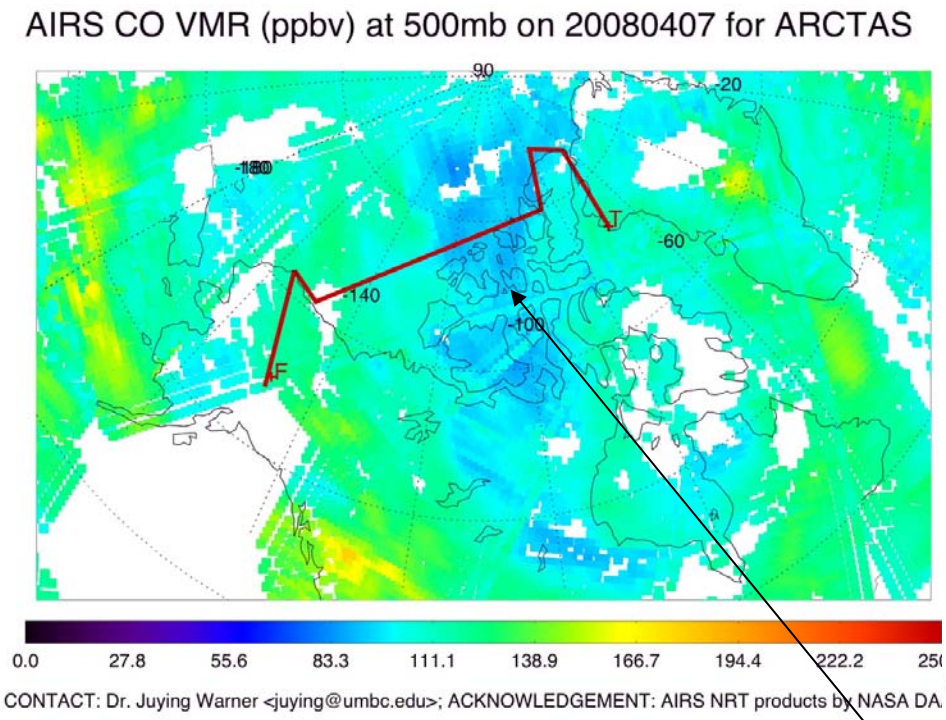
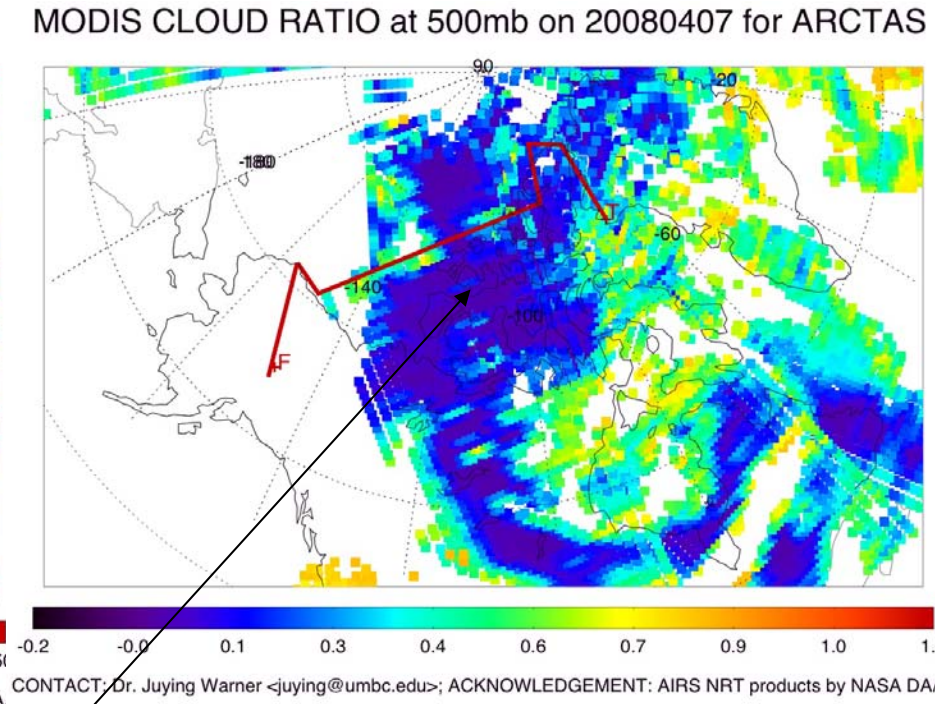
AIRS NRT ARCTAS Support:

Latest AIRS CO



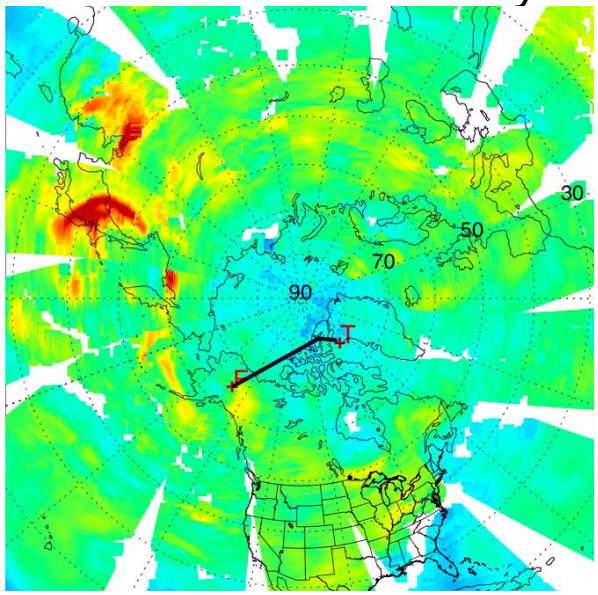


- MODIS Cloud Mask shows very confidence clear sky over low CO region.
- This low CO is nighttime measurements, day time is slightly higher.
- Could be somewhat contaminated by snow/ice covered surface.

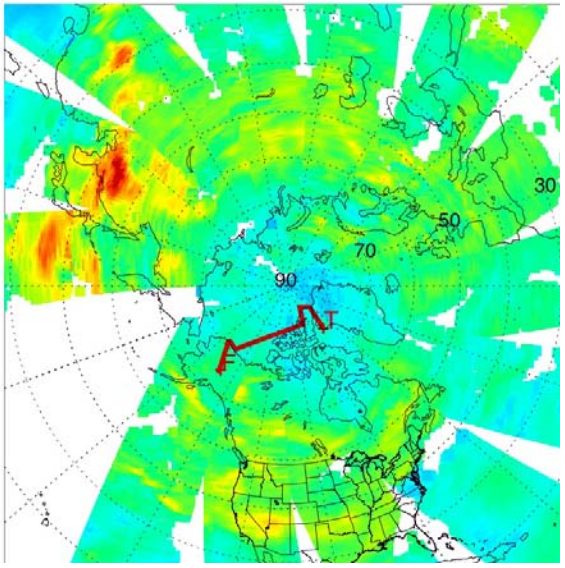
AIRS NRT ARCTAS Support:

Asian Transport Continues, slowly

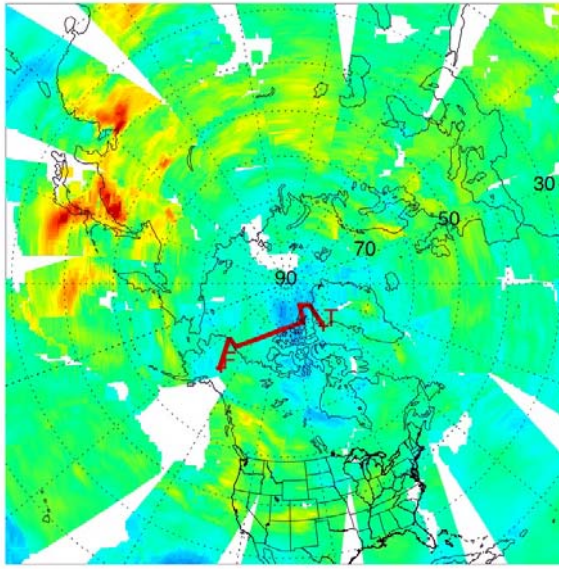
CO 500mb 20080405 day



CO 500mb 20080406 day



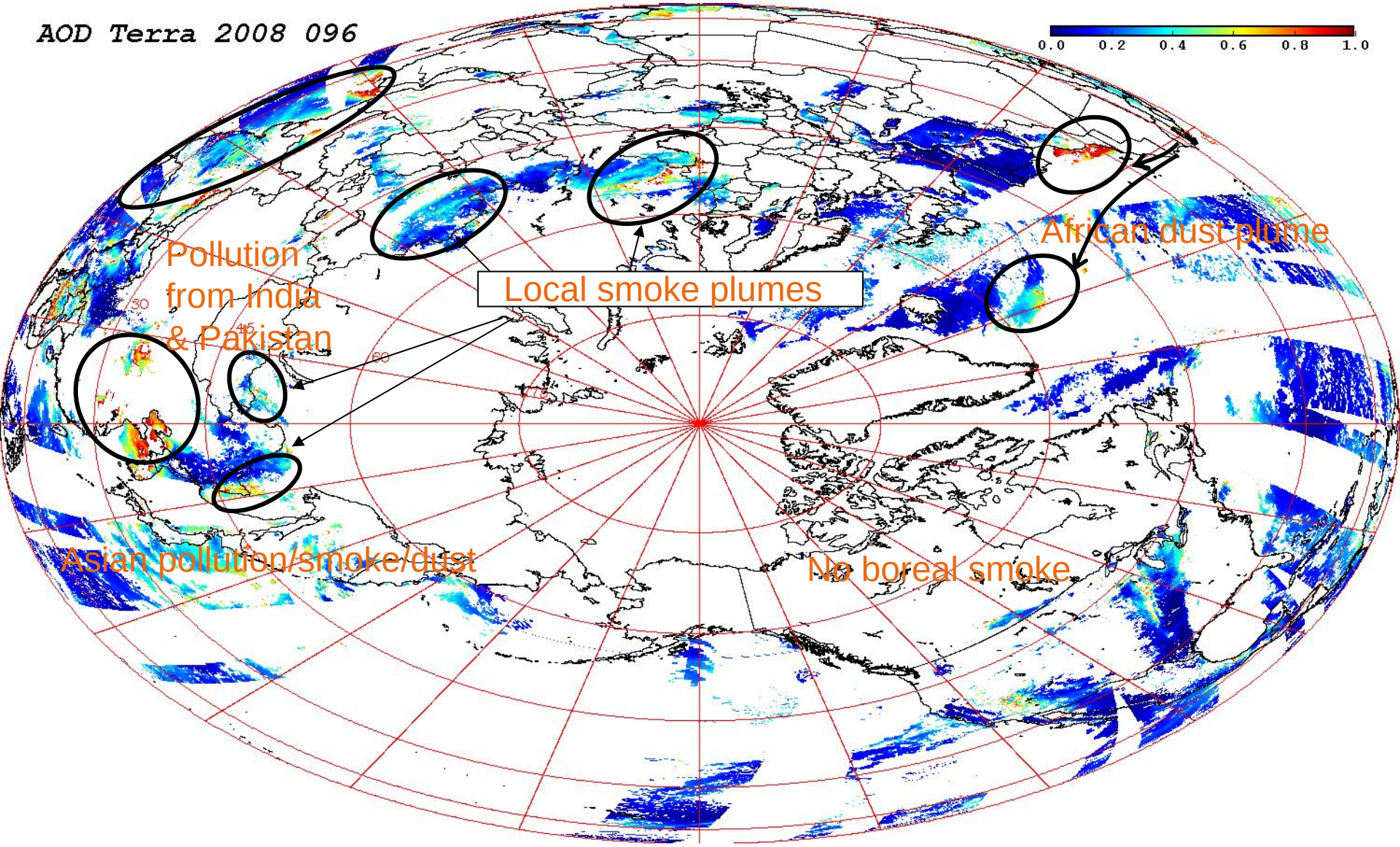
CO 500mb 20080407 Full



CONTACT: Dr. Juying Warner <juying@umbc.edu>; ACKNOWLEDGEMENT: AIRS NRT products by NASA DAAC

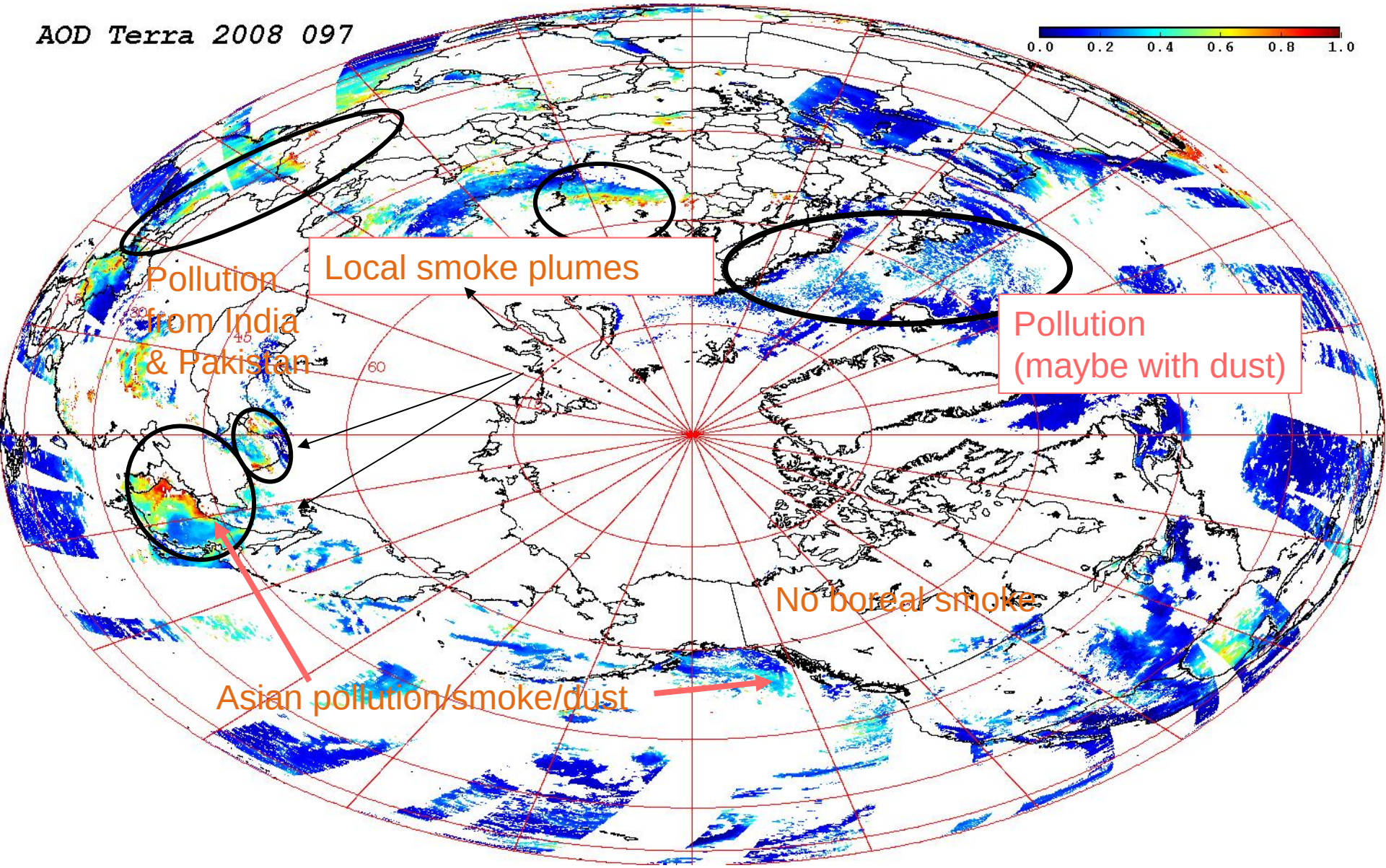
April 5, Saturday

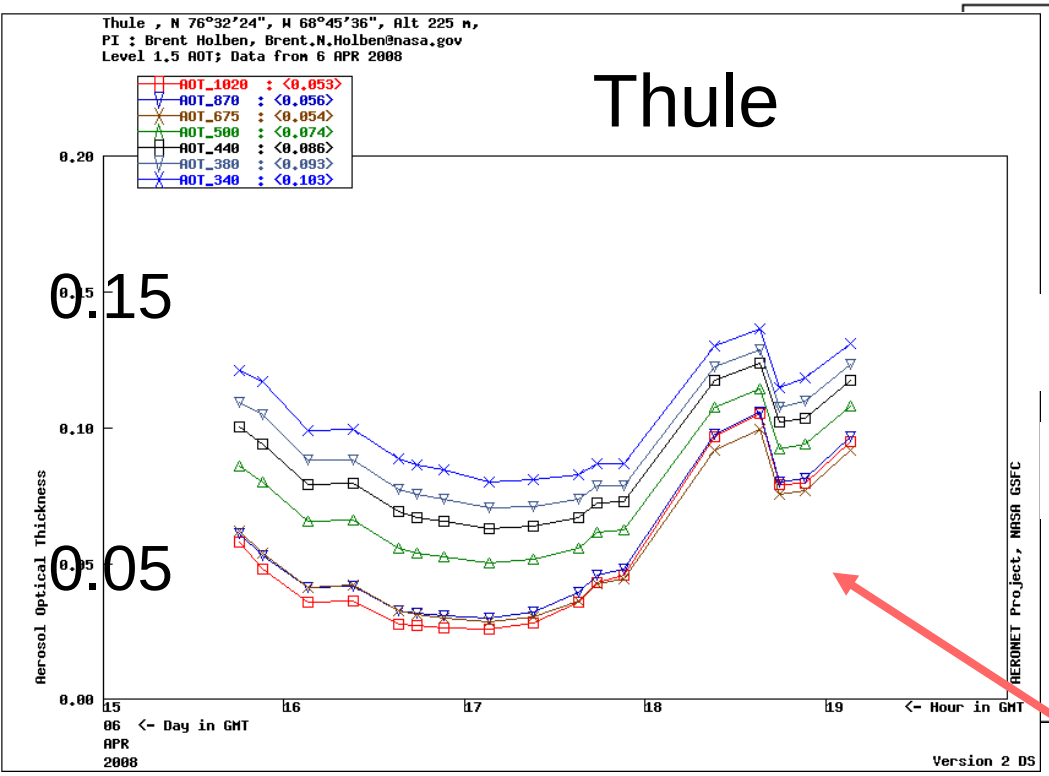
MODIS AOD Hot Spots in Northern Hemisphere (0° - 90°N)

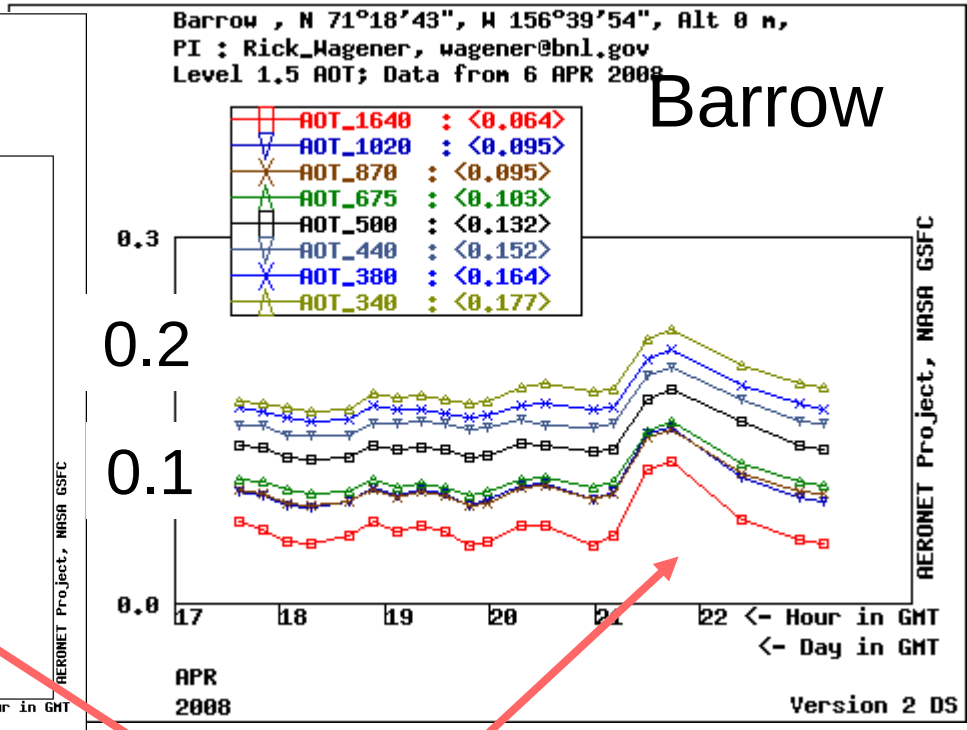


April 6, Sunday

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

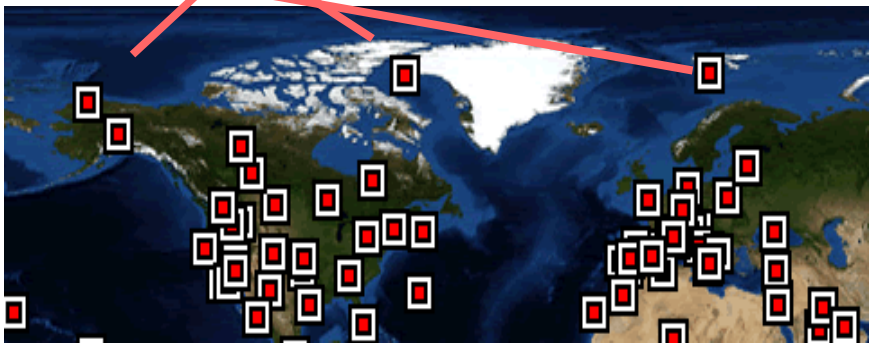




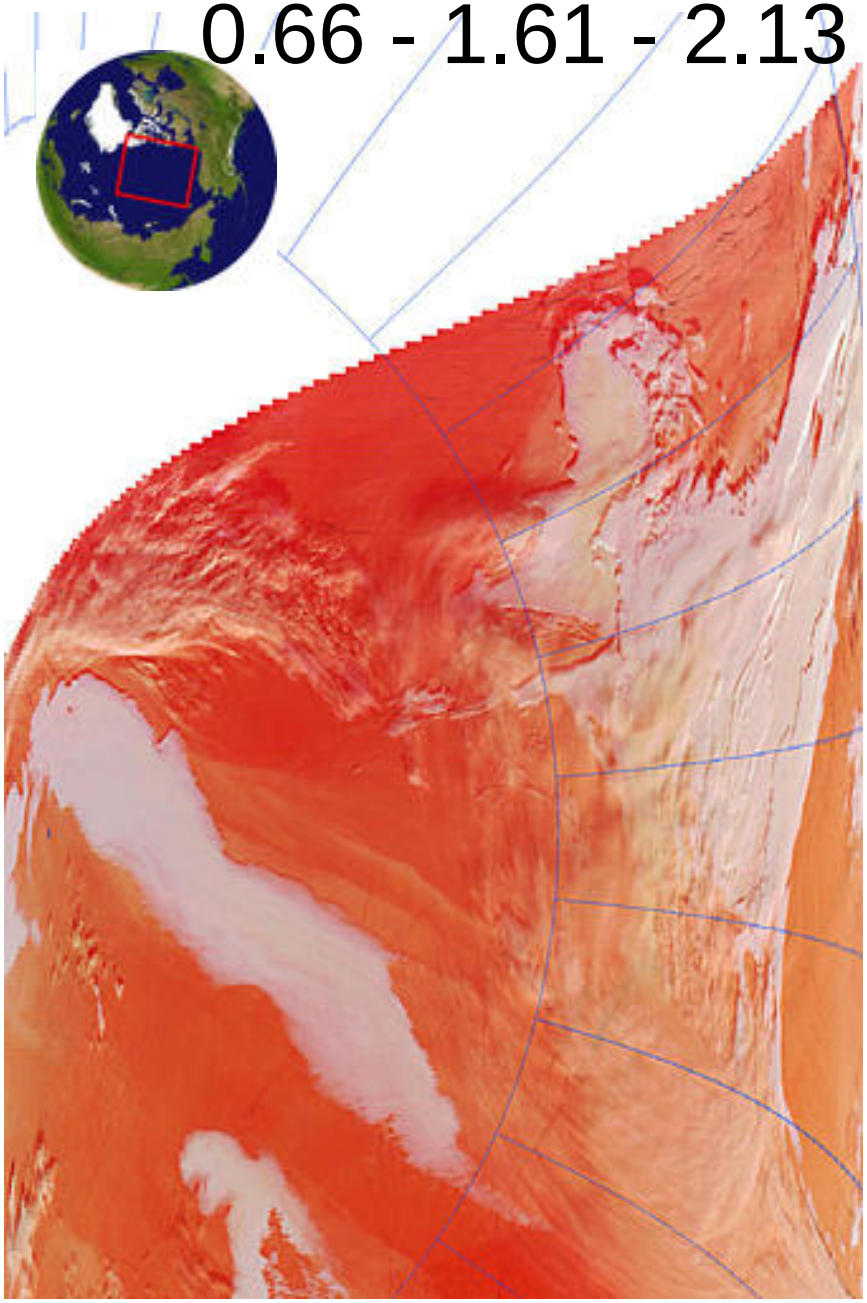


Hornshund

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

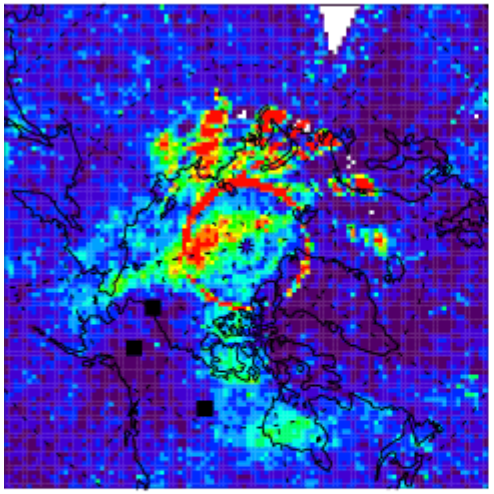


0.66 - 1.61 - 2.13 µm

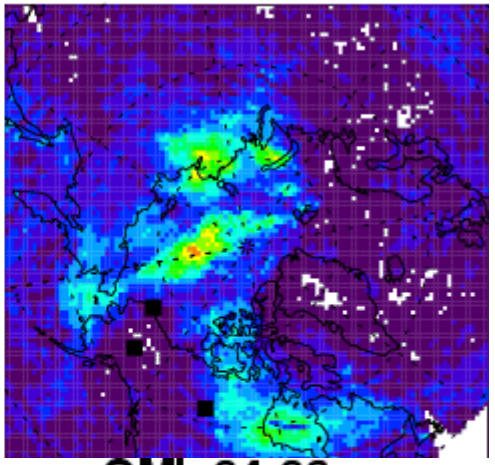


Monday April 7

OMI_04-05

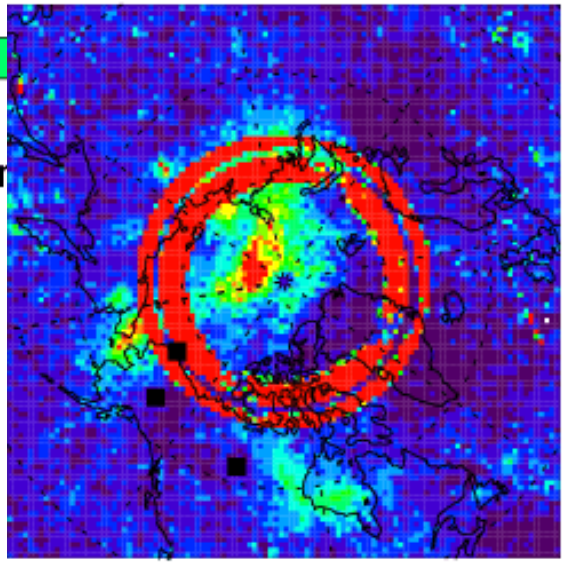


GOME2_04-05

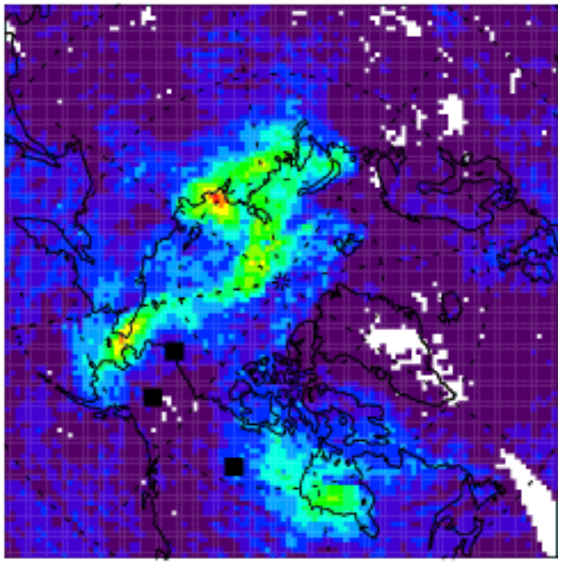


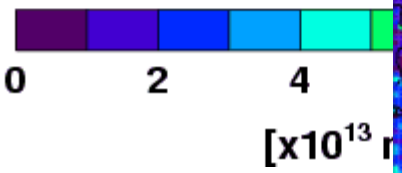
The high spots over Bering Sea is so far stable

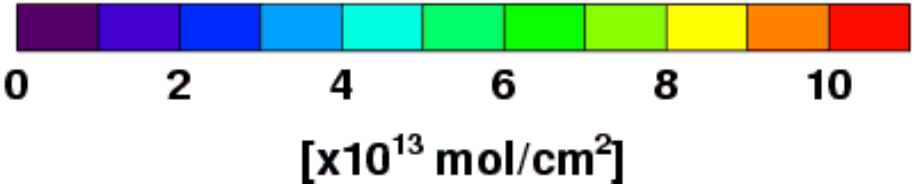
OMI_04-06



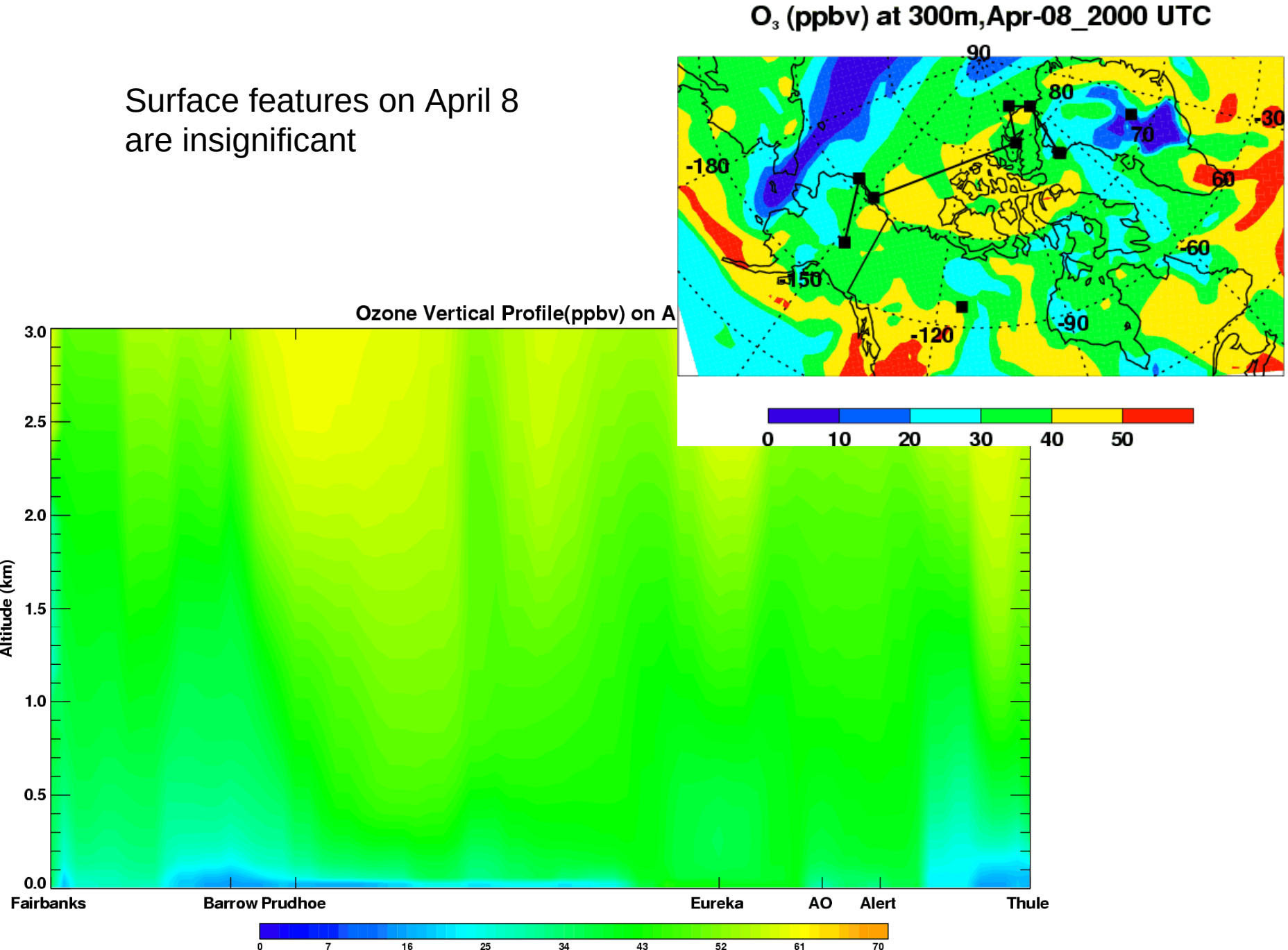
GOME2_04-06



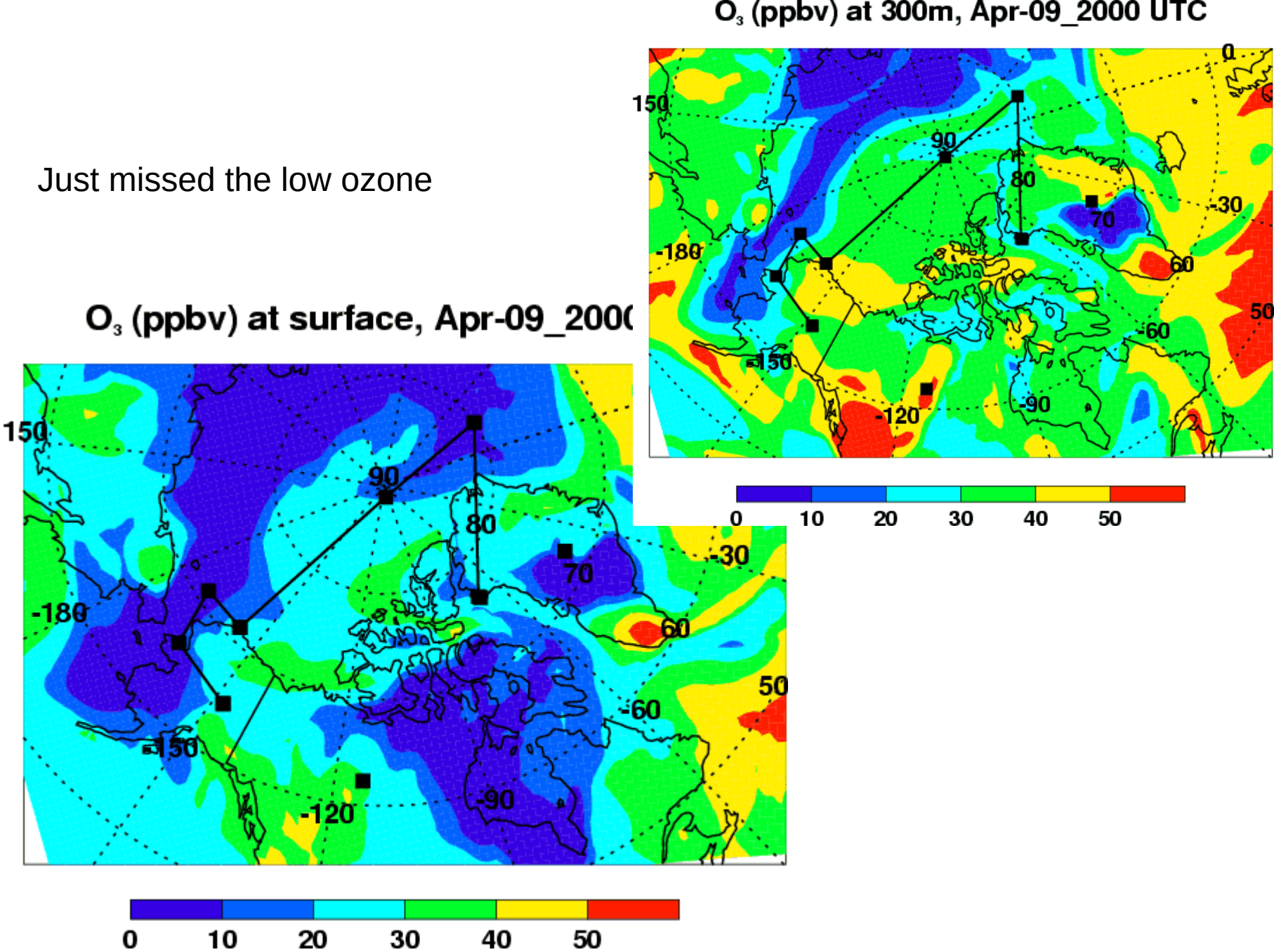


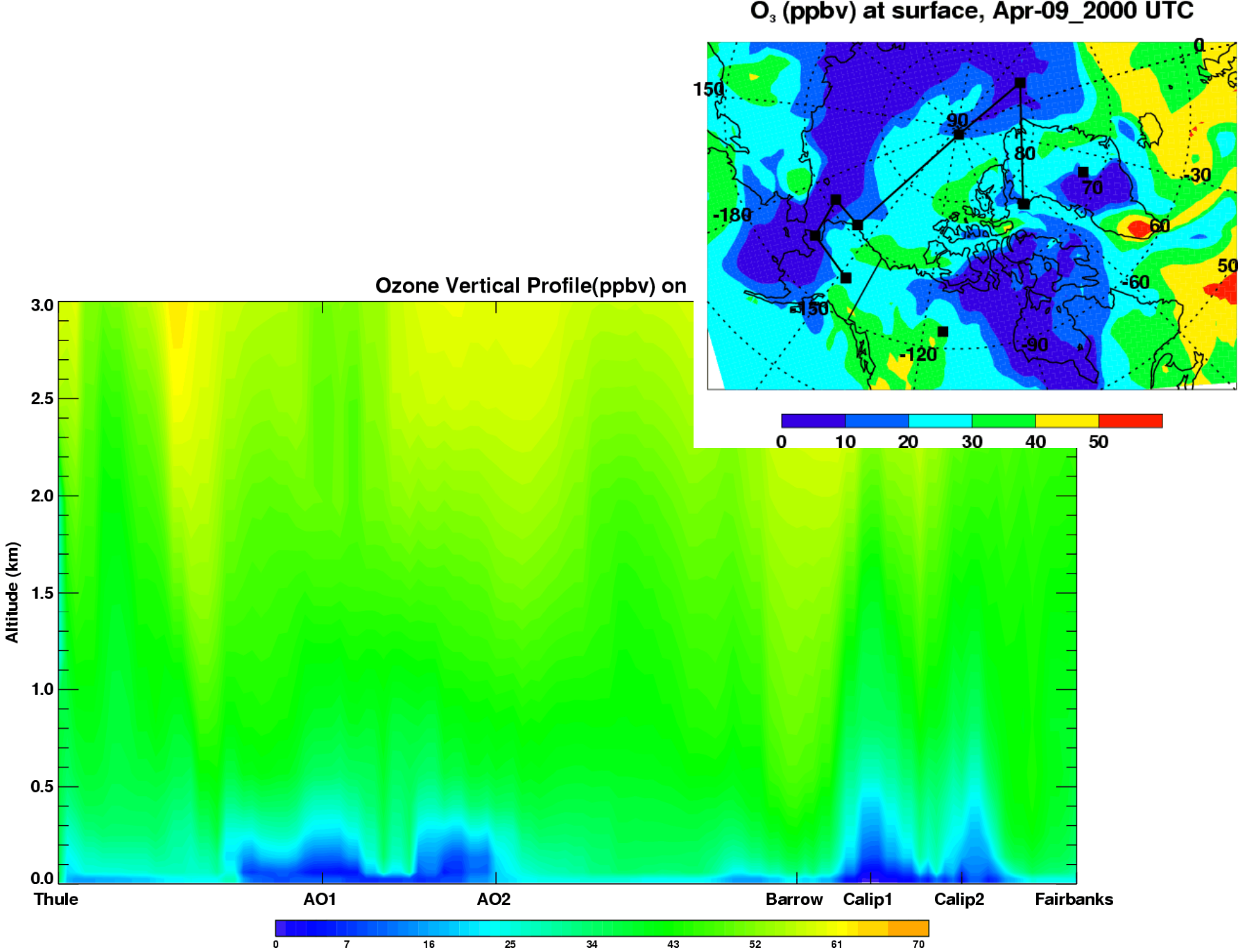


Surface features on April 8 are insignificant

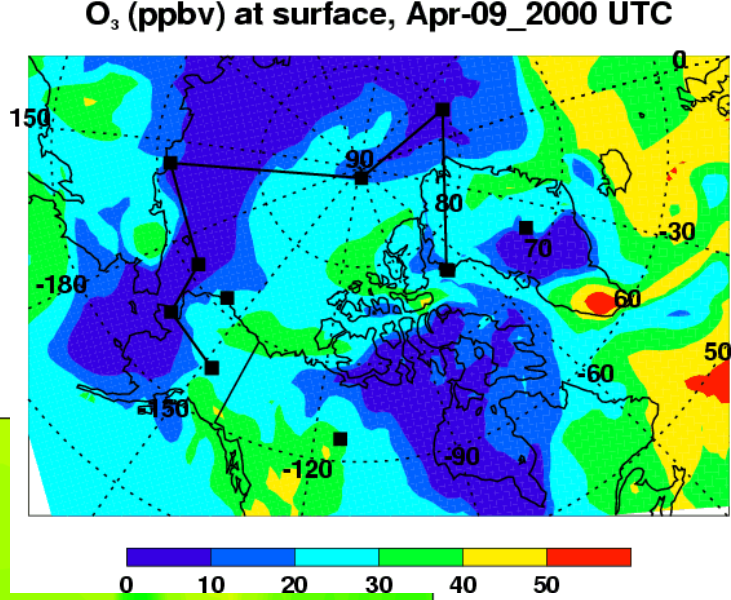


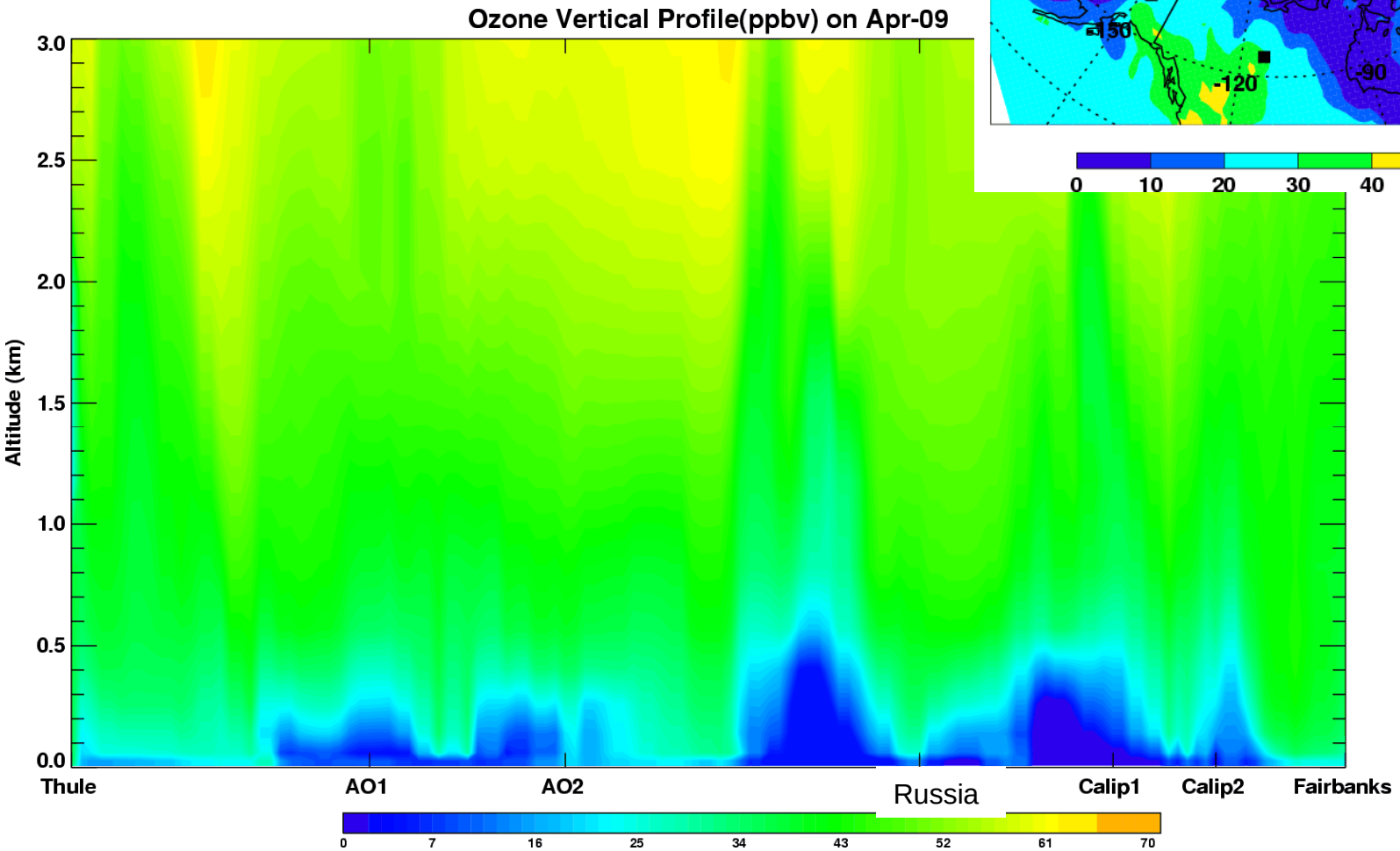
Just missed the low ozone




O3 (ppbv) at surface, Apr-09_2000 UTC
0
150
90
80
70
-30
-180
60
50
-60
-150
-120
-90
0
10
20
30
40
50
Ozone Vertical Profile(ppbv) on
Altitude (km)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Thule
AO1
AO2
Barrow
Calip1
Calip2
Fairbanks
0
7
16
25
34
43
52
61
70

Only if we could fly to Russia…





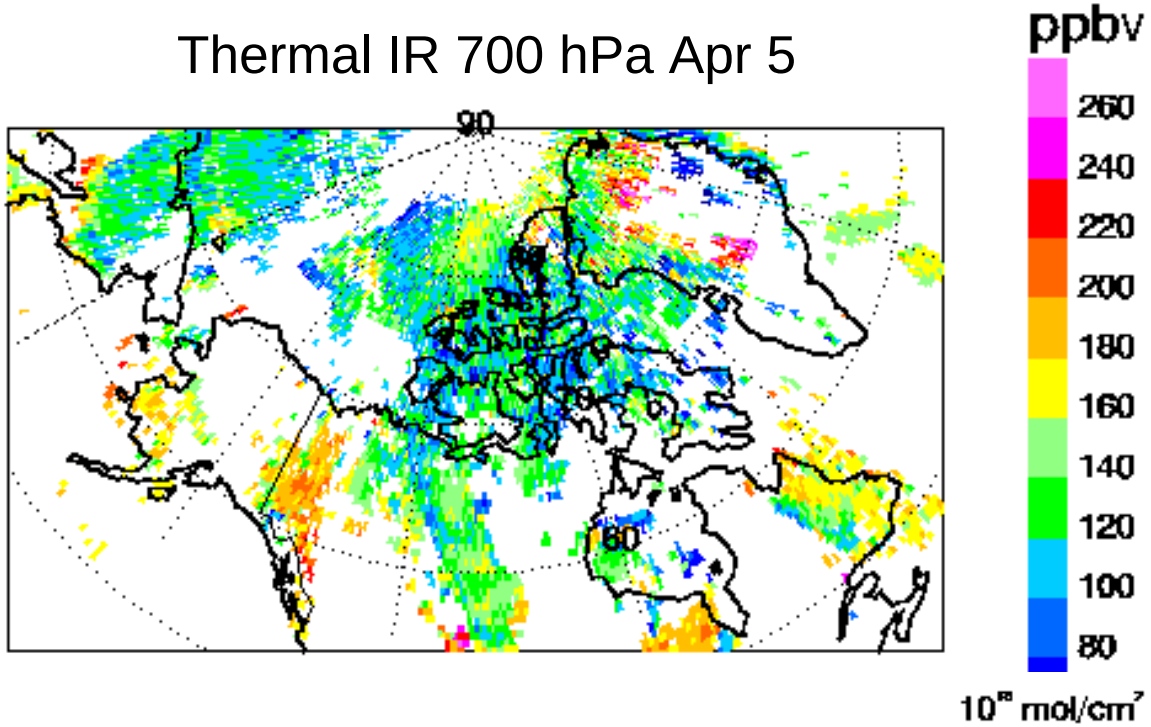
MOPITT CO

DC8 spiral Apr 5

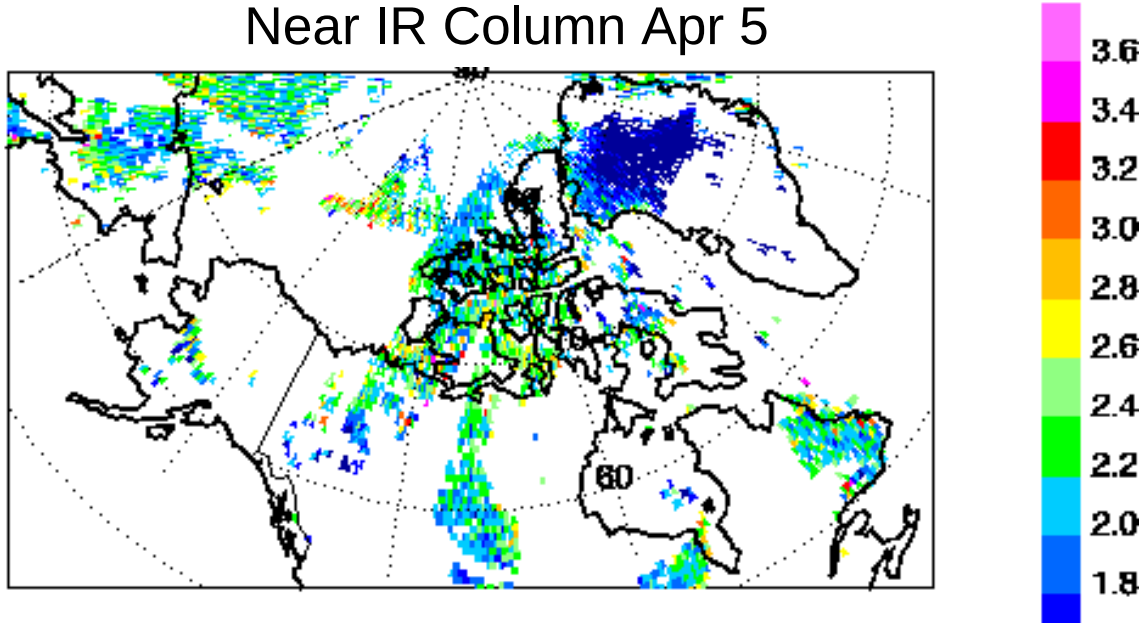
No MOPITT retrievals directly over Summit

Enough over ice sheet for some validation

Thermal IR 700 hPa Apr 5



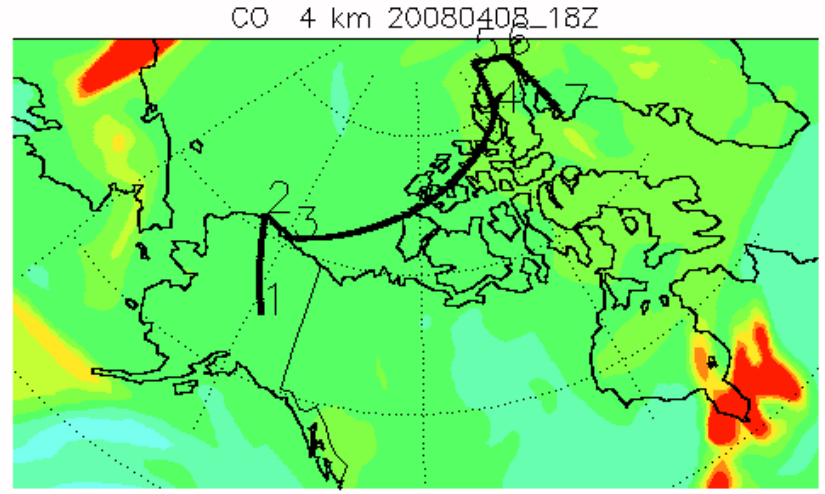
Near IR Column Apr 5

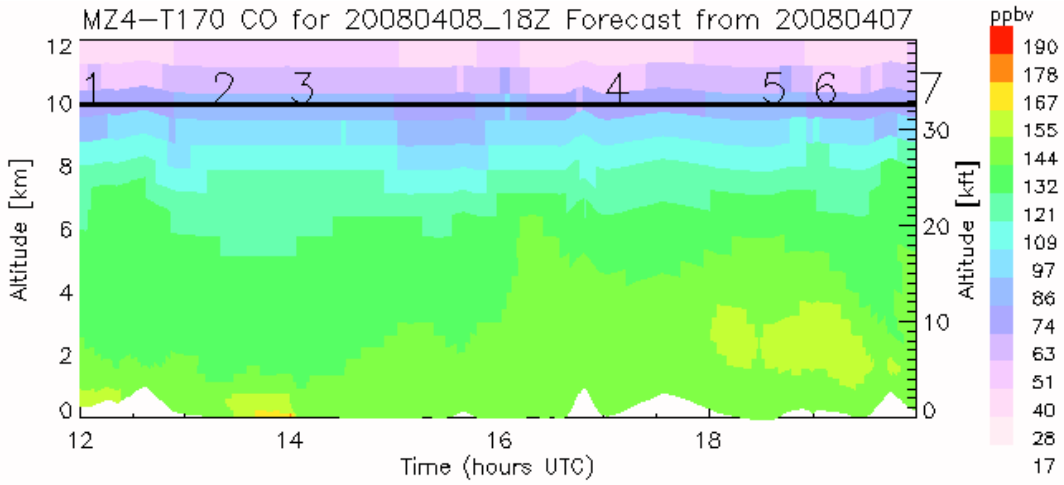


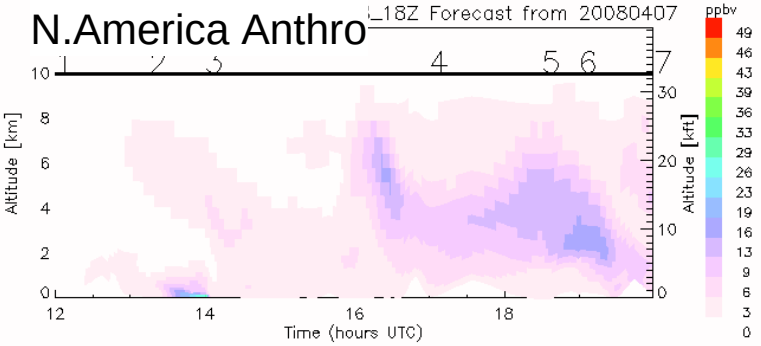
Apr 8 Fairbanks-Eureka-Thule

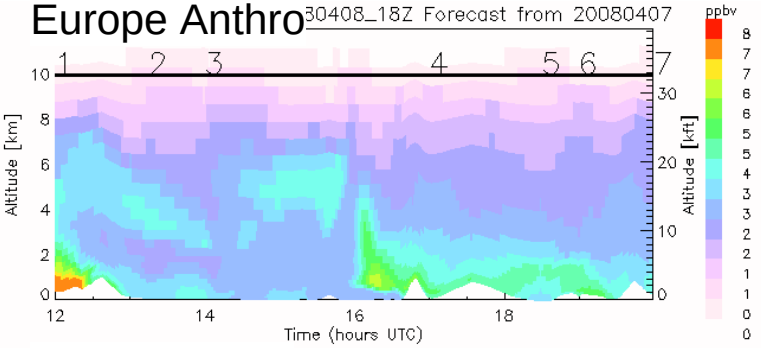
MZ4 forecast from Apr 7 for Apr 8 18Z

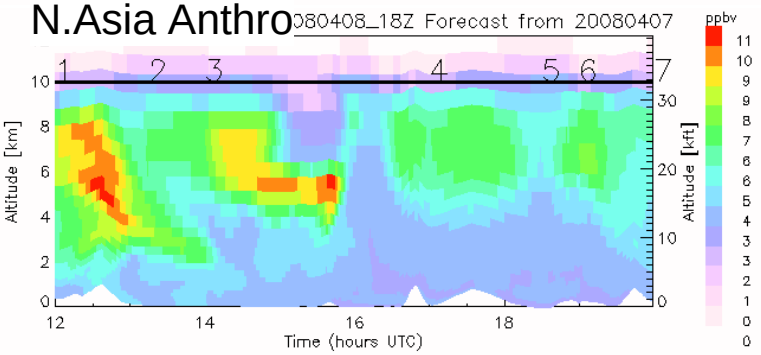
Weak plumes, aged pollution for whole flight
Primarily Asian at start of flight, N. American and European over Eureka and Thule

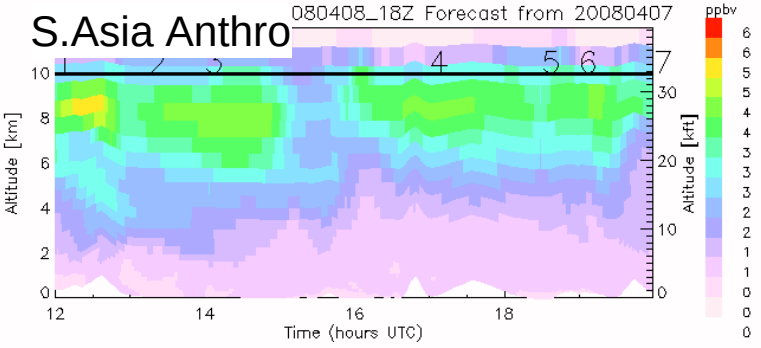










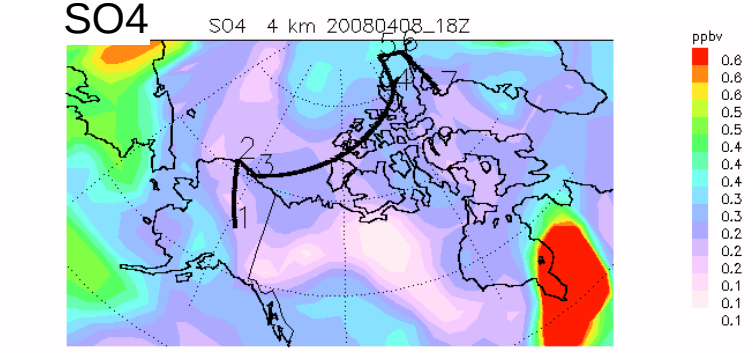


Apr 8 Fairbanks-Eureka-Thule

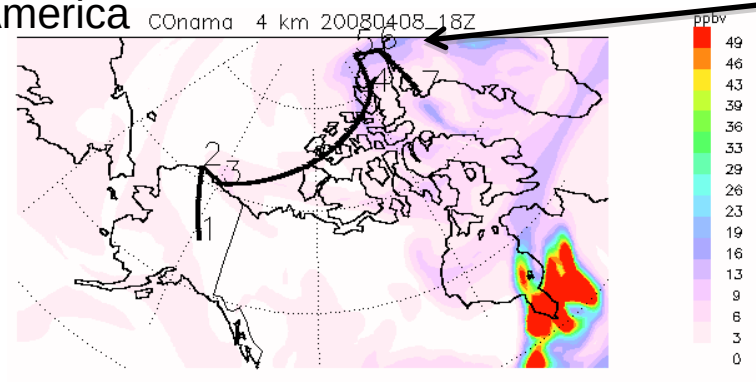
MZ4 forecast from Apr 7 for Apr 8 18Z

Aerosols over Eureka:
coincide with N. American CO
European CO just to north

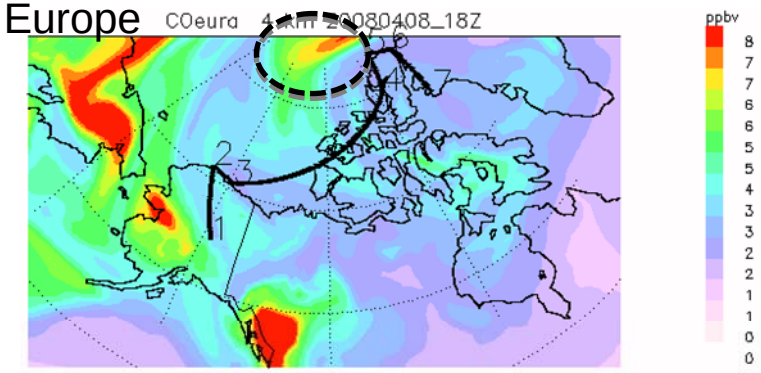
SO4



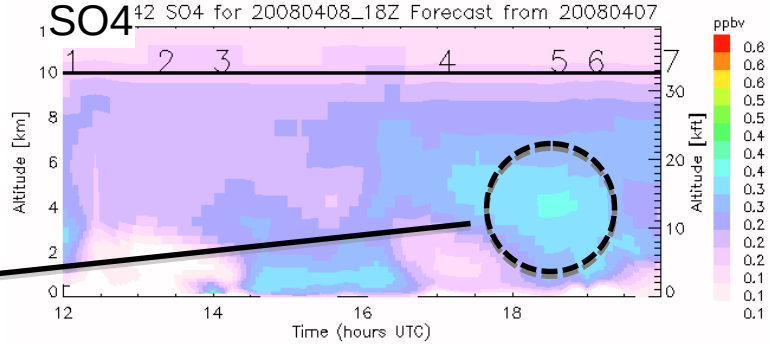
N.America



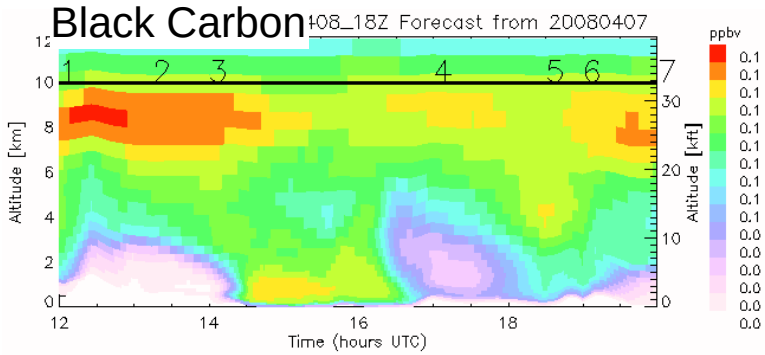
Europe



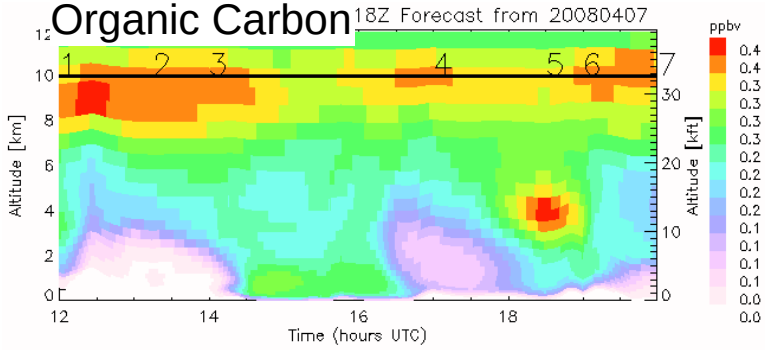
SO4



Black Carbon



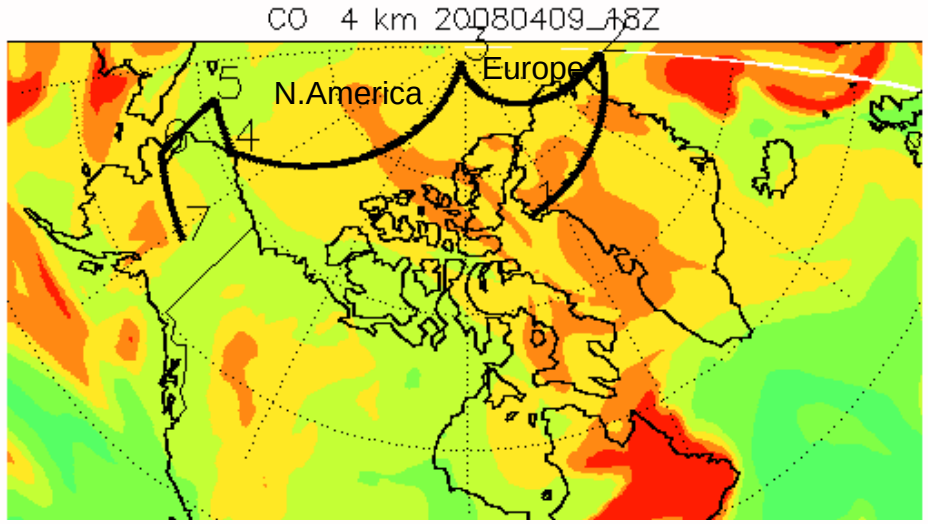
Organic Carbon

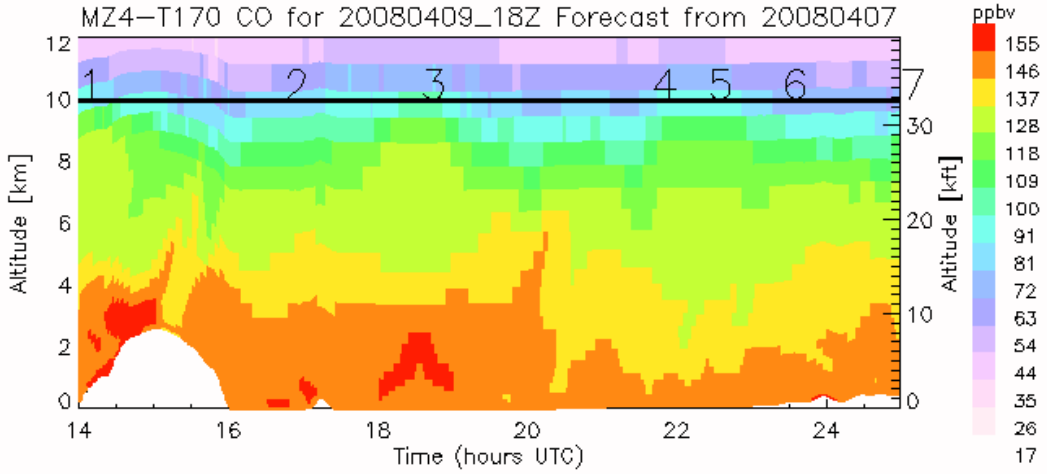


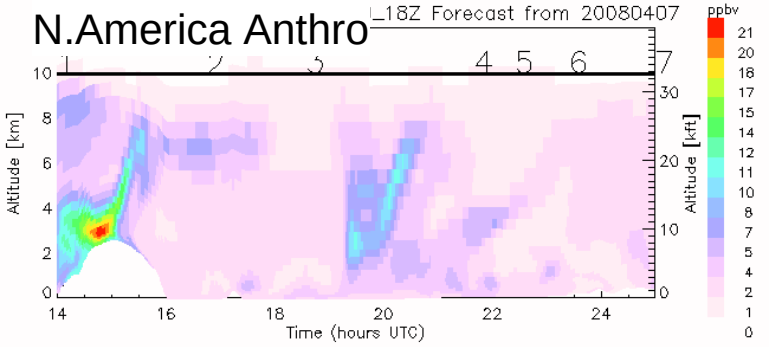
Apr 8 Thule-Svalbard-Fairbanks

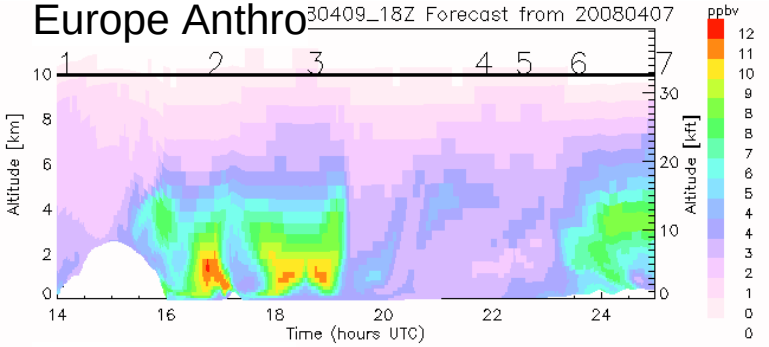
MZ4 forecast from Apr 7 for Apr 8 18Z

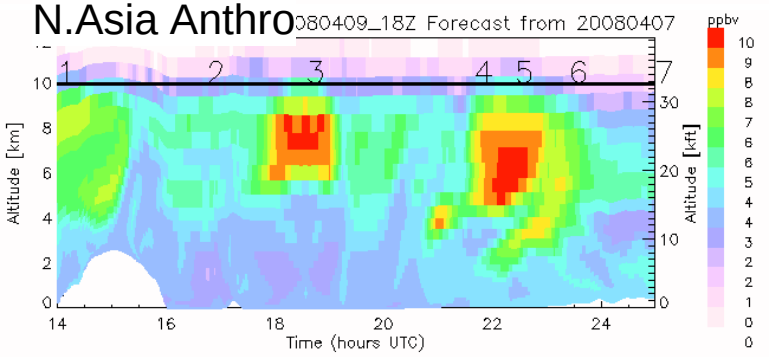
Weak plumes, aged pollution for whole flight
Primarily Asian at start of flight, N. American and European over Eureka and Thule

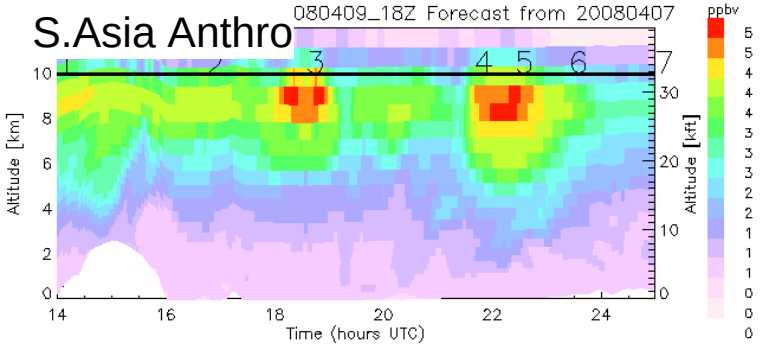








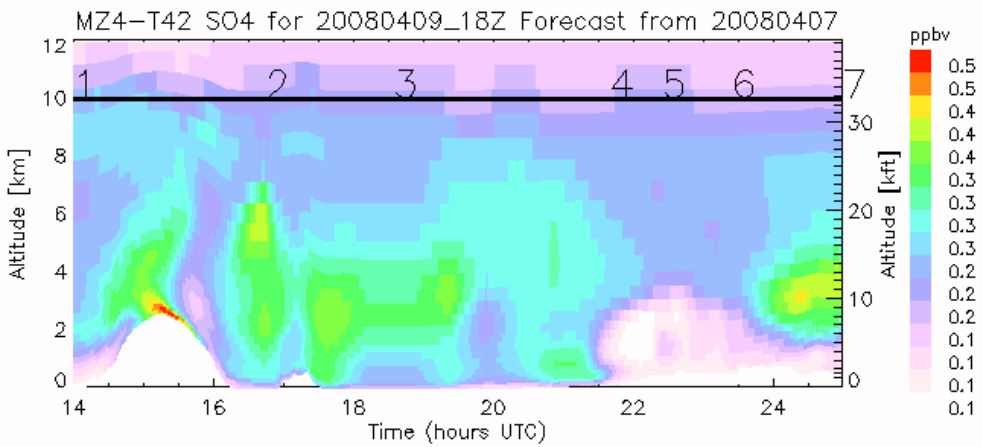


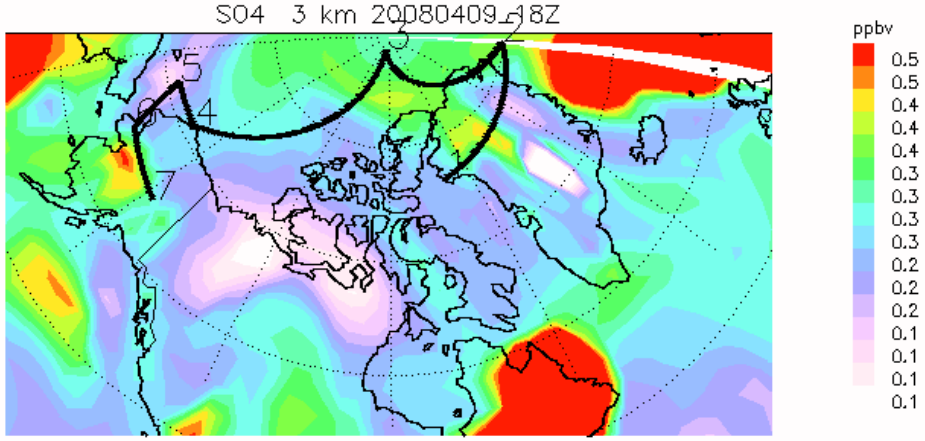


Apr 8 Thule-Svalbard-Fairbanks

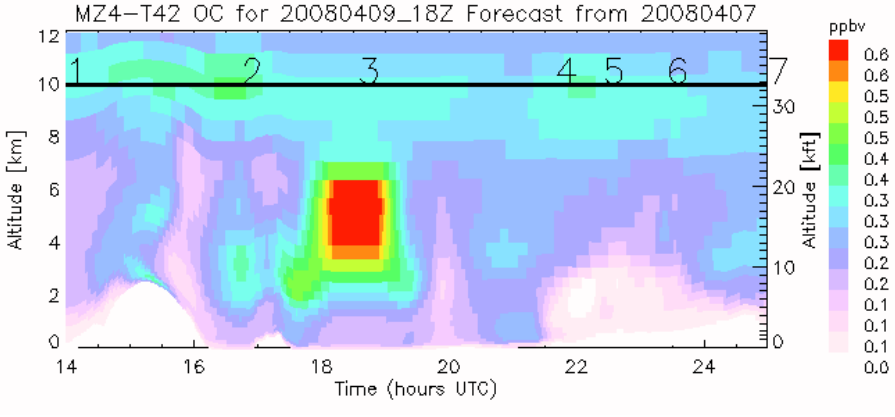
MZ4 forecast from Apr 7 for Apr 8 18Z

SO4

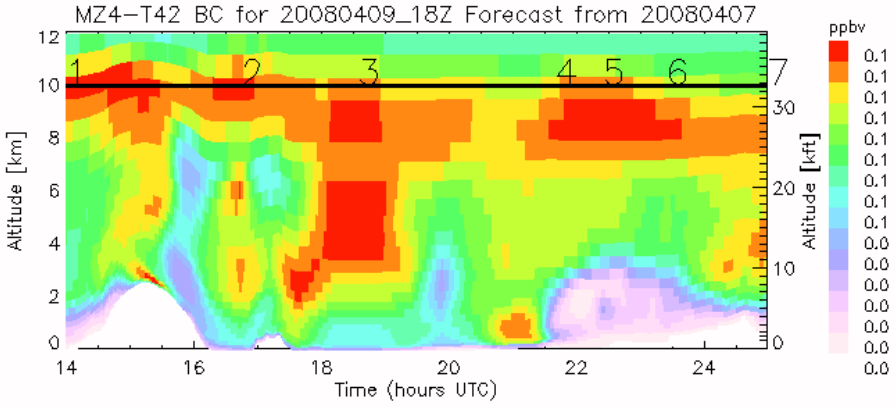




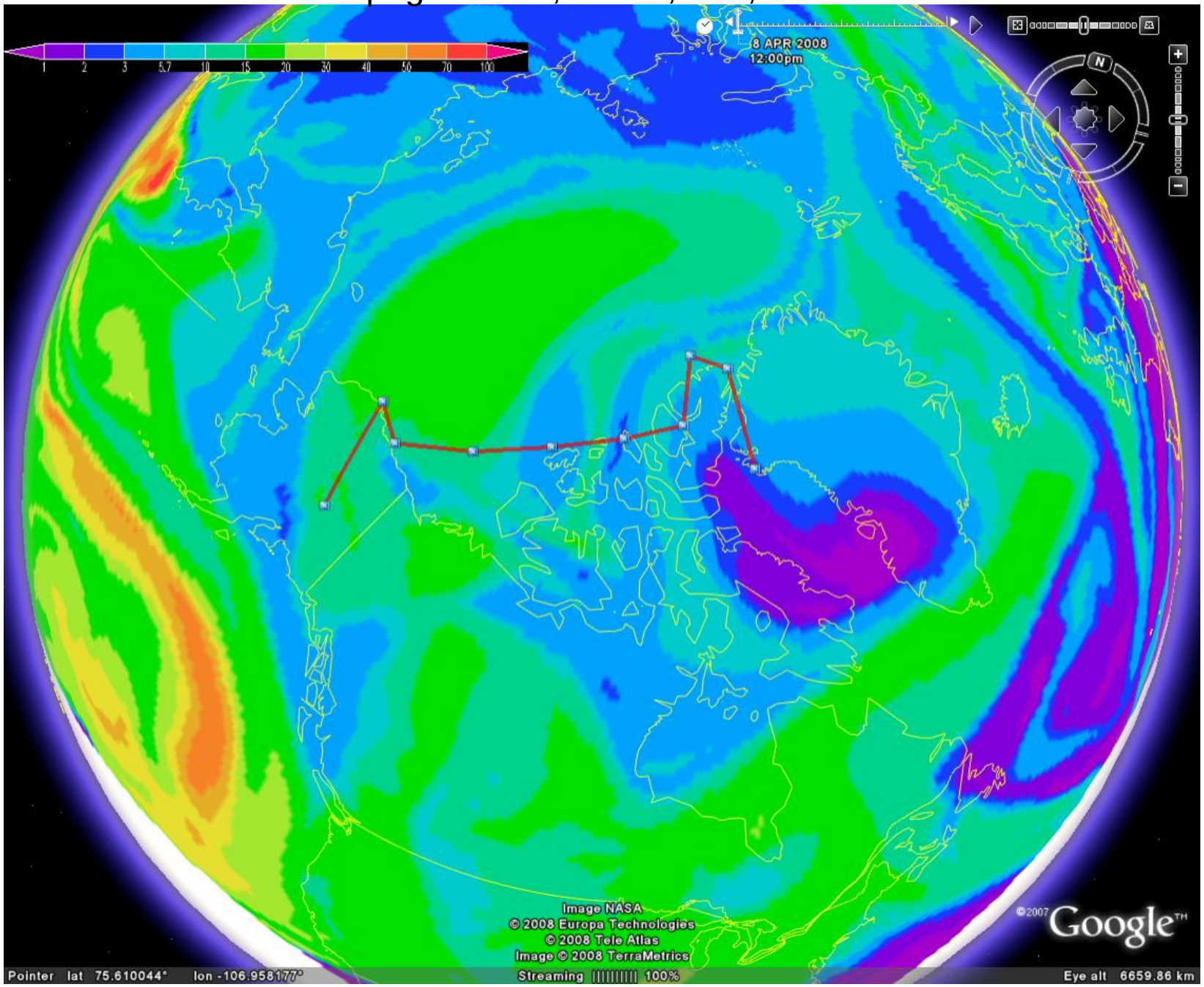
Organic Carbon



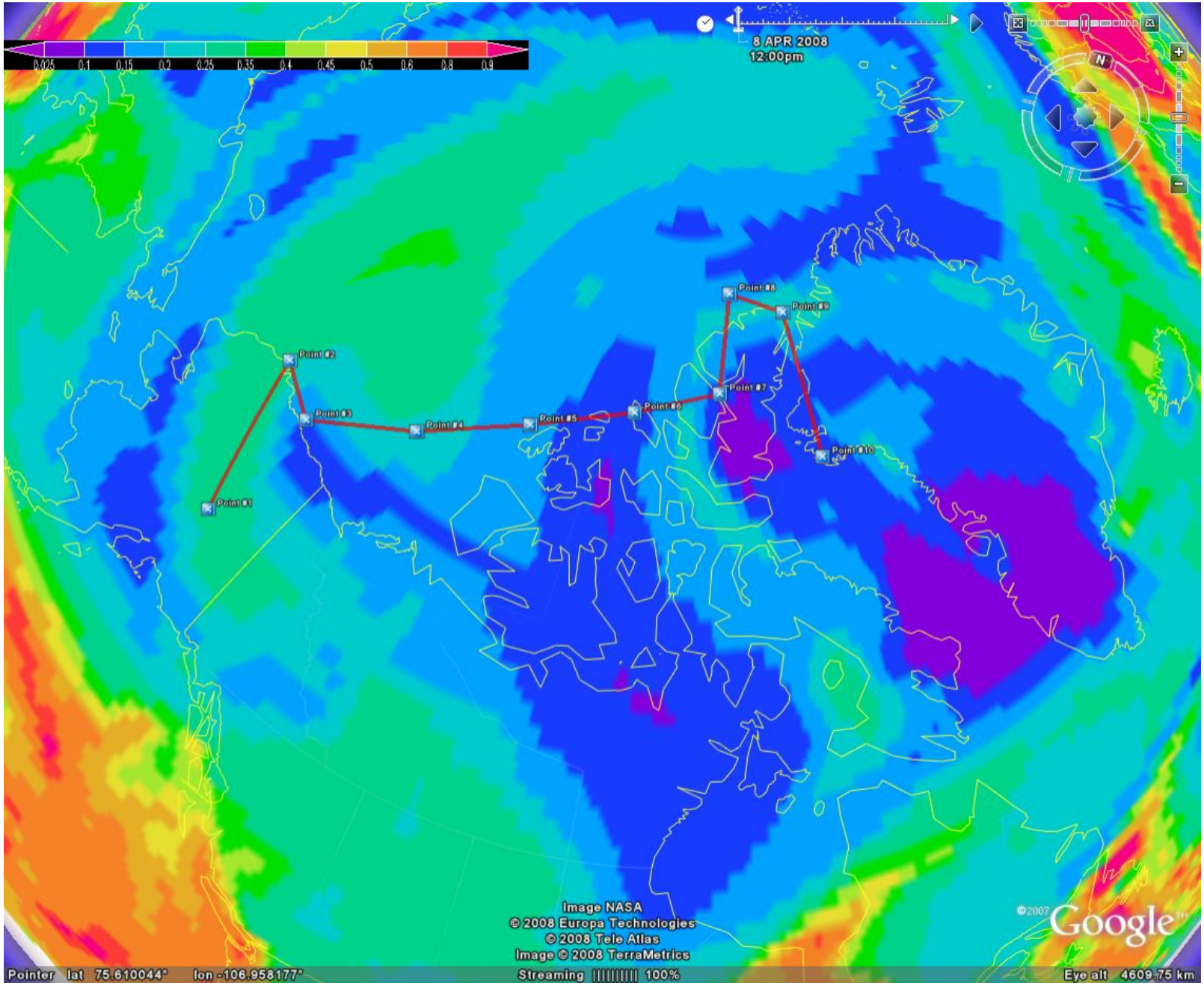
Black Carbon



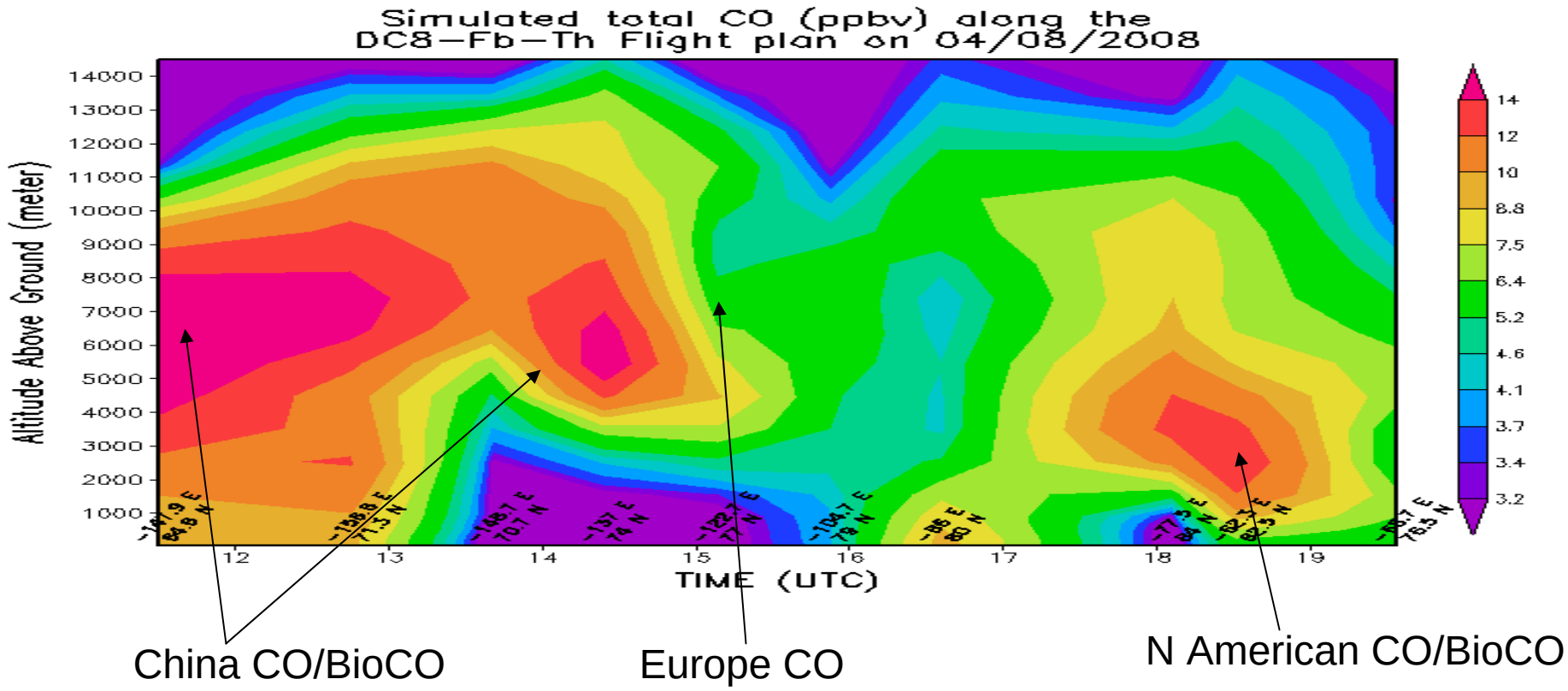
DC8- Anthropogenic CO, 8.4km, 12Z, 36 hr forecast

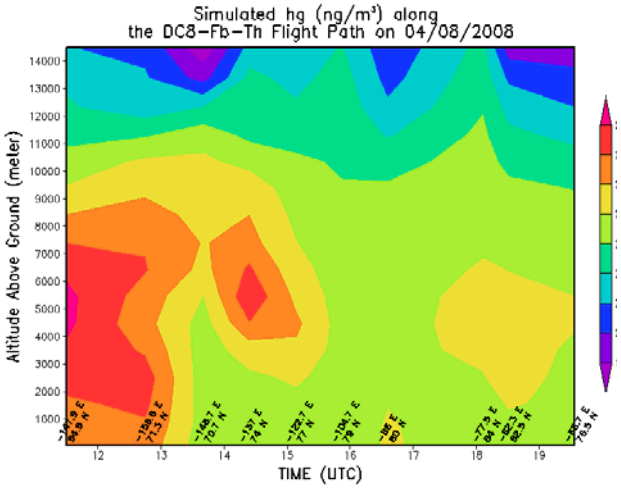


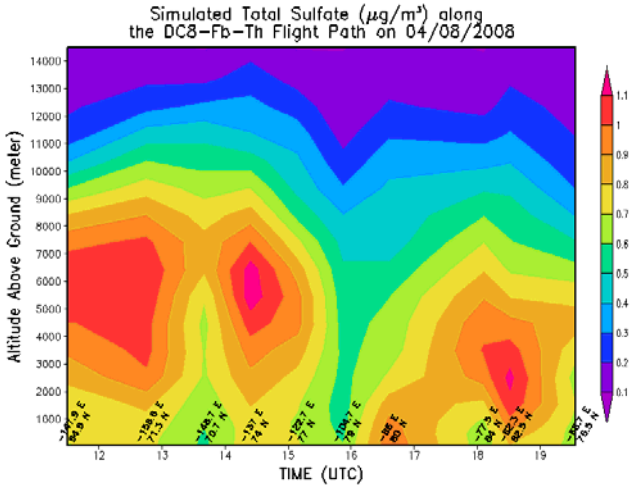
DC8 Flight April 8- AOD, 12Z, 36 hr forecast

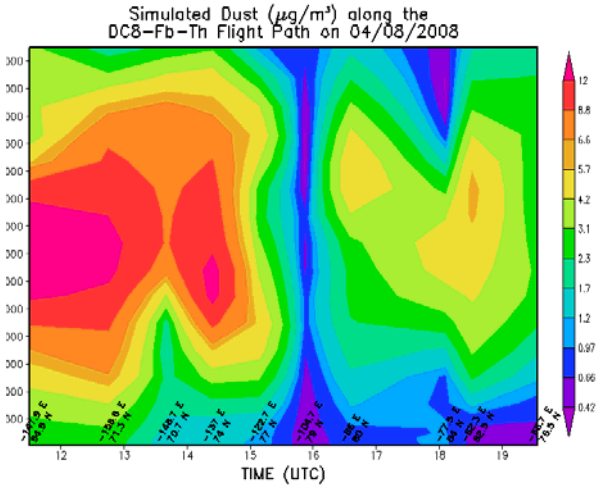


FAI to Thule Flight Track April 8 for DC-8

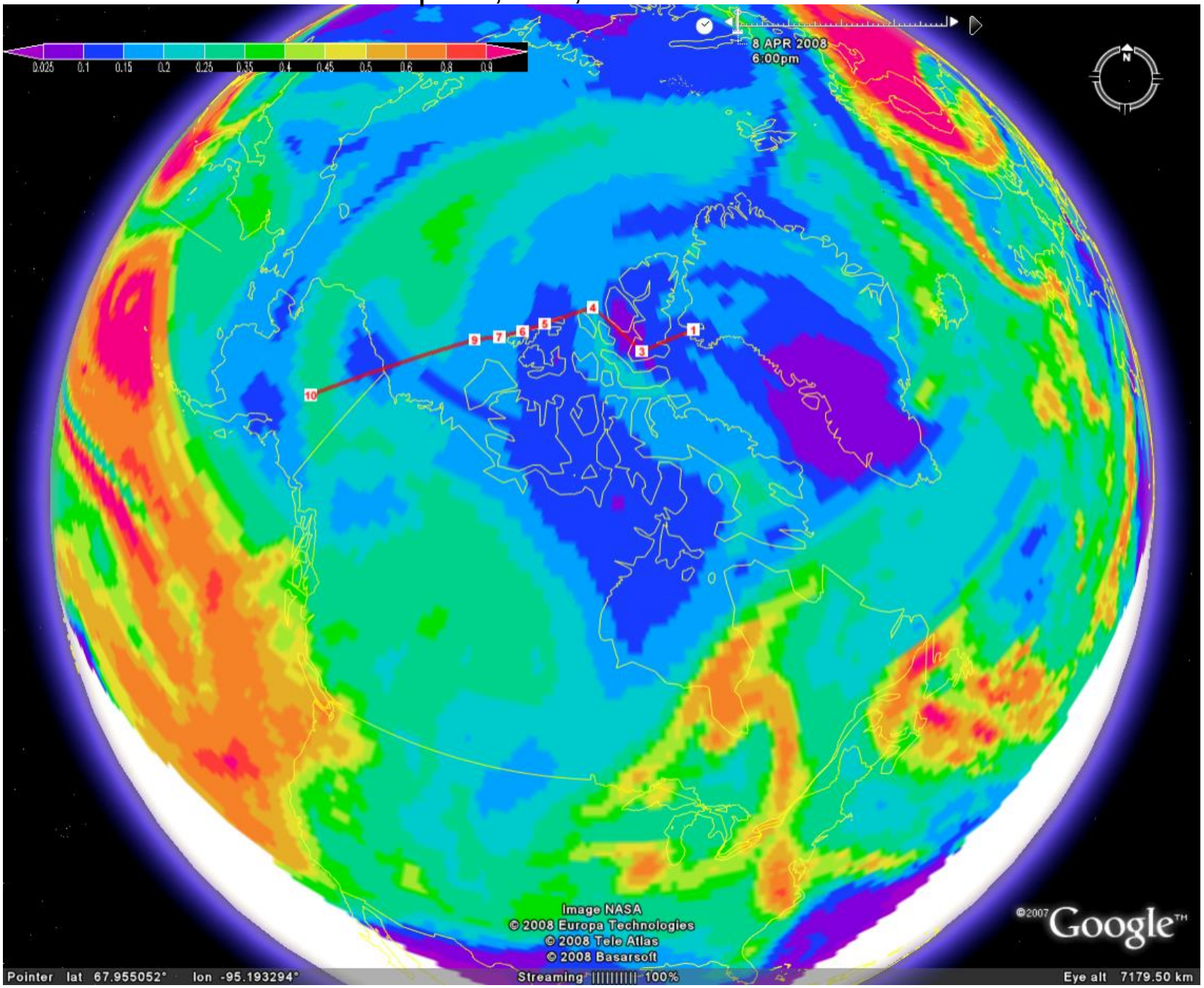




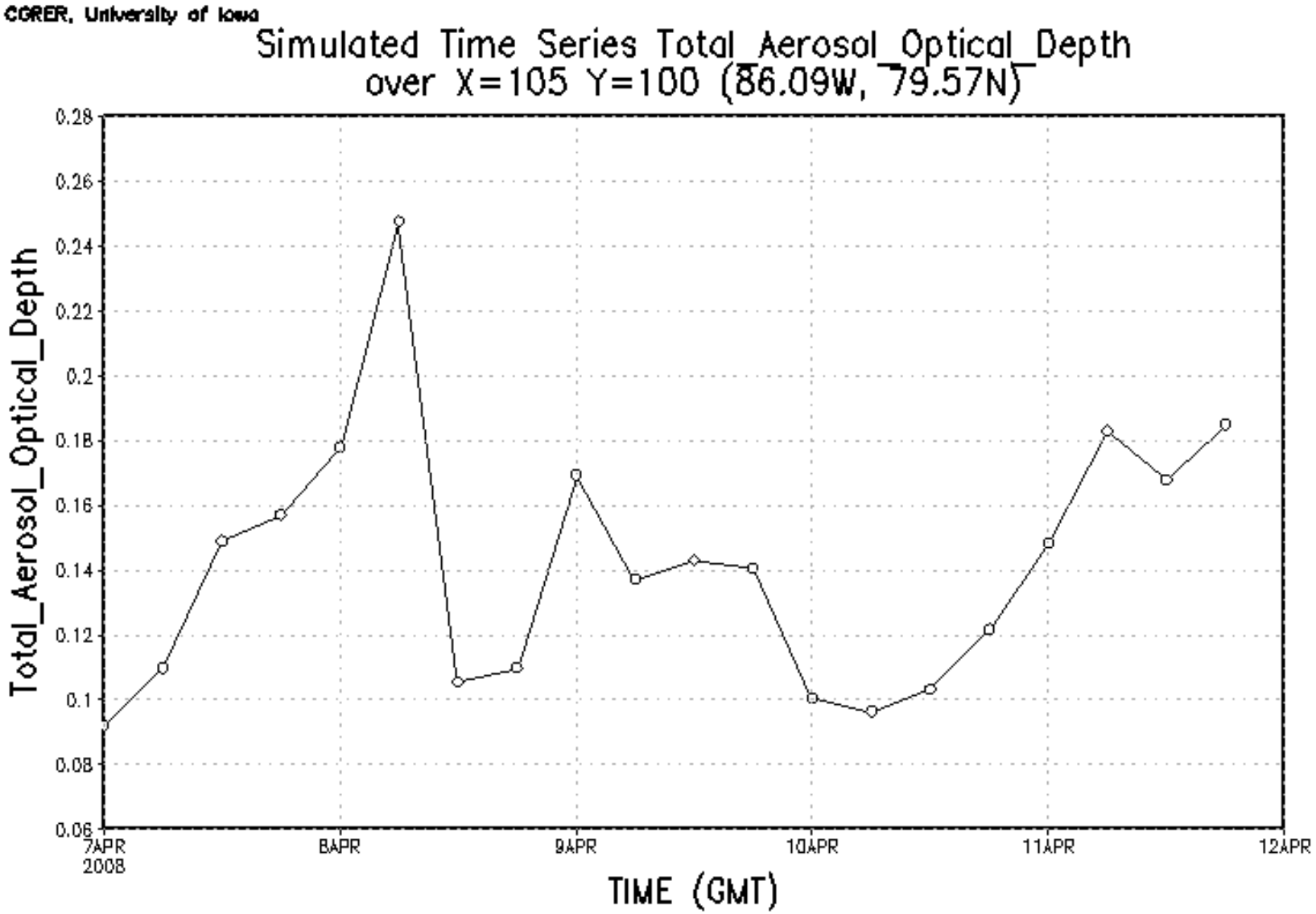




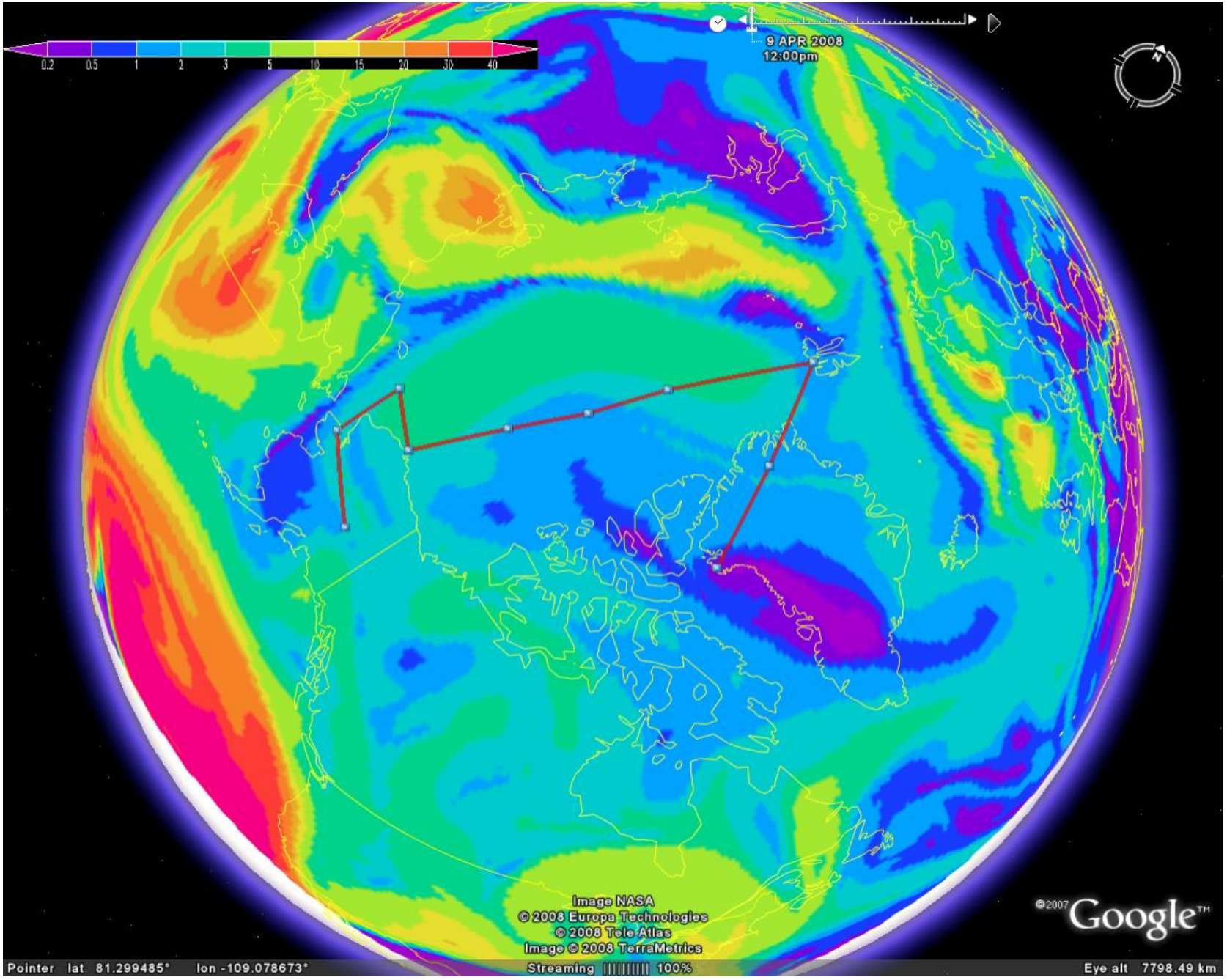
AOD-April 8, 18Z, 42 hour forecast



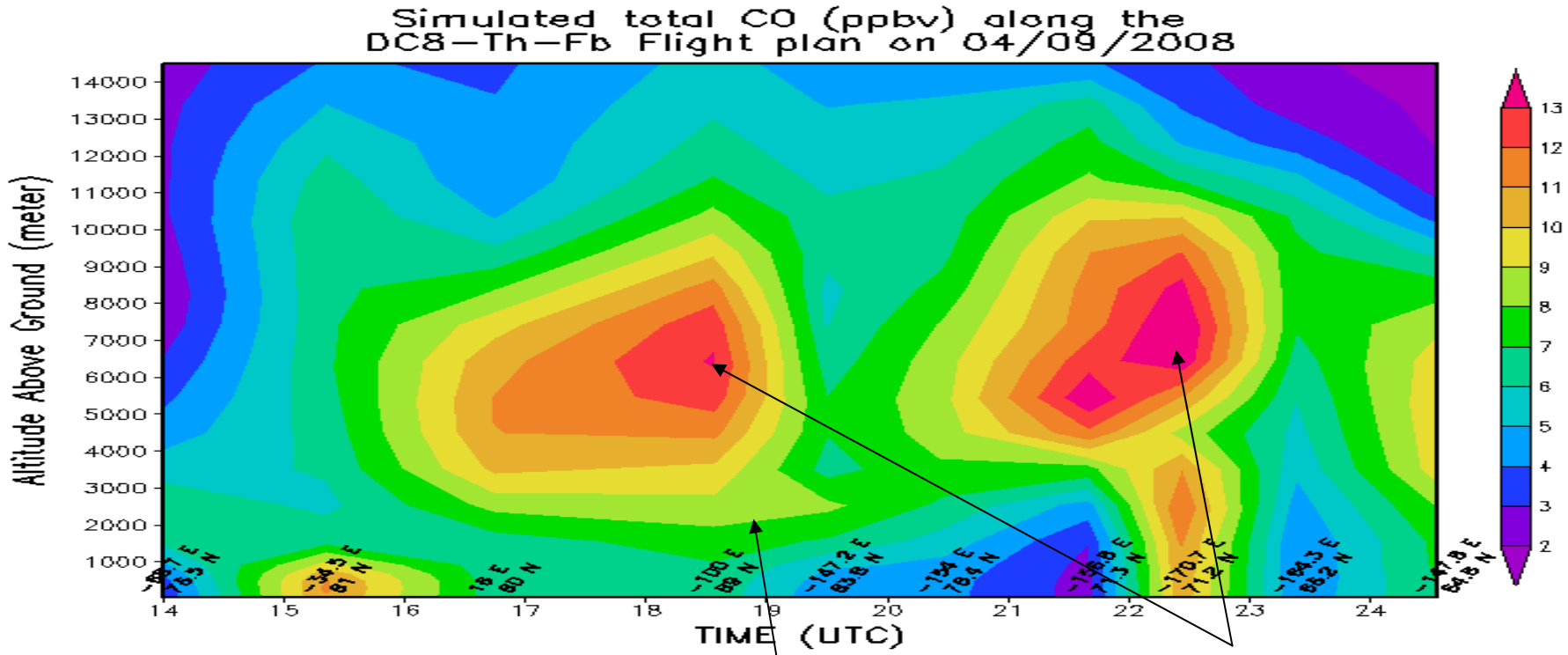
Eureka and Surrounding



DC8- Bio CO, 8.4km, 12Z, 60 hr forecast



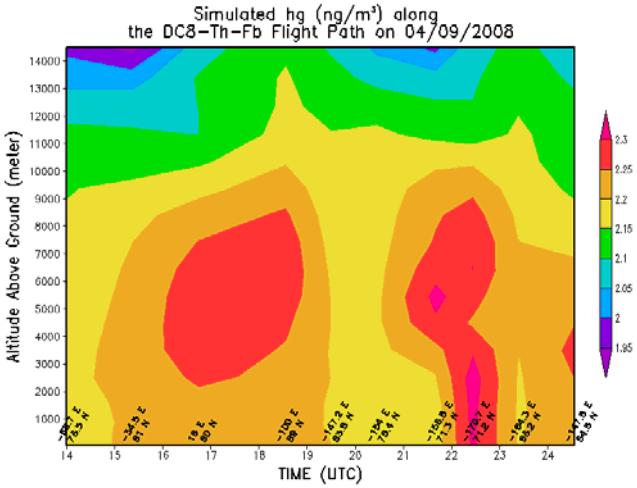
Thule to FAI Flight Track April 9 for DC-8

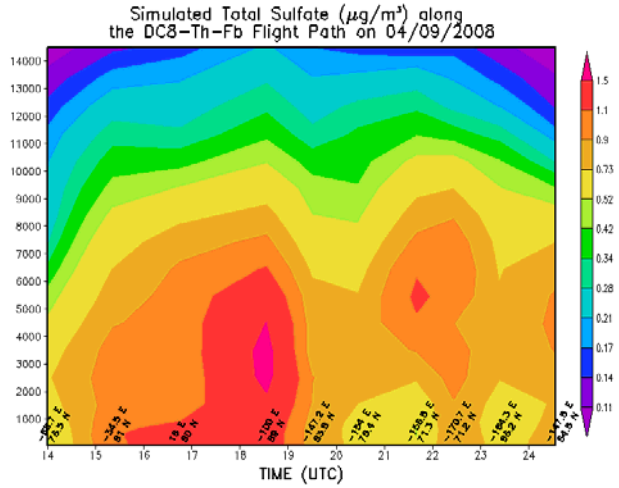


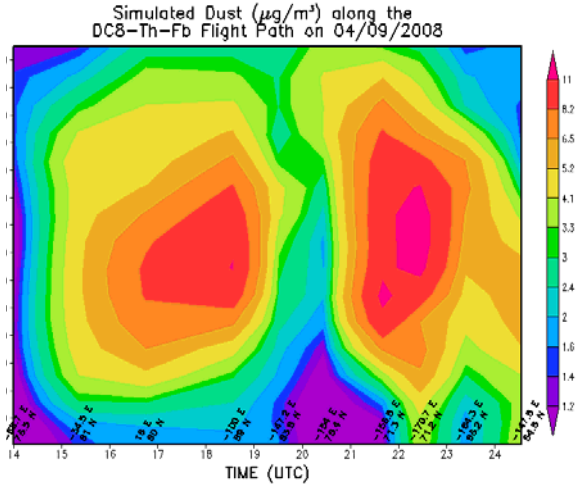
N American CO/BB

Europe CO

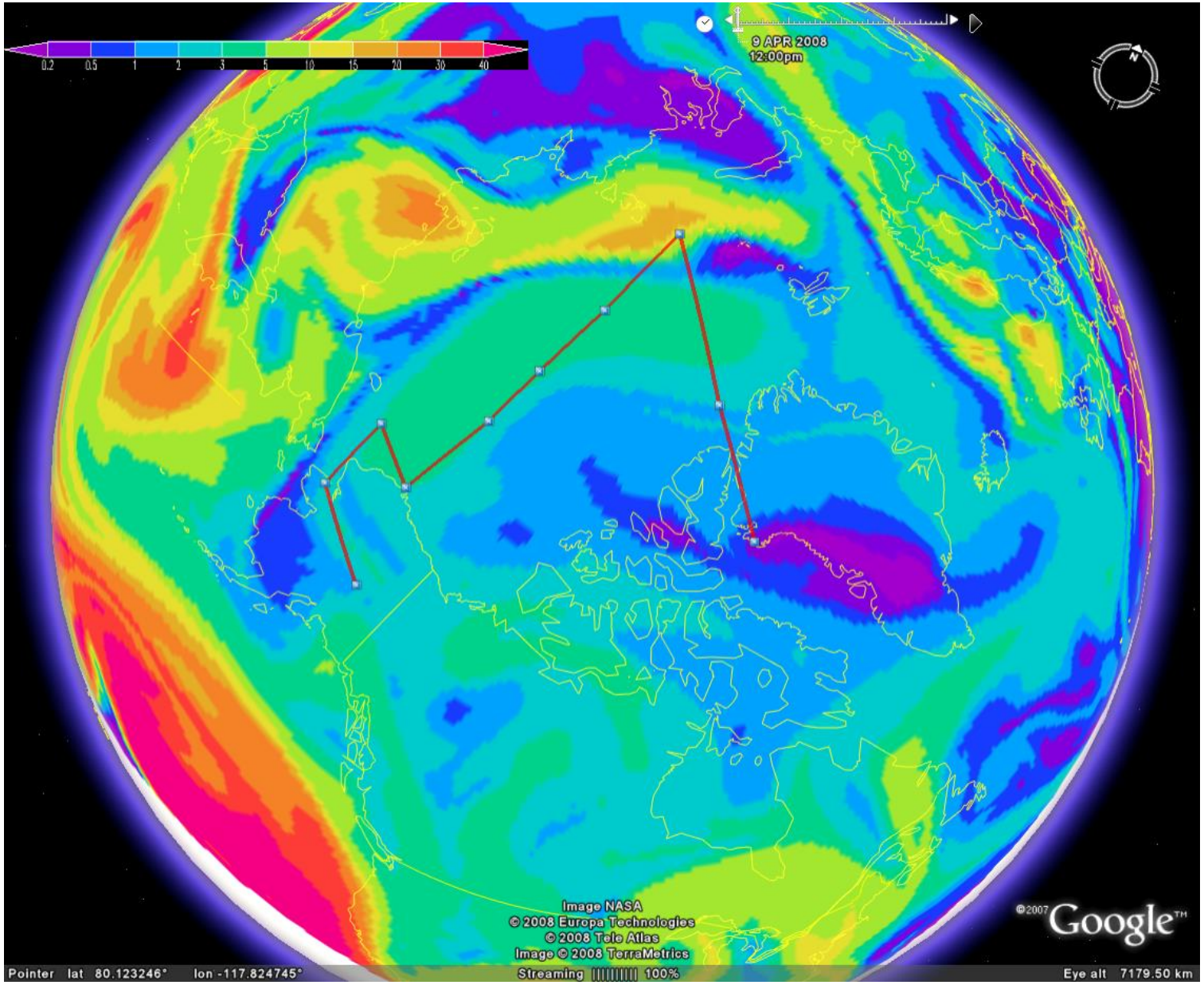
Asian CO/BB



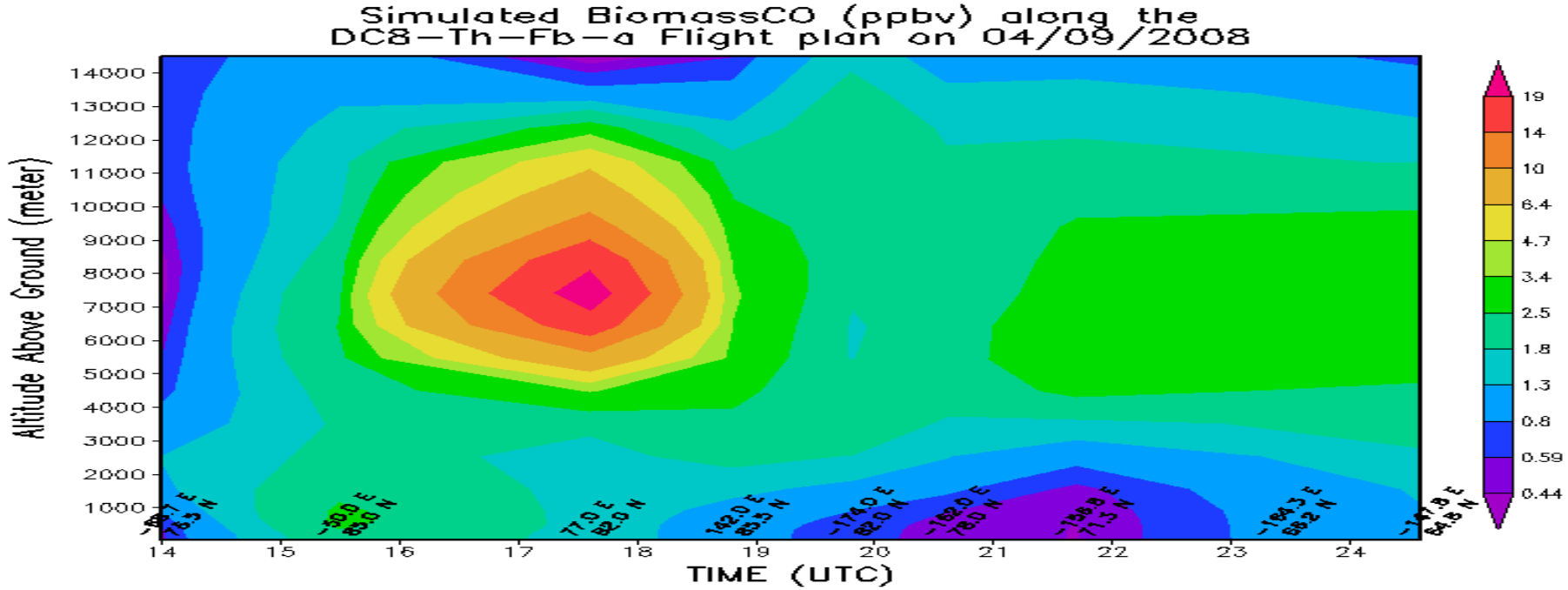


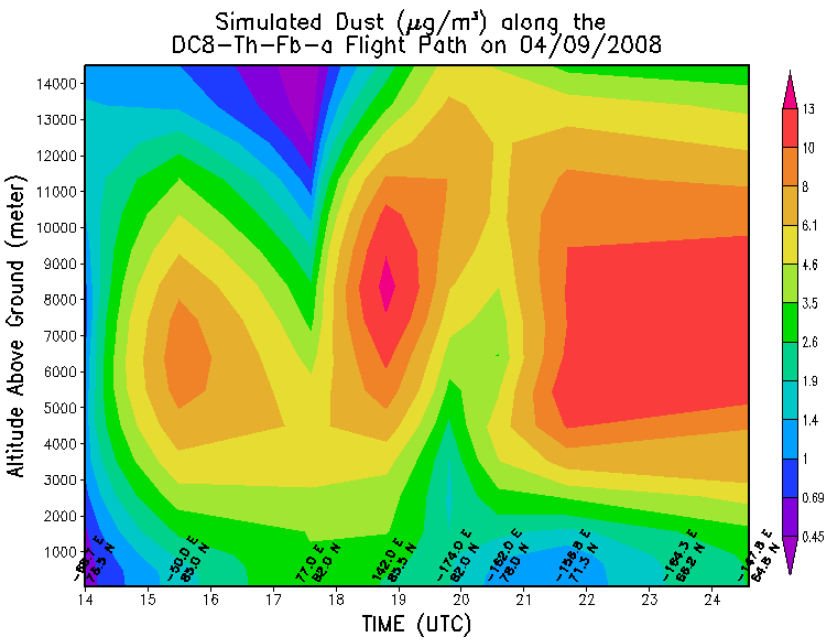


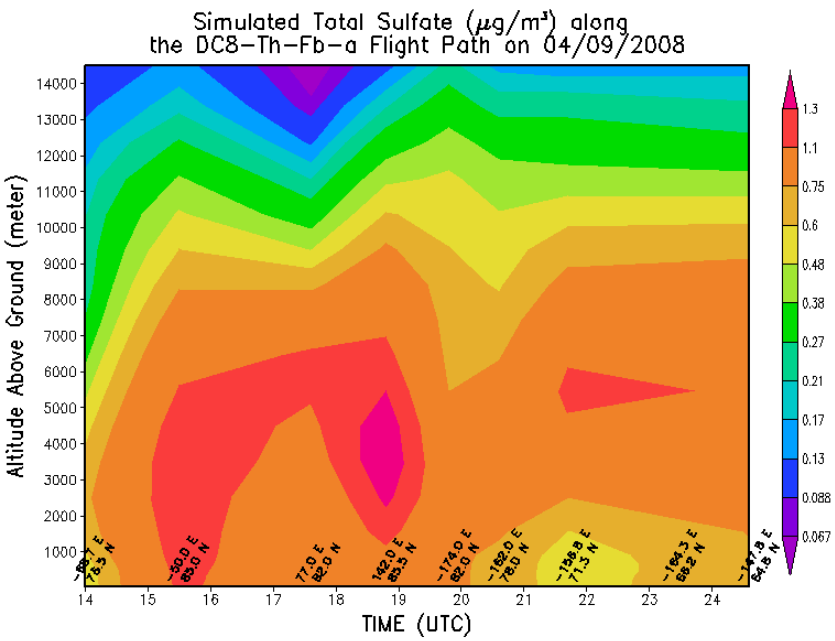
BiomassCO, Revised Track for DC-8 April 9th 60hr forecast



Thule to FAI DC-8 Revised Flight Path for April 9

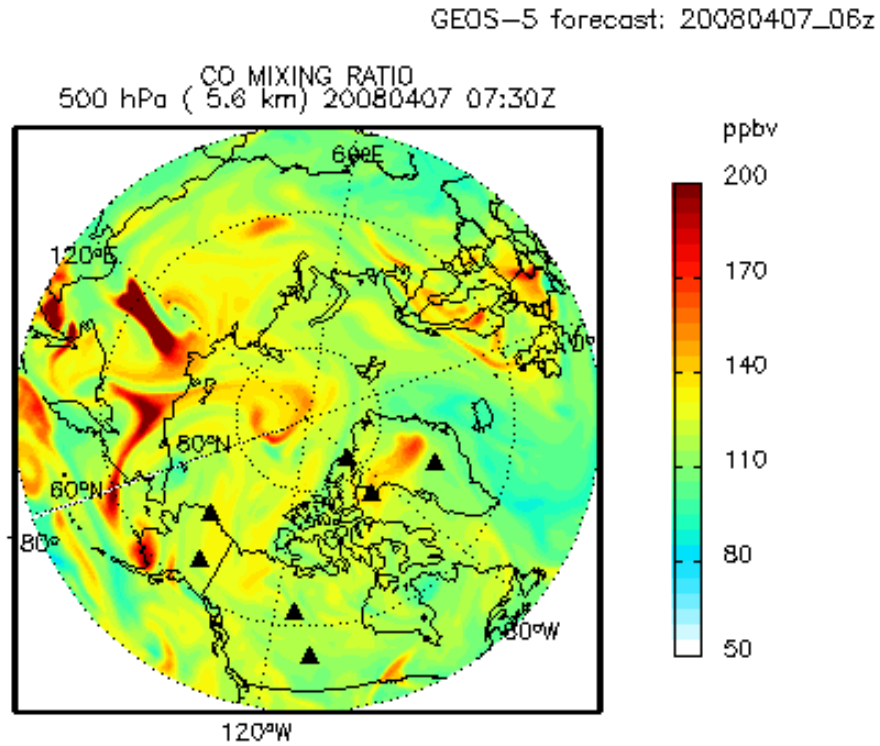




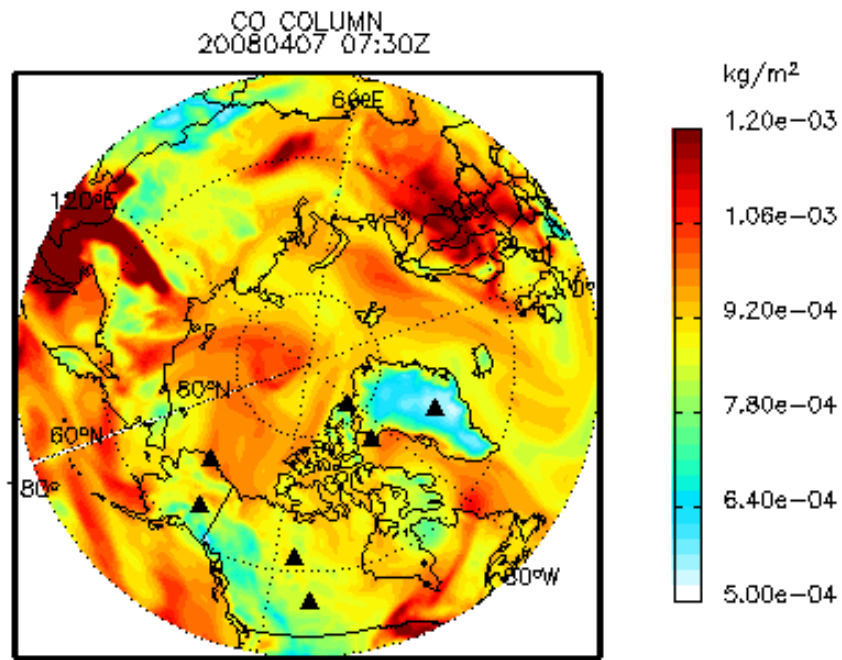


CO evolution: 4/7 – 4/11

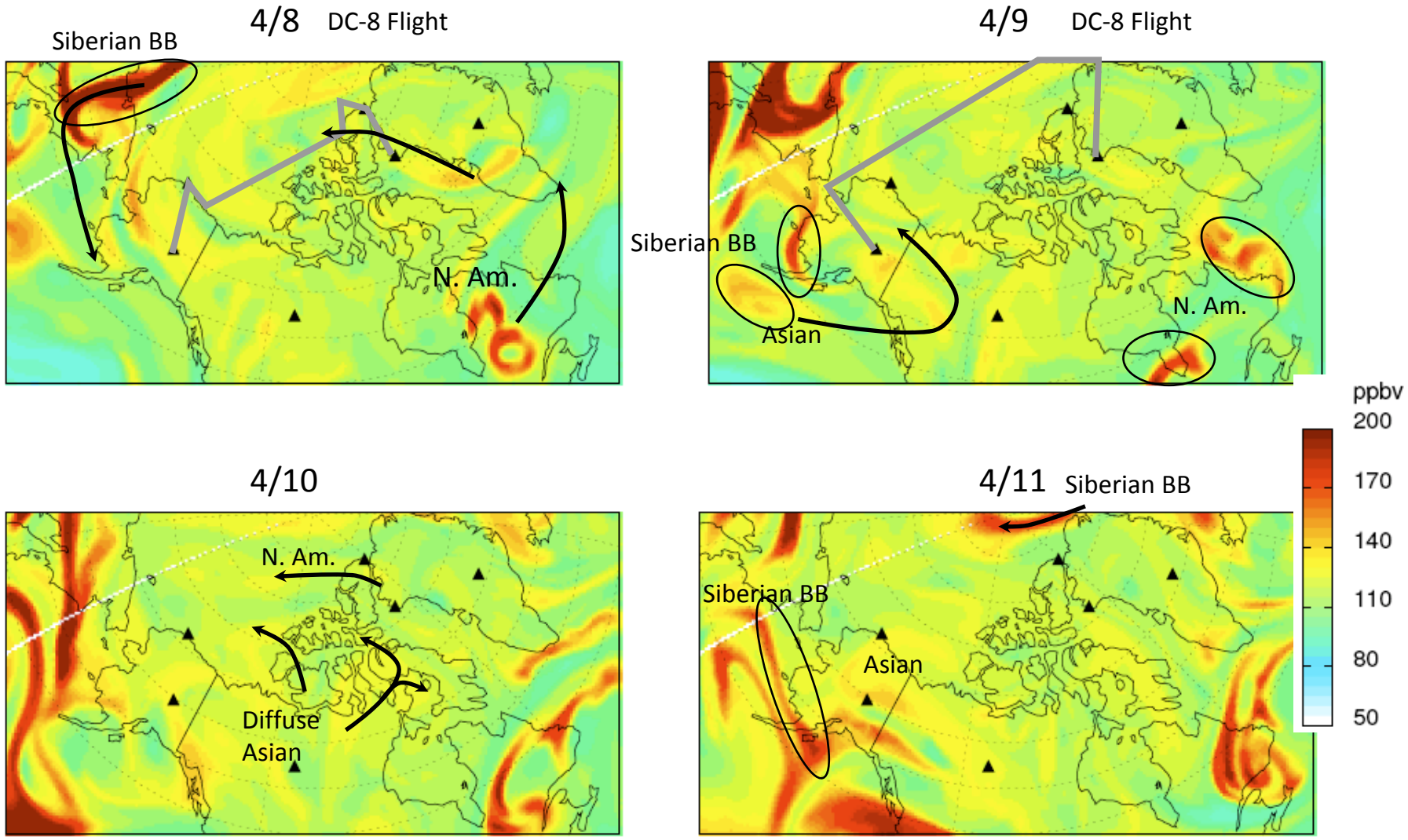
500 mb CO



Total CO Column

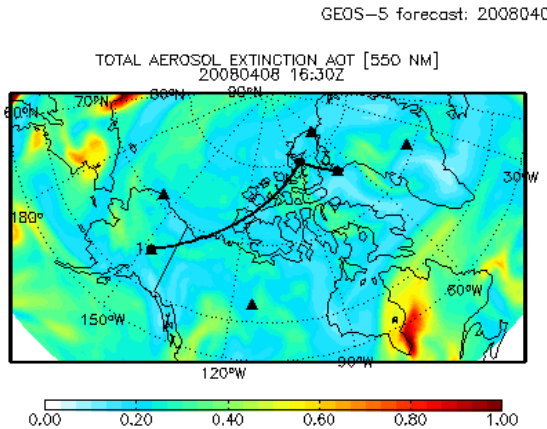


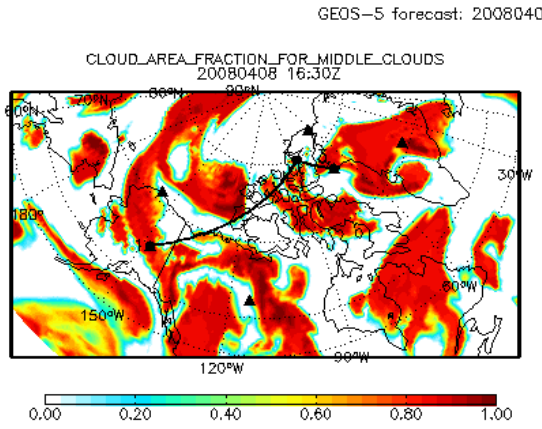
GEOS Total CO 500 hPa

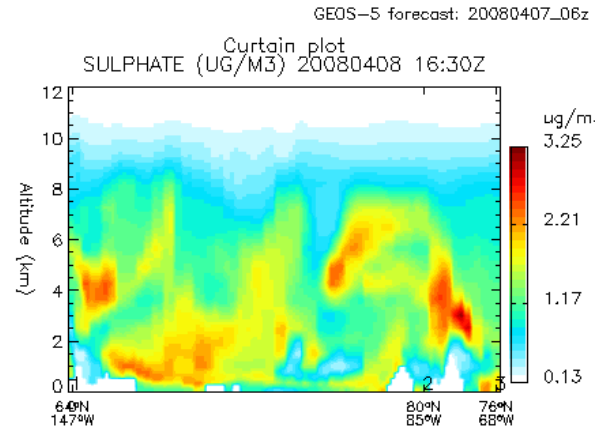


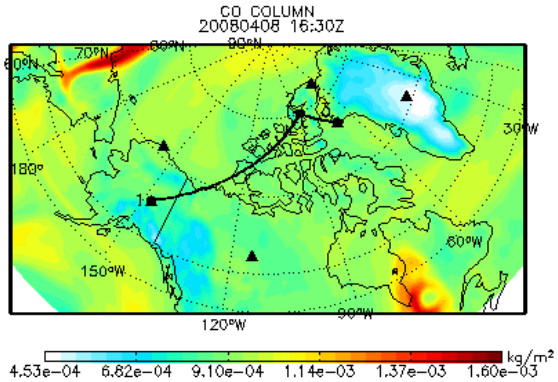
Initialized 04/07/2008 – 06z

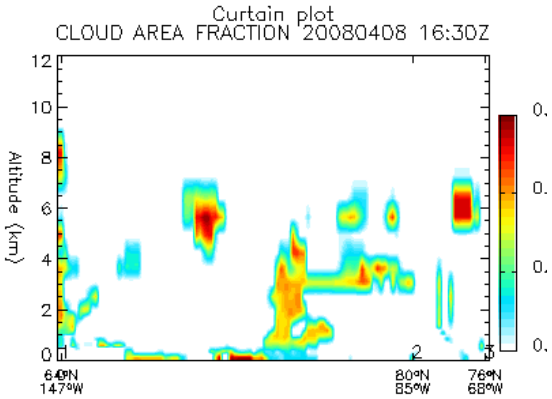
P-3 Fairbanks – Eureka – Thule
April 8, 2008

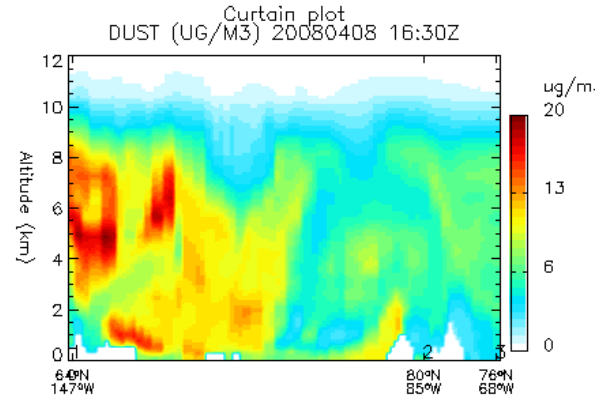


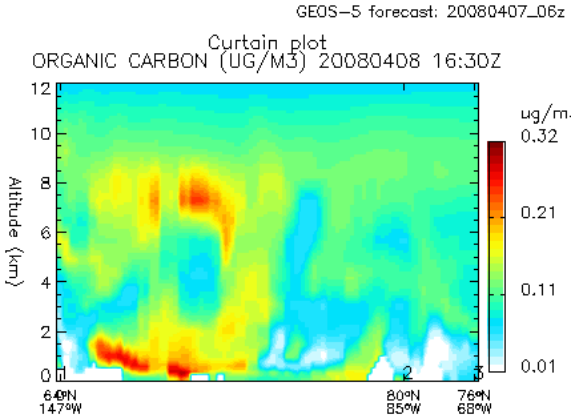


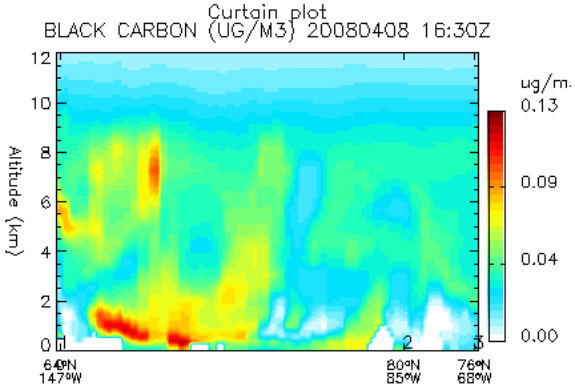


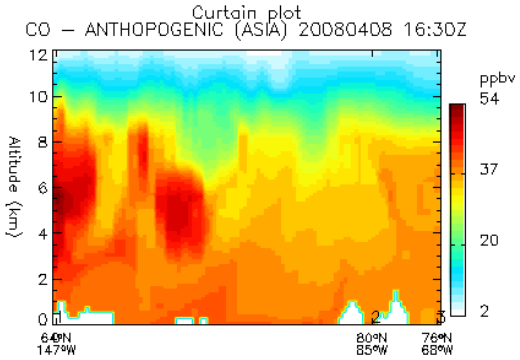


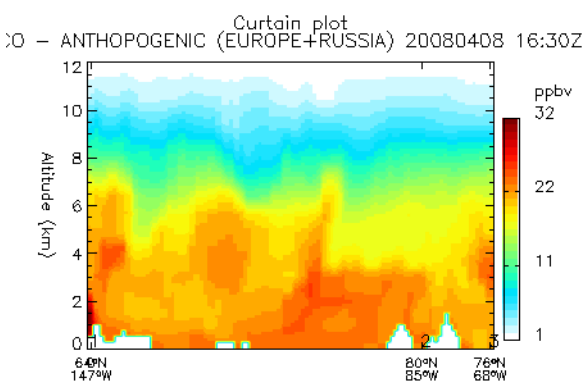


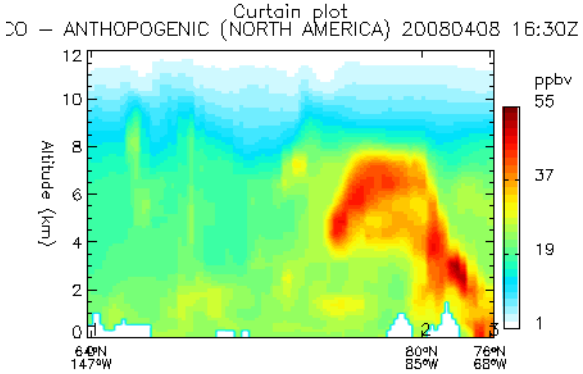


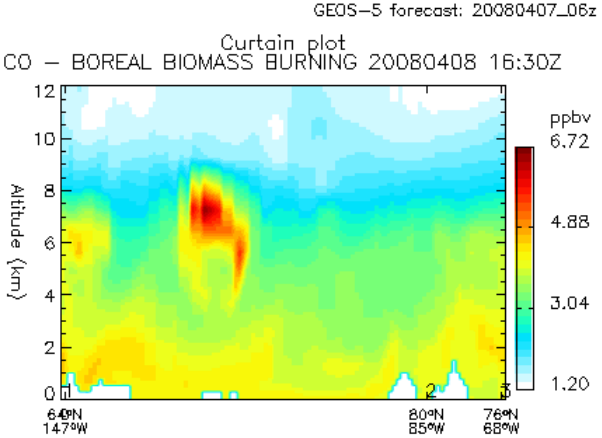

GEOS-5 forecast: 20080407_06z
Curtain plot
ORGANIC CARBON (UG/M3) 20080408 16:30Z
Altitude (km)
ug/m.
0.32
0.21
0.11
0.01
64°N 147°W
80°N 85°W
76°N 68°W

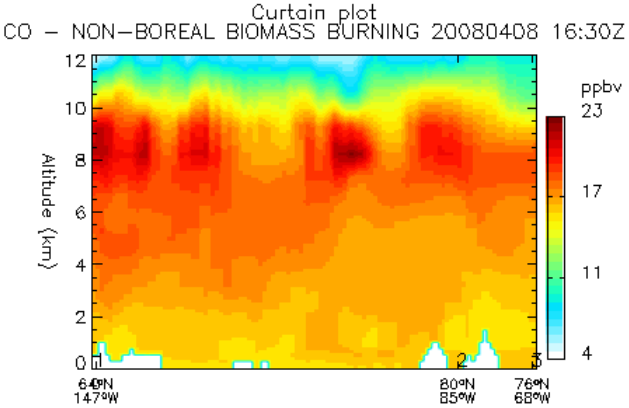

Curtain plot
BLACK CARBON (UG/M3) 20080408 16:30Z
Altitude (km)
ug/m.
0.13
0.09
0.04
0.00
64°N 147°W
80°N 85°W
76°N 68°W


Curtain plot
CO – ANTHOPOGENIC (ASIA) 20080408 16:30Z
Altitude (km)
ppbv
54
37
20
2
64°N 147°W
80°N 85°W
76°N 68°W


GEOS-5 forecast: 20080407_06z
Curtain plot
CO – ANTHOPOGENIC (EUROPE+RUSSIA) 20080408 16:30Z
Altitude (km)
ppbv
32
22
11
1
64°N 147°W
80°N 85°W
76°N 68°W

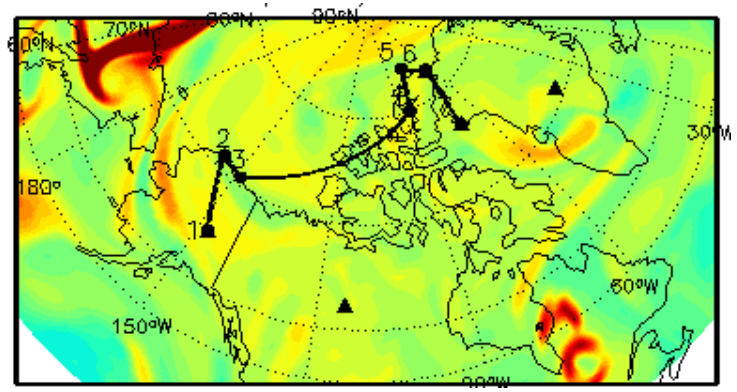

Curtain plot
CO – ANTHOPOGENIC (NORTH AMERICA) 20080408 16:30Z
Altitude (km)
ppbv
55
37
19
1
64°N 147°W
80°N 85°W
76°N 68°W

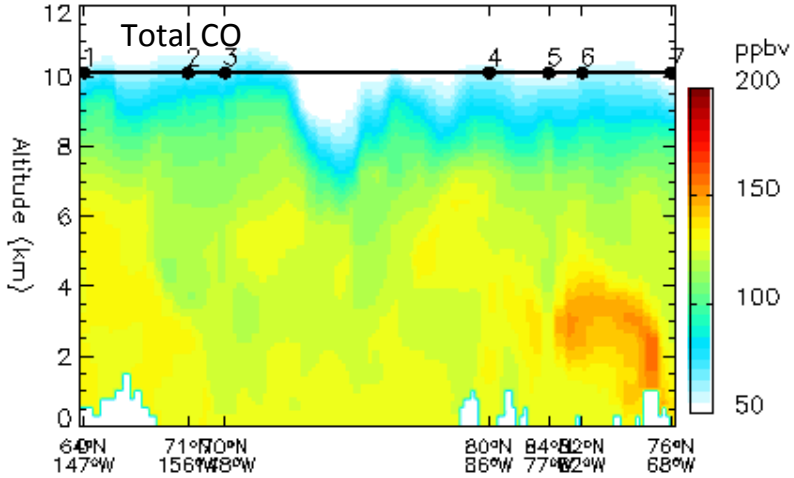

GEOS-5 forecast: 20080407_06z
Curtain plot
CO – BOREAL BIOMASS BURNING 20080408 16:30Z
Altitude (km)
ppbv
6.72
4.88
3.04
1.20
64°N 147°W
80°N 85°W
76°N 68°W

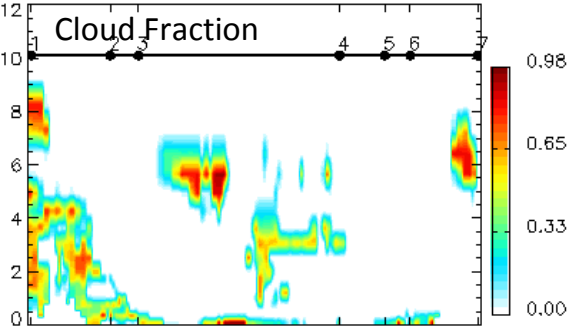

Curtain plot
CO – NON-BOREAL BIOMASS BURNING 20080408 16:30Z
Altitude (km)
ppbv
23
17
11
4
64°N 147°W
80°N 85°W
76°N 68°W

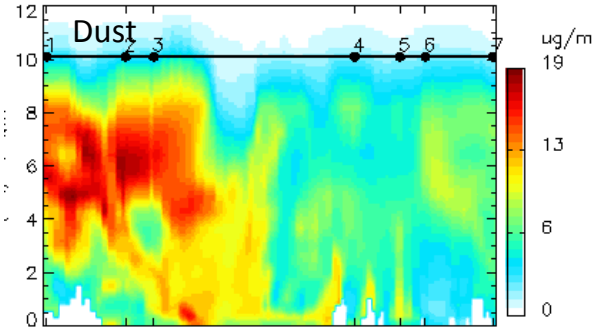
DC-8 Fairbanks - Thule 4/8

Total CO 500 hPa

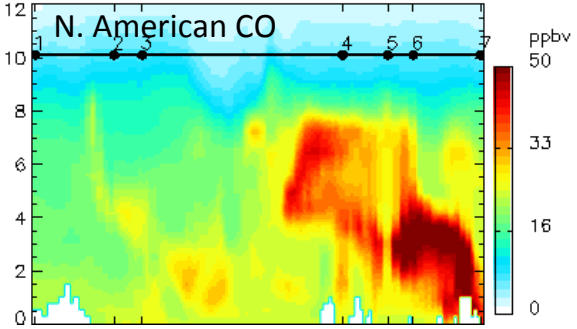


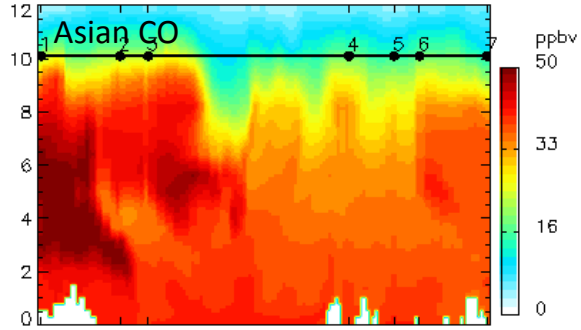


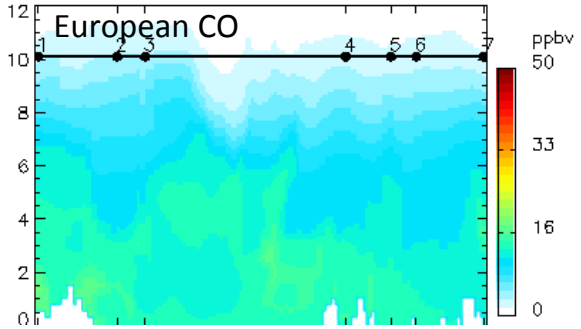


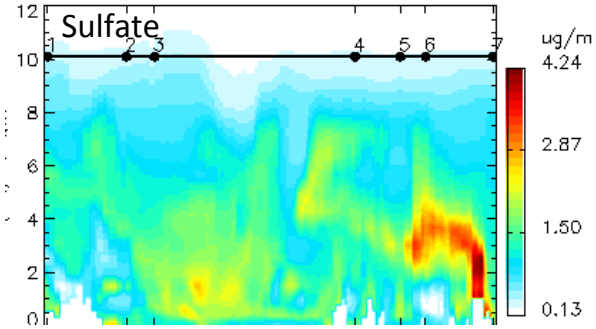


Initialized 04/07/2008 – 06z

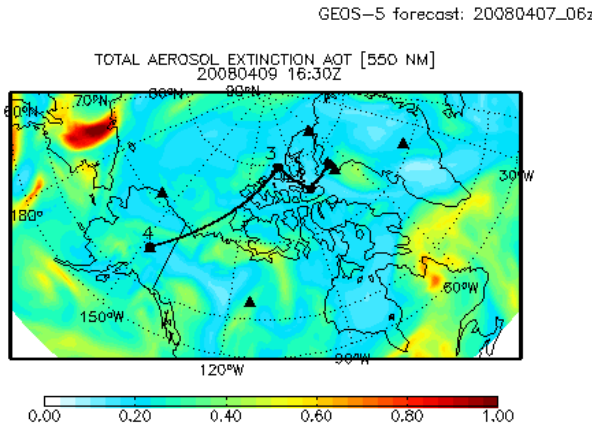


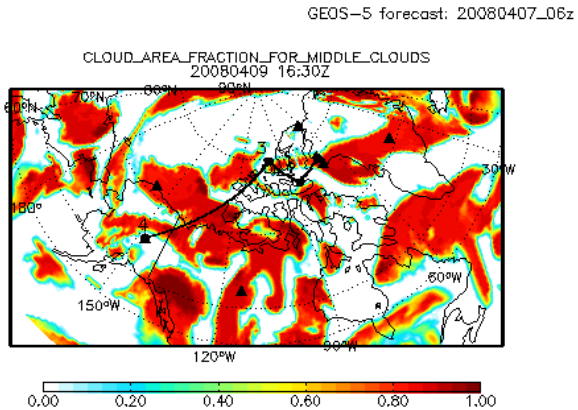


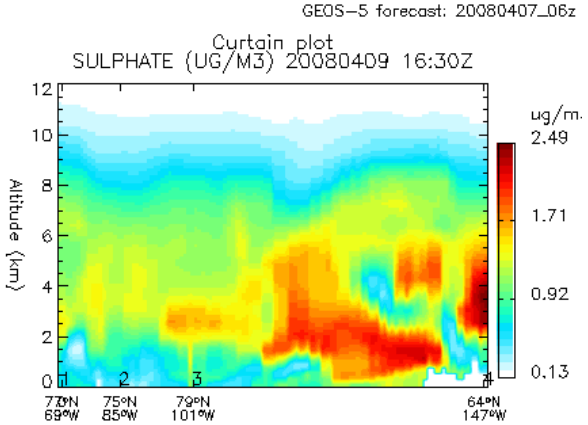


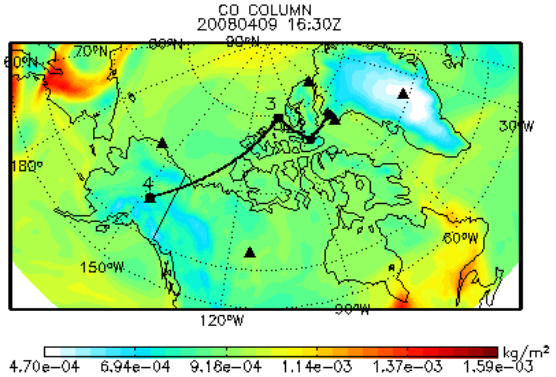


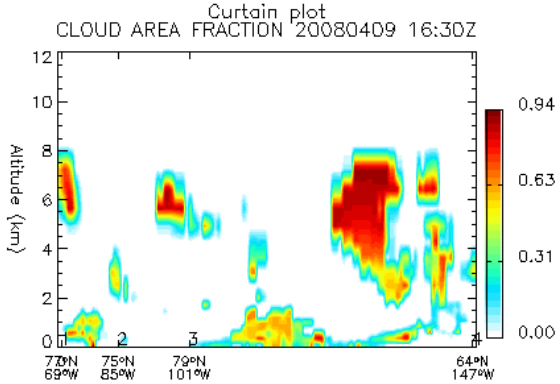
P-3 Thule – Fairbanks
April 9, 2008

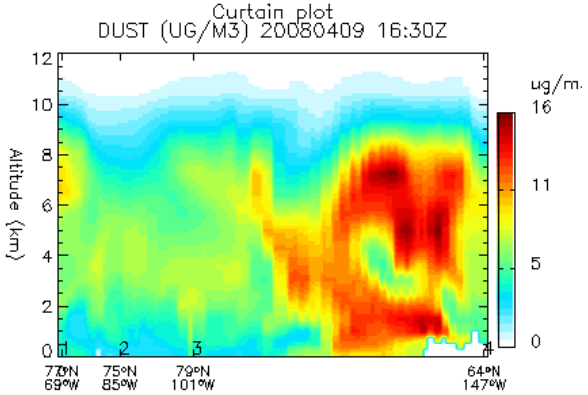


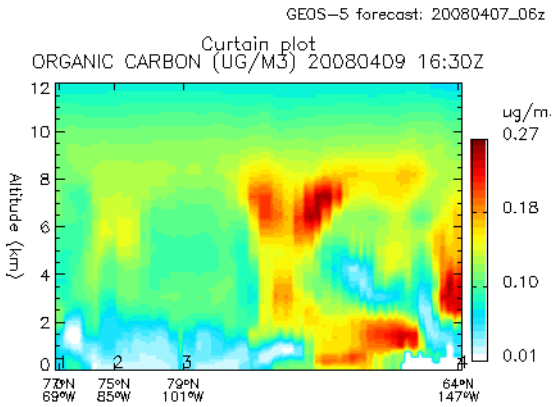


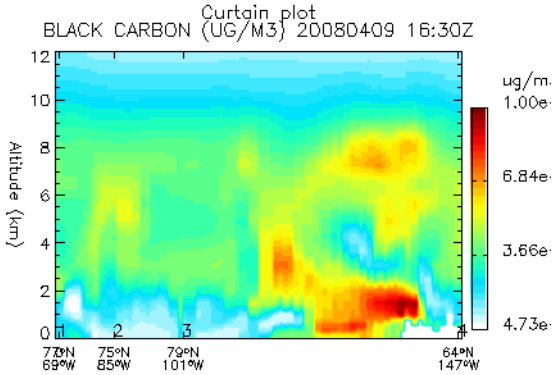


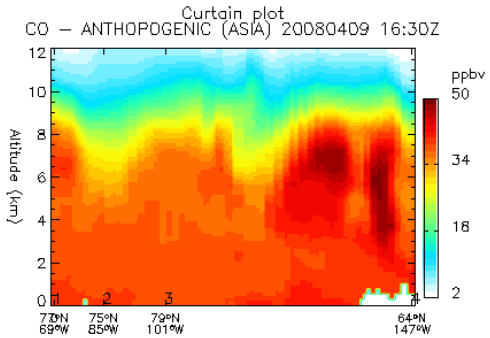


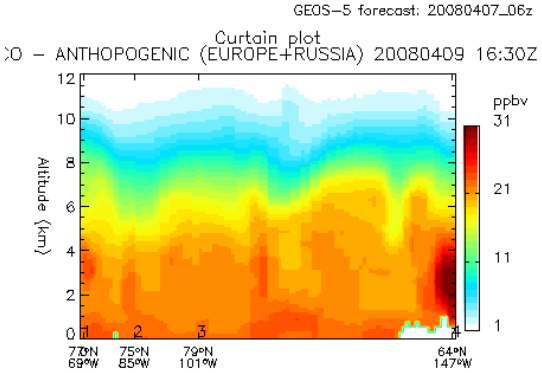


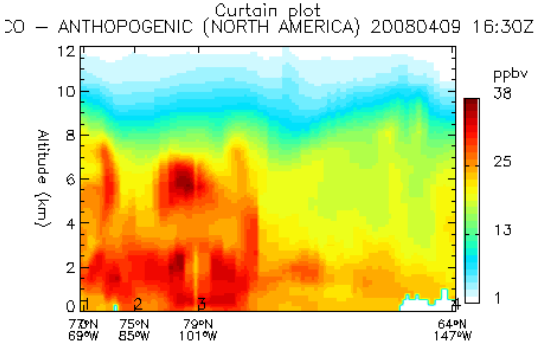


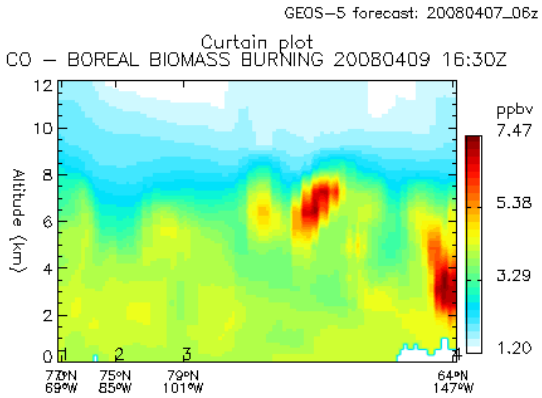

GEOS-5 forecast: 20080407_06z
Curtain plot
ORGANIC CARBON (UG/M3) 20080409 16:30Z
Altitude (km)
ug/m.
0.27
0.18
0.10
0.01
77°N 69°W
75°N 85°W
79°N 101°W
64°N 147°W

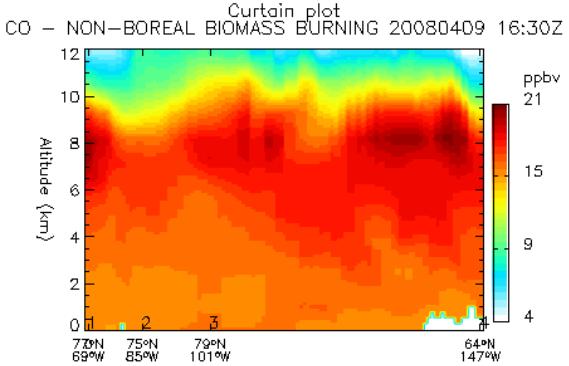

Curtain plot
BLACK CARBON (UG/M3) 20080409 16:30Z
Altitude (km)
ug/m.
1.00e-
6.84e-
3.66e-
4.73e-
77°N 69°W
75°N 85°W
79°N 101°W
64°N 147°W


Curtain plot
CO – ANTHOPOGENIC (ASIA) 20080409 16:30Z
Altitude (km)
ppbv
50
34
18
2
77°N 69°W
75°N 85°W
79°N 101°W
64°N 147°W

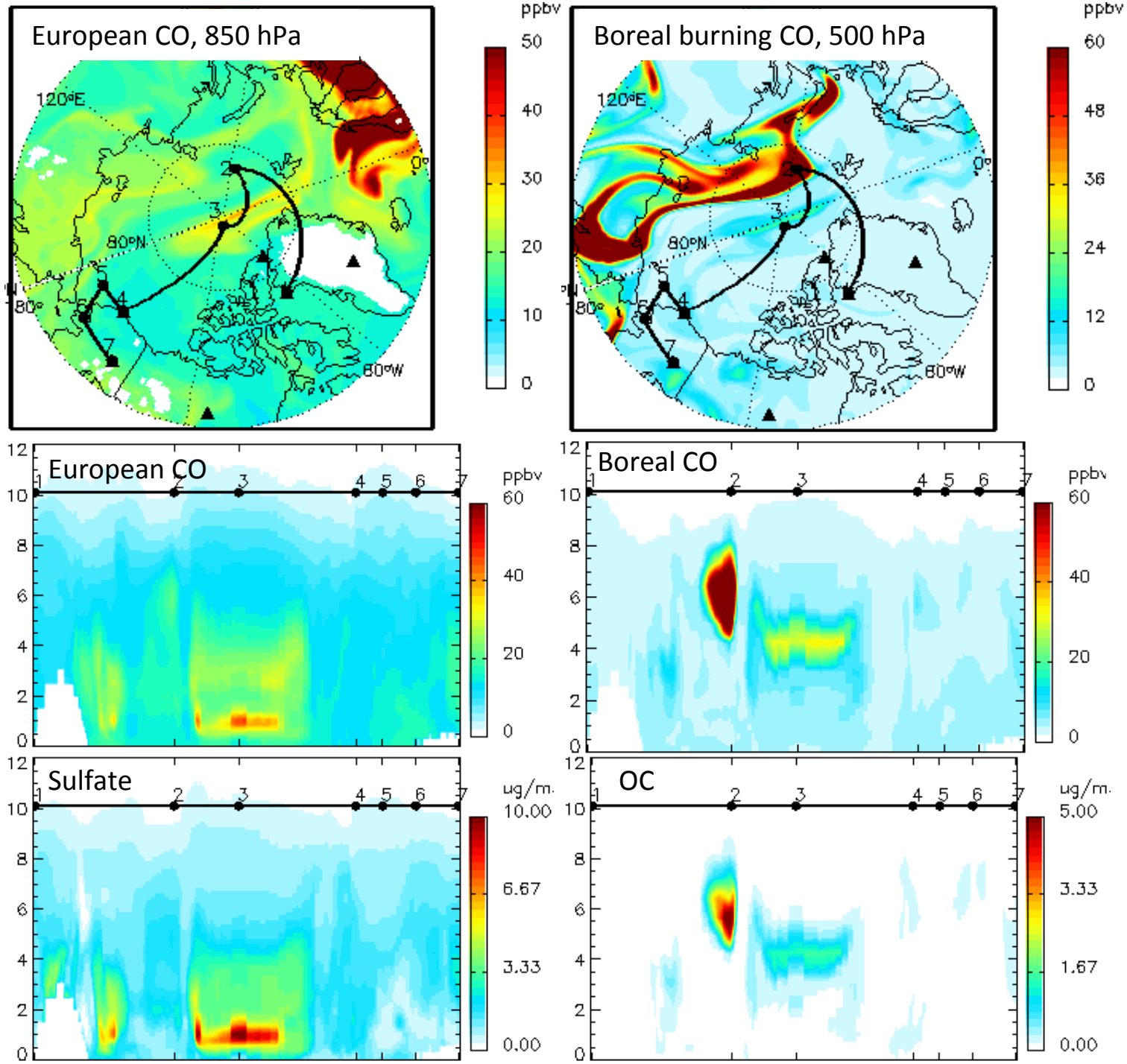

GEOS-5 forecast: 20080407_06z
Curtain plot
CO – ANTHOPOGENIC (EUROPE+RUSSIA) 20080409 16:30Z
Altitude (km)
ppbv
31
21
11
1
77°N 69°W
75°N 85°W
79°N 101°W
64°N 147°W


Curtain plot
CO – ANTHOPOGENIC (NORTH AMERICA) 20080409 16:30Z
Altitude (km)
ppbv
38
25
13
1
77°N 69°W
75°N 85°W
79°N 101°W
64°N 147°W

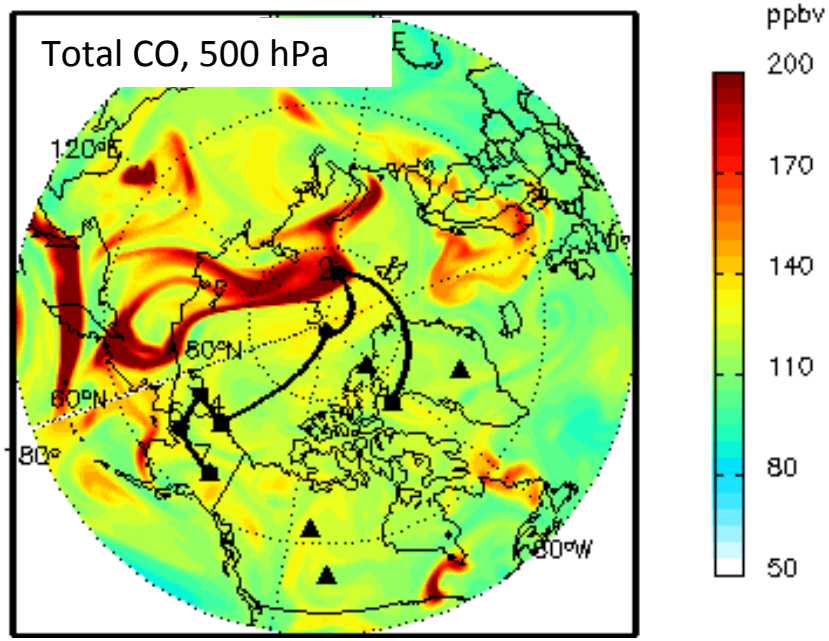

GEOS-5 forecast: 20080407_06z
Curtain plot
CO – BOREAL BIOMASS BURNING 20080409 16:30Z
Altitude (km)
ppbv
7.47
5.38
3.29
1.20
77°N 69°W
75°N 85°W
79°N 101°W
64°N 147°W


Curtain plot
CO – NON-BOREAL BIOMASS BURNING 20080409 16:30Z
Altitude (km)
ppbv
21
15
9
4
77°N 69°W
75°N 85°W
79°N 101°W
64°N 147°W

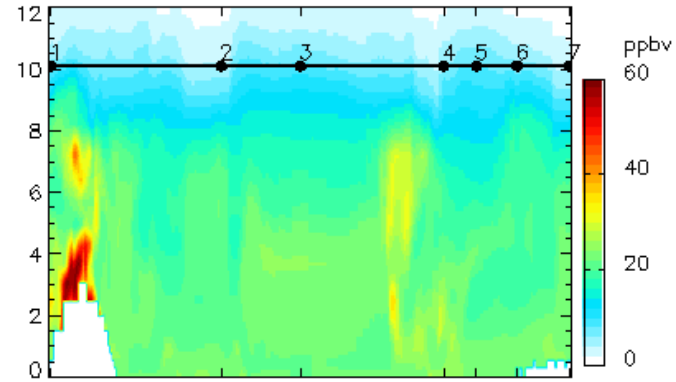
We still see haze near the pole, but the boreal biomass burning plume has moved to the East



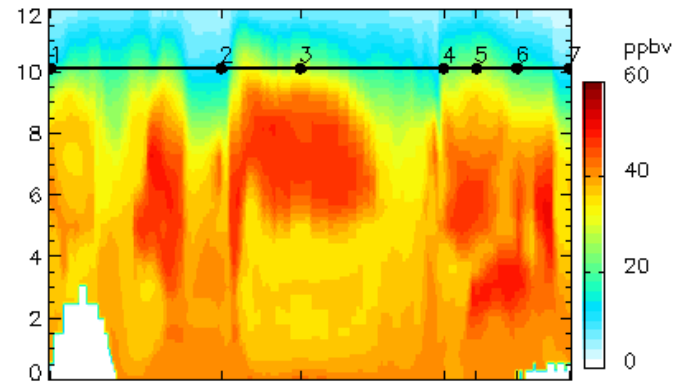
Features:
-Relatively cloud free
-Asian CO at point 3 may obscure European CO
-N. American CO near Thule



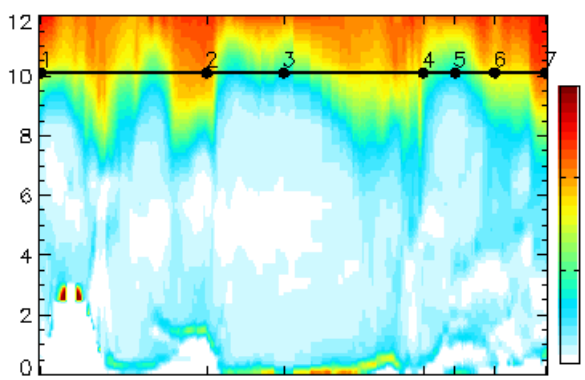
North American CO



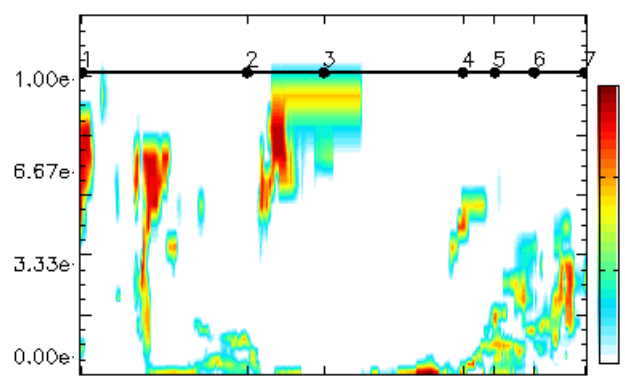
Asian CO



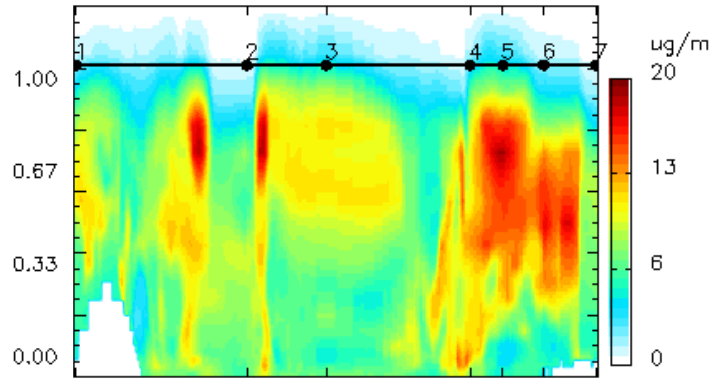
PV



Cloud Fraction



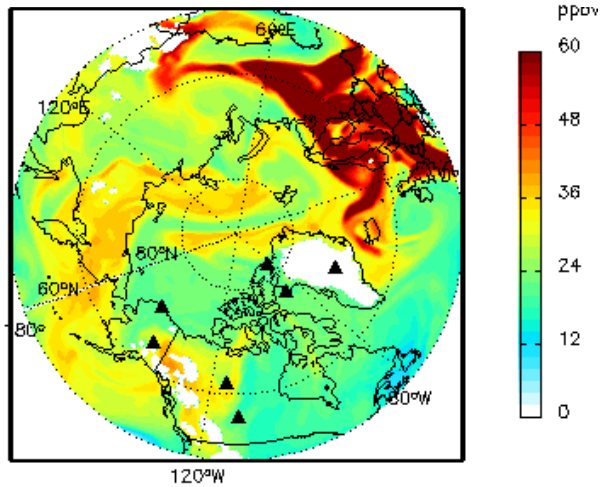
Dust



GMAO Fx 20080407 06Z: 04/10

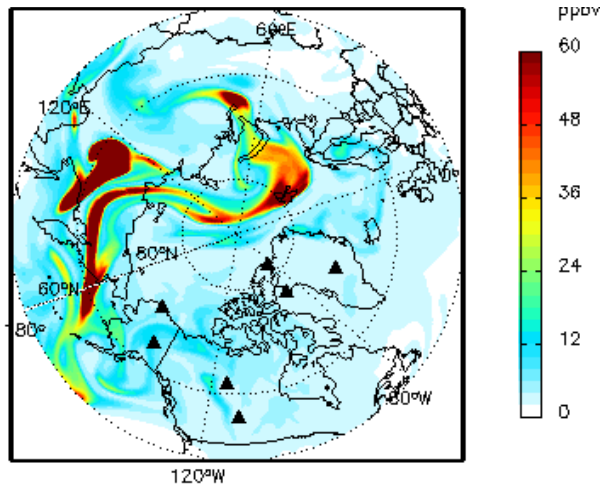
GEOS–5 forecast: 200804

Europe+Russia CO @ 850mb



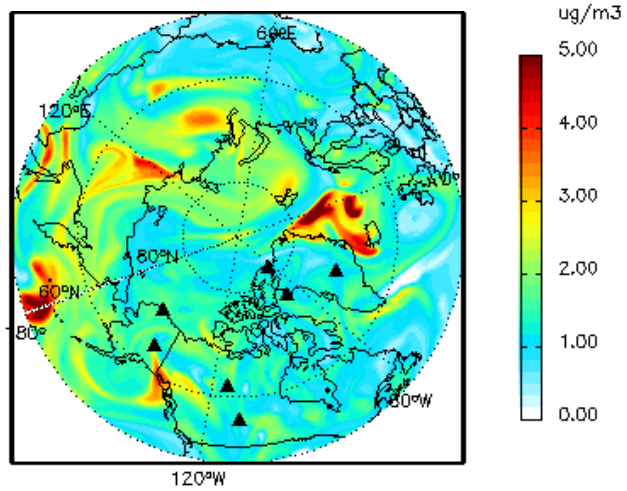
GEOS–5 forecast: 200804

Boreal Biomass CO @ 500mb

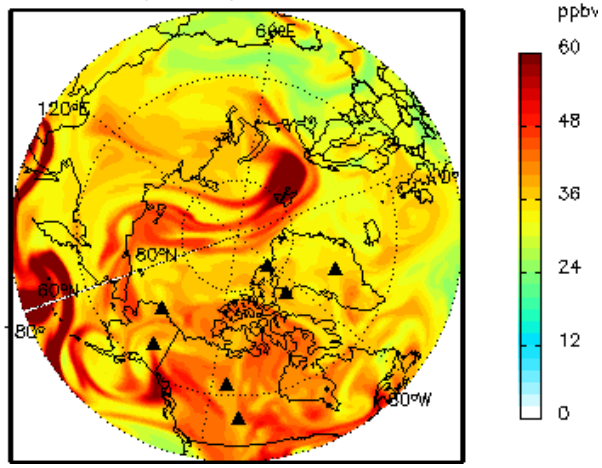


GEOS–5 forecast: 20080407

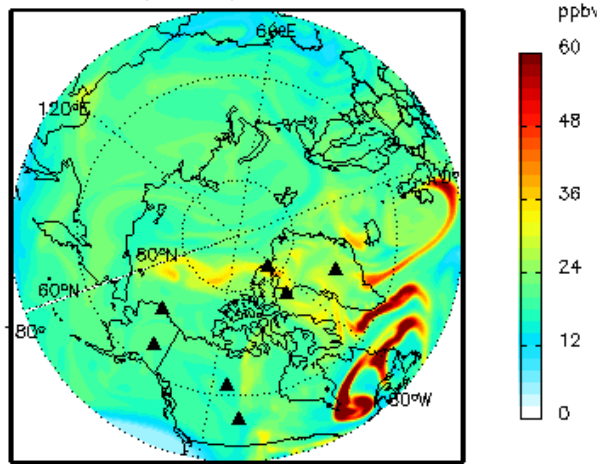
Sulfate @ 500mb



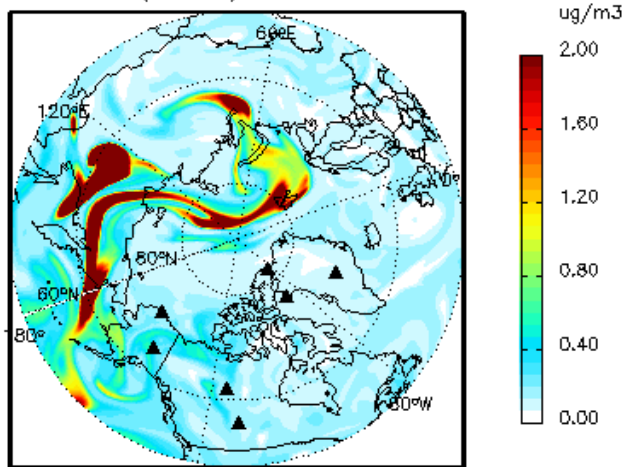
Asian CO @ 500mb



N. American CO @ 500mb



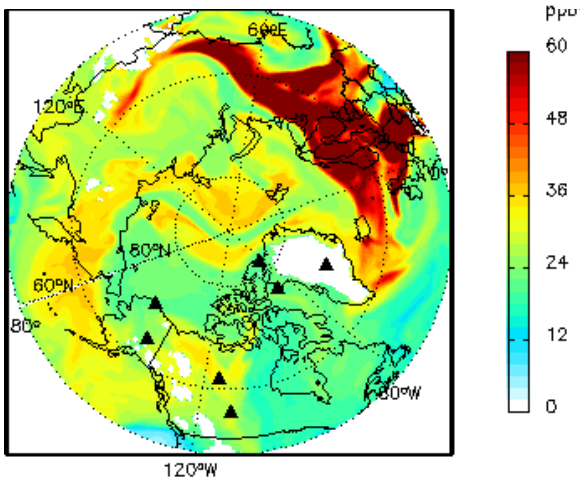
Organic Carbon @ 500 mb



GMAO Fx 20080407 06Z: 04/11

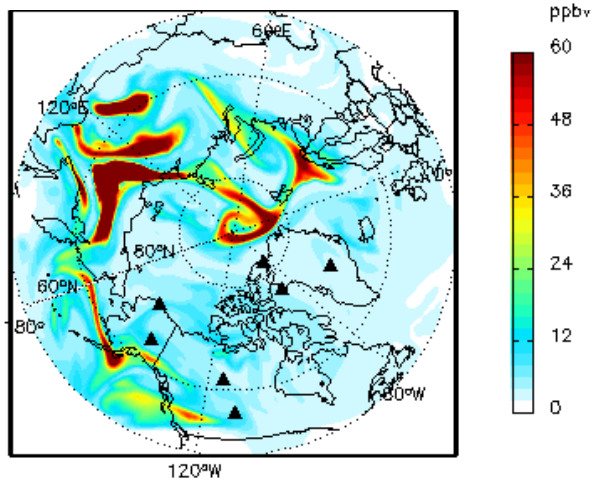
GEOS–5 forecast: 20080

Europe+Russia CO @ 850mb



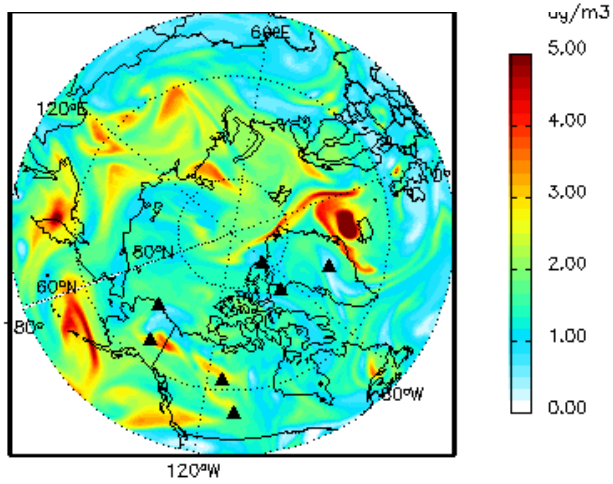
GEOS–5 forecast: 200804

Boreal Biomass CO @ 500mb

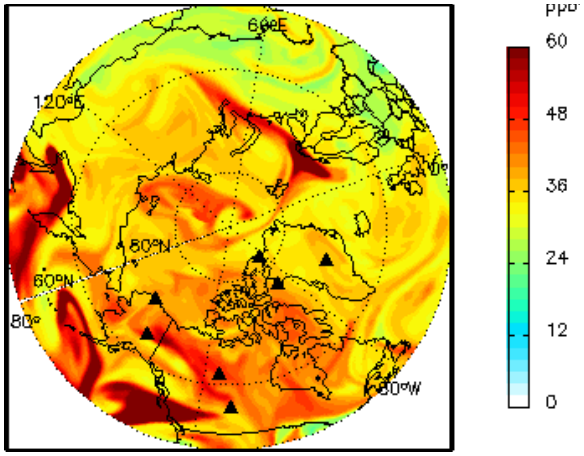


GEOS–5 forecast: 20080407

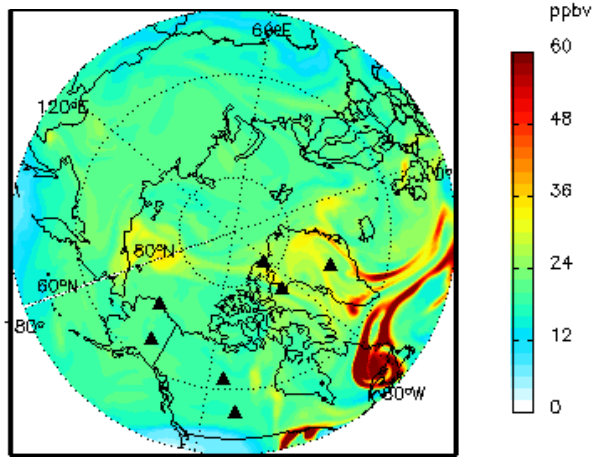
Sulfate @ 500mb



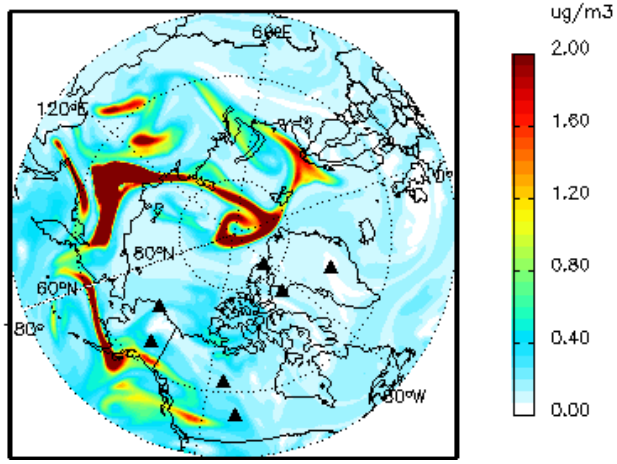
Asian CO @ 500mb



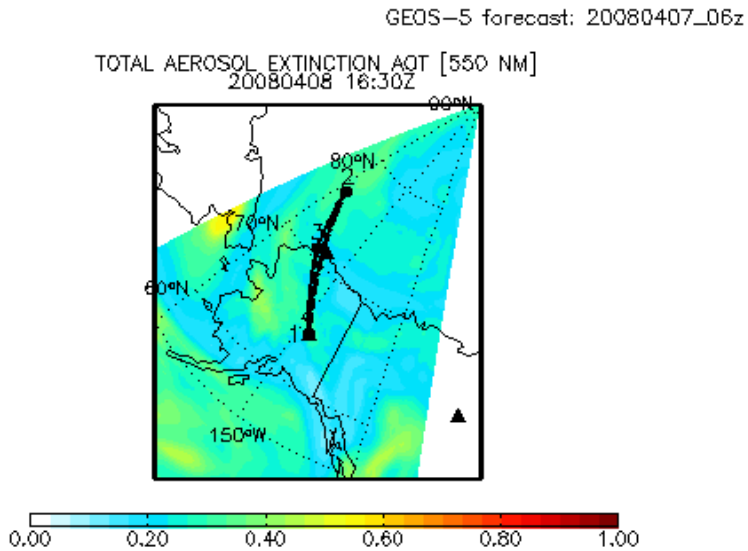
N. American CO @ 500mb

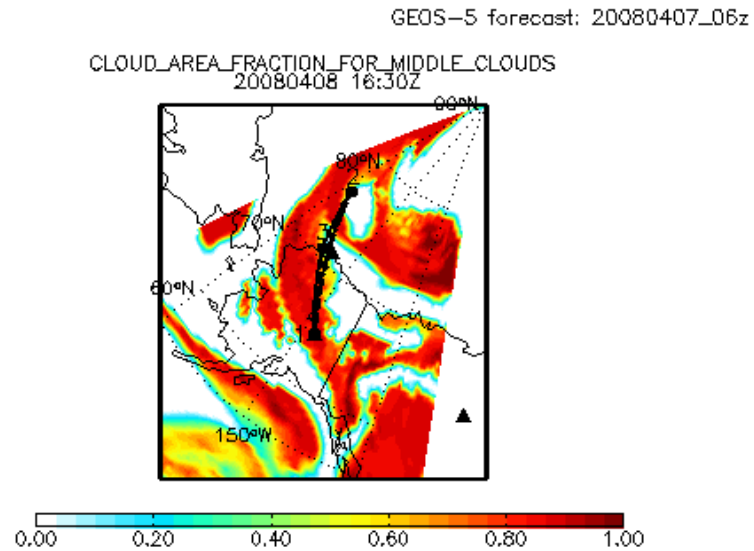


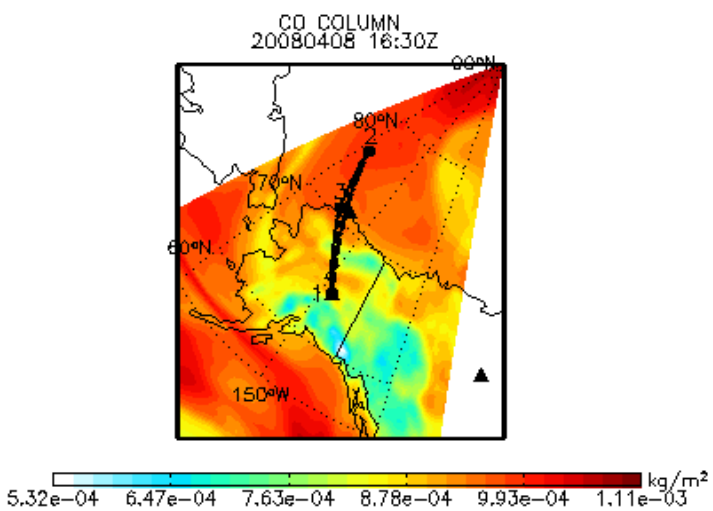
Organic Carbon @ 500 mb

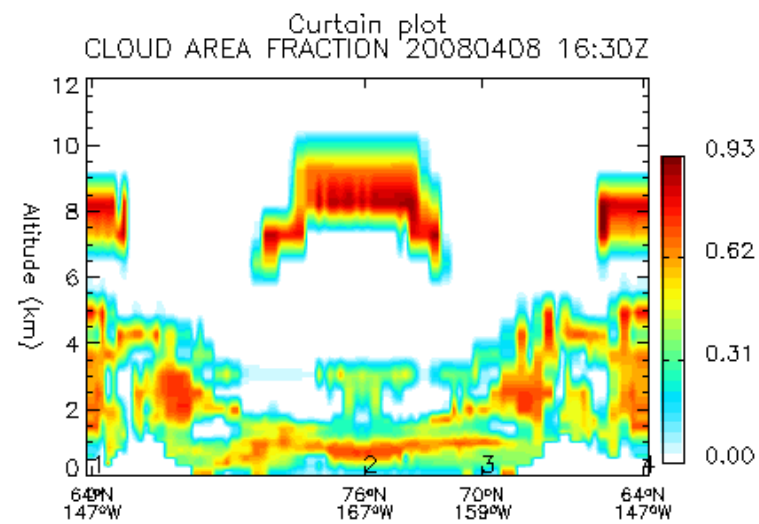


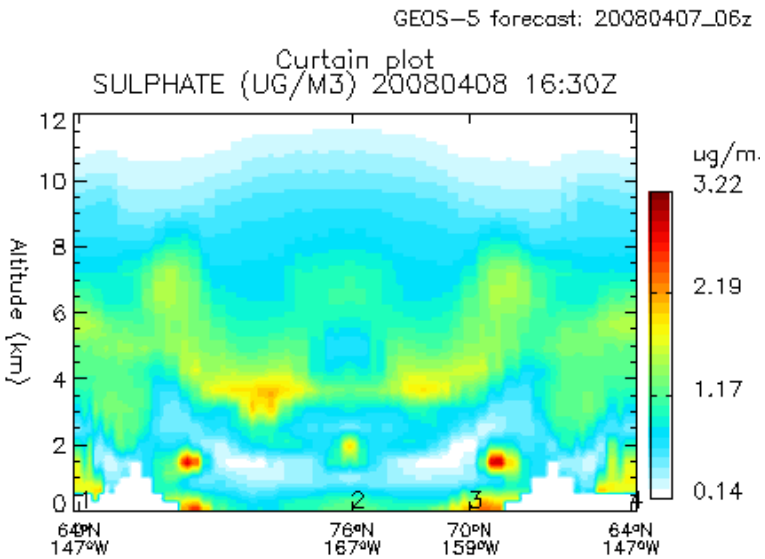
P-3 Fairbanks – Aerosol – CALIPSO – Fairbanks
April 8, 2008

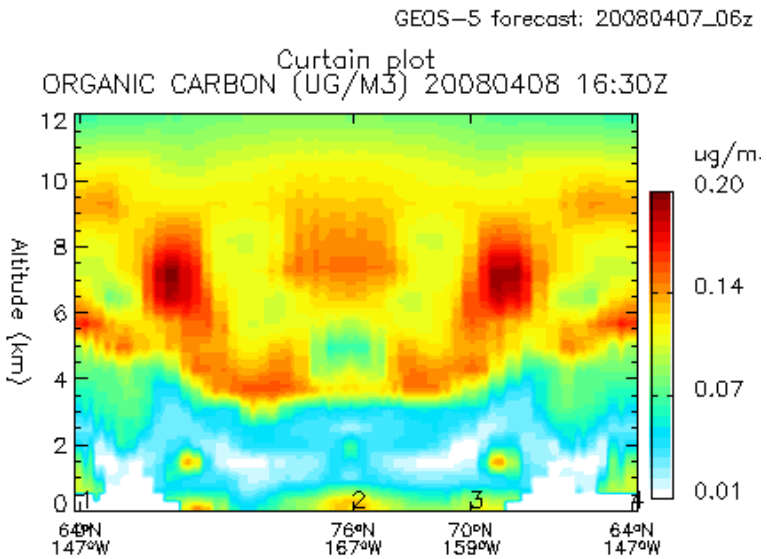


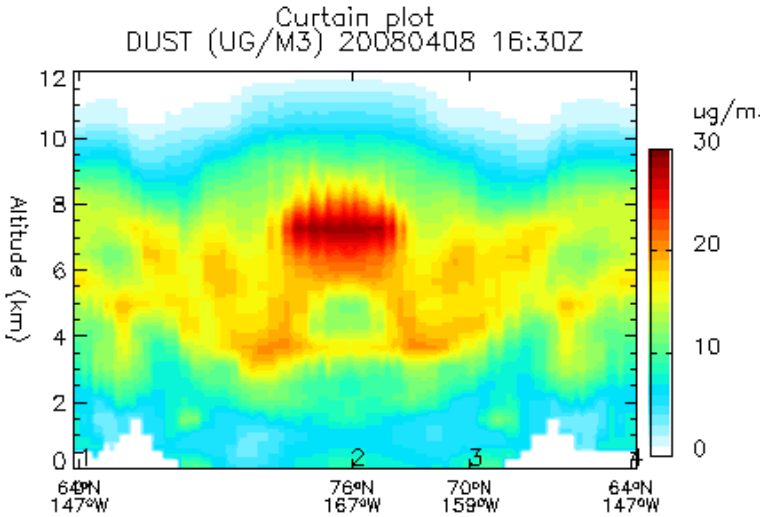


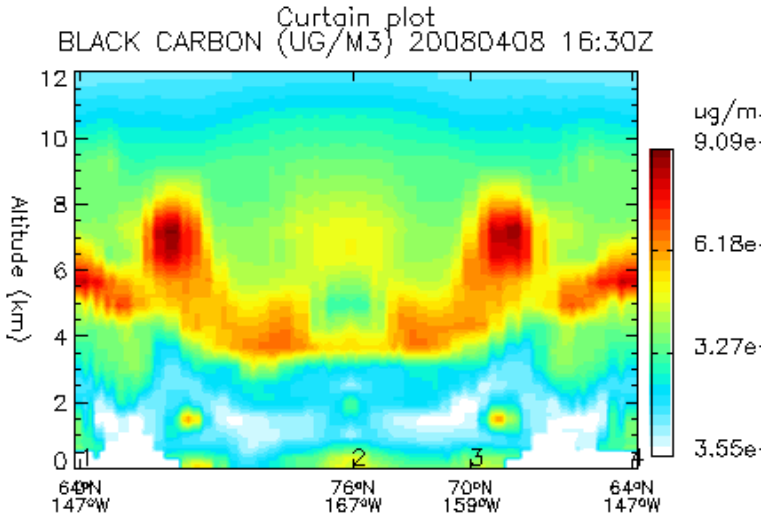


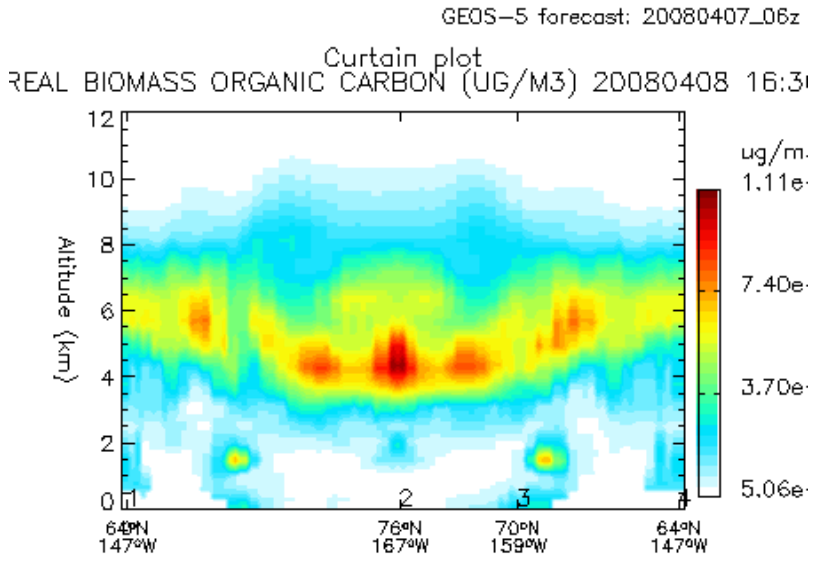


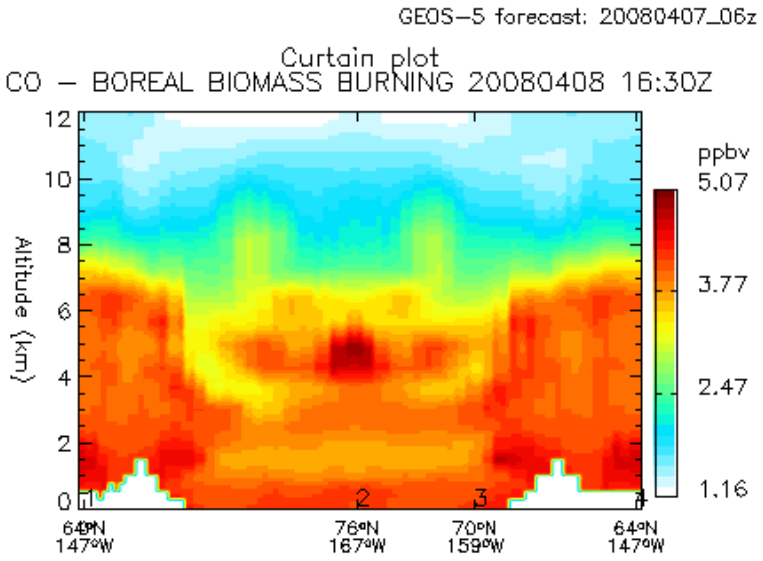

GEOS-5 forecast: 20080407_06z
Curtain plot
SULPHATE (UG/M3) 20080408 16:30Z
Altitude (km)
ug/m.
3.22
2.19
1.17
0.14
64°N 147°W
76°N 167°W
70°N 159°W
64°N 147°W

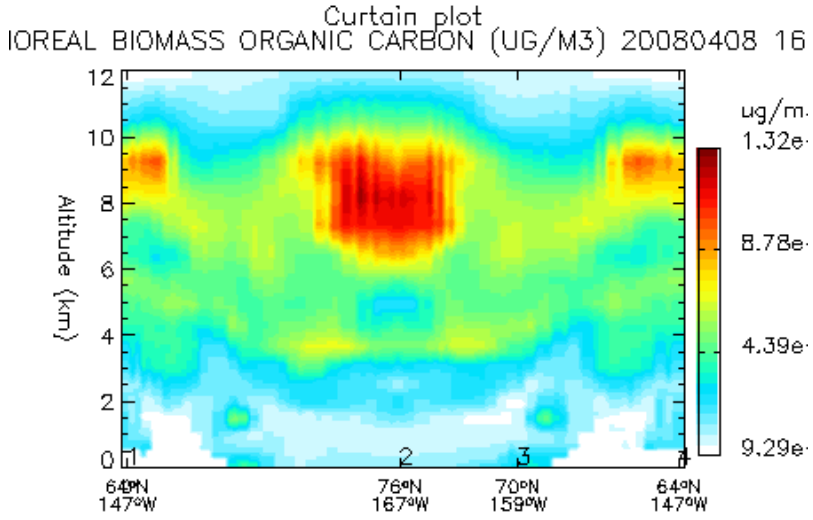

GEOS-5 forecast: 20080407_06z
Curtain plot
ORGANIC CARBON (UG/M3) 20080408 16:30Z
Altitude (km)
ug/m.
0.20
0.14
0.07
0.01
64°N 147°W
76°N 167°W
70°N 159°W
64°N 147°W

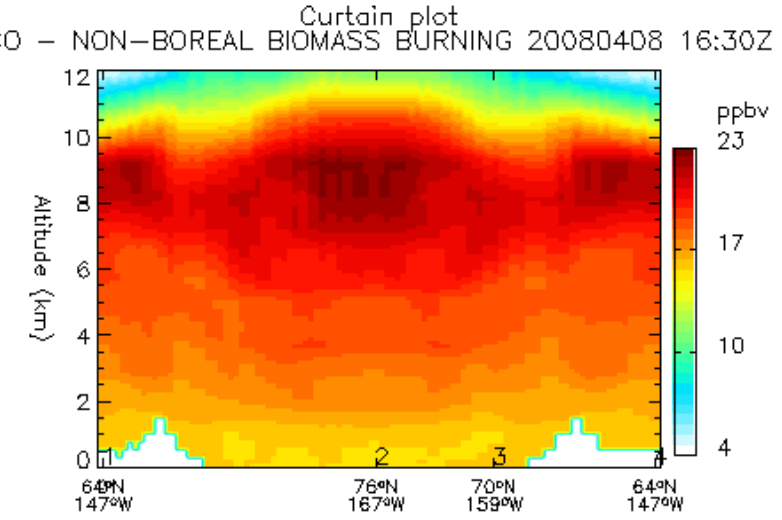

Curtain plot
DUST (UG/M3) 20080408 16:30Z
Altitude (km)
ug/m.
30
20
10
0
64°N 147°W
76°N 167°W
70°N 159°W
64°N 147°W

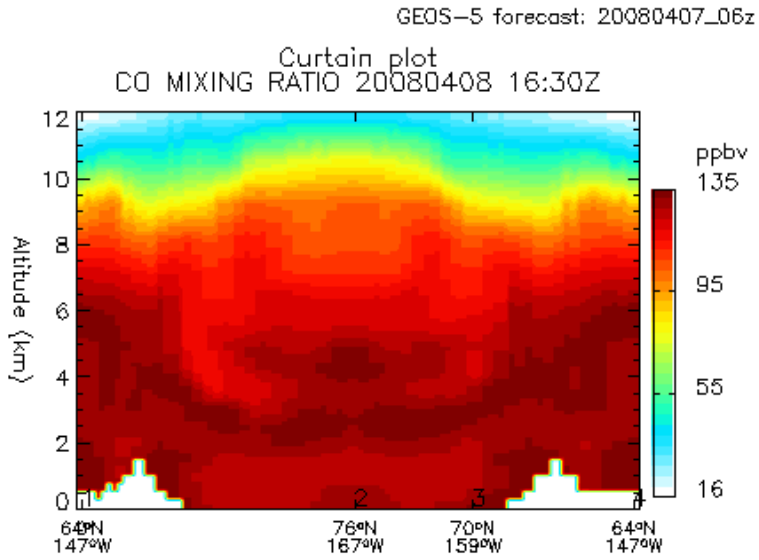

Curtain plot
BLACK CARBON (UG/M3) 20080408 16:30Z
Altitude (km)
ug/m.
9.09e
6.18e
3.27e
3.55e
64°N 147°W
76°N 167°W
70°N 159°W
64°N 147°W

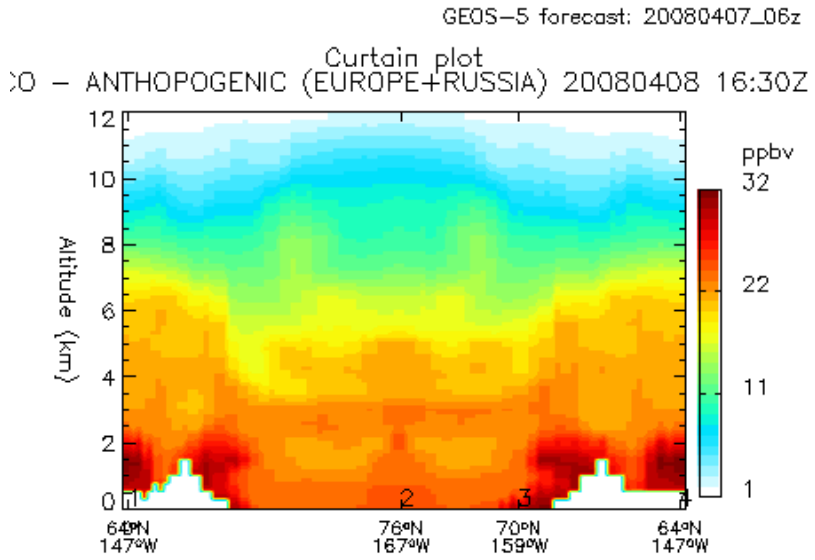

GEOS-5 forecast: 20080407_06z
Curtain plot
REAL BIOMASS ORGANIC CARBON (UG/M3) 20080408 16:3
Altitude (km)
ug/m
1.11e
7.40e
3.70e
5.06e
64°N 147°W
76°N 167°W
70°N 159°W
64°N 147°W

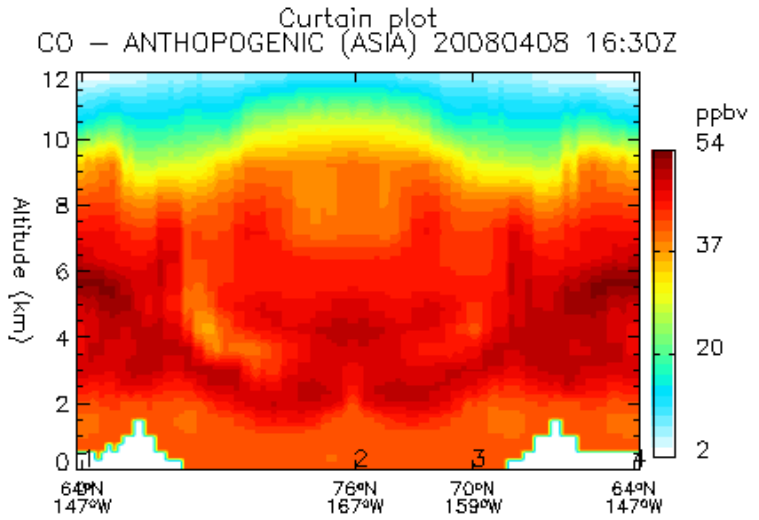

GEOS-5 forecast: 20080407_06z
Curtain plot
CO – BOREAL BIOMASS BURNING 20080408 16:30Z
Altitude (km)
ppbv
5.07
3.77
2.47
1.16
64°N 147°W
76°N 167°W
70°N 159°W
64°N 147°W

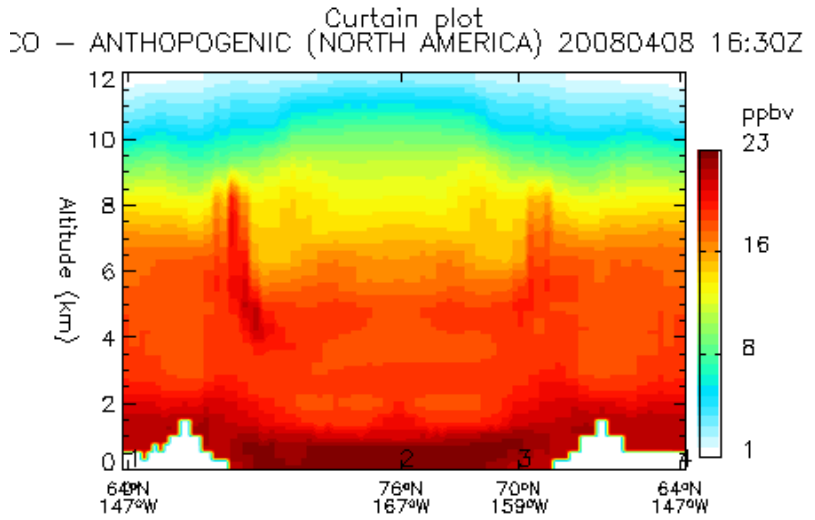

Curtain plot
IOREAL BIOMASS ORGANIC CARBON (UG/M3) 20080408 16
Altitude (km)
ug/m
1.32e
8.78e
4.39e
9.29e
64°N 147°W
76°N 167°W
70°N 159°W
64°N 147°W


Curtain plot
CO – NON-BOREAL BIOMASS BURNING 20080408 16:30Z
Altitude (km)
ppbv
23
17
10
4
64°N 147°W
76°N 167°W
70°N 159°W
64°N 147°W


GEOS-5 forecast: 20080407_06z
Curtain plot
CO MIXING RATIO 20080408 16:30Z
Altitude (km)
ppbv
135
95
55
16
64°N 147°W
76°N 167°W
70°N 159°W
64°N 147°W


GEOS-5 forecast: 20080407_06z
Curtain plot
CO – ANTHOPOGENIC (EUROPE+RUSSIA) 20080408 16:30Z
Altitude (km)
ppbv
32
22
11
1
64°N 147°W
76°N 167°W
70°N 159°W
64°N 147°W


Curtain plot
CO – ANTHOPOGENIC (ASIA) 20080408 16:30Z
Altitude (km)
ppbv
54
37
20
2
64°N 147°W
76°N 167°W
70°N 159°W
64°N 147°W


Curtain plot
CO – ANTHOPOGENIC (NORTH AMERICA) 20080408 16:30Z
Altitude (km)
ppbv
23
16
8
1
64°N 147°W
76°N 167°W
70°N 159°W
64°N 147°W