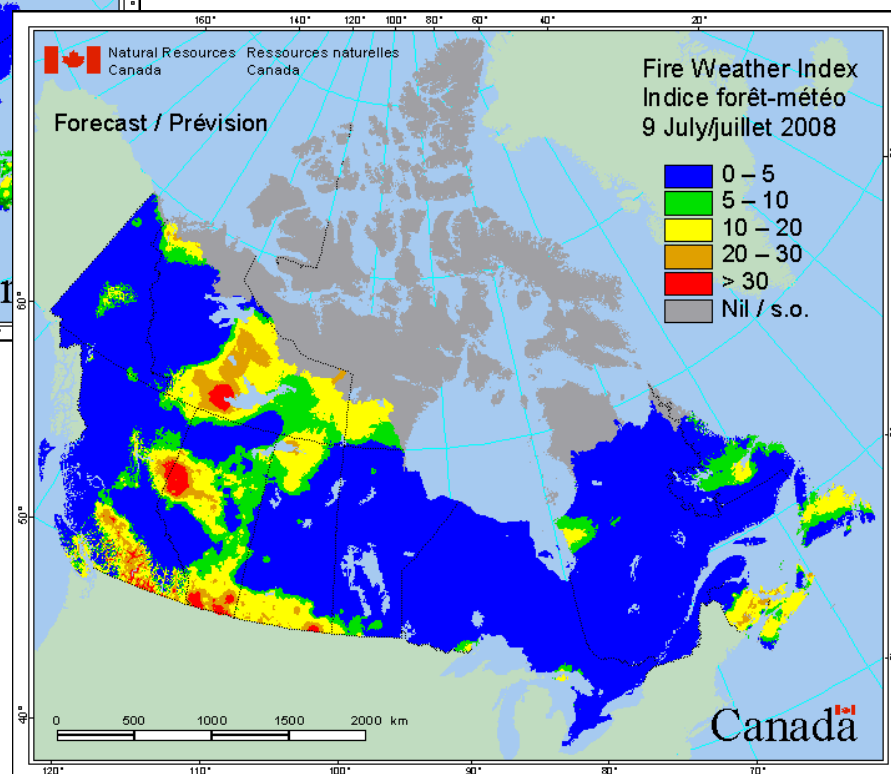
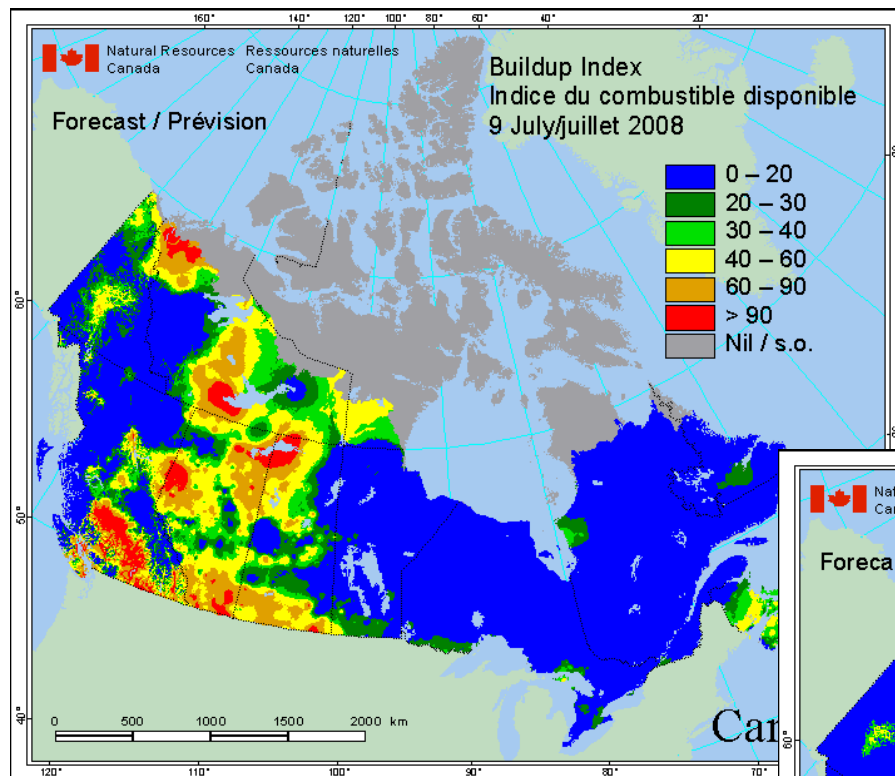
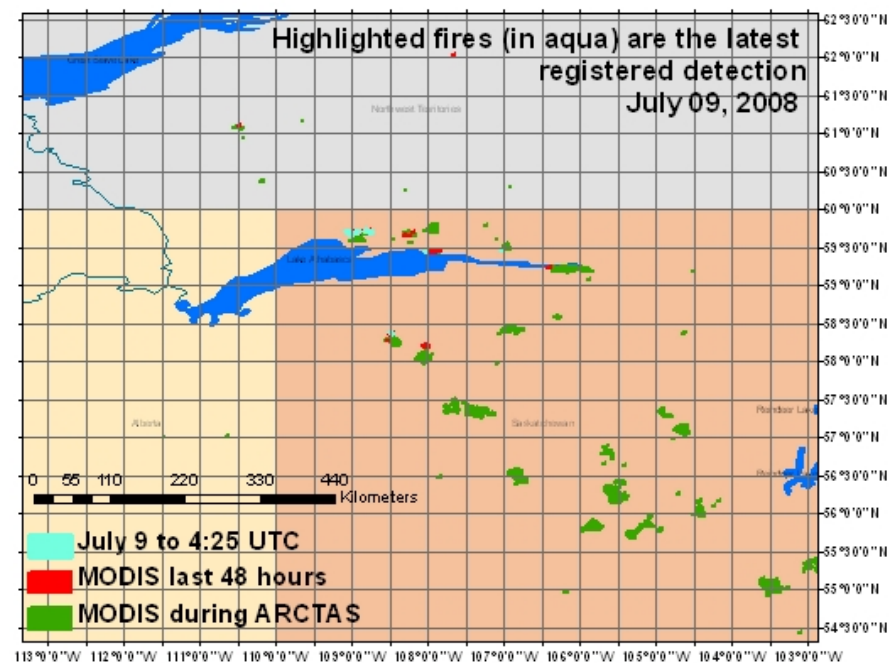
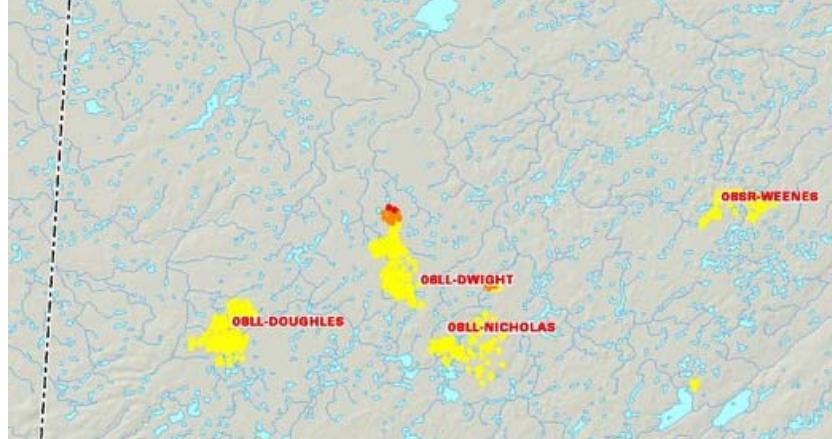
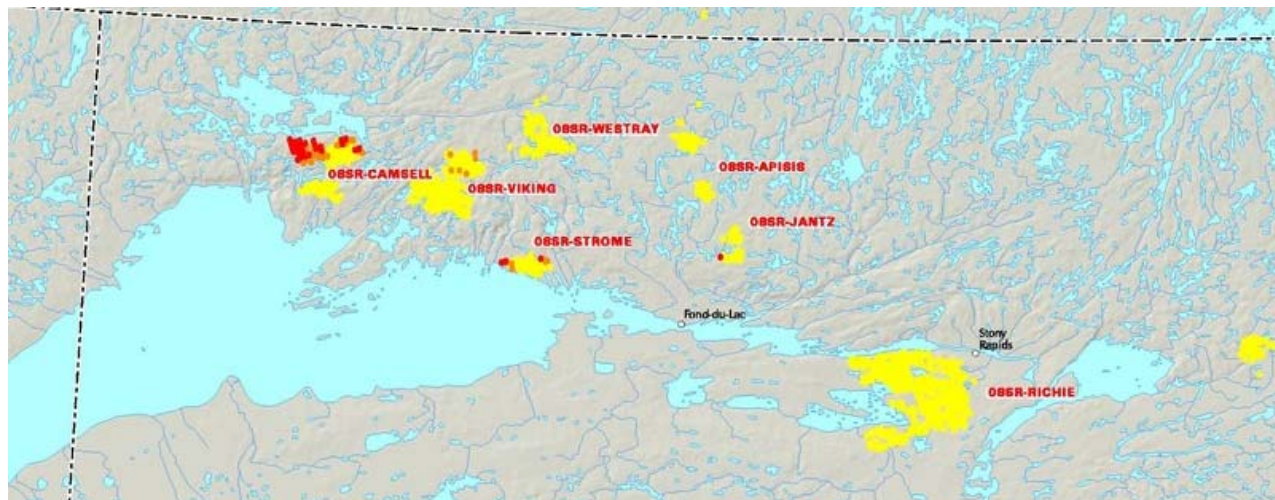


Fire Activity/Potential July 9/08

- Athabasca fires remain active – some cloud in area
- P3 covering these later today
- Alaska pyroCb last night - monitoring
- CA fires extremely active – transit flight?





Highlighted fires (in aqua) are the latest registered detection
July 09, 2008

0 337.5675 1,350 2,025 2,700 Kilometers

July 9 to 4:25 UTC
MODIS last 48 hours
MODIS during ARCTAS

Highlighted fires (in aqua) are the latest registered detection
July 09, 2008

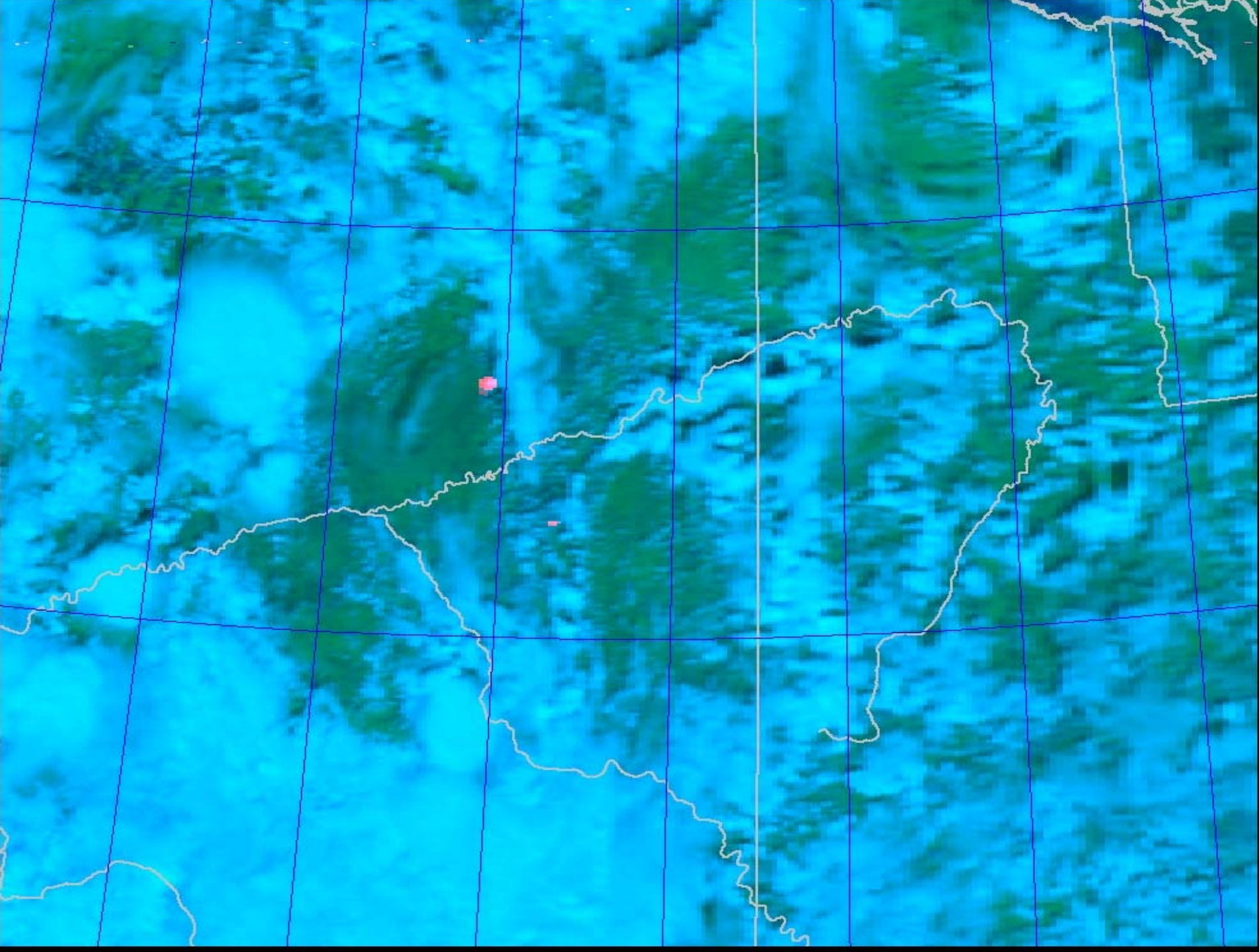
0 337.5675 1,350 2,025 2,700 Kilometers

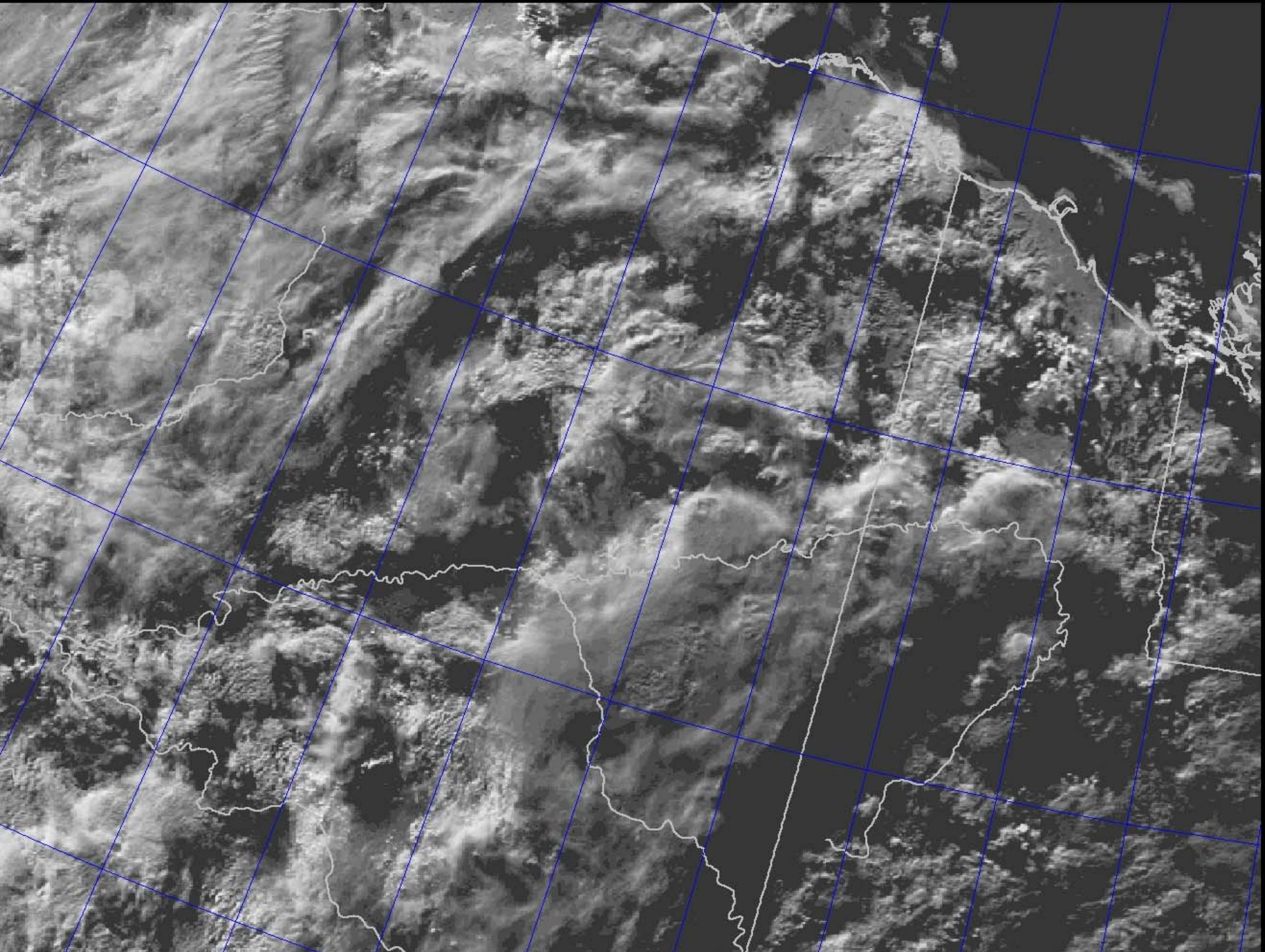
July 9 to 4:25 UTC
MODIS last 48 hours
MODIS during ARCTAS

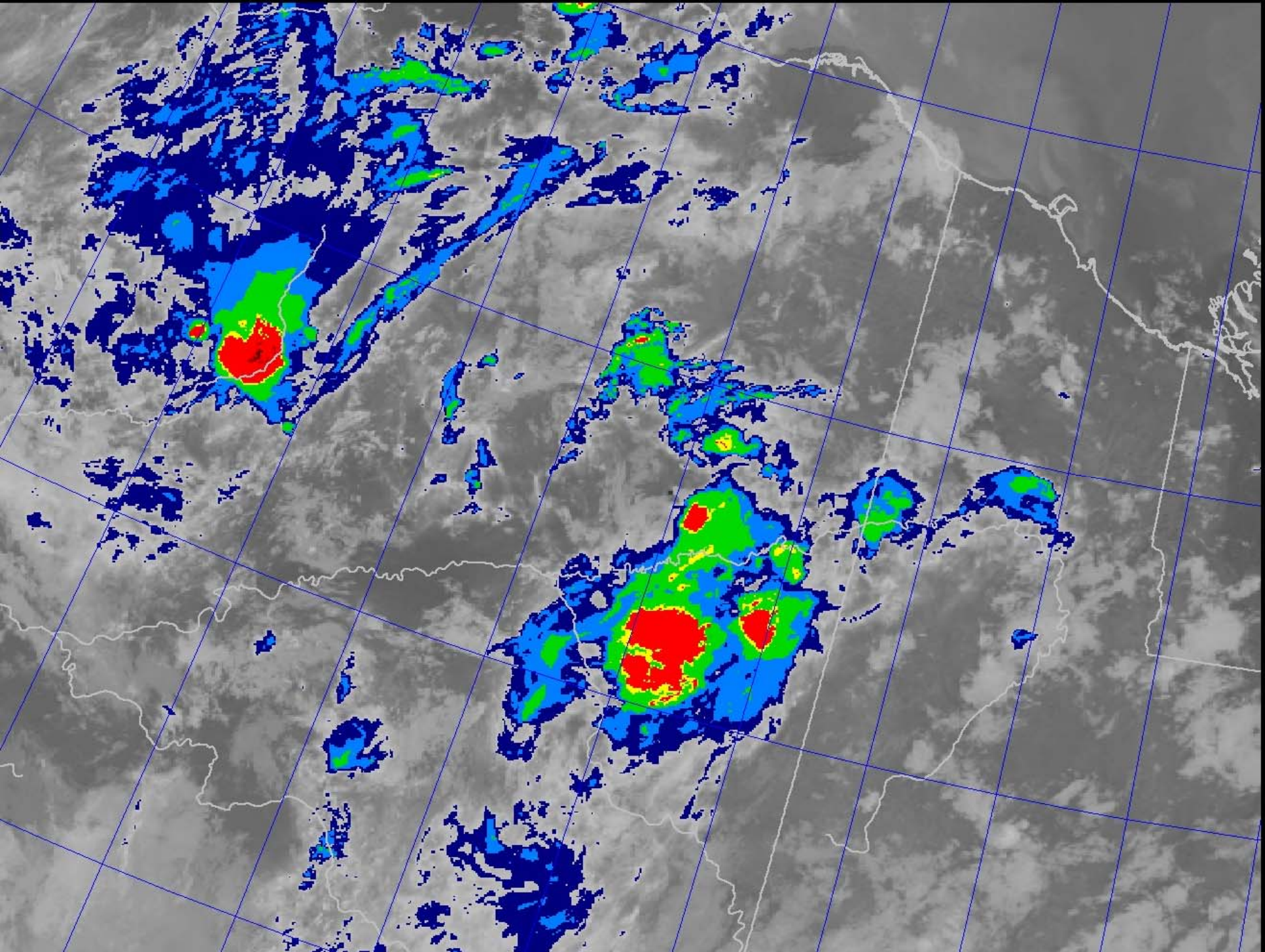
Highlighted fires (in aqua) are the latest registered detection
July 09, 2008

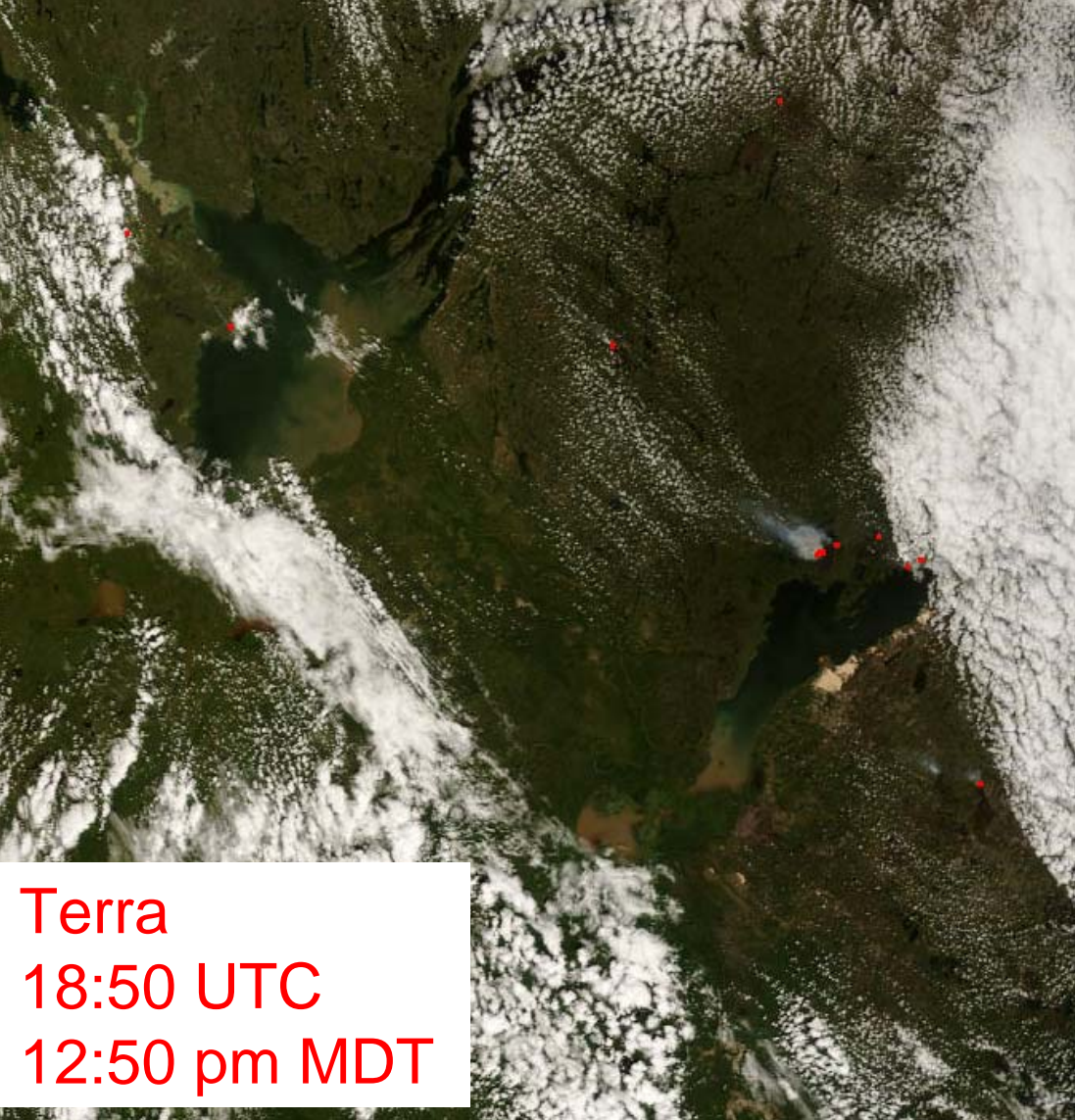
0 337.5675 1,350 2,025 2,700 Kilometers

July 9 to 4:25 UTC
MODIS last 48 hours
MODIS during ARCTAS









Terra
18:50 UTC
12:50 pm MDT

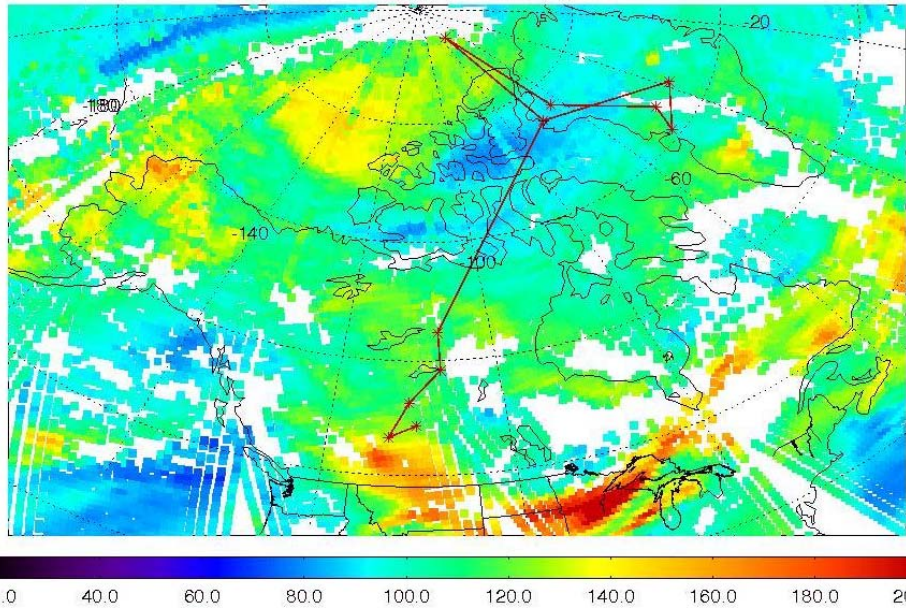
Fires at Athabasca and
Great Slave Lakes Tues. July 8
Note afternoon enhancement
More fires. More smoke



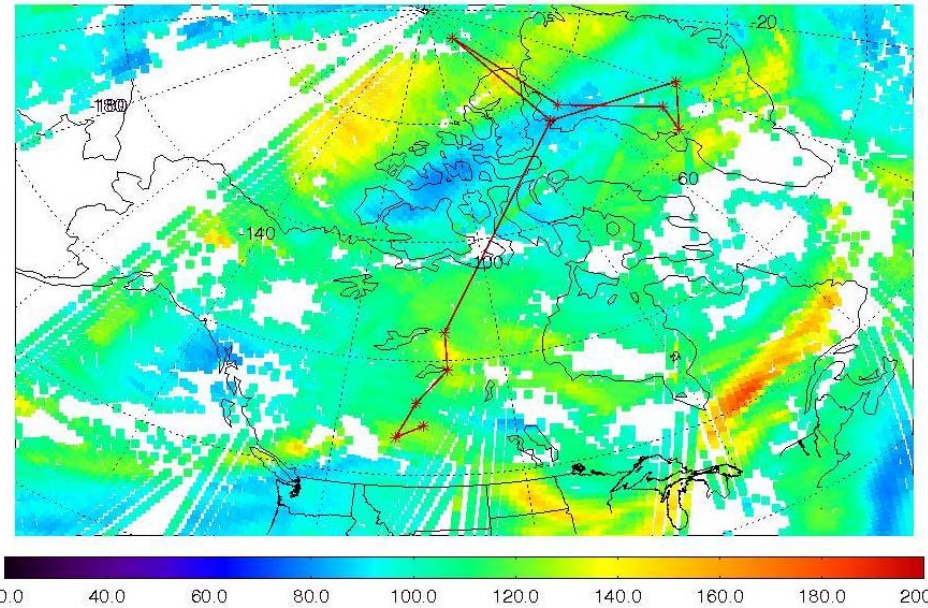
Aqua
20:40 UTC
2:40 pm MDT

AIRS Support for ARCTAS

AIRS CO VMR (ppbv) at 500mb on 20080708 for ARCTAS



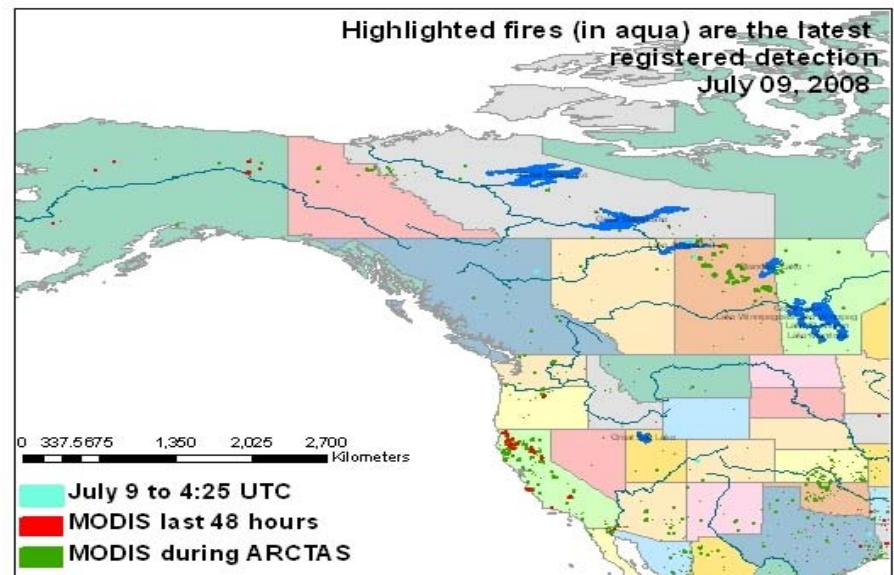
AIRS CO VMR (ppbv) at 500mb on 20080709 for ARCTAS



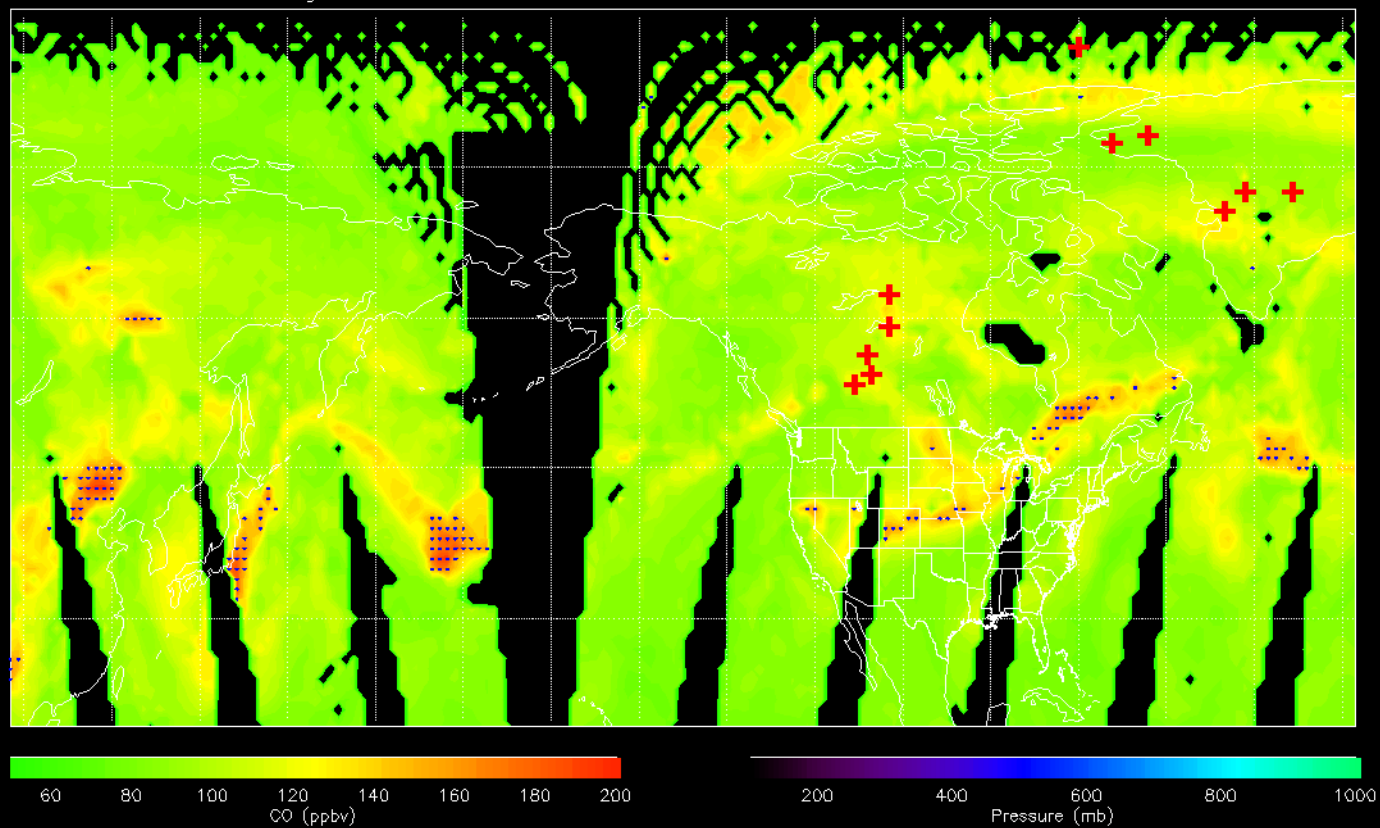
ACKNOWLEDGEMENT: AIRS NRT products by NASA DAAC

ACKNOWLEDGEMENT: AIRS NRT products by NASA DAAC

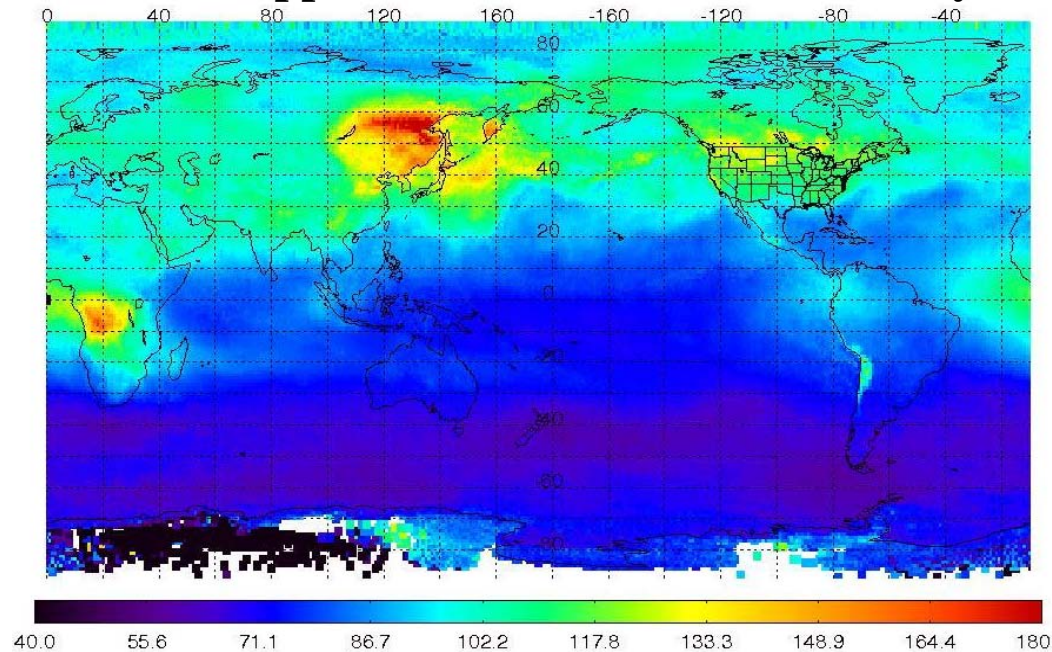
- New plumes of Alaska and Lake Athabasca.
- Relatively cleaner over Canada
- DC8 should capture the long-range transport both at the pole and from N. America today
- Flight back to Cold Lake should capture the remaining long-range transport and new fire emissions.



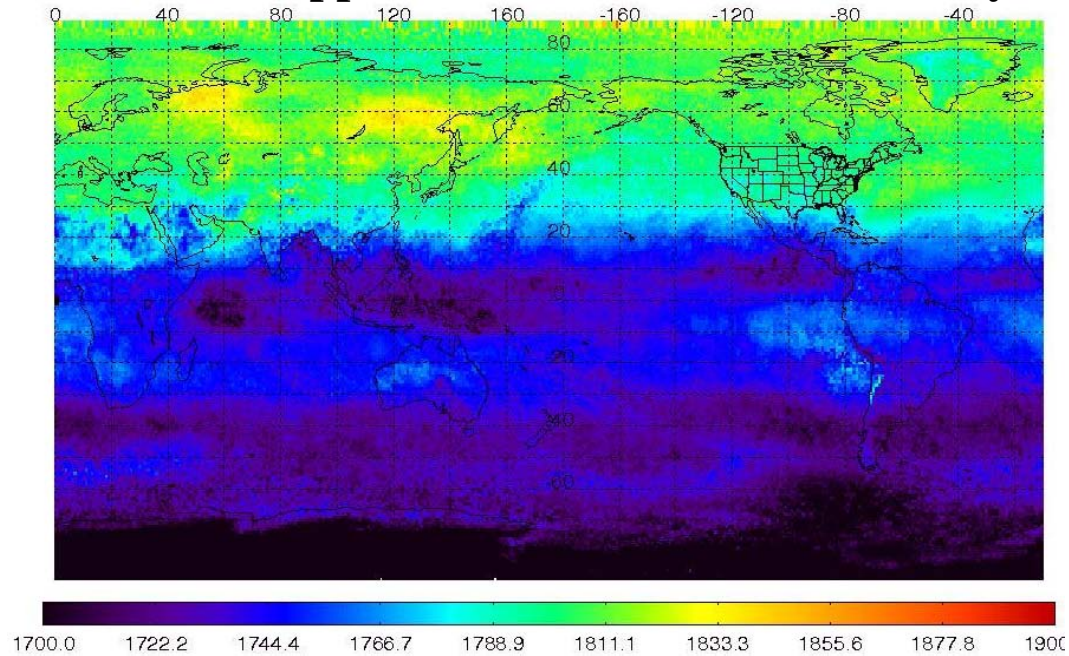
AIRS 500mb Trajectories initialized 2008070900 Valid 2008070900



AIRS CO (ppbv) at 500mb for June 26 – July 8



AIRS CH₄ (ppbv) at 300mb for June 26 – July 8

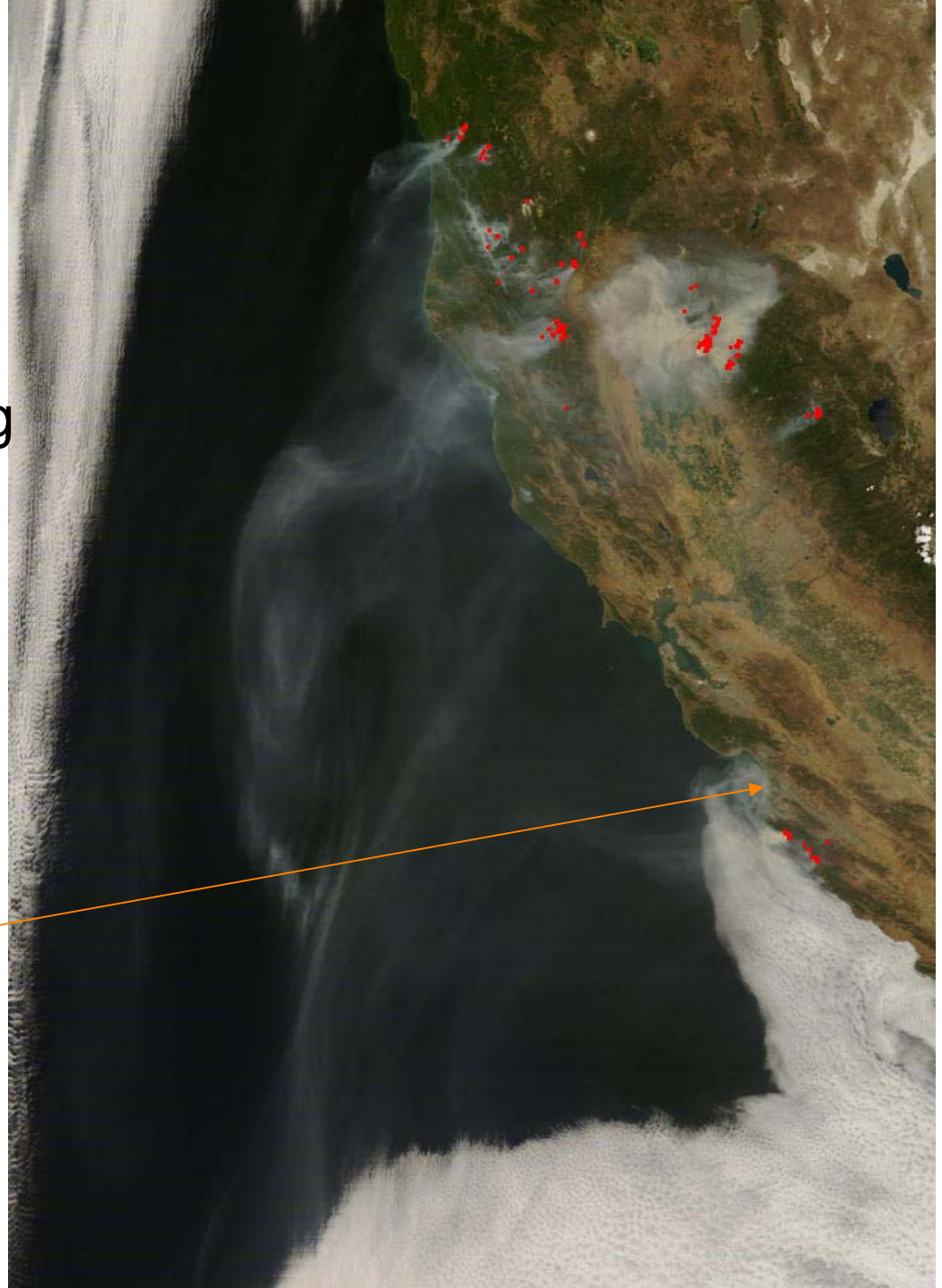


Missing some great
fires down south in Calif.

Note the smoke is flowing
South and west.

It is not mixing with the
Asian transport at the
U.S.-Canadian border.

AERONET AOD = 1.8
In Monterey



Summary

1. Athabasca and Great Slave Lake fires flared up yesterday and smoke plumes identified, but too local to show up in regional AOD maps
2. Calif. Fire smoke transported south and west, but high AOD identified all the way east to Dakotas.
(from Calif.? Or from Asia?)
3. Asian fine mode aerosol in the Bering Sea
4. Too cloudy to see Alaskan fire smoke
5. Outflow over Newfoundland probably a mix of the Asian transport with homegrown U.S. pollution
6. Band of slightly elevated AOD at around 62 N.
Source unknown.

Day 190 (Tuesday) July 8

MODIS AOD Hotspots in North America

Asian

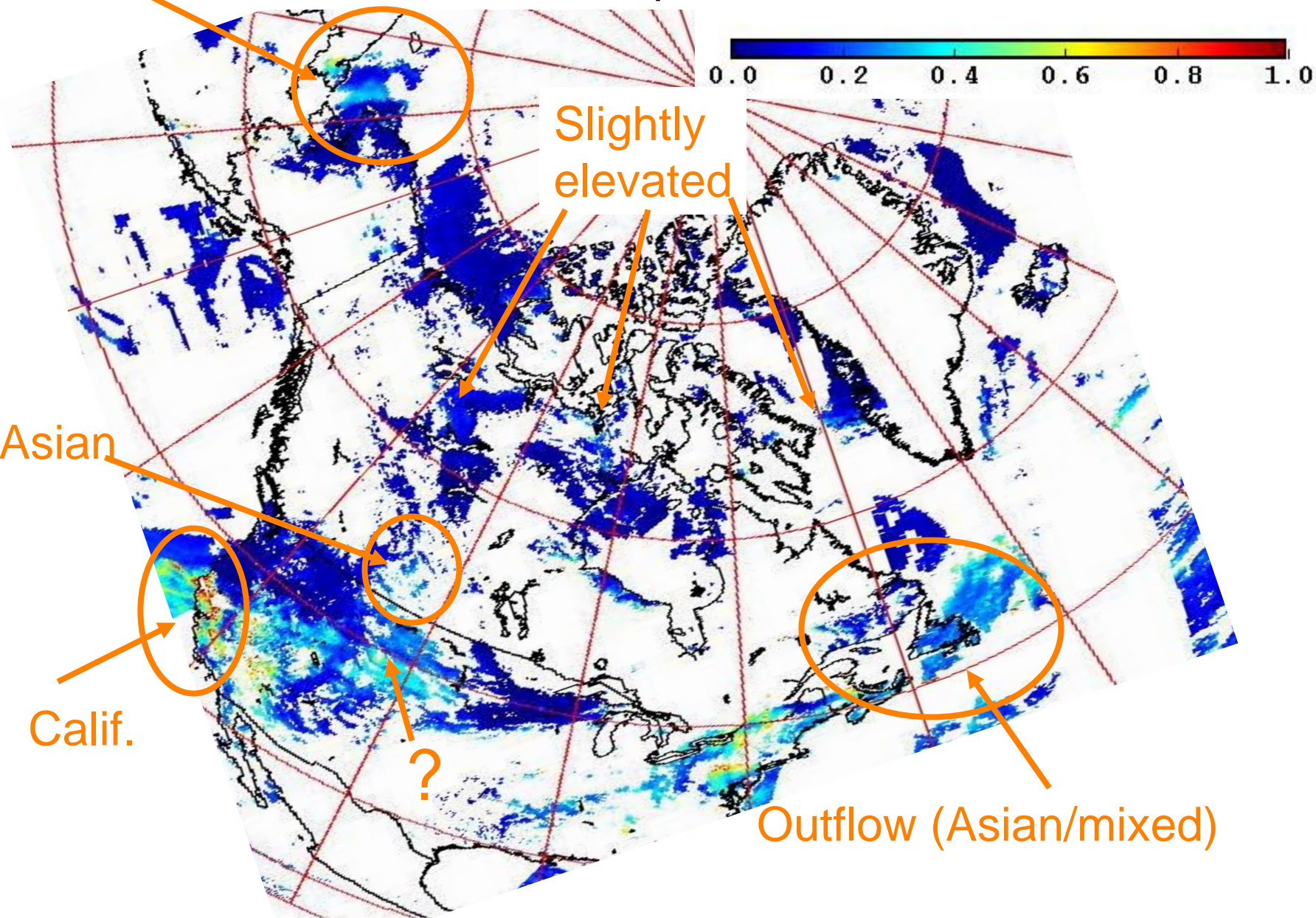
Asian

Calif.

?

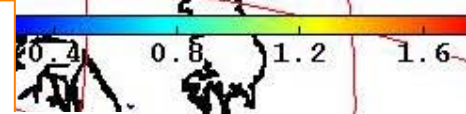
Slightly
elevated

Outflow (Asian/mixed)



Terra 2008/19

Day 190 (Monday) July 8



MODIS AOD Hotspots in North America

OPAL <0.03>

Kangerlussuaq <0.07>

Bonanza Creek <no data>

Churchill <0.09>

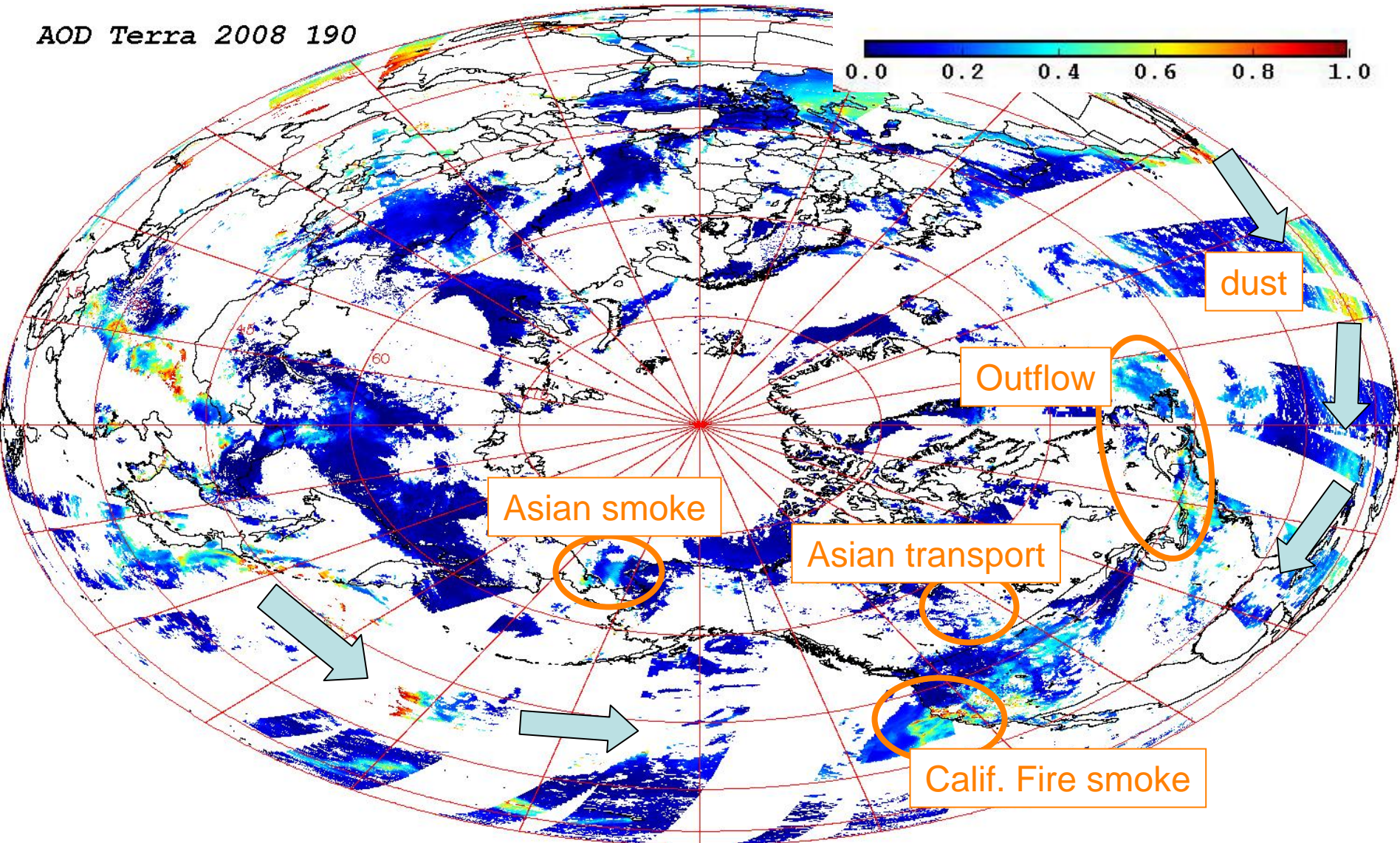
Fort McMurray <0.12>

Kelowna <0.17 to 0.35>

Saturn Island <0.09 to 0.30>

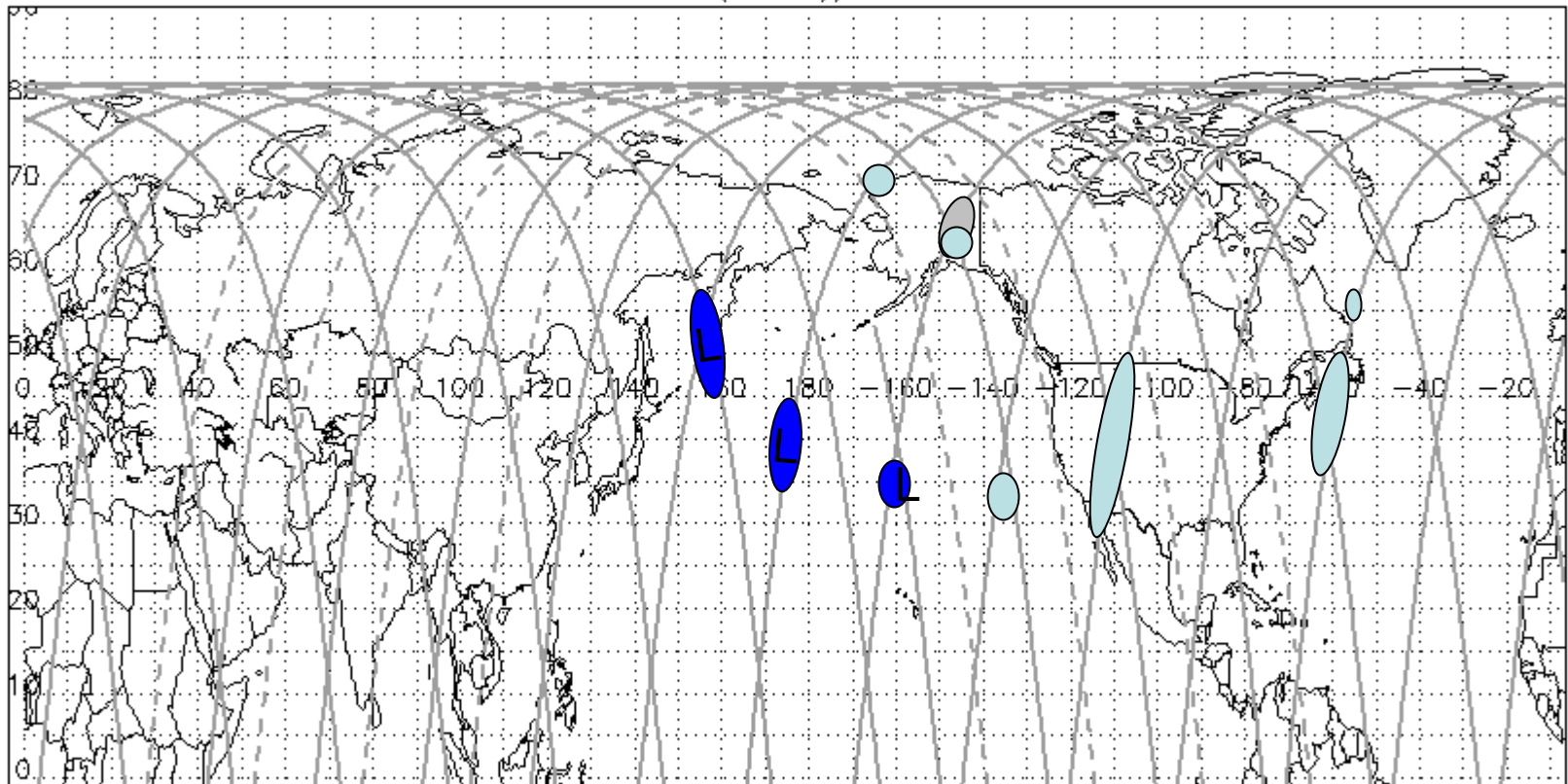
Day 190 (July 8) Tuesday

MODIS Hot Spots in Northern Hemisphere



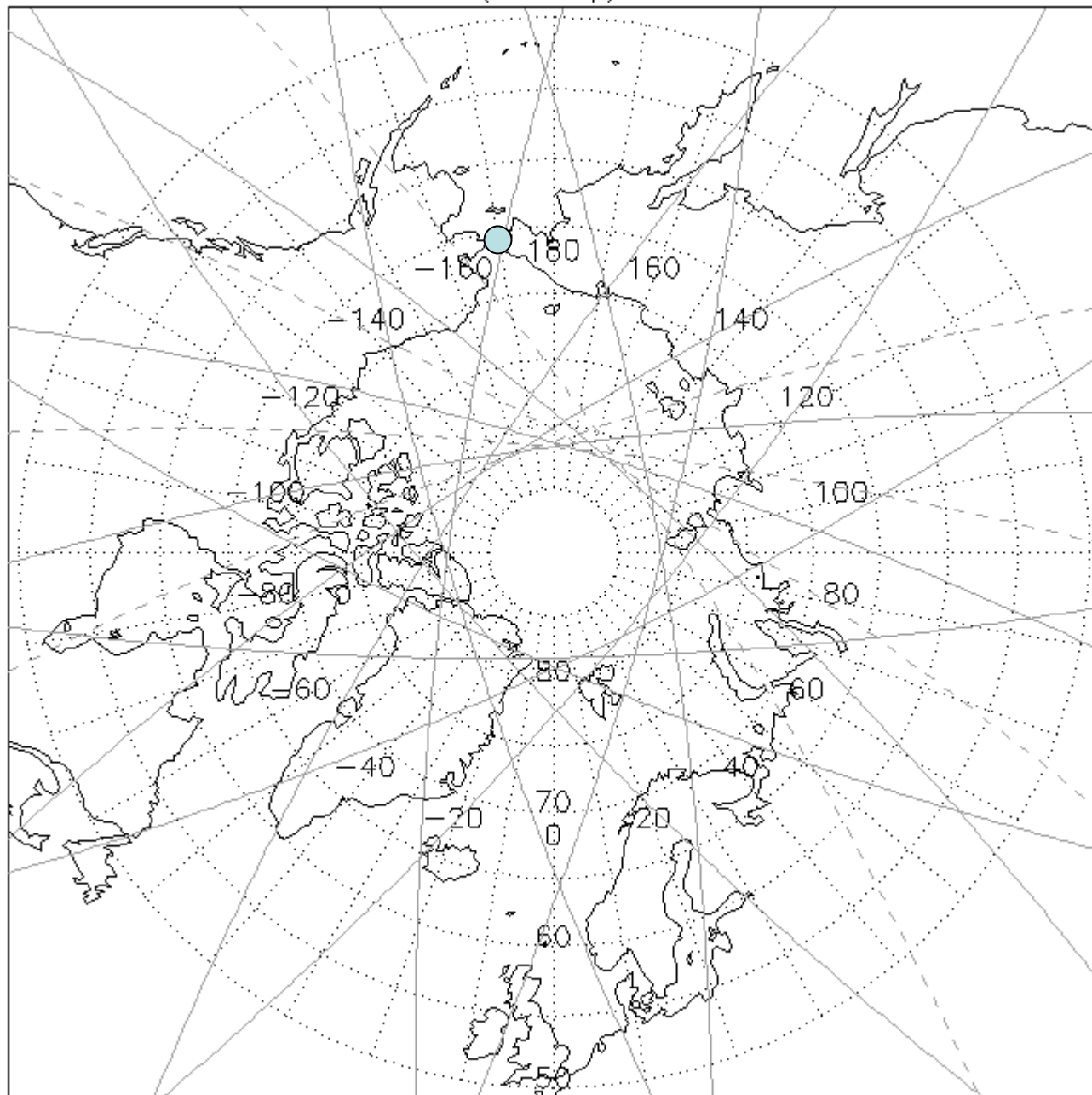
Aerosol Layer Locations based on CALIPSO Observation on 7/8

20080707(>18Z)/20080708



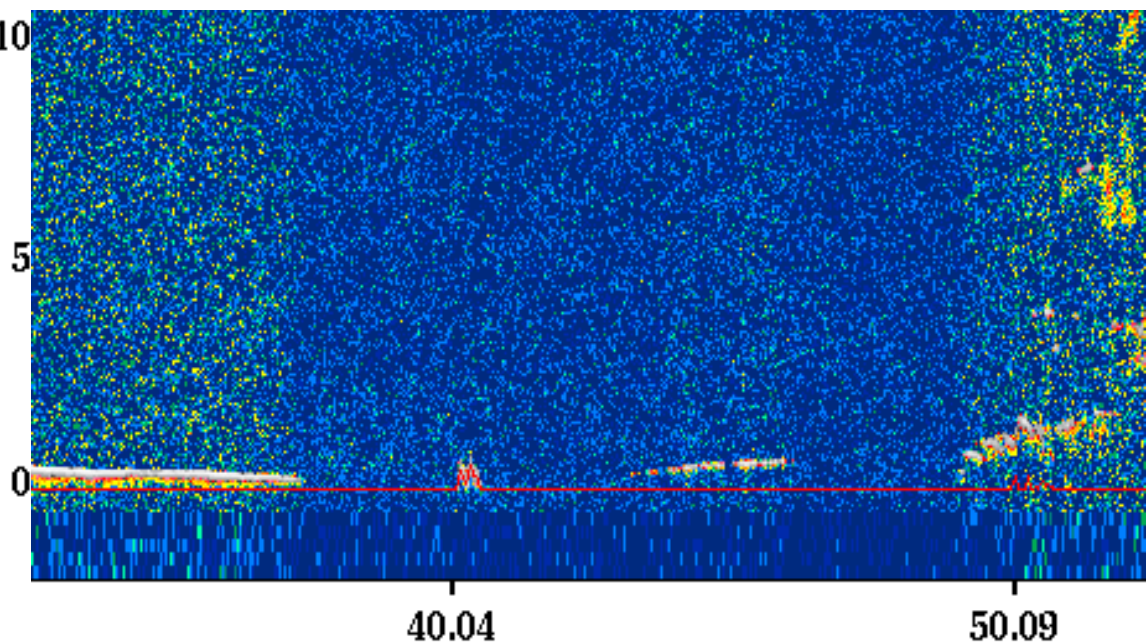
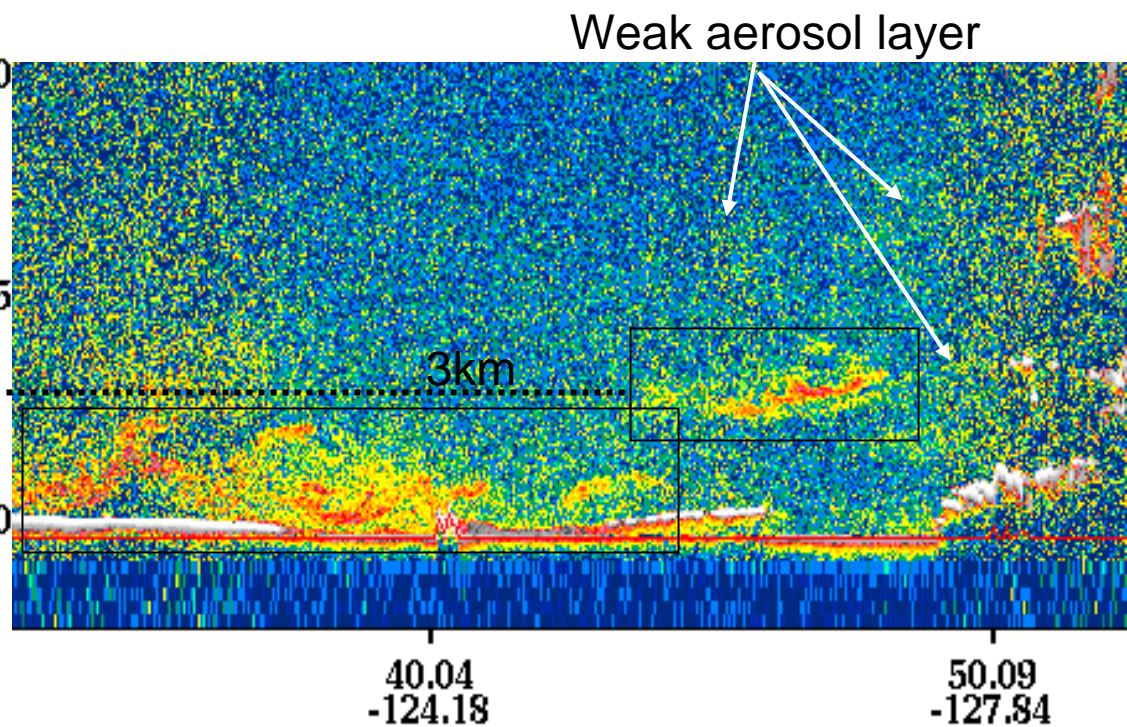
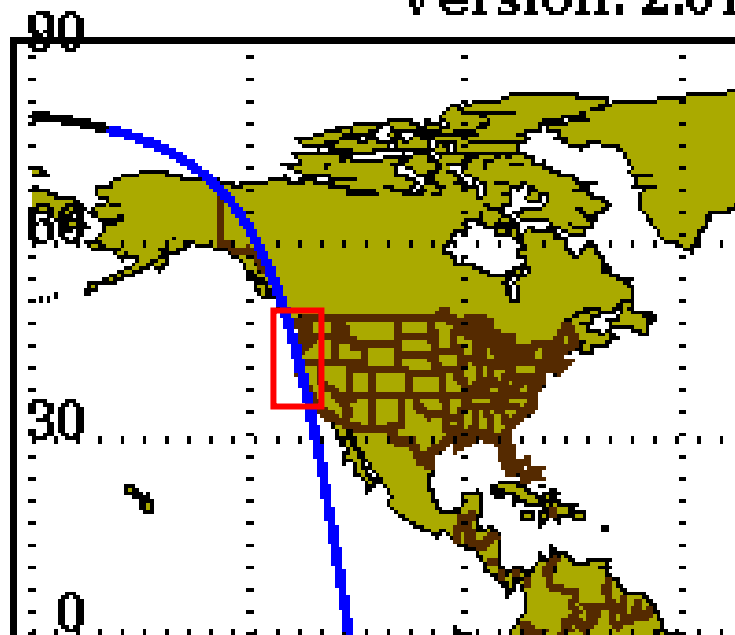
- Cloud
- Aerosol Layer- low aerosol loading
- Aerosol Layer- medium aerosol loading
- Aerosol Layer- high aerosol loading

20080707(>18Z)/20080708



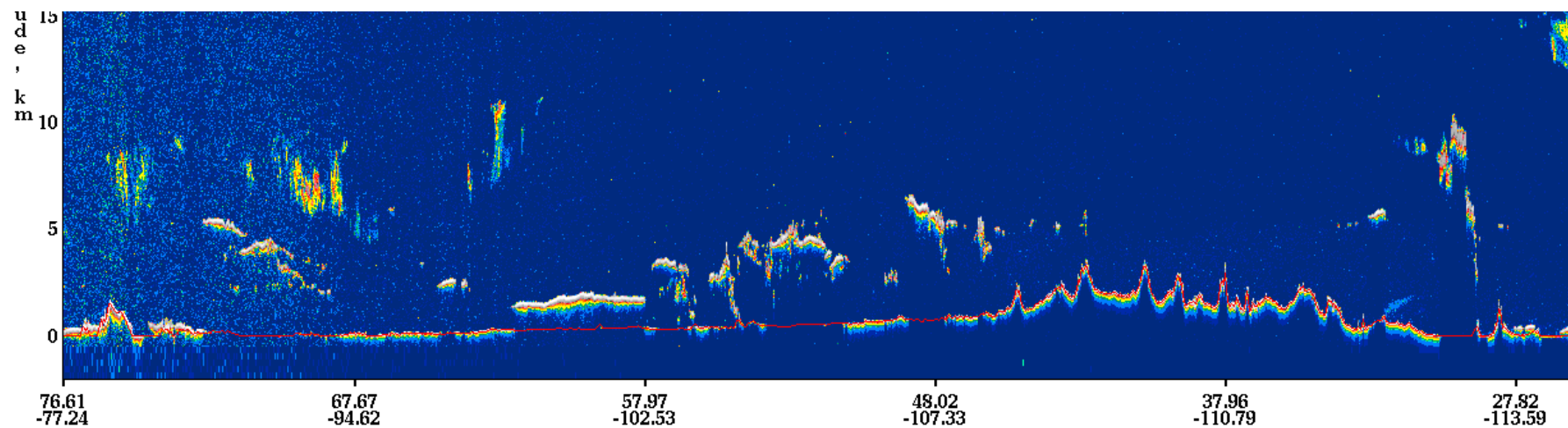
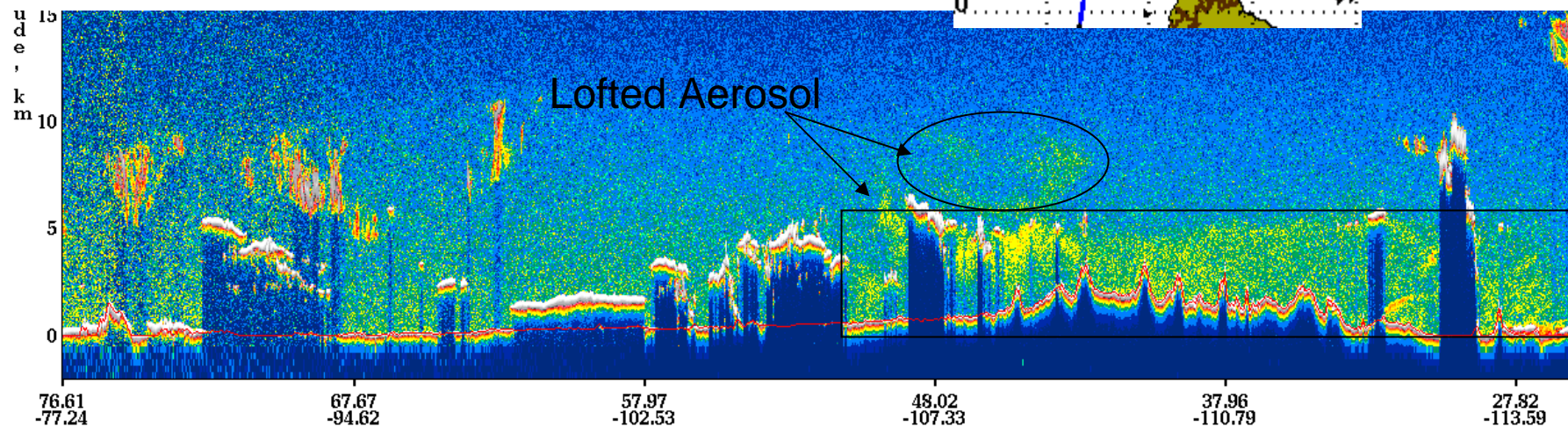
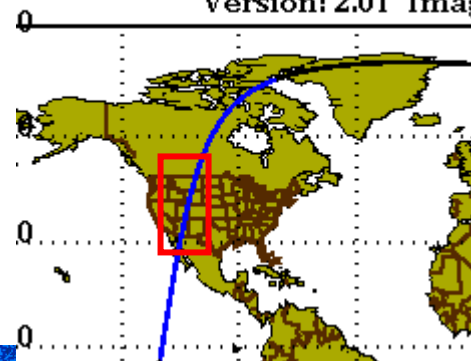
CALIPSO Obs 21Z 7/7

2008-07-07 21-00-00
Version: 2.01



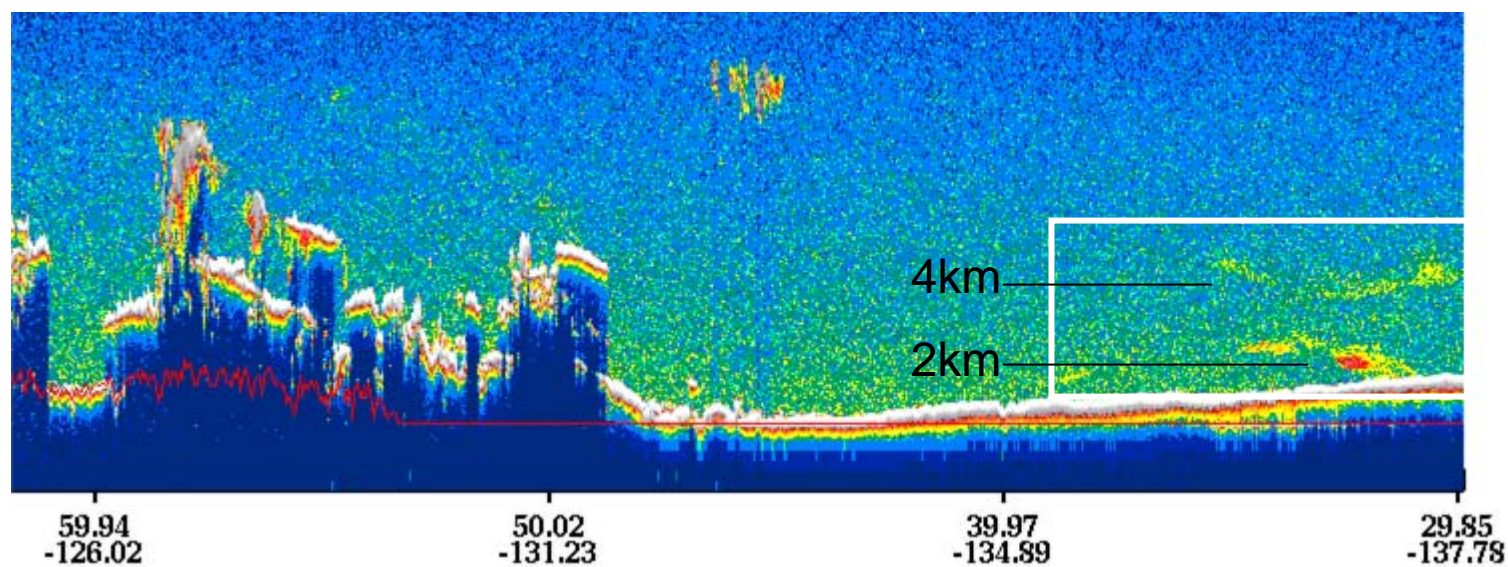
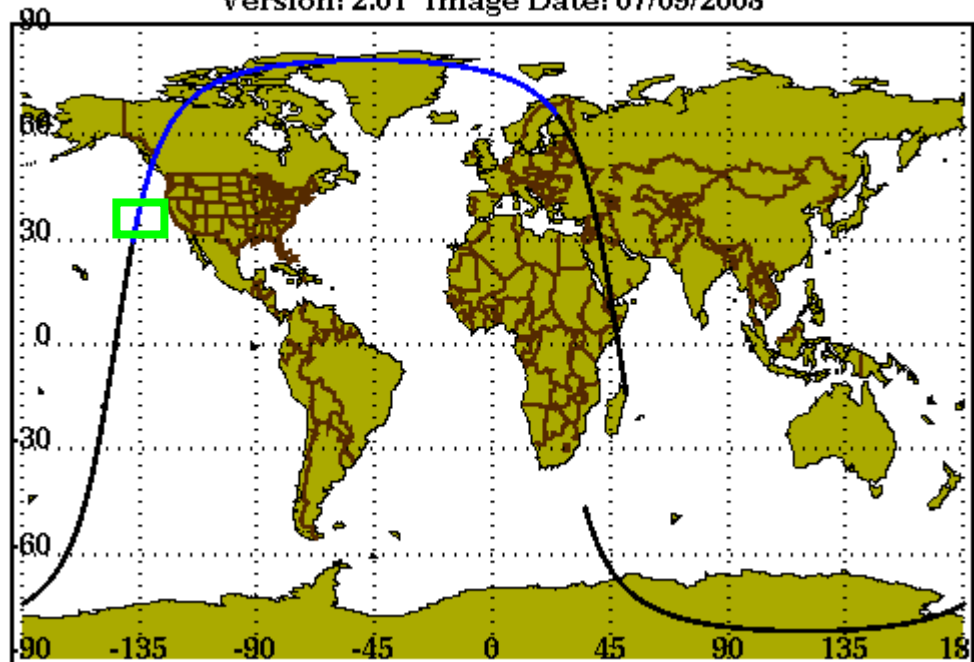
CALIPSO Obs 09Z 7/8

2008-07-08 09:00-00 UTC S
Version: 2.01 Imag

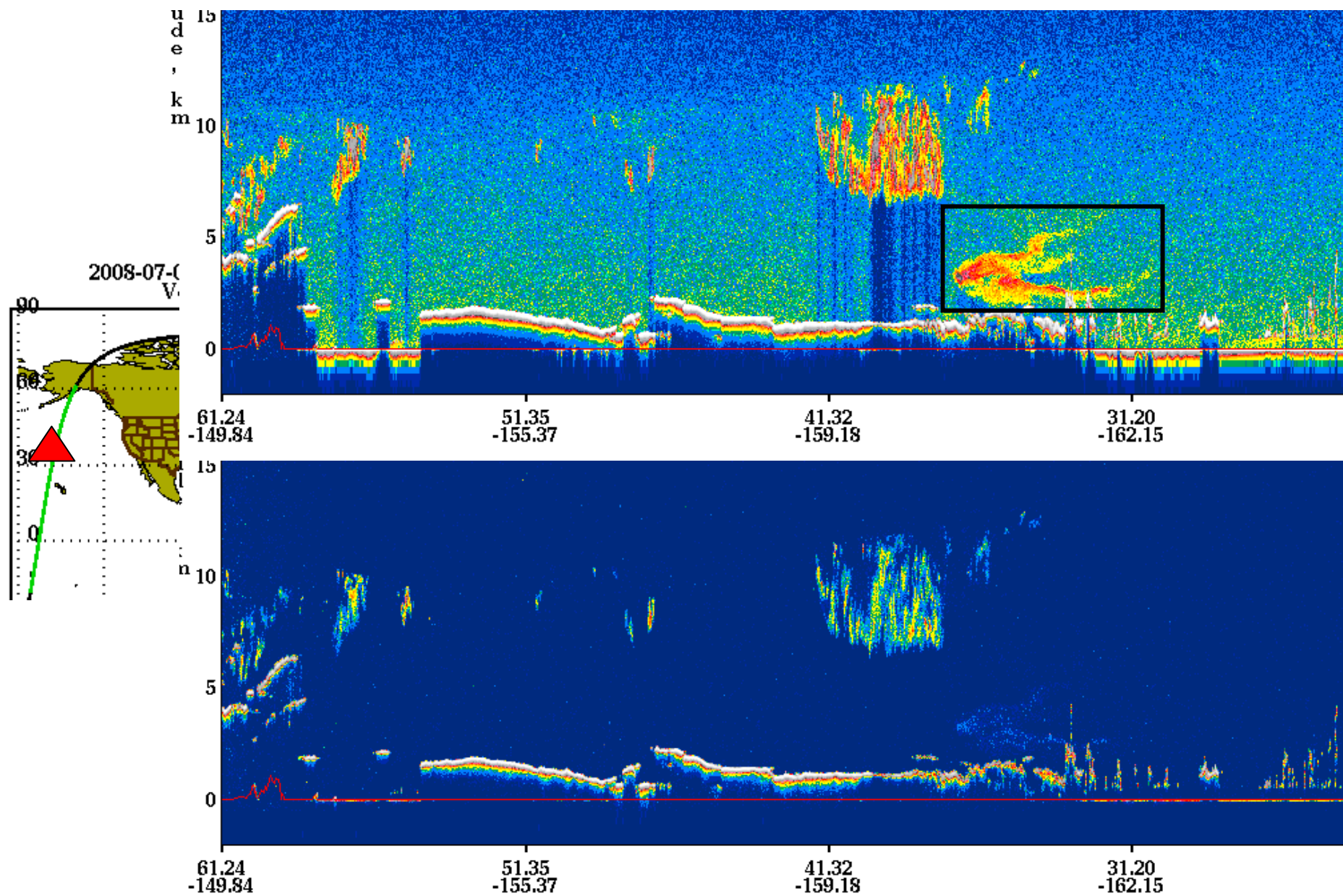


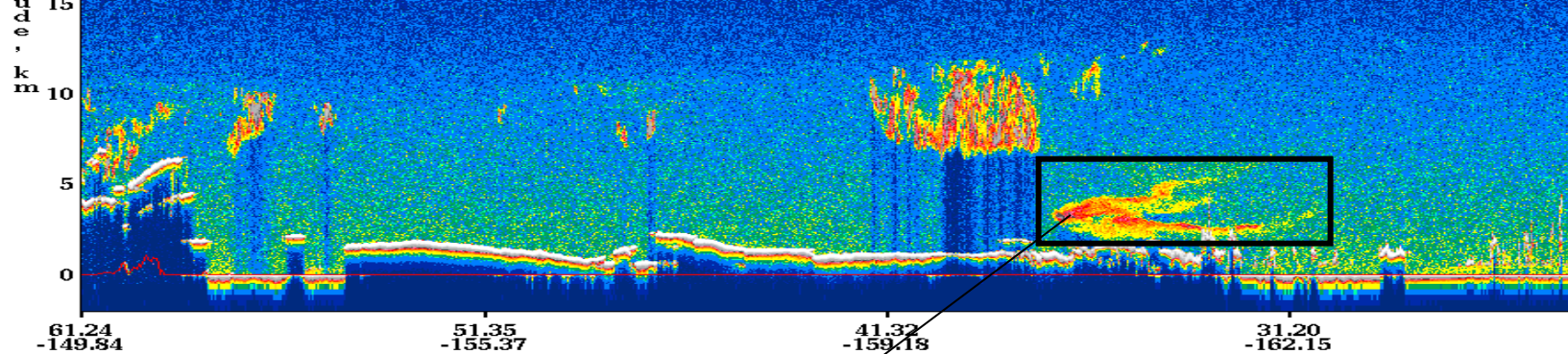
2008-07-08 10-30-00 UTC Half of Hour Conditions
Version: 2.01 Image Date: 07/09/2008

CALIPSO Obs 7/8



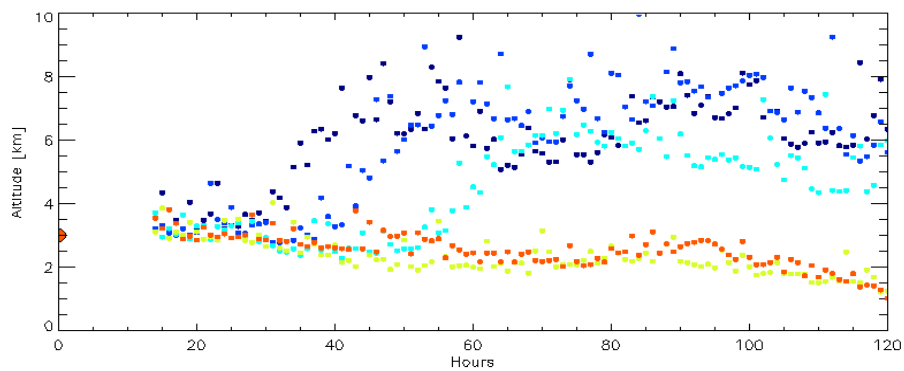
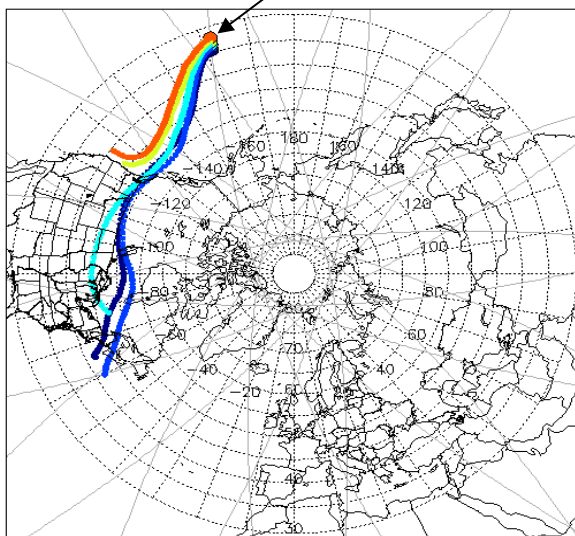
CALIPSO Obs 7/8



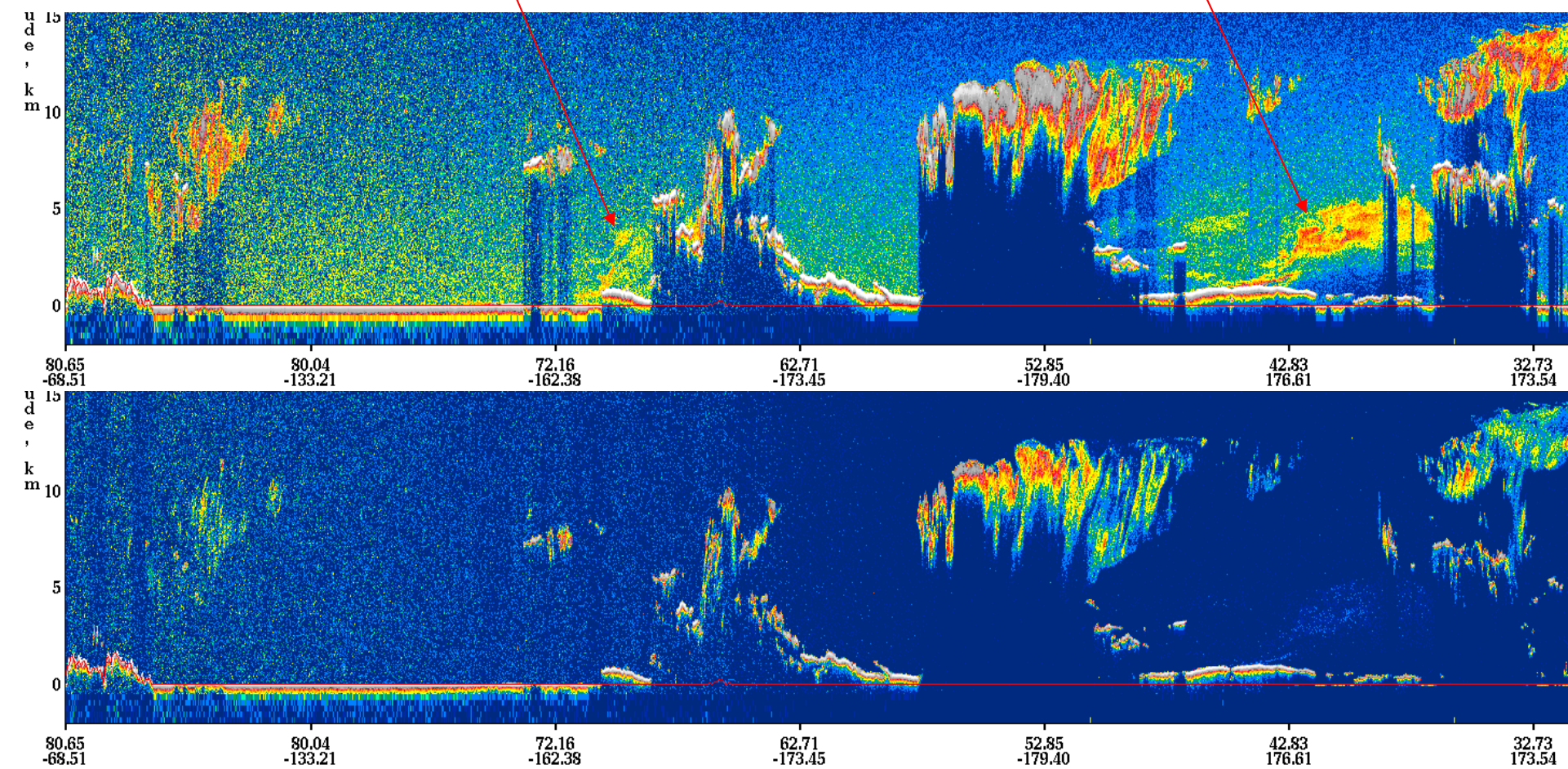
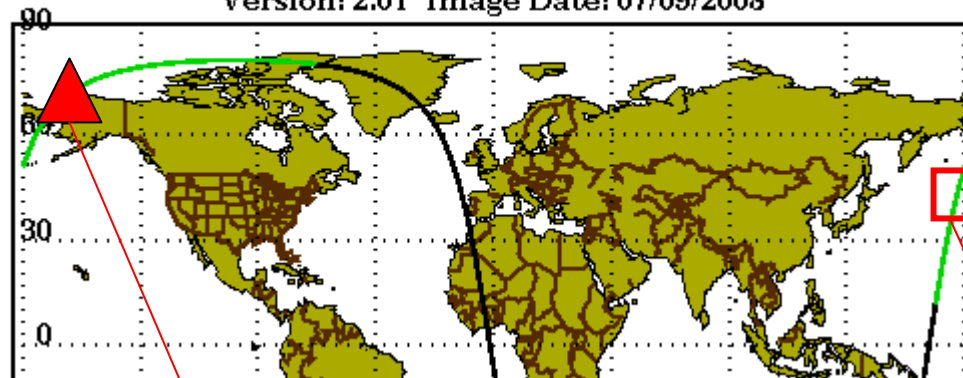


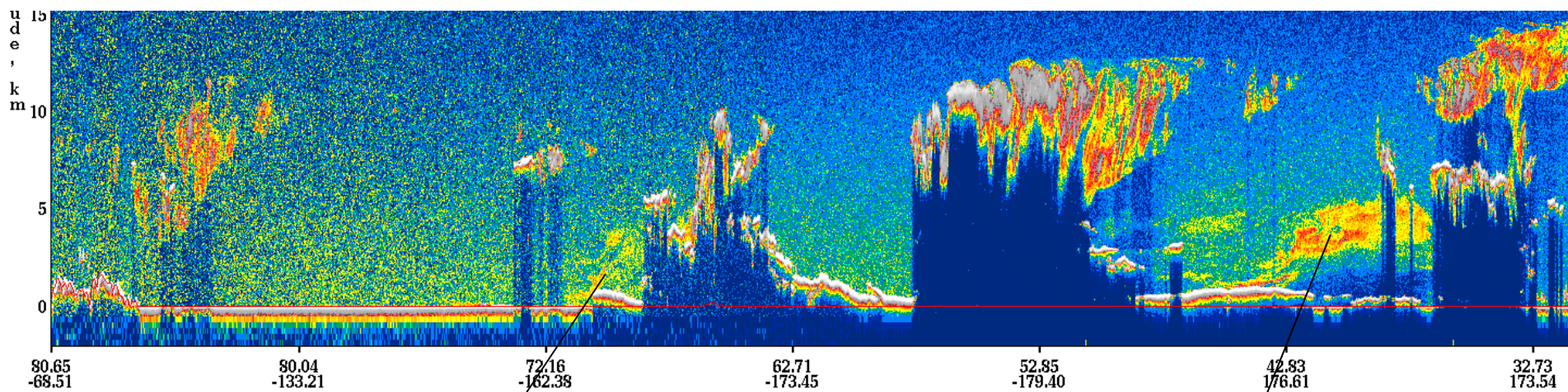
120hr CALIPSO Trajectories Initialized 2008070800 Valid 2008071300

Initial Altitude: 3000m

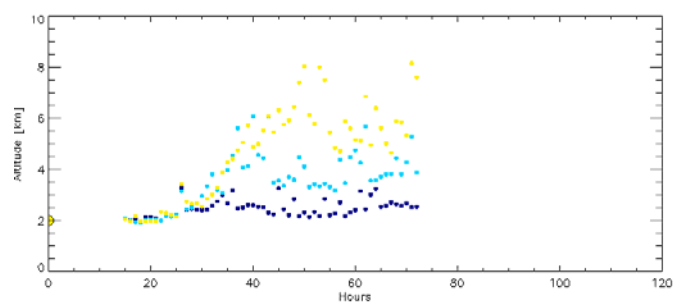
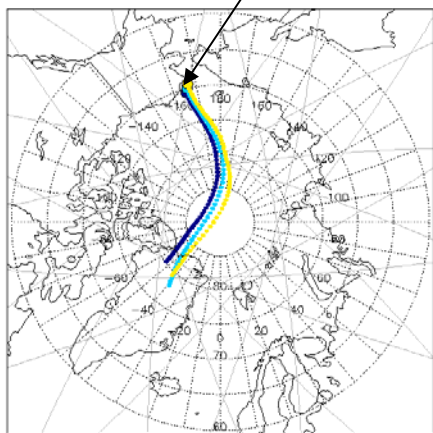


CALIPSO Obs ***7/8***

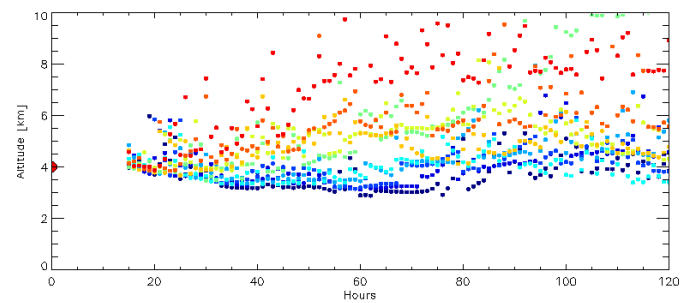
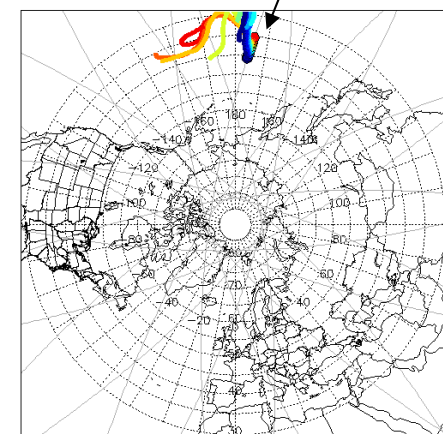




72hr CALIPSO Trajectories Initialized 2008070800 Valid 2008071100
Initial Altitude: 2000m



120hr CALIPSO Trajectories Initialized 2008070800 Valid 2008071300
Initial Altitude: 4000m

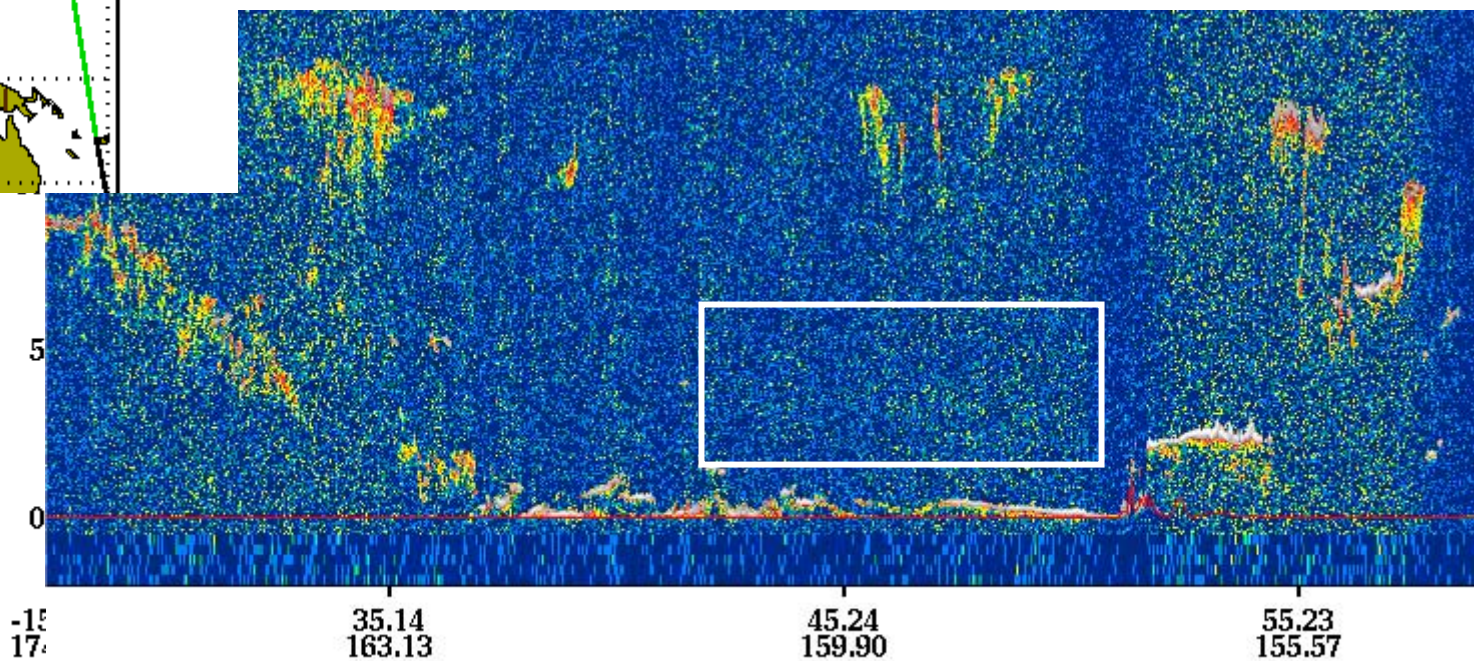
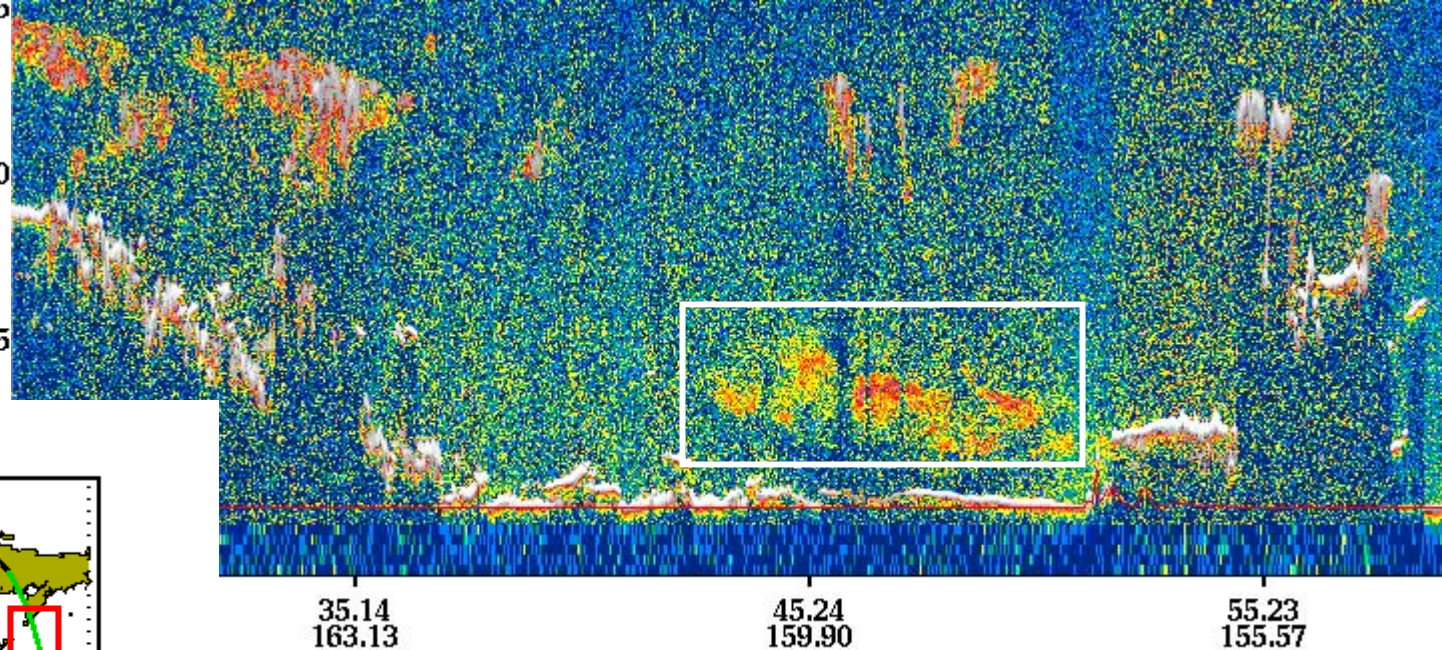
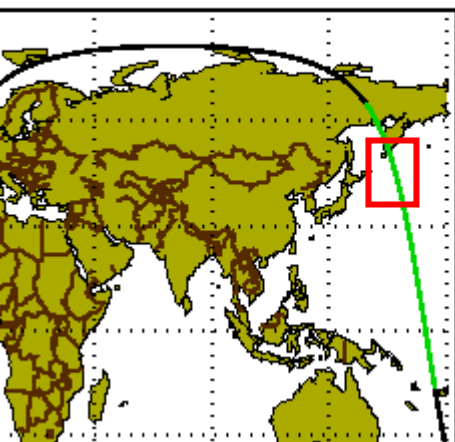


Trajectory analysis provided by Brad Pierce (NOAA/NESDIS)

CALIPSO

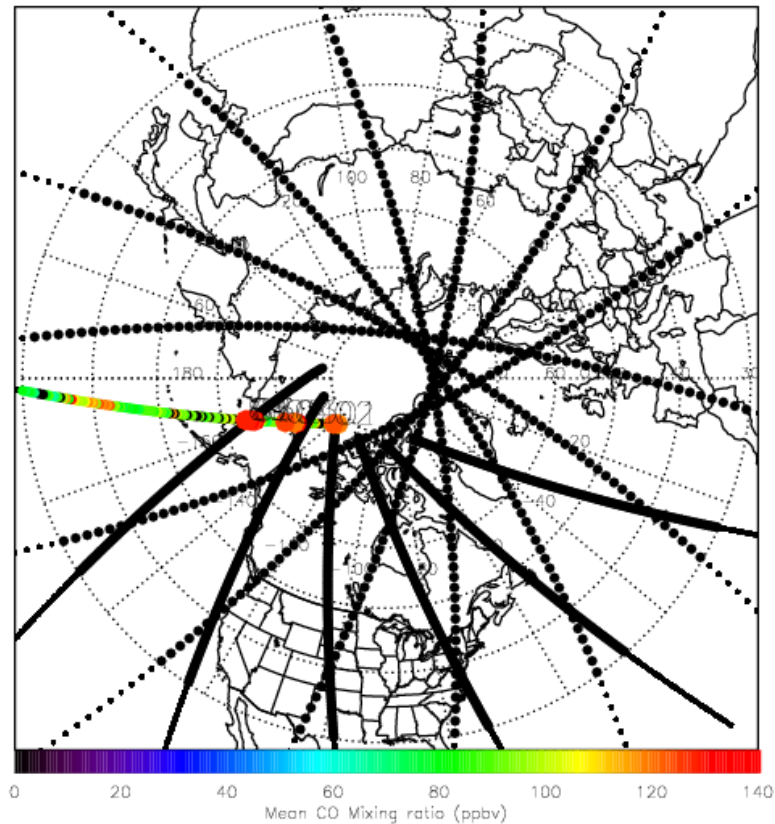
Obs 7/8

Half of Hour Conditions
Date: 07/09/2008

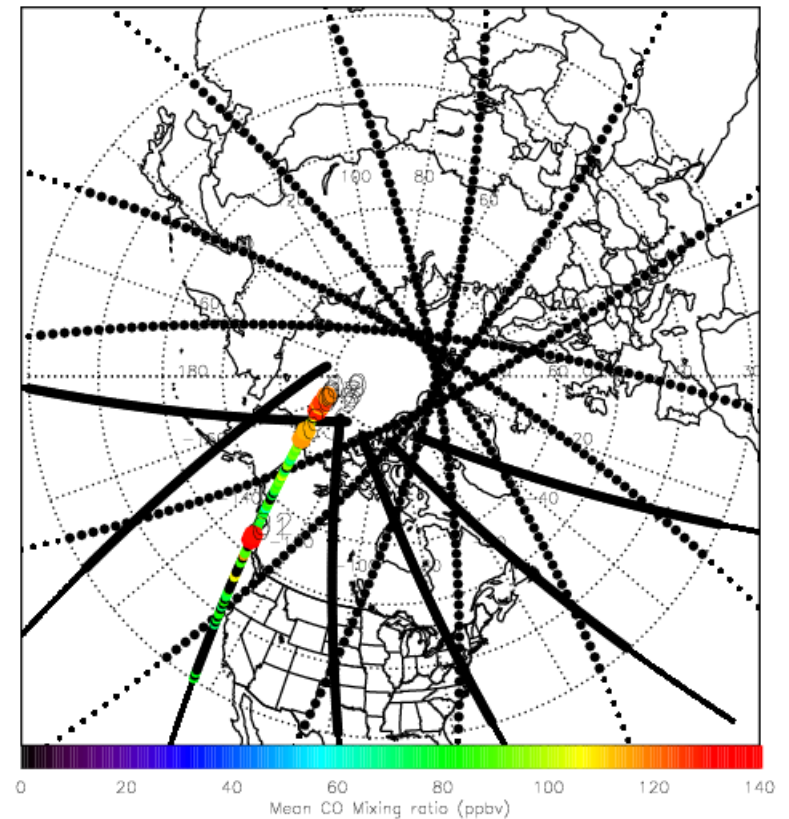


TES CO Mean Column Concentration from SS orbits 7752 and 7773 (07/07)

Initial Mean TES CO (Theta<380K) for Top 10 TES SS Forward trajectories
2008070700 RUNID=7752

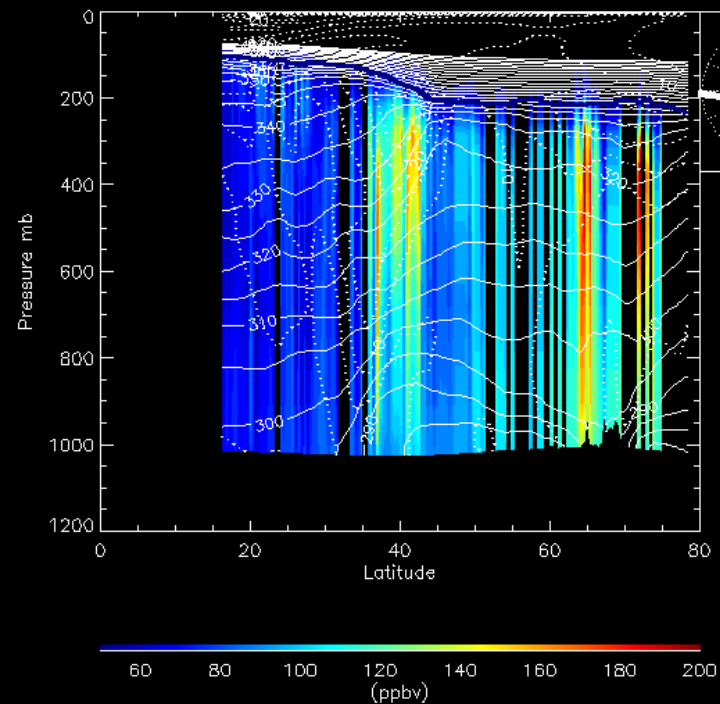


Initial Mean TES CO (Theta<380K) for Top 10 TES SS Forward trajectories
2008070700 RUNID=7773

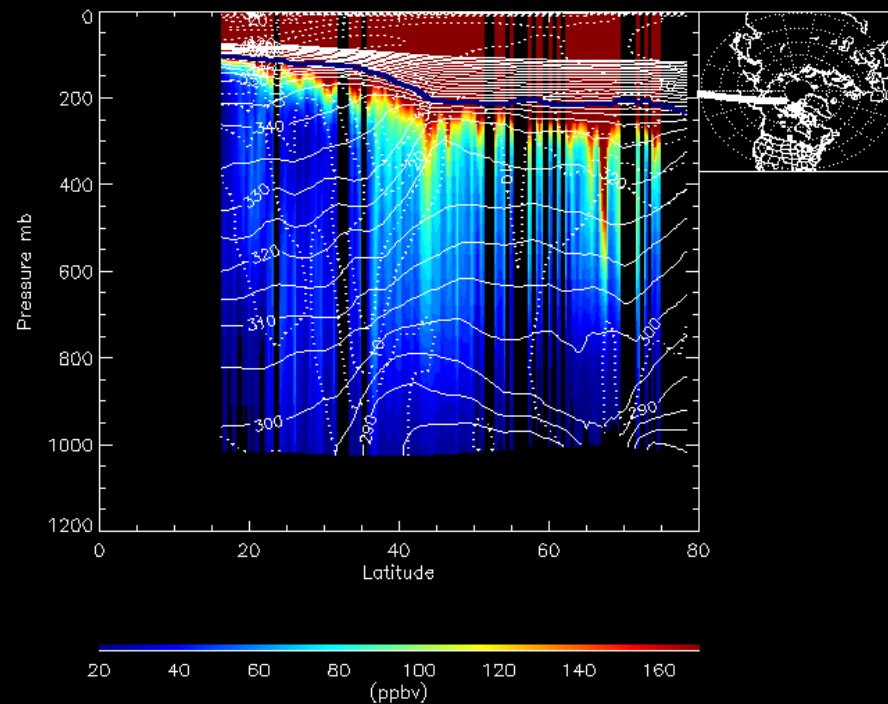


TES CO (left) and O3 (right) curtains from SS orbit 7752 (07/07)

TES CO (ppbv)
TES-Aura_L2-Nadir_20080707_13:42:00 RUNID=7752

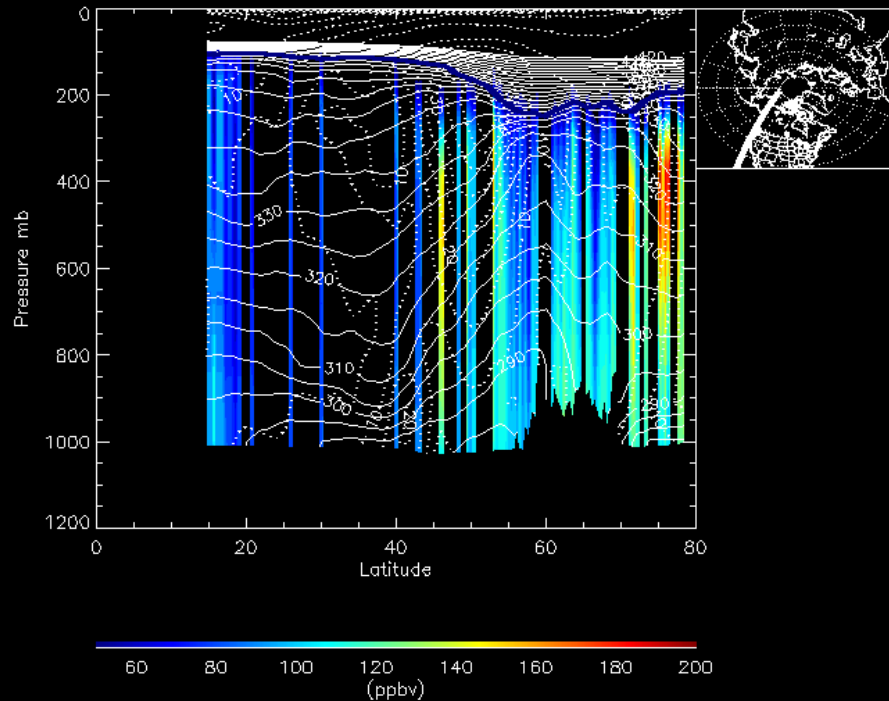


TES O3 (ppbv)
TES-Aura_L2-Nadir_20080707_13:42:00 RUNID=7752

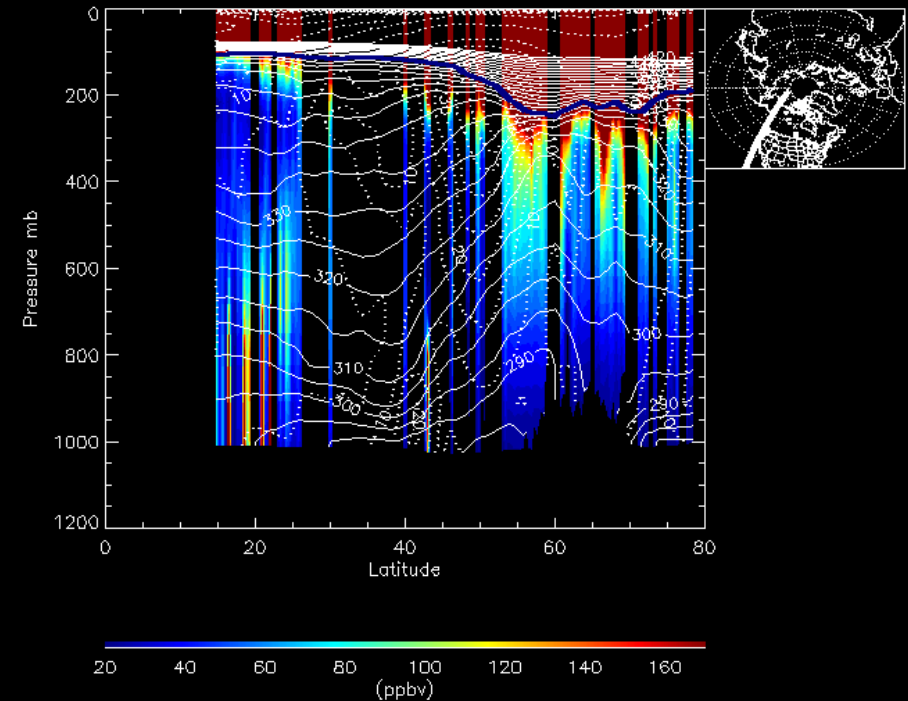


TES CO (left) and O3 (right) curtains from SS orbit 7773 (07/07)

TES CO (ppbv)
TES-Aura_L2-Nadir_20080707_21:33:32 RUNID=7773

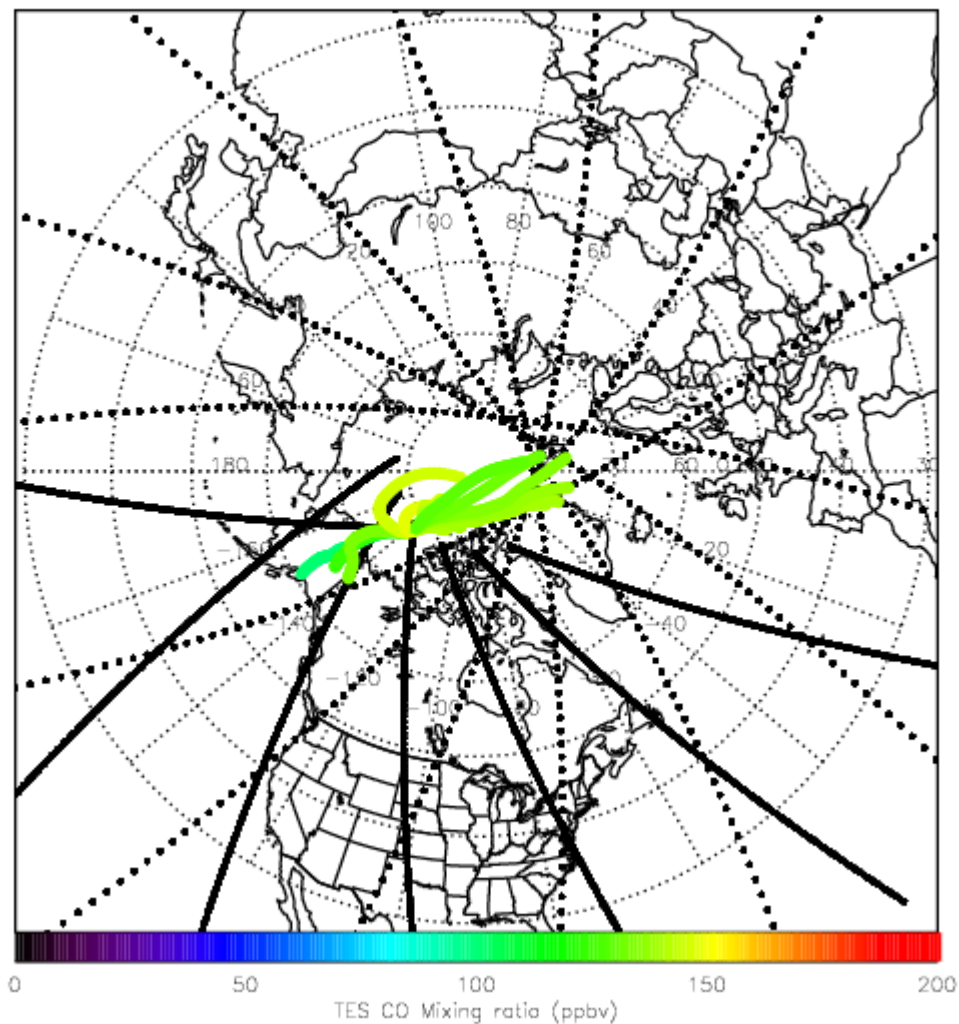


TES O3 (ppbv)
TES-Aura_L2-Nadir_20080707_21:33:32 RUNID=7773

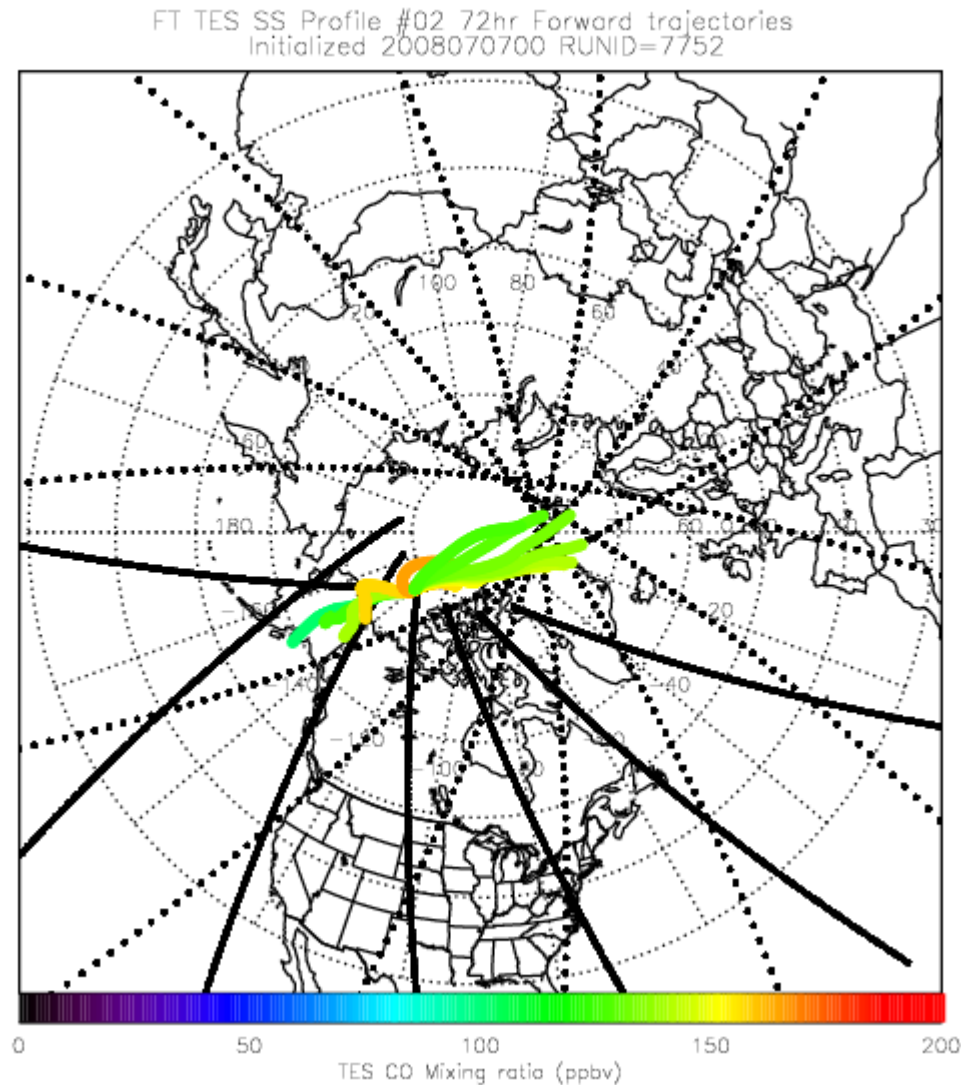


TES SS 7752 Forward Trajectories “Profile 1” Valid 00Z 07/10 (07/09 Thule local flight)

FT TES SS Profile #01 72hr Forward trajectories
Initialized 2008070700 RUNID=7752

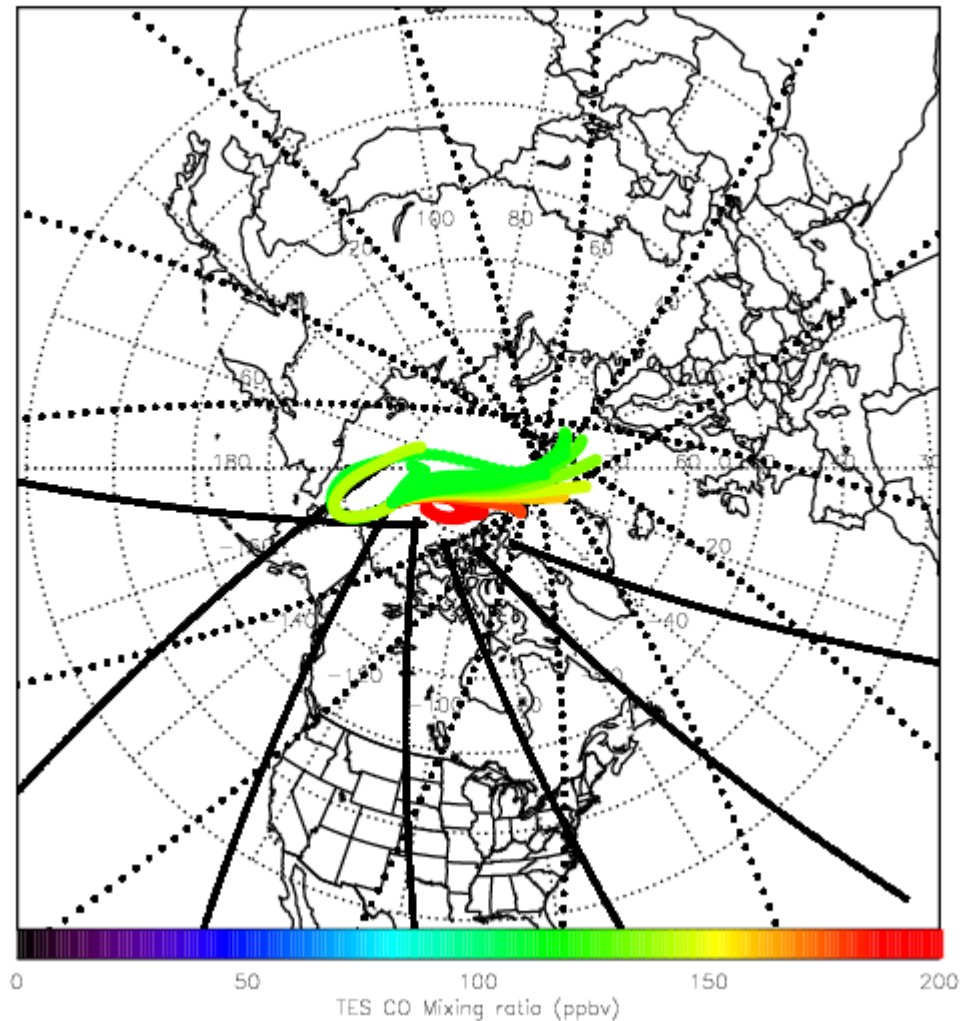


TES SS 7752 Forward Trajectories “Profile 2” Valid 00Z 07/10 (07/09 Thule local flight)



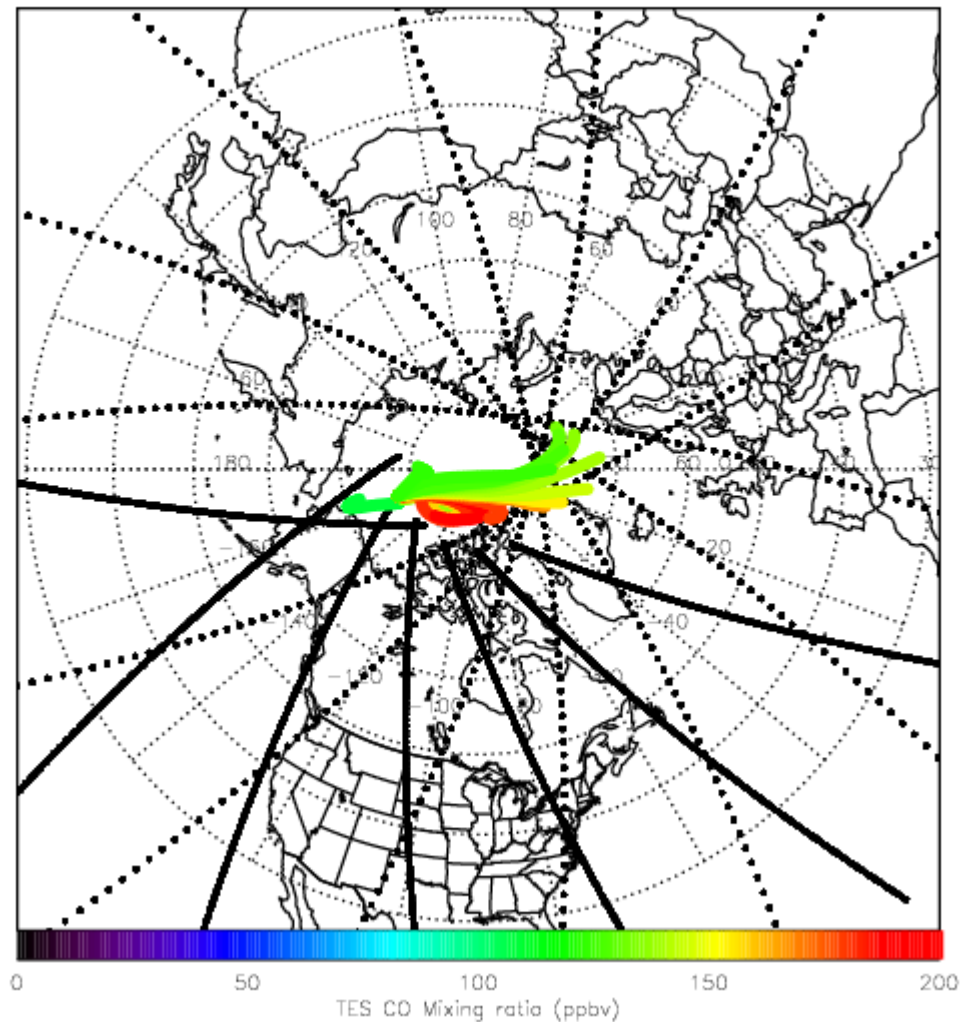
TES SS 7773 Forward Trajectories “Profile 8” Valid 00Z
07/10
(07/09 Thule local flight)

FT TES SS Profile #08 72hr Forward trajectories
Initialized 2008070700 RUNID=7773



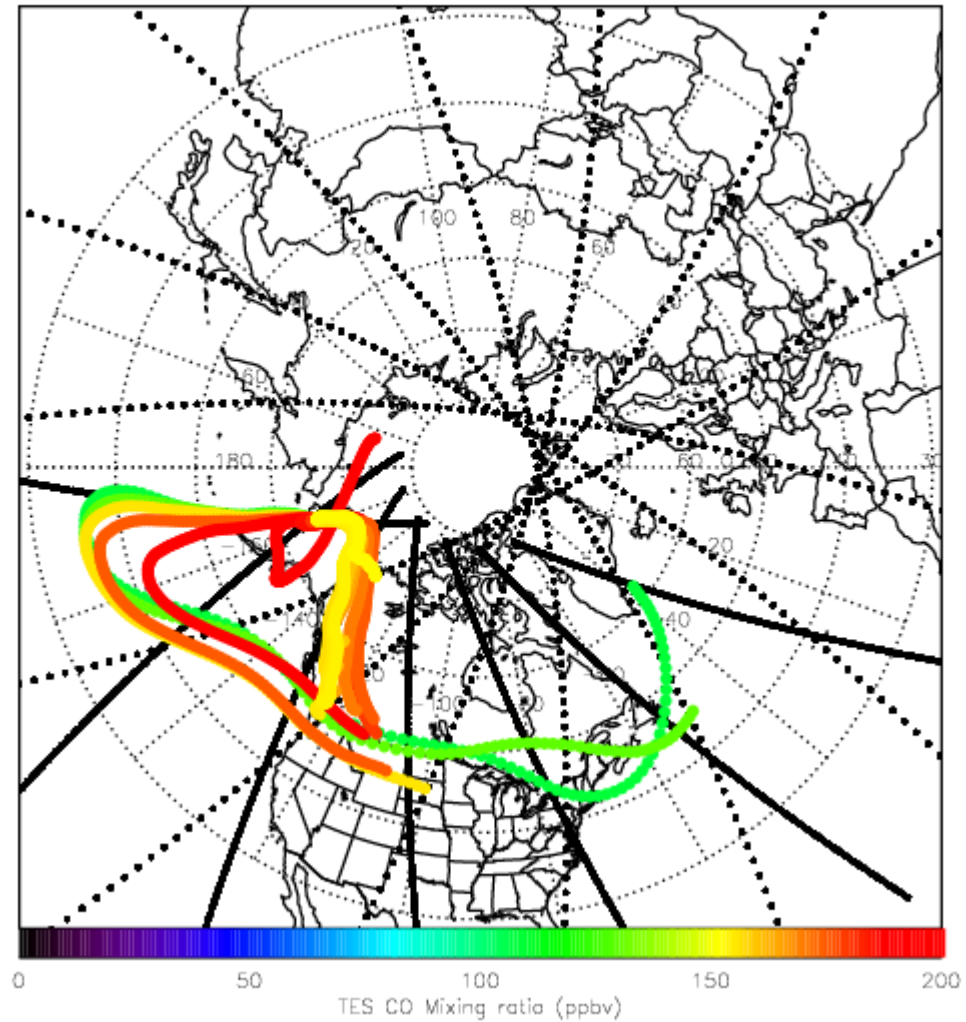
TES SS 7773 Forward Trajectories “Profile 9” Valid 00Z 07/10 (07/09 Thule local flight)

FT TES SS Profile #09 72hr Forward trajectories
Initialized 2008070700 RUNID=7773



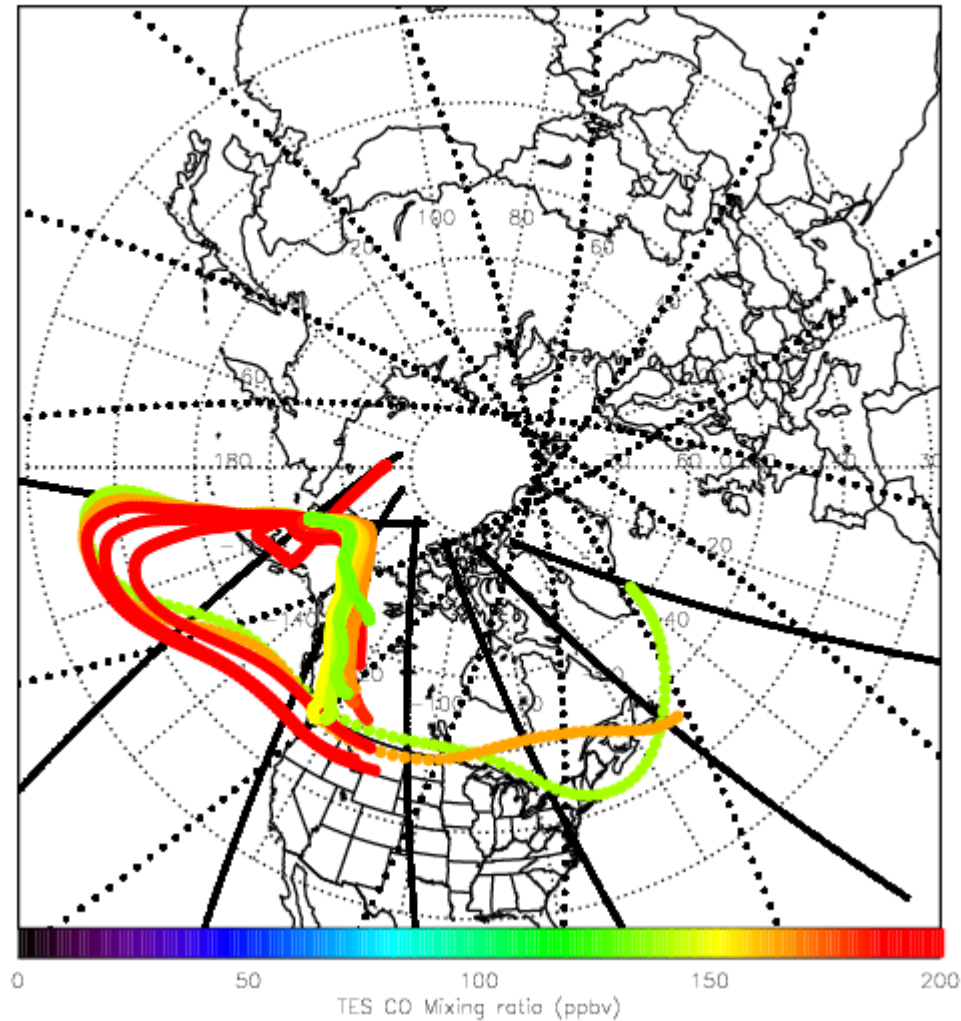
TES SS 7752 Forward Trajectories “Profile 9” Valid 00Z 07/13 (07/12 Dryden Transit)

FT TES SS Profile #06 144hr Forward trajectories
Initialized 2008070700 RUNID=7752

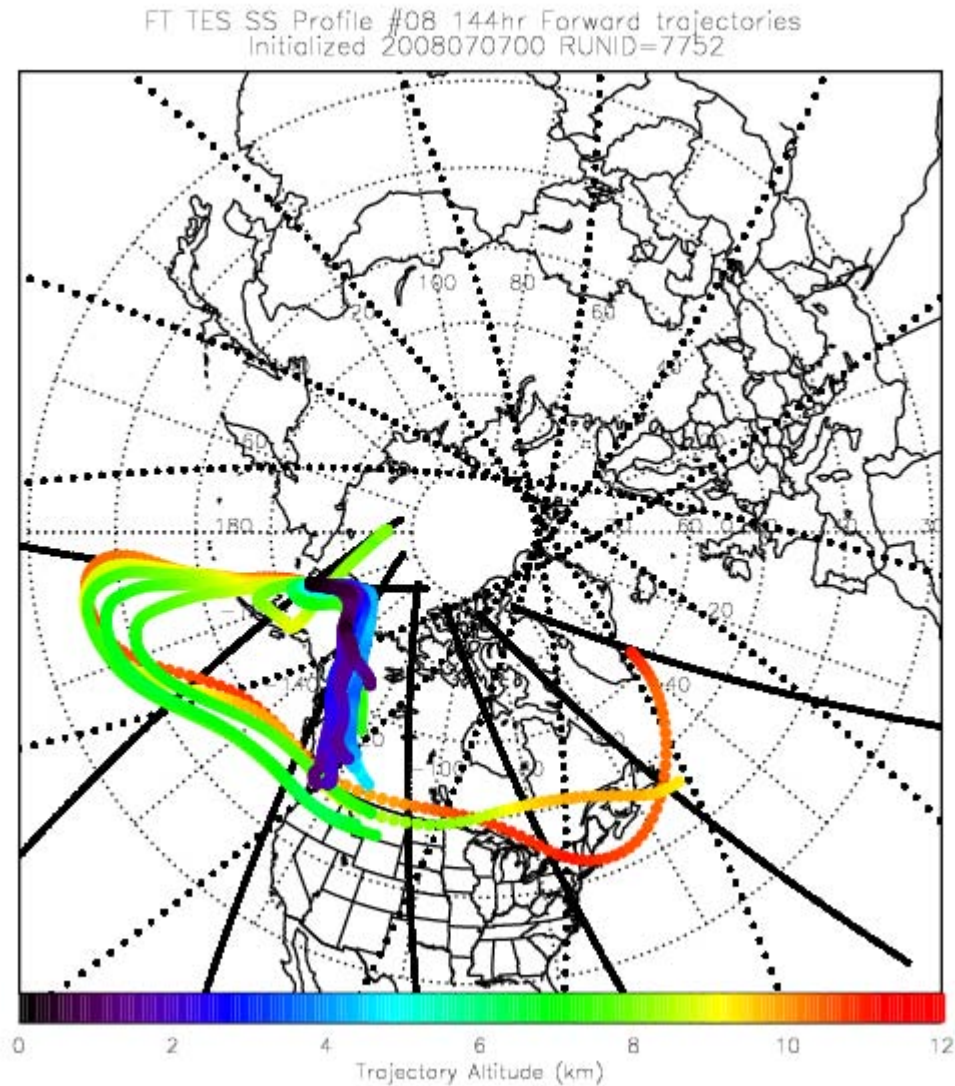


TES SS 7752 Forward Trajectories “Profile 9” Valid 00Z 07/13 (07/12 Dryden Transit)

FT TES SS Profile #08 144hr Forward trajectories
Initialized 2008070700 RUNID=7752



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

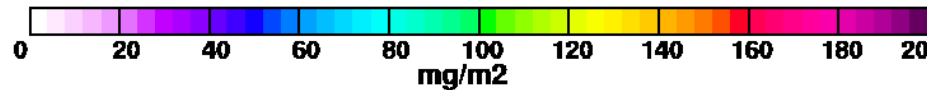
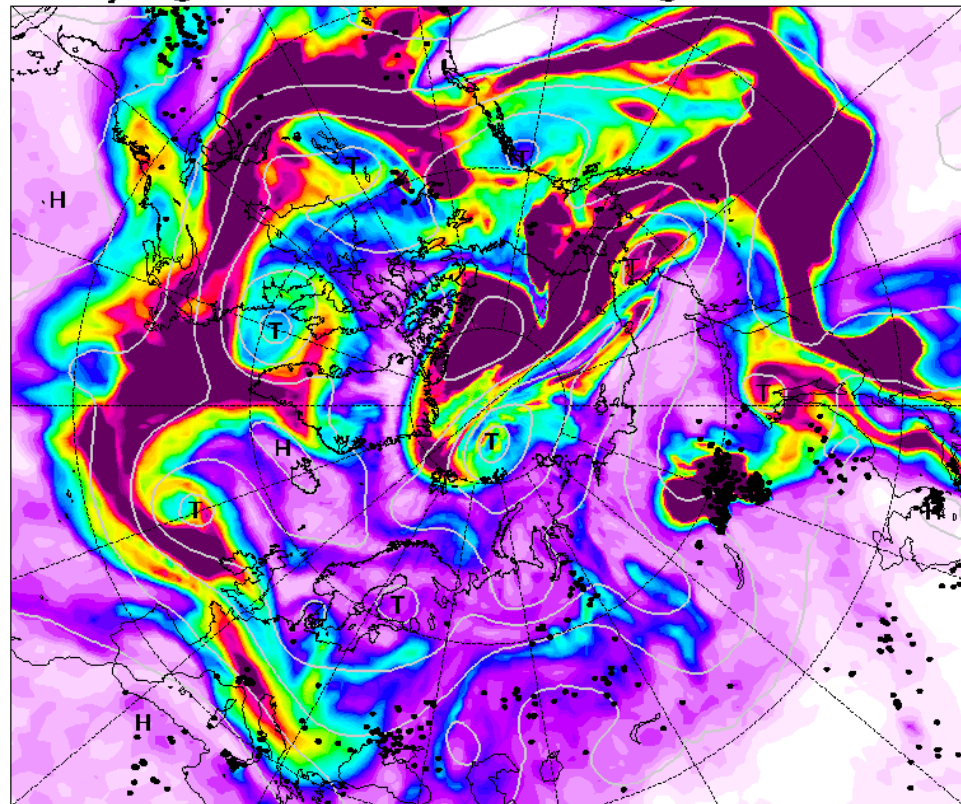


Biomass and Anthropogenic

Total column of BB-CO and 500 hPa geopotential

Analysis @ 20080709. 0

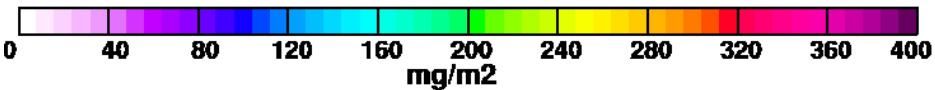
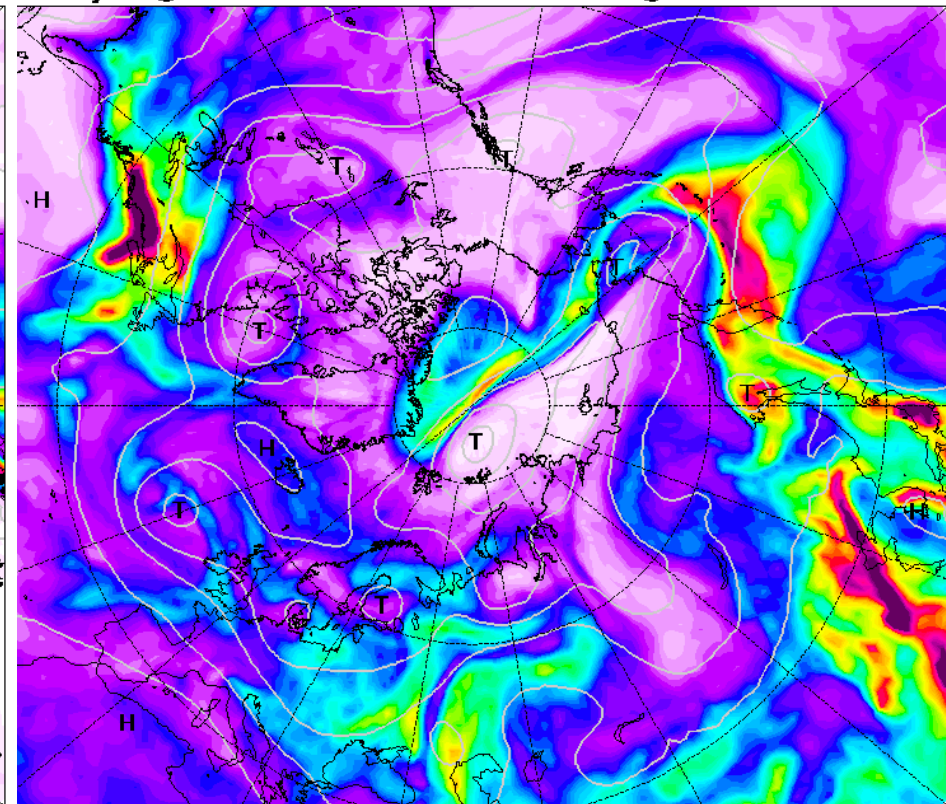
Actual @ 20080709. 30000



Total column of AN-CO and 500 hPa geopotential

Analysis @ 20080709. 0

Actual @ 20080709. 30000



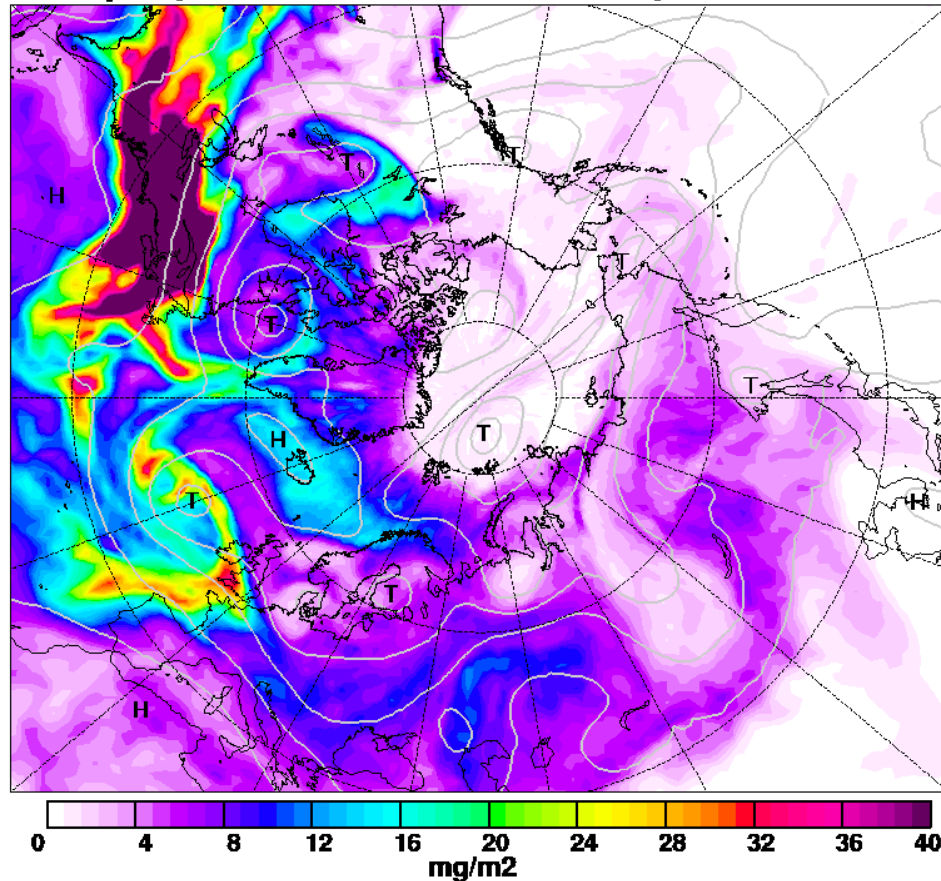
N. American Tracers

North American Anthropogenic Tracers

Total column of NA-NO₂ and 500 hPa geopotential

Analysis @ 20080709. 0

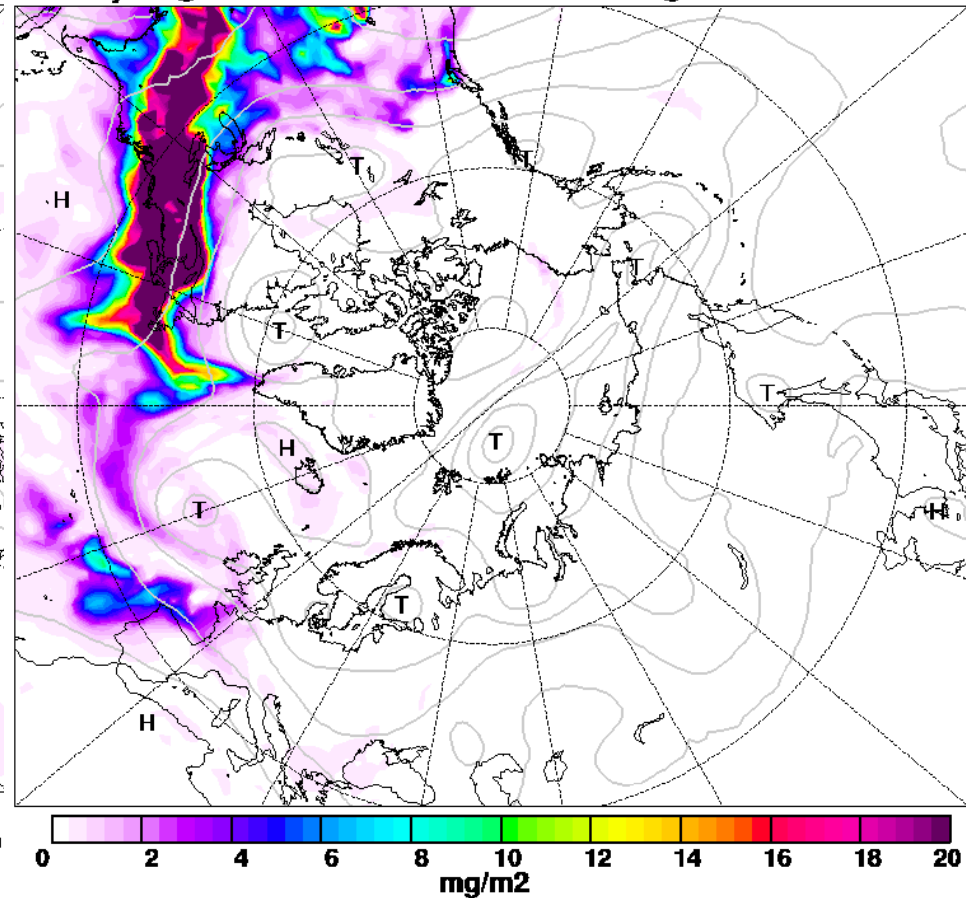
Actual @ 20080709. 30000



Total column of NA-SO₄ and 500 hPa geopotential

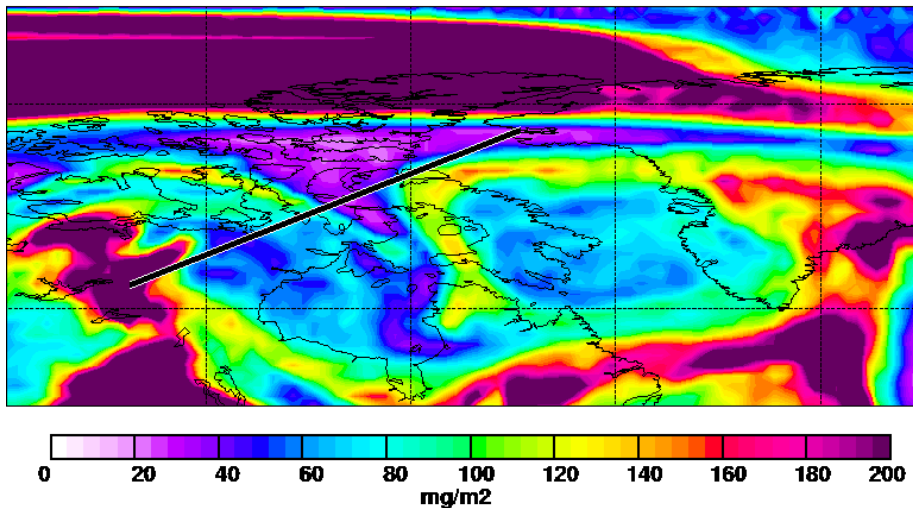
Analysis @ 20080709. 0

Actual @ 20080709. 30000

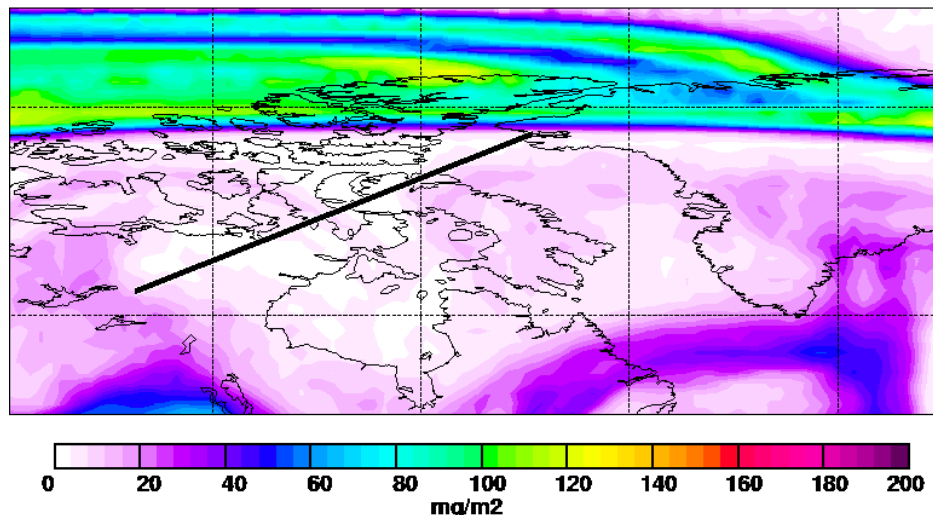


BC

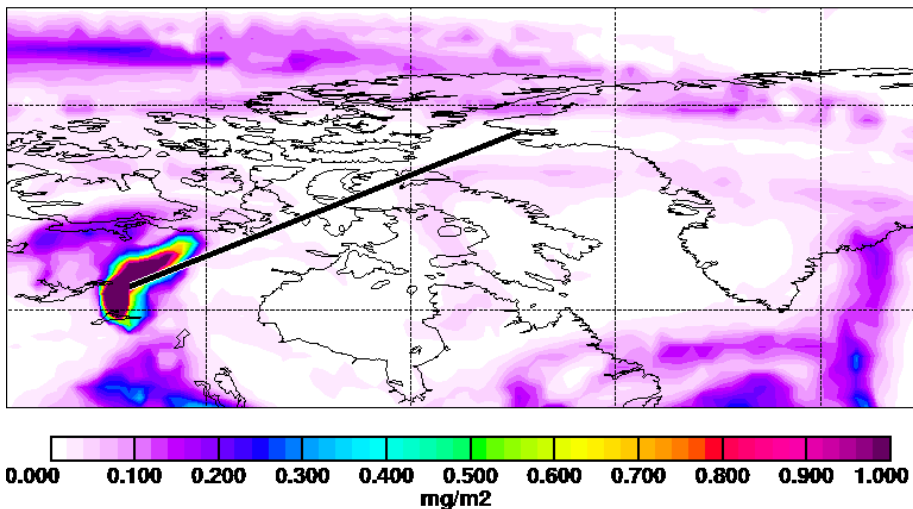
Total column of BB-CO for age class all
Analysis @ 20080709. 90000 Actual @ 20080710.1200



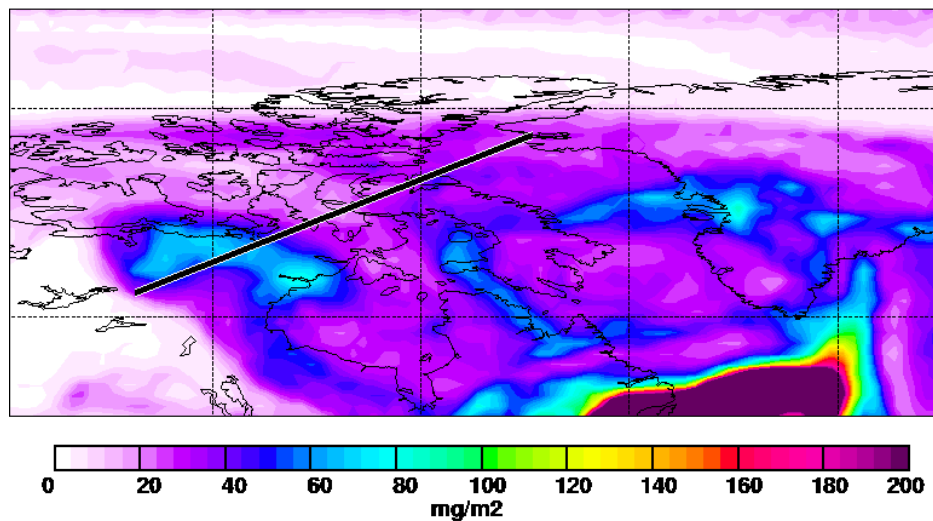
Total column of AS-CO for age class all
Analysis @ 20080709. 90000 Actual @ 20080710.1200



Total column of BB-BC for age class all
Analysis @ 20080709. 90000 Actual @ 20080710.1200

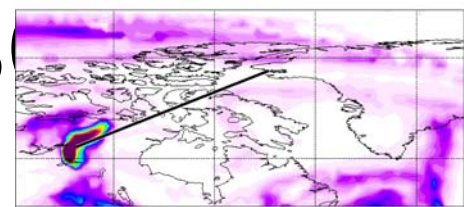


Total column of NA-CO for age class all
Analysis @ 20080709. 90000 Actual @ 20080710.1200

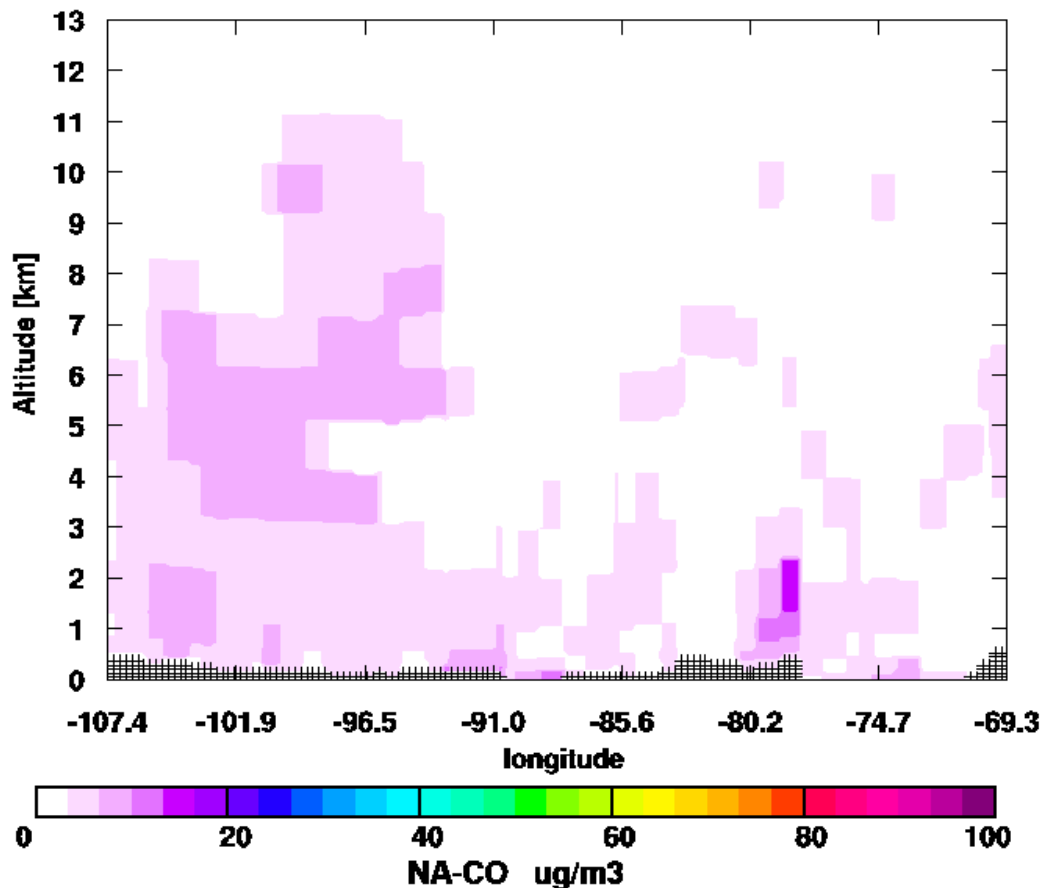


Biomass, N.American CO, B

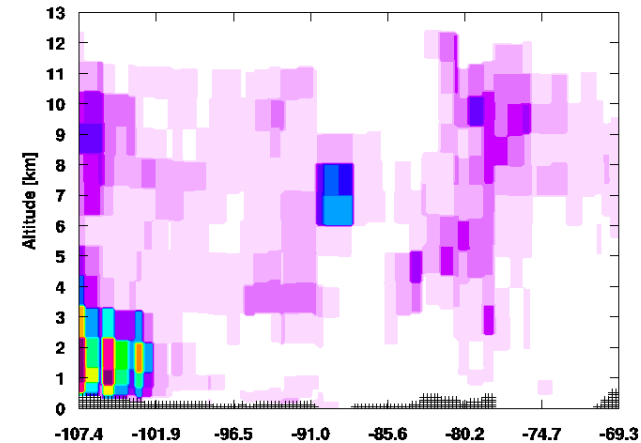
Leg 1 – Transect : Thule – Lake Athabasca



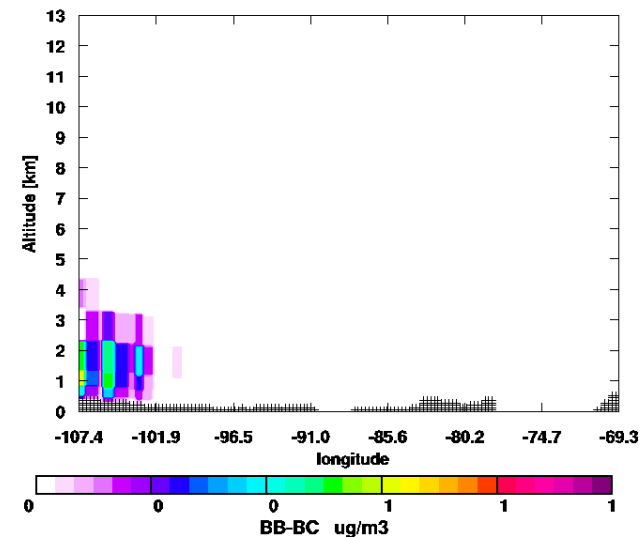
CROSS SECTION FROM 62.4 TO 77.5 LATITUDE AND -107.4 TO -69.3 LONGITUDE
NA-CO CONCENTRATION FOR AGE CLASS 0 - 20.00 DAYS
ANALYSIS @ 20080709 60000 UTC ACTUAL @ 20080710 120000 UTC



CROSS SECTION FROM 62.4 TO 77.5 LATITUDE AND -107.4 TO -69.3 LONGITUDE
BB-CO CONCENTRATION FOR AGE CLASS 0 - 20.00 DAYS
ANALYSIS @ 20080709 60000 UTC ACTUAL @ 20080710 120000 UTC



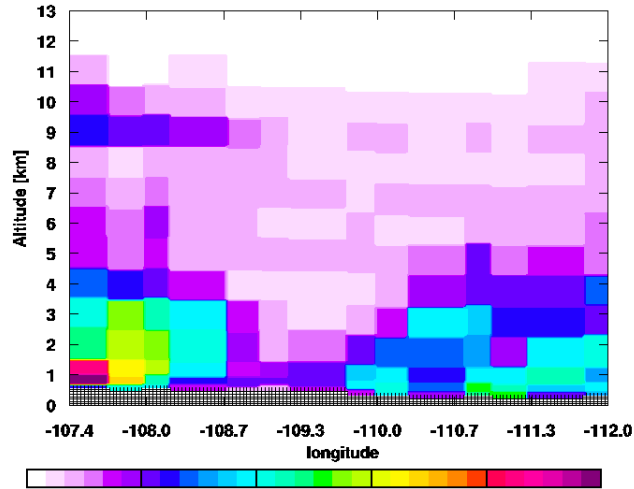
CROSS SECTION FROM 62.4 TO 77.5 LATITUDE AND -107.4 TO -69.3 LONGITUDE
BB-BC CONCENTRATION FOR AGE CLASS 0 - 20.00 DAYS
ANALYSIS @ 20080709 60000 UTC ACTUAL @ 20080710 120000 UTC



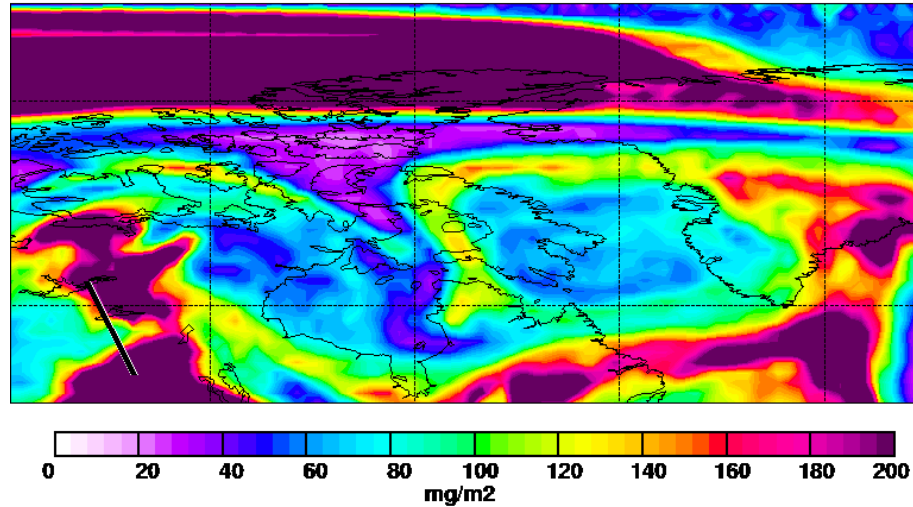
Profile

Good location for sampling biomass versus N.American Pollution

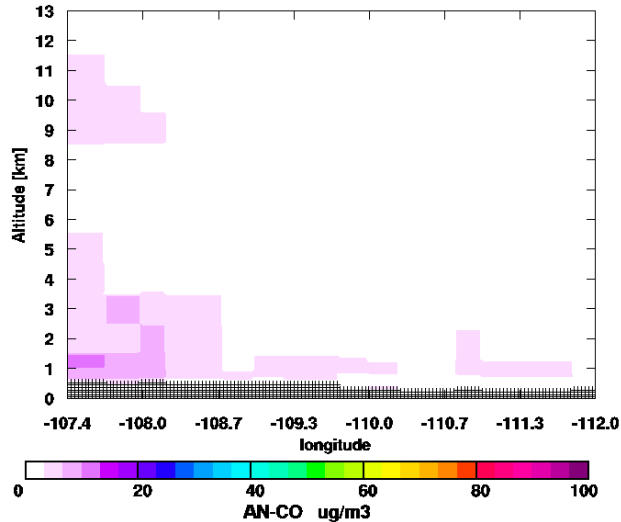
CROSS SECTION FROM 53.3 TO 62.4 LATITUDE AND -107.4 TO -112.0 LONGITUDE
BB-CO CONCENTRATION FOR AGE CLASS 0 - 20.00 DAYS
ANALYSIS @ 20080709 60000 UTC ACTUAL @ 20080710 120000 UTC



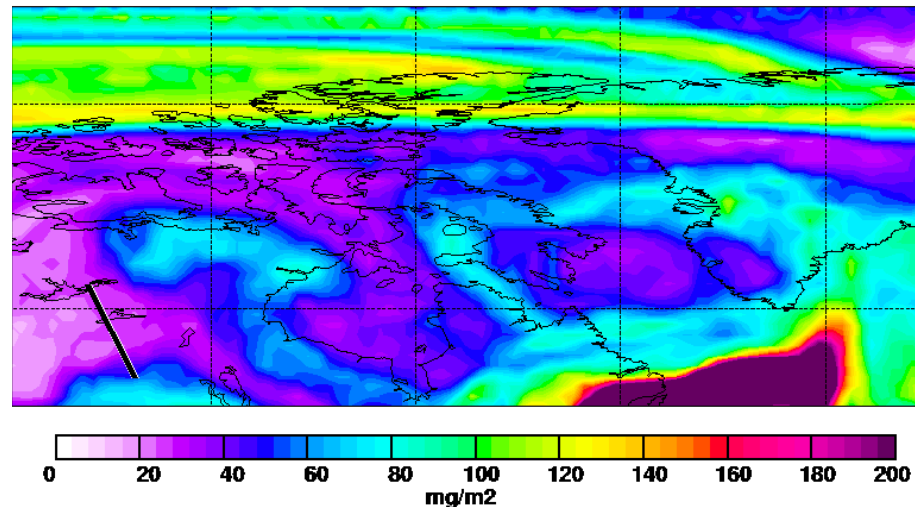
Total column of BB-CO for age class all
Analysis @ 20080709. 90000 Actual @ 20080710.1200



CROSS SECTION FROM 53.3 TO 62.4 LATITUDE AND -107.4 TO -112.0 LONGITUDE
AN-CO CONCENTRATION FOR AGE CLASS 0 - 20.00 DAYS
ANALYSIS @ 20080709 60000 UTC ACTUAL @ 20080710 120000 UTC



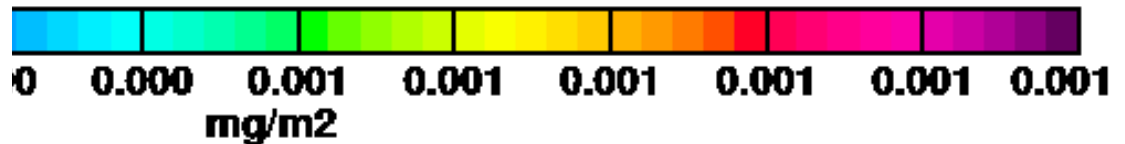
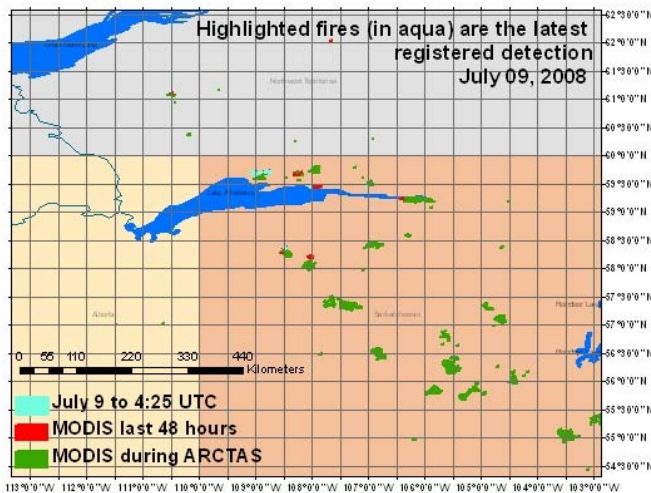
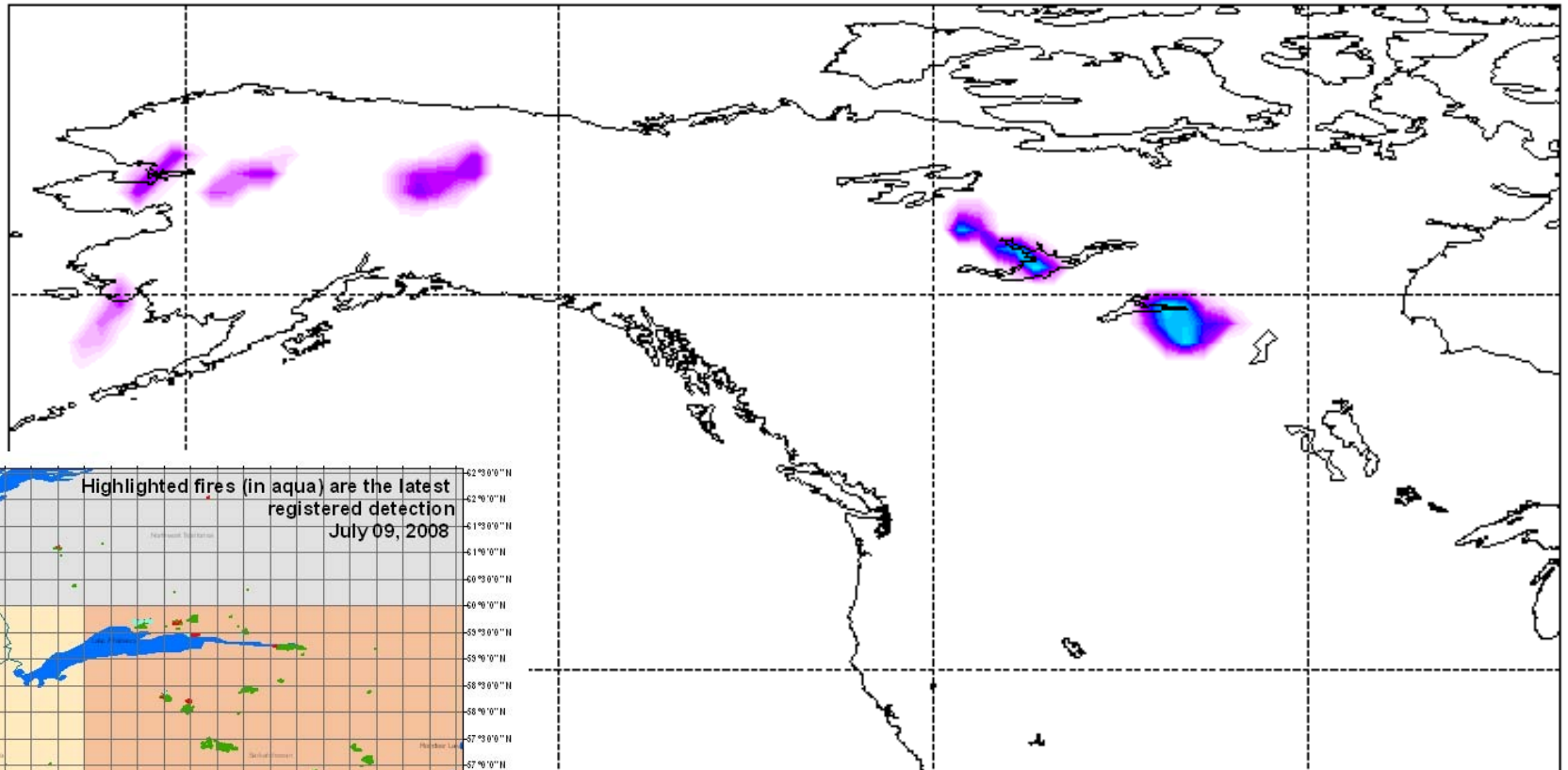
Total column of AN-CO for age class all
Analysis @ 20080709. 90000 Actual @ 20080710.1200



New Fires

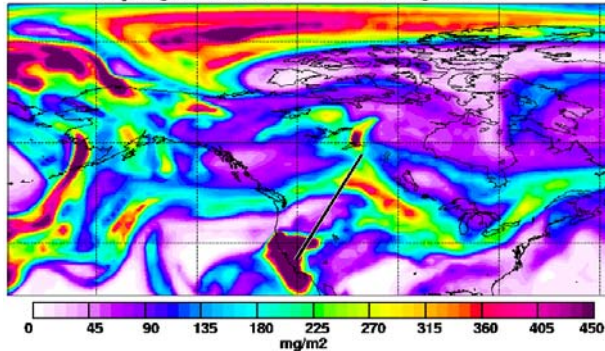
Significantly different situation for aerosol tracers

Total column of AIRTRAC for age class all
Analysis @ 20080708. 0 **Actual @ 20080708.1500**

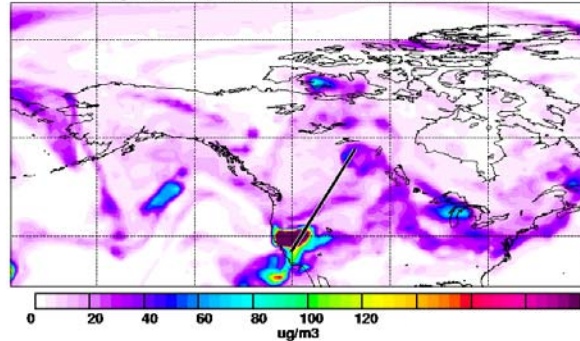


Outlook

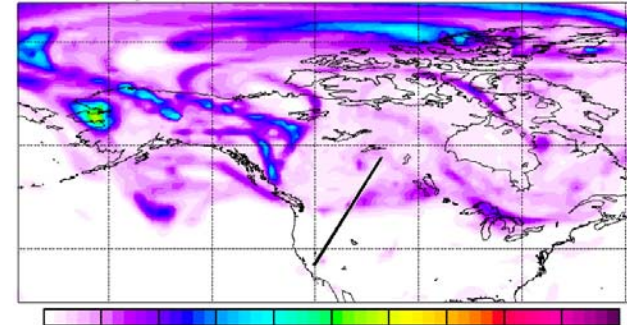
Total column of BB-CO for age class all
Analysis @ 20080709. 90000 Actual @ 20080710.



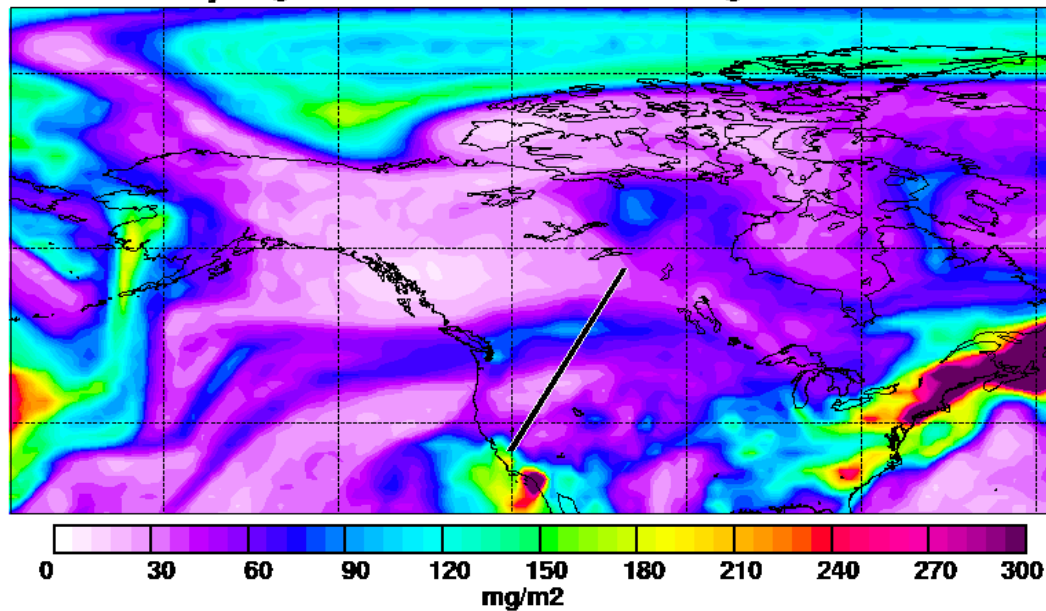
Mixing ratio of BB-CO at 3500 m asl for age class all
Analysis @ 20080709. 90000 Actual @ 20080711.



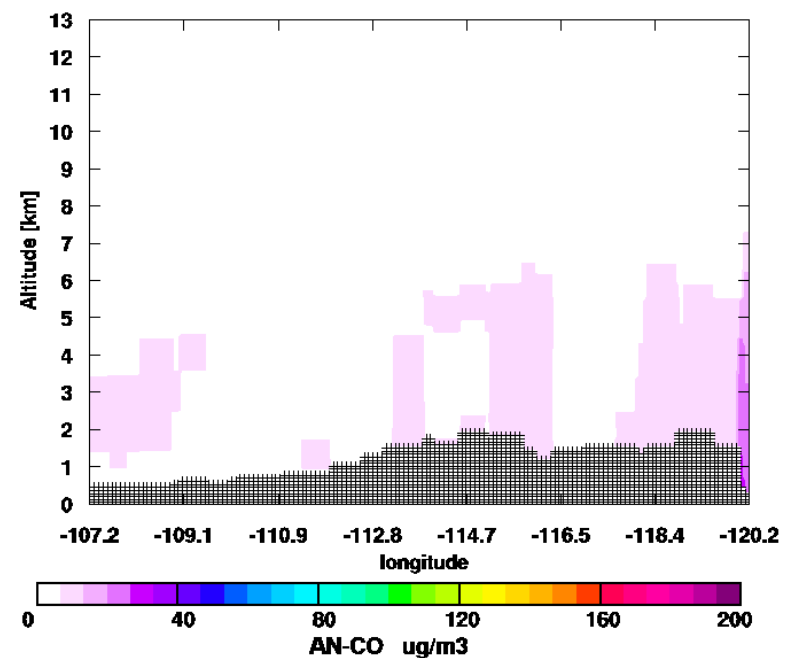
Mixing ratio of BB-CO at 7500 m asl for age class all
Analysis @ 20080709. 90000 Actual @ 20080711.



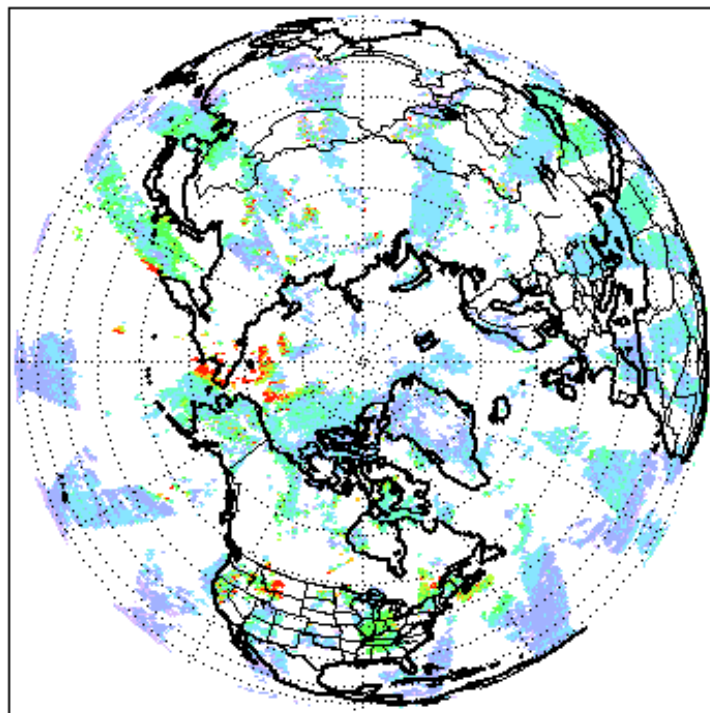
Total column of AN-CO for age class all
Analysis @ 20080709. 90000 Actual @ 20080710.



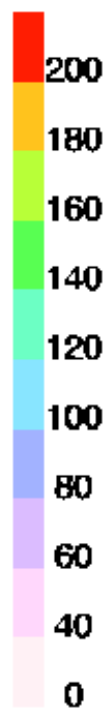
CROSS SECTION FROM 57.7 TO 36.7 LATITUDE AND -107.2 TO -120.2 LONGITUDE
AN-CO CONCENTRATION FOR AGE CLASS 0 - 20.00 DAYS
ANALYSIS @ 20080709 60000 UTC ACTUAL @ 20080711 0 UTC



MOPITT CO 350hPa: 20080706

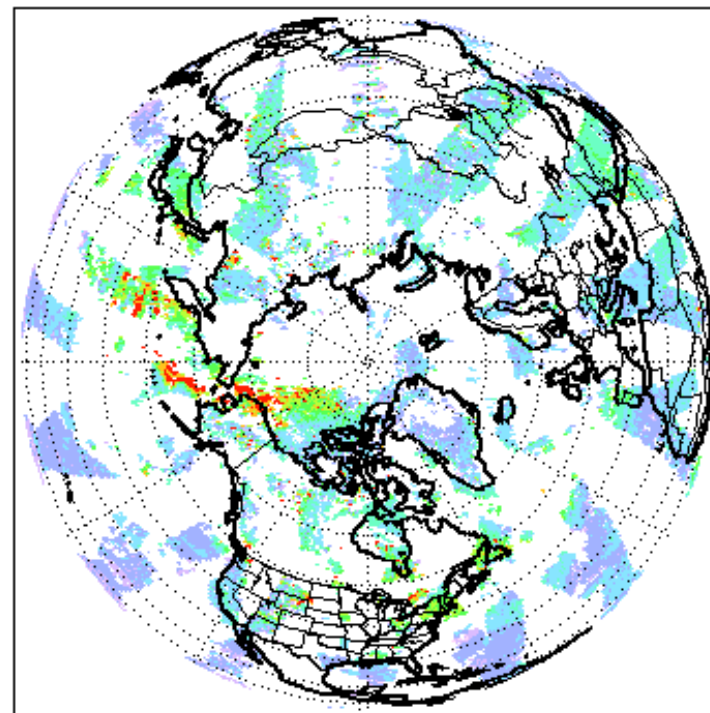


ppbv



July 6

MOPITT CO 350hPa: 20080707

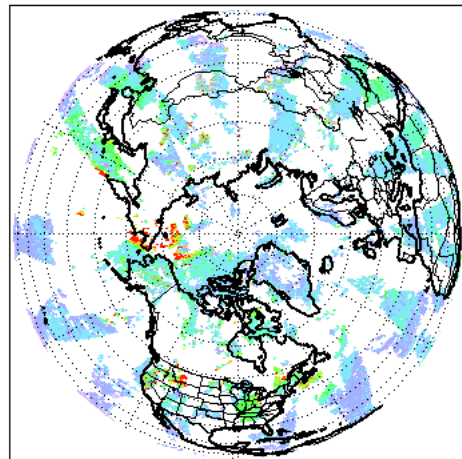


ppbv



July 7

MOPITT CO 350hPa: 20080706

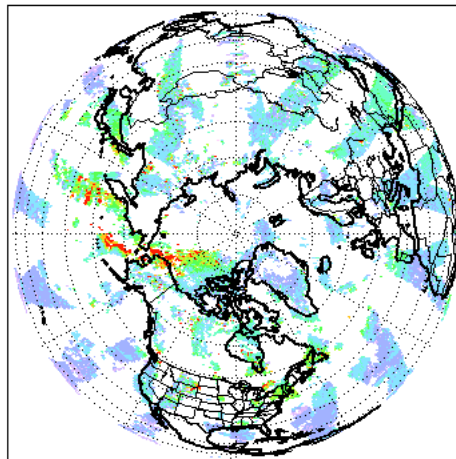


ppbv



July 6

MOPITT CO 350hPa: 20080707

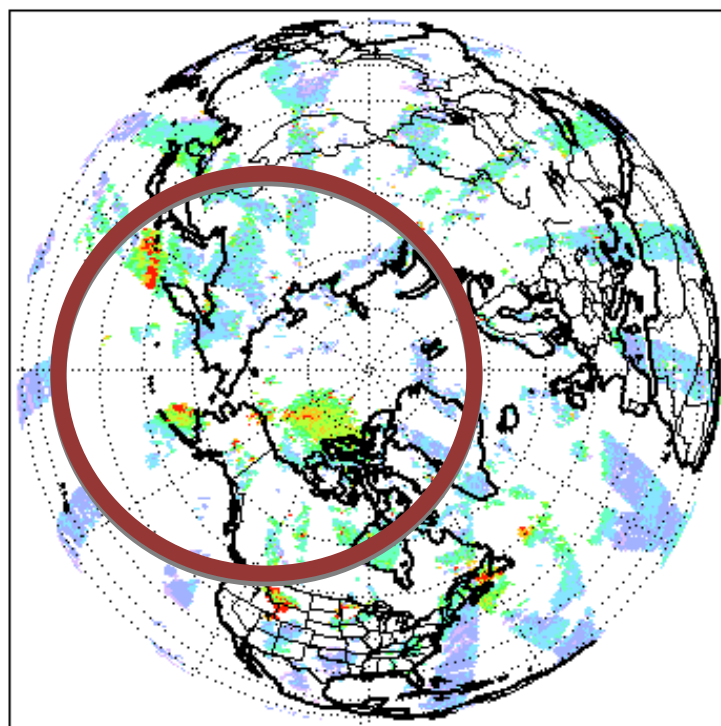


ppbv



July 7

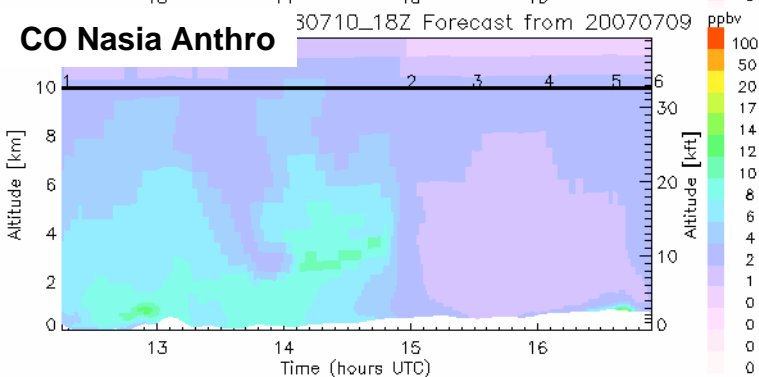
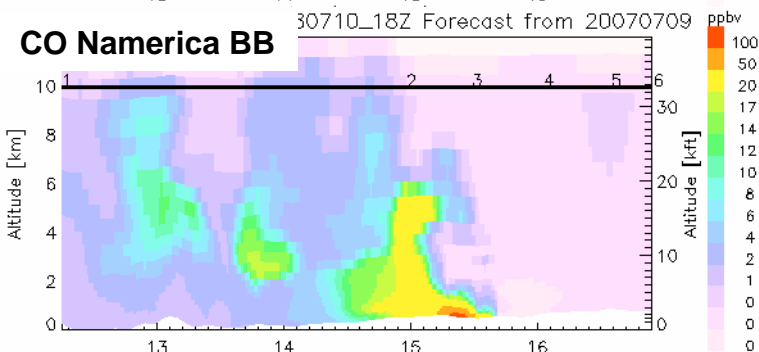
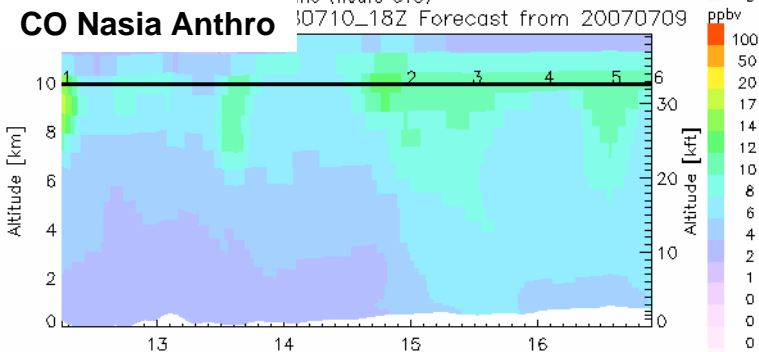
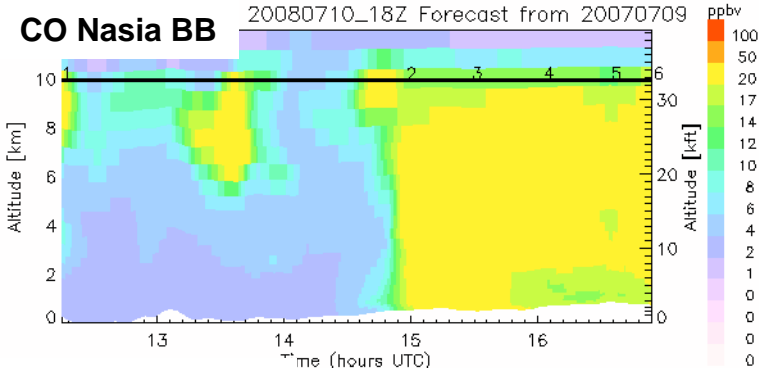
MOPITT CO 350hPa: 20080708



ppbv

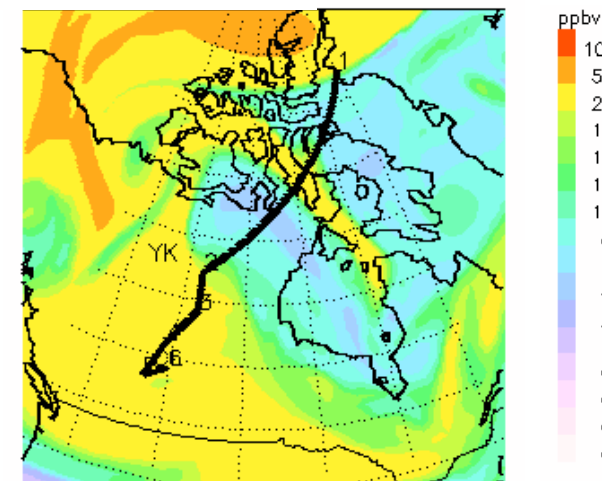


July 8



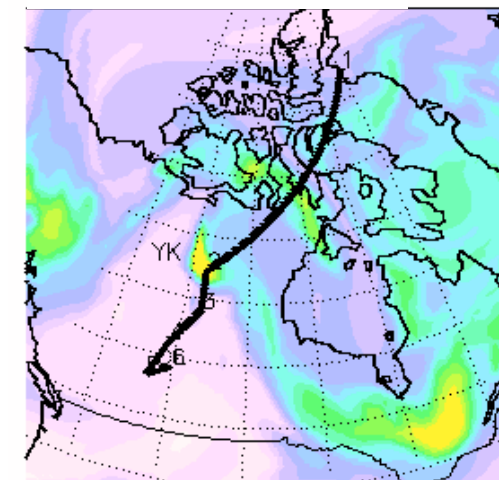
Thule Return MOZART Fx July 10 18z

CO Nasia BB 8 km 20080710_18Z



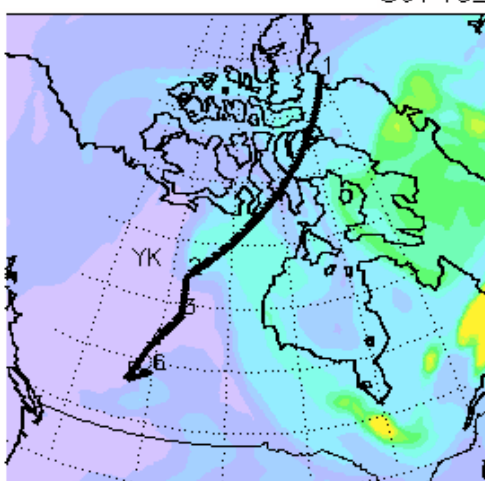
0709

Z CO Namerica BB 4 km 20080710_18Z

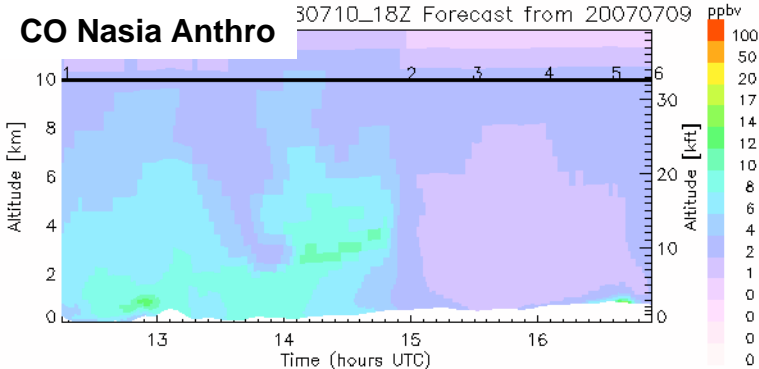
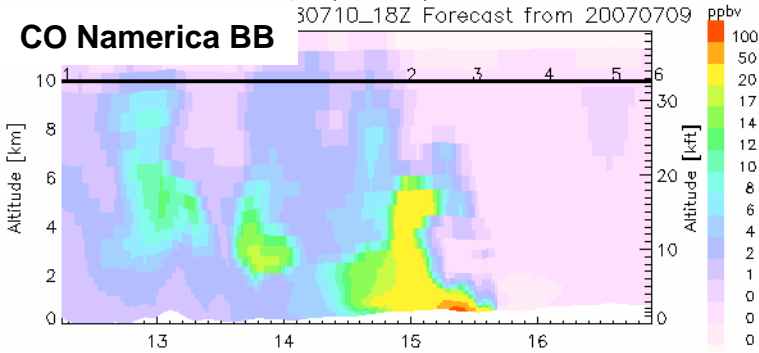
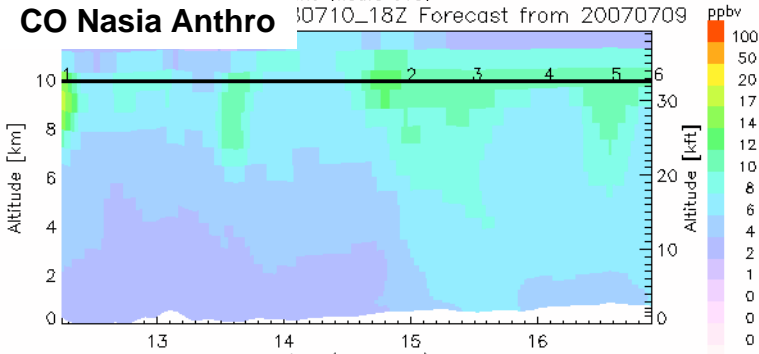
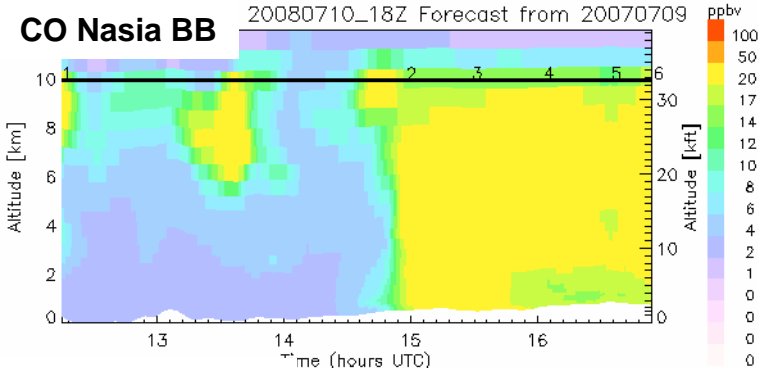


0709

CO Namerica BB 4 km 20080710_18Z

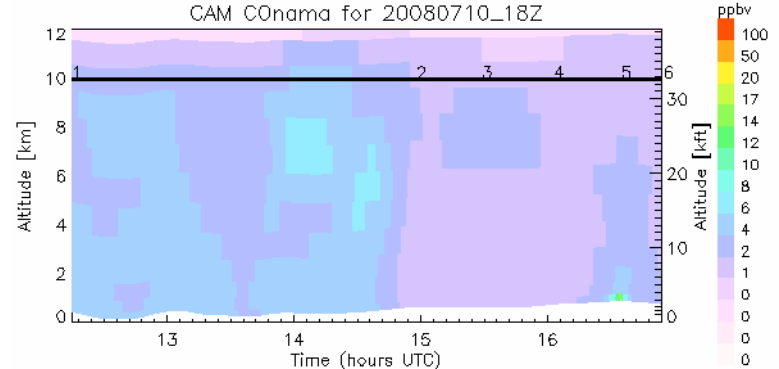
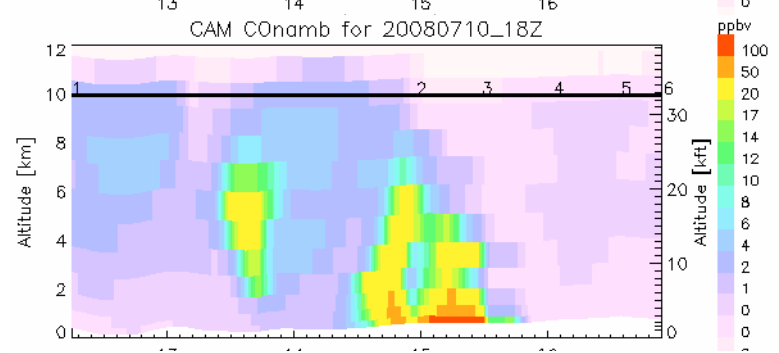
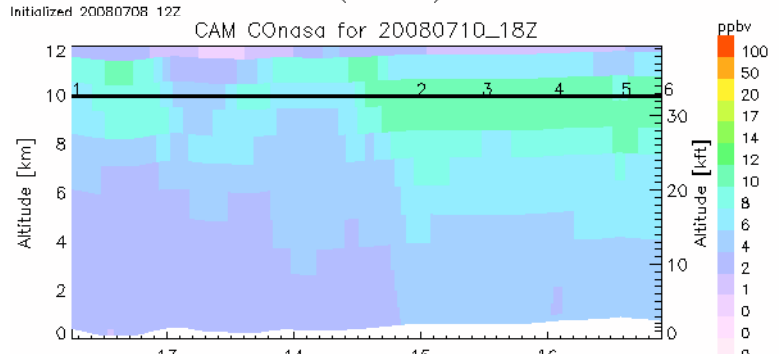
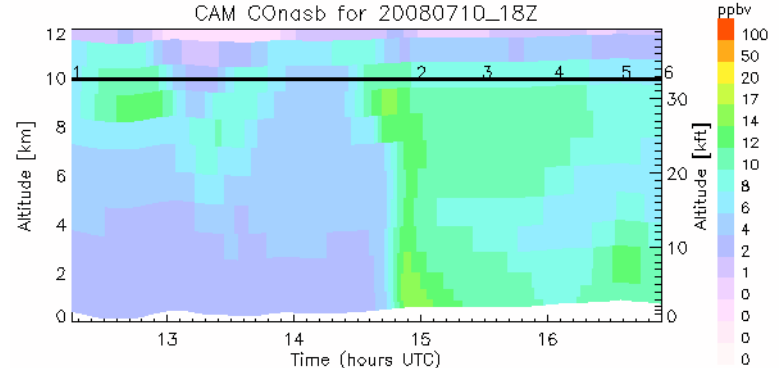


0709

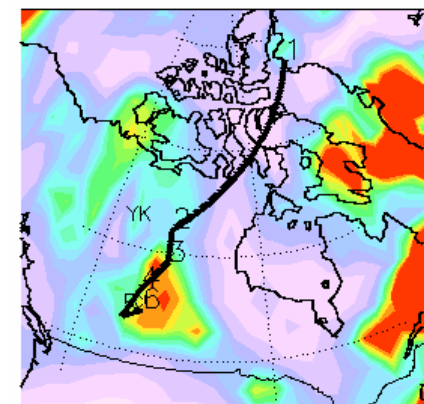


← MOZART

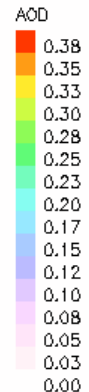
CAM →



MOZART-4 AOD 20080710_18Z



AOD

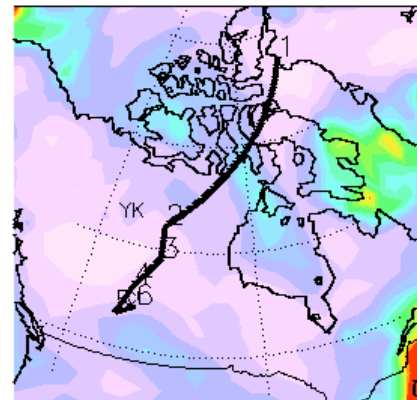


**Thule Return
Aerosol
July 9 18z**

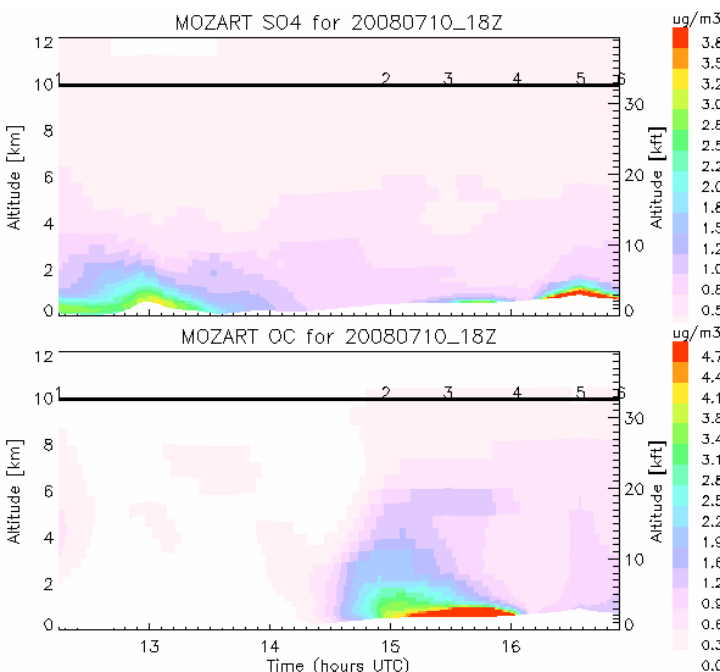
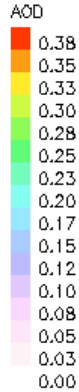
← MOZART

CAM →

CAM AOD 20080710_18Z



AOD

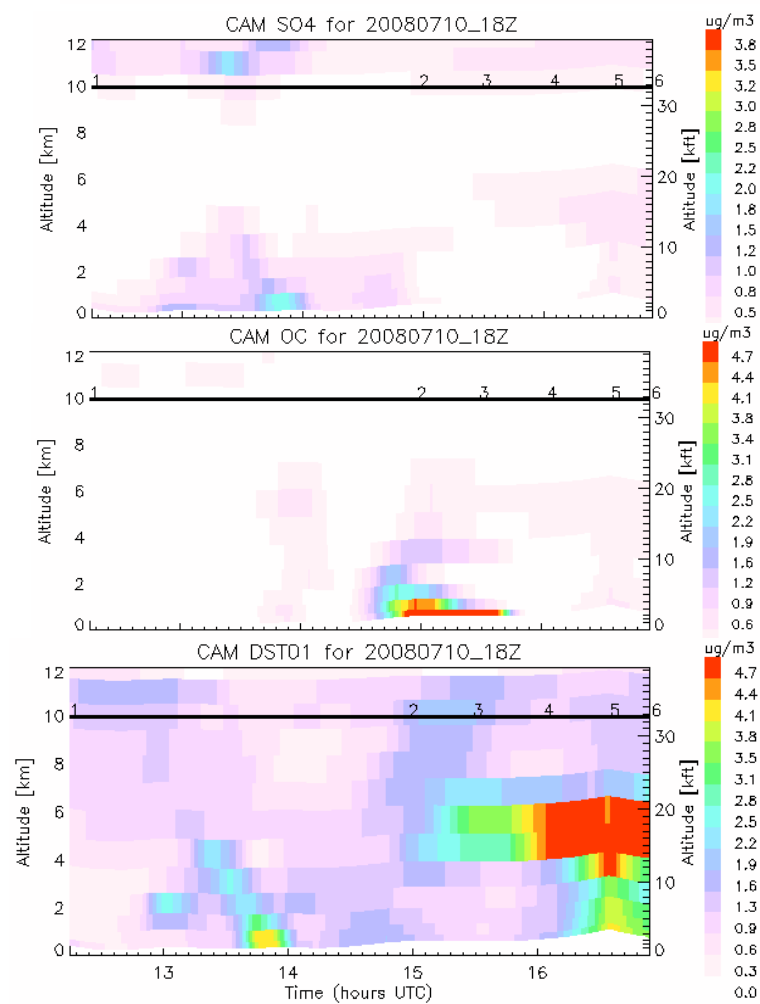


Initialized 20080709

SO4

Org. Carbon

Dust

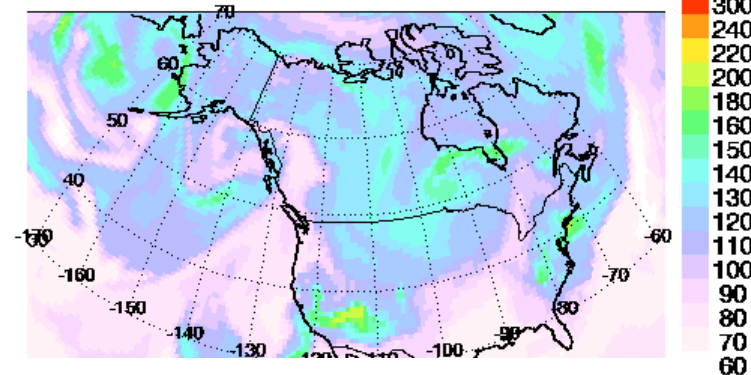


Transit to Palmdale July 12 18Z

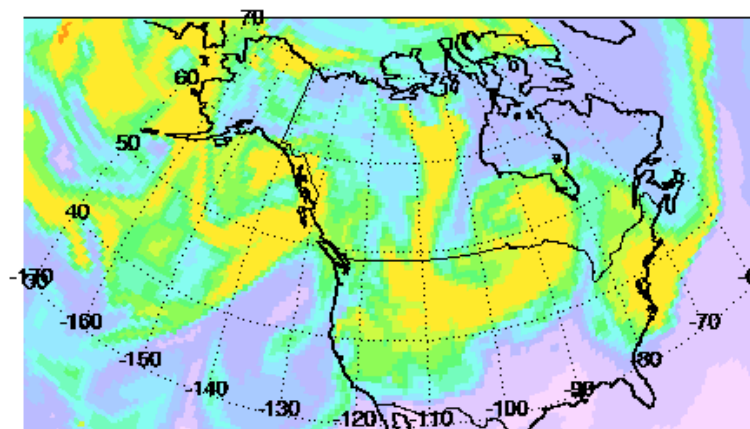
MOZART Fx

3 km

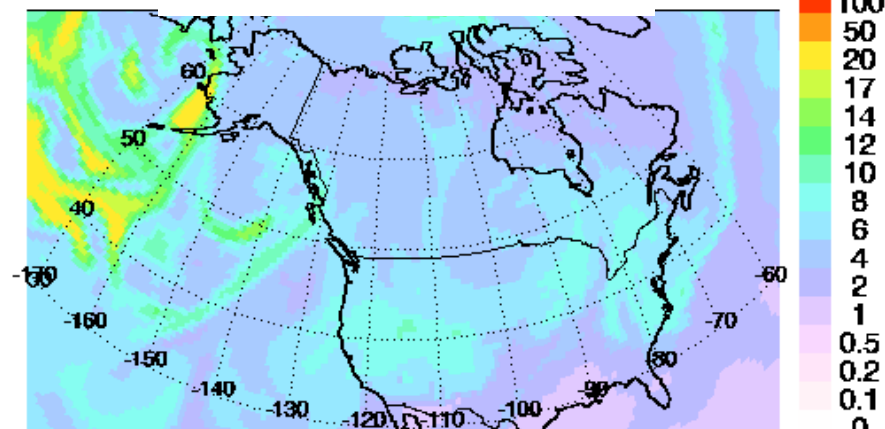
CO 20080712-18Z 3km



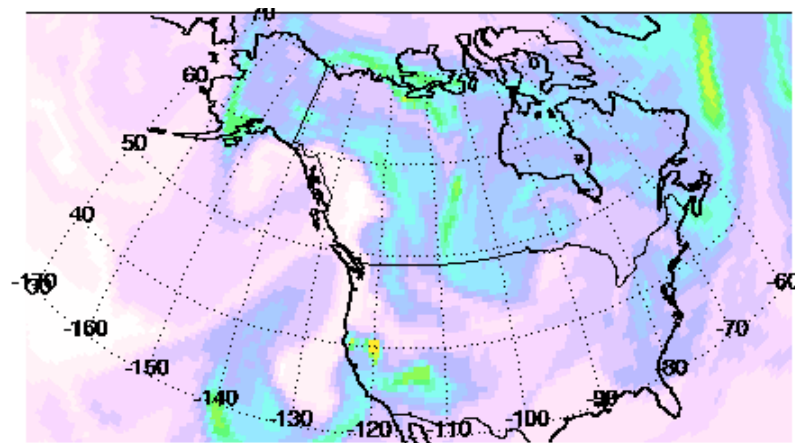
CO Nasia BB



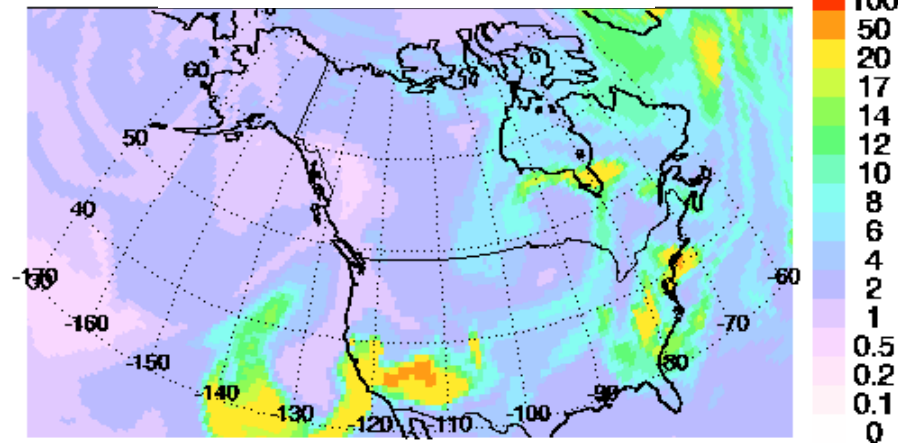
CO Nasia Anthro



CO Namerica BB



CO Namerica Anthro

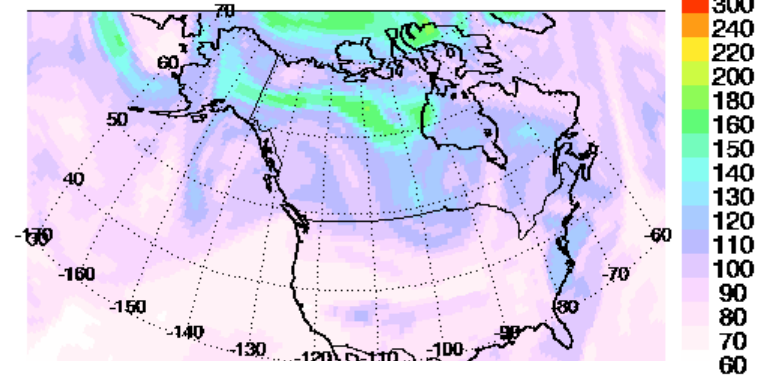


Transit to Palmdale July 12 18Z

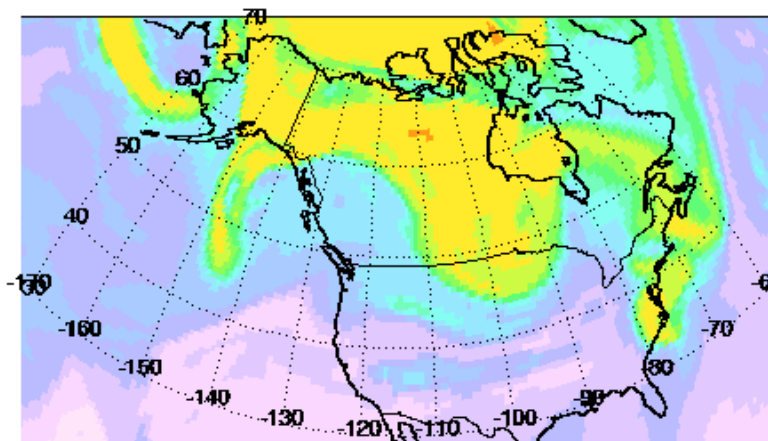
MOZART Fx

9 km

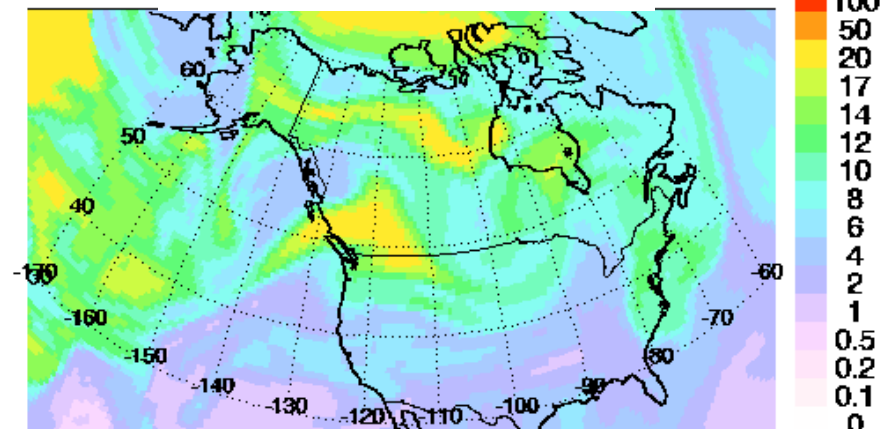
CO 20080712-18Z 9km



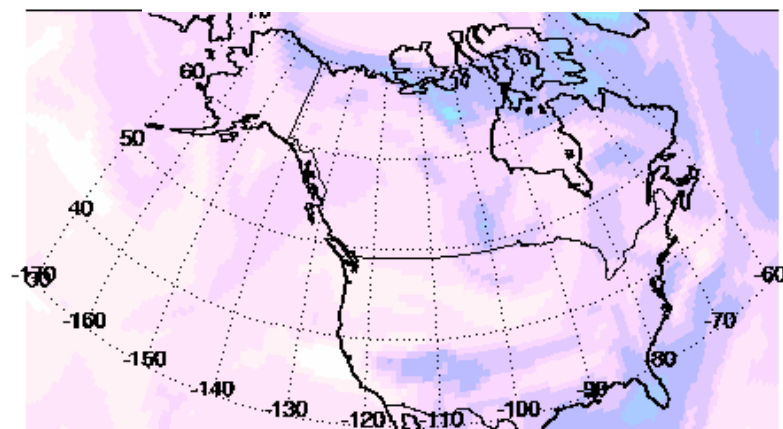
CO Nasia BB



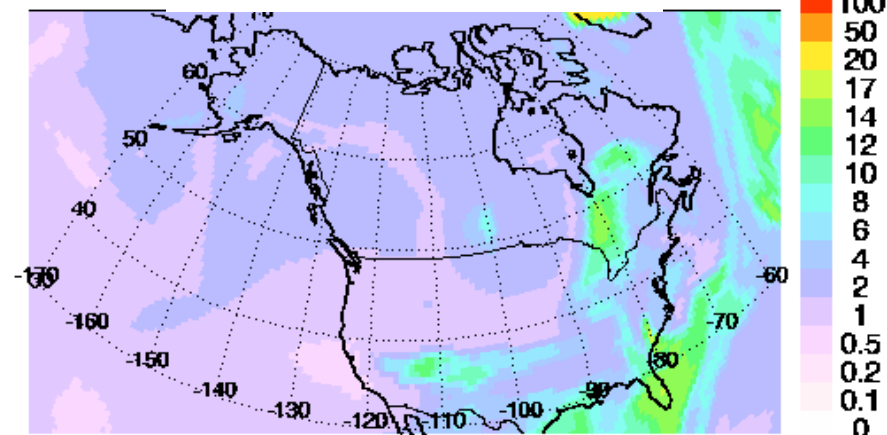
CO Nasia Anthro



CO Namerica BB



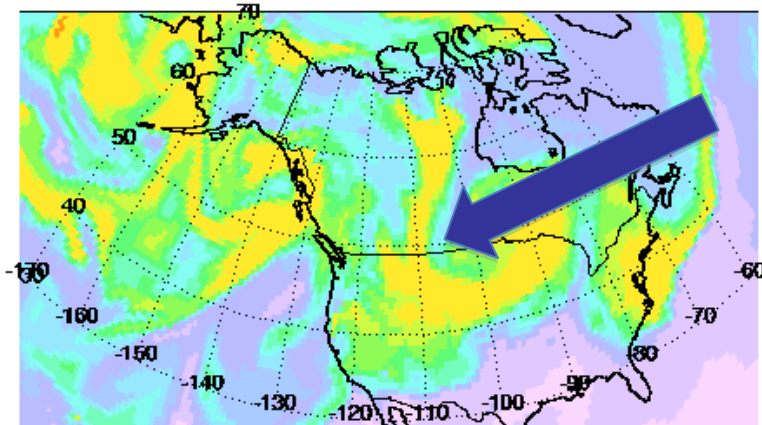
CO Namerica Anthro



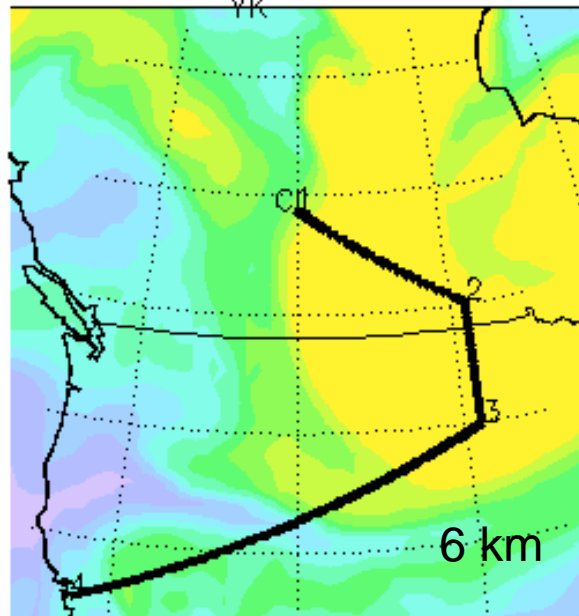
Example Flight Plan for Transit

Siberian BB Plume

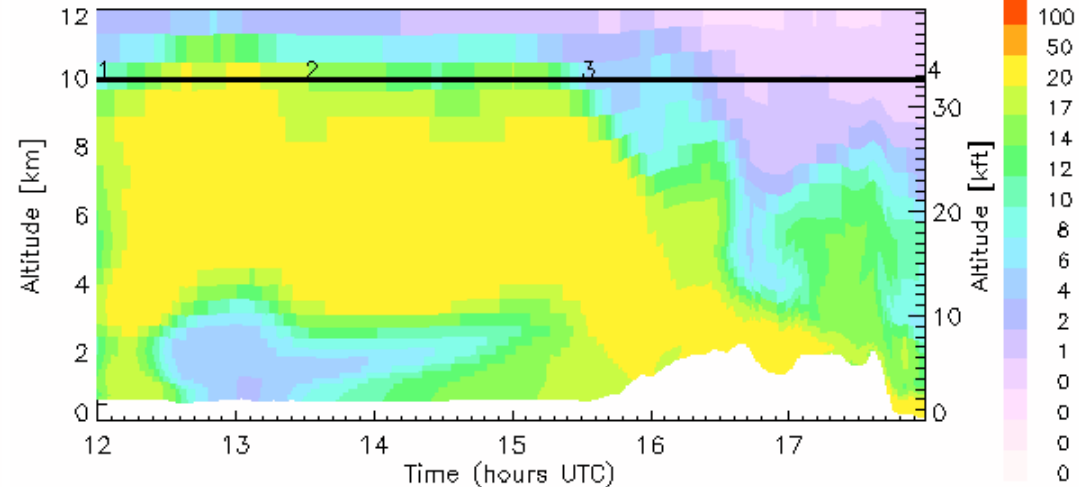
CO Nasia BB



MOZART CO_{Nasb} 6 km 20080712_18Z

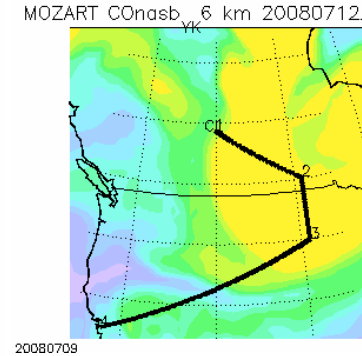
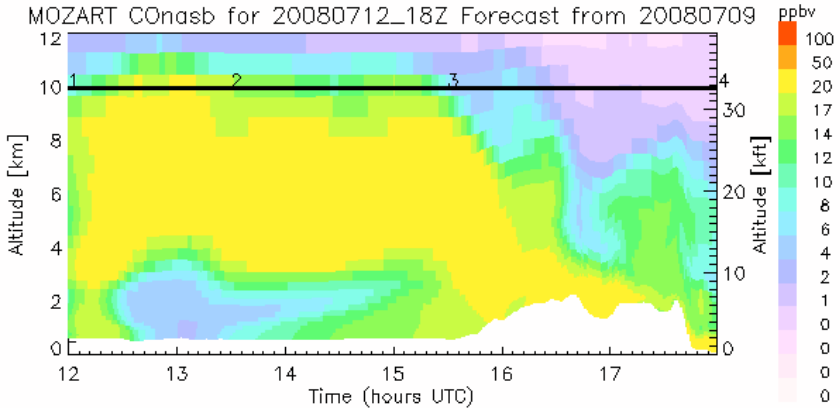


MOZART CO_{Nasb} for 20080712_18Z Forecast from 20080709

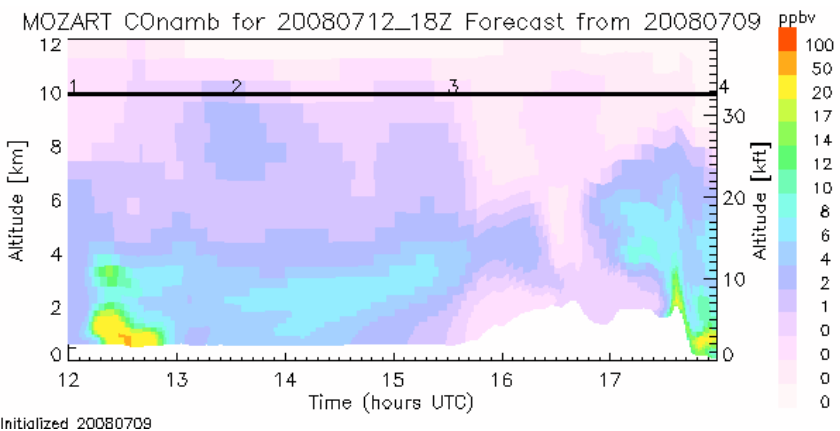


Initialized 20080709

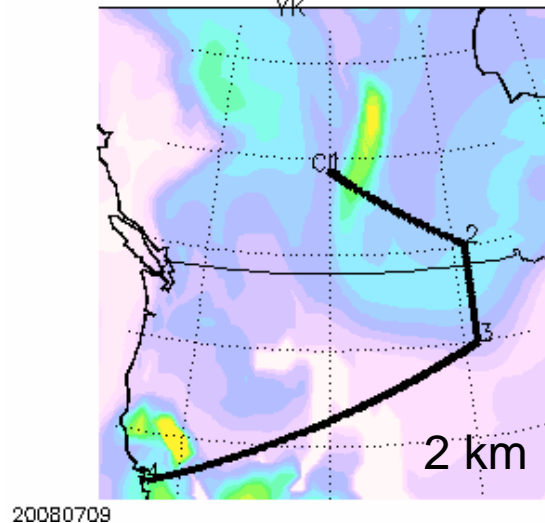
Example Flight Plan for Transit



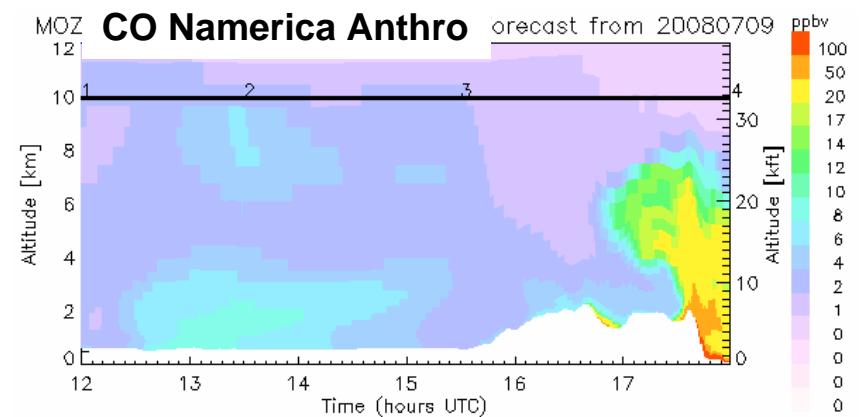
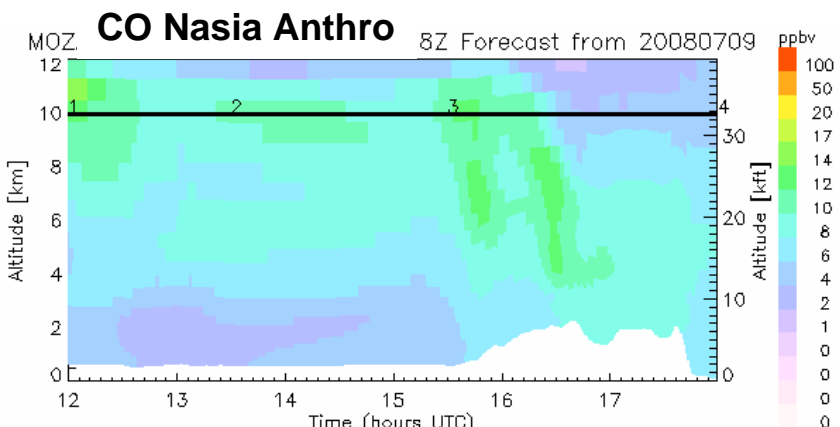
CO Nasia BB



MOZART CONamb_2 km 20080712_18Z



CO Namerica BB

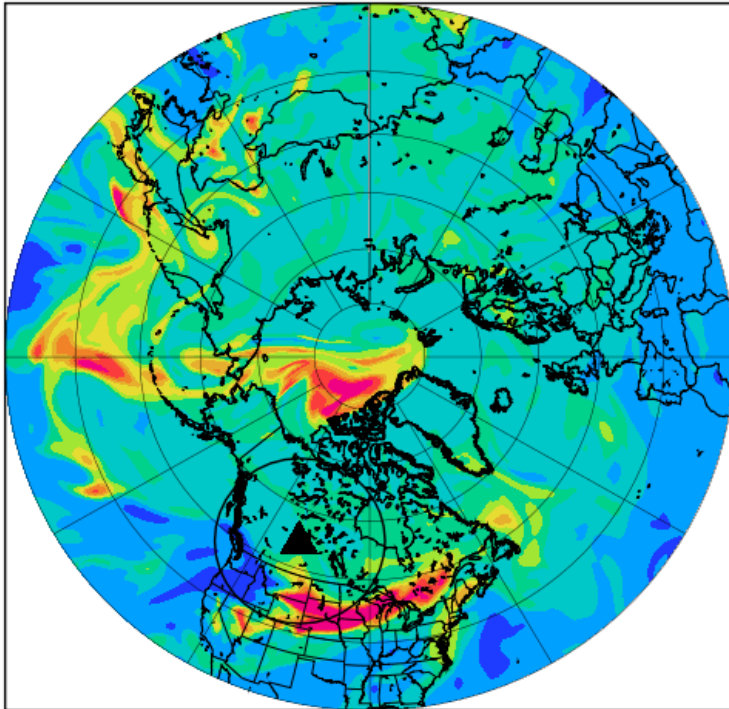


GEOS5 Forecast: 5-Day CO Animation

July 9th – 13th (July 9th 00Z)

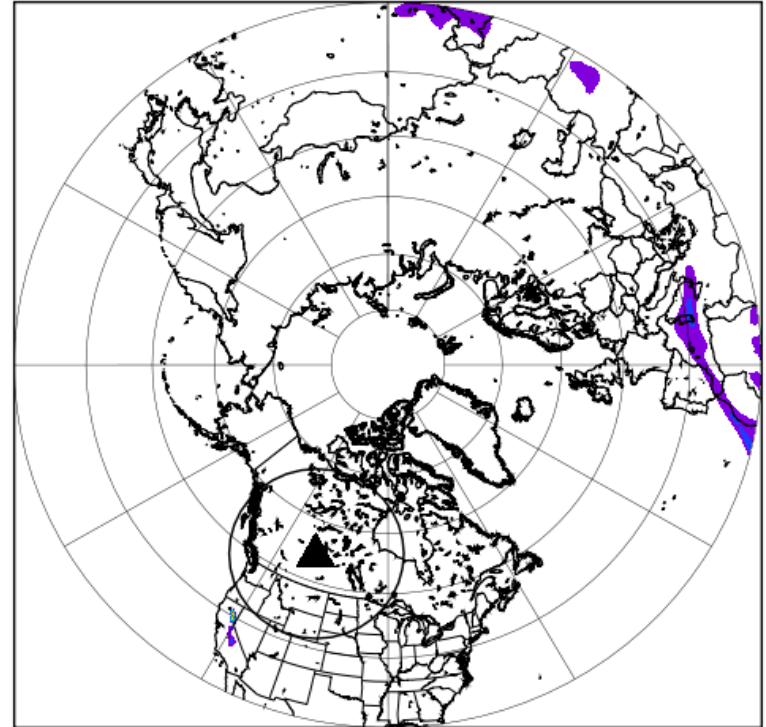
Total CO 500 mb

01:30Z09JUL2008



California Fire CO 500 mb

01:30Z09JUL2008

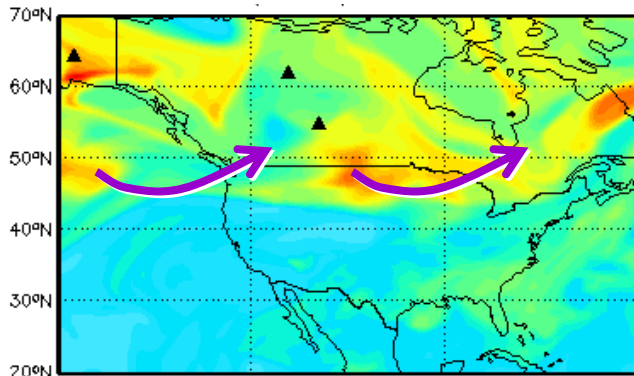


California fire pollution lofted
on 10th.

GEOS-5 20080709_06Z Fcst: **CO Outlook for the next few days**

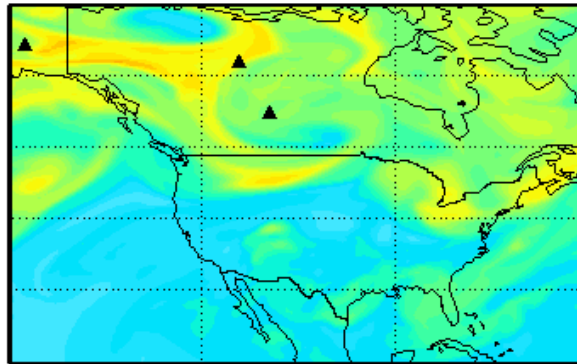
July 10

300 hPa



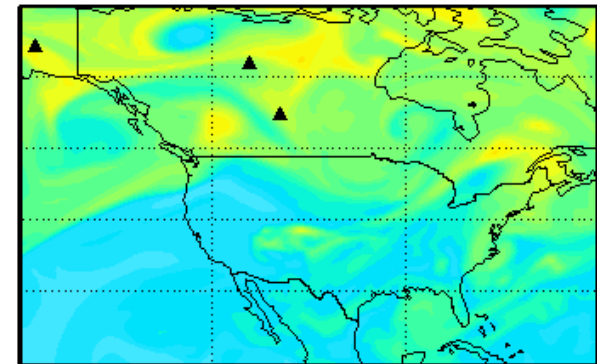
July 11

300 hPa



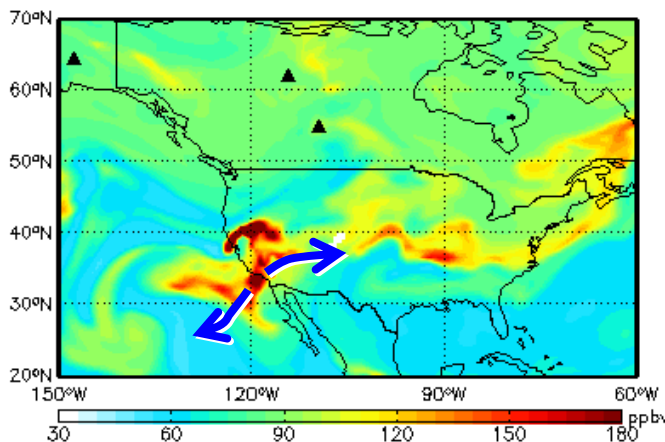
July 12

300 hPa

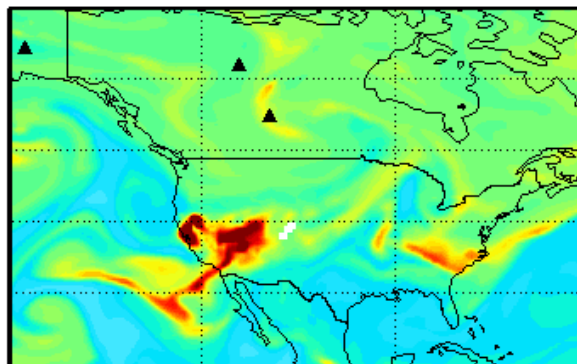


Waves of Siberian Fire/Asian anthro. plumes due east across the Pacific and US/Canada border

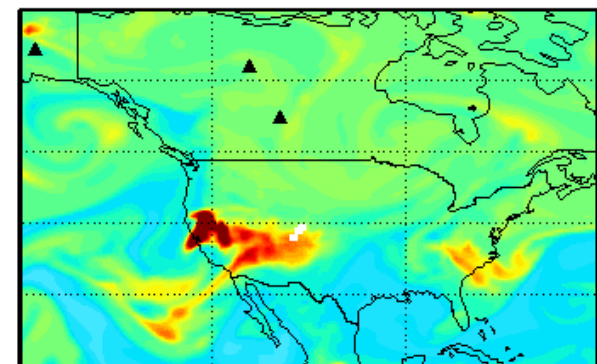
700 hPa



700 hPa



700 hPa

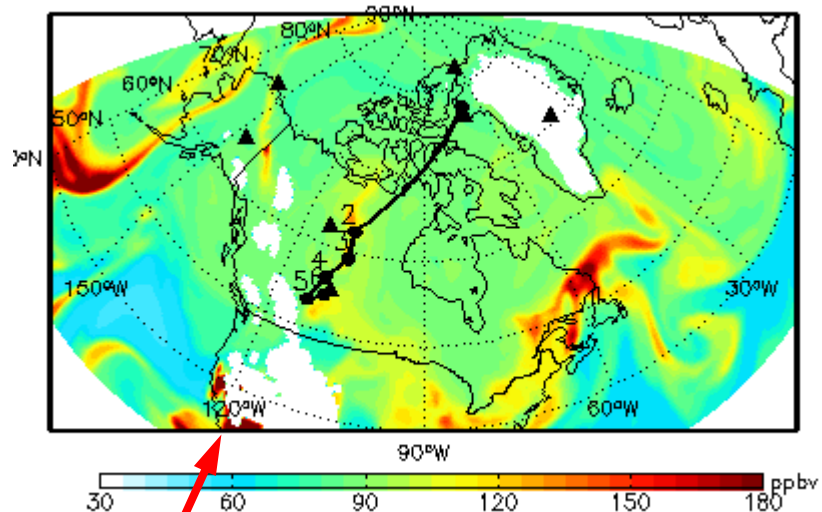


Lofting of California fire/some N. Amer pollution to the middle troposphere and transported east.

GEOS5 Forecast: DC-8 Flight : Thule to Cold Lake

July 10th 16:30Z (July 9th 06Z forecast)

Total CO 850 mb

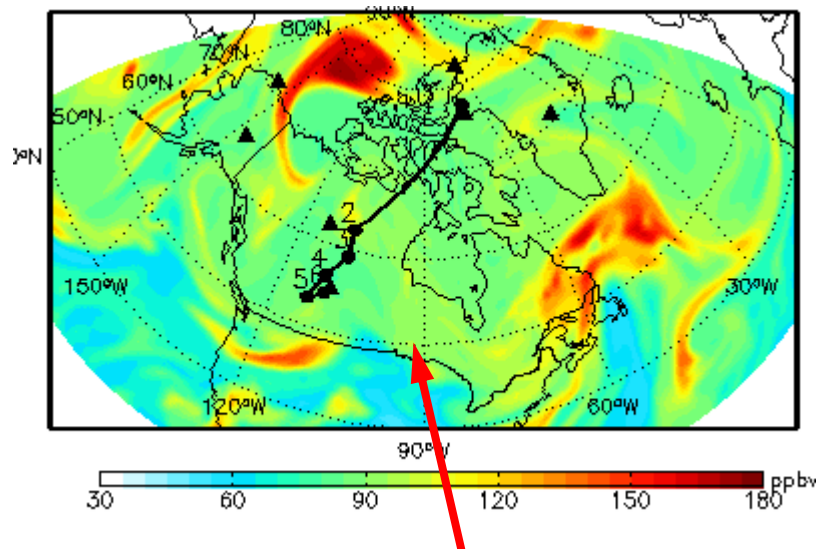


California Fires:
Keep an eye on
for transit to
Palmdale.

Siberian Fire

**Siberian Fire + Asian
Anthro.**

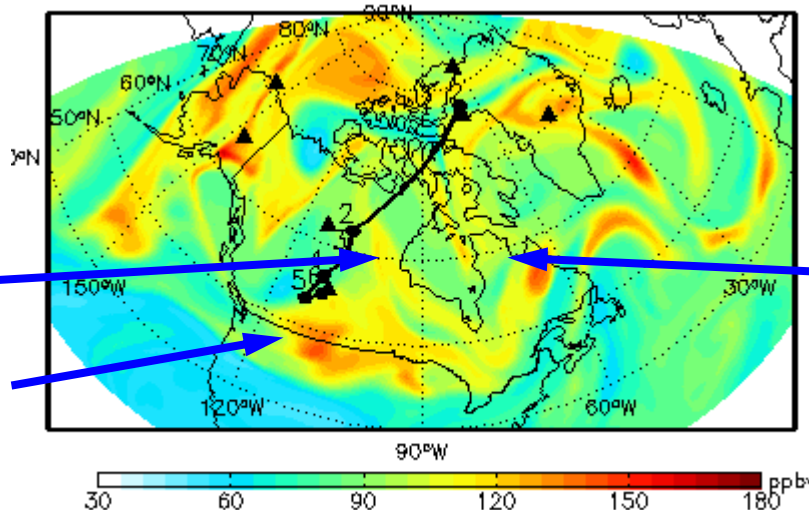
Total CO 500 mb



**Not much going on for
Thule to Cold Lake at 500
mb.**

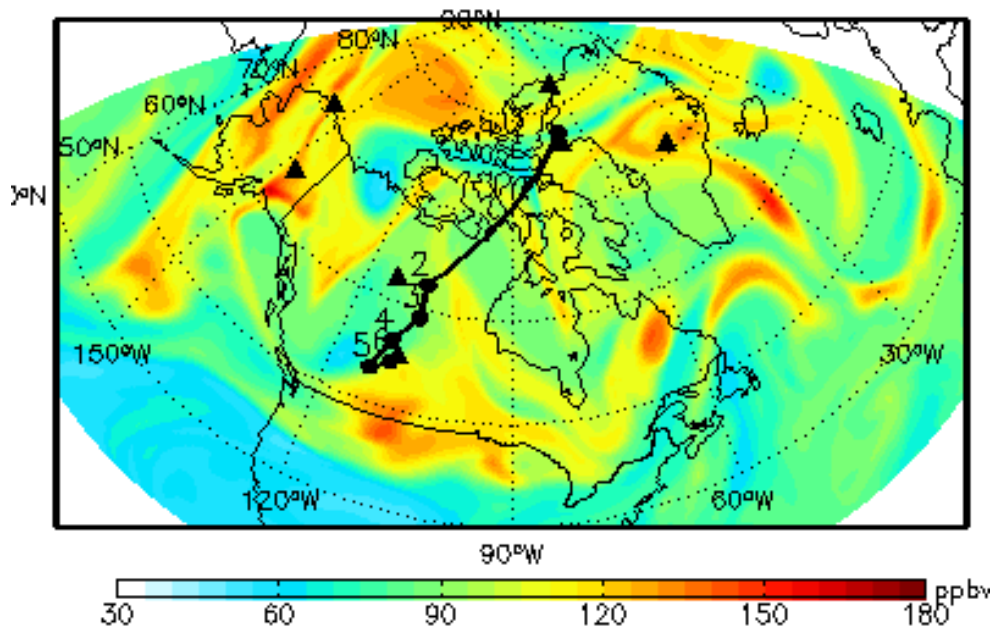
**Some relatively weak
plumes at 300 mb, but
flight track missing
them.**

Total CO 300 mb

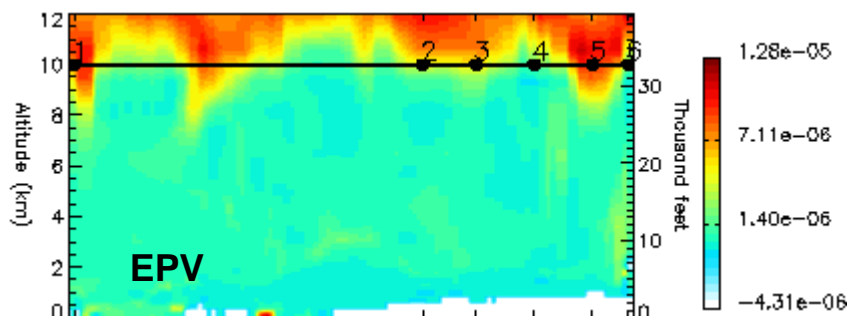
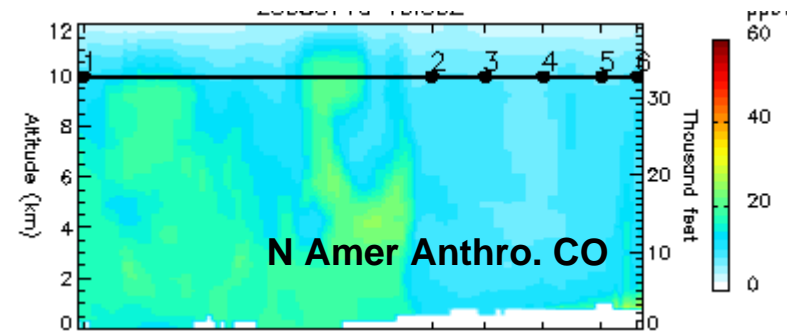
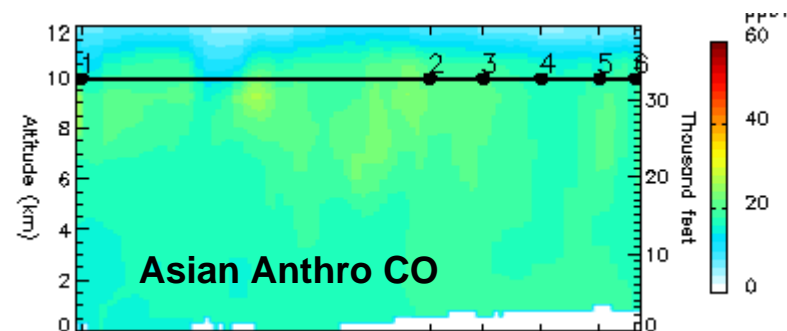
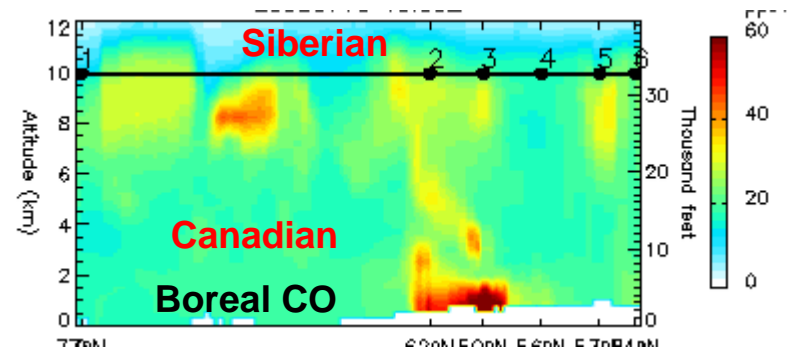
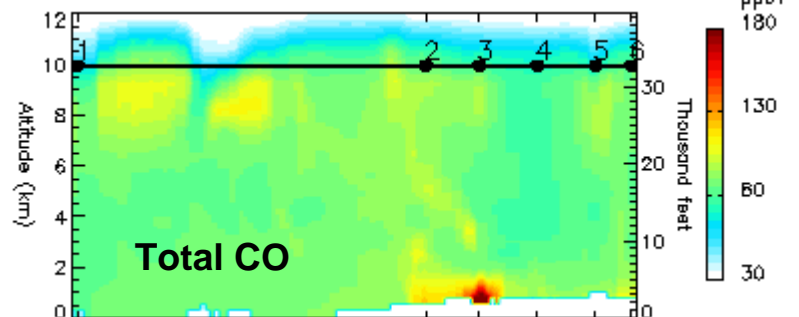


GEOS5 Forecast: DC-8 Flight July 10th 16:30Z (July 9th 06Z forecast)

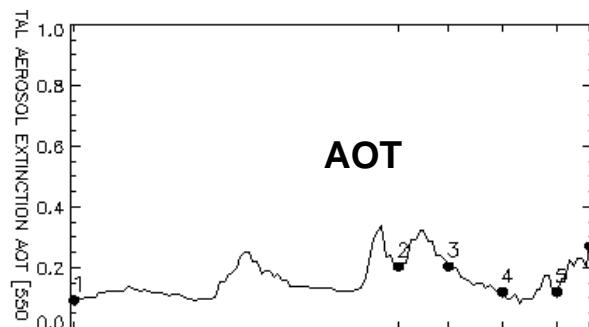
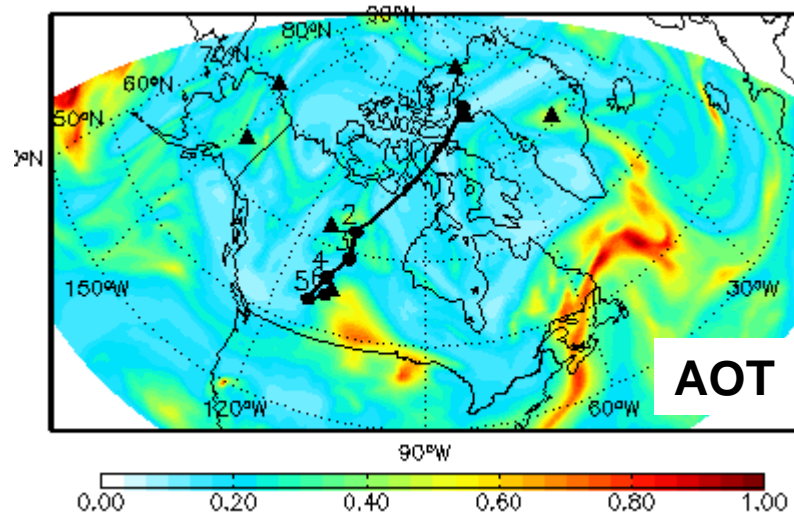
Total CO 300 mb



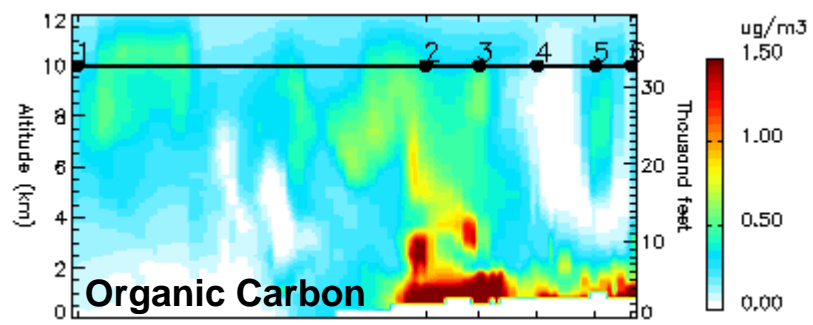
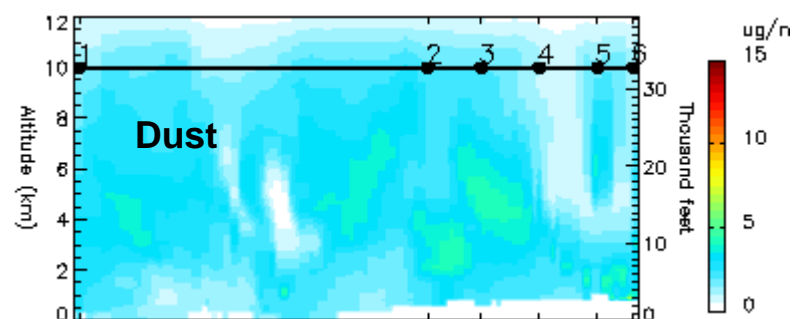
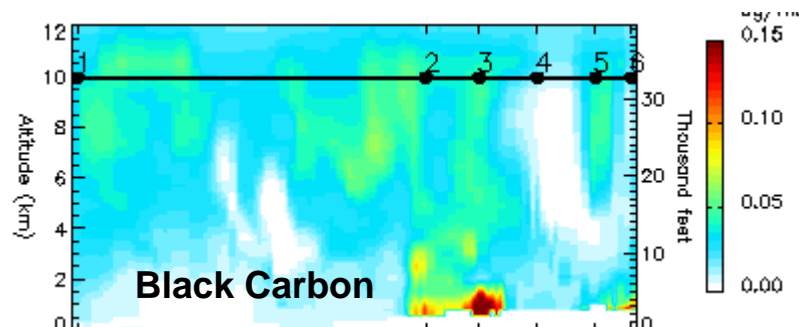
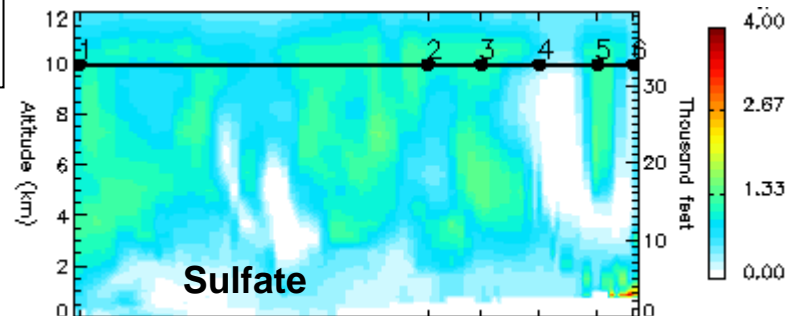
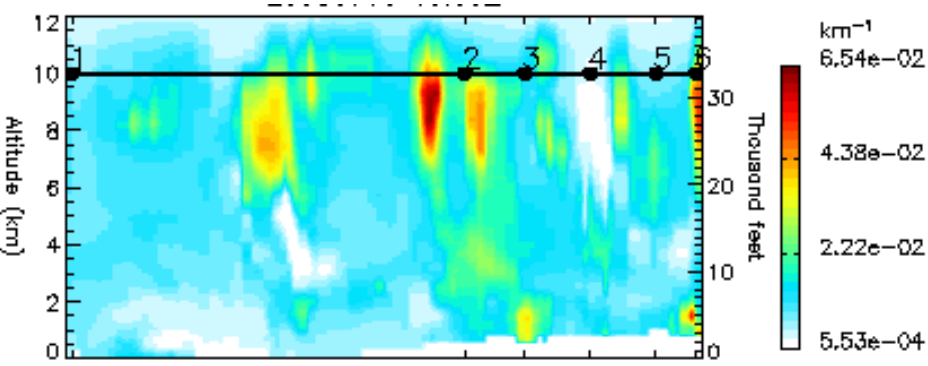
Was flight plan designed to miss all plumes on purpose?



GEOS5 Forecast: DC-8 Flight July 10th 16:30Z (July 9th 06Z forecast)

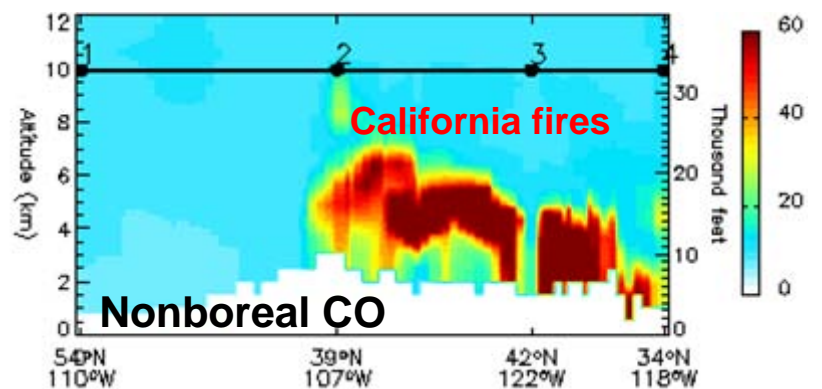
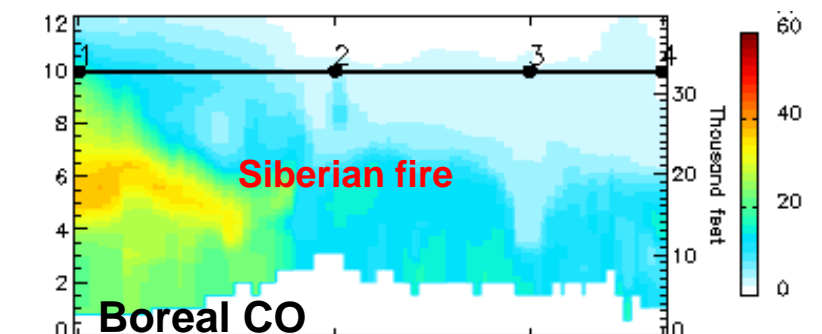
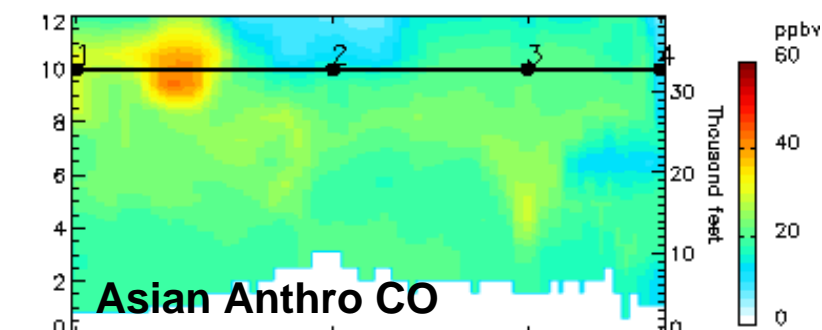
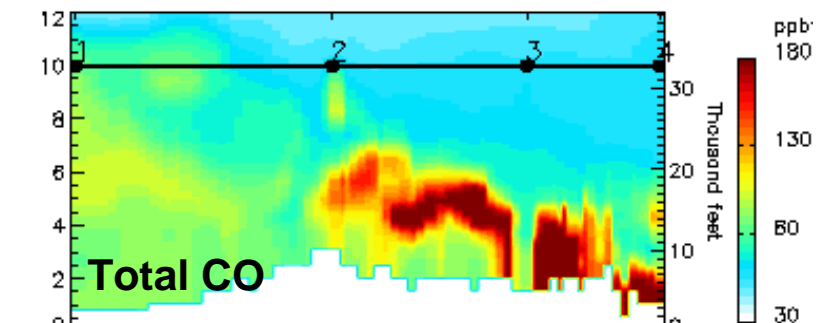
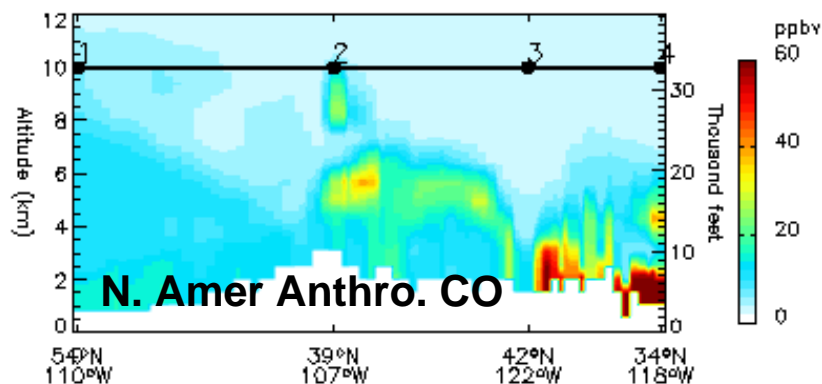
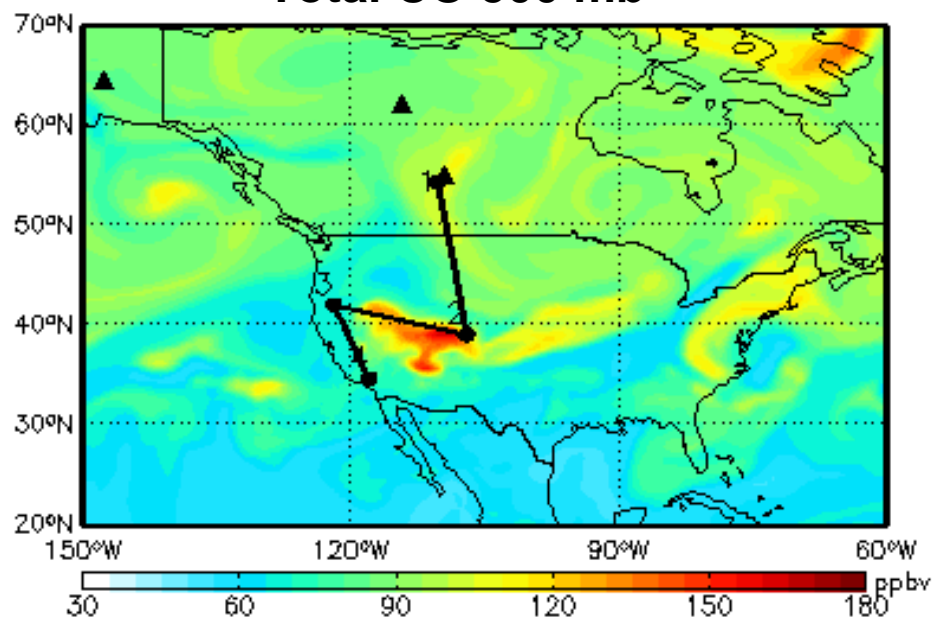


Aerosol Extinction (/km)

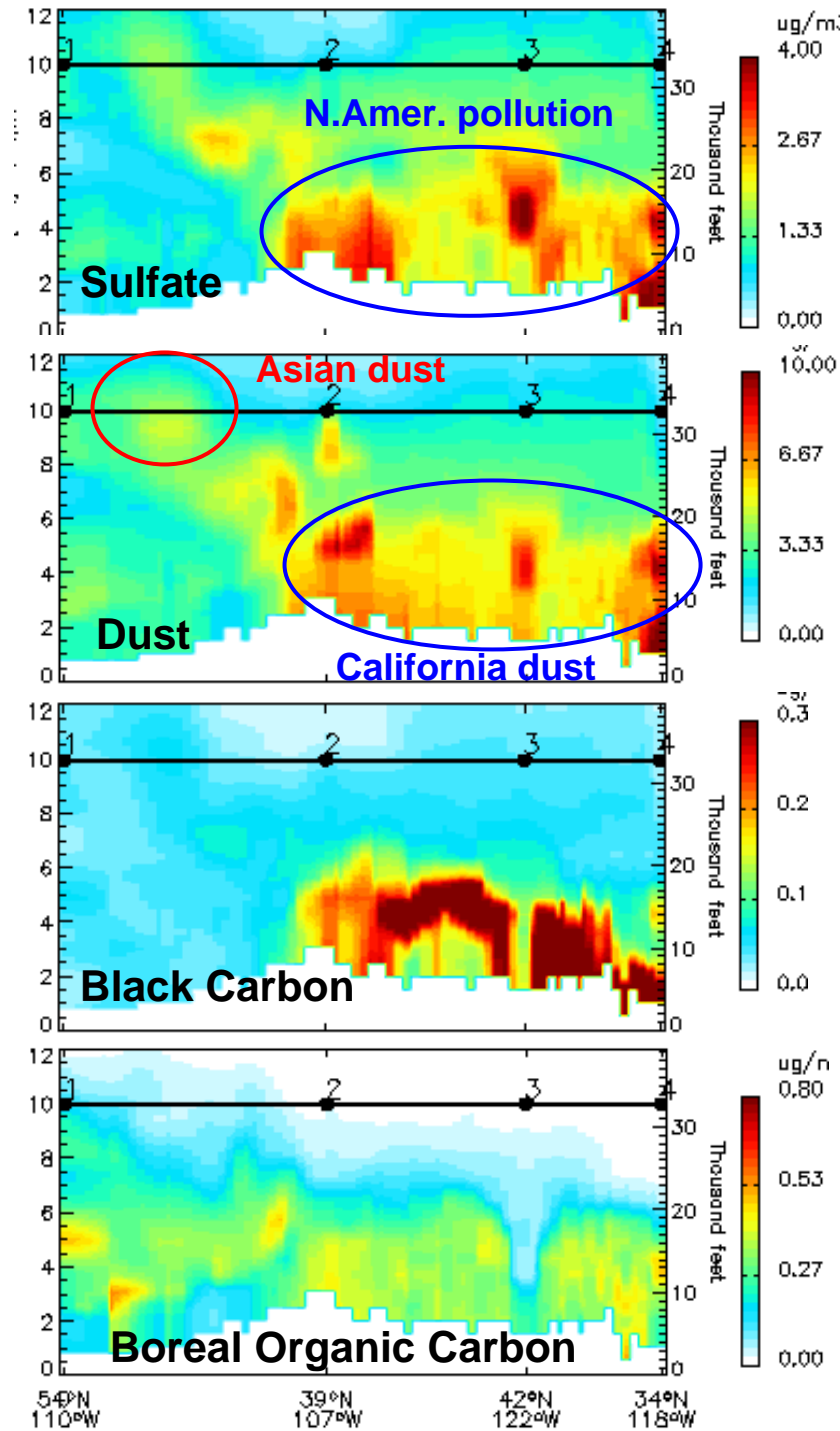
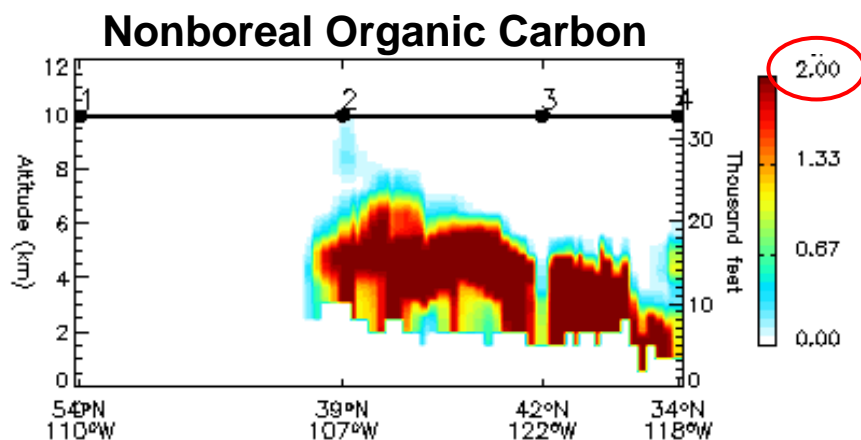
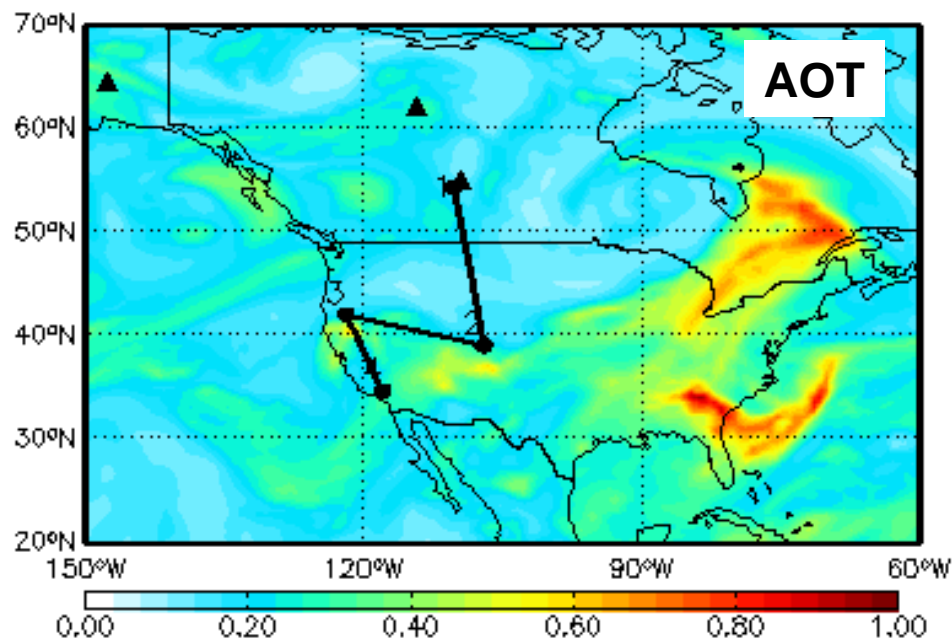


GEOS-5 Forecast 20080709_06Z: July 12 Cold Lake -> Palmdale

Total CO 500 mb

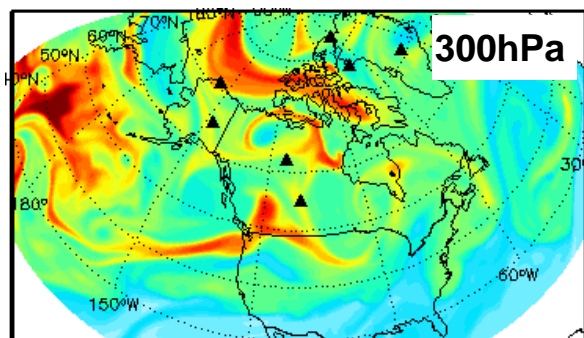


GEOS-5 Forecast 20080709_06Z: July 12 Cold Lake -> Palmdale

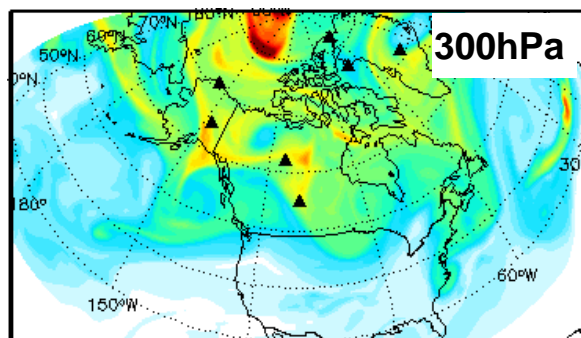


GEOS-5 Forecast 20080709_06Z: July 12 Cold Lake -> Palmdale

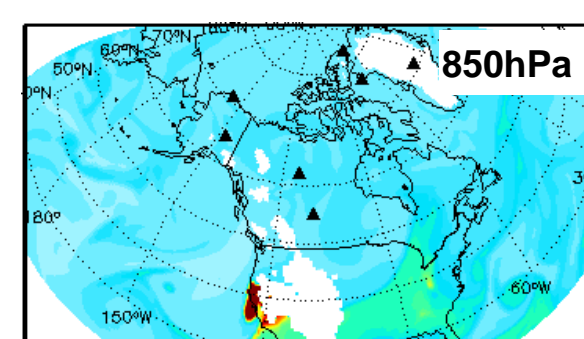
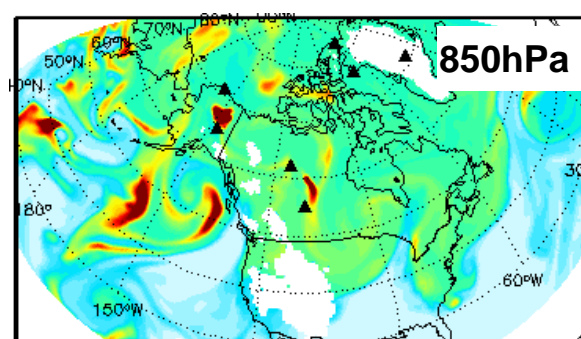
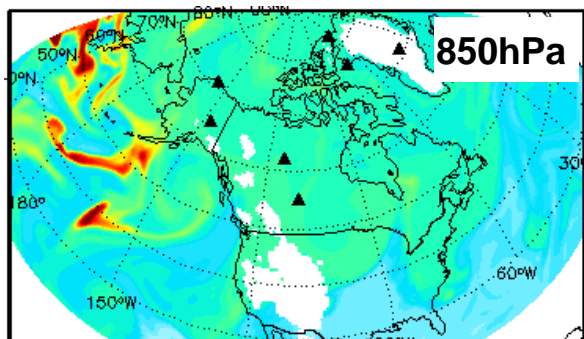
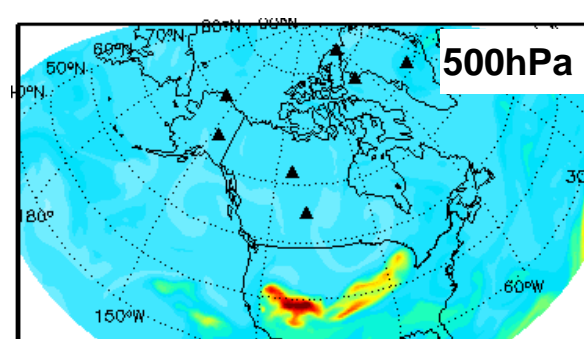
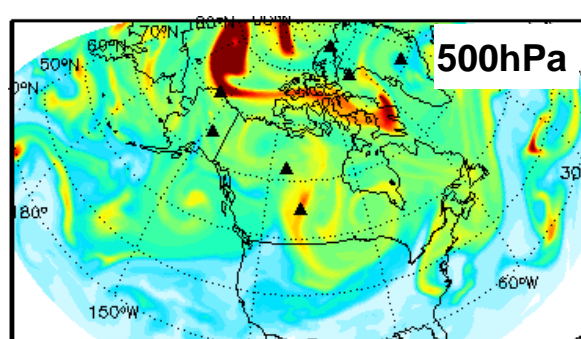
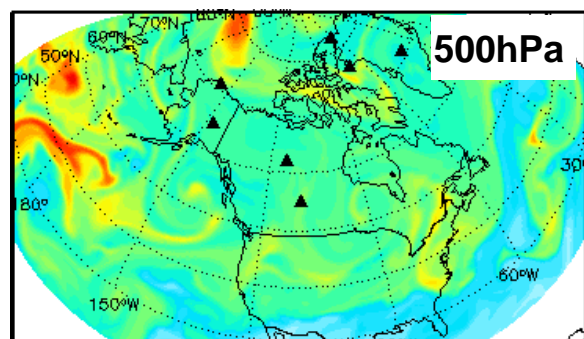
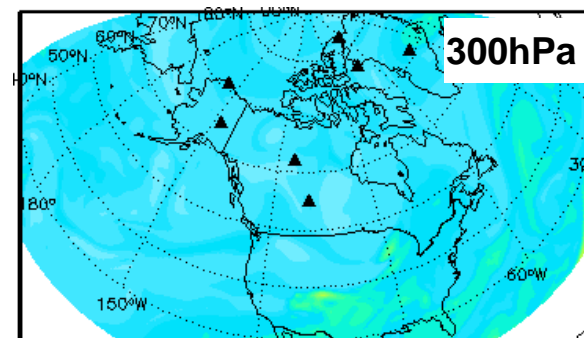
Asian anthropogenic CO



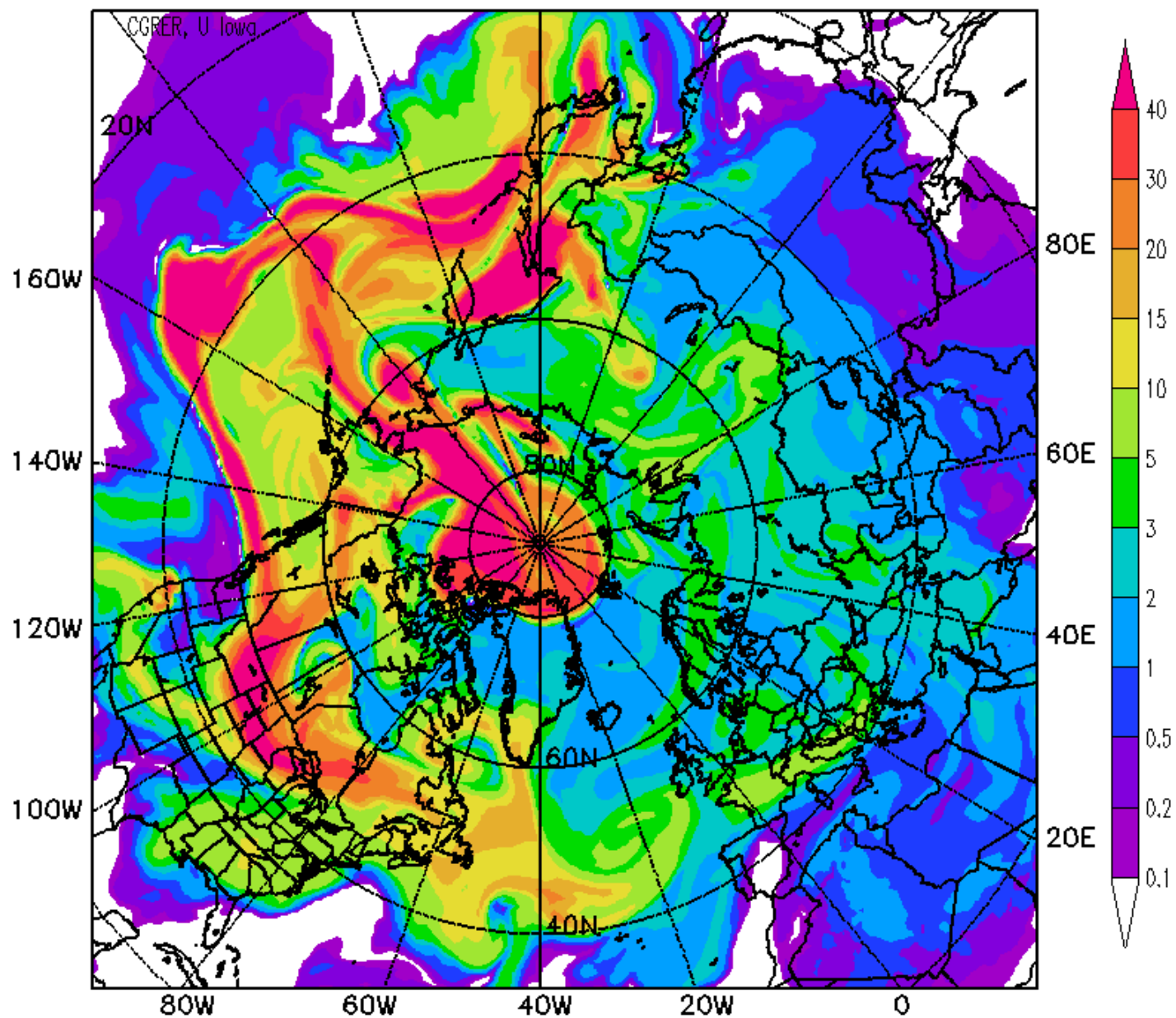
Boreal biomass burning CO



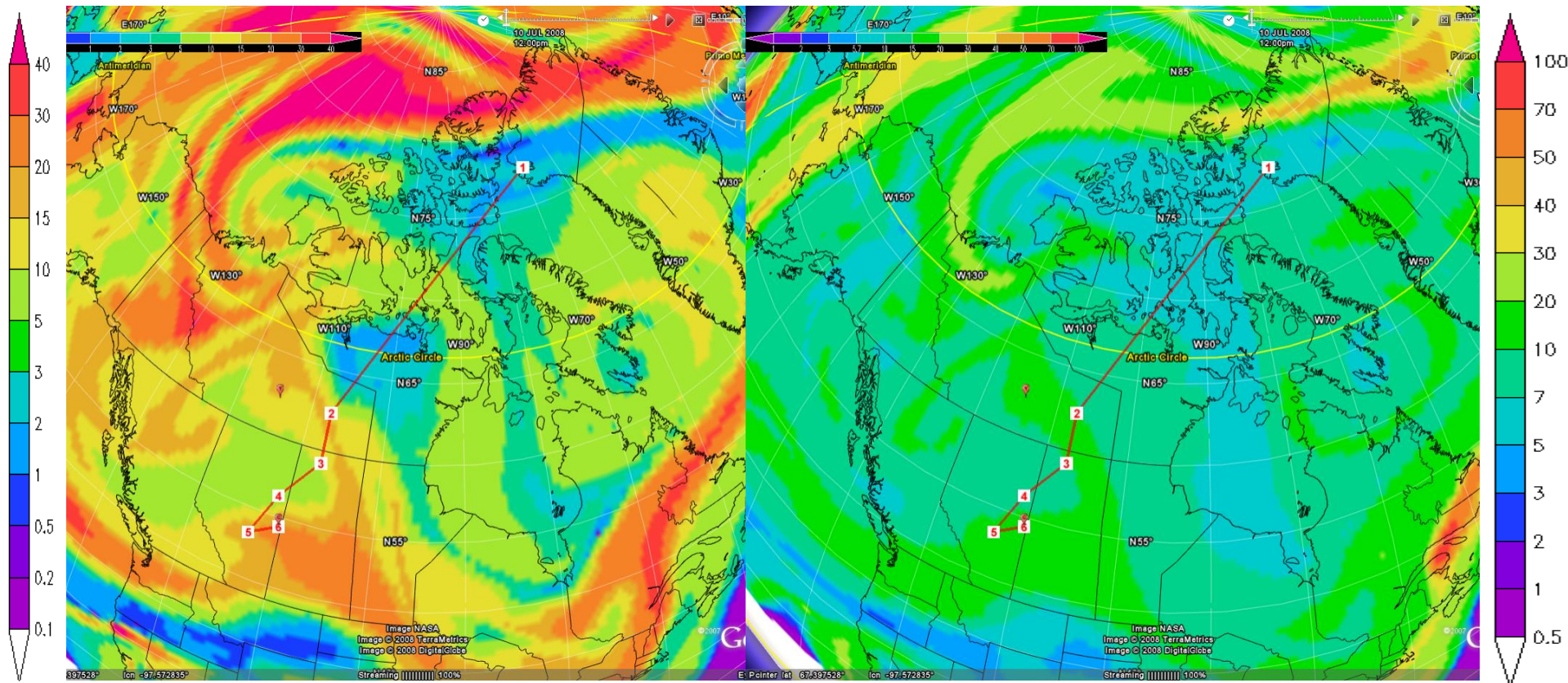
Nonboreal biom. Burn. CO



Simulated BB_CO (ppbv) in the 5.5km layer
at UTC, 07/09/2008



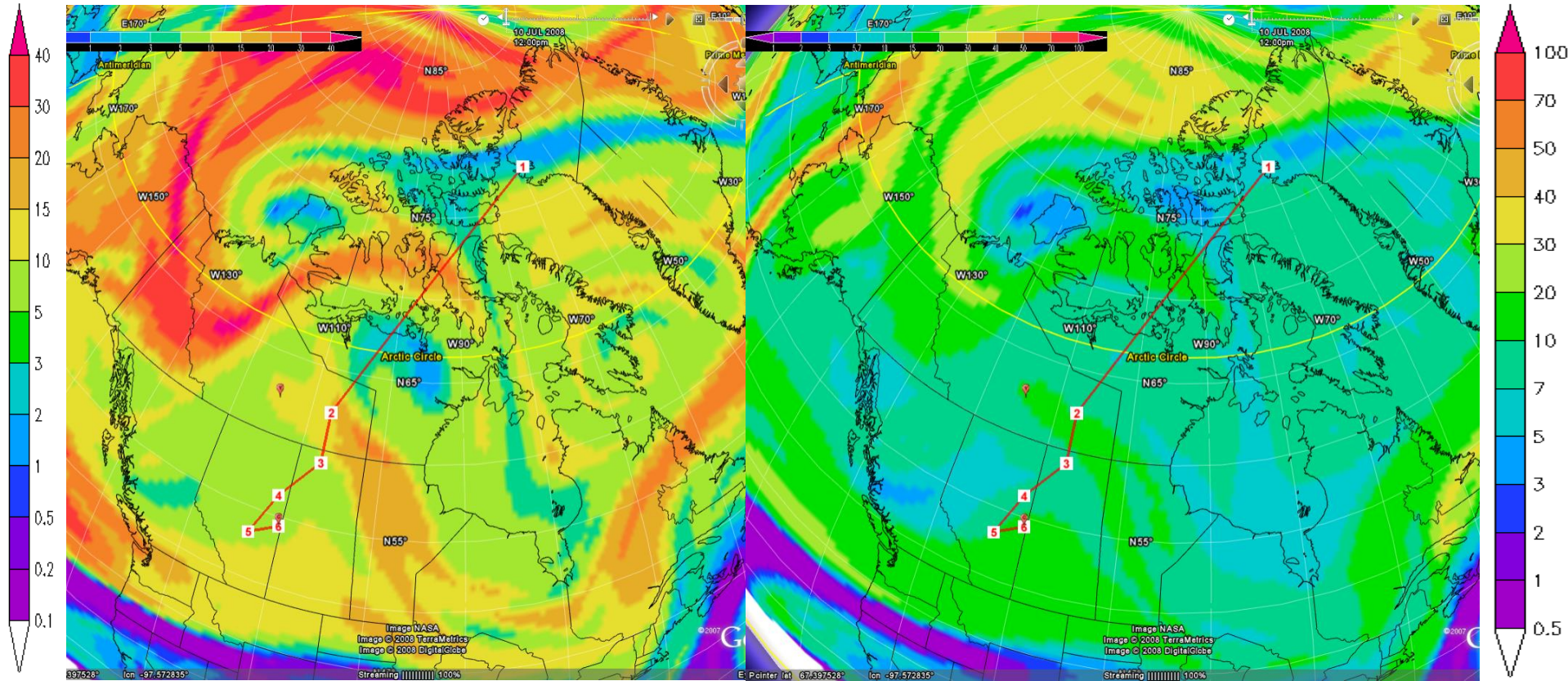
5.5km layer



Biomass CO, 12Z, 7/10

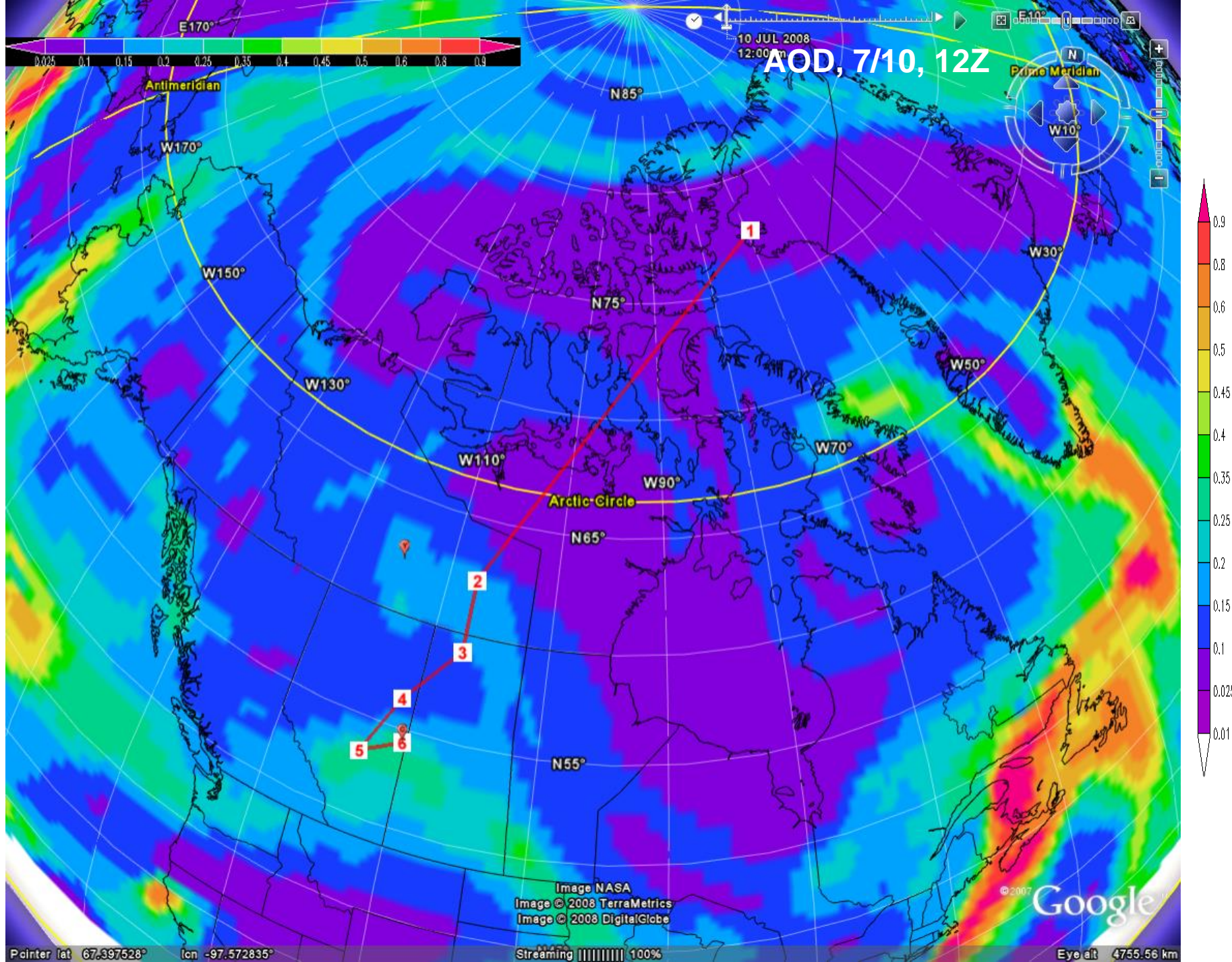
Anthropogenic CO, 12Z, 7/10

8.5km layer

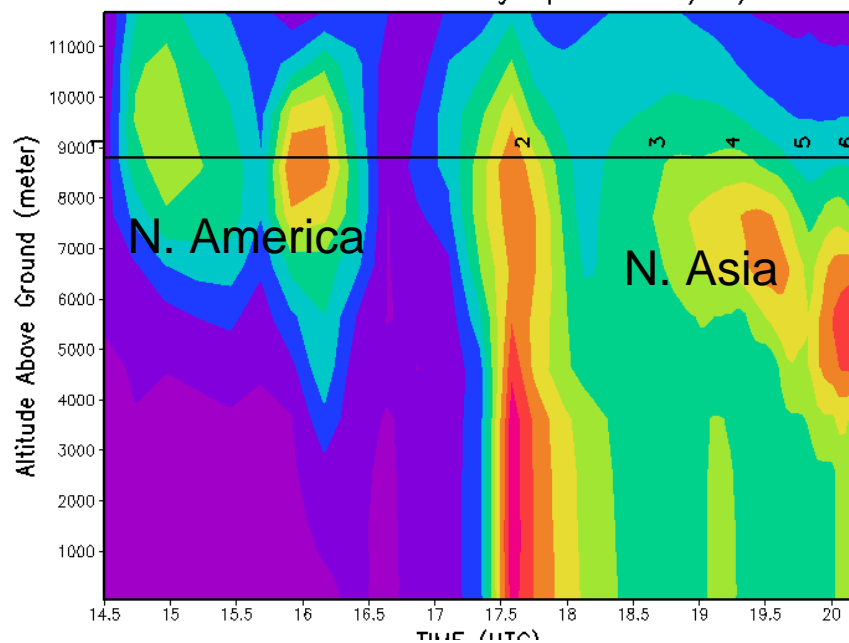


Biomass CO, 12Z, 7/10

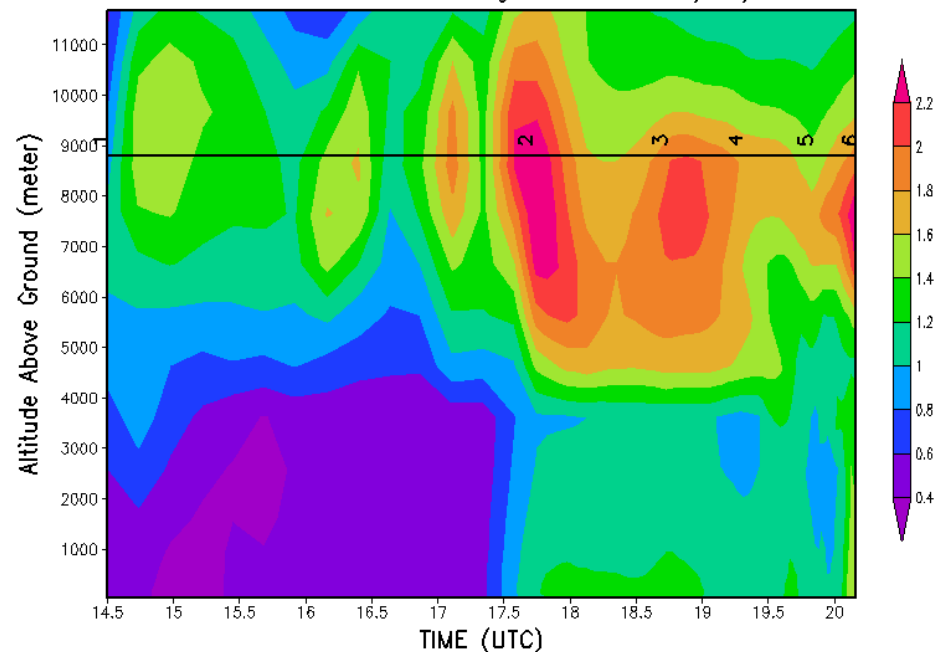
Anthropogenic CO, 12Z, 7/10



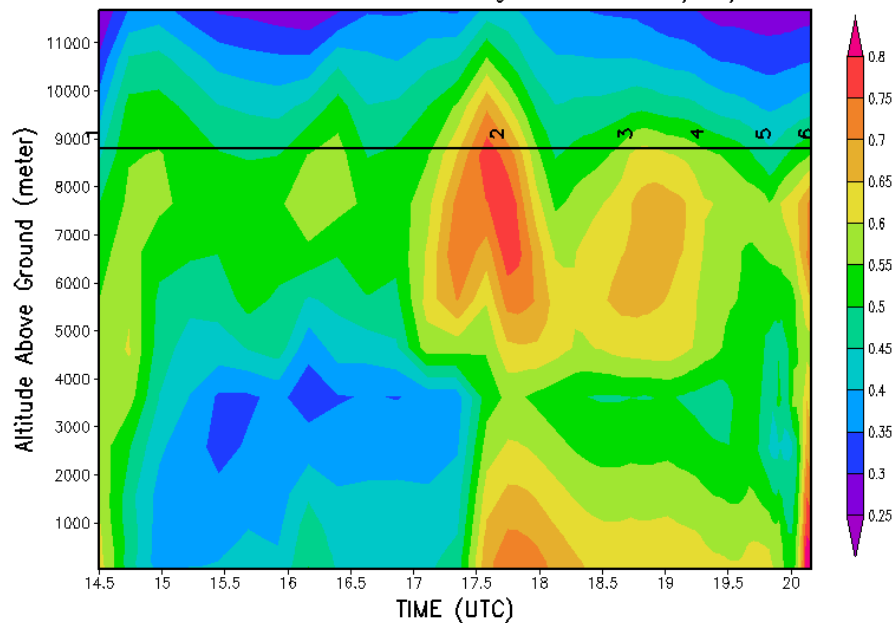
Simulated BiomassCO (ppbv) along the
DC8-Thule-ColdLake-V2 Flight plan on 07/10/2008



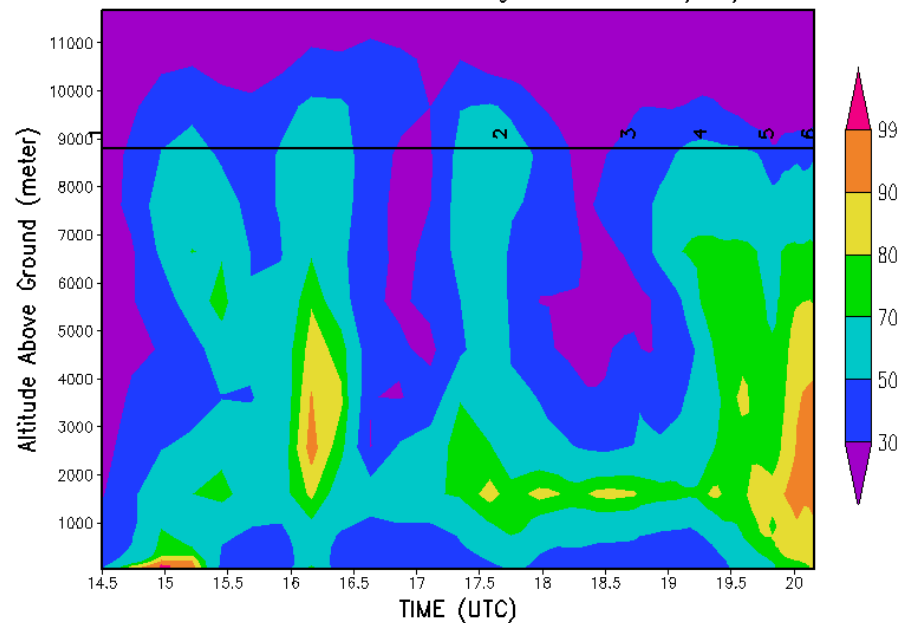
Simulated Dust ($\mu\text{g}/\text{m}^3$) along the
DC8-Thule-ColdLake-V2 Flight Path on 07/10/2008



Simulated Total Sulfate ($\mu\text{g}/\text{m}^3$) along
the DC8-Thule-ColdLake-V2 Flight Path on 07/10/2008

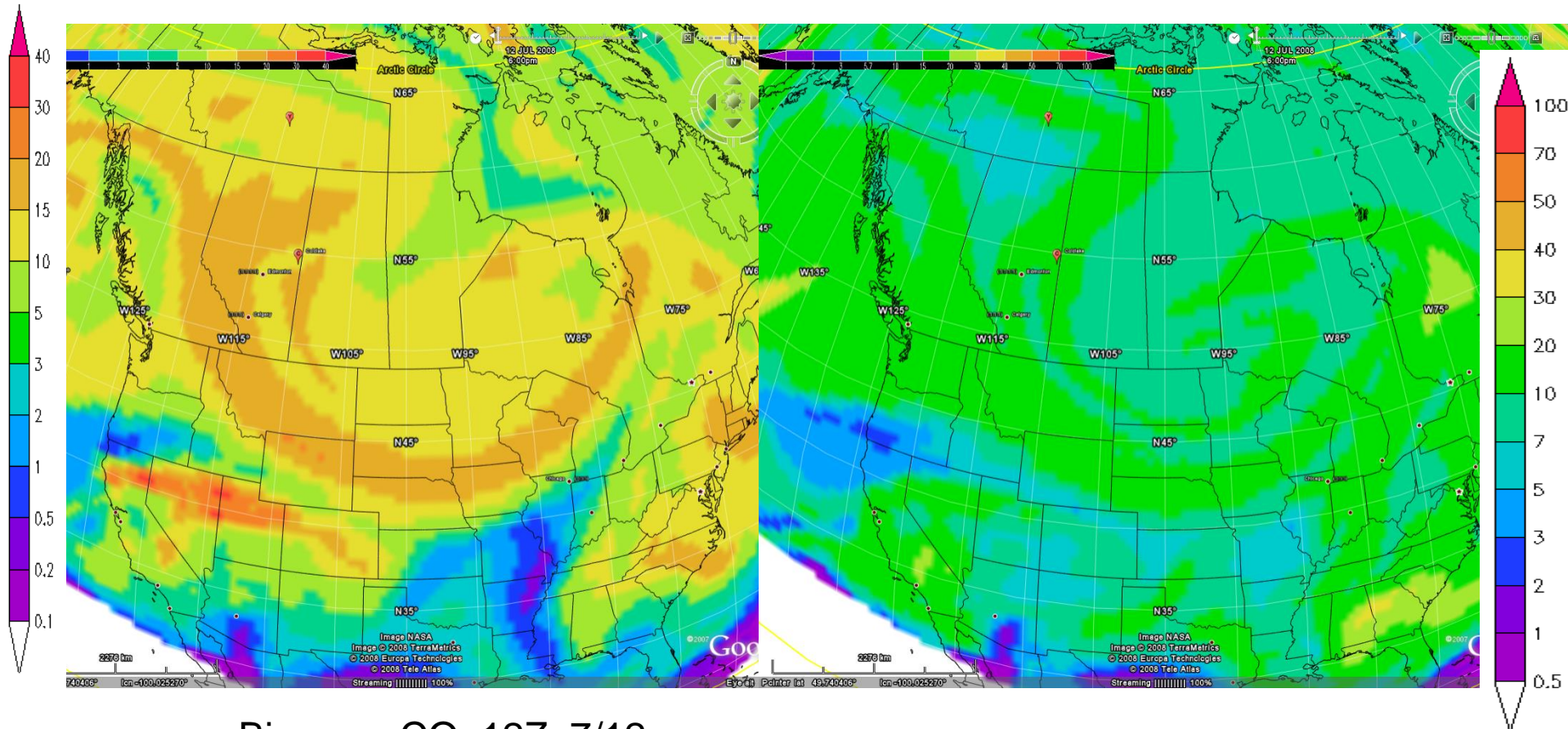


Simulated Relative Humidity(%) along
the DC8-Thule-ColdLake-V2 Flight Path on 07/10/2008



Transit Home

5.5km layer



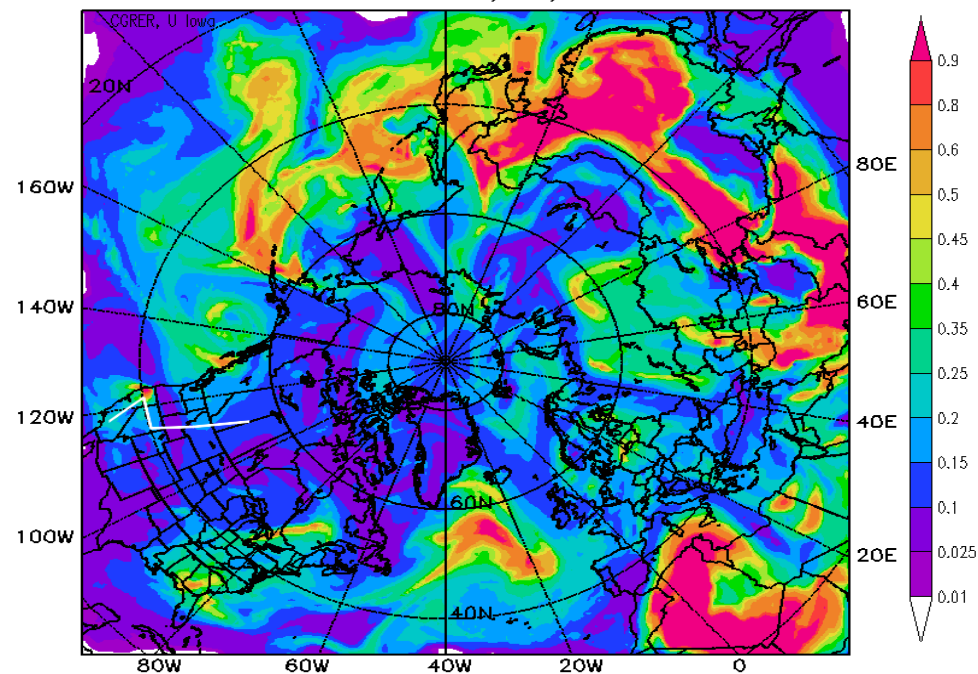
Biomass CO, 12Z, 7/12

Anthropogenic CO, 12Z, 7/12

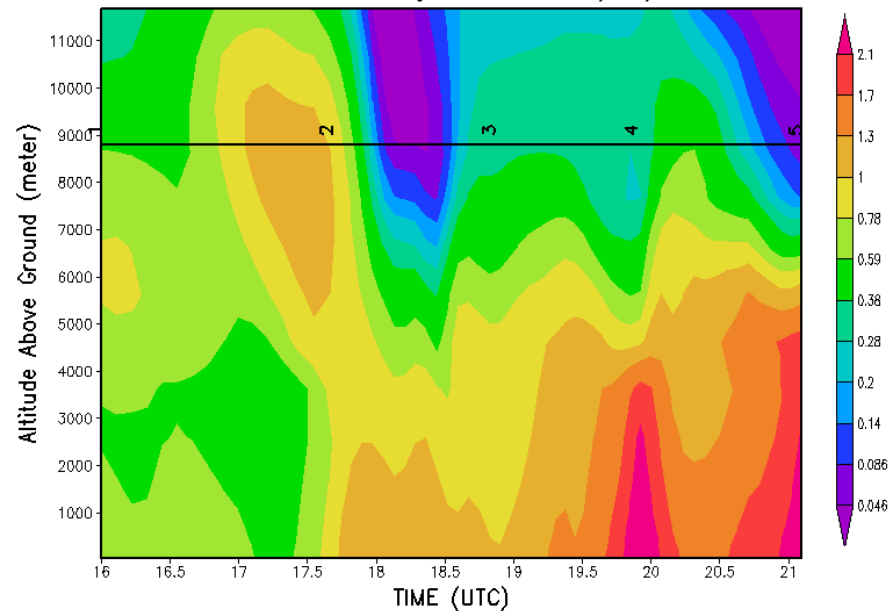
South Bound, Sample Siberian biomass mixed with Asian pollution in the northern legs and then sample California fires at the southern leg below 5km.

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

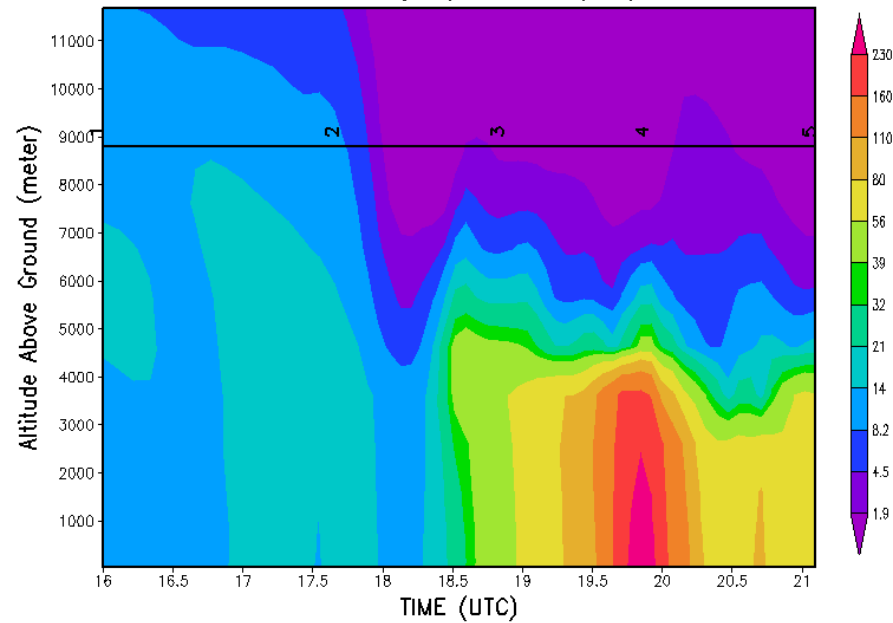
Simulated Column TOTAL Aerosol Optical_Depth
at 18UTC, 07/12/2008



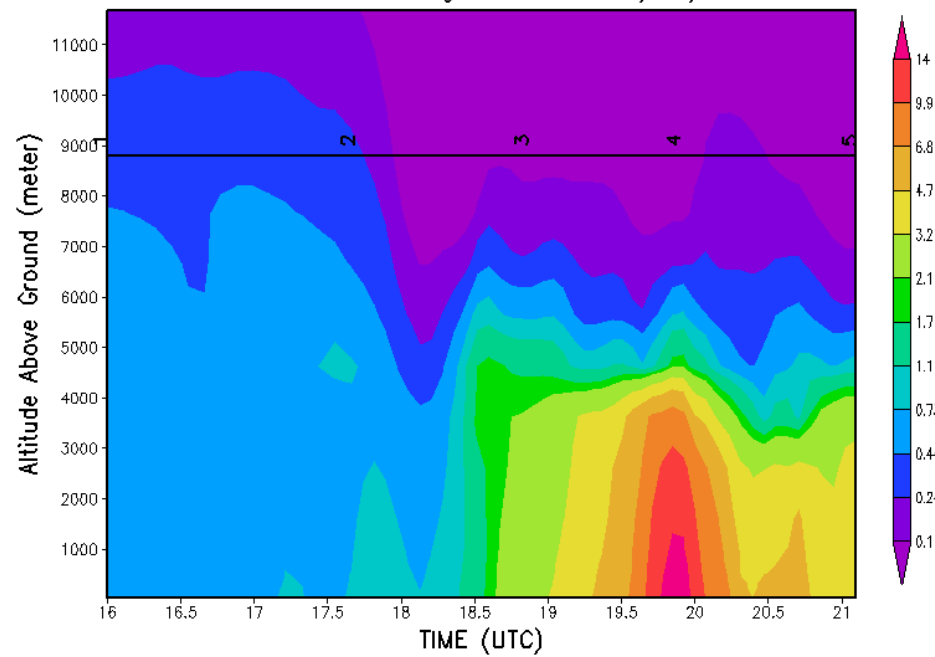
Simulated Total Sulfate ($\mu\text{g}/\text{m}^3$) along
the DC8-Transit Flight Path on 07/12/2008



Simulated BiomassCO (ppbv) along the
DC8-Transit Flight plan on 07/12/2008

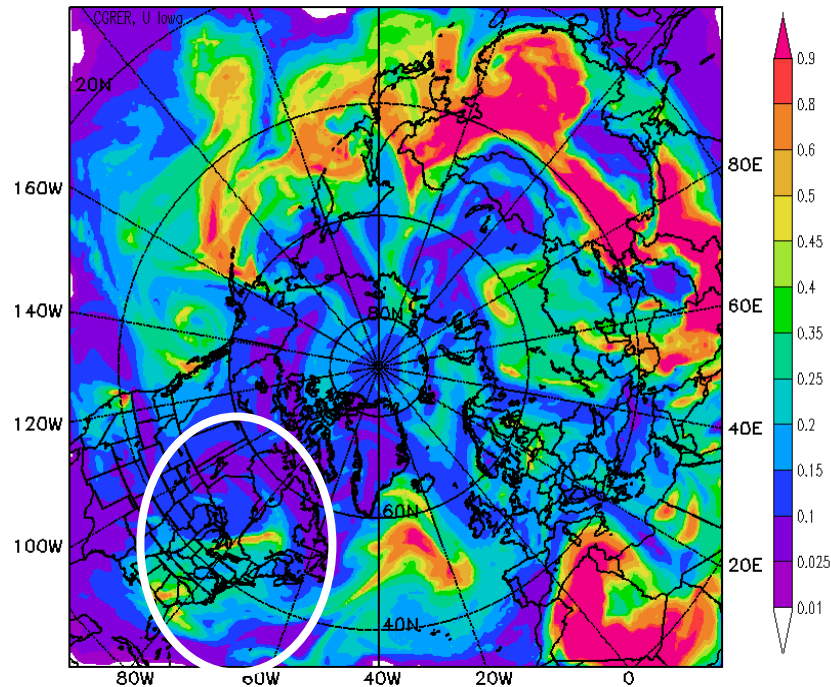


Simulated Organic Carbon ($\mu\text{g}/\text{m}^3$) along
the DC8-Transit Flight Path on 07/12/2008

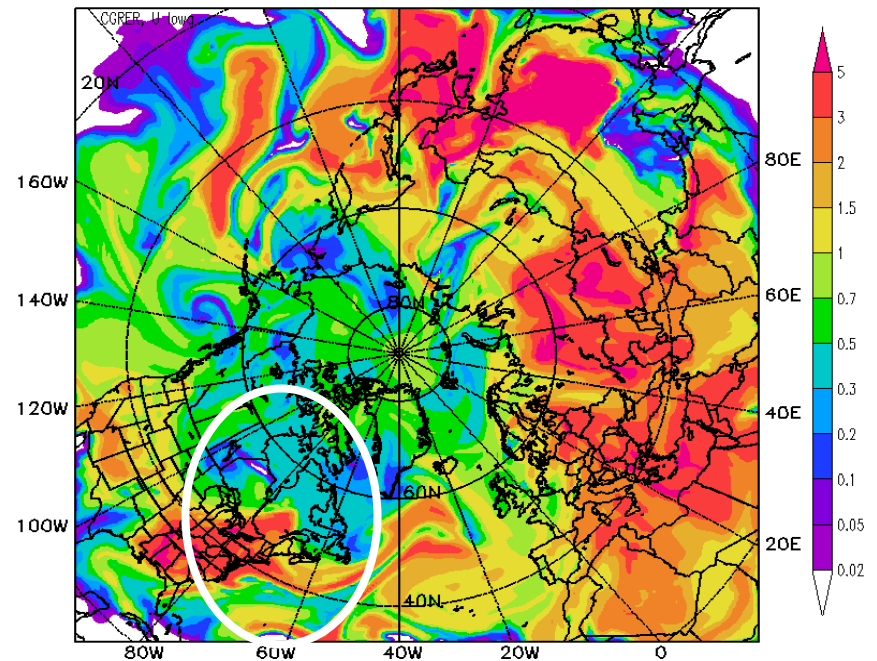


Transit July 12: Eastbound

Simulated Column TOTAL Aerosol Optical Depth
at 18UTC, 07/12/2008

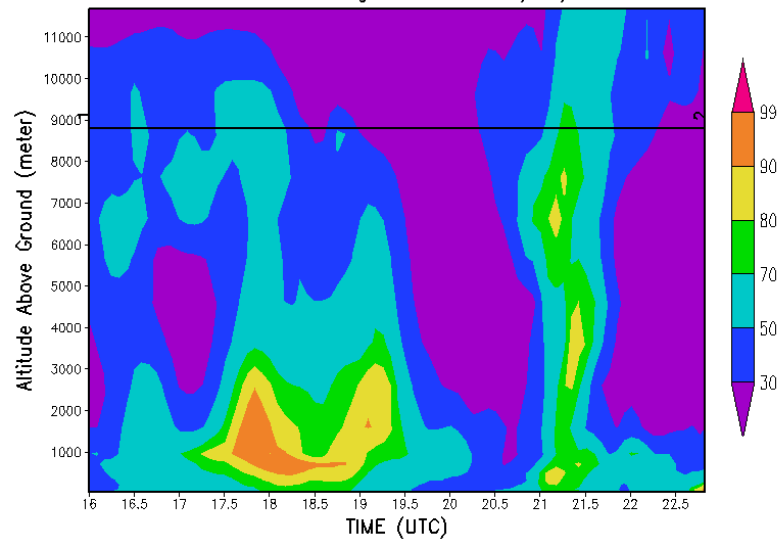


Simulated Sulfate ($\mu\text{g}/\text{m}^3$) in the 1.5km layer
at 18UTC, 07/12/2008

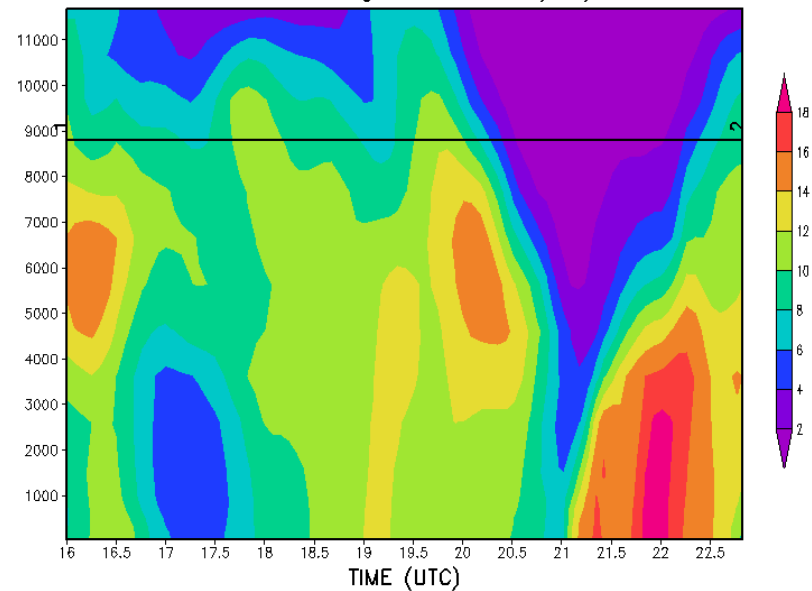


Opportunity to sample aged biomass plumes behind the front
and pollution ahead of the front (mixed with aged fires)

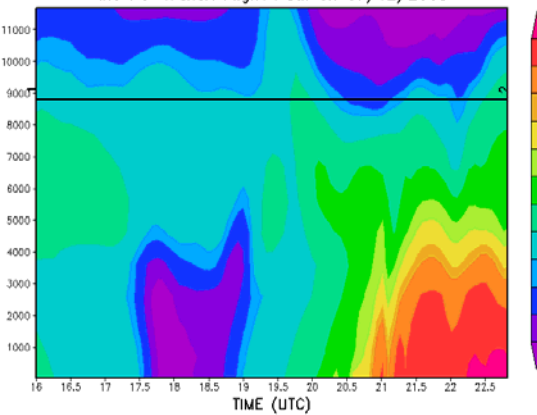
Simulated Relative Humidity(%) along
the P3-Transit Flight Path on 07/12/2008



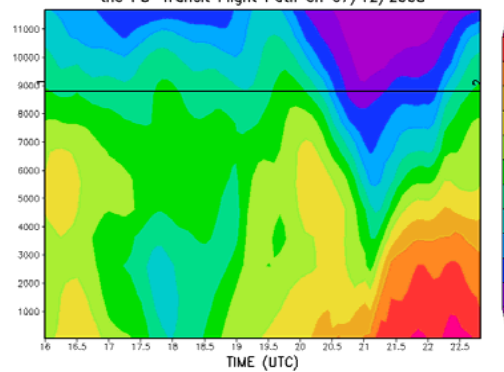
Simulated BB North Asia and Europe CO (ppbv) along
the P3-Transit Flight Path on 07/12/2008



Simulated Total Sulfate ($\mu\text{g}/\text{m}^3$) along
the P3-Transit Flight Path on 07/12/2008



Simulated Organic Carbon ($\mu\text{g}/\text{m}^3$) along
the P3-Transit Flight Path on 07/12/2008



Simulated Tracer N American BB CO (ppbv) along
the P3-Transit Flight Path on 07/12/2008

