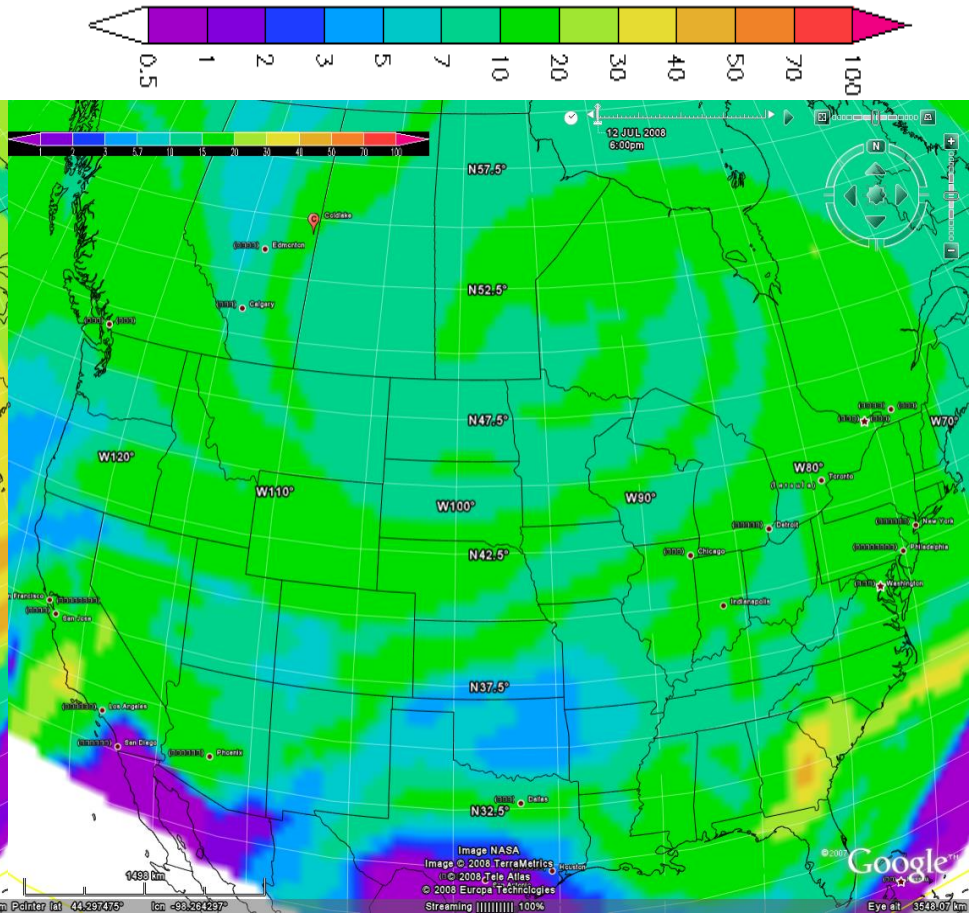

Simulated BB_CO_(ppbv) in the 5.5km layer
at 0UTC, 07/10/2008
CGRER, U Iowa
20N
160W
140W
120W
100W
80N
60N
40N
80W
60W
40W
20W
0
80E
60E
40E
20E
40
30
20
15
10
5
3
2
1
0.5
0.2
0.1

5.5km layer

Biomass CO, 18Z, 7/12



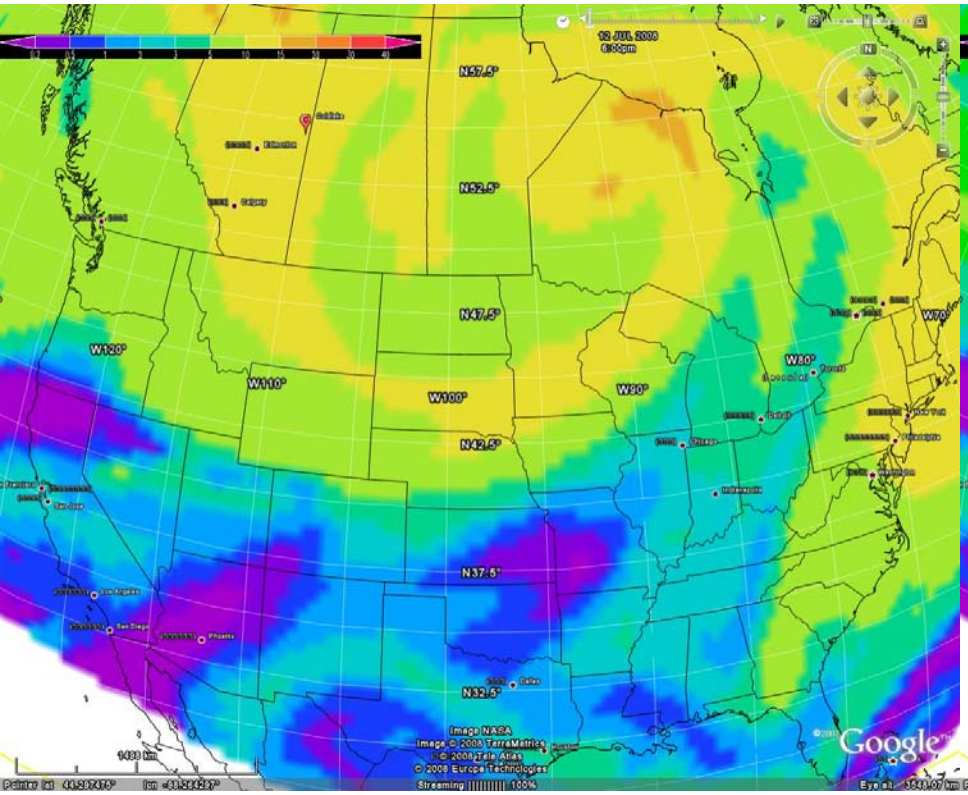
Anthropogenic CO, 18Z, 7/12

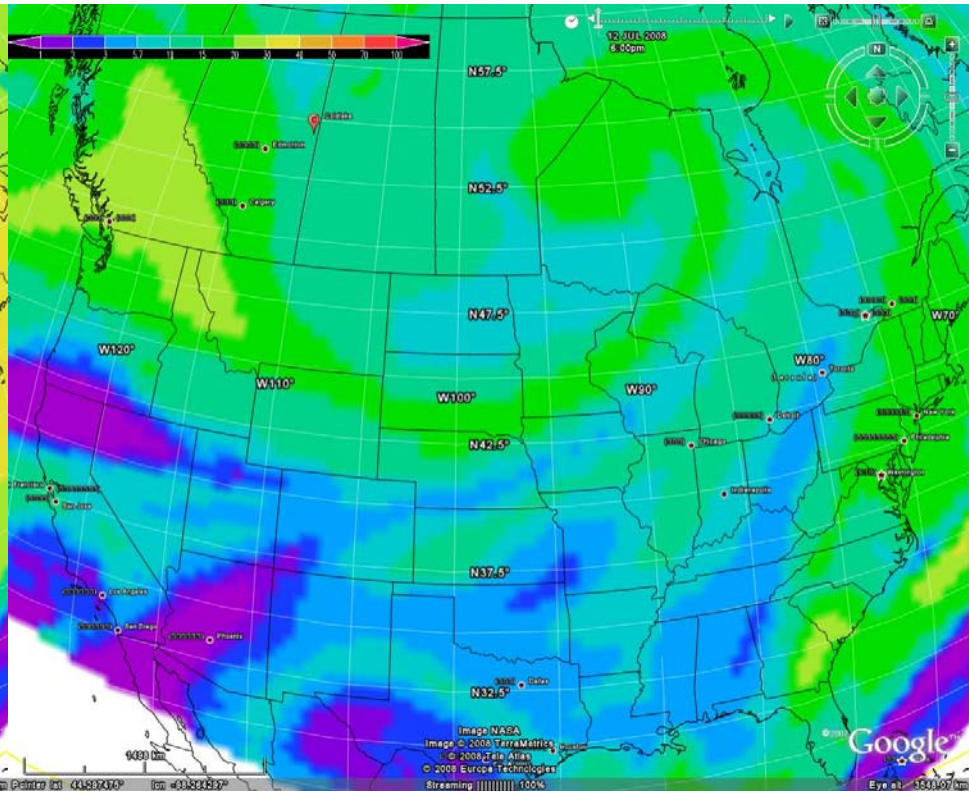


South Bound, Sample Siberian biomass mixed with Asian pollution in the northern legs and then sample California fires at the southern leg below 5km.

East Bound: Opportunity to sample aged biomass plumes behind the front (*including those sampled on July 10*) and pollution ahead of the front (mixed with aged fires)

8.5km layer

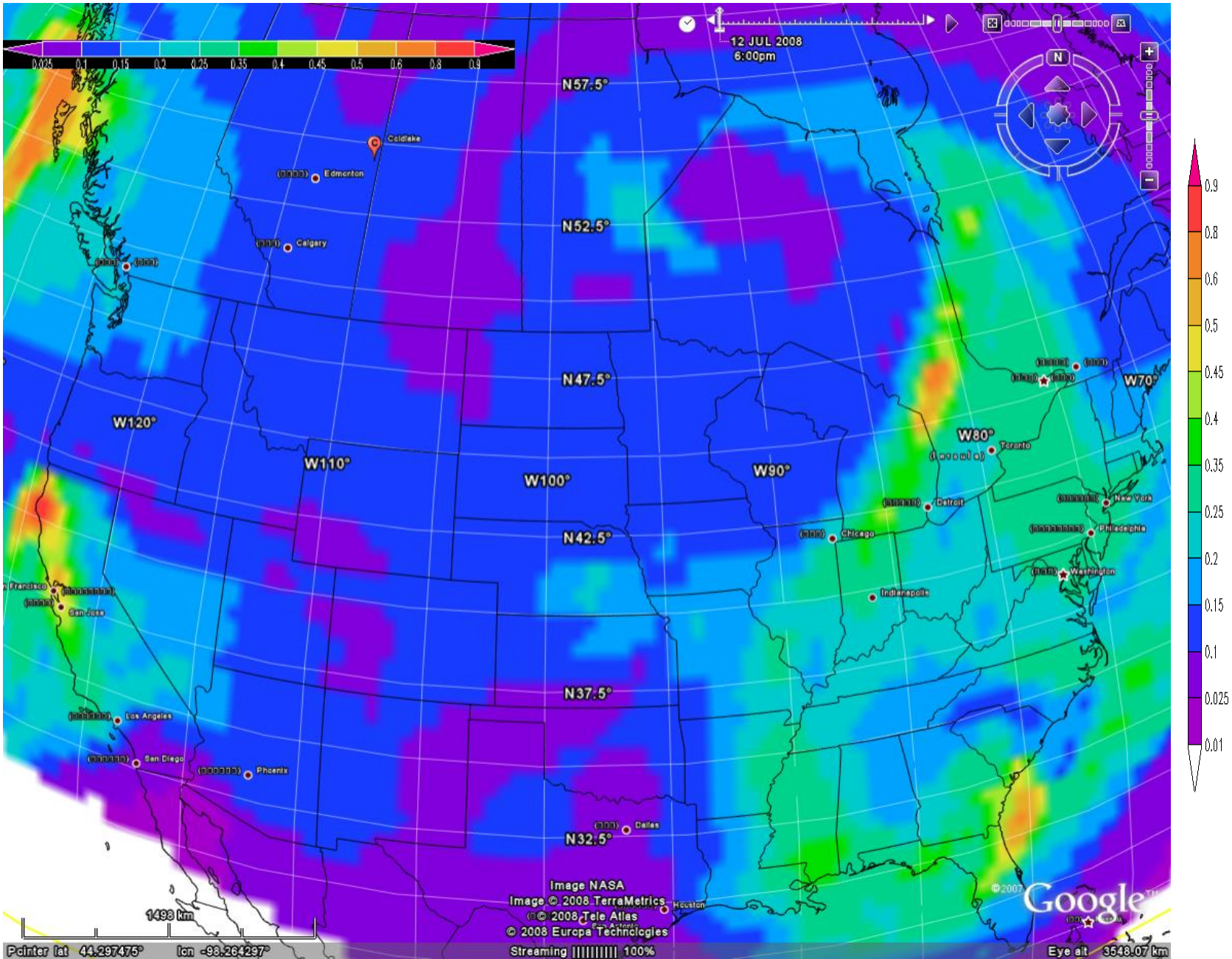




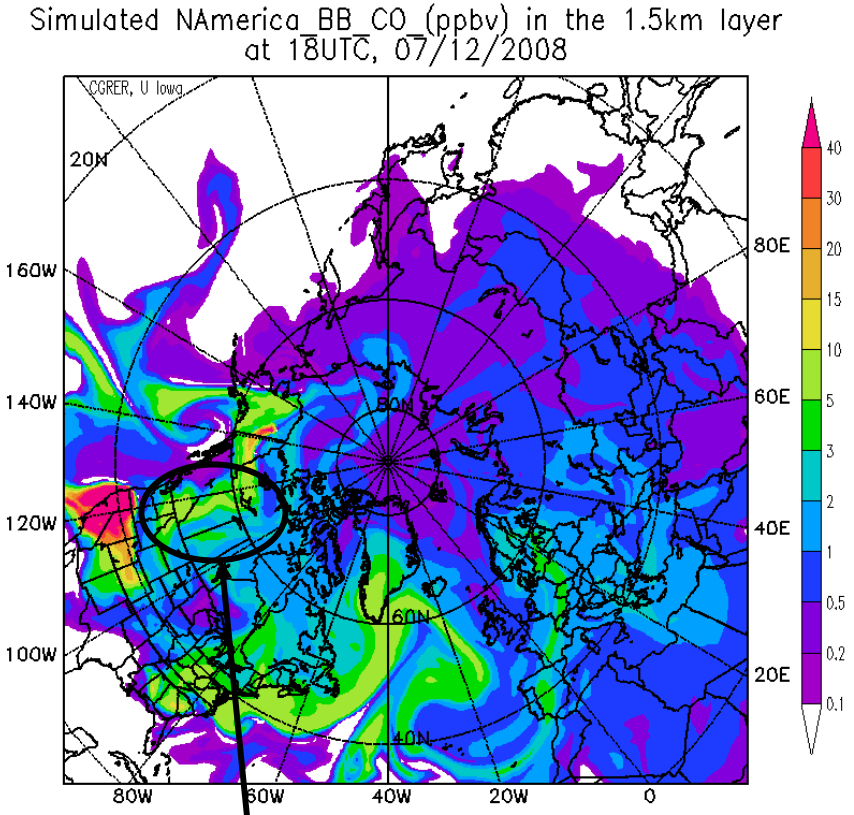
Biomass CO, 18Z, 7/12

Anthropogenic CO, 18Z, 7/12

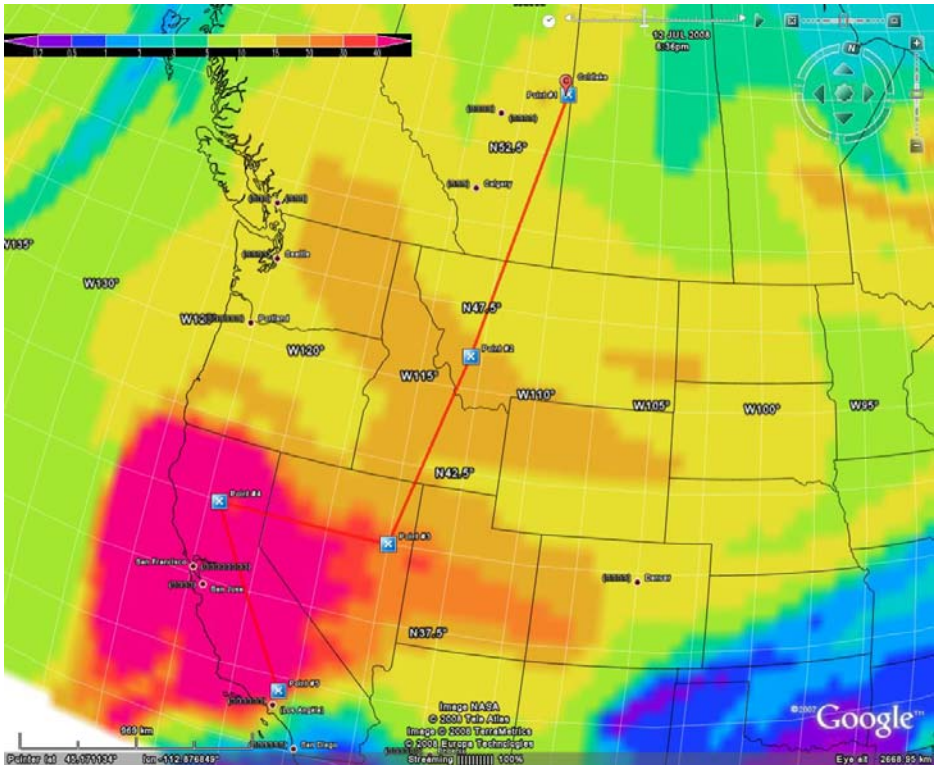
AOD, 18Z, 7/12

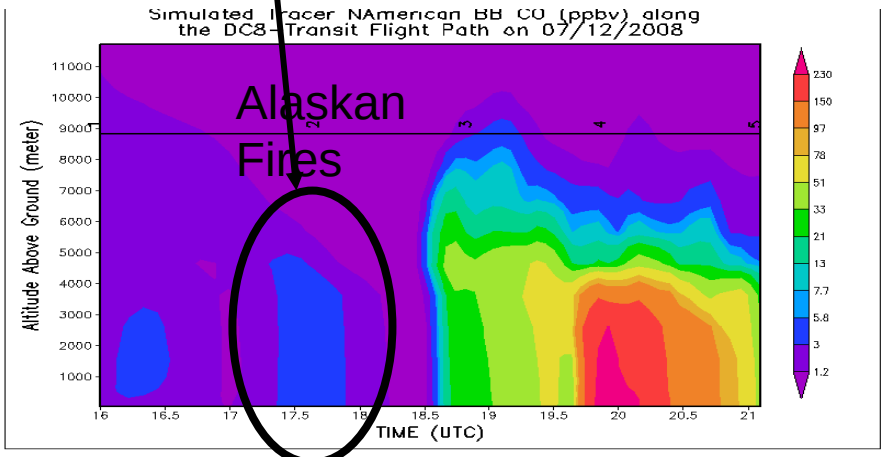

0.025 0.1 0.15 0.2 0.25 0.35 0.4 0.45 0.5 0.6 0.8 0.9
12 JUL 2008
6:00pm
N57.5°
N52.5°
N47.5°
N42.5°
N37.5°
N32.5°
W120°
W110°
W100°
W90°
W80°
W70°
Coldlake
Edmonton
Calgary
Toronto
Detroit
Chicago
New York
Philadelphia
Washington
Indianapolis
Los Angeles
San Diego
Phoenix
Dallas
Houston
0.9
0.8
0.6
0.5
0.45
0.4
0.35
0.25
0.2
0.15
0.1
0.025
0.01
1498 km
Image NASA
Image © 2008 TerraMetrics
© 2008 Tele Atlas
© 2008 Europa Technologies
Google
Pointer lat 44.297475° lon -98.264297°
Streaming 100%
Eye alt 3548.07 km

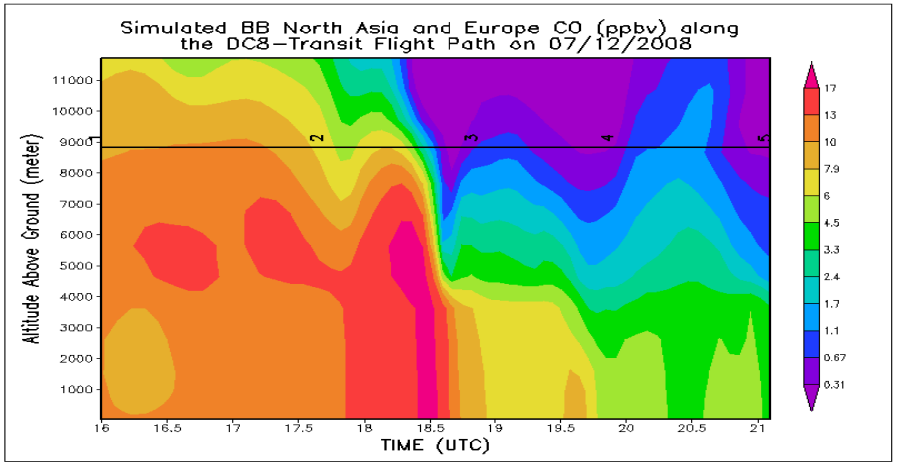
DC 8 Transit Home

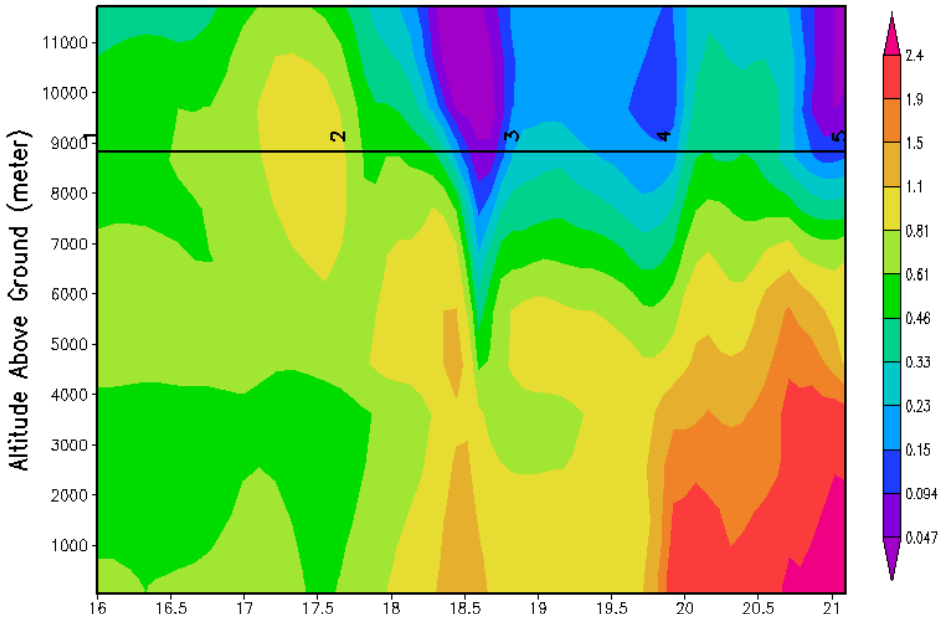


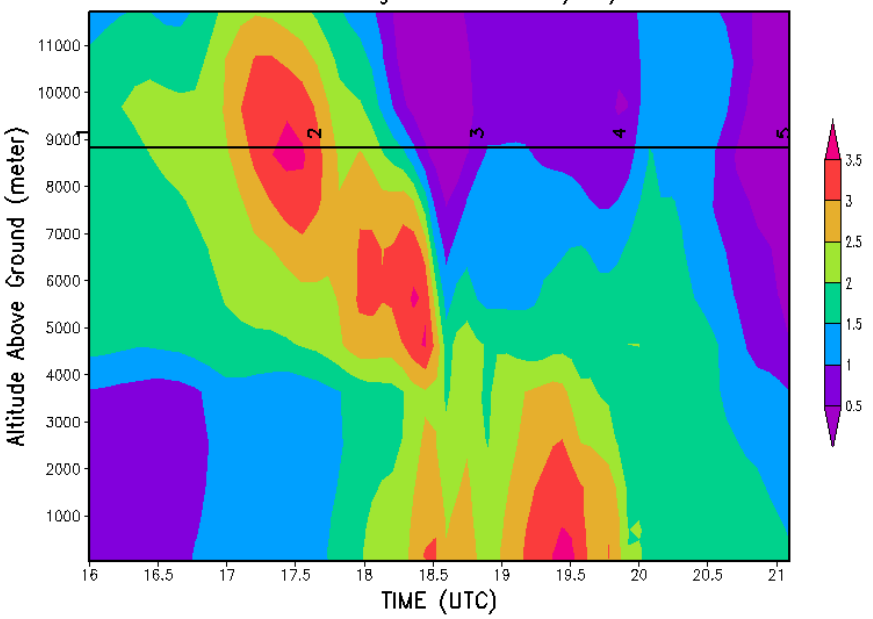
Biomass CO, 1.5 km

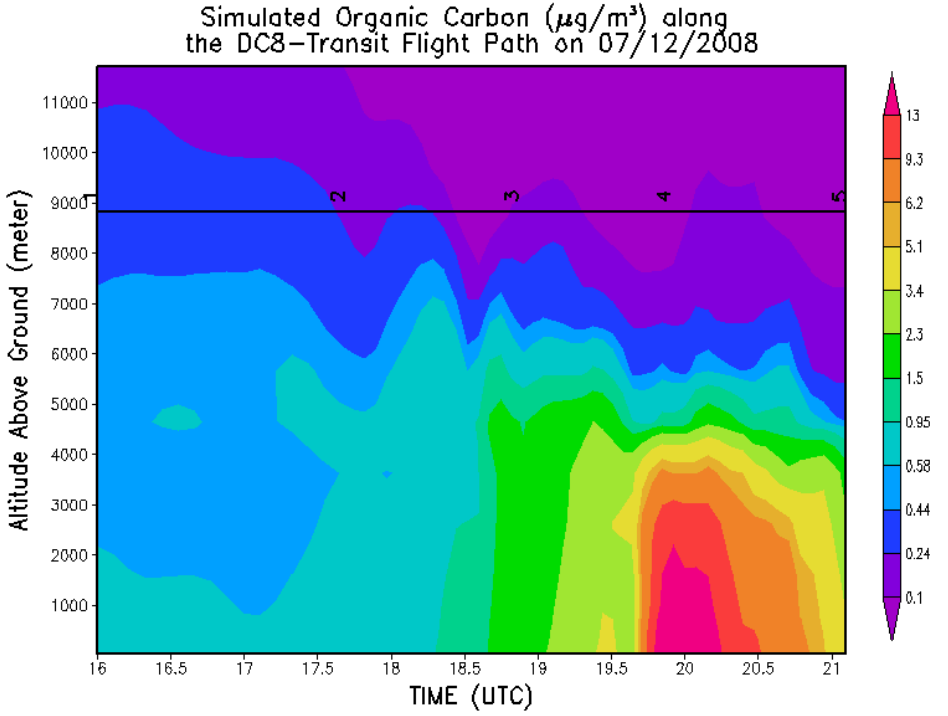


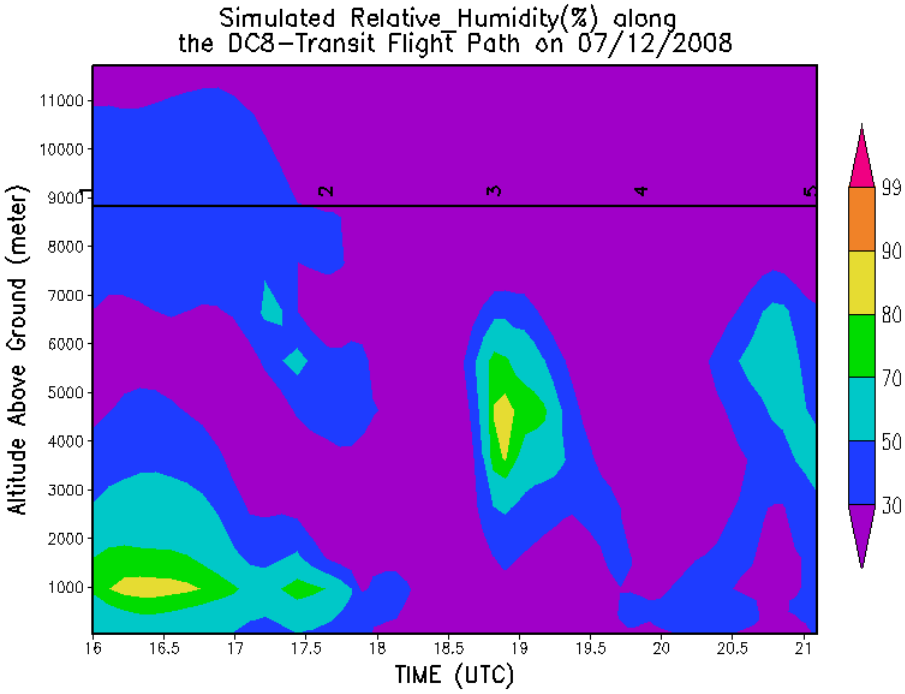


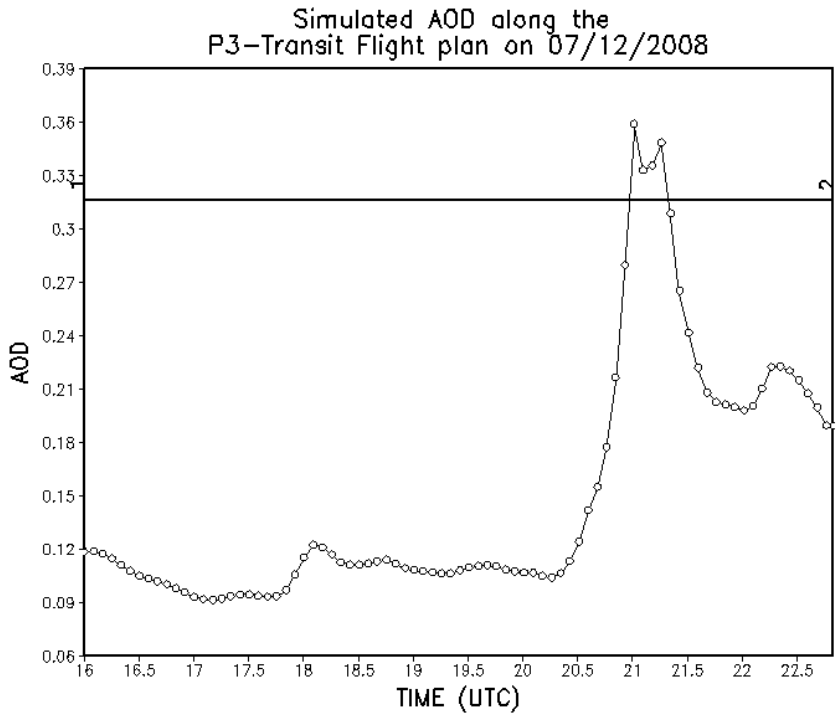


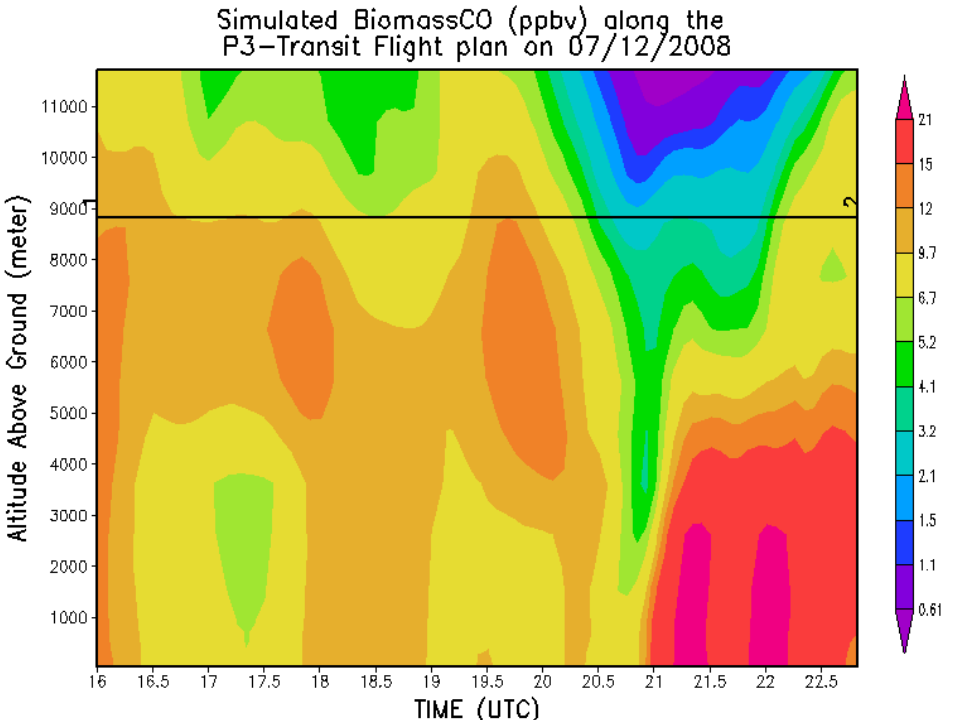

Simulated Total Sulfate (μg/m³) along
the DC8-Transit Flight Path on 07/12/2008
Altitude Above Ground (meter)
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
1
2
3
4
5
16
16.5
17
17.5
18
18.5
19
19.5
20
20.5
21
2.4
1.9
1.5
1.1
0.81
0.61
0.46
0.33
0.23
0.15
0.094
0.047

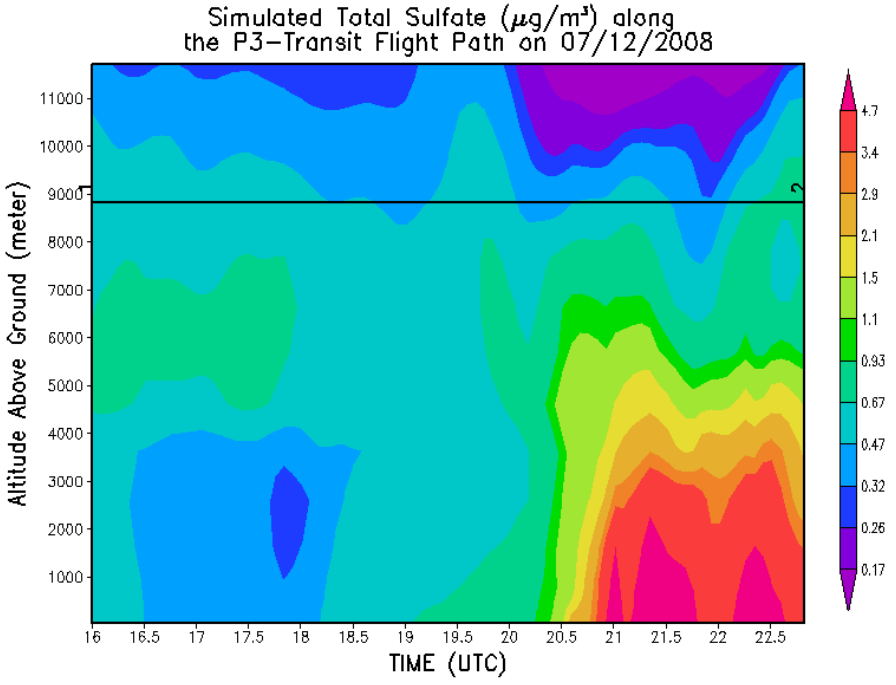

Simulated Dust (μg/m³) along the
DC8-Transit Flight Path on 07/12/2008
Altitude Above Ground (meter)
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
1
2
3
4
5
16
16.5
17
17.5
18
18.5
19
19.5
20
20.5
21
TIME (UTC)
3.5
3
2.5
2
1.5
1
0.5

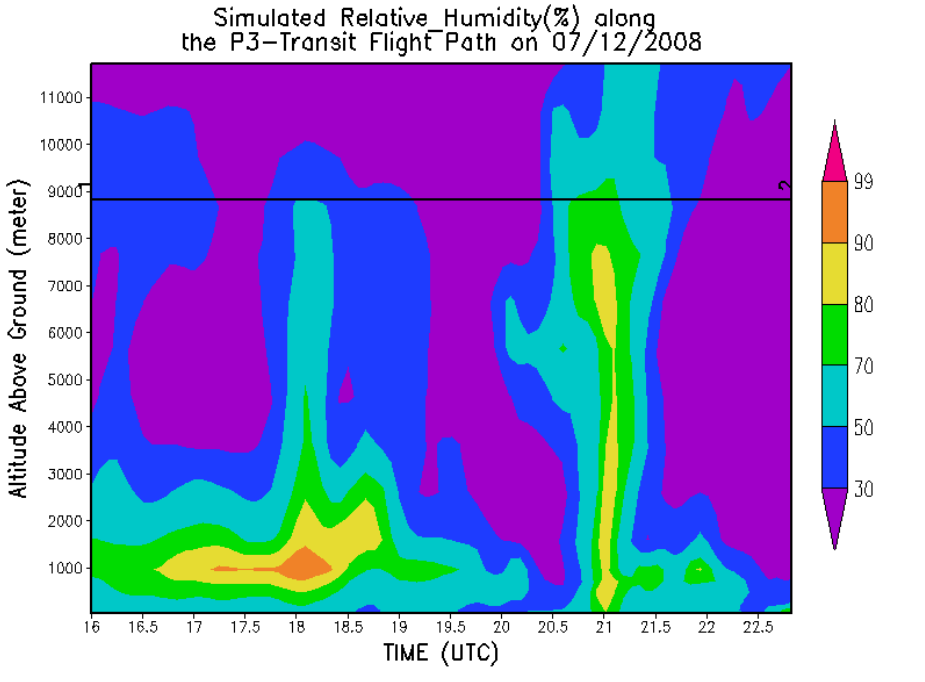

Simulated Organic Carbon (μg/m³) along
the DC8-Transit Flight Path on 07/12/2008
Altitude Above Ground (meter)
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
1
2
3
4
5
16
16.5
17
17.5
18
18.5
19
19.5
20
20.5
21
TIME (UTC)
13
9.3
6.2
5.1
3.4
2.3
1.5
0.95
0.58
0.44
0.24
0.1


Simulated Relative_Humidity(%) along
the DC8-Transit Flight Path on 07/12/2008
Altitude Above Ground (meter)
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
1
2
3
4
5
16
16.5
17
17.5
18
18.5
19
19.5
20
20.5
21
TIME (UTC)
99
90
80
70
50
30


Simulated AOD along the
P3-Transit Flight plan on 07/12/2008
AOD
TIME (UTC)


Simulated BiomassCO (ppbv) along the
P3-Transit Flight plan on 07/12/2008
Altitude Above Ground (meter)
TIME (UTC)

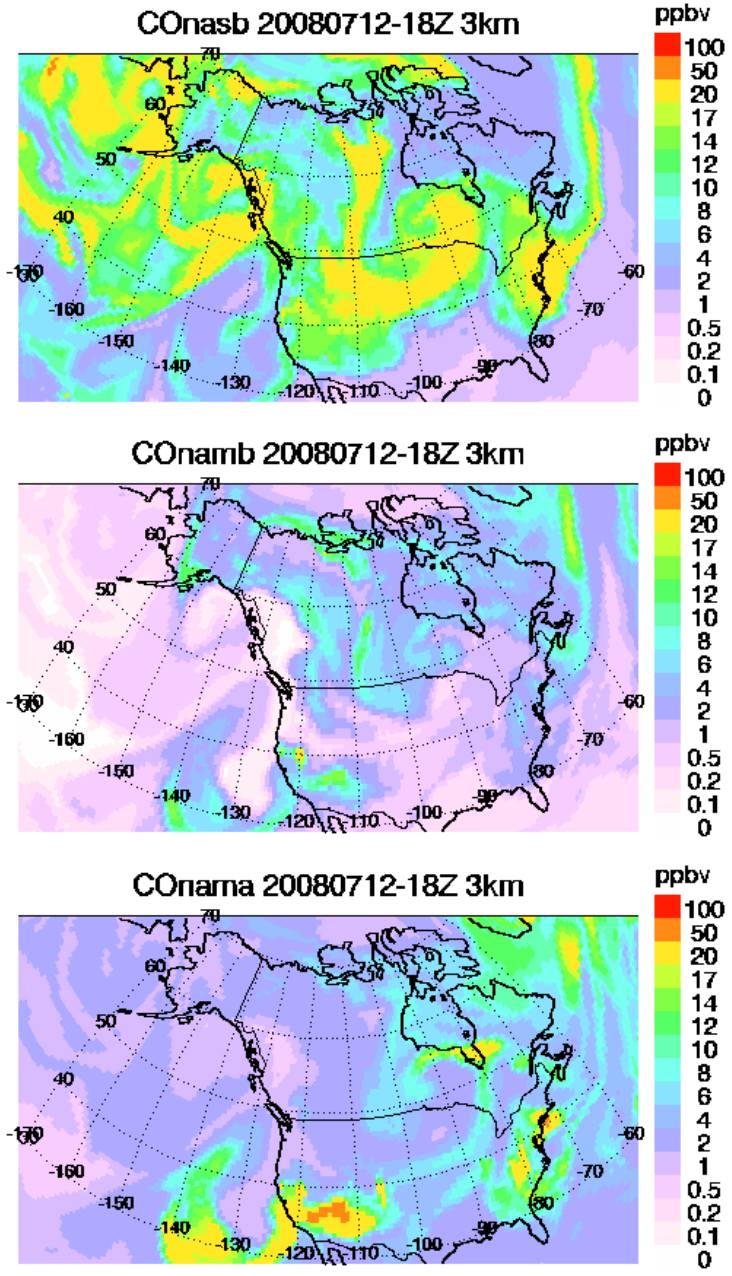

Simulated Total Sulfate (μg/m³) along
the P3-Transit Flight Path on 07/12/2008
Altitude Above Ground (meter)
TIME (UTC)


Simulated Relative_Humidity(%) along
the P3-Transit Flight Path on 07/12/2008
Altitude Above Ground (meter)
TIME (UTC)

MOZART Fx
July 12

3 km

6 km



CO Nasia BB

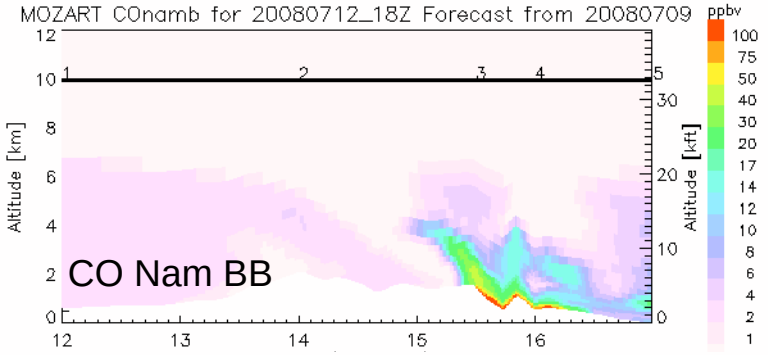
CO Nam BB

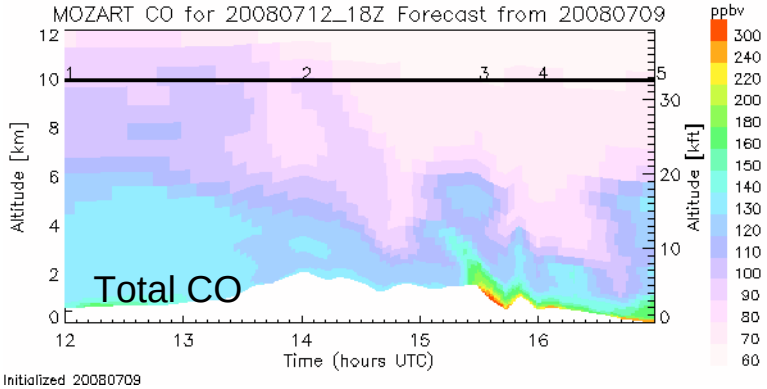
CO Nam Anthro

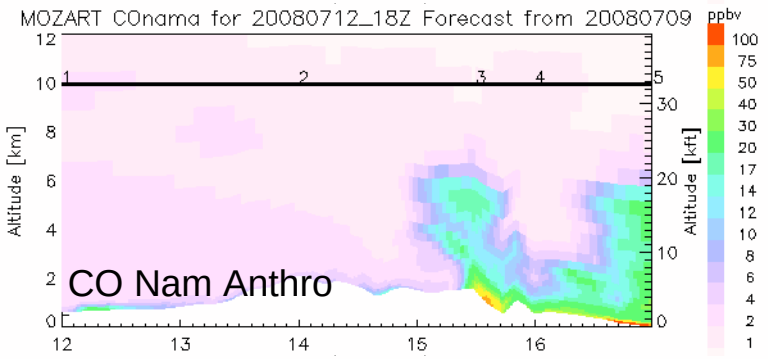
MOZART Forecast from 20080709

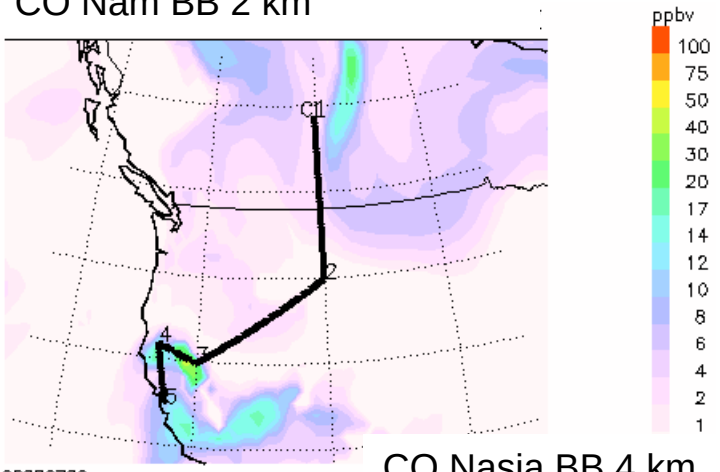
MOZART Forecast from 20080709

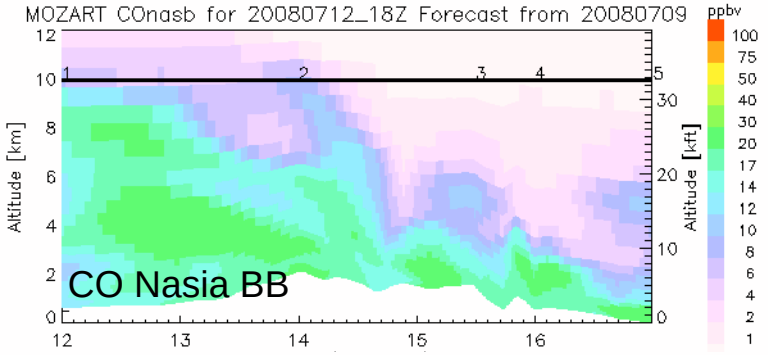
DC-8 Transit
July 12
MOZART Fx

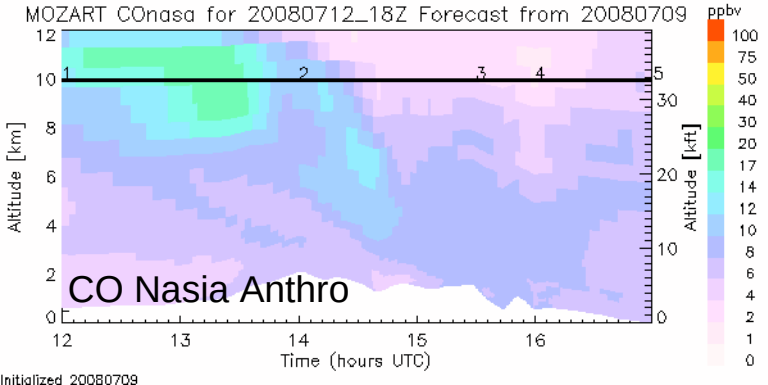


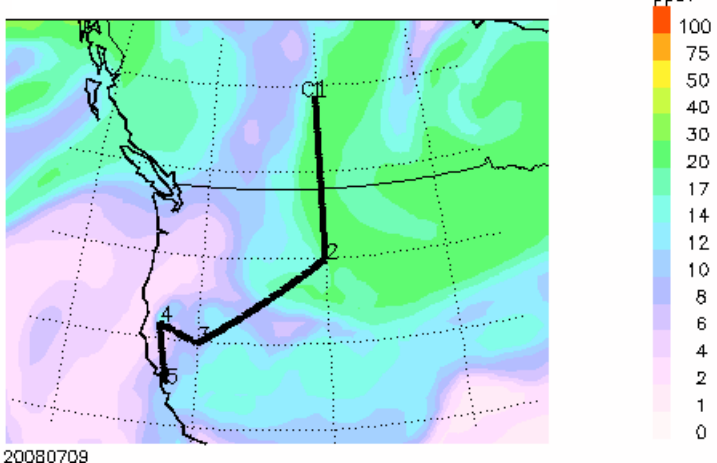




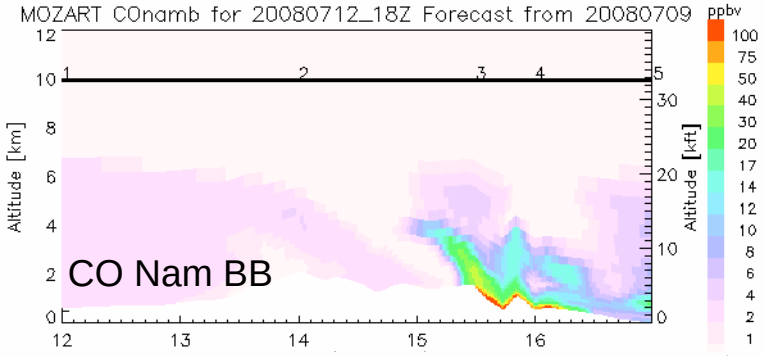


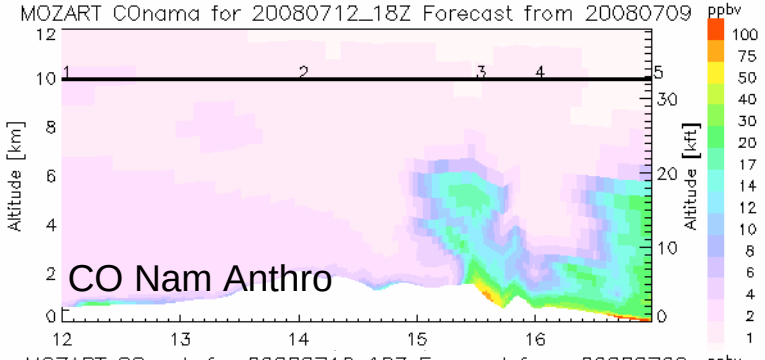


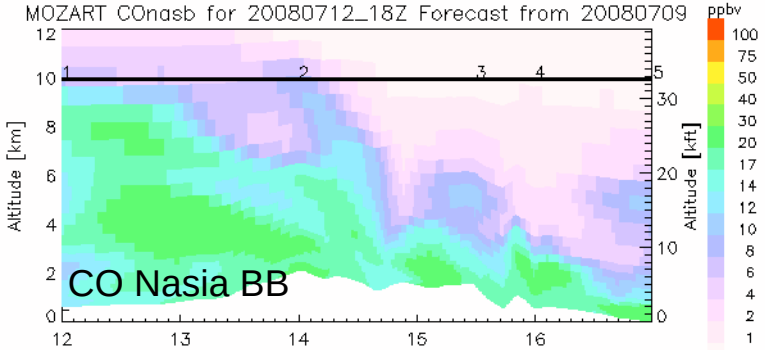


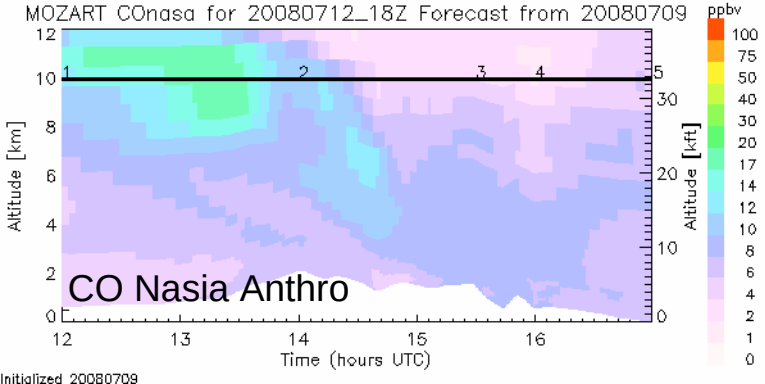


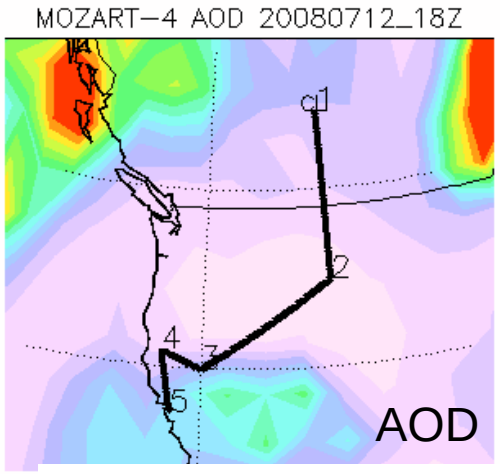
DC-8 Transit
July 12
MOZART Fx

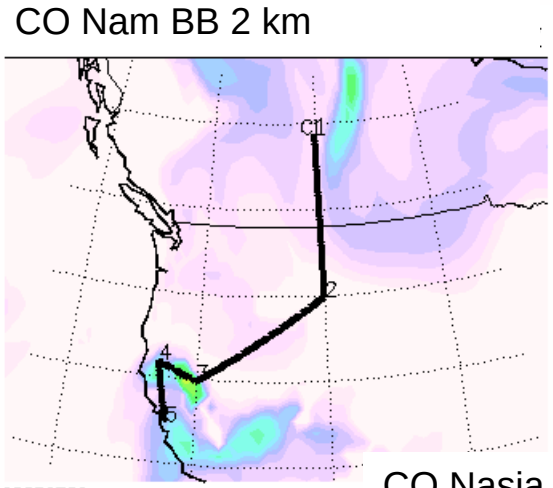


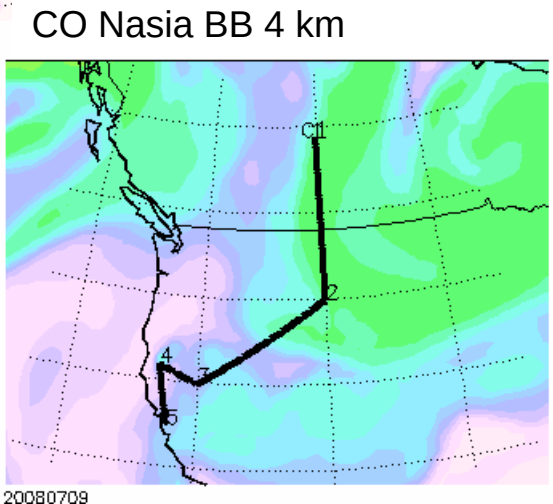




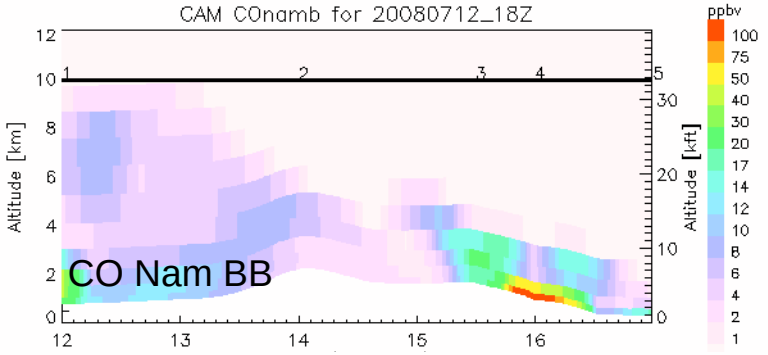


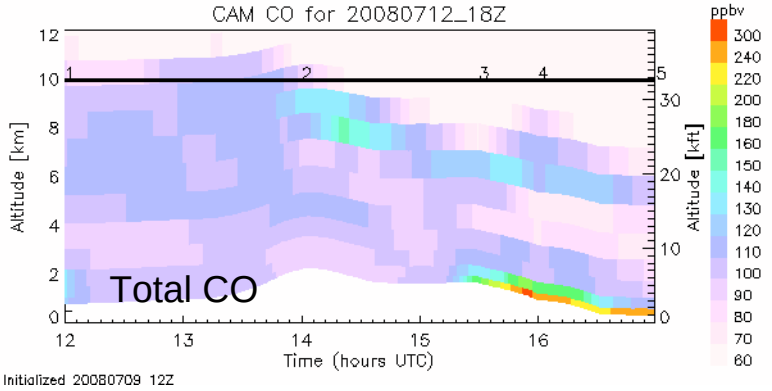


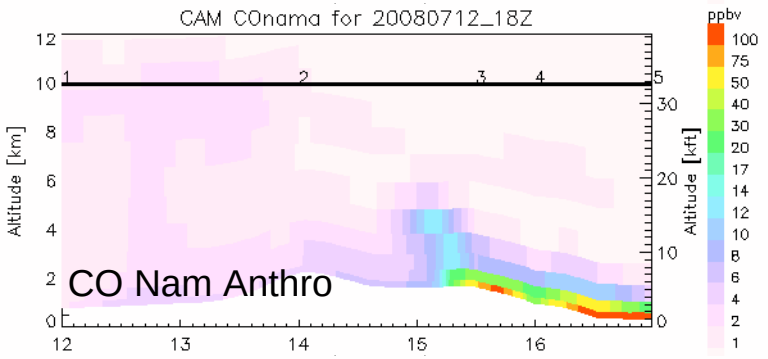


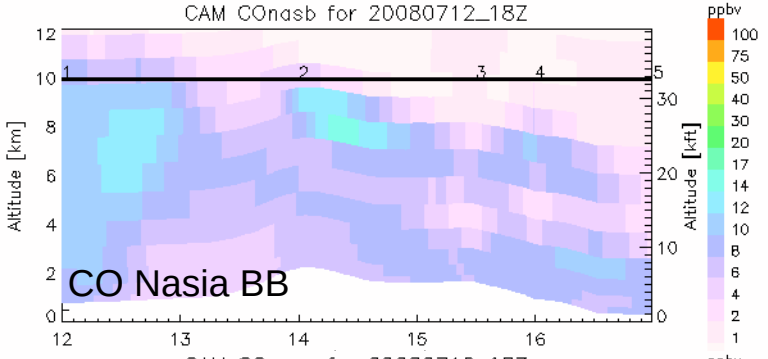


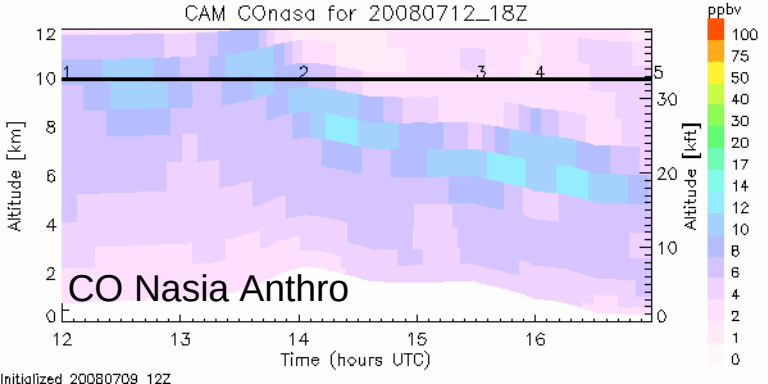
DC-8 Transit
July 12
CAM-Chem Fx



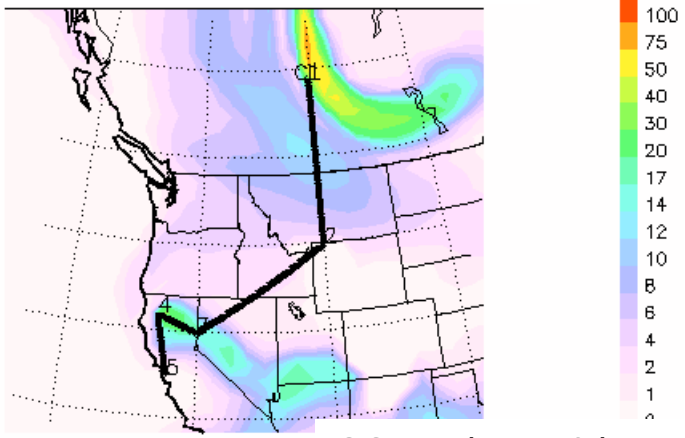




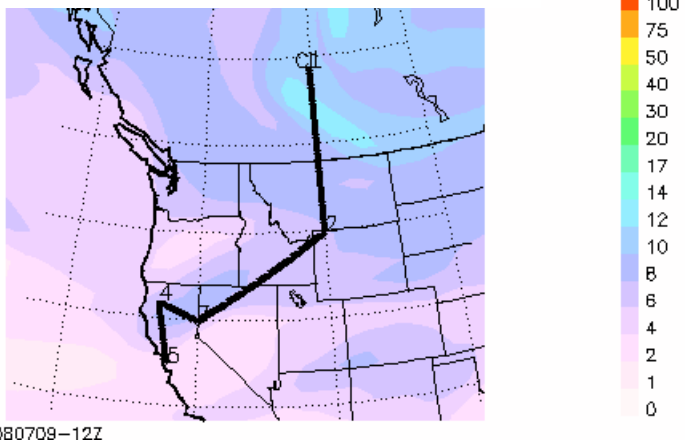




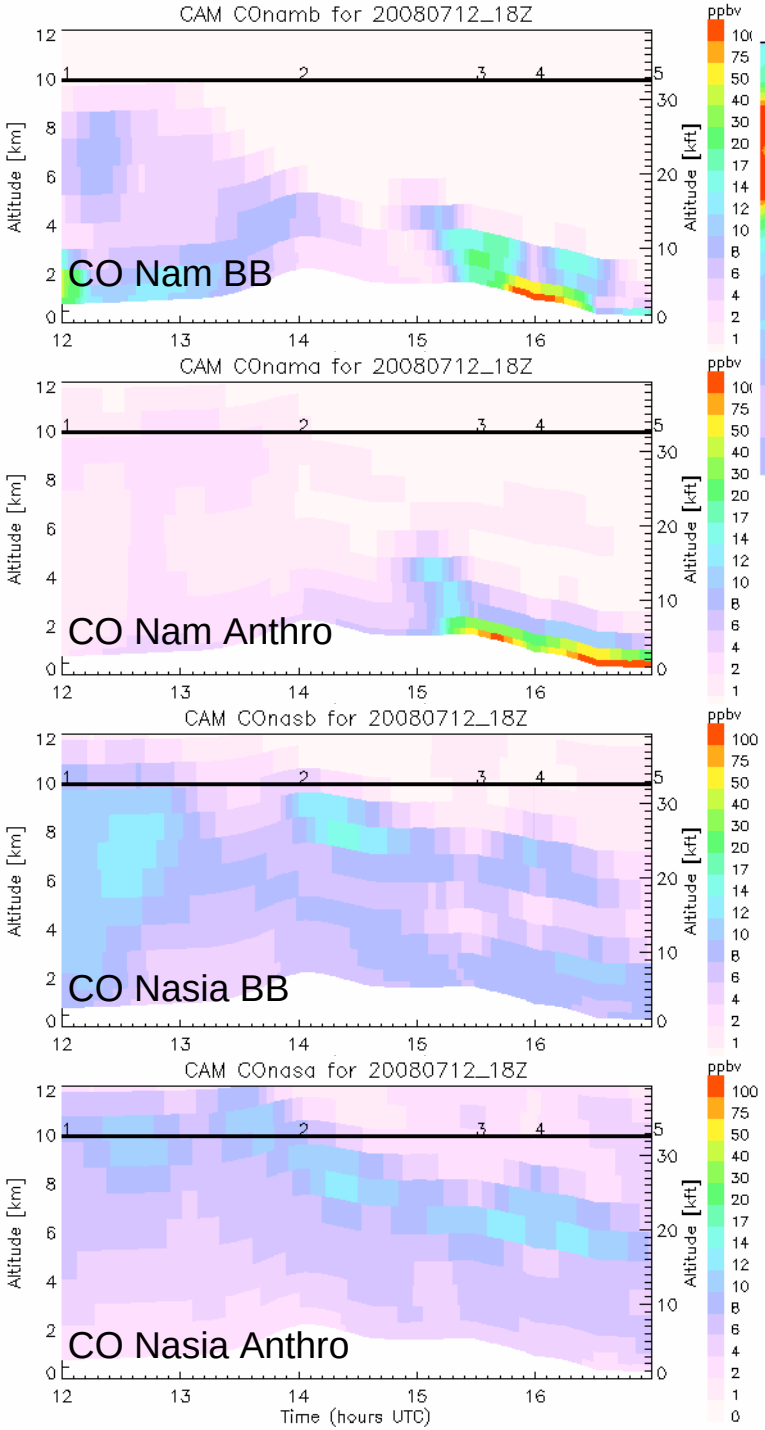
CO Nam BB 2 km

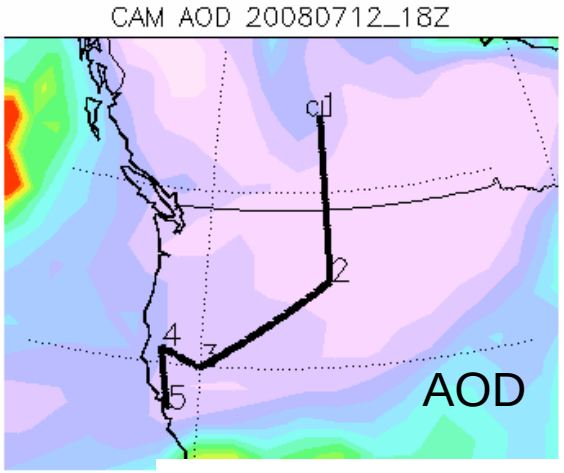


CO Nasia BB 6 km

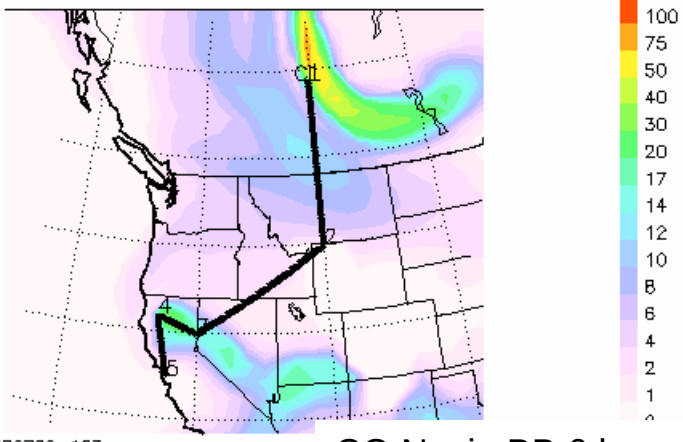


DC-8 Transit
July 12
CAM-Chem Fx

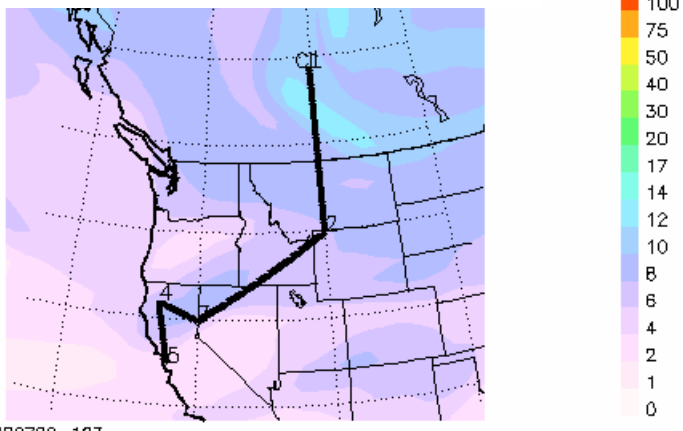




CO Nam BB 2 km

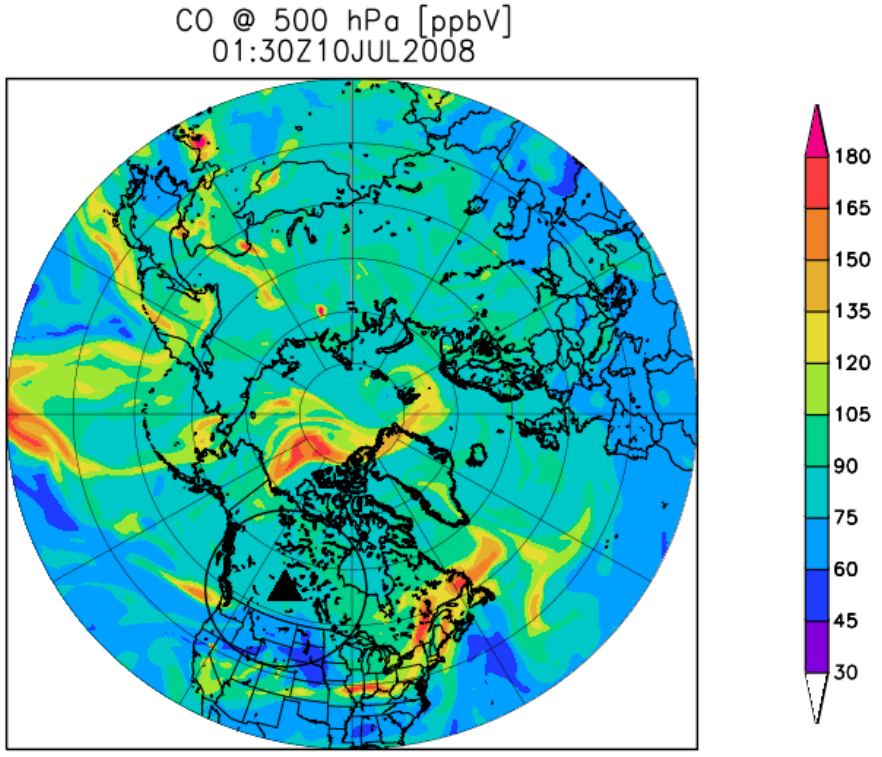


CO Nasia BB 6 km

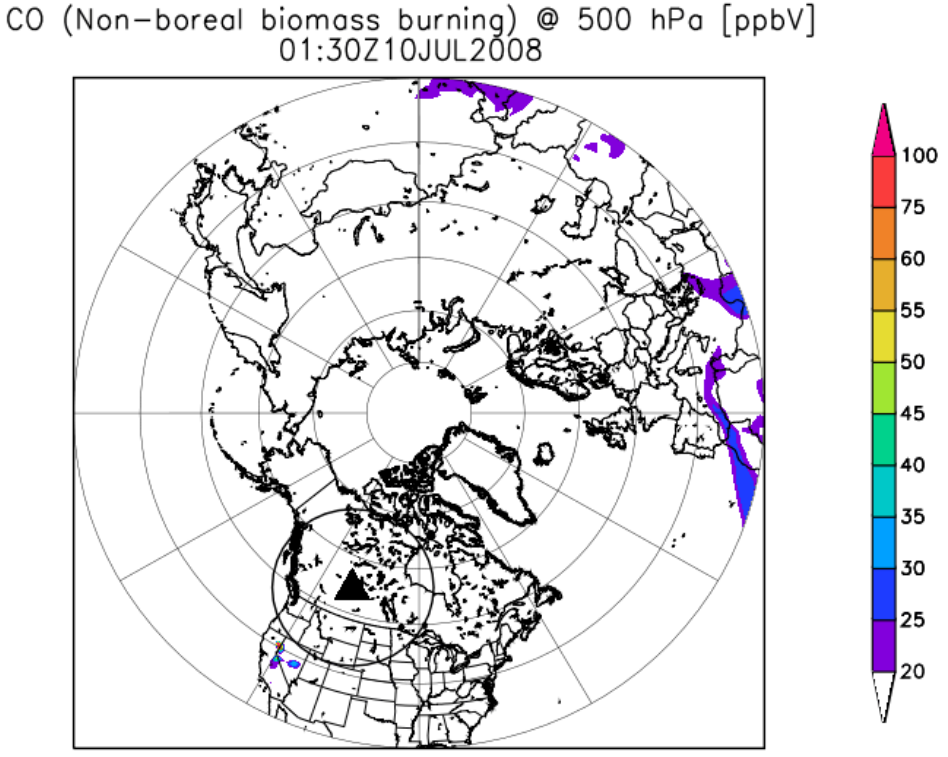


GEOS5 Forecast: 5-Day CO Animation
July 10th – 14th (July 10th 00Z)

Total CO 500 mb



California Fire CO 500 mb

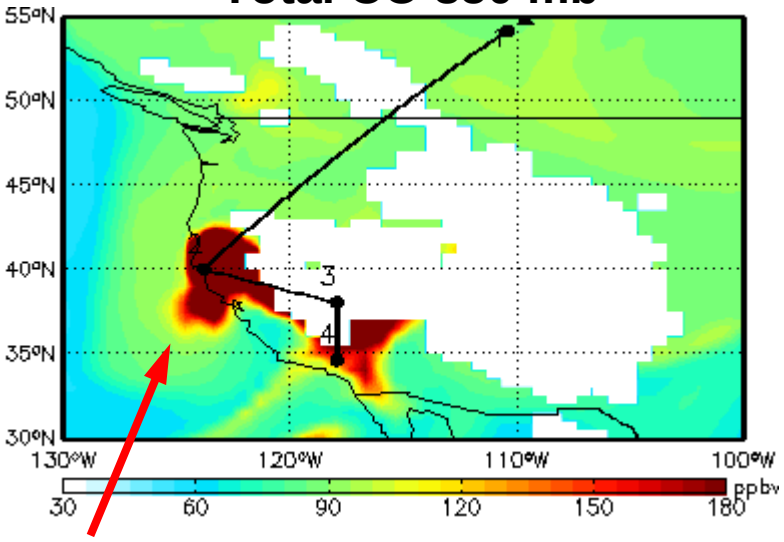


California fire pollution lofted today.

GEOS5 Forecast: DC-8 Flight : Cold Lake to Palmdale
July 10th 16:30Z (July 10th 06Z forecast)

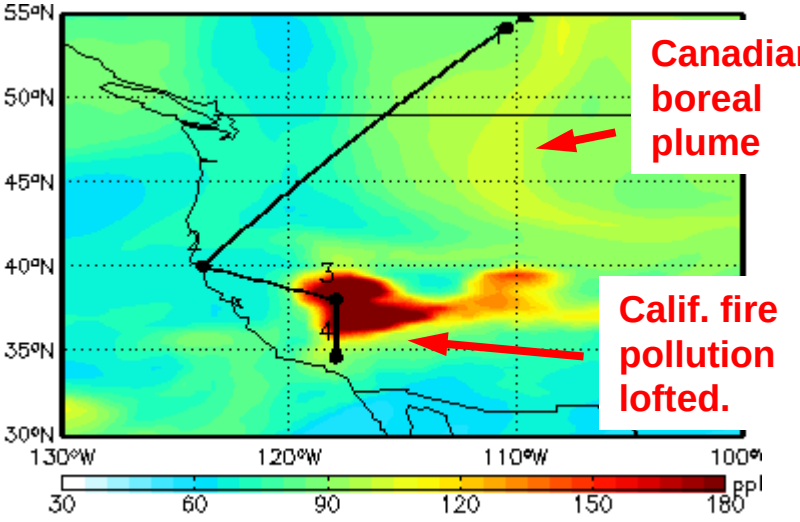
PLAN A

Total CO 850 mb



California Fires!

Total CO 500 mb

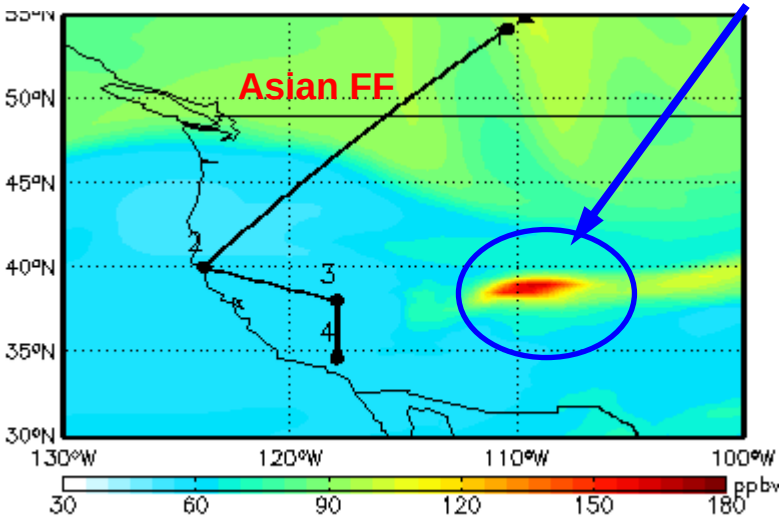


Canadian boreal plume

Calif. fire pollution lofted.

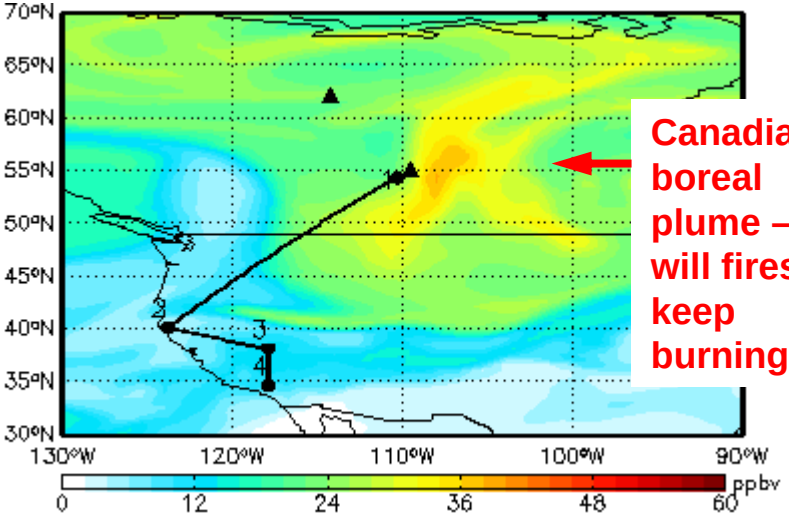
Total CO 300 mb

Convection over Arizona lofts pollution to UT.



Asian FF

Boreal CO 500 mb

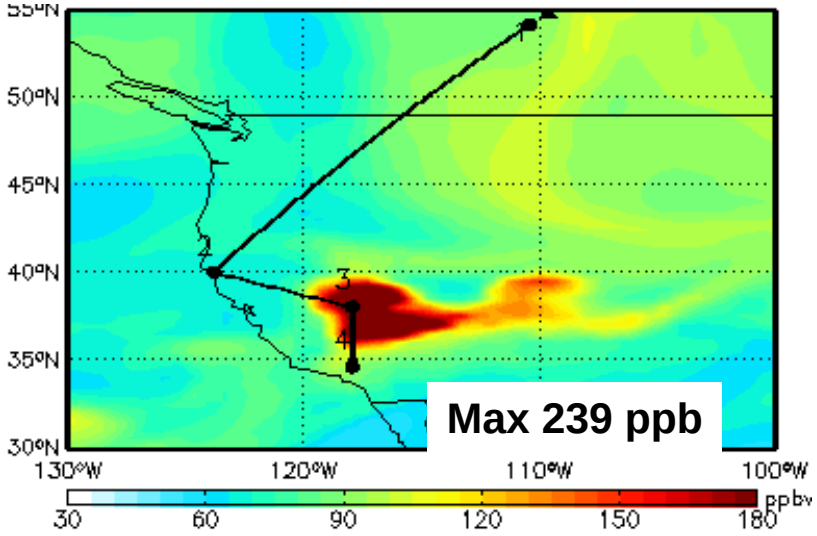


Canadian boreal plume – will fires keep burning?

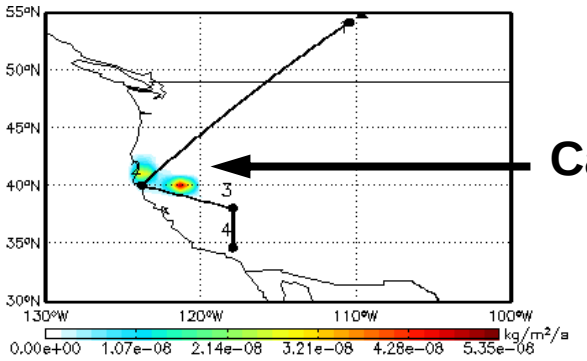
GEOS-5 Forecast 20080710_06Z:

July 12 Cold Lake -> Palmdale

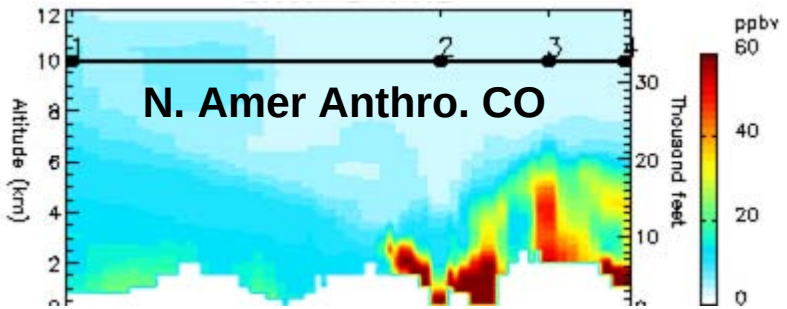
Total CO 500 mb

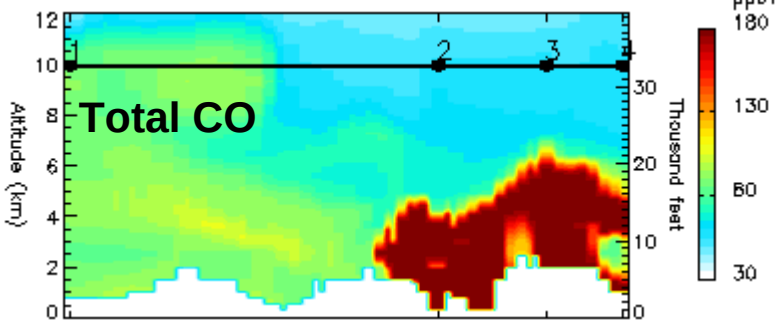


PLAN A

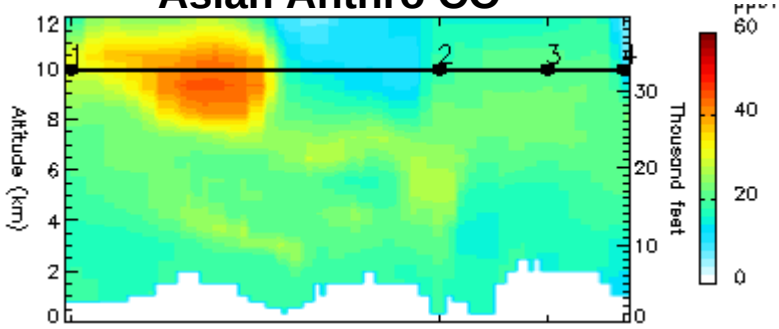


Calif. fire emissions

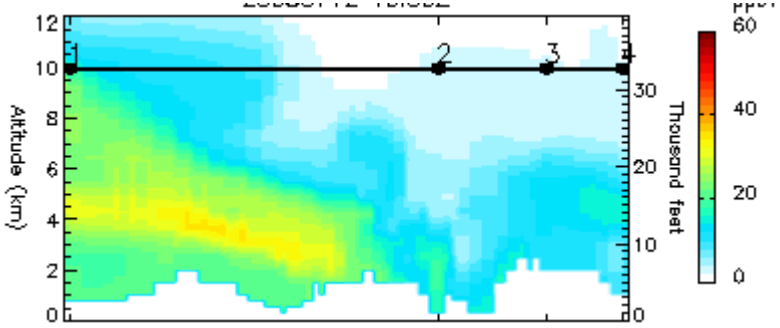




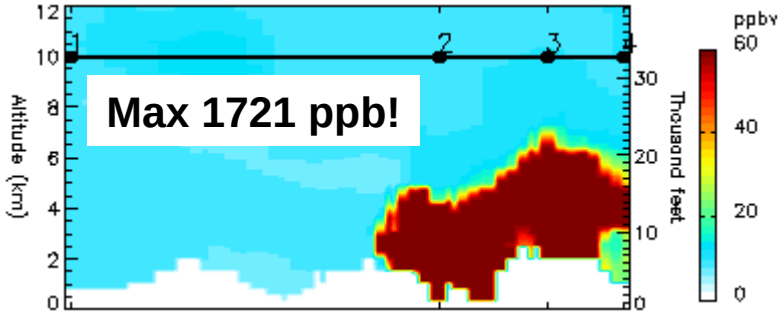
Asian Anthro CO



Boreal CO



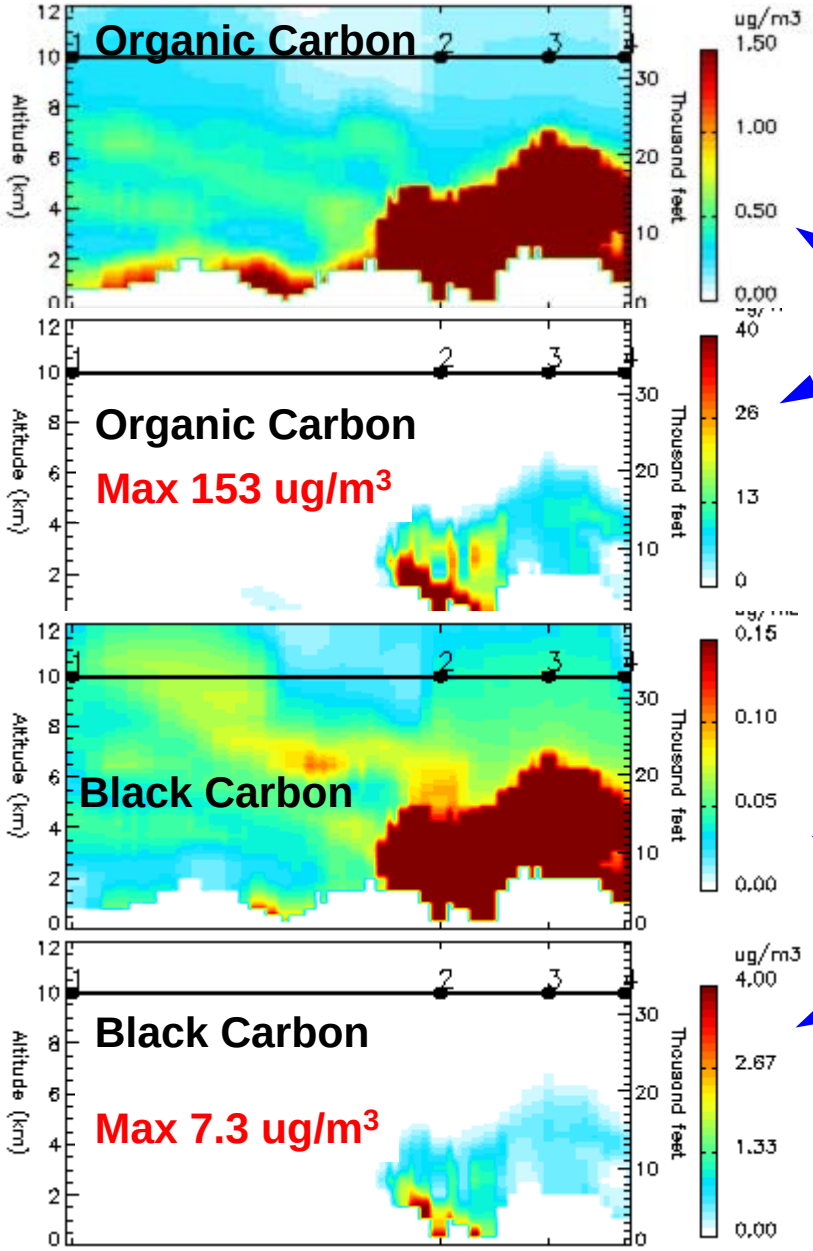
California Fires



PLAN A

GEOS-5 Forecast 20080710_06Z:

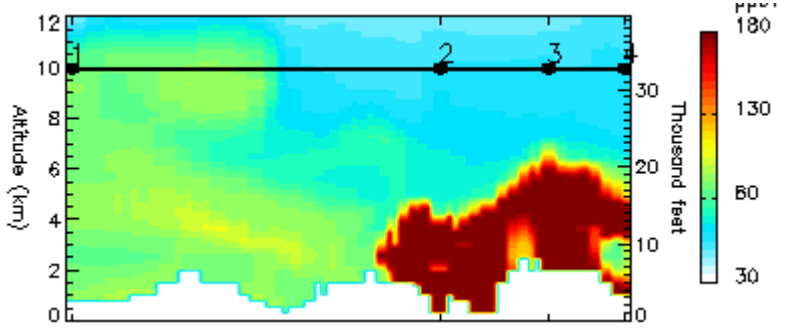
July 12 Cold Lake -> Palmdale



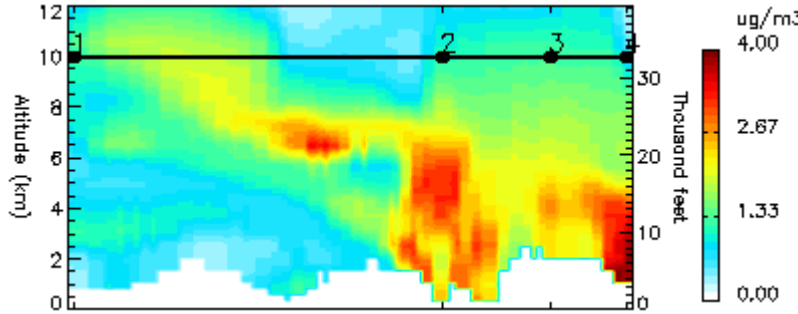
Note: Scales vary

Note: Scales vary

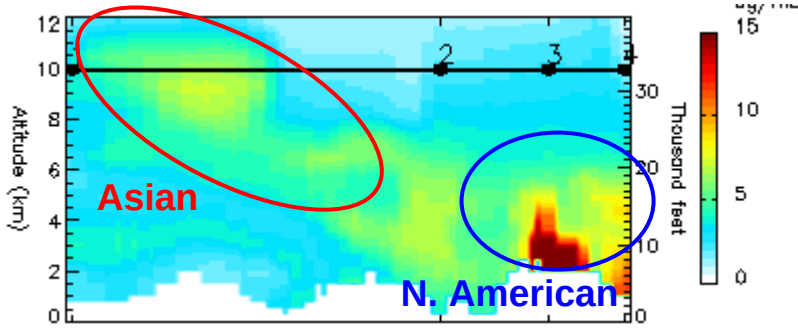
Total CO



Sulfate



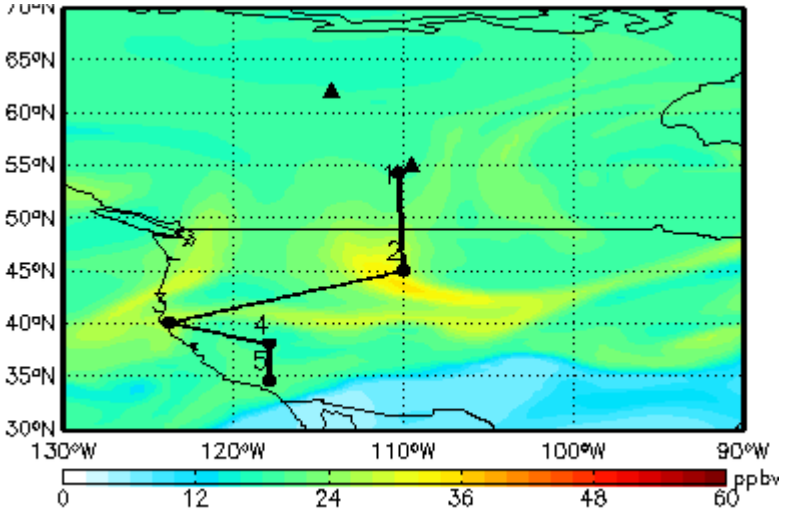
Dust



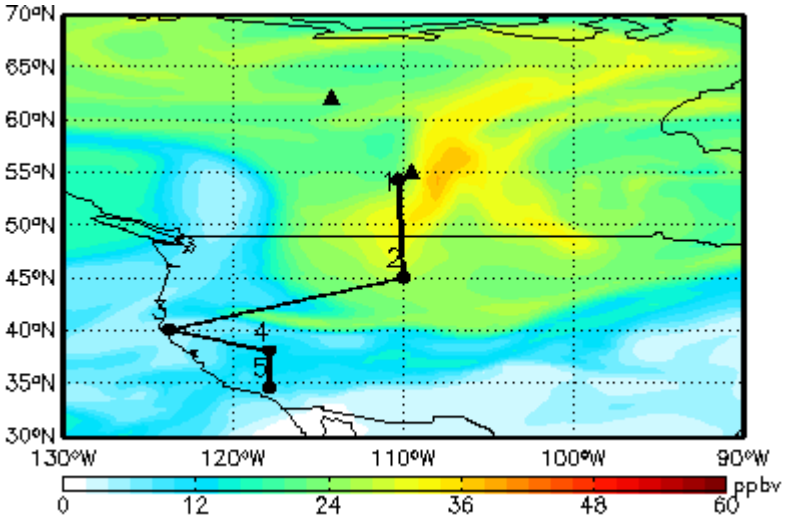
GEOS5 Forecast: DC-8 Flight : Cold Lake to Palmdale
July 10th 16:30Z (July 10th 06Z forecast)

PLAN B

Asian Anthro CO 500 mb

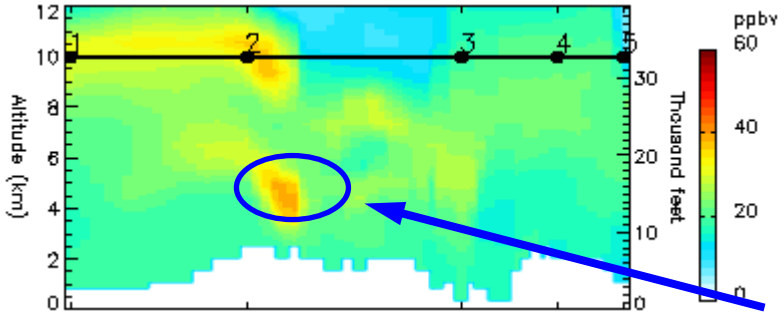


Total CO 500 mb

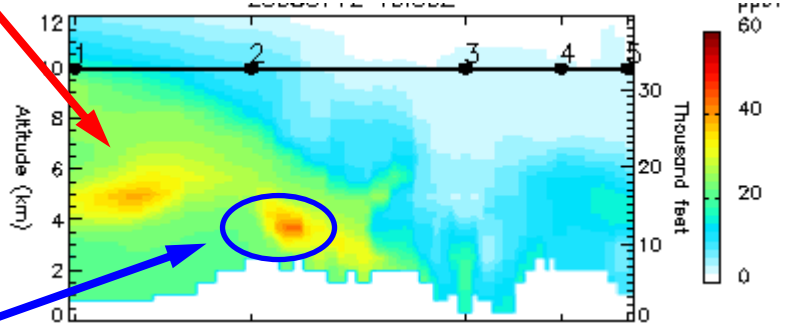


Canadian source

Asian Anthro. CO

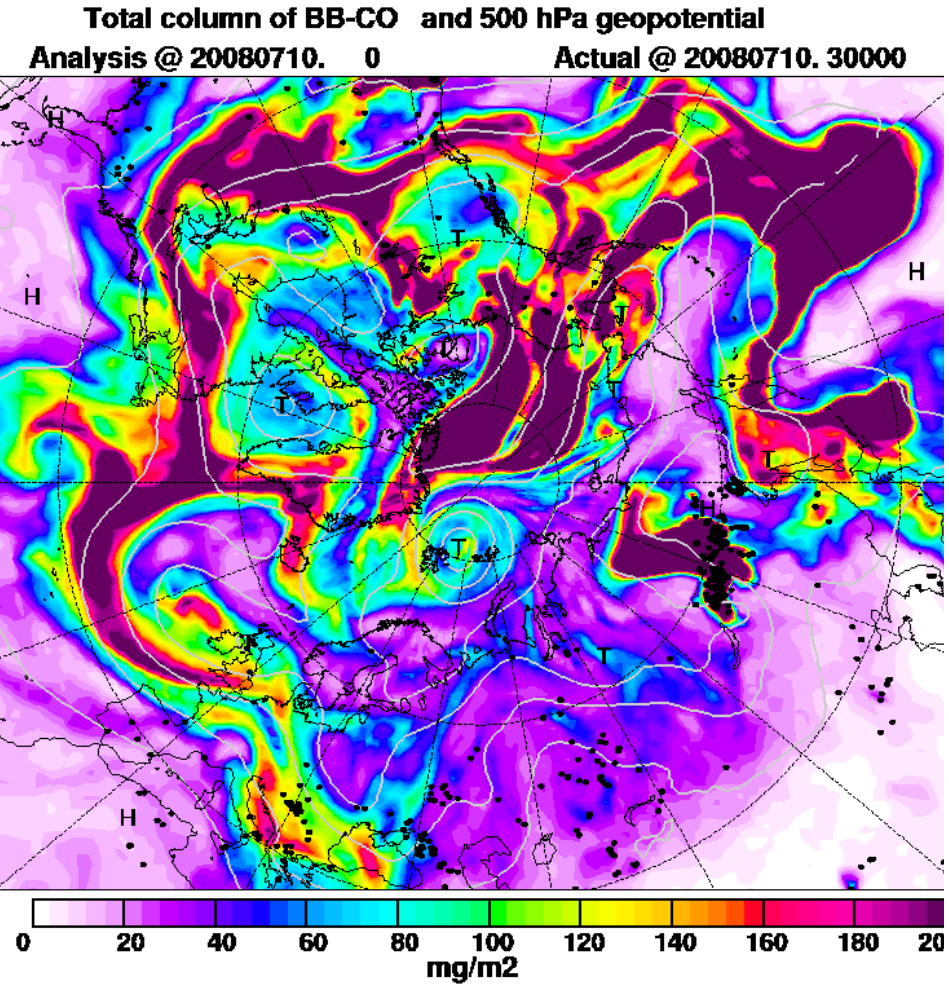


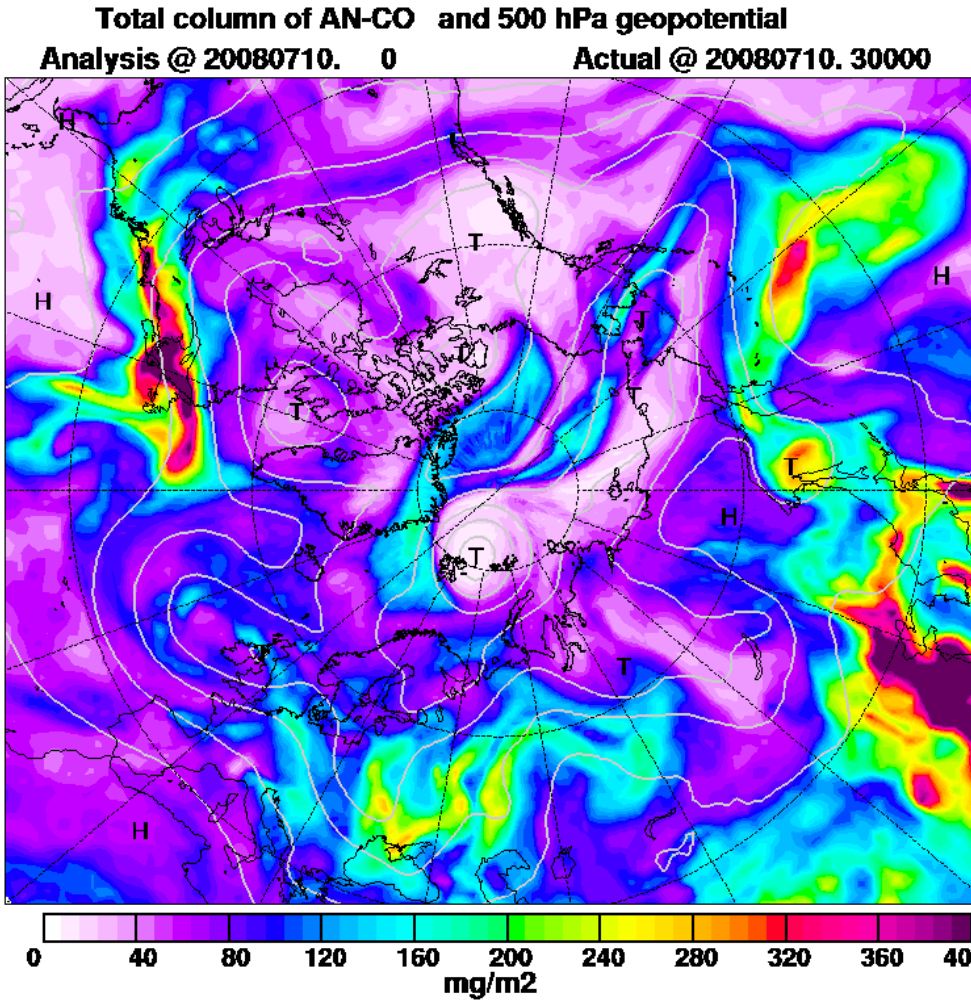
Boreal CO 500 mb



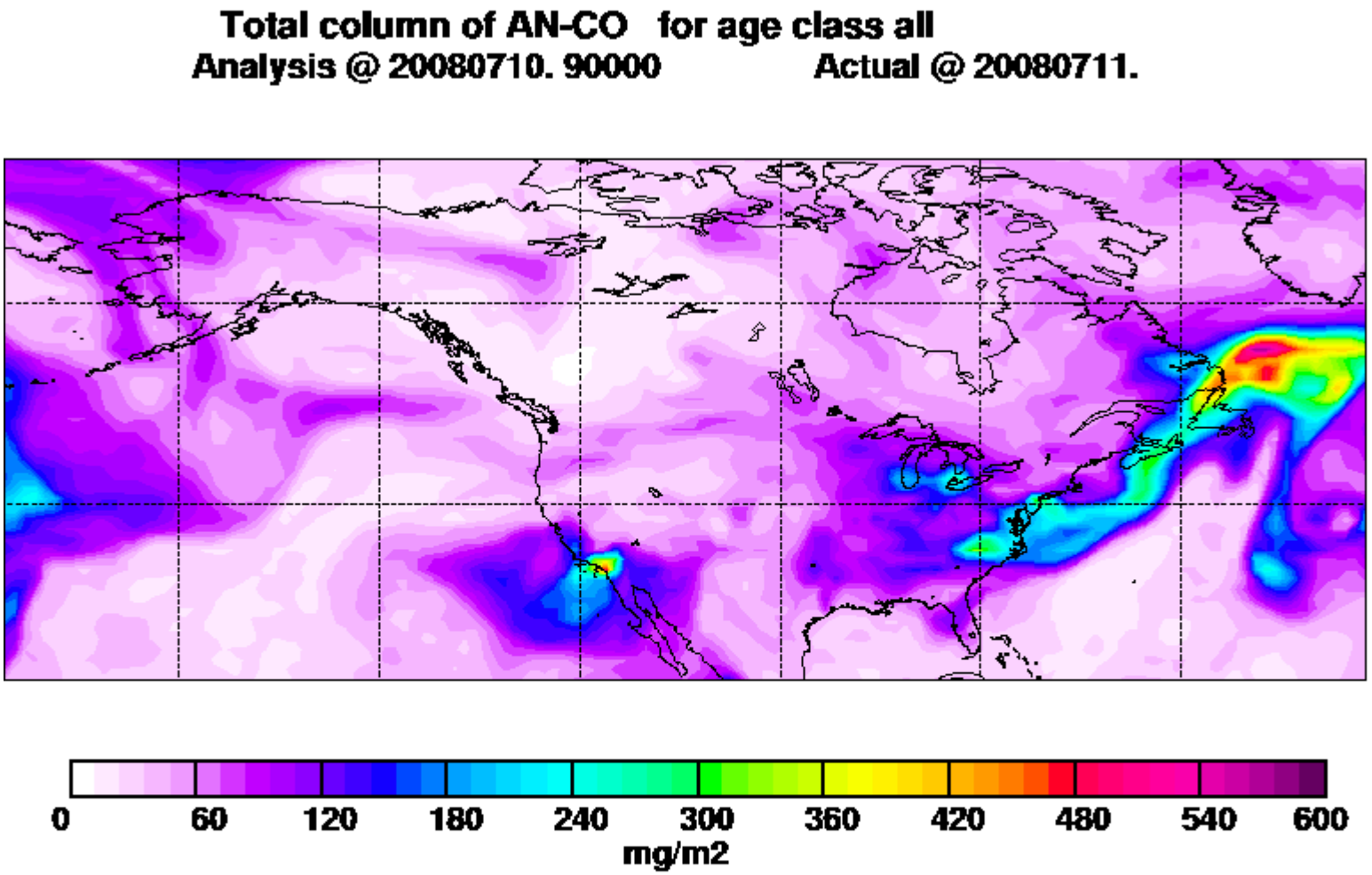
Asian source

Biomass and Anthropogenic

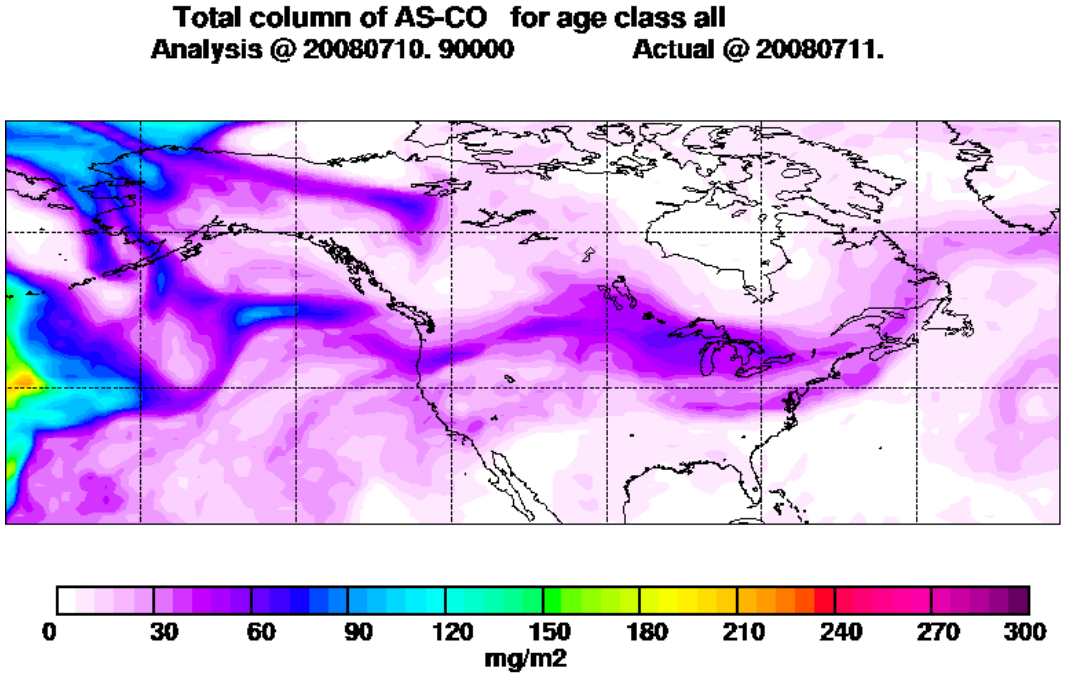


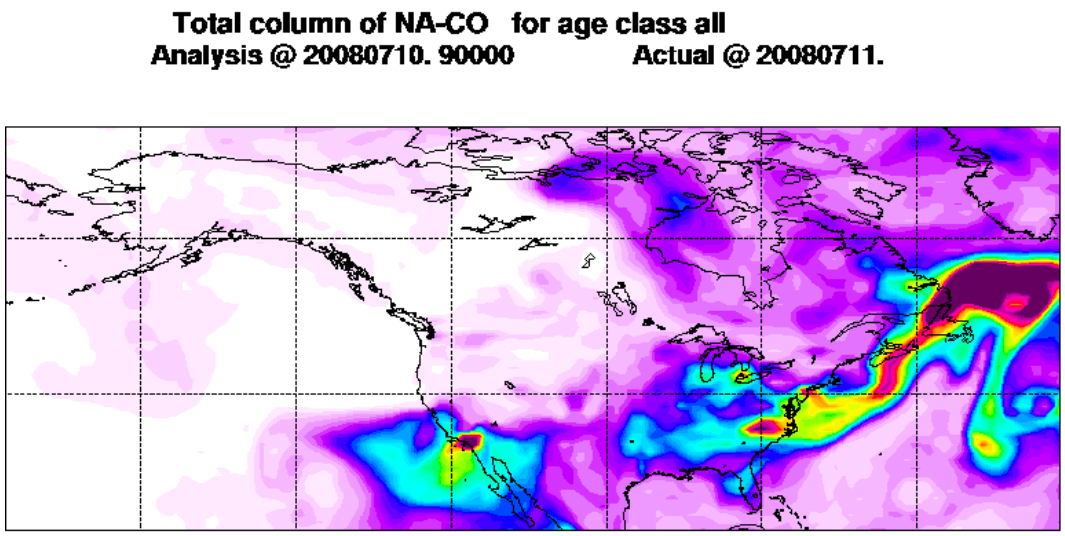


Overview

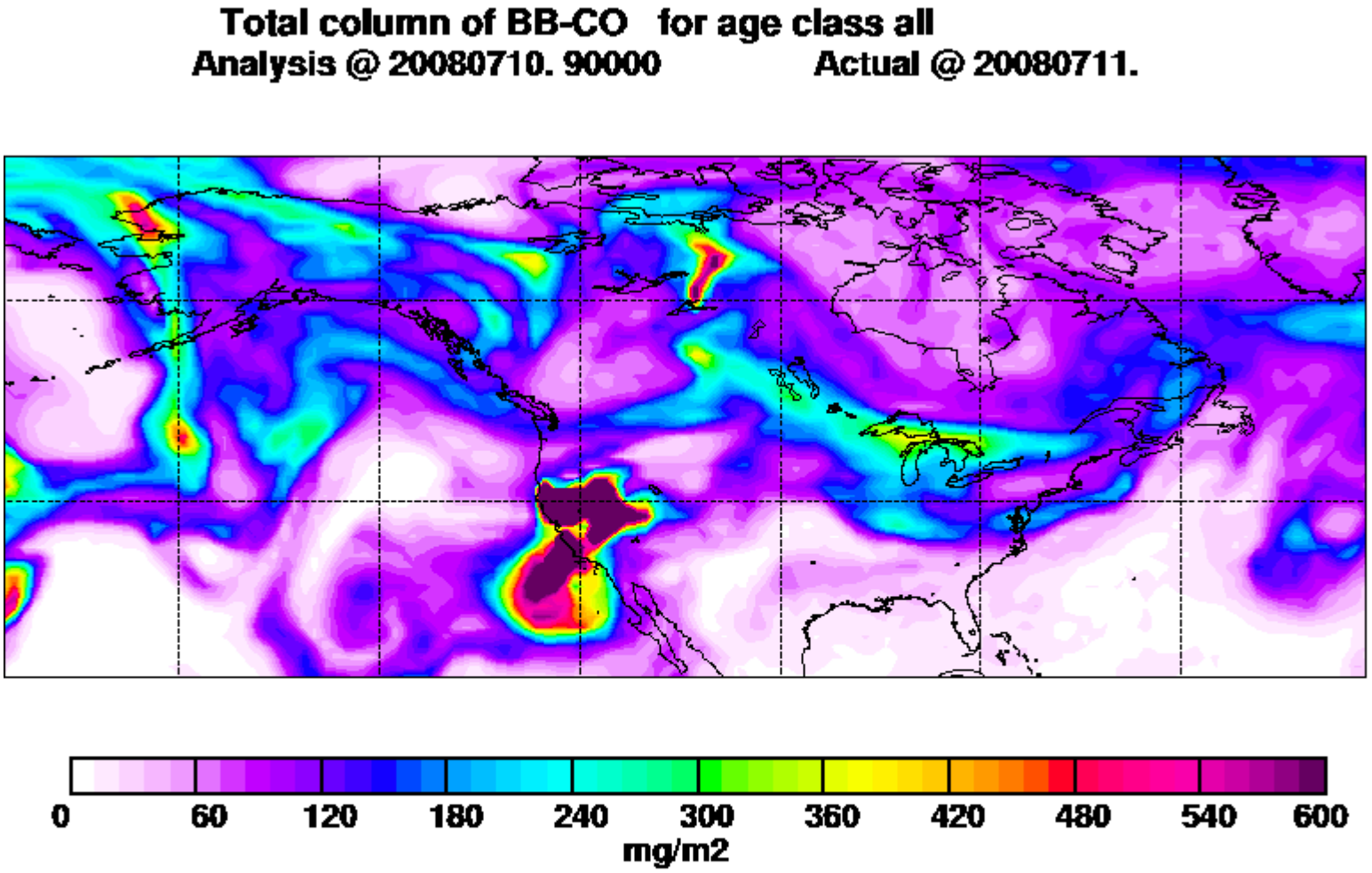

Total column of AN-CO for age class all
Analysis @ 20080710. 90000
Actual @ 20080711.
0
60
120
180
240
300
360
420
480
540
600
mg/m2

Overview

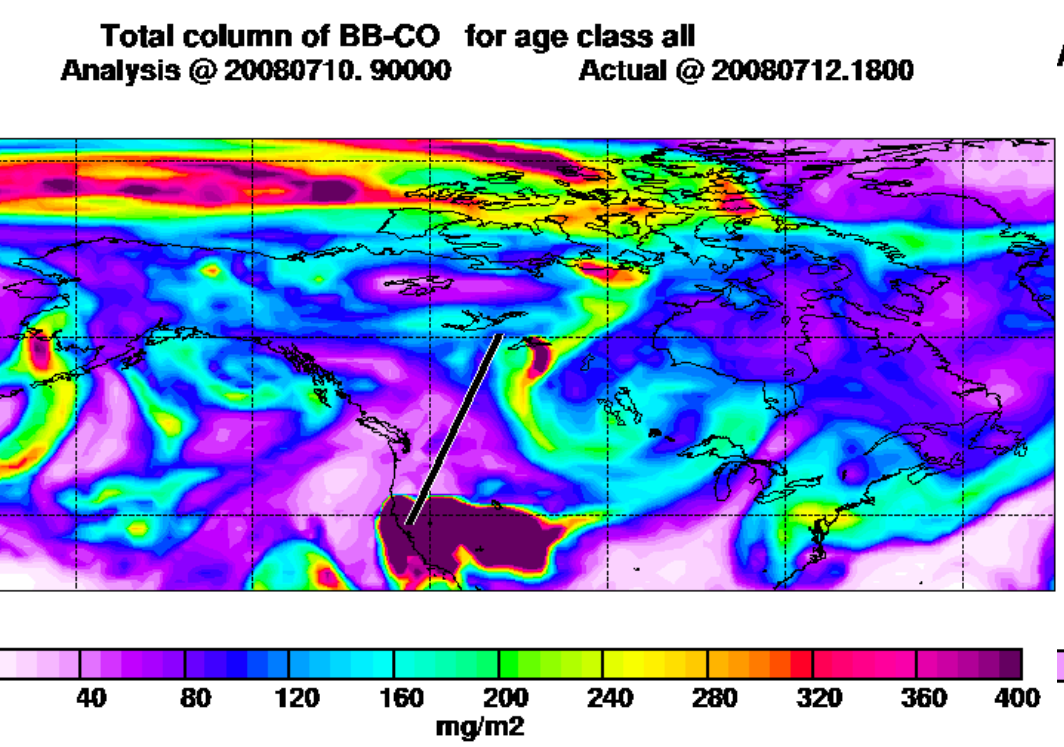

Total column of AS-CO for age class all
Analysis @ 20080710. 90000
Actual @ 20080711.
0
30
60
90
120
150
180
210
240
270
300
mg/m2

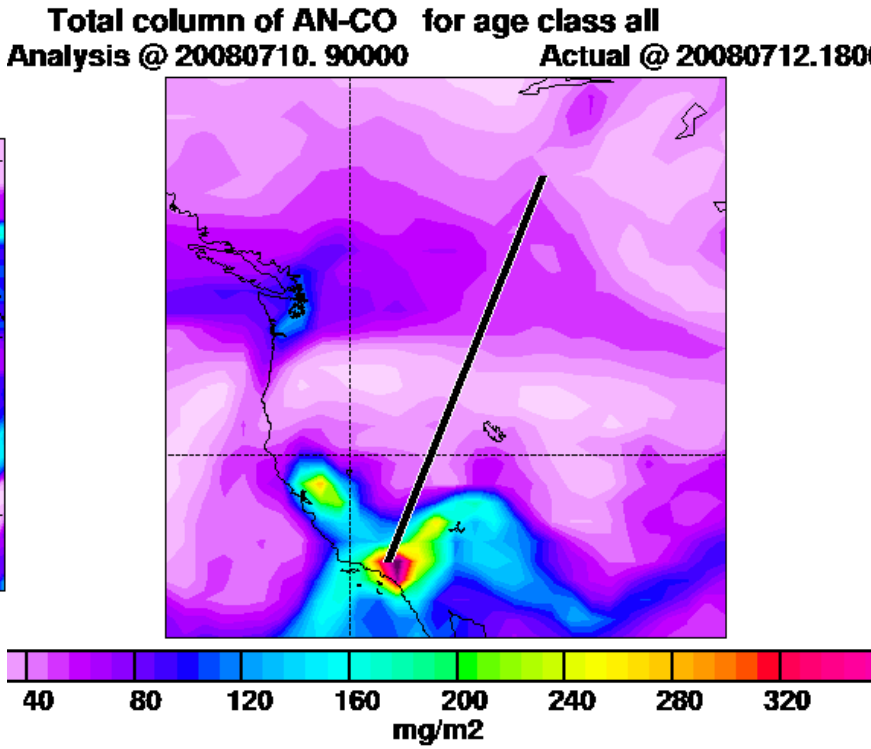

Total column of NA-CO for age class all
Analysis @ 20080710. 90000
Actual @ 20080711.

Biomass Burning: 12 July Overview

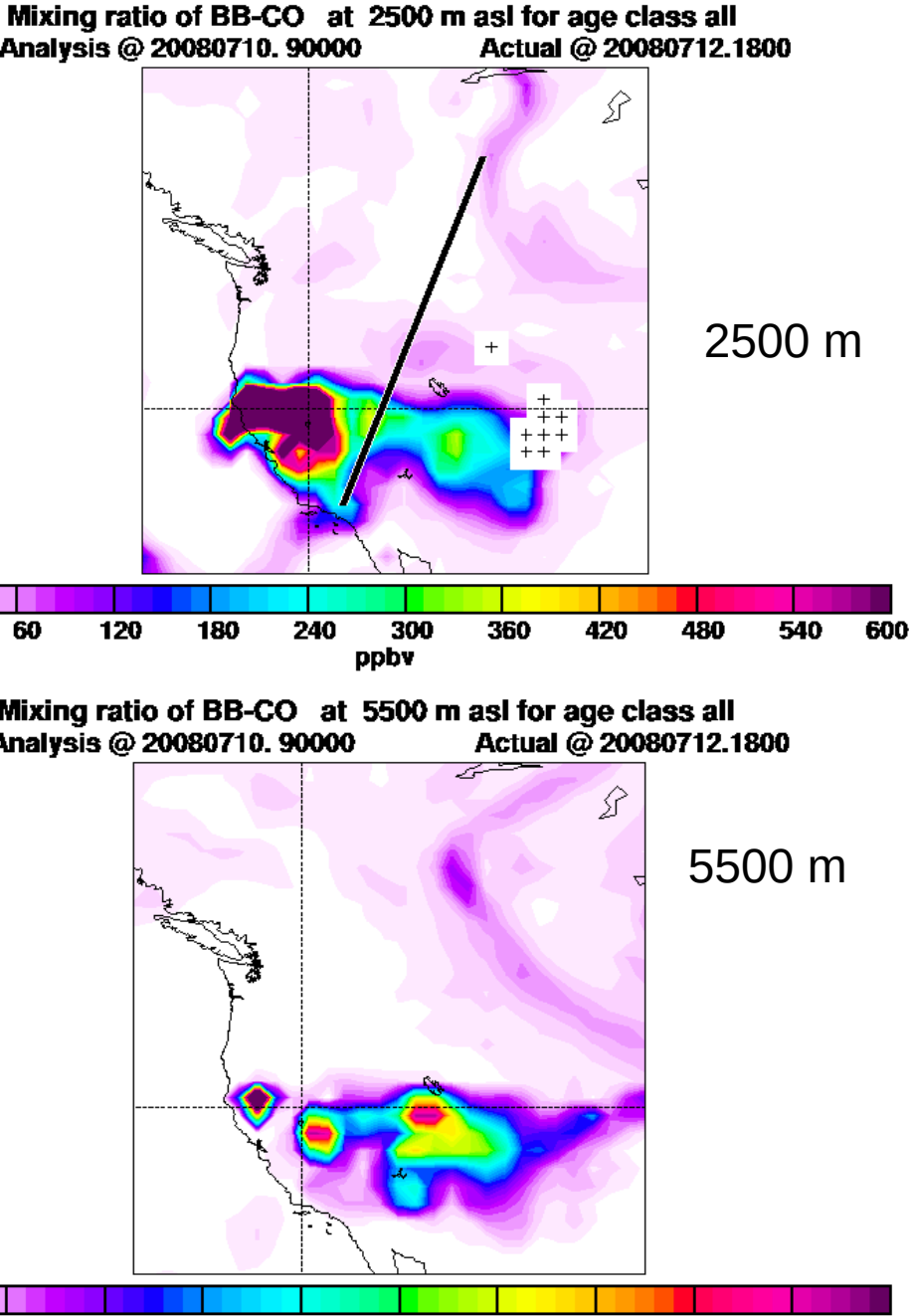


12 July – BB, Anthro CO

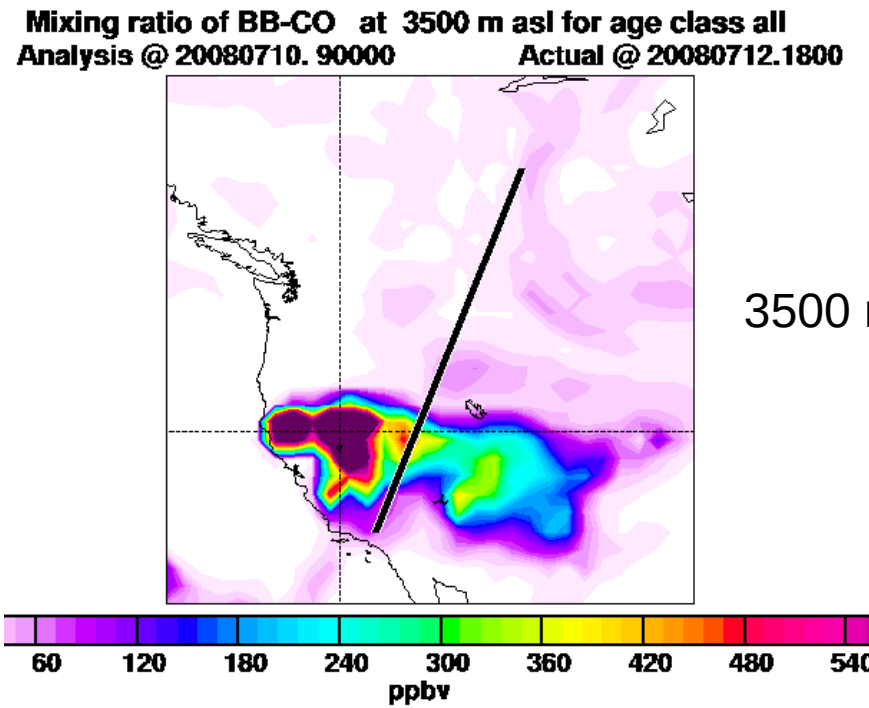




12 July BB, CO

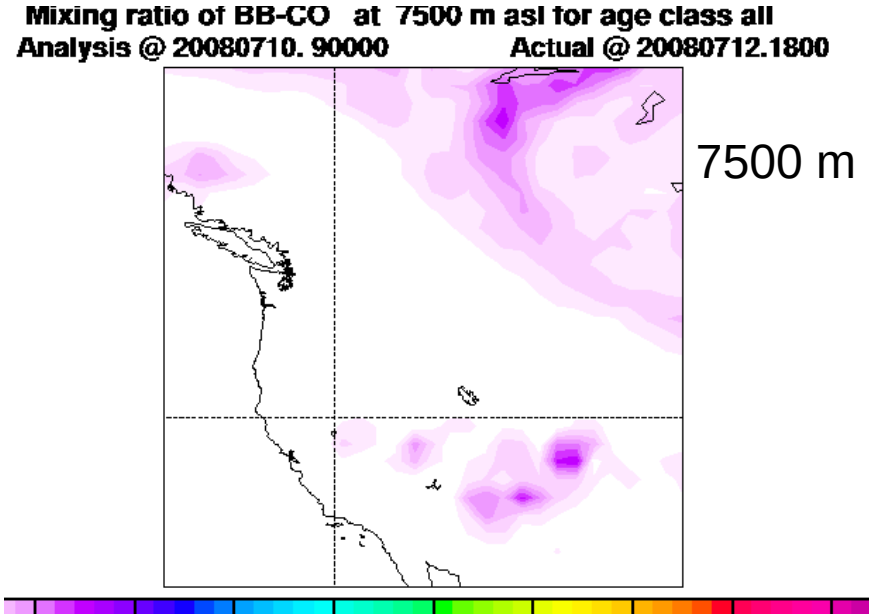


2500 m



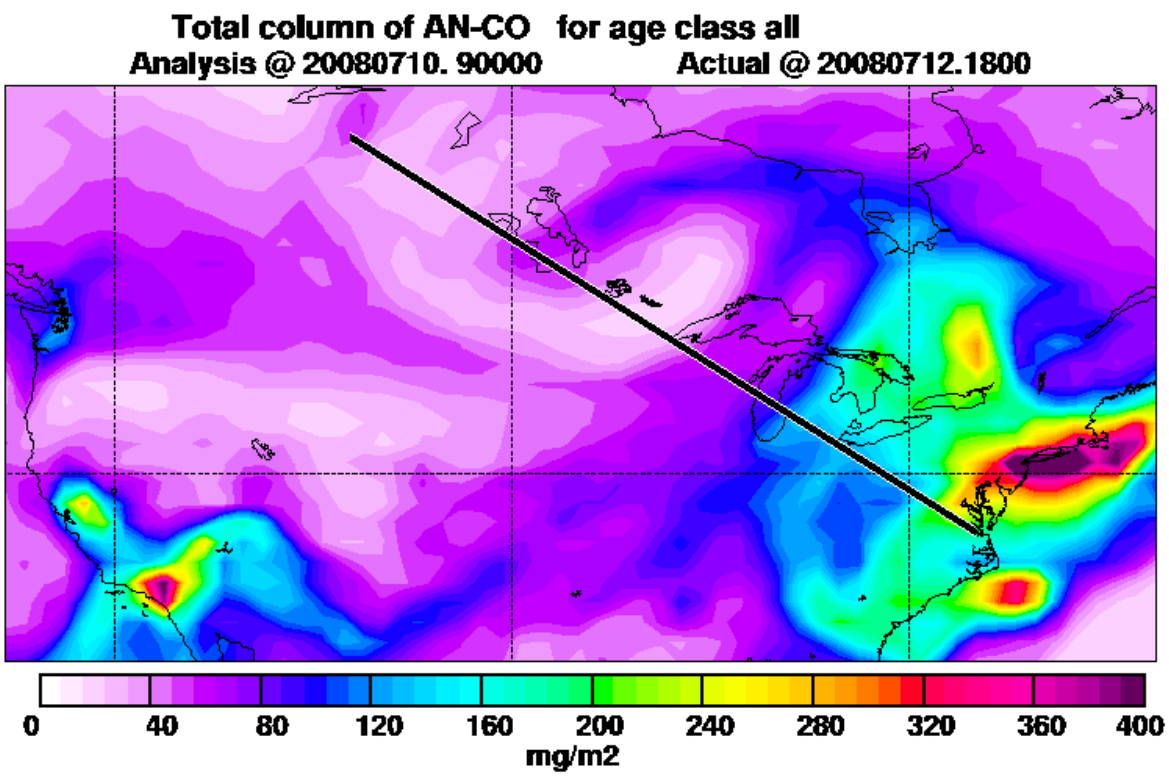
3500 m

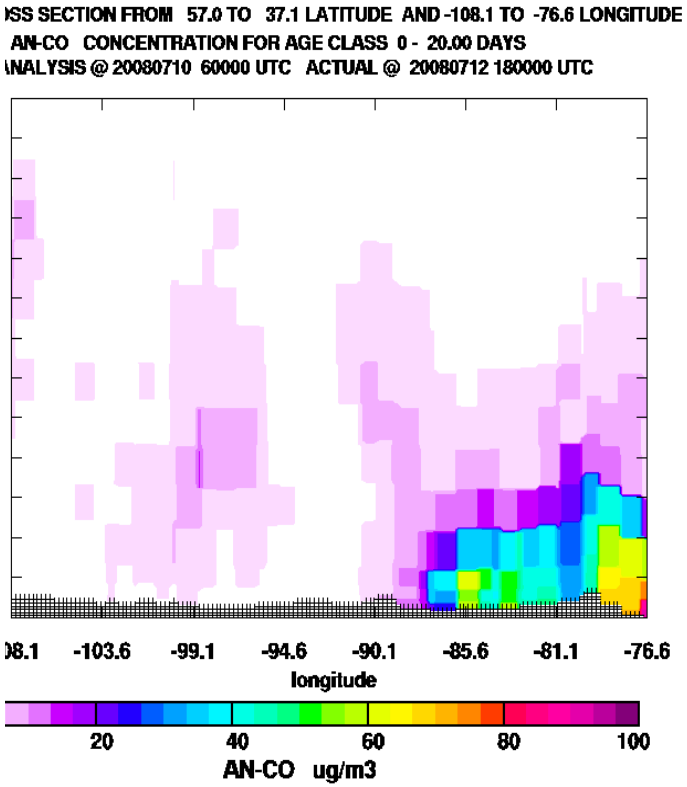
5500 m



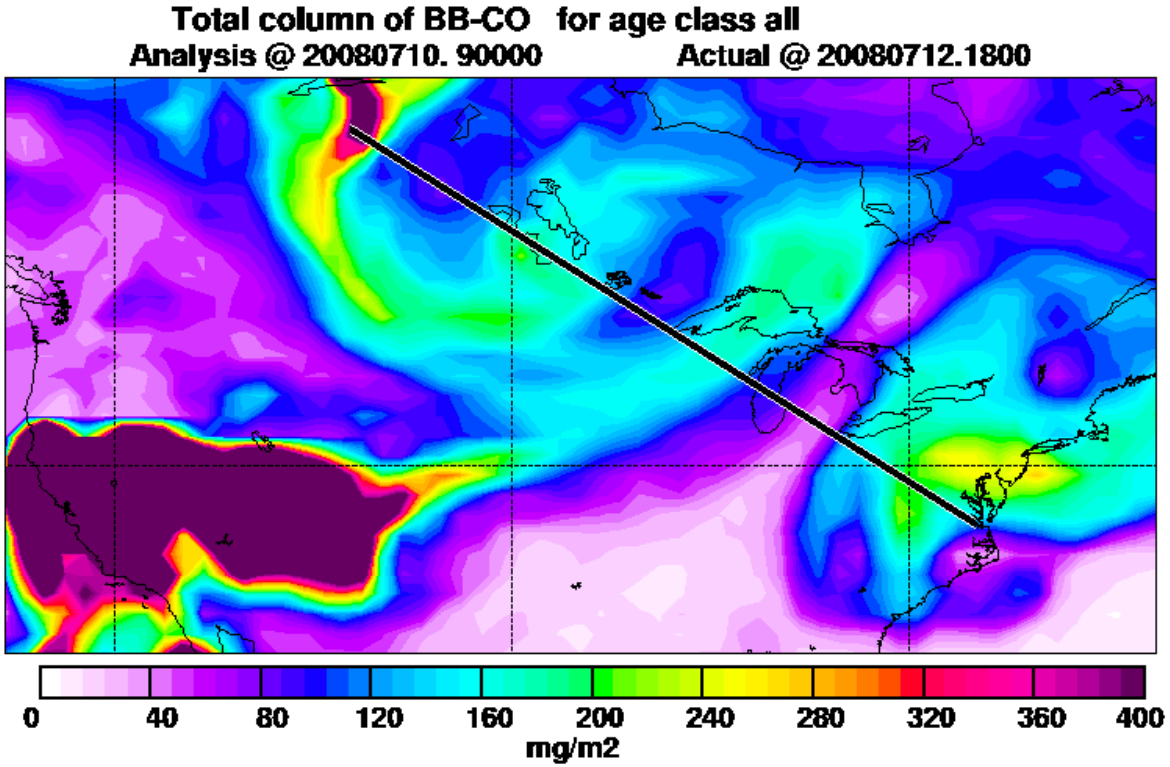
7500 m

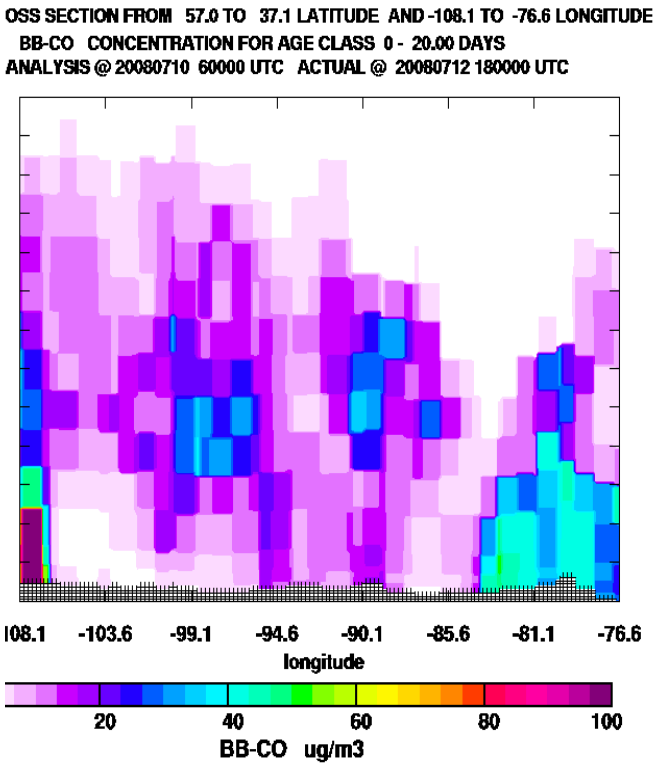
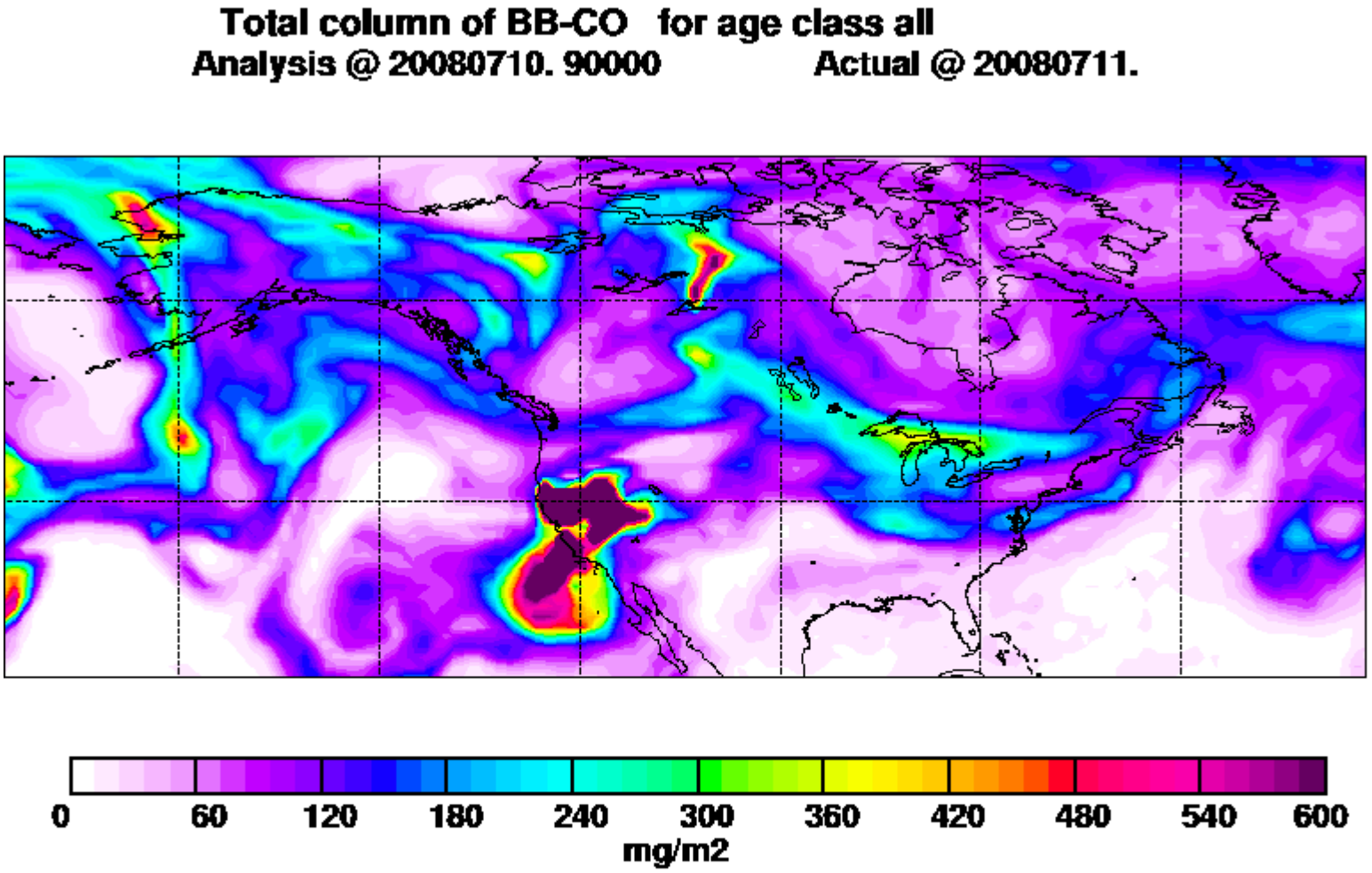
P3 12 July Transit: Anthro CO





P3 12 July Transit : BBCO





Biomass Burning: 12 July Overview