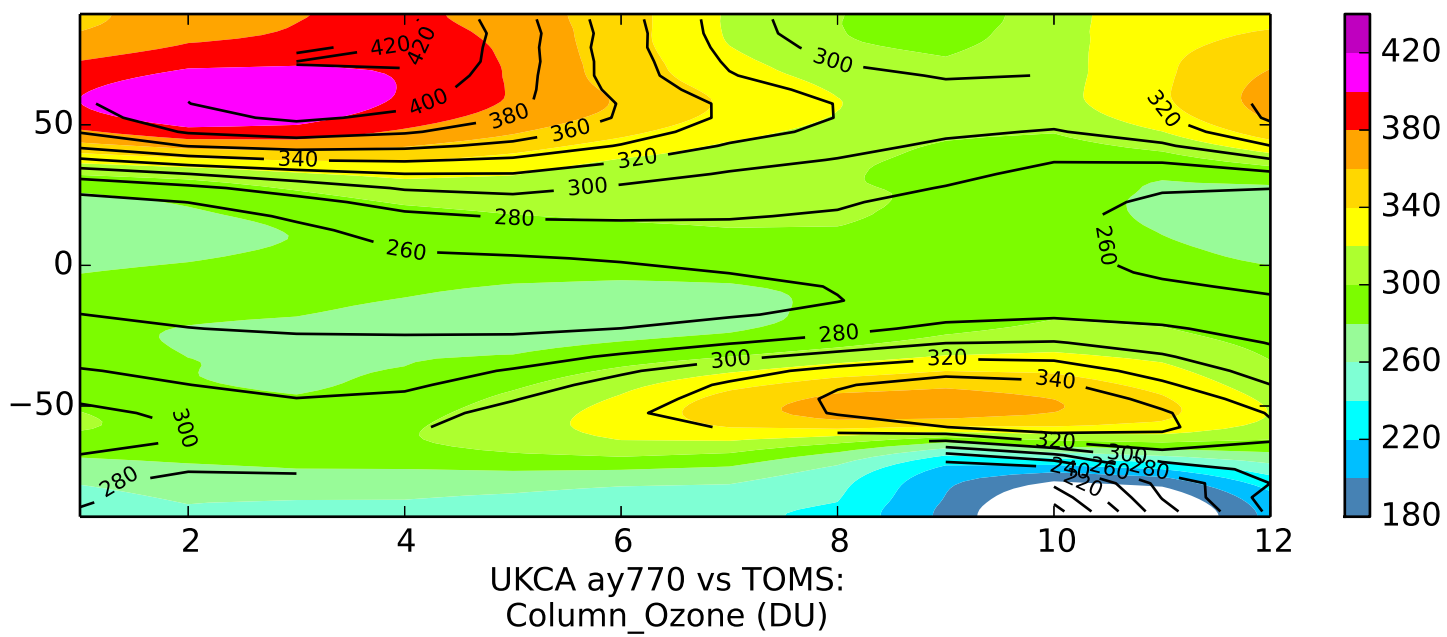
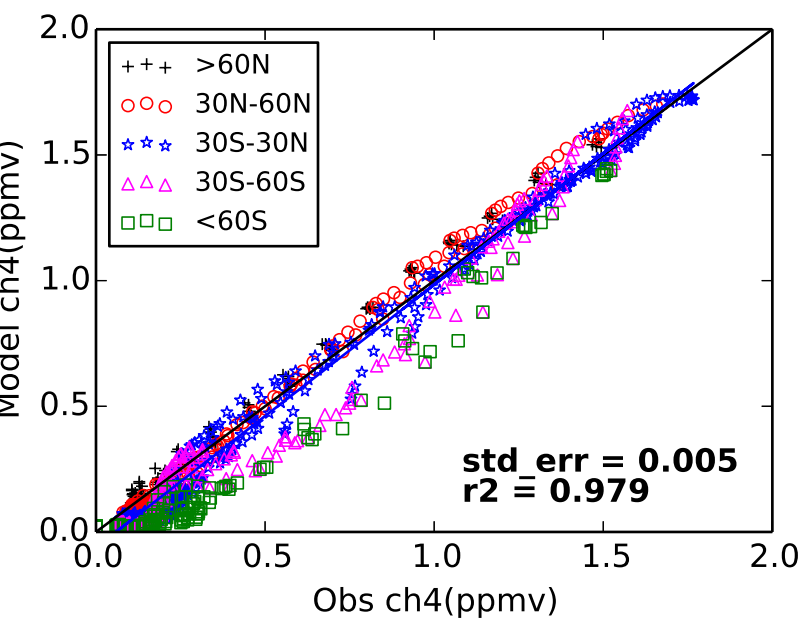
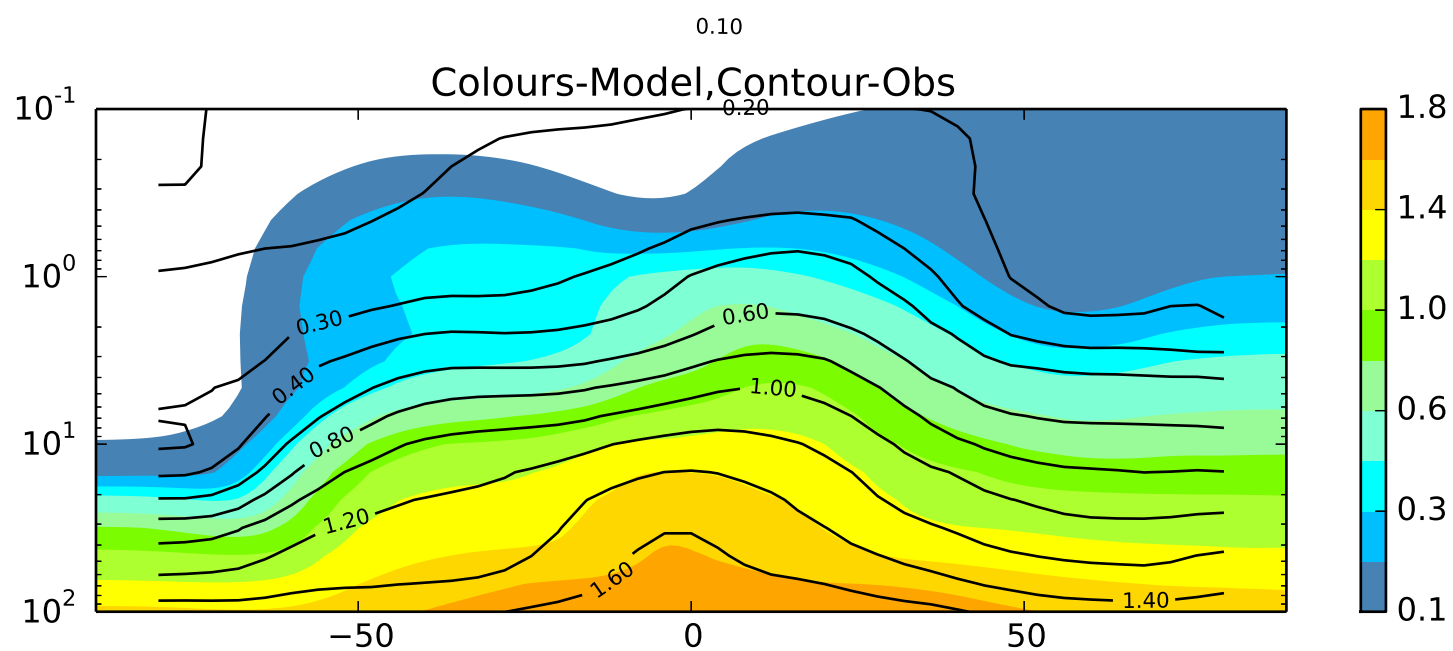
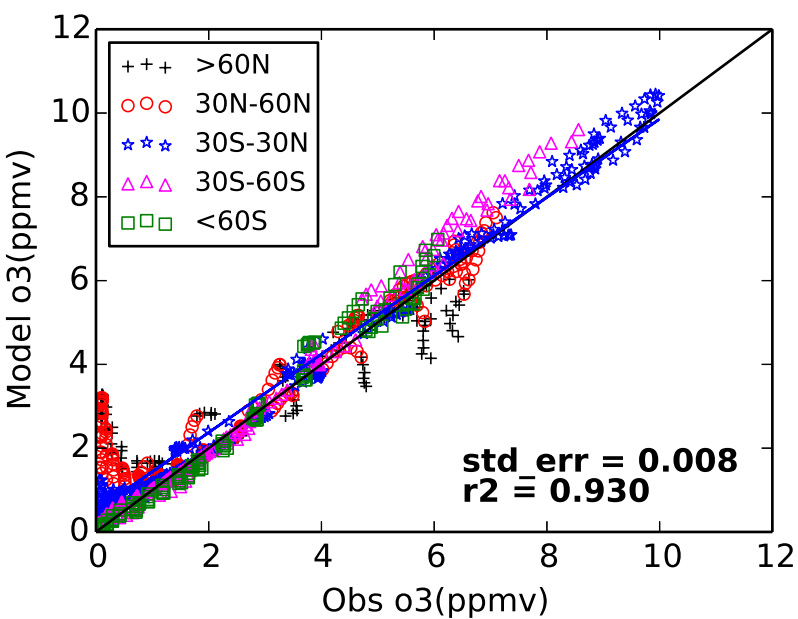
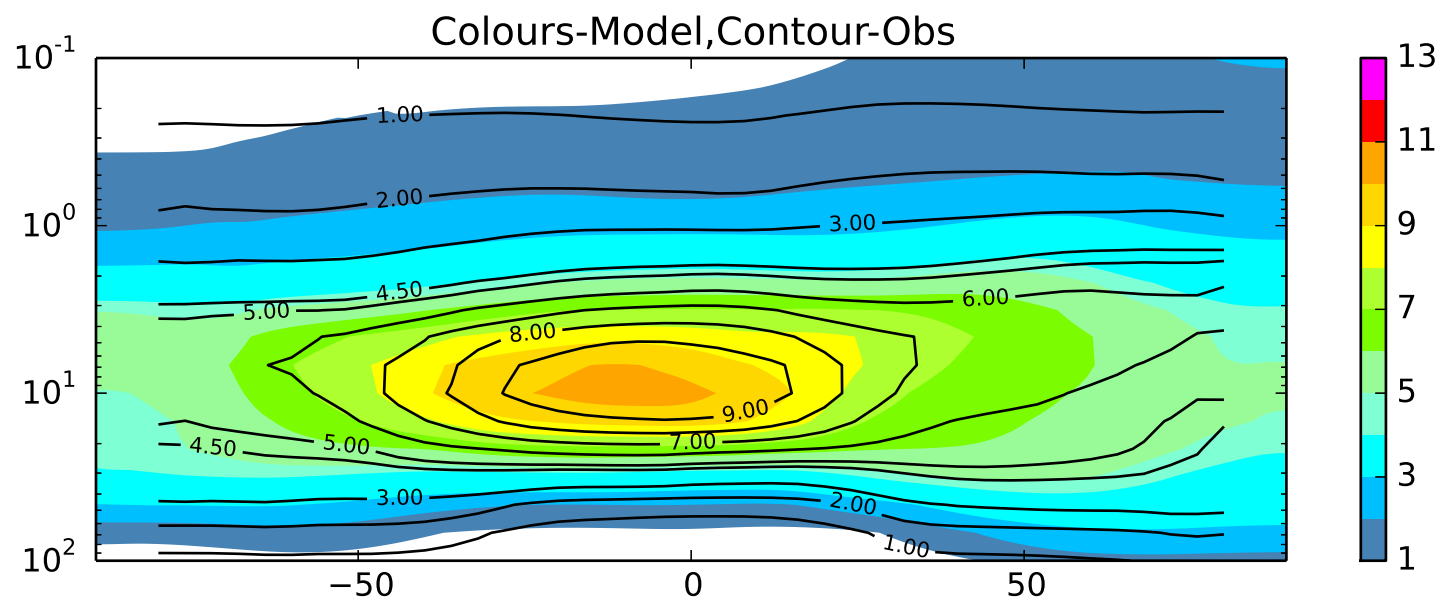


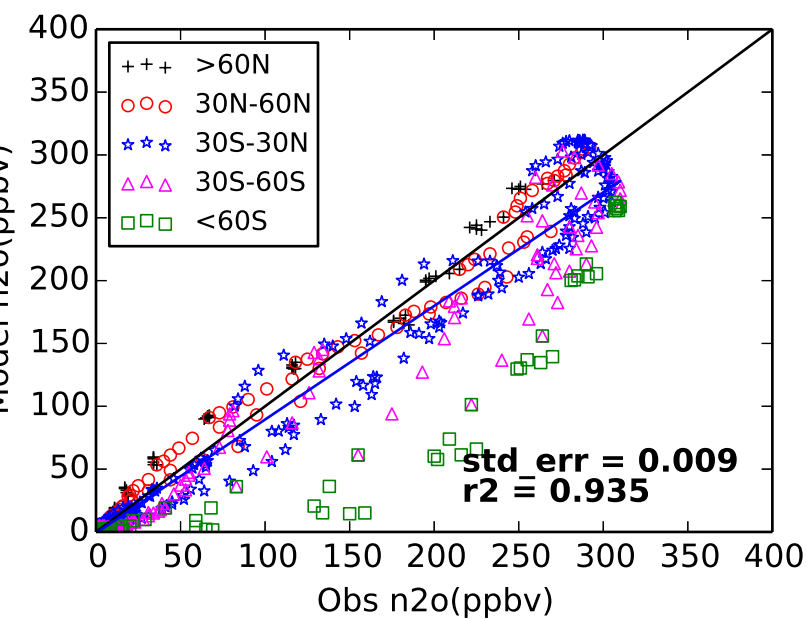
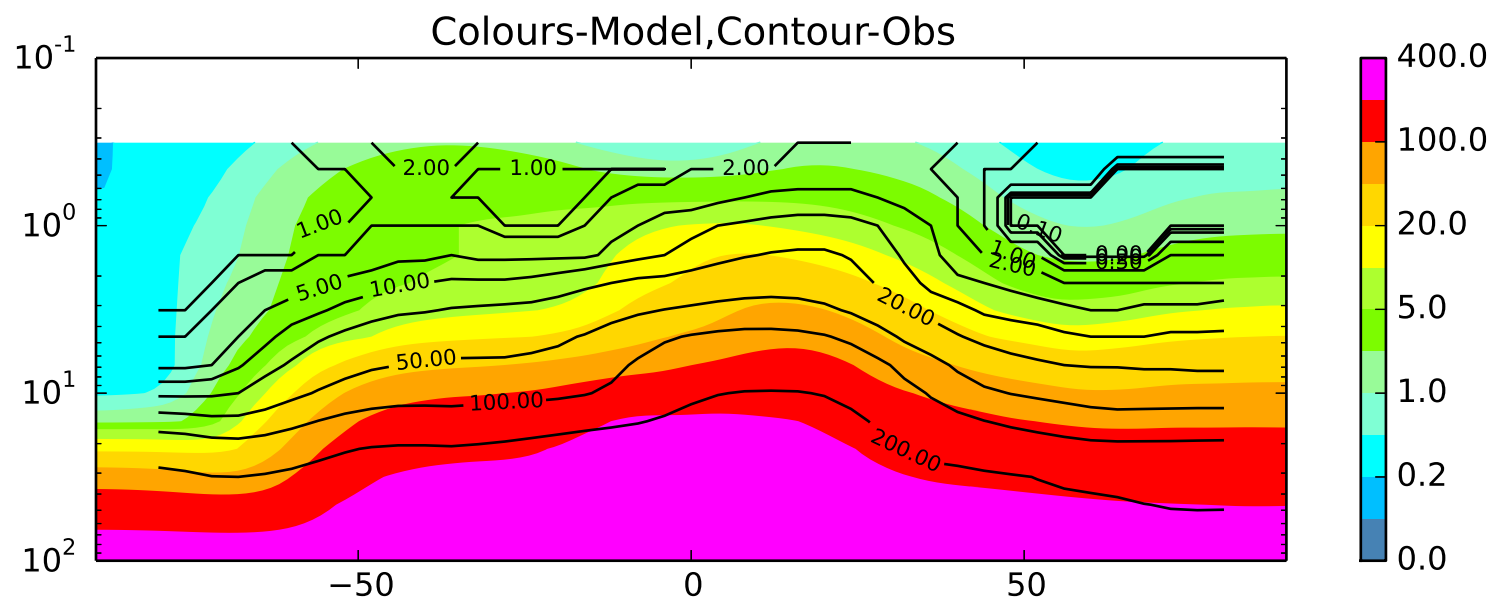




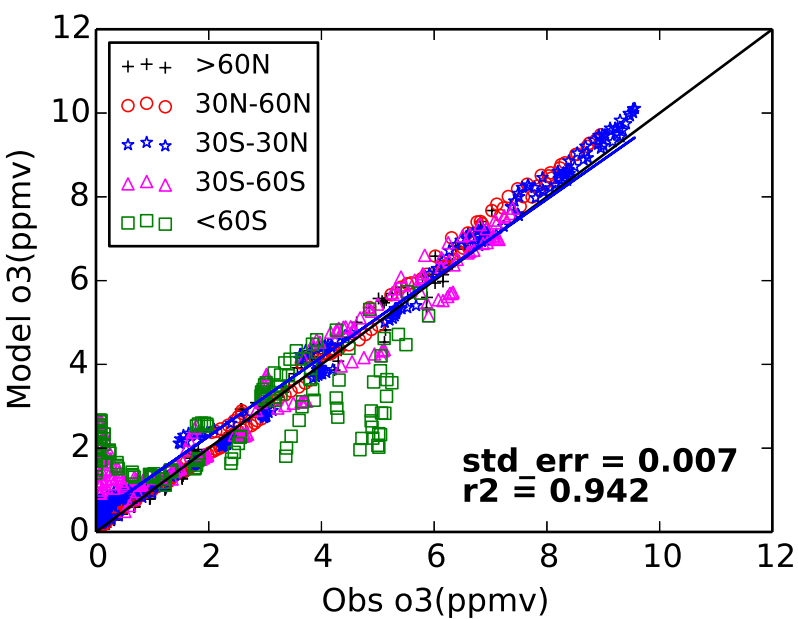
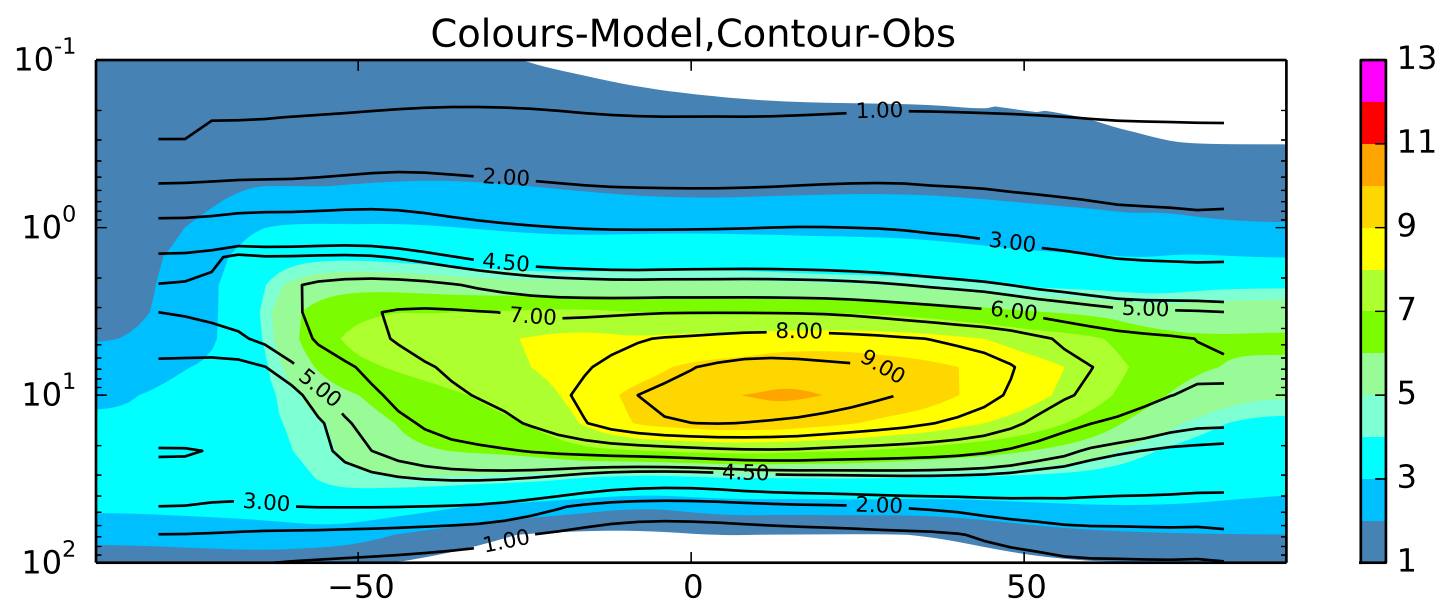
UKCA ay770 vs HALOE:
CH4 (ppmv) Jul



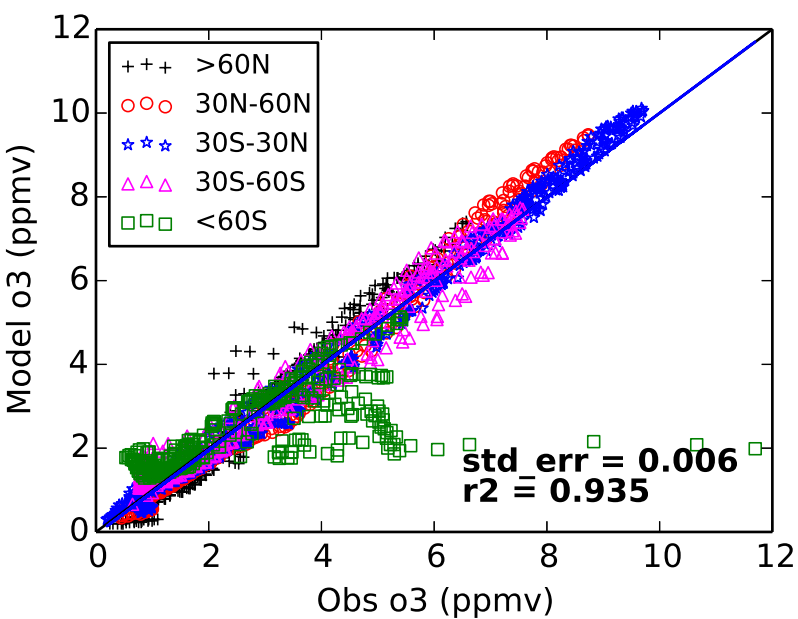
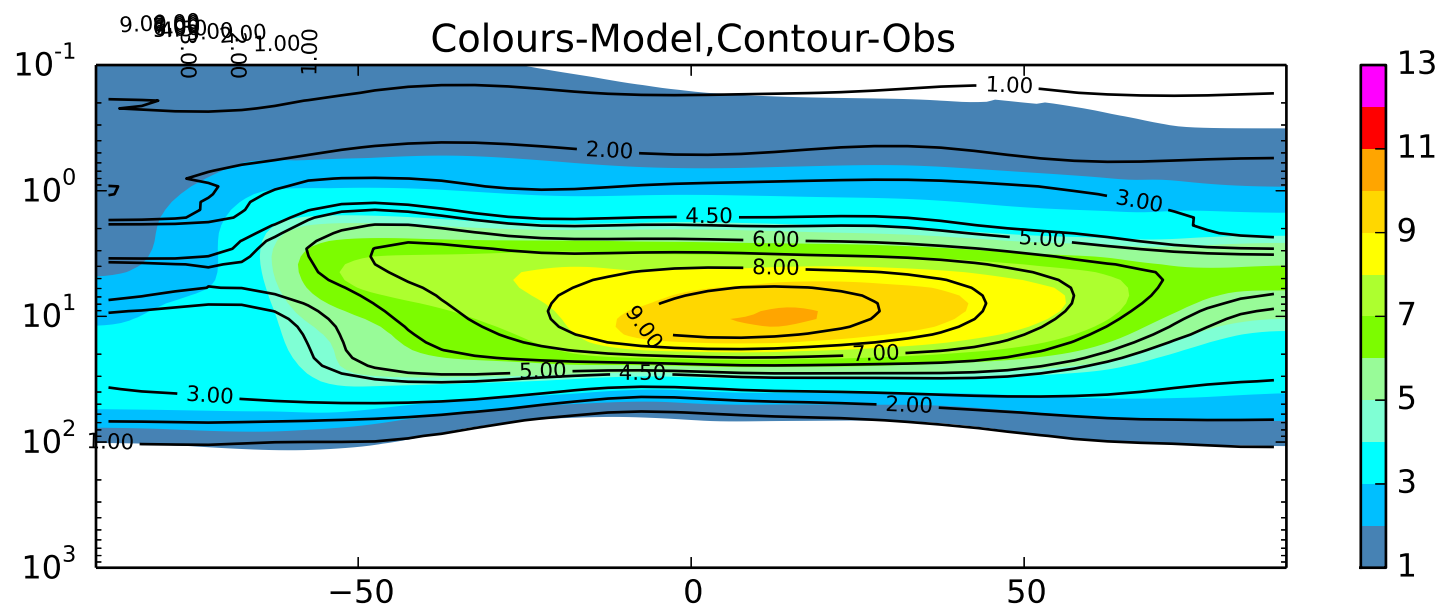
UKCA ay770 vs HALOE:
O3 (ppmv) Jan



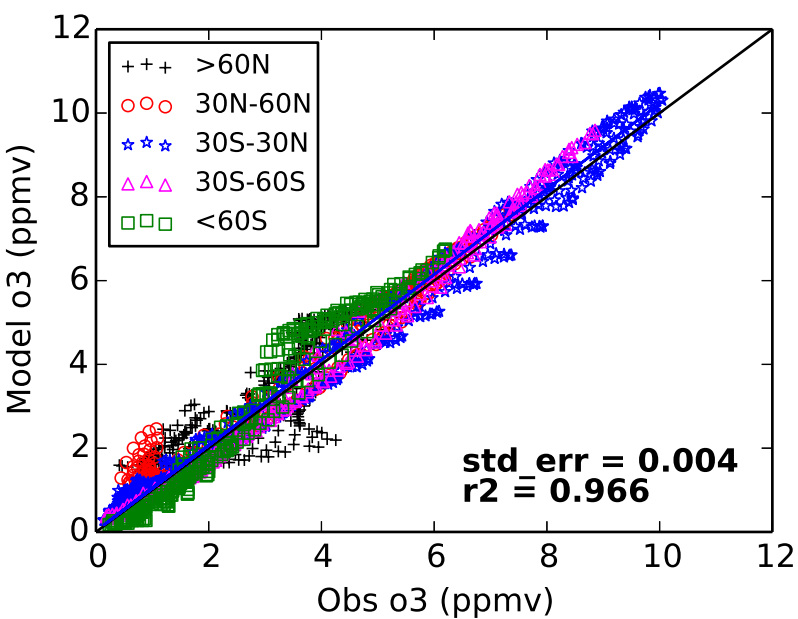
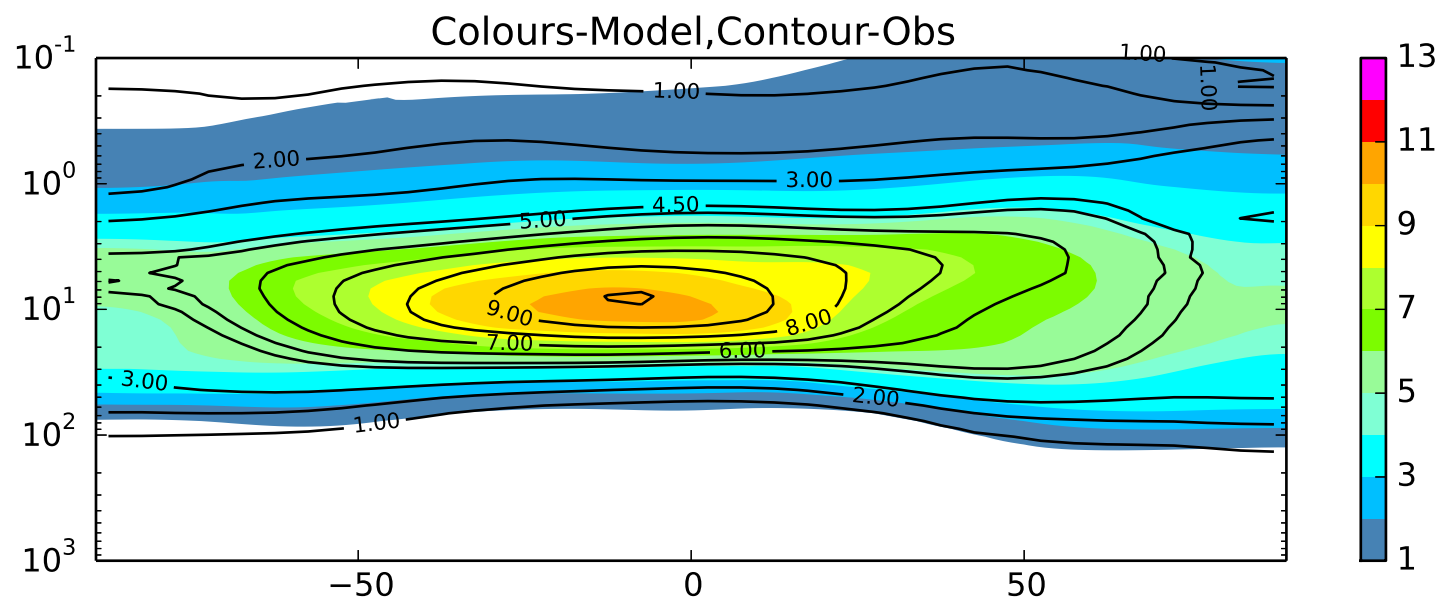
UKCA ay770 vs HALOE:
N₂O (ppmv) Jul



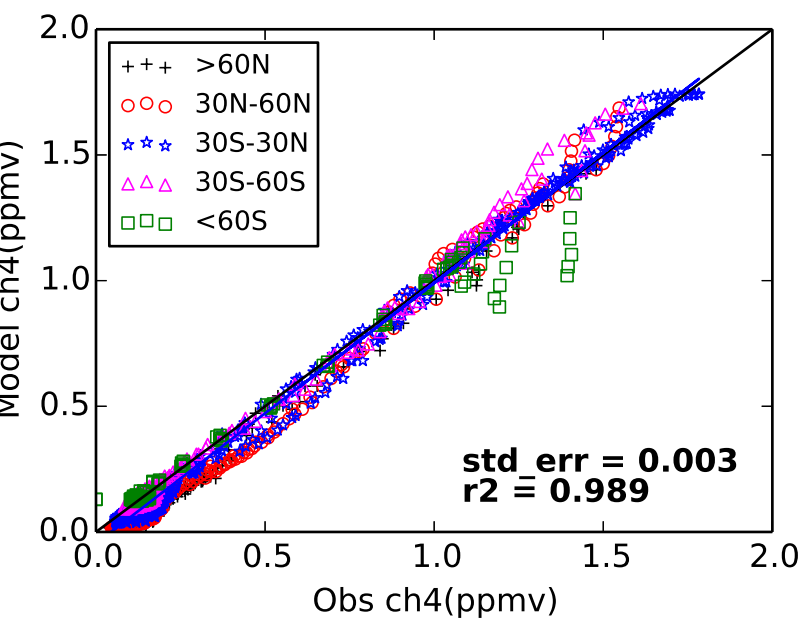
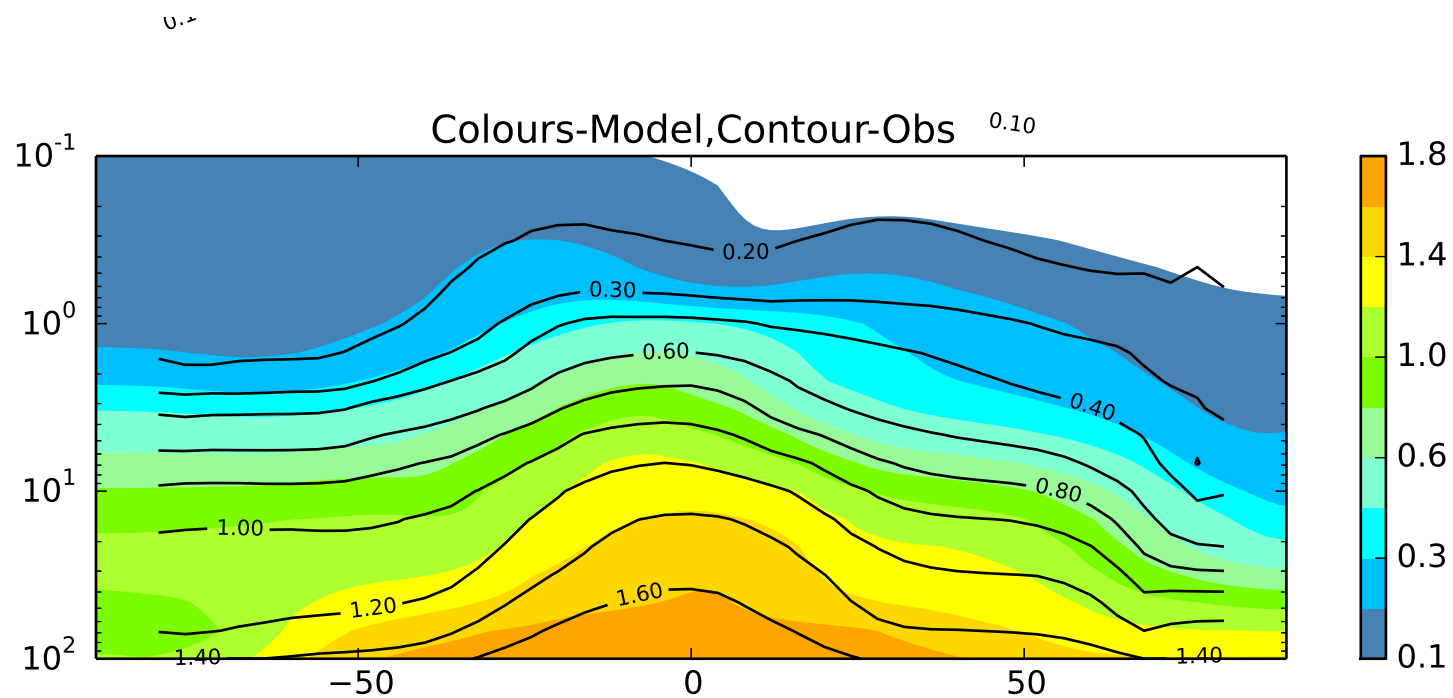
UKCA ay770 vs HALOE:
O₃ (ppmv) Jul



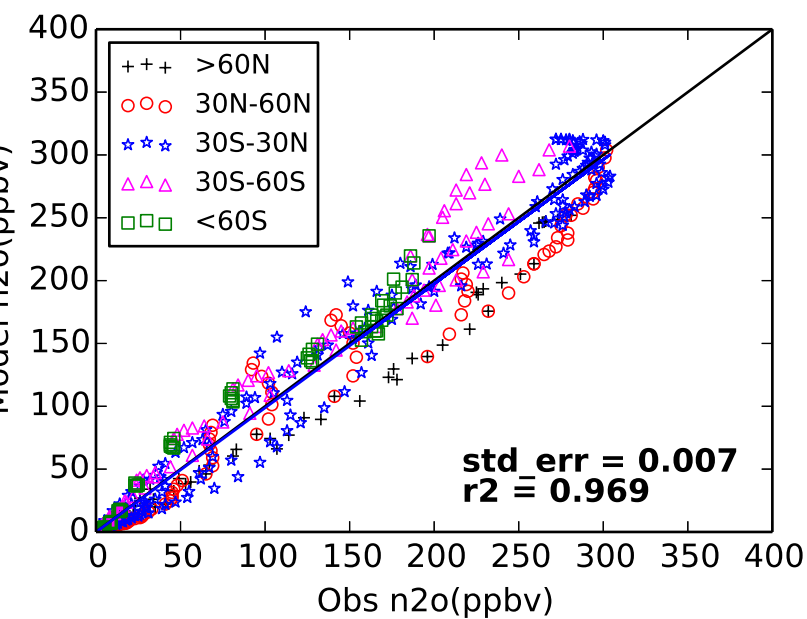
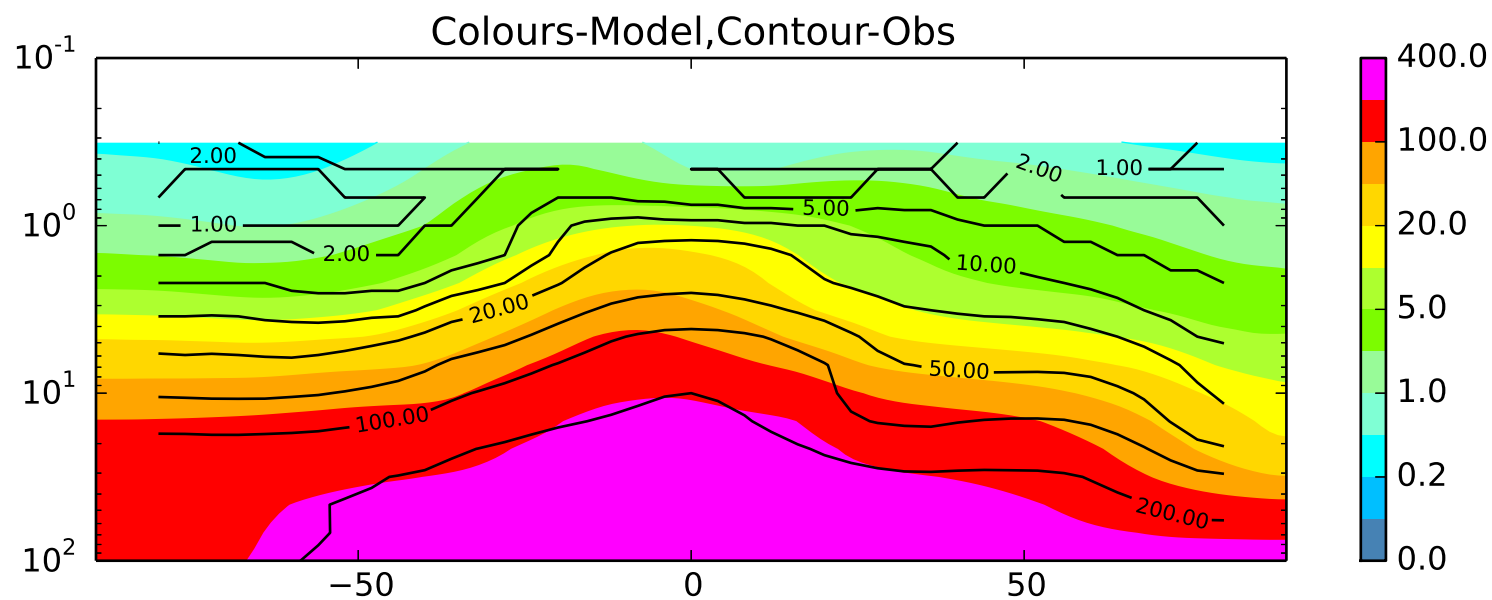
UKCA ay770 vs NIWA-CCMVal:
O₃ (ppmv) Jul



UKCA ay770 vs NIWA-CCMVal:
O₃ (ppmv) Jan

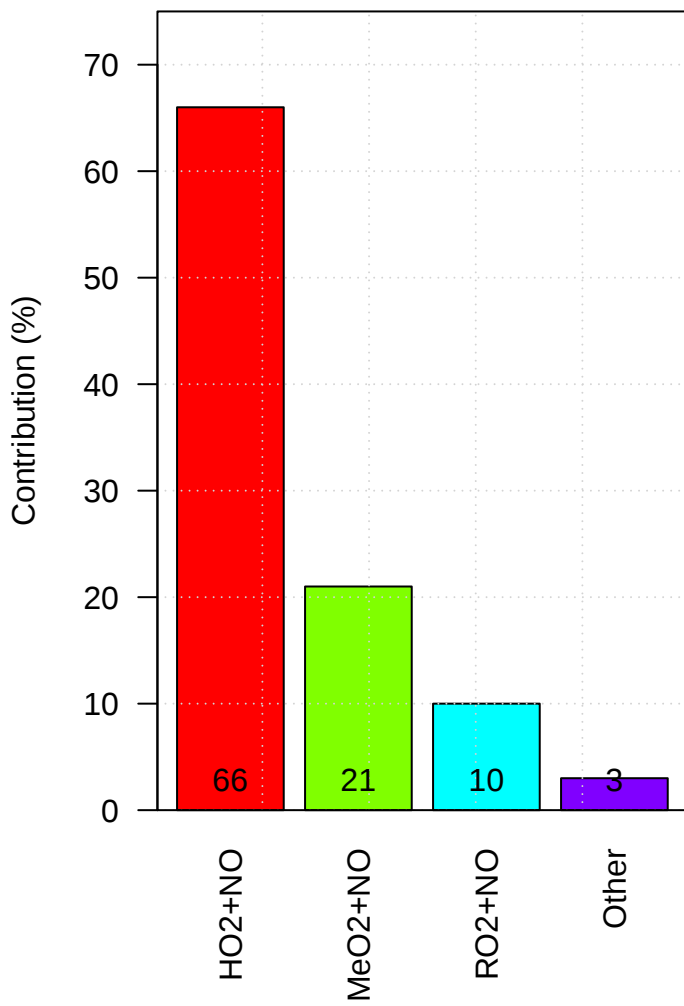


UKCA ay770 vs HALOE:
CH4 (ppmv) Jan

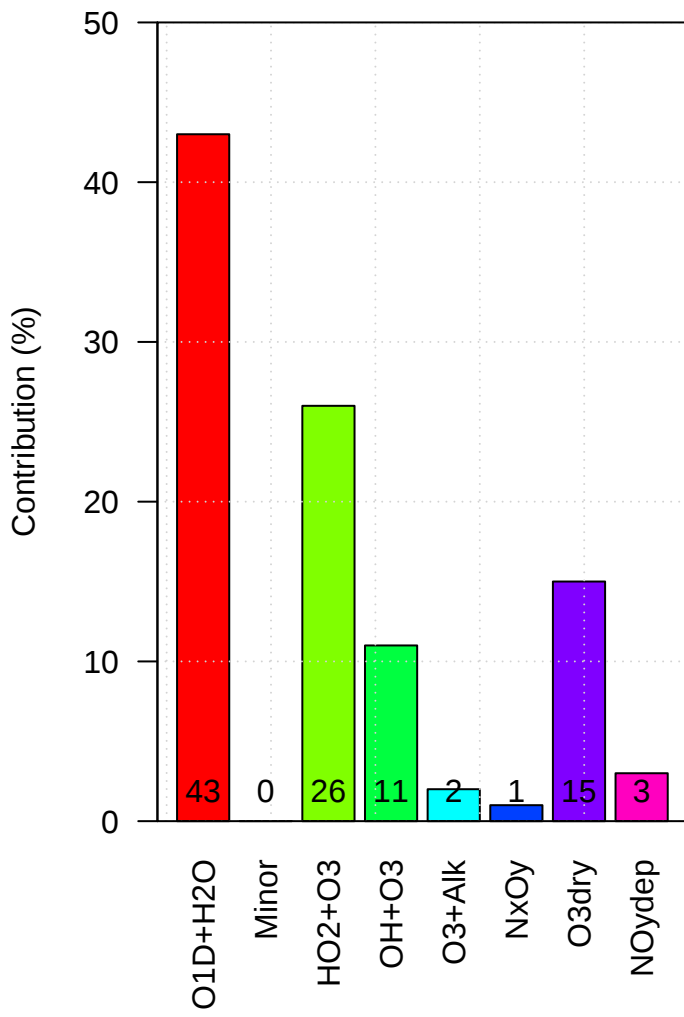


UKCA ay770 vs HALOE:
N2O (ppmv) Jan

ay770 Production of Tropospheric Ox

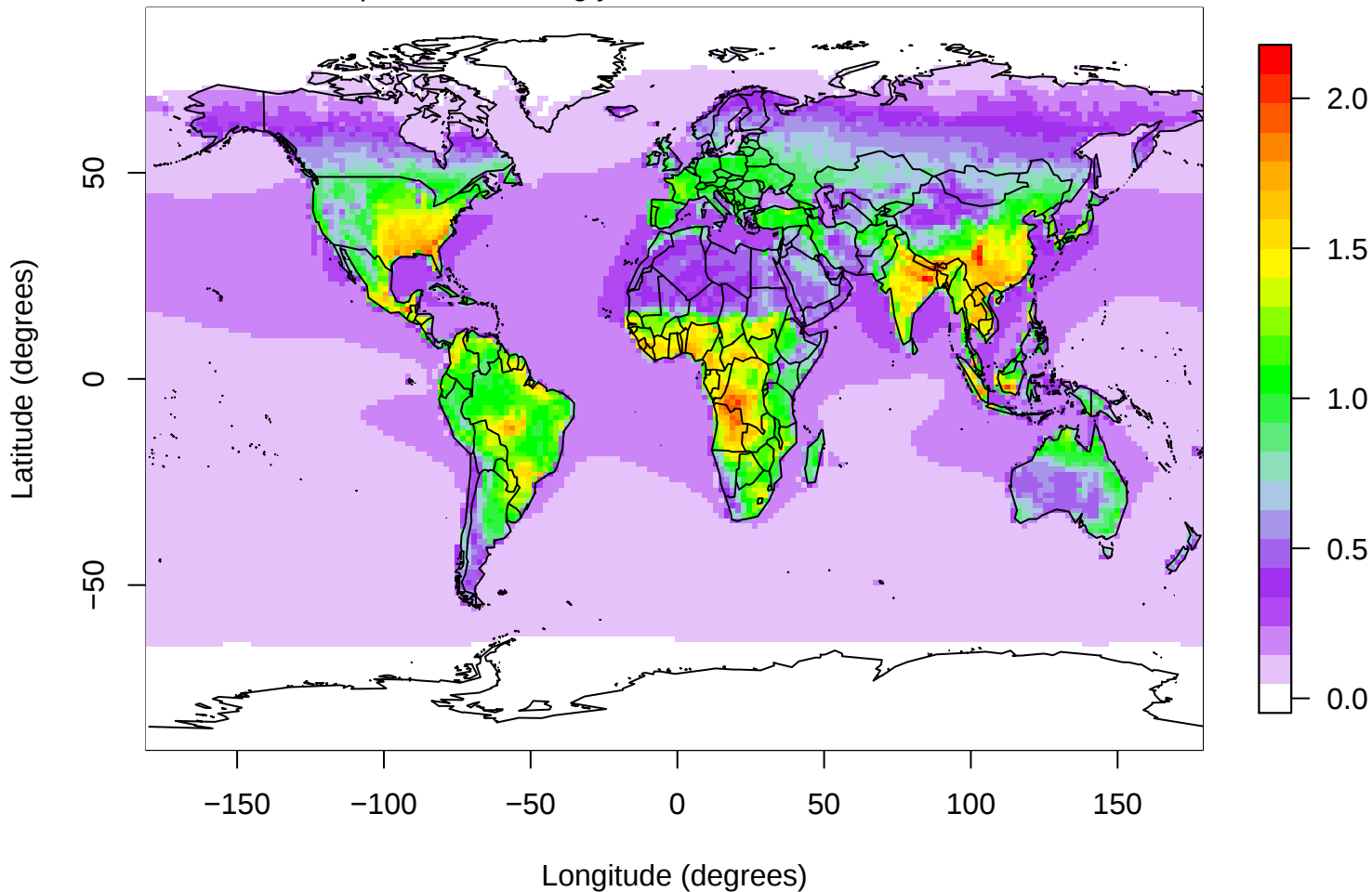


ay770 Loss of Tropospheric Ox



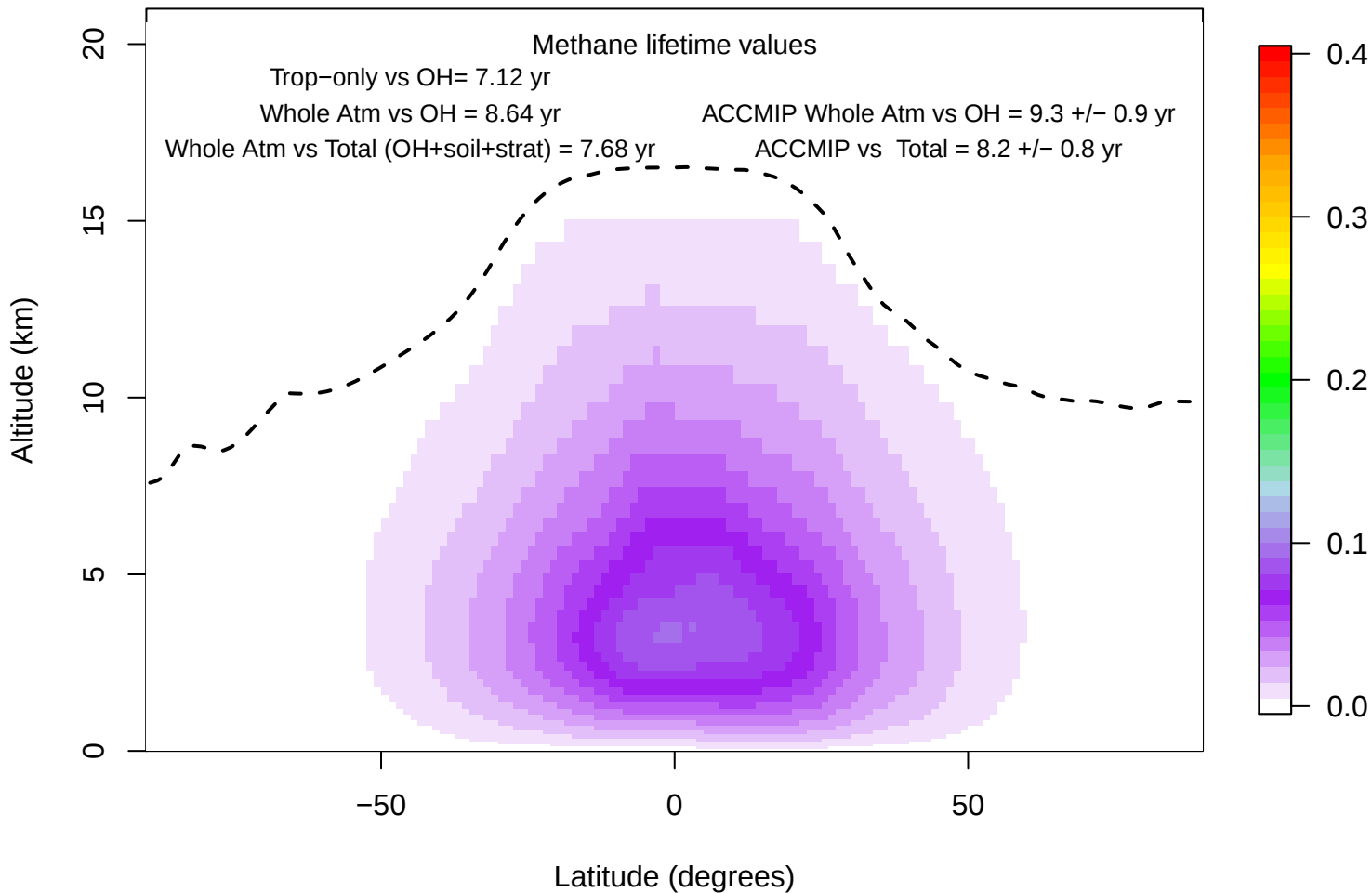
UKCA Ox deposition ay770

Total Ox Deposition = 990 Tg/yr



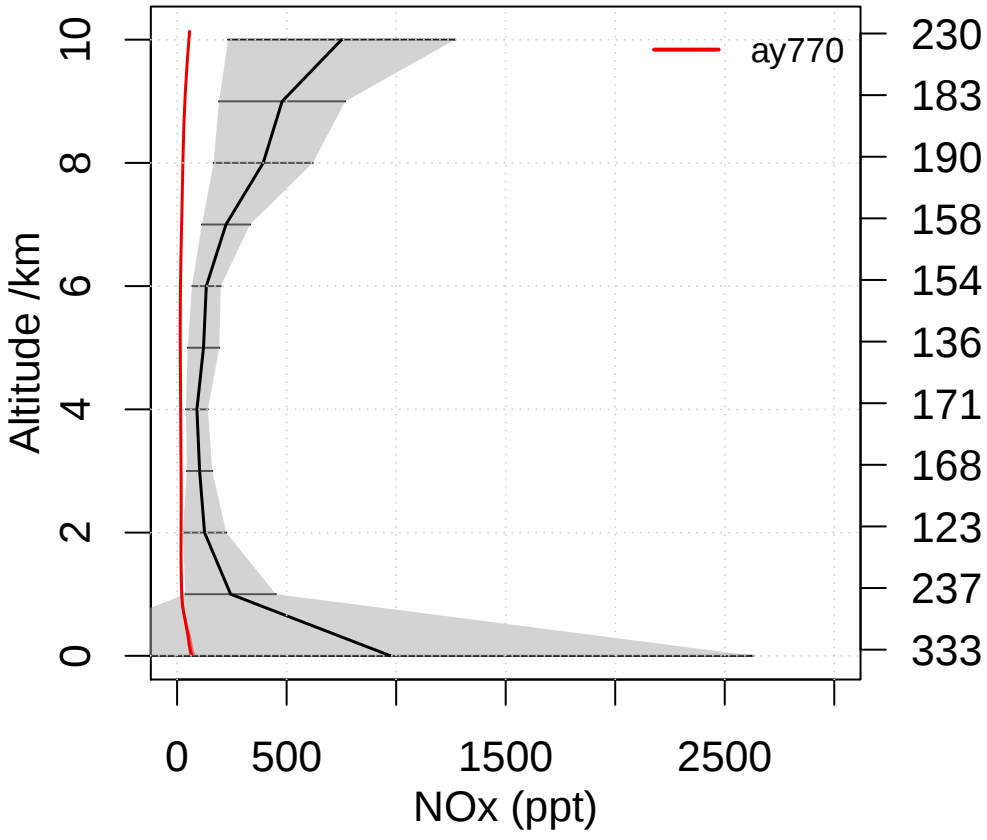
UKCA ay770

% CH₄ + OH flux (moles cm⁻³ s⁻¹)

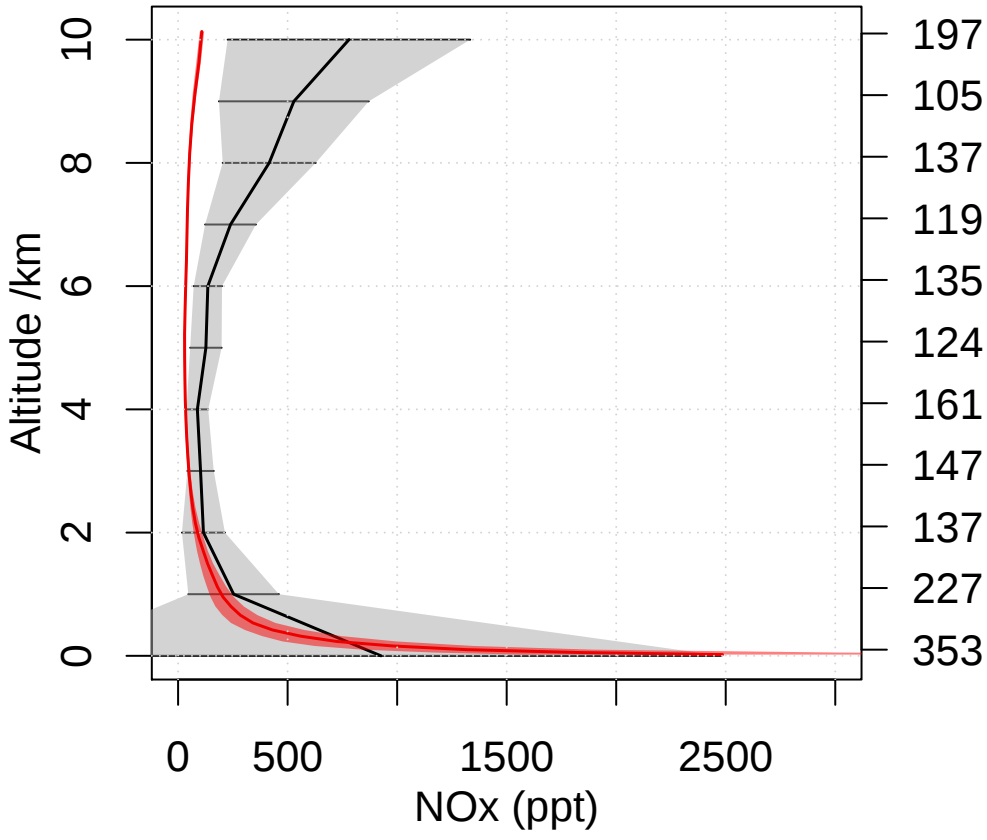


Emmons NOx comparison

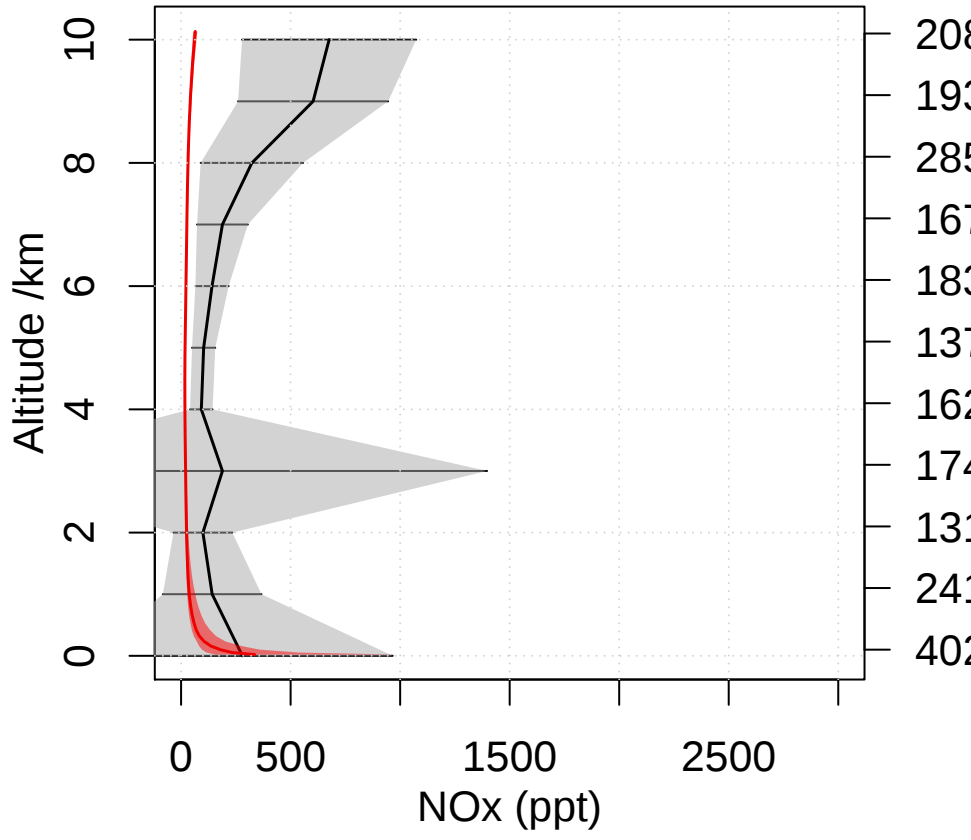
INTEX-NA East Coast 2004 07
Lat 32.5 – 40 Lon 296.5 – 307



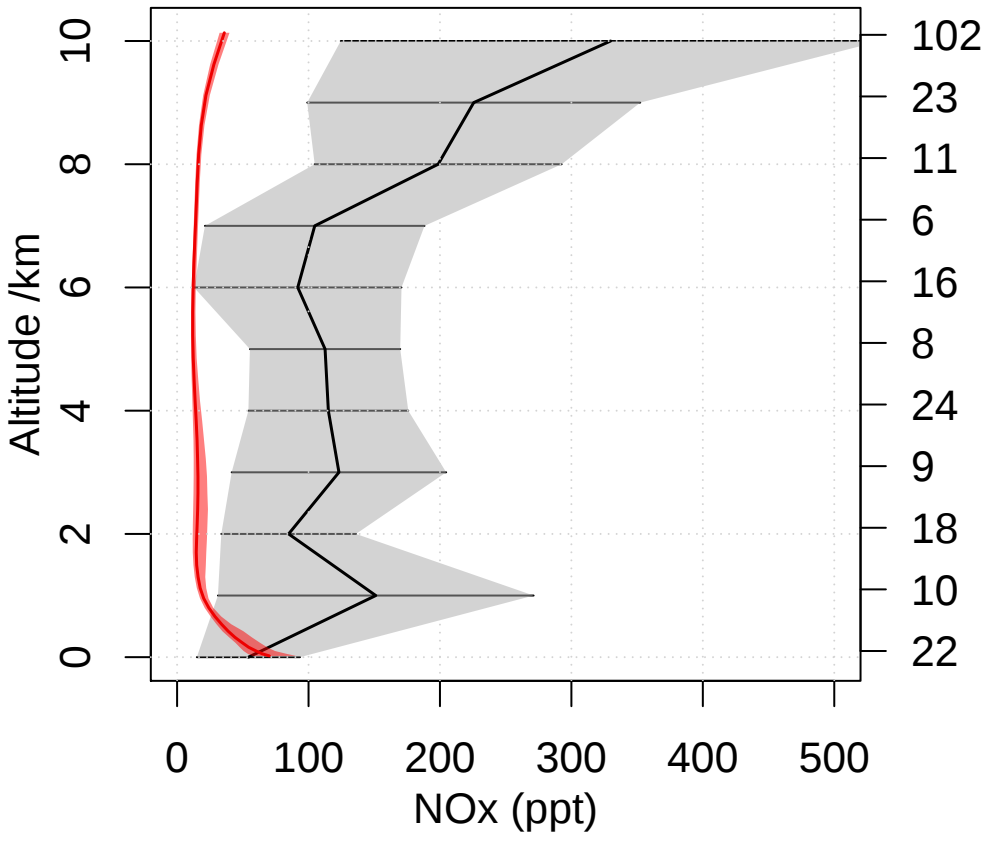
INTEX-NA Central 2004 07
Lat 30 – 40 Lon 259.5 – 285



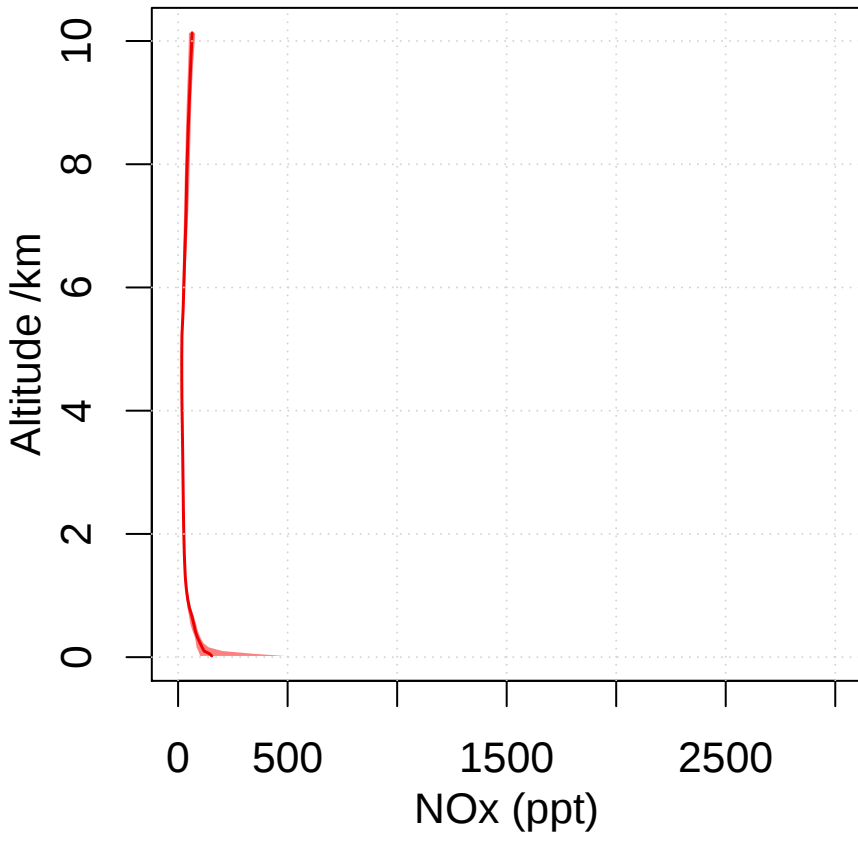
INTEX-NA North East 2004 07
Lat 42.5 – 52.5 Lon 285 – 310



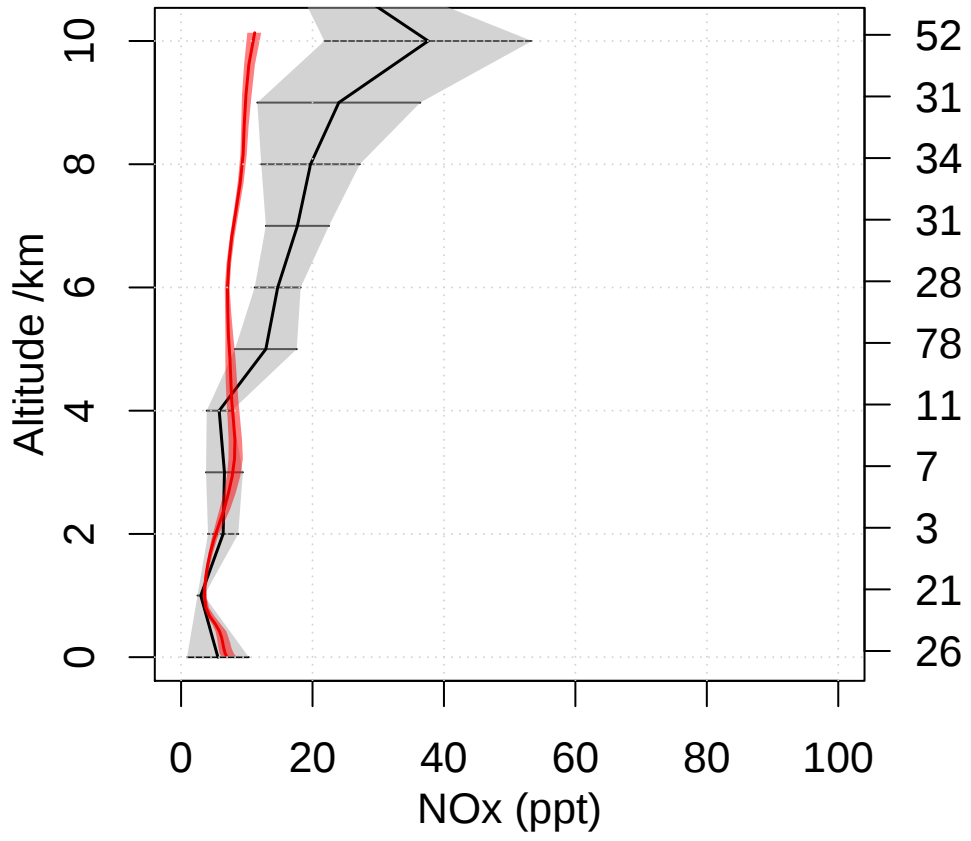
INTEX-NA West Coast 2004 07
Lat 32.5 – 45 Lon 217 – 240



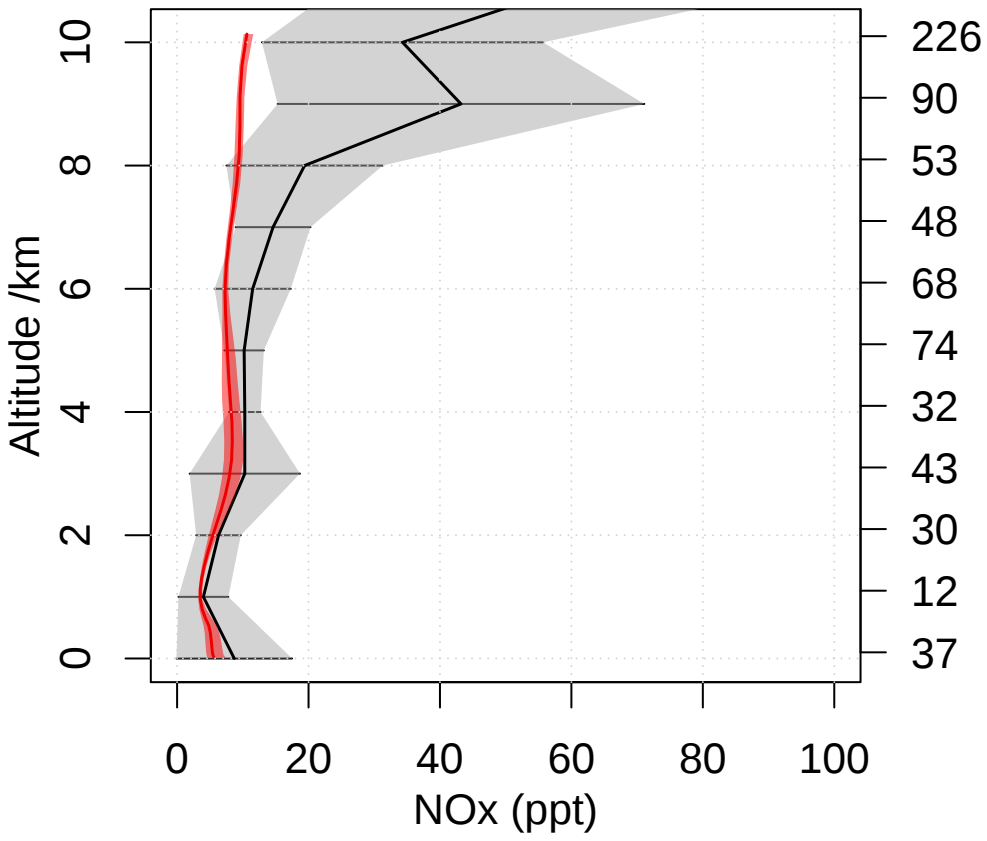
OP3 2008 07
Lat 2.5 – 7.5 Lon 112.5 – 120



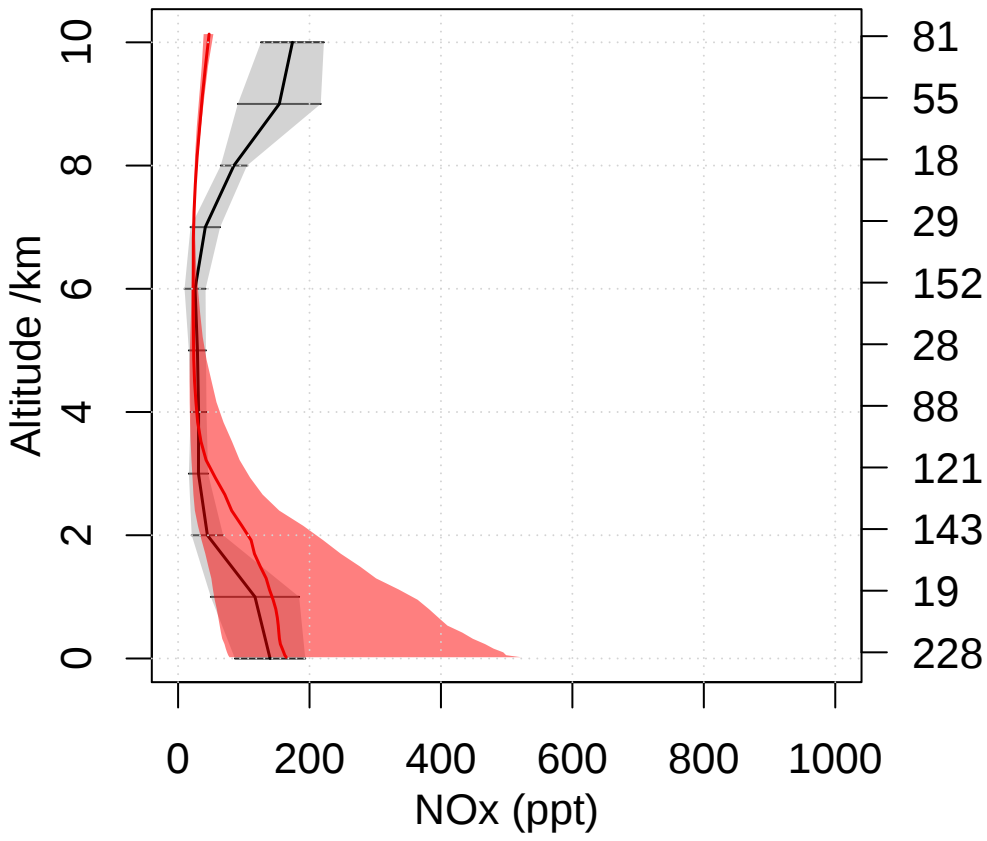
PEM-Tropics-B Christmas-Island 1999 07
Lat 0 – 10 Lon 200 – 220



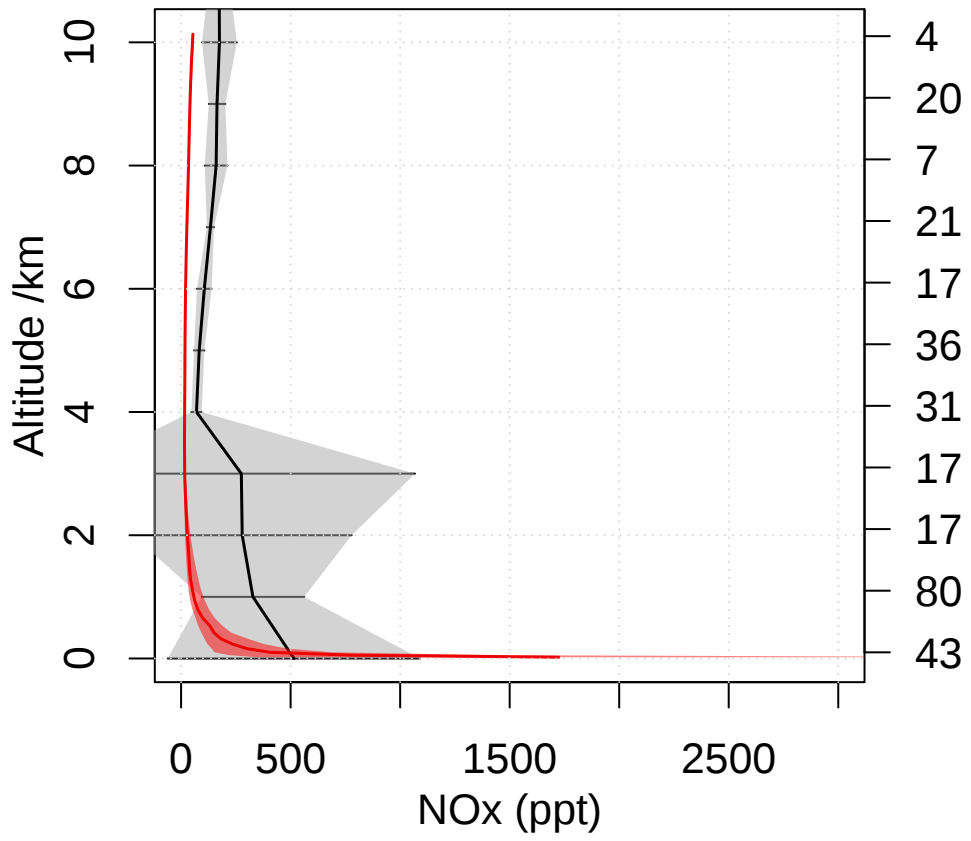
PEM-Tropics-B Tahiti 1999 03
Lat -20 – 0 Lon 200 – 230



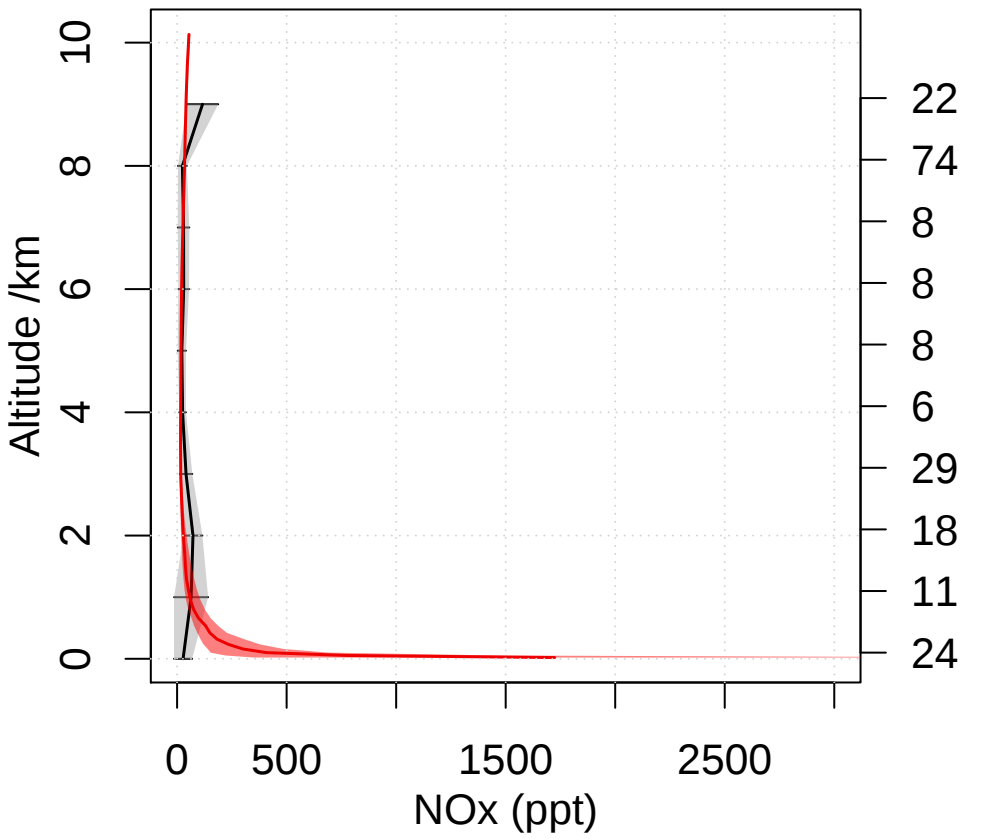
PEM-West-B Japan 1994 02
Lat 25 – 40 Lon 135 – 150



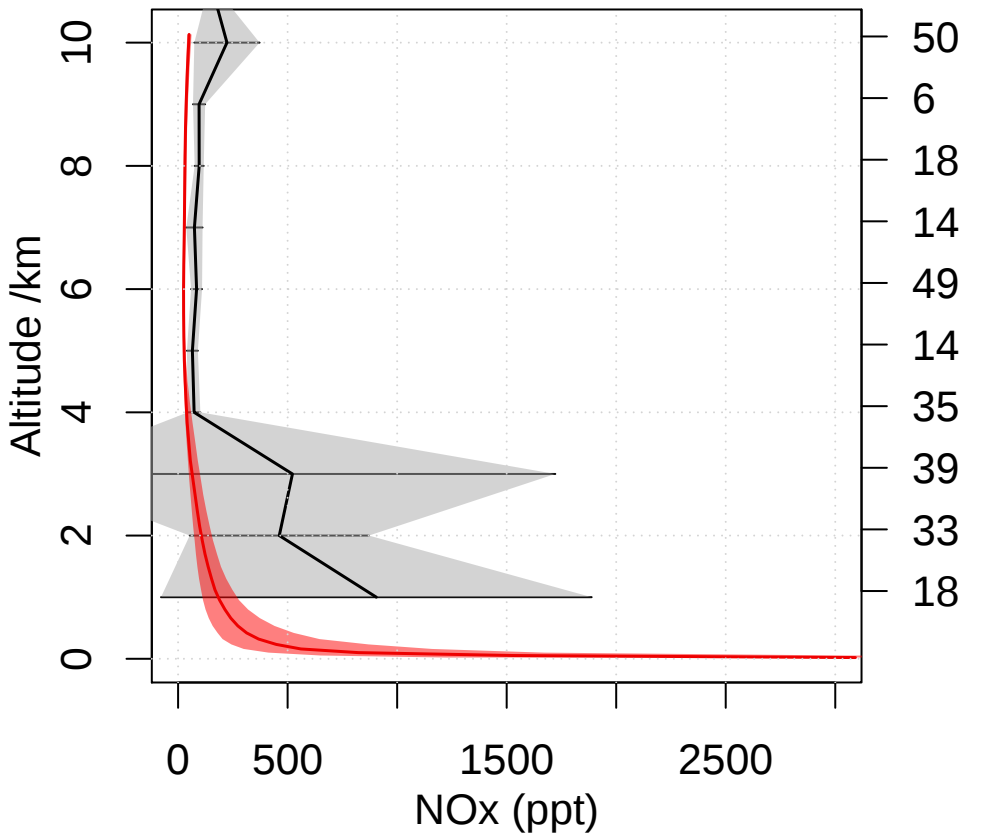
TRACE-A E-Brazil 1992 09
Lat -15 – -5 Lon 310 – 320



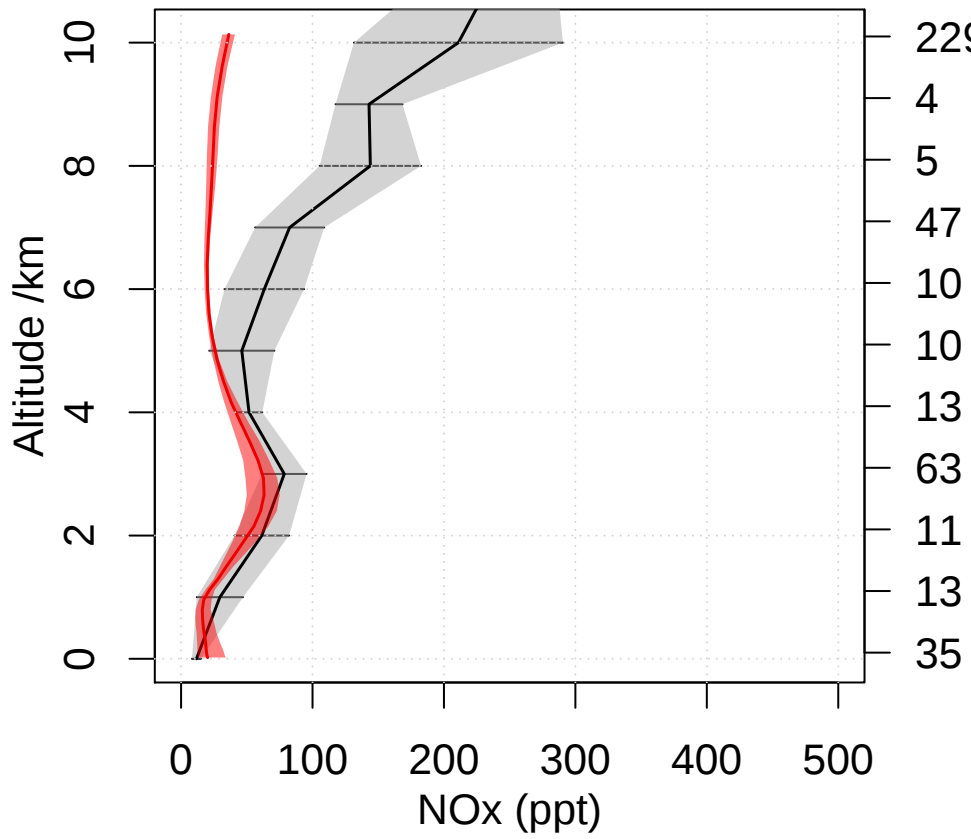
TRACE-A E-Brazil Coast 1992 09
Lat -35 – -25 Lon 310 – 320



TRACE-A S-Africa 1992 09
Lat -25 – -5 Lon 15 – 35



TRACE-A W-Africa Coast 1992 09
Lat -25 – -5 Lon 0 – 10



UKCA ay770

[OH] Air mass weighted (10⁶ molecules cm⁻³)

Mean OH= 1.18e+06 molec/cm3

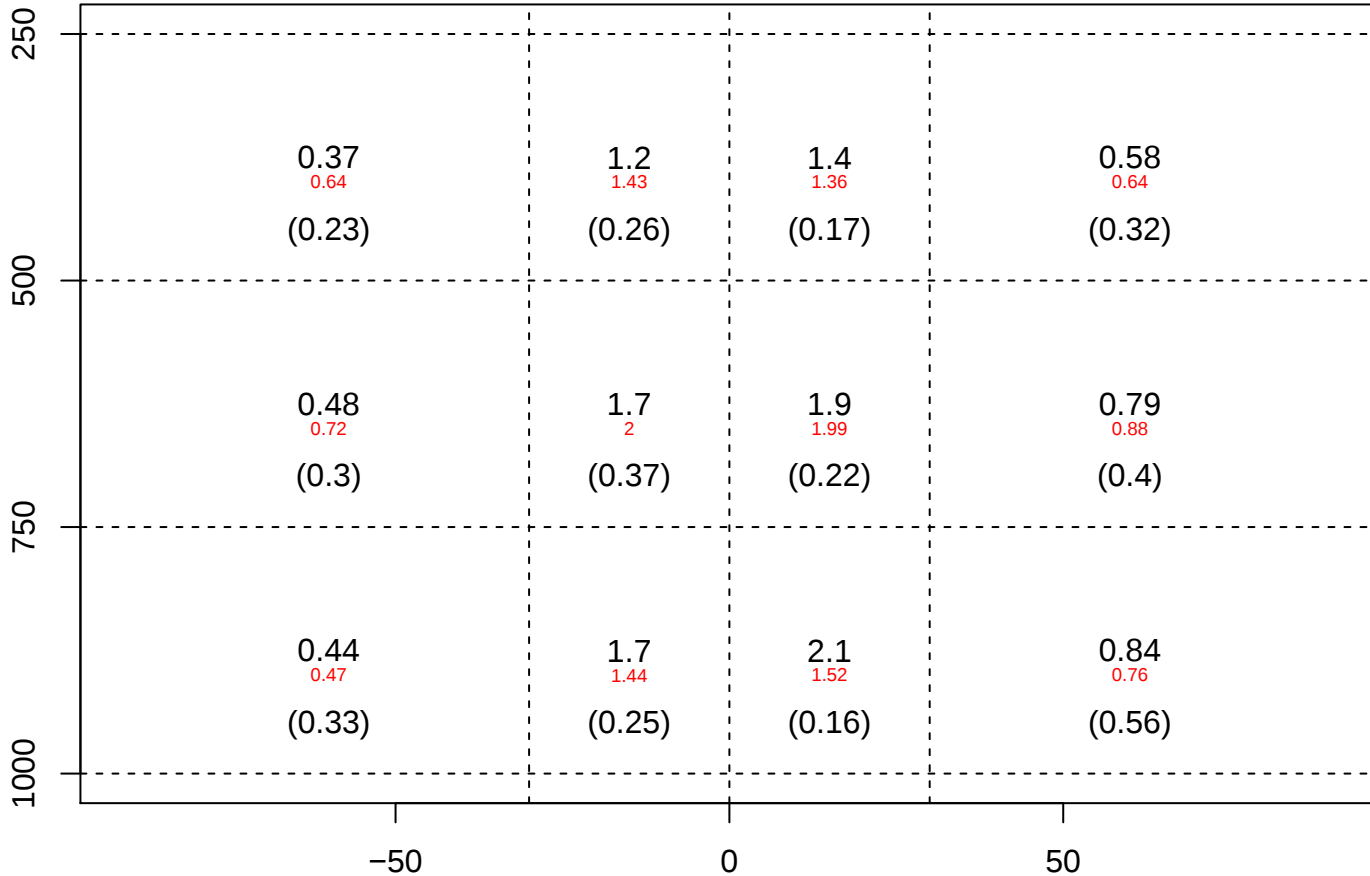
ACCMIP Multi-model Mean= 1.17 (+/- 0.1) e+06 molec/cm3

NH:SH ratio= 1.39 Patra et al 2014: 0.97 +/- 0.12

Red: Spivakovsky values

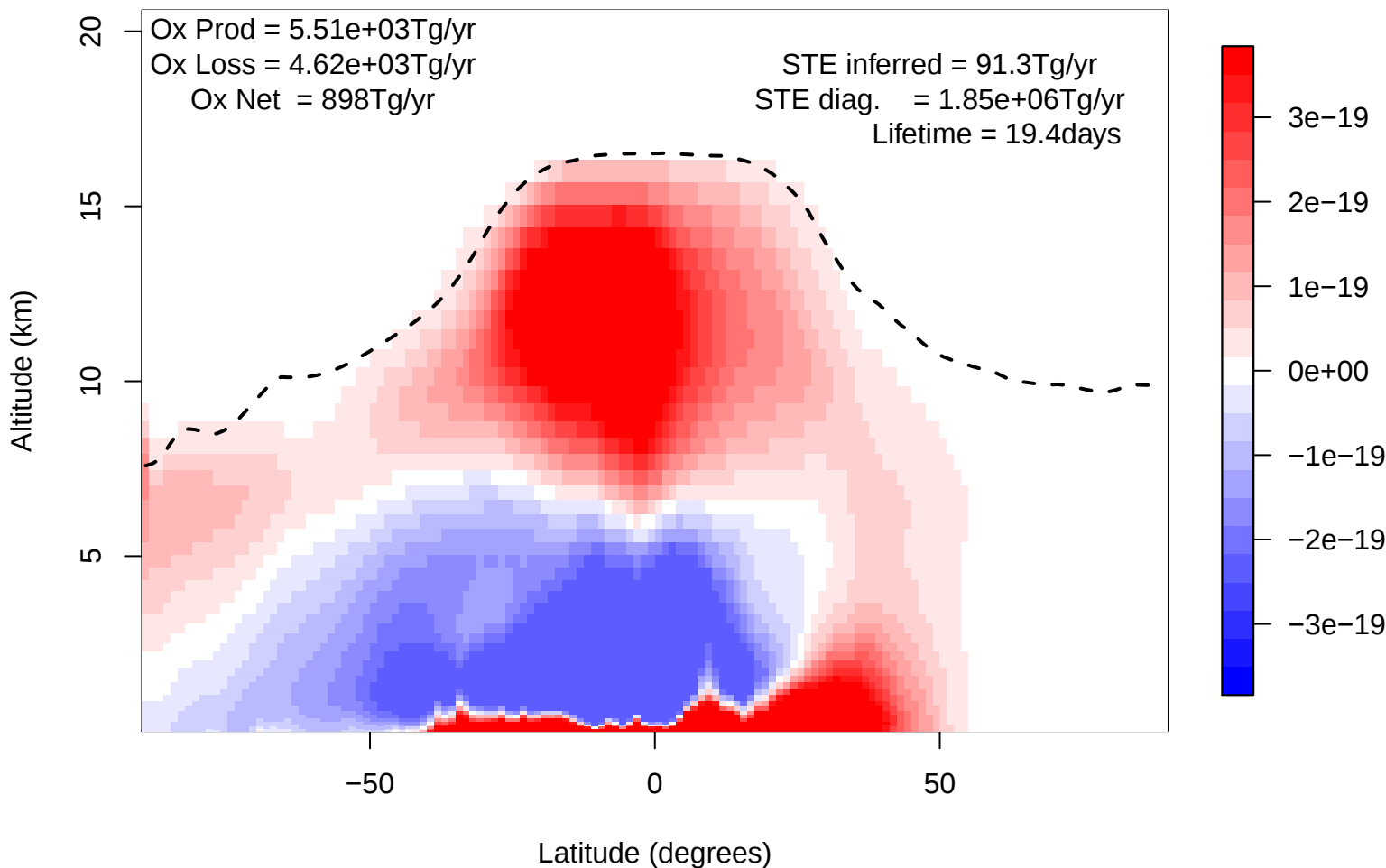
Values in (): Std dev

Pressure (hPa)



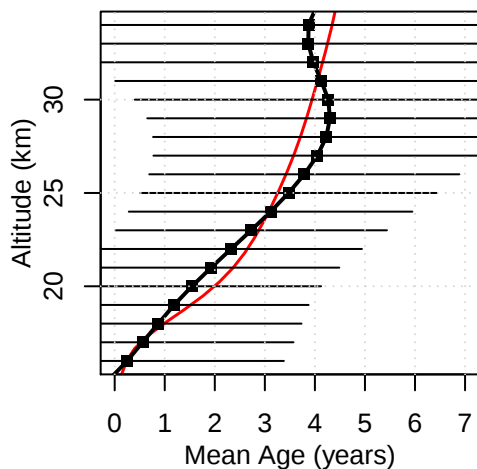
Latitude

UKCA ay770 Ox Net Chemical Production

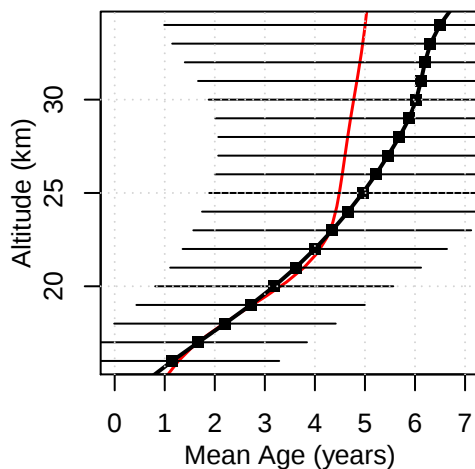


UKCA ay770 Mean Age of Air

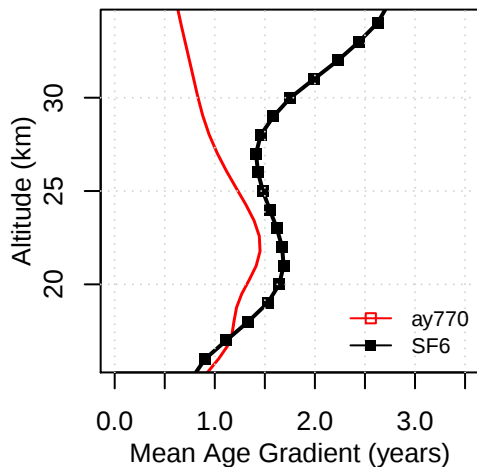
Tropical Mean Age Profile



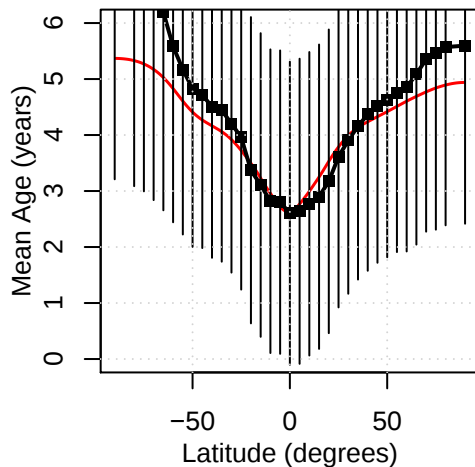
Midlatitude Mean Age Profile



Trop-Midlat Mean Age Gradient Prof

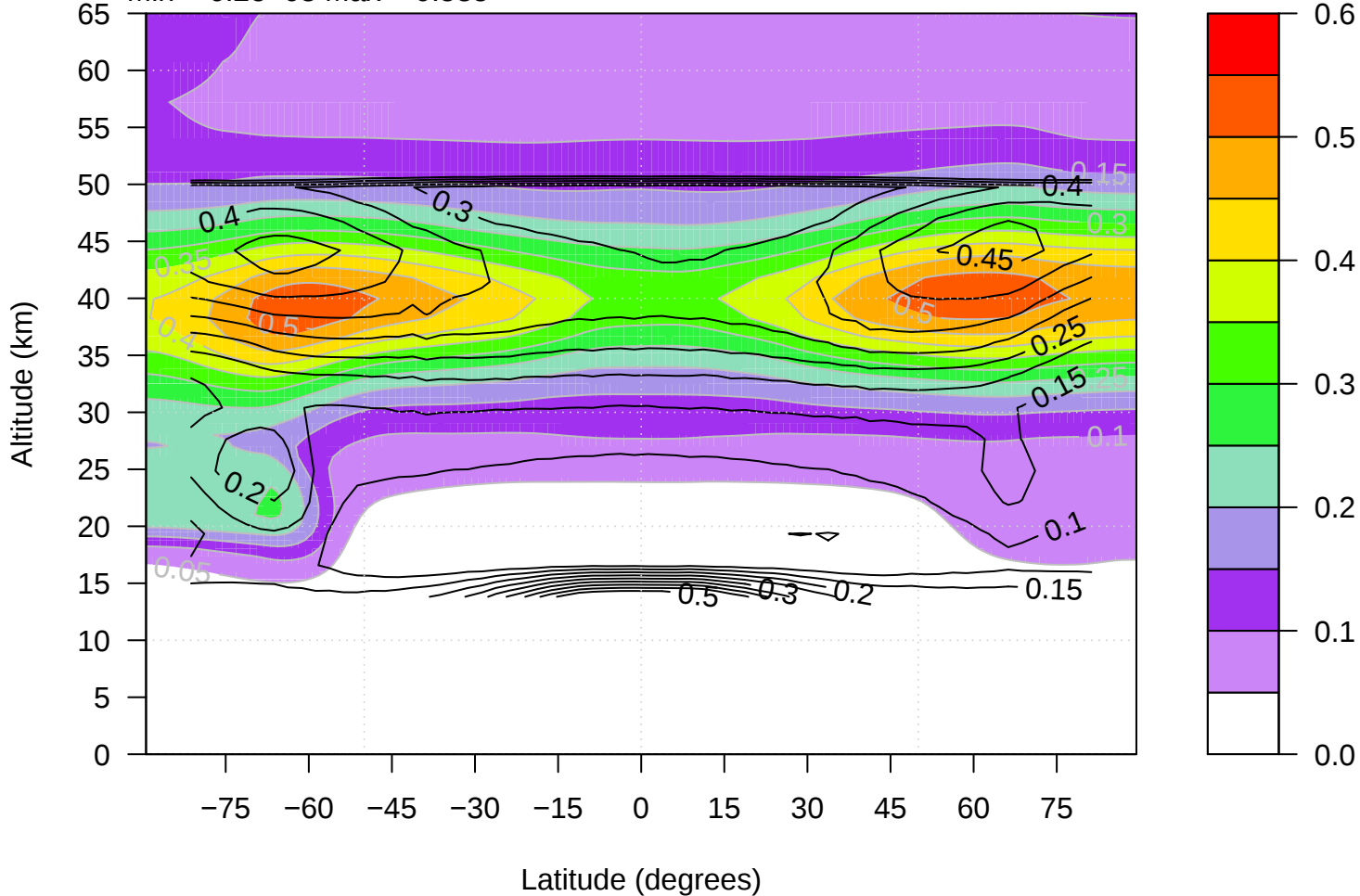


Mean Age, 23km (~50hPa)



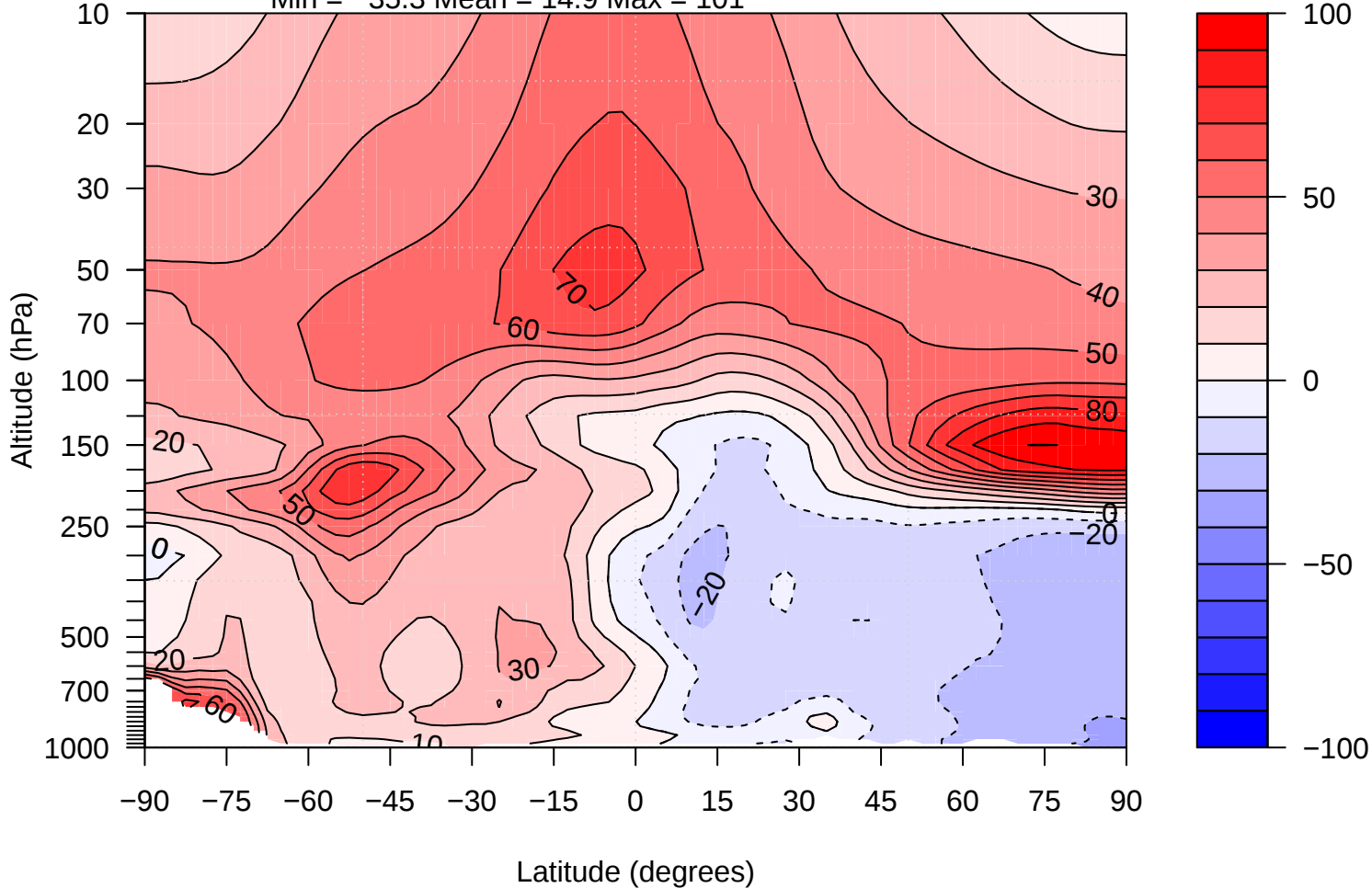
ppm

0.6



ay770 - ERA Q bias

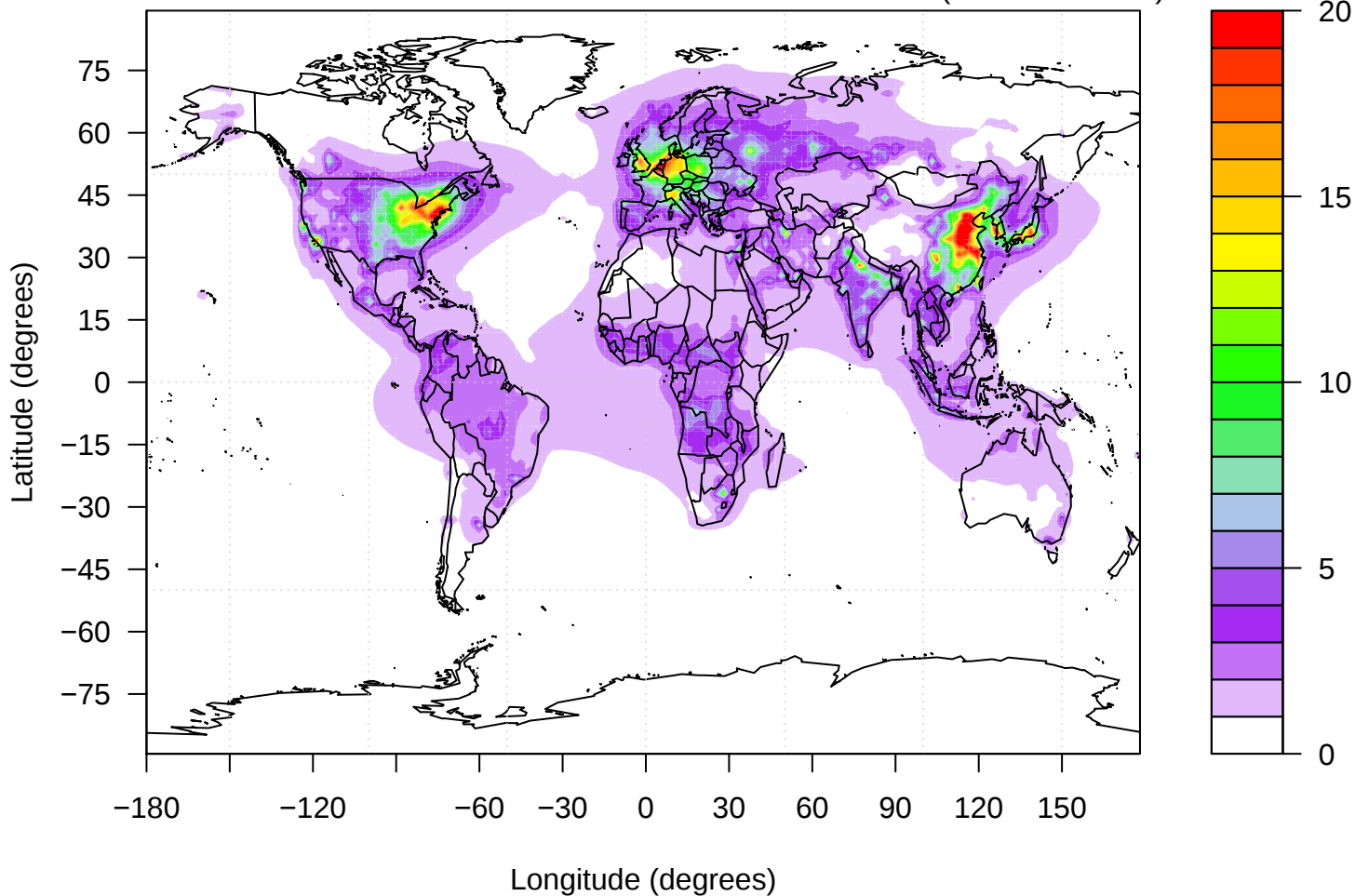
Min = -35.3 Mean = 14.9 Max = 101



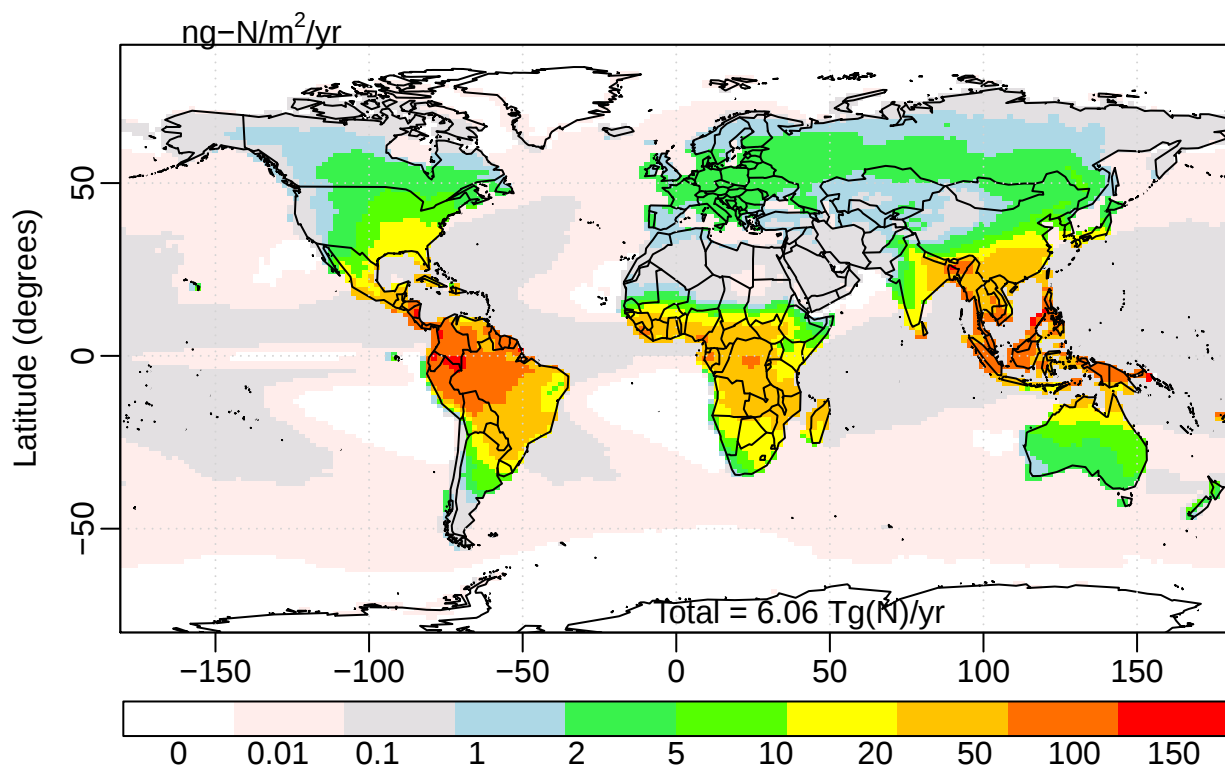
ay770 tropospheric NO₂ column

Min = 0.0128 Mean = 1.11 Max = 47.7

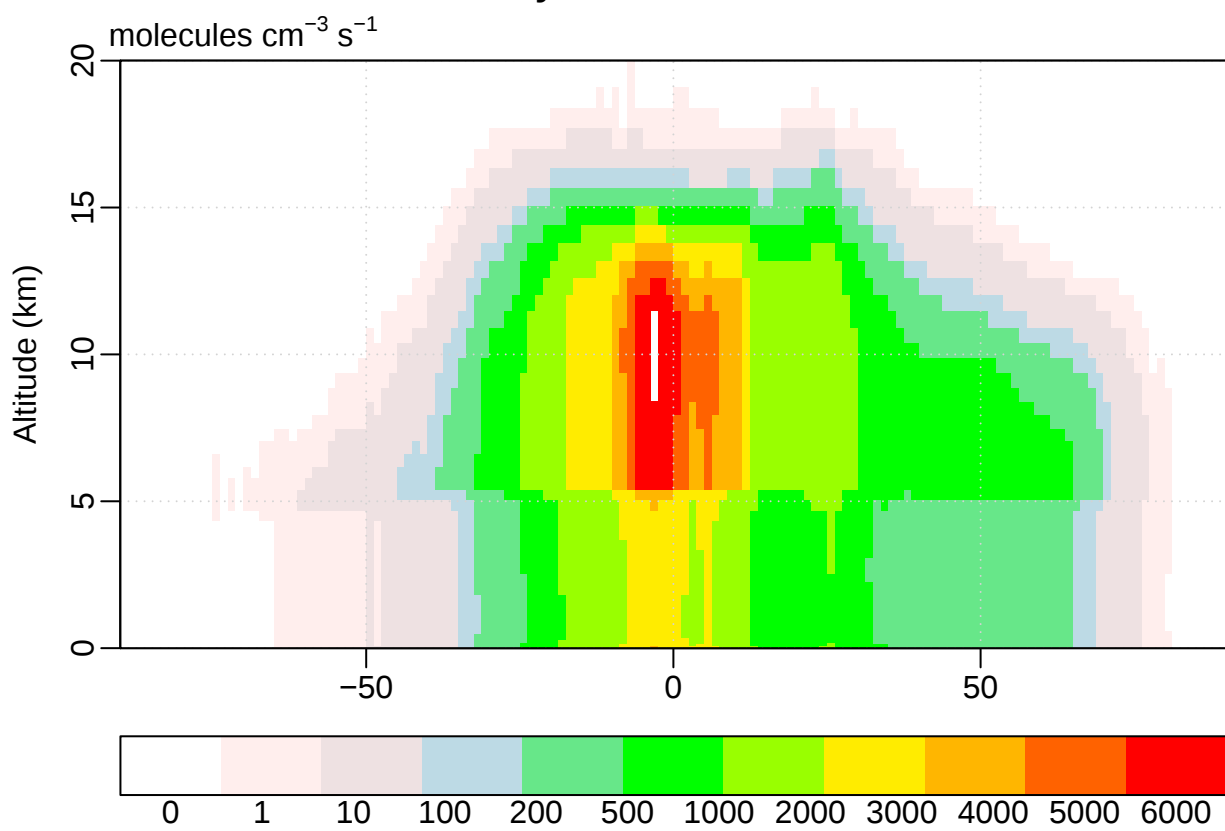
10¹⁵ (molecules cm⁻²)

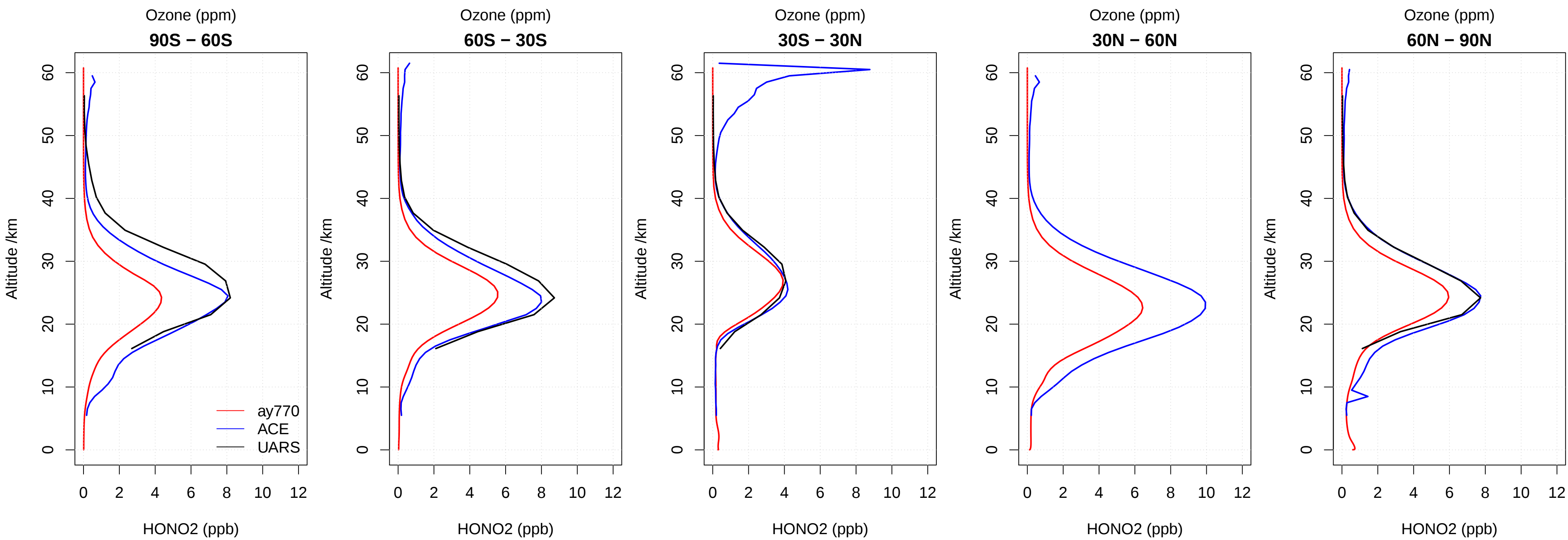
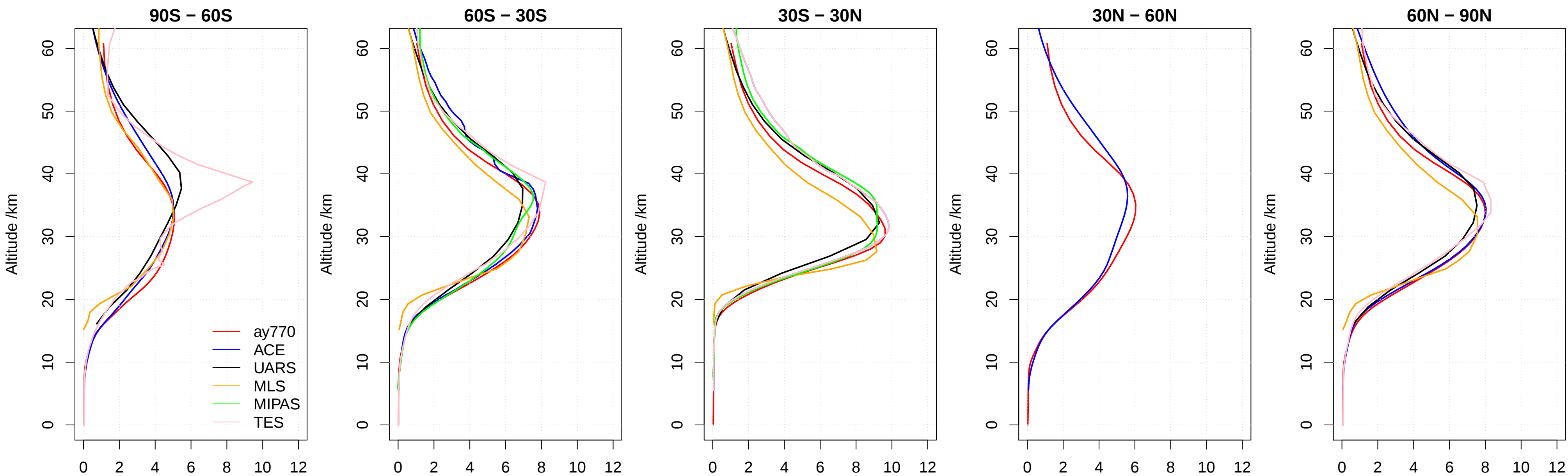


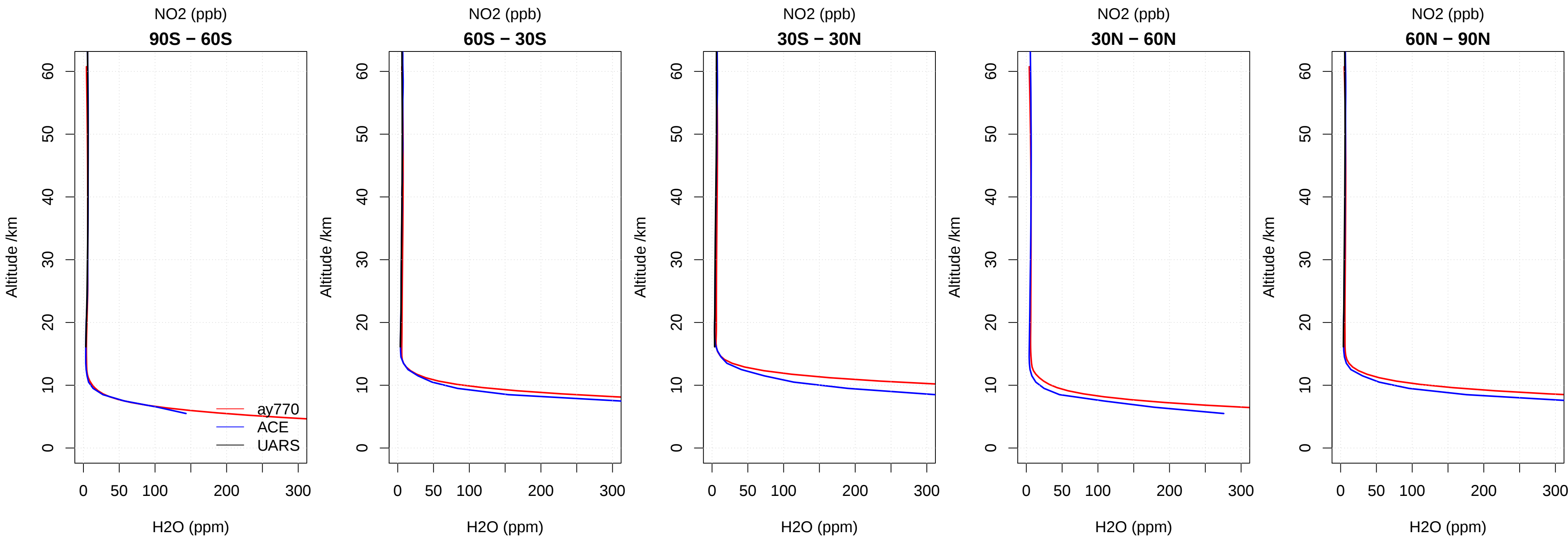
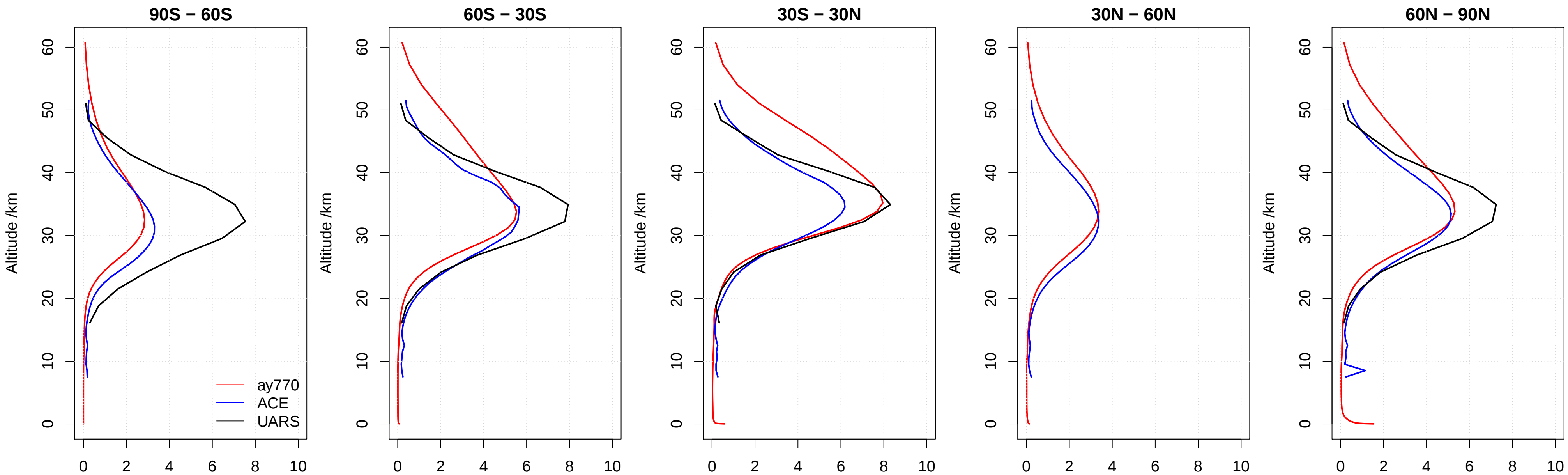
ay770 total column

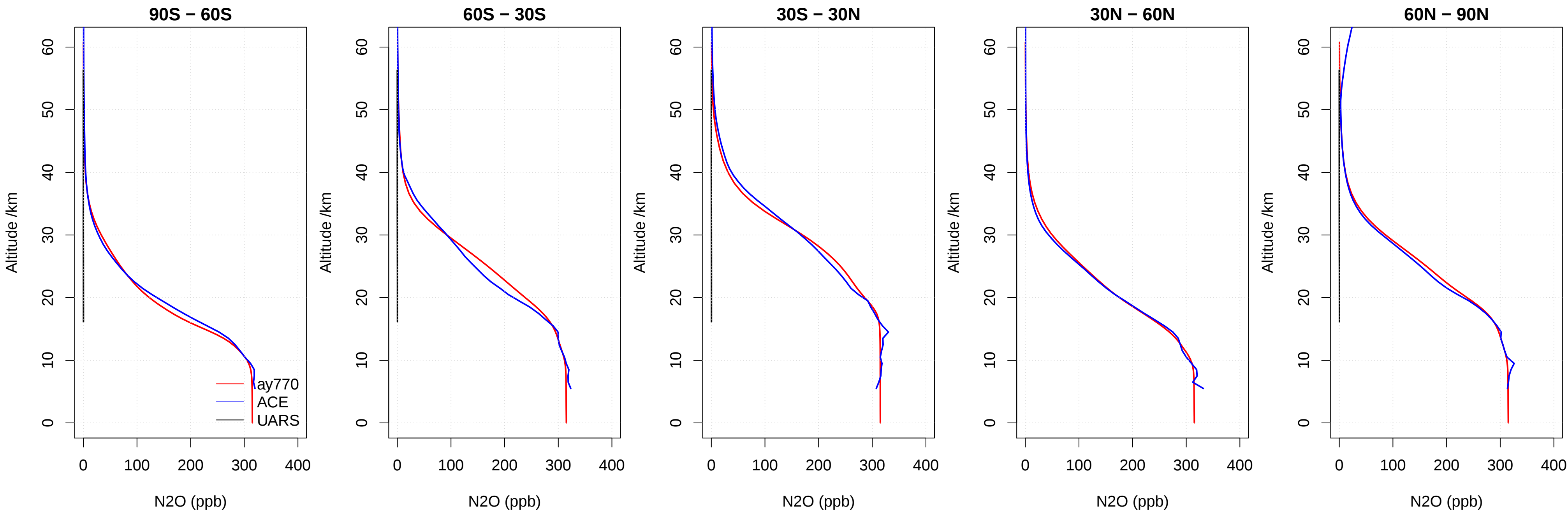


ay770 zonal mean



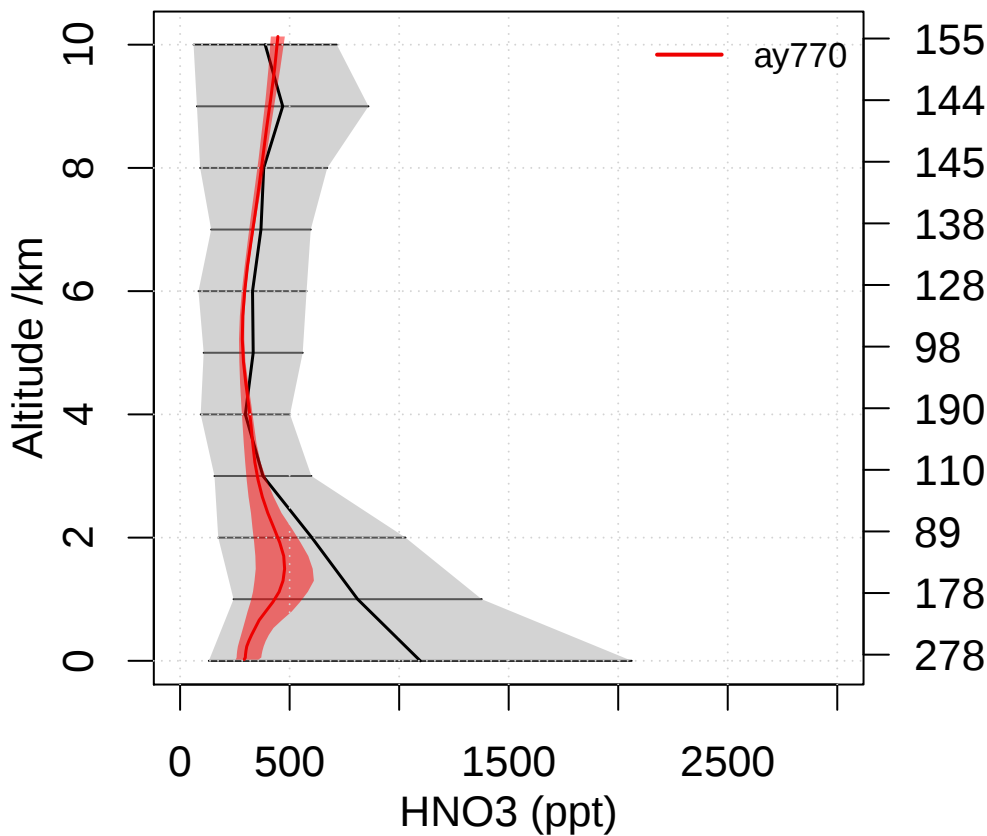




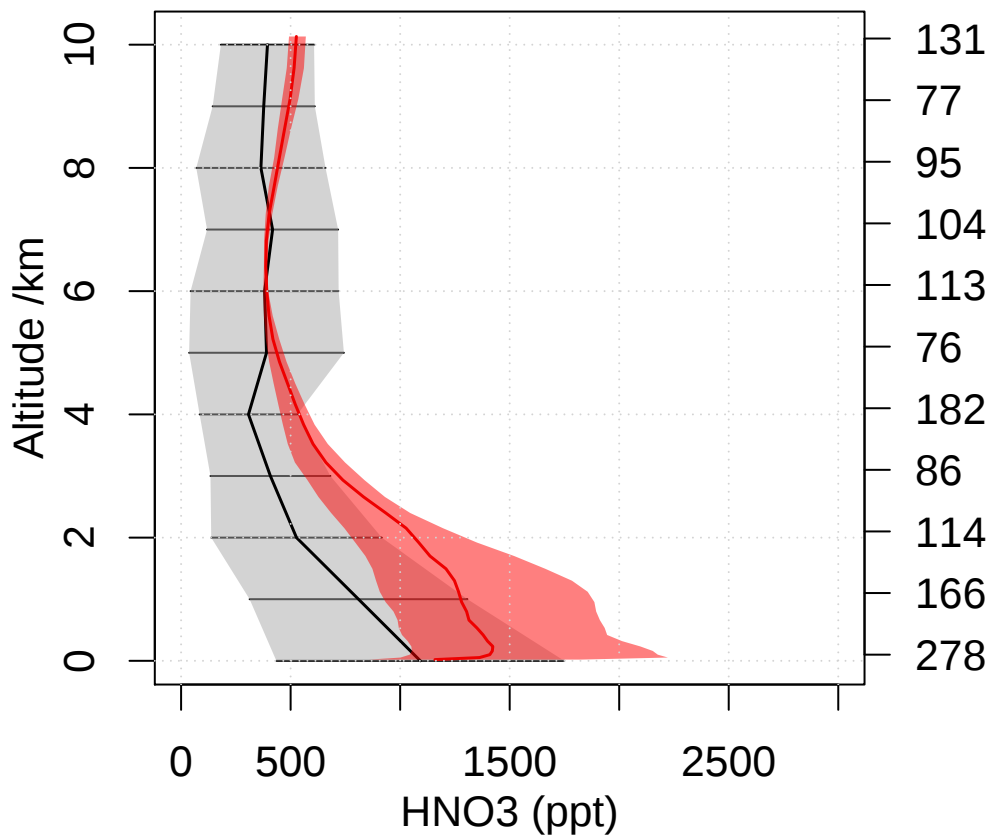


Emmons HNO3 comparison

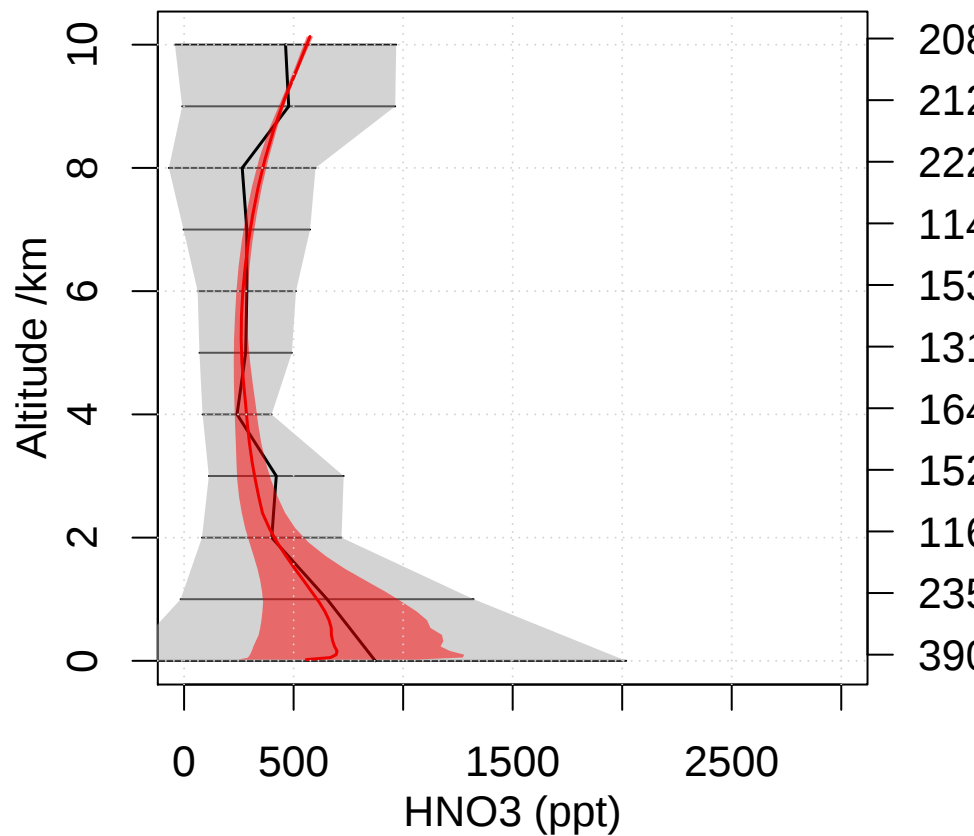
INTEX-NA East Coast 2004 07
Lat 32.5 – 40 Lon 296.5 – 307



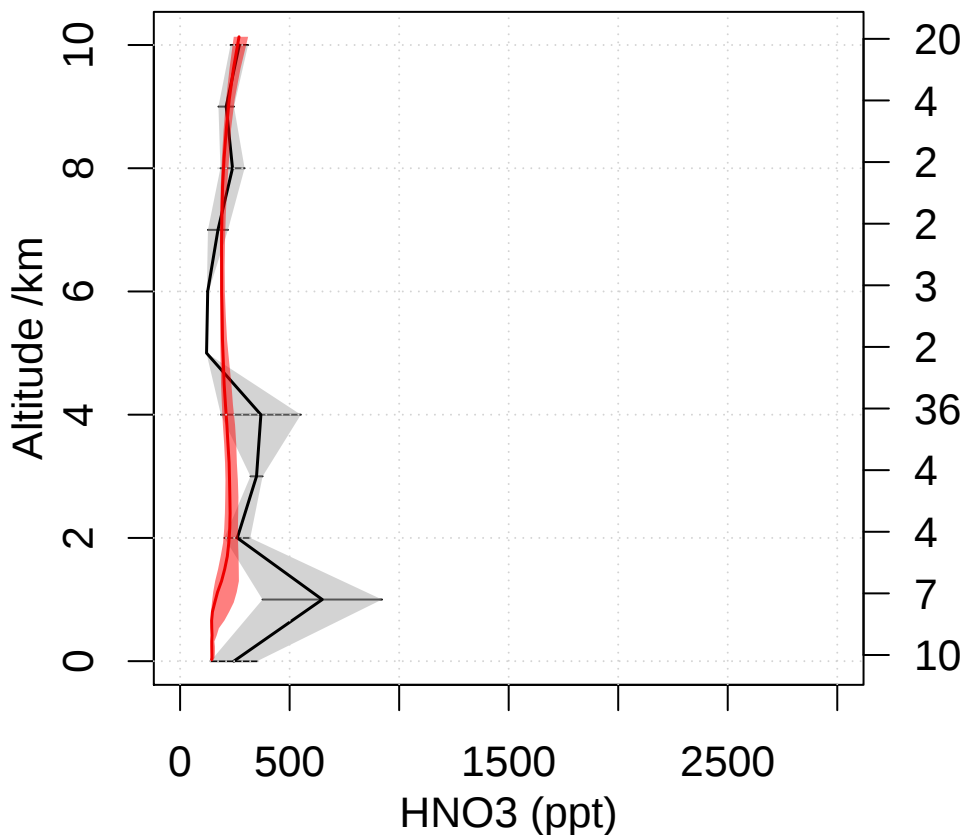
INTEX-NA Central 2004 07
Lat 30 – 40 Lon 259.5 – 285



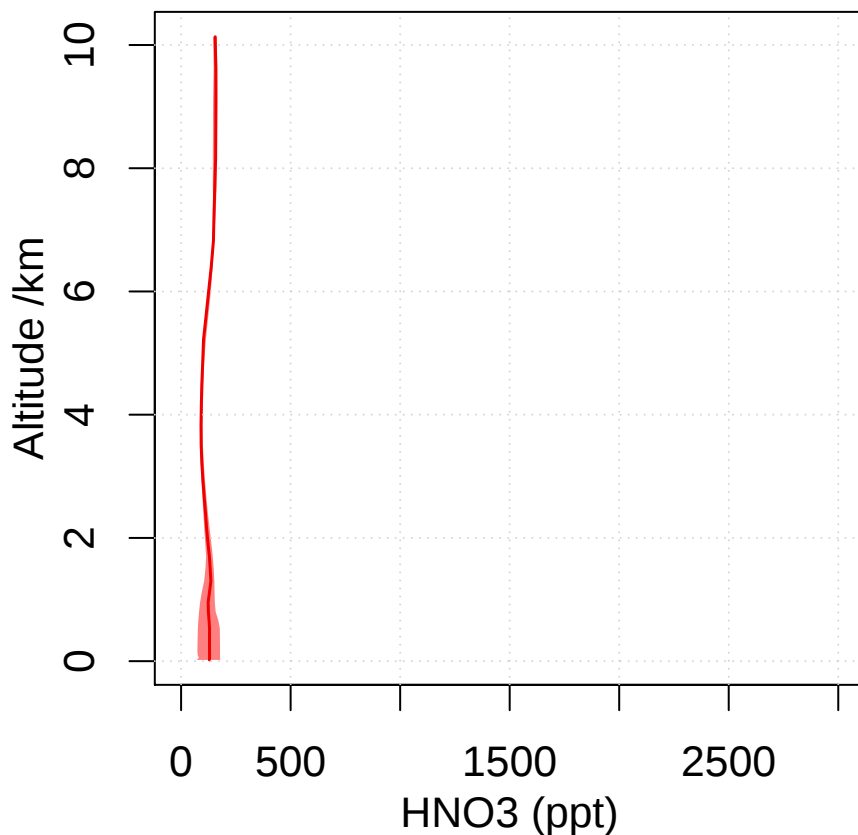
INTEX-NA North East 2004 07
Lat 42.5 – 52.5 Lon 285 – 310



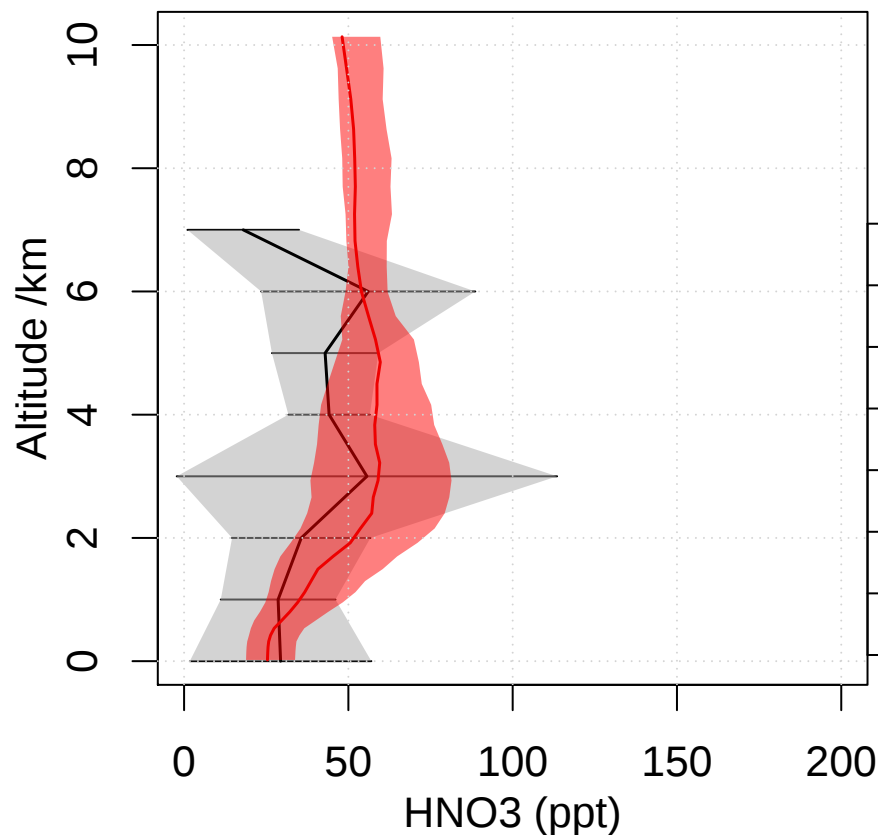
INTEX-NA West Coast 2004 07
Lat 32.5 – 45 Lon 217 – 240



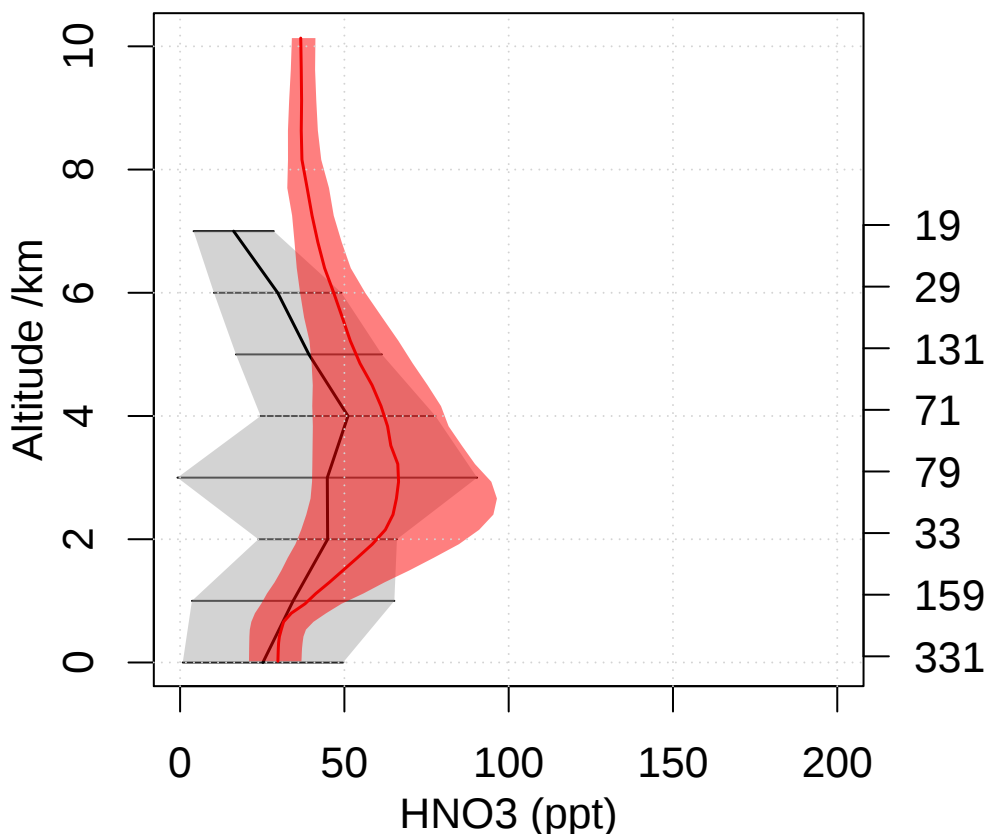
OP3 2008 07
Lat 2.5 – 7.5 Lon 112.5 – 120



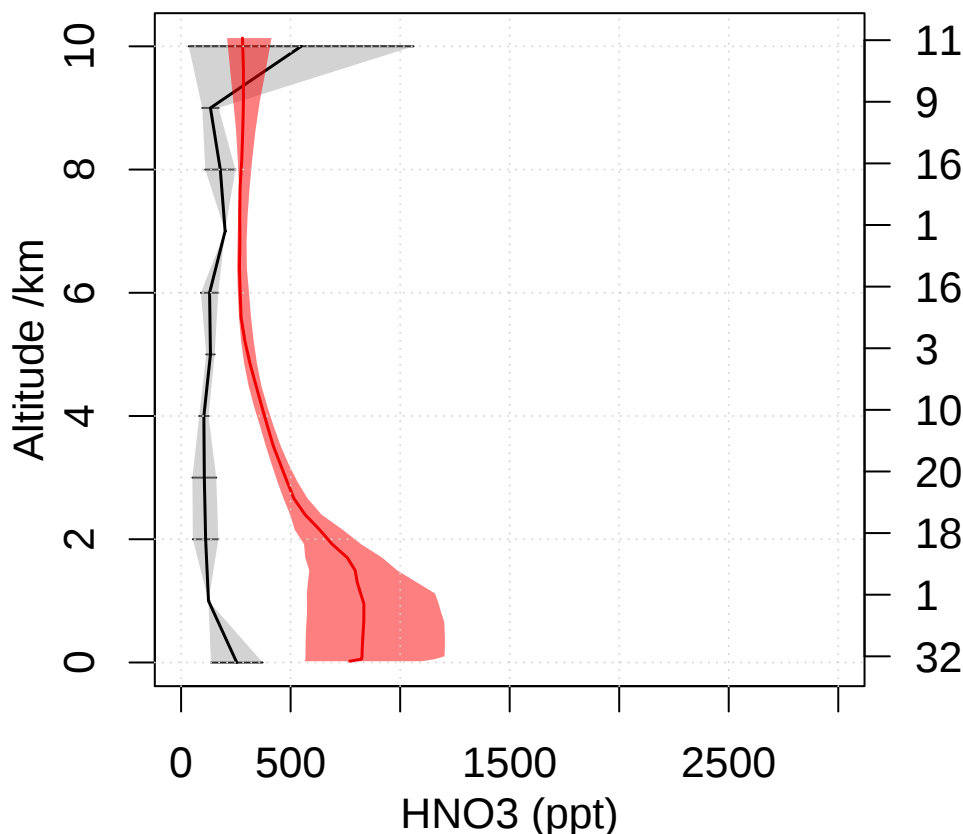
PEM-Tropics-B Christmas-Island 1999 07
Lat 0 – 10 Lon 200 – 220



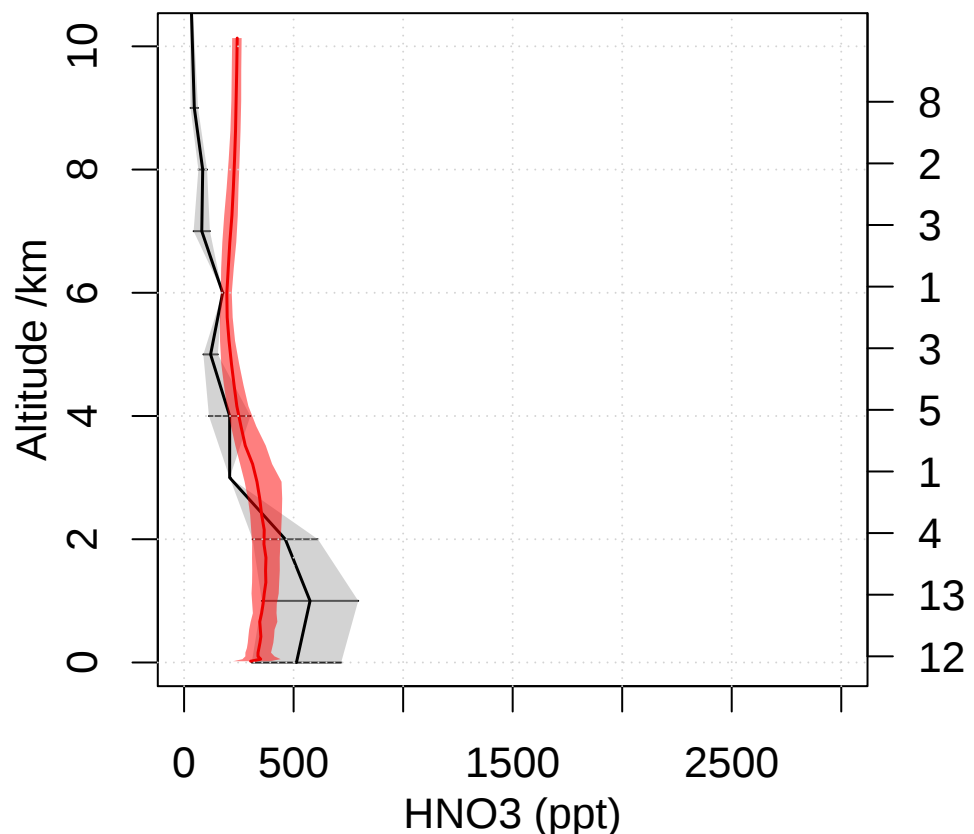
PEM-Tropics-B Tahiti 1999 03
Lat -20 – 0 Lon 200 – 230



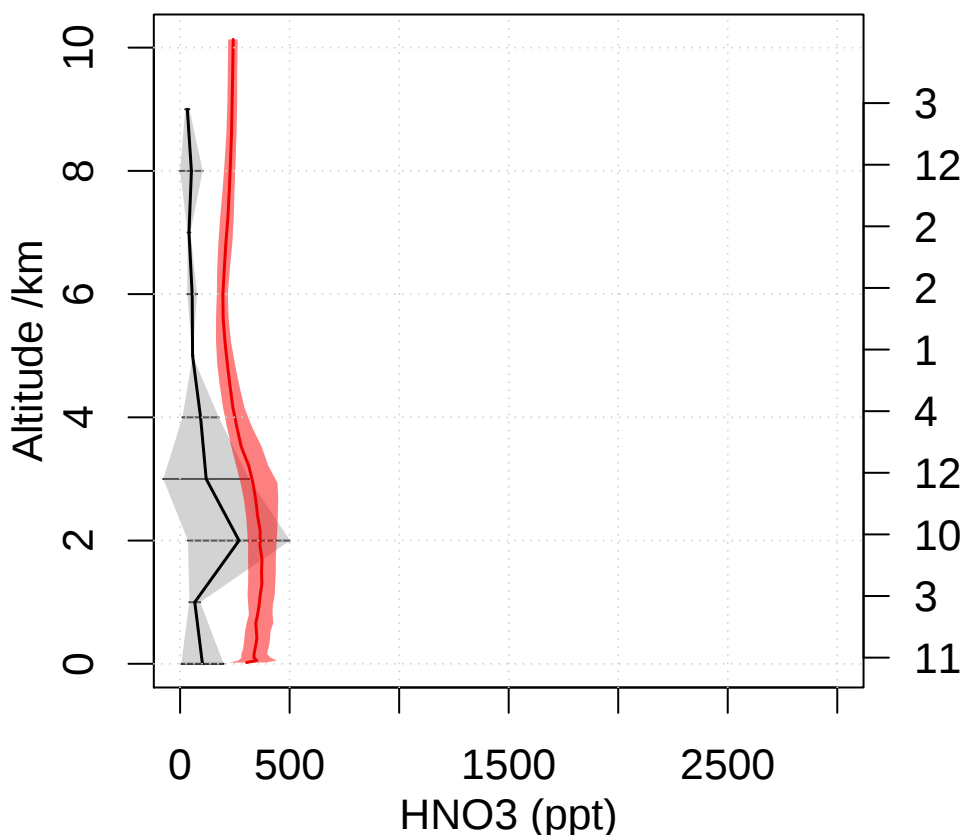
PEM-West-B Japan 1994 02
Lat 25 – 40 Lon 135 – 150



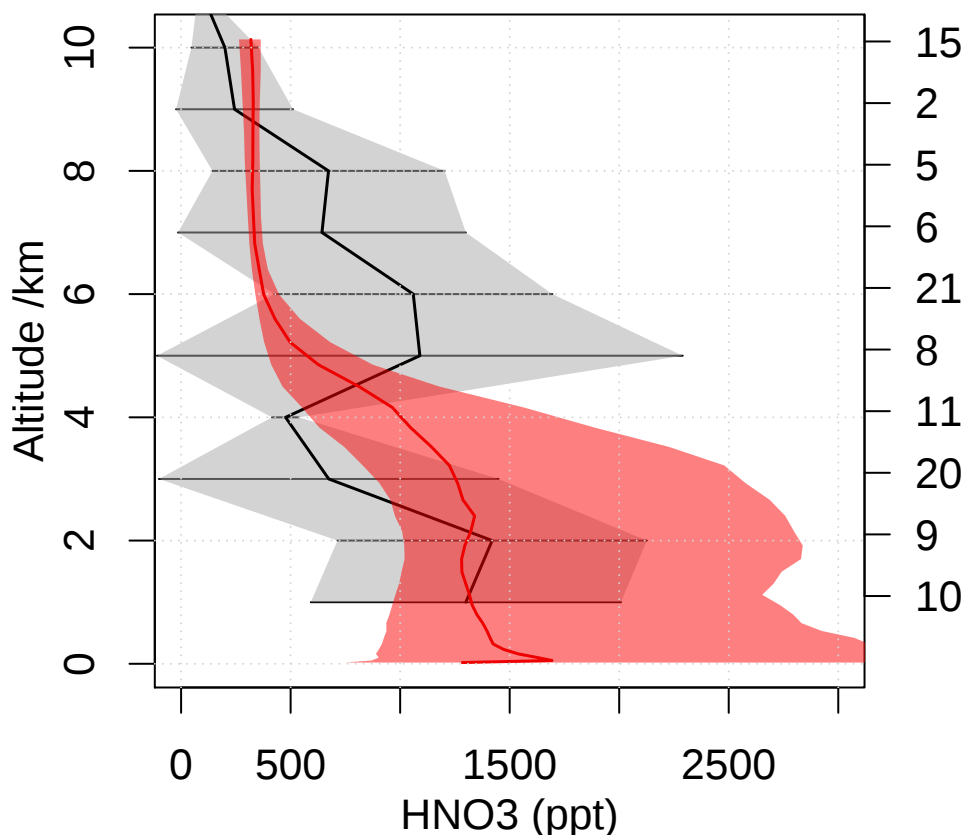
TRACE-A E-Brazil 1992 09
Lat -15 – -5 Lon 310 – 320



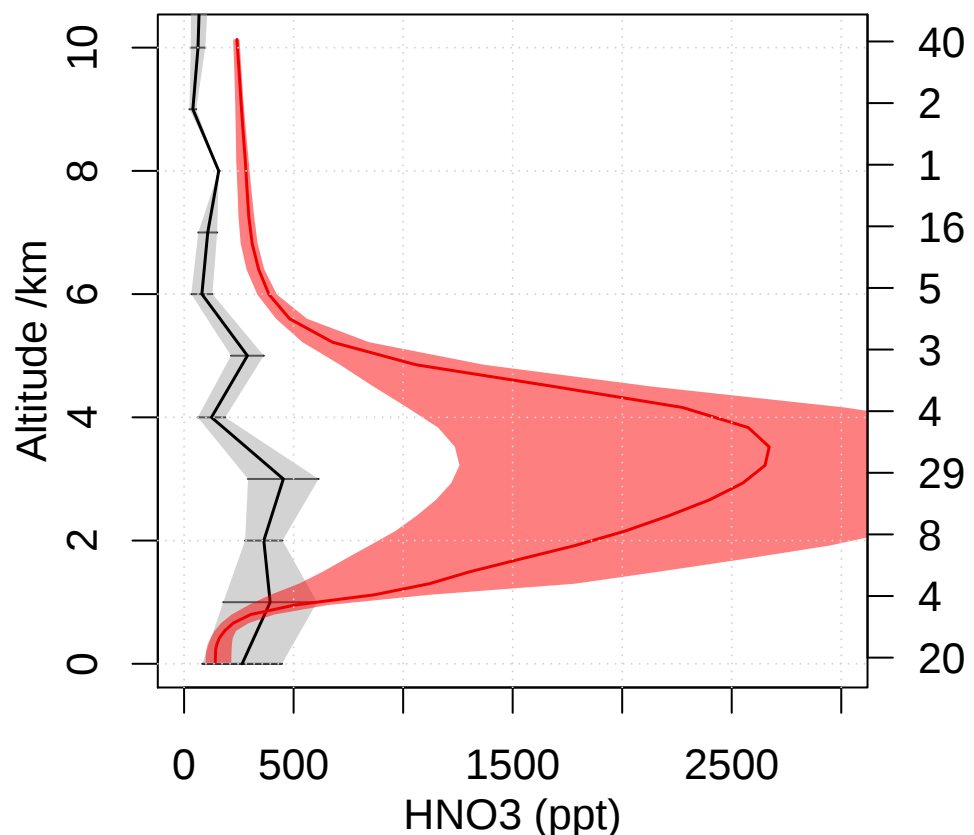
TRACE-A E-Brazil Coast 1992 09
Lat -35 – -25 Lon 310 – 320



TRACE-A S-Africa 1992 09
Lat -25 – -5 Lon 15 – 35

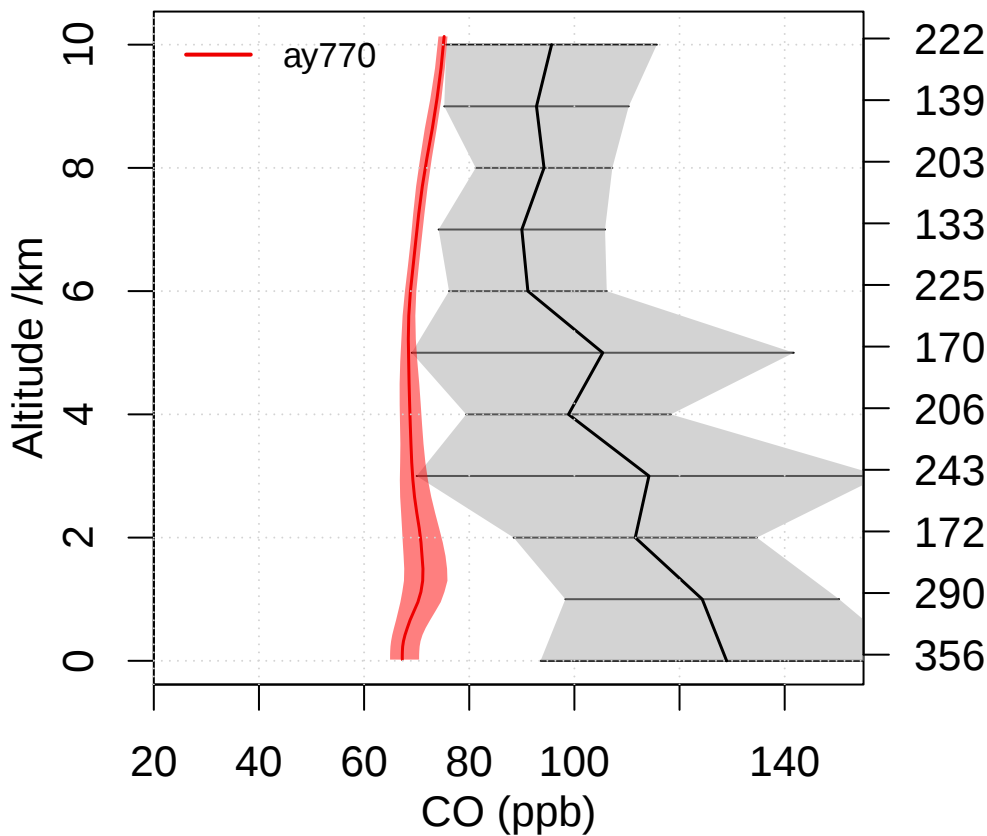


TRACE-A W-Africa Coast 1992 09
Lat -25 – -5 Lon 0 – 10

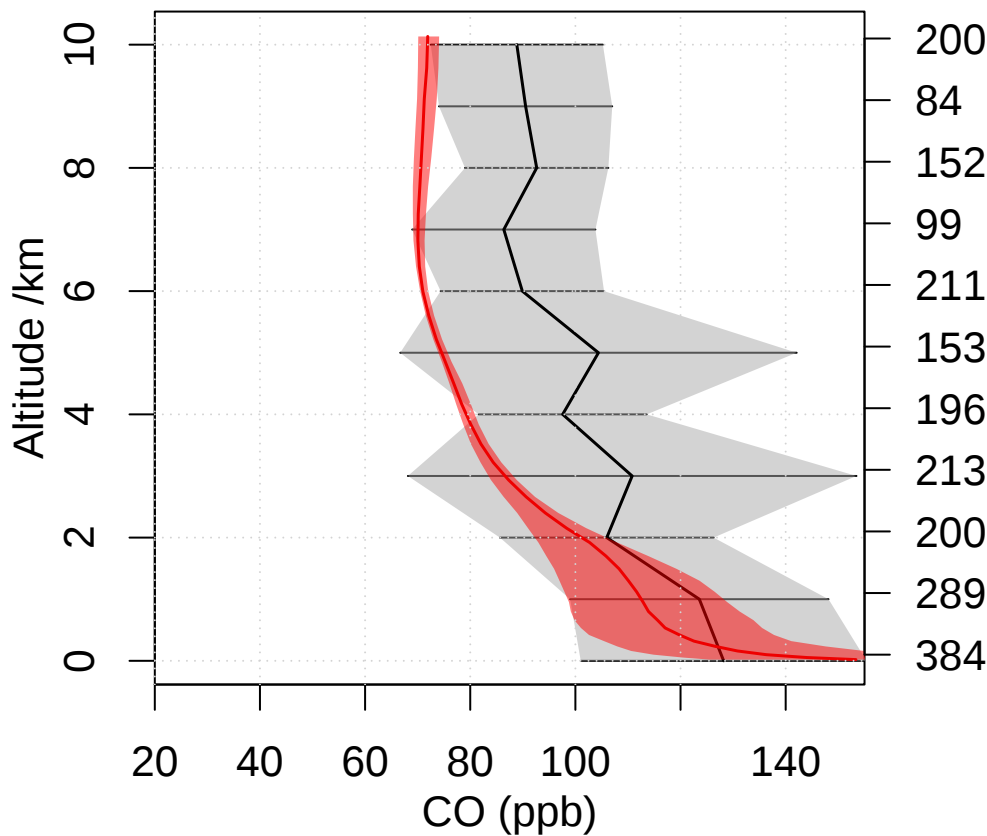


Emmons CO comparison

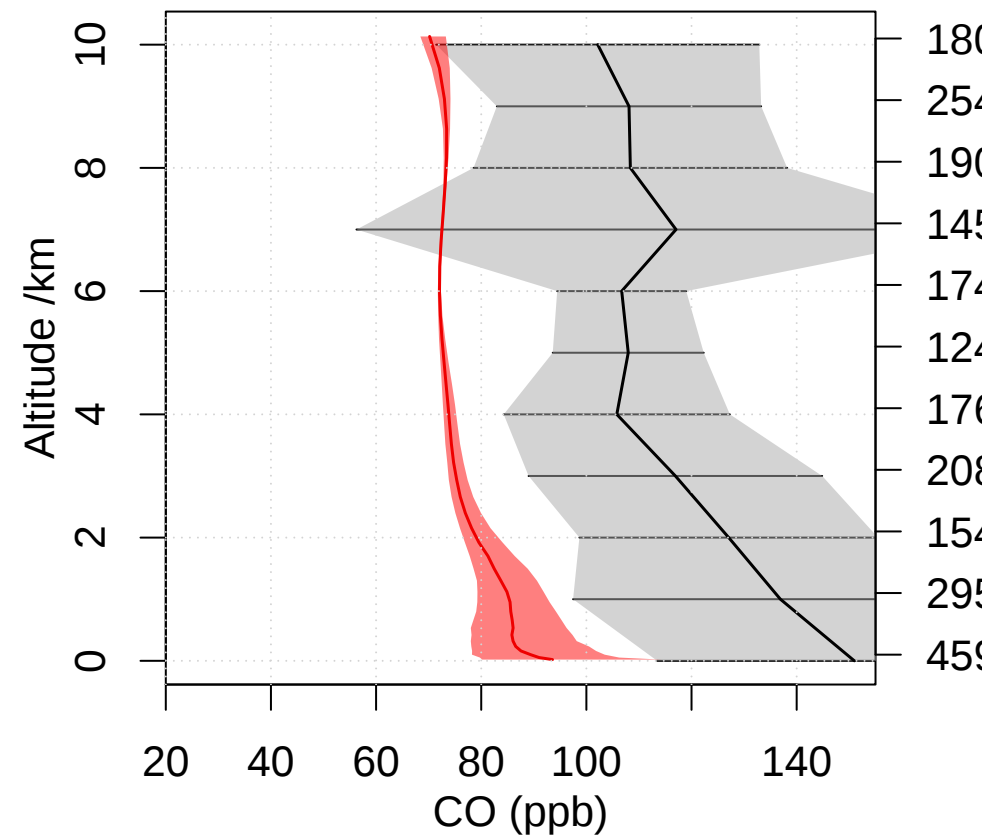
INTEX-NA East Coast 2004 07
Lat 32.5 – 40 Lon 296.5 – 307



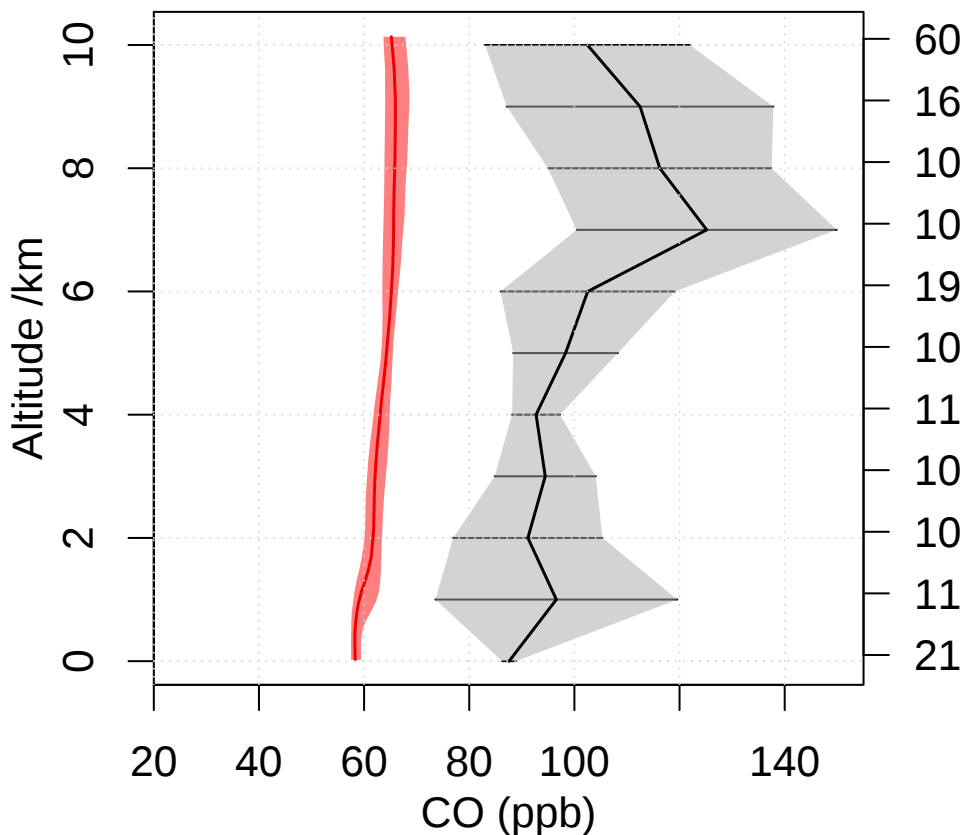
INTEX-NA Central 2004 07
Lat 30 – 40 Lon 259.5 – 285



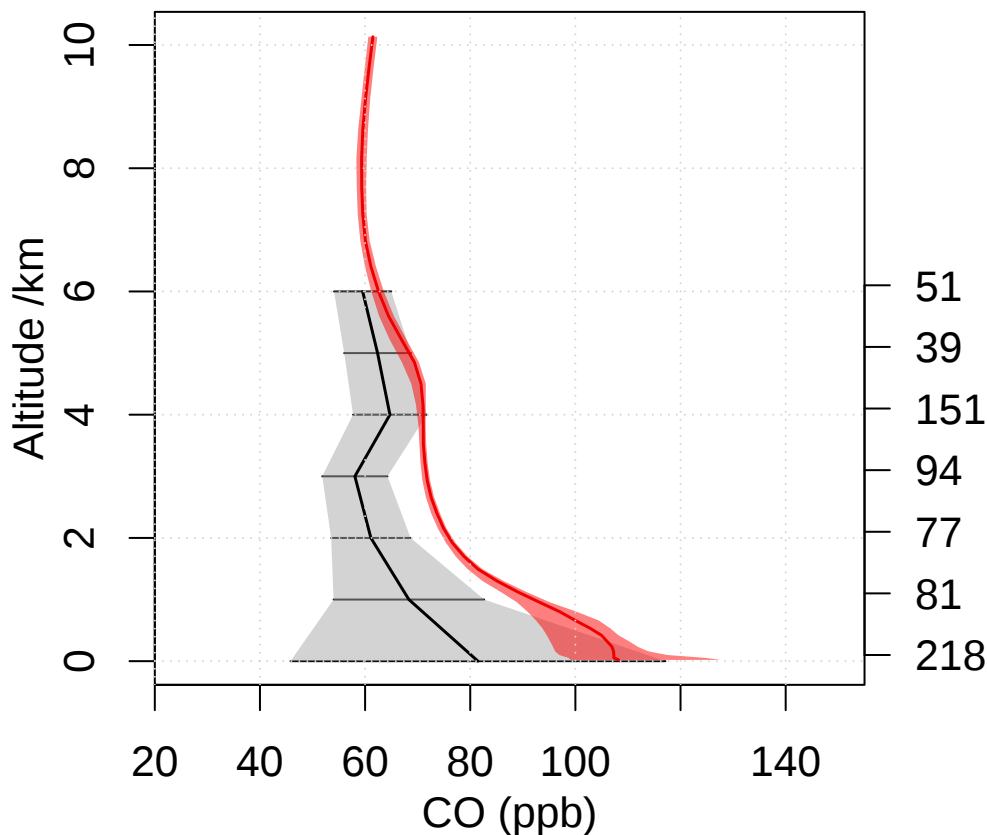
INTEX-NA North East 2004 07
Lat 42.5 – 52.5 Lon 285 – 310



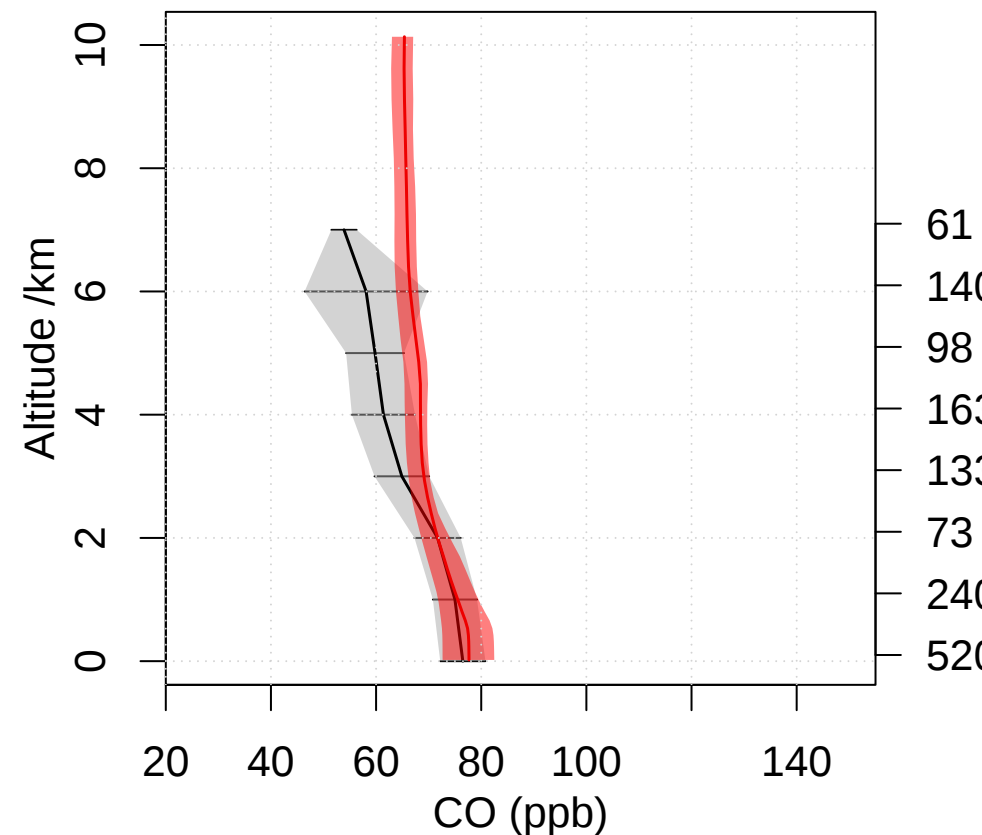
INTEX-NA West Coast 2004 07
Lat 32.5 – 45 Lon 217 – 240



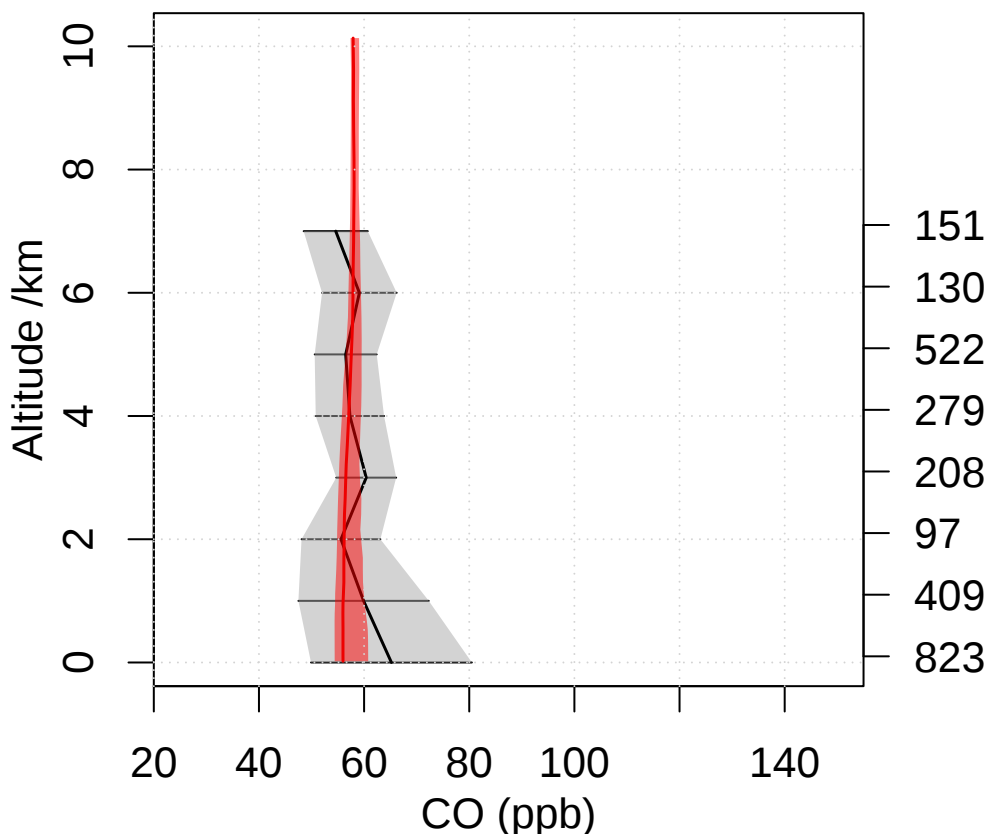
OP3 2008 07
Lat 2.5 – 7.5 Lon 112.5 – 120



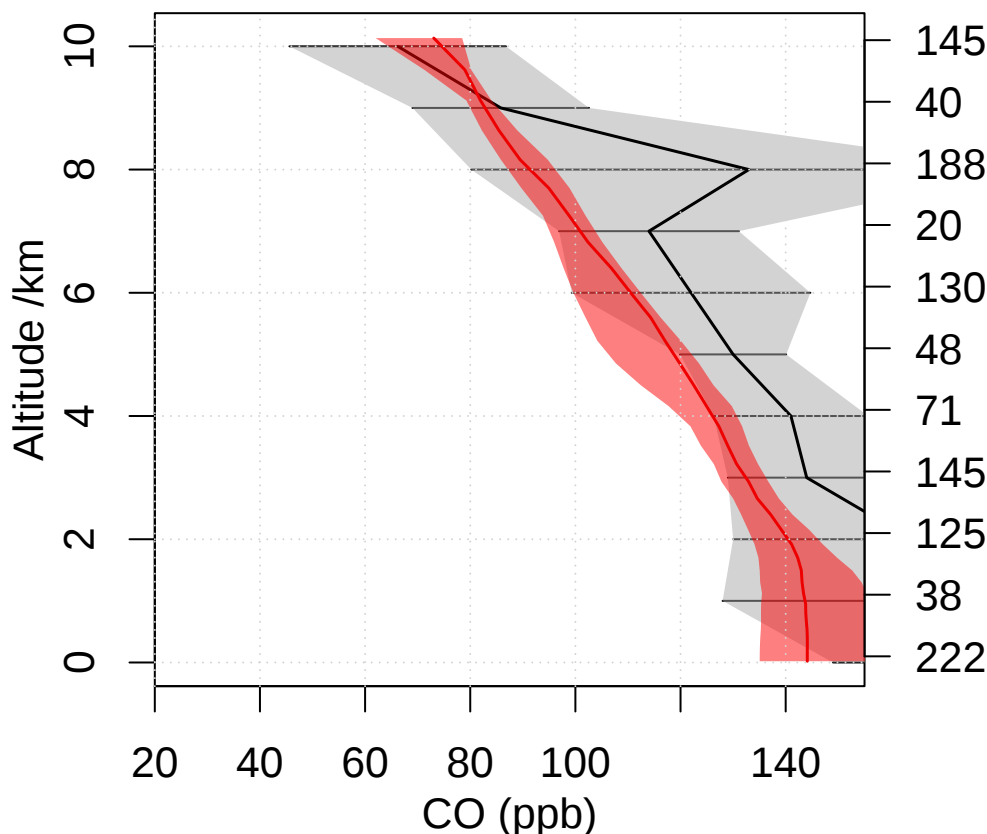
PEM-Tropics-B Christmas-Island 1999 07
Lat 0 – 10 Lon 200 – 220



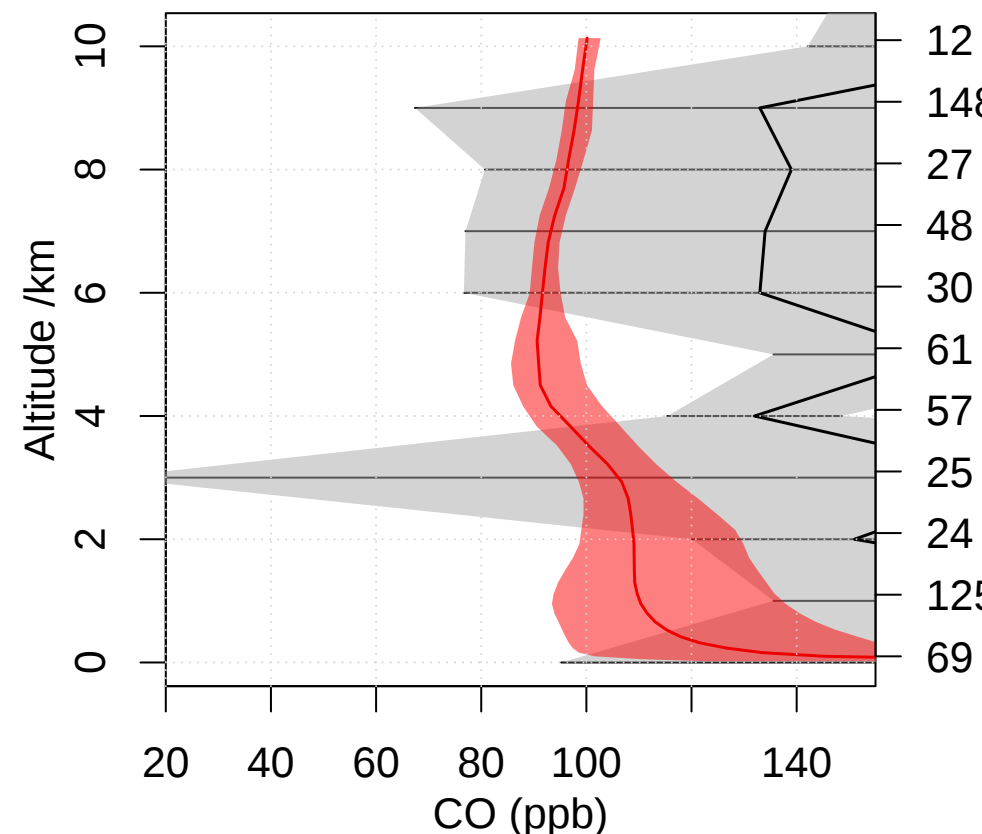
PEM-Tropics-B Tahiti 1999 03
Lat -20 – 0 Lon 200 – 230



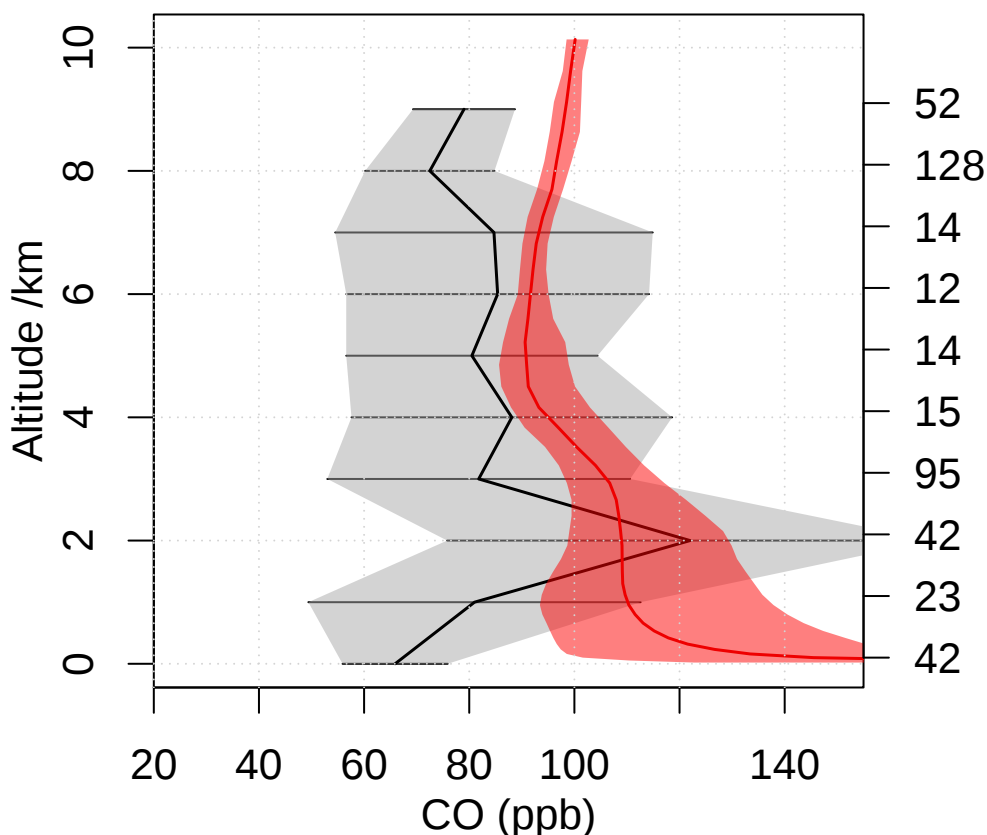
PEM-West-B Japan 1994 02
Lat 25 – 40 Lon 135 – 150



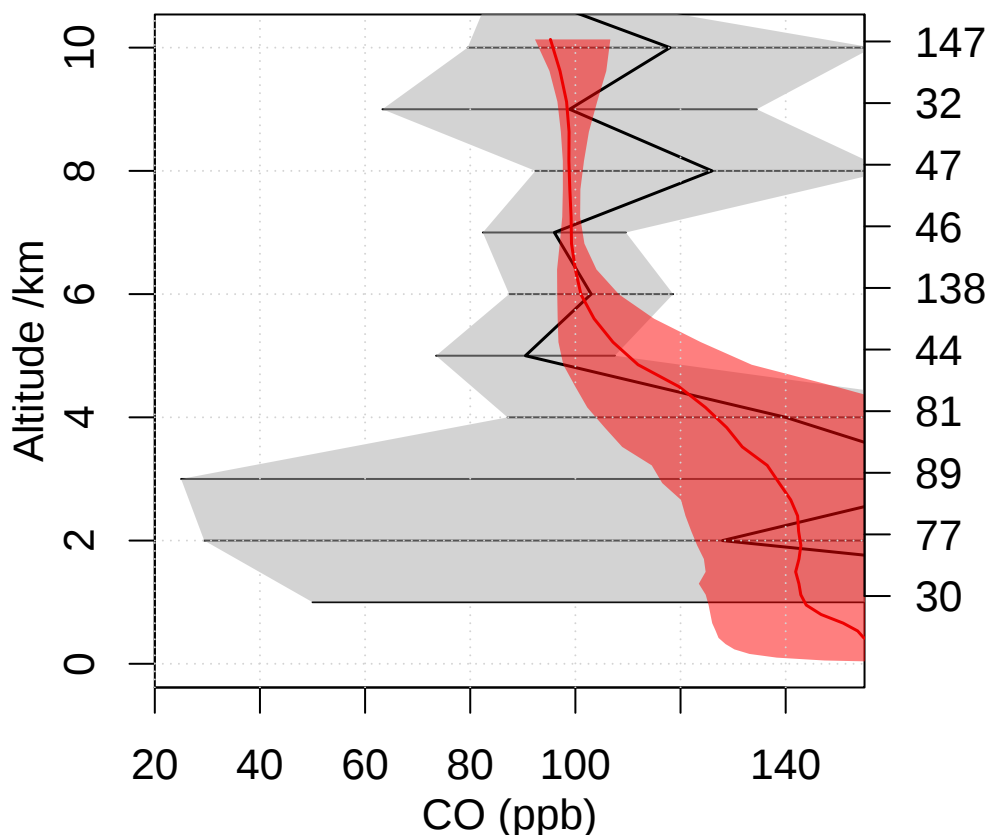
TRACE-A E-Brazil 1992 09
Lat -15 – -5 Lon 310 – 320



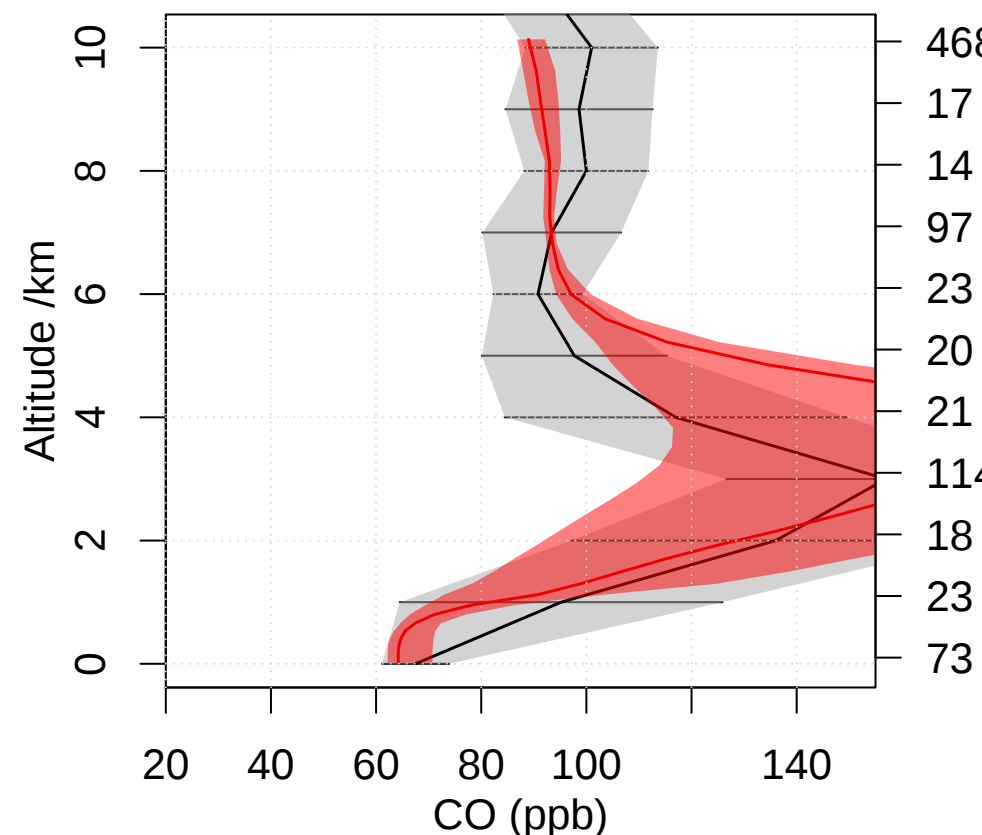
TRACE-A E-Brazil Coast 1992 09
Lat -35 – -25 Lon 310 – 320



TRACE-A S-Africa 1992 09
Lat -25 – -5 Lon 15 – 35



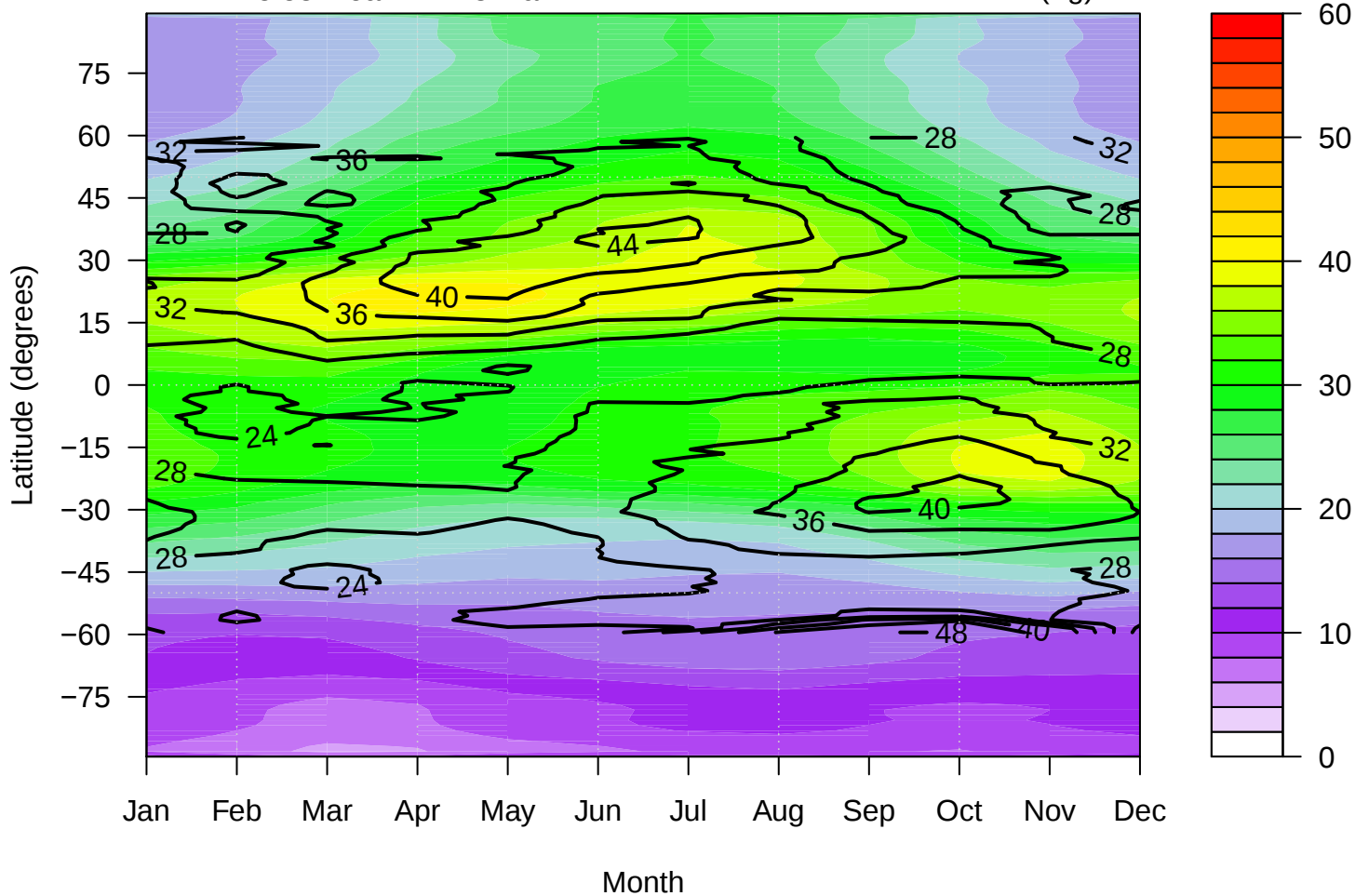
TRACE-A W-Africa Coast 1992 09
Lat -25 – -5 Lon 0 – 10



ay770 tropospheric O₃ column

Min = 5.58 Mean = 24.3 Max = 41

Burden (Tg) = 303



ay770 Tilmes ozone sonde comparison

