Table 1 *Specifications of the simulations. The code and the name are used interchangeably in the text.*
S1c and S2c are just multi-annual equivalents of S1 and S2.

Code	Name	Meteorology	Emissions	Reference
S1 **S1c**	Y2000	2000 1995-2004	2000 (EDGAR3.2)	Olivier et al 2001
S2 **S2c**	CLE	2000 1995-2004	2030 IIASA CLE	Dentener et al 2004
S3	MFR	2000	2030 IIASA MFR	Dentener et al 2004
S4	A2	2000	2030 SRES A2	Nakicenovic et al 2000
S5c	CLE-_C	2025-2034	2030 IIASA CLE	Stevenson et al 2005

Table 3 *Specified global annual anthropogenic emission totals for each scenario. Biomass burning emissions did not vary between scenarios. Specified methane \ concentrations are also given – these were fixed throughout the model domain. Ship emissions are included (for S4, ship emissions for 2000 were used in error). Additional aircraft emissions of 0.8 Tg N (S1) and 1.7 Tg N (all 2030 cases) were recommended. Values from IPCC TAR for year 2000 are also shown for comparison.*

	S1	S2	S3	S4	S5c	TAR
NO_x (Tg N)	27.8	32.8	13.1	54.6	32.8	33
CO (Tg)	470	397	222	761	397	650
NMVOC (Tg)	116	114	73	176	114	161
SO_2 (Tg S)	54	57	17	100	57	76
NH_3 (Tg N)	49	65	65	69	65	36
CH_4 conc (ppbv)	1760	2088	1760	2163	2012	1745

Table 4 *Specified global biomass burning and recommended natural emissions sources (fixed for all scenarios – except in some models for S5c, where some natural emissions are linked to climate). Values from IPCC TAR are shown for comparison.*

		this study	IPCC TAR
NO_x (Tg N)	Biomass burning Soils Lightning	10.2 7 5	7.1 5.6 5.0
CO (Tg)	Biomass burning Oceans/vegetation	507 100	700 200
NMHC (Tg)	Biomass burning Vegetation isoprene Vegetation terpenes	31 512 260	33 220 127
SO_2 (Tg S) **DMS (Tg S)**	Biomass burning Volcanoes Oceans/terrestrial biosphere	1.4 14.6 20	2.2 9.3 24
NH_3 (Tg N)	Biomass burning Oceans Soils	4.9 8.3 2.4	5.7 8.2 2.4

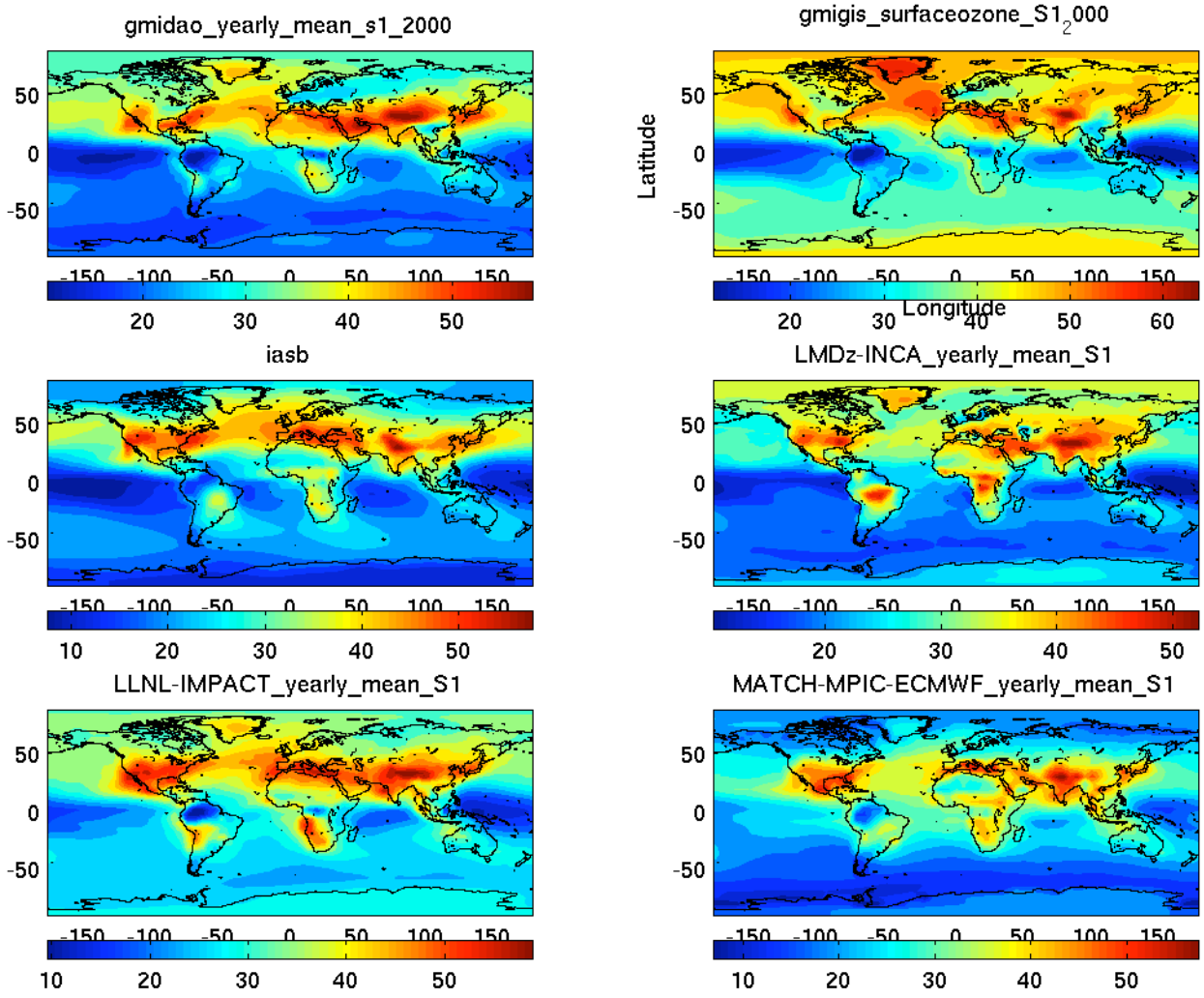
	S1(c)	S2(c)	S3	S4	S5c
CHASER_CTM	1	1	1	1	--
CHASER_GCM	9	9	--	--	9
FRSGC_UCI	1	1	1	1	--
GEOS-CHEM	1	1	1	1	--
GISS	5	5	5	5	5
GMI/CCM	1	1	1	1	--
GMI/DAO	1	1	1	1	--
GMI/GIS	1	1	1	1	--
IASB	1	1	1	1	--
LLNL-IMPACT	1	1	1	1	--
LMDz/INCA (CTM)	1	1	1	1	--
LMDz/INCAc (GCM)	5	5	--	--	5
MATCH-MPIC-ECMWF	1	1	1	1	--
MATCH-MPIC-NCEP	1	1	1	1	--
MOZ2-GFDL	2	2	2	2	--
MOZART4 (NCAR)	2	2	2	2	2
MOZECH	5	5	--	--	5
p-TOMCAT	1	1	1	1	--
STOCHEM-HadAM3	1(10)	1(6)	1	1	10
STOCHEM-HadGEM	5	5	5	5	5

TM4	**1**	**1**	**1**	**1**	**--**
TM5	**1**	**1**	**--**	**--**	**--**
UIO2 (Oslo)	**1**	**1**	**1**	**1**	**--**
ULAQ	**10**	**10**	**10**	**10**	**10**
UM_CAM	**1(10)**	**1**	**1**	**1**	**10**

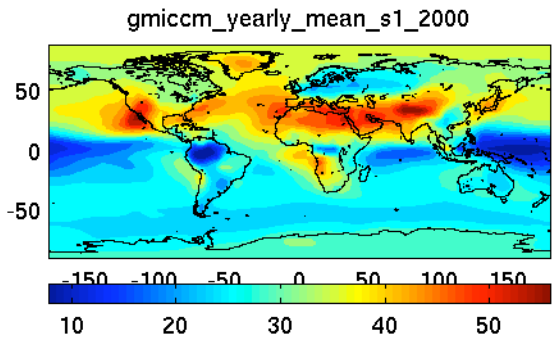
Submitted Output

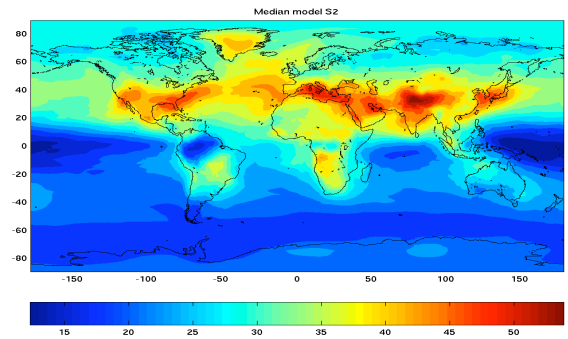
- Hourly surface ozone [ppbv
- Daily average tropospheric column ozone
- Local Time (10 AM) NO2, CH2O (column) profiles
- 2D monthly O3 dry deposition, oxidized nitrogen dry/wet depositon
- 3D monthly mean fields for O3, CO, CH4 (to double check it is fixed), NO, NO2, and OH
- 3D monthly mean field of the CH4+OH destruction flux
- 3D monthly budgets of ozone (odd oxygen) production and destruction - (Our odd oxygen definition follows GEOS-CHEM: O_3 + NO_2 + 2xNO_3 + 3xN_2O_5 + HNO_3 + PAN + HO_2NO_2 + ….)
- 2D stratospheric O3 influx (really, flux through 100 mb surface)

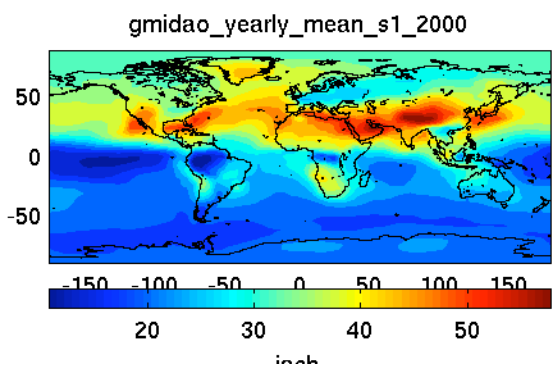
Surface Ozone: Current Day

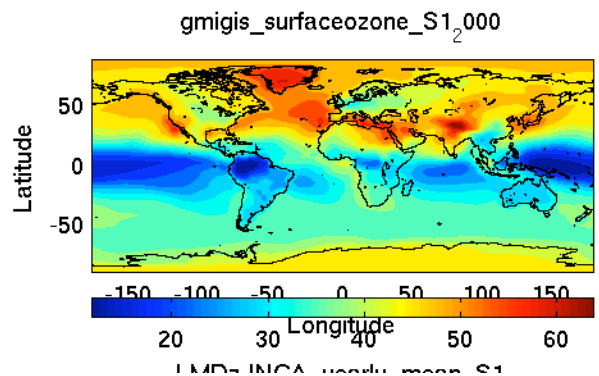


Model Median

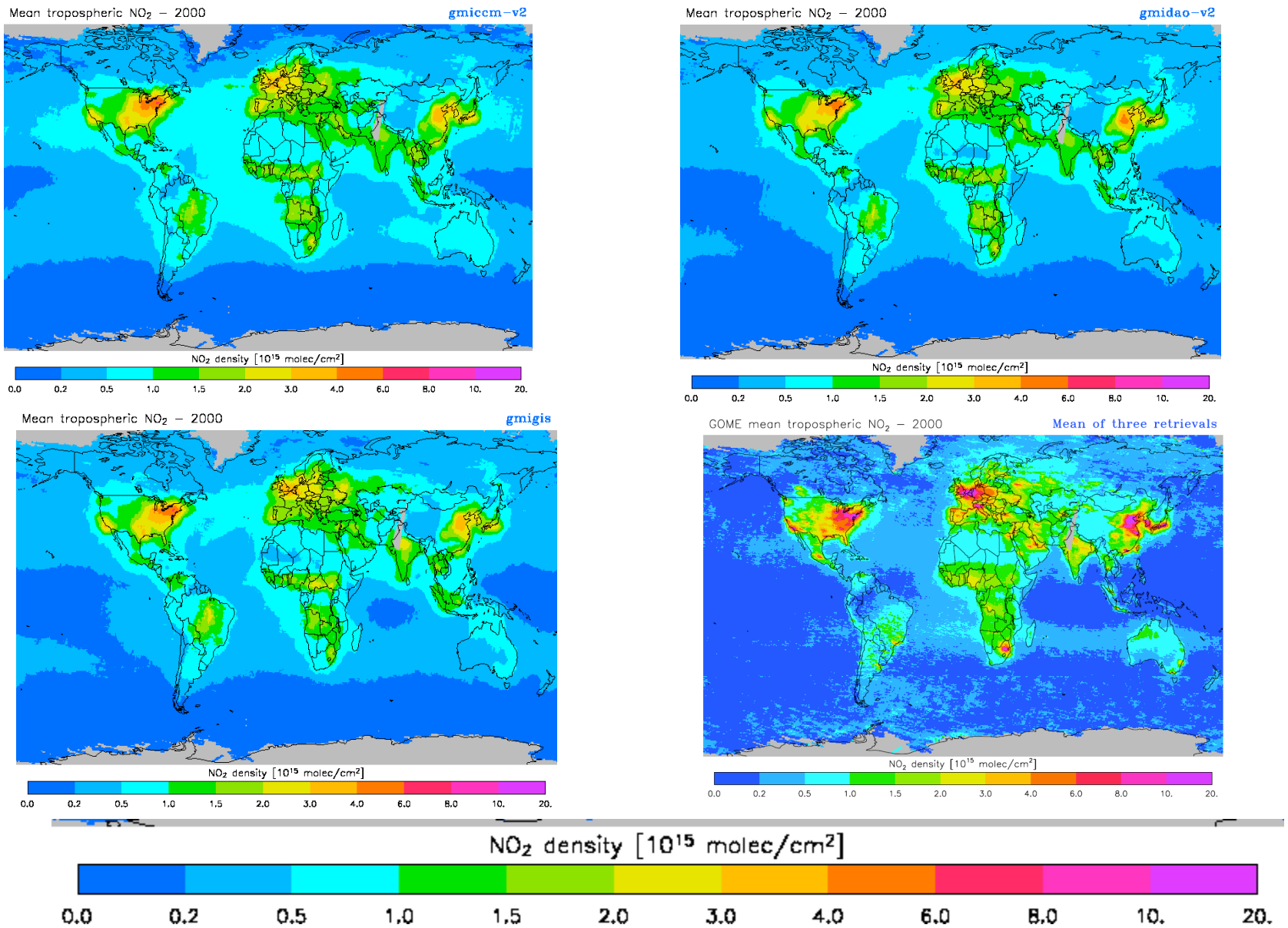




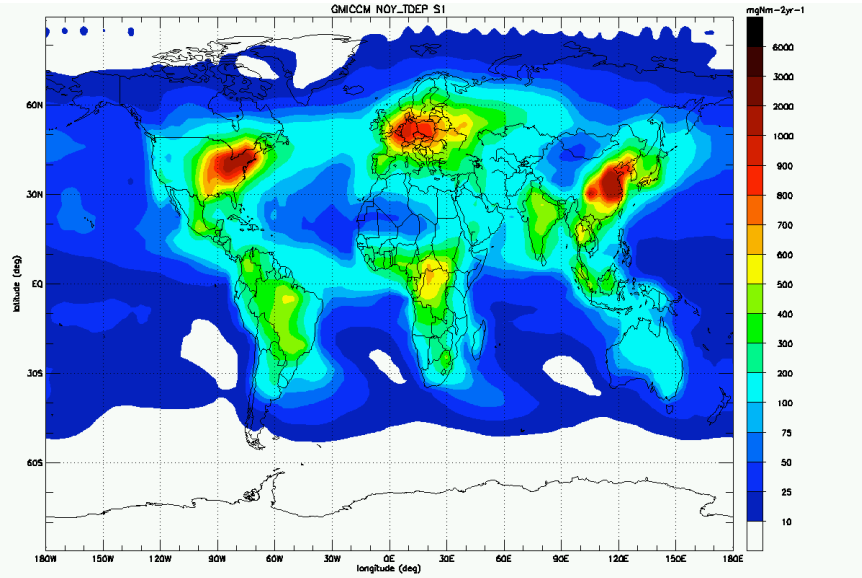


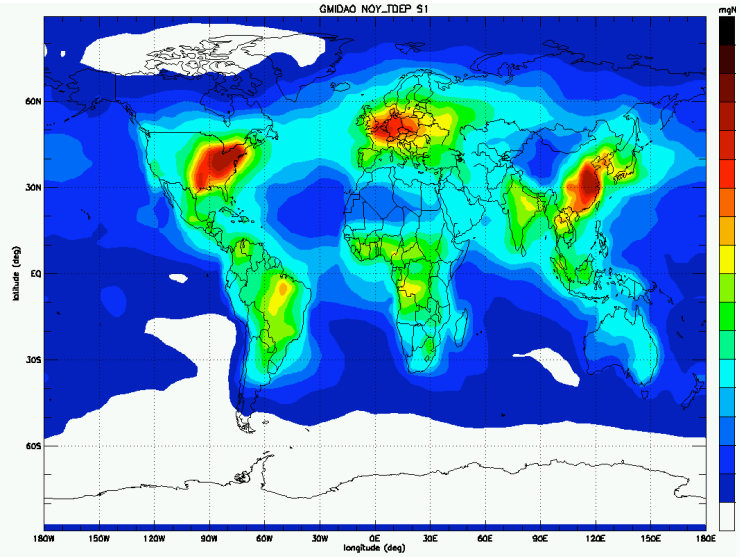


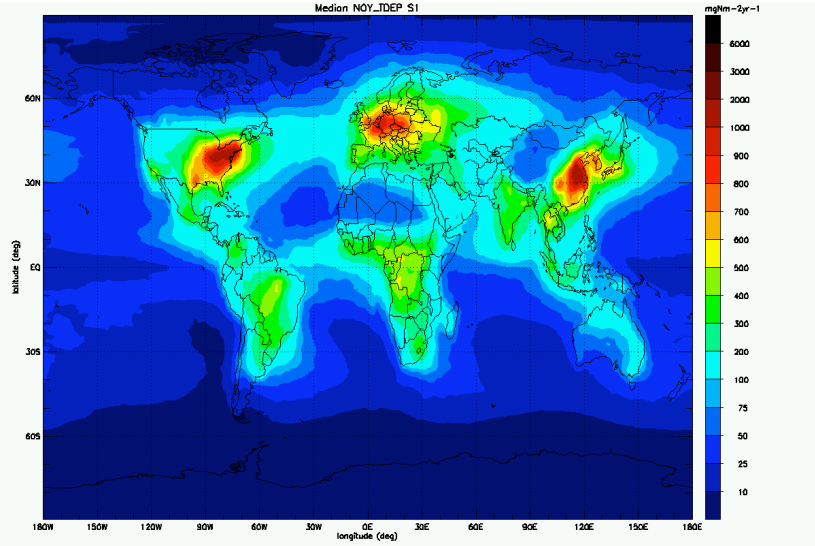
Column NO2 – Current day, annual average, compared to annual average of GOME 2000, average of 3 retrieval methods

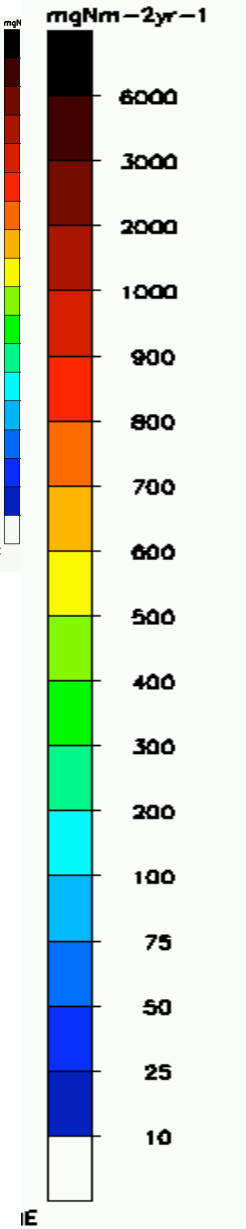


NOy Deposition

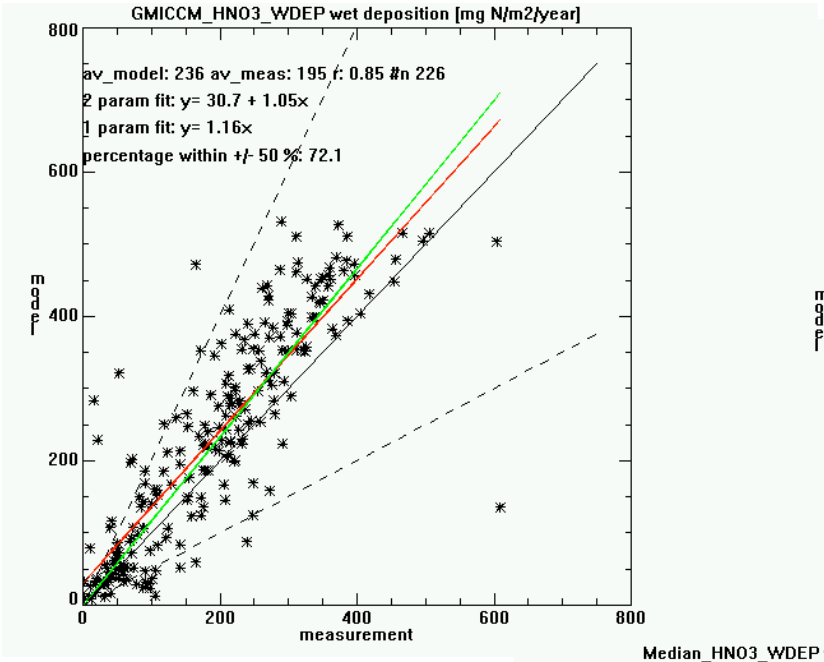


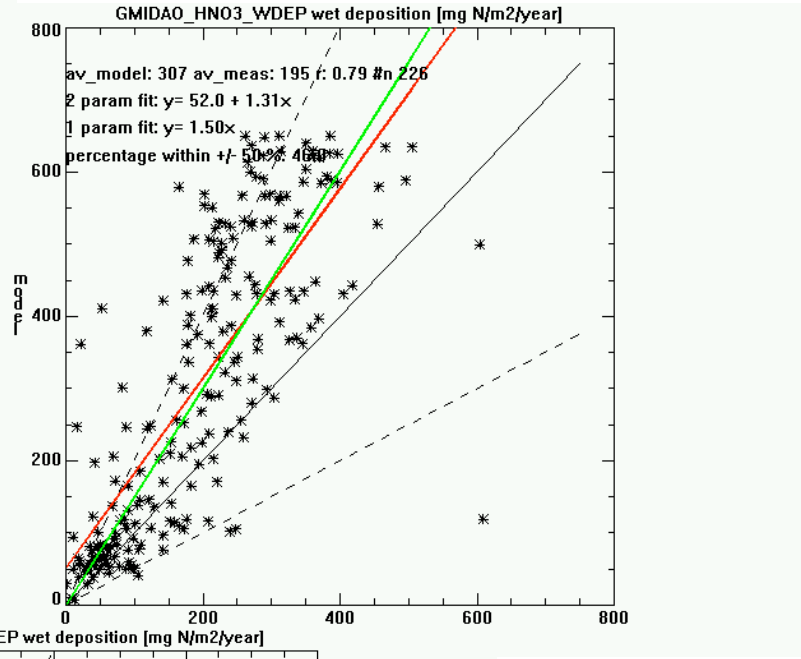


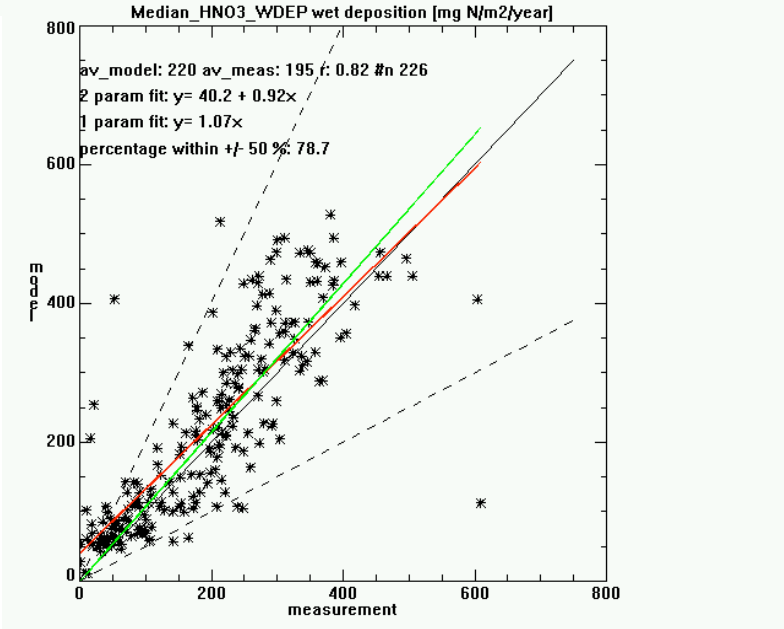




Comparison to Wet Deposition of NOy over North America







Tropospheric O3 budget (Tg/O3/yr). D=Deposition, S=dediced strat.

	P	L	D	S_{inf}	B_{O3}	τ_{O3}	τ_{CH4}
CHASER_CTM	5042	4594	948	501	331	21.8	8.42
CHASER_GCM	5032	4620	948	536	333	21.8	8.37
FRSGC_UCI	5135	4733	907	505	331	21.4	7.61
GEOS-CHEM	4490	*3770*	1016	*296*	*294*	22.4	*10.17*
MOZ2-GFDL	5263	5087	963	*787*	349	21.0	8.42
GMI/CCM	5331	5059	862	590	*388*	23.9	7.50
GMI/DAO	5124	4940	*763*	579	*386*	*24.7*	7.64
GMI/GIS	4722	4396	856	530	372	*25.9*	8.54
LLNL-IMPACT	5432	5160	1014	*742*	*406*	24.0	*7.18*
LMDz/INCA (CTM)	4912	4182	1232	502	330	22.3	8.57
LMDz/INCAc (GCM)	4931	4027	1227	*324*	316	22.0	8.78
MOZECH	*6920*	*6617*	963	660	*407*	*19.6*	*6.31*
MOZART4 (NCAR)	4964	4670	906	612	375	*24.5*	9.07
STOCHEM-HadAM3	5331	4821	945	435	*274*	*17.3*	8.44
STOCHEM-HadGEM	5114	*3757*	*1507*	*151*	*293*	*20.3*	*10.36*
TM4	4806	4594	*720*	508	344	23.6	8.80
TM5	4580	4623	827	*871*	339	22.7	7.93
ULAQ	5009	4469	*1356*	623	328	21.3	8.06
UM_CAM	*3922*	*3363*	1172	614	303	*24.4*	*10.57*
Mean ± Standard Deviation	**5056 ± 571**	**4561 ± 722**	**1014 ± 219**	**519 ± 195**	**343 ± 42**	**22.4 ± 2.0**	**8.72 ± 1.30**
IPCC TAR	**3420**	**3470**	**770**	**770**	**300**	**24**	**8.4**