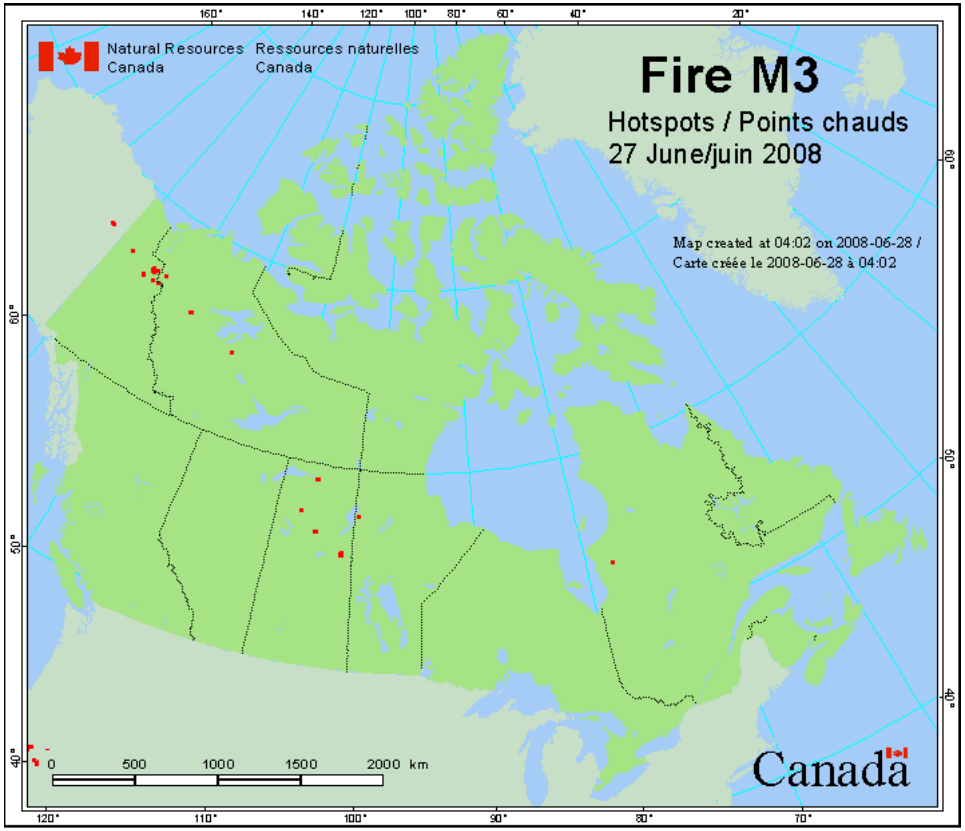
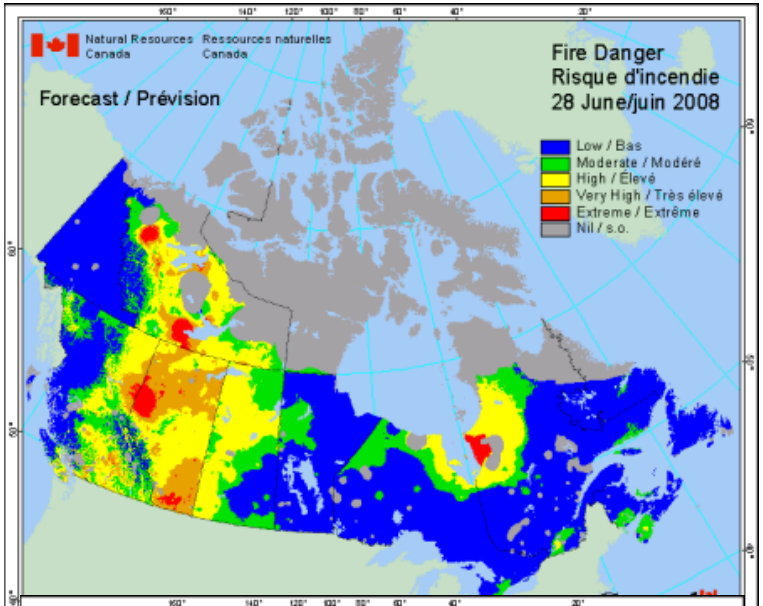
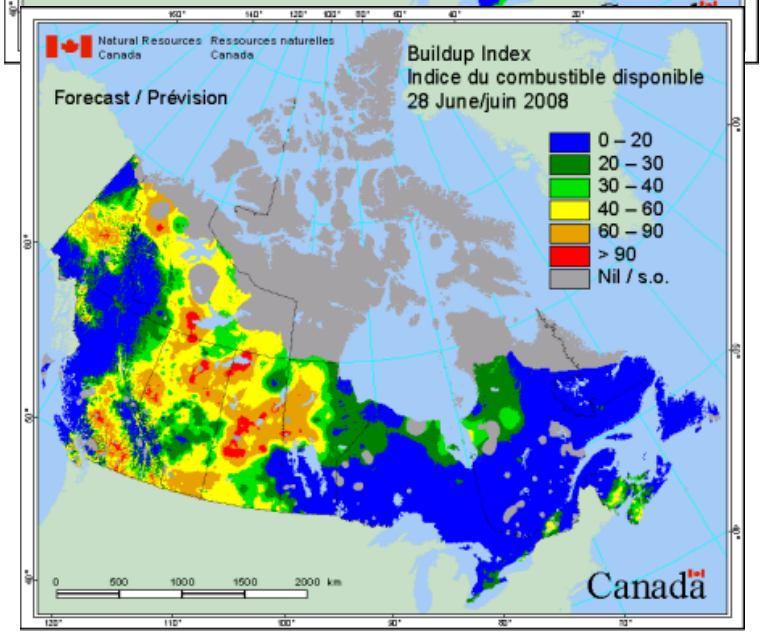
Fire Locations/Potential

June 28, 2008

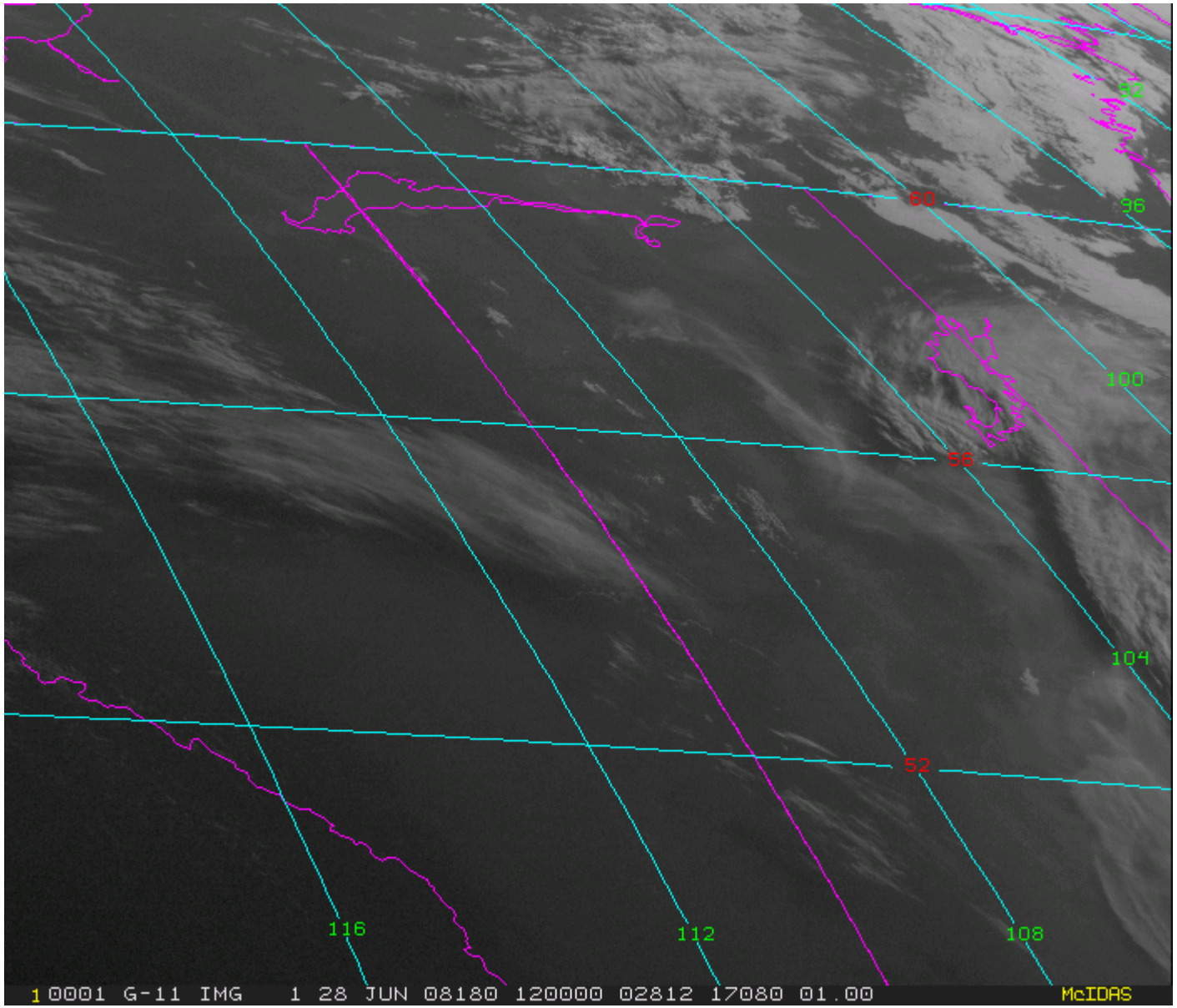
Fromm, Stocks, and Soja
Boreal Fire Situation Office
Hangar 1, Cold Lake, AB







Canada Fires and Fire Danger
June 28, 2008


92
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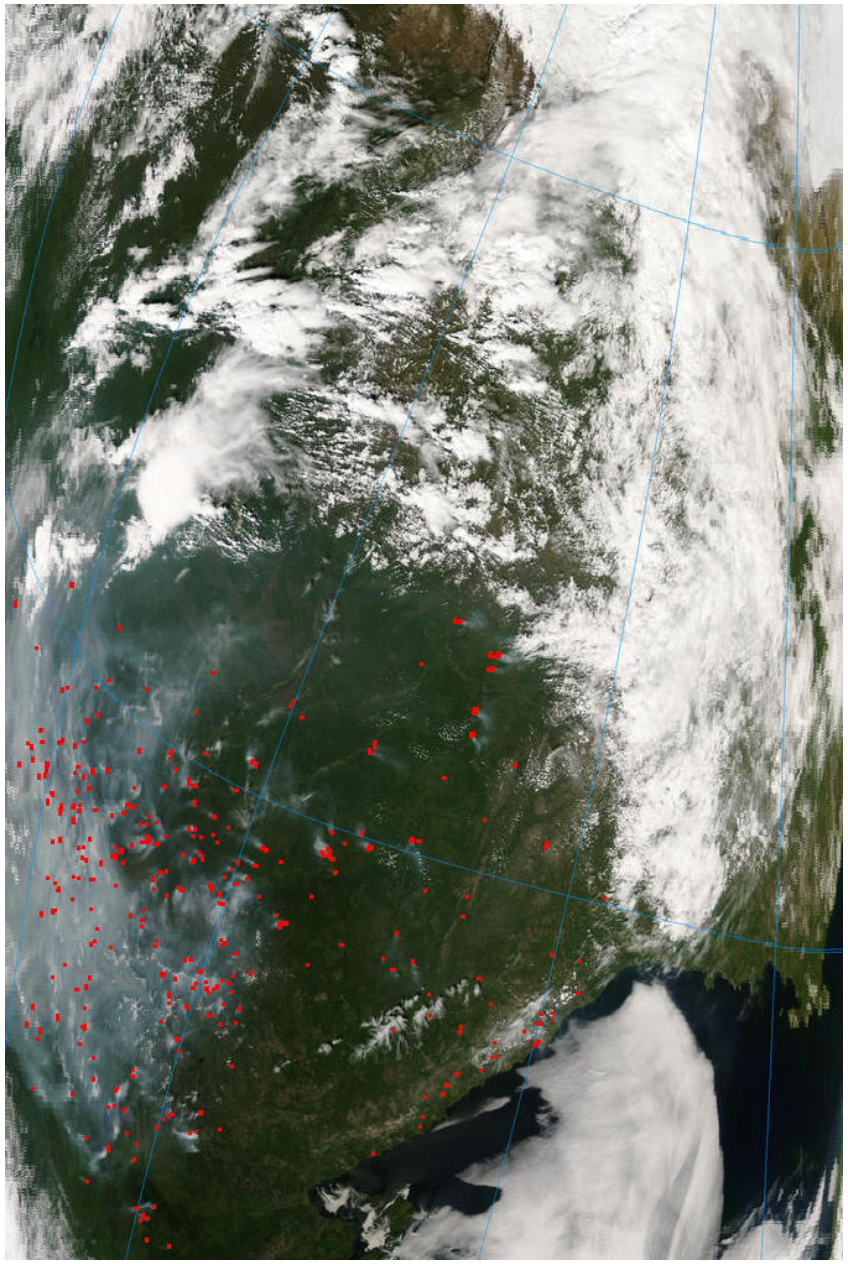
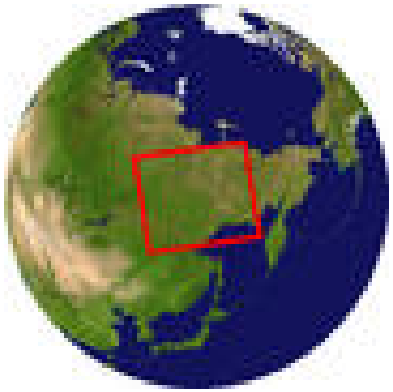
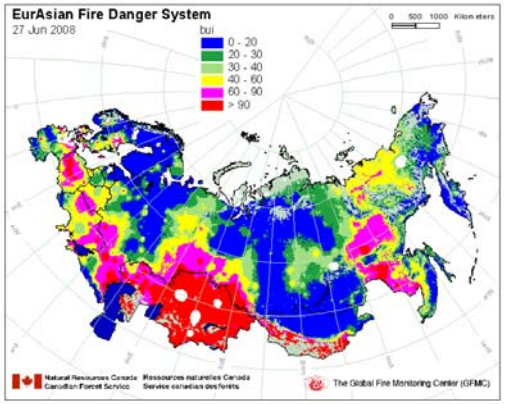
McIDAS





East Siberian Fires
June 28/08



Summary

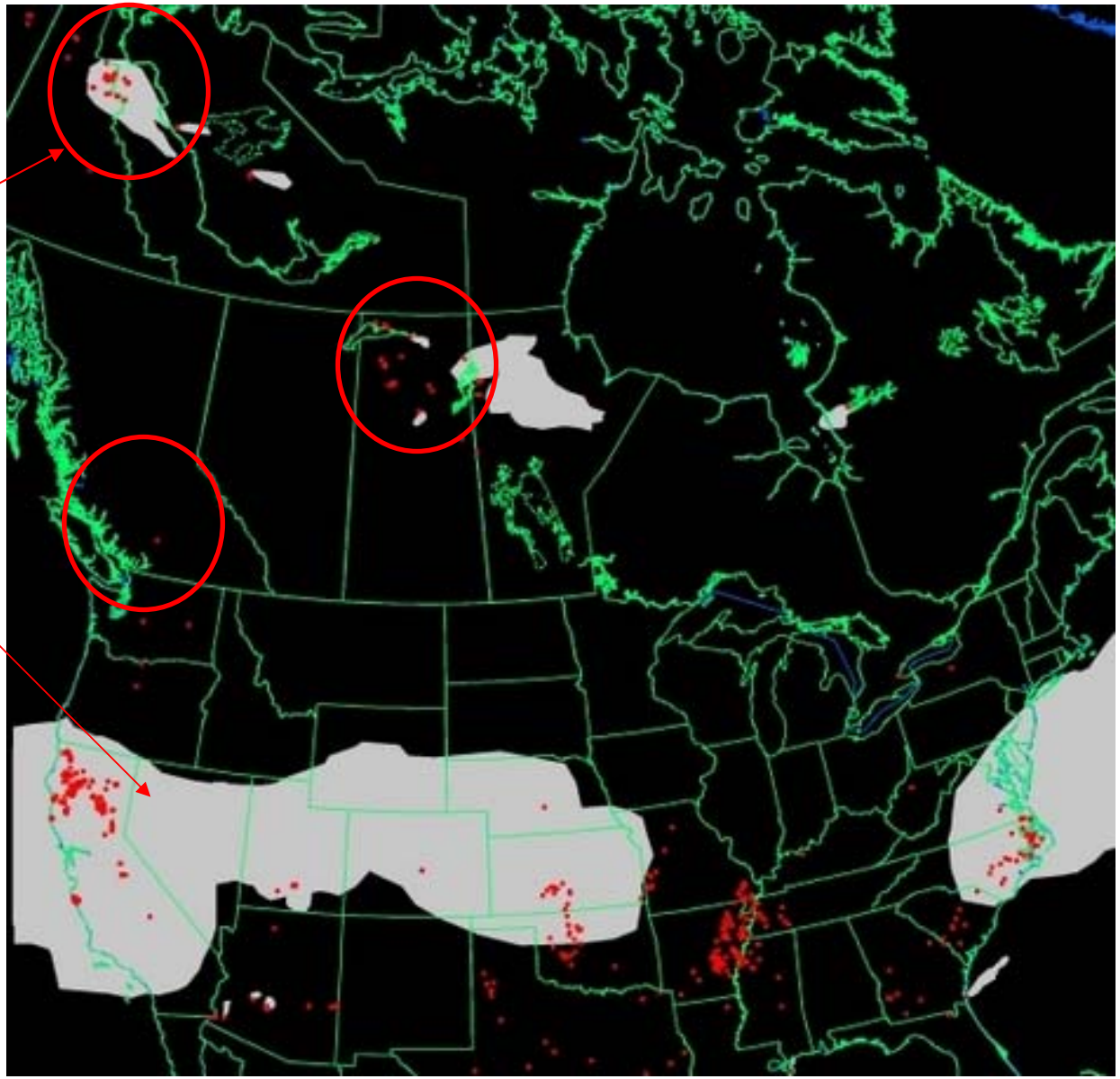
- SK/MB fires in place and should exhibit more intense behavior over next few days
- Ridge breakdown/lightning in NWT
- Warm and dry all week, then ridge collapse
- Potential active zones

- July 1 NRN BC and NRN AB
- July 2 NRN BC and NRN AB
- July 3 NRN BC, SRN NWT, NRN AB
- July 4 NERN BC, NWT, NRN AB, NRN SK
- July 5 YK, NWT, AB, SK,
- July 6 YK, NWT, AB, SK, MB

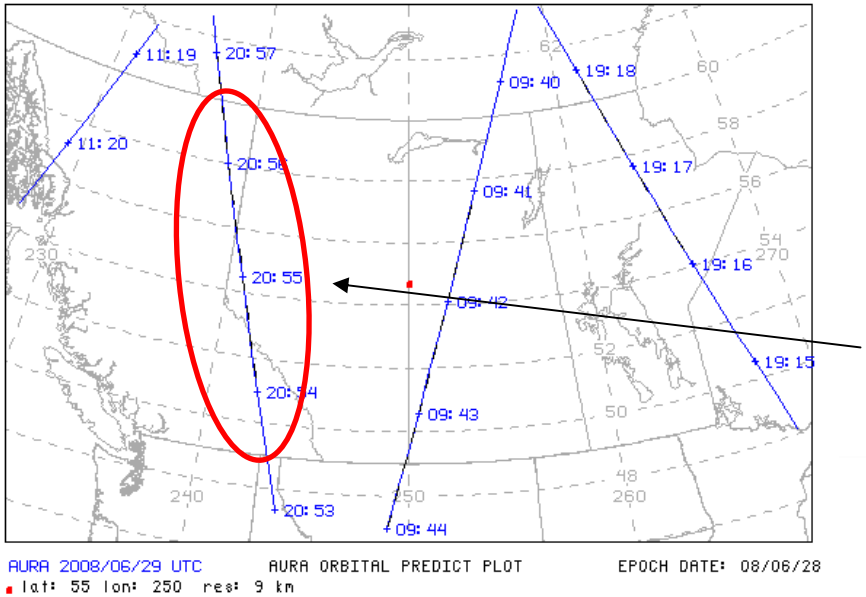
NOAA/NESDIS HMS Analysis for day 6/27/2008 last updated at 6/28/2008 11:15:25 GMT

Red Circles highlight fires

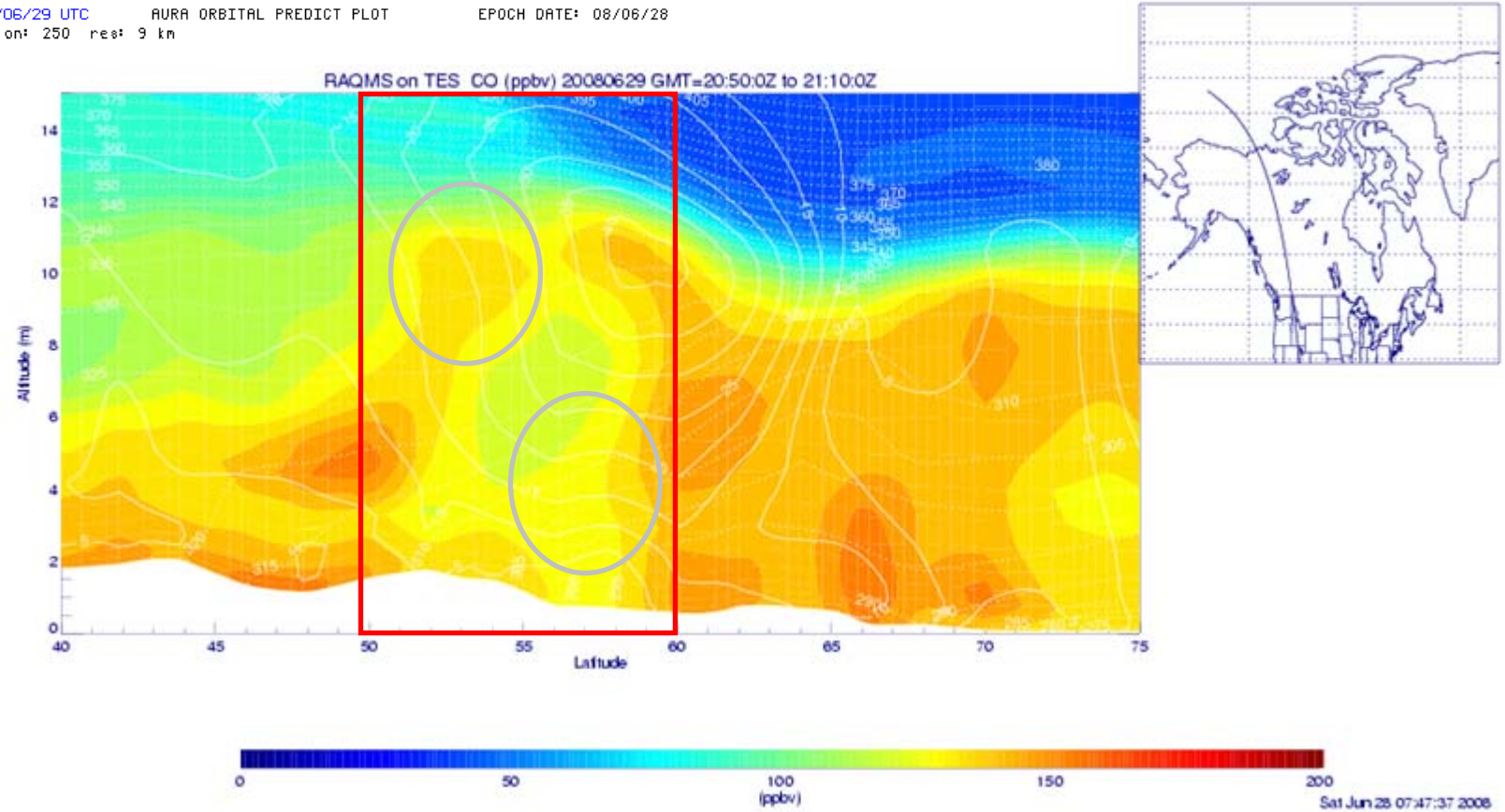
White regions indicate smoke plumes



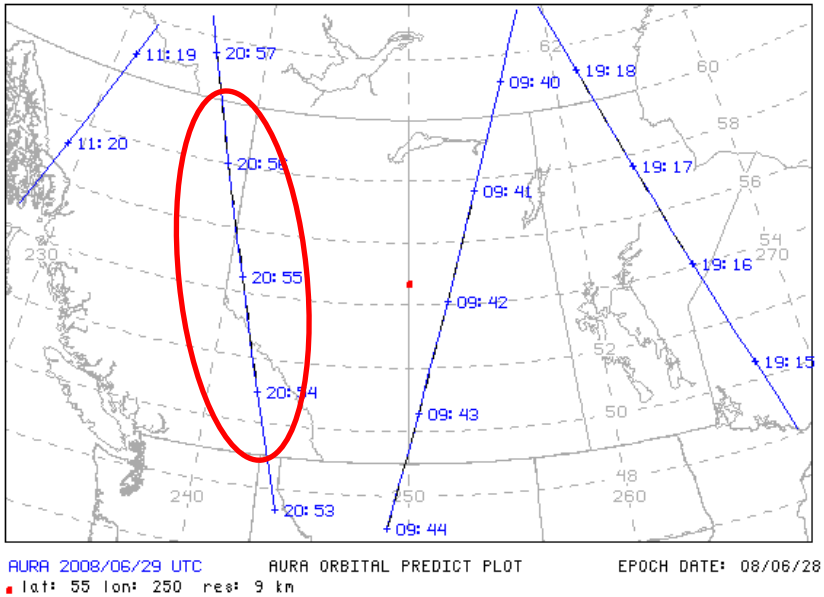
RAQMS CO Prediction: 06/29 TES orbit 20:50Z-21:10Z

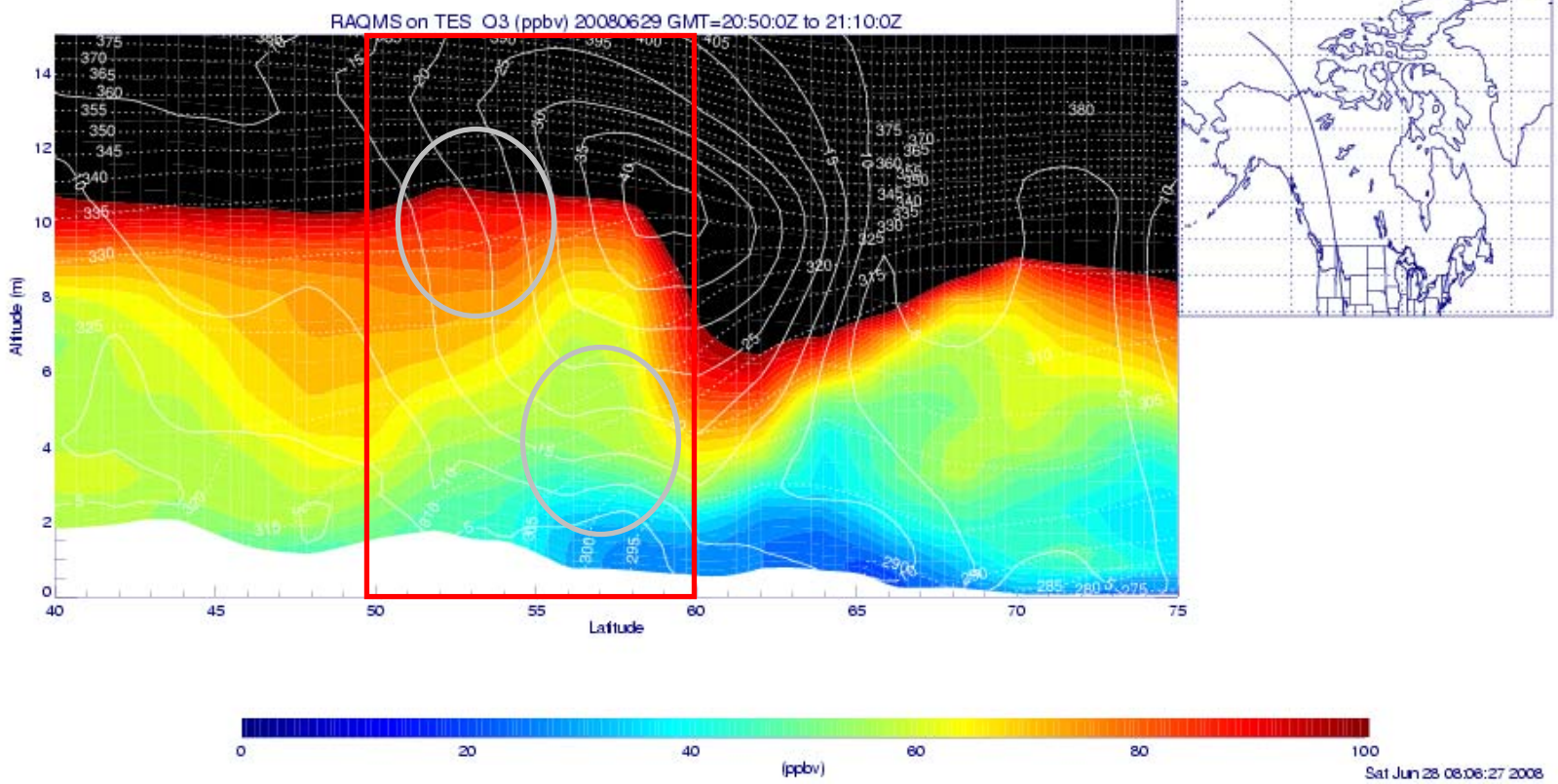


Oval indicates approximate location of Sundays current flight path



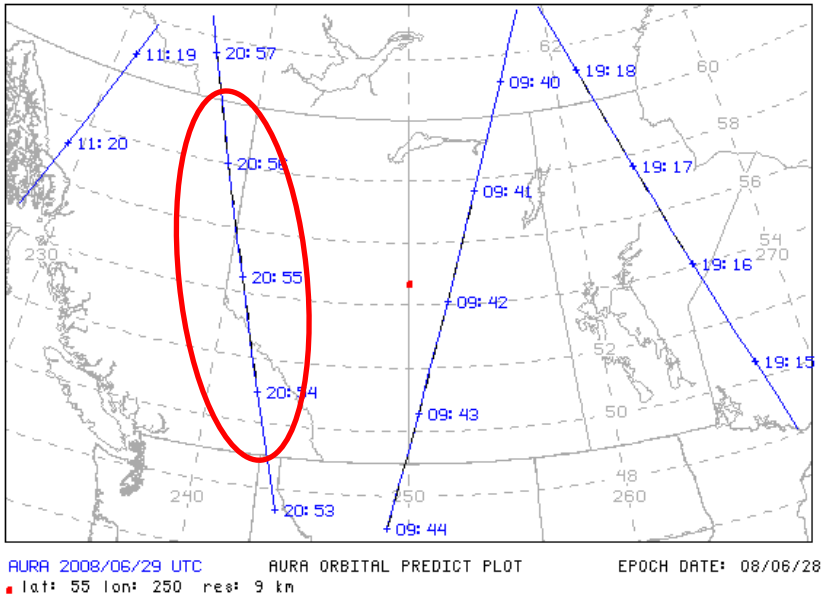
RAQMS O3 Prediction: 06/29 TES orbit 20:50Z-21:10Z

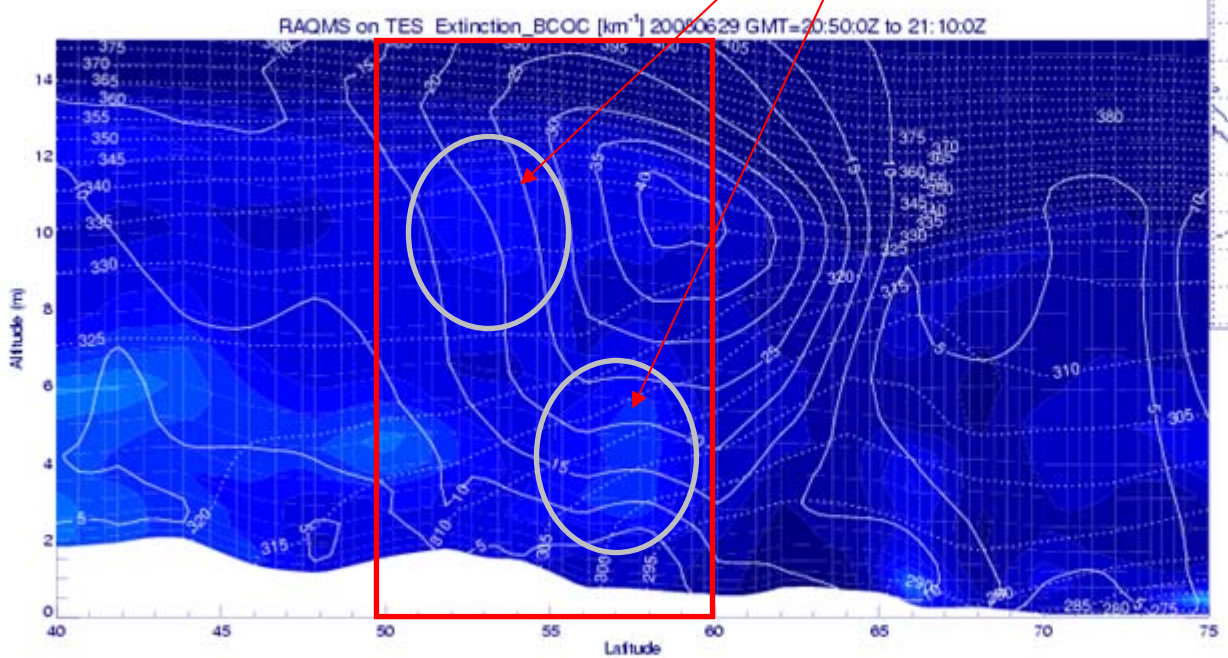


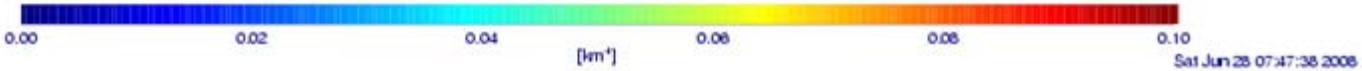


RAQMS BCOC Ext Prediction: 06/29 TES orbit 20:50Z-21:10Z

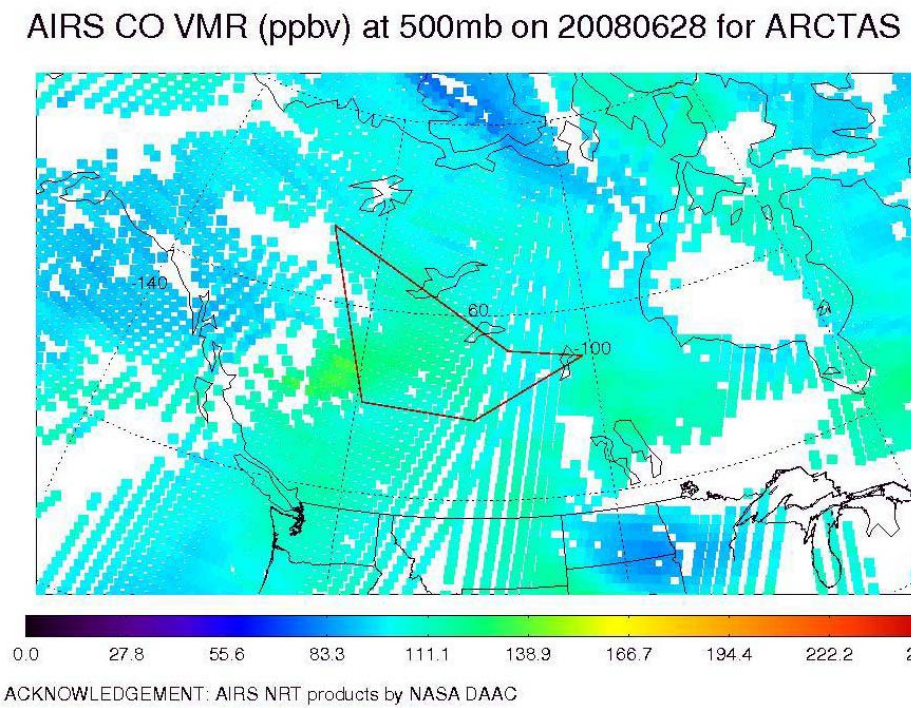
Black Carbon extinction shows indication of smoke along expected flight path

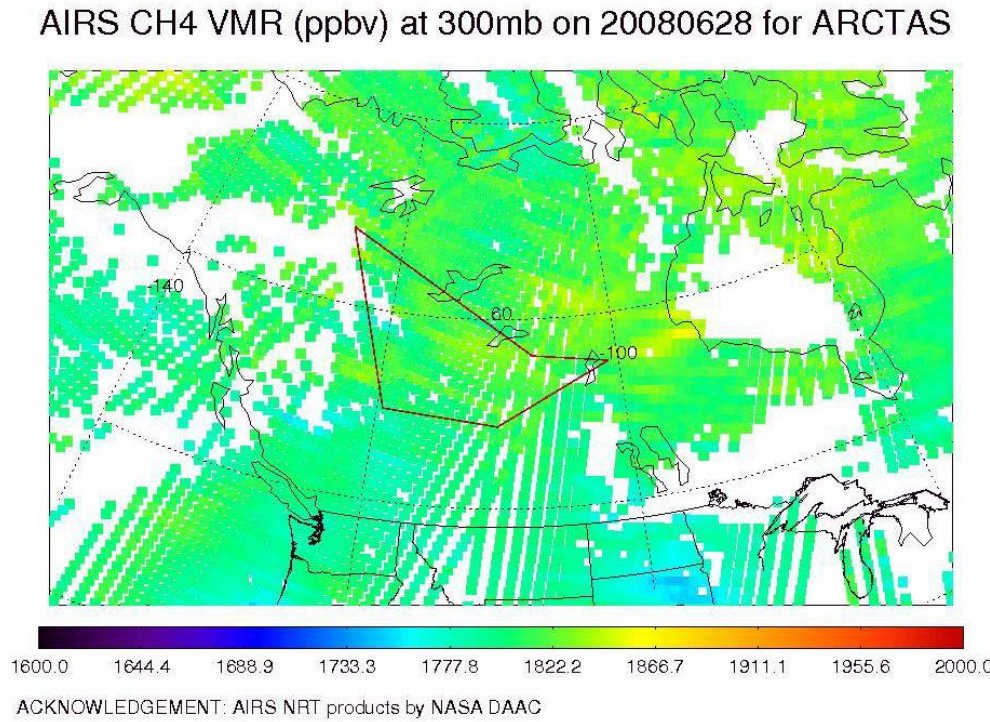






AIRS Support for ARCTAS/CARB

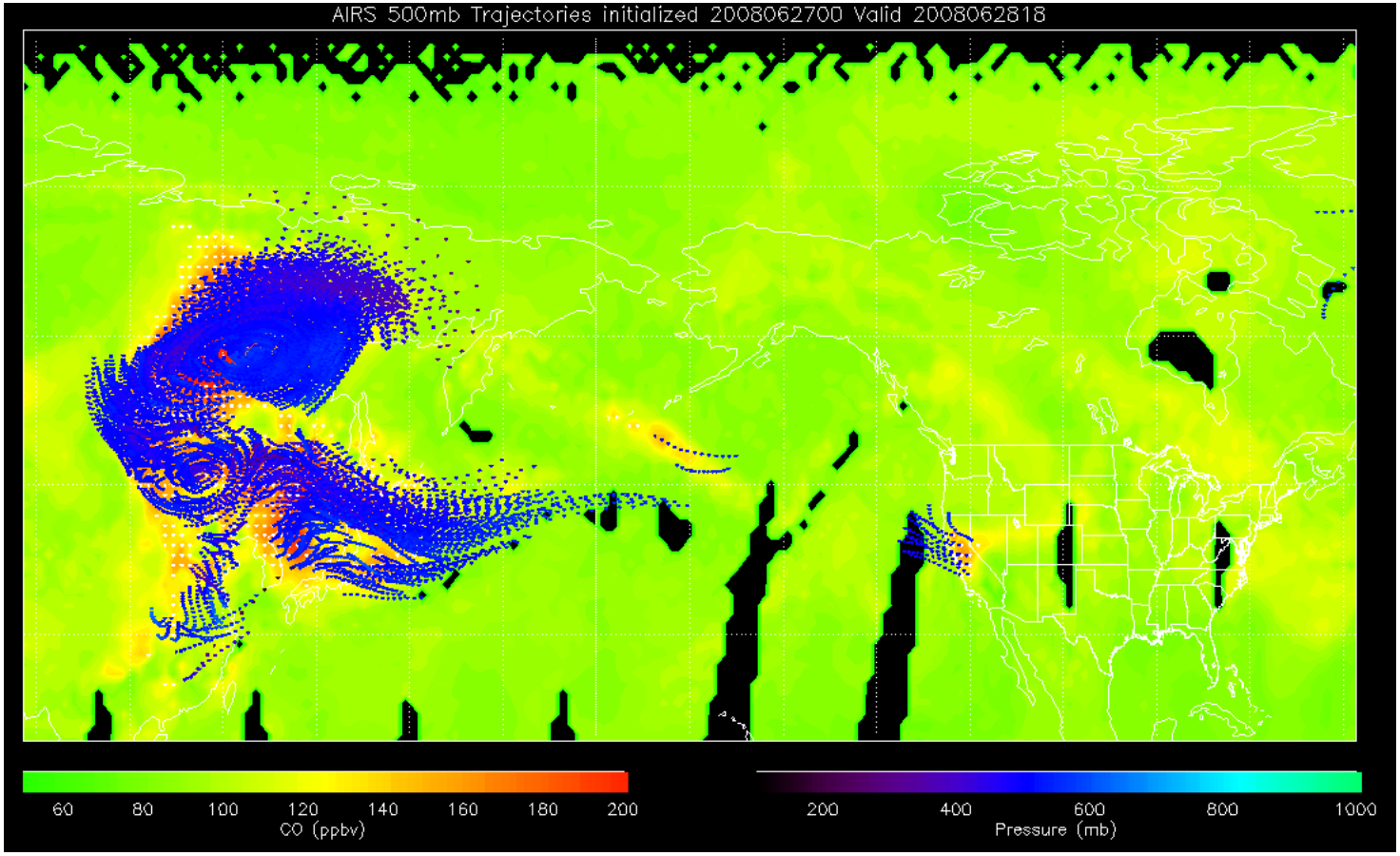




- DC8 planned path should sample transported CO from CA fires.
- CH4 is relatively high northern Canada.

AIRS Support for ARCTAS/CARB

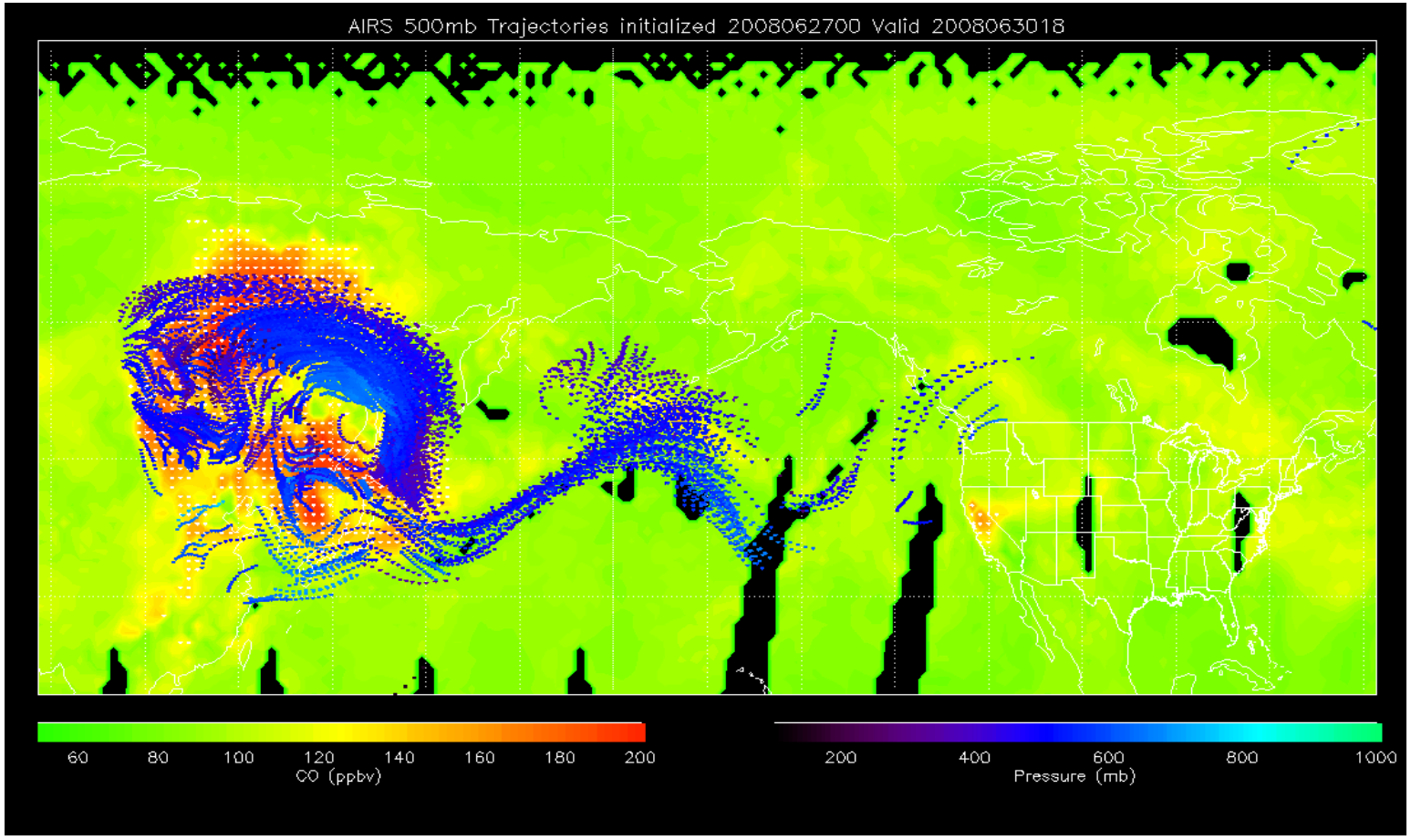
20080628 18z



California CO biomass burning is transported into Canada over flight area.

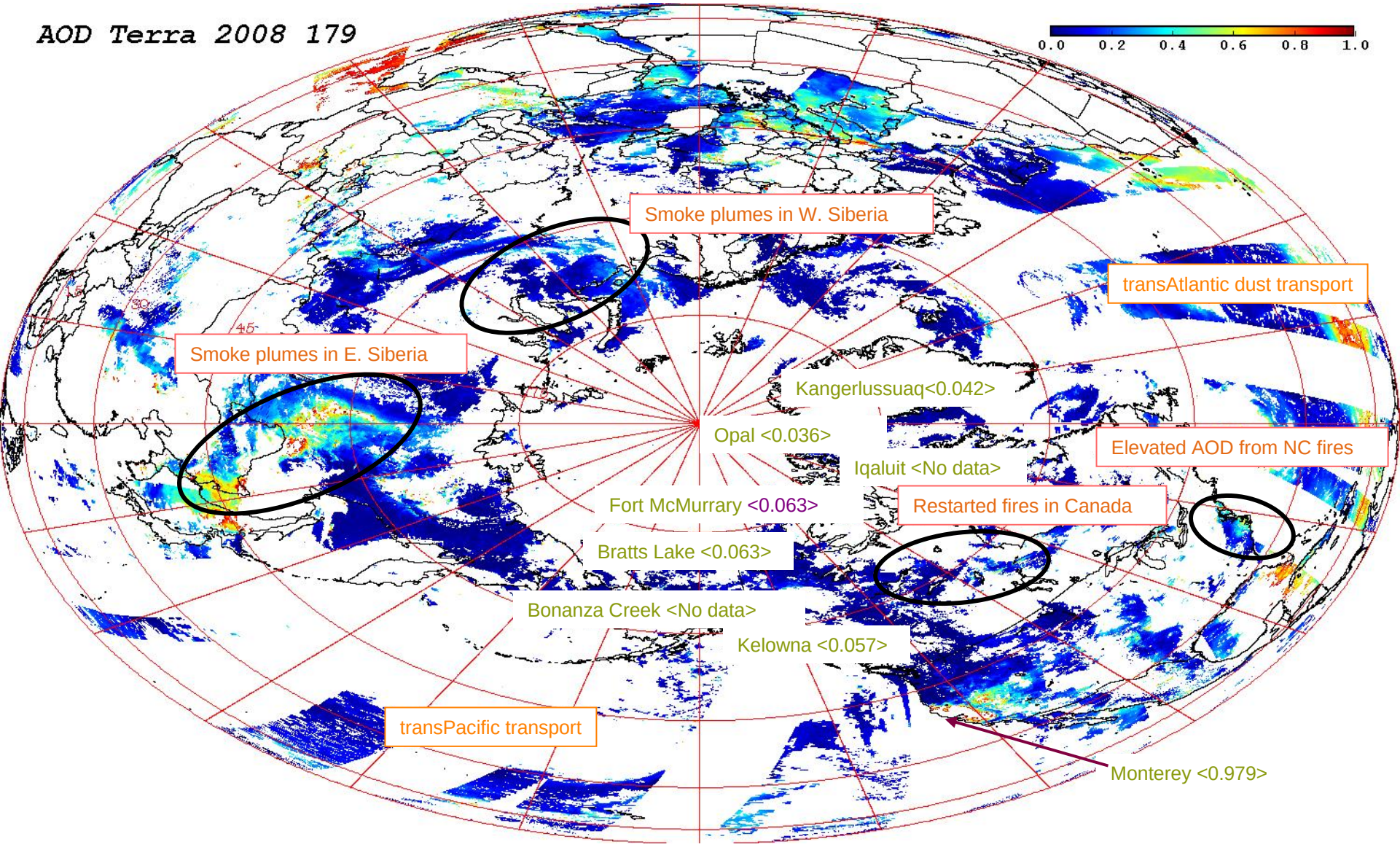
AIRS Support for ARCTAS/CARB

20080630 18z



Day 179 (June 27) Friday

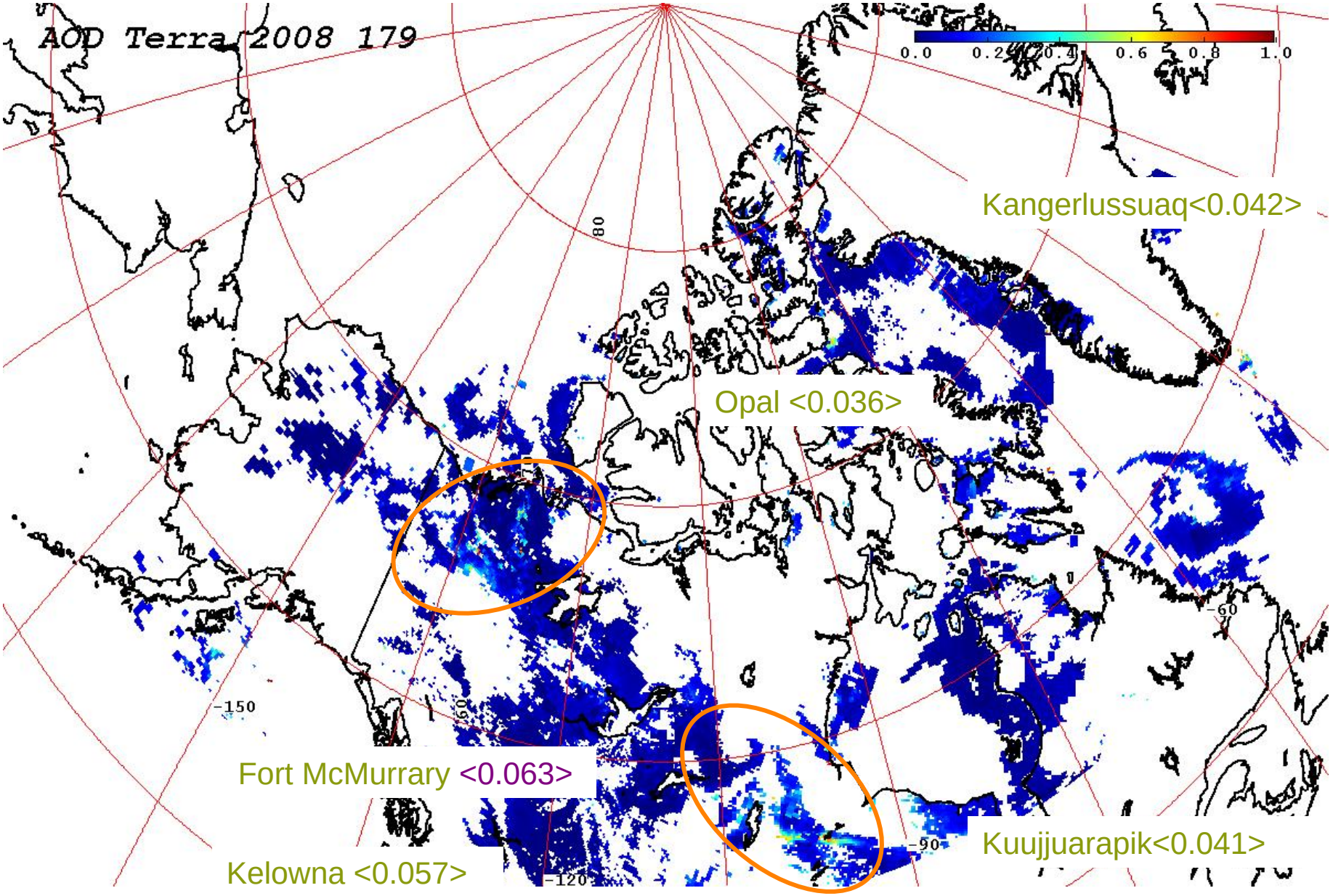
MODIS AOD Hot Spots in Northern Hemisphere (0° - 90°N)



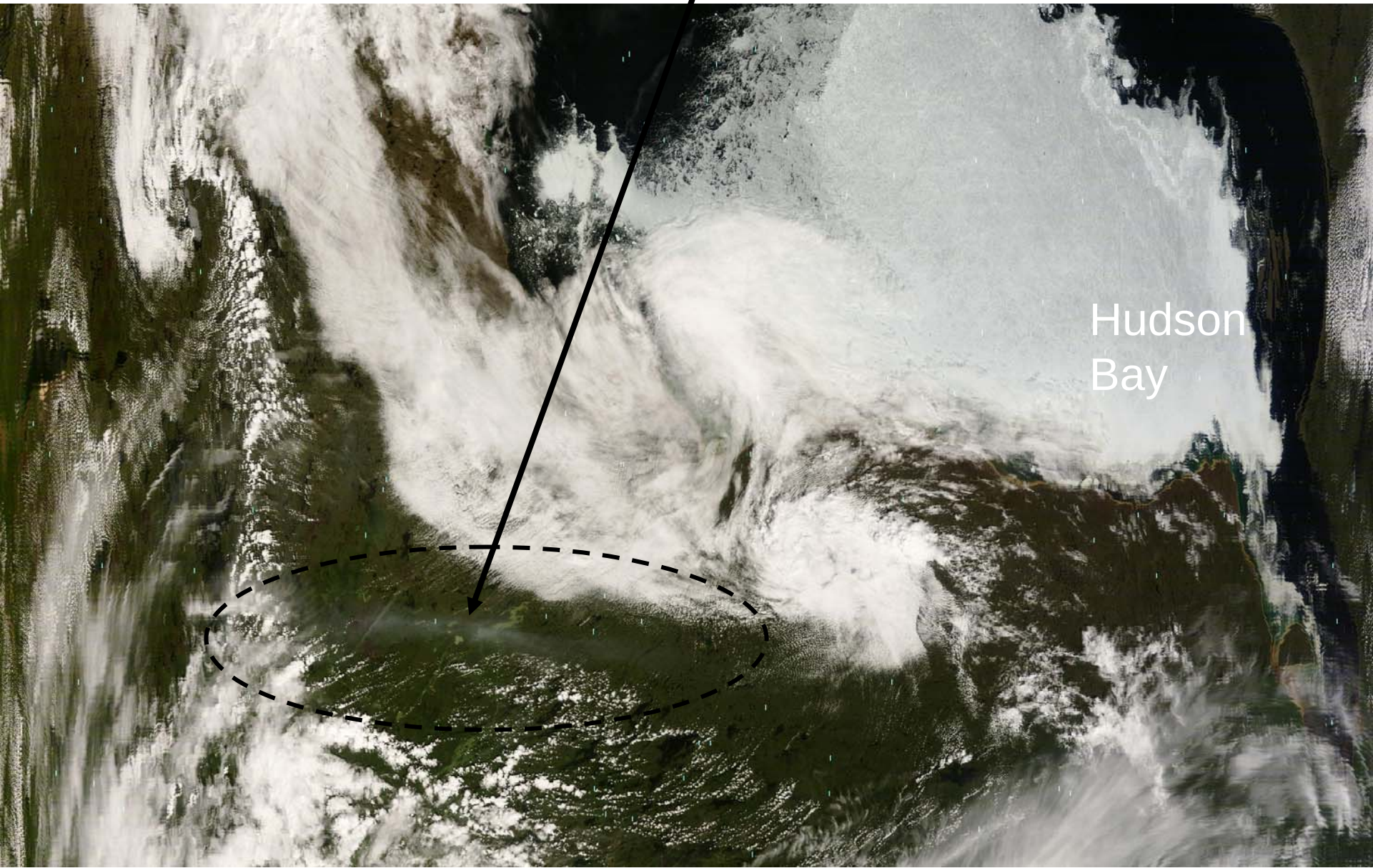
MODIS AOD at 550 nm and AERNOET daily mean <AOD> at 500 nm

Day 179 (June 27) Friday

MODIS AOD Hot Spots in Northern America

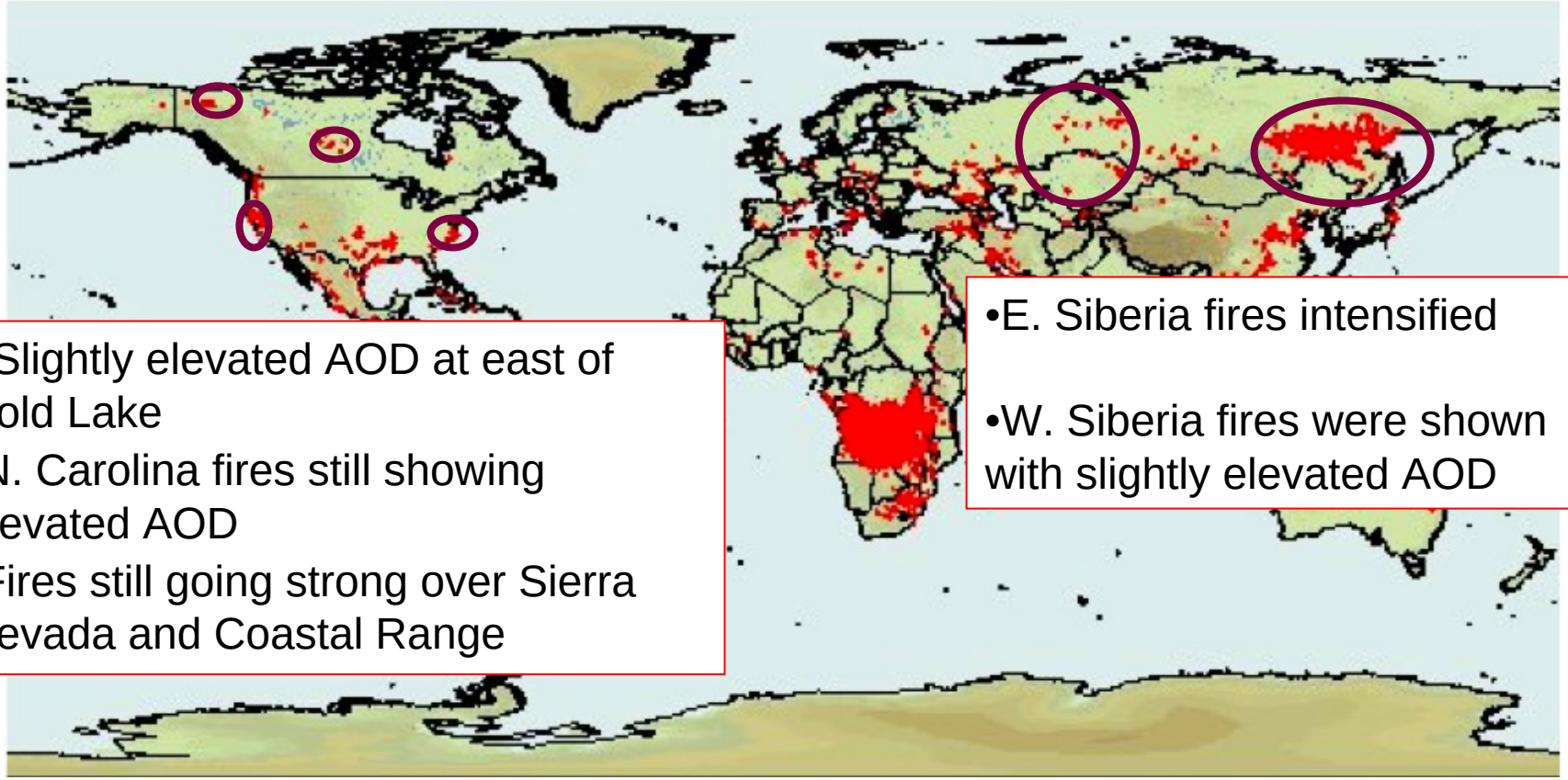


Smoke Plume at West of the Hudson Bay



MODIS Global Active Fire Count Map In Last 24 hours

(20080626- 20080628)



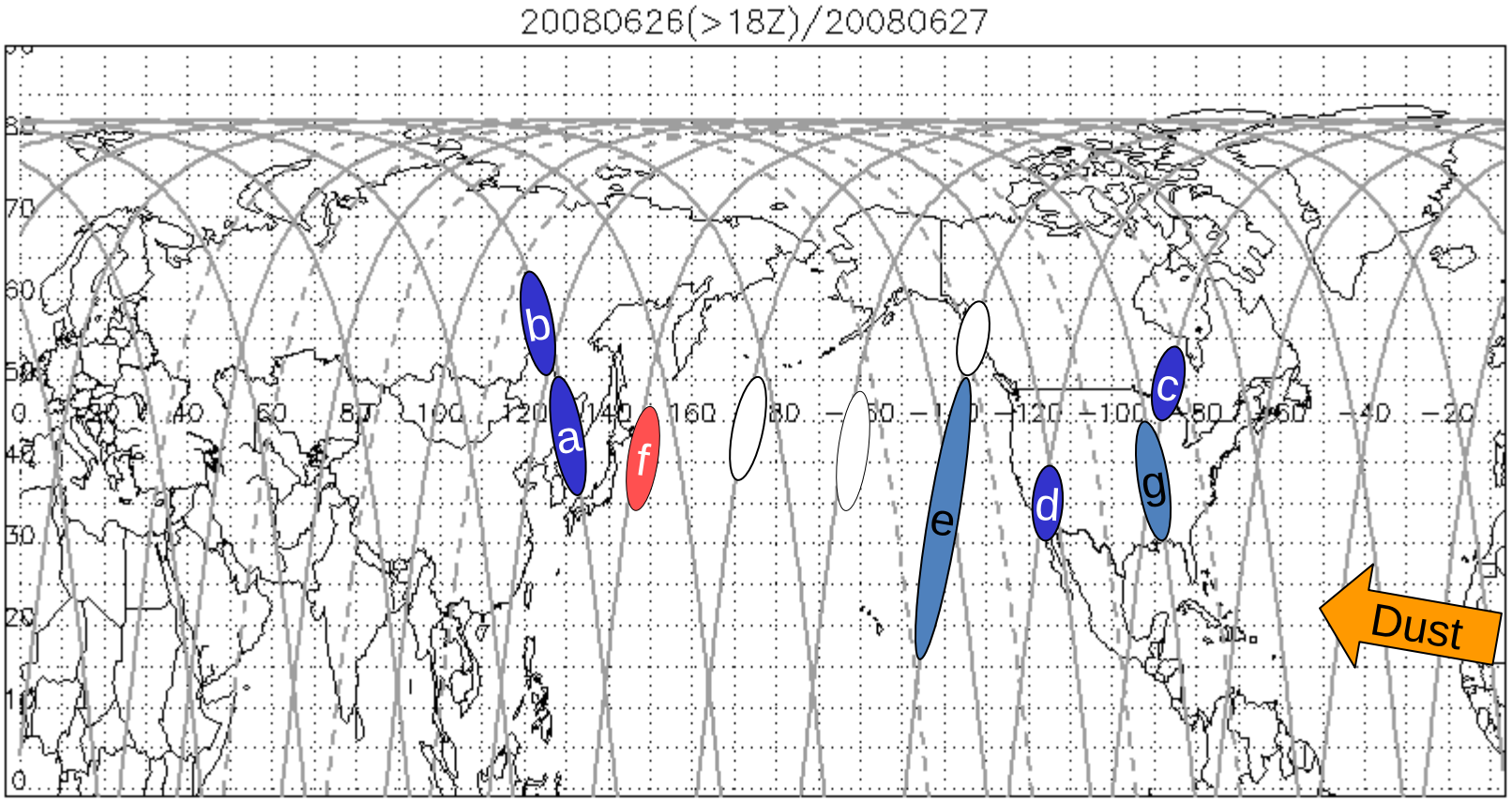
- Slightly elevated AOD at east of Cold Lake
- N. Carolina fires still showing elevated AOD
- Fires still going strong over Sierra Nevada and Coastal Range

- E. Siberia fires intensified
- 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

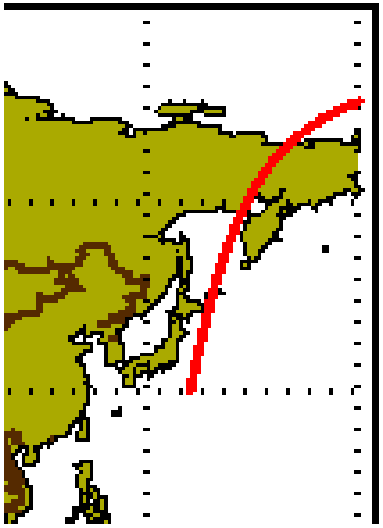
CALIPSO Obs 6/27

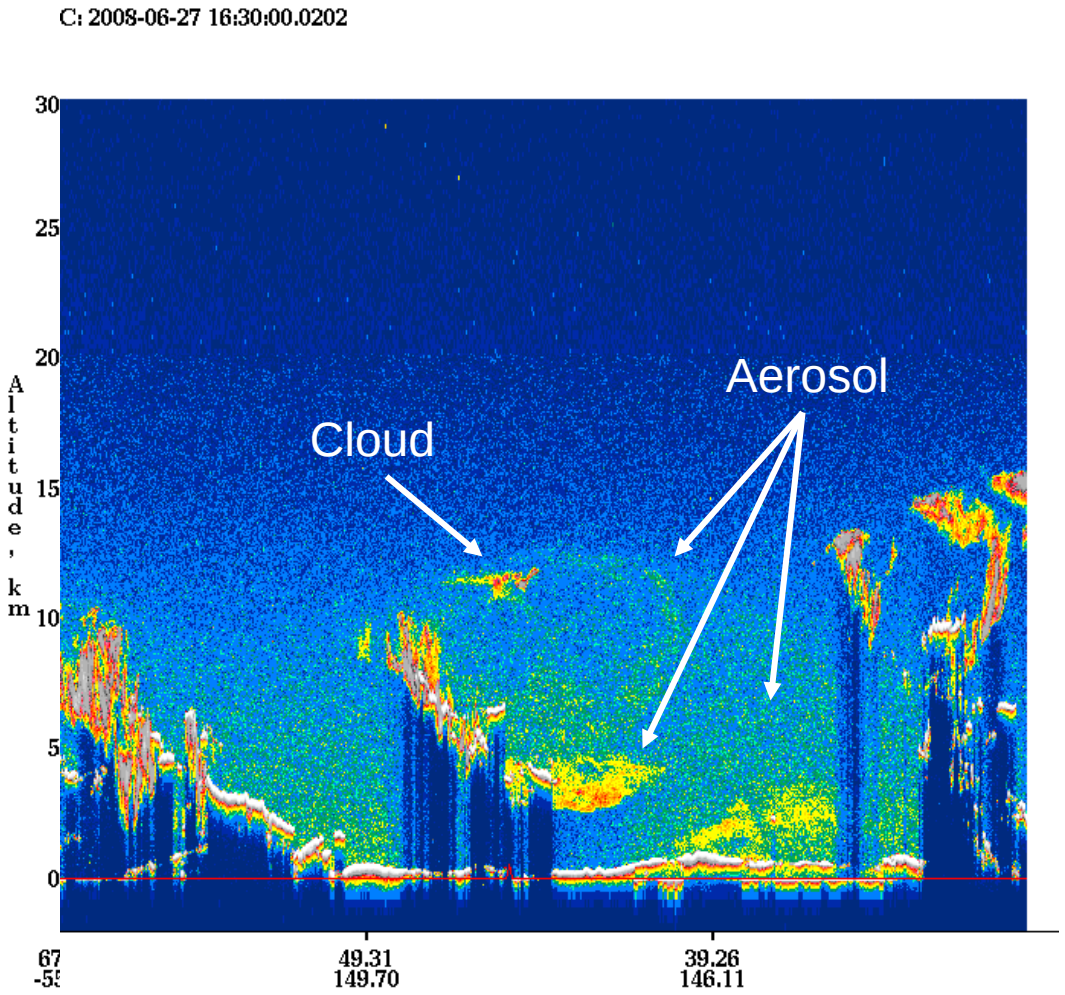


a: 2-6km
b: sfc-4km
c: sfc-3km
d: sfc-6km
e: 2-6km
f: sfc-5km (S), >3km (N)
g: sfc-6km

CALIPSO Obs 6/27

litions





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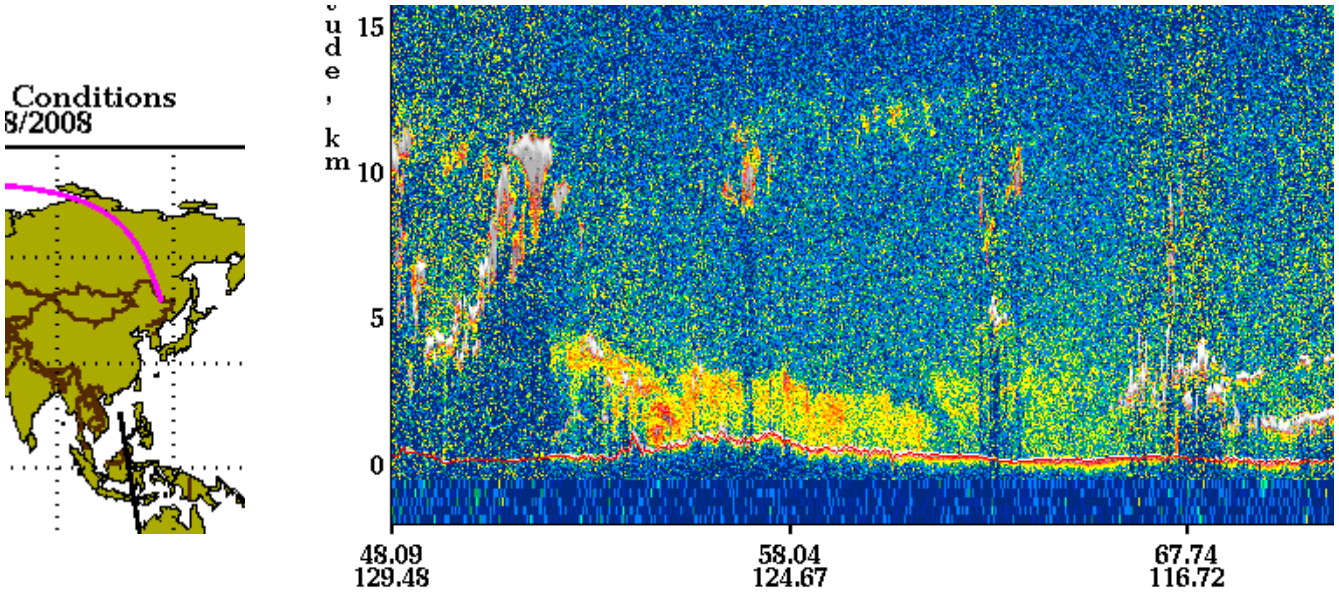

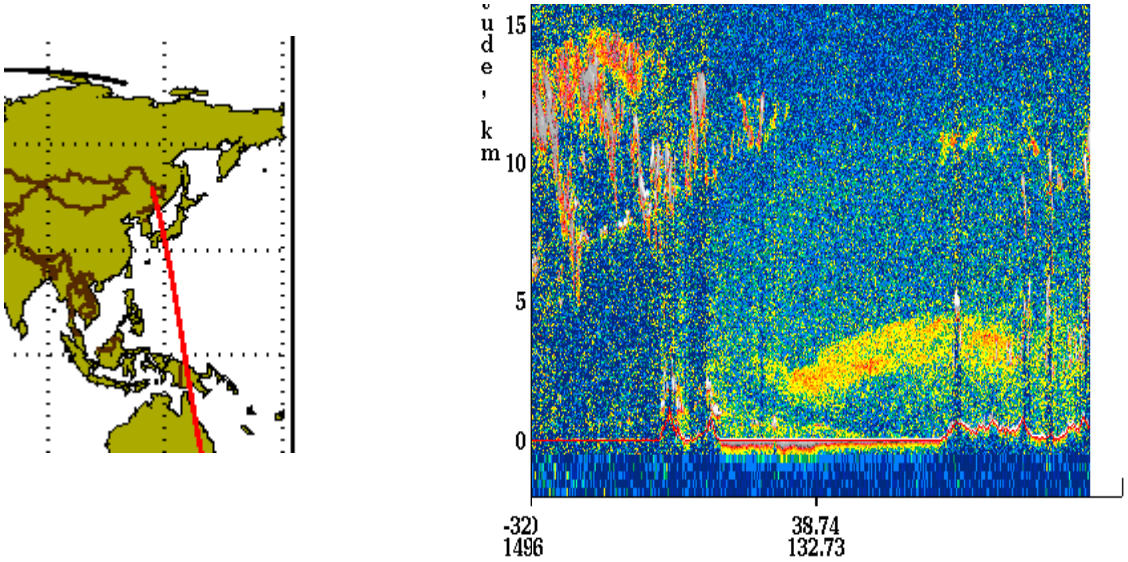

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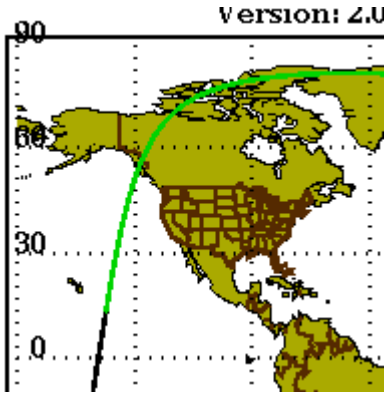

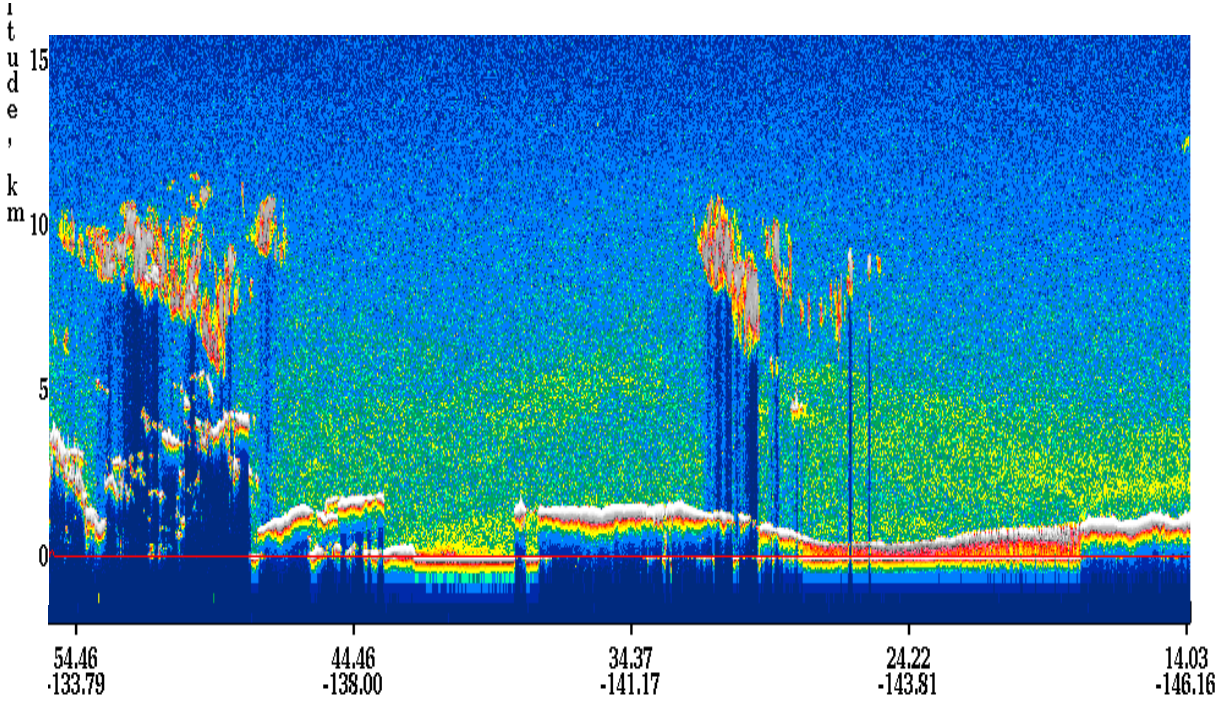

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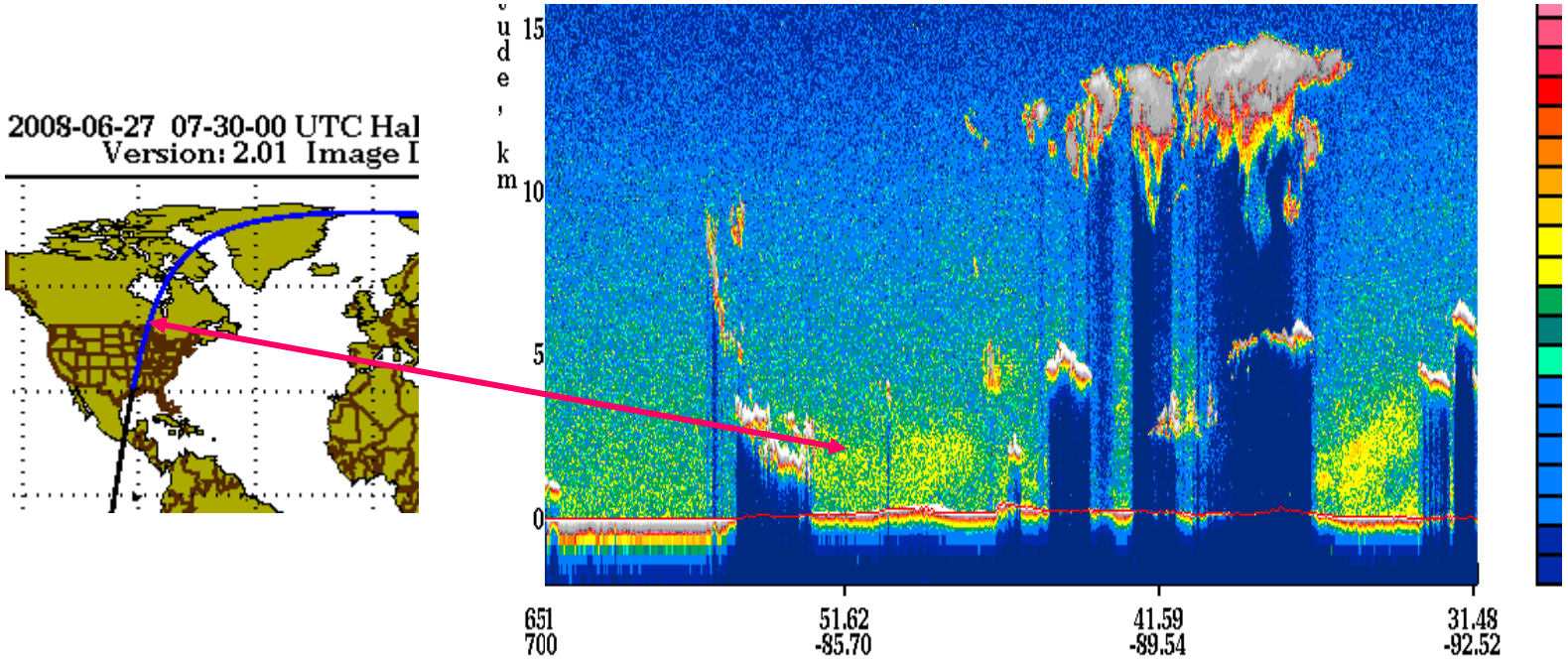
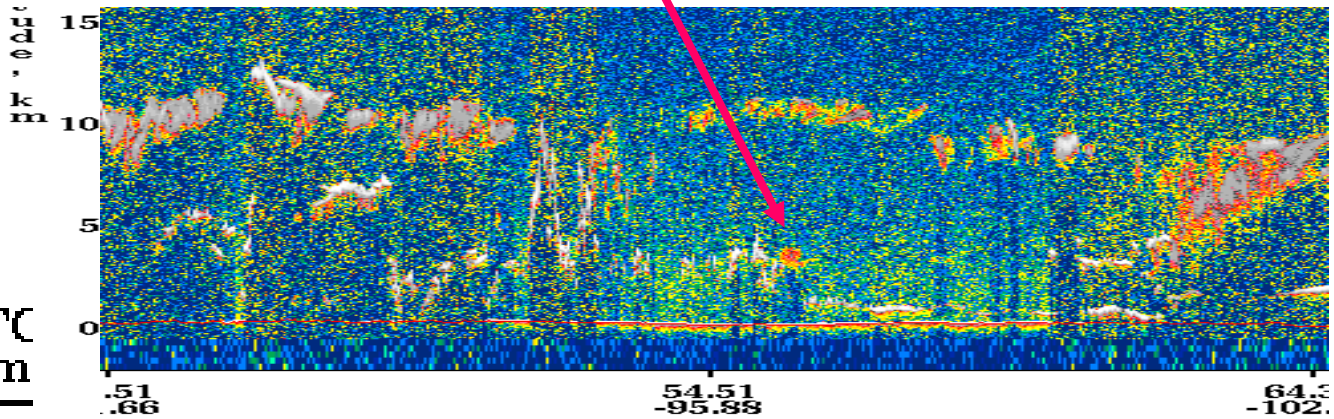
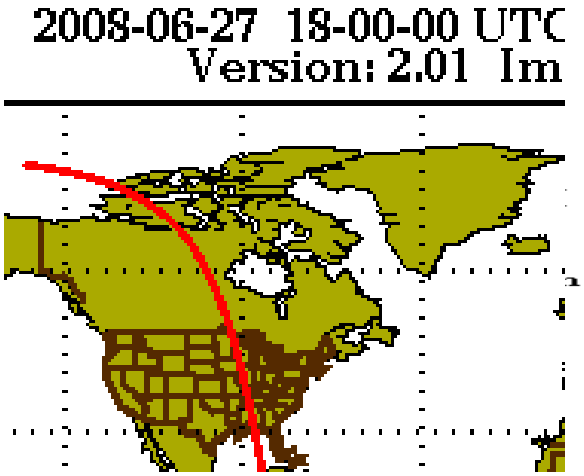
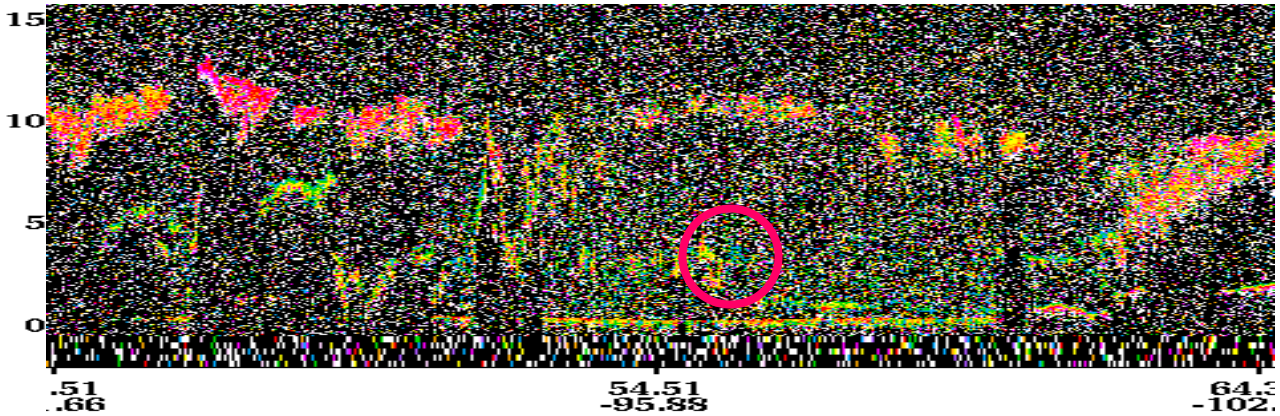


MODIS (AQUA)

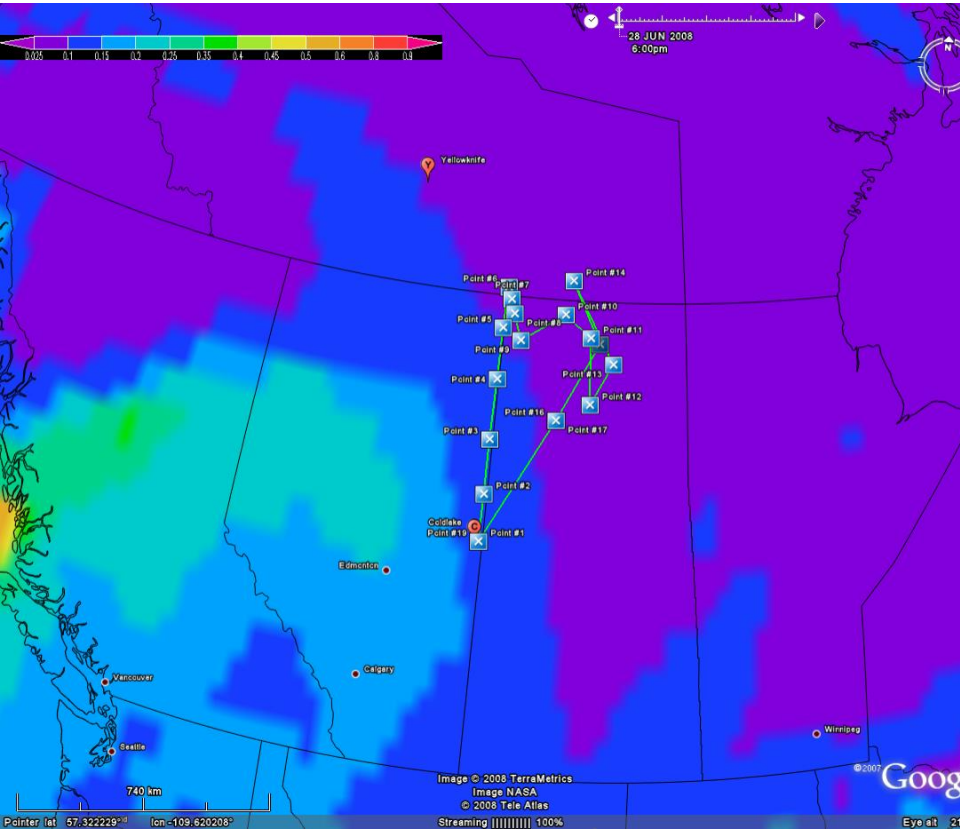
provided by Allen Chu

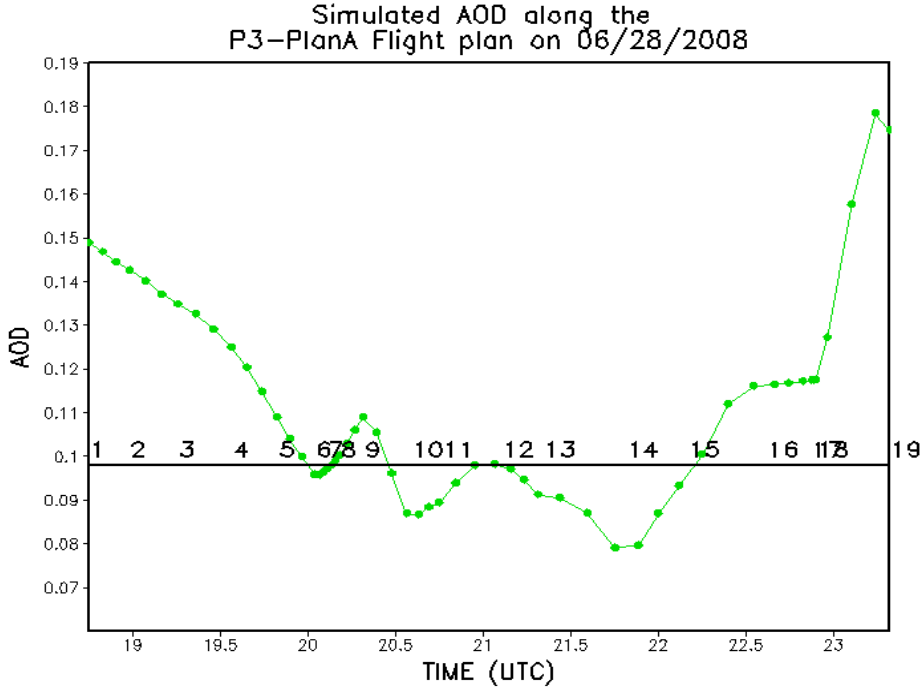


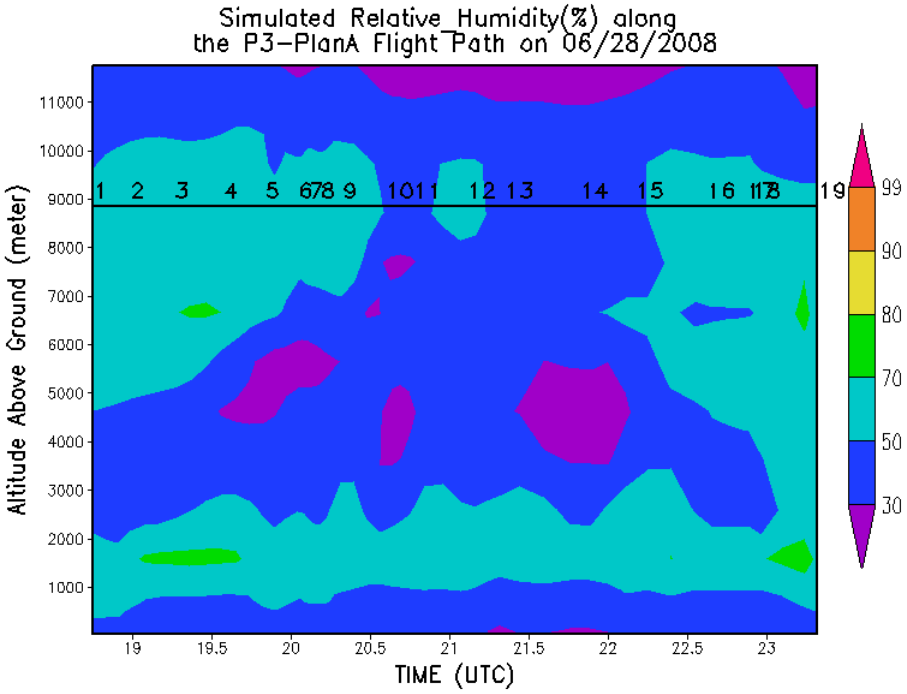


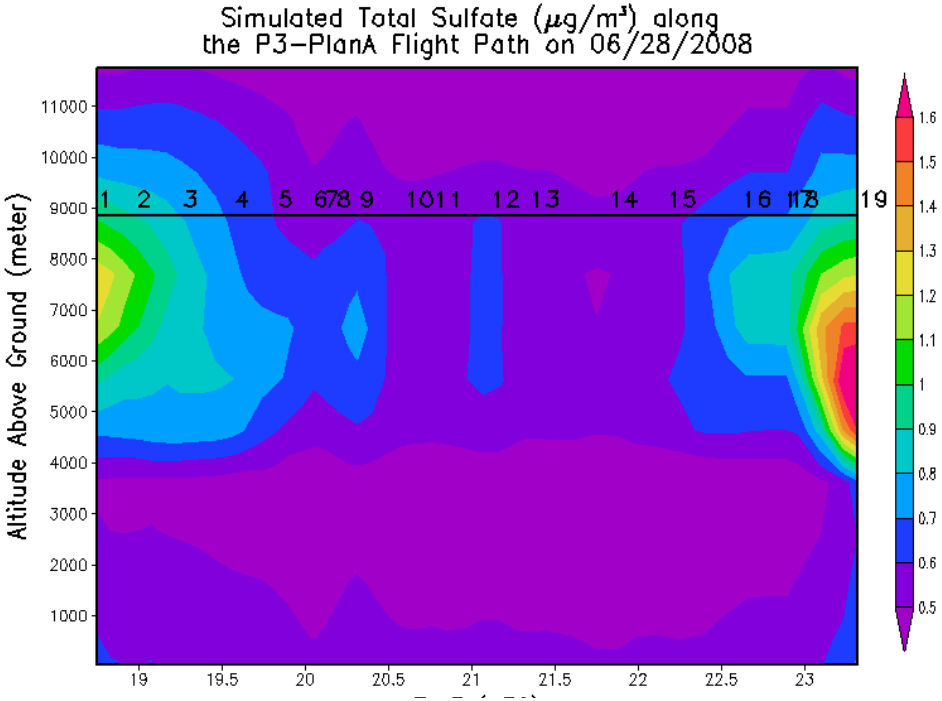


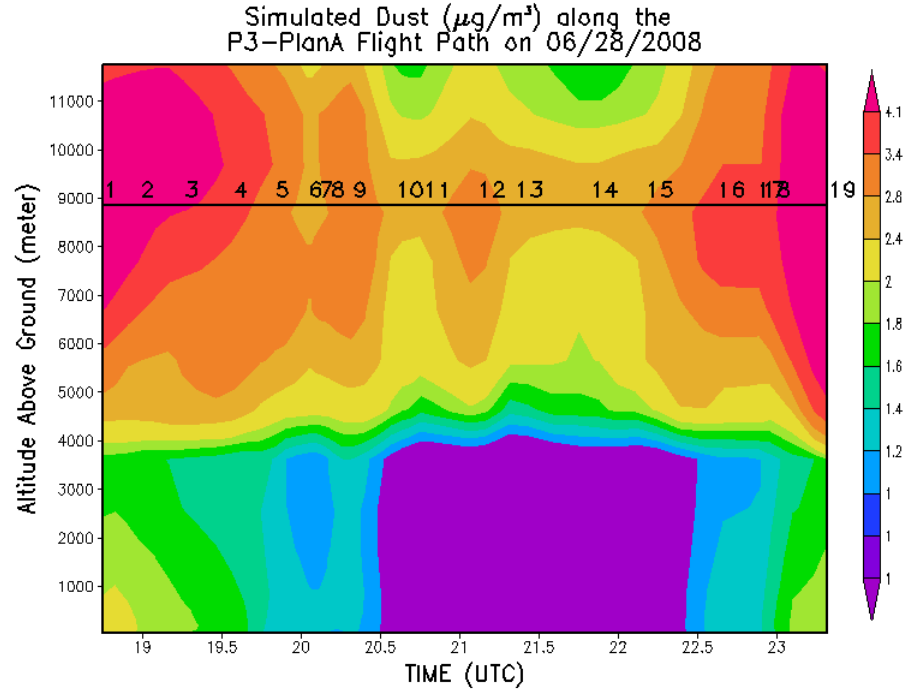
P3 Flight for 6-28

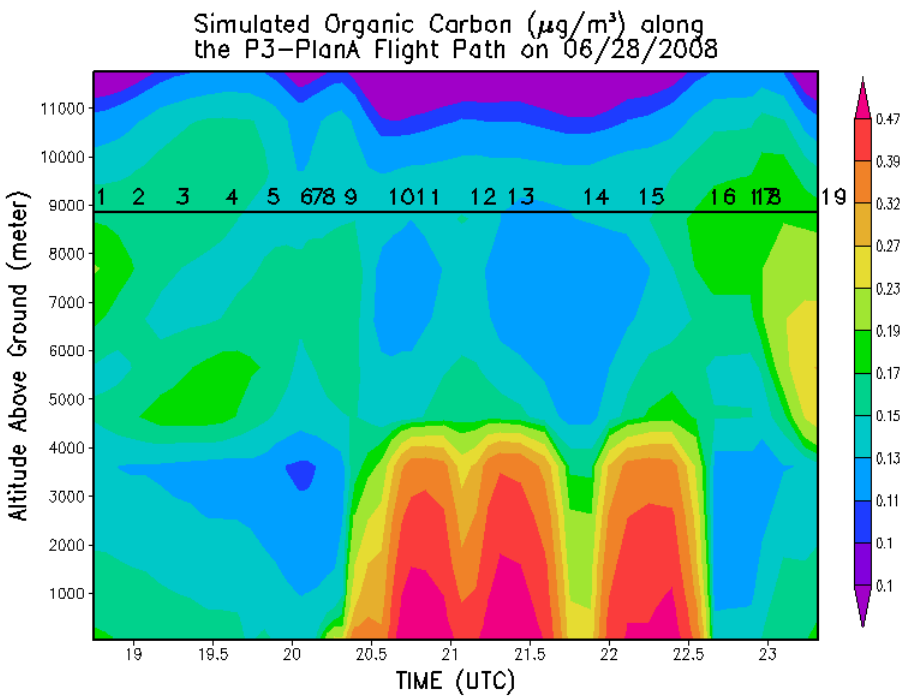







Simulated Total Sulfate (μg/m³) along the P3-PlanA Flight Path on 06/28/2008
Altitude Above Ground (meter)
1 2 3 4 5 678 9 1011 12 13 14 15 16 1718 19
11000 10000 9000 8000 7000 6000 5000 4000 3000 2000 1000
19 19.5 20 20.5 21 21.5 22 22.5 23
1.6 1.5 1.4 1.3 1.2 1.1 1 0.9 0.8 0.7 0.6 0.5


Simulated Dust (μg/m³) along the P3-PlanA Flight Path on 06/28/2008
Altitude Above Ground (meter)
1 2 3 4 5 678 9 1011 12 13 14 15 16 1718 19
11000 10000 9000 8000 7000 6000 5000 4000 3000 2000 1000
19 19.5 20 20.5 21 21.5 22 22.5 23
TIME (UTC)
4.1 3.4 2.8 2.4 2 1.8 1.6 1.4 1.2 1 1 1


Simulated Organic Carbon (μg/m³) along the P3-PlanA Flight Path on 06/28/2008
Altitude Above Ground (meter)
1 2 3 4 5 678 9 1011 12 13 14 15 16 1718 19
11000 10000 9000 8000 7000 6000 5000 4000 3000 2000 1000
19 19.5 20 20.5 21 21.5 22 22.5 23
TIME (UTC)
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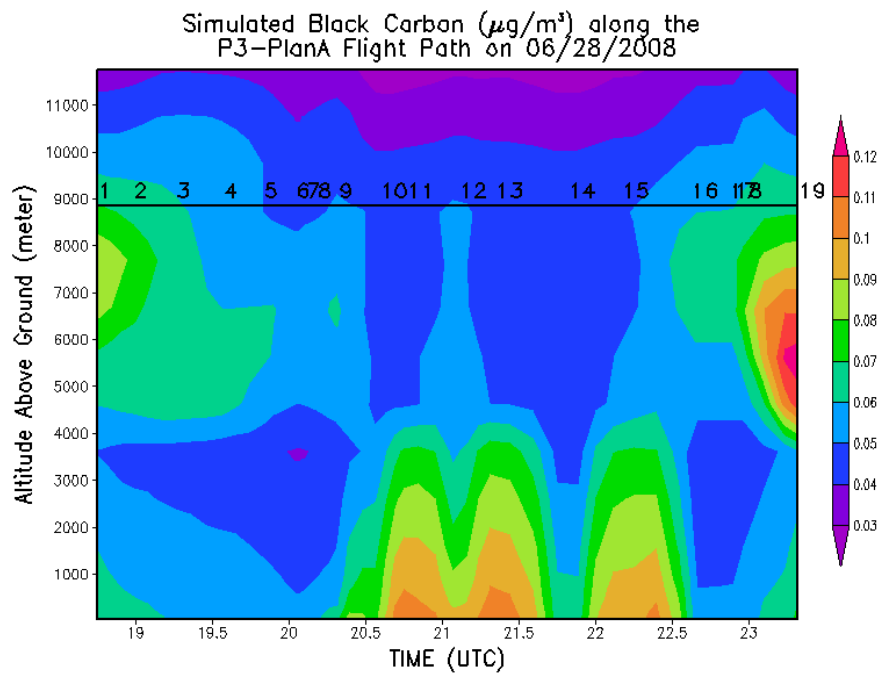
Simulated Black Carbon (μg/m³) along the P3-PlanA Flight Path on 06/28/2008
Altitude Above Ground (meter)
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11000 10000 9000 8000 7000 6000 5000 4000 3000 2000 1000
19 19.5 20 20.5 21 21.5 22 22.5 23
TIME (UTC)
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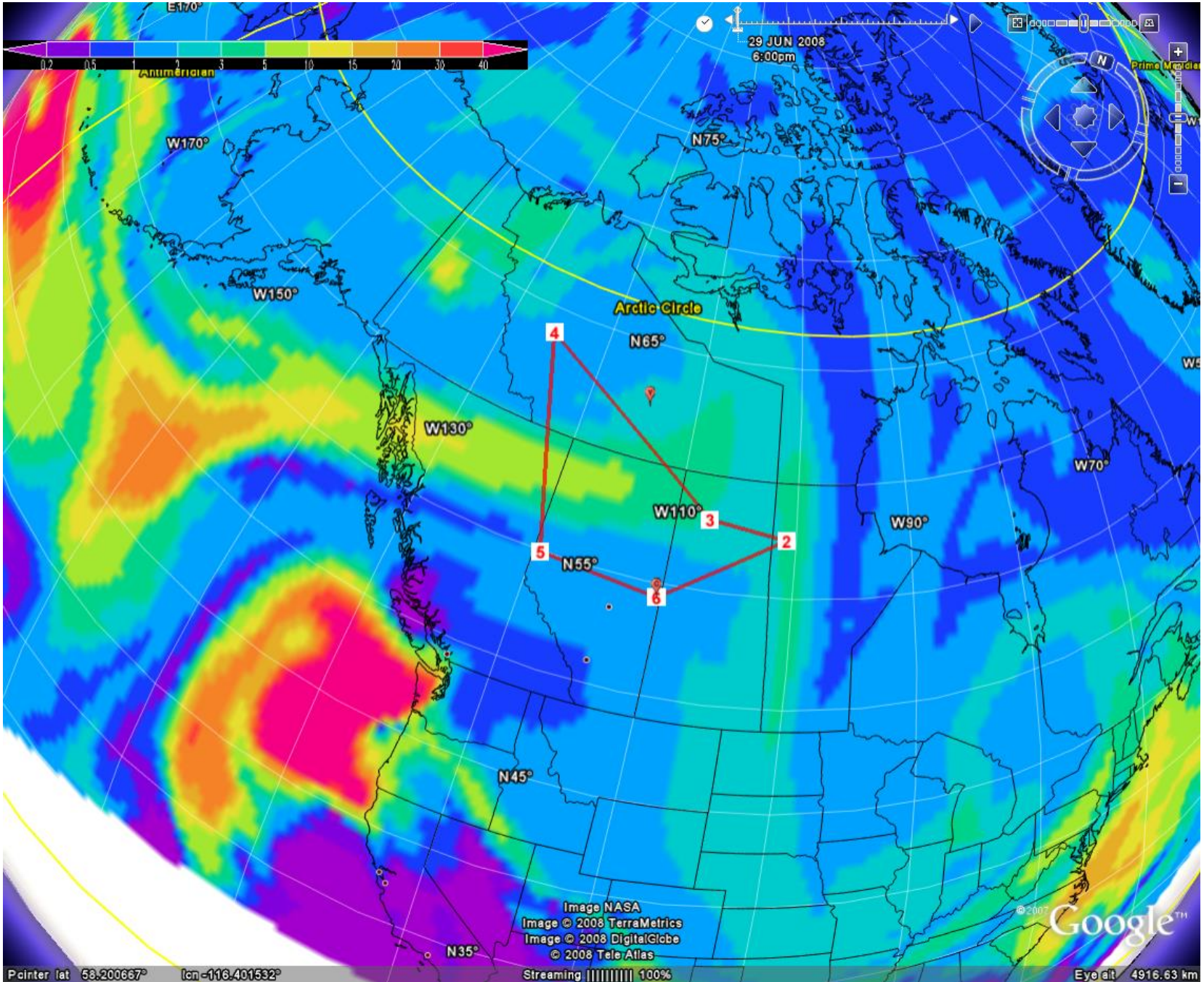
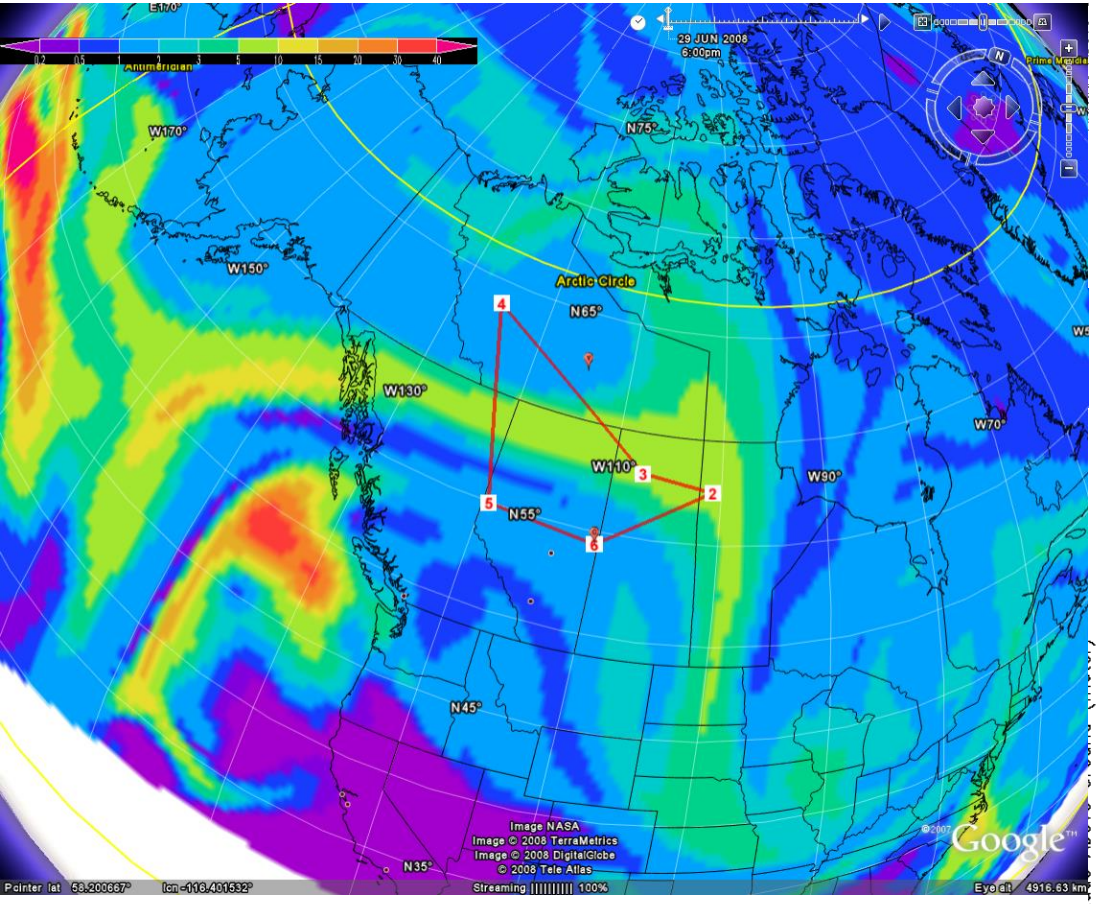
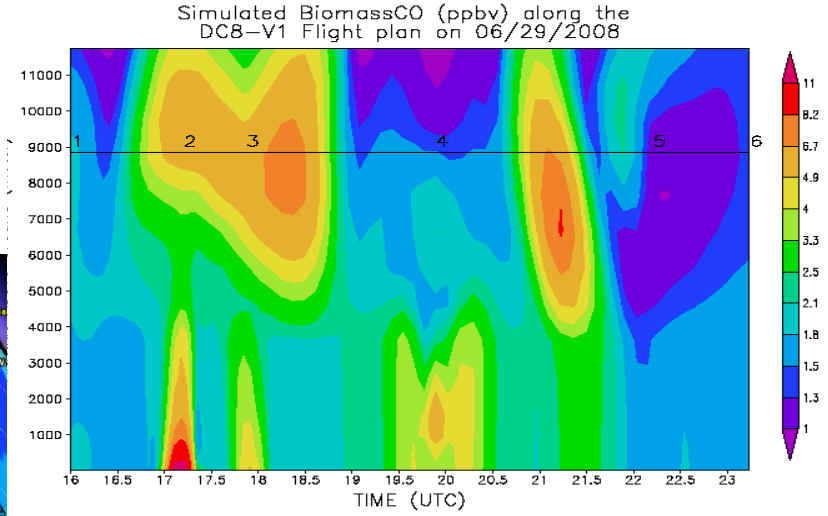
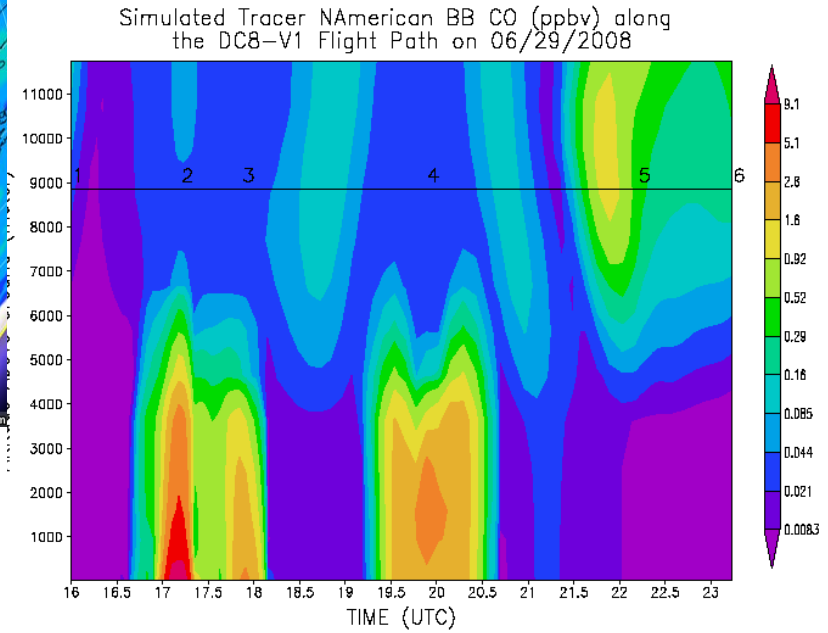
Biomass CO, 5.5 km layer, 29th June 18Z

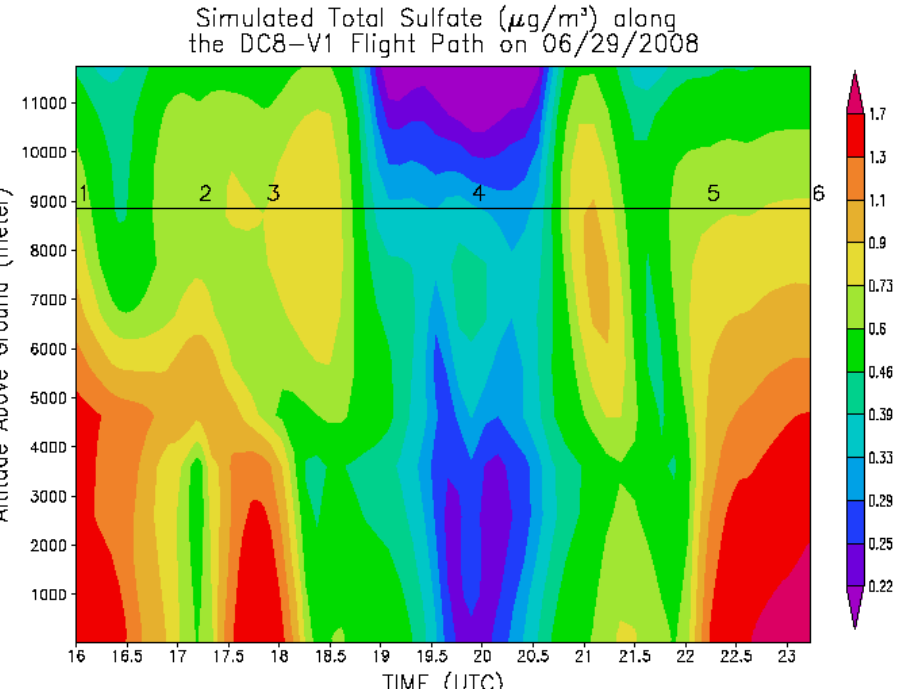


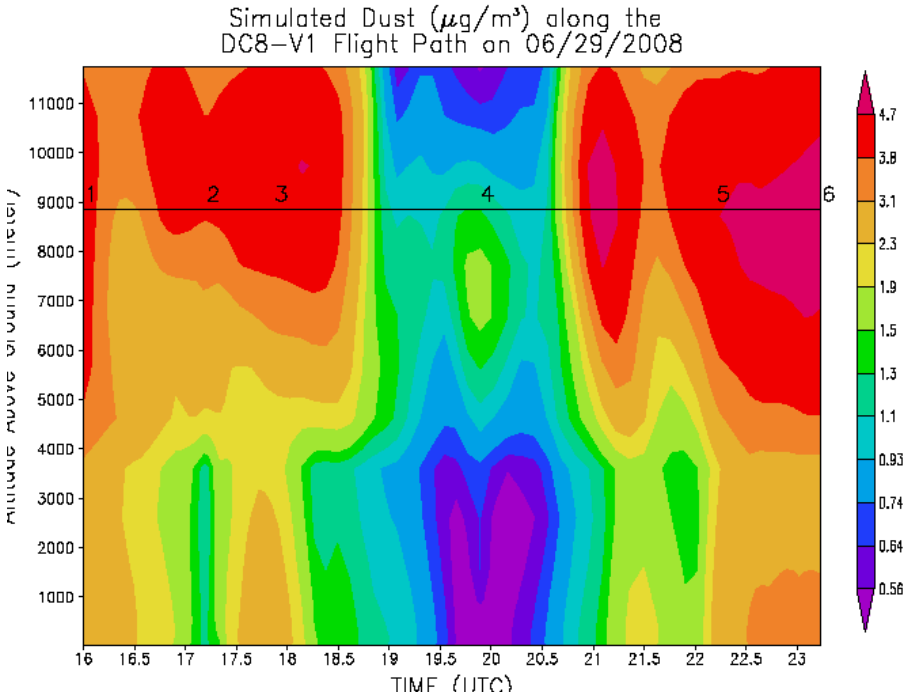
Biomass CO, 8.4 km layer, 29th June 18Z

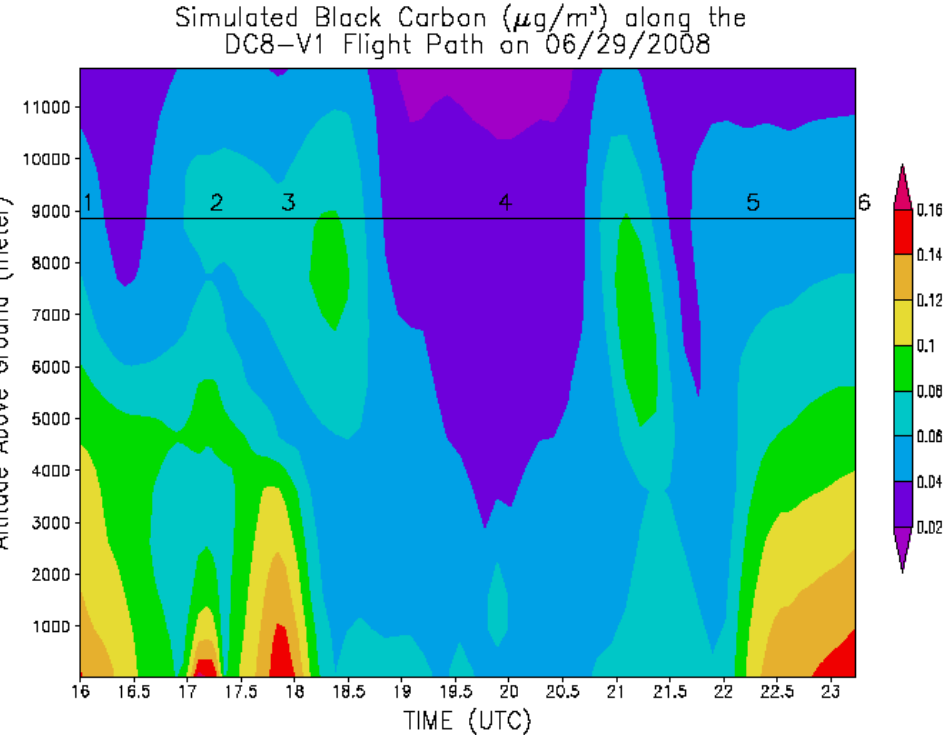


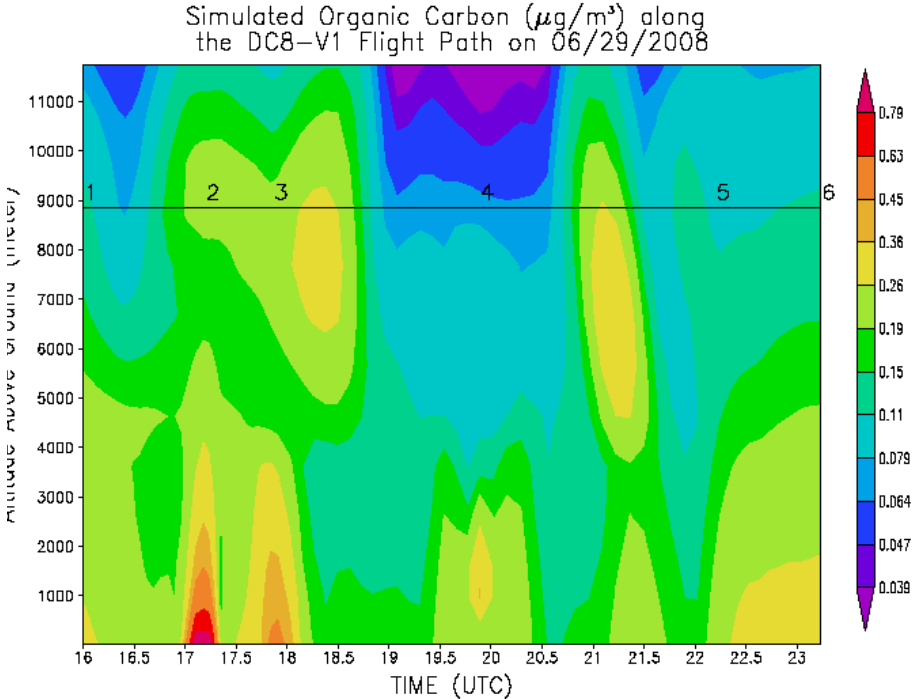




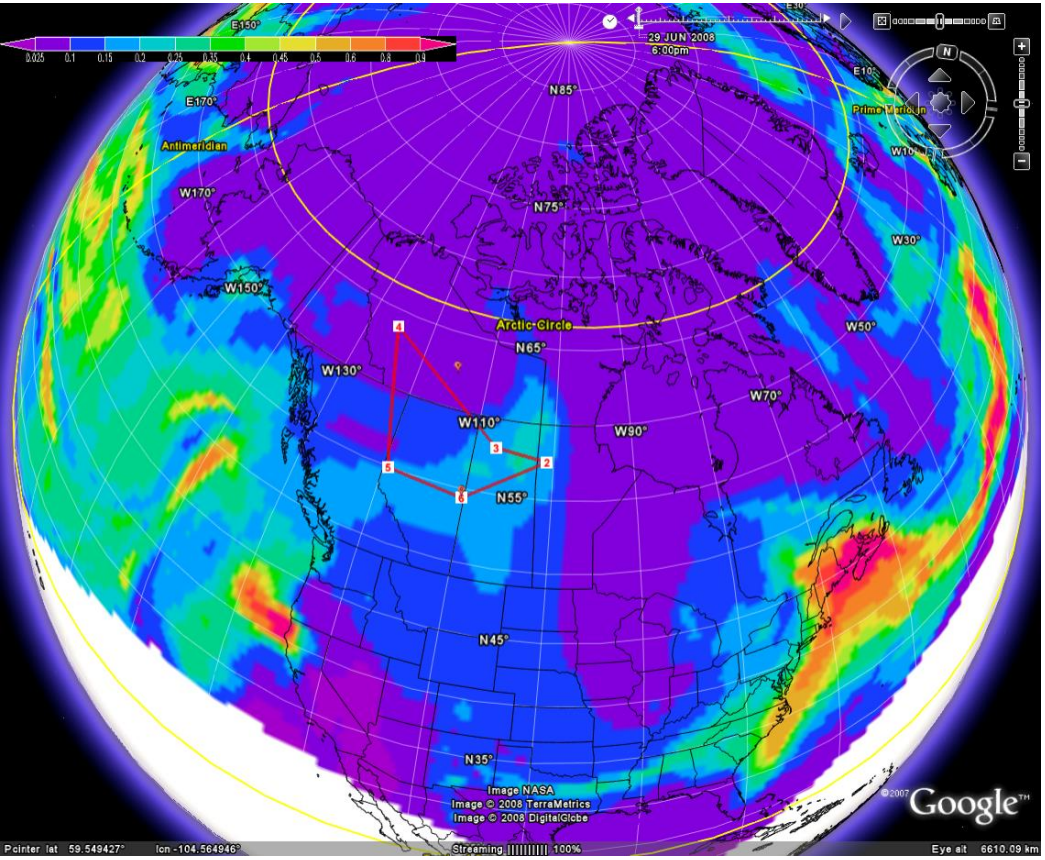

Simulated Total Sulfate (μg/m³) along the DC8-V1 Flight Path on 06/29/2008
Altitude Above Ground (meter)
TIME (UTC)
1
2
3
4
5
6
1.7
1.3
1.1
0.9
0.73
0.6
0.46
0.39
0.33
0.29
0.25
0.22

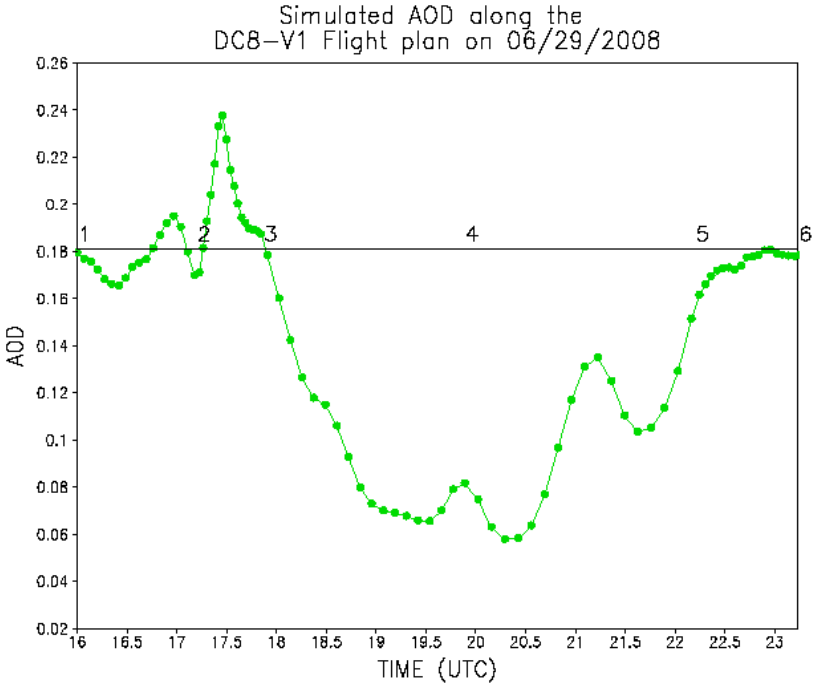

Simulated Dust (μg/m³) along the DC8-V1 Flight Path on 06/29/2008
Altitude Above Ground (meter)
TIME (UTC)
1
2
3
4
5
6
4.7
3.8
3.1
2.3
1.9
1.5
1.3
1.1
0.93
0.74
0.64
0.56

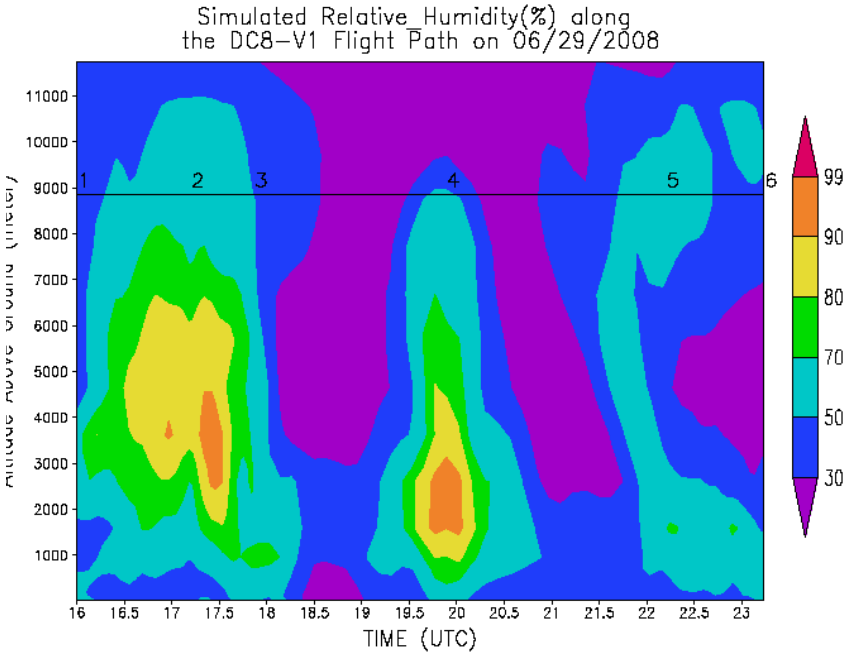

Simulated Black Carbon (μg/m³) along the DC8-V1 Flight Path on 06/29/2008
Altitude Above Ground (meter)
TIME (UTC)
1
2
3
4
5
6
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02

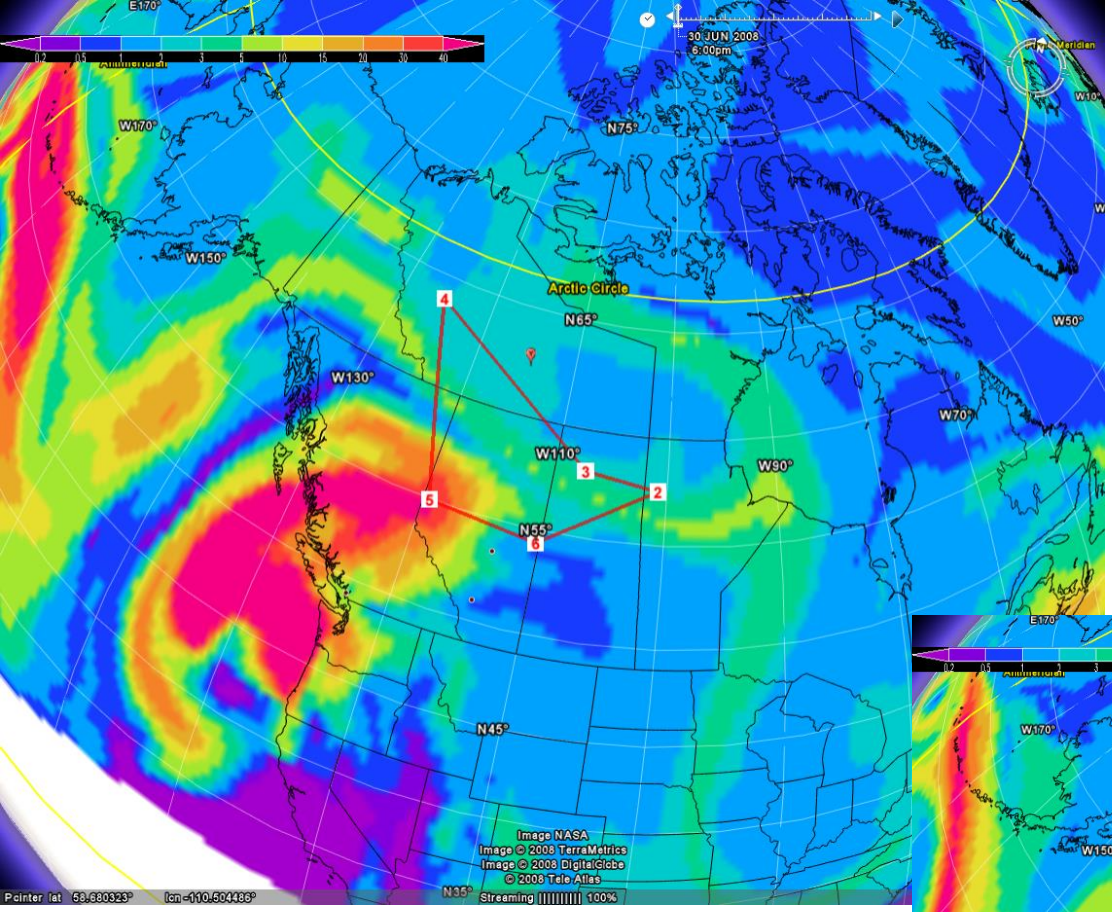

Simulated Organic Carbon (μg/m³) along the DC8-V1 Flight Path on 06/29/2008
Altitude Above Ground (meter)
TIME (UTC)
1
2
3
4
5
6
0.79
0.63
0.45
0.36
0.26
0.19
0.15
0.11
0.079
0.064
0.047
0.039

AOD, June 29th , 18Z

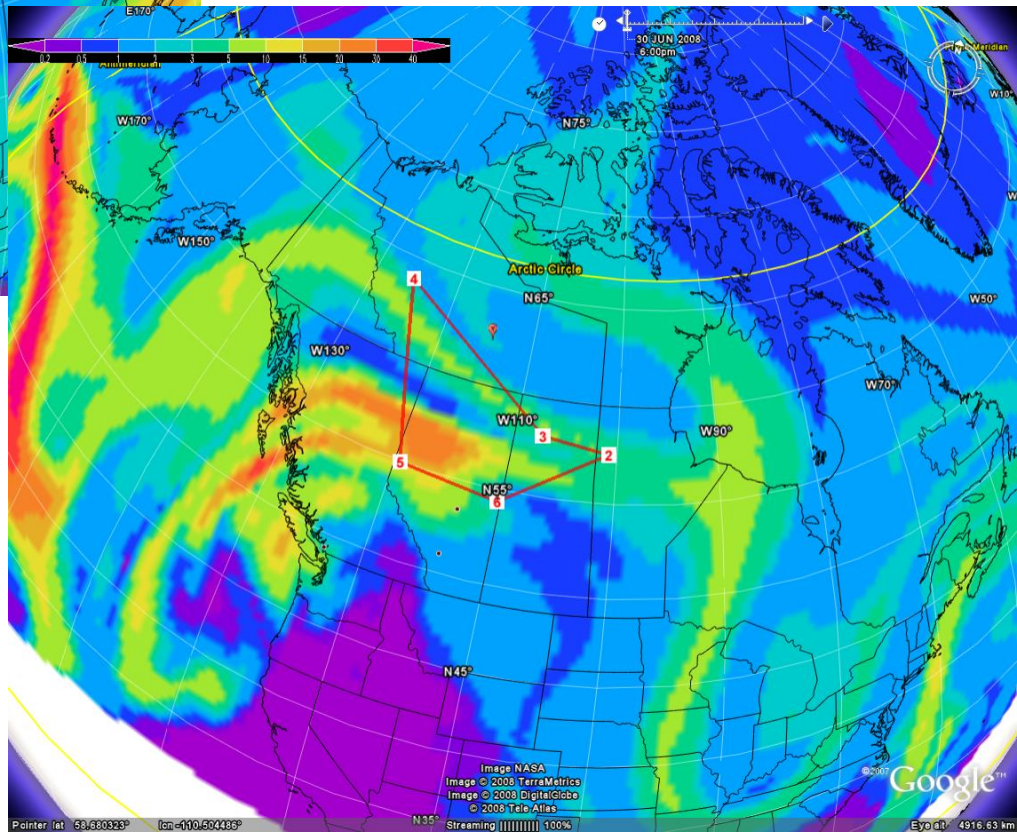




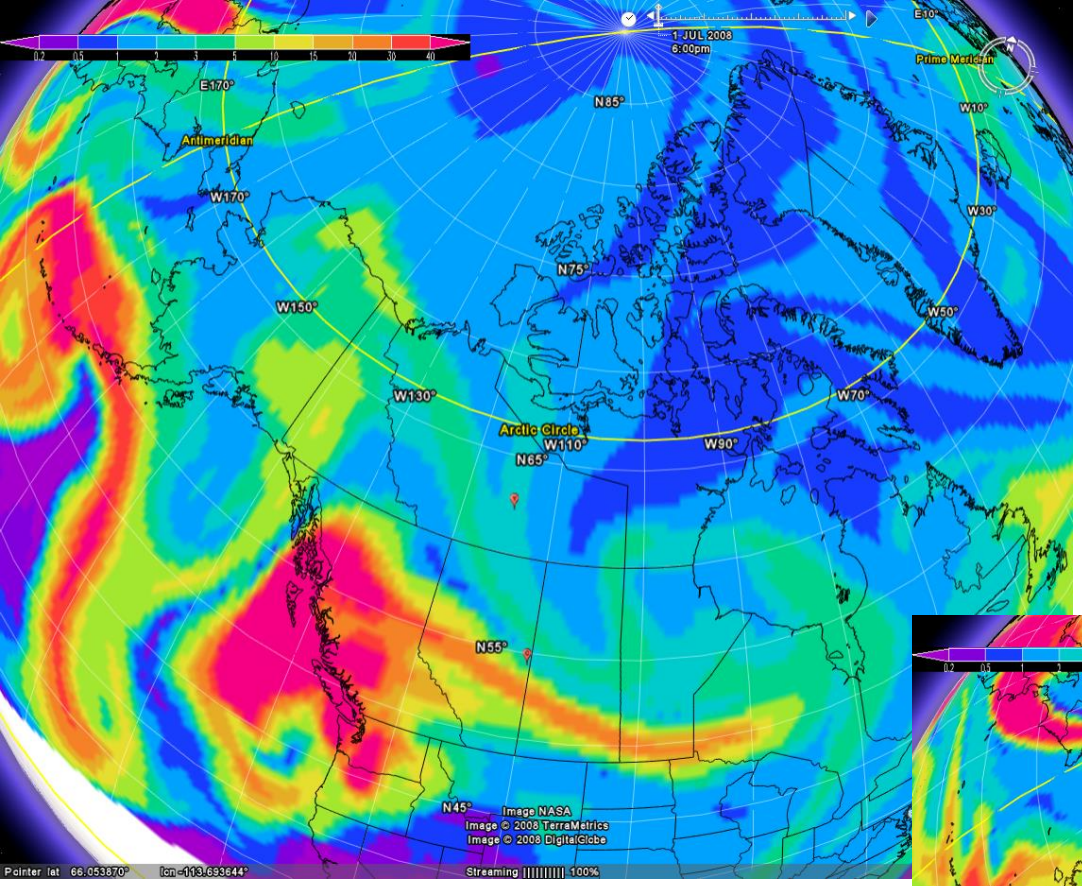




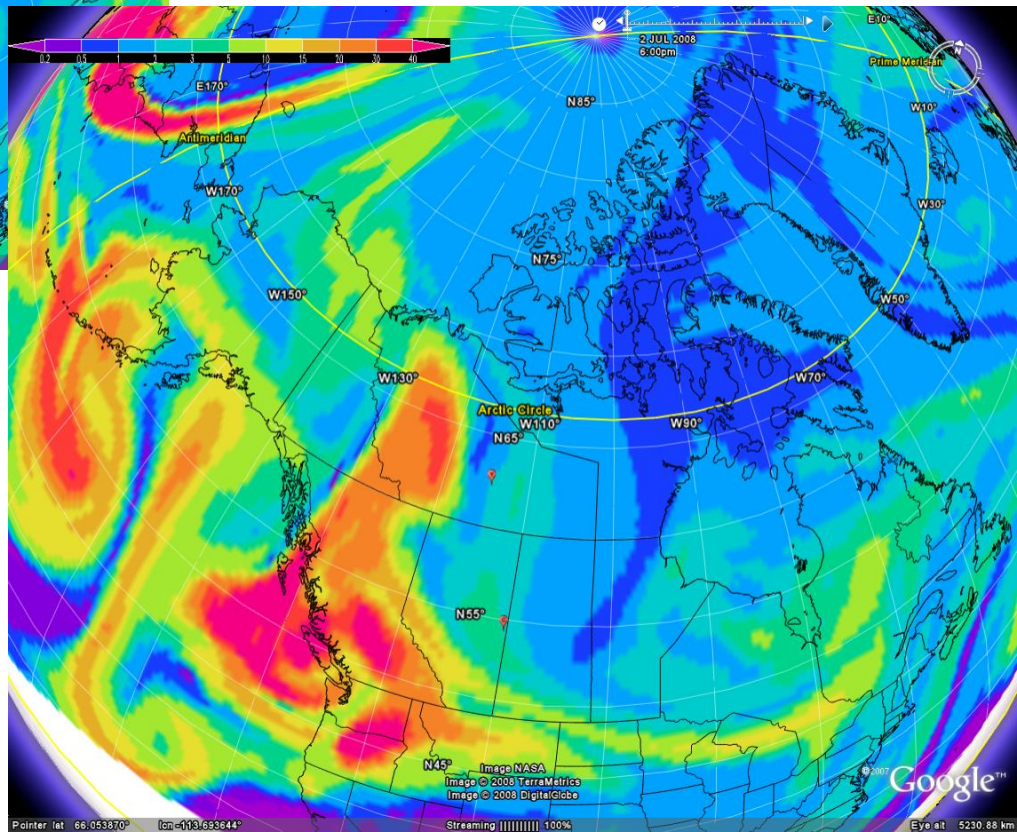
Biomass CO, June 30, 18Z
5.5 km layer



Biomass CO, June 30, 18Z
8.4 km layer

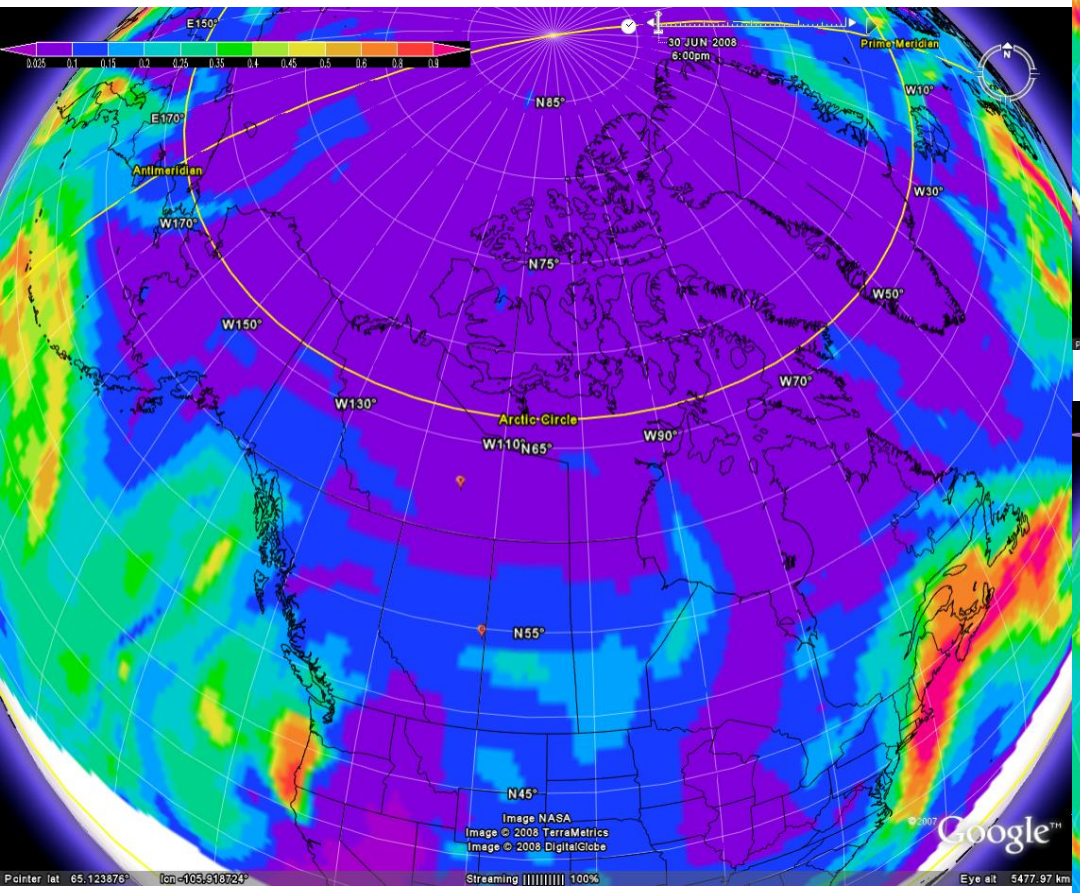


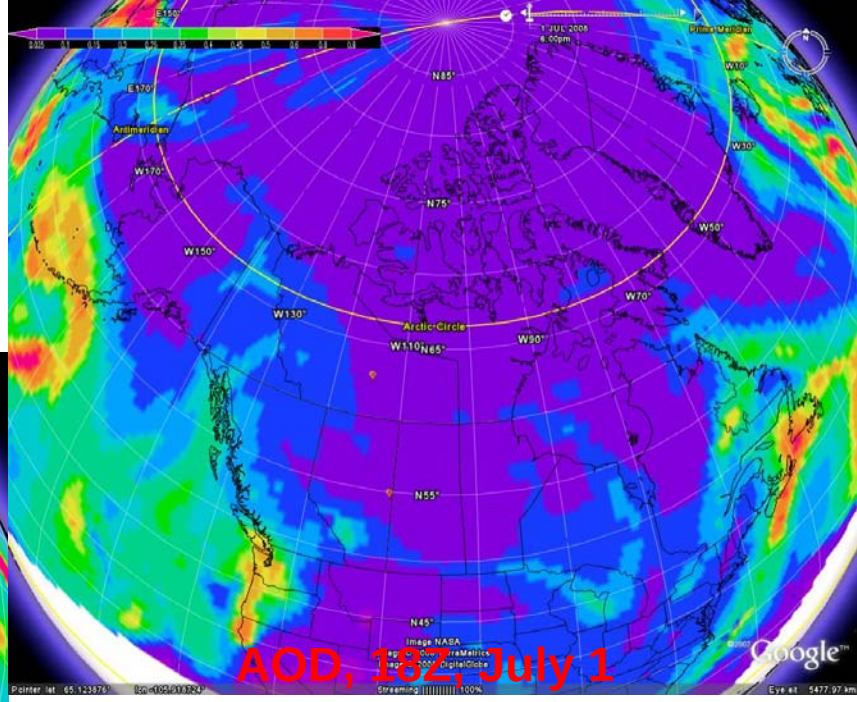
Biomass CO, July 1, 18Z
5.5 km layer, 90hrs

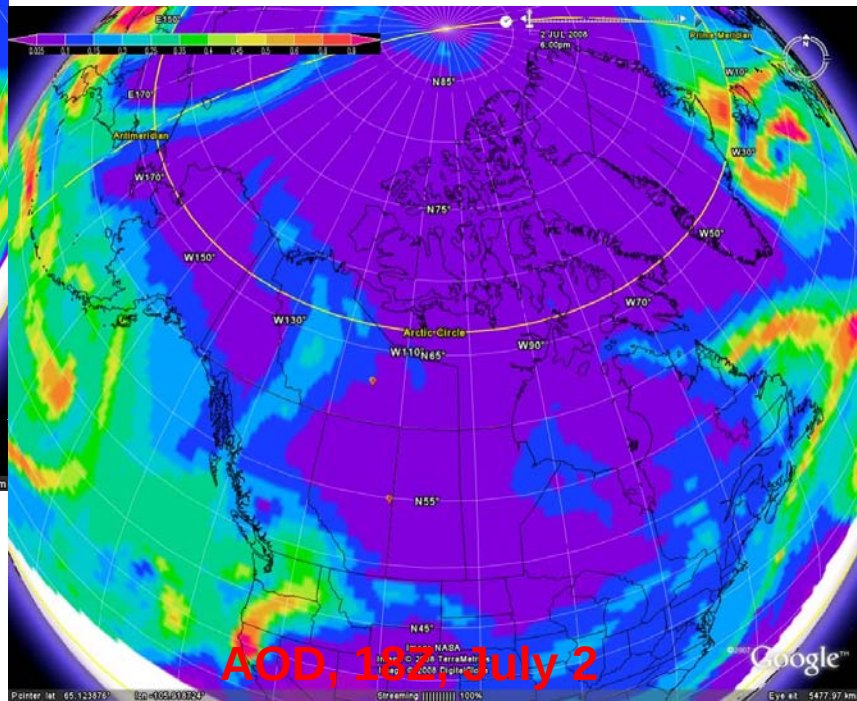


Biomass CO, July 2, 18Z
5.5 km layer, 114 hrs

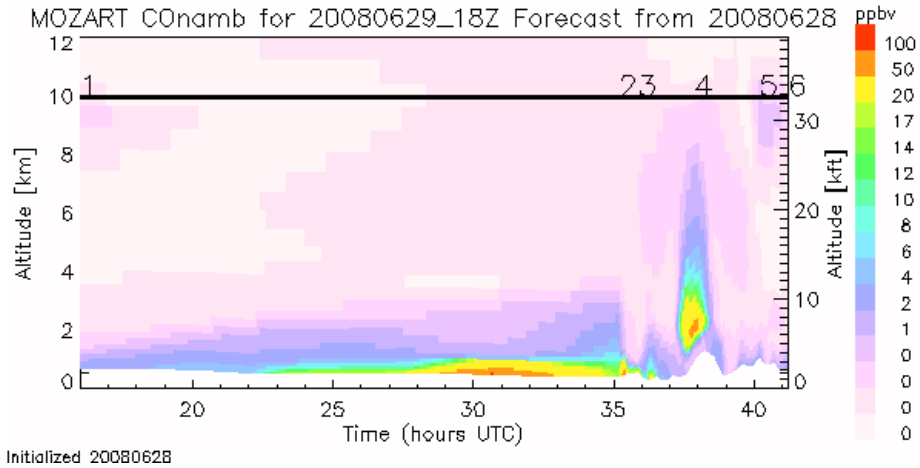
AOD, 18Z, June 30



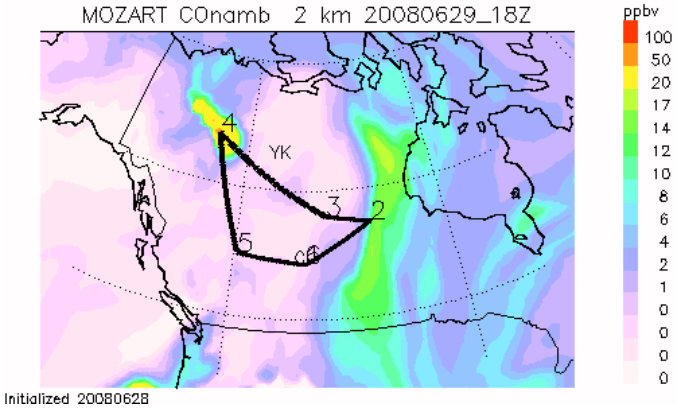


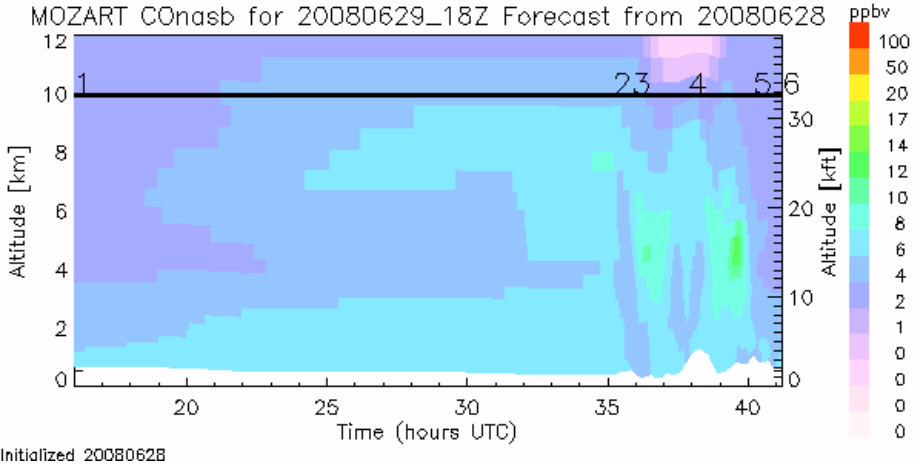


NCAR MOZART Fx for DC-8 Local 1 06/29 (18 UTC)

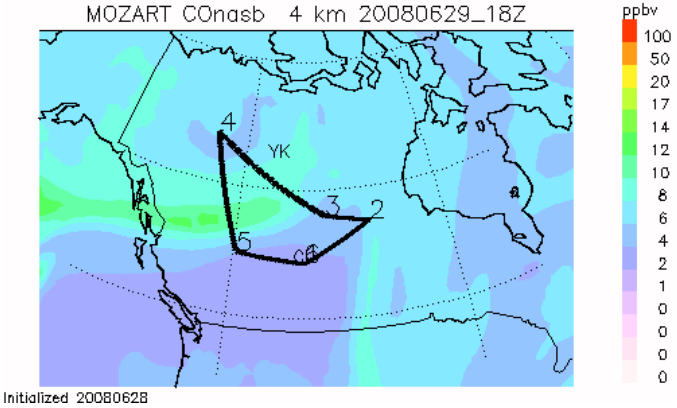


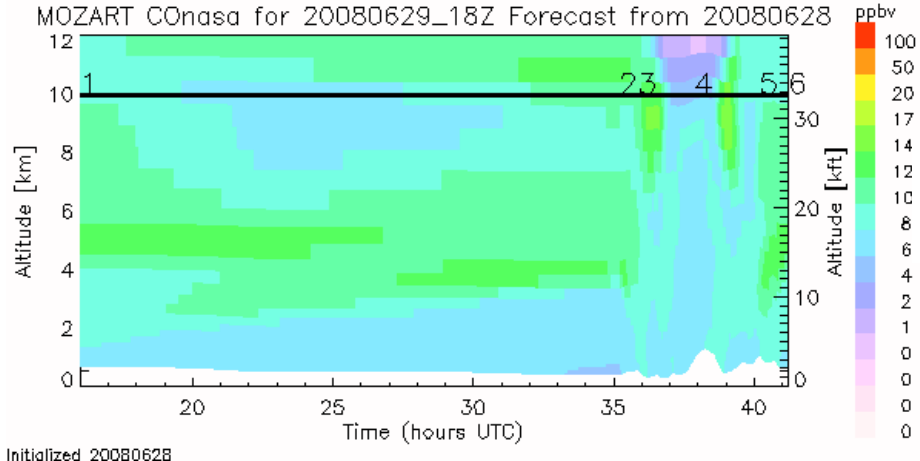
CO NAM BB
2 km



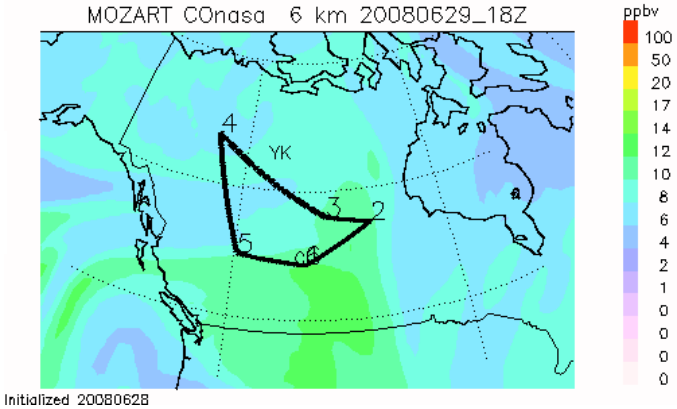


CO NAS BB
4 km

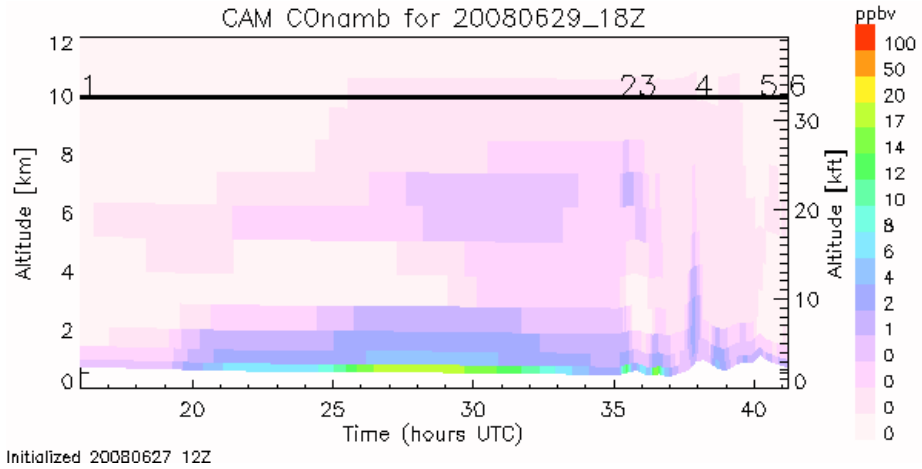




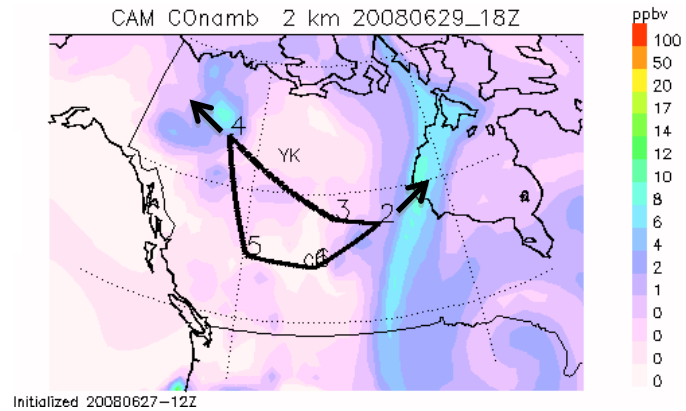
CO NAS FFBF
6km

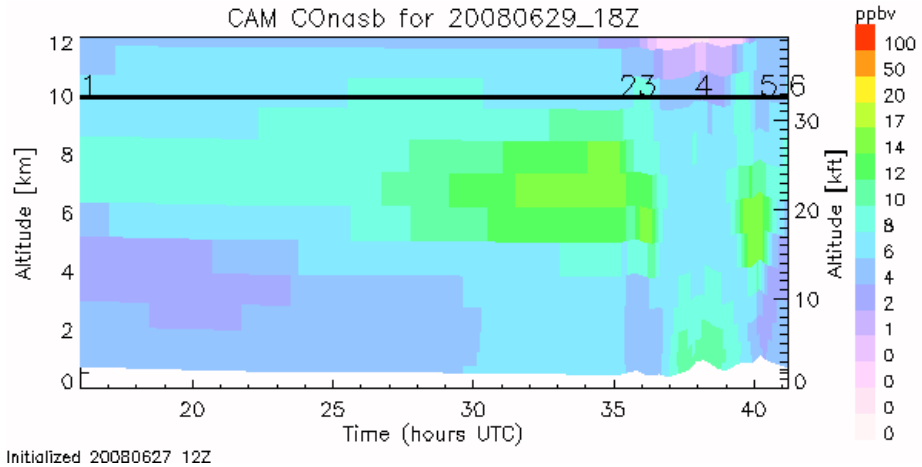


NCAR CAM Fx for DC-8 Local 1 06/29 (18 UTC)

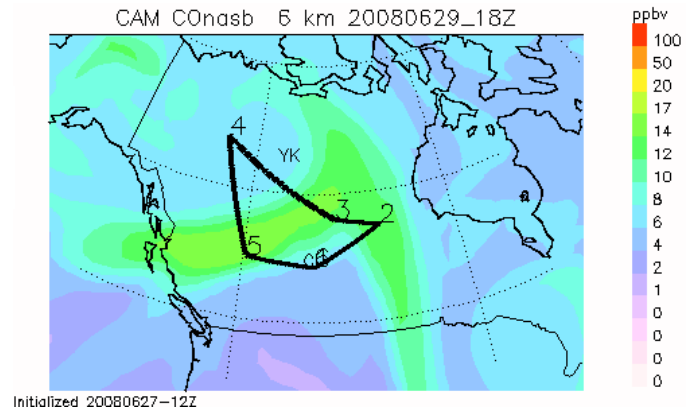


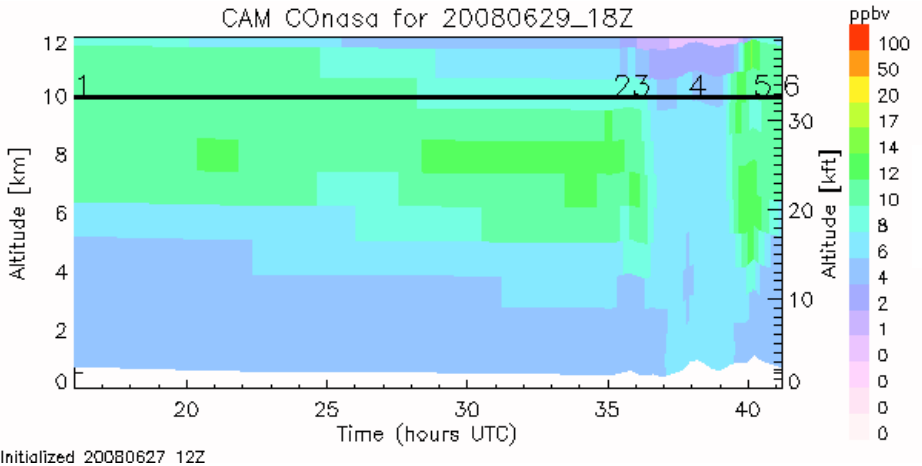
CO NAM BB
2 km



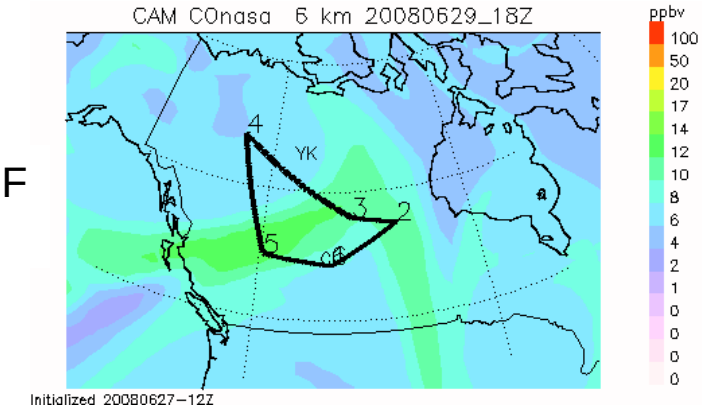


CO NAS BB
6 km

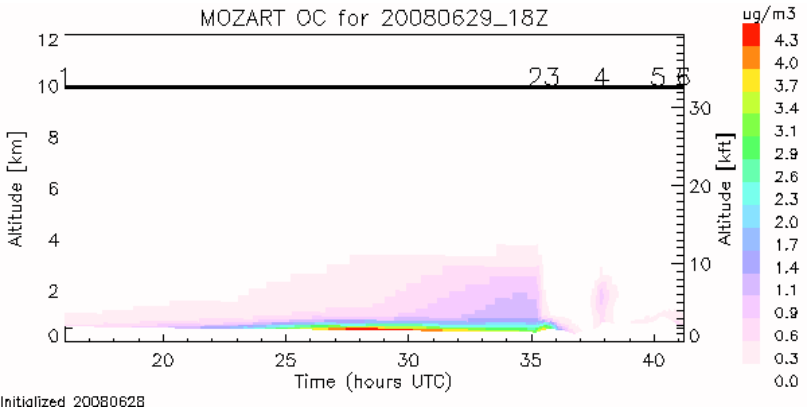




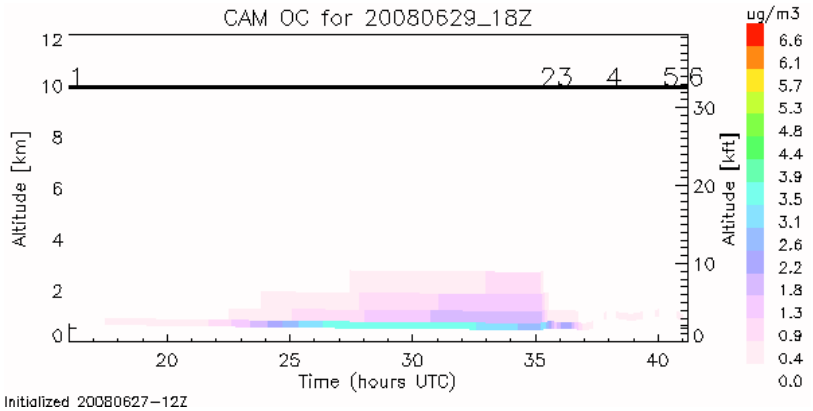
CO NAS FFBF
6km

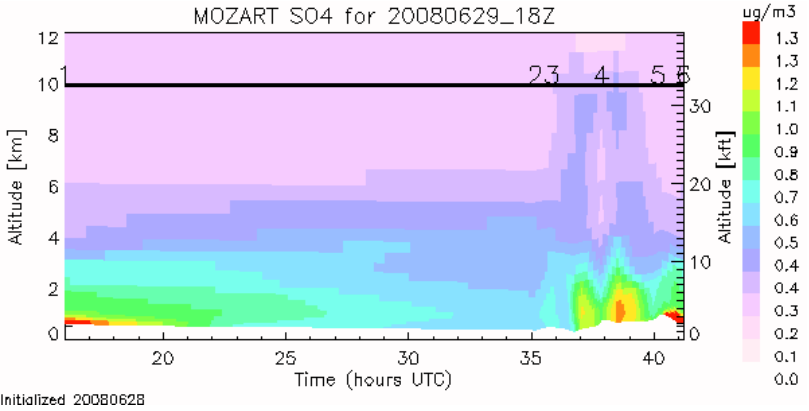


MOZART **Fx for DC-8 Local 1 06/29 (18 UTC)** **DART/CAM-Chem**

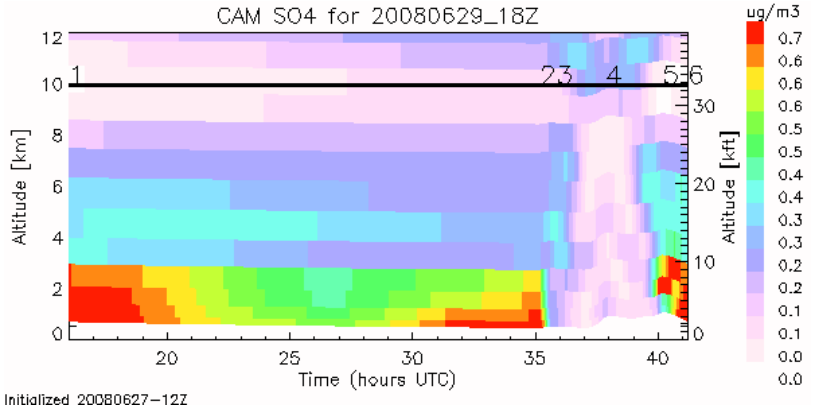


OC

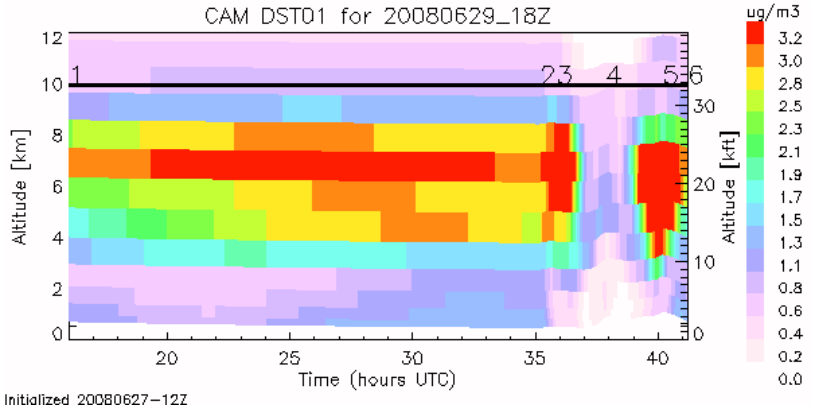




SO4

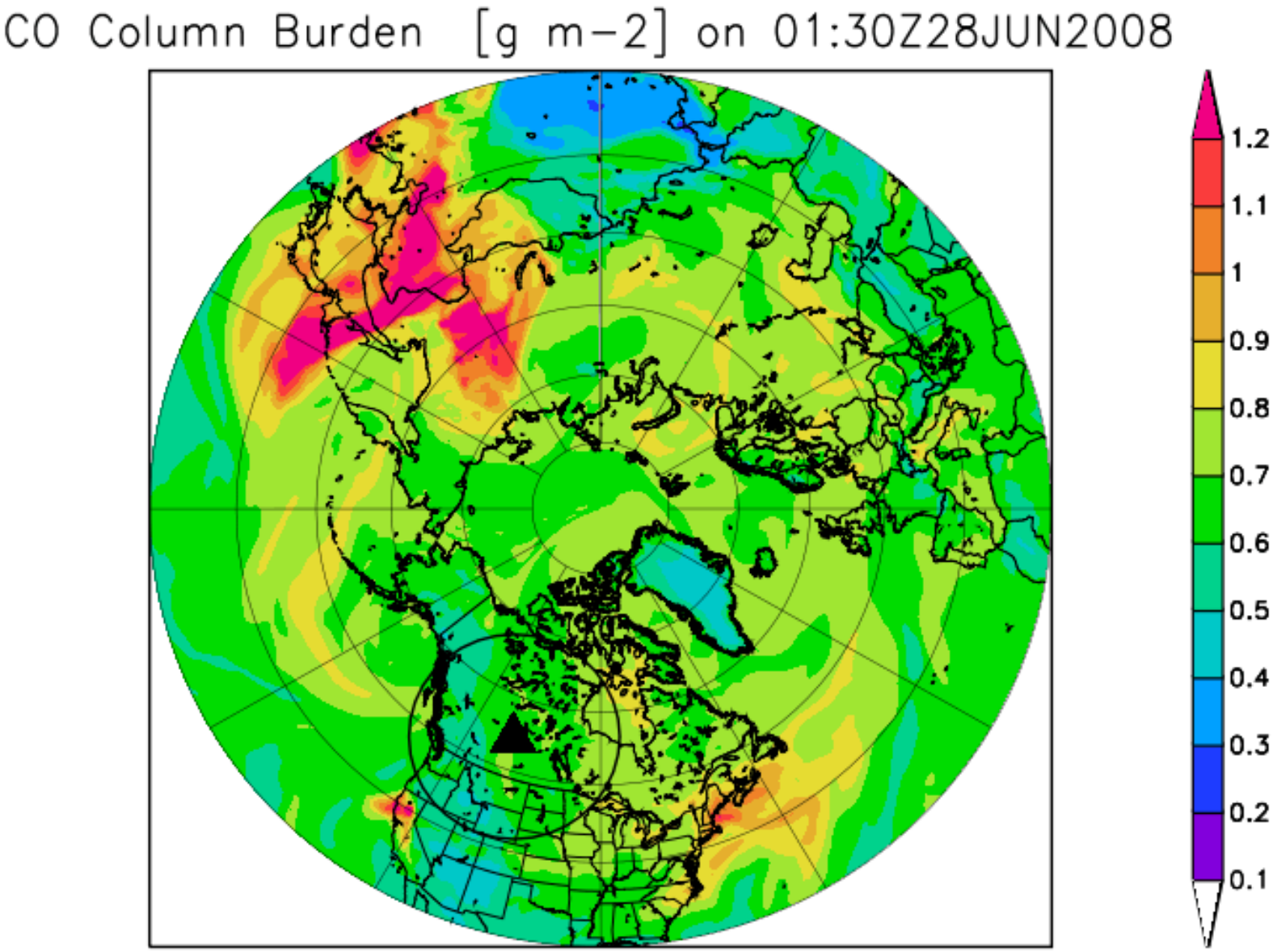


DUST



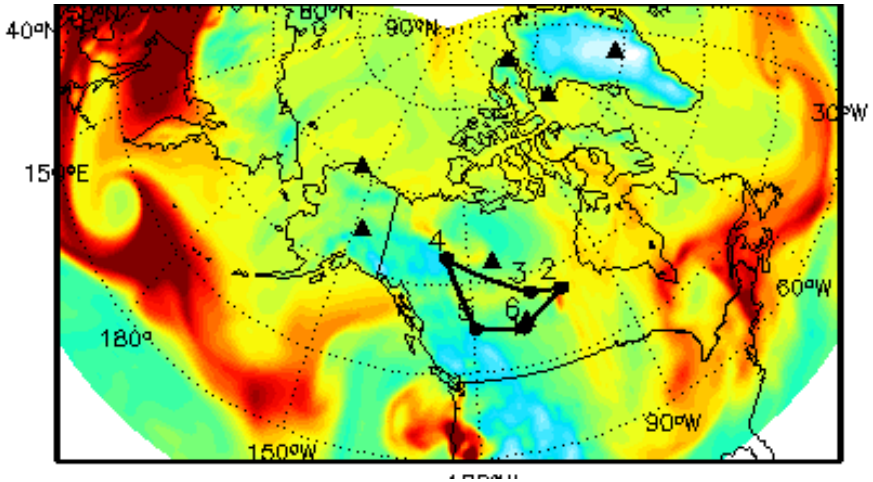
Note: scales differ!

GEOS-5 Outlook: CO Column

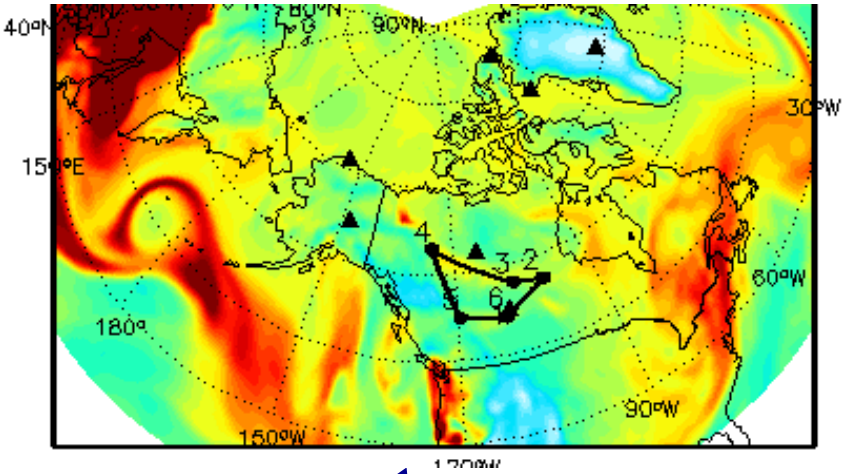


GEOS-5 Outlook: CO Column 20080629 19:30Z

6/29



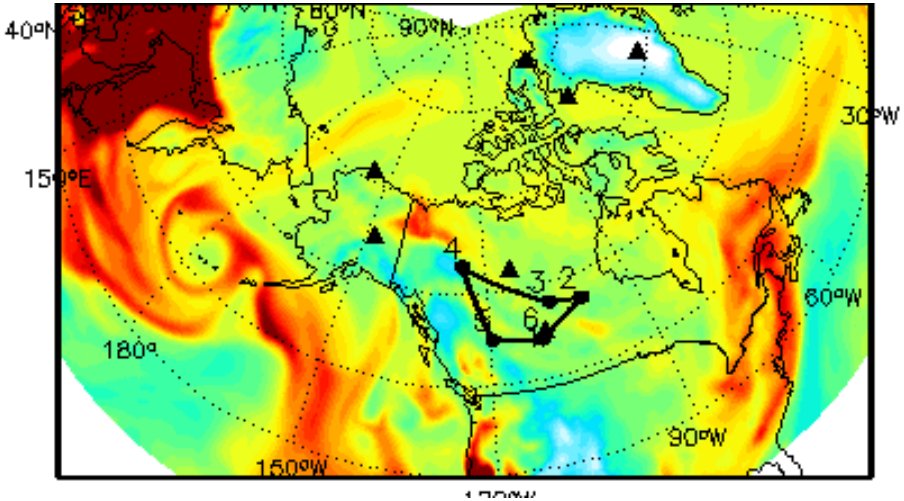
6/30



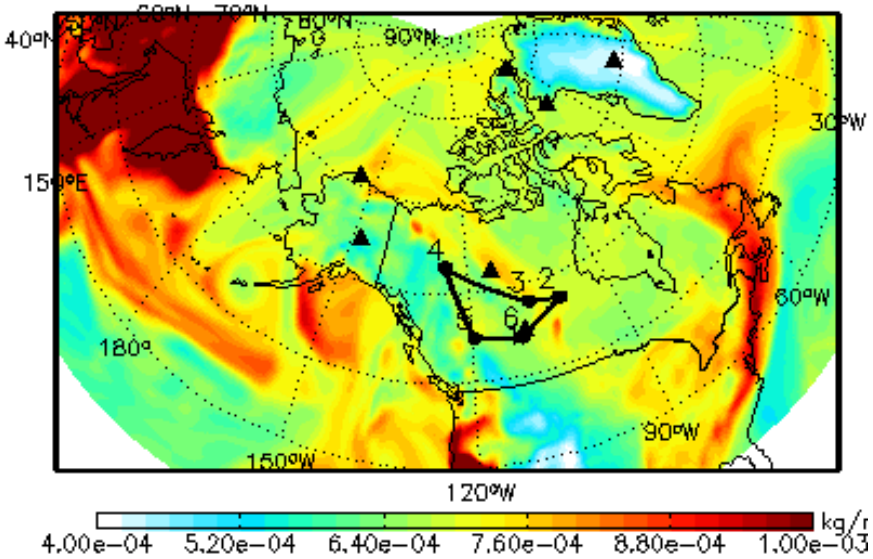
Siberian fire & Asian CO transported directly over Cold Lake!

California fire plume moving northwards

7/01

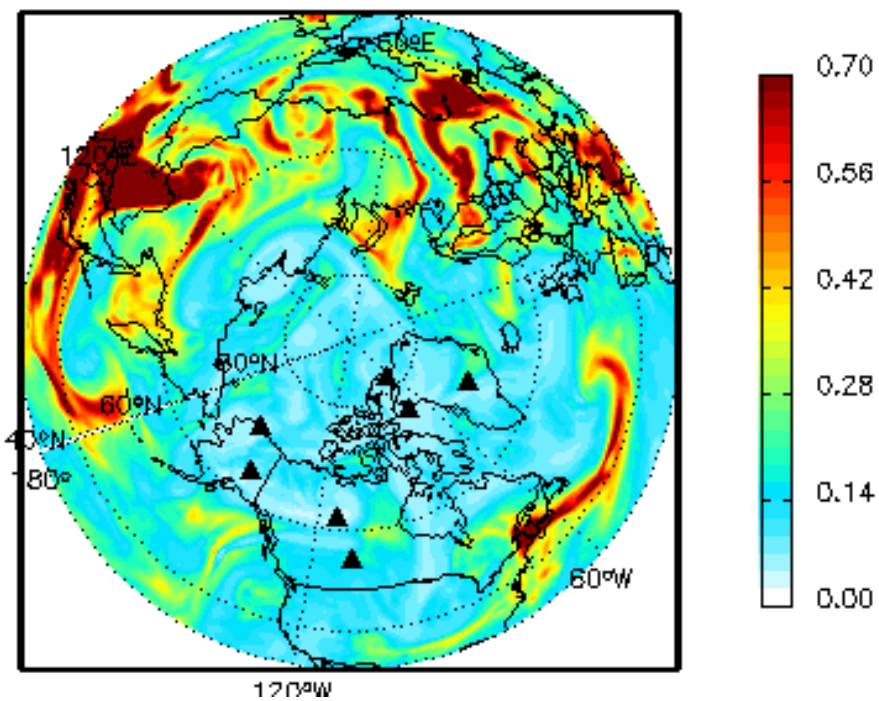


7/02

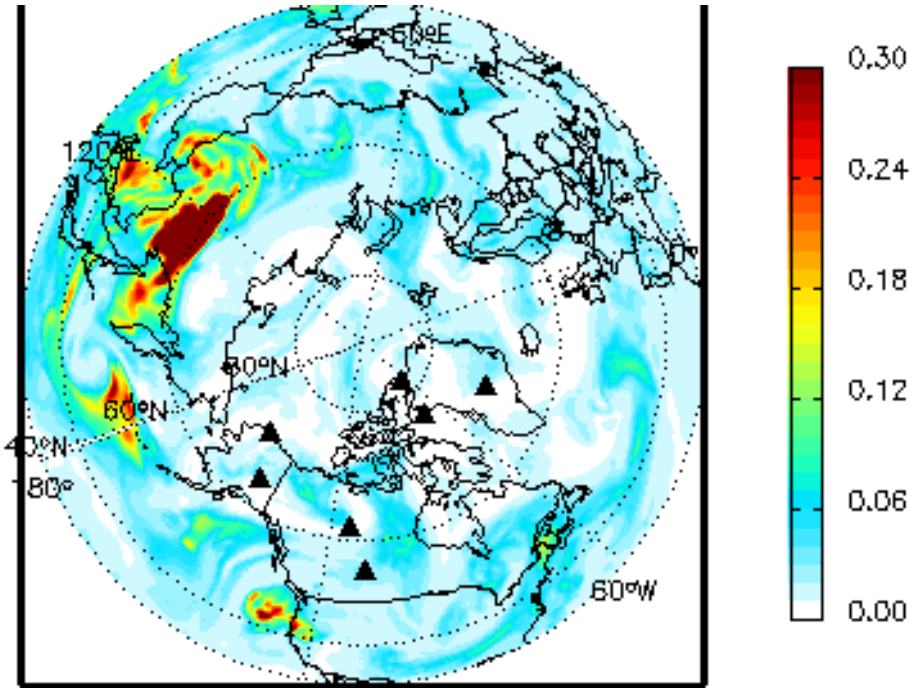


Asian Pollutant Transport: 20080629 19:30Z

Sulfate AOT (anthropogenic)



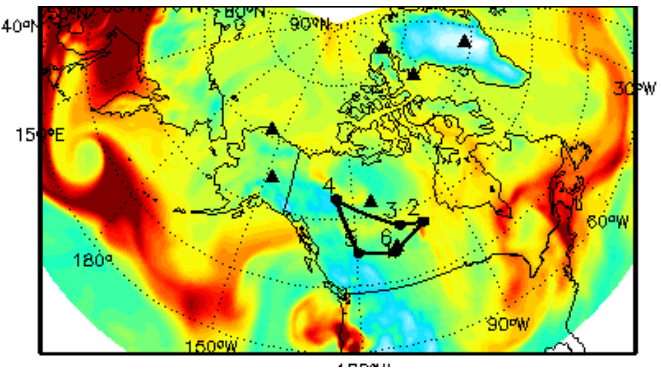
Organic Carbon AOT (fires)



Asian fossil fuel and Siberian fires follow similar transport pathways and mix along the way.

DC8 flight on 6/29

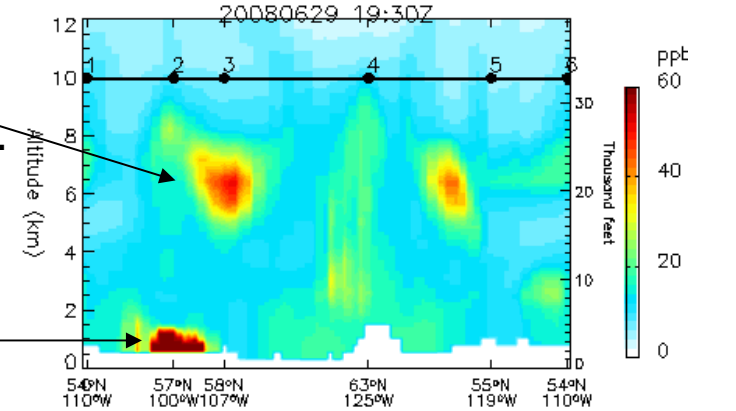
Total CO column



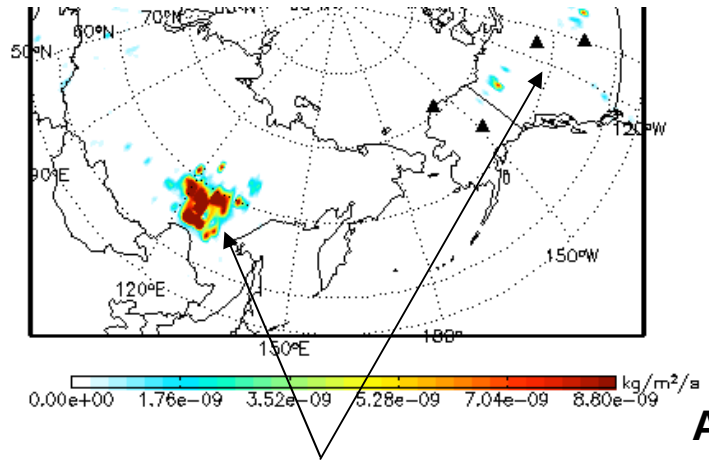
Siberian boreal fires in middle troposphere.

N. American boreal fires near surface, but no model pyroconvection.

Boreal Fire CO

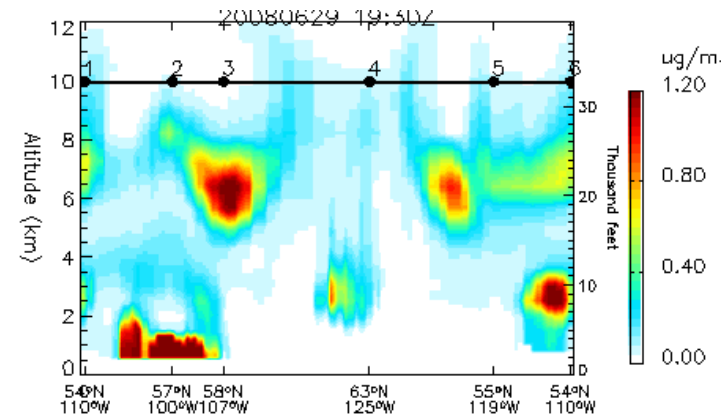


Boreal Fire CO Emissions



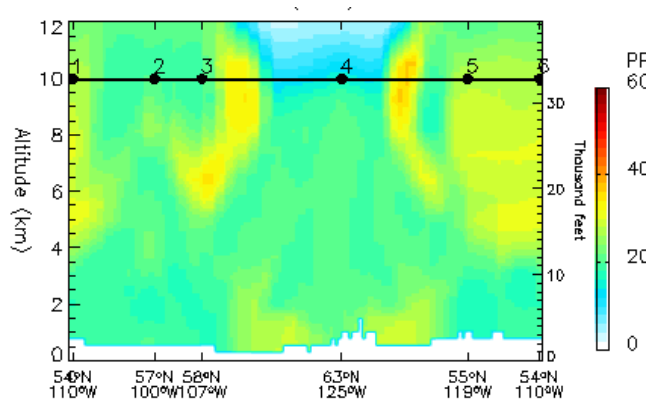
California fires small.

Boreal Fire OC

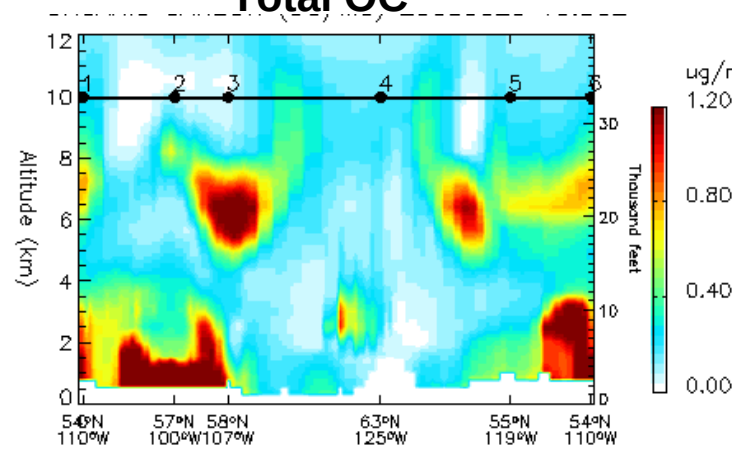


N. American boreal fires small in comparison to Siberian ones.

Asian Fossil CO

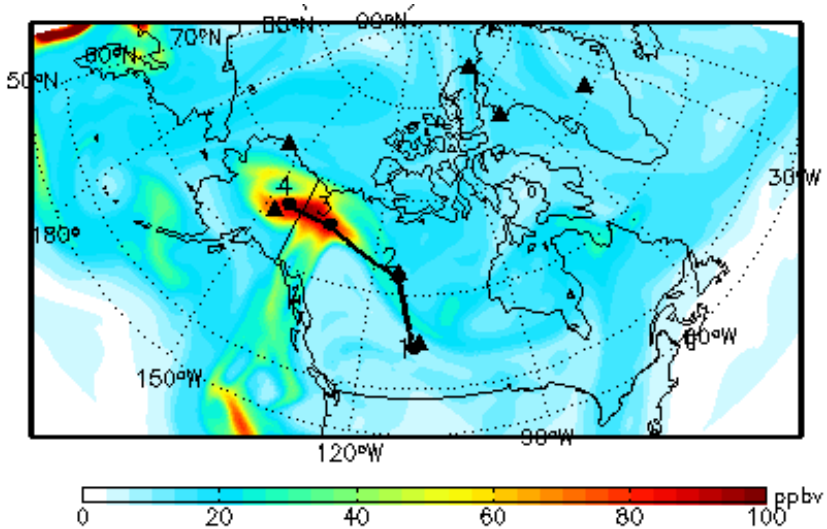


Total OC

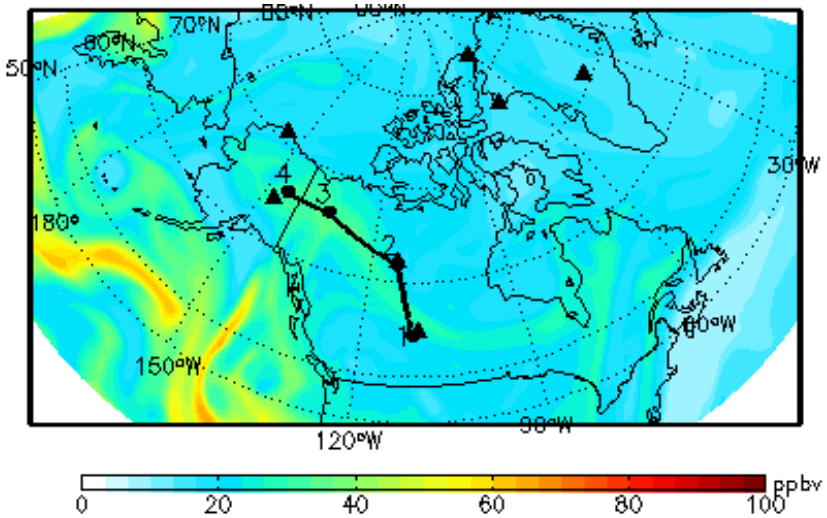


Possible Flight Track: Tuesday 7/01

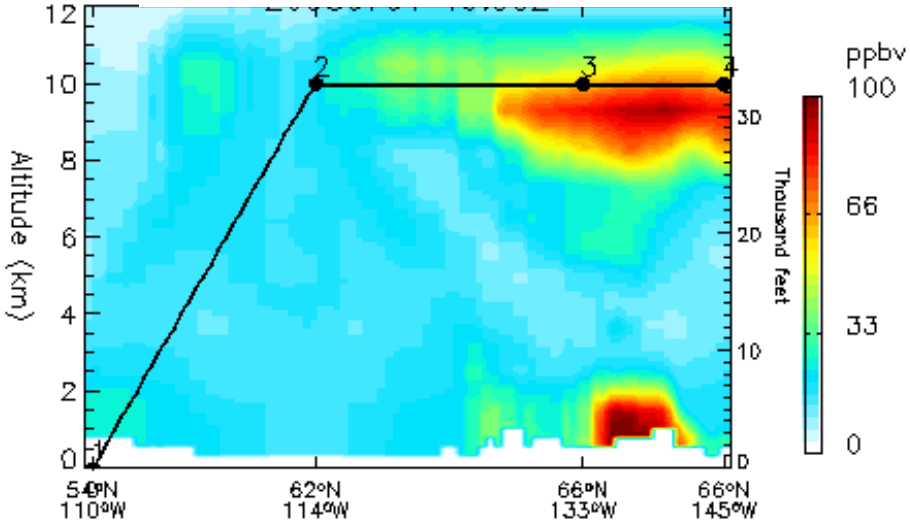
Boreal CO 300 mb



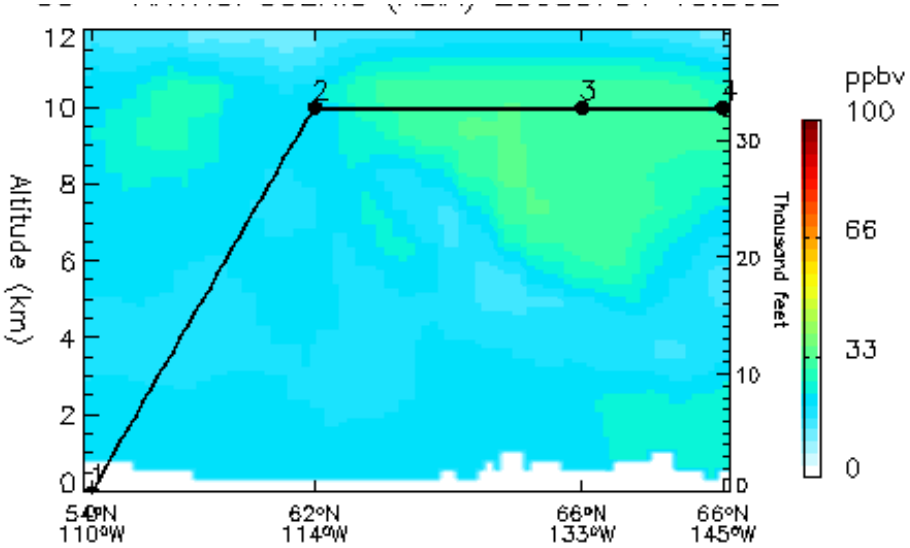
Asian Fossil CO 300 mb



Boreal CO

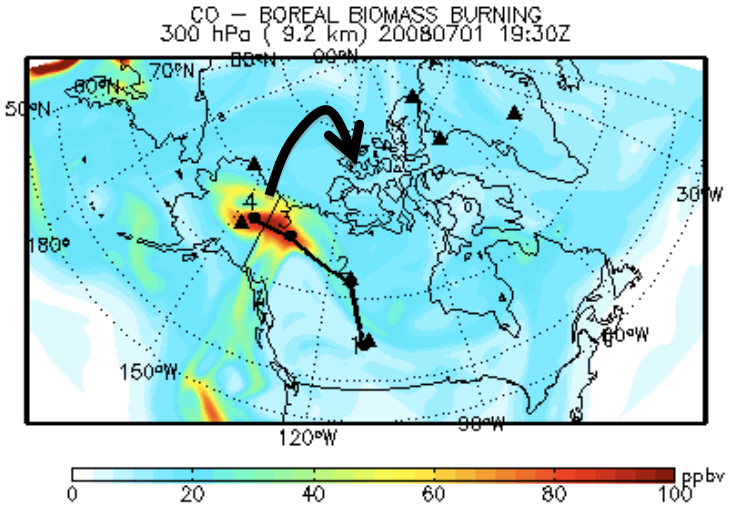


Asian Fossil CO

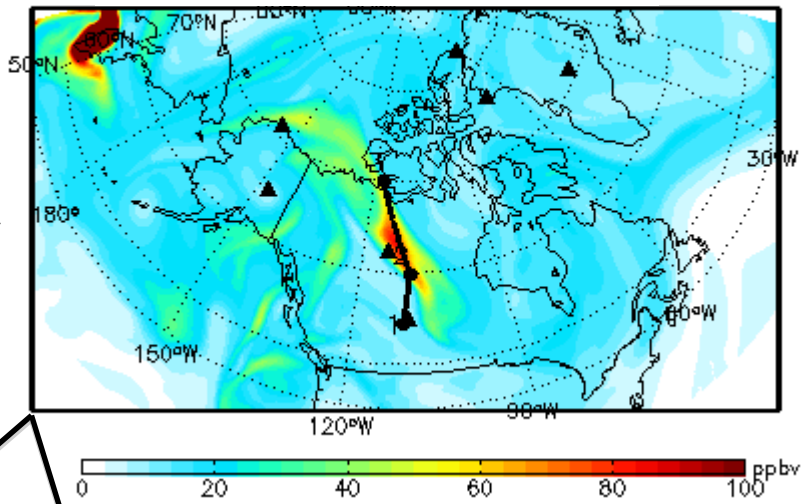


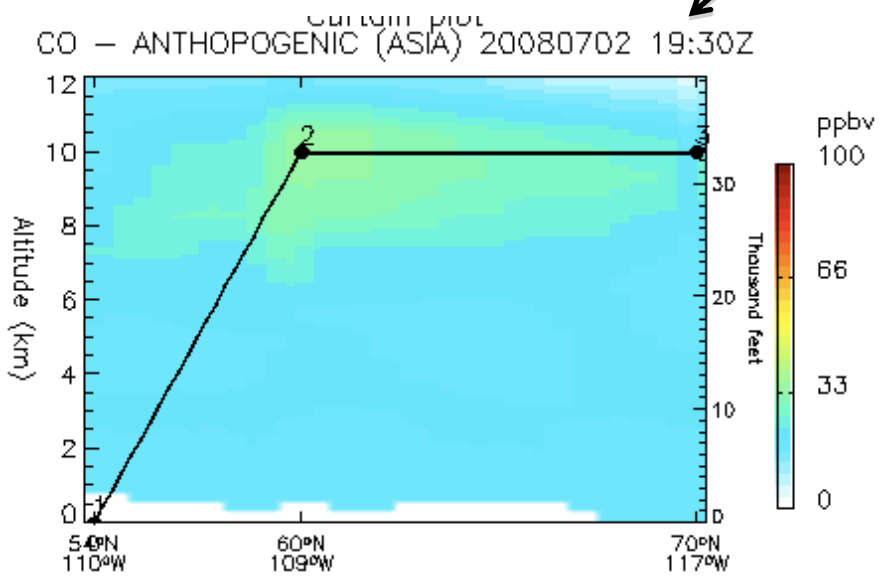
Outlook: Tuesday 7/02, can look at the same plume from 7/01, aged for one more day

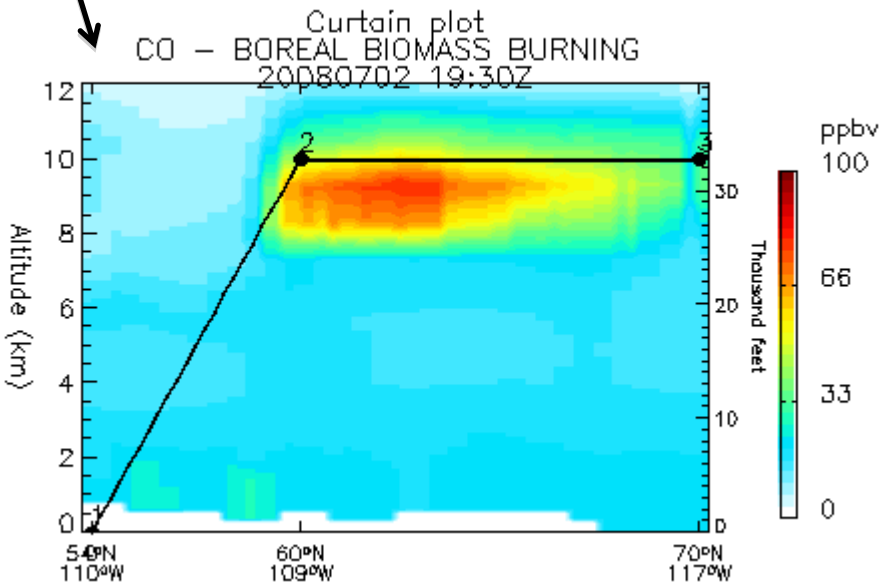
July 1st



July 2nd

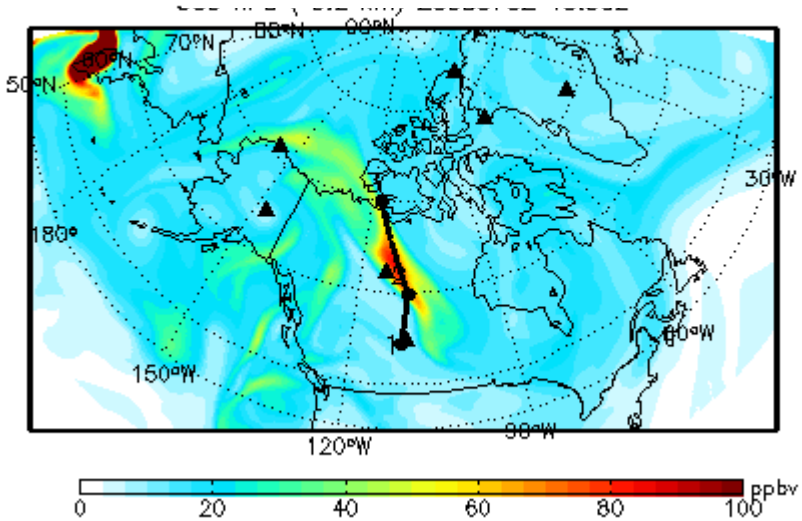




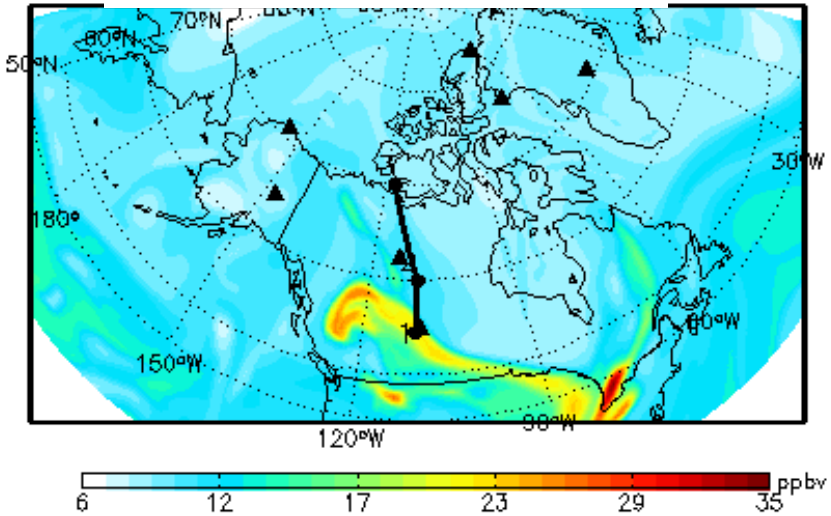


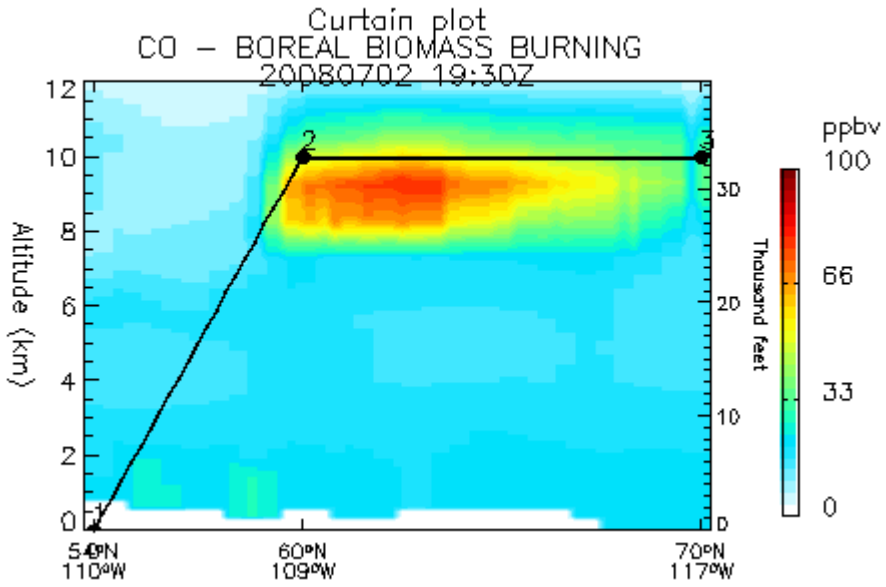
Outlook: Tuesday 7/02

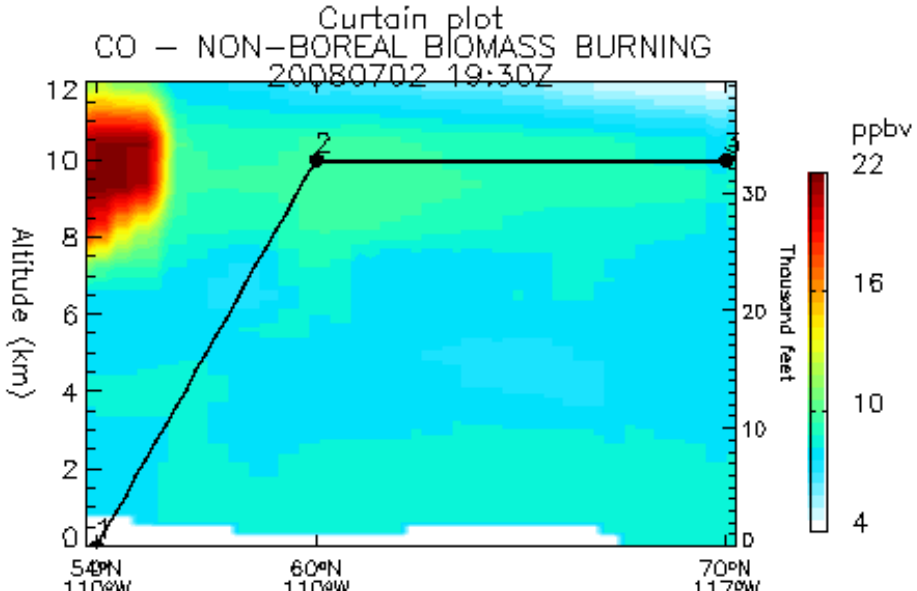
Boreal Fires



Non- Boreal Fires



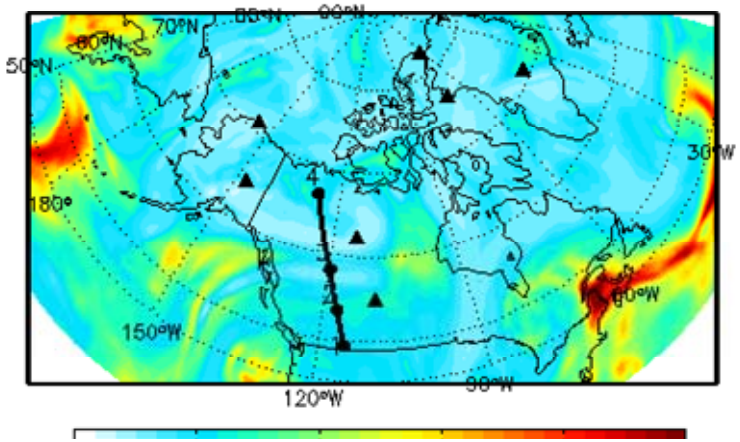




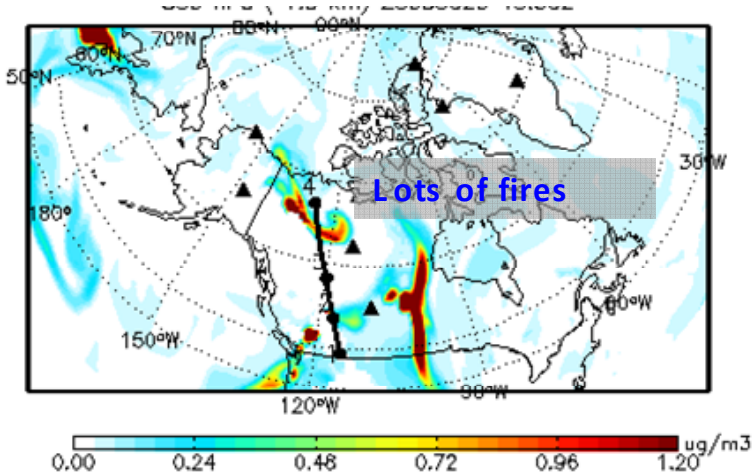
Calipso Track on 6/29 19:30Z – Boreal fire plumes

GEOS-5 forecast: 20080628_06z

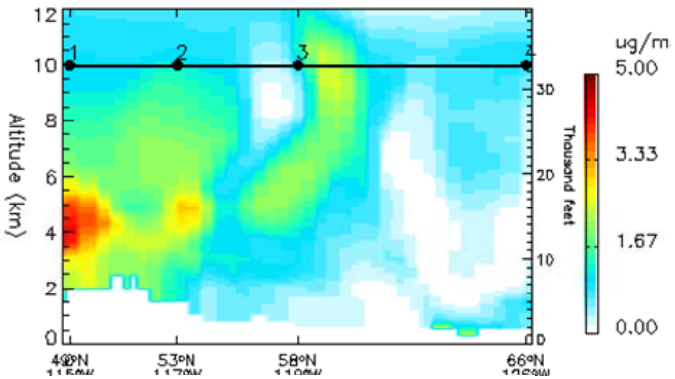
AOT



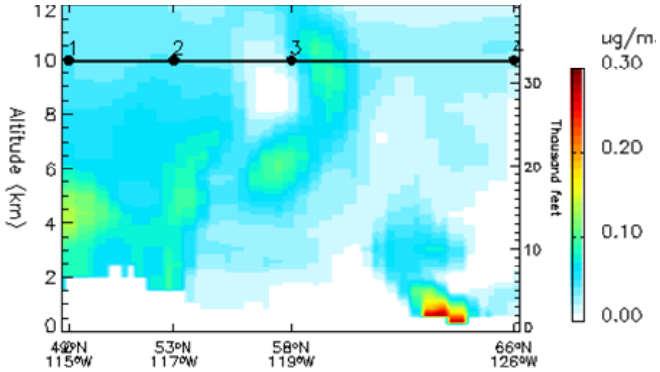
850 hPa Boreal BC



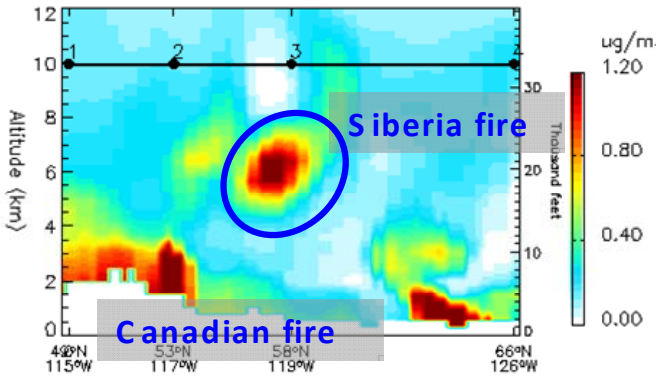
Sulfate



Black Carbon



Organic Carbon



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