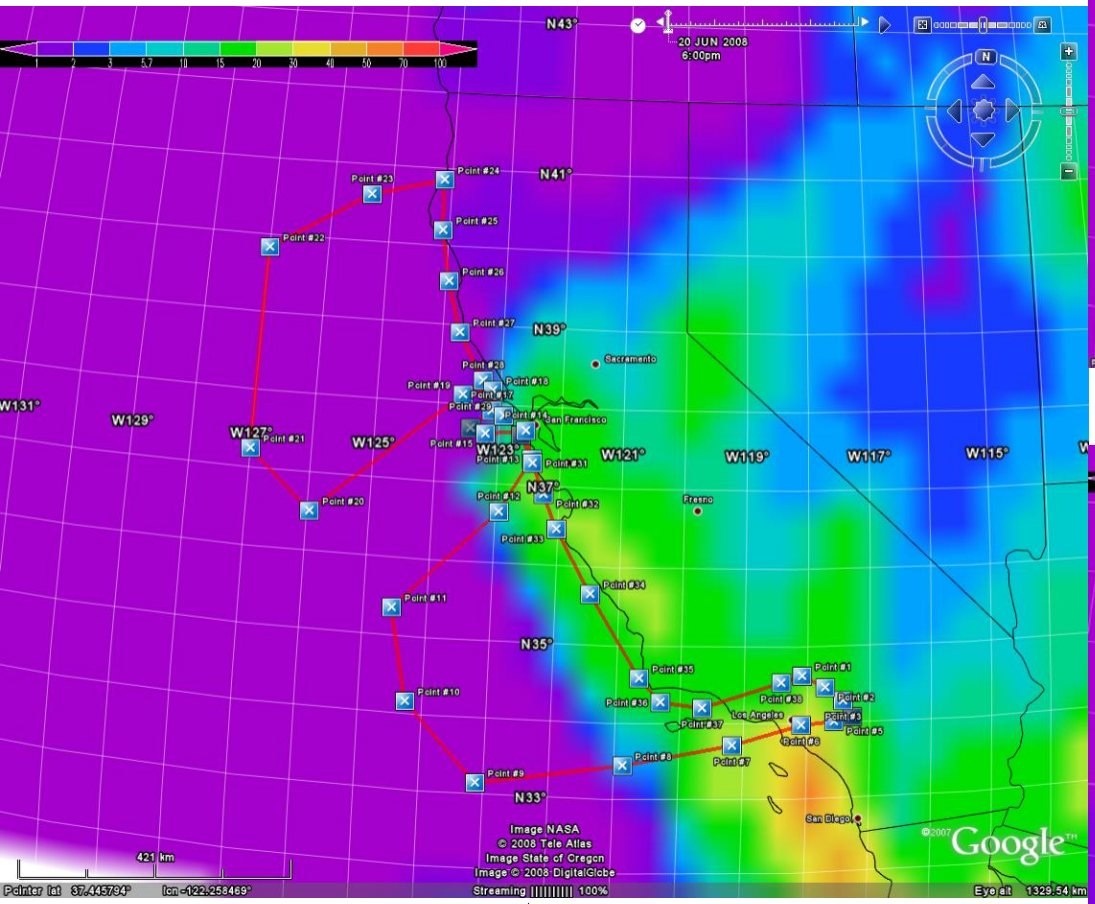
STEM Model

06-19-2008 meeting

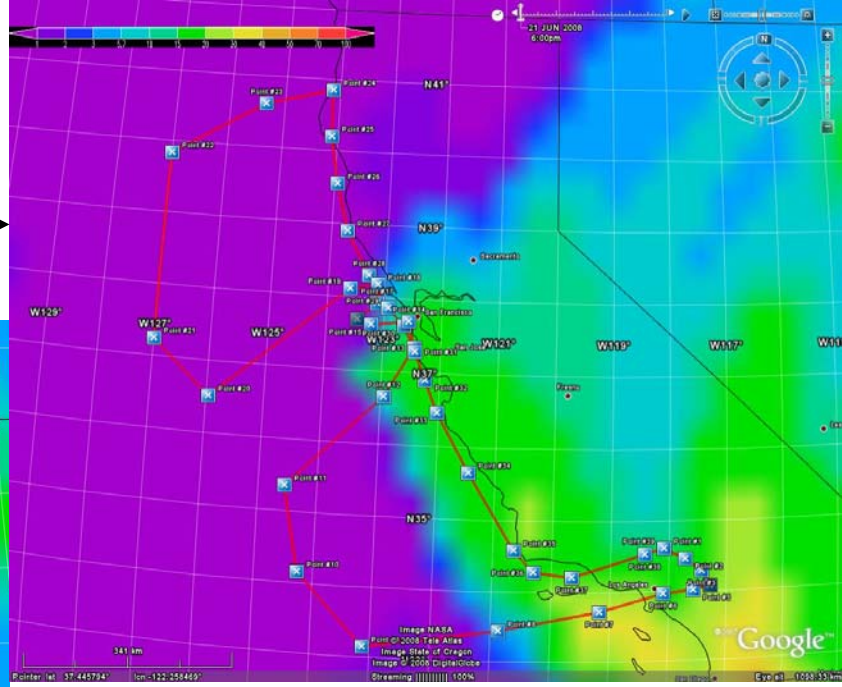
Boundary Condition Flights for 20/21/222

Anthropogenic CO, 1.5km layer, 18Z

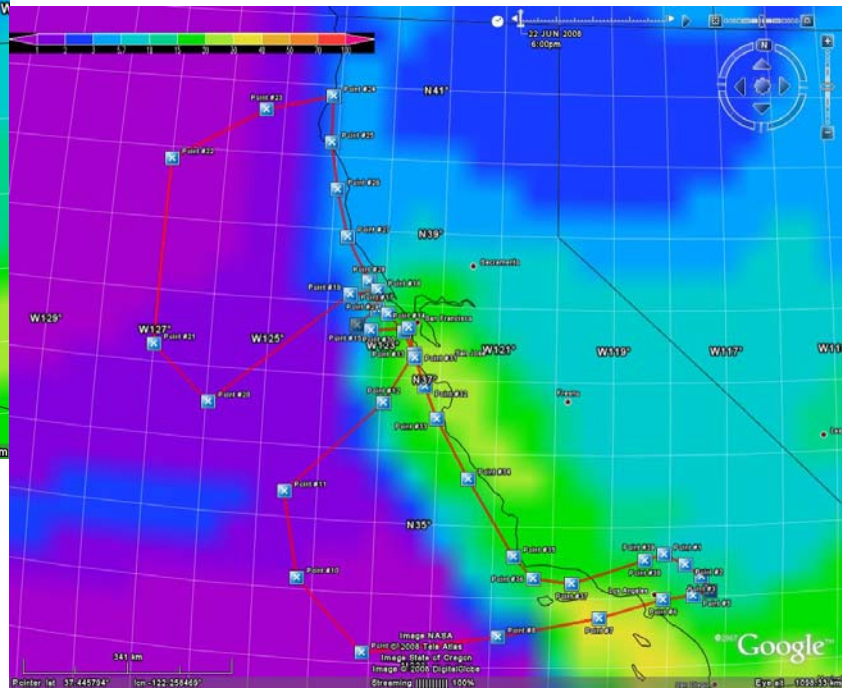


06-20

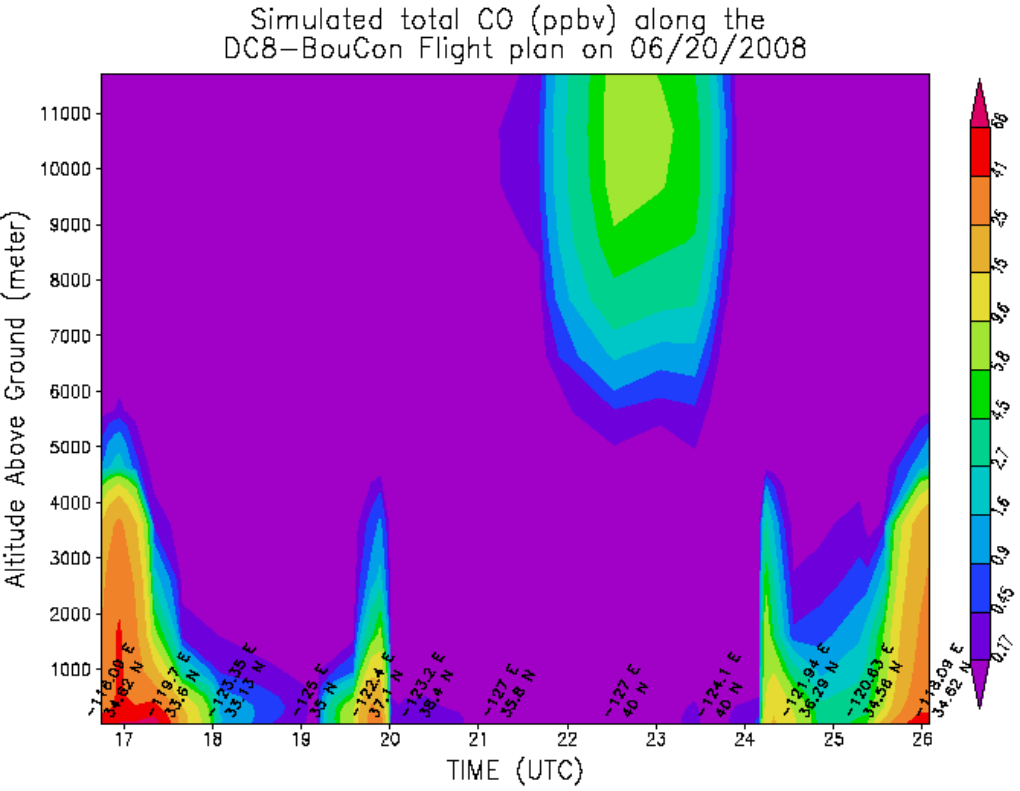
6-21

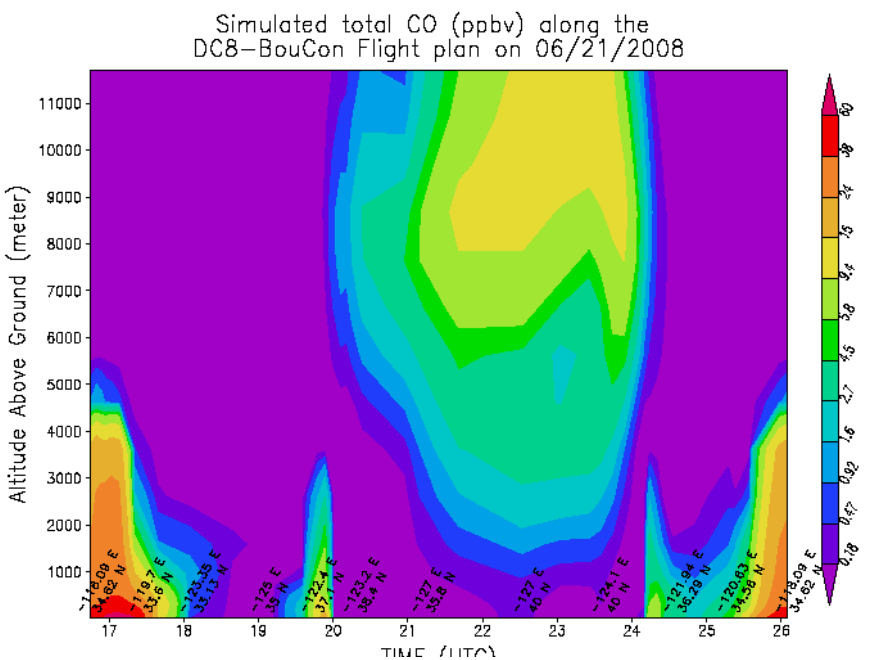


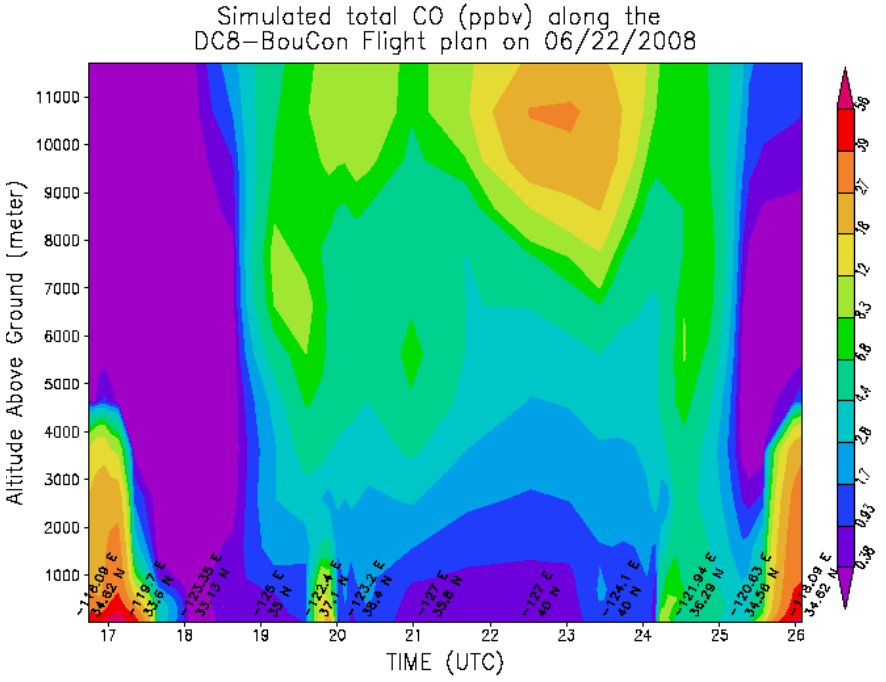
6-22



Boundary Condition Flights for 20/21/222

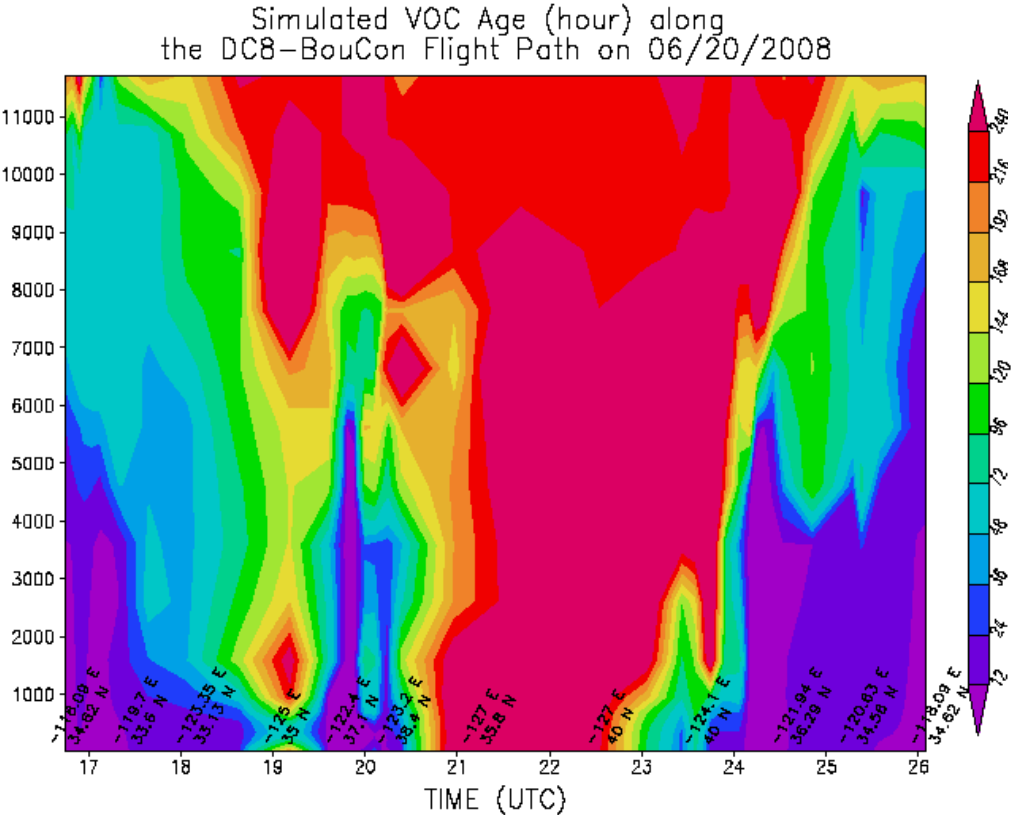


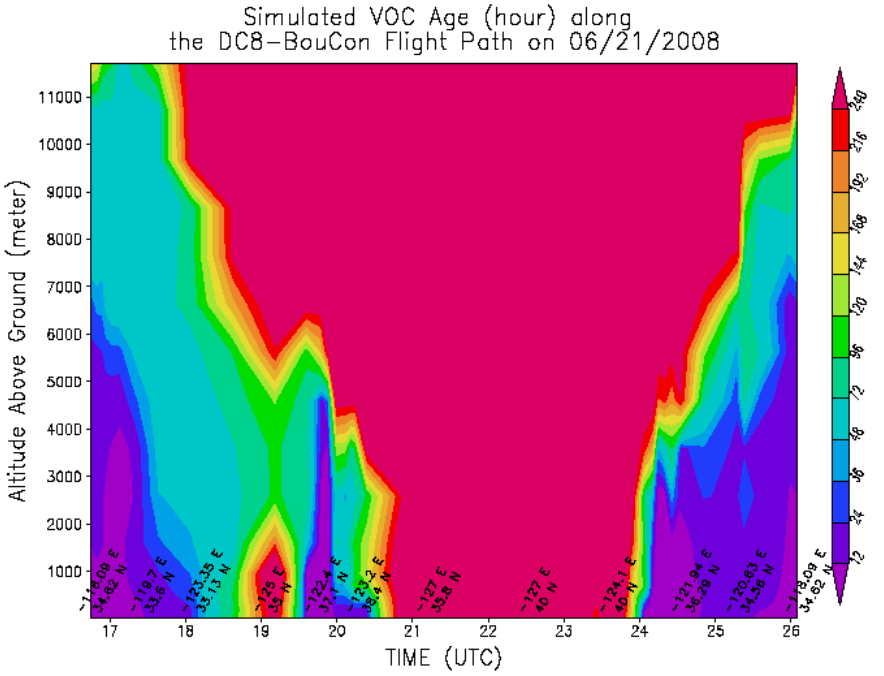


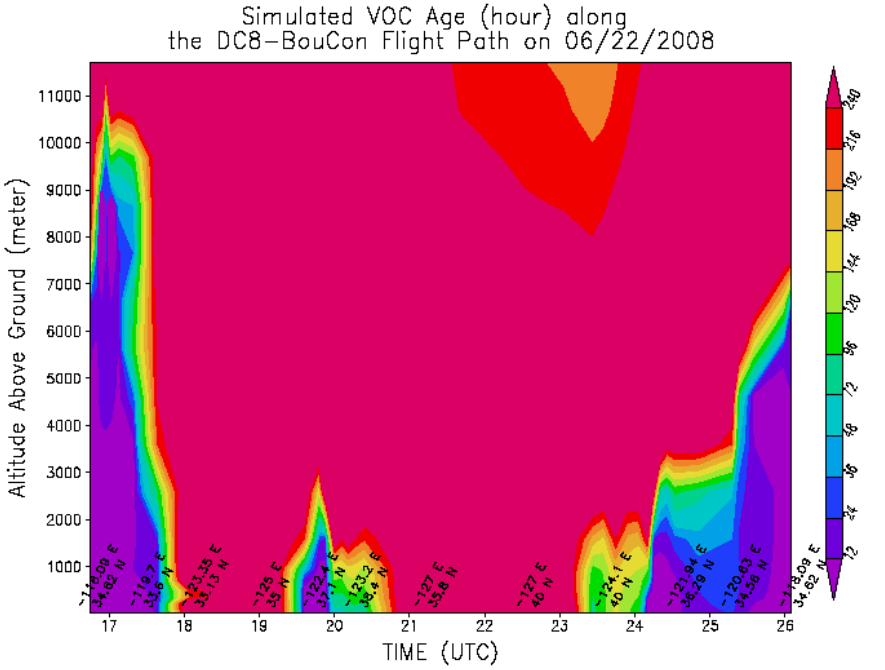


*Scales are different but similar magnitude

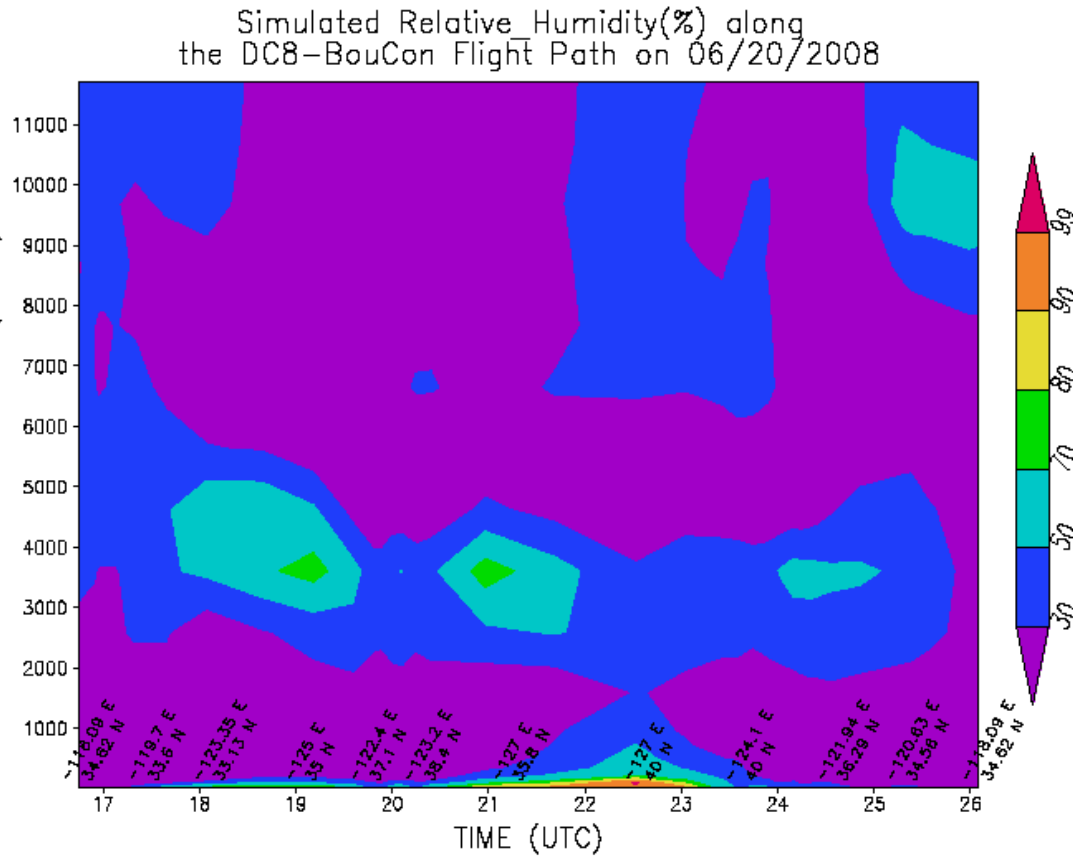
Air mass age along flight track

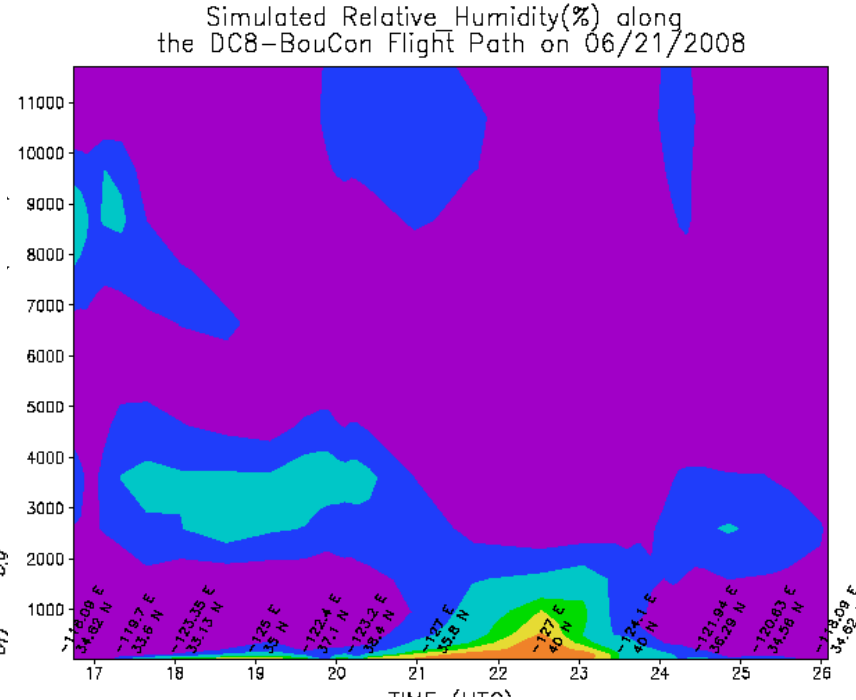


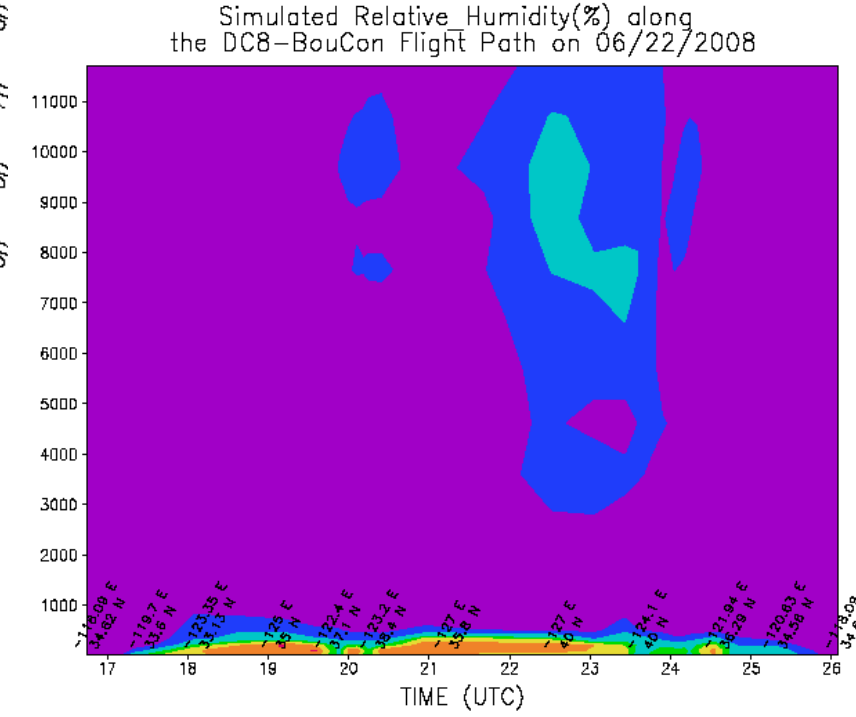




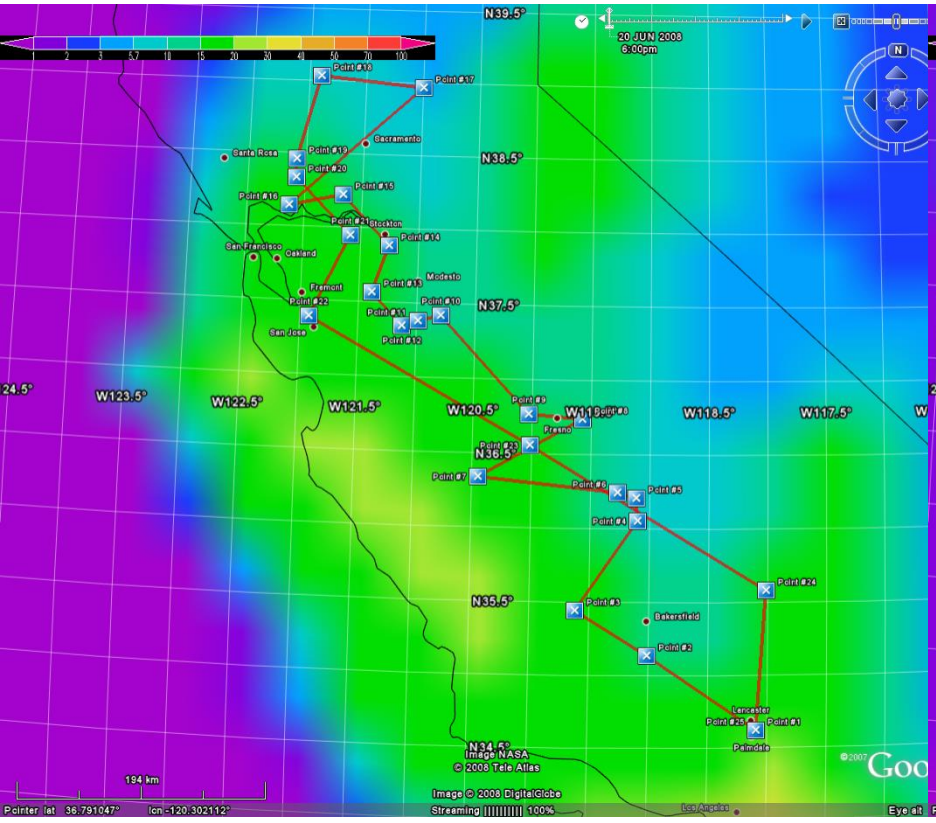
Boundary Condition Flights for 20/21/222



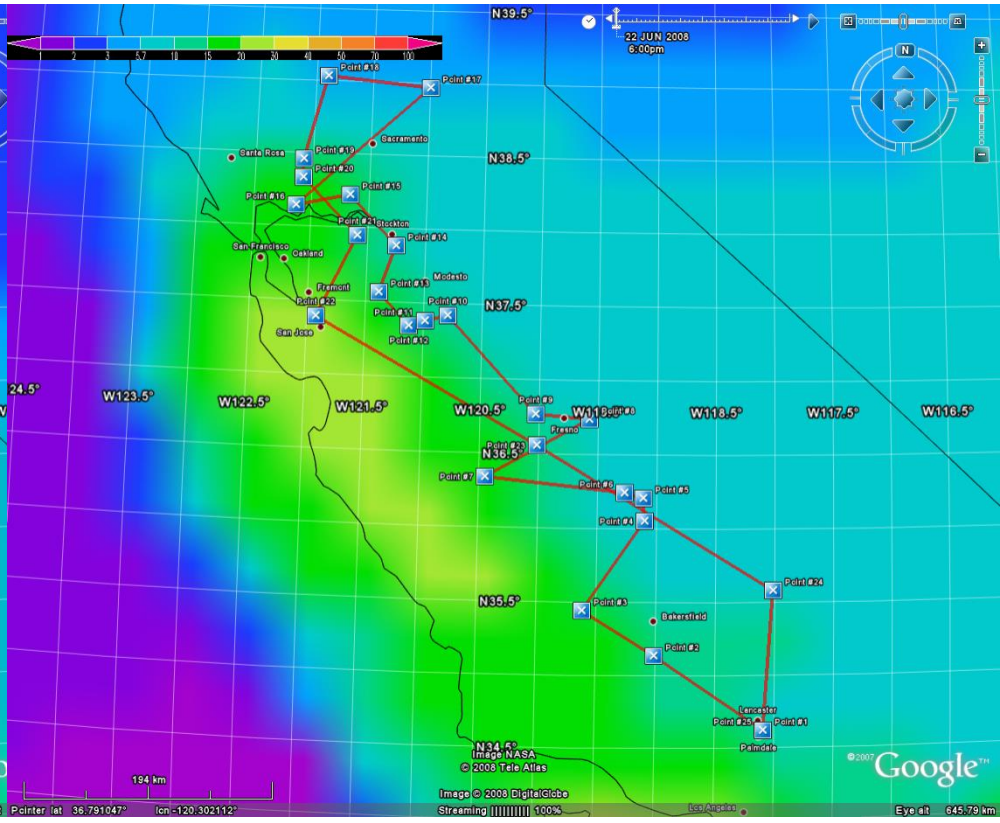




SJV Flights

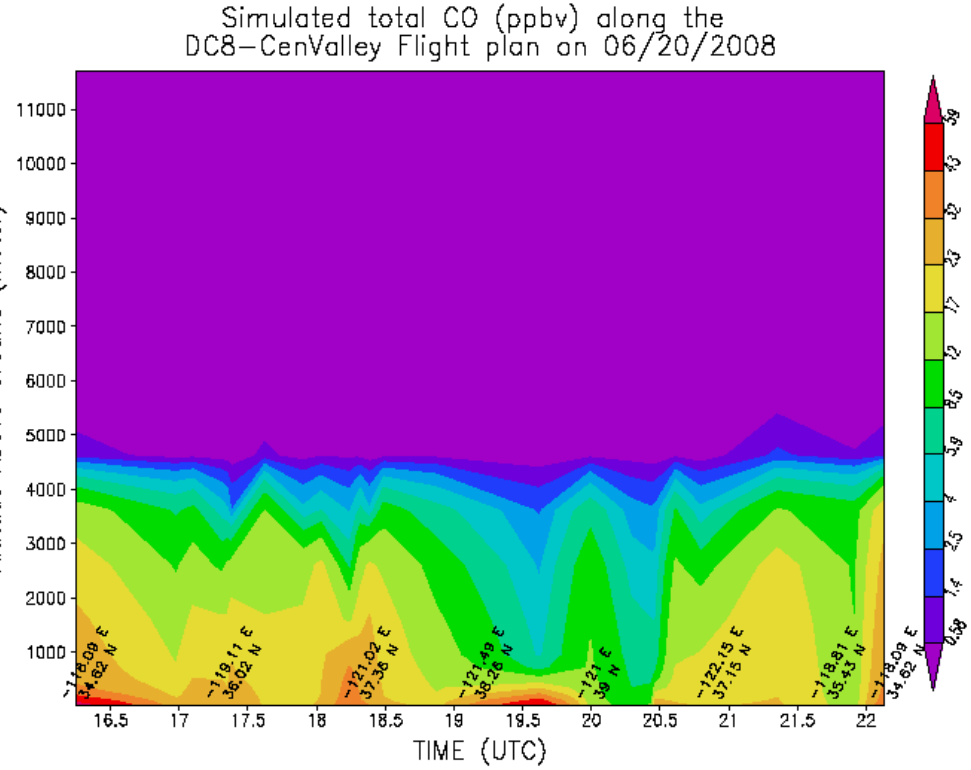


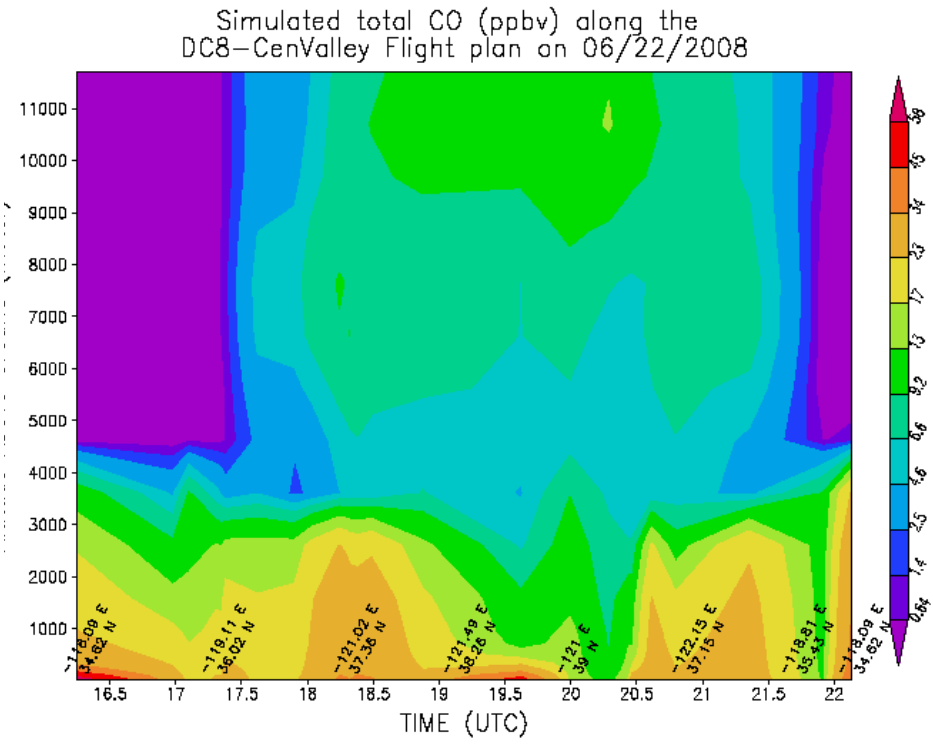
6/20/2008



6/22/2008

SJV Curtains

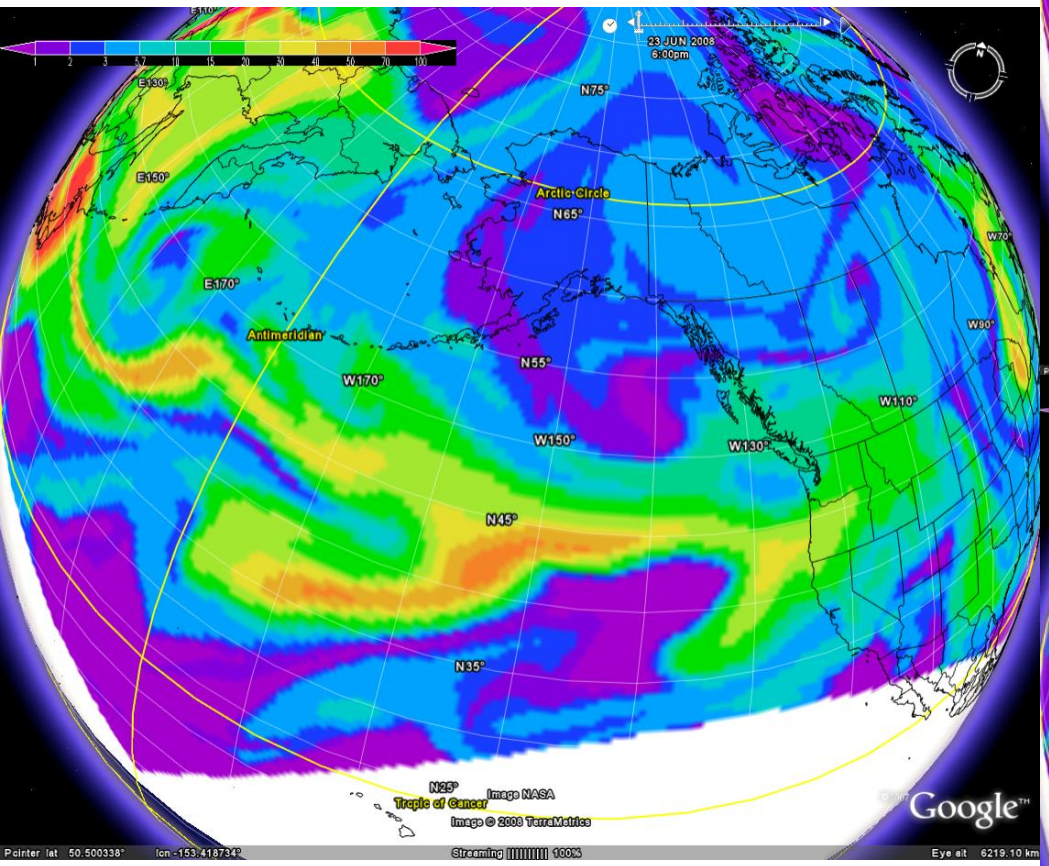




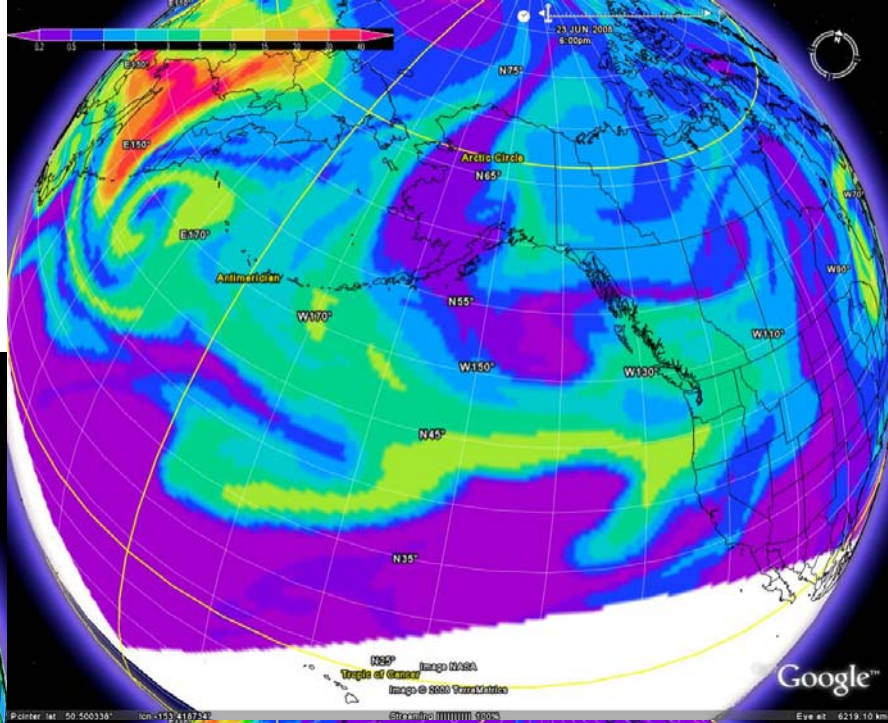
Scales are different but similar

Biomass CO

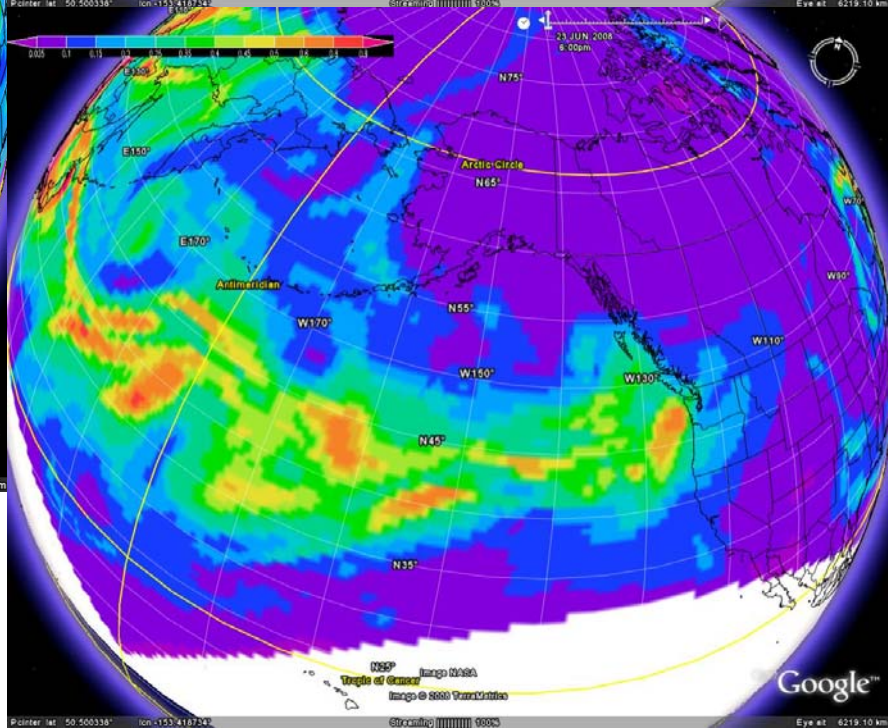
06-23-2008
5.5km



Anthropogenic CO

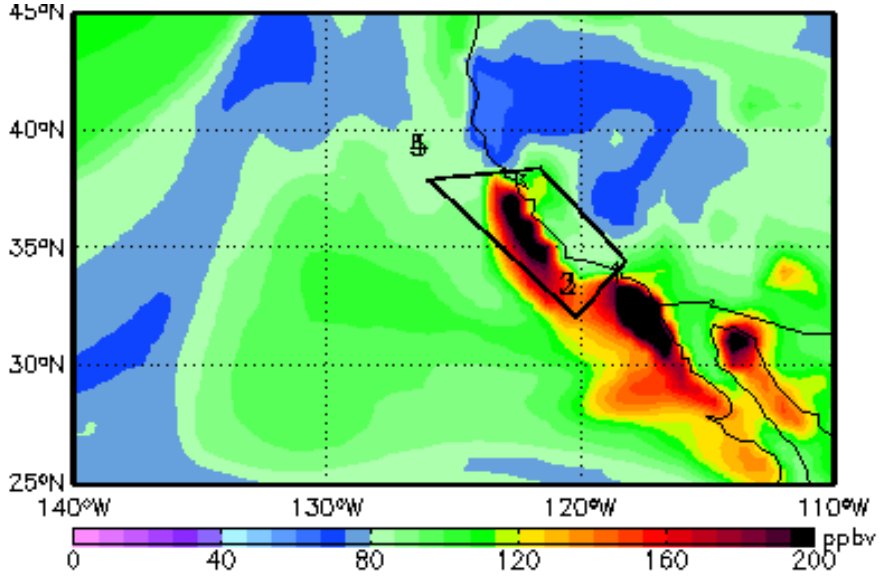


AOD

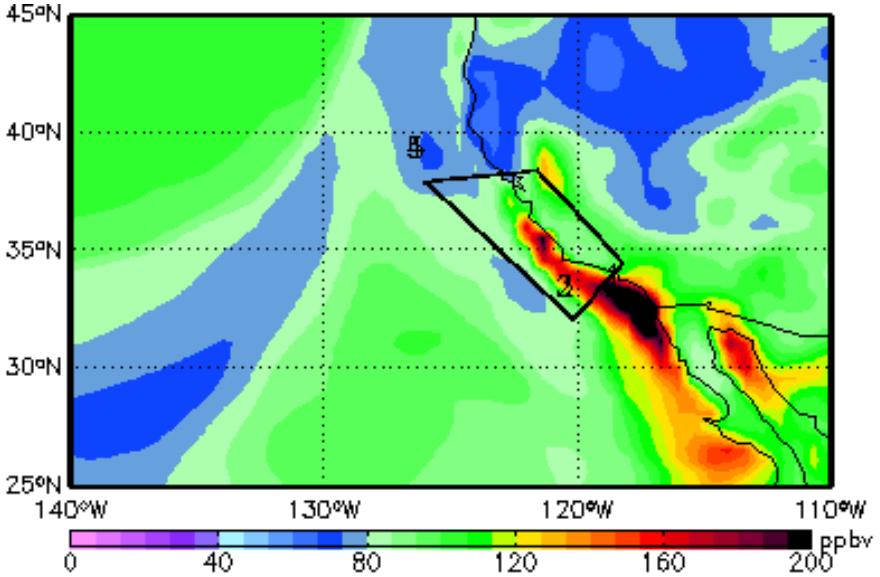


GEOS-5 Outlook: Surface CO at 19:30Z

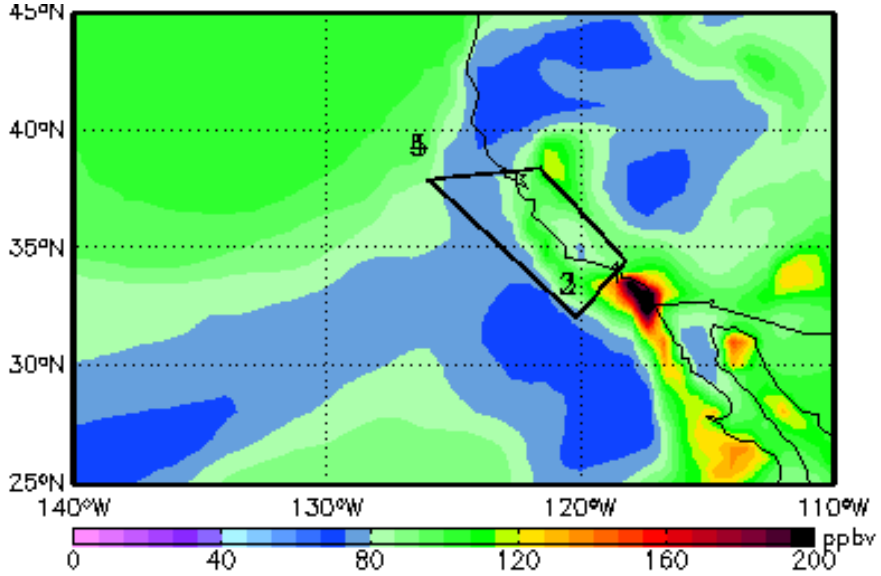
June 20



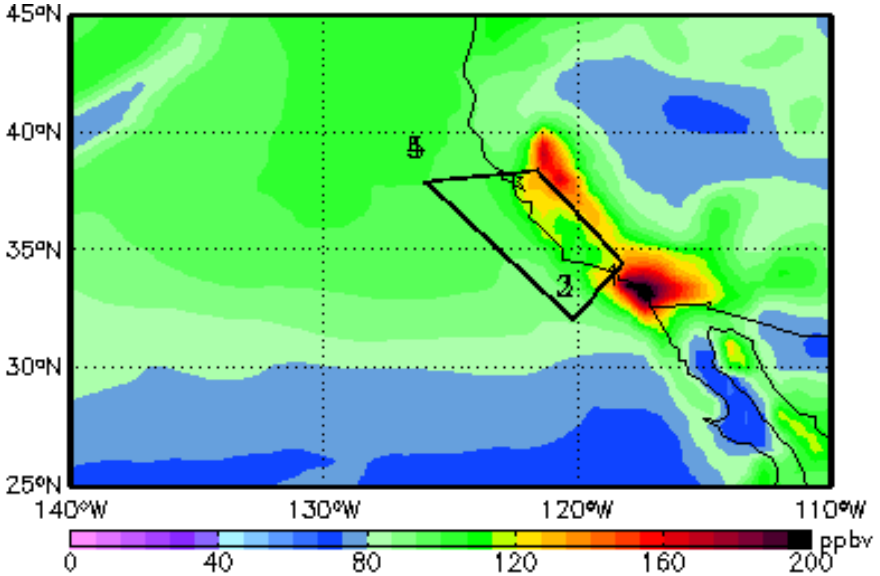
June 21



June 22

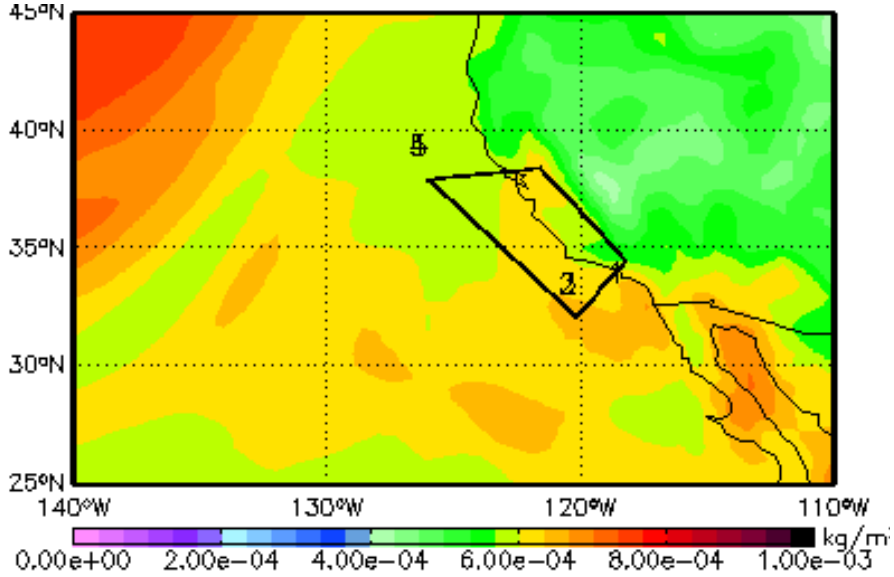


June 23



GEOS-5 Outlook: Total Column CO at 19:30Z

June 20



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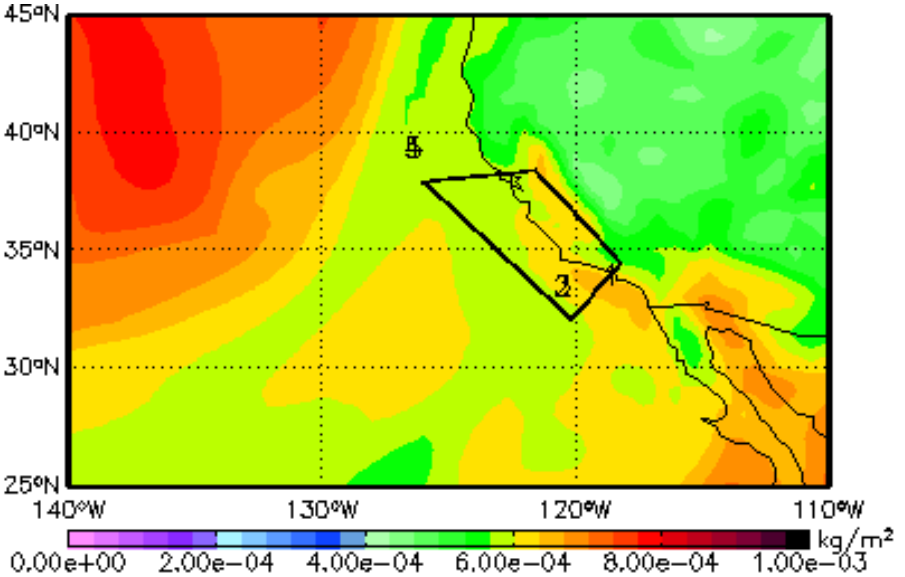

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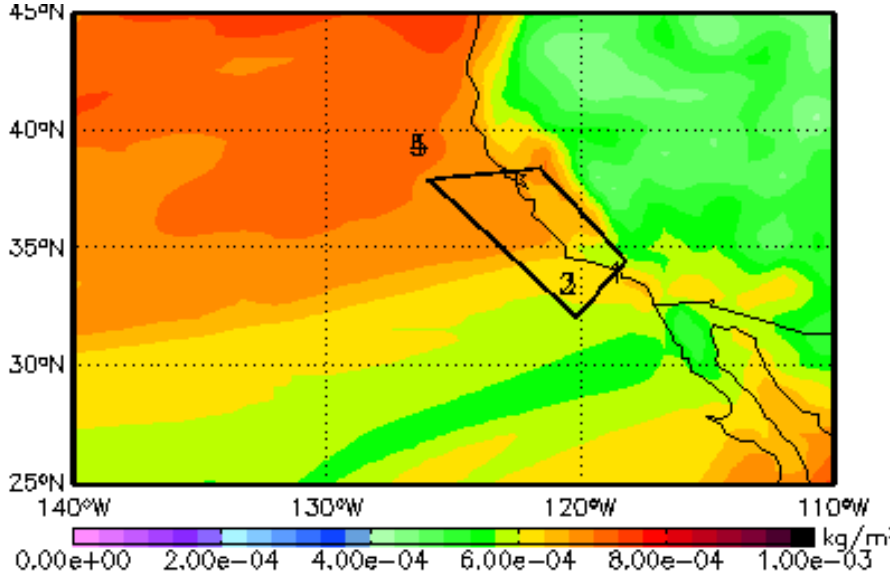

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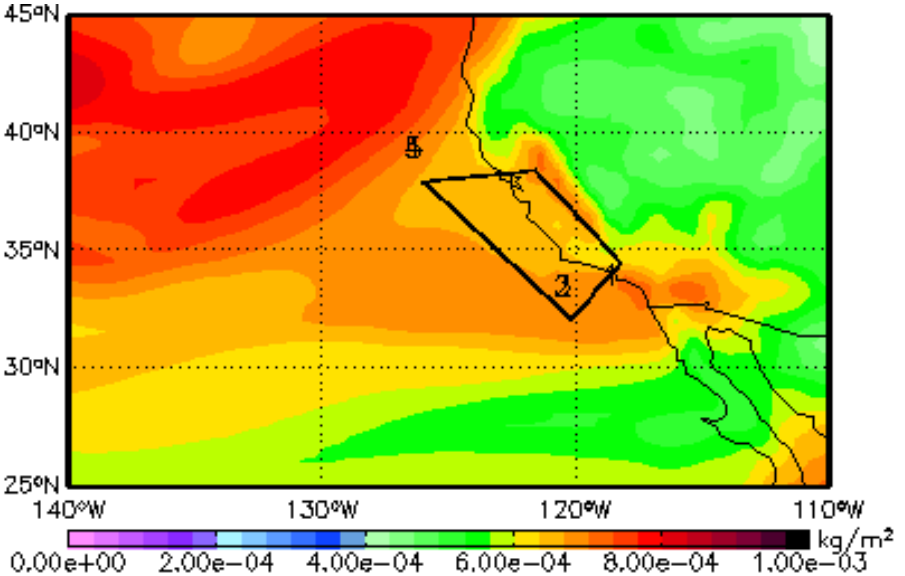
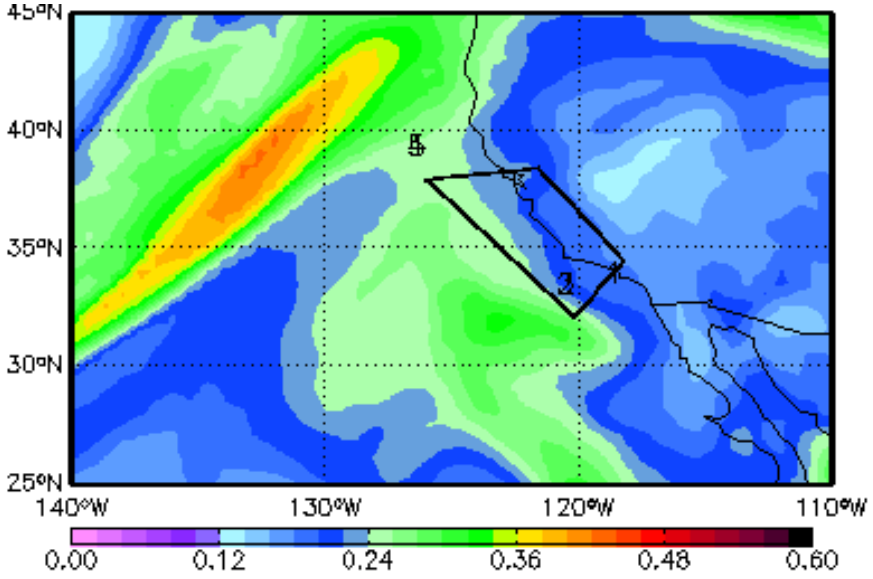


GEOS-5 Outlook: Total AOT at 19:30Z

June 20



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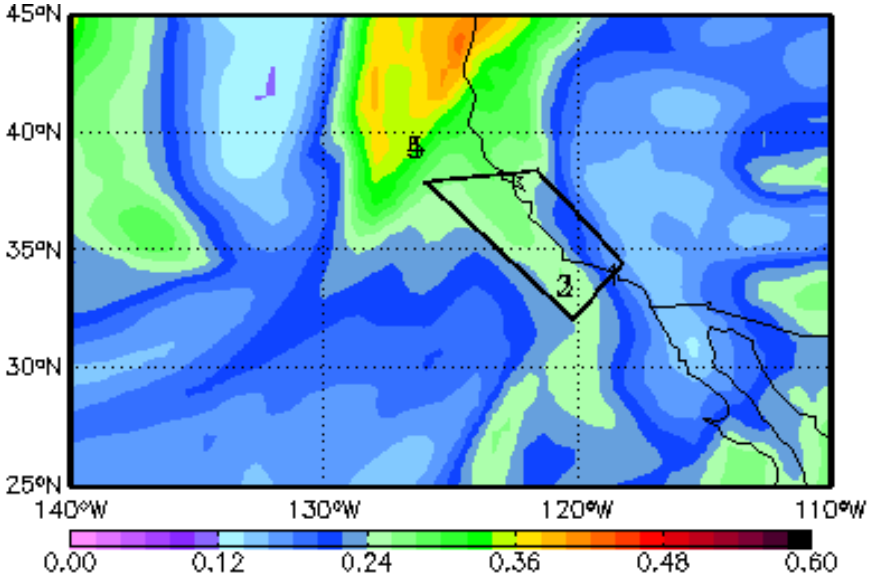

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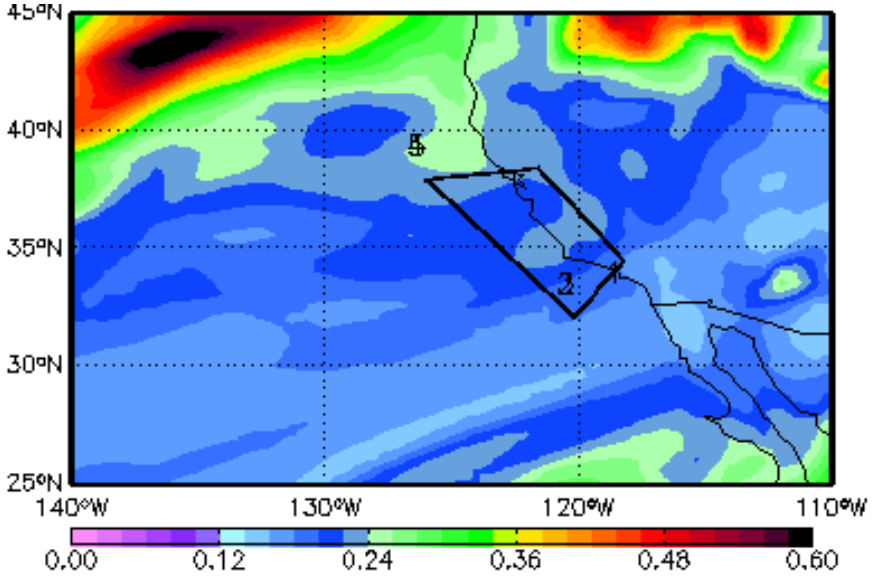

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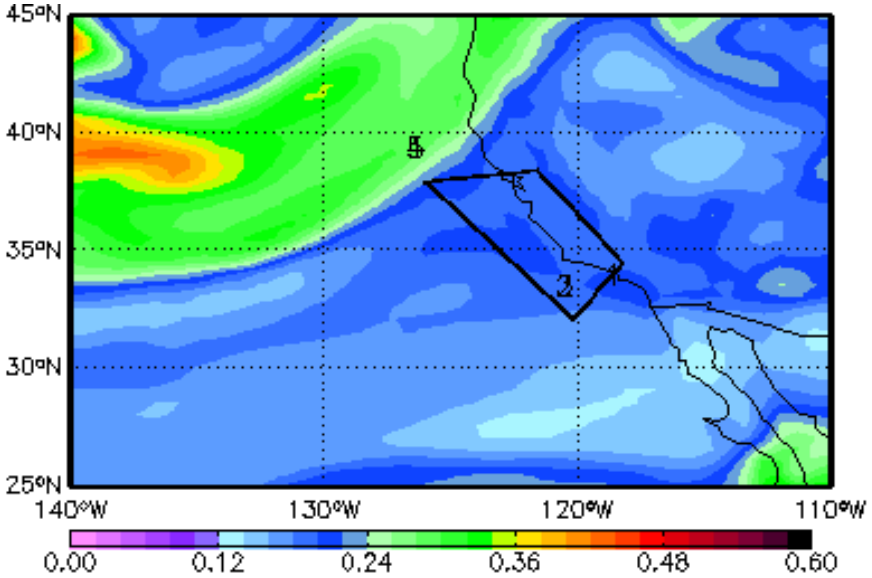
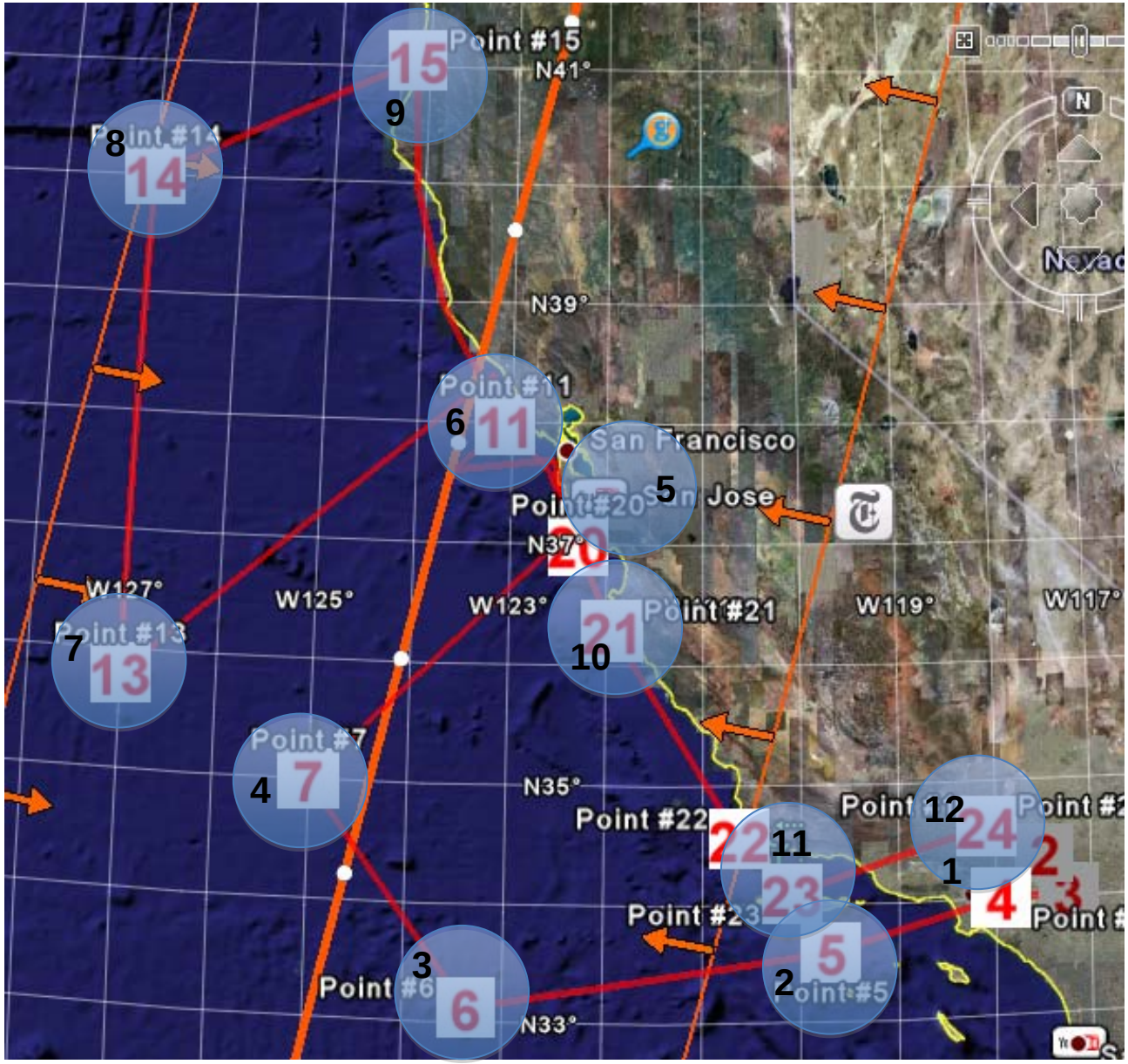


Proposed Flight Plan: Boundary Condition Survey
06/20/2008



Point 7:
Spiral 30 kft.

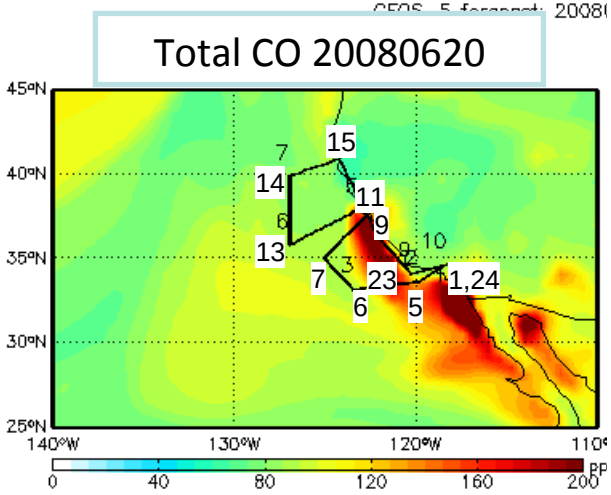
Point 14:
Spiral 30 kft.

Point 15:
Spiral 20 kft.

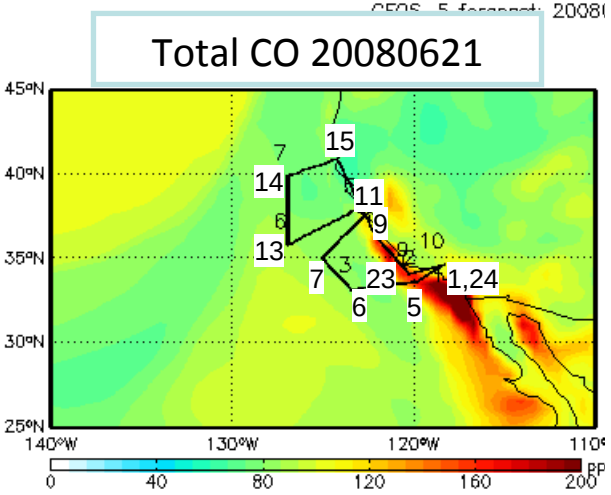
Point 24:
Palmdale Spiral
18 kft.

Surface CO, total and NAM

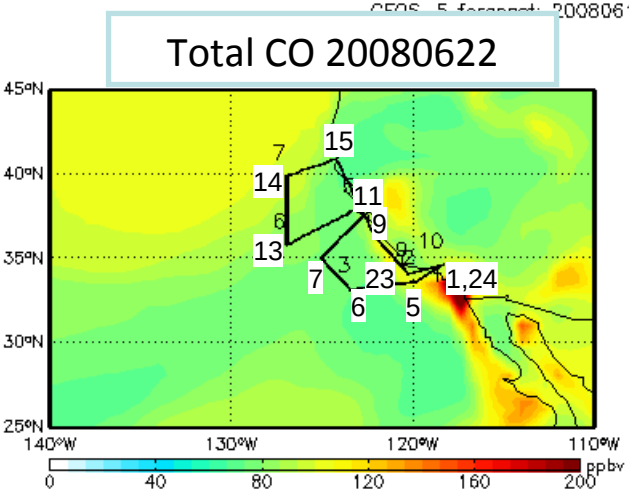
Total CO 20080620



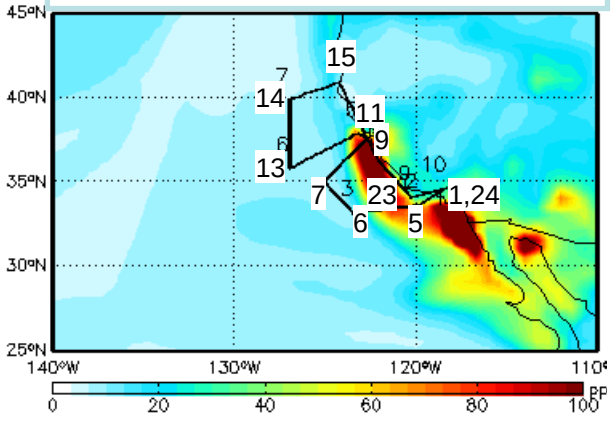
Total CO 20080621



Total CO 20080622



NAM anthrop CO 20080620



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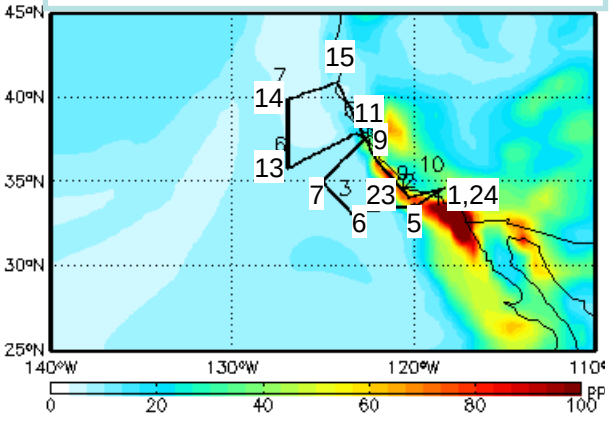

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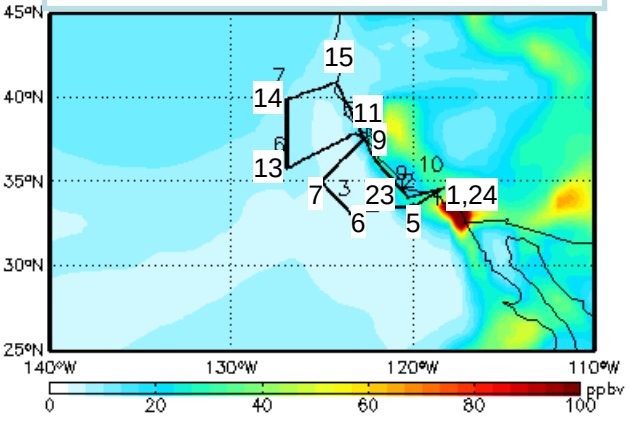
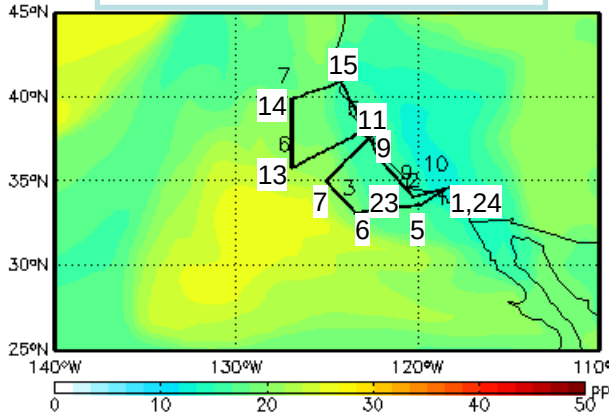


Surface CO, Asia and Non Boreal bb

ASA CO 20080620



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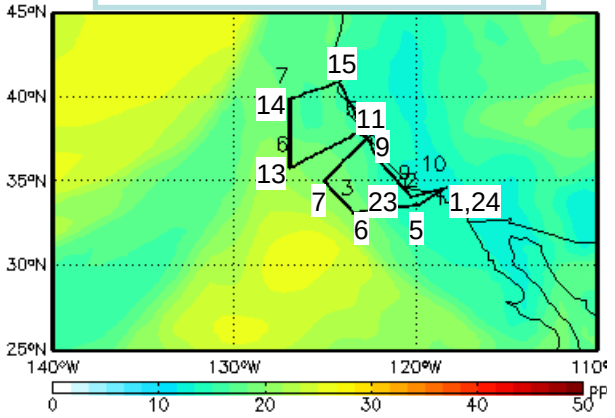

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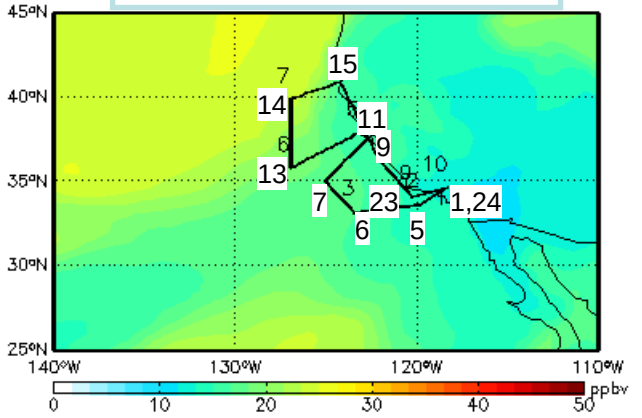
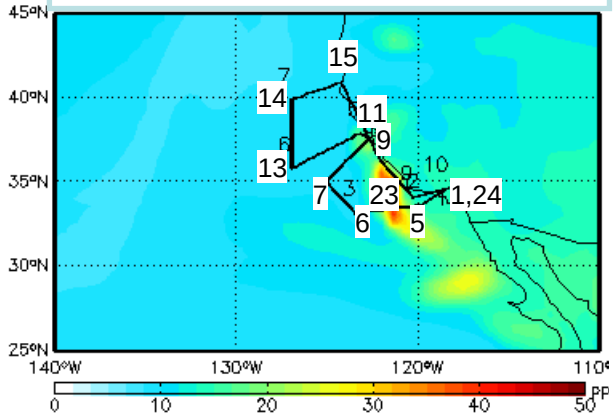
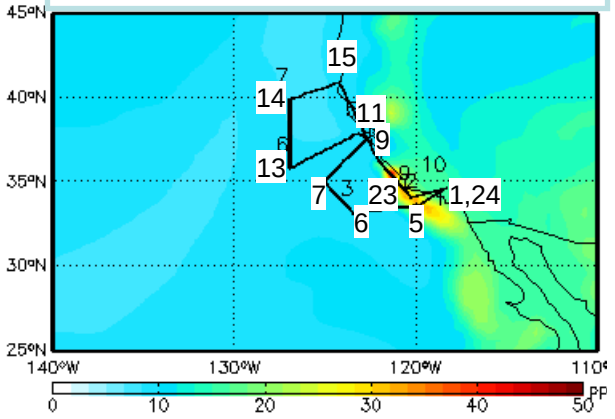


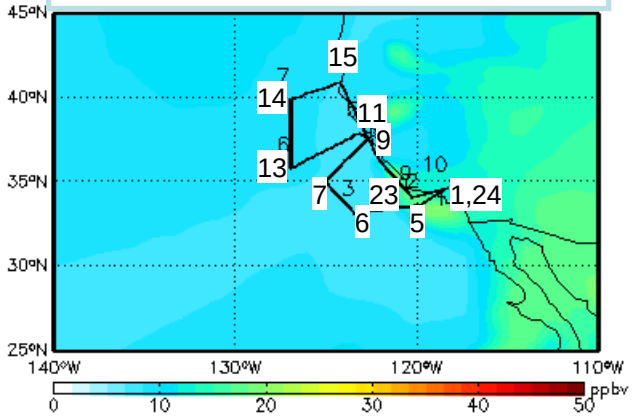
NB-bb CO 20080620



NB-bb CO 20080621

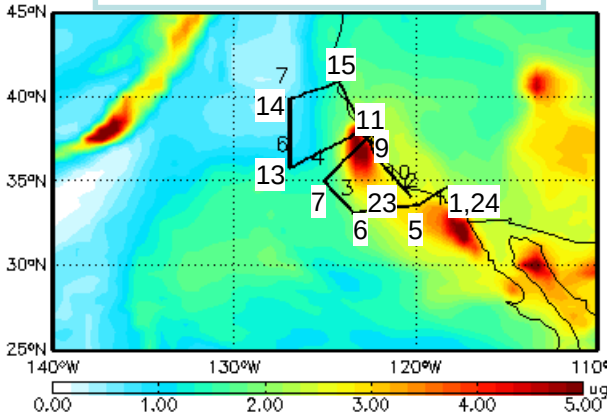


NB-bb CO 20080622

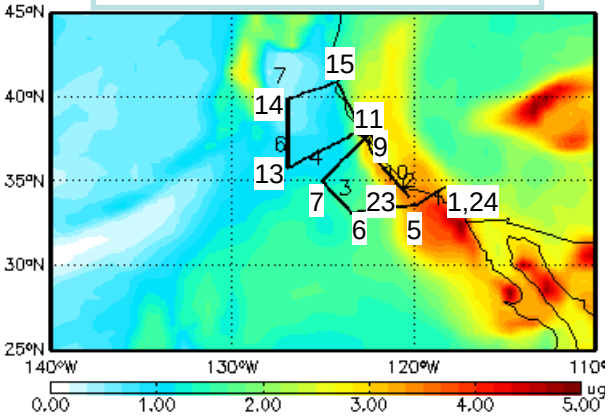


Surface sulfate and black carbon

Sulfate 20080620



Sulfate 20080621



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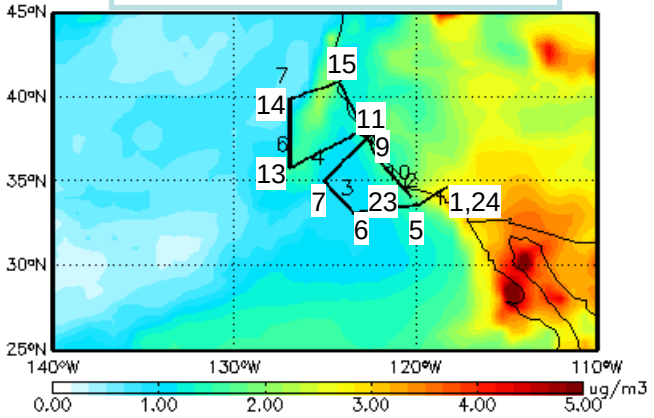
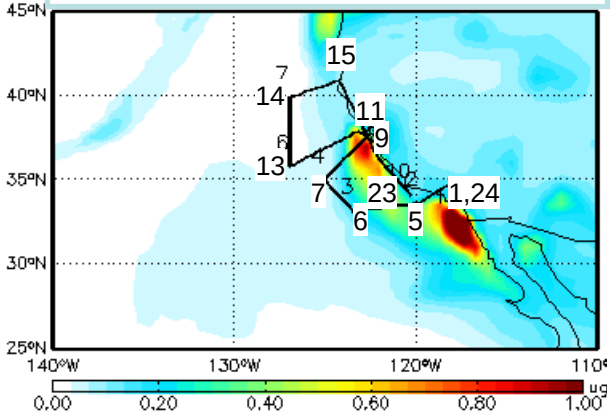
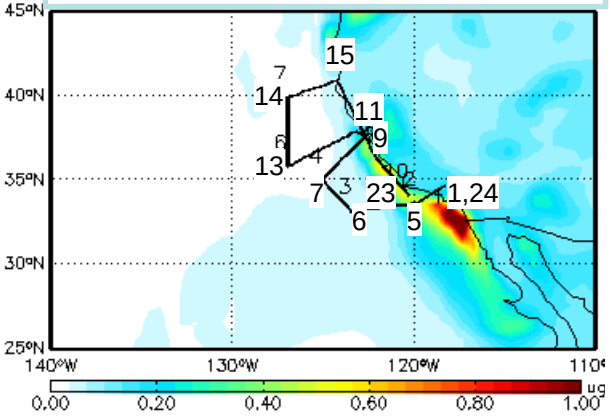


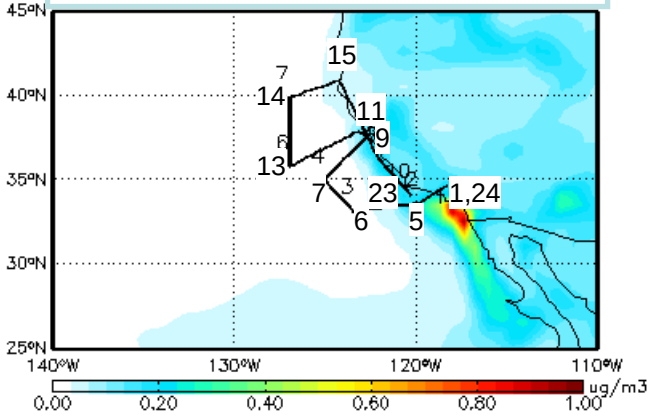
Black carbon 20080620



Black carbon 20080621

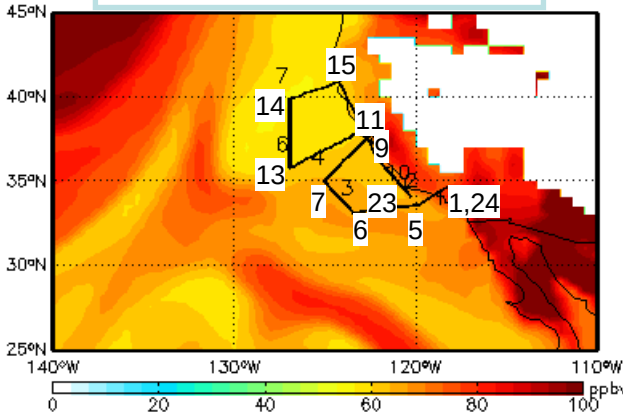


Black carbon 20080622

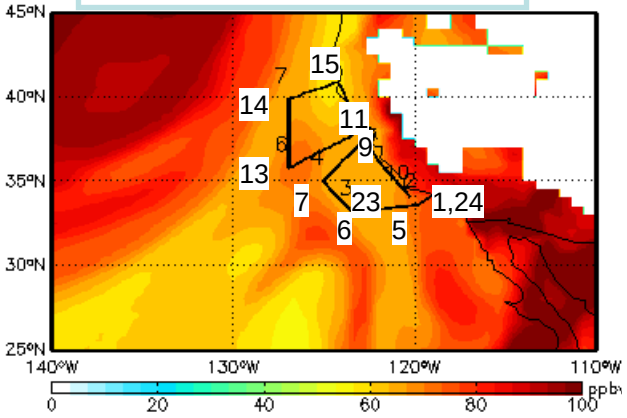


850 mb CO, total and NAM

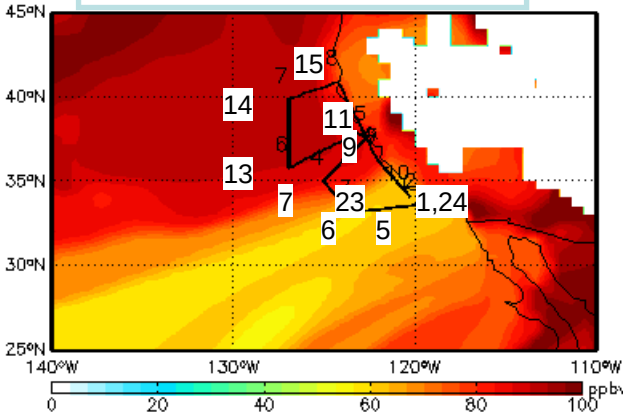
Total CO 20080620



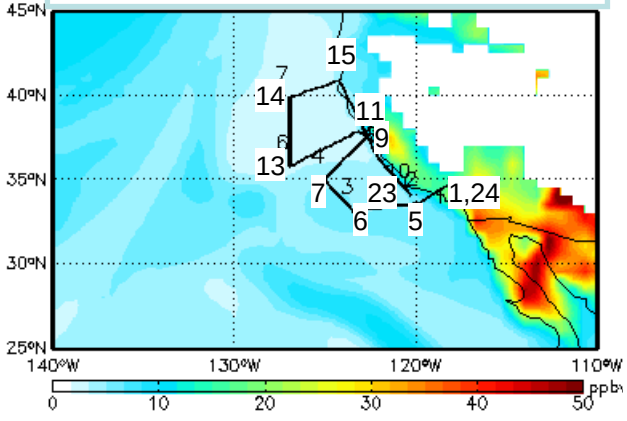
Total CO 20080621



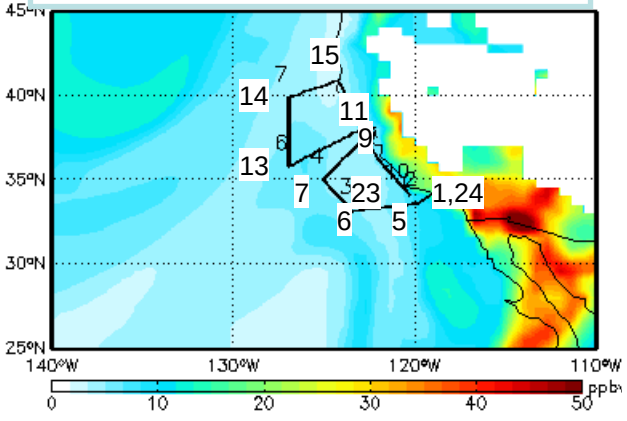
Total CO 20080622



NAM anthrop CO 20080620



NAM anthrop CO 20080621



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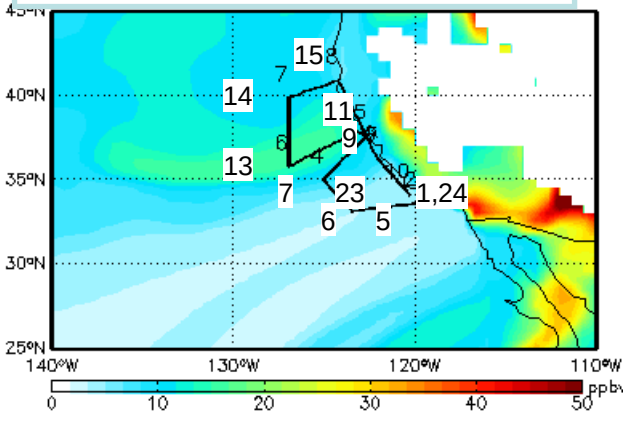
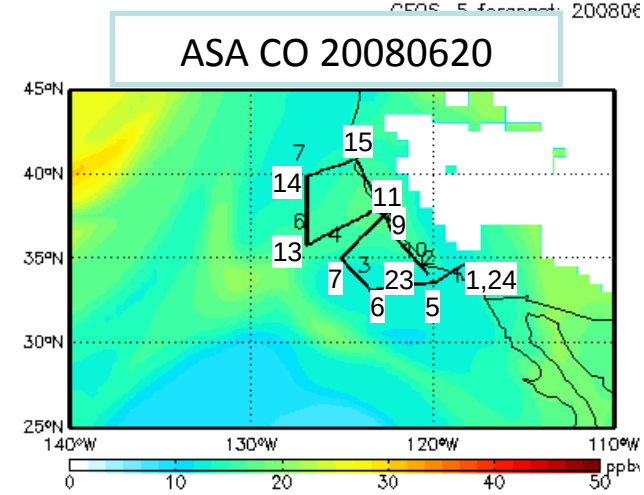
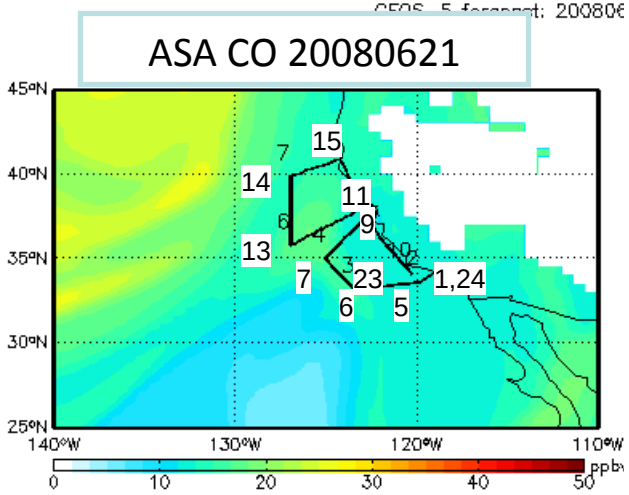
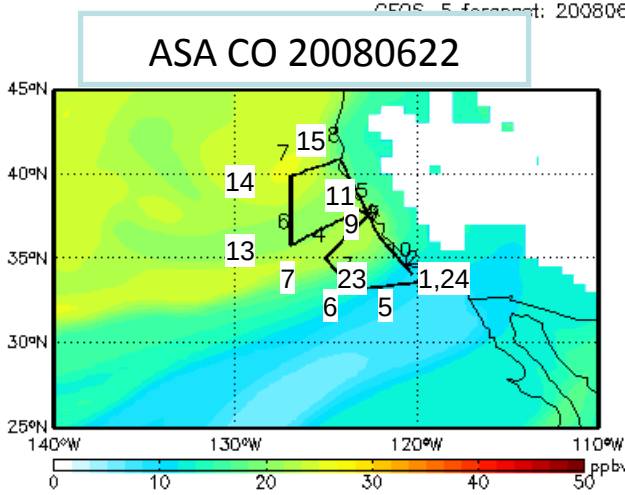
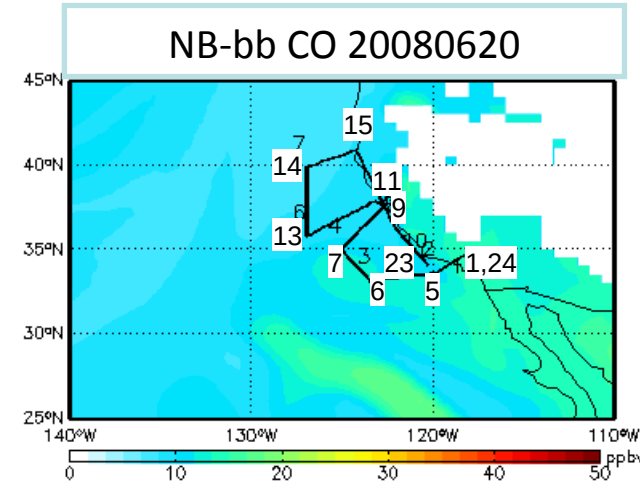


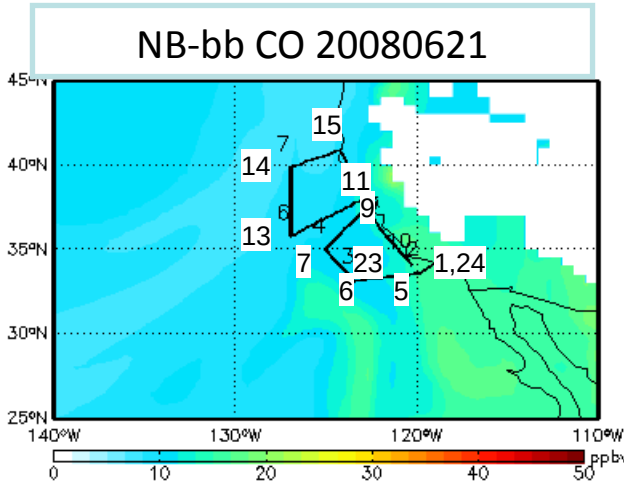
850 mb CO, Asia and Non Boreal bb

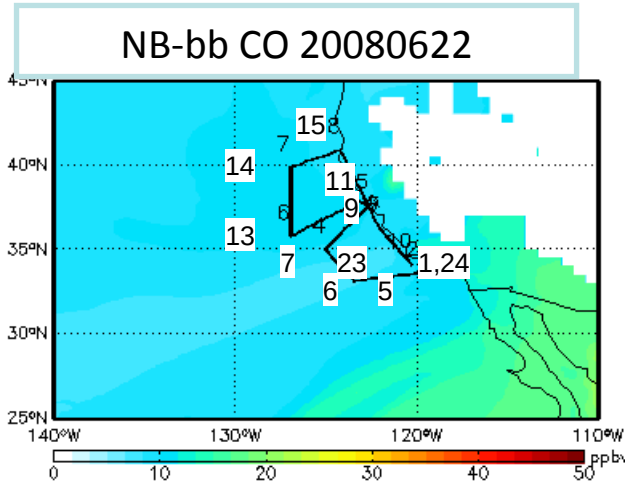




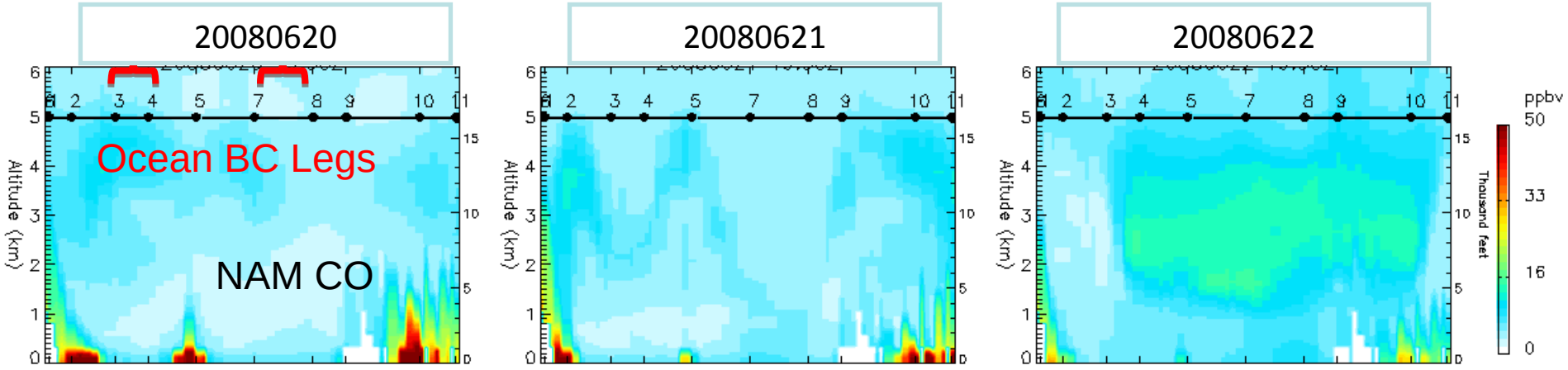




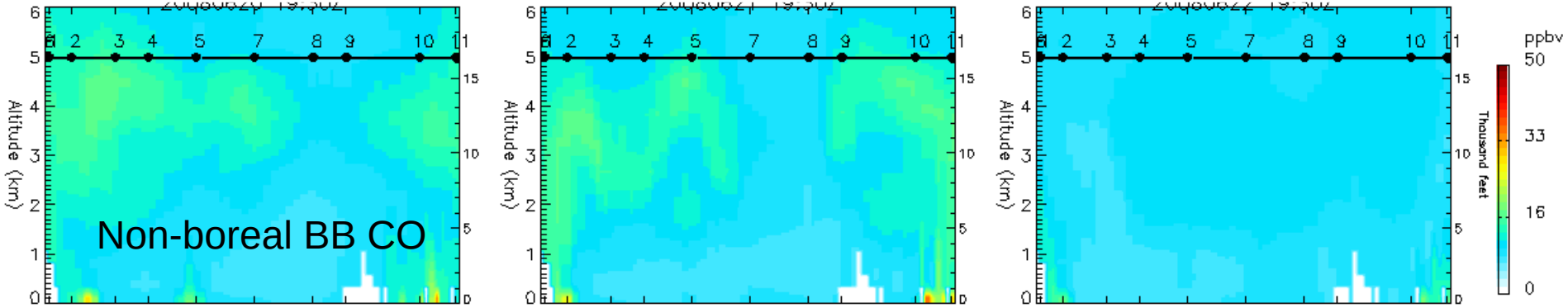




North American CO is trapped in the near-shore BL on all days; slightly more N.Am. CO aloft on Sunday

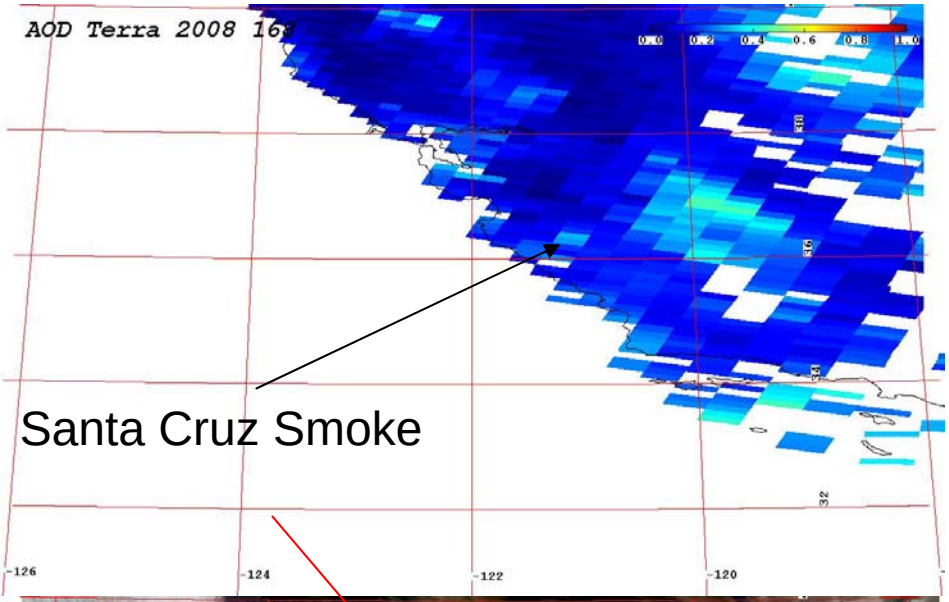


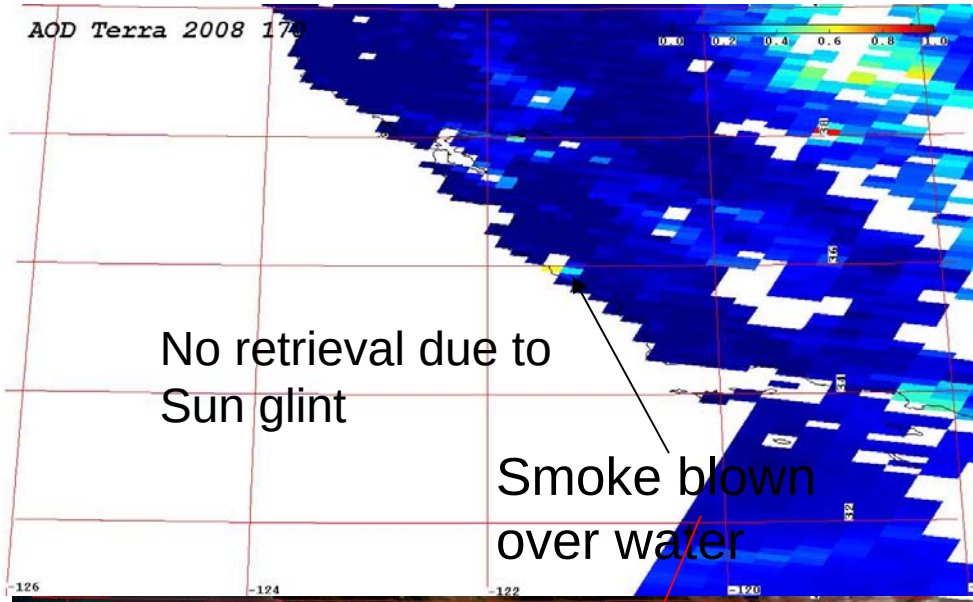
Biomass burning influence is negligible at the surface on all three days

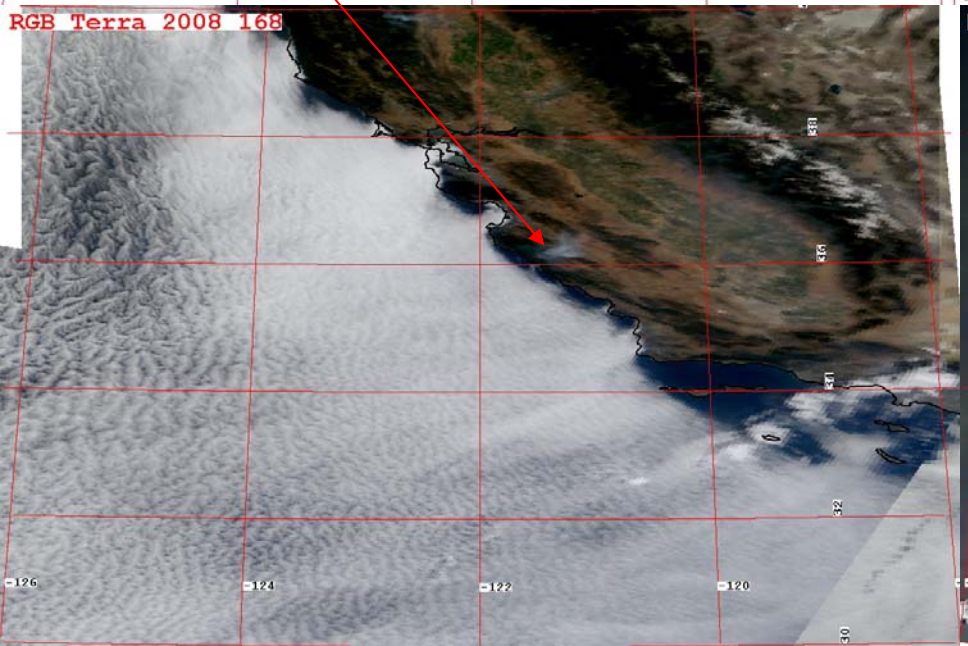


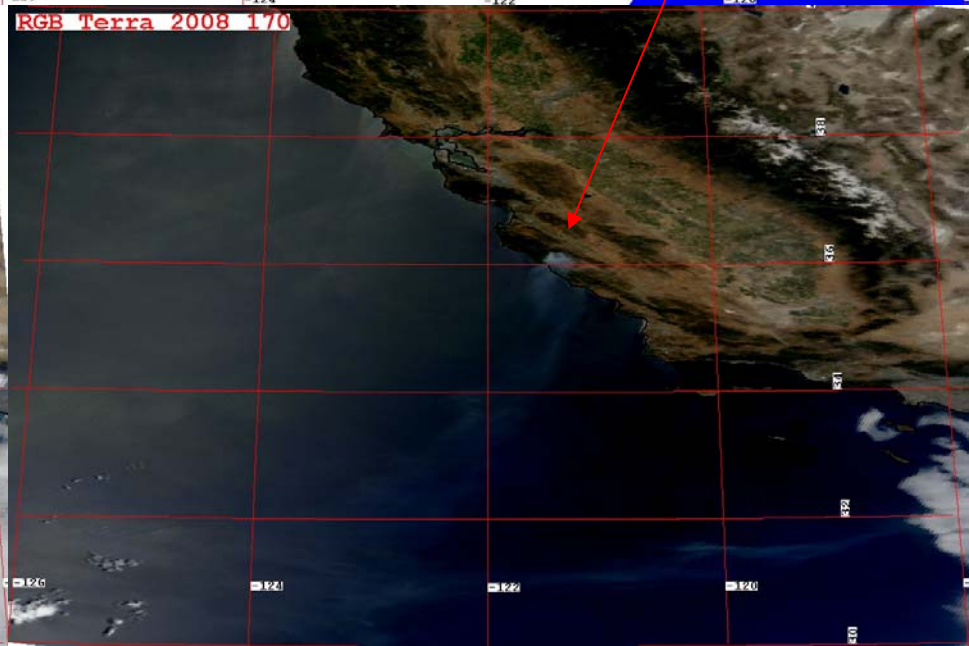
Day 169 & 170 (June 17&18) Tue. (Left) and Wed. (Right)

MODIS AOD Hot Spots in California



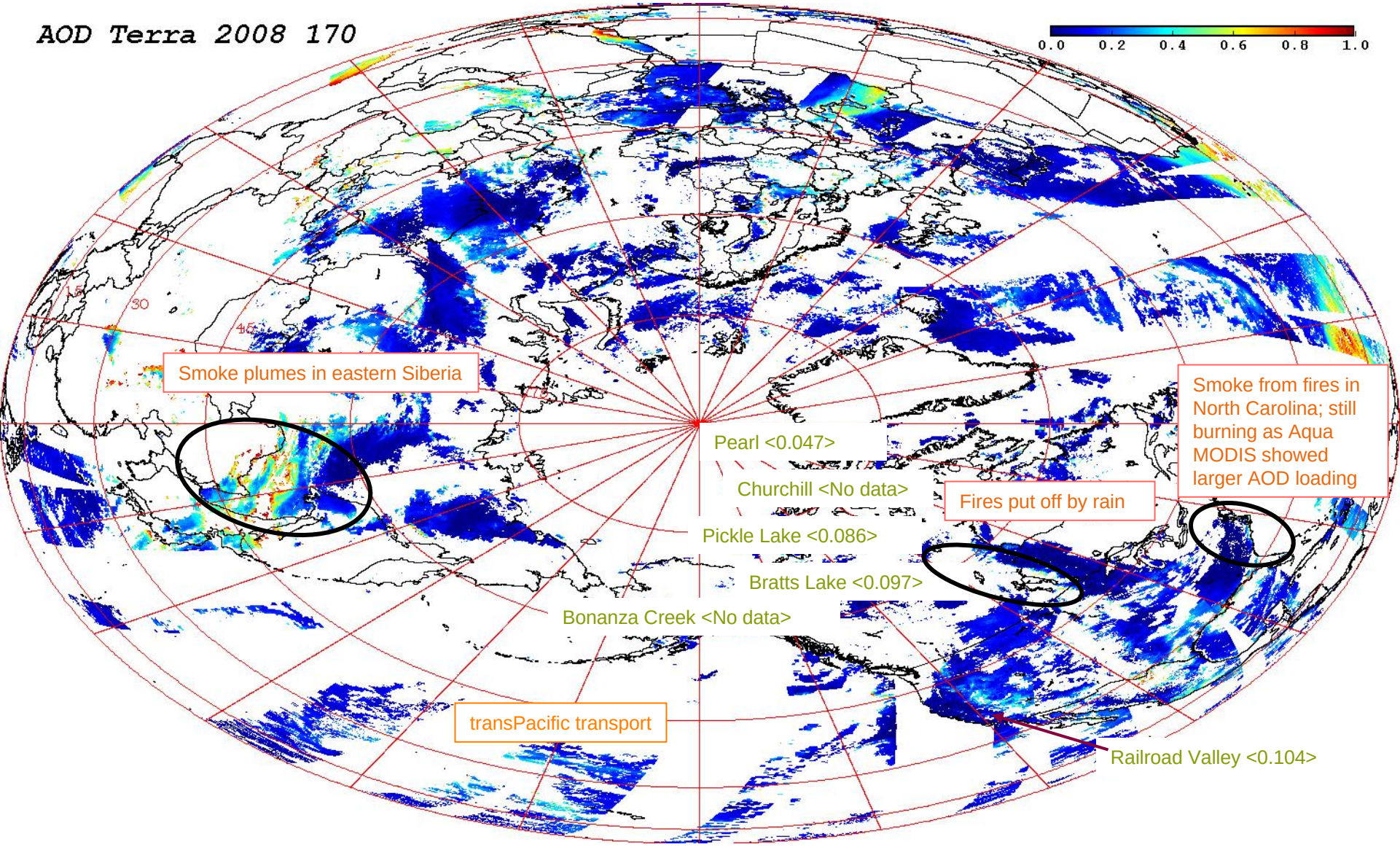






Day 170 (June 18) Wednesday

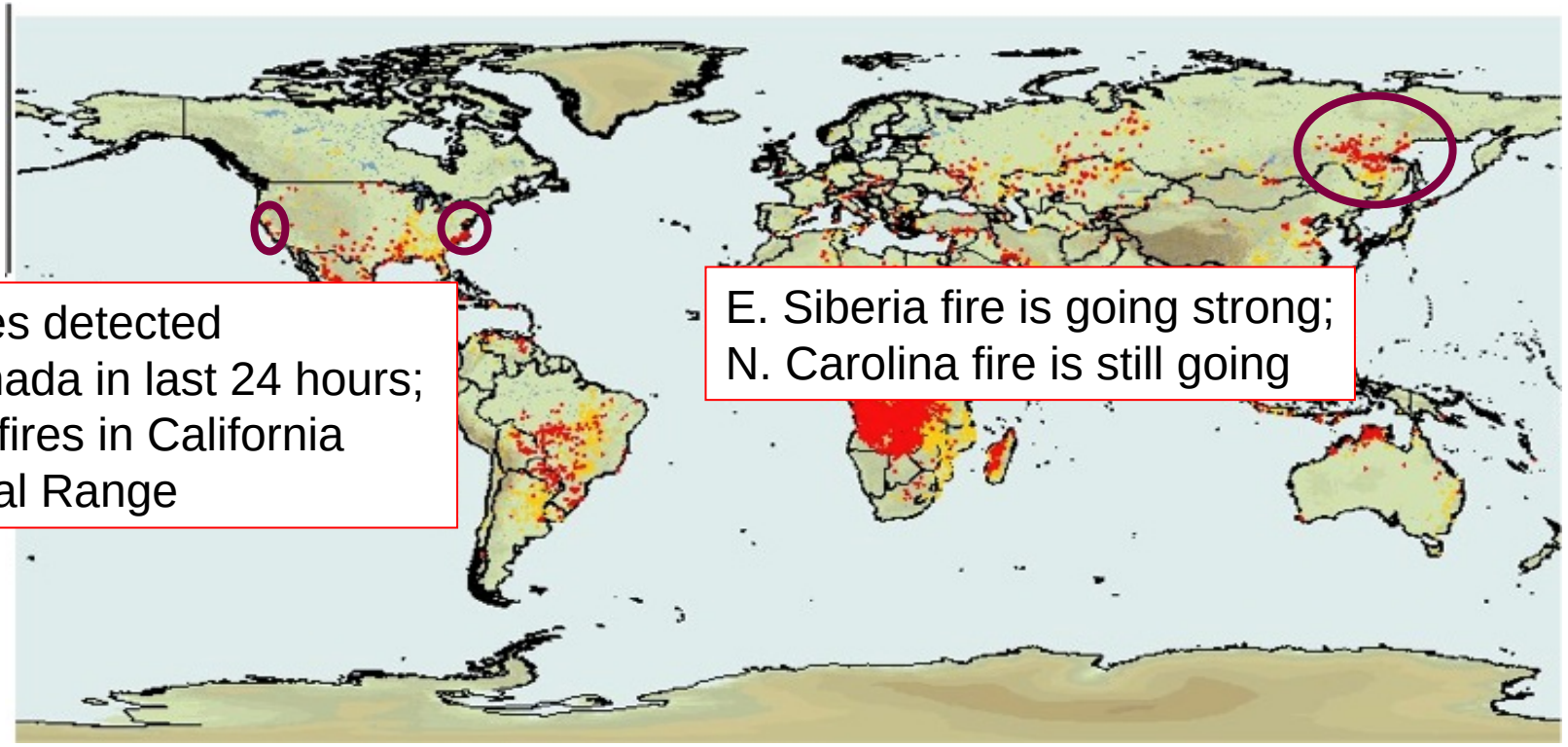
MODIS AOD Hot Spots in Northern Hemisphere (0° - 90° N)



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

MODIS Global Active Fire Count Map In Last 24 hours (Red) & 7 days (Yellow)

(20080617 - 20080619)



No fires detected
in Canada in last 24 hours;
some fires in California
Coastal Range

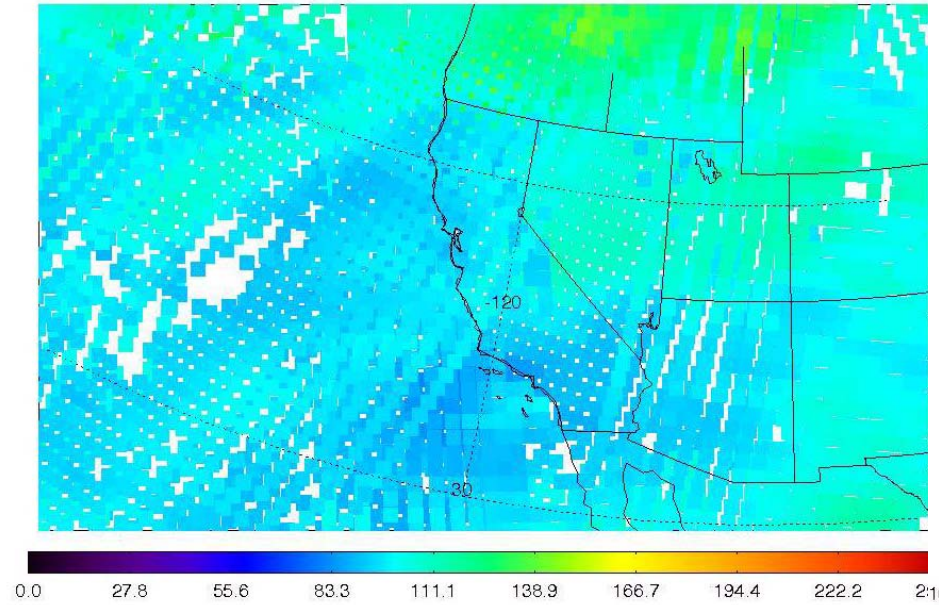
E. Siberia fire is going strong;
N. Carolina fire is still going

http://maps.geog.umd.edu/activefire_html

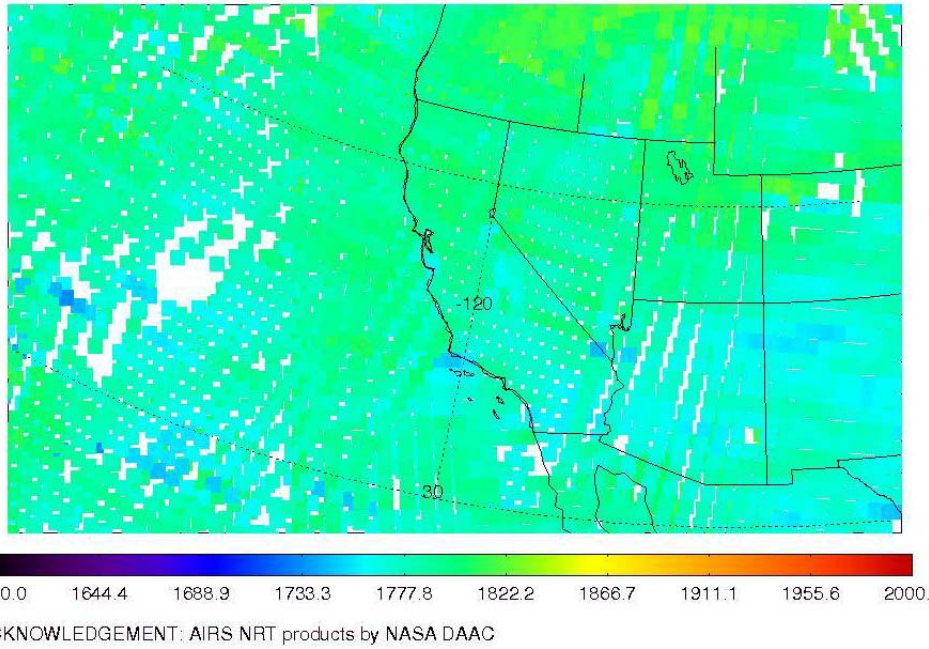
Circles indicate fires that produced elevated AOD noted on previous slide.

AIRS Support for CARB

NRT AIRS CO mr 500mb June 19



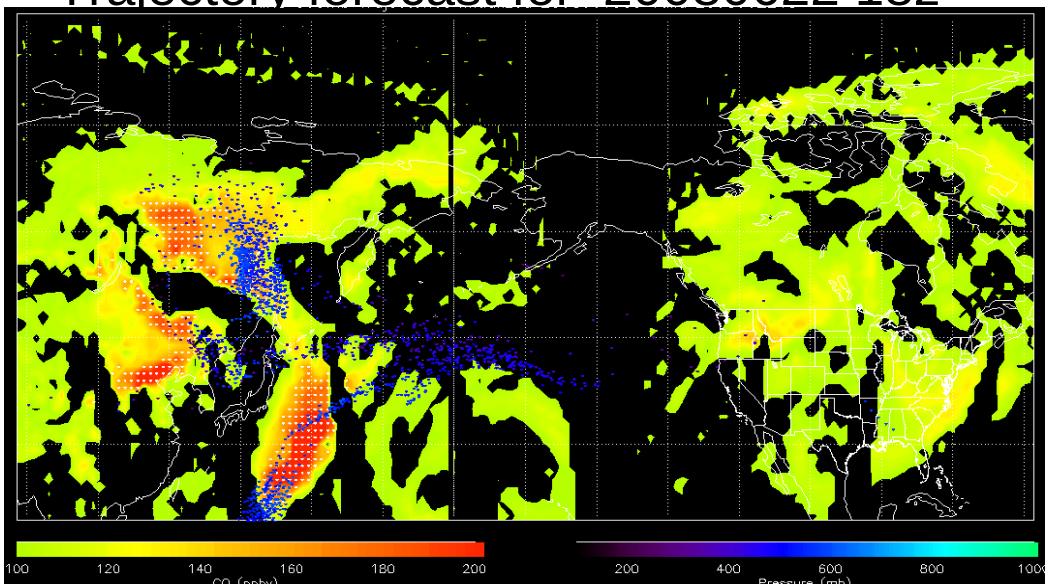
NRT AIRS CH_4 mr 300mb June 19



- Relatively low CO values (< ~100ppbv) over CA at 500mb, measurements taken in the last two days since there is no daytime data for CA today yet.
- CH4 show north-south gradients below ~1800ppbv in average.

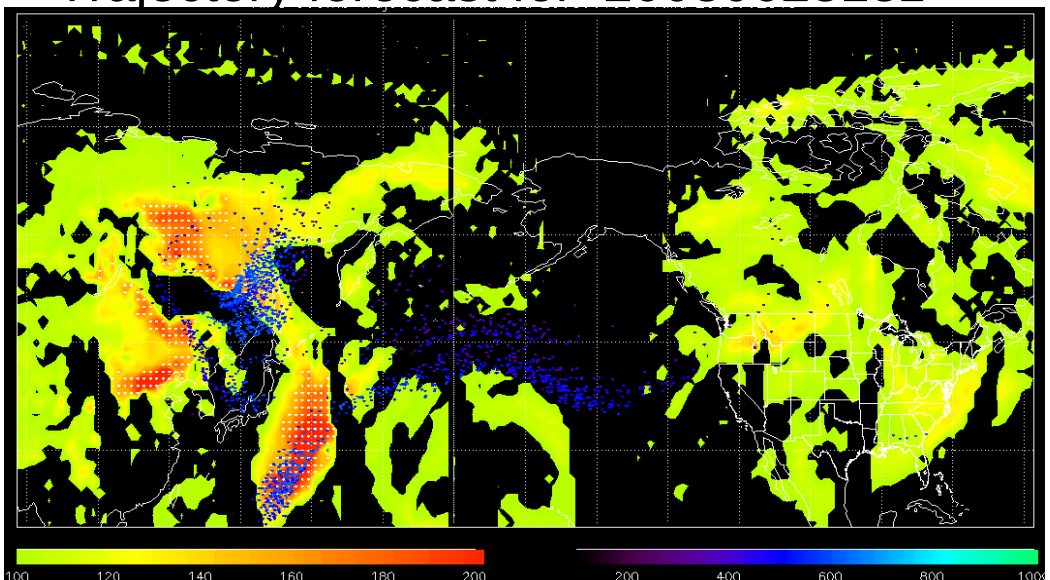
AIRS Support for CARB

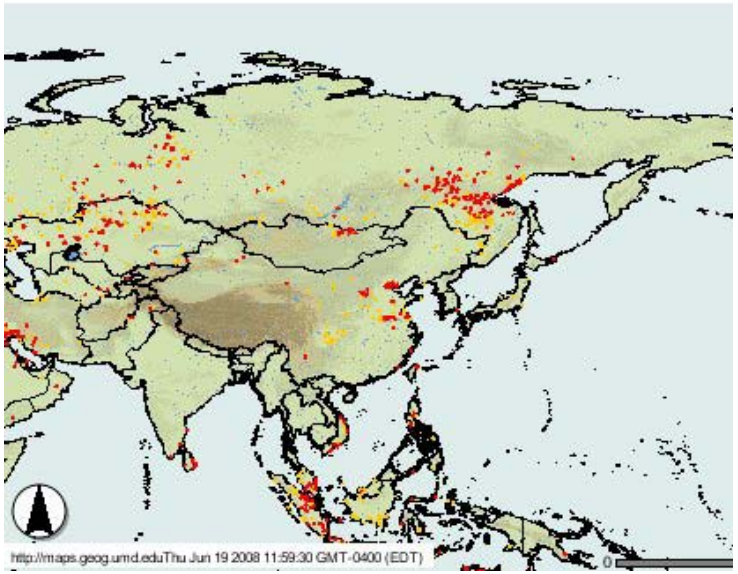
Trajectory forecast for 20080622 18z



- Asian transports possible to affect CA on June 24.
- Trajectory shows ascending air masses.
- Asian high CO partly due to fire activities.

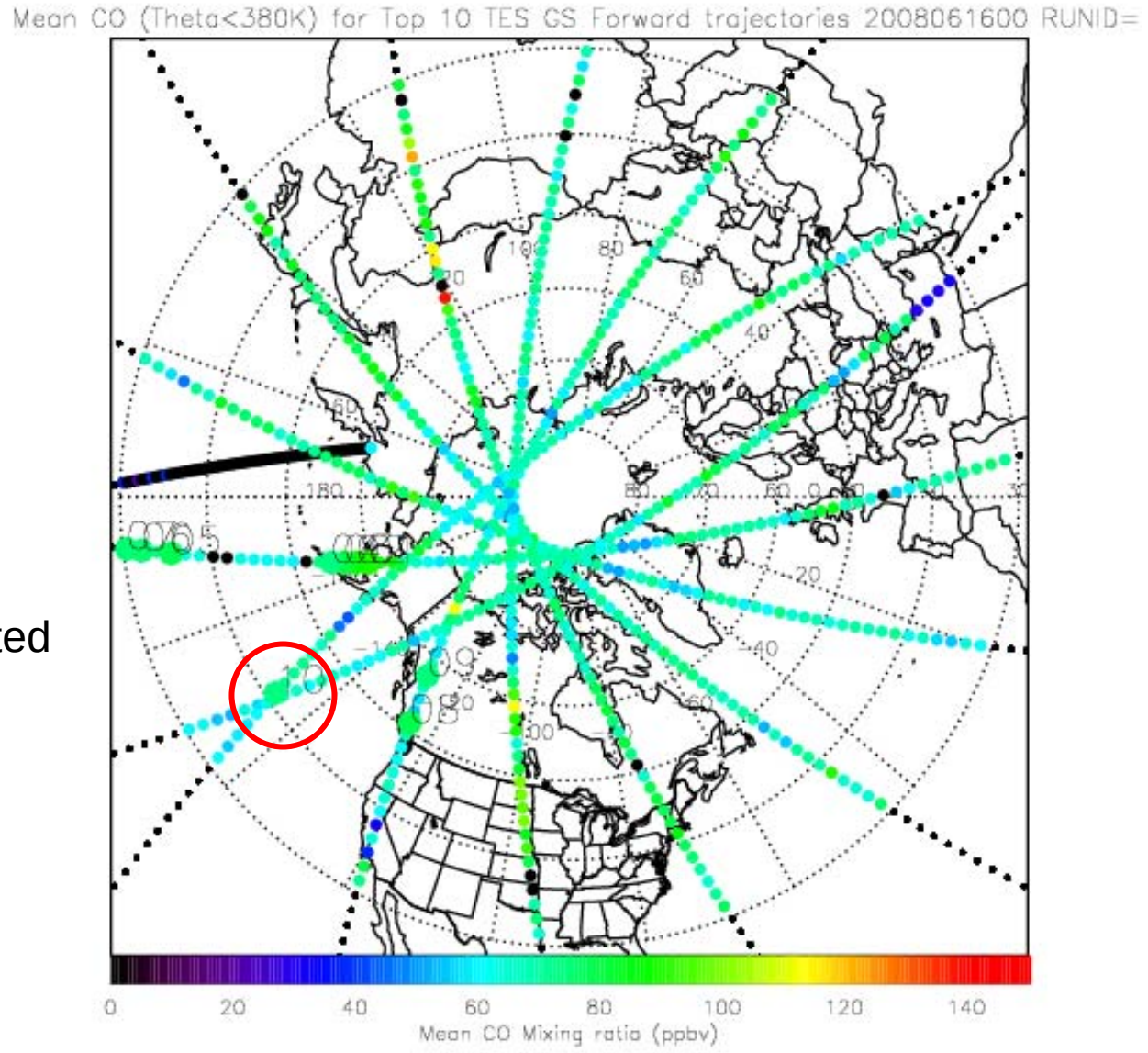
Trajectory forecast for 2008062318z

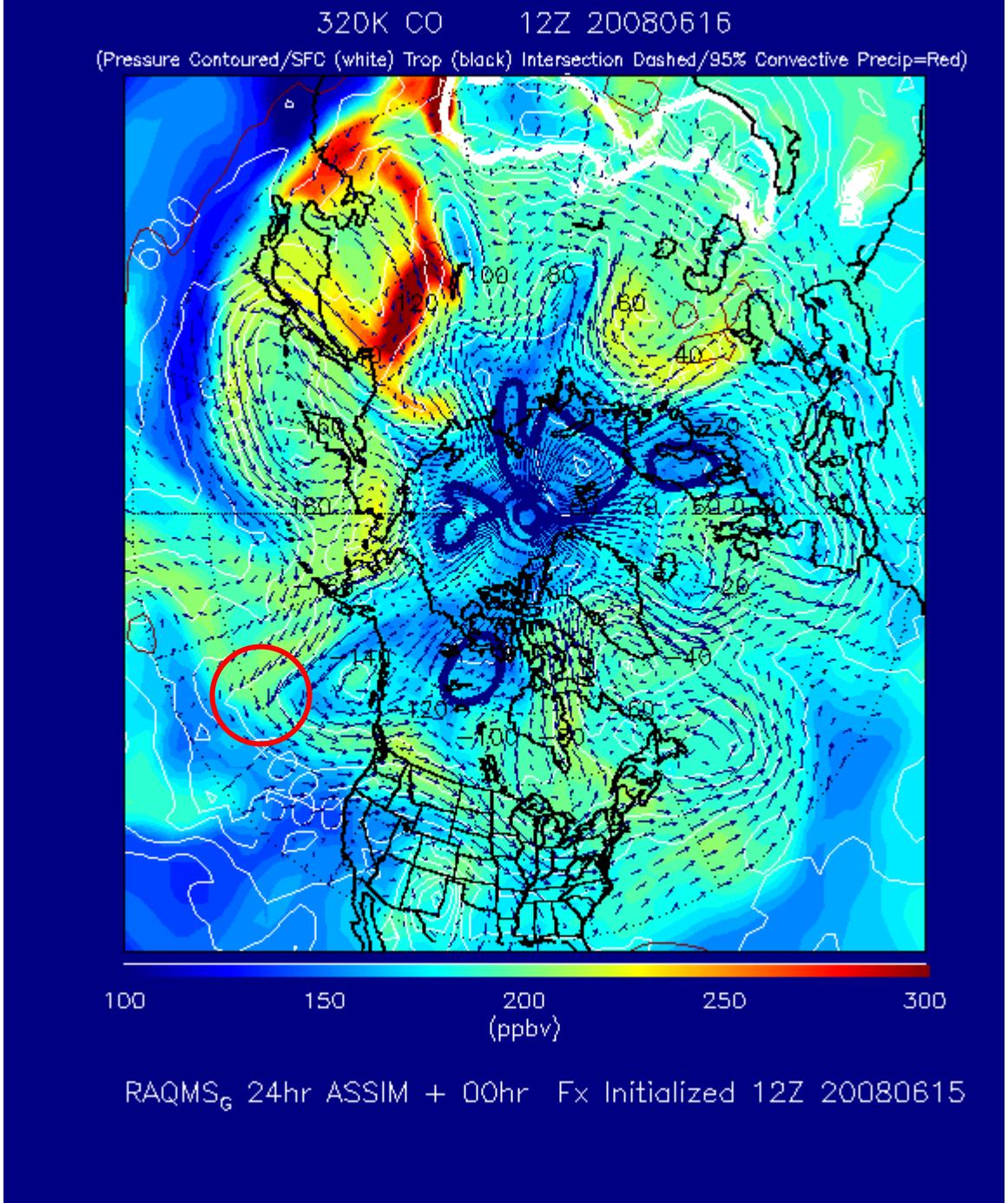




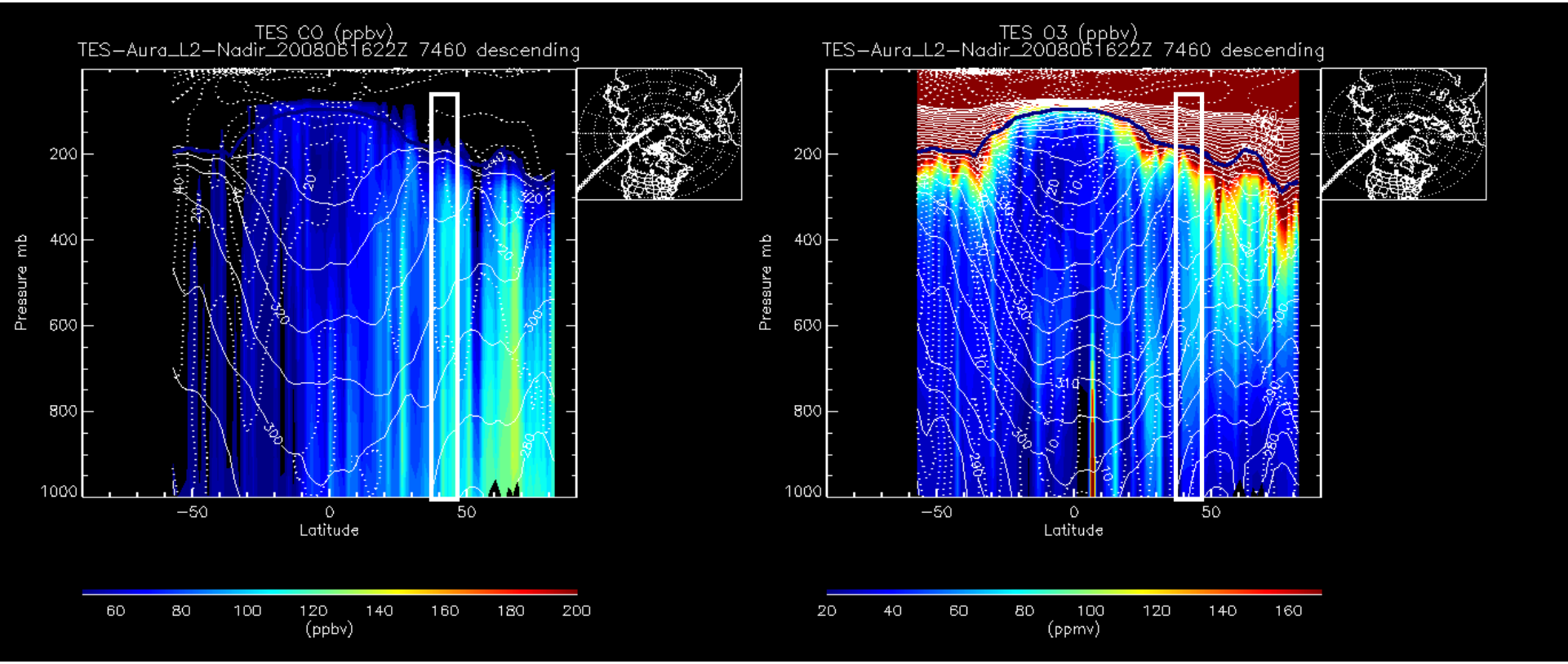
TES CO observations 06/16 : Focus on Pacific Sector

Profile selected from TES observation “Profile 10”



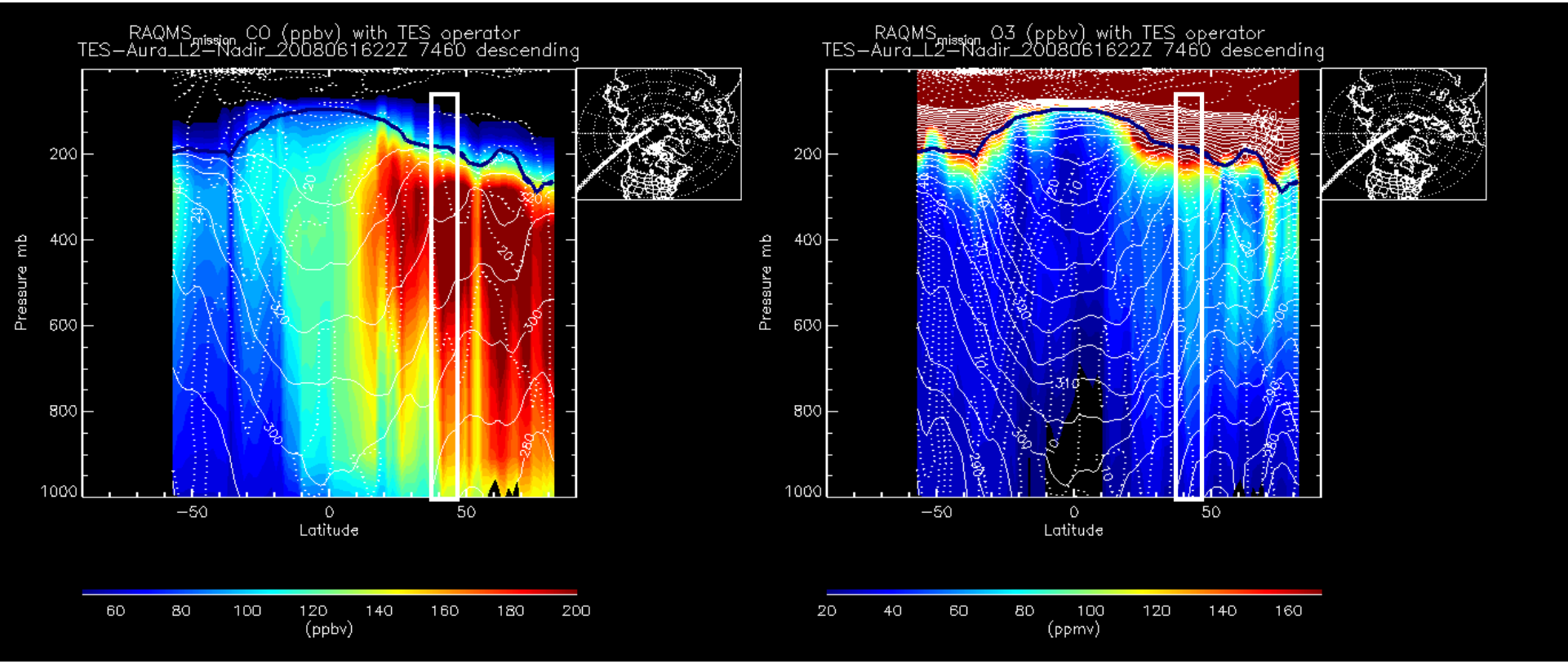

320K CO 12Z 20080616
(Pressure Contoured/SFC (white) Trop (black) Intersection Dashed/95% Convective Precip=Red)
100
150
200
250
300
(ppbv)
RAQMS$_G$ 24hr ASSIM + 00hr Fx Initialized 12Z 20080615

TES CO (left) and O3 (right) curtains from selected orbit



White box shows region of selected profile

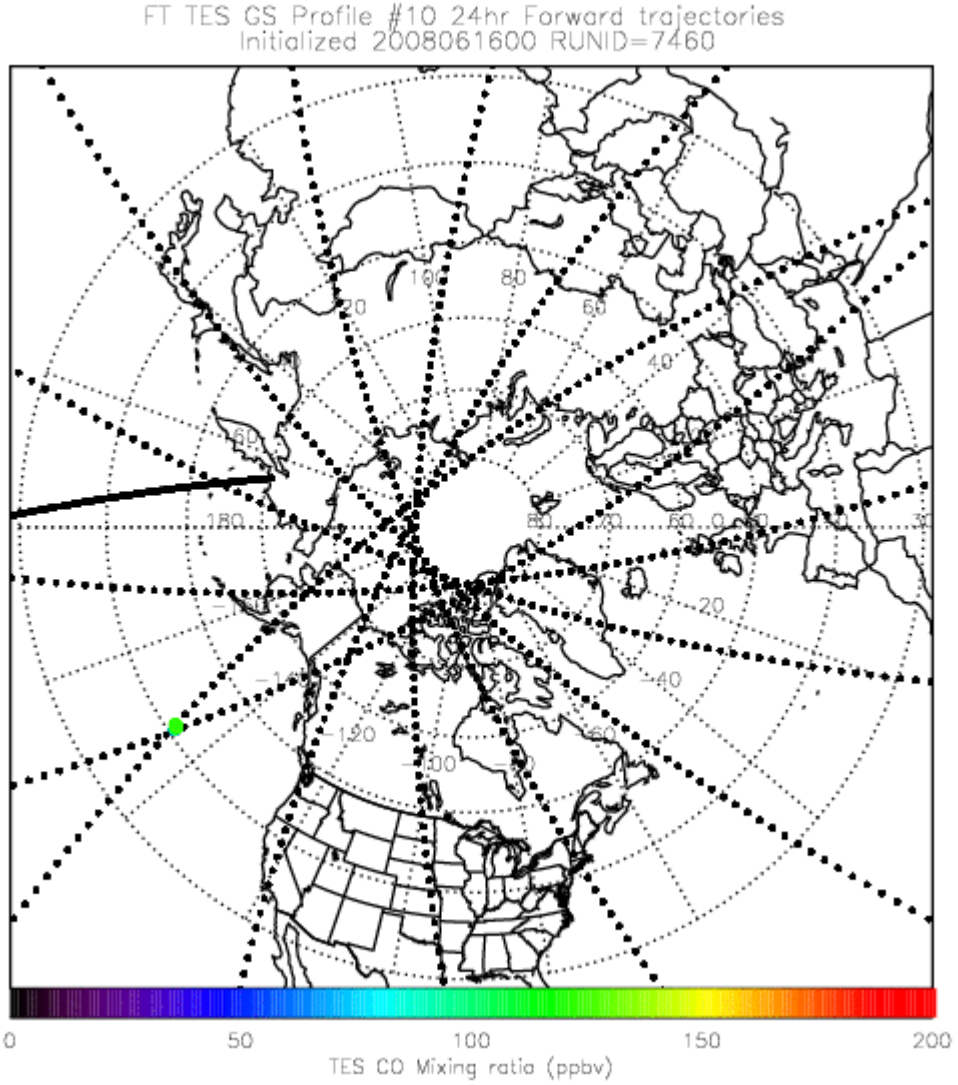
RAQMS* CO (left) and O3 (right) curtains from selected orbit



White box shows region of selected profile

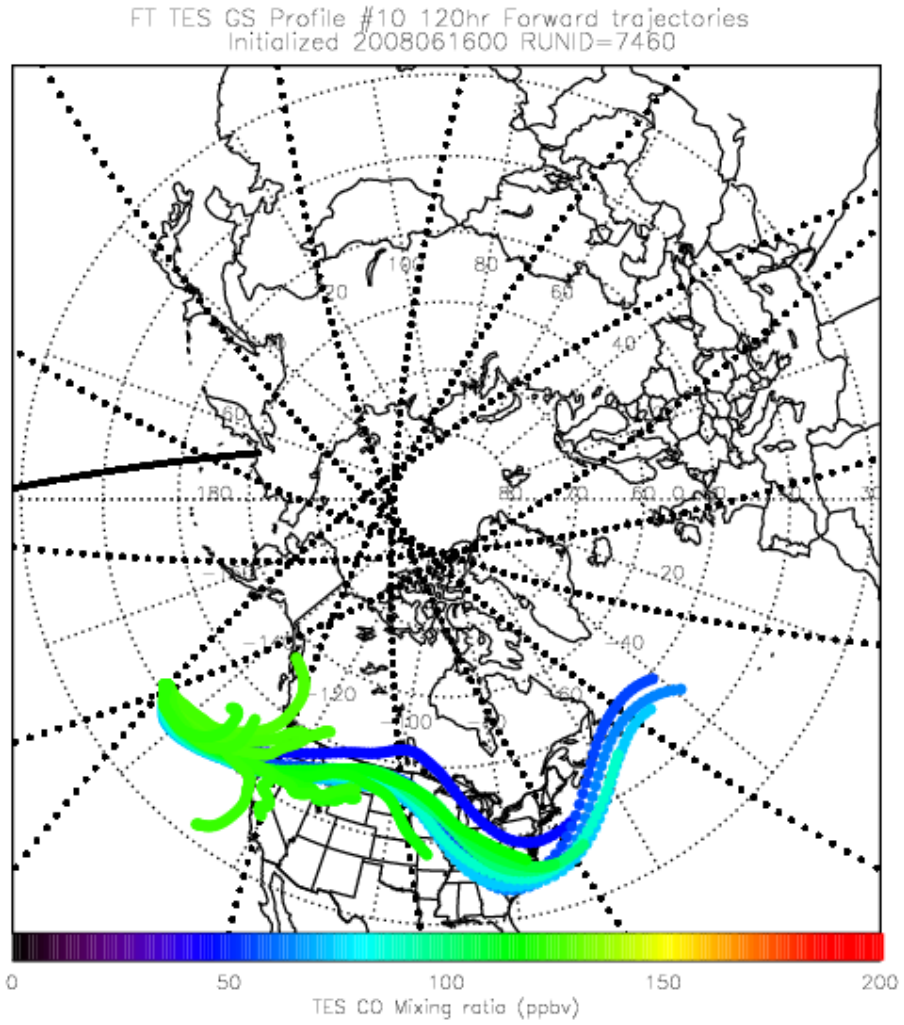
*With TES sensitivity operator applied

Forward trajectories initialized from selected profile “Profile 10” (colored by TES CO)

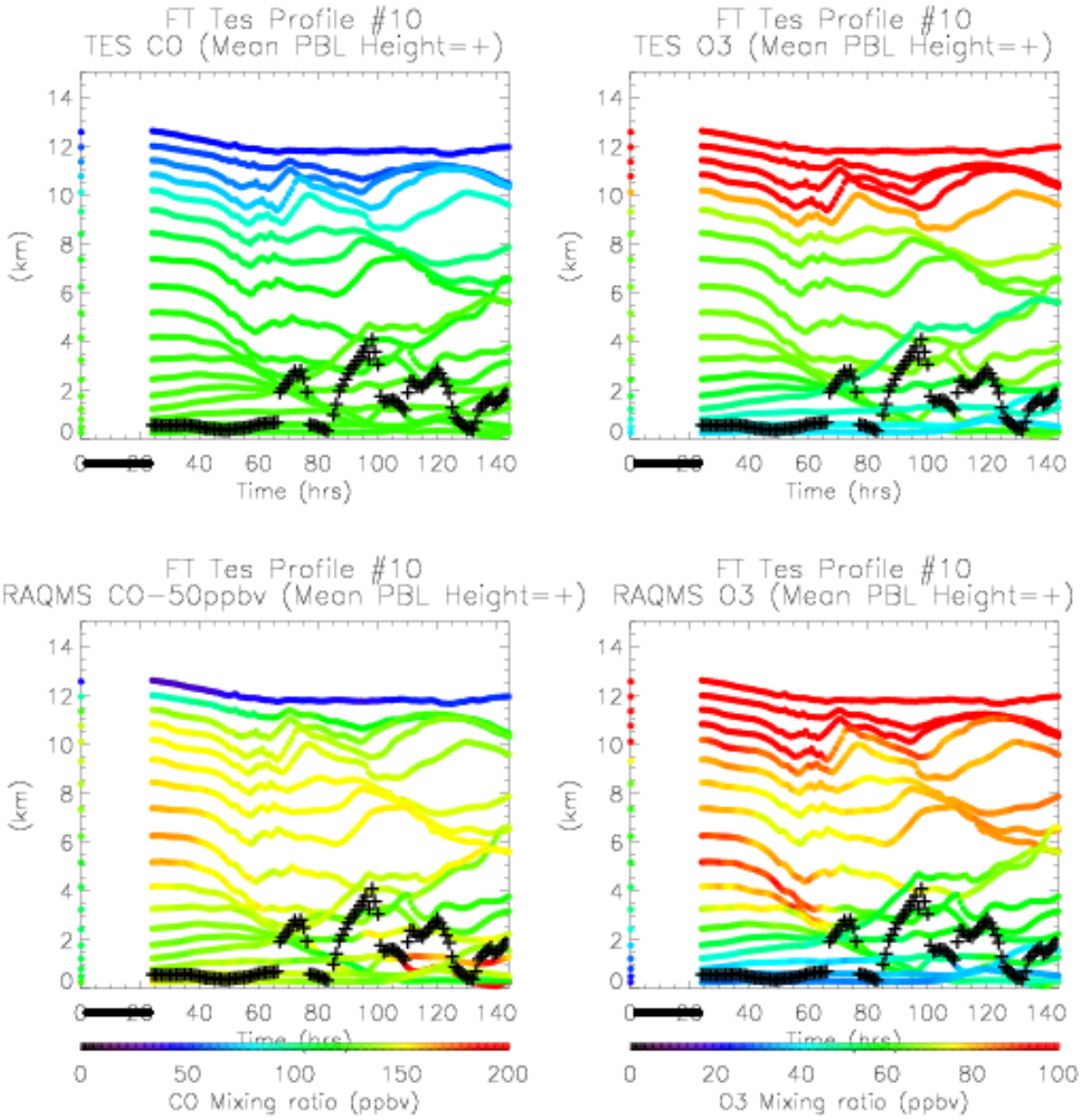
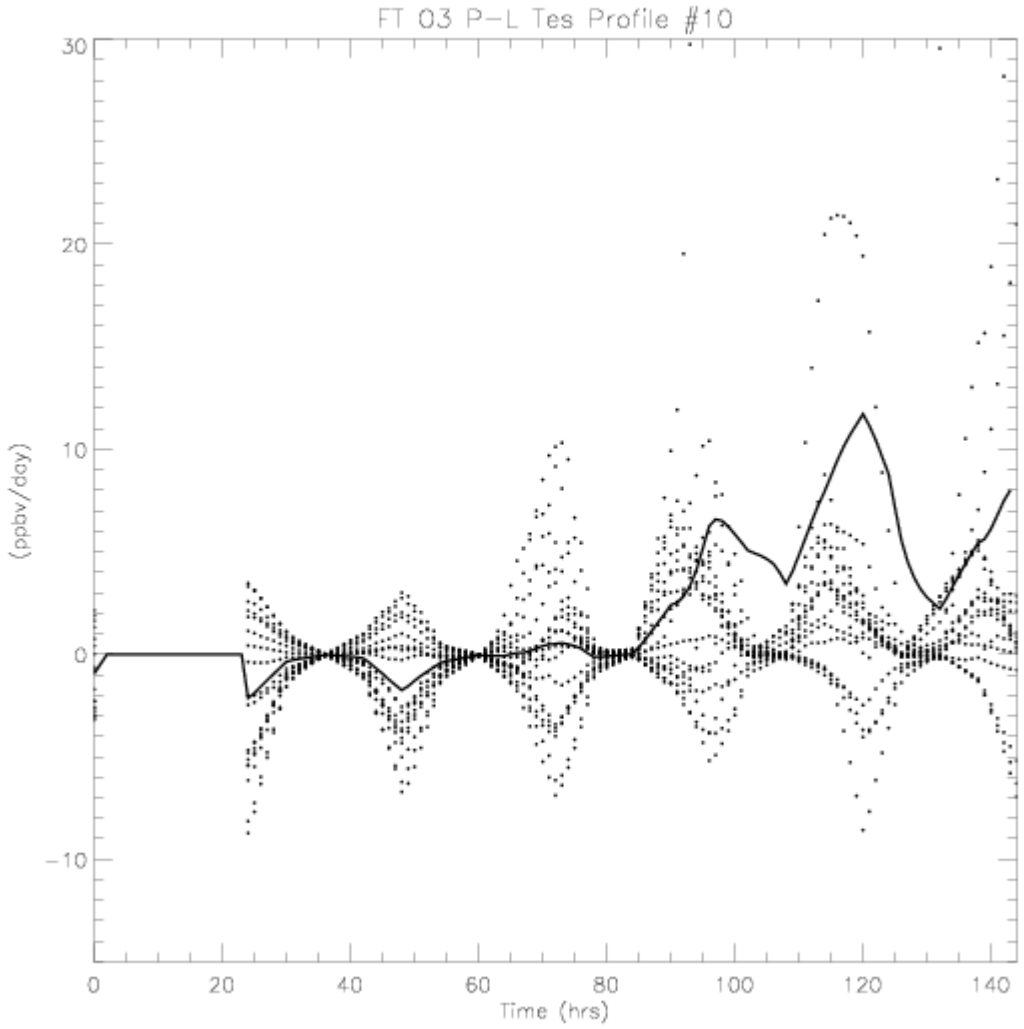


24hr (06/17) 48hr (06/18) 72hr (06/19) 96hr (06/20) 120hr (06/21) 144hr (06/22) @ 00Z

120 Hour trajectory forecast (valid 6/21 00Z)



Chemical evolution along “Profile 10” forward trajectories



Net O3 production (from RAQMS) along “Profile 10” forward trajectories