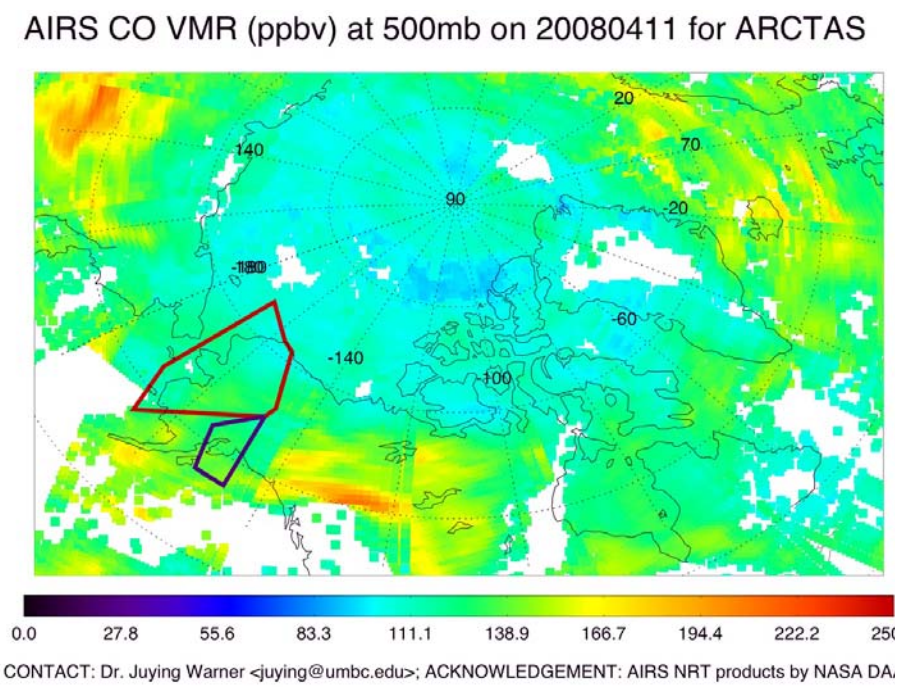
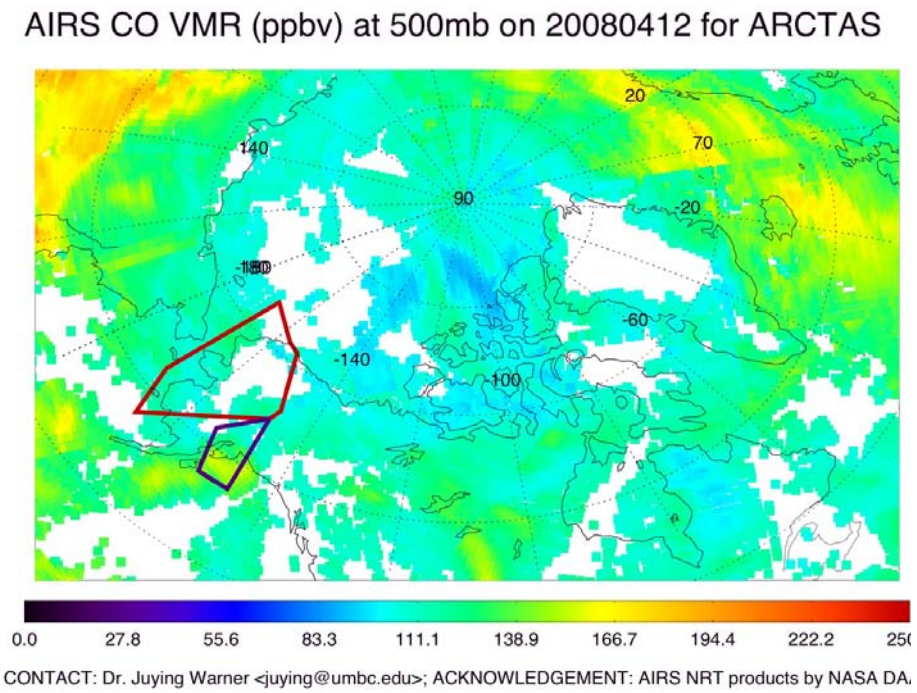
AIRS NRT ARCTAS Support: Latest AIRS CO

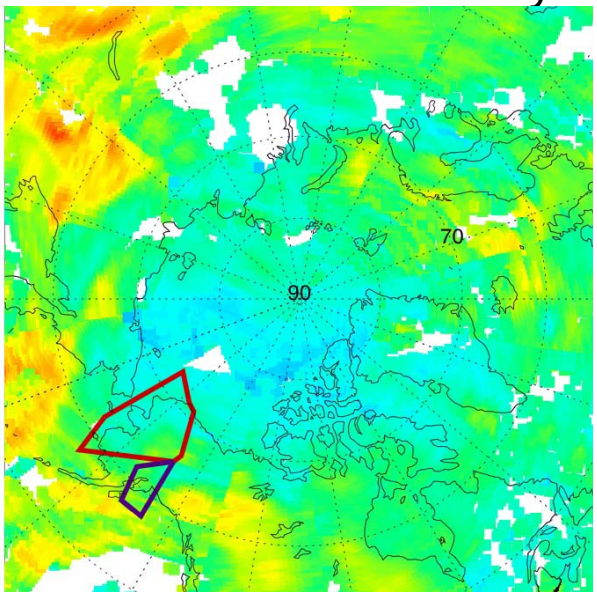




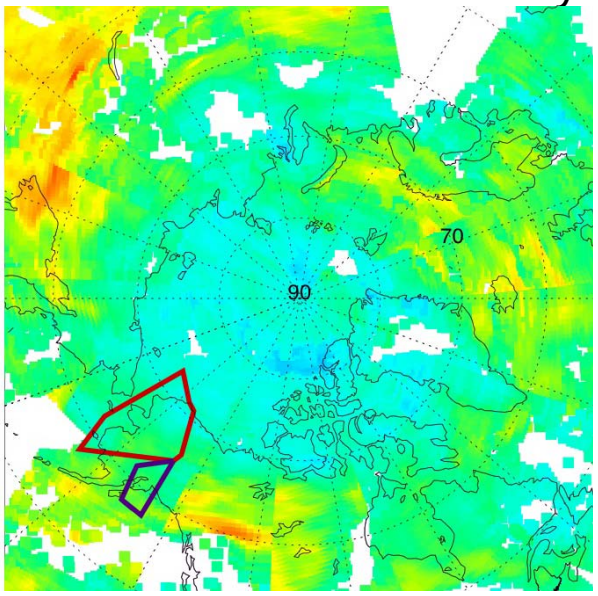
DC-8 and P-3 planed fights should capture Asian transport.

AIRS NRT ARCTAS Support:

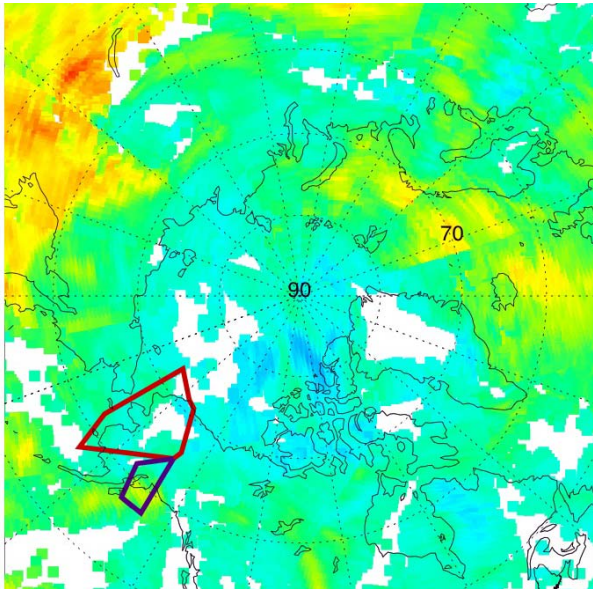
CO 500mb 20080410 day

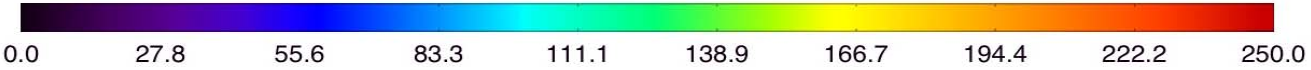


CO 500mb 20080411 day



CO 500mb 20080412 Full



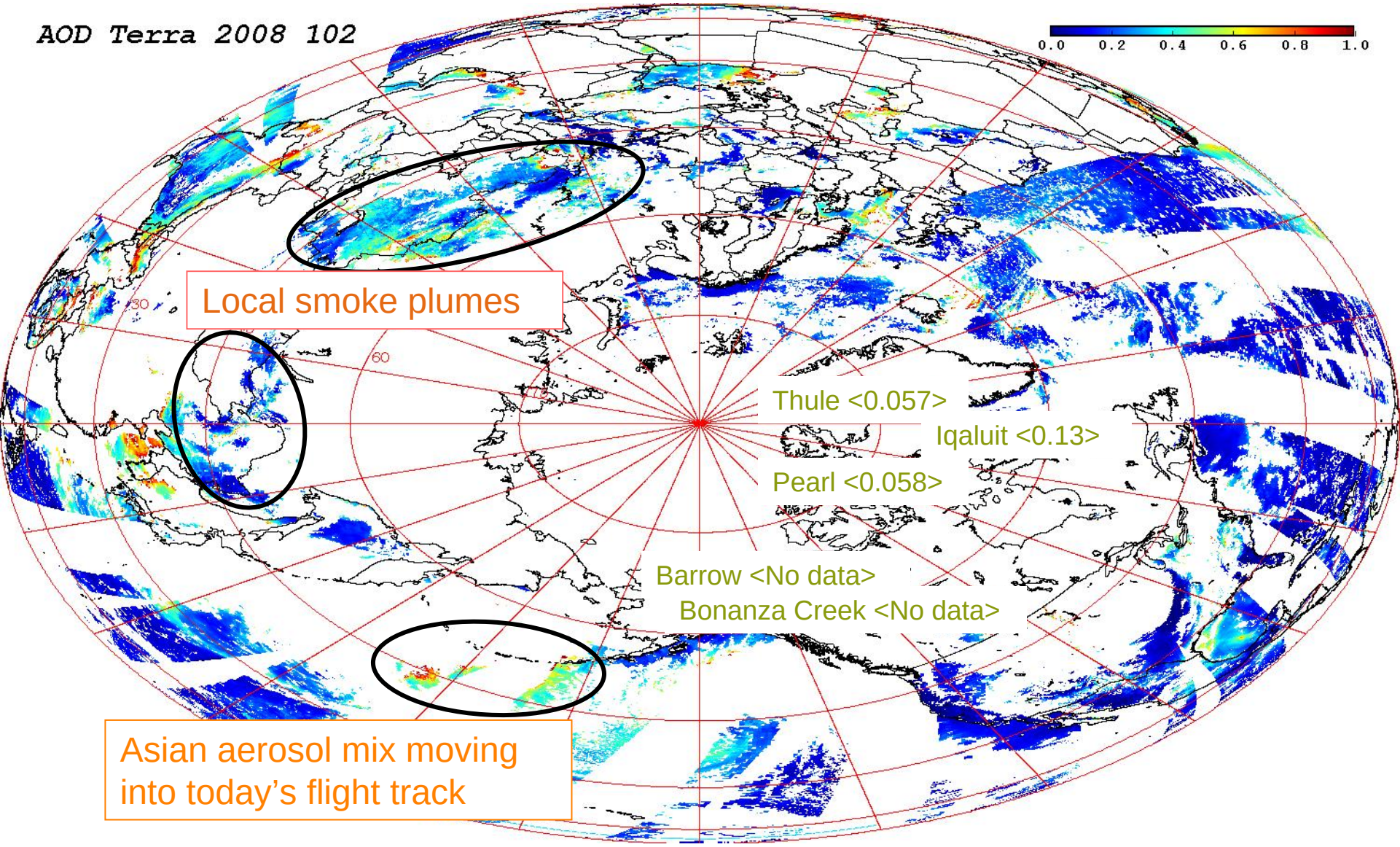


CONTACT: Dr. Juying Warner <juying@umbc.edu>; ACKNOWLEDGEMENT: AIRS NRT products by NASA DAAC

- European transport increases into Arctic circle
- Asian Transport Continues, large amounts from China and southern Siberia

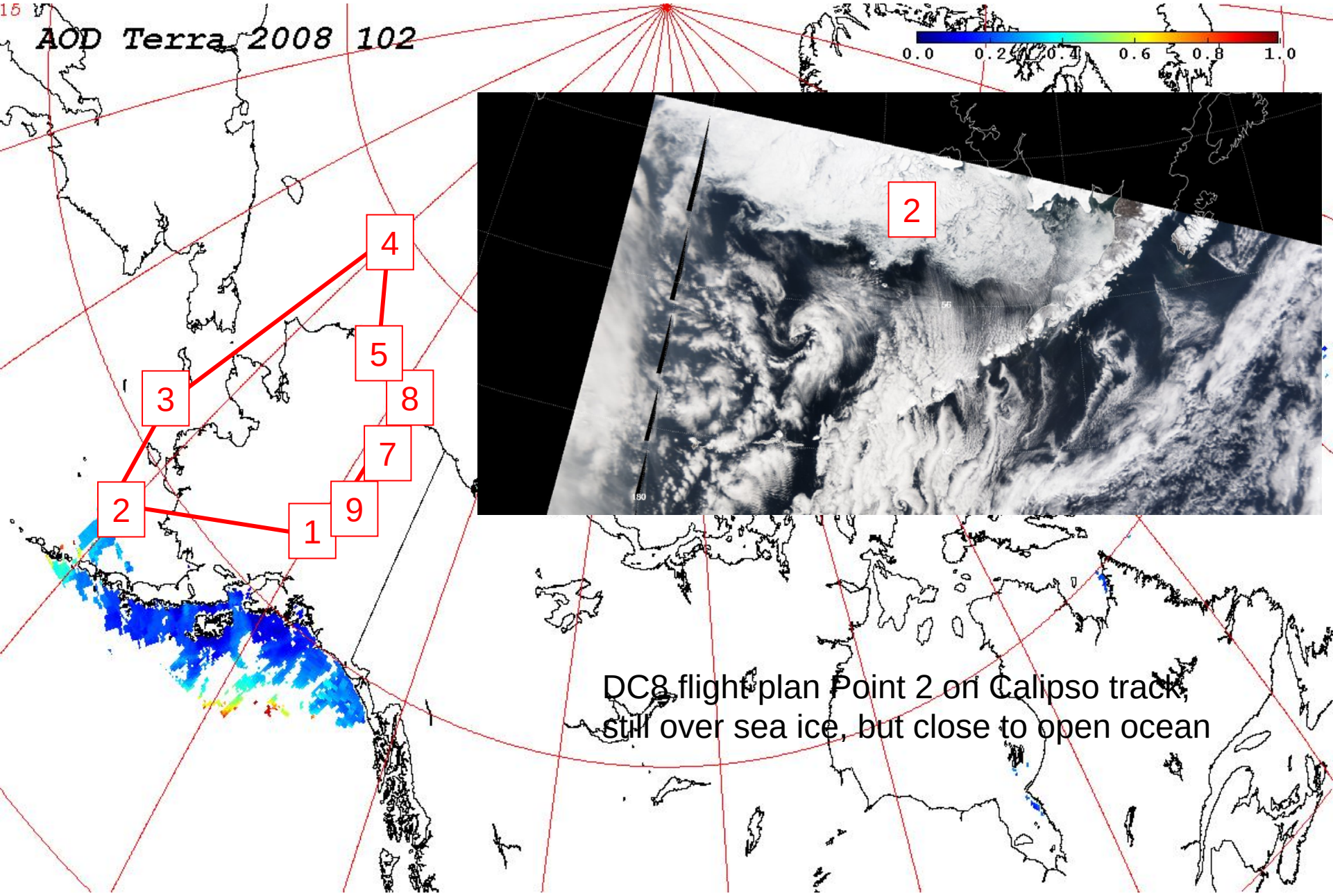
Day 102 (April 11) Friday

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



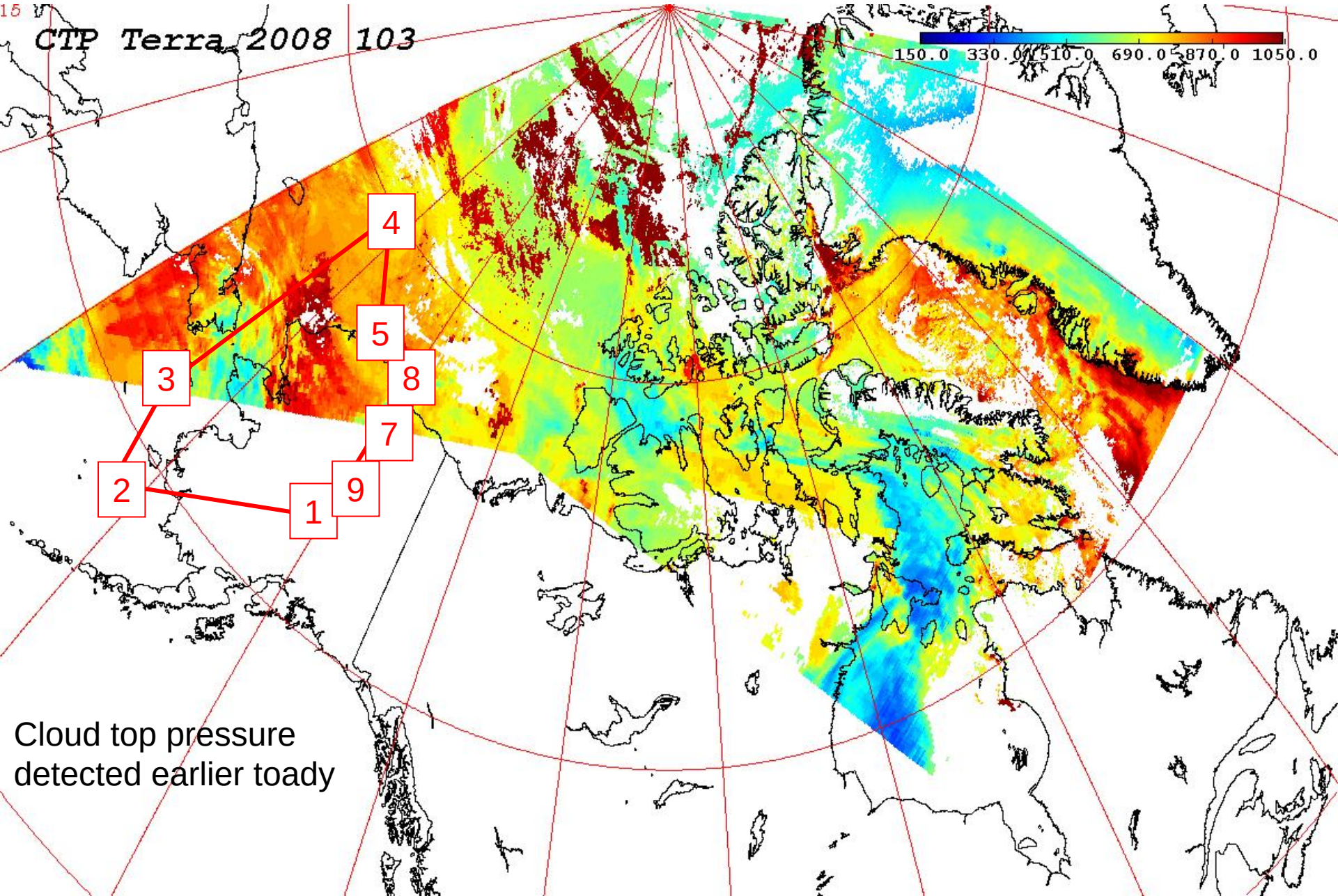
MODIS AOD at 550 nm and AERNOET daily mean <AOD> at 500 nm

Asian Aerosol Mix Moving Into Today's Flight Track



DC8 flight plan Point 2 on Calipso track, still over sea ice, but close to open ocean

Expecting Clear-Sky Space at Points 4 and 5



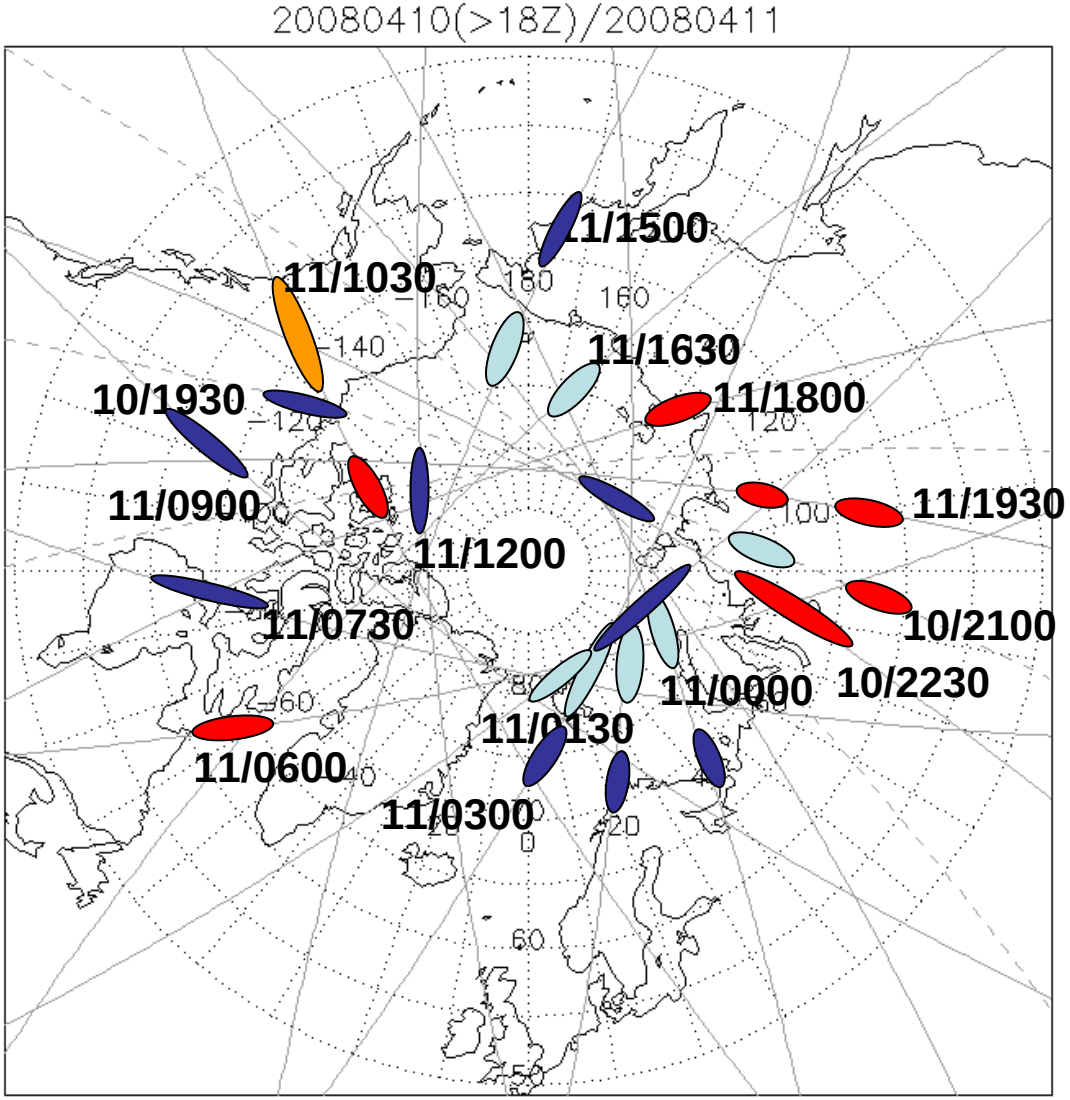
Cloud top pressure detected earlier toady

CALIPSO Observations 10/11 April 2008

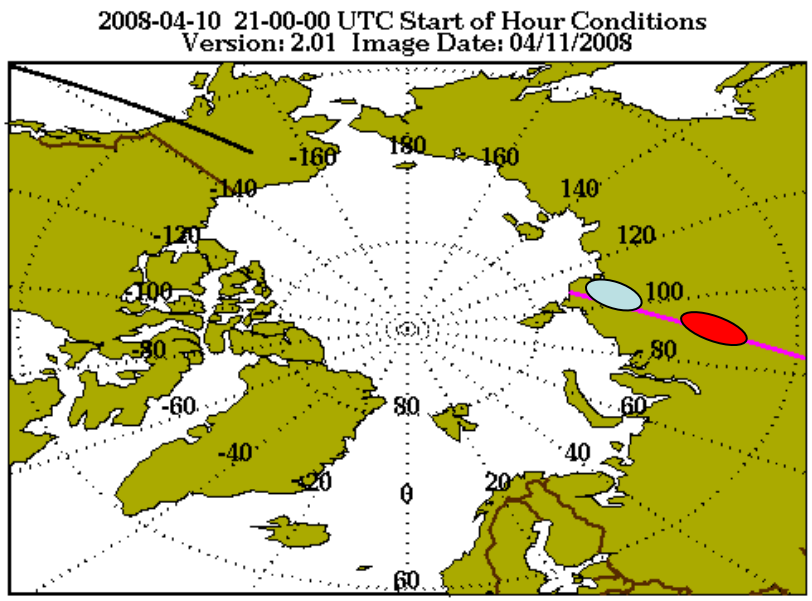
CALIPSO Hot Spots – 10/11 April

Color key

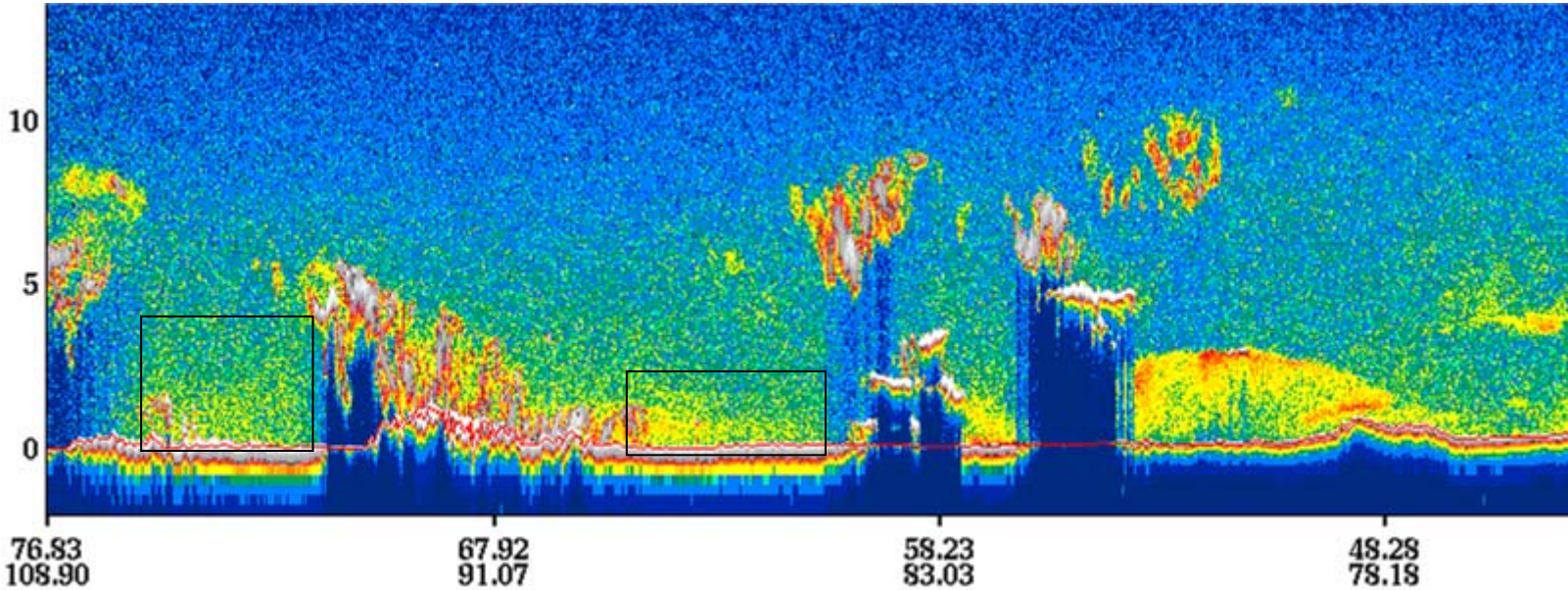
- distinct layer at surface
- distinct layer aloft
- weak, diffuse aerosol
- high depol (dust)
- cloudy



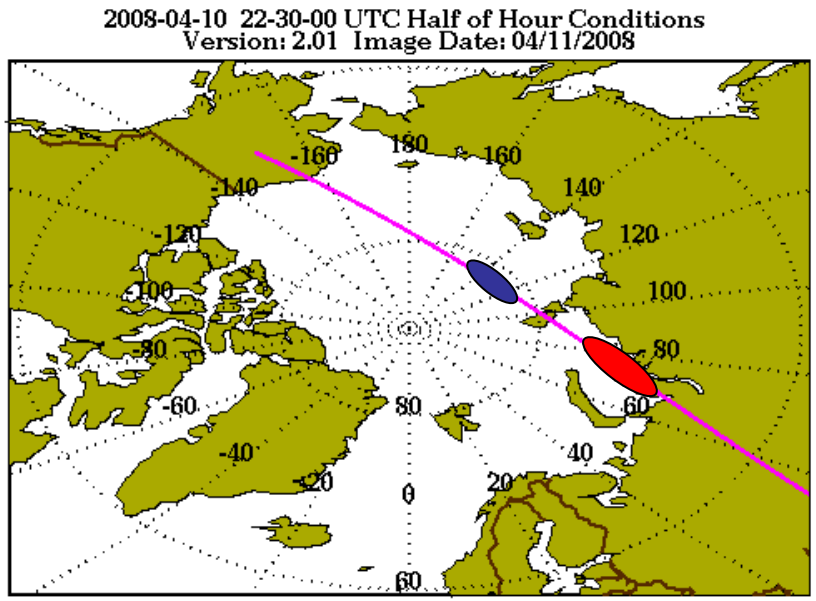
10 April 2100Z



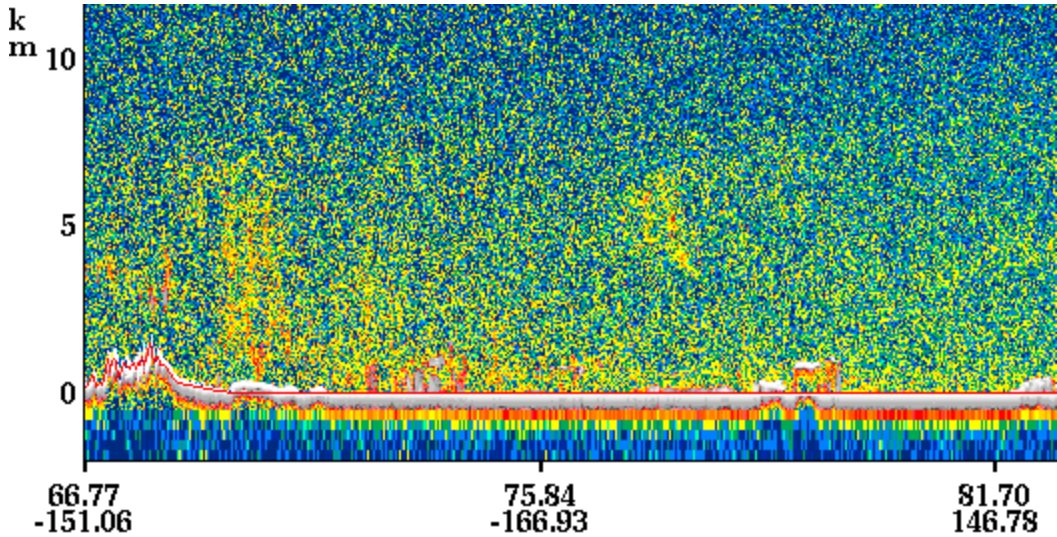
northern Russia

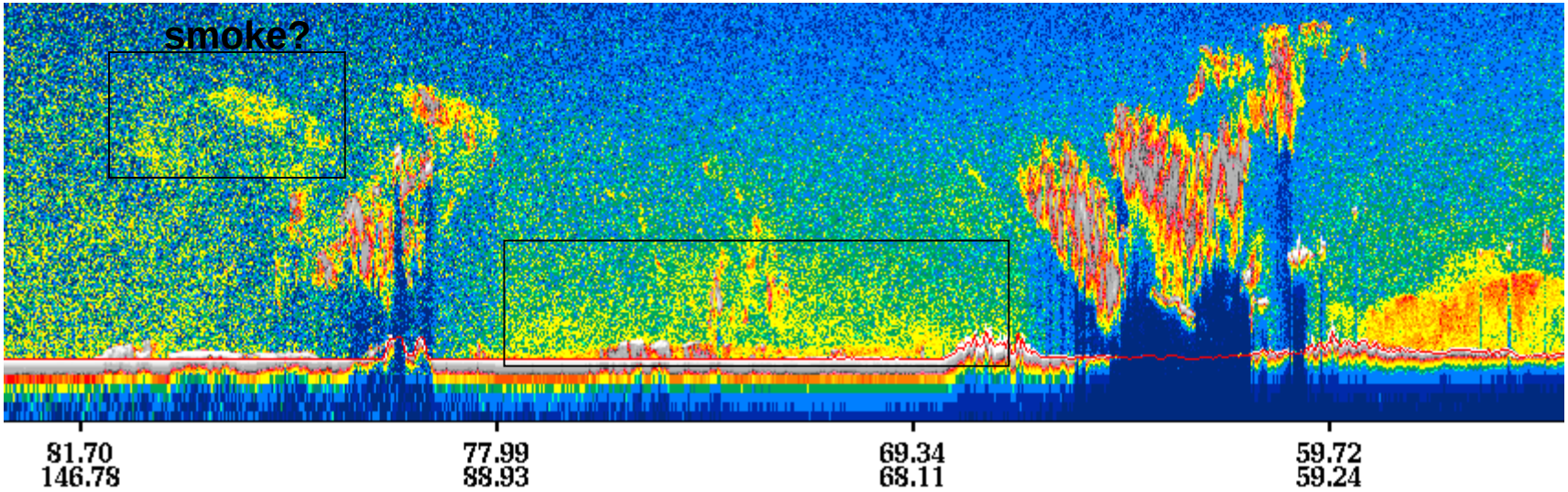


10 April 2230Z

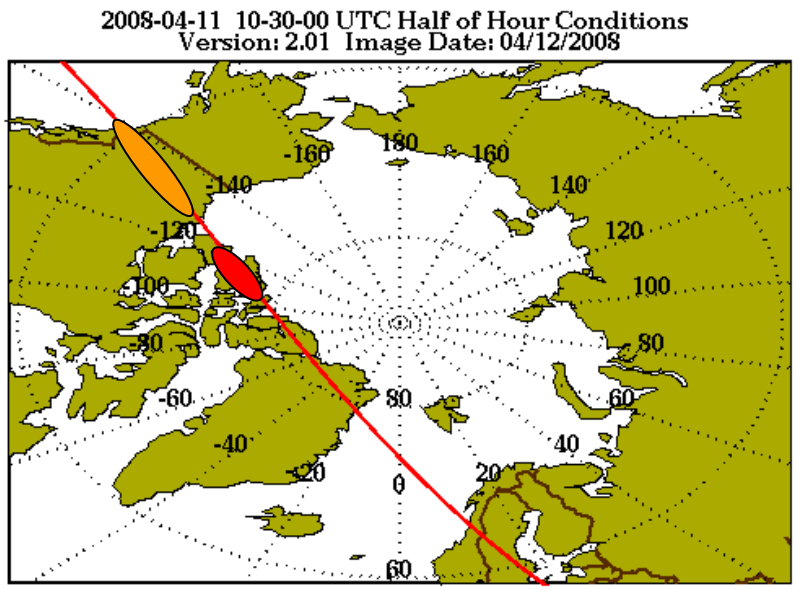


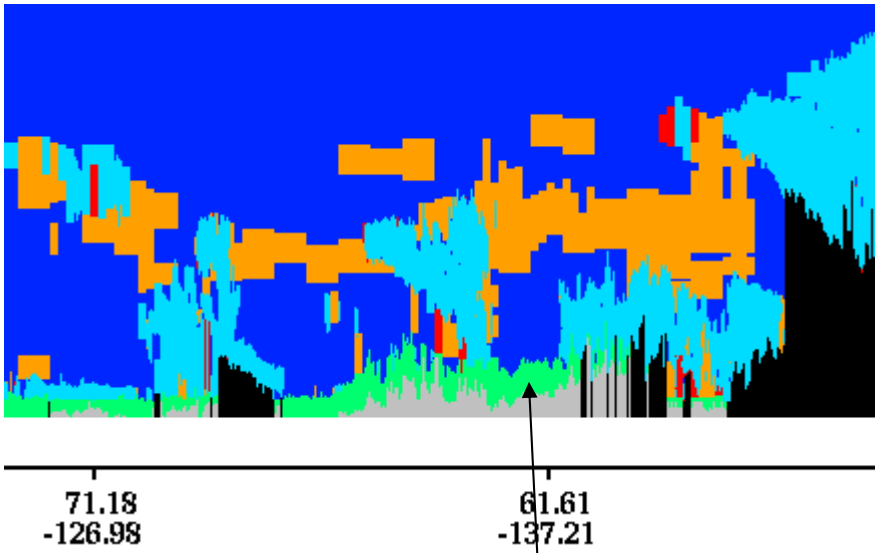
Barrow overpass: clean

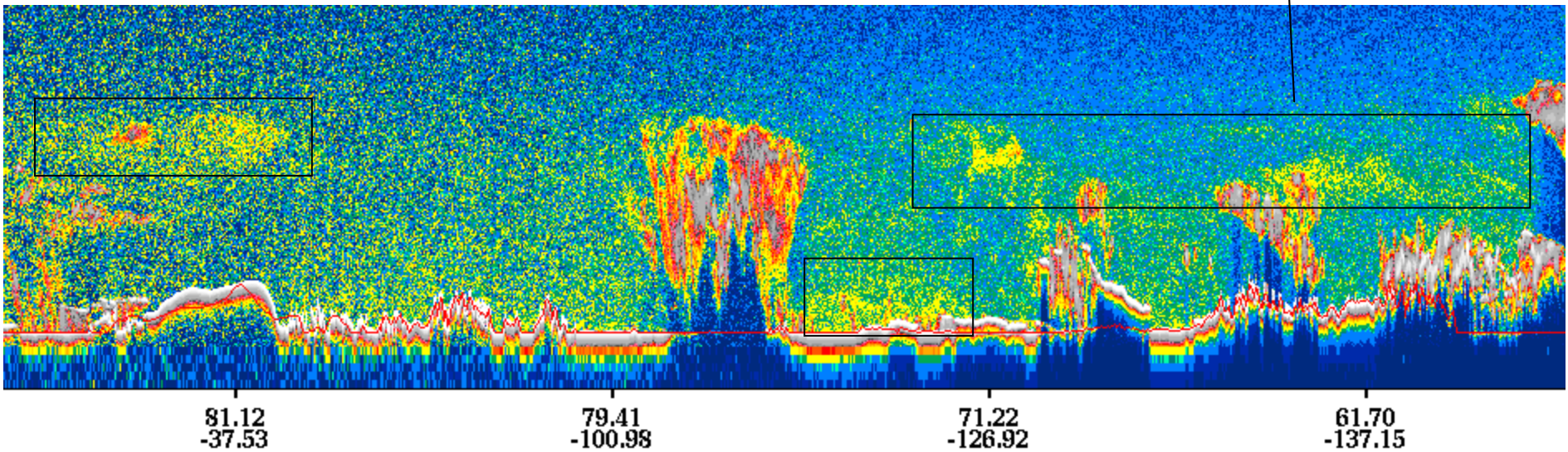




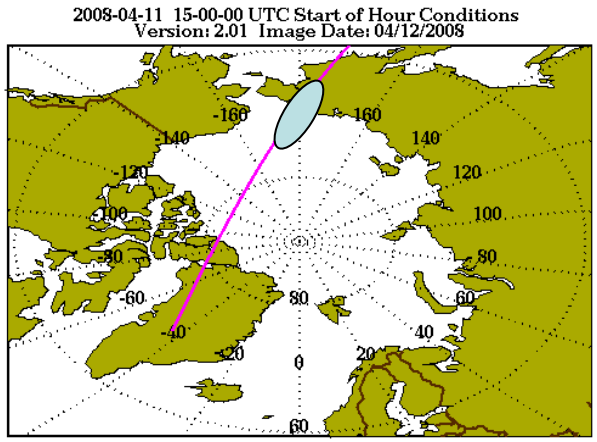
11 April, 1030Z

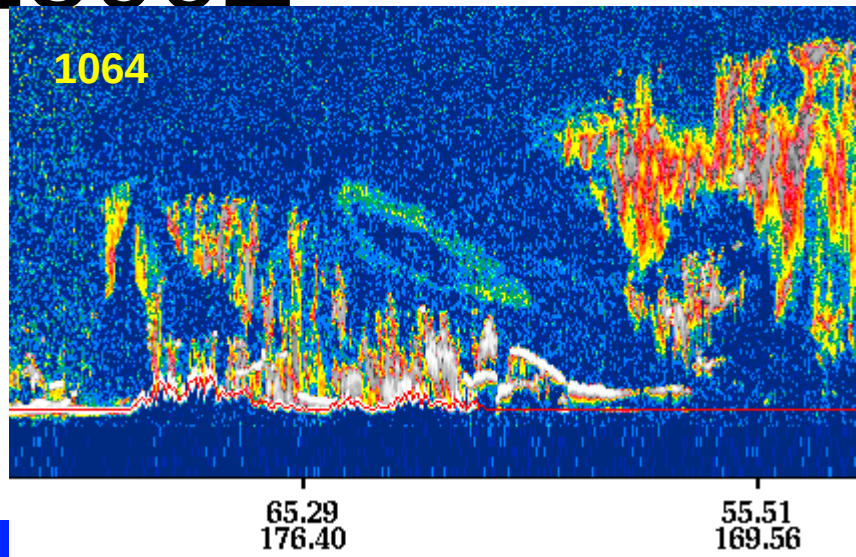


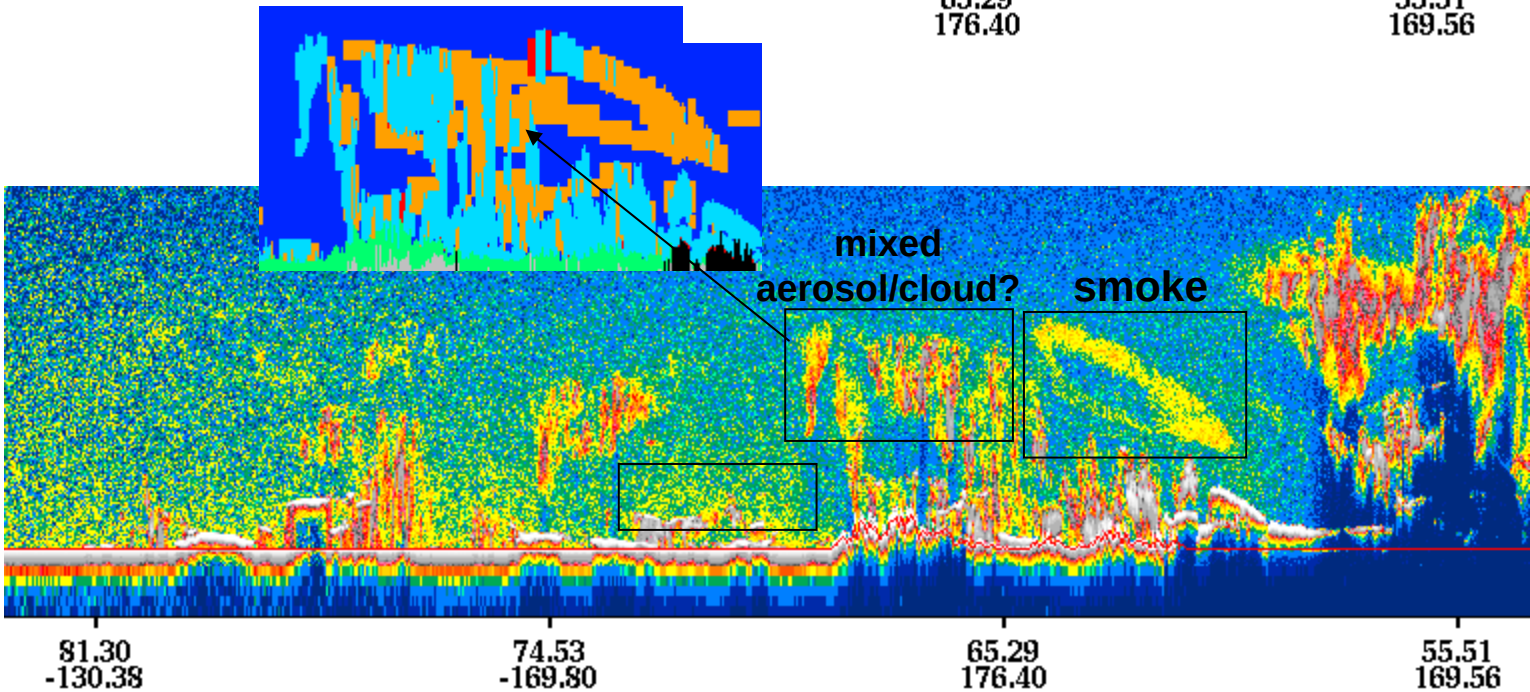




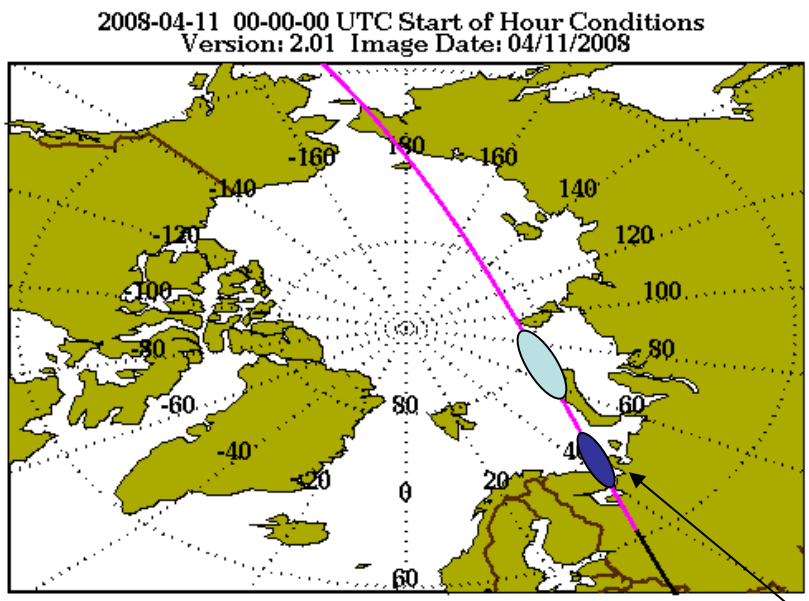
11 April, 1500Z

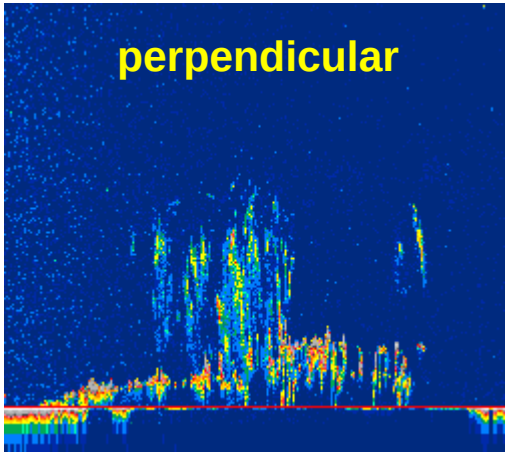


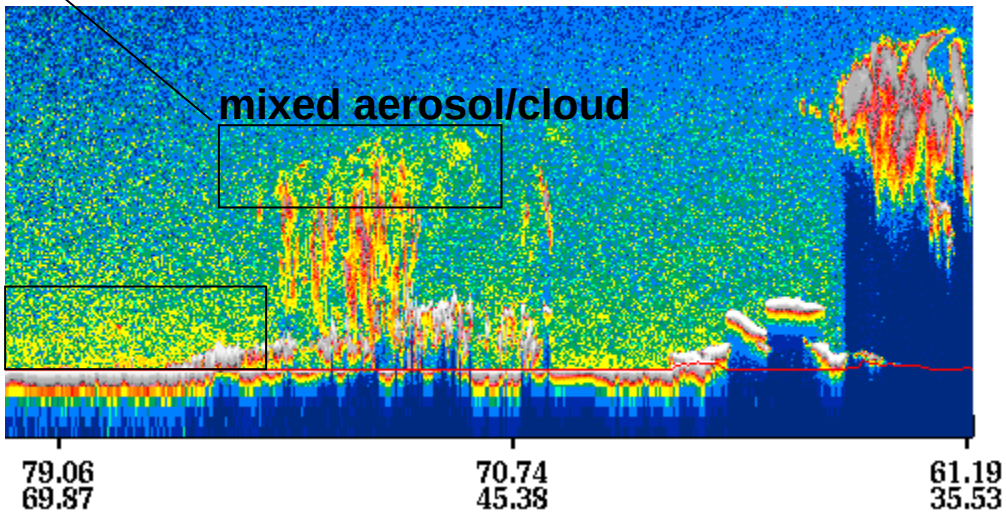


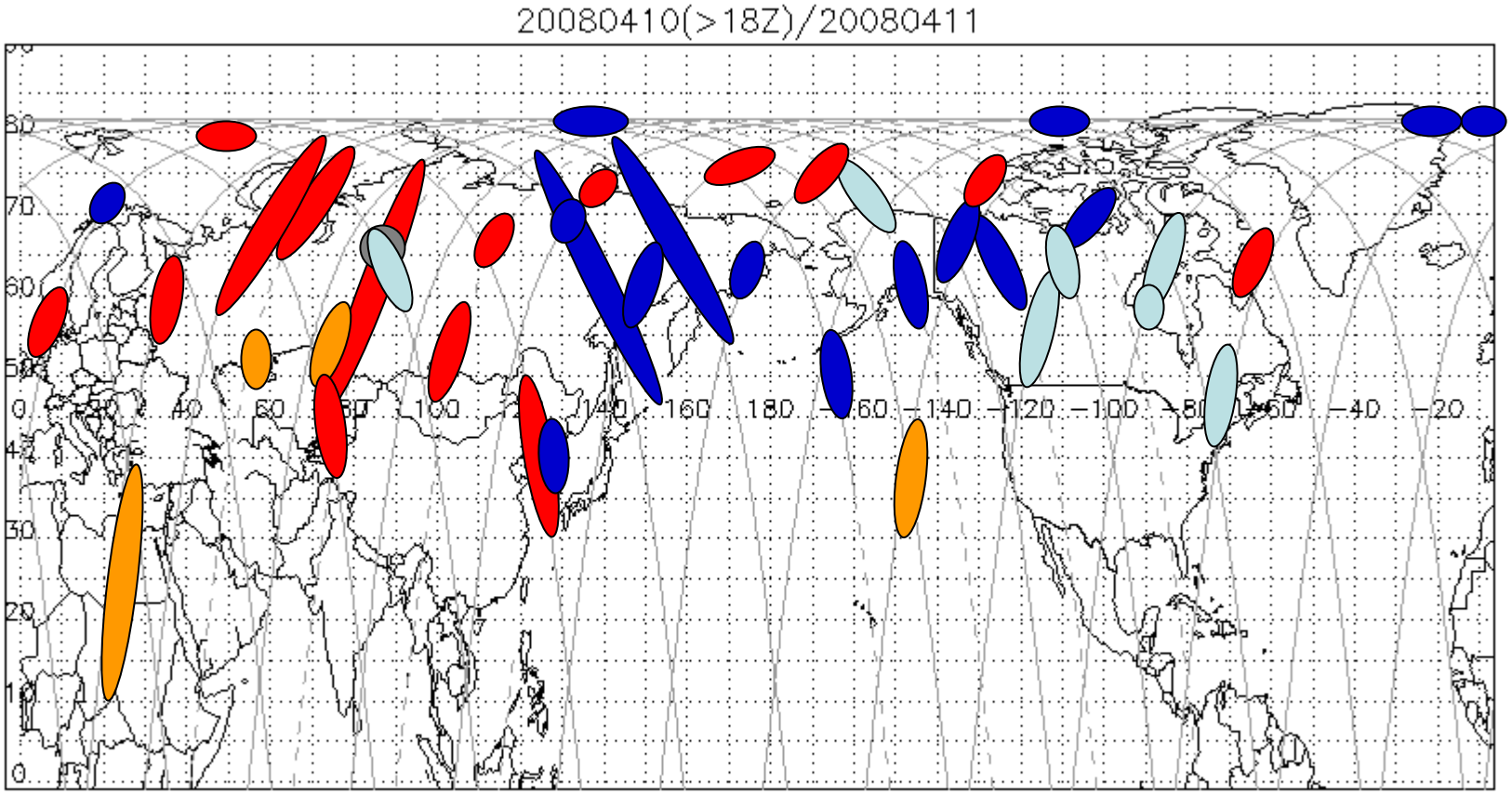


11 April, 0000Z





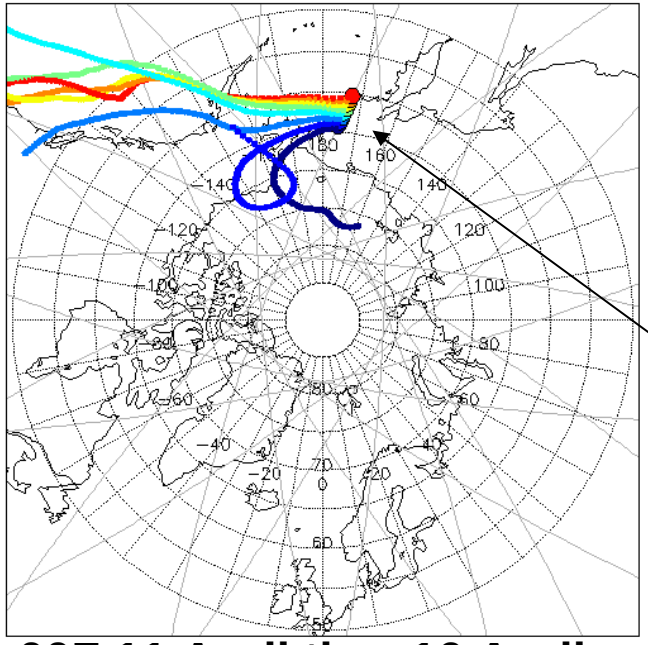




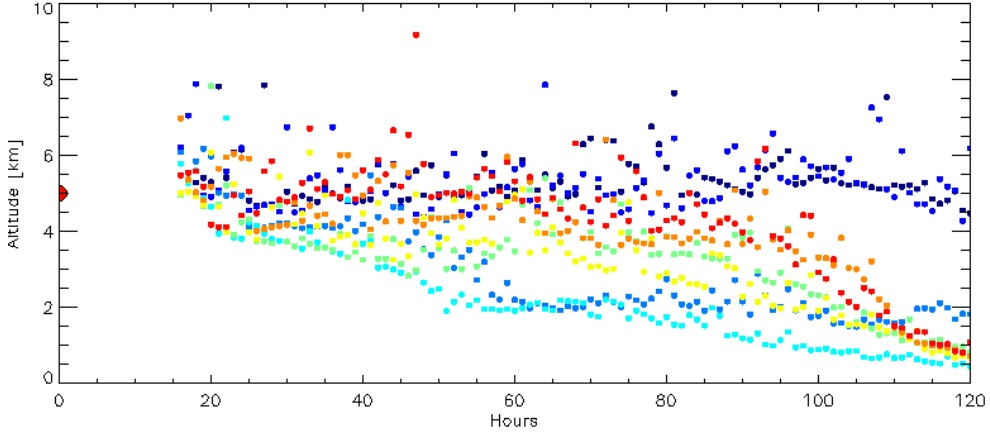
Arrows indicate the general transport direction of the feature based on the trajectory analysis provided by Brad Pierce (NOAA/NESDIS).

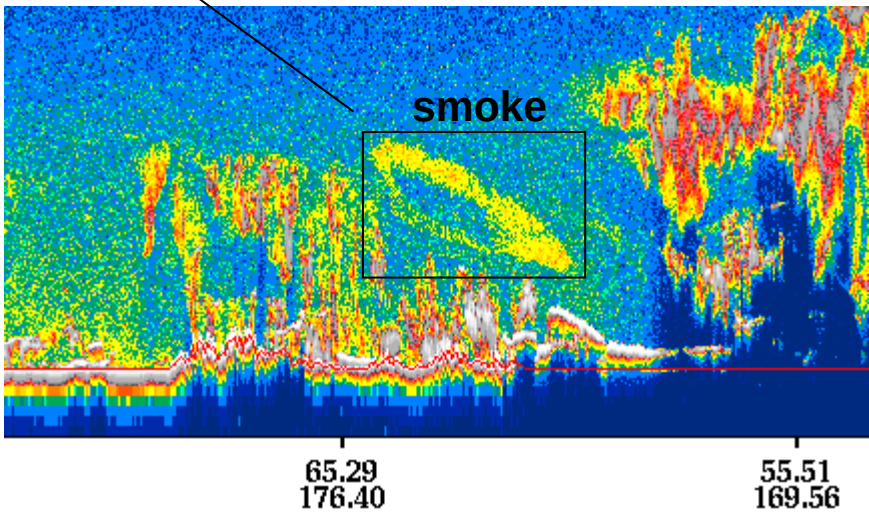
120hr CALIPSO Trajectories Initialized 2008041100 Valid 2008041600

Initial Altitude: 5000m



00Z 11 April thru 16 April





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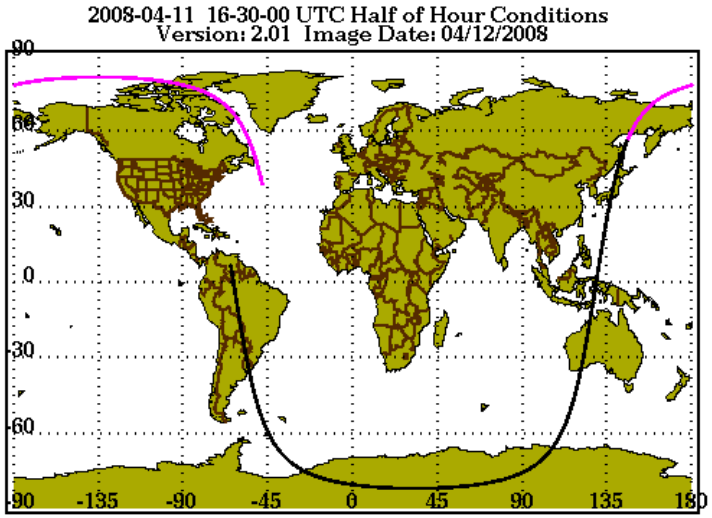
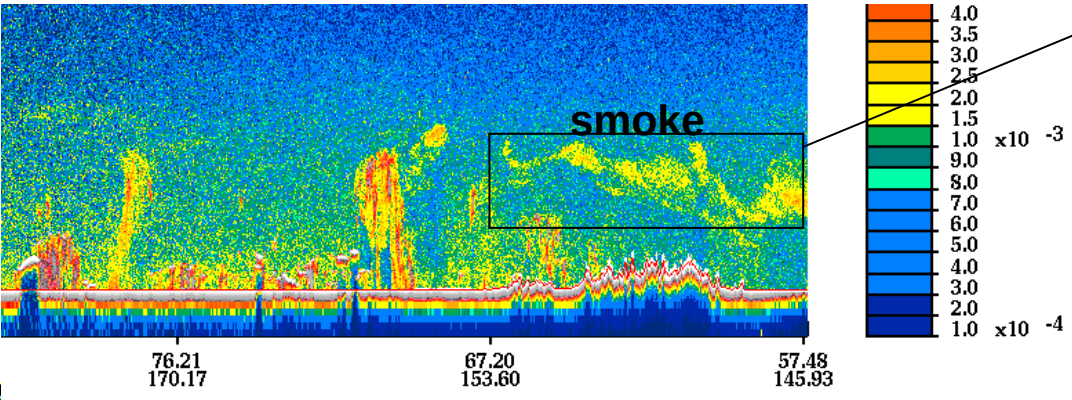
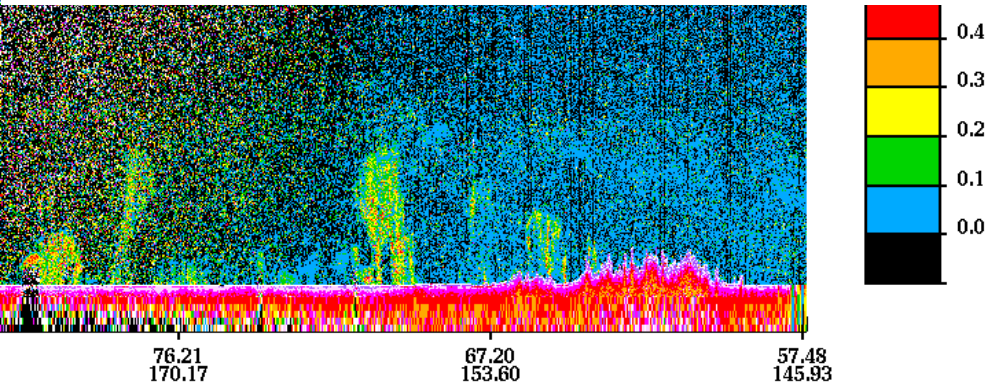
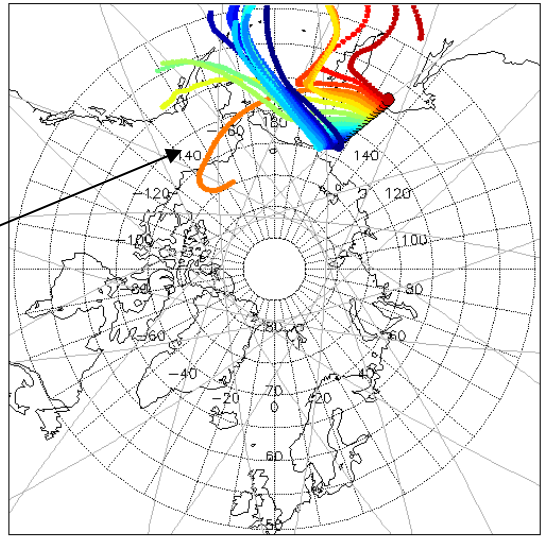
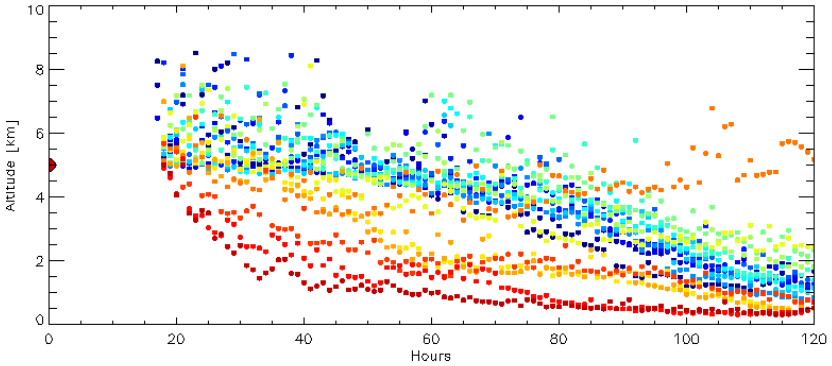
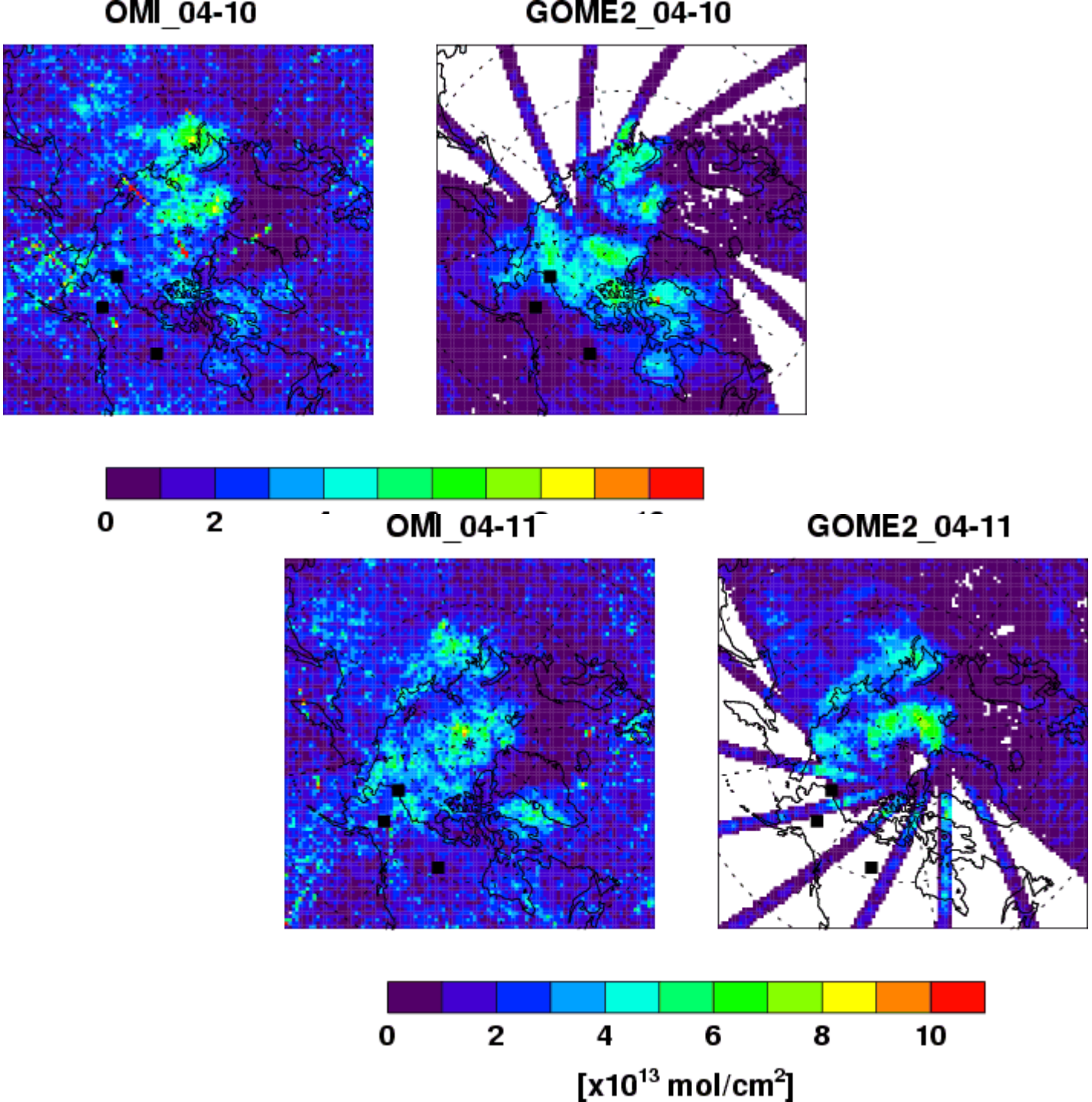




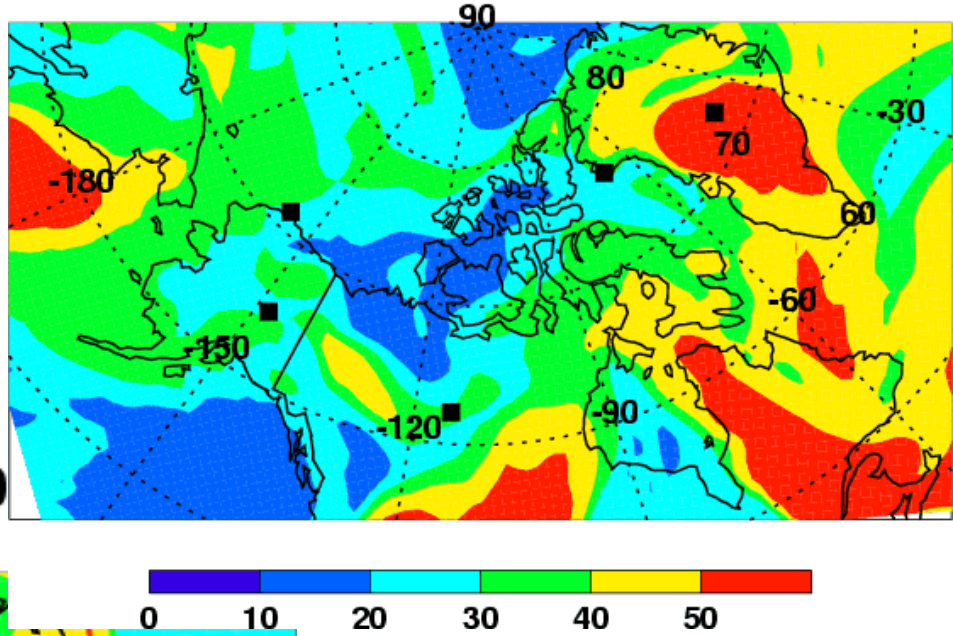




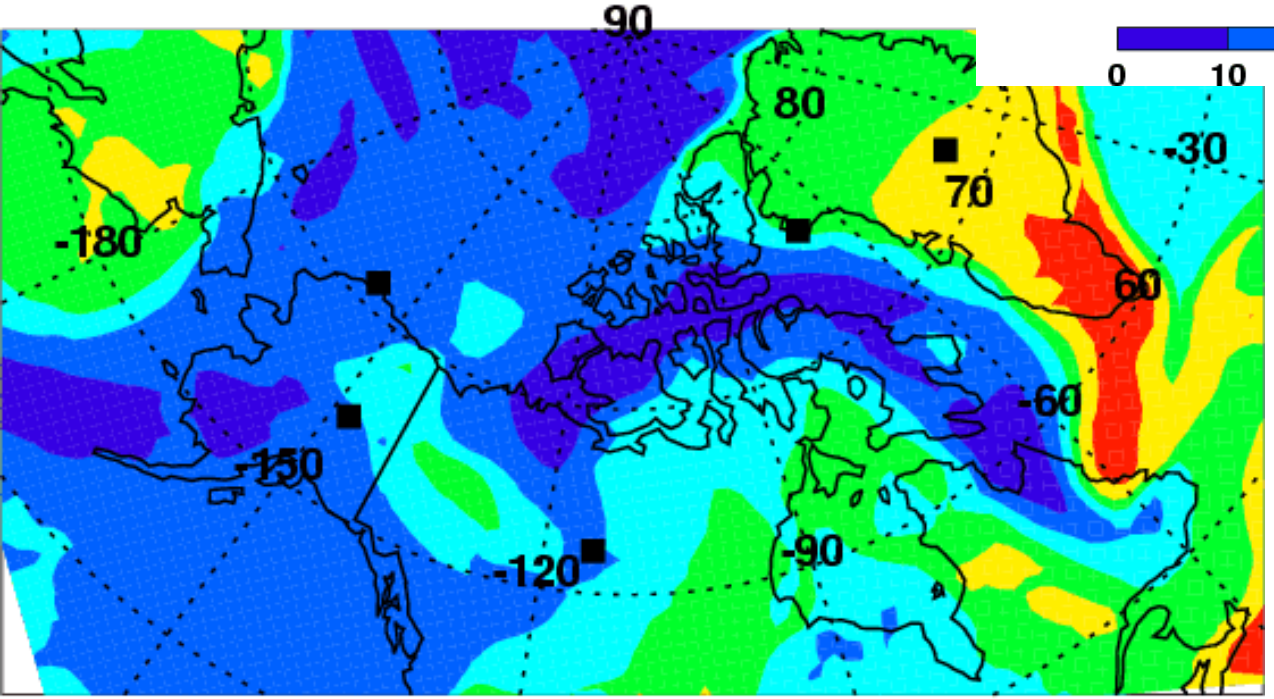



OMI_04-10
GOME2_04-10
0
2
OMI_04-11
GOME2_04-11
0
2
4
6
8
10
[x10^13 mol/cm^2]

O_3 (ppbv) at 300m,Apr-15_2000 UTC



O_3 (ppbv) at surface,Apr-15_200

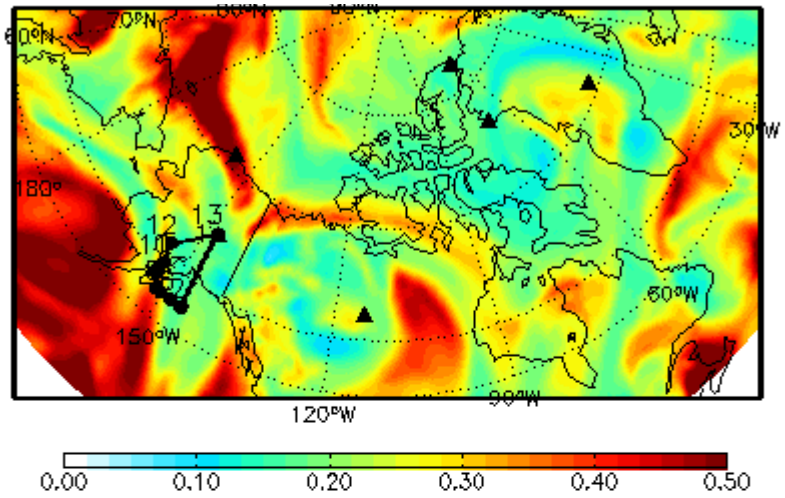


0 10 20 30 40 50

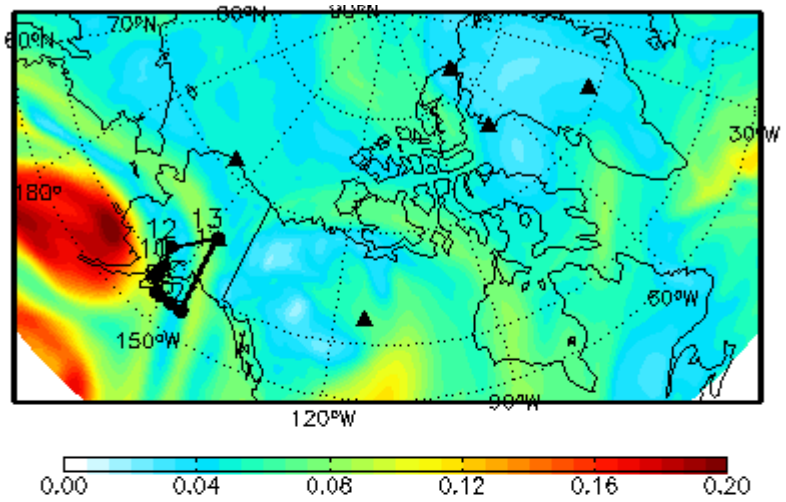
P3 : April 13th using 4/11 12z forecast _1

GEOS–5 forecast: 20080411_12z

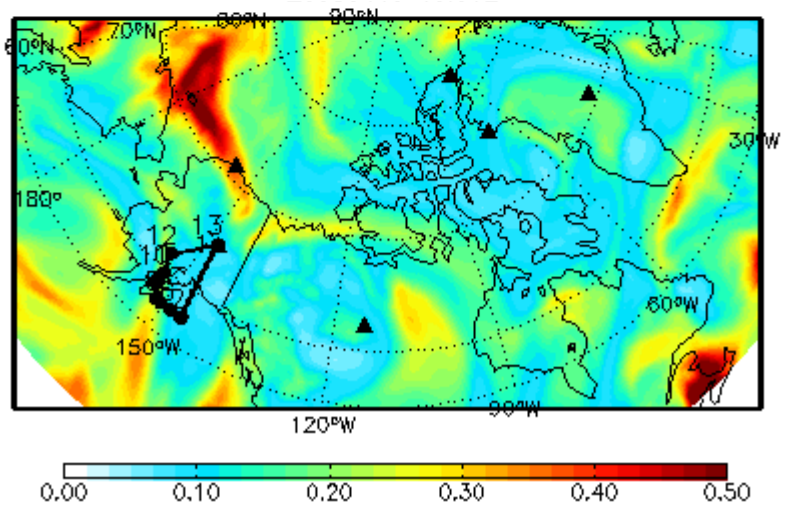
Total AOT



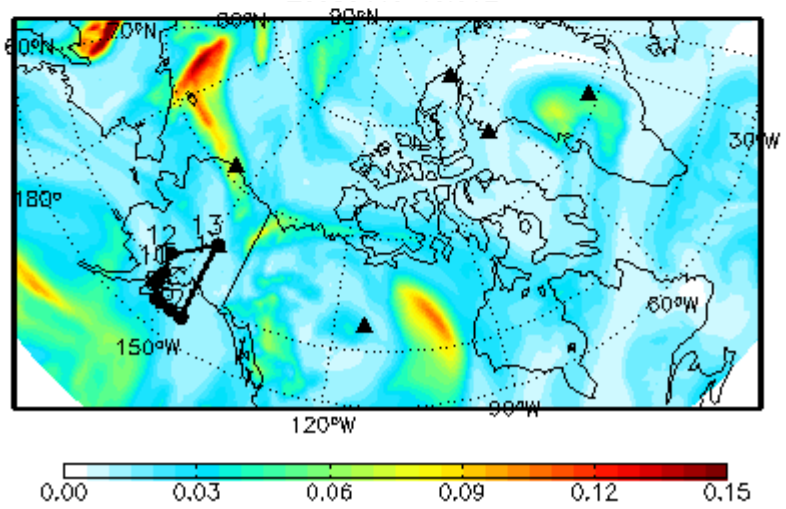
Dust AOT



Sulfate AOT



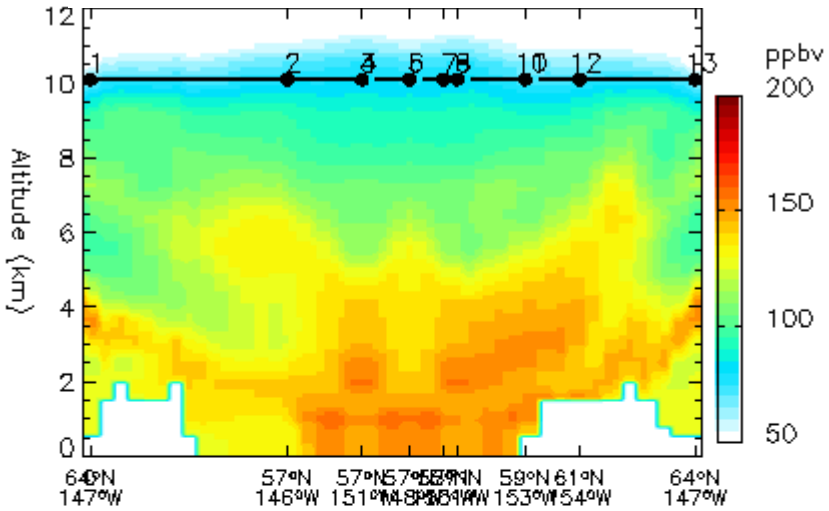
Organic Carbon AOT



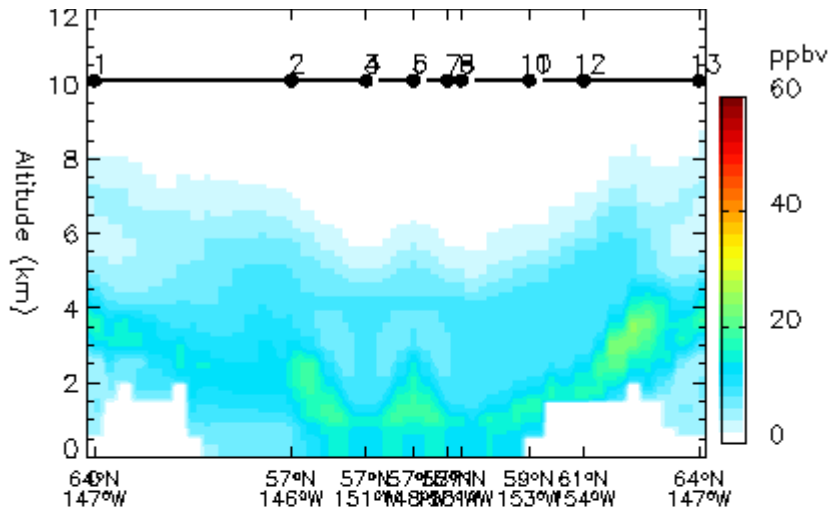
P3 : April 13th using 4/11 12z forecast

GEOS–5 forecast: 20080411_12z

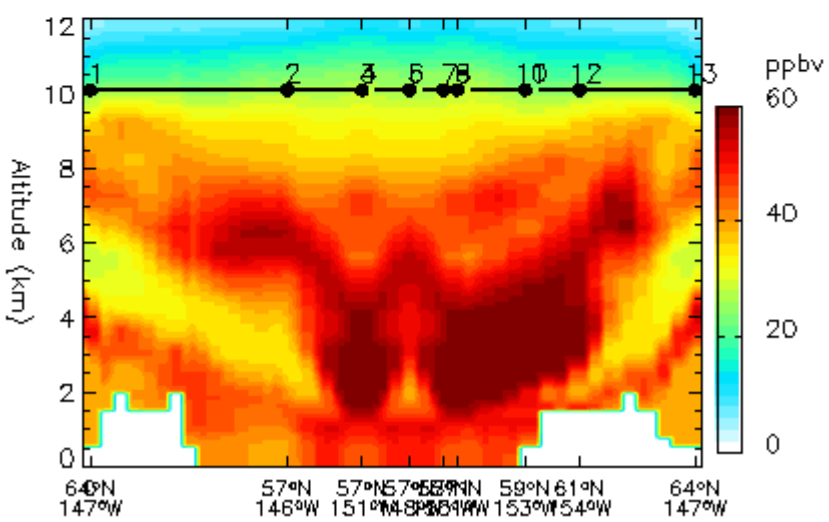
Total CO



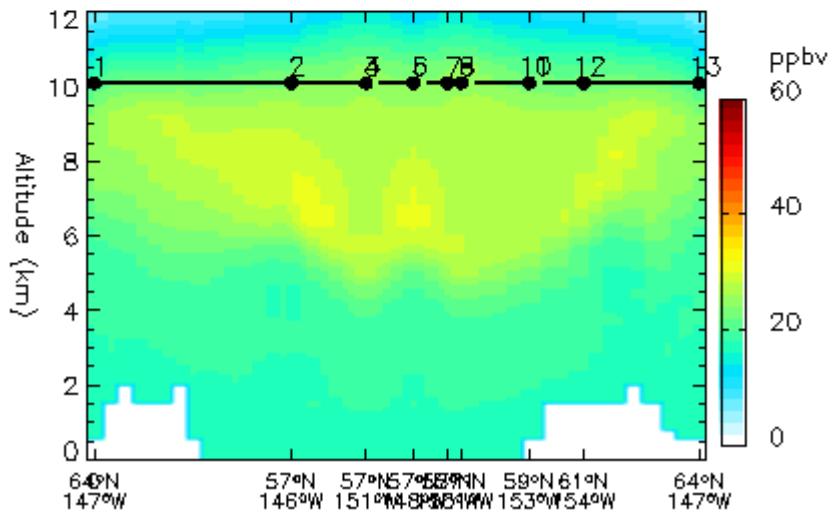
Boreal Biomass CO



Asian CO



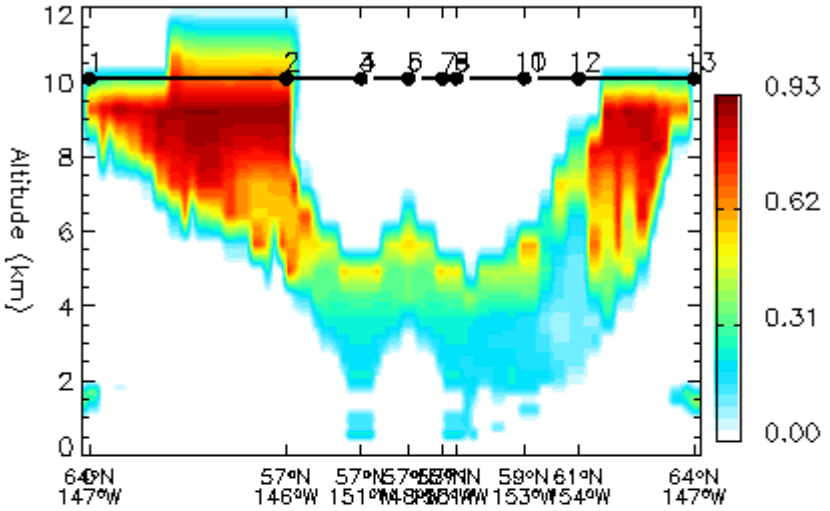
Non-Boreal Biomass CO



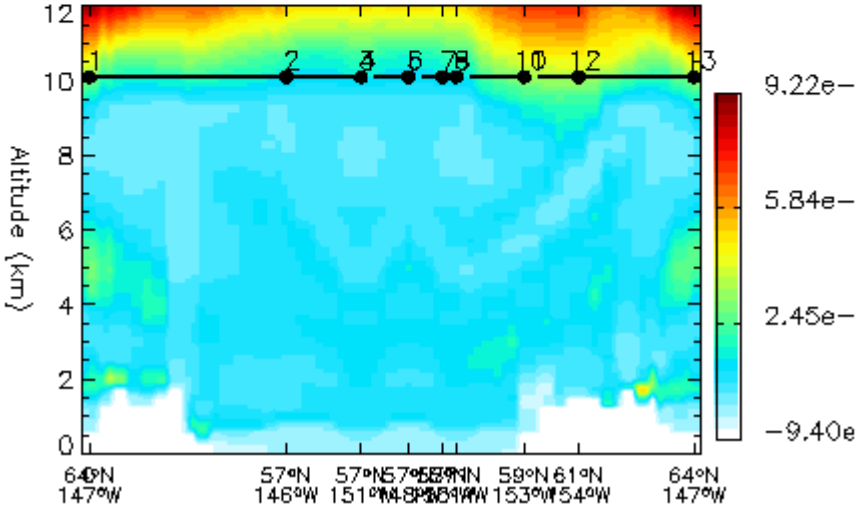
P3 : April 13th using 4/11 12z forecast

GEOS-5 forecast: 20080411_12z

Cloud Area Fraction



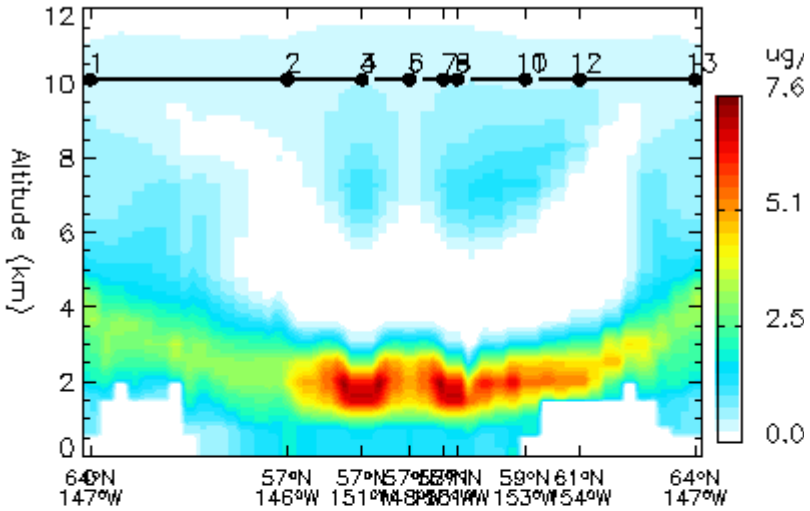
EPV



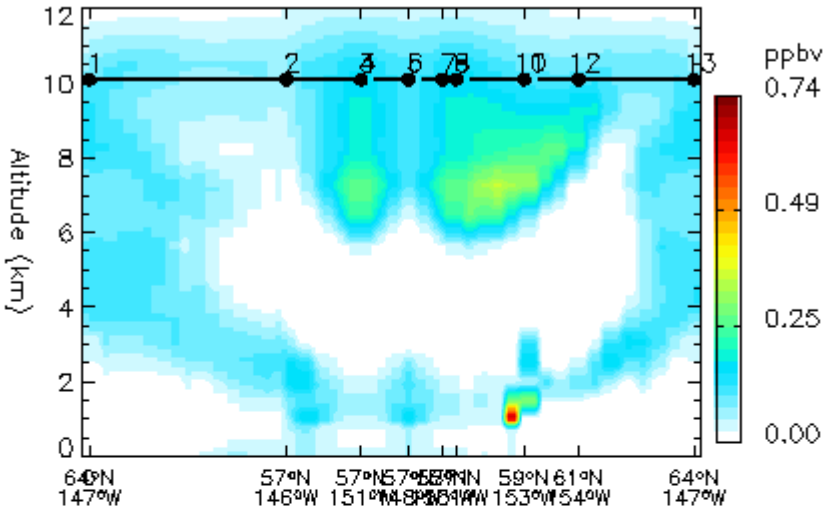
P3 : April 13th using 4/11 12z forecast

GEOS–5 forecast: 20080411_12z

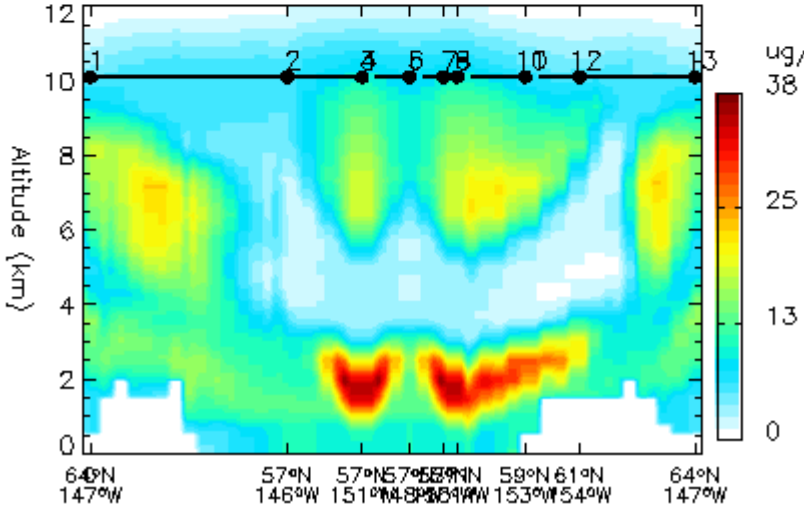
Sulfate Concentration



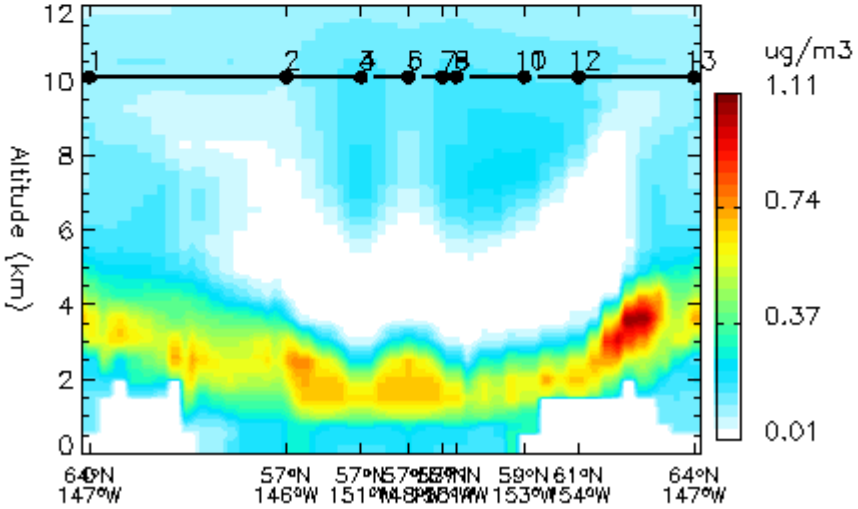
Sulfur Dioxide (ppbv)



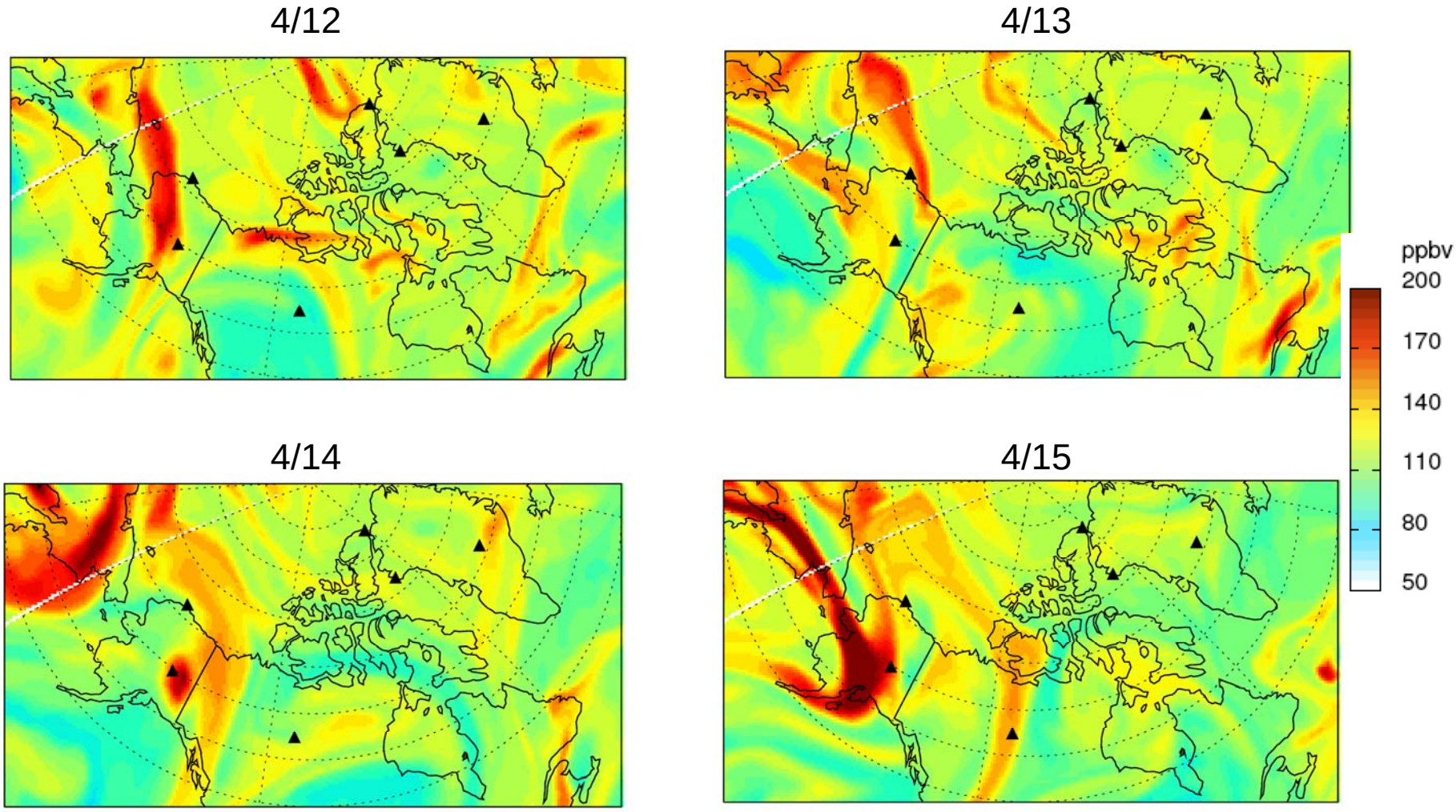
Dust Concentration



Organic Carbon Concentration



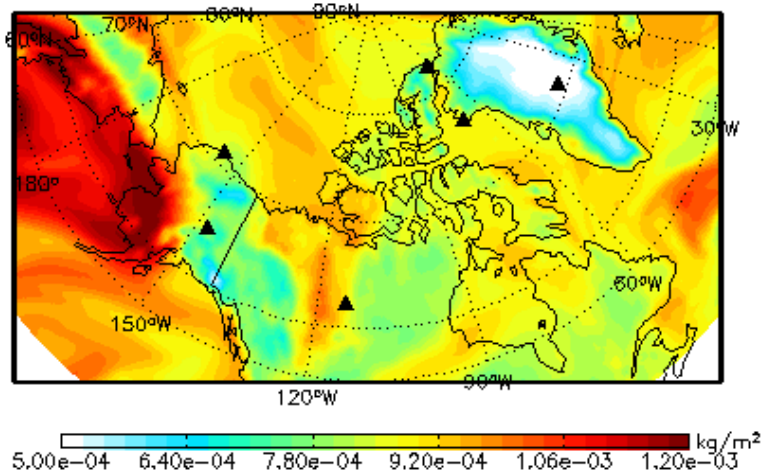
GEOS Total CO 500 hPa



GEOS5 Fx 20080411_06Z: 04/15

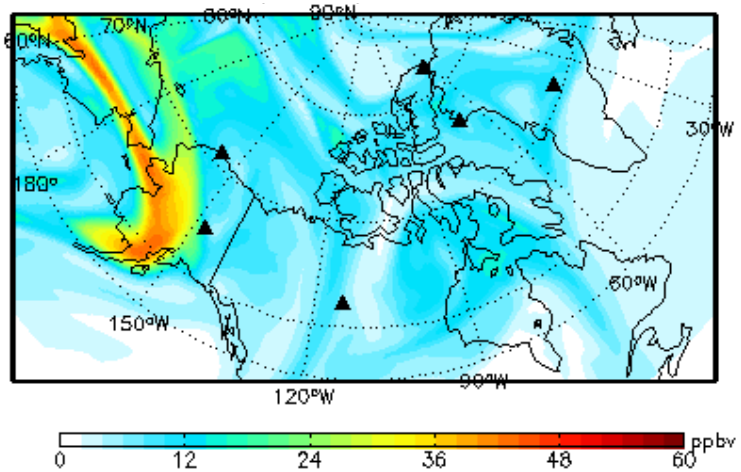
GEOS–5 forecast: 20080411_06z

Total CO Column

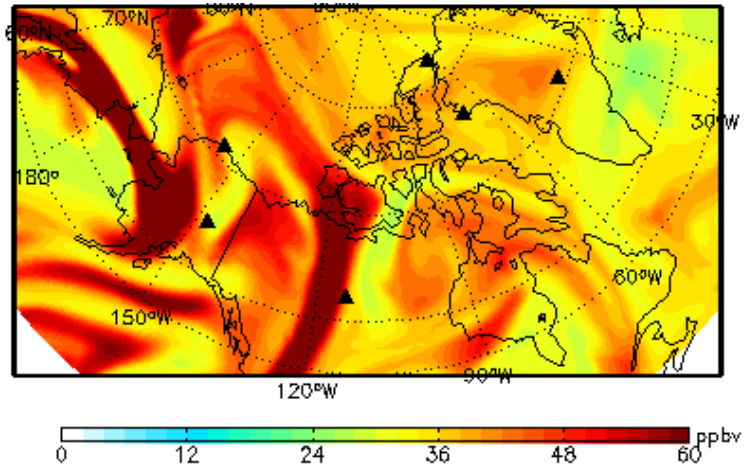


GEOS–5 forecast: 20080411_06z

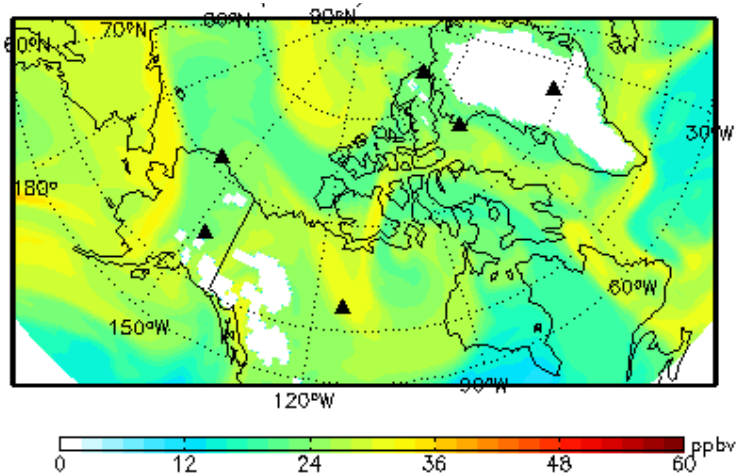
Boreal Biomass CO @ 500 mb



Asian CO @500 mb

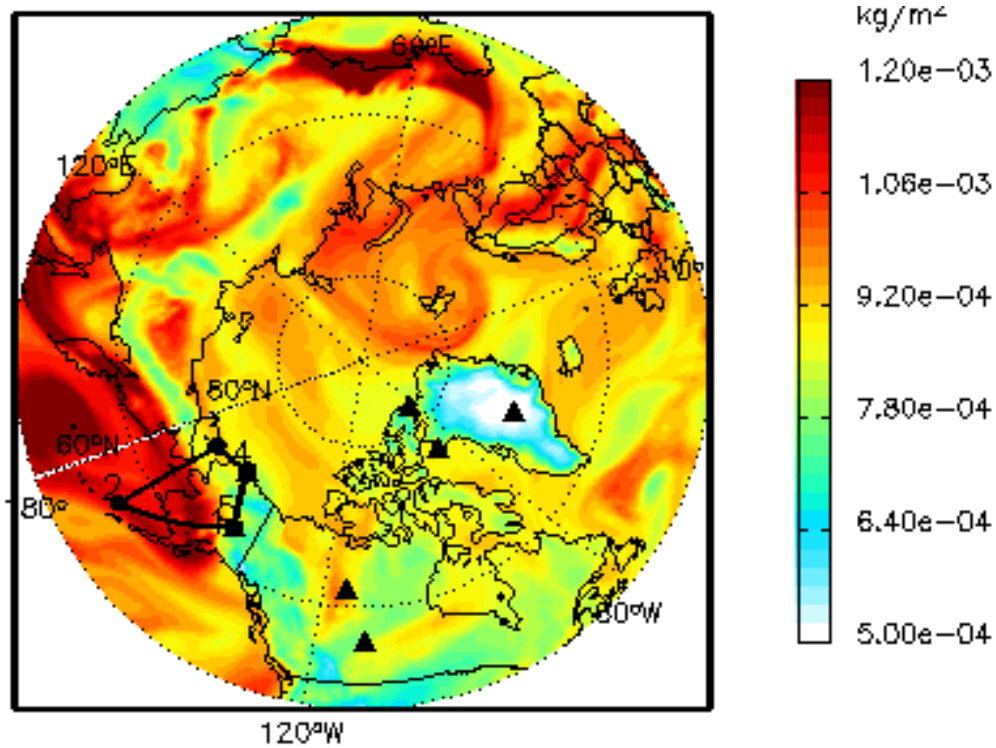


Europe+Russia CO @ 850 mb

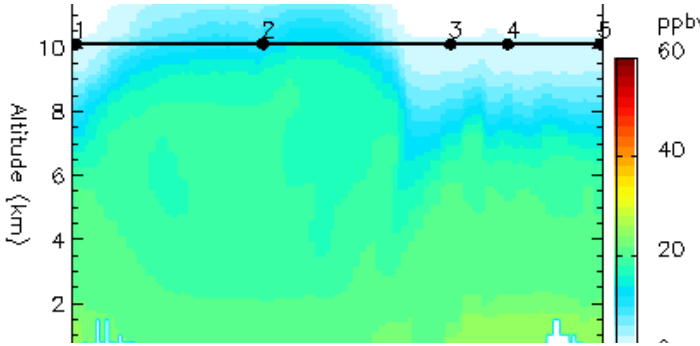


DC-8 FAI to FAI: April 15th

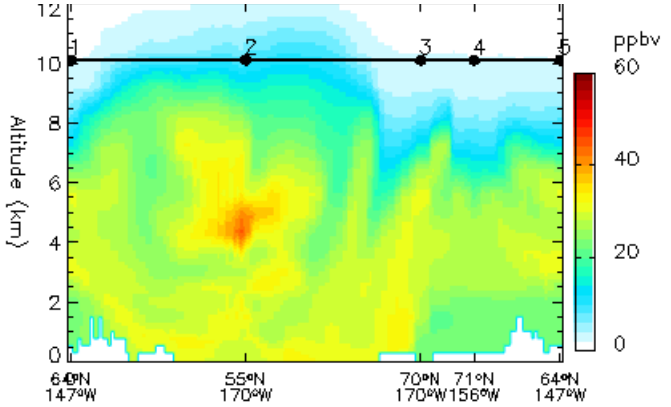
Total CO Column



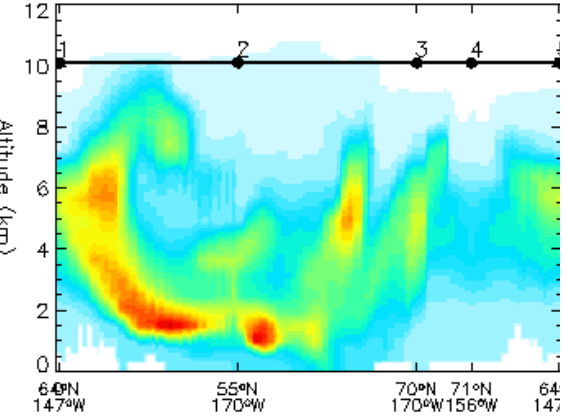
N. America



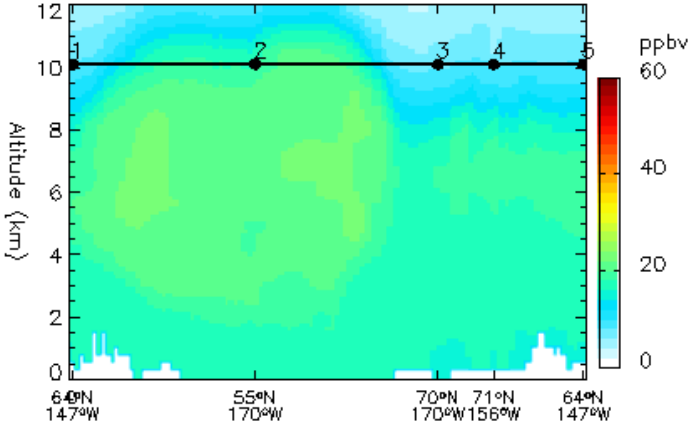
Europe



Boreal



Non-Boreal



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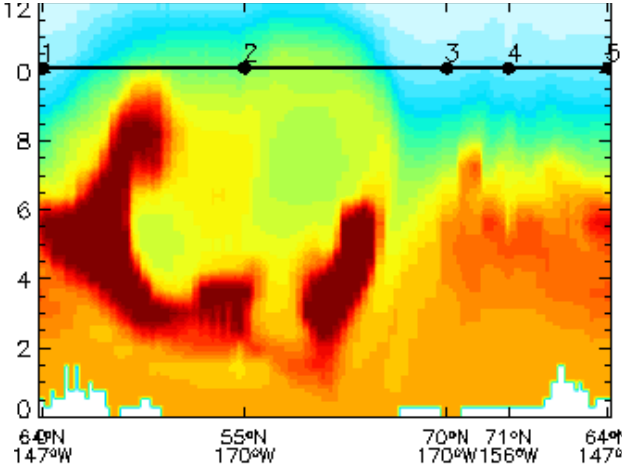
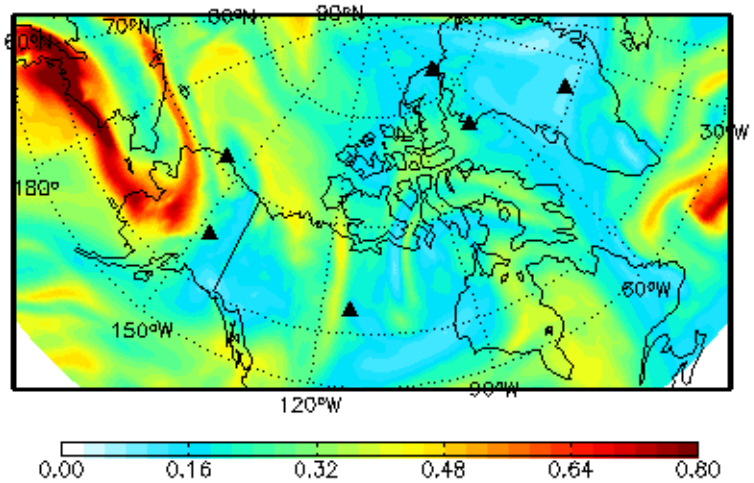


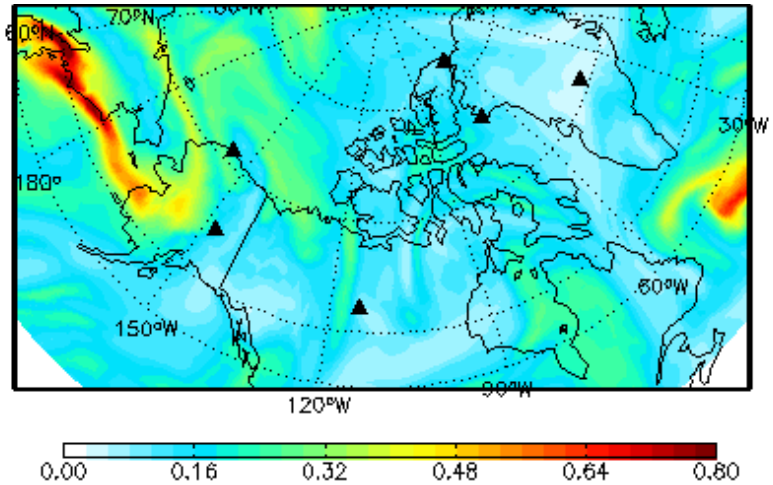
Extinction AOT at 500 nm for April 15

GEOS-5 forecast: 20080411_06z

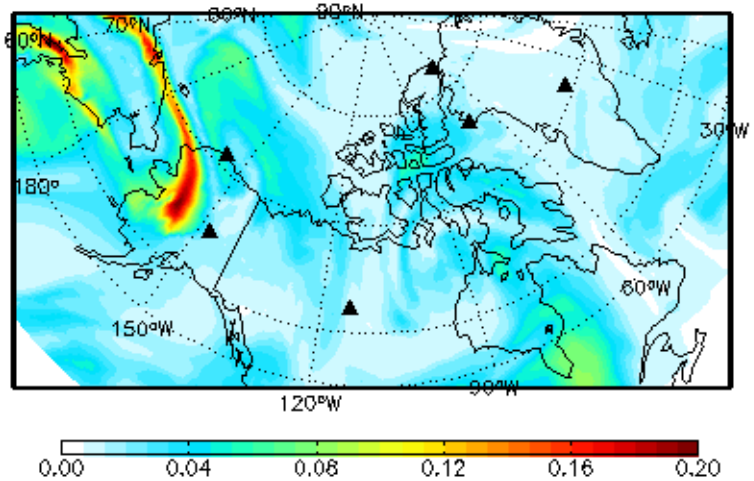
Total aerosol



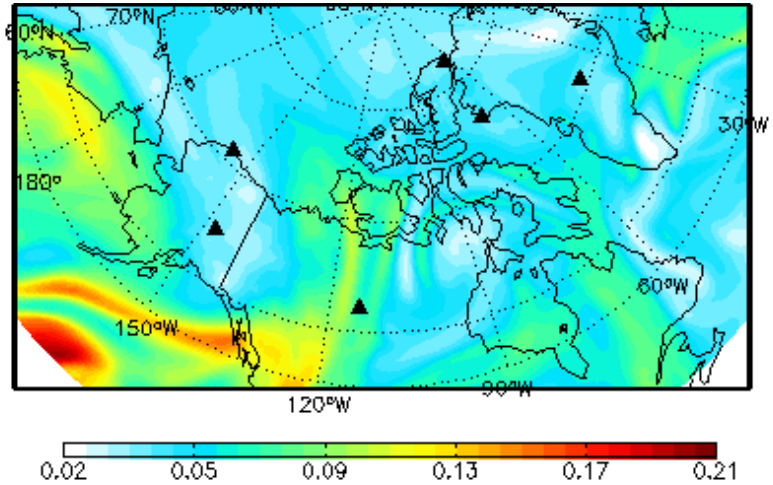
Sulfate



Organic Carbon

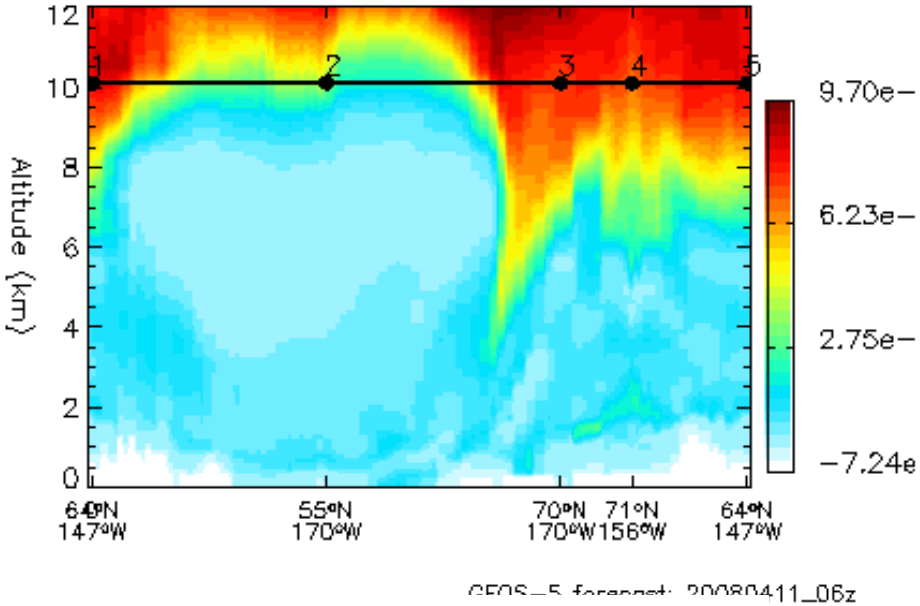


Dust

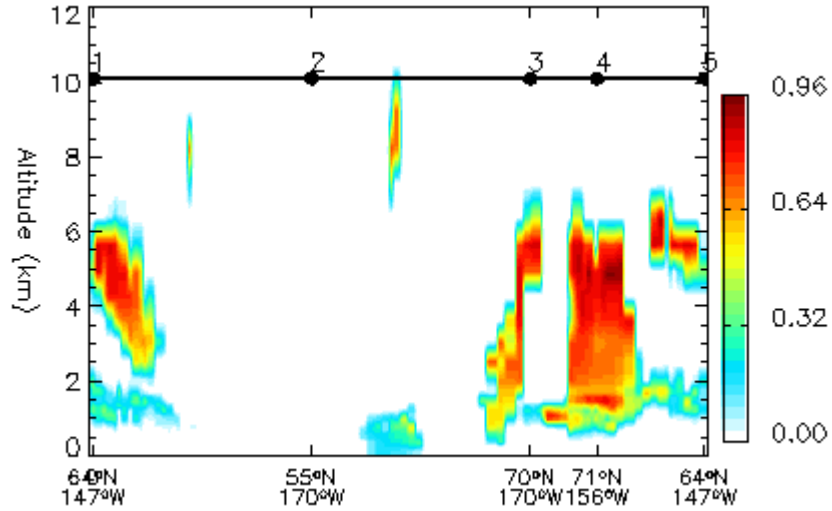


DC-8 FAI to FAI: April 15th

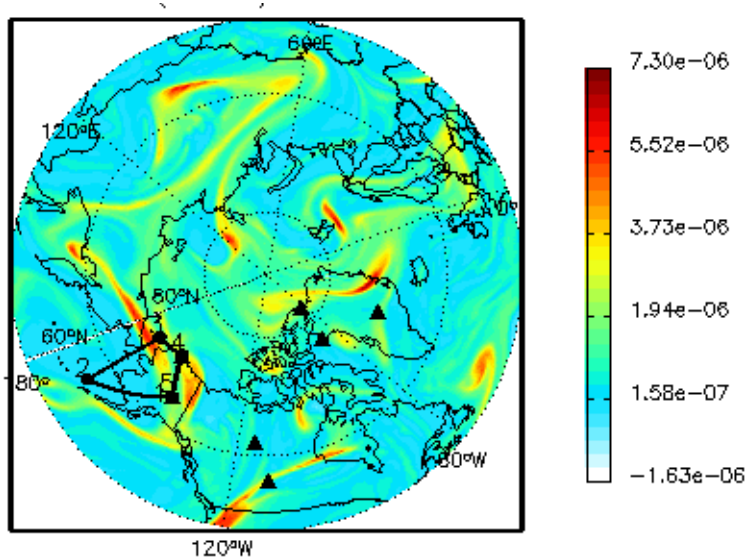
EPV



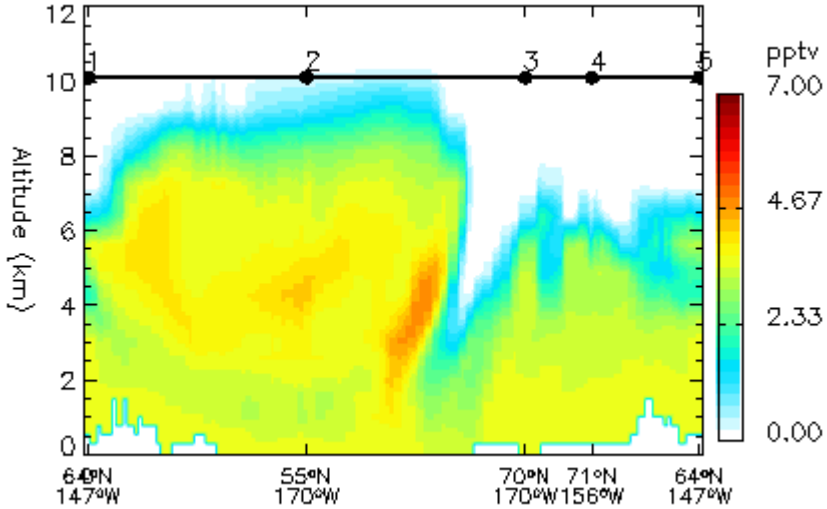
Total Cloud Area Fraction



EPV

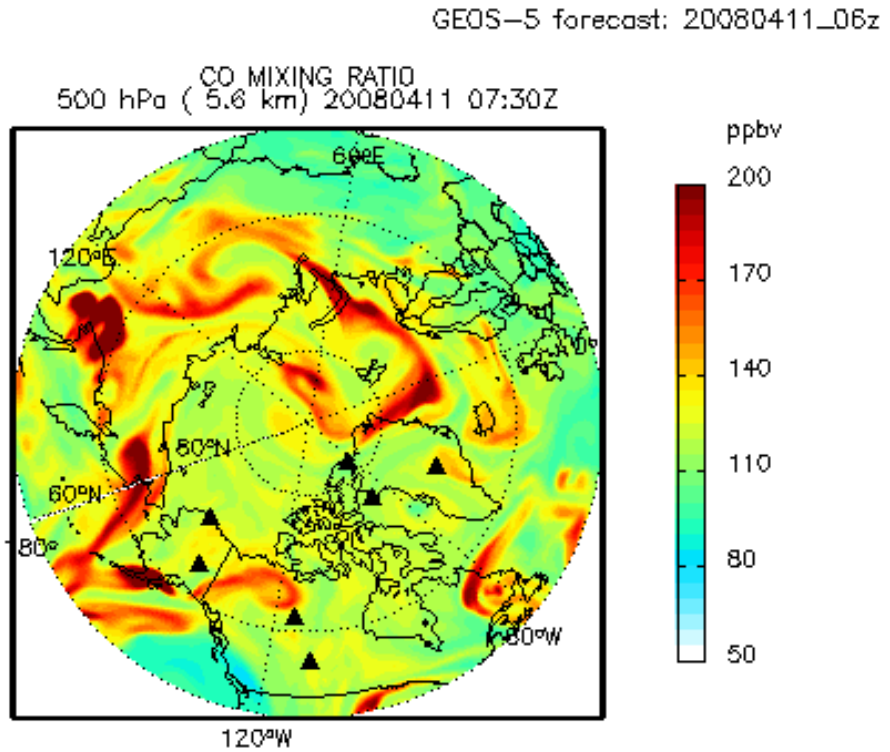


Tropospheric CFC-12

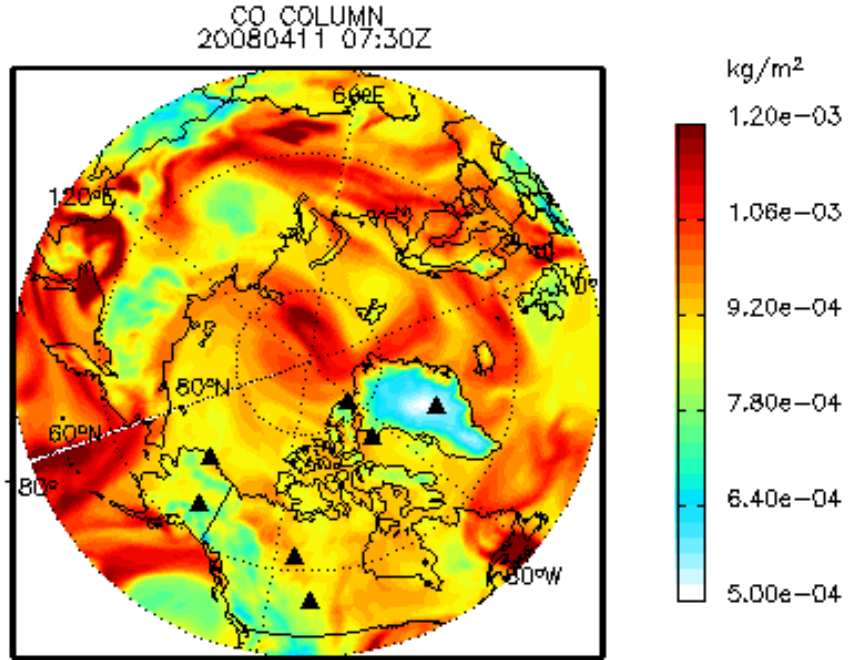


GEOS5 Fx 20080411_06Z: 4/11- 4/15

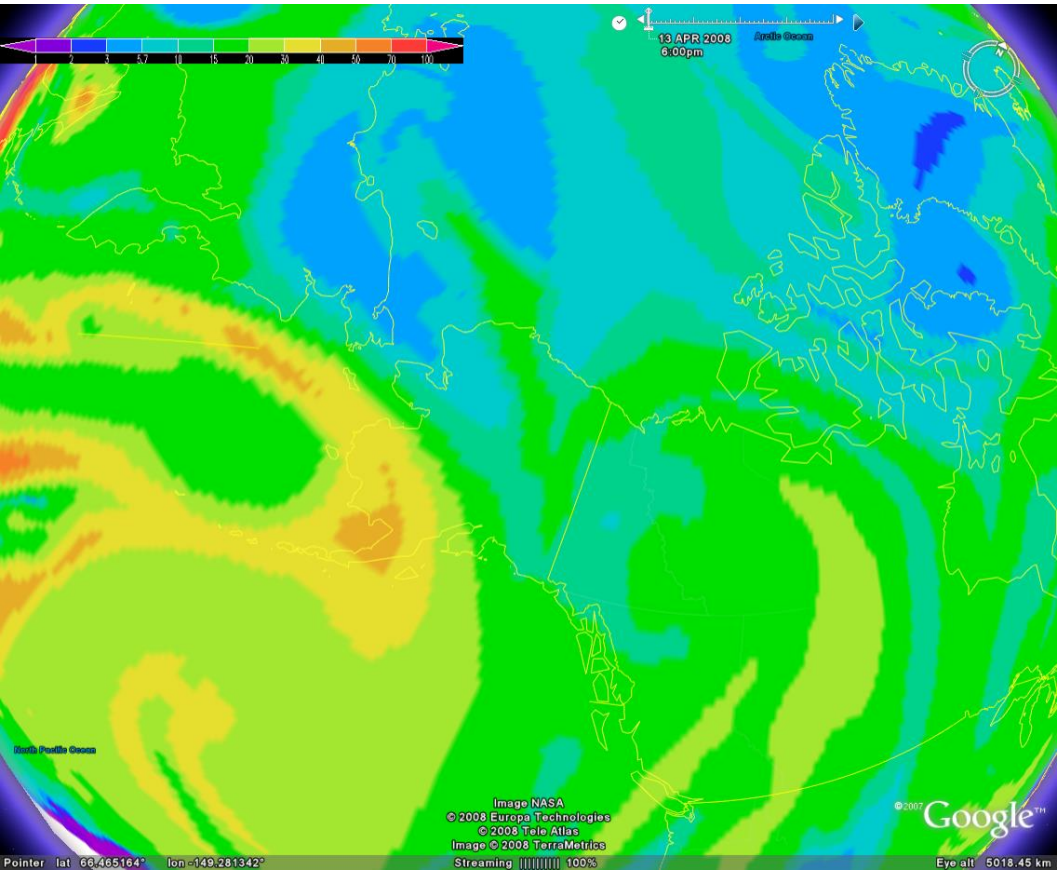
500mb CO

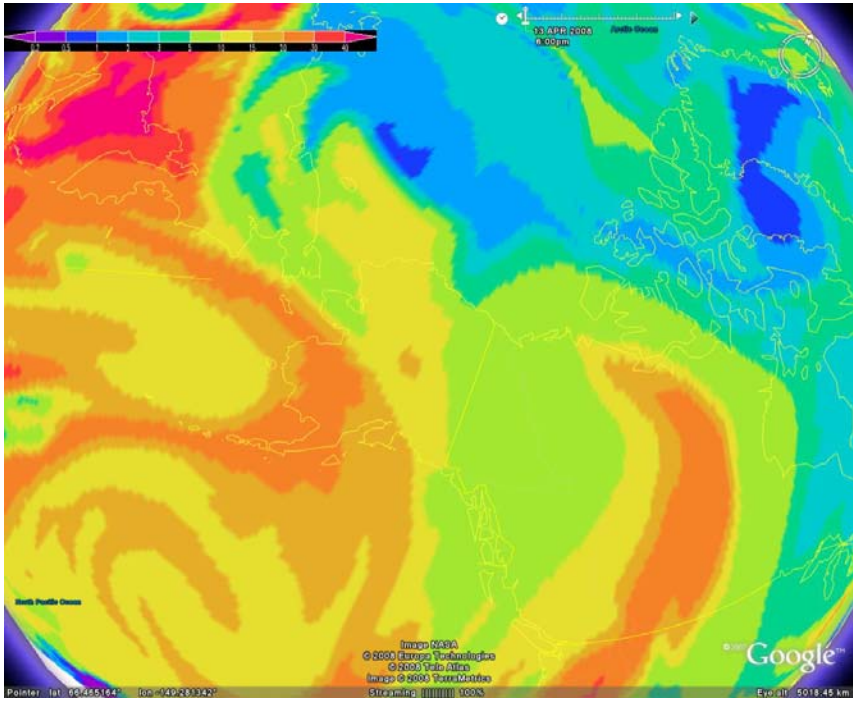


Total CO column



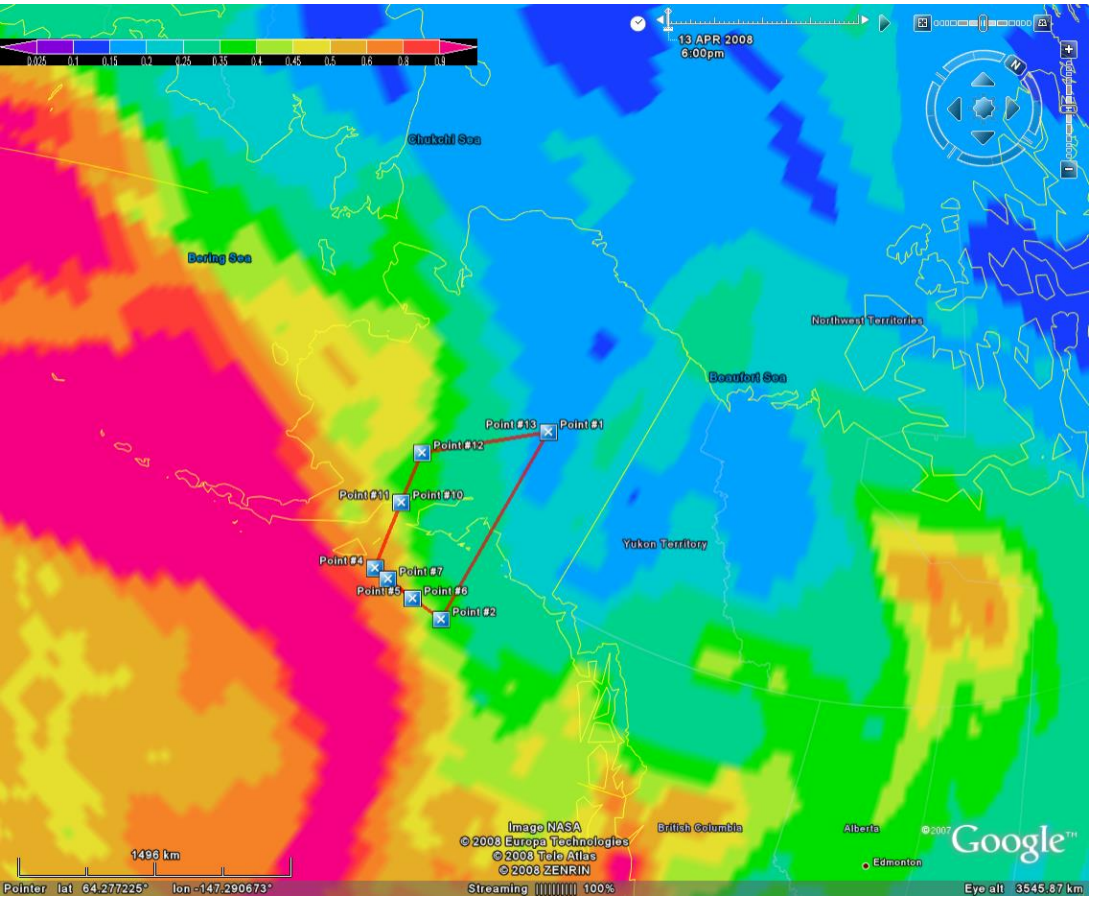
Anthropogenic CO (left) and Biomass CO (right) at 5.5 km layer (42 hr Forecast)
* Scales are different





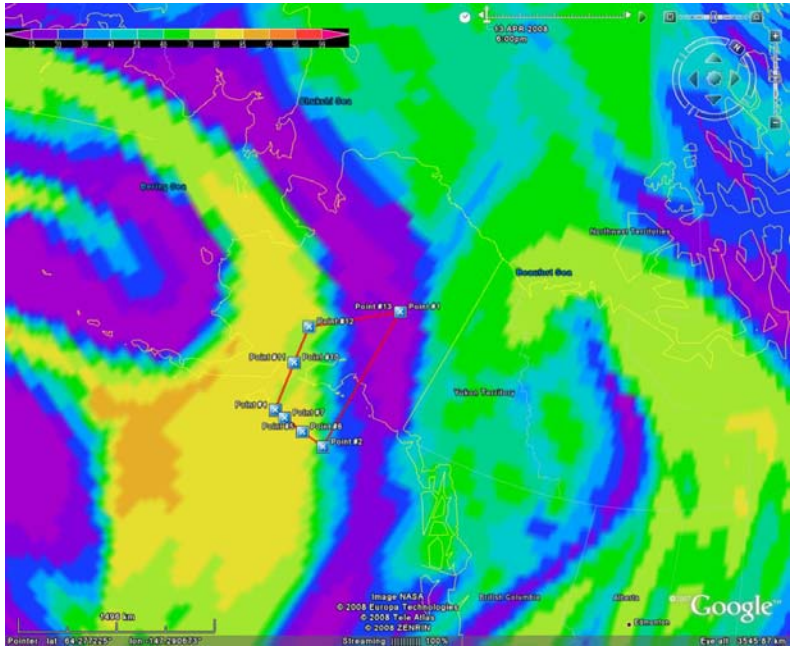
Similar to yesterday's forecast and not much different from today's sampling condition

P3 Flight for April 13 2008

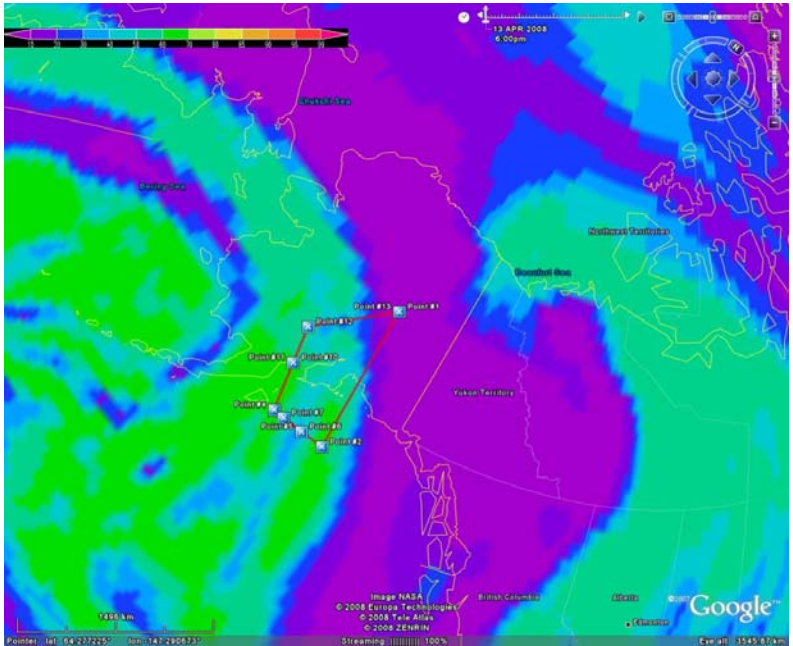


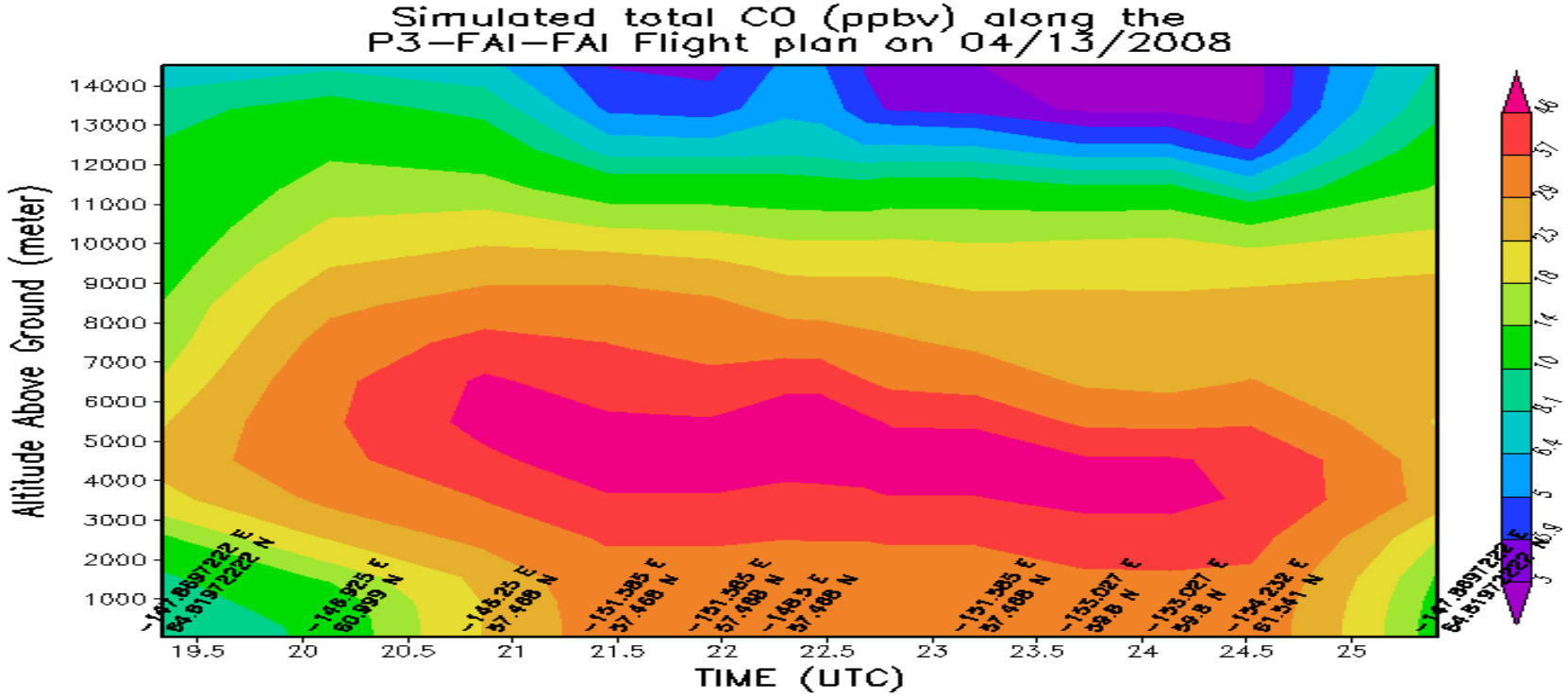
AOD, 18Z April 13, (42 hr)

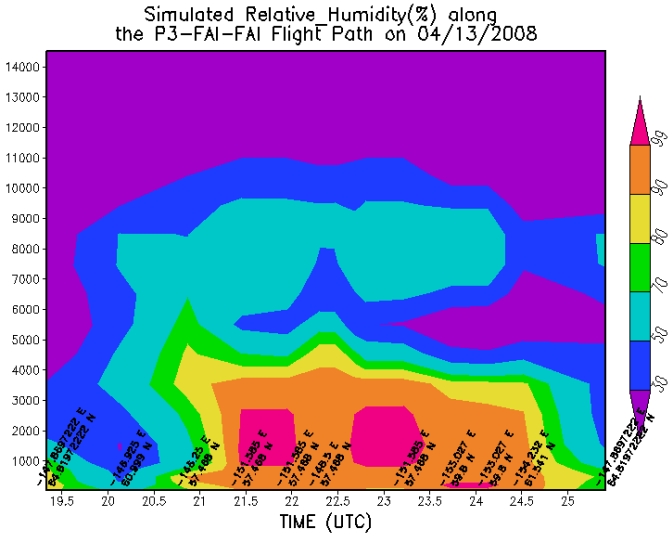
RH at 5.5 km

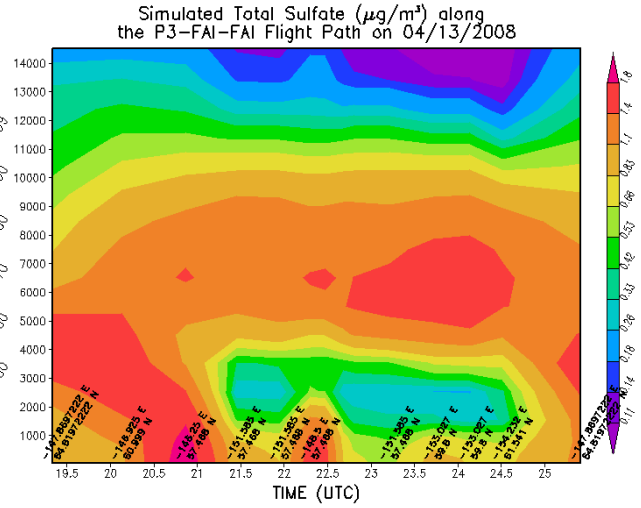


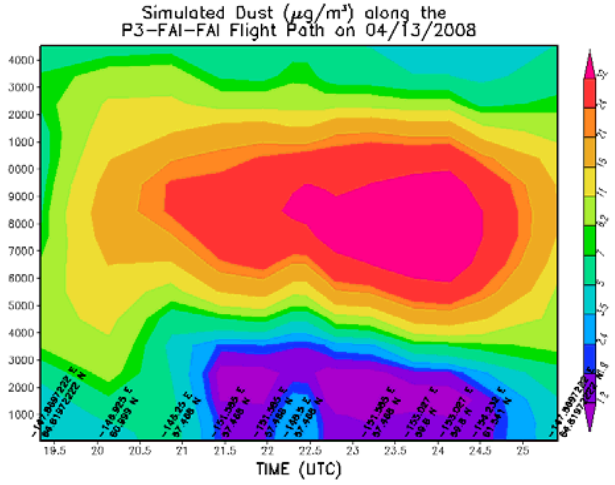
RH at 8.4 km




Simulated total CO (ppbv) along the
P3-FAI-FAI Flight plan on 04/13/2008
Altitude Above Ground (meter)
TIME (UTC)

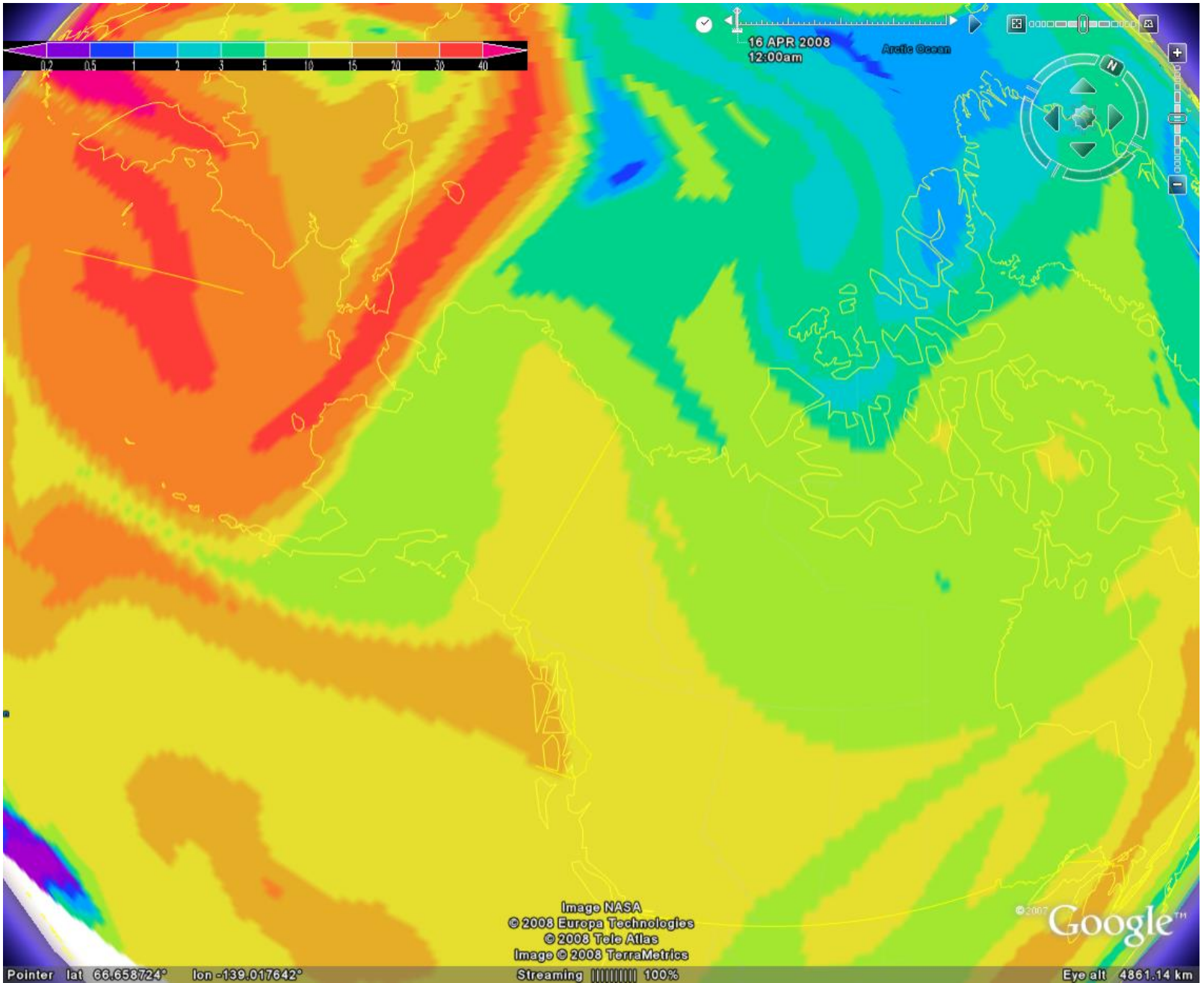

Simulated Relative_Humidity(%) along
the P3-FAI-FAI Flight Path on 04/13/2008
TIME (UTC)


Simulated Total Sulfate (μg/m³) along
the P3-FAI-FAI Flight Path on 04/13/2008
TIME (UTC)

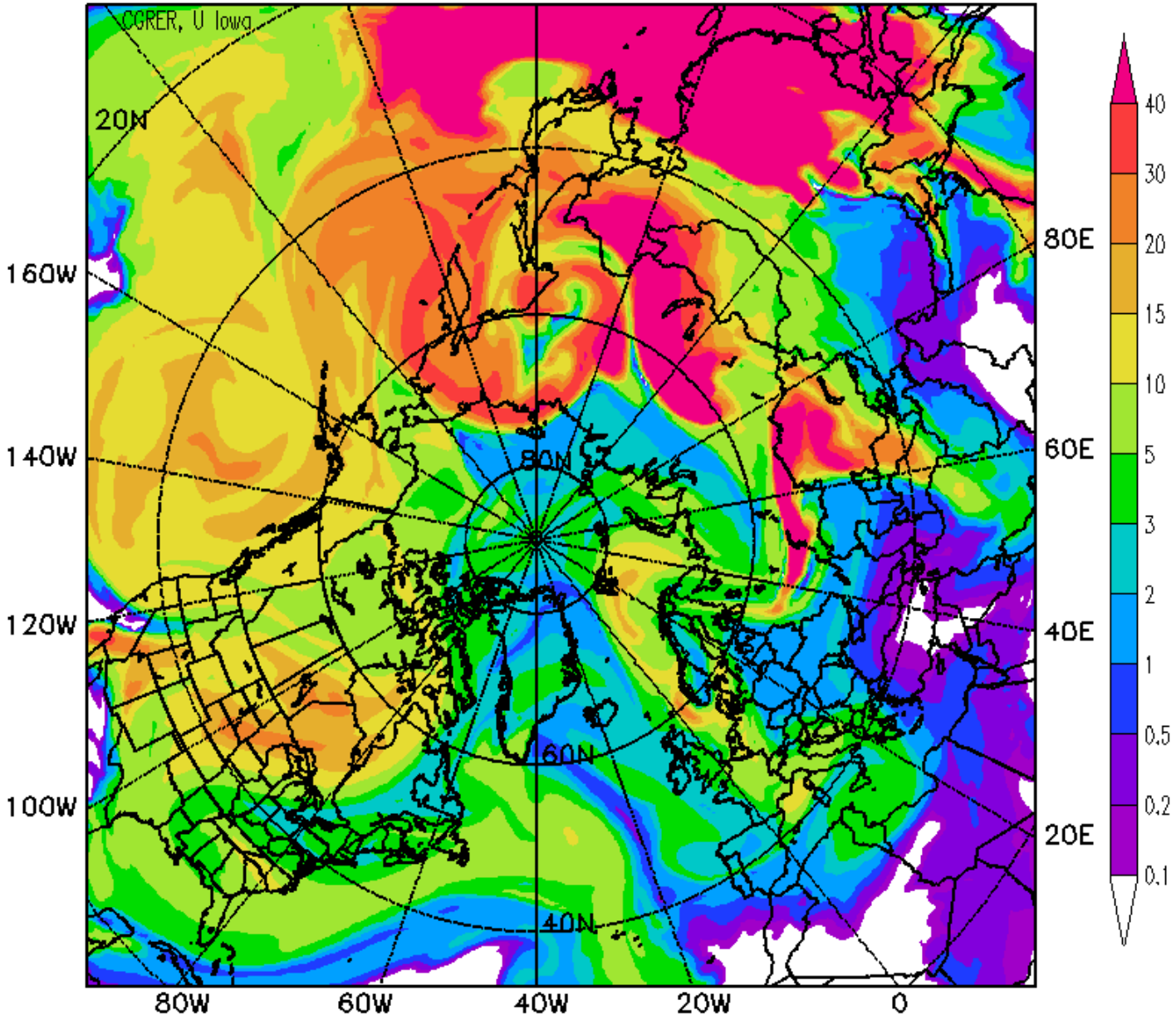

Simulated Dust (μg/m³) along the
P3-FAI-FAI Flight Path on 04/13/2008
TIME (UTC)

For DC8 Flight on April 15th.

Shown is Biomass CO at 5.4 km (96 hr forecast), 0Z April 16th

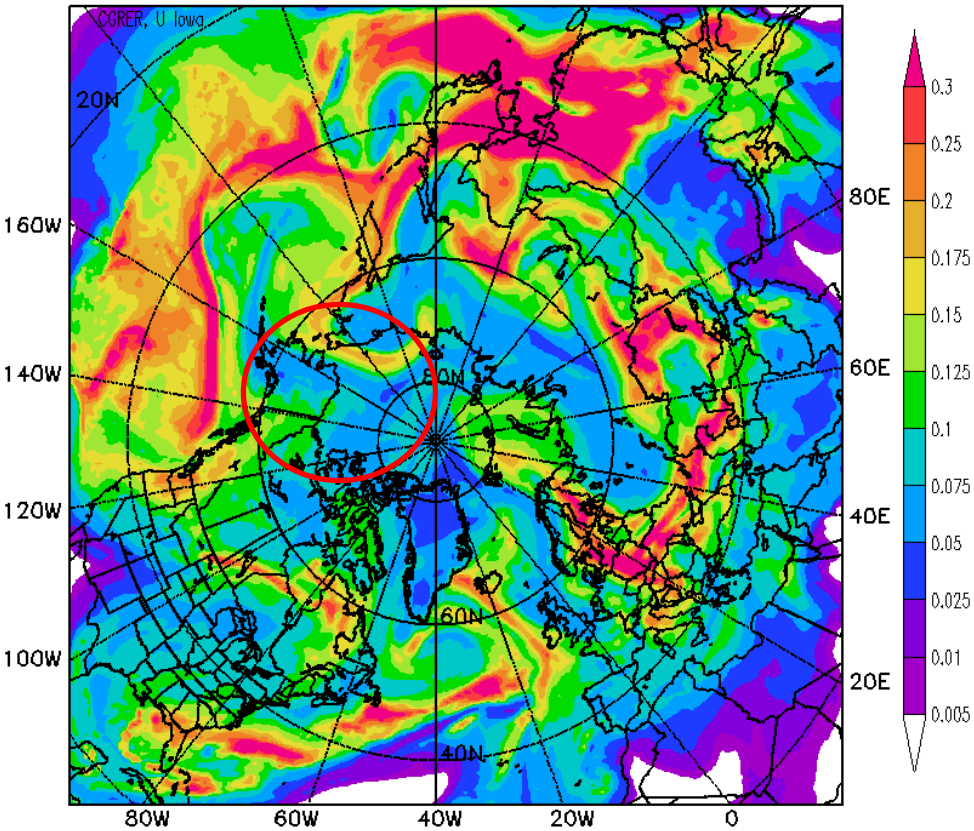


Simulated BB_CO (ppbv) in the 5.5km layer
at 0UTC, 04/15/2008

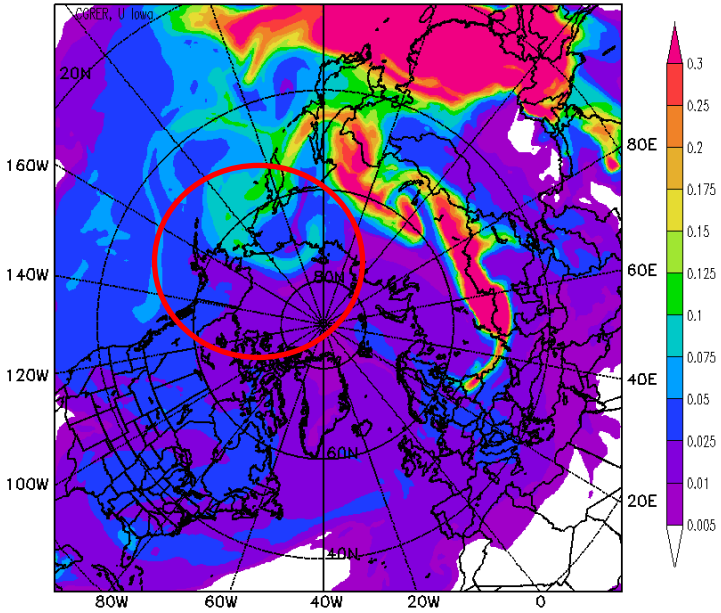


April 15th

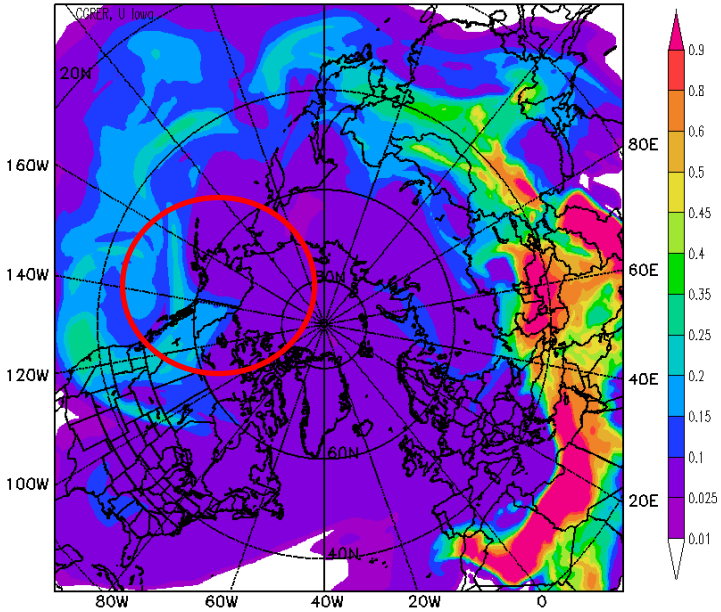
Simulated Sulfate_Aerosol_Optical_Depth
at 0UTC, 04/16/2008



Simulated OC_Aerosol_Optical_Depth
at 0UTC, 04/16/2008

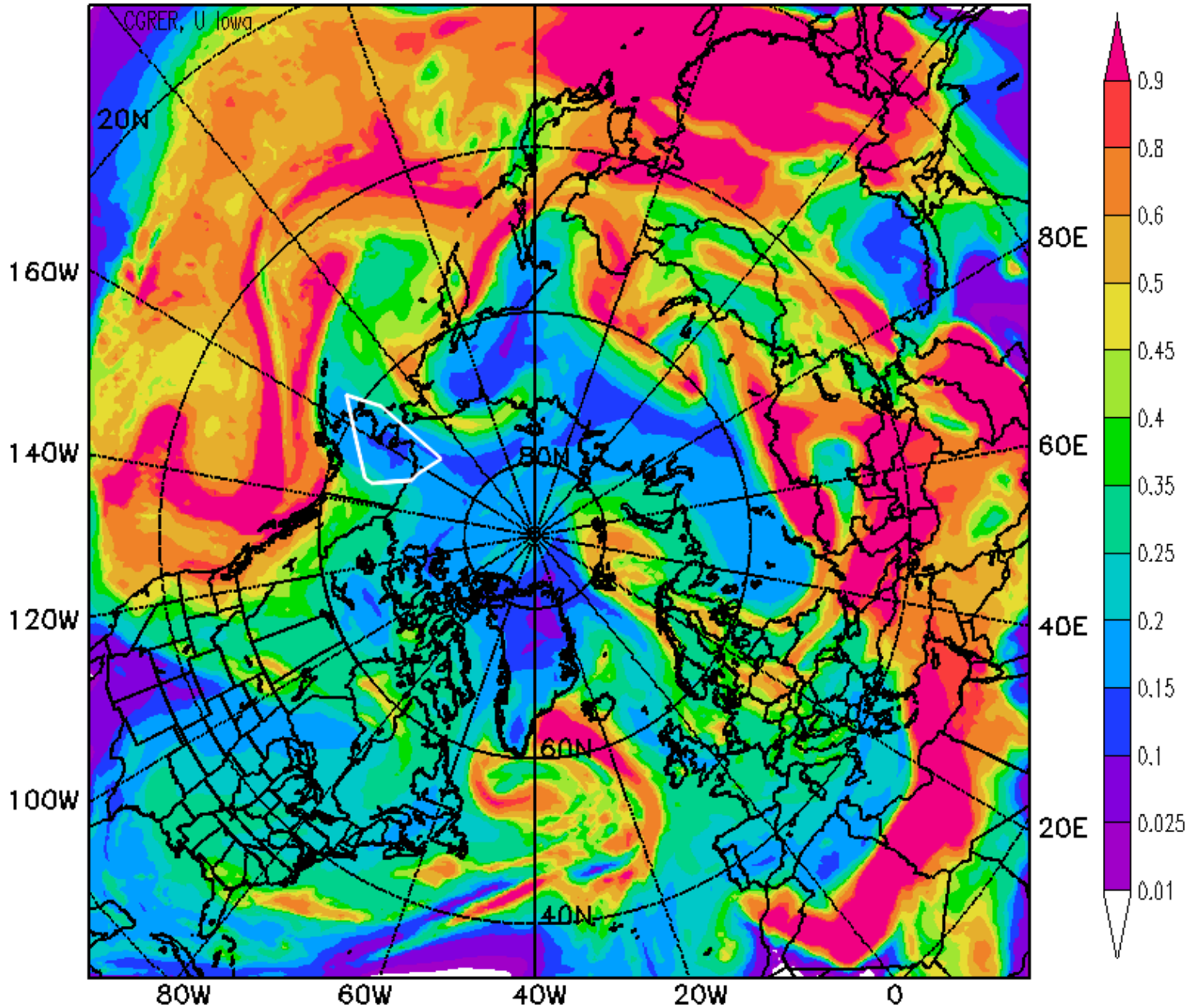


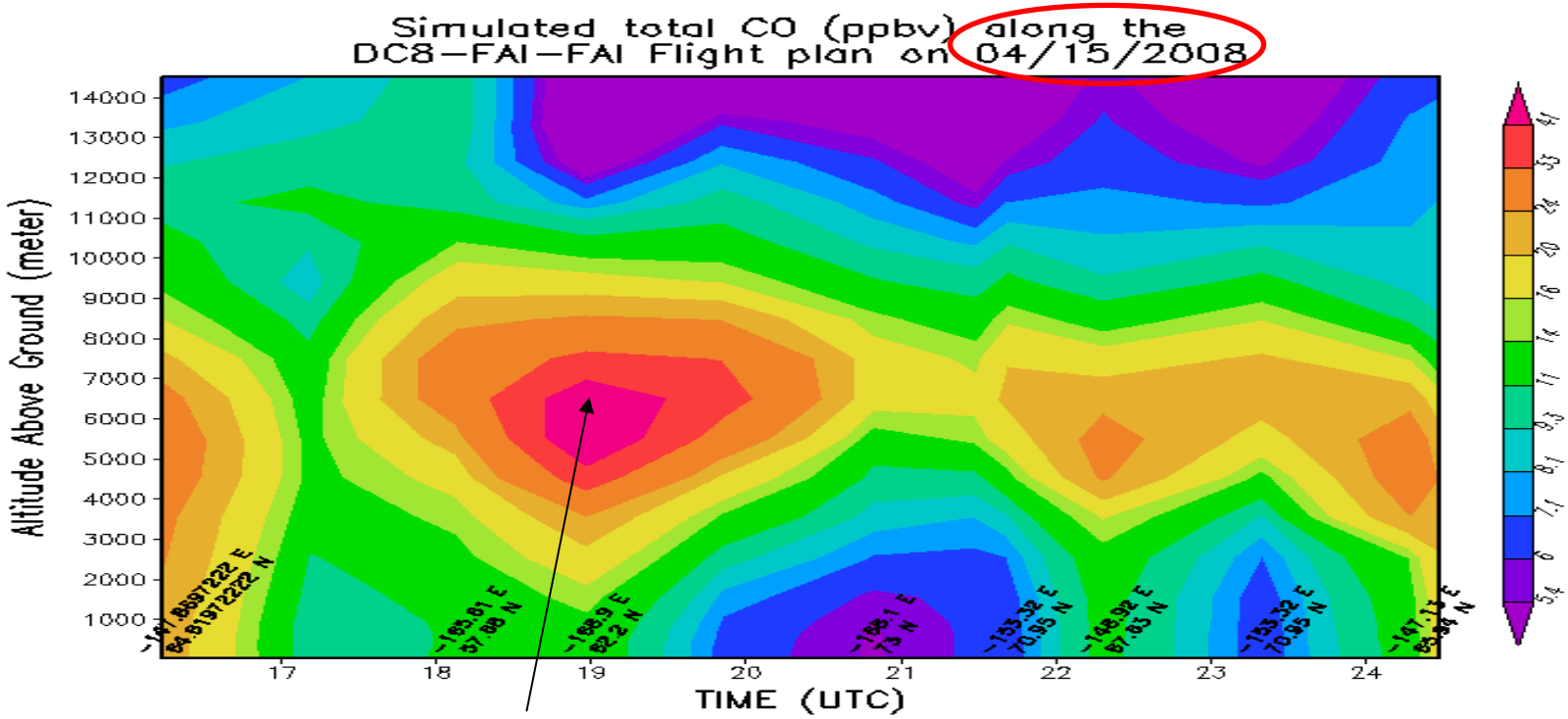
Simulated Dust_Aerosol_Optical_Depth
at 0UTC, 04/16/2008



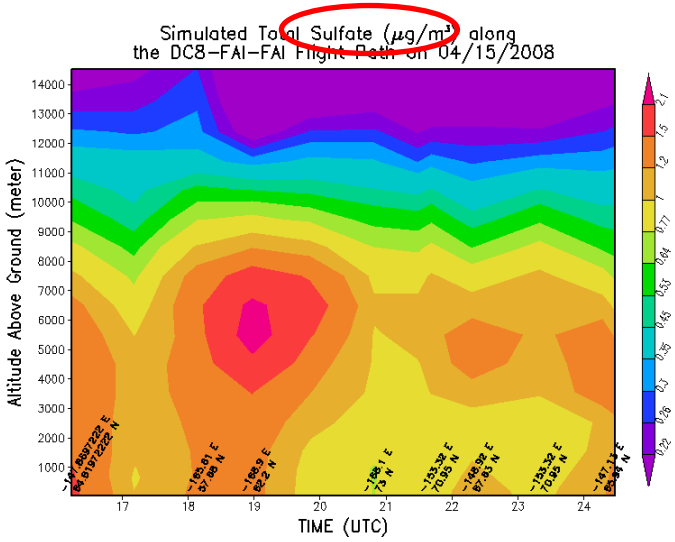
Need to start a bit later,
Plume too close to Russian Airspace

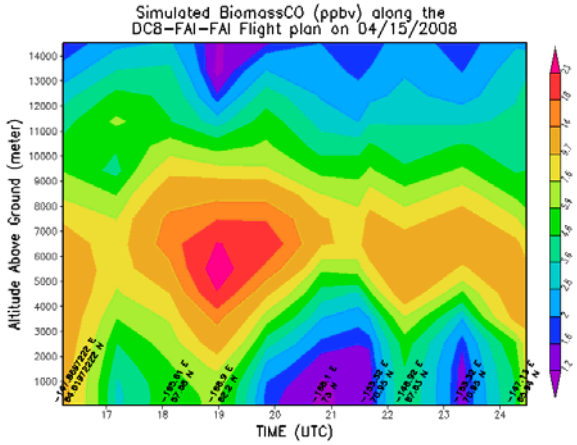
Simulated Column TOTAL_Aerosol_Optical_Depth
at 18UTC, 04/15/2008

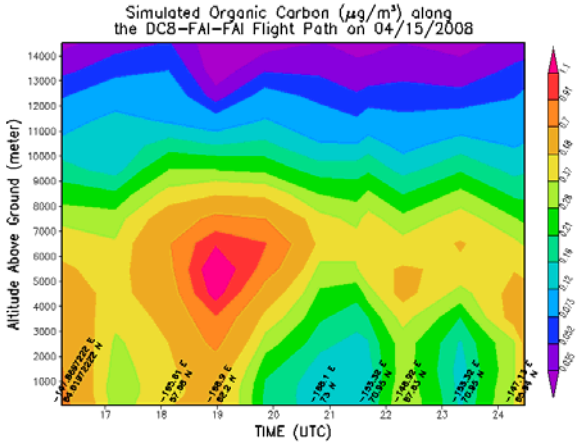




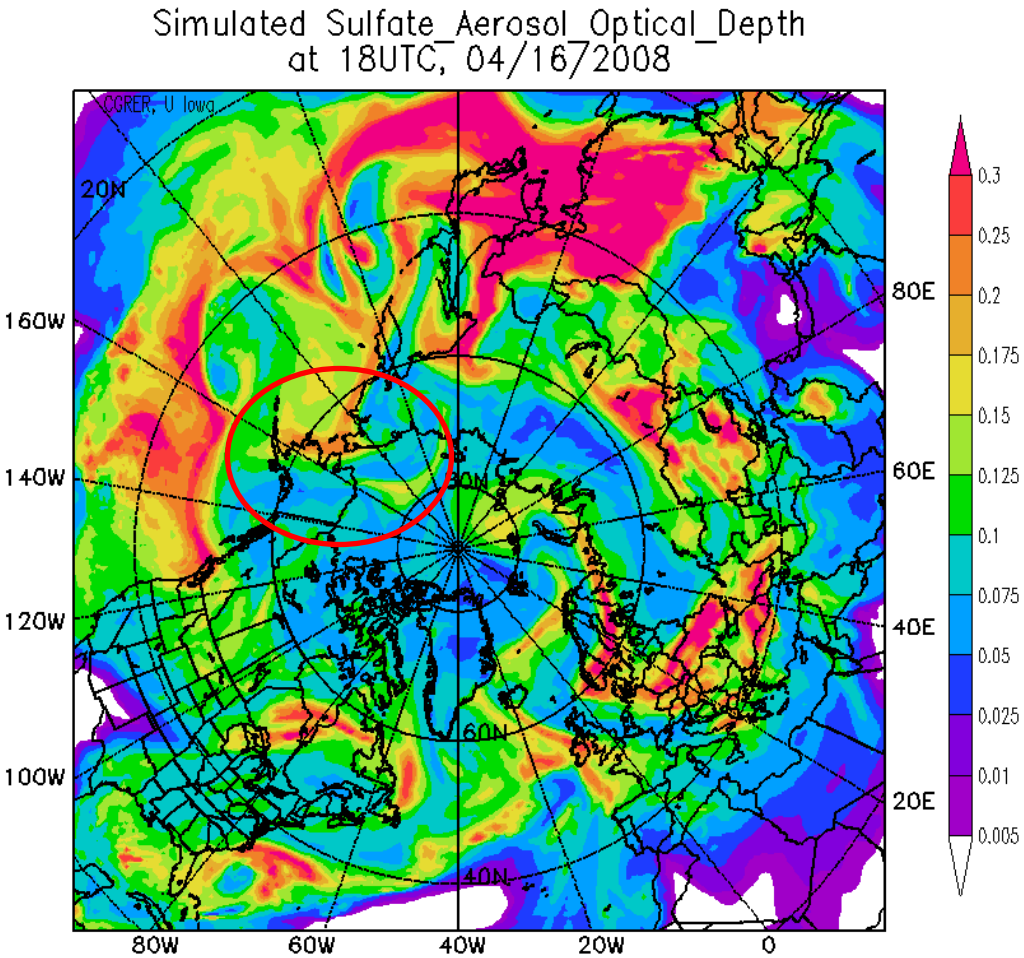
Biomass and Anthropogenic Mixture

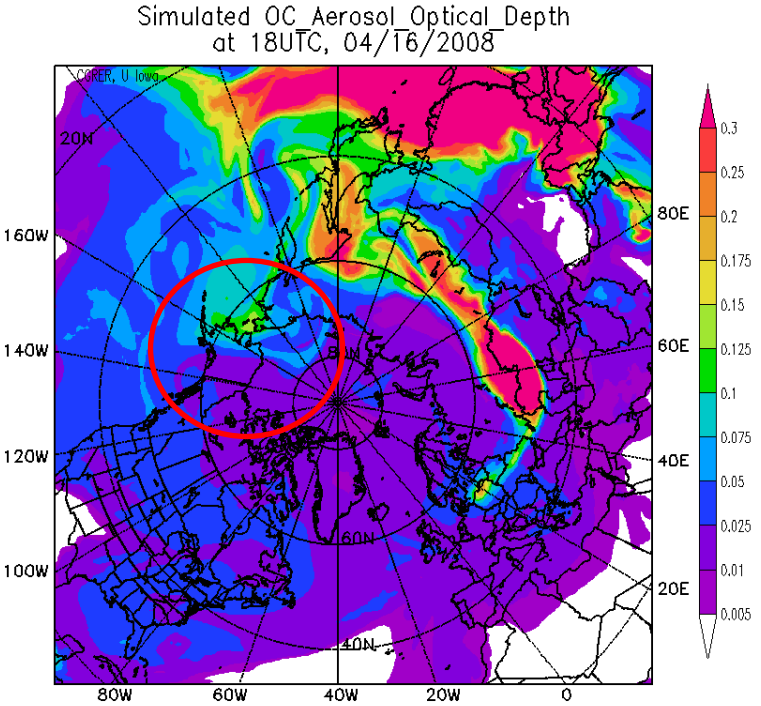


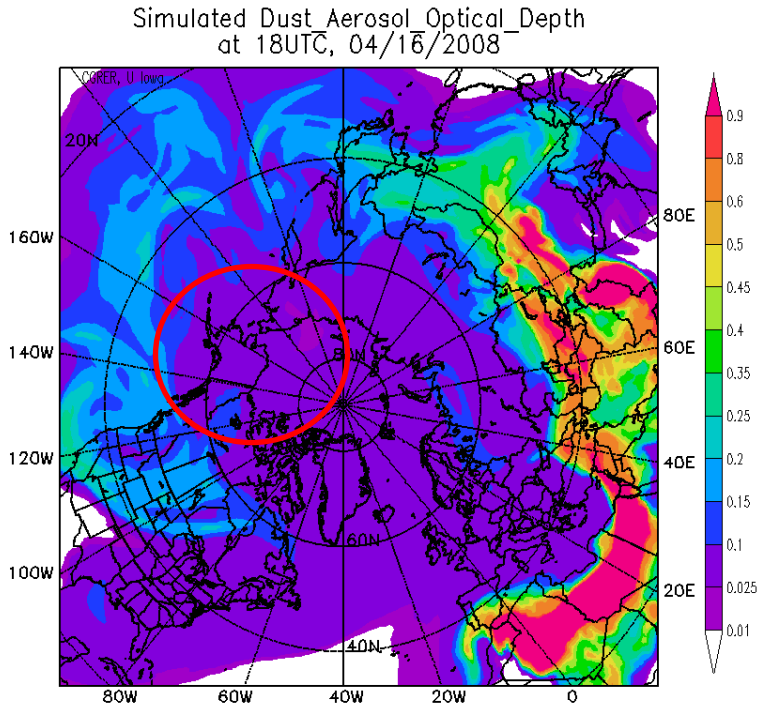


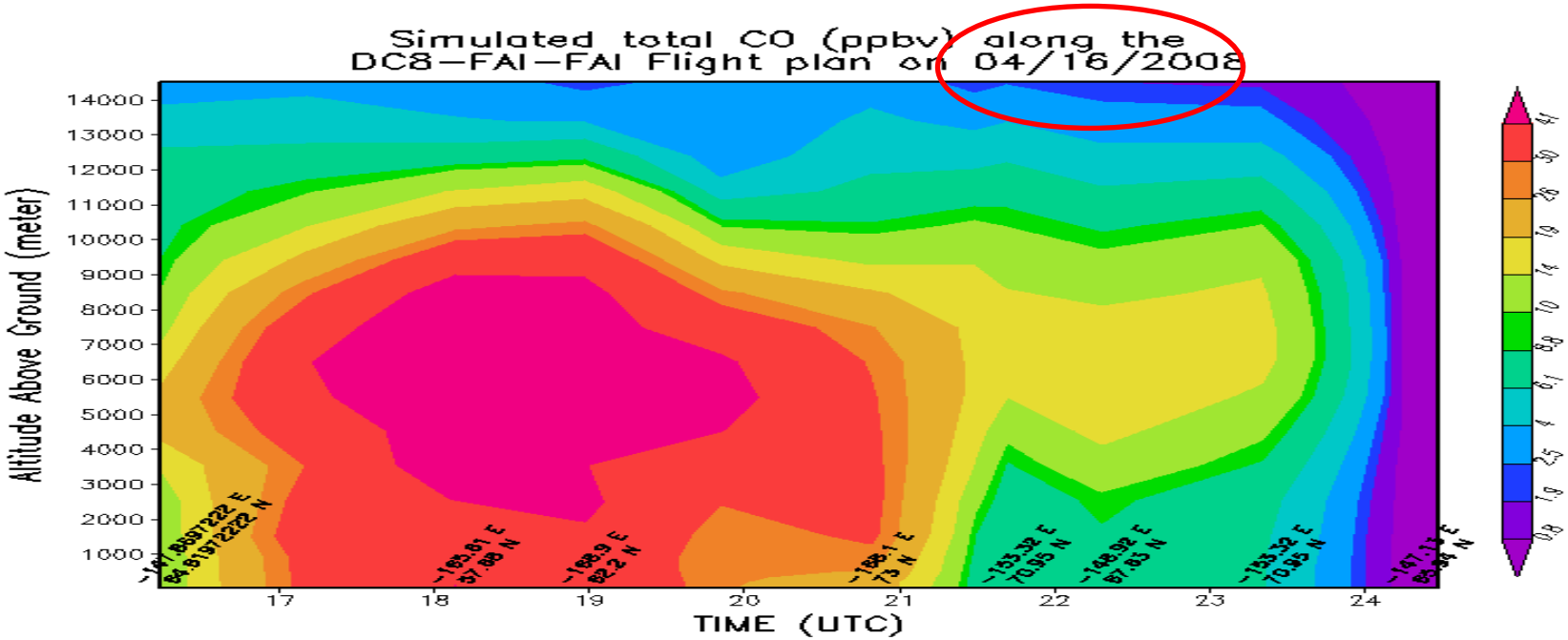


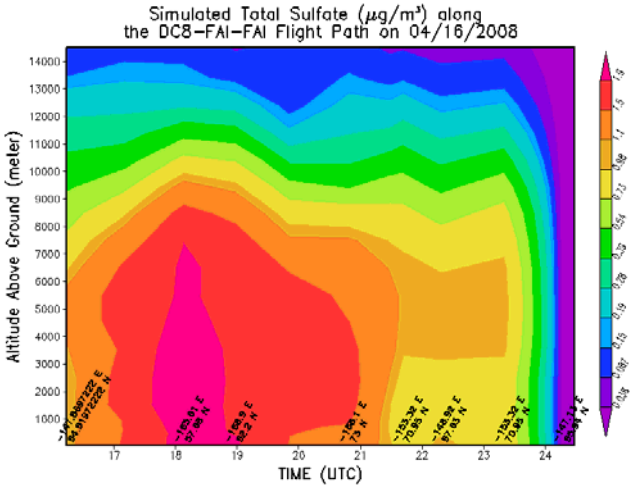
April 16th

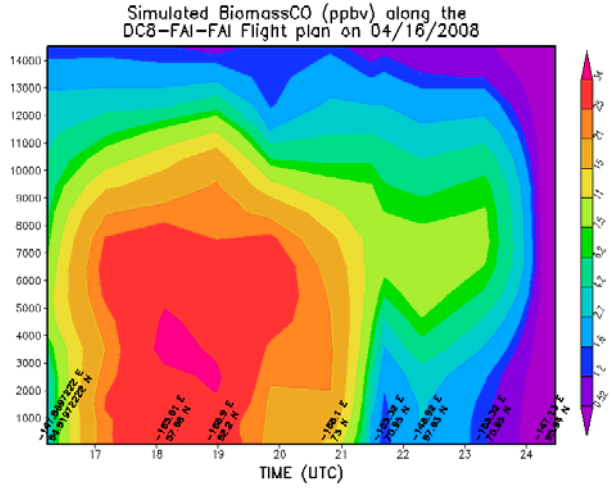

Simulated Sulfate_Aerosol_Optical_Depth
at 18UTC, 04/16/2008
CGRER, U Iowa
20N
30N
40N
60N
160W
140W
120W
100W
80E
60E
40E
20E
80W
60W
40W
20W
0
0.3
0.25
0.2
0.175
0.15
0.125
0.1
0.075
0.05
0.025
0.01
0.005

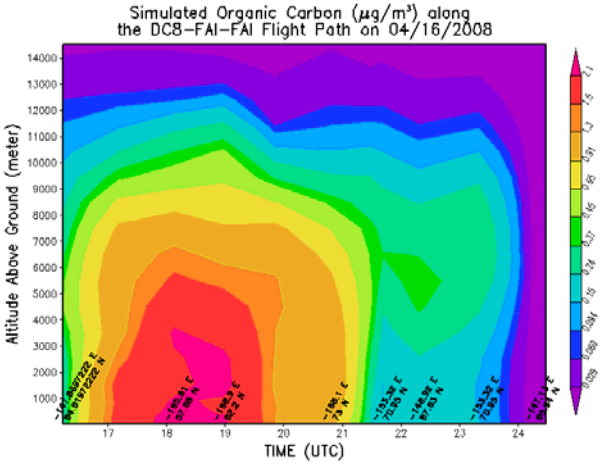

Simulated OC_Aerosol_Optical_Depth
at 18UTC, 04/16/2008
CGRER, U Iowa
20N
30N
40N
60N
160W
140W
120W
100W
80E
60E
40E
20E
80W
60W
40W
20W
0
0.3
0.25
0.2
0.175
0.15
0.125
0.1
0.075
0.05
0.025
0.01
0.005


Simulated Dust_Aerosol_Optical_Depth
at 18UTC, 04/16/2008
CGRER, U Iowa
20N
30N
40N
60N
160W
140W
120W
100W
80E
60E
40E
20E
80W
60W
40W
20W
0
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


Simulated total CO (ppbv) along the
DC8-FAI-FAI Flight plan on 04/16/2008
Altitude Above Ground (meter)
TIME (UTC)

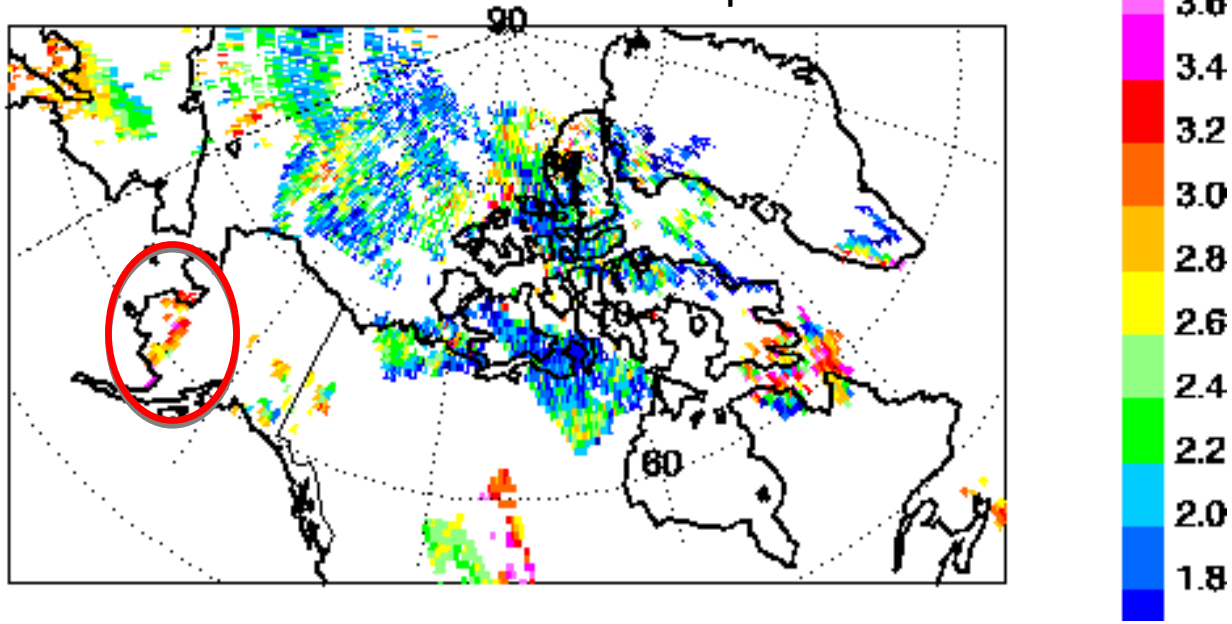

Simulated Total Sulfate (μg/m³) along
the DC8-FAI-FAI Flight Path on 04/16/2008
Altitude Above Ground (meter)
TIME (UTC)


Simulated BiomassCO (ppbv) along the
DC8-FAI-FAI Flight plan on 04/16/2008
TIME (UTC)

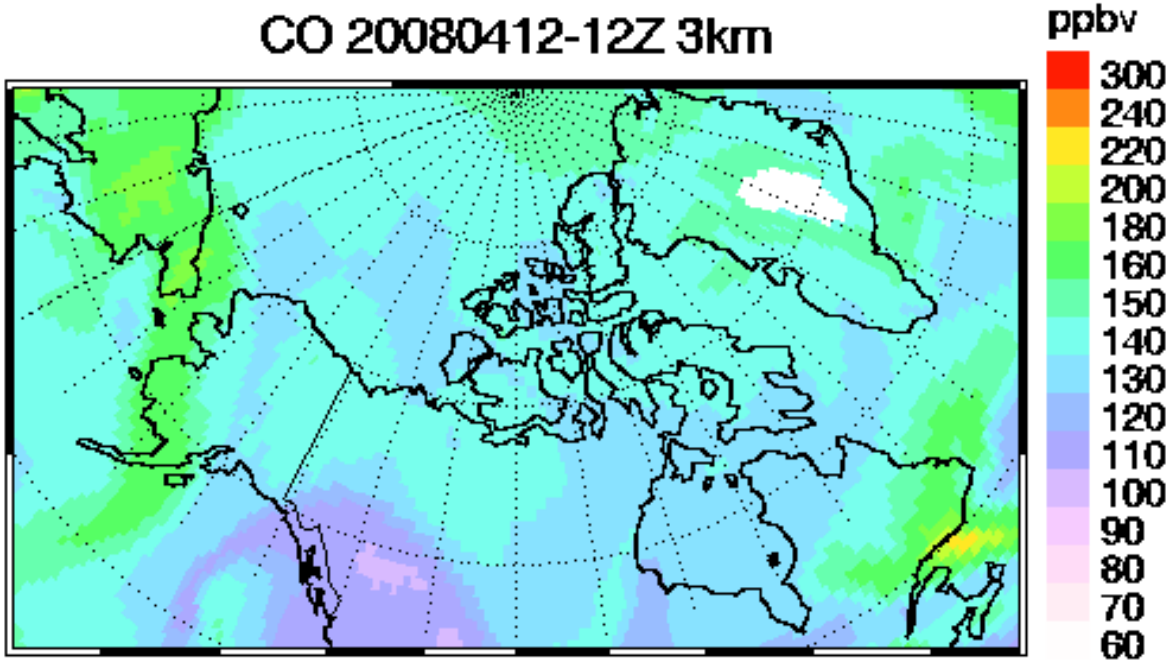

Simulated Organic Carbon (μg/m³) along
the DC8-FAI-FAI Flight Path on 04/16/2008
Altitude Above Ground (meter)
TIME (UTC)

Today

MOPITT CO TIR Column Apr 12



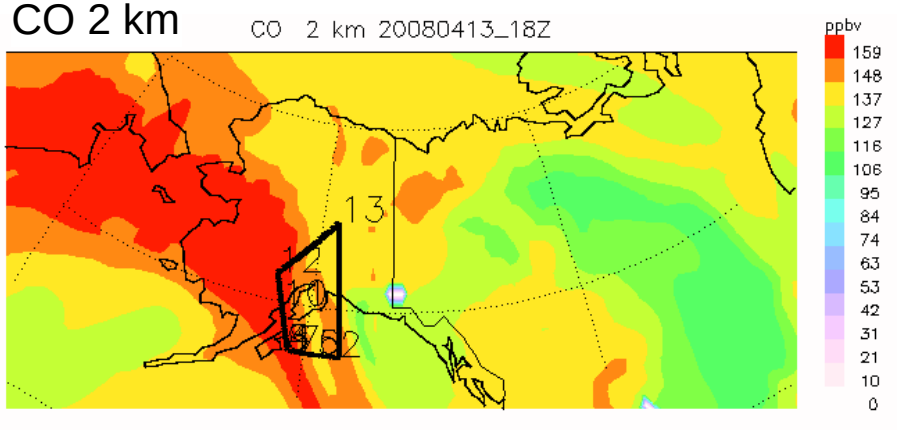
CO 20080412-12Z 3km



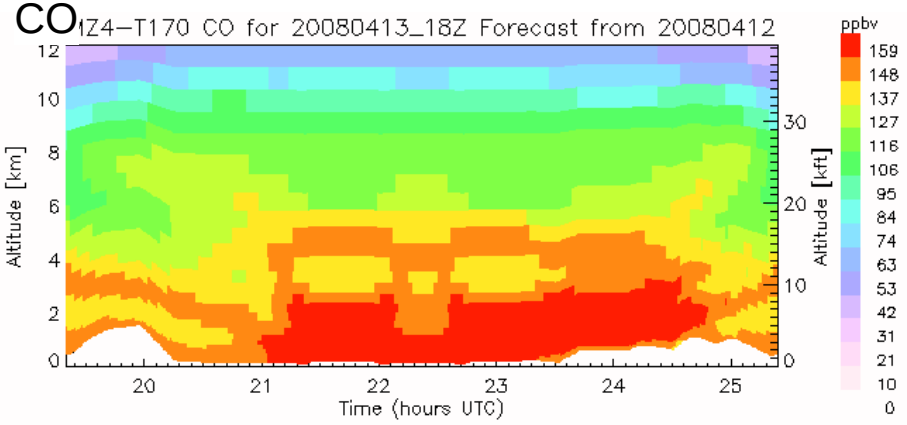
MOZART Forecast from 20080412

MZ4/GFS forecast from Apr 12 for Apr 13 – P3

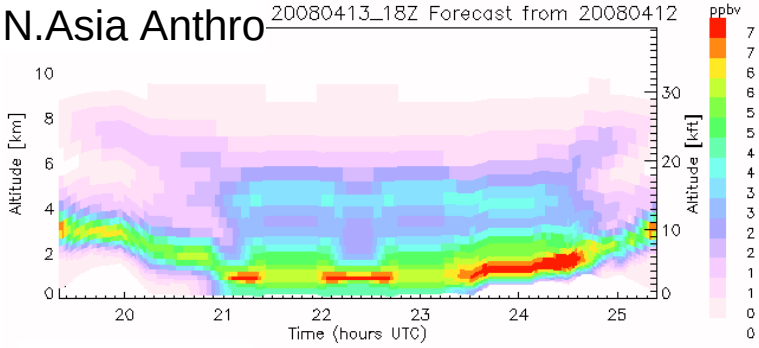
CO 2 km



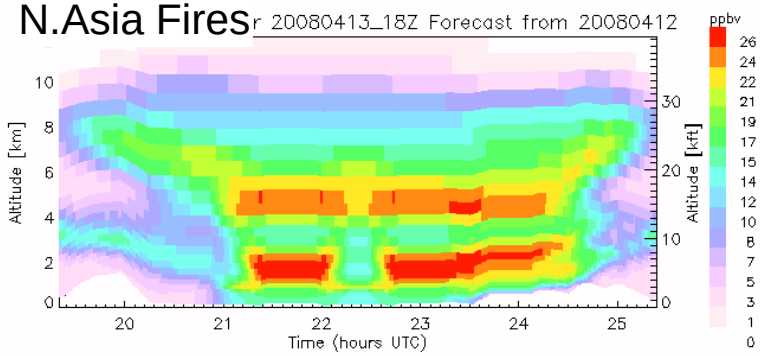
CO



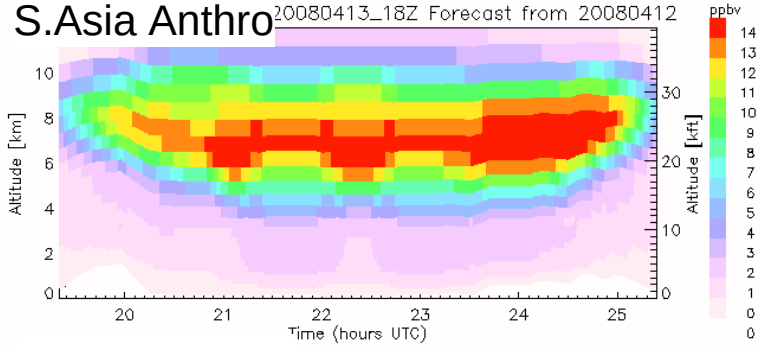
N.Asia Anthro



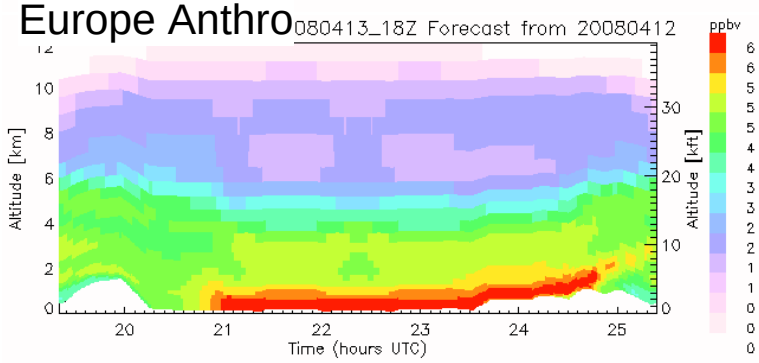
N.Asia Fires



S.Asia Anthro

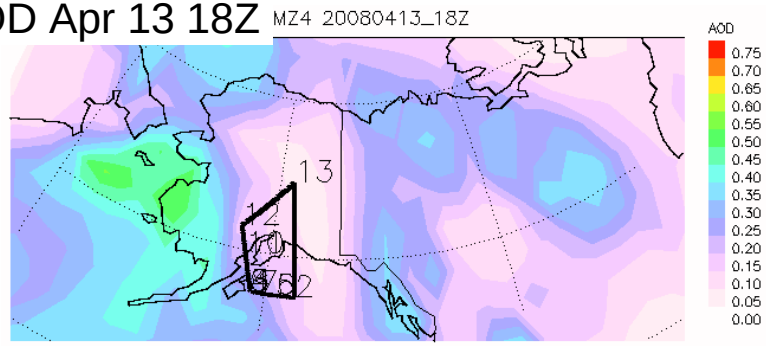


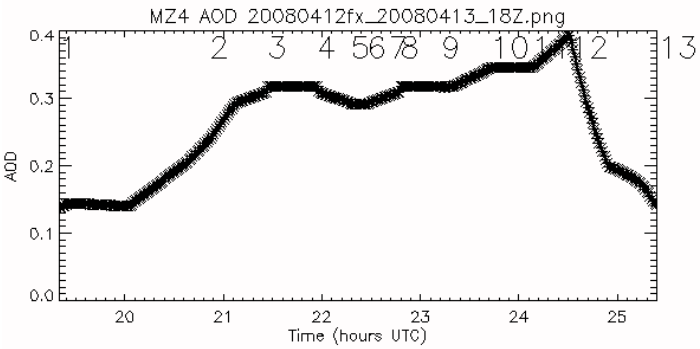
Europe Anthro



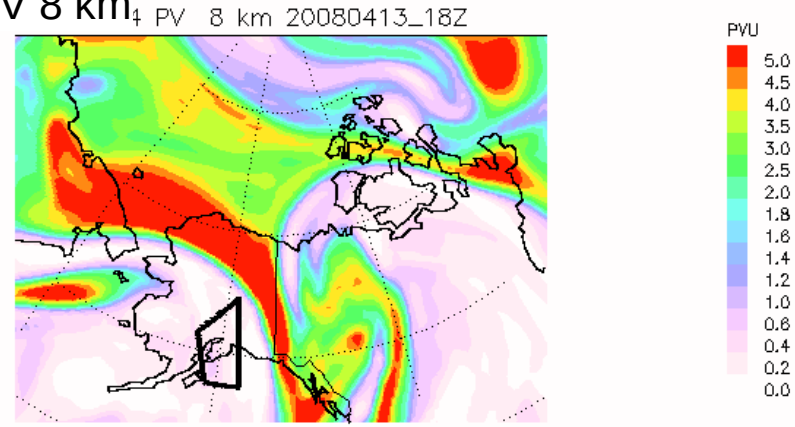
MZ4/GFS Apr 13 forecast from Apr 12

AOD Apr 13 18Z

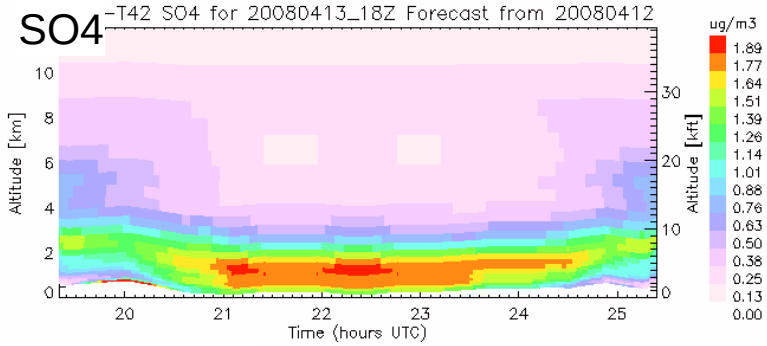




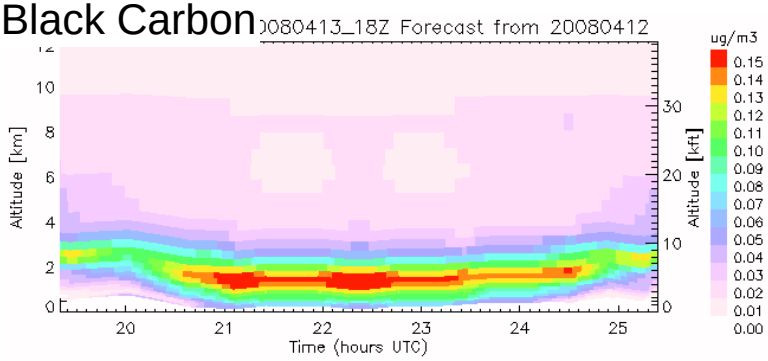
PV 8 km



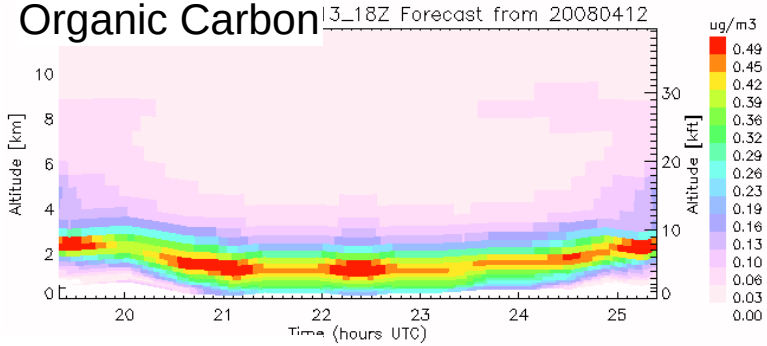
SO4



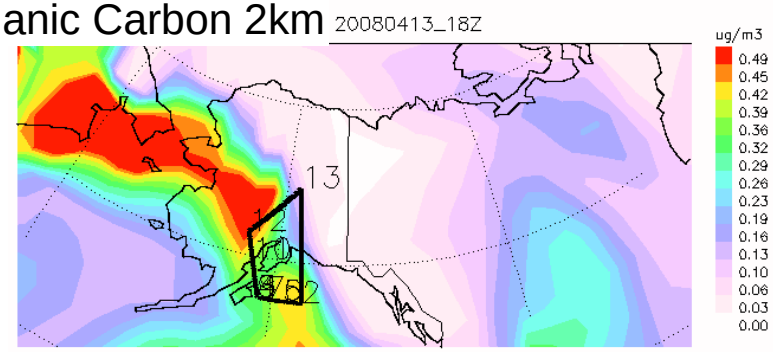
Black Carbon



Organic Carbon

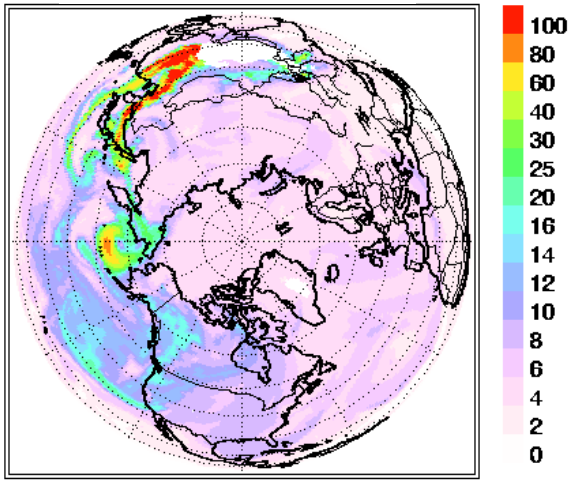


Organic Carbon 2km



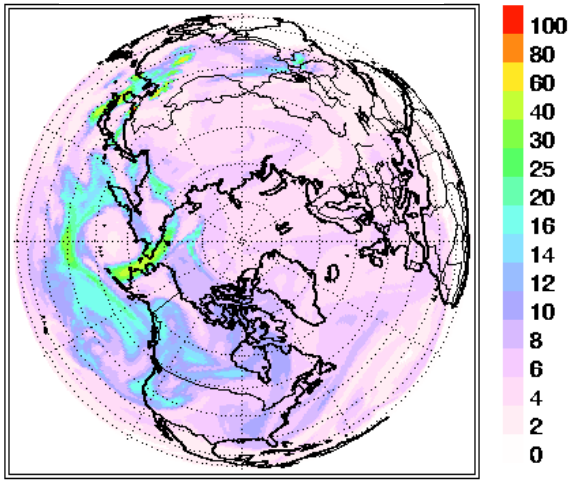
MZ4/GFS for Apr 15

N.Asia Anthro 3km



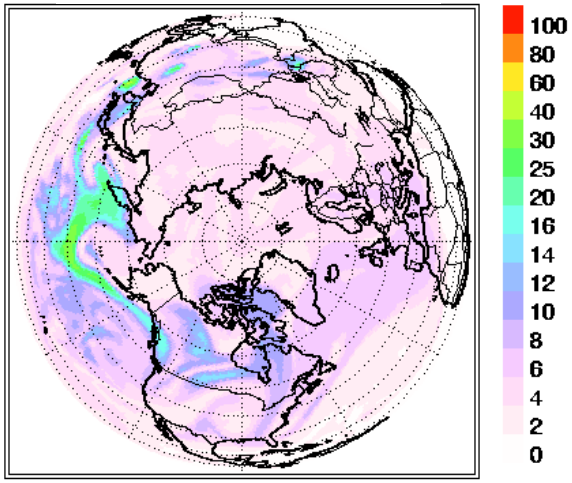
MOZART Forecast from 20080412

N.Asia Anthro 6km



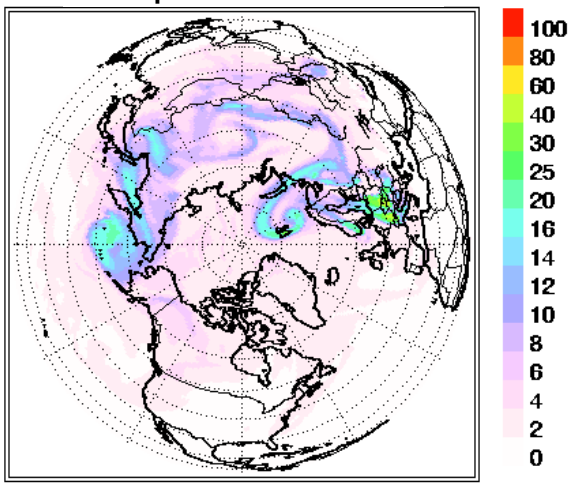
MOZART Forecast from 20080412

N.Asia Anthro 9km



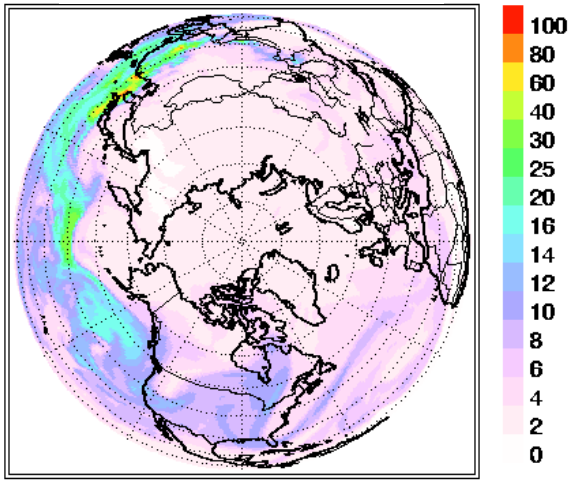
MOZART Forecast from 20080412

Europe Anthro 6 km



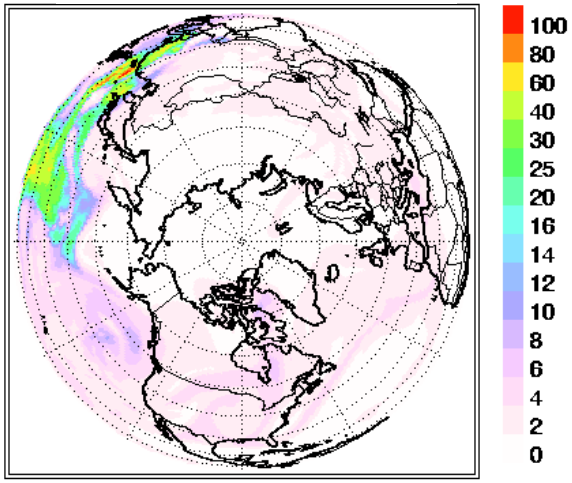
MOZART Forecast from 20080412

S.Asia Anthro 6km



MOZART Forecast from 20080412

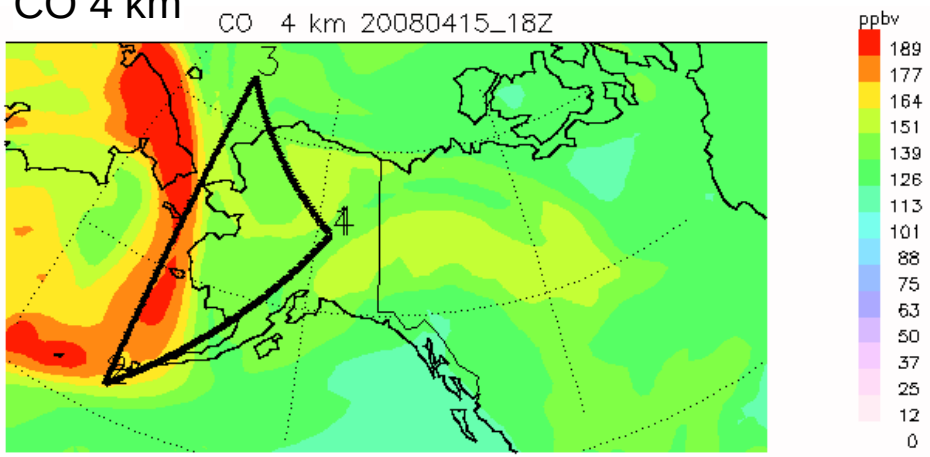
S.Asia Fires 9km



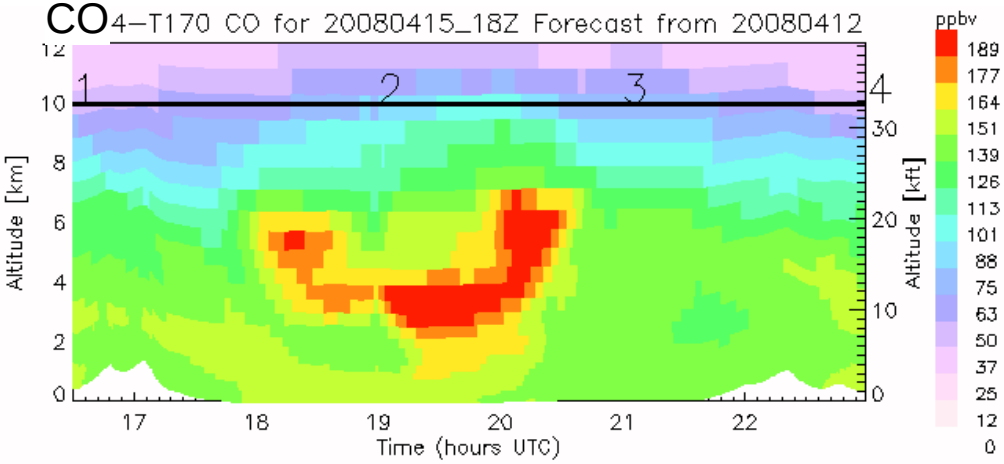
MOZART Forecast from 20080412

MZ4/GFS forecast from Apr 12 for Apr 13 – P3

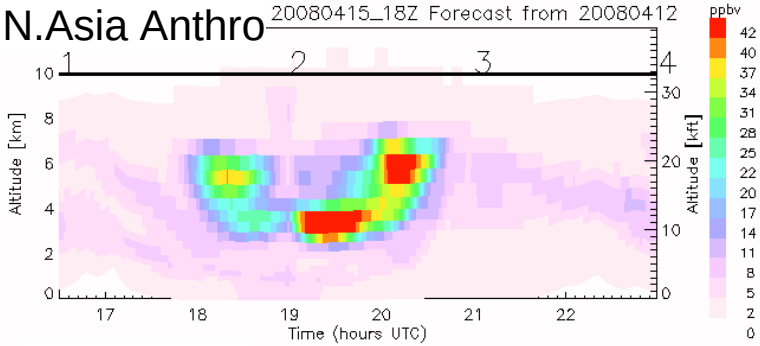
CO 4 km



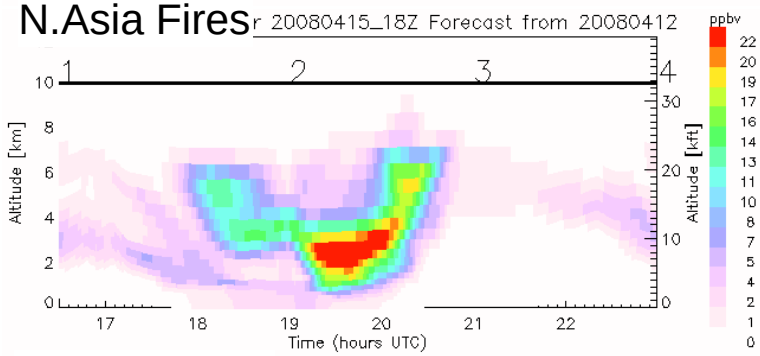
CO



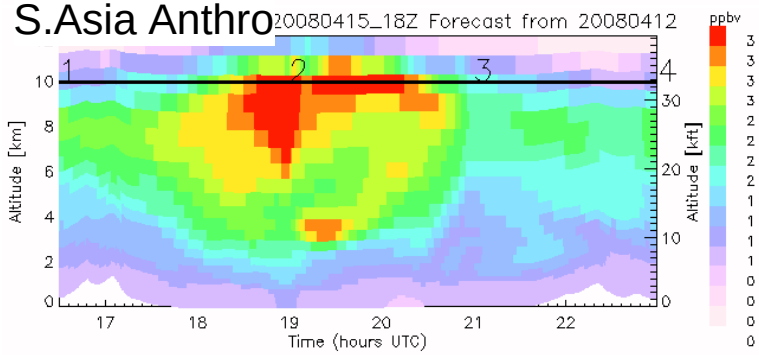
N.Asia Anthro



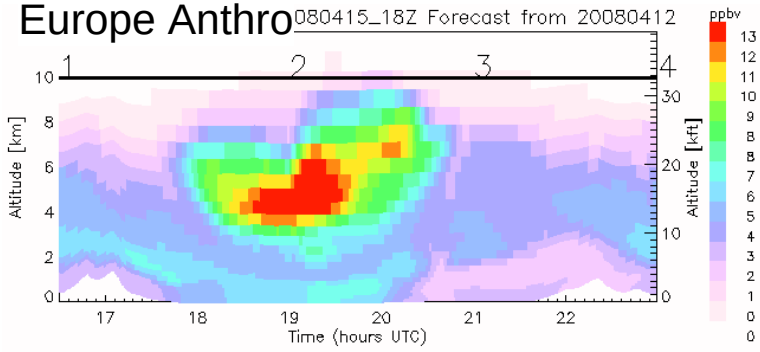
N.Asia Fires



S.Asia Anthro

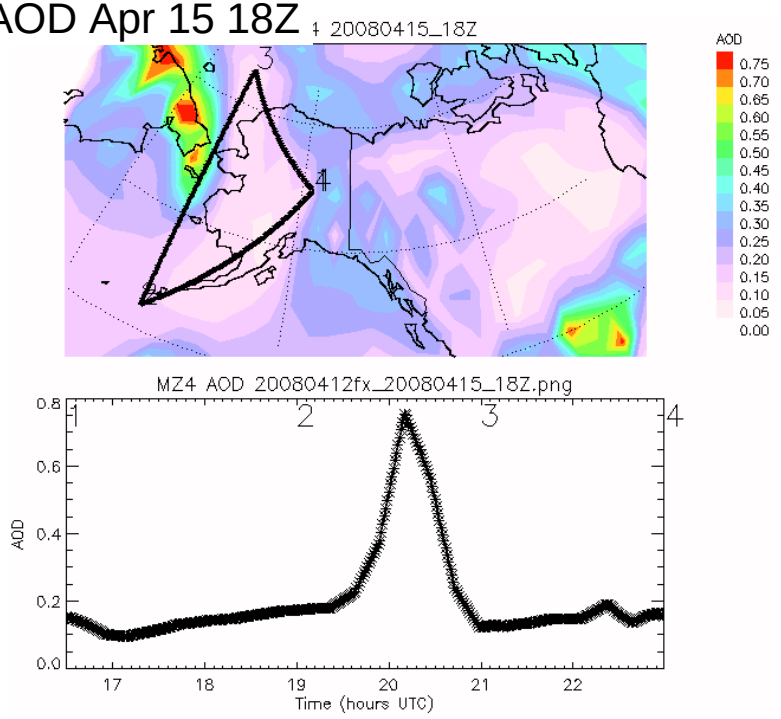


Europe Anthro



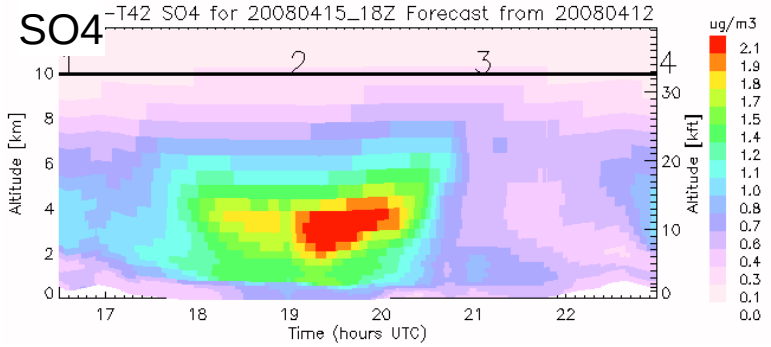
MZ4/GFS Apr 15 forecast from Apr 12

AOD Apr 15 18Z

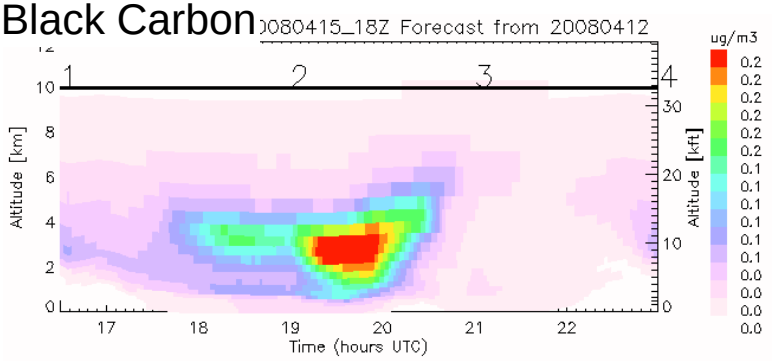


PV 8 km

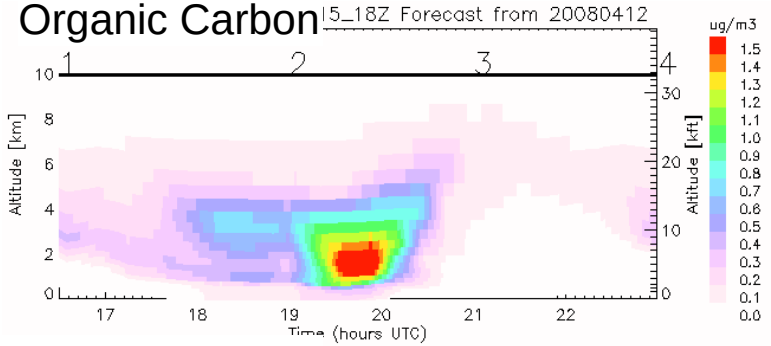
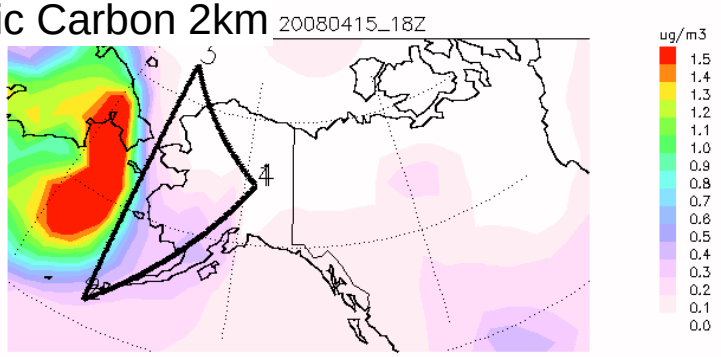
SO4



Black Carbon



Organic Carbon



Organic Carbon 2km