

Supplementary material

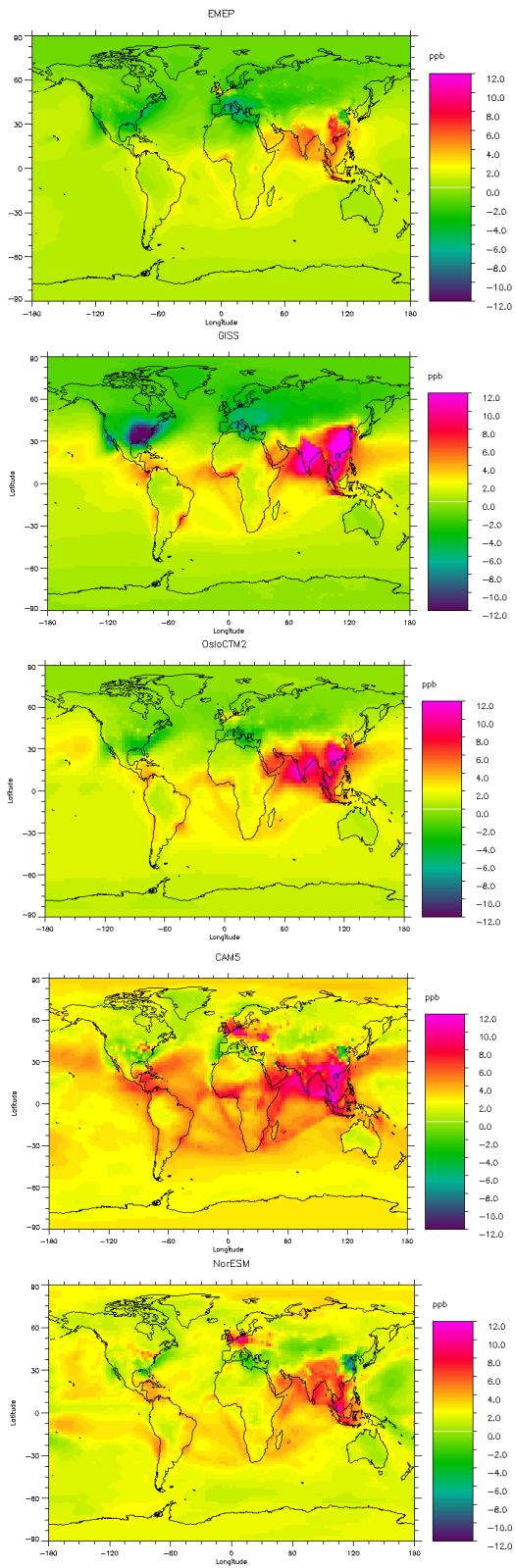


Figure S1: Surface ozone changes (ppb) over the 1990-2015 period for five models.

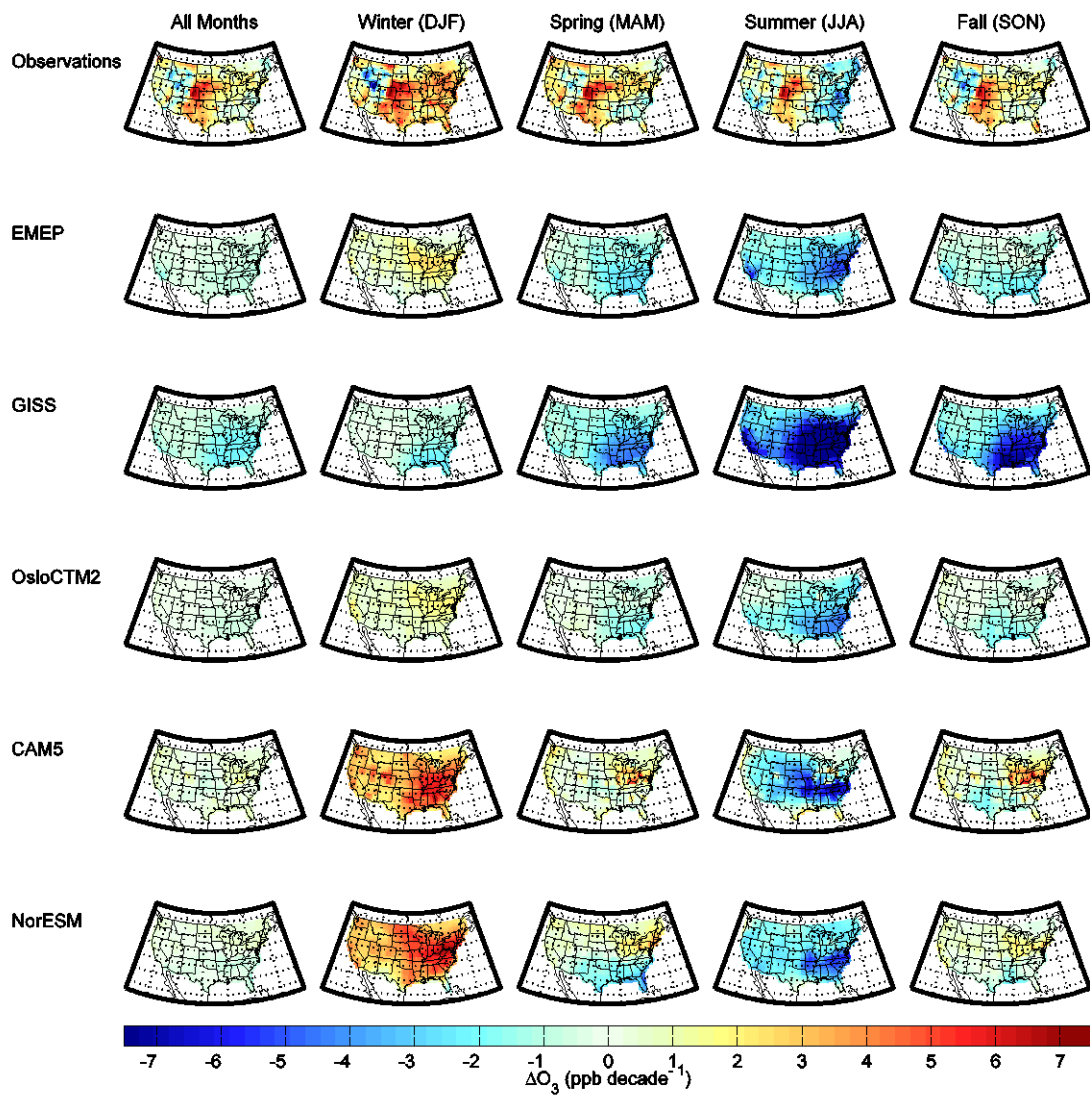


Figure S2. Surface ozone changes (ppb decade^{-1}) in observations and five models over the US. Trends in the observations, CAM5, and NorESM are with respect to 1993-2013. Trends in EMEP, GISS-E2-R, and OsloCTM2 are derived from 5-year intervals from 1990-2015.

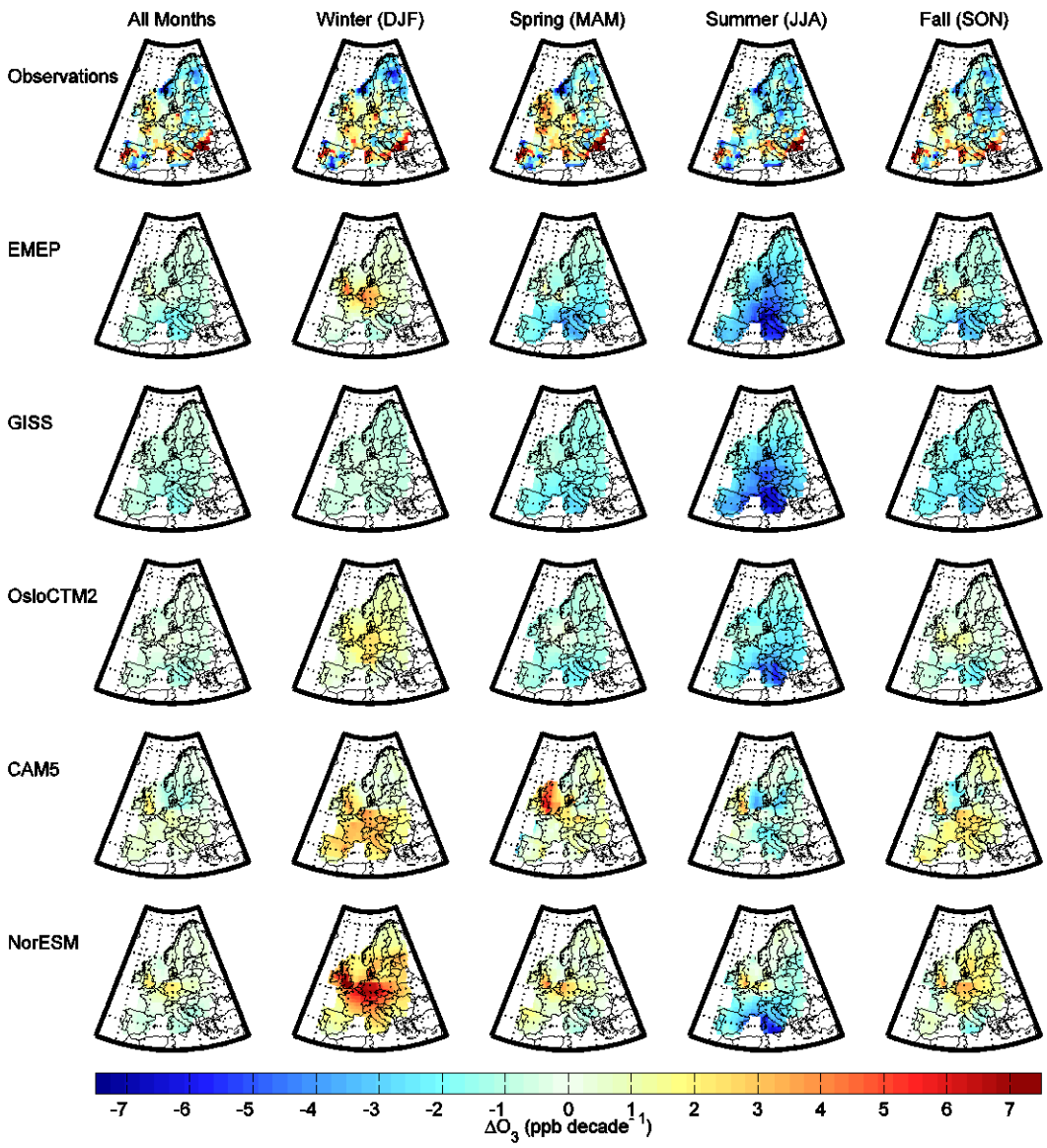


Figure S3. Surface ozone changes (ppb decade⁻¹) in observations and five models over Europe. Trends in the observations, CAM5, and NorESM are with respect to 1997-2013. Trends in EMEP, GISS-E2-R, and OsloCTM2 are derived from 5-year intervals from 1995-2015.

Table S1. Surface ozone trends (ppb decade⁻¹) for the observations (OBS), 5 global CCMs, and the model ensemble mean (EM) averaged over the US, Western US, Eastern US, Europe, Southern Europe, and Northern Europe with respect to the annual mean (ALL), winter (DJF), spring (MAM), summer (JJA), and fall (SON) months.

<i>Region</i>	<i>Months</i>	OBS ^a	EMEP ^b	GISS-E2-R ^b	OsloCTM2 ^b	CAM5 ^a	NorESM ^a	Model Mean ^c
US ^d	All	1.2	-1.0	-3.0	-0.5	0.6	0.4	-0.7
	DJF	2.3	0.9	-0.8	0.9	3.4	3.6	1.6
	MAM	1.6	-1.3	-2.2	-0.5	0.6	0.0	-0.7
	JJA	0.1	-2.5	-5.6	-1.9	-2.2	-2.3	-2.9
	SON	1.0	-1.1	-3.4	-0.5	0.5	0.3	-0.8
Western US	All	1.6	-0.8	-2.0	-0.2	0.3	0.3	-0.5
	DJF	1.8	0.6	-0.3	0.7	2.9	3.0	1.4
	MAM	2.1	-0.9	-1.5	0.0	0.3	-0.1	-0.4
	JJA	1.2	-1.8	-4.1	-1.2	-2.0	-1.8	-2.2
	SON	1.1	-1.0	-2.2	-0.3	-0.1	0.3	-0.7
Eastern US	All	0.9	-1.3	-4.0	-0.8	0.9	0.4	-0.9
	DJF	2.8	1.2	-1.2	1.1	4.0	4.2	1.9
	MAM	1.0	-1.8	-3.0	-1.0	0.9	0.0	-1.0
	JJA	-1.2	-3.2	-7.1	-2.6	-2.3	-2.9	-3.7
	SON	0.9	-1.2	-4.6	-0.7	1.1	0.2	-1.0
Europe ^e	All	-0.1	-1.3	-1.7	-0.6	0.7	0.8	-0.4
	DJF	0.1	0.7	-0.6	1.0	1.6	2.8	1.1
	MAM	0.5	-1.6	-1.5	-1.0	1.0	0.5	-0.5
	JJA	-0.8	-3.1	-3.0	-2.1	-0.6	-1.1	-2.0
	SON	-0.1	-1.3	-1.8	-0.3	0.8	0.8	-0.4
Southern Europe	All	0.7	-1.7	-2.1	-0.8	1.0	0.6	-0.6
	DJF	0.9	0.7	-0.6	1.0	2.3	3.2	1.3
	MAM	1.2	-2.1	-1.8	-1.2	0.8	0.6	-0.7
	JJA	0.0	-3.6	-3.8	-2.5	-0.6	-1.9	-2.5
	SON	0.7	-1.6	-2.1	-0.5	1.3	0.6	-0.5
Northern Europe	All	-1.1	-0.9	-1.3	-0.3	0.3	0.9	-0.3
	DJF	-1.0	0.7	-0.7	1.2	0.6	2.4	0.8

	MAM	-0.5	-1.0	-1.2	-0.7	1.2	0.4	-0.3
	JJA	-1.8	-2.3	-2.0	-1.6	-0.7	-0.2	-1.4
	SON	-1.0	-0.9	-1.5	-0.1	0.1	1.1	-0.3

^aTrends calculated over 1993-2013 in US and 1997-2012 in Europe.

^bTrends calculated using 5 year intervals from 1990 to 2015 in US and 1995 to 2015 in EU.

^cThe model mean is calculated by averaging each model's trend at each grid cell, then averaged over the region.

^dThe US domain is split into western and eastern regions at 96°W

^eThe Europe domain is split into southern and northern regions at 53°N