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High-resolution modeling of the distribution of surface air pollutants and their intercontinental transport by a global tropospheric atmospheric chemistry source–receptor model (GNAQPMS-SM)

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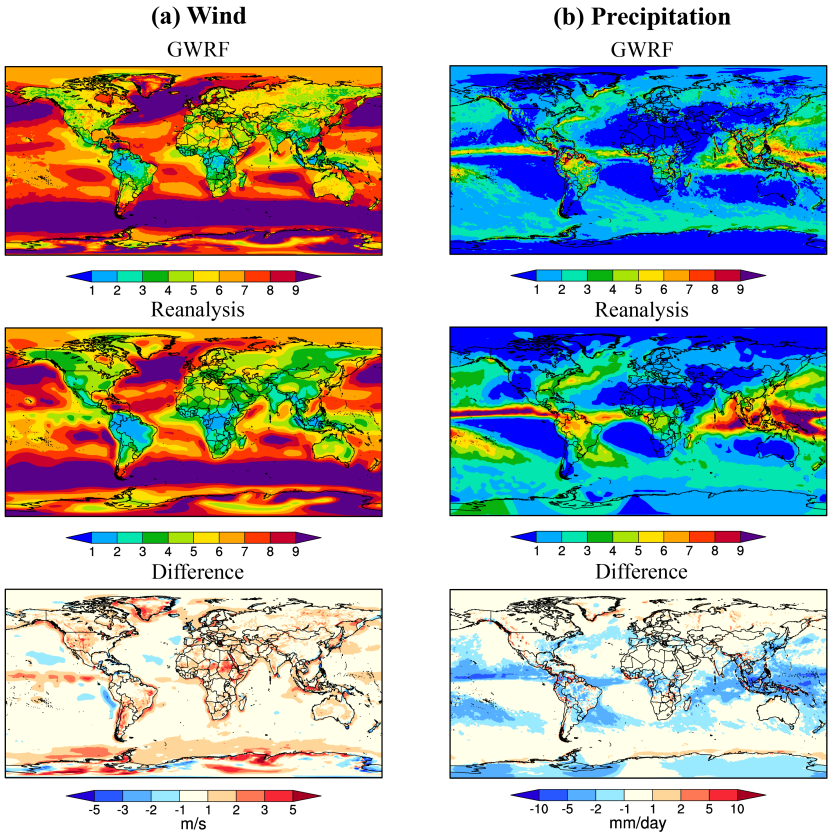

Figure S1. Comparison of annual meteorological fields: (a) wind and (b) daily precipitation.

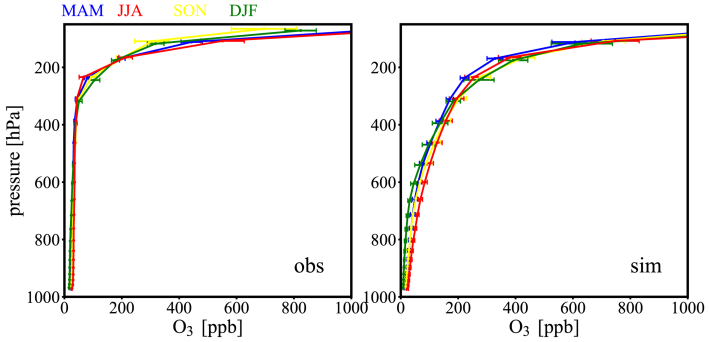

Figure S2. Comparisons of GNAQPMS-simulated seasonal mean ozone vertical profiles with ozonesonde observations averaged over the Southern Hemisphere.

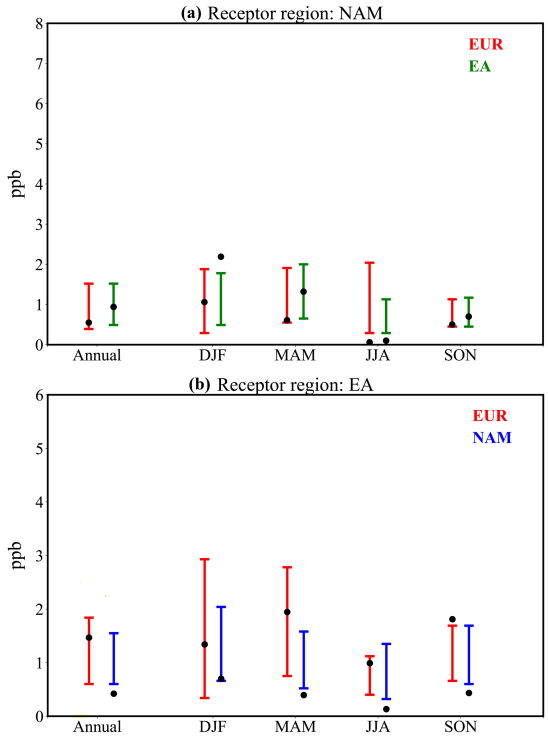

Figure S3. Annual and seasonal mean contribution to (a) NAM and (b) EA surface O_3 from source regions. (red vertical bars for EUR, blue vertical bars for NAM, green vertical bars for EA (Fiore et al., 2009); black dots for our results). The contributions from Fiore et al. (2009) are estimated by linearly scaling the simulated surface O_3 response to the combined 20% decreases in anthropogenic emissions of NO_x, CO, and NMVOC in the source regions to 100% decreases.

Table S1. The definition of tagged source regions used.

Source region	Definition
China	China
RBU	Russia, Belarussia, Ukraine
MCA	Mexico, Central America, Caribbean, Guyanas, Venezuela, Colombia
MDE	Middle East
SAF	Sub-Saharan/sub-Sahel Africa
NAF	Northern Africa, Sahara, Sahel
PAN	Pacific, Australia, New Zealand
SEA	South East Asia
SAS	South Asia
EUR	Europe
CAS	Central Asia, Mongolia
NAM	US + Canada
SAM	South America
SPO	Antarctic
South Korea	South Korea
Japan	Japan
North Korea	North Korea
NPO	the ocean north of 66.5° N
OCN	Non-arctic Ocean

Table S2. The annual correlation coefficient and normalised mean bias over EA, EUR and NAM in GNAQPMS.

		O_3	NO_2	$PM_{2.5}$	BC	OC	SNA	nss-sulphate	SO_2
EA	R	0.76	0.89	0.95	0.77		0.59	0.75	0.88
	NMB	2.96%	-25.69%	-3.07%	-52.08%		-36.07%	-40.47%	60.32%
EUR	R	0.82	0.87	0.73	0.89	0.82	0.50	0.37	0.77
	NMB	6.86%	-31.15%	-4.47%	-20.30%	-45.15%	-36.04%	-73.68%	73.25%
NAM	R	0.83	0.56	0.69	0.66	0.69	0.78	0.55	0.53
	NMB	2.29%	2.49%	-4.44%	-49.97%	-50.70%	8.73%	-14.18%	36.37%

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