Combo Model Accomplishments : G4AGCM

Turned on:

Clouds, Variable UV Albedo

Added:

Tropospheric Aerosols*, Shipping Emissions*

Numerous Output Options, Variable CH_4 BC

Modified:

Un-Hardwired Setkin Files + More*

Changed:

Philip Cameron-Smith's pressure fixer

Simulations Completed & Stored on Dirac:

4x5 & 2x2.5 G4AGCM 5-yr

Didn't Do Yet:

Tropopause Definition, Mesospheric Chemistry,

More Complete Shipping Emissions (Eyring)

****Done for Tropospheric Model too.***

****Done for Tropospheric Model too, but not in latest runs.***

Evaluation of Combo : G4AGCM

Bryan, Jerry Ziemke, Sushil Chandra

Tropospheric O_3 Column : OMI/MLS
Total O_3 Column : TOMS

Bryan

UT/LS O_3, HCl : OMI/MLS

Susan

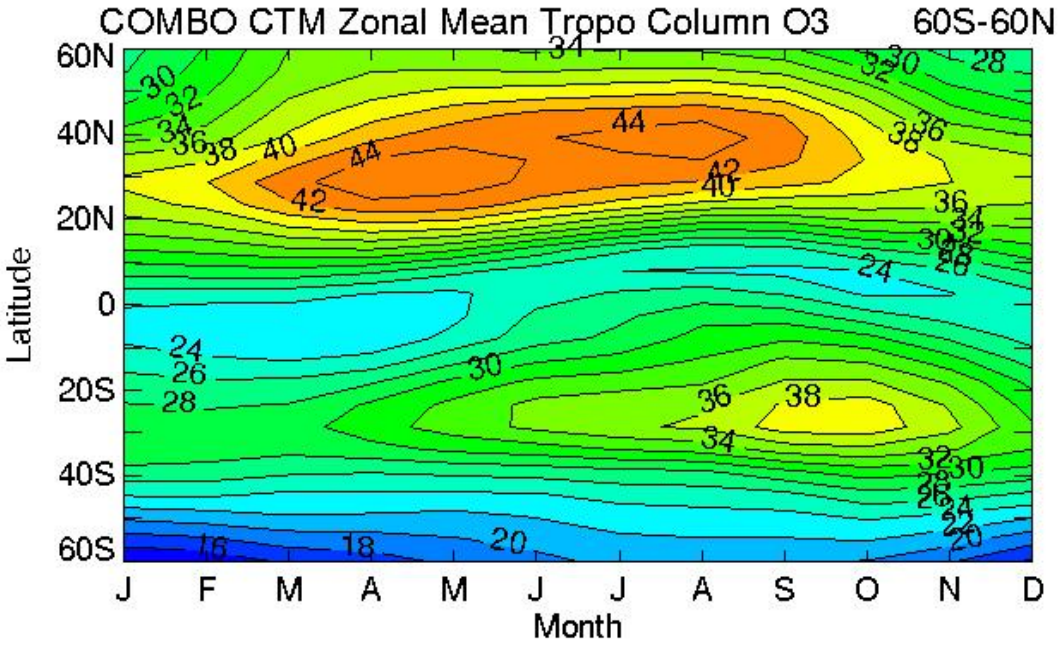
Age of Air : Aircraft Data
UT/LS O_3 : ER2

Jennifer

Tropospheric, UT/LS O_3 : Ozonesondes

David

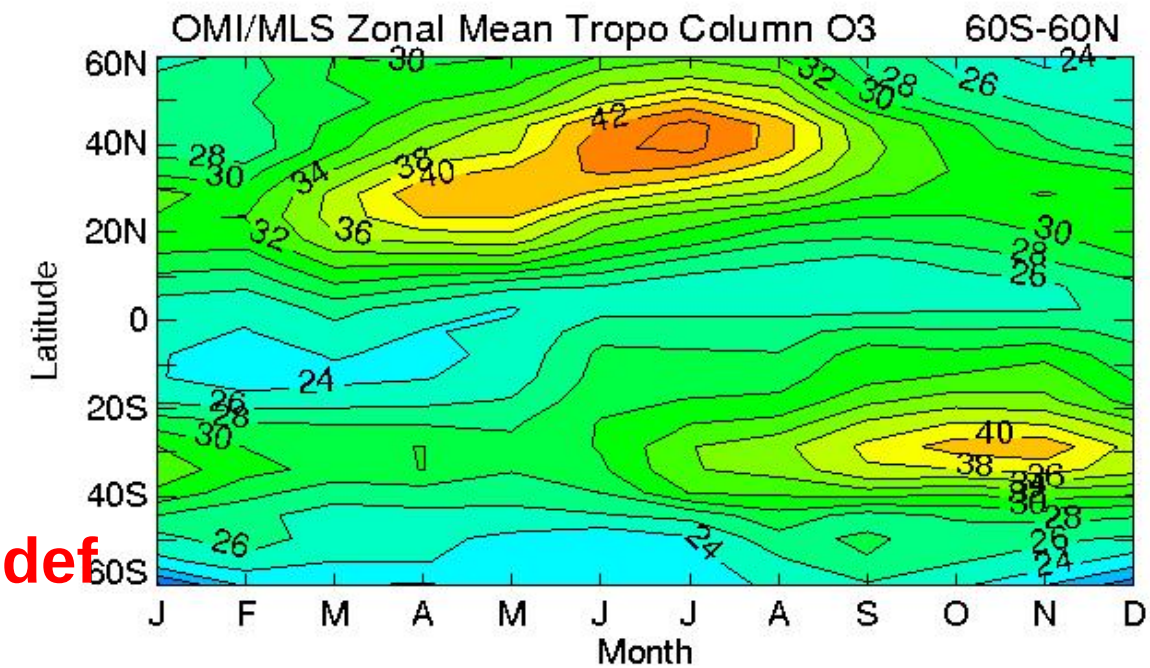
UT/LS O_3 : Ozonesondes



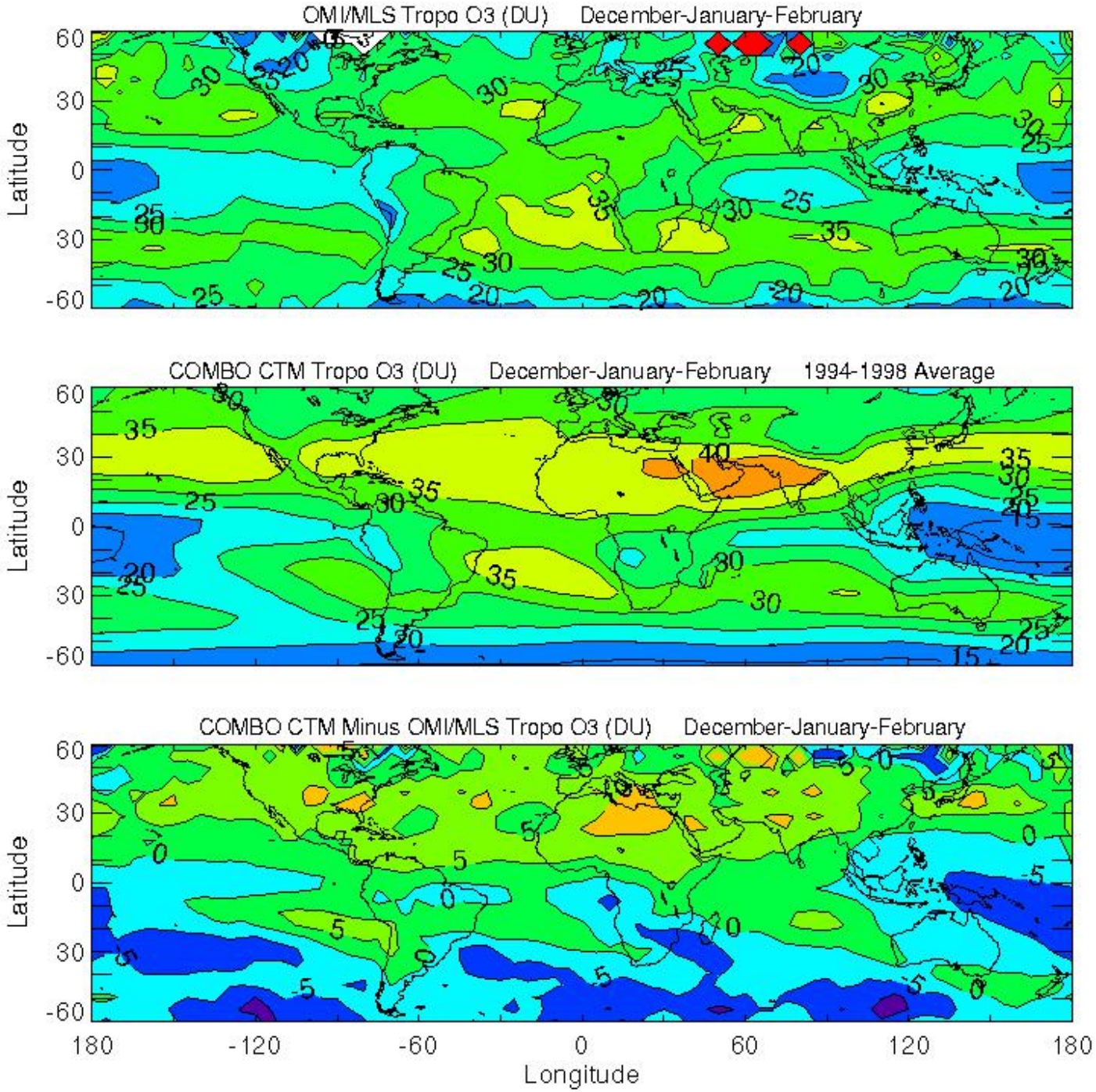
Plots from Ziemke et al., 2006

1994-1998 G4AGCM average

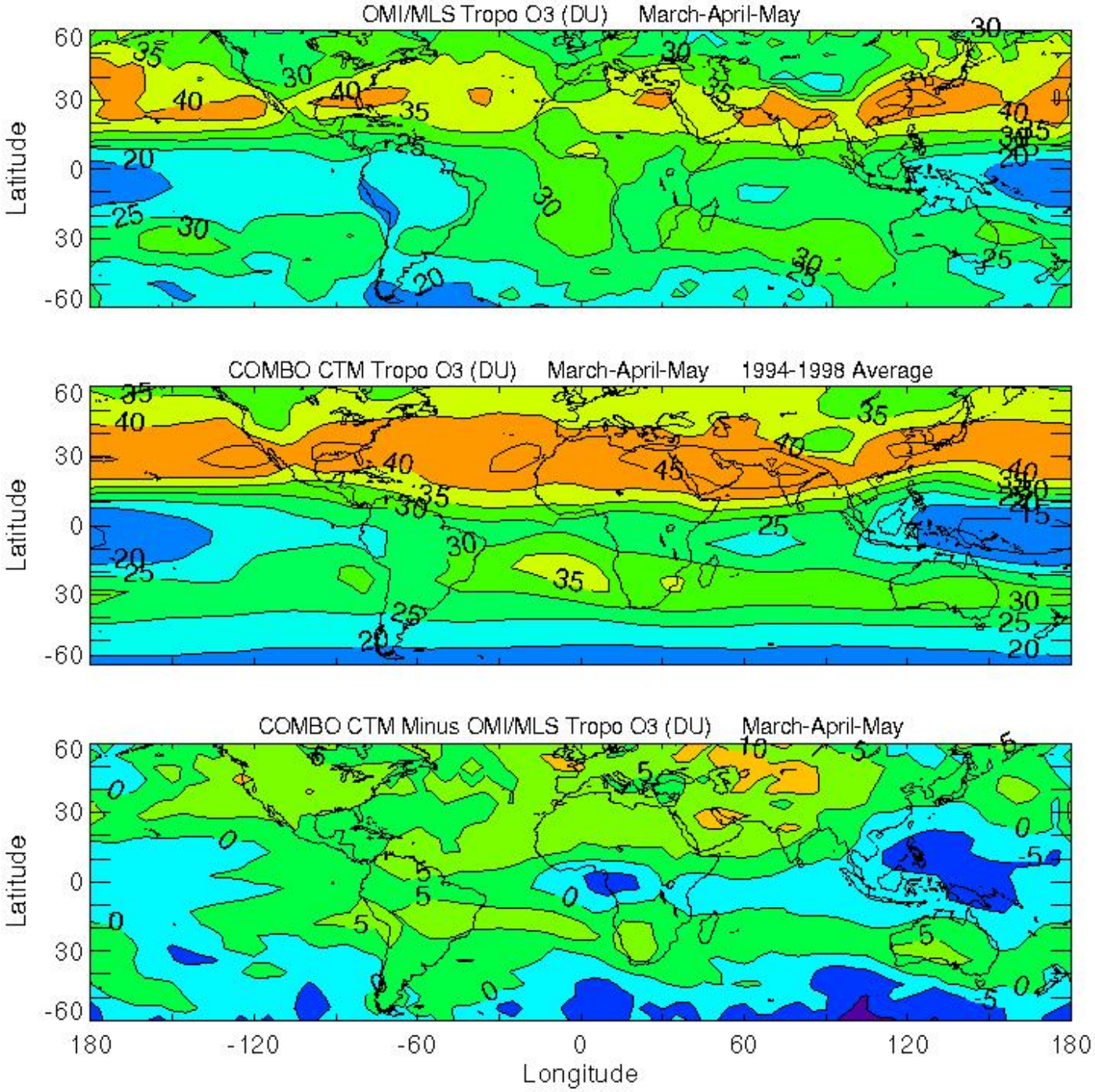
September 2004 - August 2005



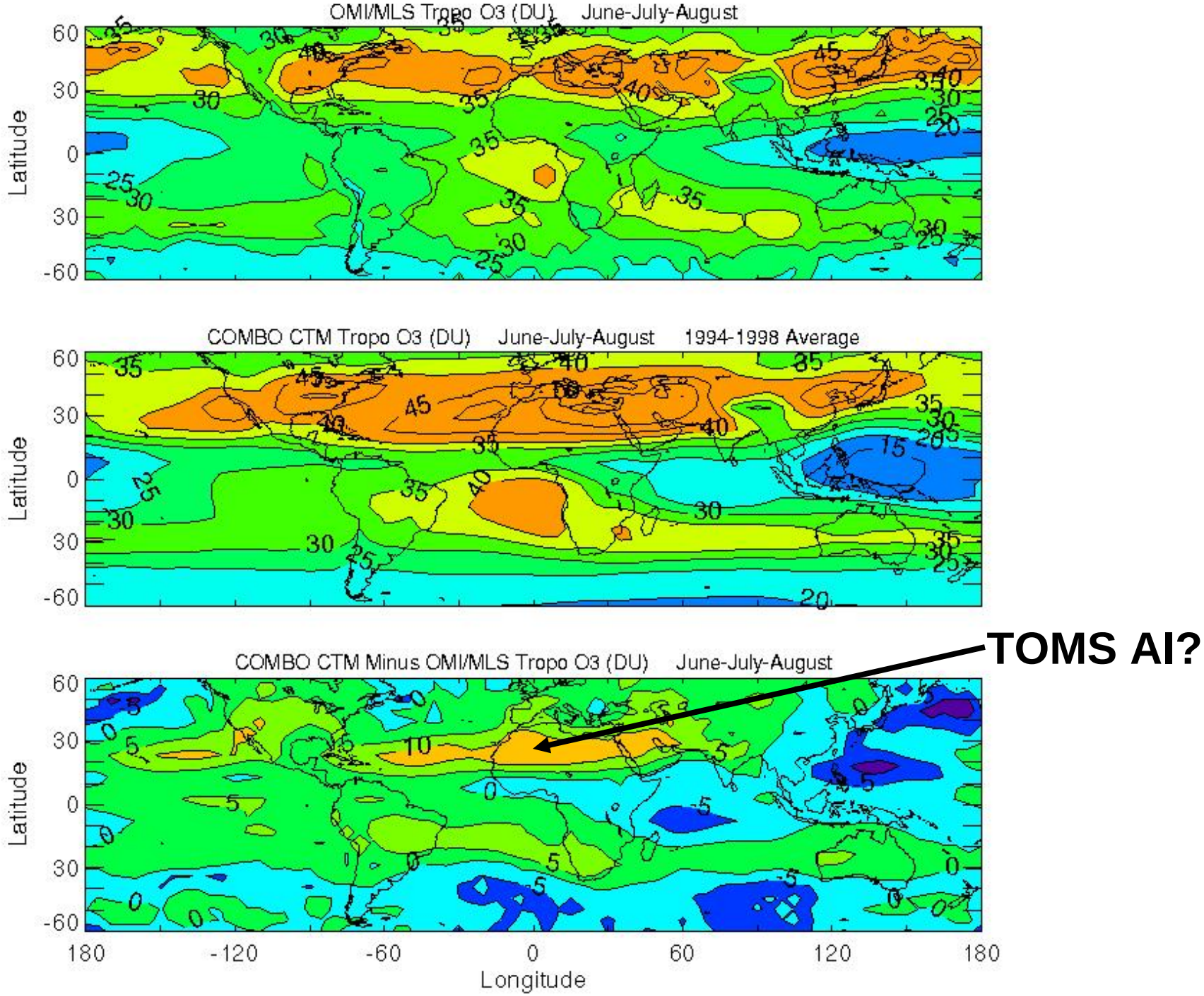
Trop Height :
NCEP ~ G4agcm met def
Synoz def = wacky

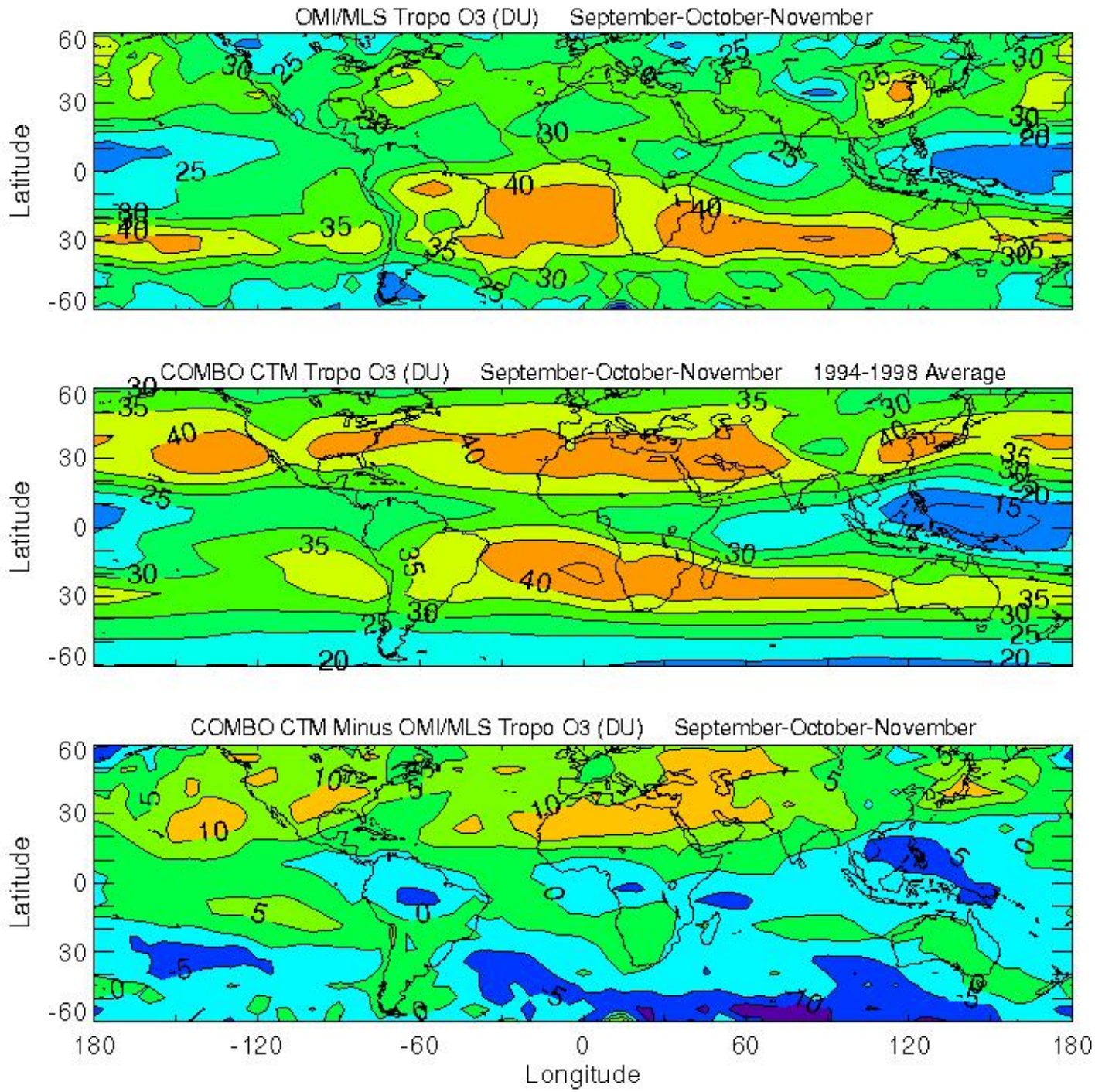


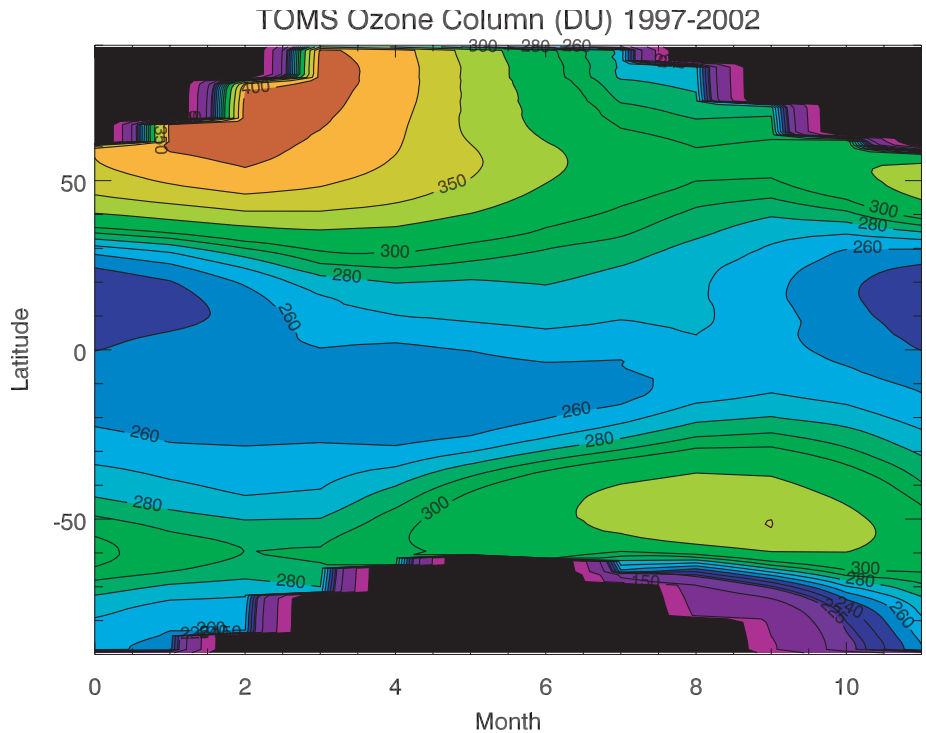
Model Biased High in NH mid-Lats

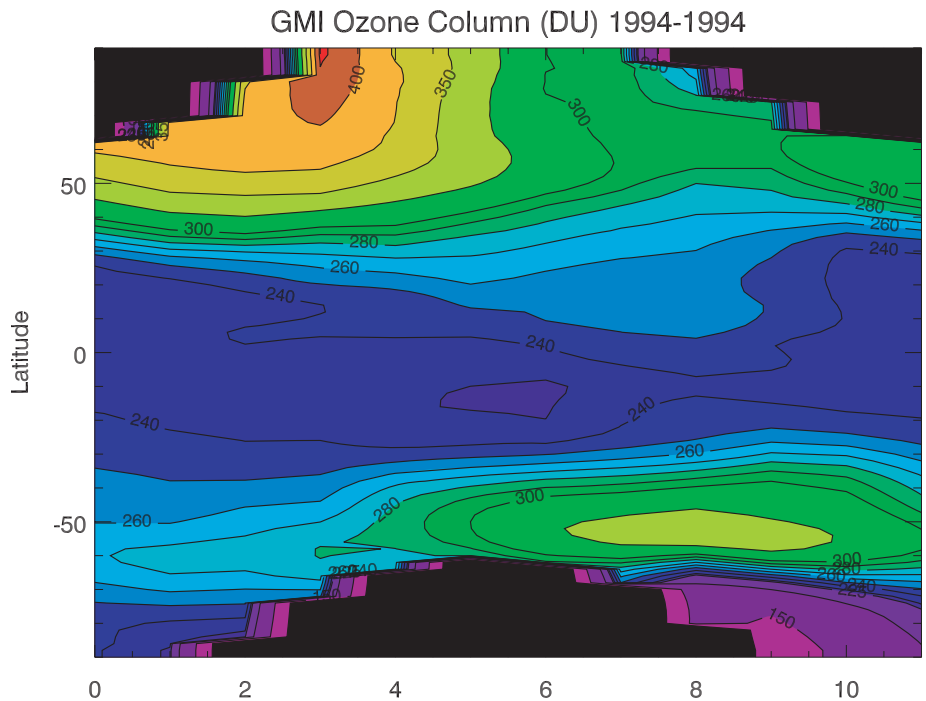


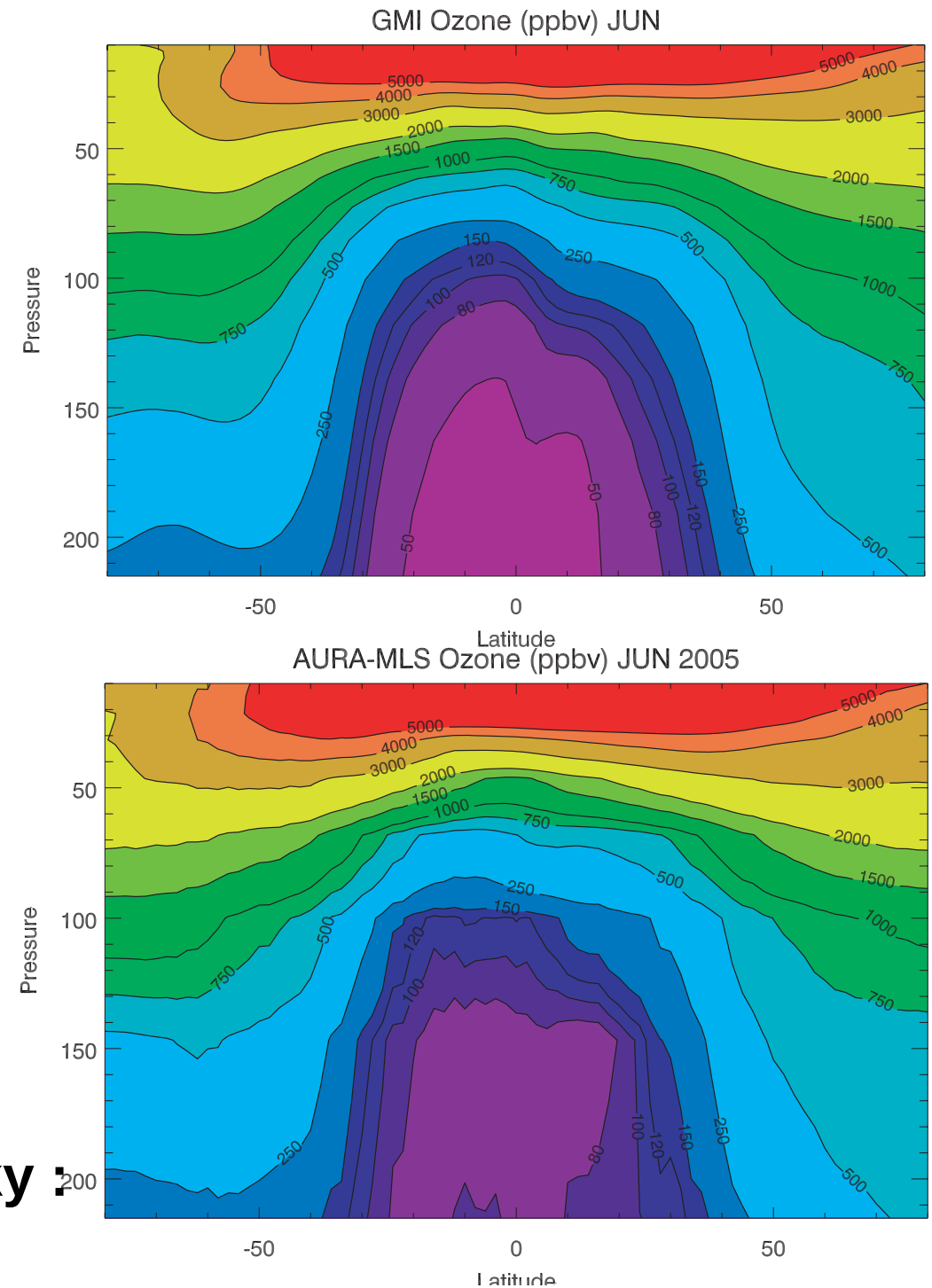
Model Biased High in both mid-Lats


OMI/MLS Tropo O3 (DU) June-July-August
COMBO CTM Tropo O3 (DU) June-July-August 1994-1998 Average
COMBO CTM Minus OMI/MLS Tropo O3 (DU) June-July-August
Latitude
Longitude
60
30
0
30
-60
180
-120
-60
0
60
120
180
TOMS AI?

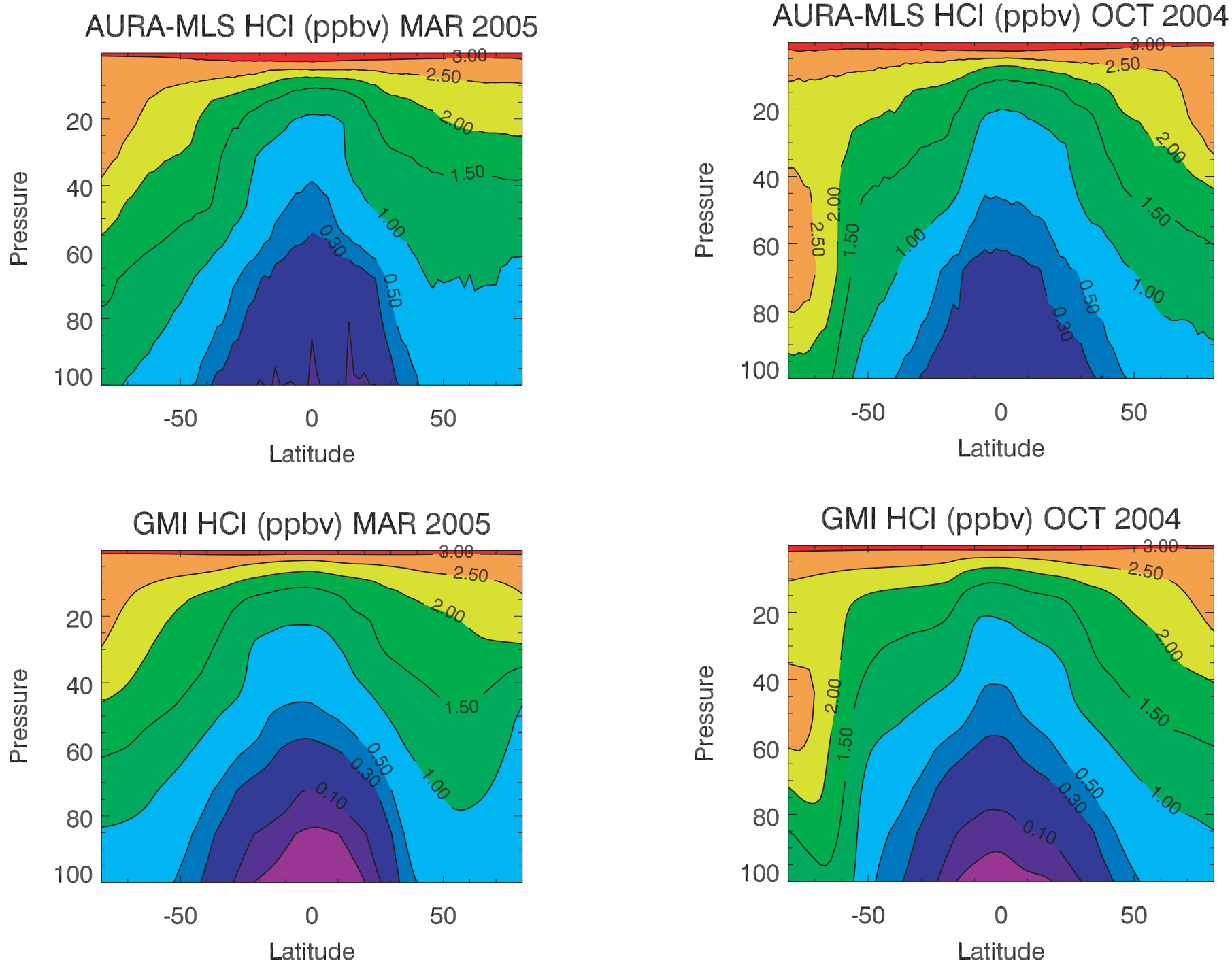

OMI/MLS Tropo O3 (DU) September-October-November
COMBO CTM Tropo O3 (DU) September-October-November 1994-1998 Average
COMBO CTM Minus OMI/MLS Tropo O3 (DU) September-October-November
Latitude
Longitude
60
30
0
30
-60
180
-120
-60
0
60
120
180


TOMS Ozone Column (DU) 1997-2002
Latitude
Month
50
0
-50
0
2
4
6
8
10
400
350
300
280
260

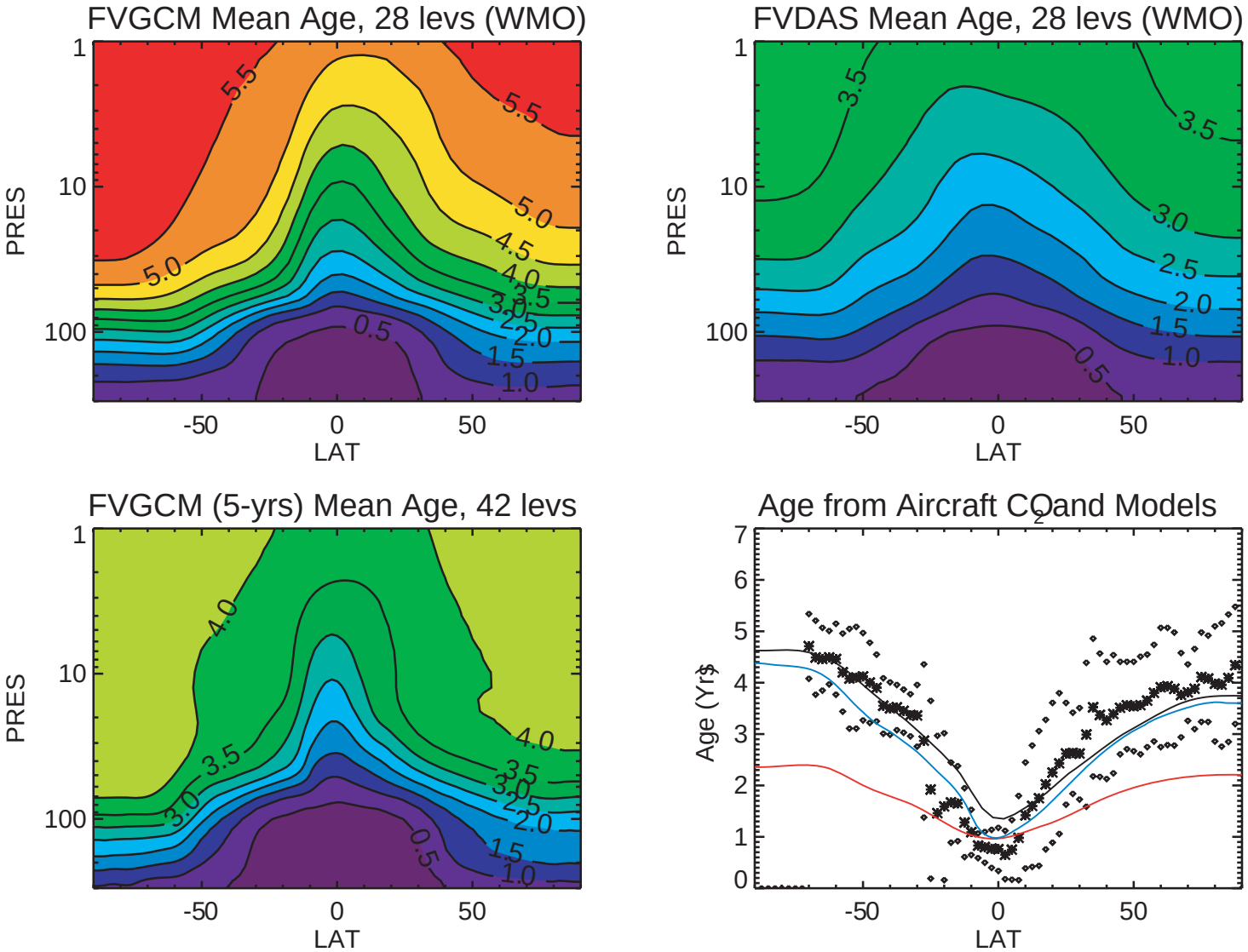

GMI Ozone Column (DU) 1994-1994
Latitude
50
0
-50
0
2
4
6
8
10
400
350
300
280
260
240
150



GMI CO wacky : no CO_2 + hv

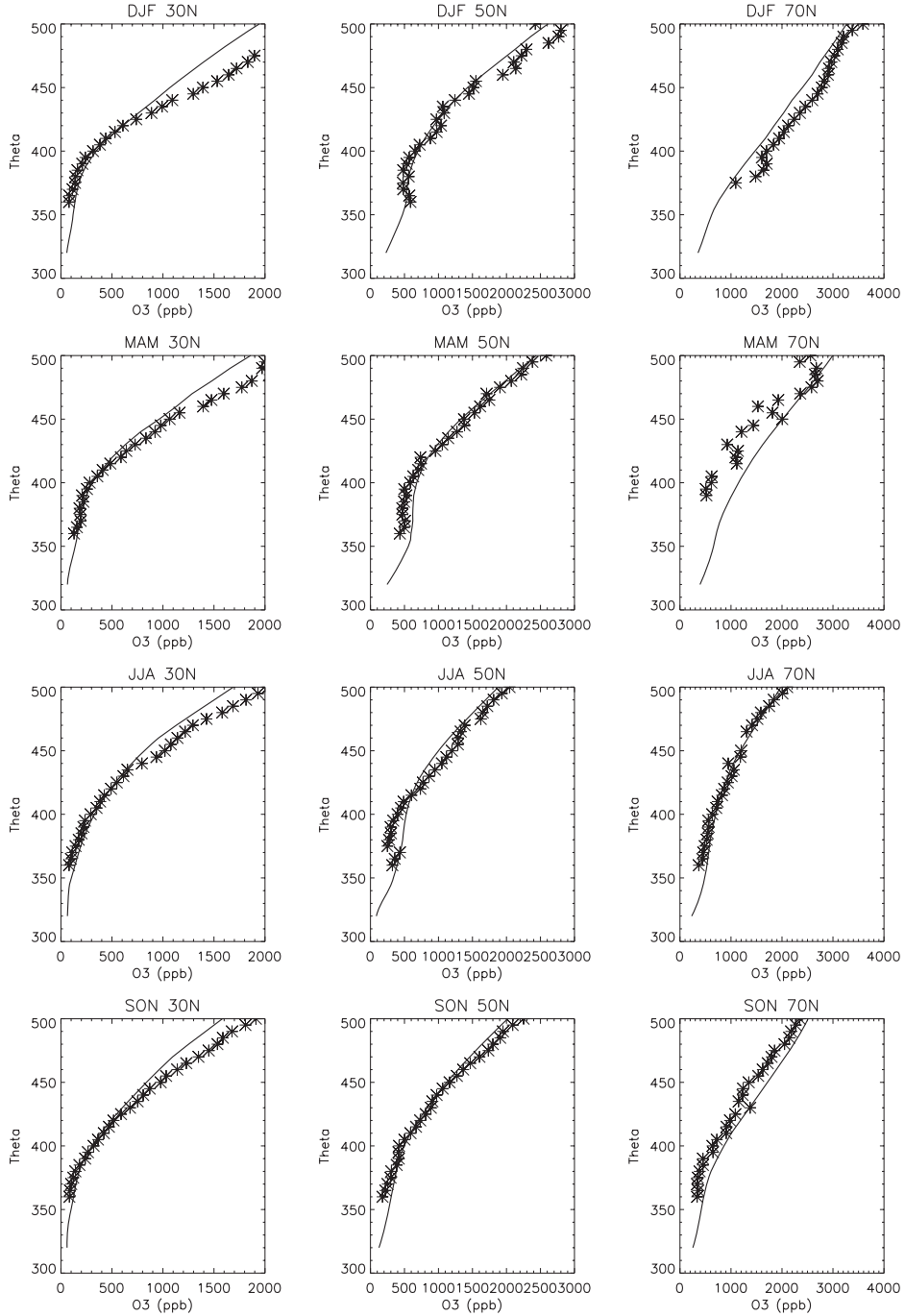

AURA-MLS HCl (ppbv) MAR 2005
AURA-MLS HCl (ppbv) OCT 2004
GMI HCl (ppbv) MAR 2005
GMI HCl (ppbv) OCT 2004
Pressure
Latitude
20
40
60
80
100
-50
0
50
3.00
2.50
2.00
1.50
1.00
0.50
0.30
0.10

Mean Age from 20-year Simulations



FVGCM 28-lev (black), FVDAS 28-lev (red), FVGCM 42-lev (blue)

Combo O3 and ER−2 Seas Climatology (***): Equiv Latitude Coord



Miscellaneous Stuff

Stratospheric CH_4 **min (Feb. 0.73mb) = 223 ppbv**
O_3 **max = 9.8 ppmv**

Precipitation reasonable vs GPCP