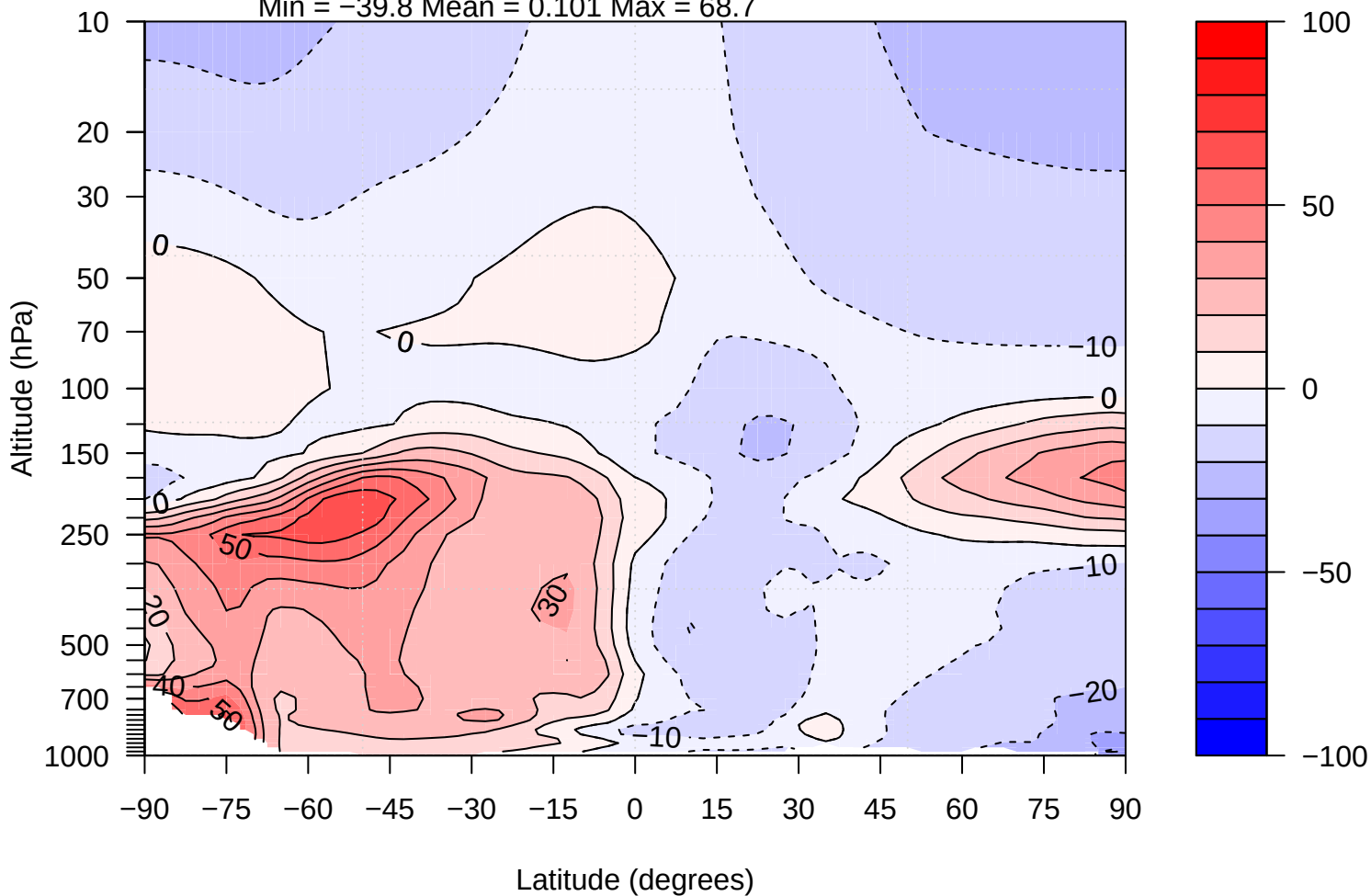
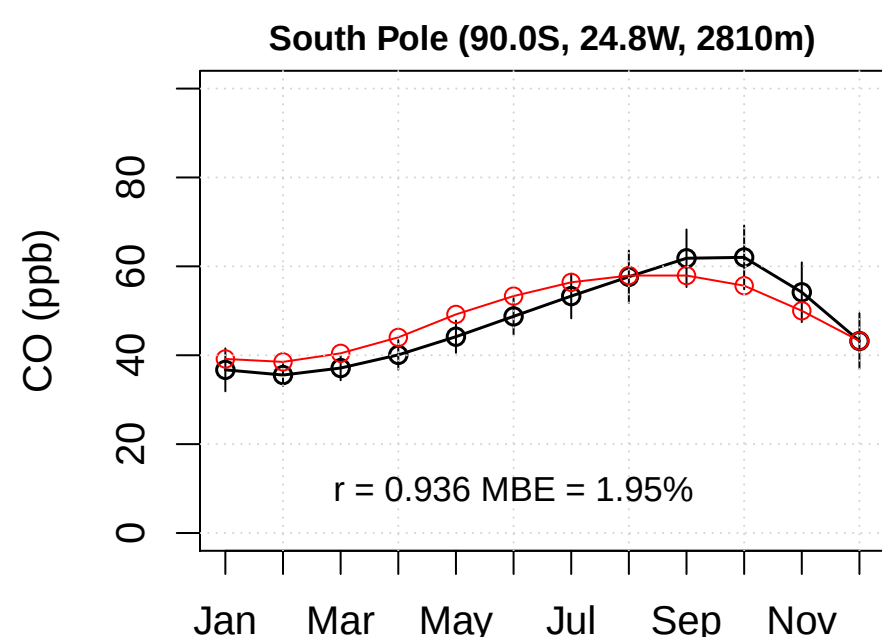
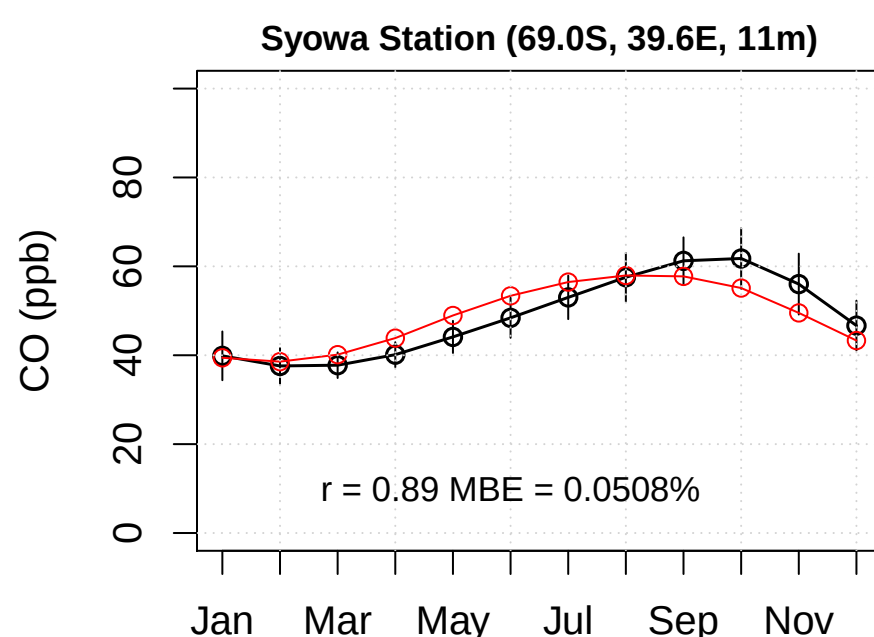
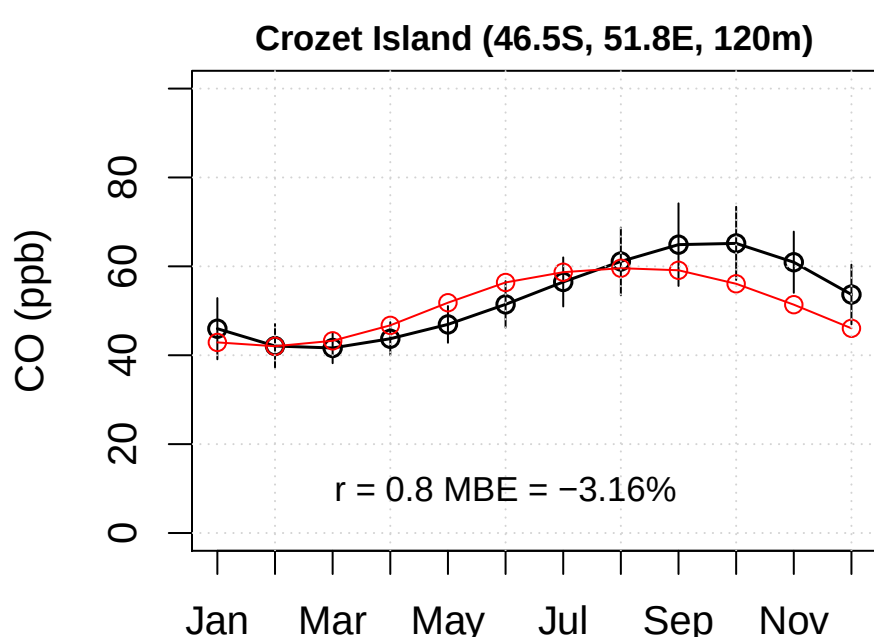
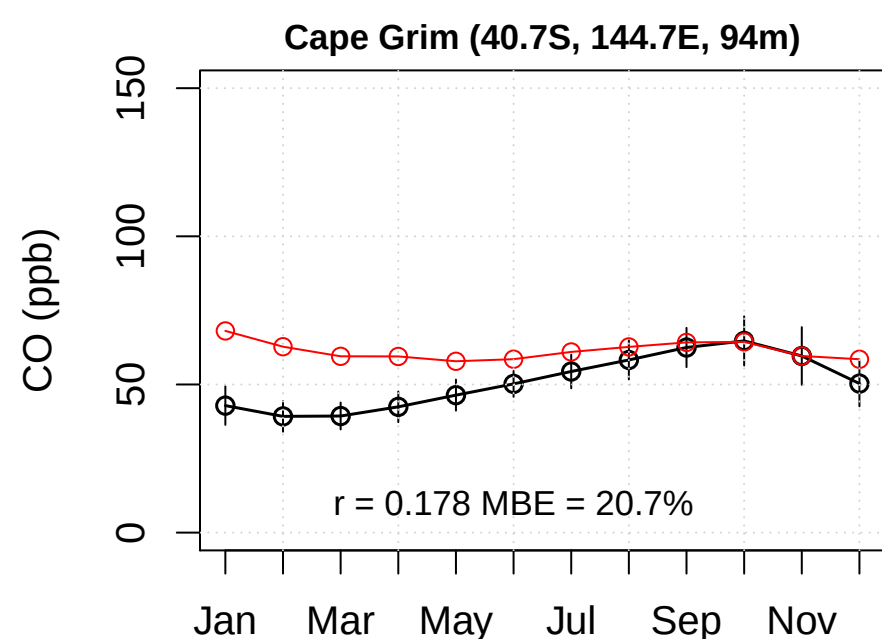
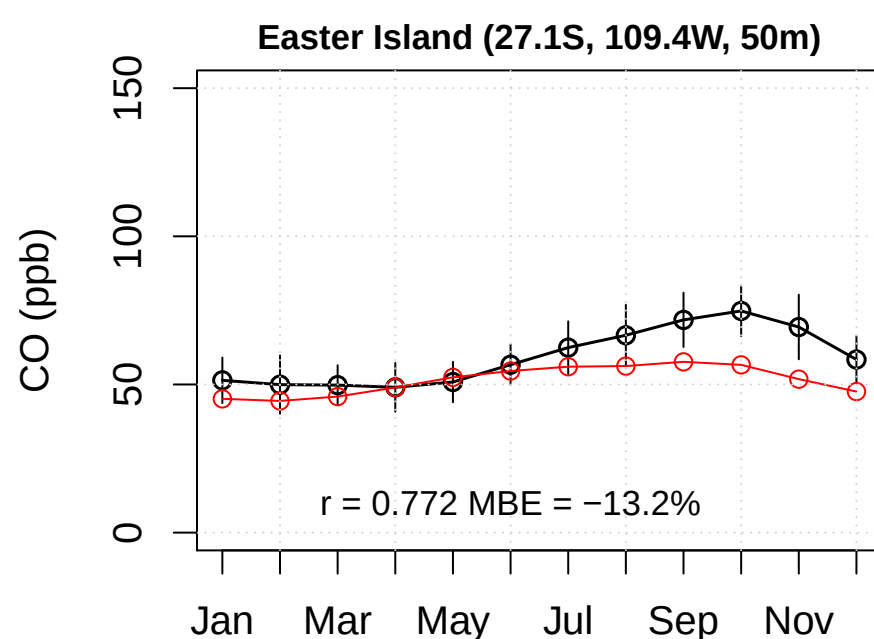
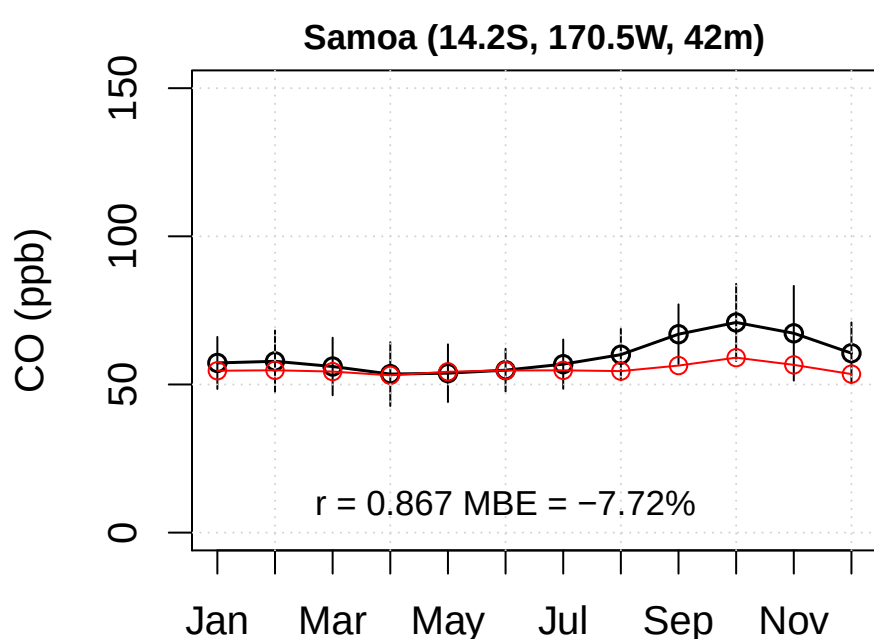
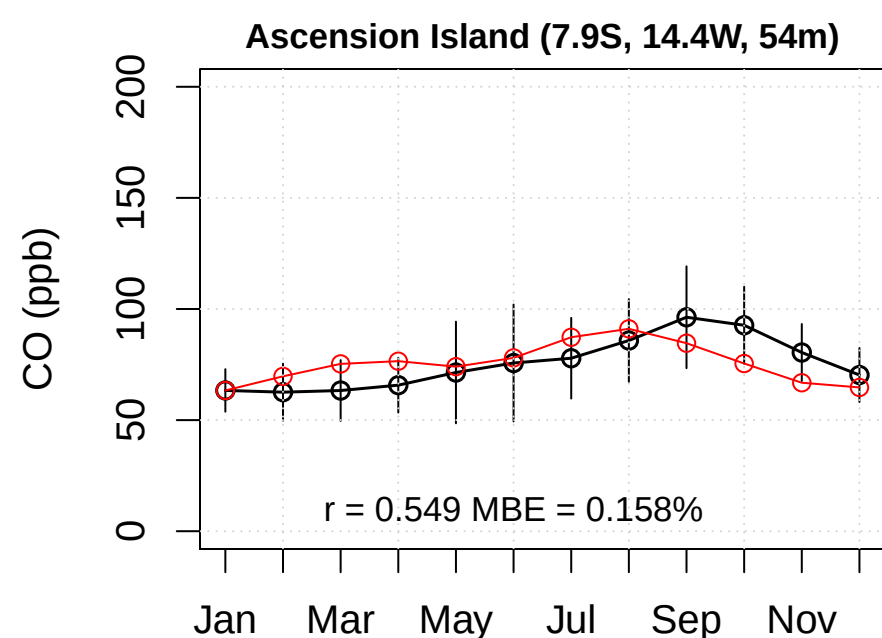
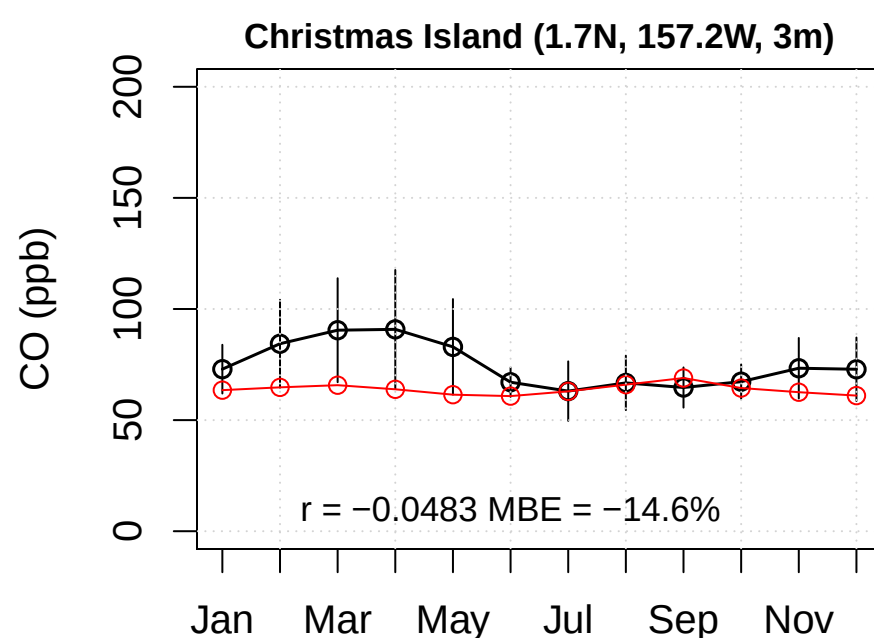
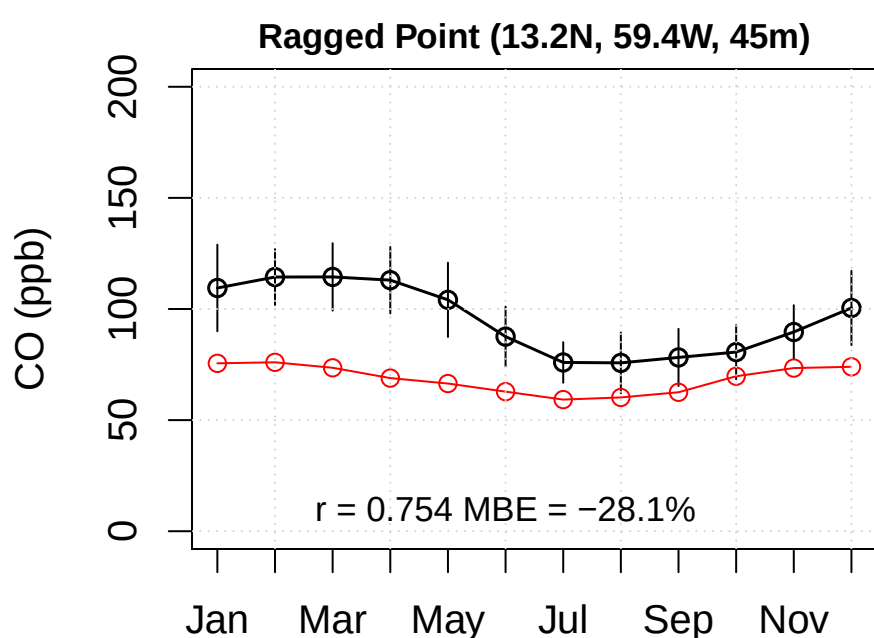
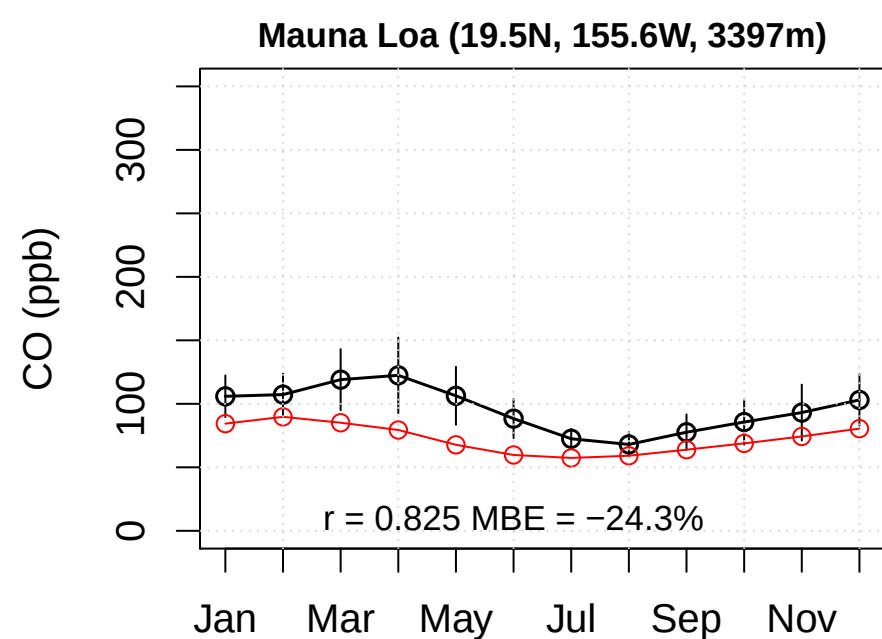
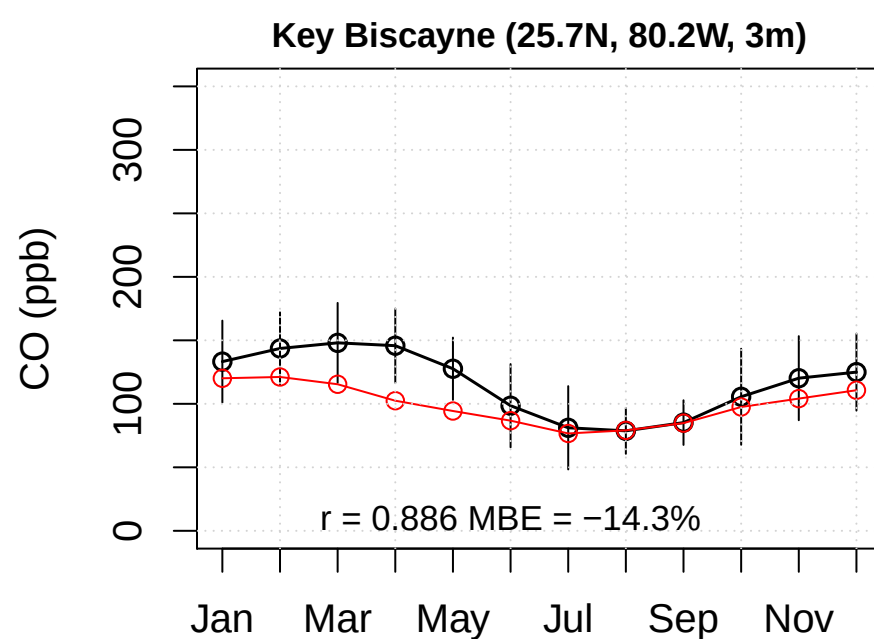
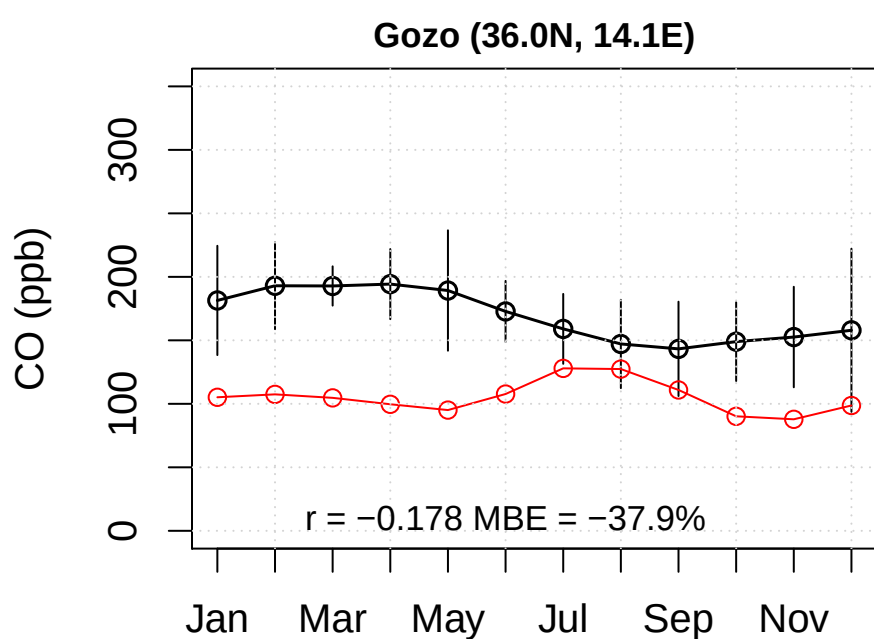
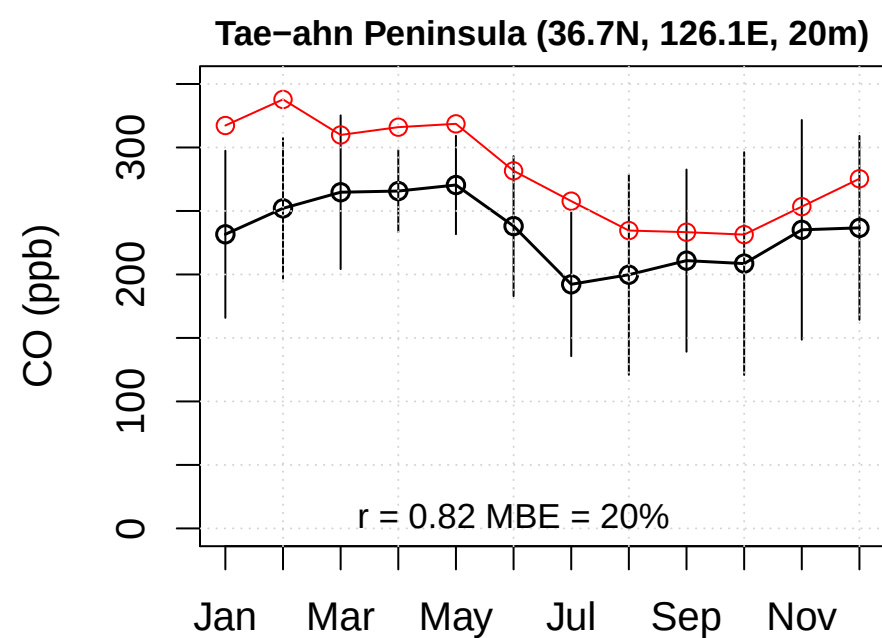
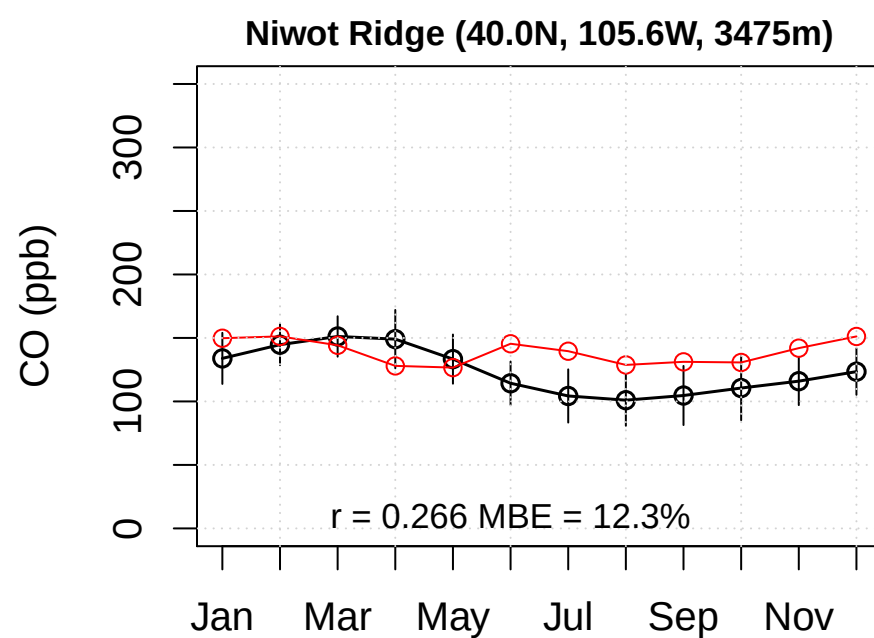
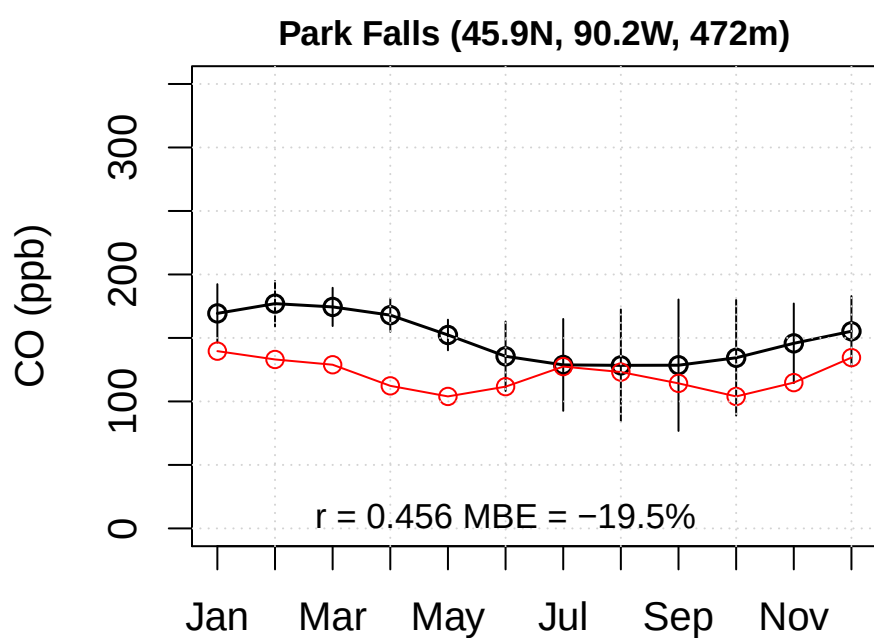
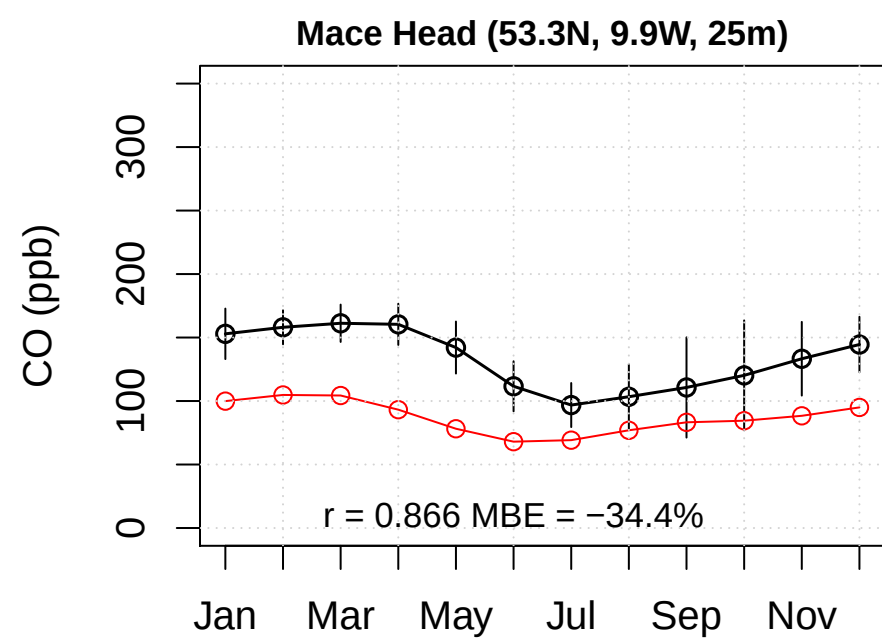
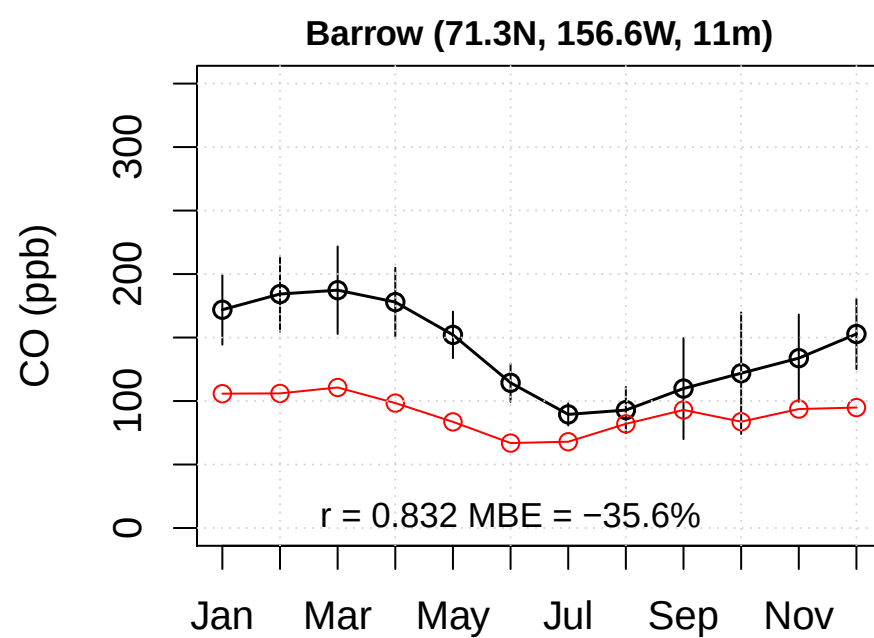
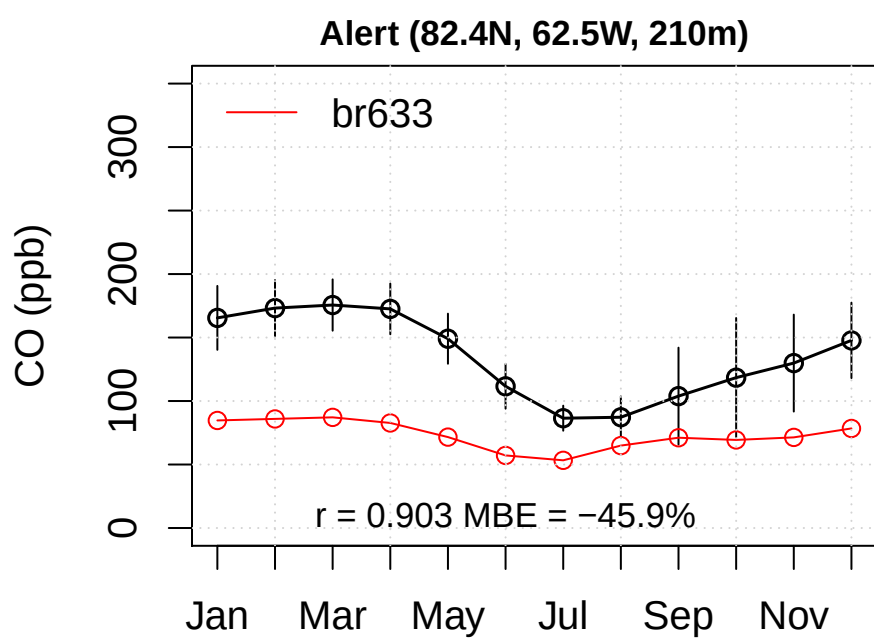


br633 – ERA Q bias

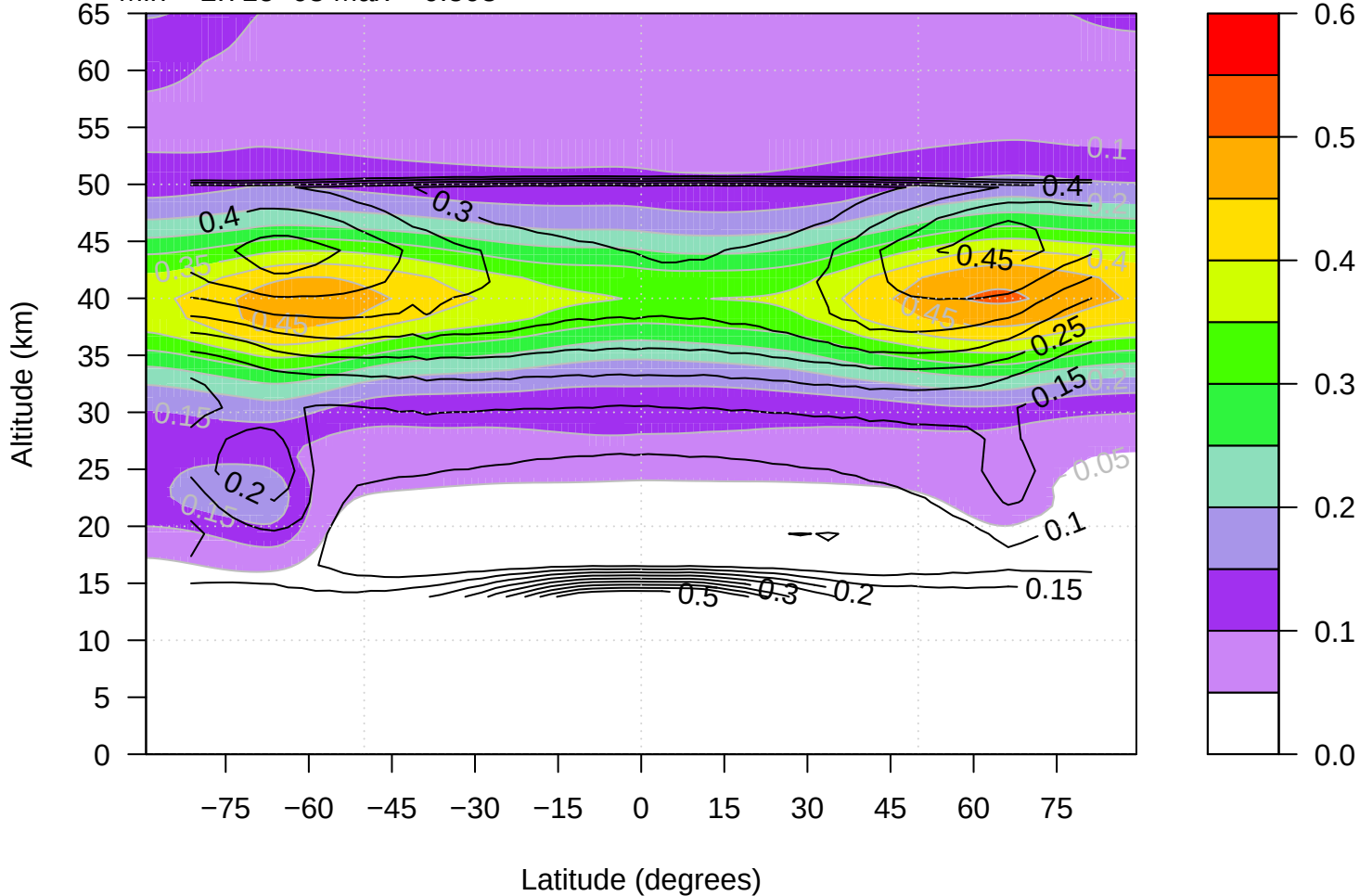
Min = -39.8 Mean = 0.101 Max = 68.7



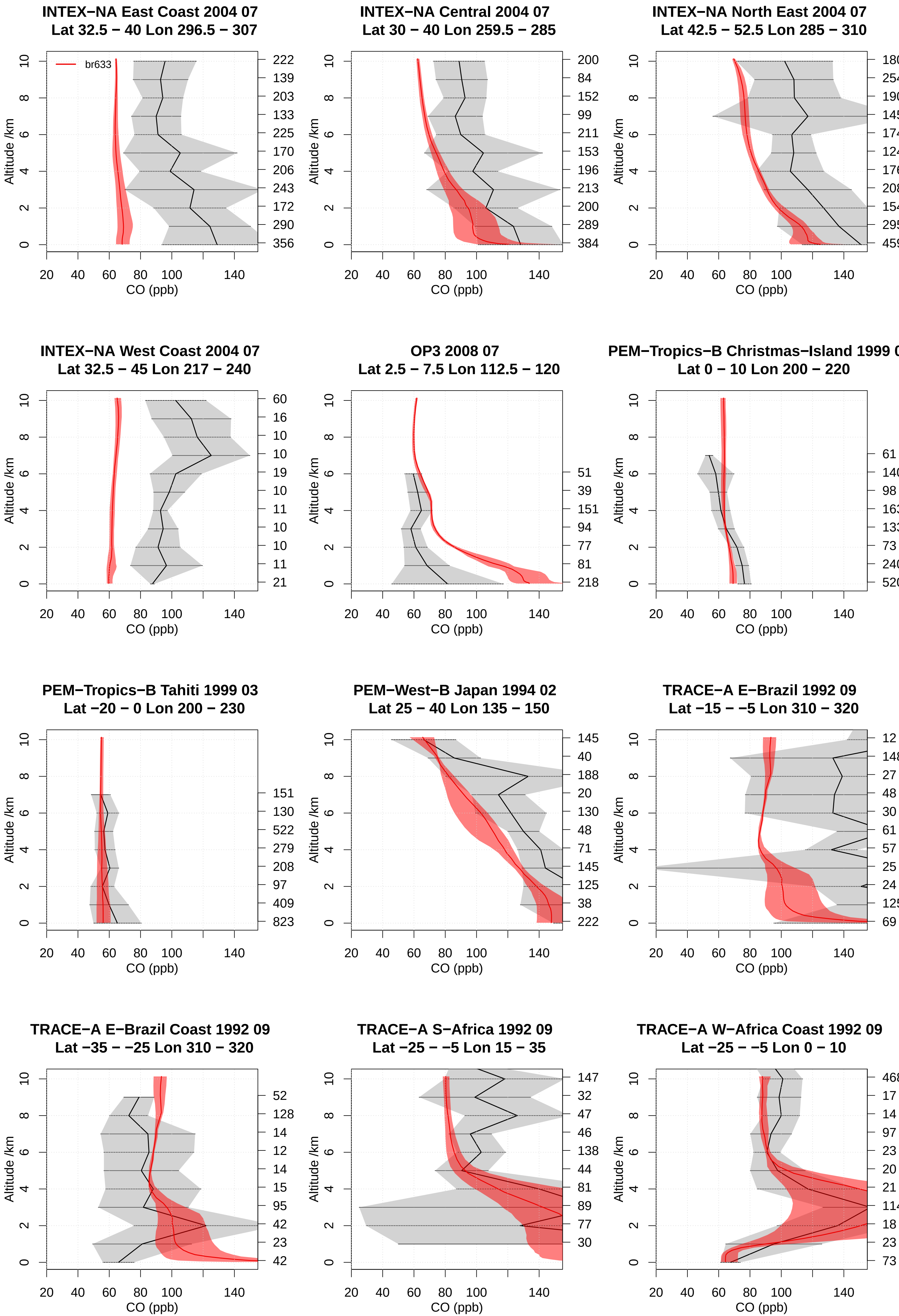


MLS – UKCA br633 ClO comparison

Min = 2.71e-08 Max = 0.508

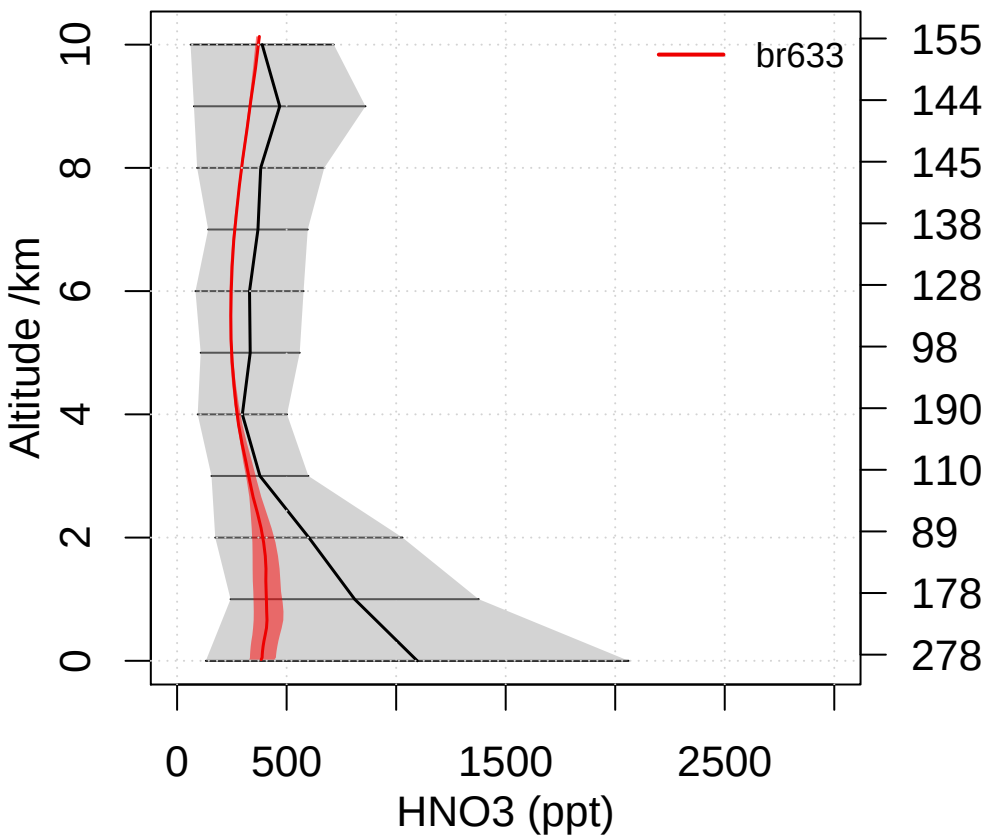


Emmons CO comparison

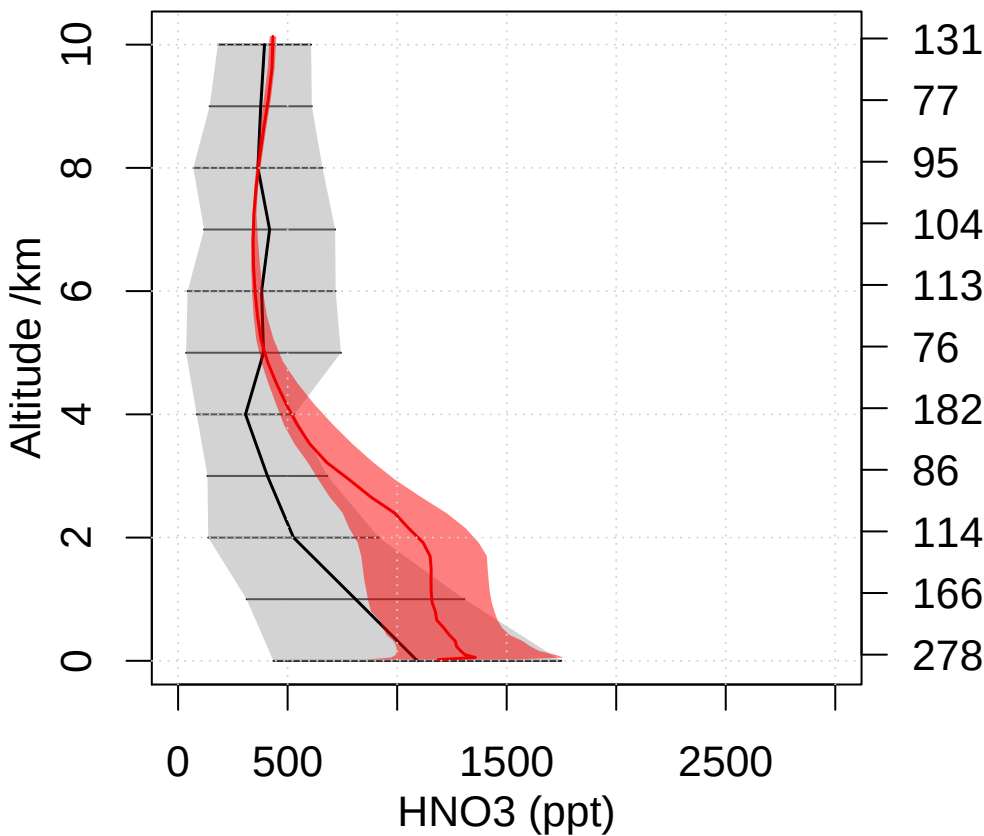


Emmons HNO3 comparison

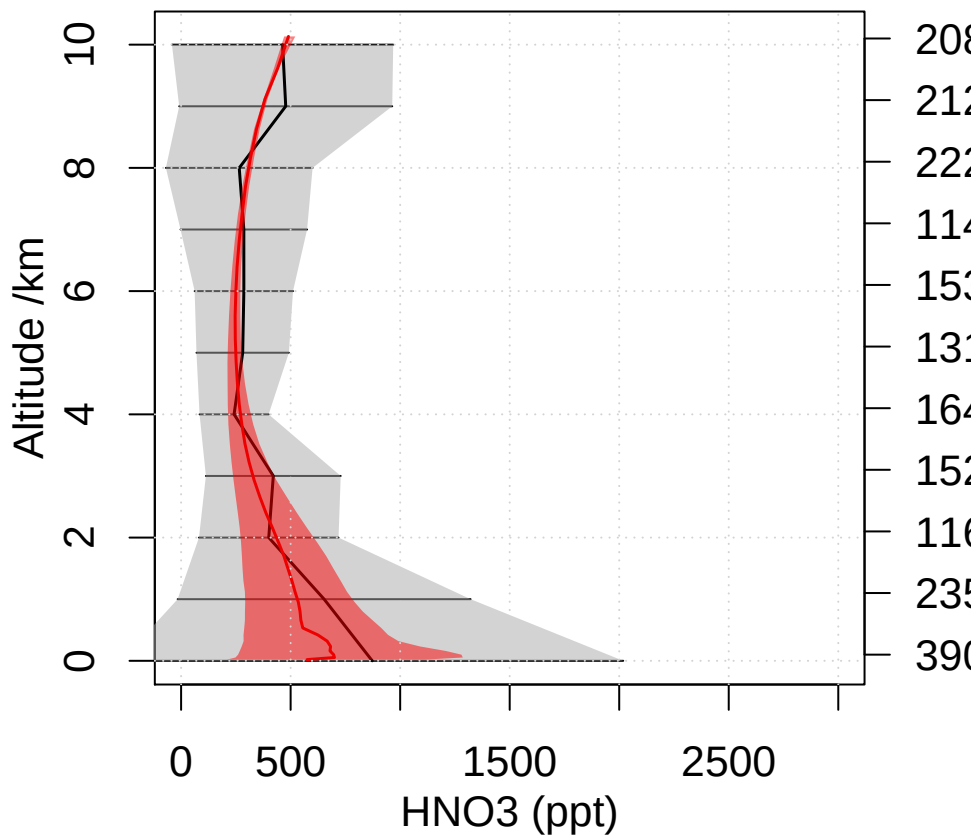
INTEX-NA East Coast 2004 07
Lat 32.5 – 40 Lon 296.5 – 307



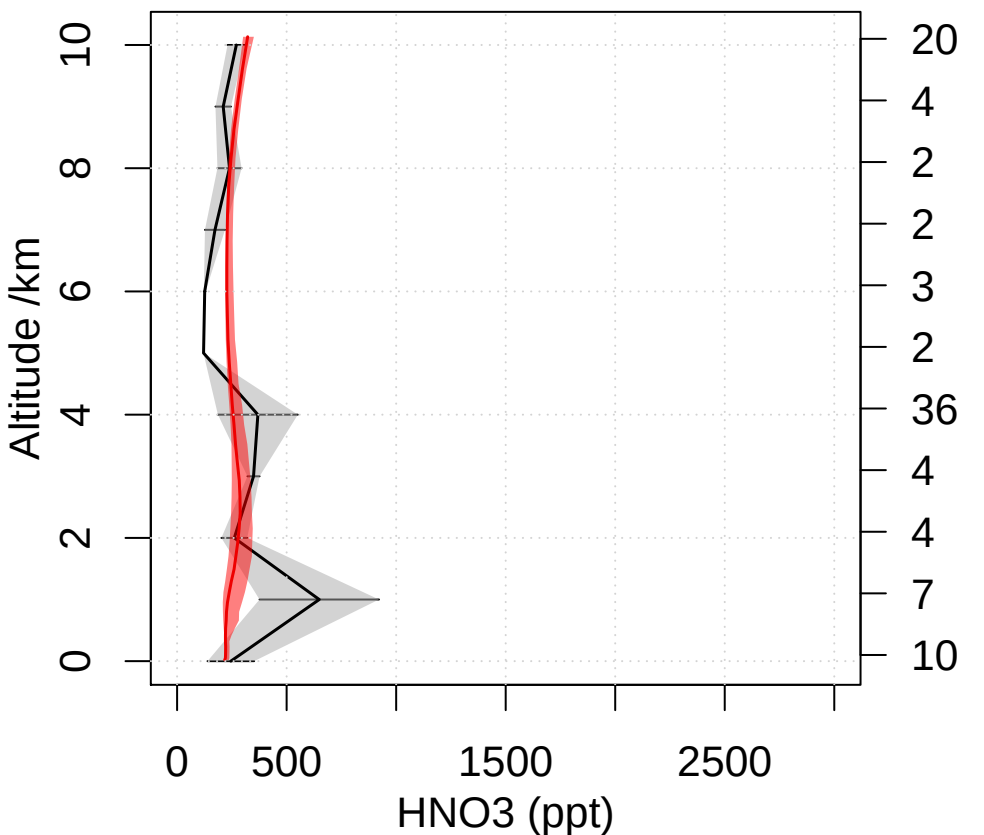
INTEX-NA Central 2004 07
Lat 30 – 40 Lon 259.5 – 285



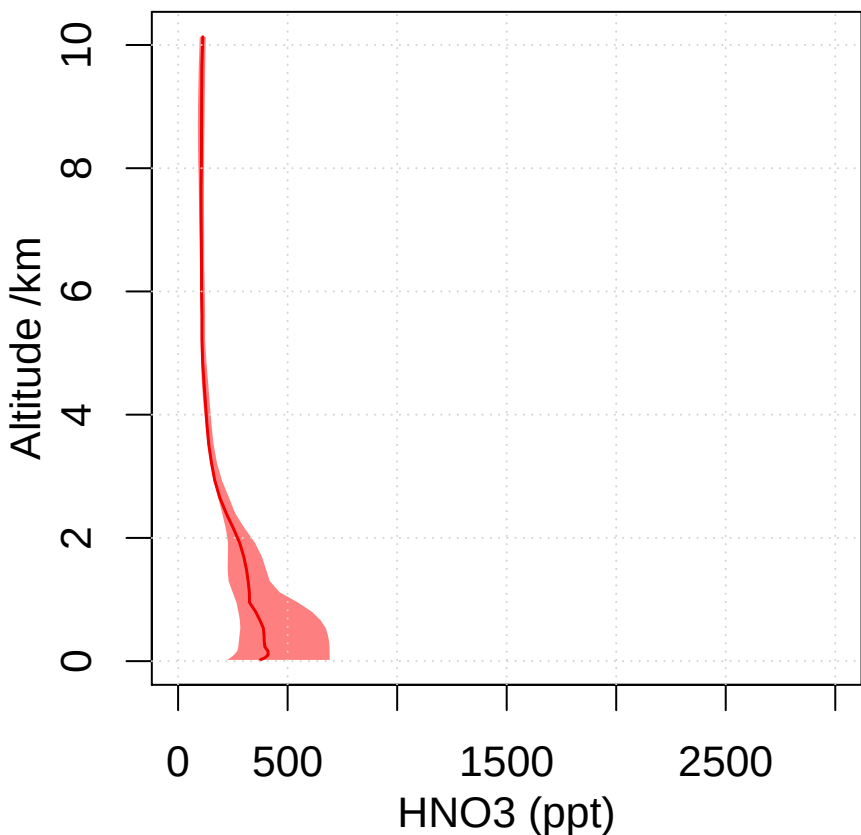
INTEX-NA North East 2004 07
Lat 42.5 – 52.5 Lon 285 – 310



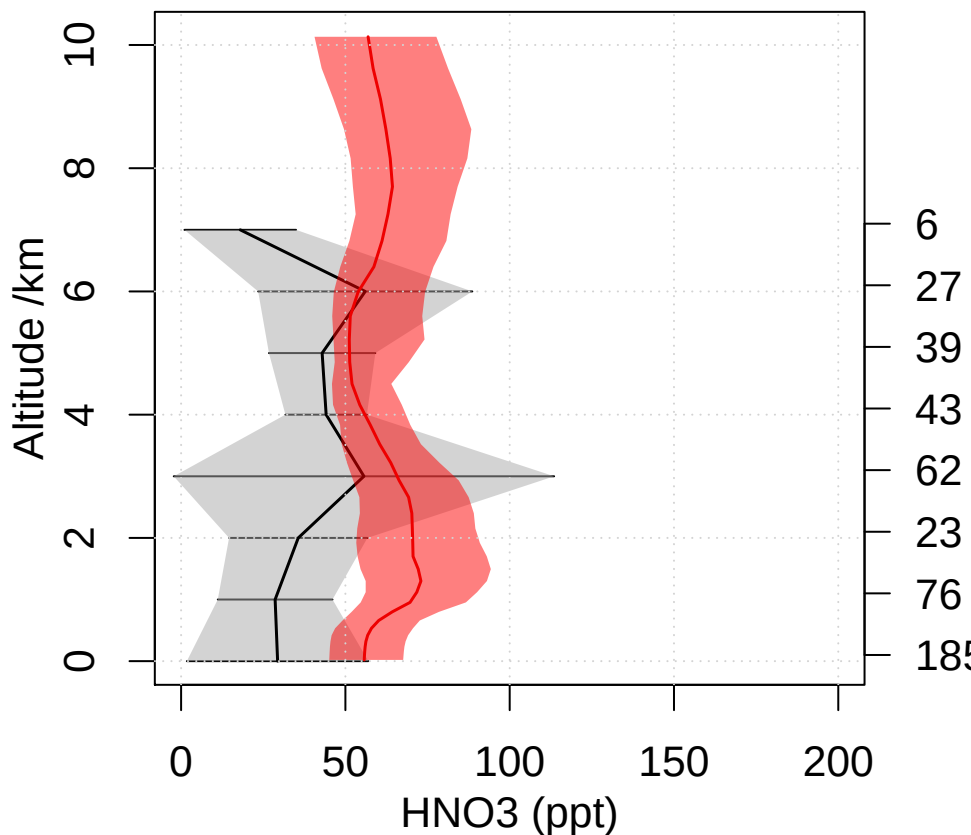
INTEX-NA West Coast 2004 07
Lat 32.5 – 45 Lon 217 – 240



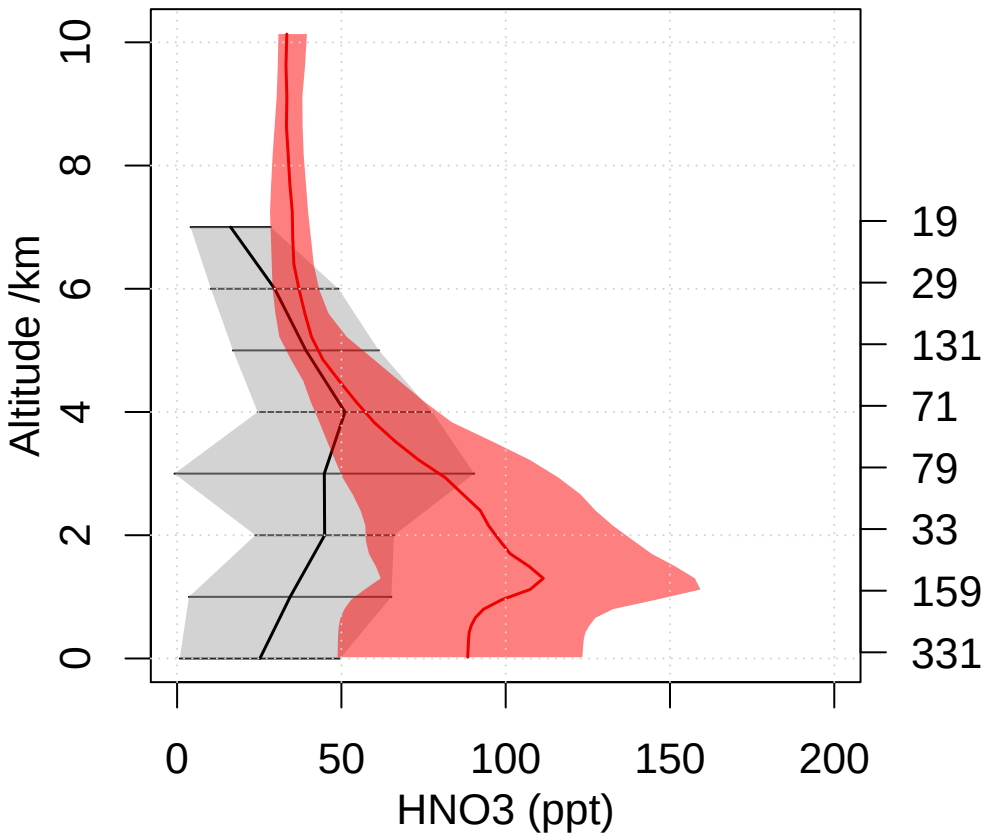
OP3 2008 07
Lat 2.5 – 7.5 Lon 112.5 – 120



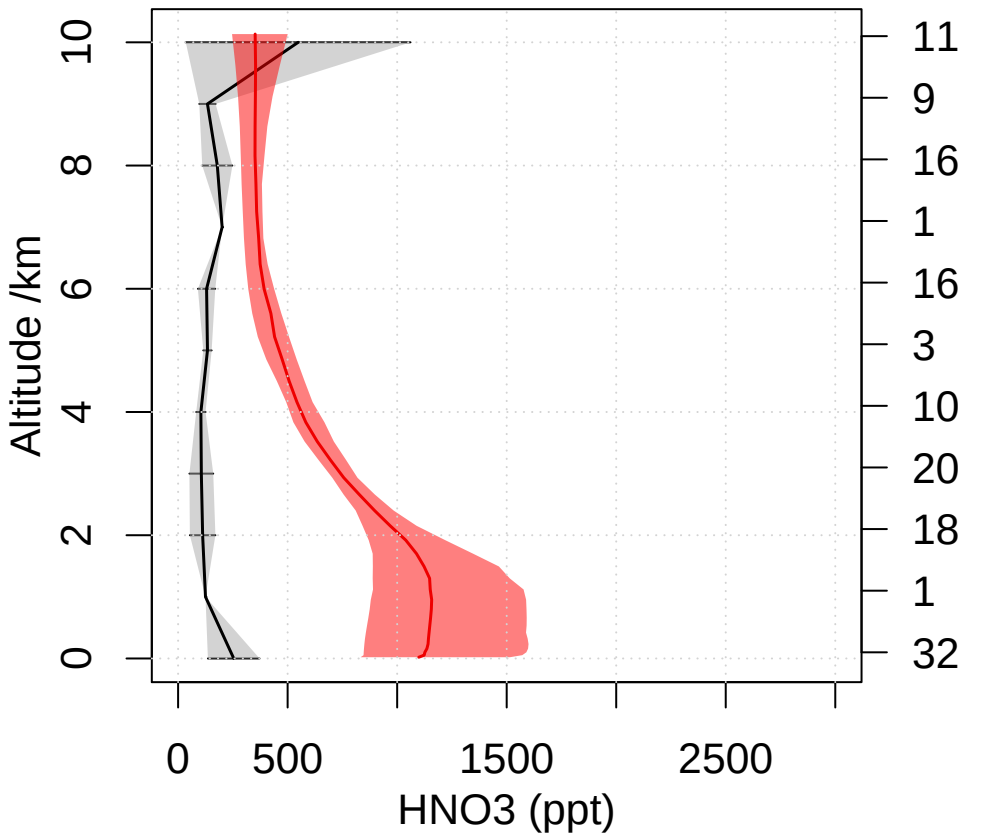
PEM-Tropics-B Christmas-Island 1999 07
Lat 0 – 10 Lon 200 – 220



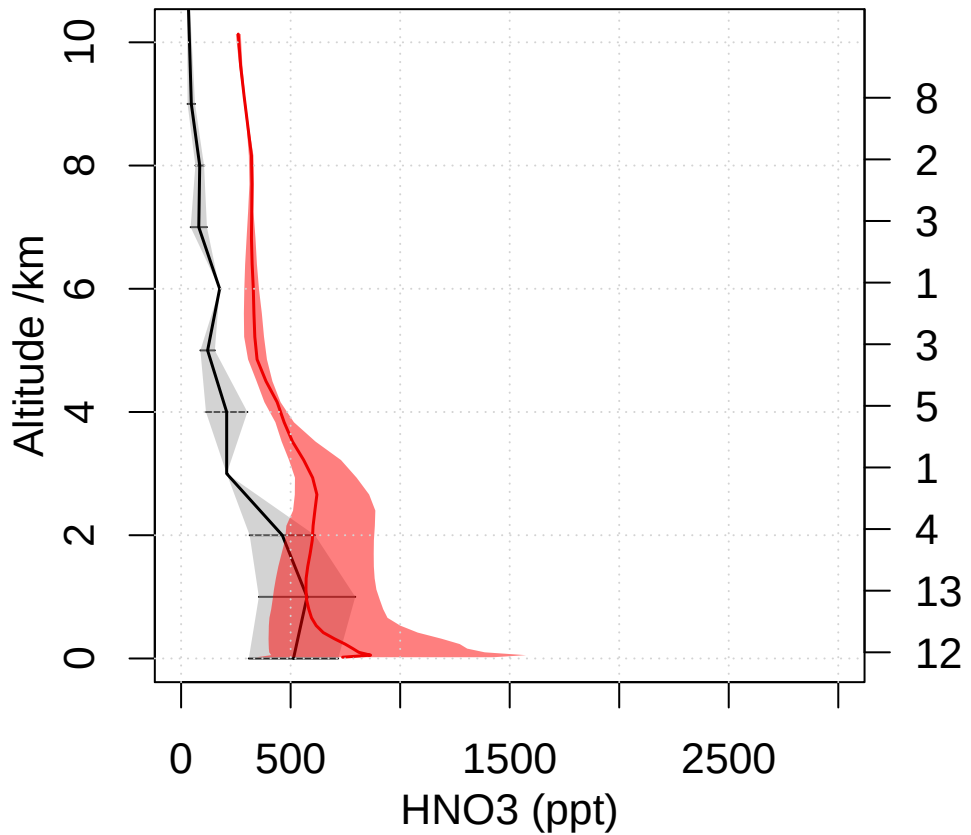
PEM-Tropics-B Tahiti 1999 03
Lat -20 – 0 Lon 200 – 230



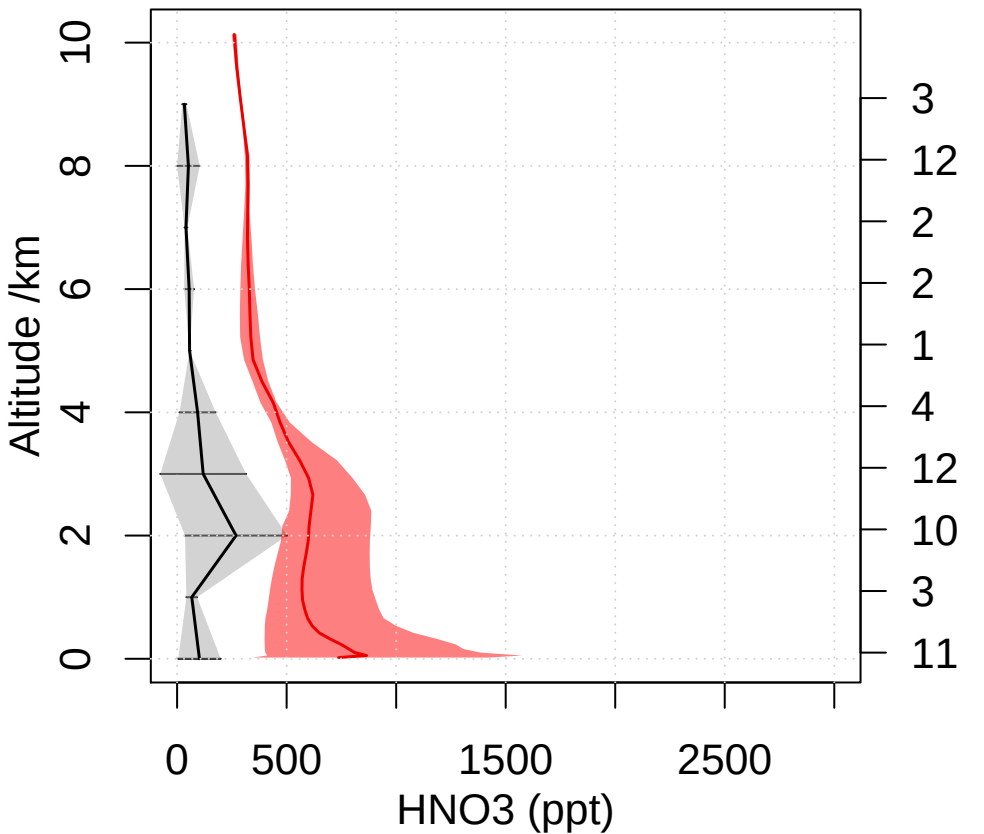
PEM-West-B Japan 1994 02
Lat 25 – 40 Lon 135 – 150



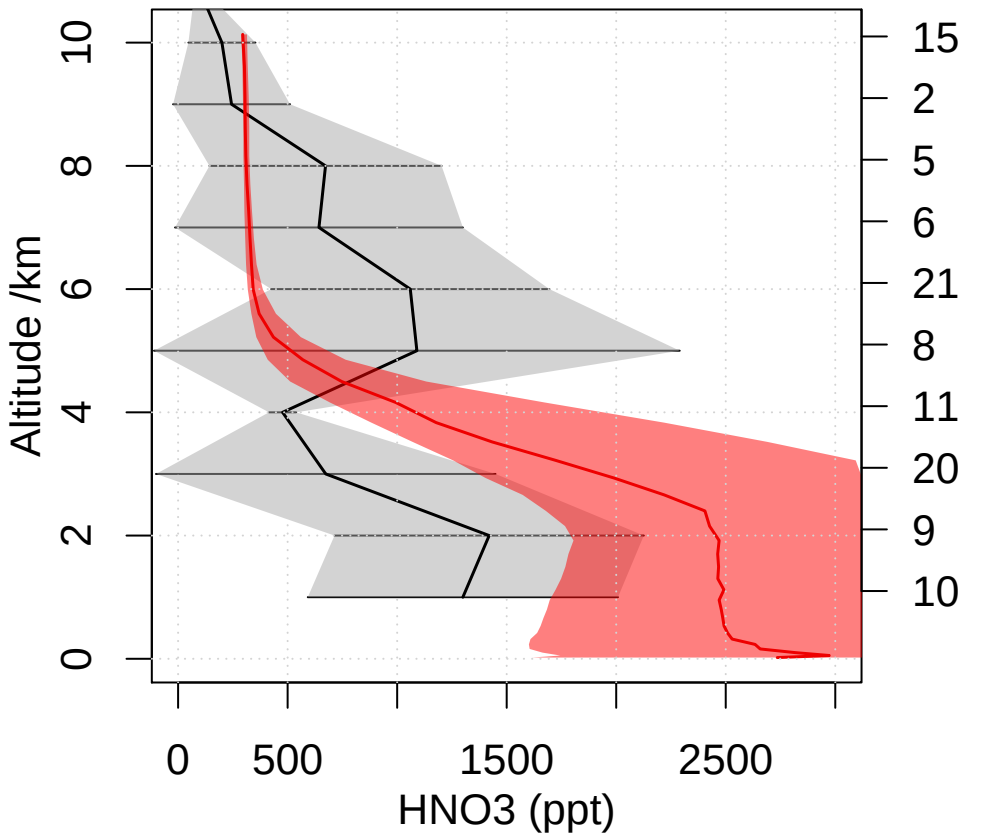
TRACE-A E-Brazil 1992 09
Lat -15 – -5 Lon 310 – 320



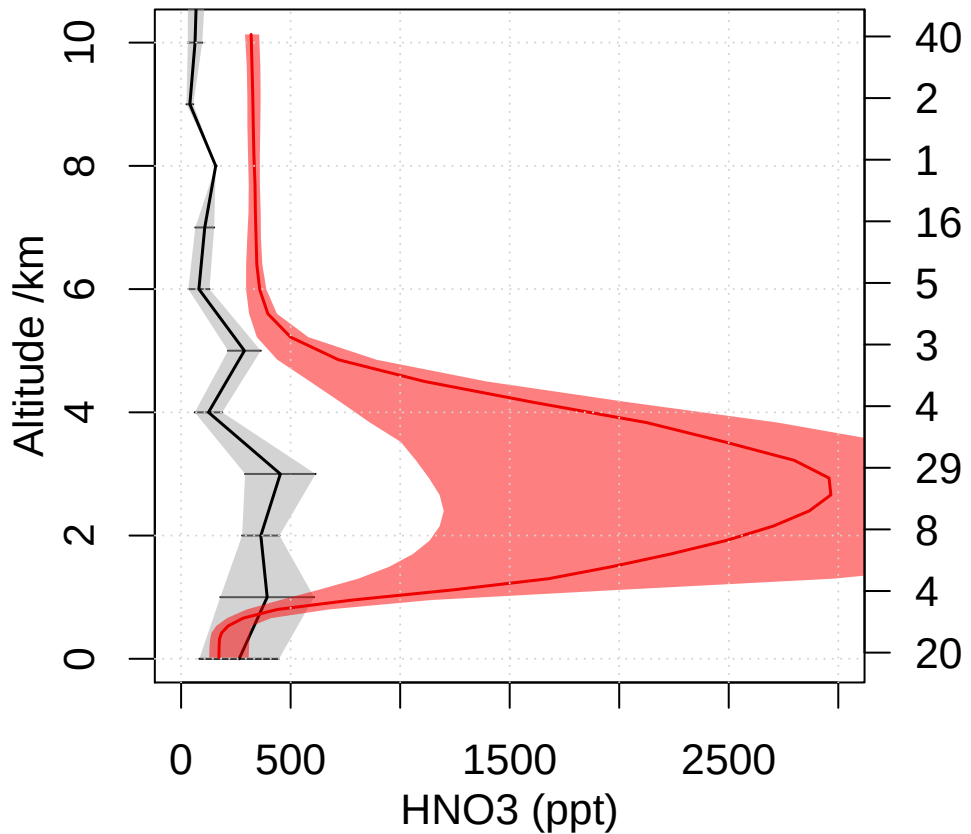
TRACE-A E-Brazil Coast 1992 09
Lat -35 – -25 Lon 310 – 320



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

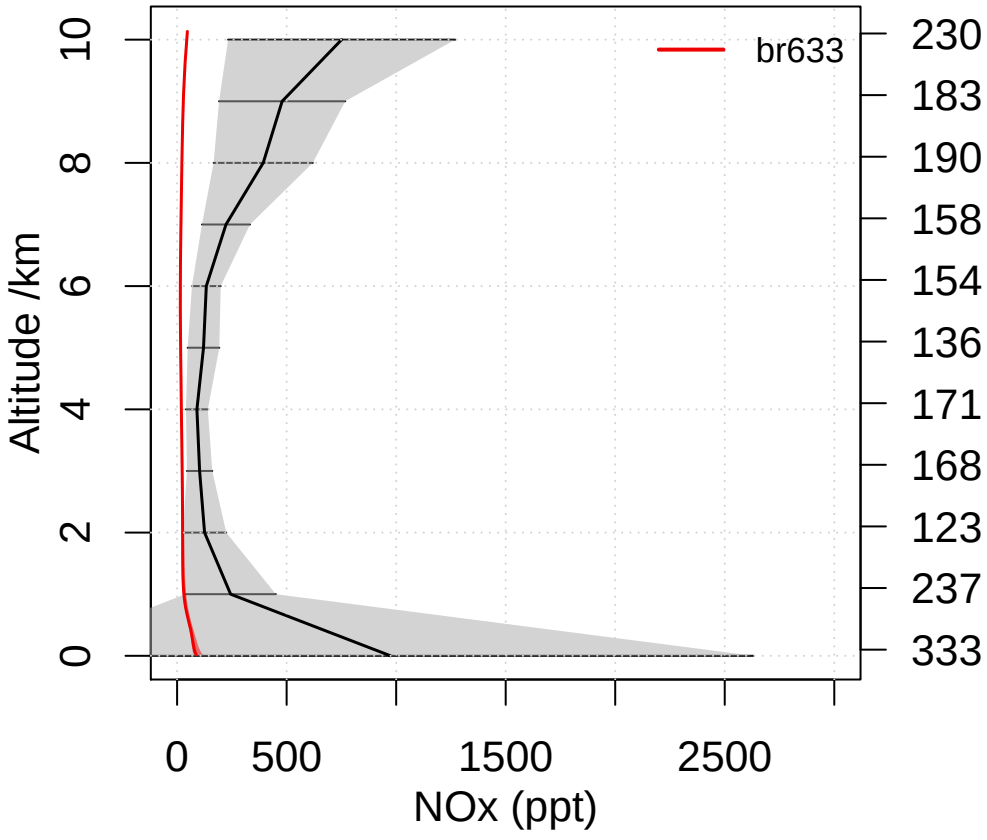


TRACE-A W-Africa Coast 1992 09
Lat -25 – -5 Lon 0 – 10

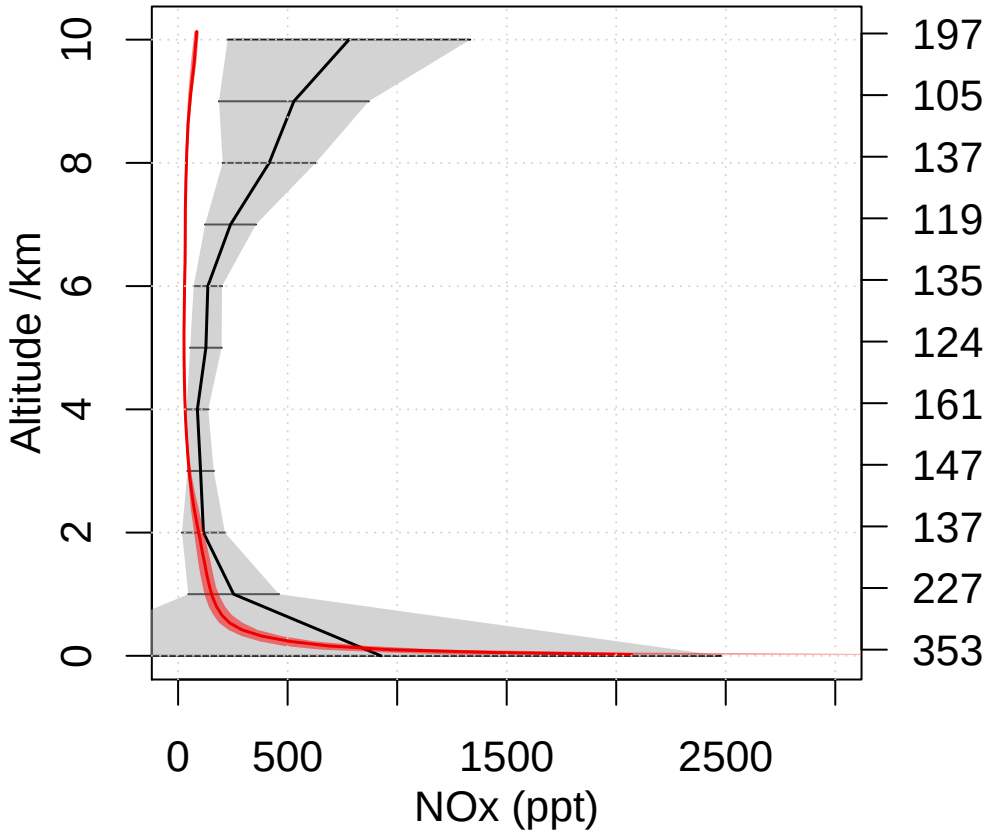


Emmons NOx comparison

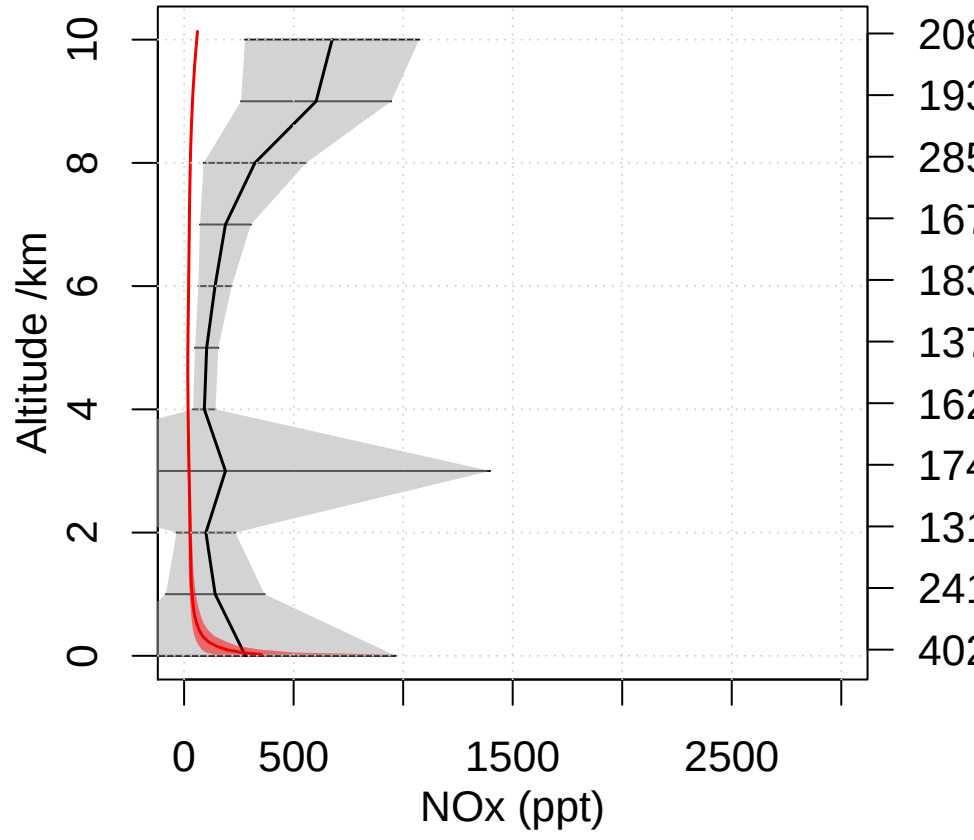
INTEX-NA East Coast 2004 07
Lat 32.5 – 40 Lon 296.5 – 307



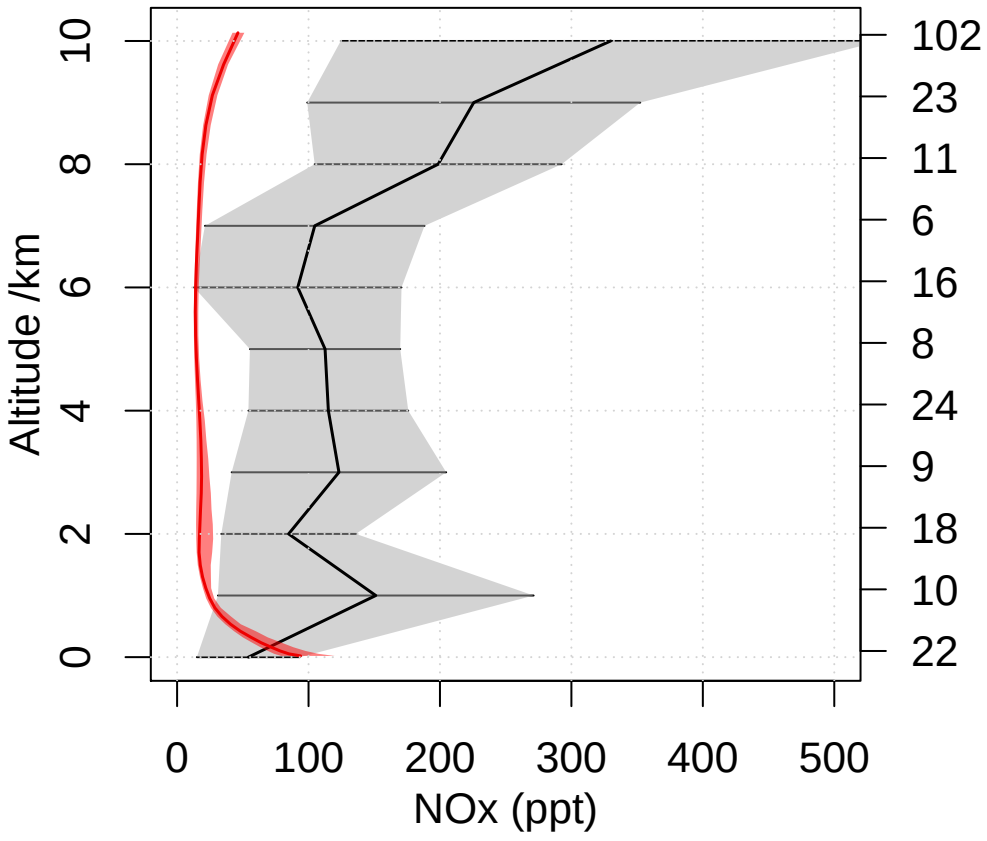
INTEX-NA Central 2004 07
Lat 30 – 40 Lon 259.5 – 285



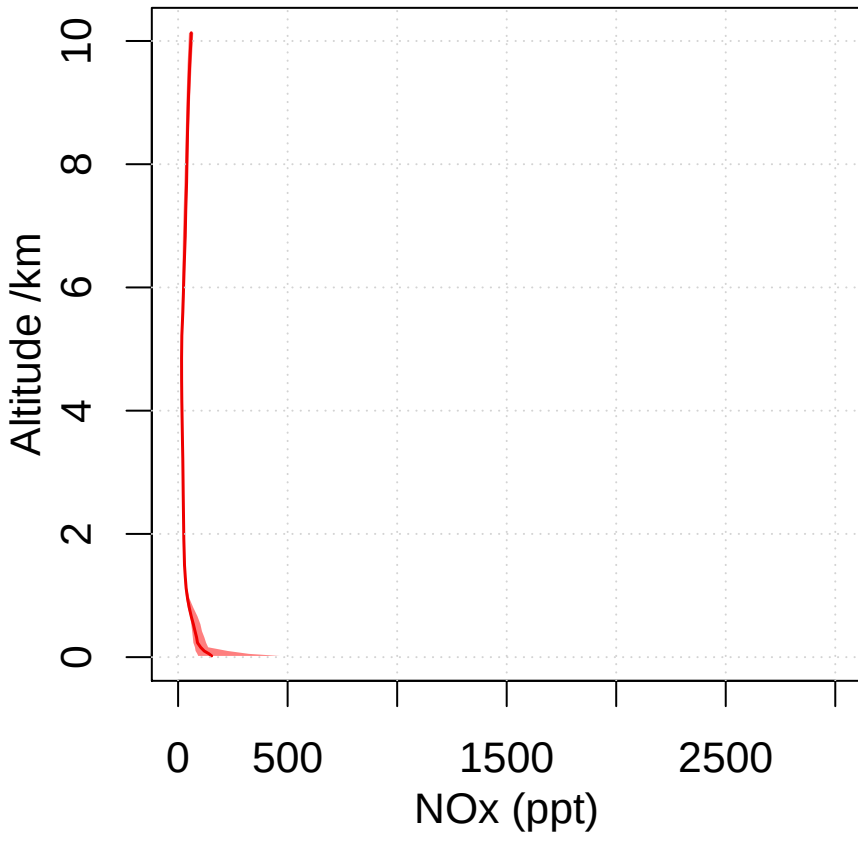
INTEX-NA North East 2004 07
Lat 42.5 – 52.5 Lon 285 – 310



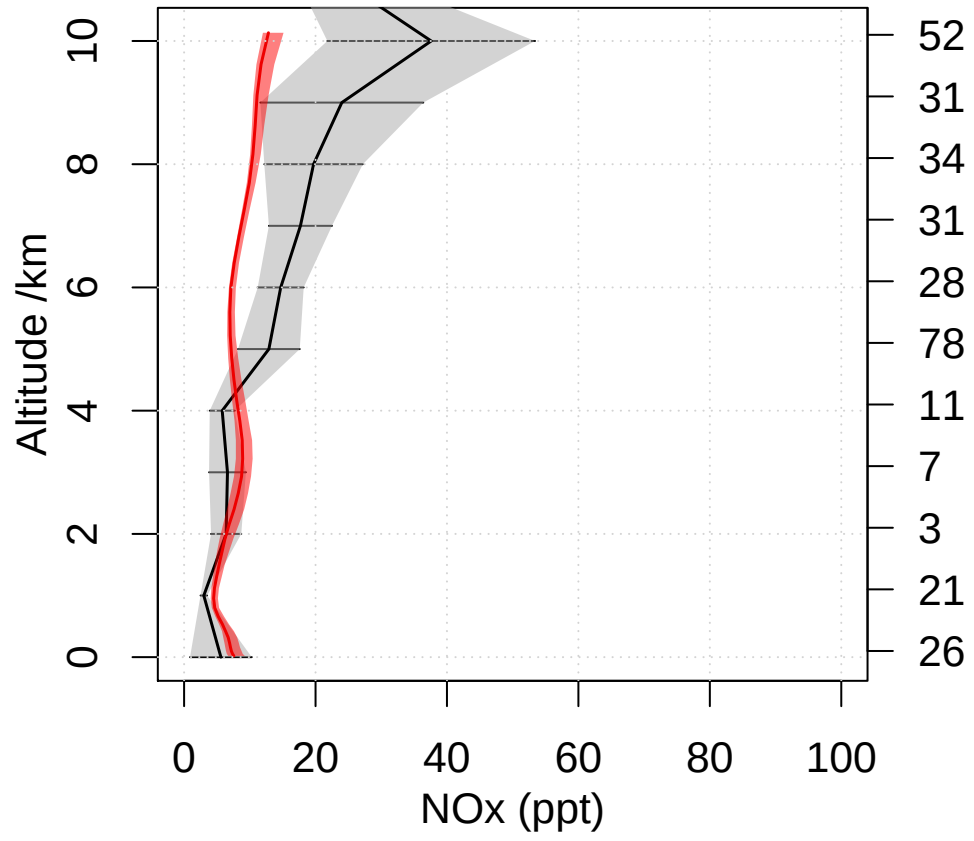
INTEX-NA West Coast 2004 07
Lat 32.5 – 45 Lon 217 – 240



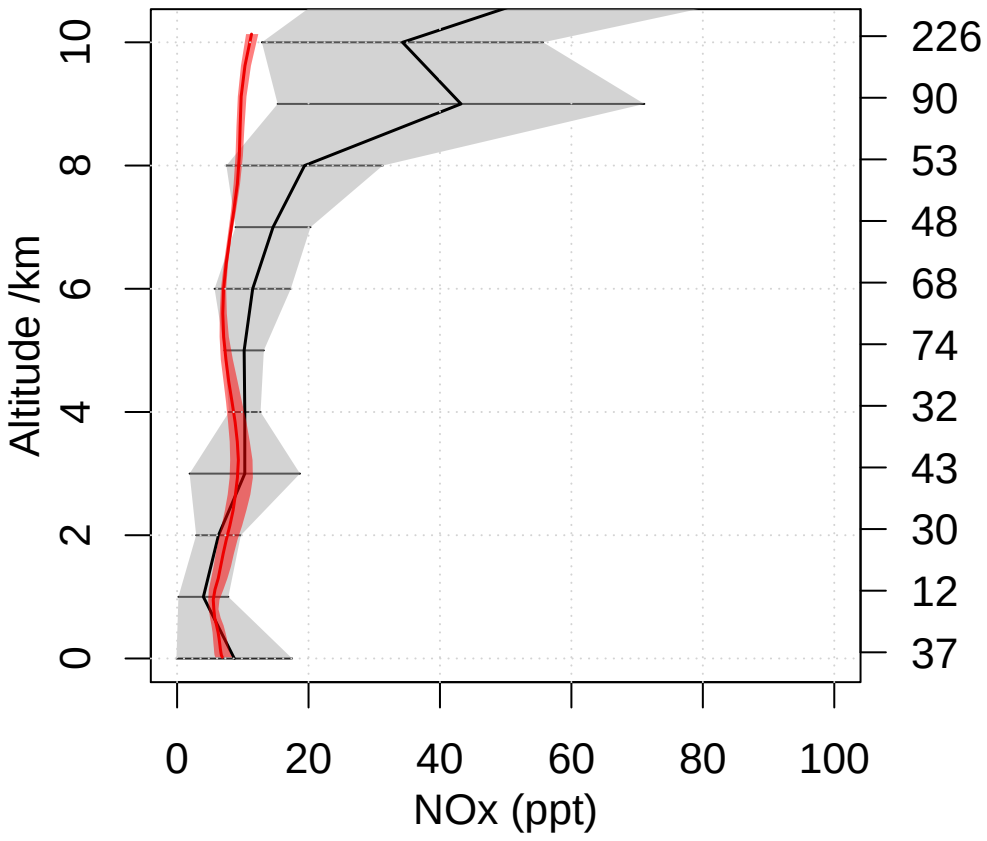
OP3 2008 07
Lat 2.5 – 7.5 Lon 112.5 – 120



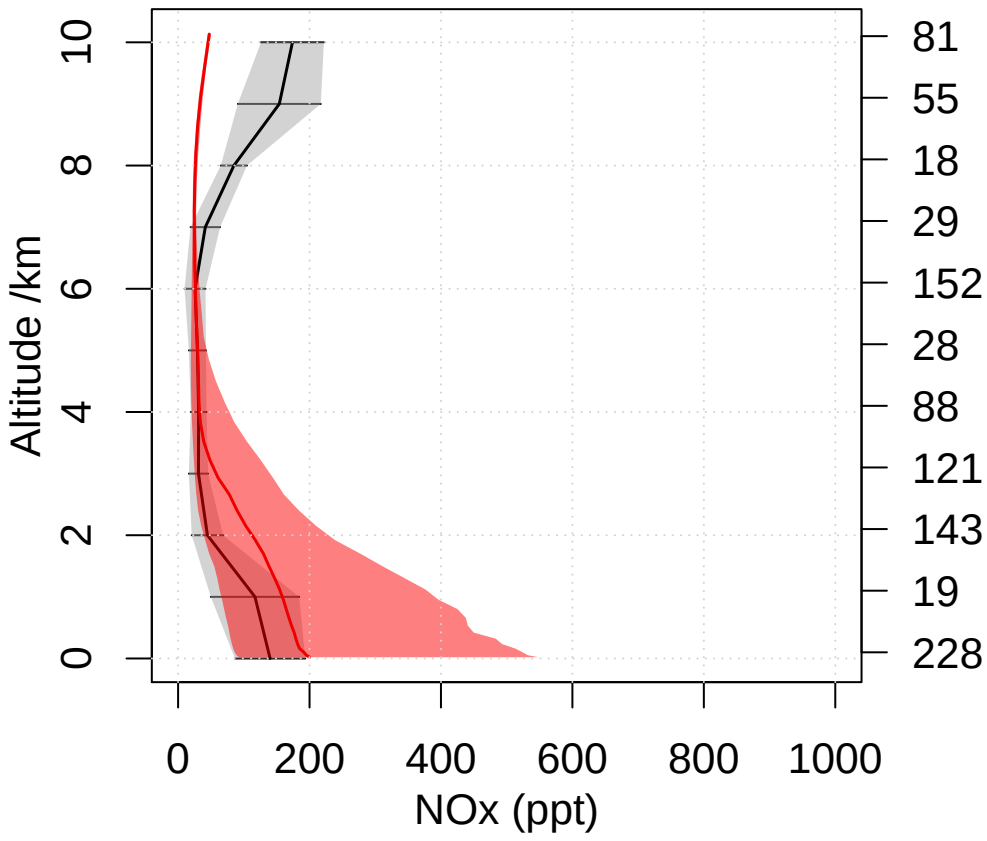
PEM-Tropics-B Christmas-Island 1999 07
Lat 0 – 10 Lon 200 – 220



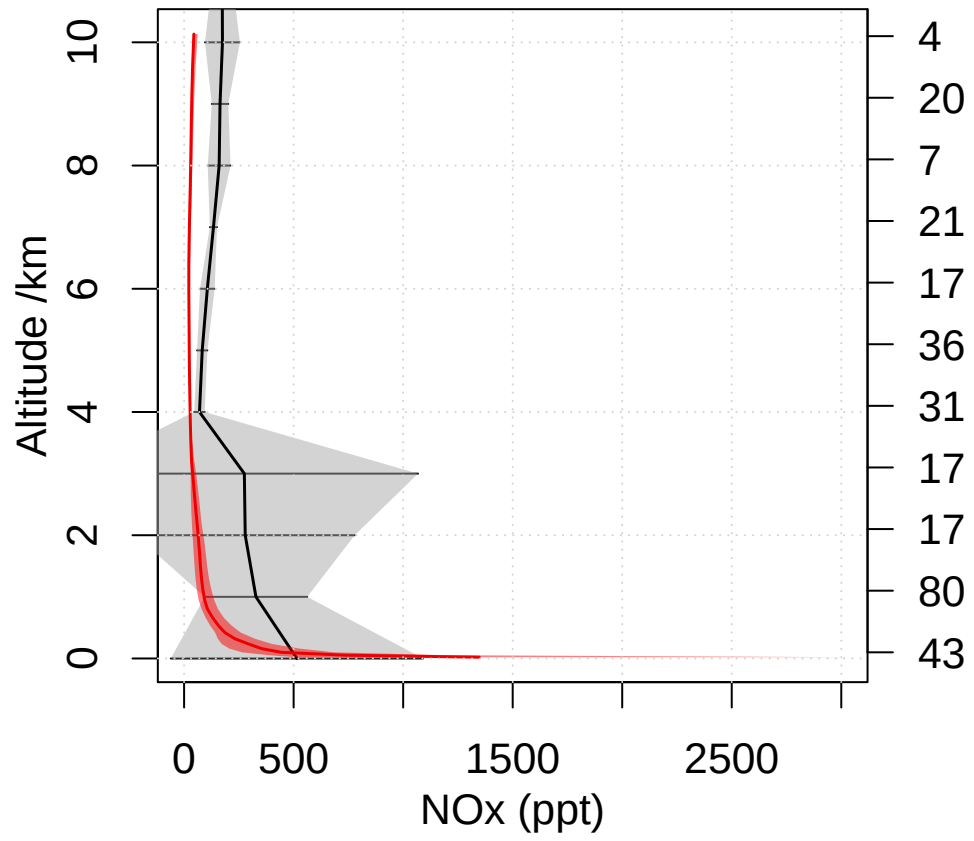
PEM-Tropics-B Tahiti 1999 03
Lat -20 – 0 Lon 200 – 230



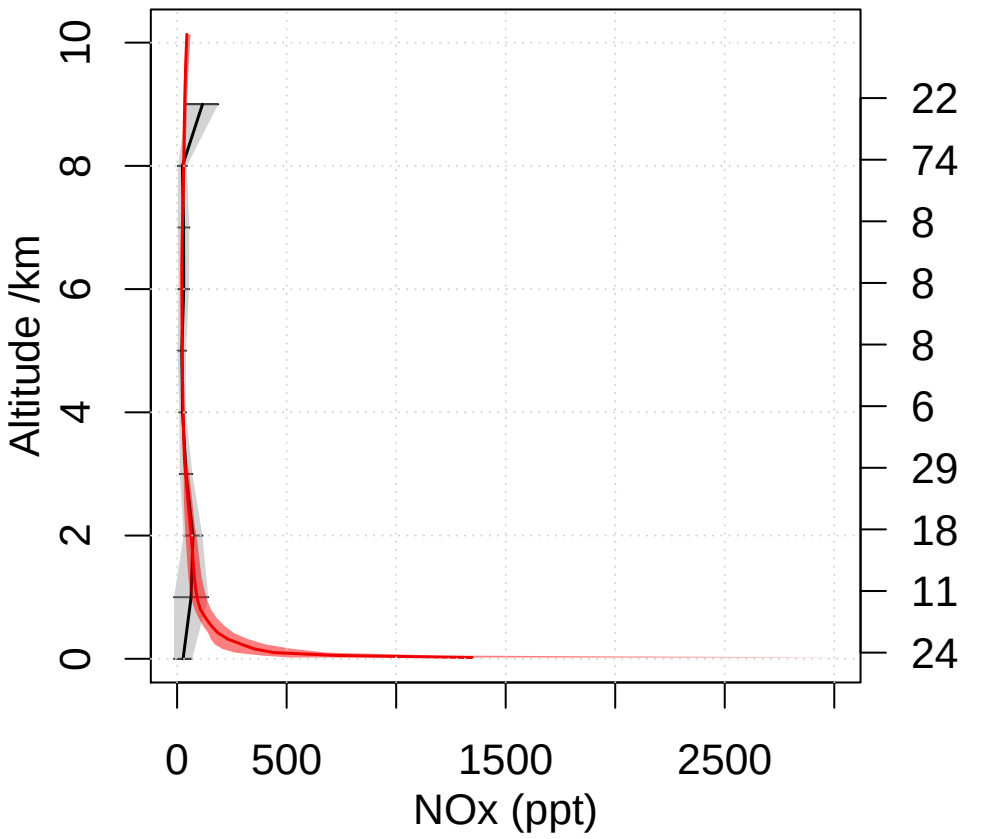
PEM-West-B Japan 1994 02
Lat 25 – 40 Lon 135 – 150



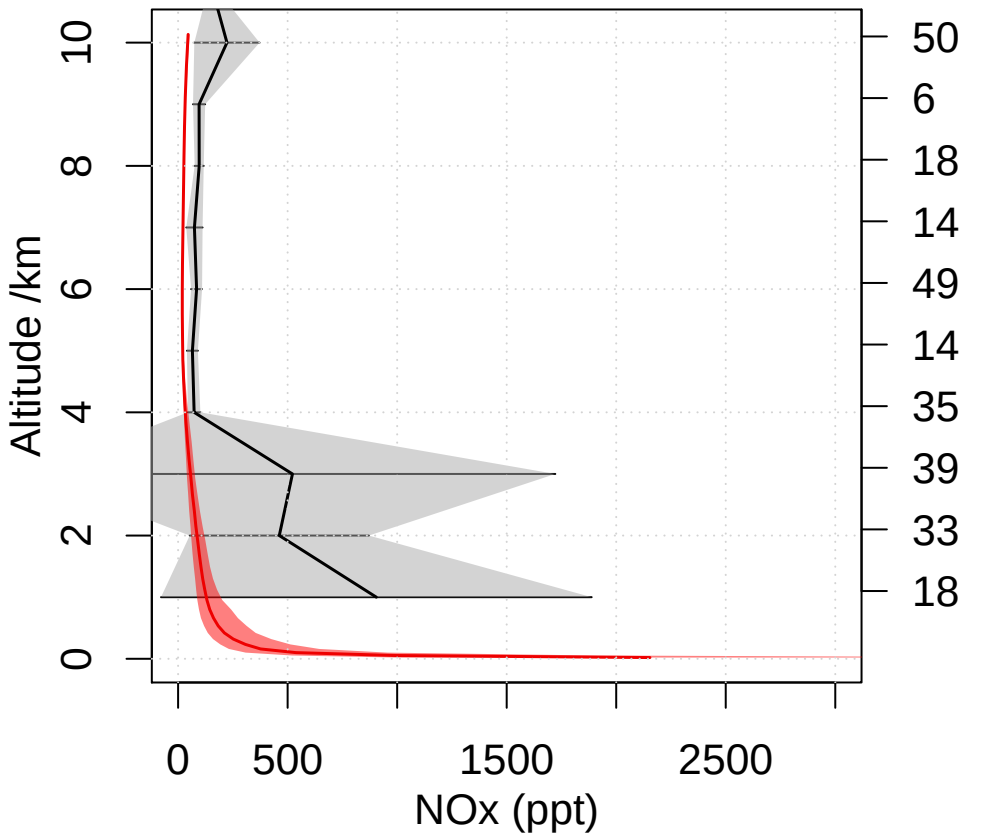
TRACE-A E-Brazil 1992 09
Lat -15 – -5 Lon 310 – 320



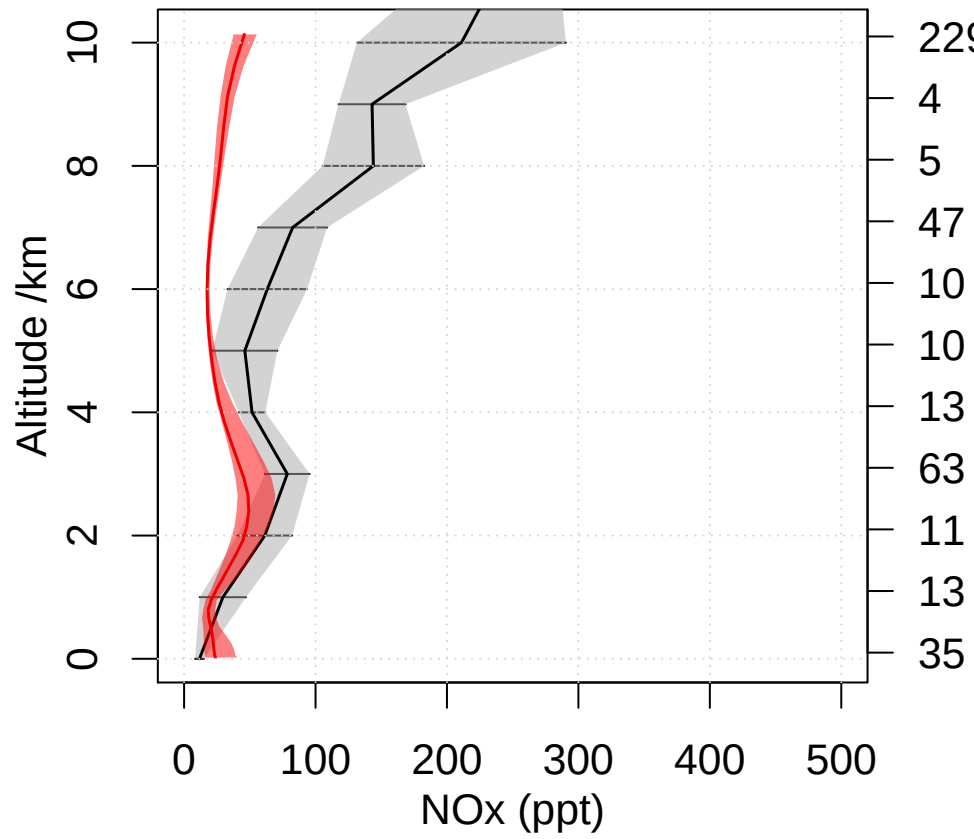
TRACE-A E-Brazil Coast 1992 09
Lat -35 – -25 Lon 310 – 320



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 br633

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

Red: Spivakovsky values

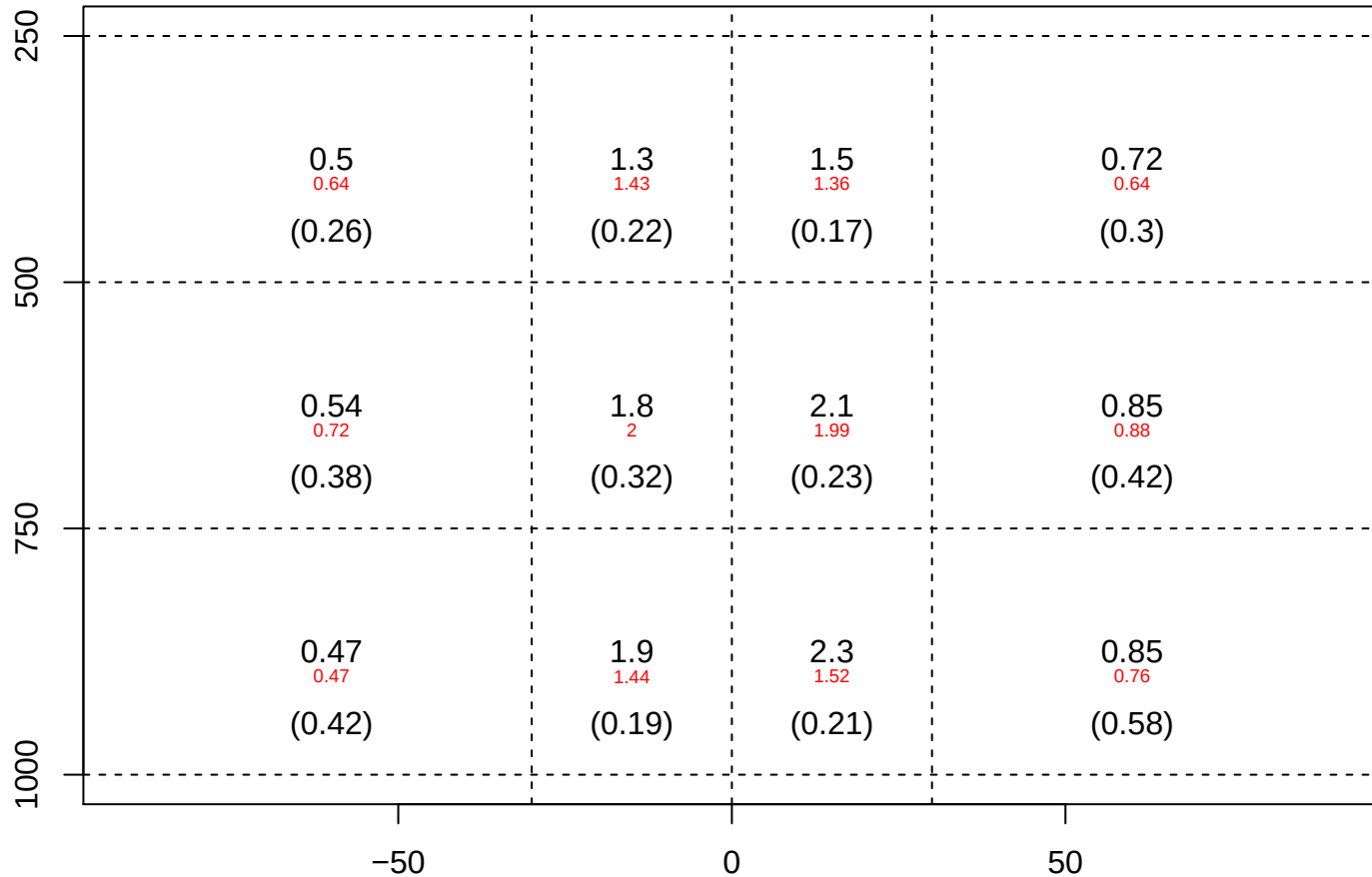
Mean OH= 1.29e+06 molec/cm3

Values in (): Std dev

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

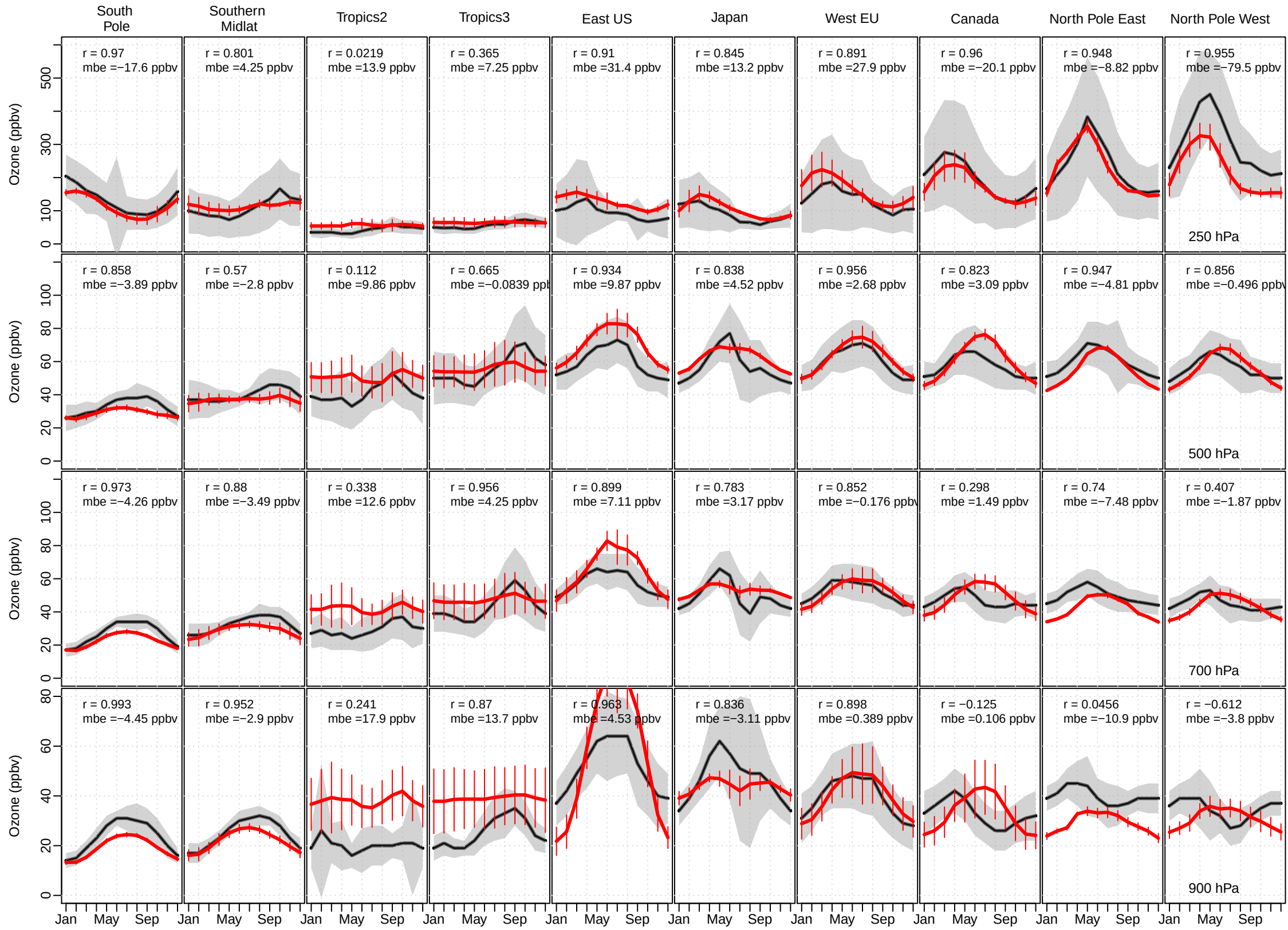
NH:SH ratio= 1.33 Patra et al 2014: 0.97 +/- 0.12

Pressure (hPa)



Latitude

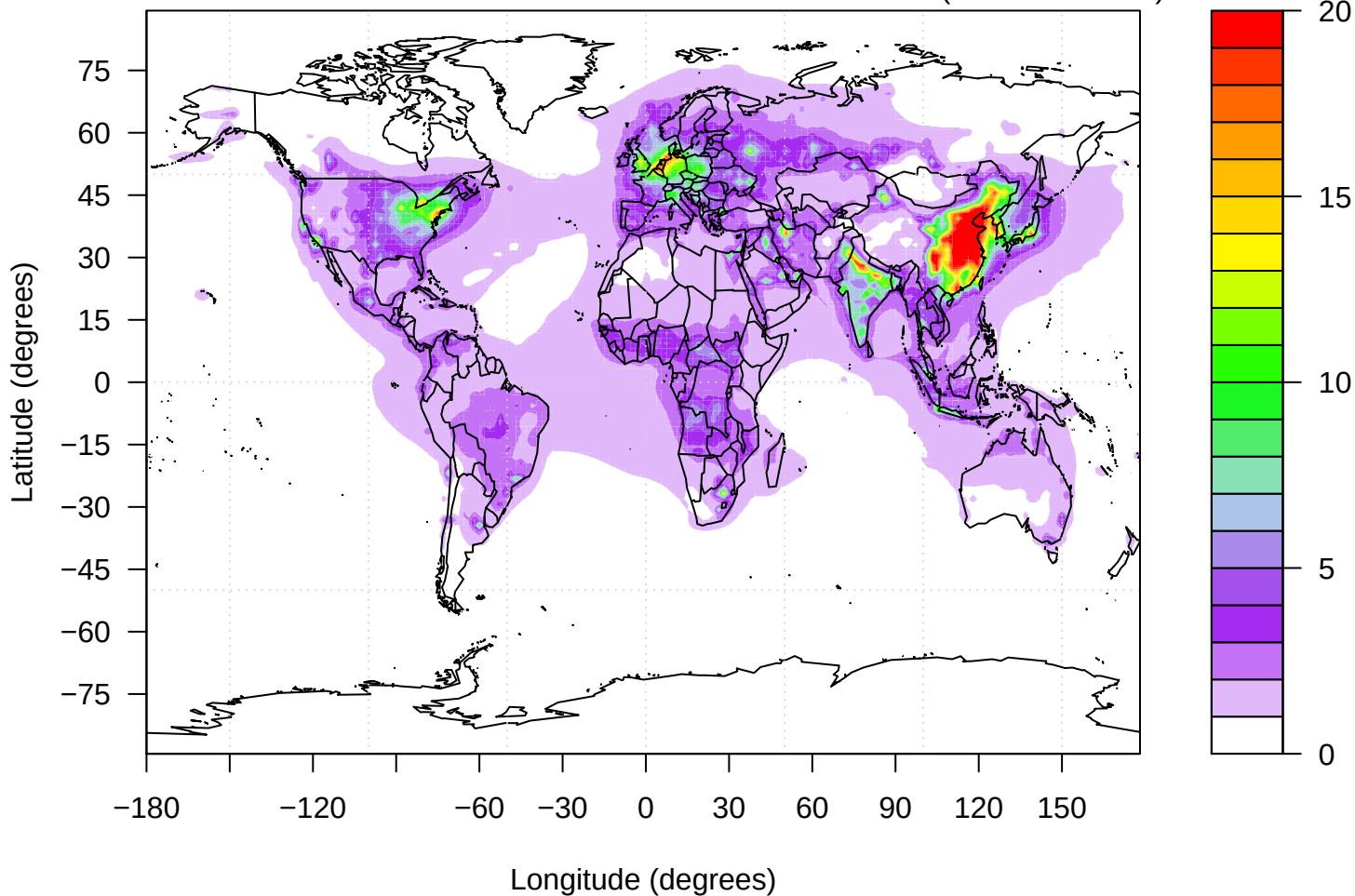
br633 Tilmes ozone sonde comparison



br633 tropospheric NO₂ column

Min = 0.015 Mean = 1.17 Max = 80.8

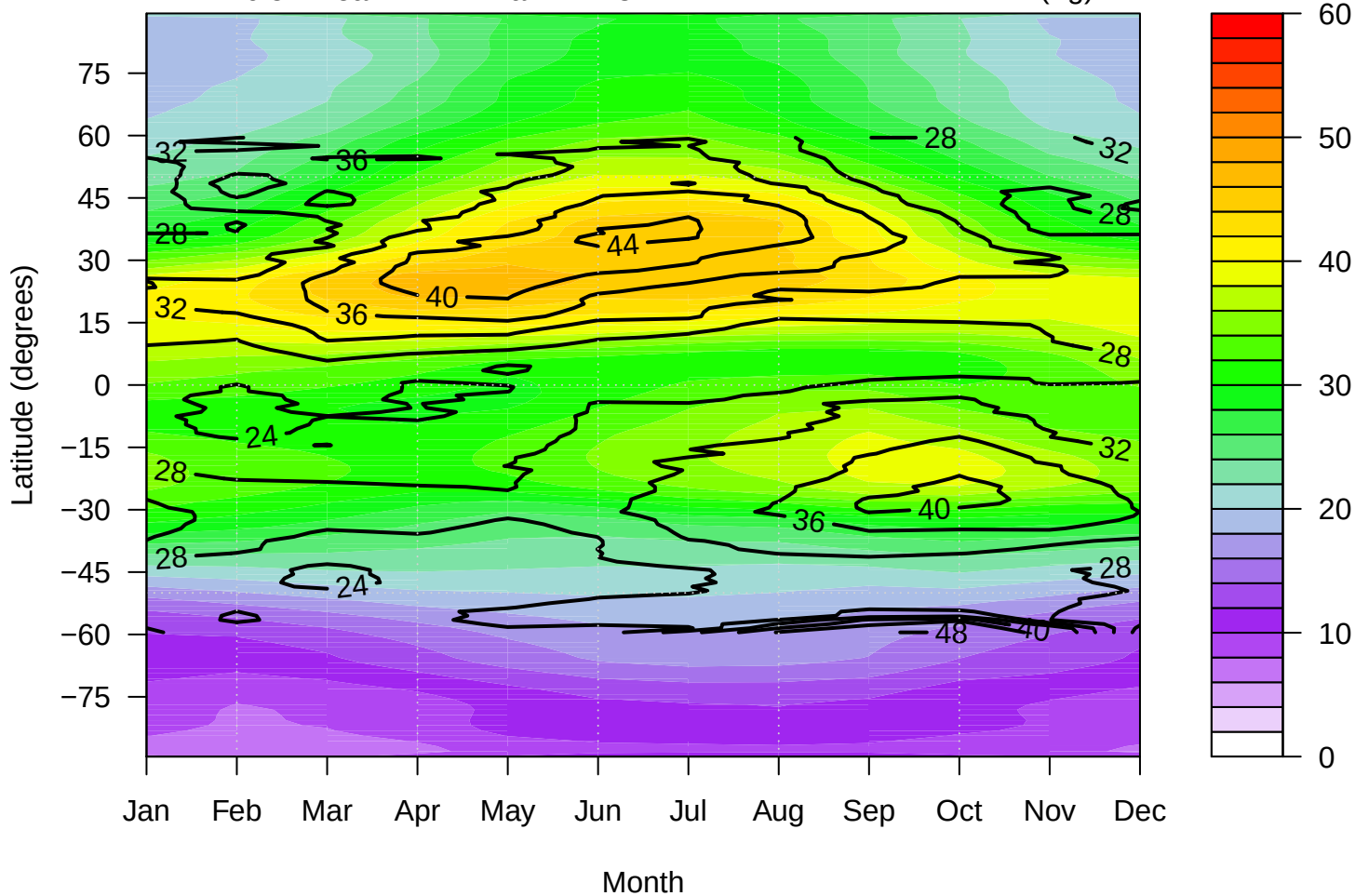
10¹⁵ (molecules cm⁻²)



br633 tropospheric O₃ column

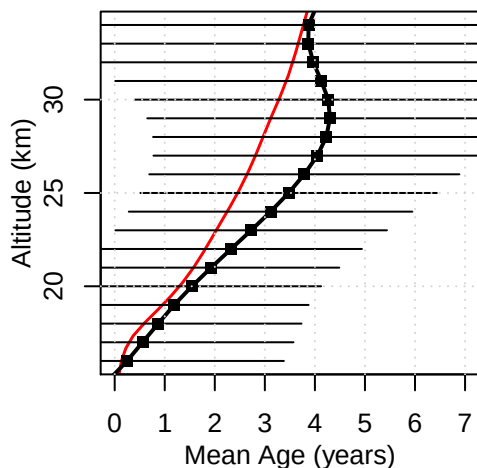
Min = 6.51 Mean = 27.1 Max = 47.8

Burden (Tg) = 336

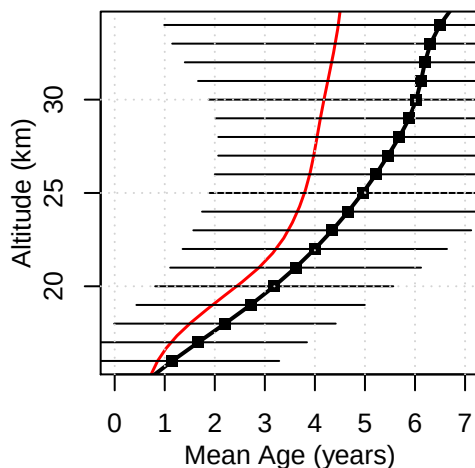


UKCA br633 Mean Age of Air

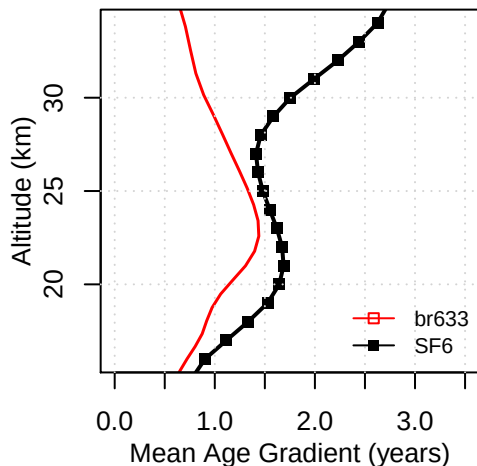
Tropical Mean Age Profile



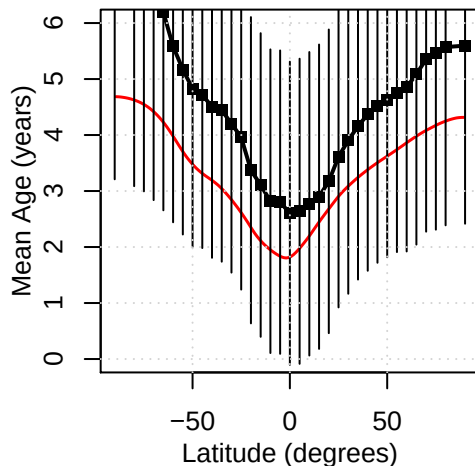
Midlatitude Mean Age Profile



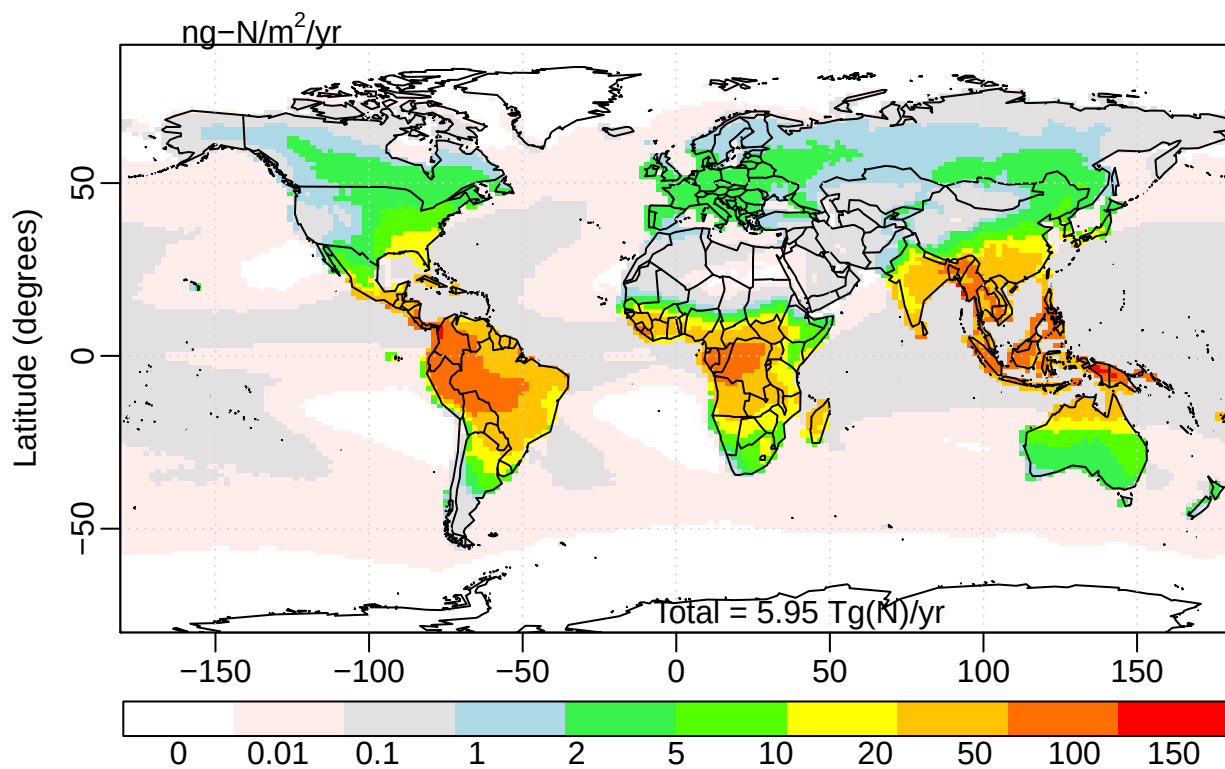
Trop-Midlat Mean Age Gradient Prof



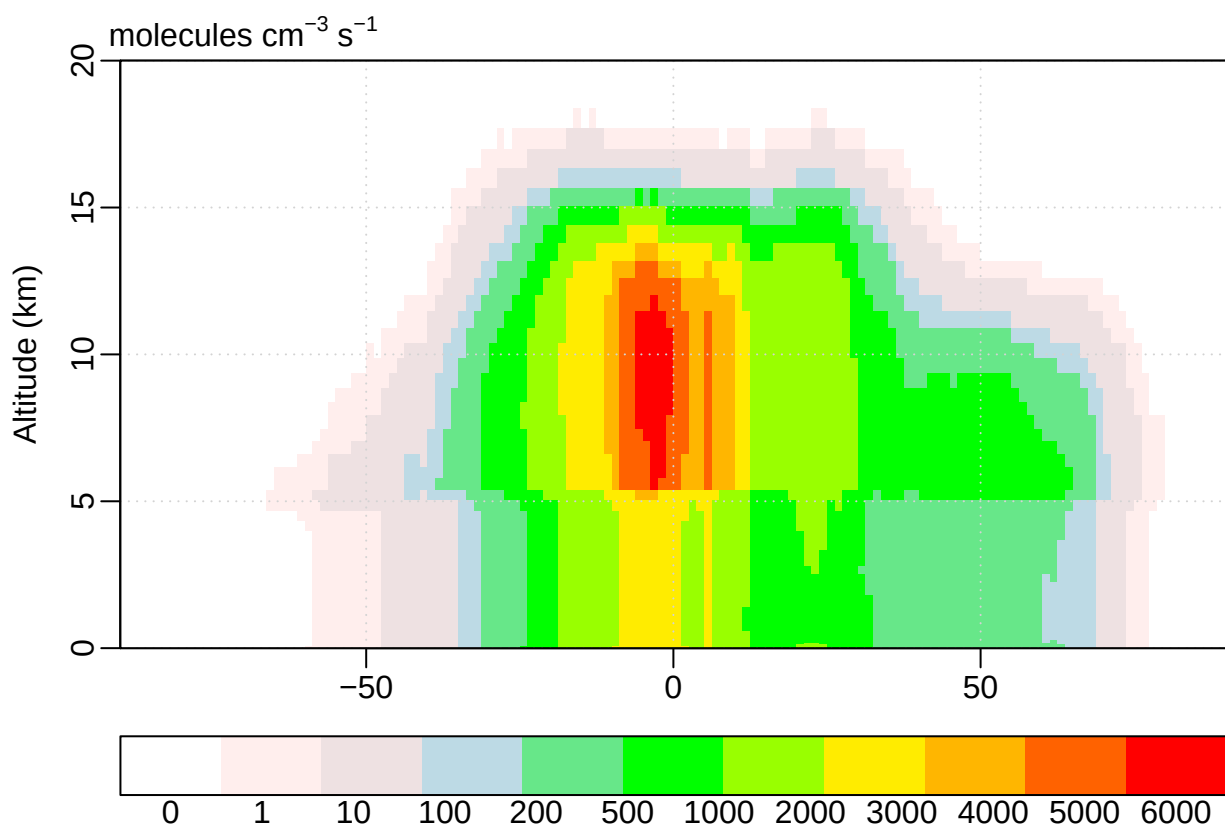
Mean Age, 23km (~50hPa)



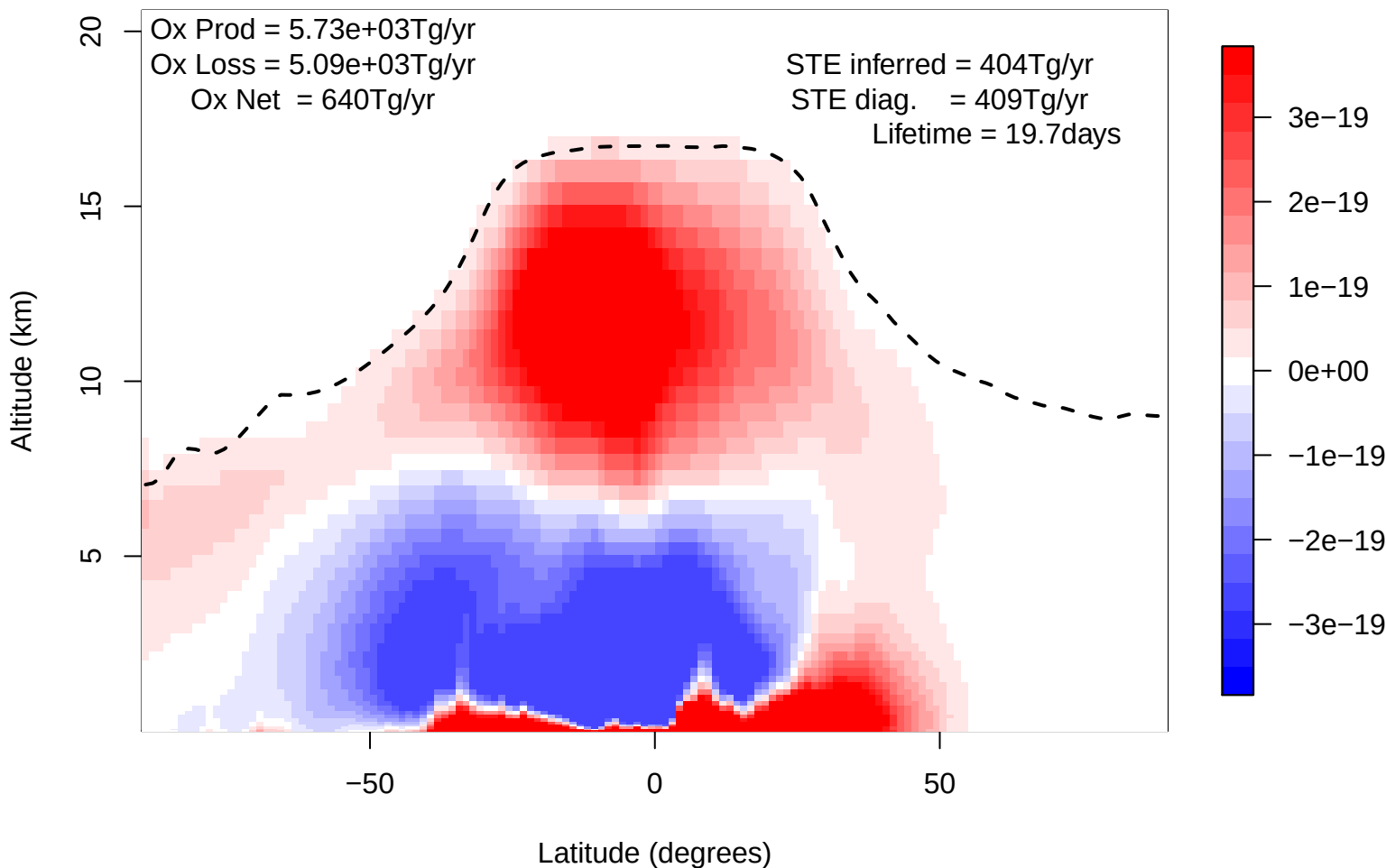
br633 total column



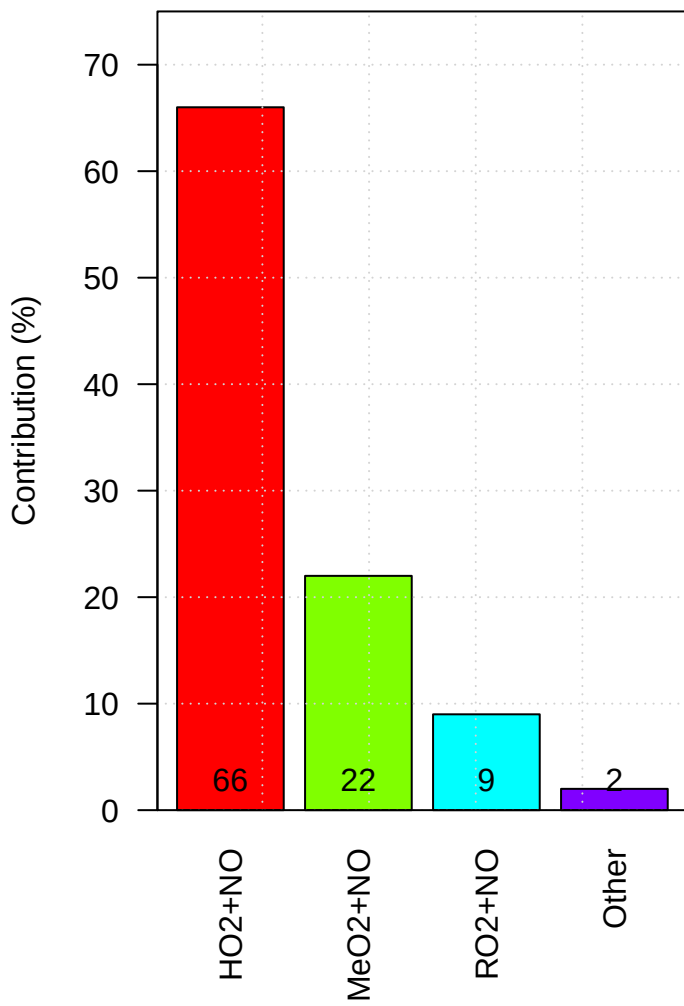
br633 zonal mean



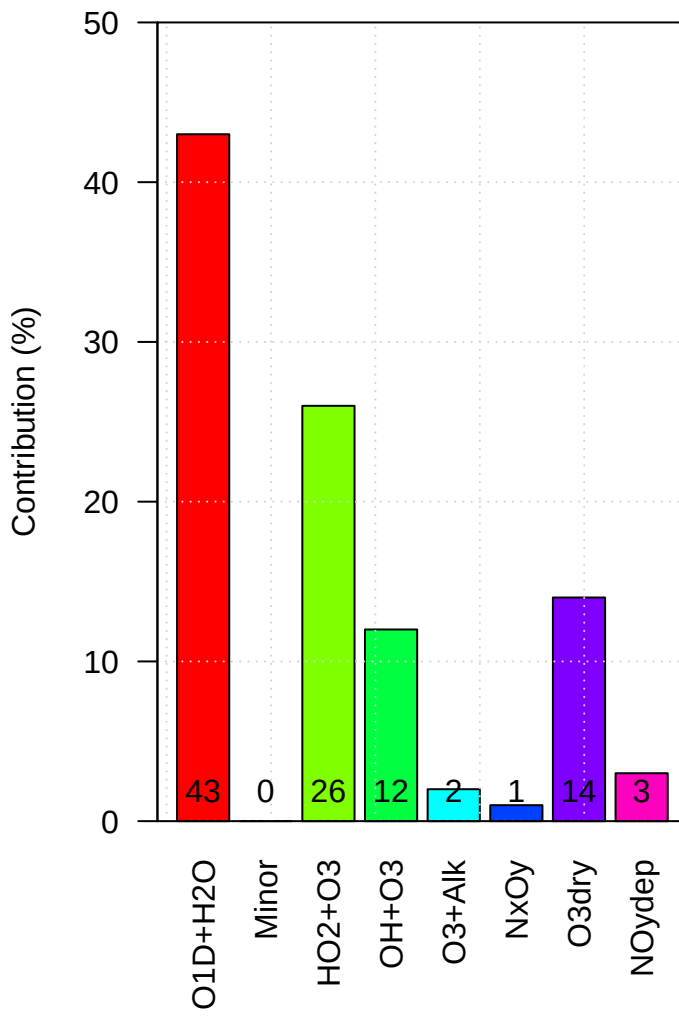
UKCA br633 Ox Net Chemical Production



br633 Production of Tropospheric Ox

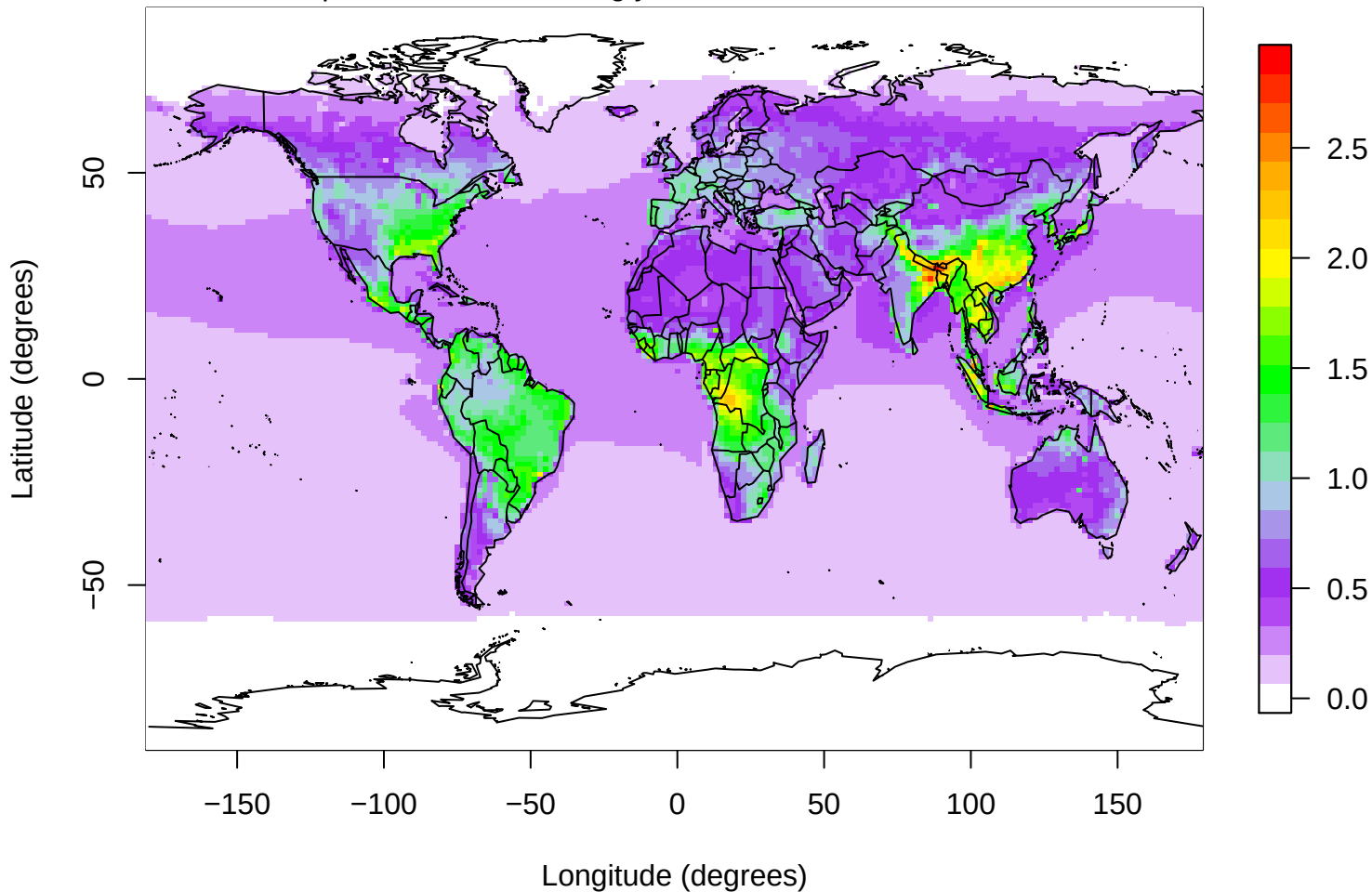


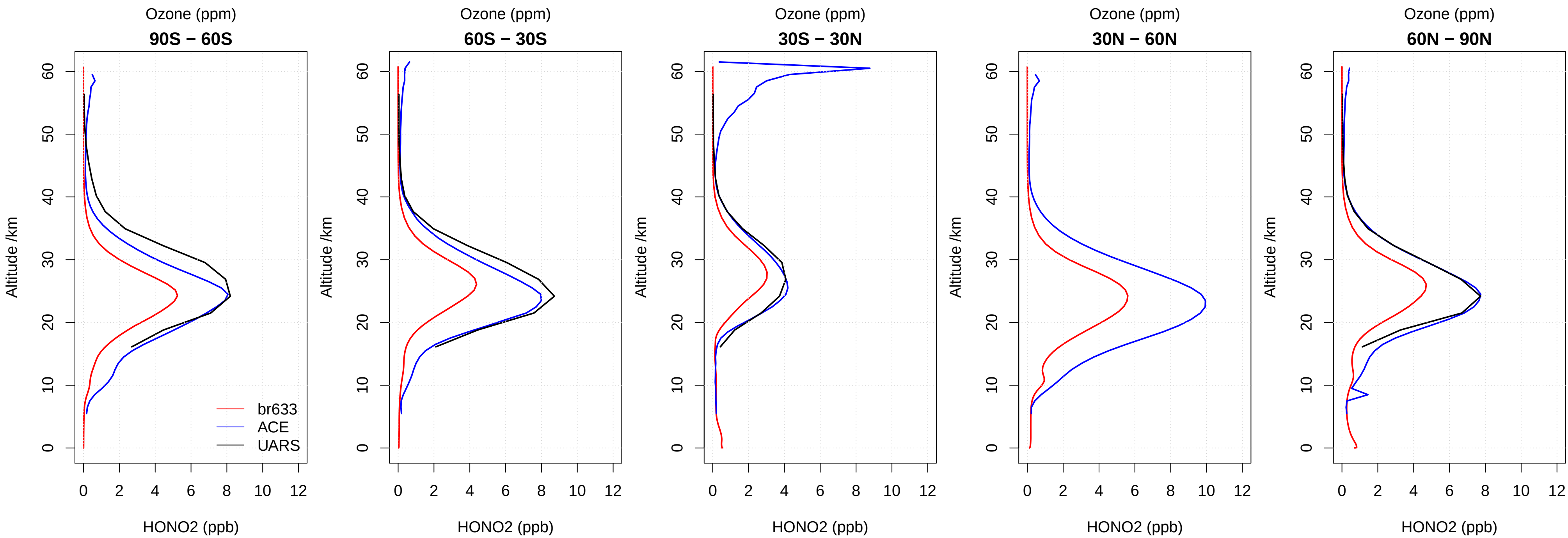
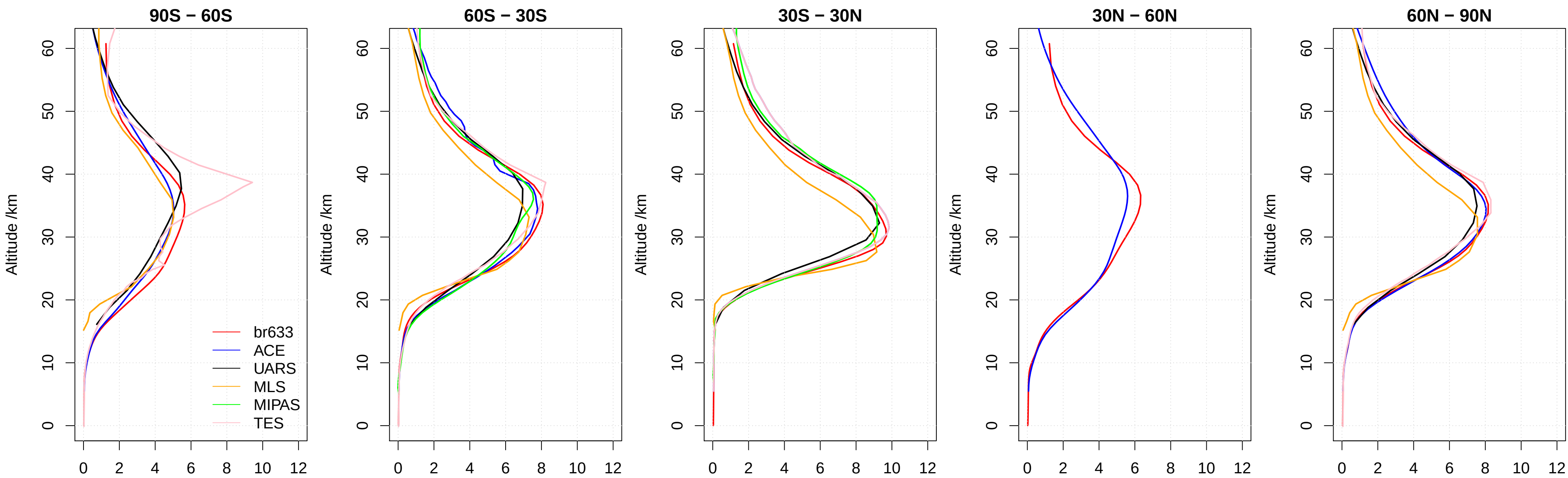
br633 Loss of Tropospheric Ox

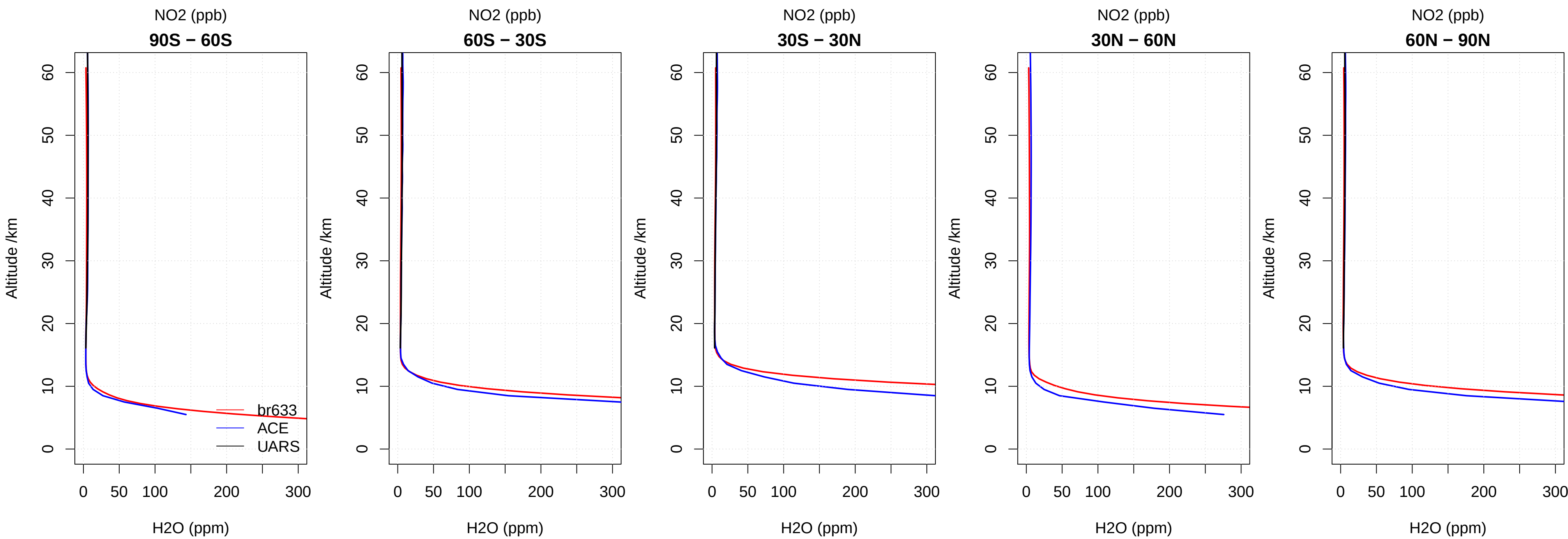
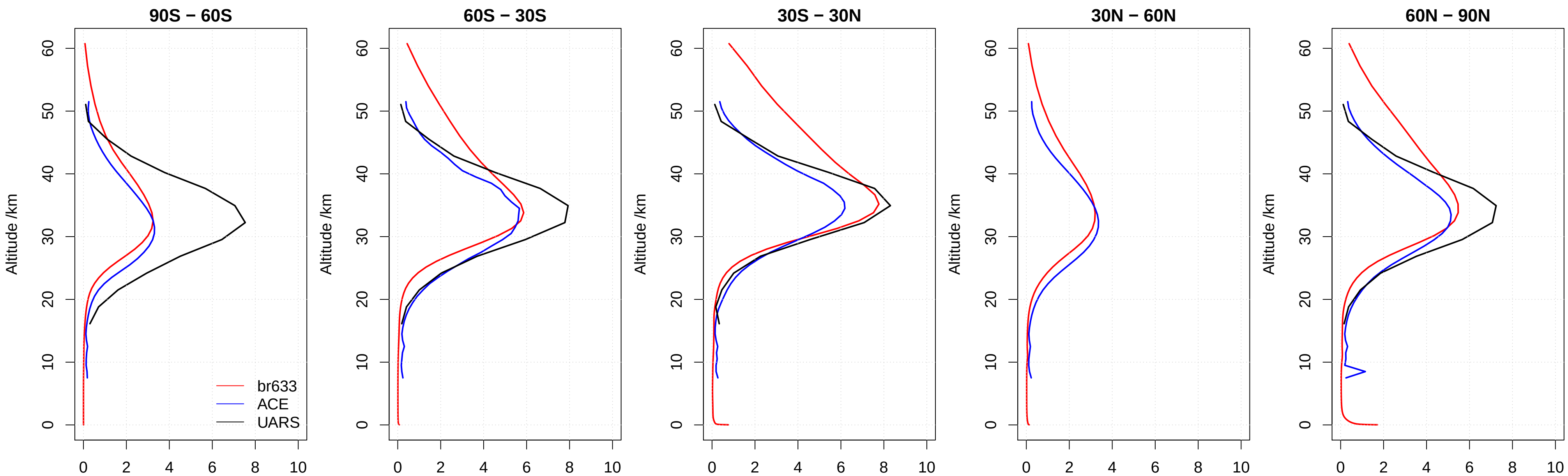


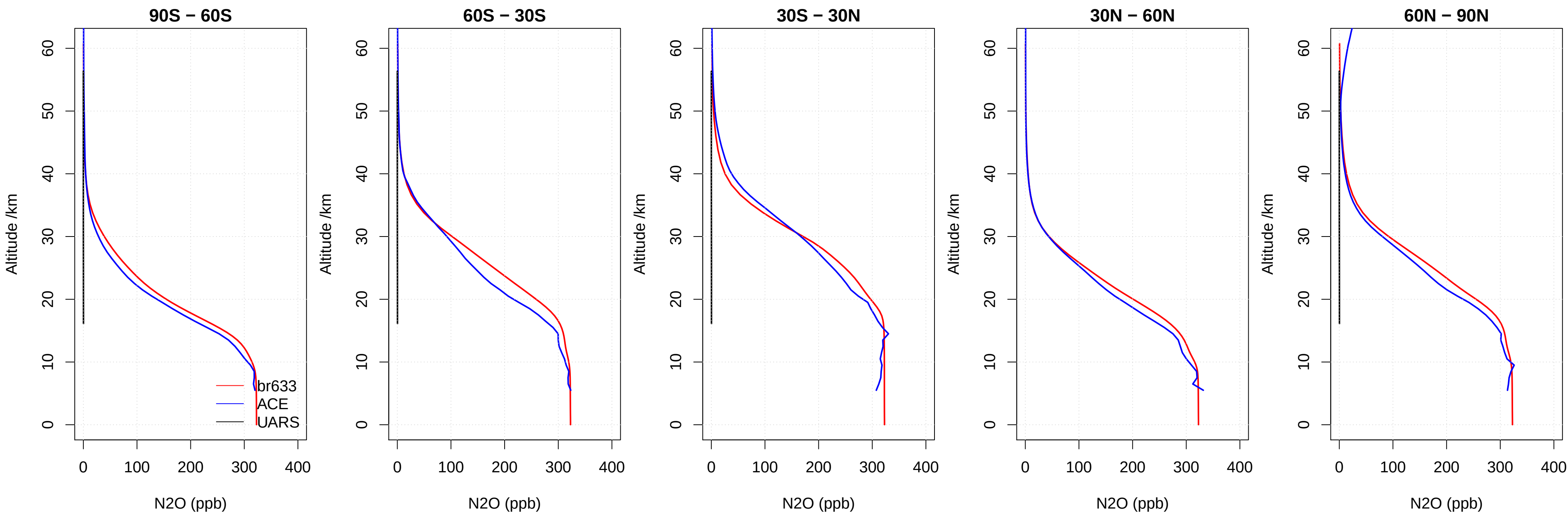
UKCA Ox deposition br633

Total Ox Deposition = 1.04×10^3 Tg/yr



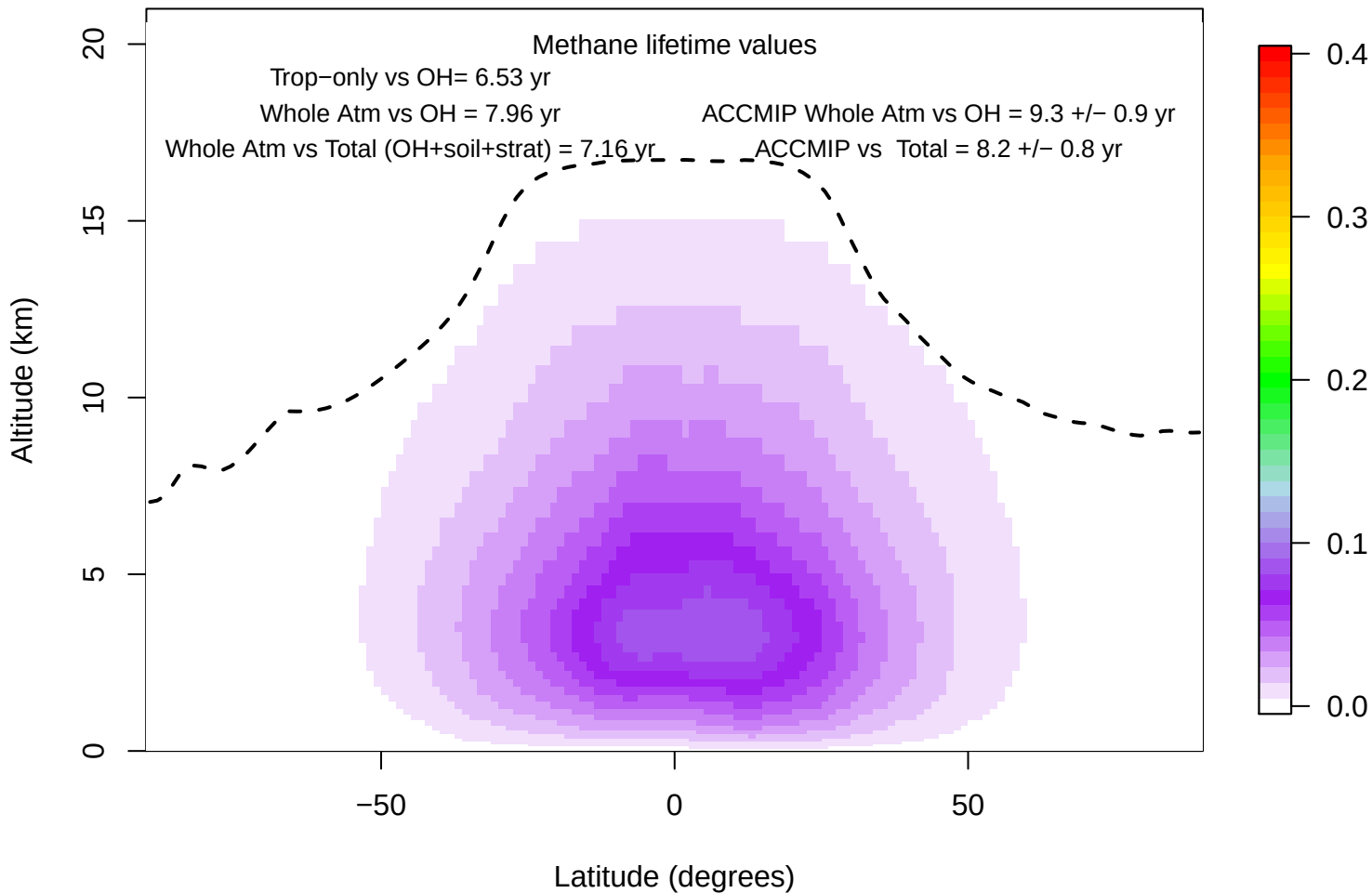


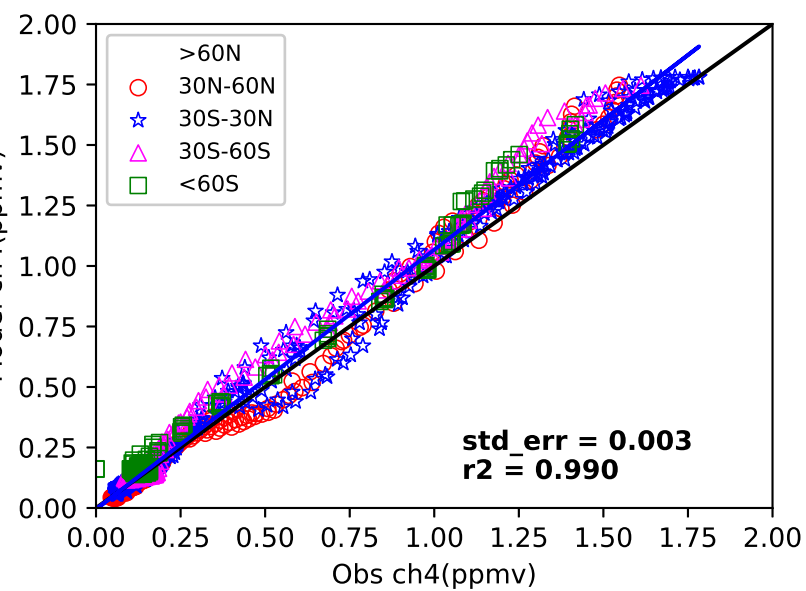
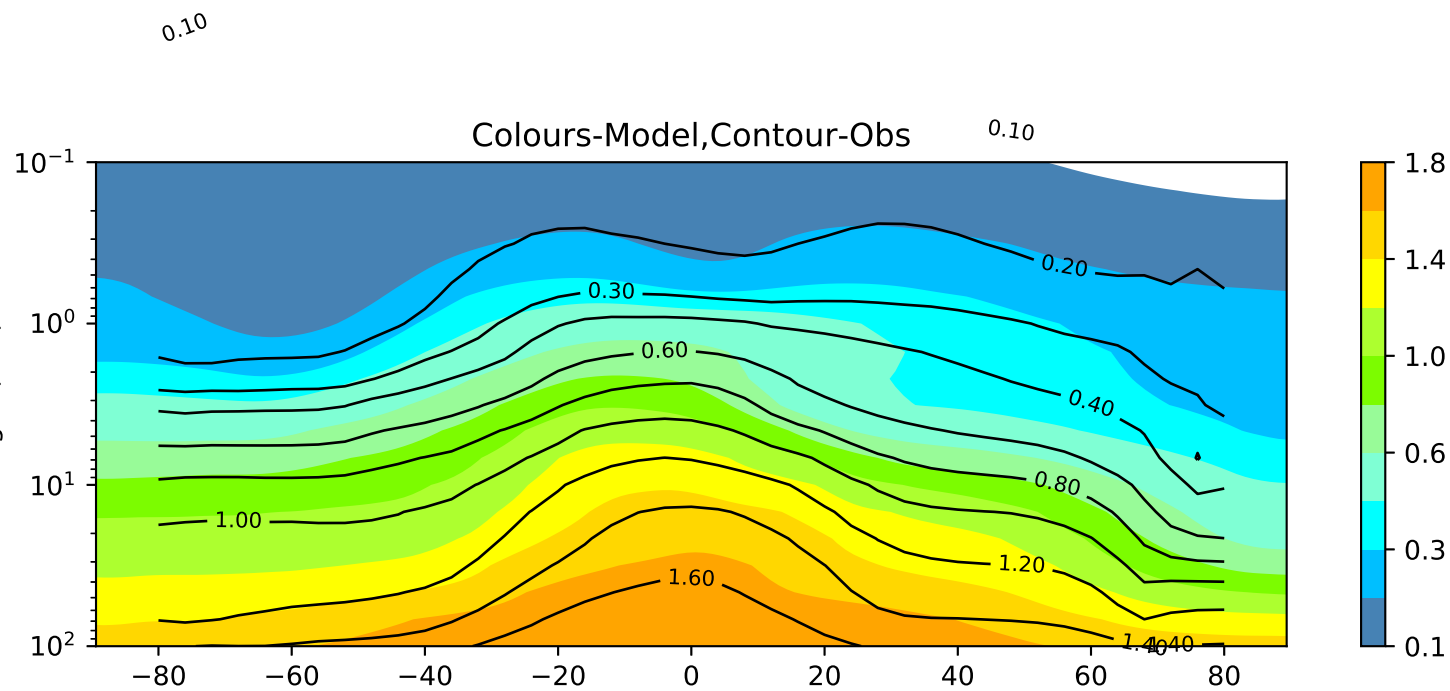


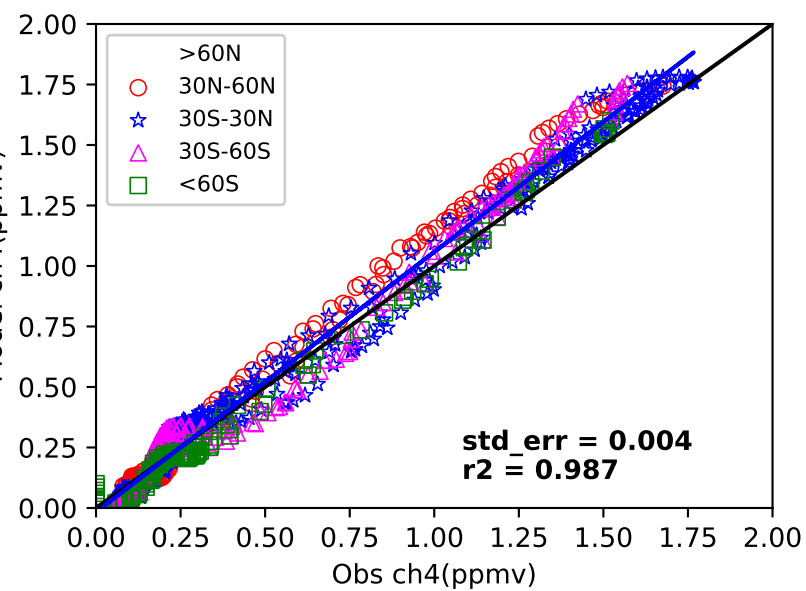
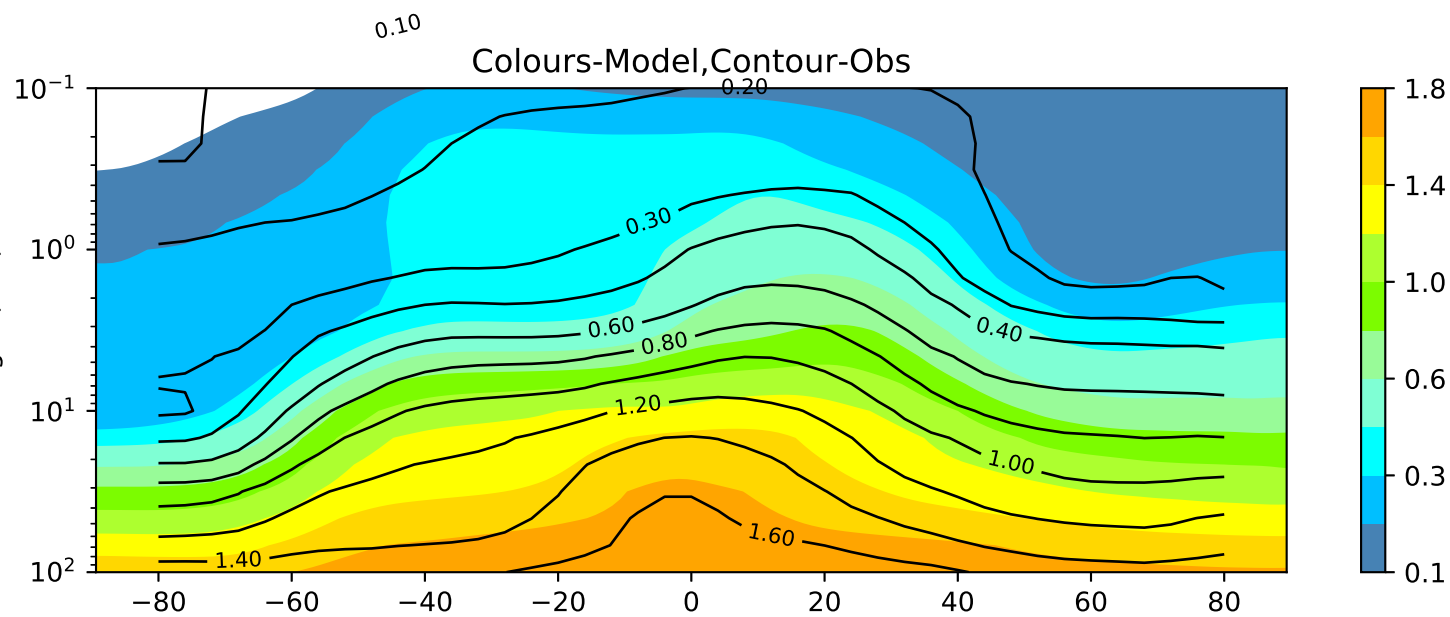


UKCA br633

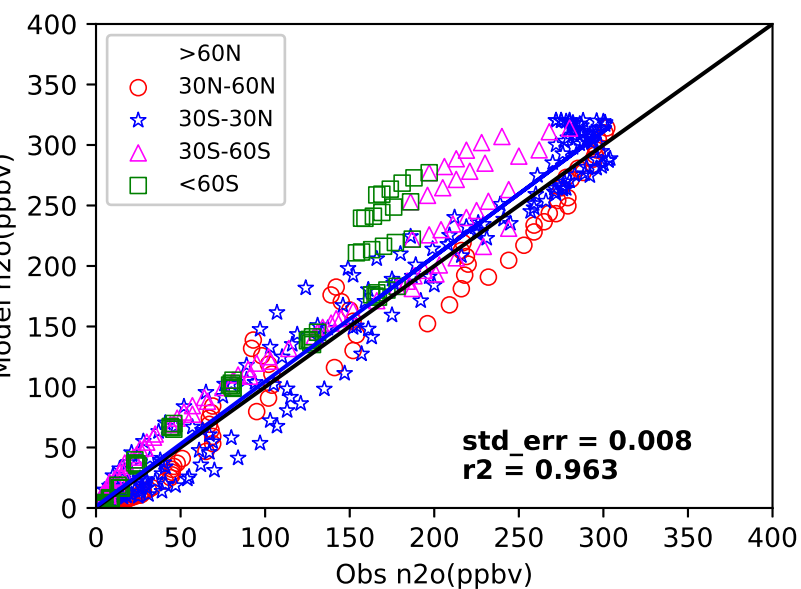
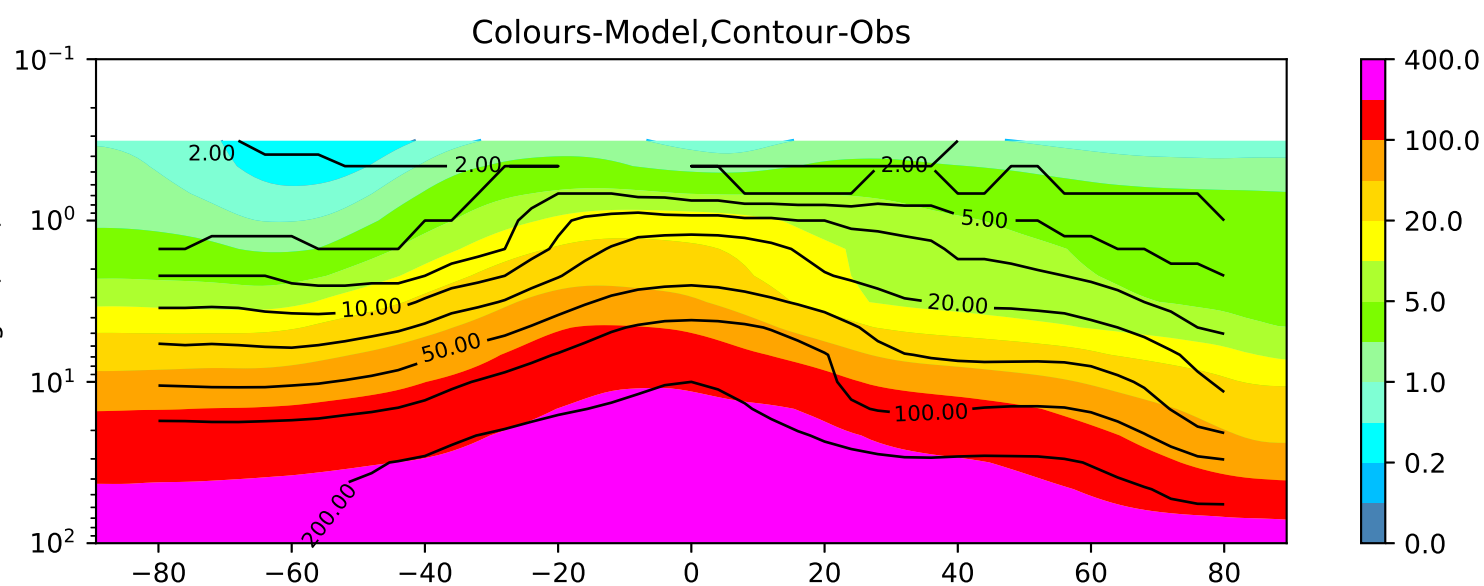
% CH₄ + OH flux (moles cm⁻³ s⁻¹)



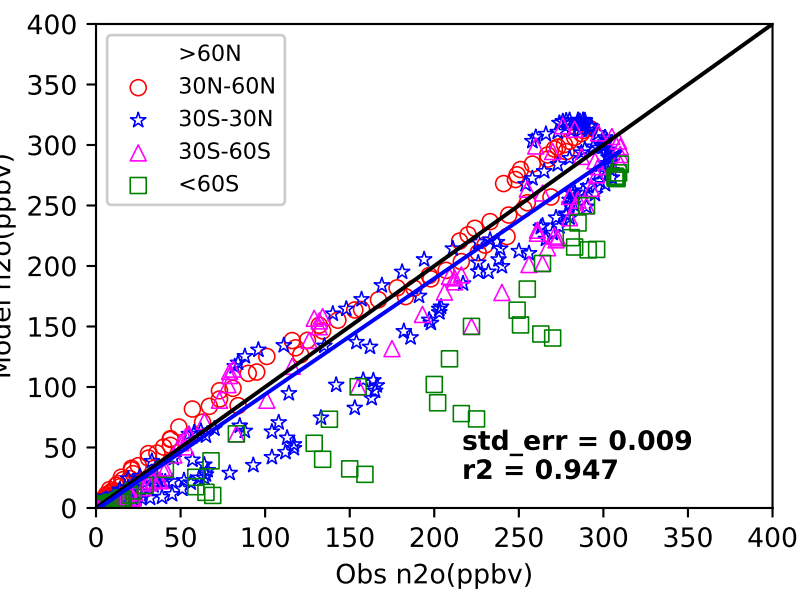
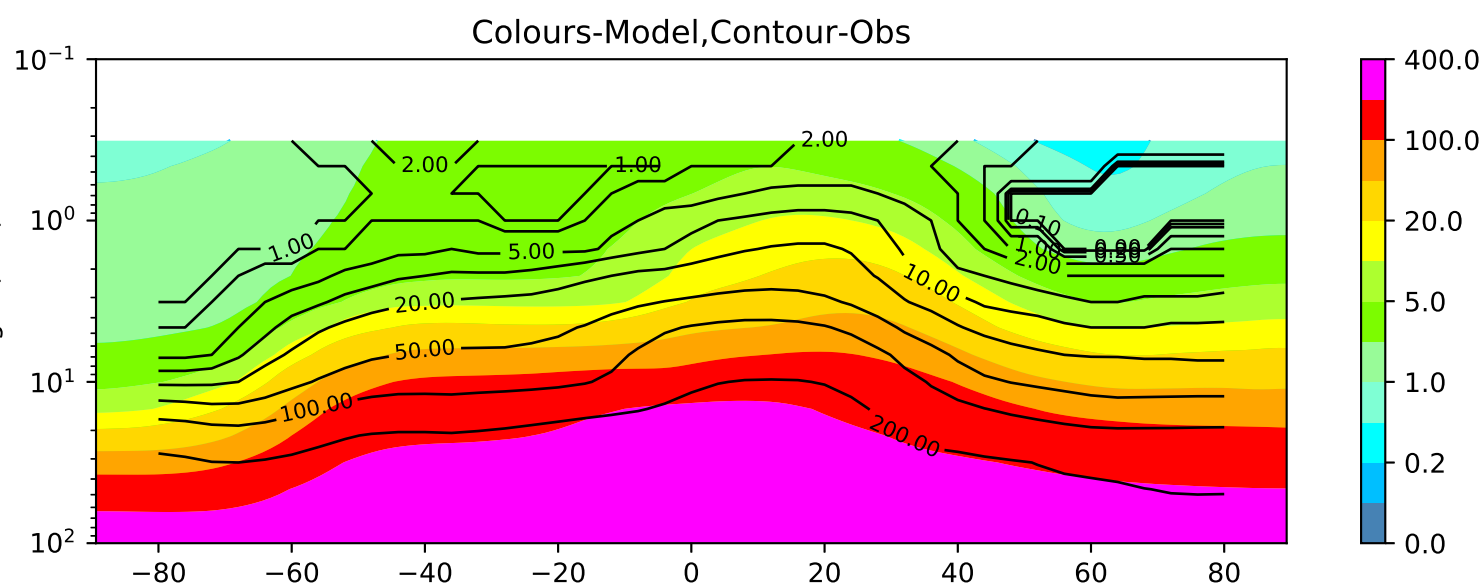




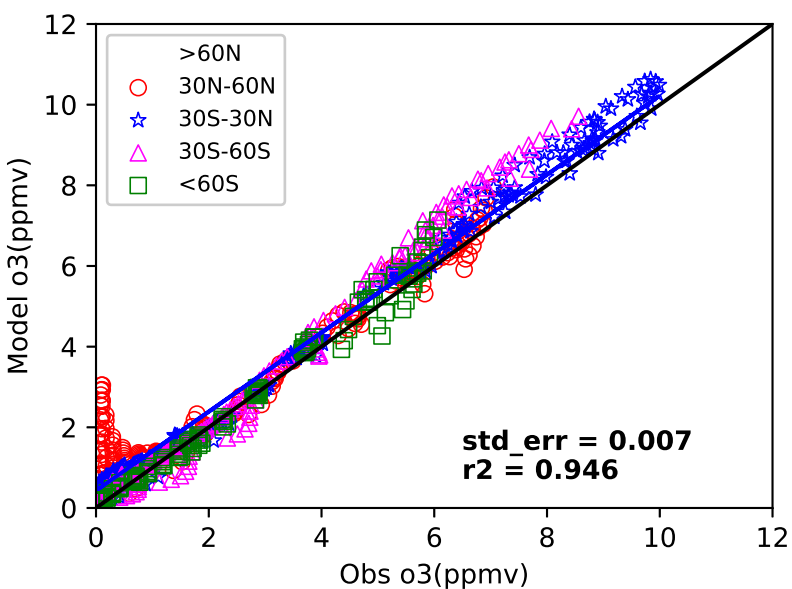
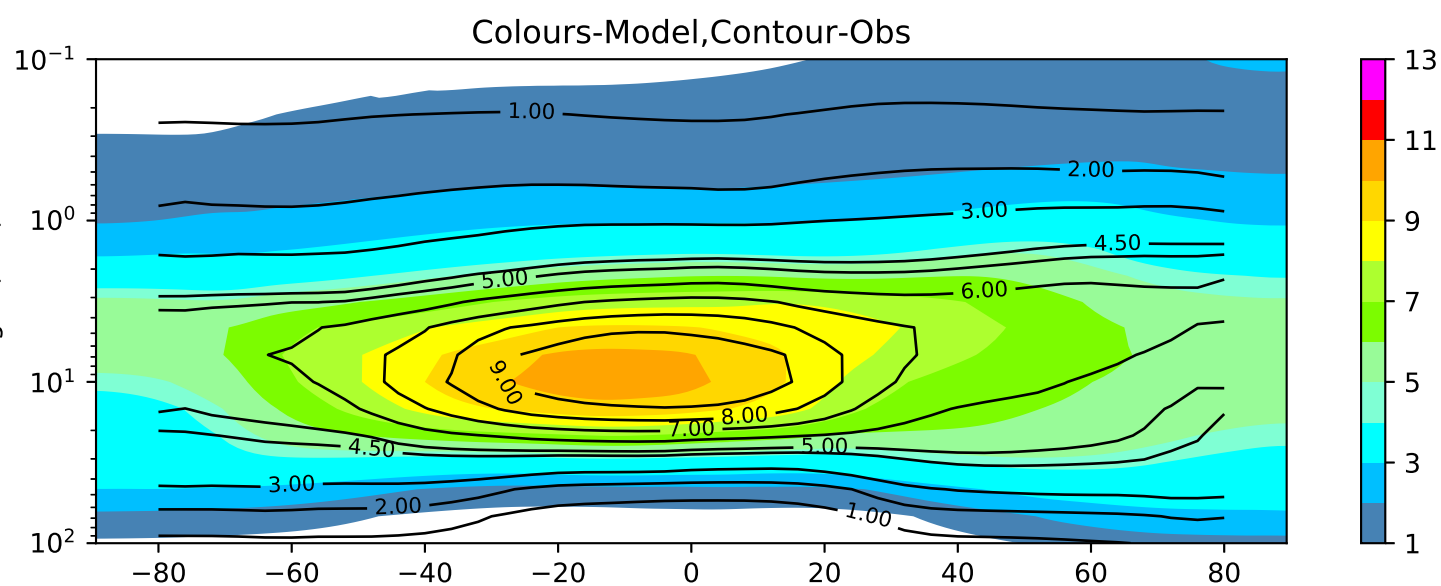
UKCA br633 vs HALOE:
CH4 (ppmv) Jul



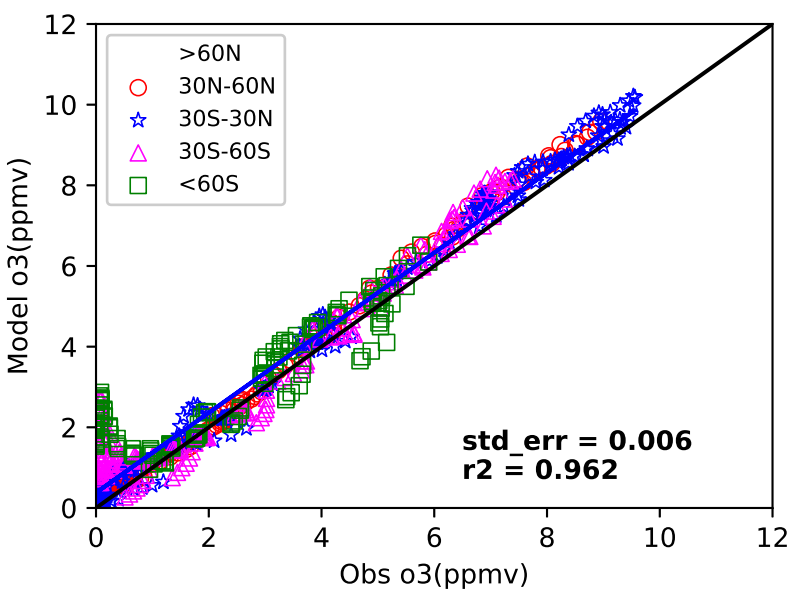
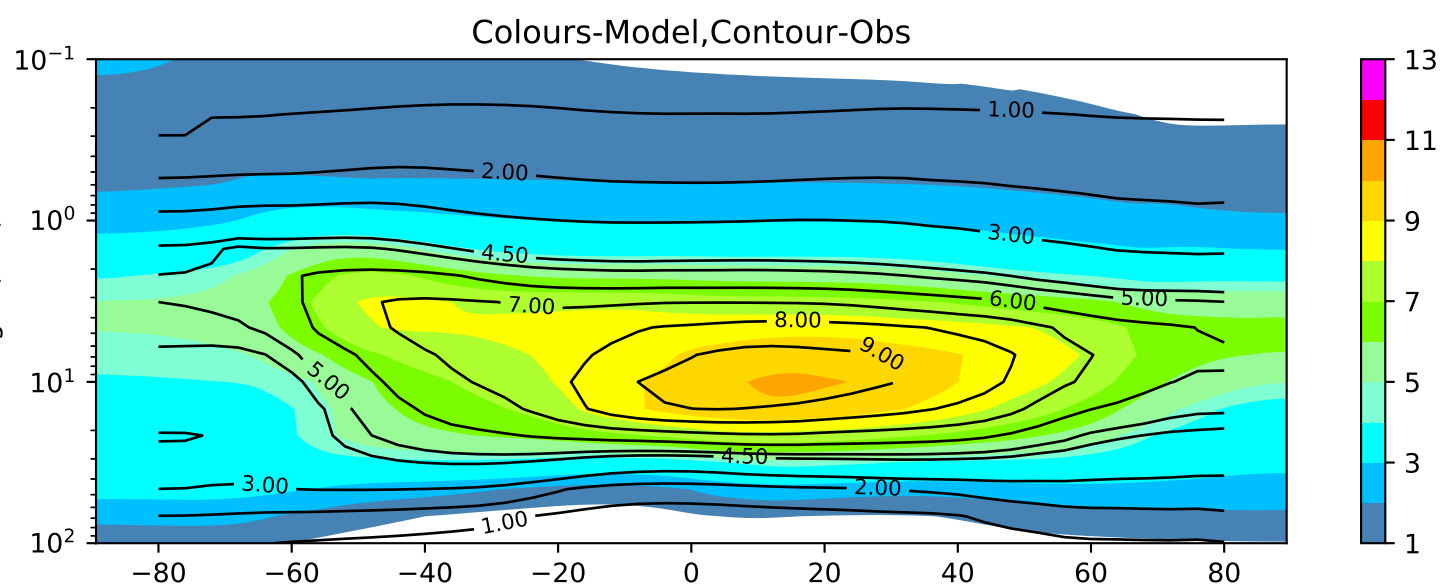
UKCA br633 vs HALOE:
N2O (ppmv) Jan



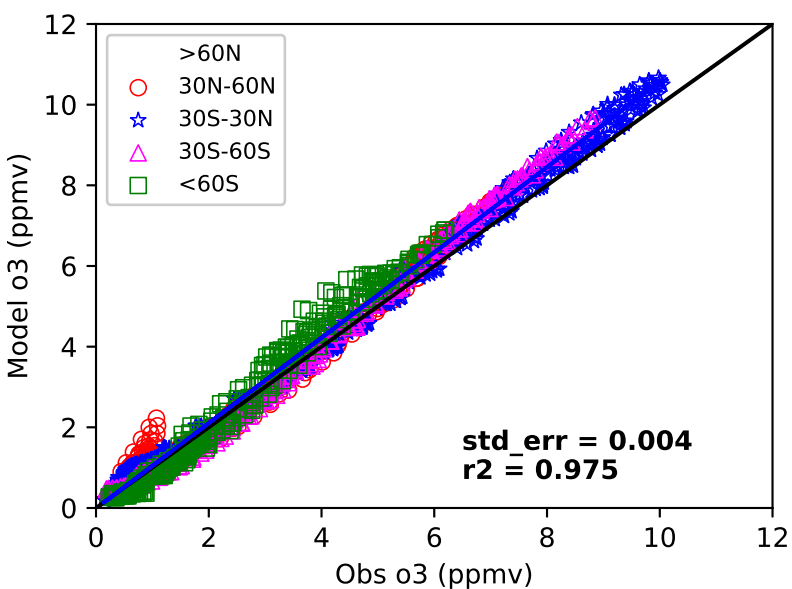
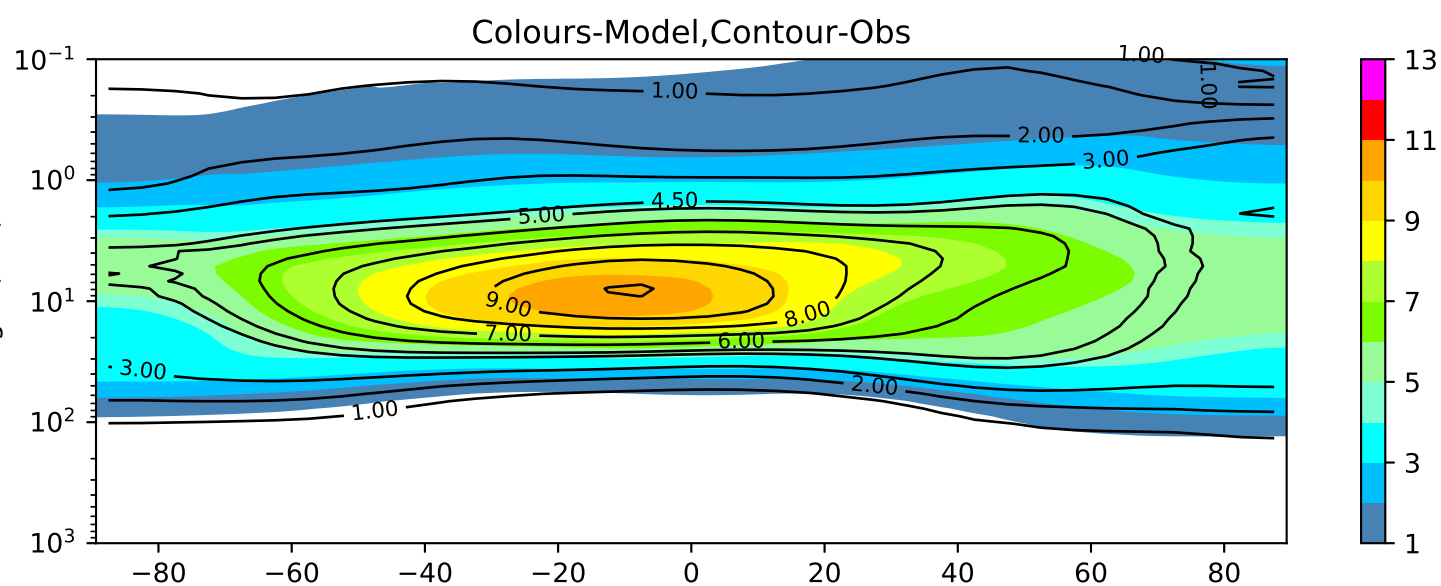
UKCA br633 vs HALOE:
N2O (ppmv) Jul



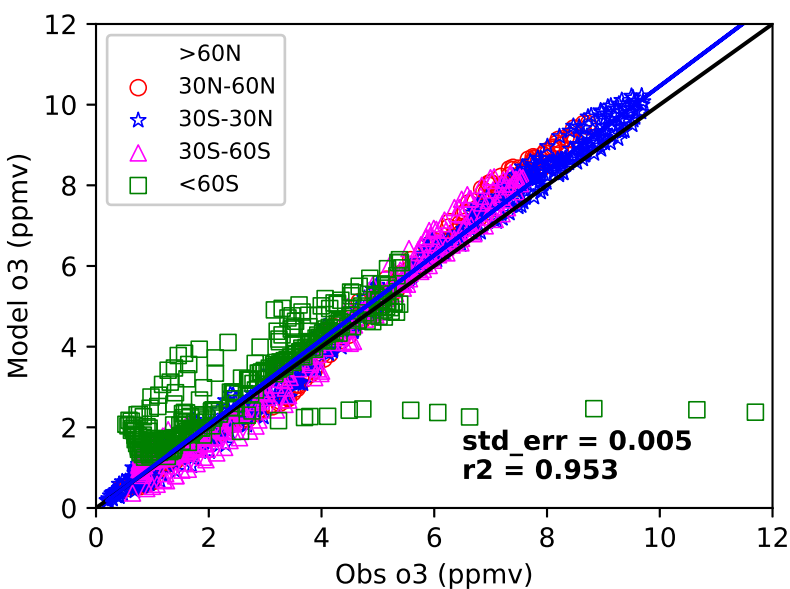
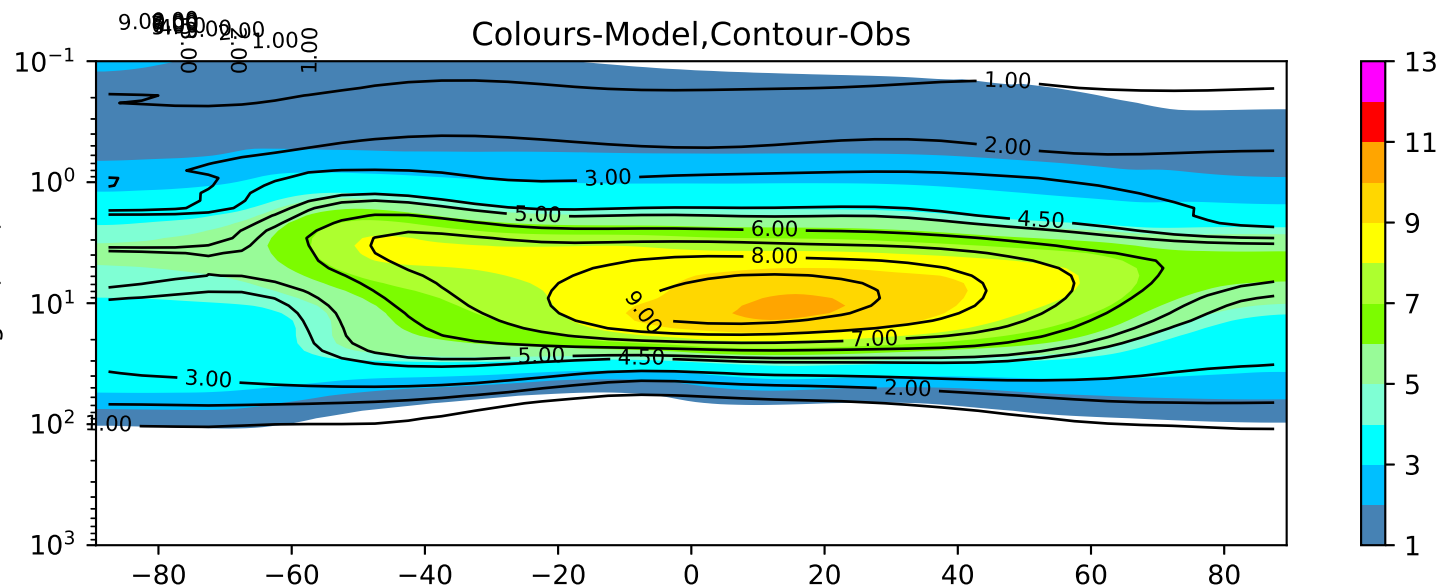
UKCA br633 vs HALOE:
O₃ (ppmv) Jan



UKCA br633 vs HALOE:
O₃ (ppmv) Jul



UKCA br633 vs NIWA-CCMVal:
O3 (ppmv) Jan



UKCA br633 vs NIWA-CCMVal:
O3 (ppmv) Jul

