

Supplement of

Technical note: Assessment of OMI/MLS Satellite-Derived Tropospheric Ozone Product for predicting monthly surface-level ozone concentrations

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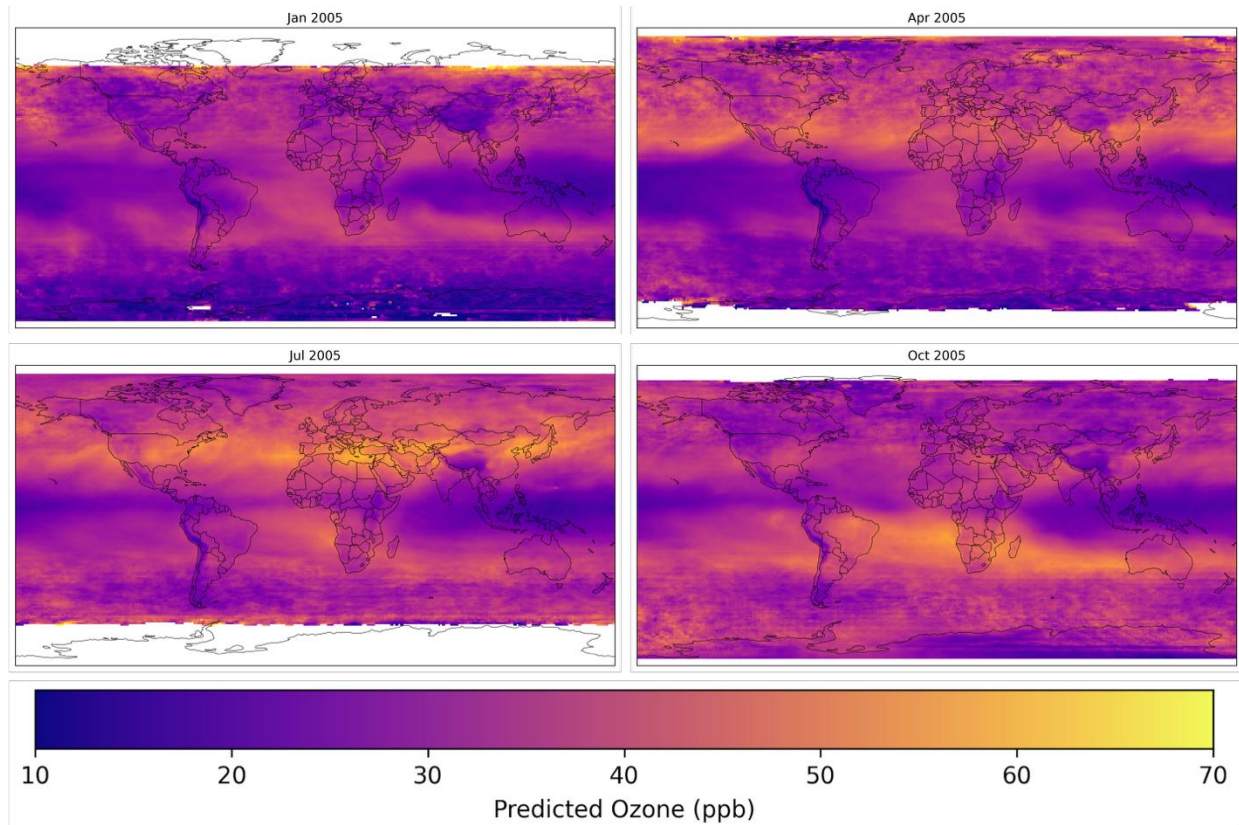
Table S1. The regions defined by Hemispheric Transport Air Pollution(HTAP)2 (Koffi et al., 2016). The definitions for the regions in bold were used for analysis in this study.

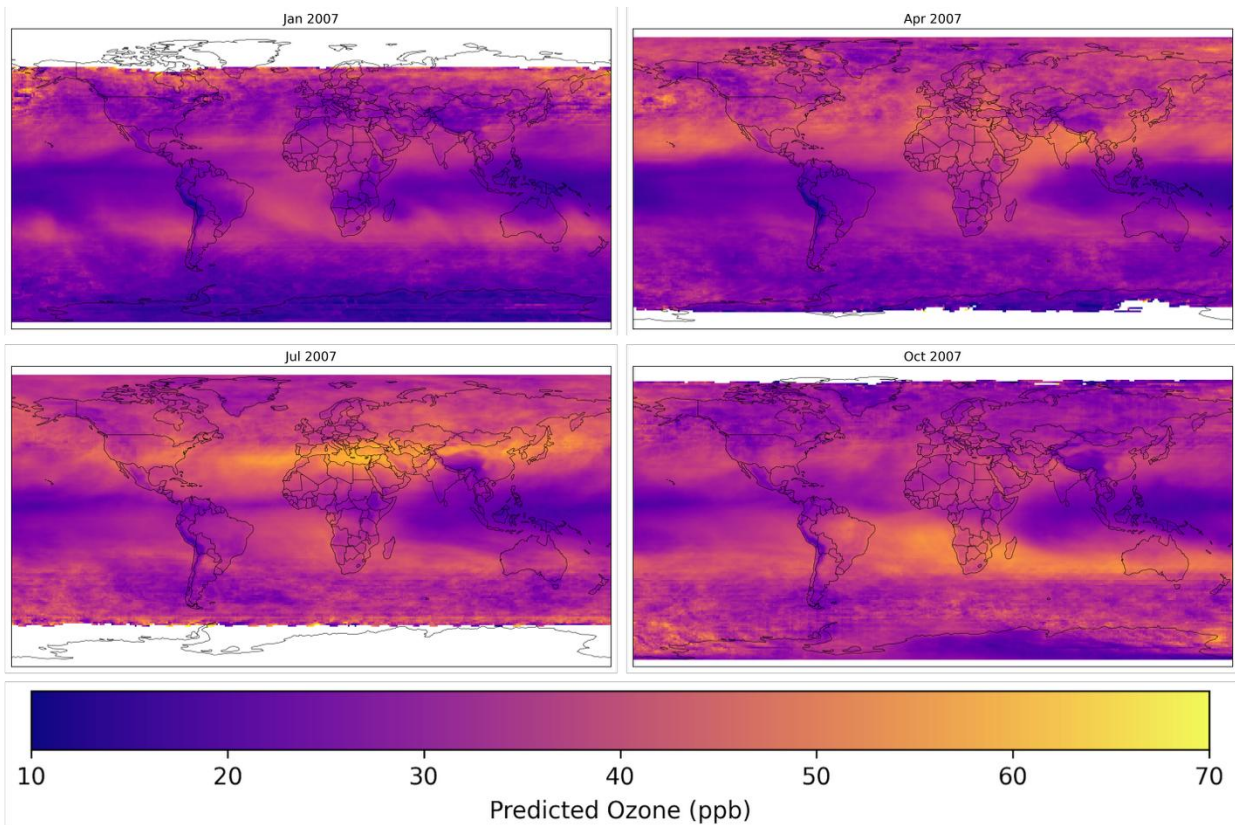
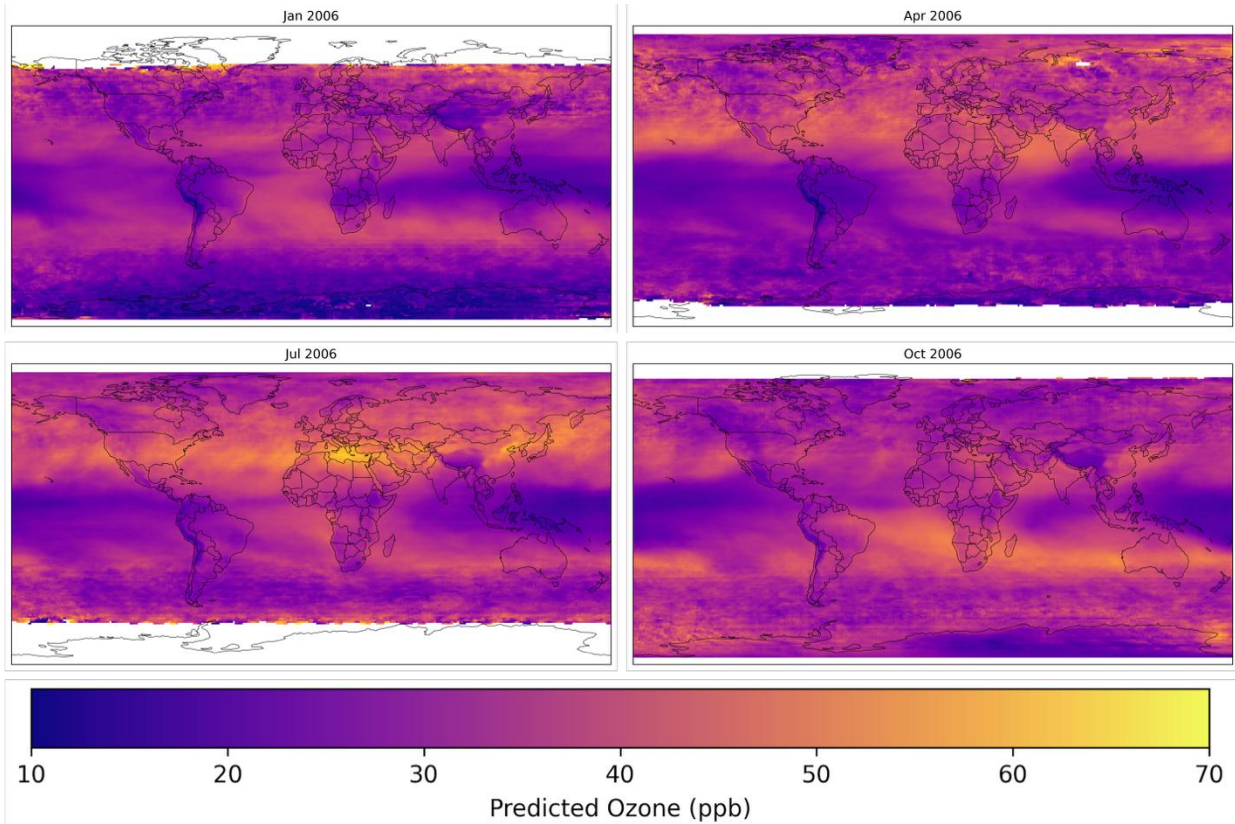
	Tier 1 (Source)	Tier 2 (Receptor)
01	World	
02	Non-arctic/Antarctic Ocean	020 Baltic Sea 021 North Atlantic 022 South Atlantic 023 North Pacific 024 South Pacific 025 Indian Ocean 026 Hudson Bay 027 Mediterranean Sea 028 Black and Caspian Sea 150 Arctic seas are included in the Arctic receptor region 160 Antarctic seas are included in Antarctic receptor as Southern Ocean
03	US+Canada (upto 66 N; polar circle)	031 NE US (all divided on state or provincial lines) 032 SE US 033 NW US 034 SW US 035 E. Canada 036 W. Canada + Alaska up to 66 N.
04	Western + Eastern EU+Turkey (upto 66 N polar circle)	041 NW Europe 042 SW Europe (France follows provinces level at ca. 46 N). 043 Eastern Europe 044 Greece+Turkey+Cyprus

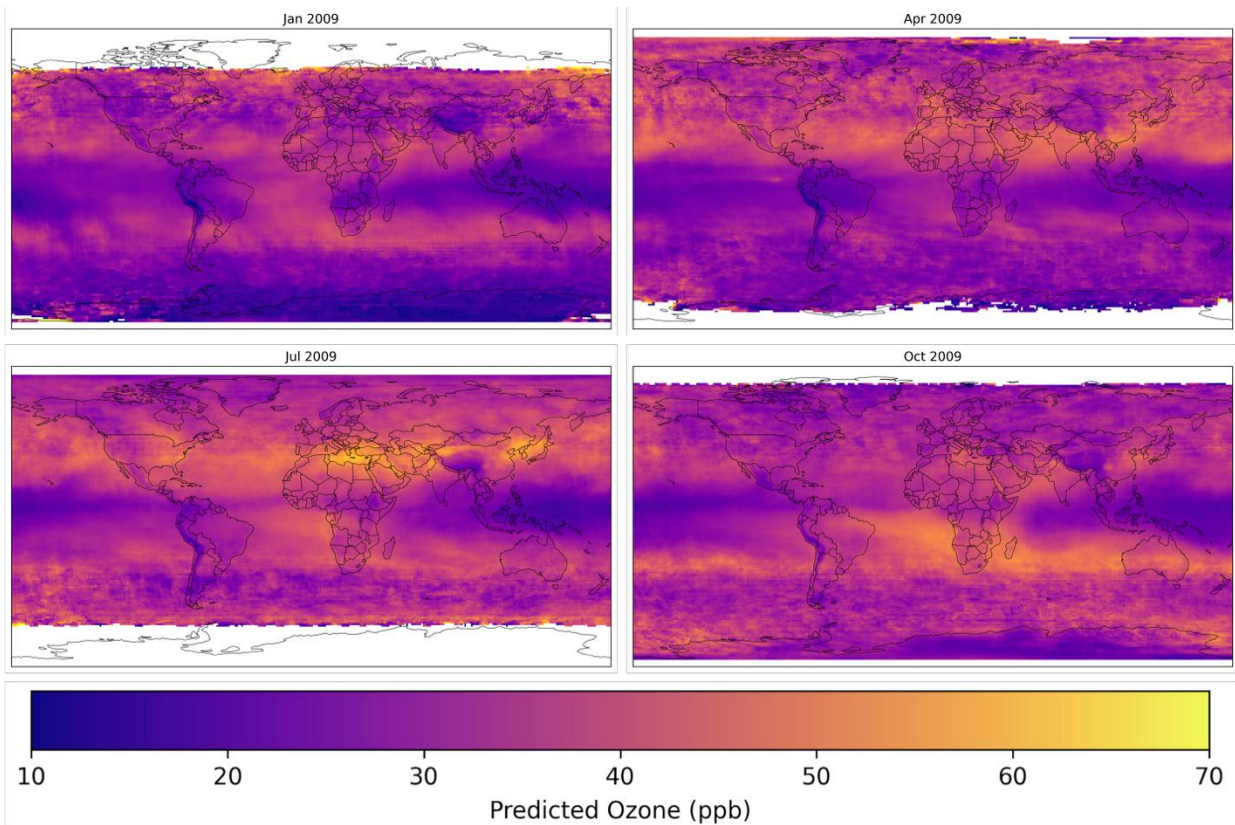
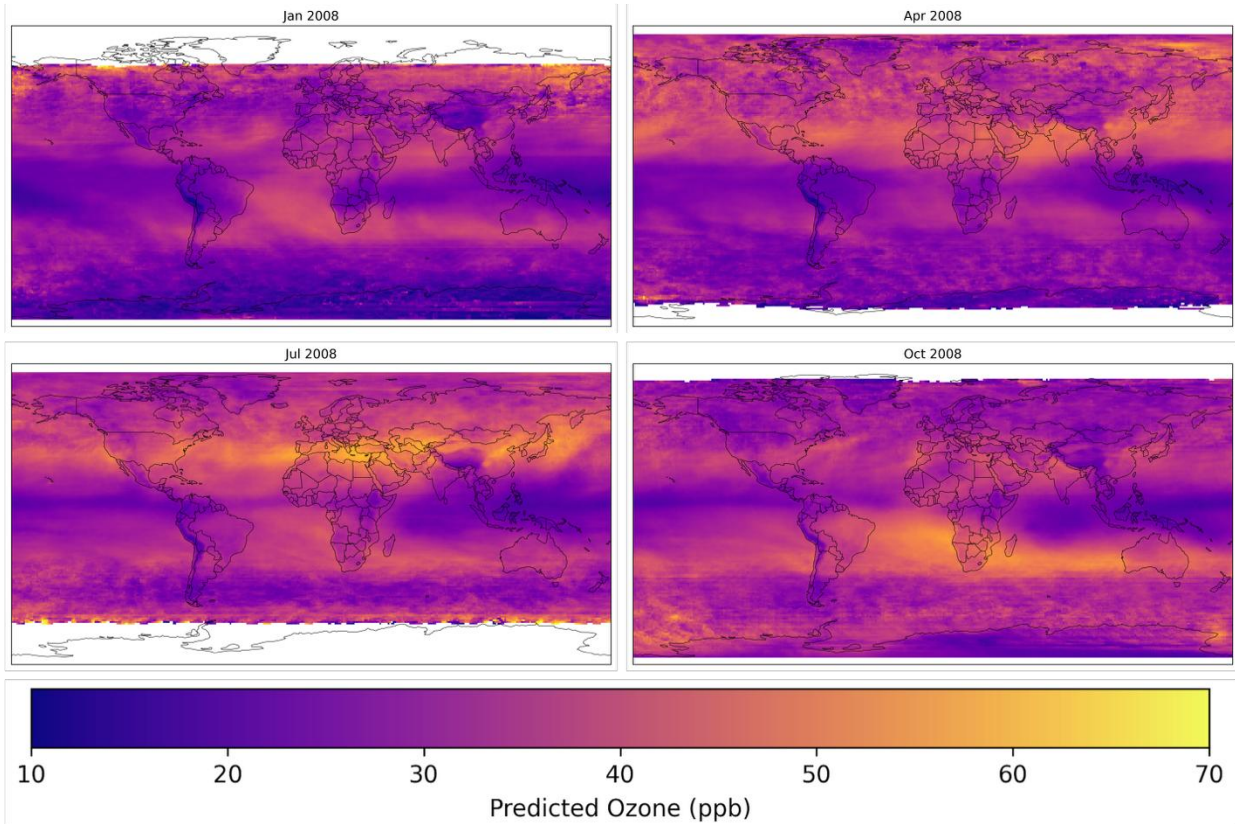
05	South Asia: India, Pakistan, Nepal, Bangladesh, Sri Lanka	051 North India+Pakistan+Nepal+Bangladesh 052 South India+Sri Lanka 053 Indian Himalaya (above an elevation of 1500 m)
06	E Asia: China, Korea, Japan	061 North East China 062 South East China 063 West China +Mongolia (excl. Himalaya) 064 North/South Korea 065 Japan 066 China/Tibet Himalaya (above an elevation of 1500 m)
07	South East Asia	071 Indonesia+Malaysia+Singapore 072 Thailand+Myanmar+Vietnam
08	Pacific, Australia+ New Zealand	081 Pacific 082 Australia 083 New Zealand
09	Northern Africa	091 Egypt 092 Rest of Northern Africa
10	Sub Saharan Africa	101 West and Central Africa: Côte d'Ivoire, Angola, Benin, Burkina Faso, Cameroon, Cape Verde, Chad, Congo Brazzaville, Democratic Republic of Congo, Equatorial Guinea, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo 102 East Africa: Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Sudan, Rwanda, Uganda, Somalia and Tanzania. 103 Southern Africa: Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, and Zimbabwe
11	Middle East; S. Arabia etc, Iran, Iraq	111 Middle East 112 S.Arabia; Yemen; Oman; etc 113 Iran, Iraq
12	Mexico, Central America, Caribbean, Guyanas, Venezuela, Columbia	121 Mexico 122 Central America 123 Caribbean

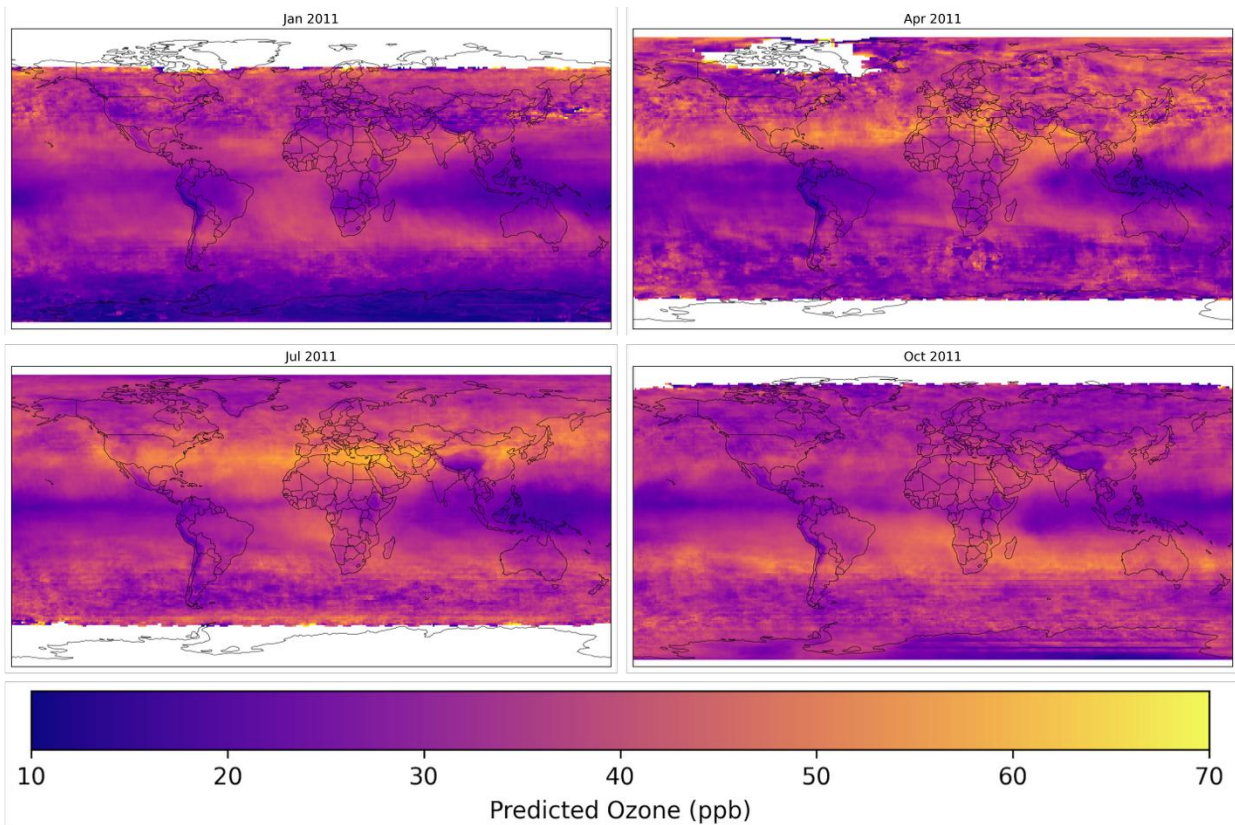
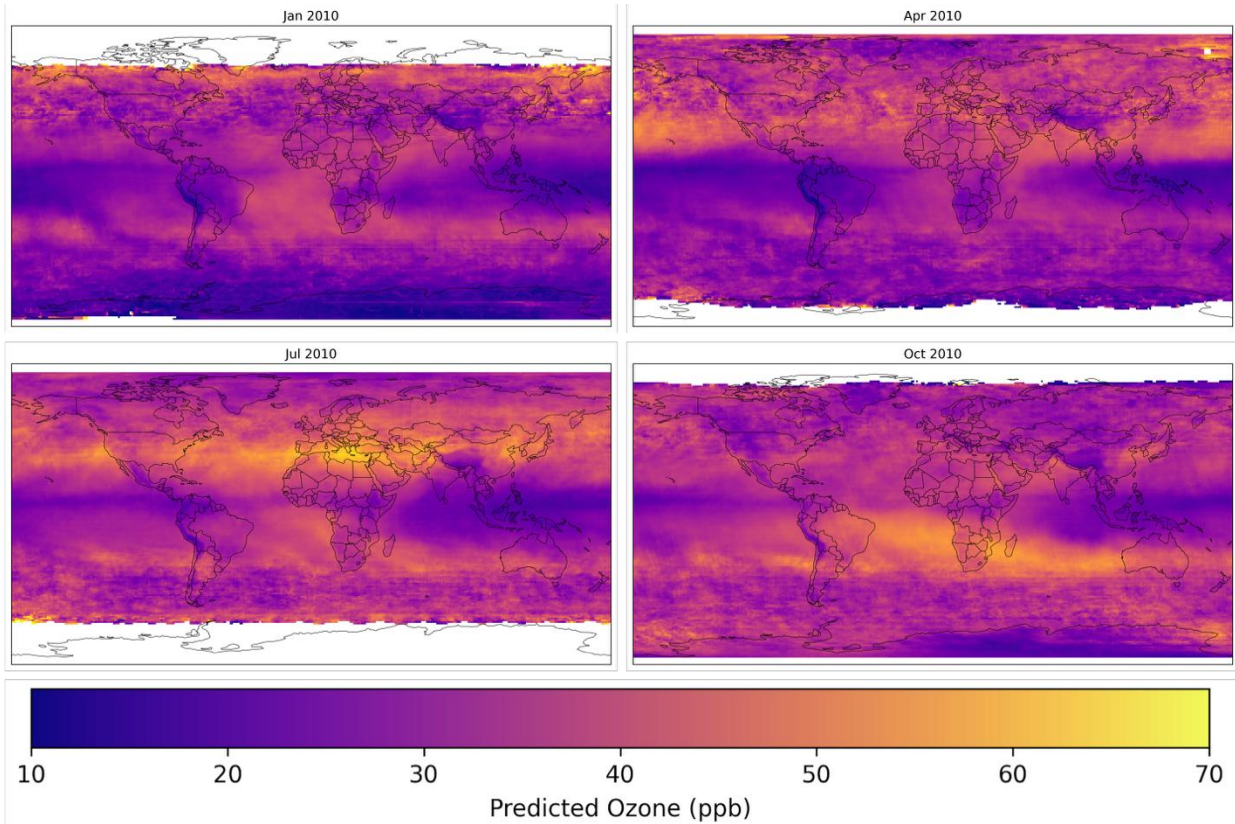
		124 Guyanas, Columbia, Venezuela
13	S. America	131 South Brazil 132 Rest of Brazil 133 Uruguay, Paraguay, Argentina, Chile 134 Peru, Ecuador
14	Russia, Belarussia, Ukraine, Central Asia	141 Russia West 142 Russia East 143 Belarussia+Ukraine 144 Uzbekistan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan 145 Himalaya part of “Stans” (above an elevation of 1500 m)
15*	Arctic Circle (North of 66 N)+Greenland	150 Arctic (includes ocean and all of Greenland)
16*	Antarctic	160 Antarctic 161 Southern Ocean, south of 60S

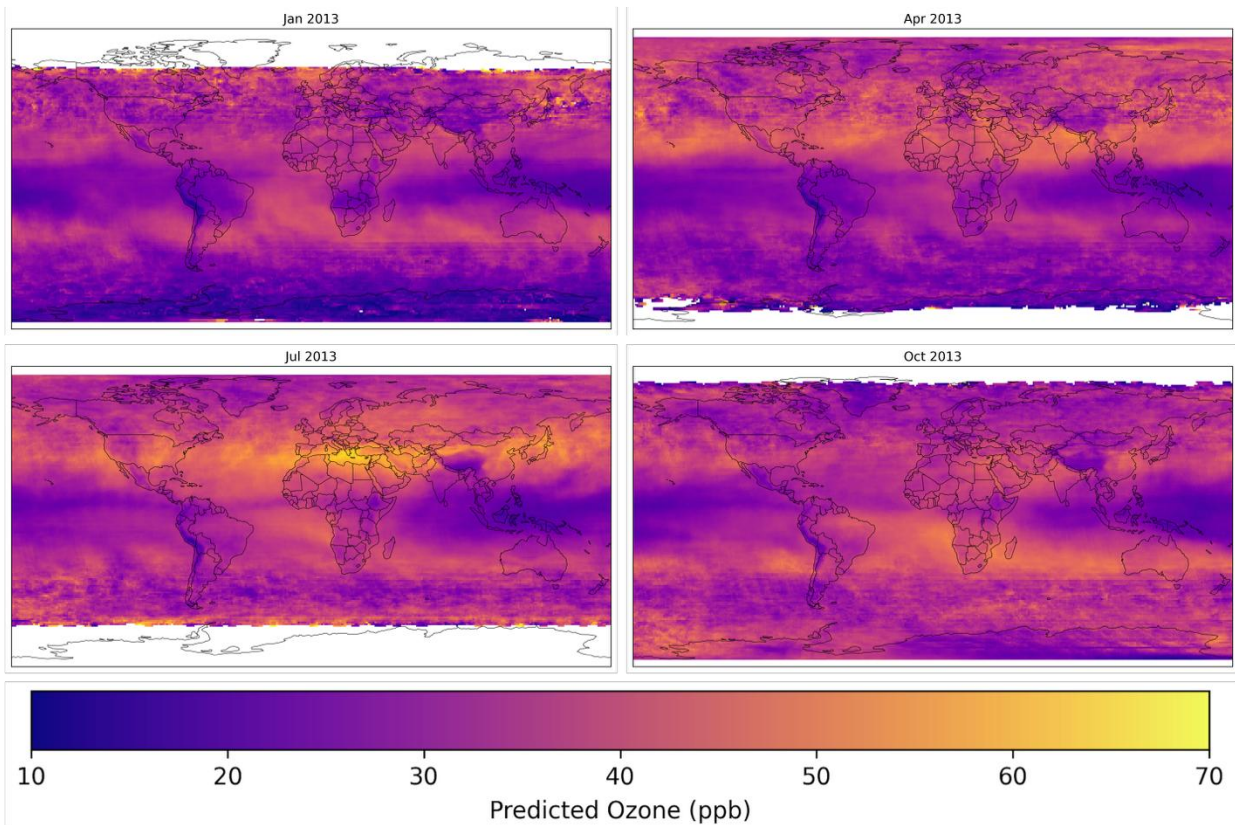
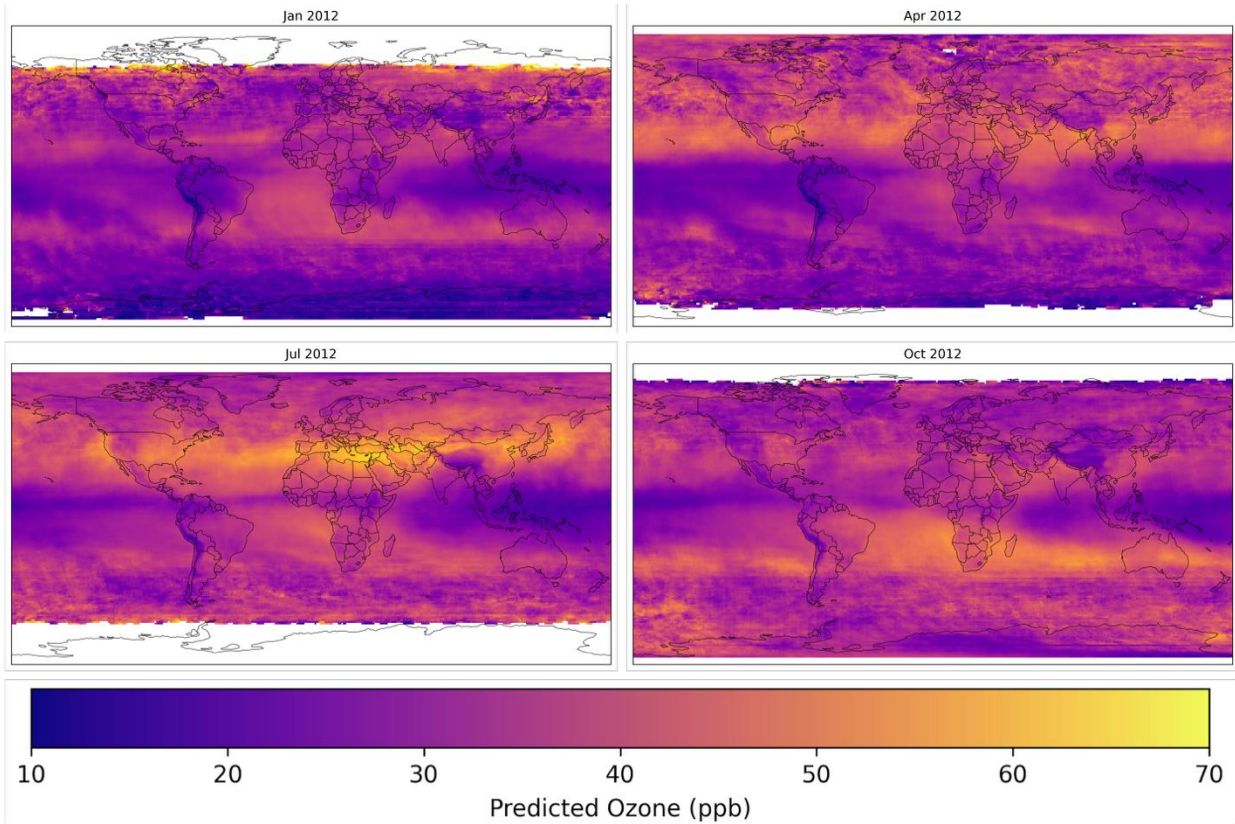
Figure S1: Global ground-level ozone estimate maps created using the OMI/MLS DU dataset and the linear regression results with the TOAR-II dataset, in selected months, from 2005-2022.

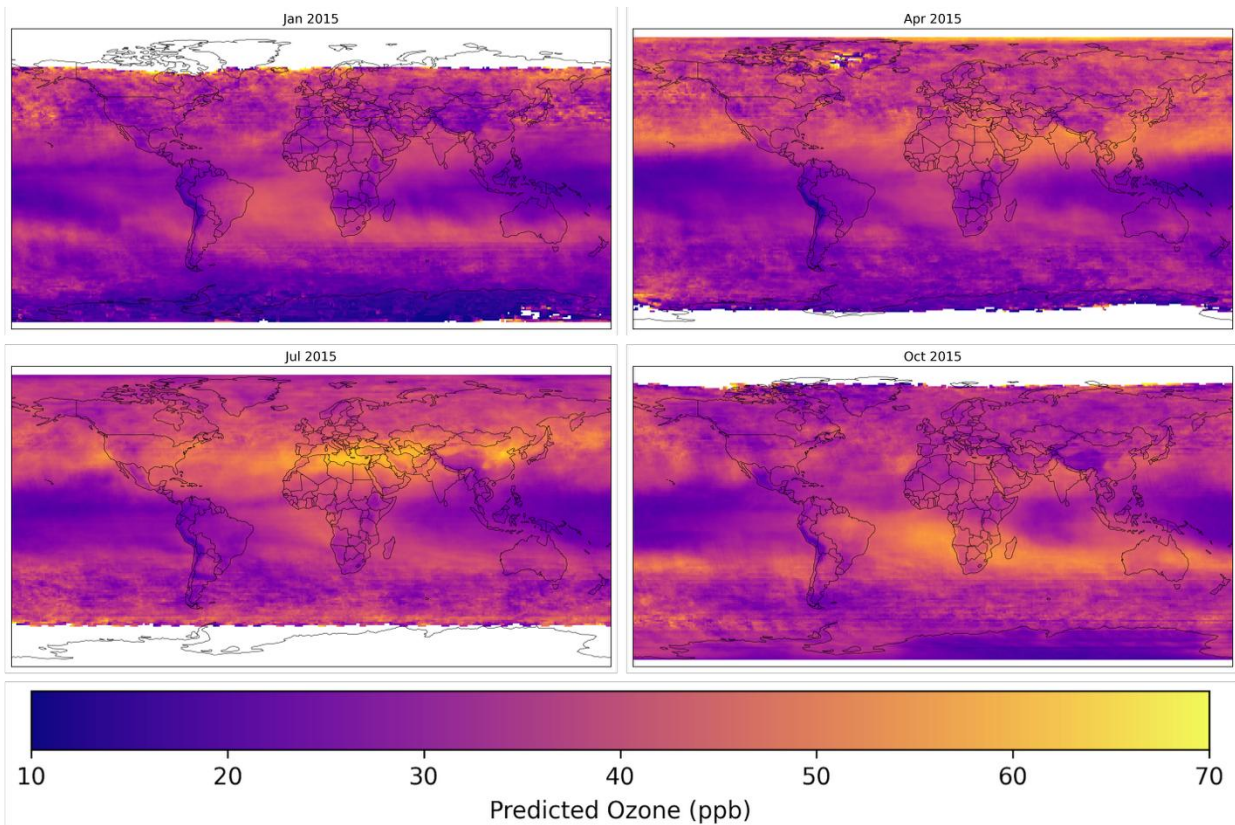
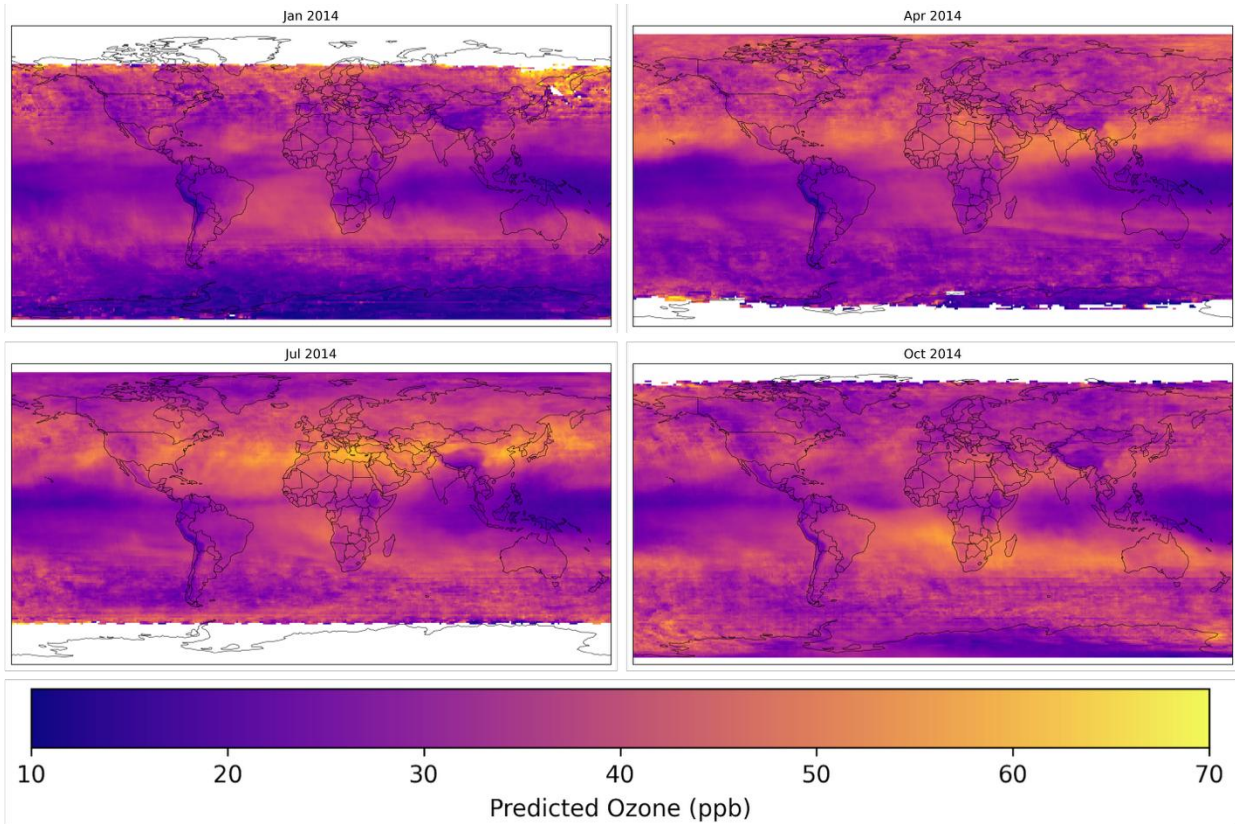


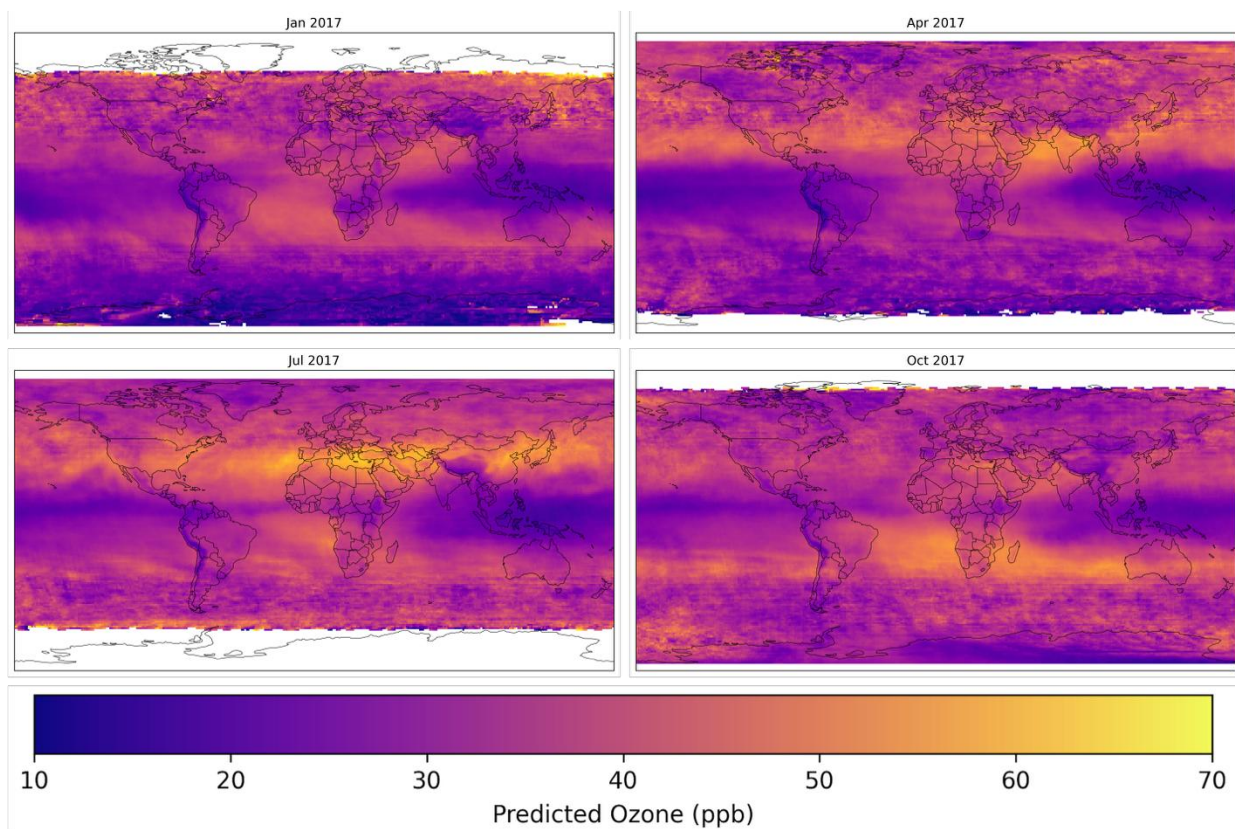
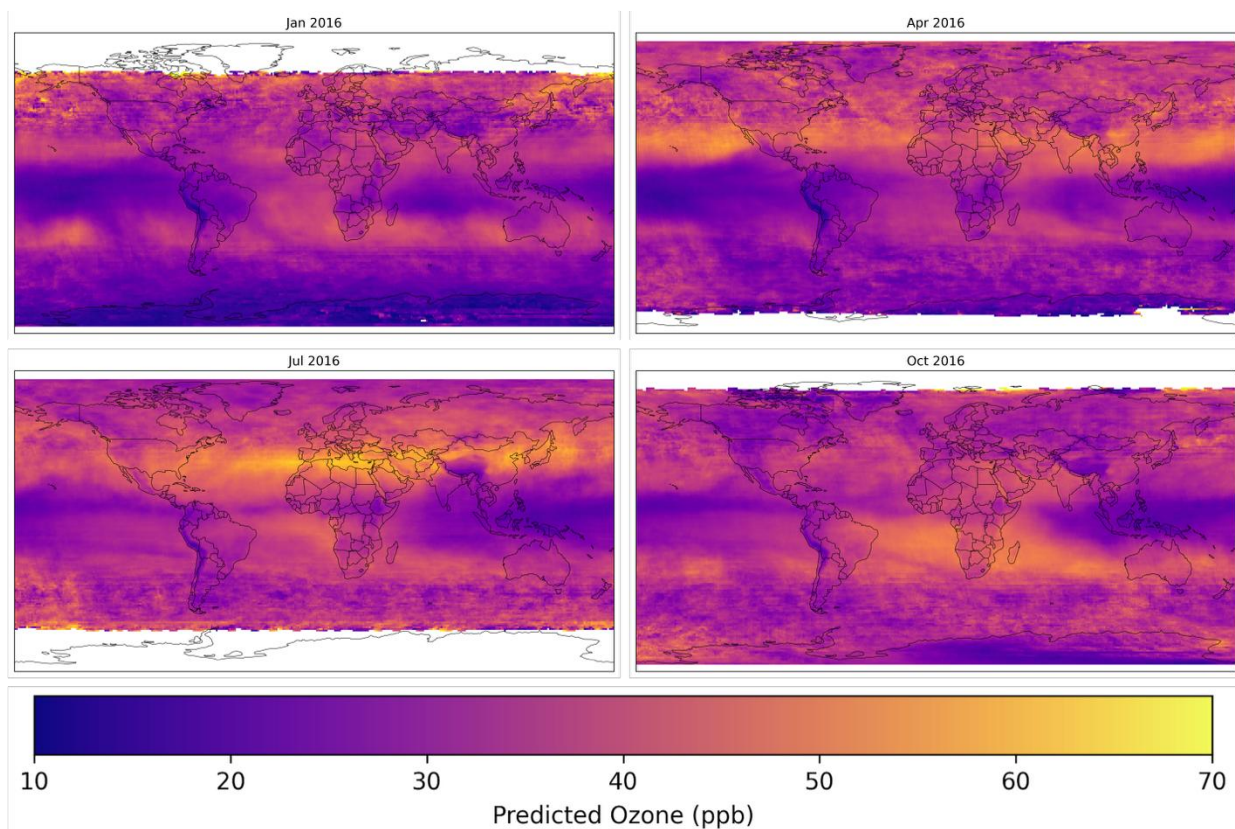


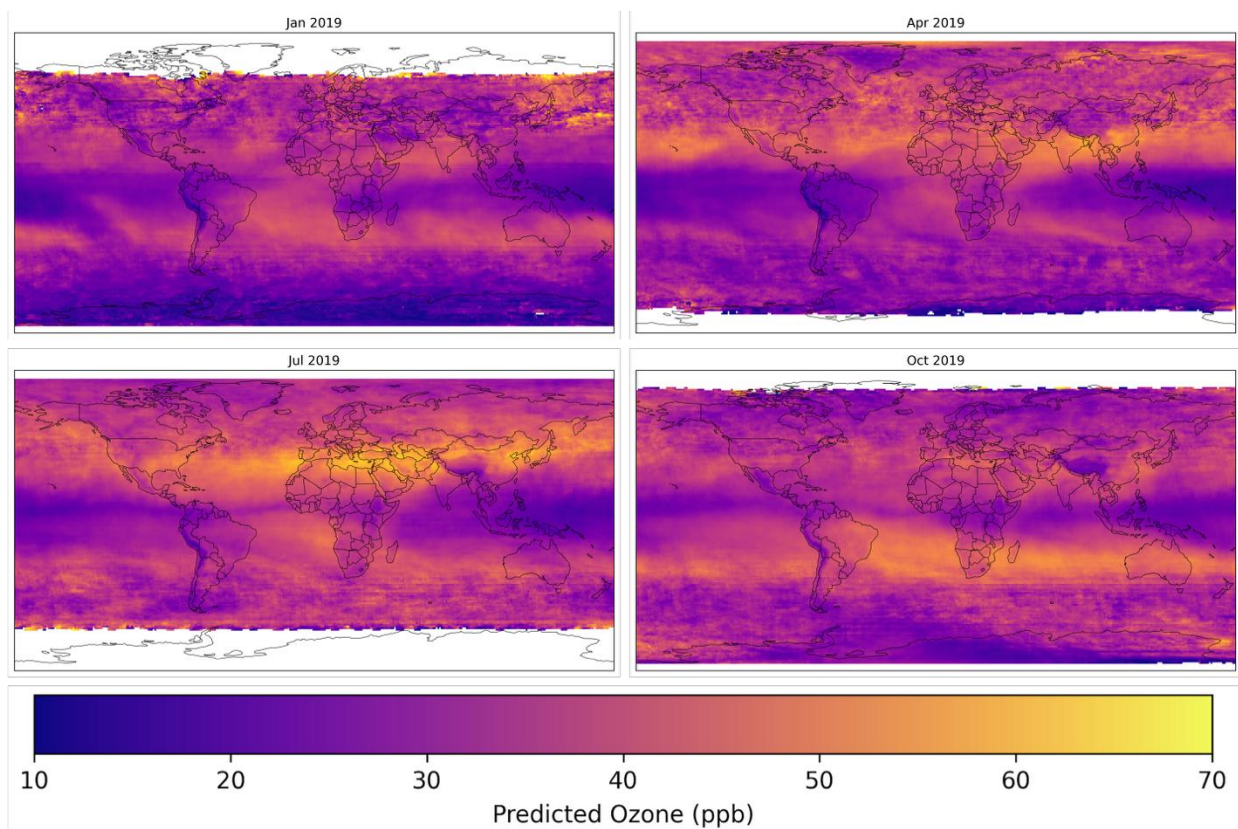
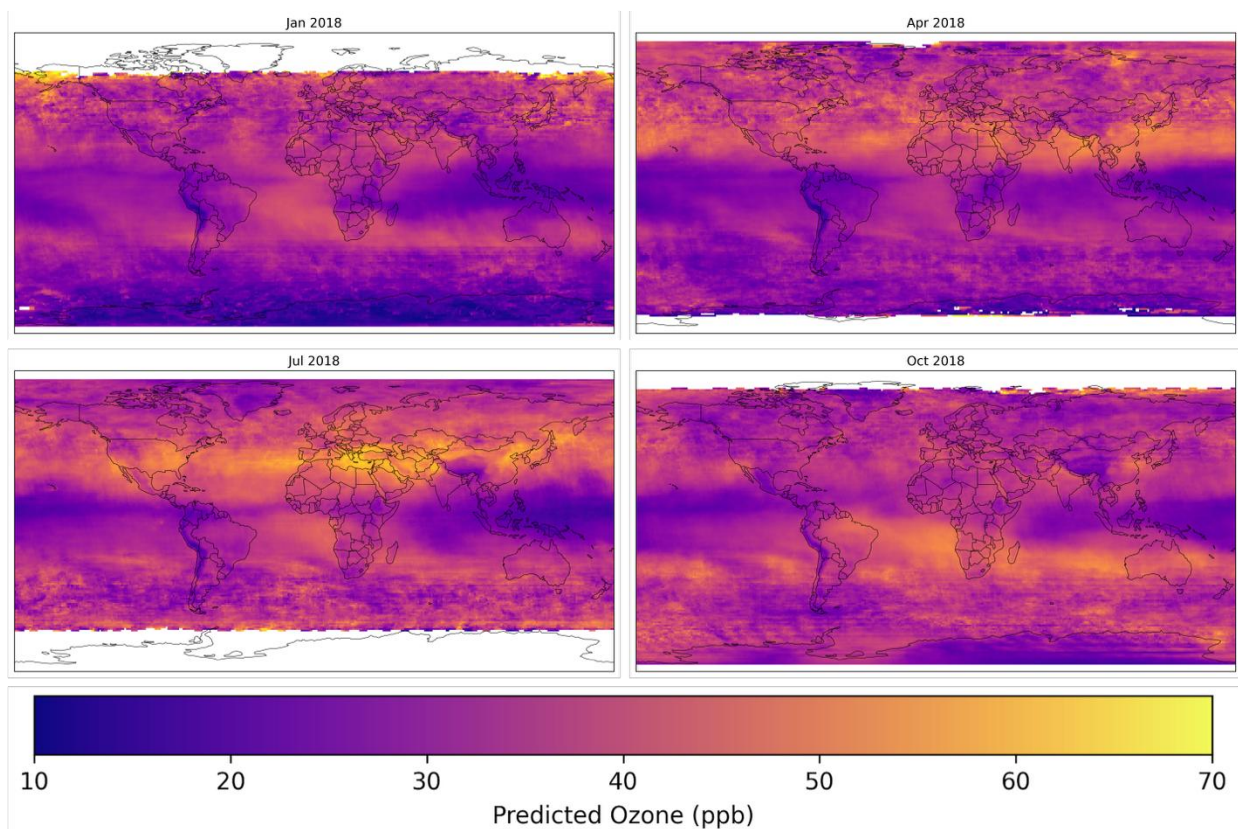


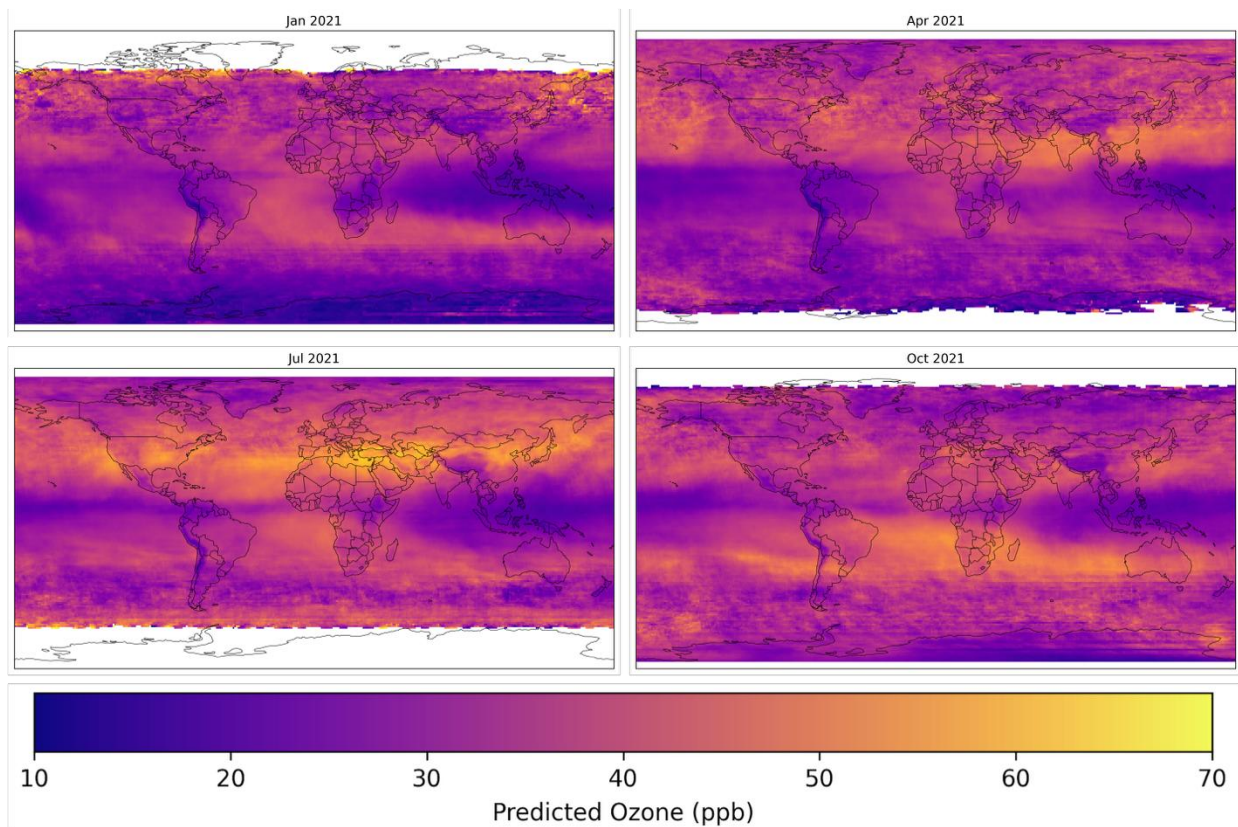
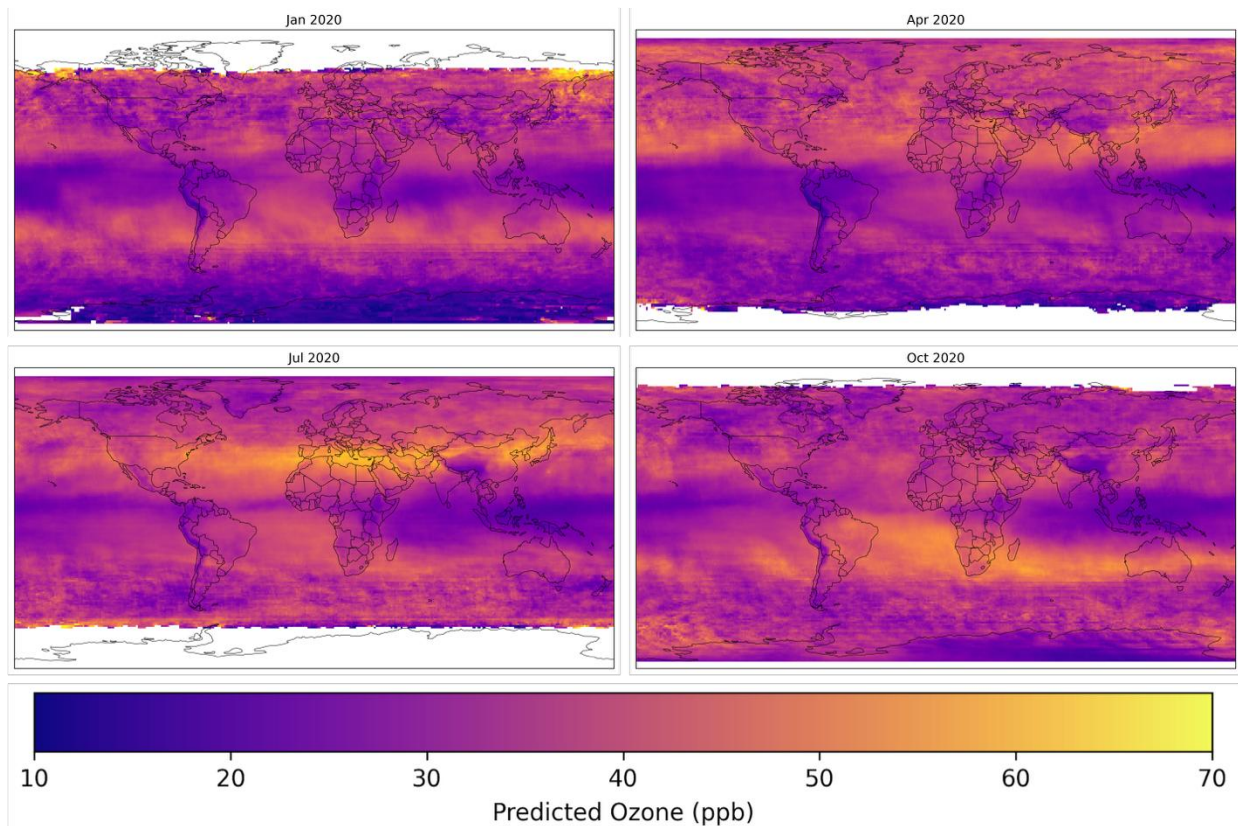












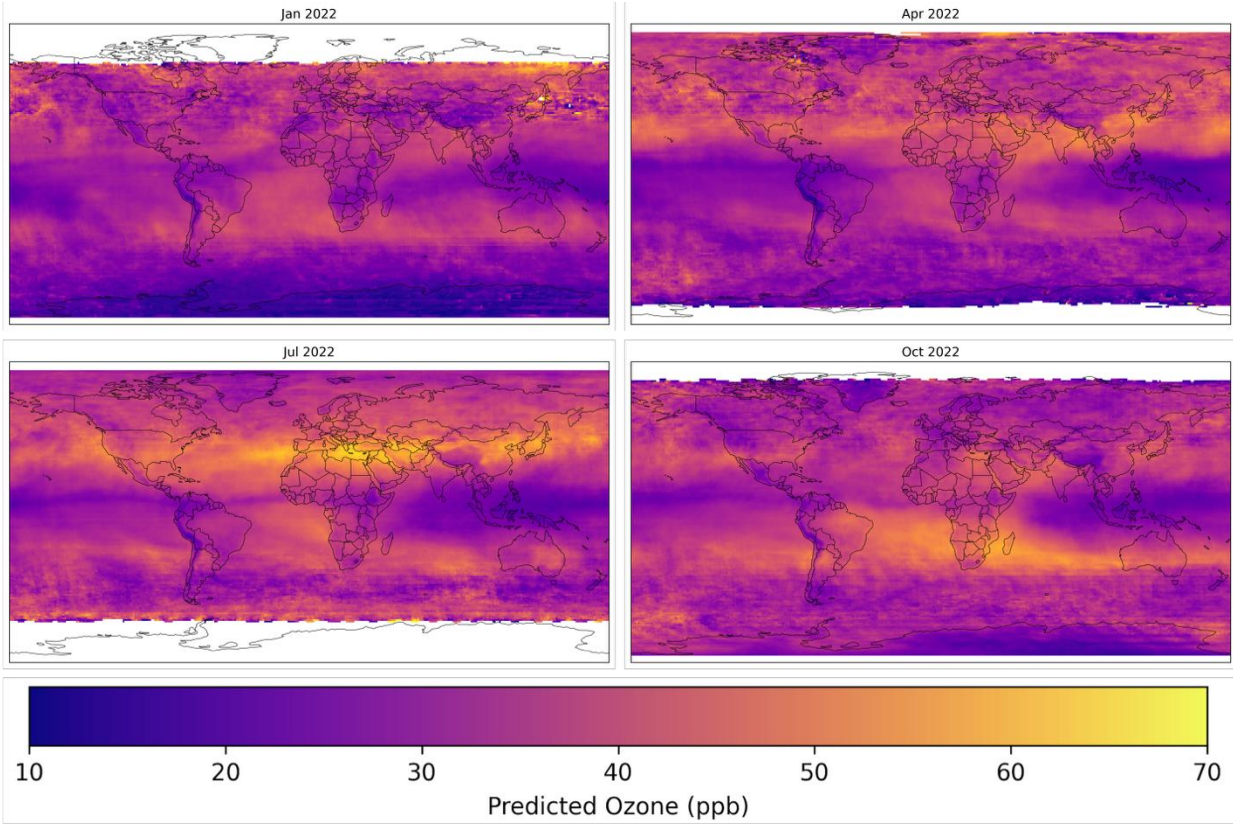
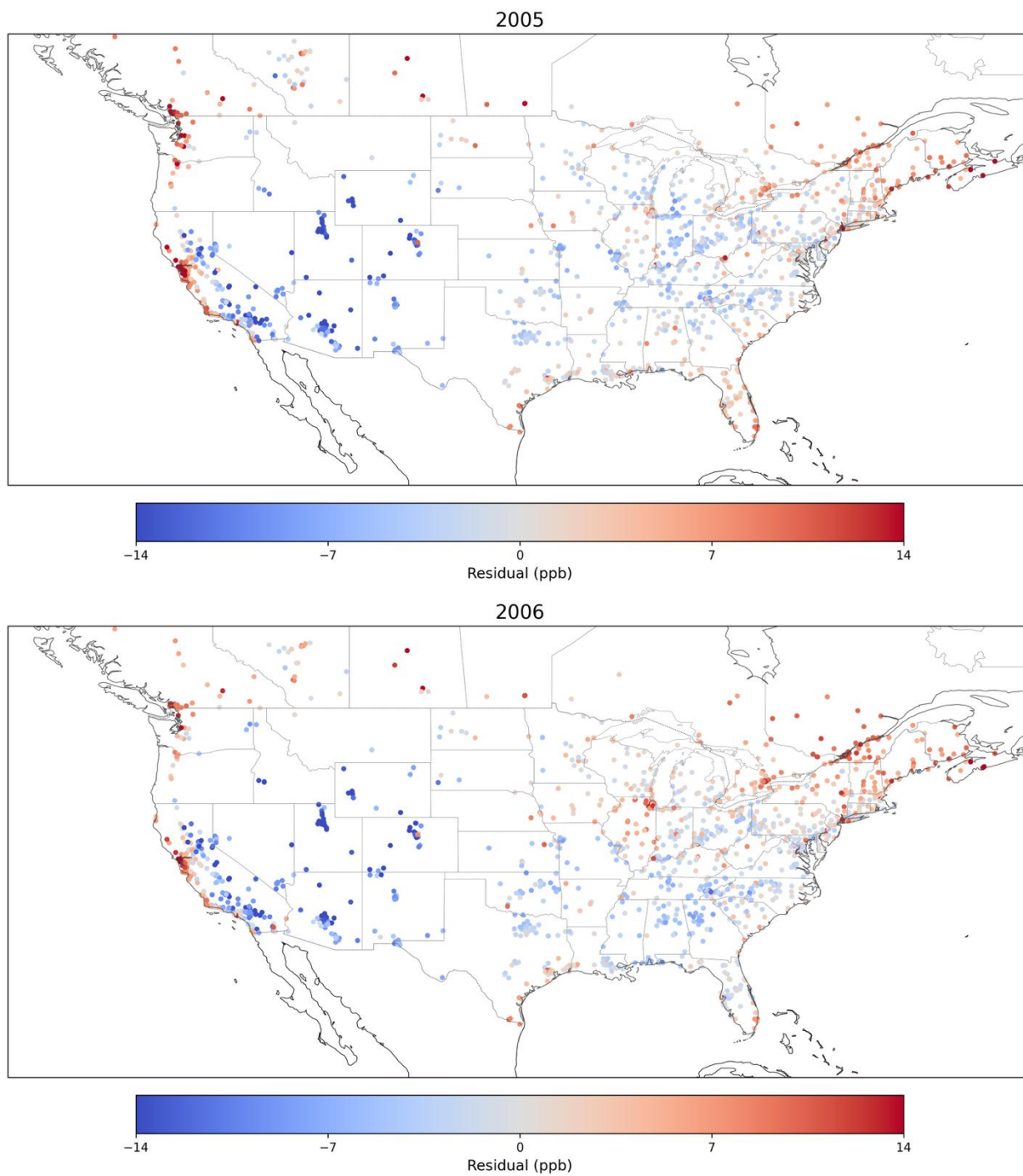
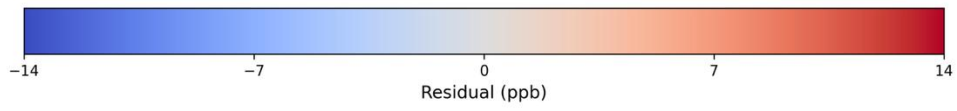
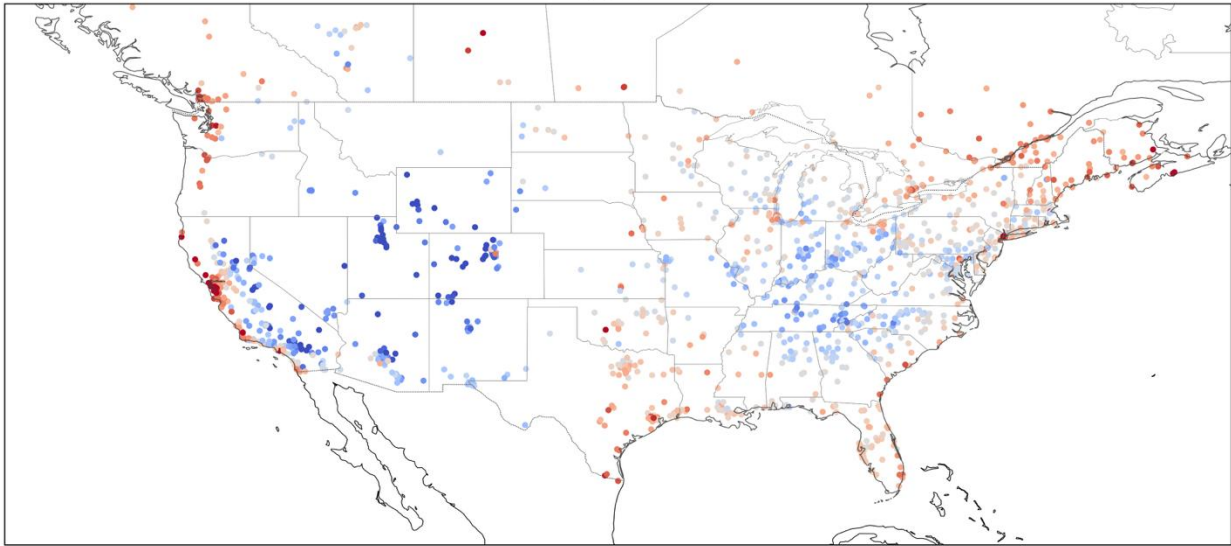


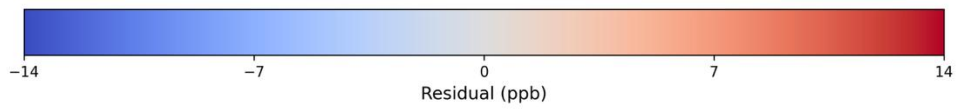
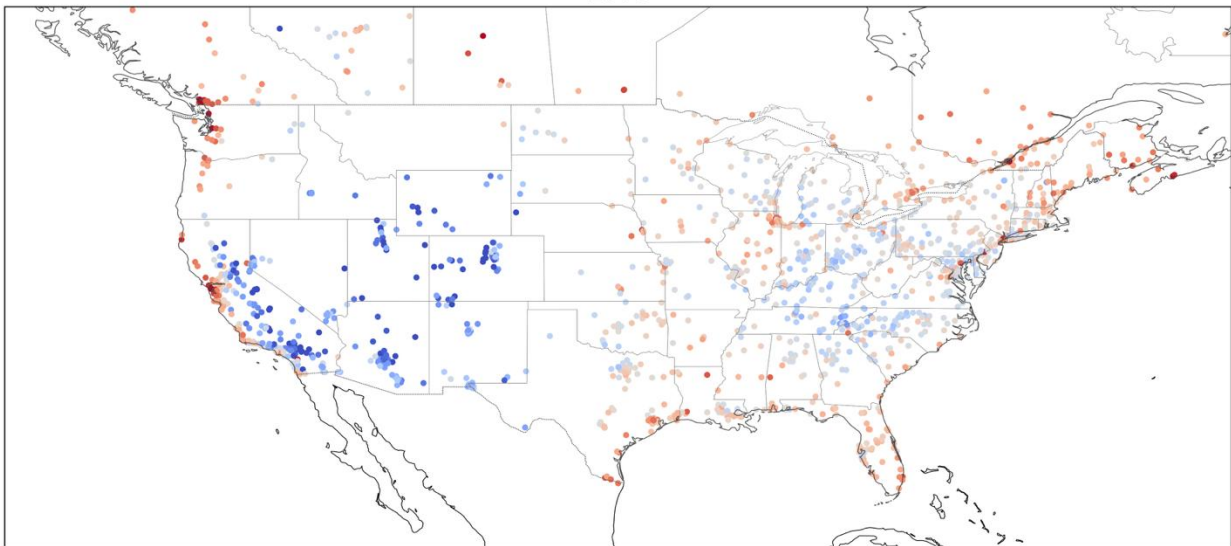
Figure S2. Residual maps (satellite-based prediction minus observed) for North America for ground-level DMA8 ozone averaged over all months in each year from 2005-2022. Blue points reflect an underprediction of measured ground-level ozone and red points reflect an overprediction of measured ground-level ozone.



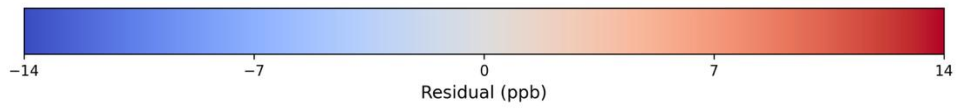
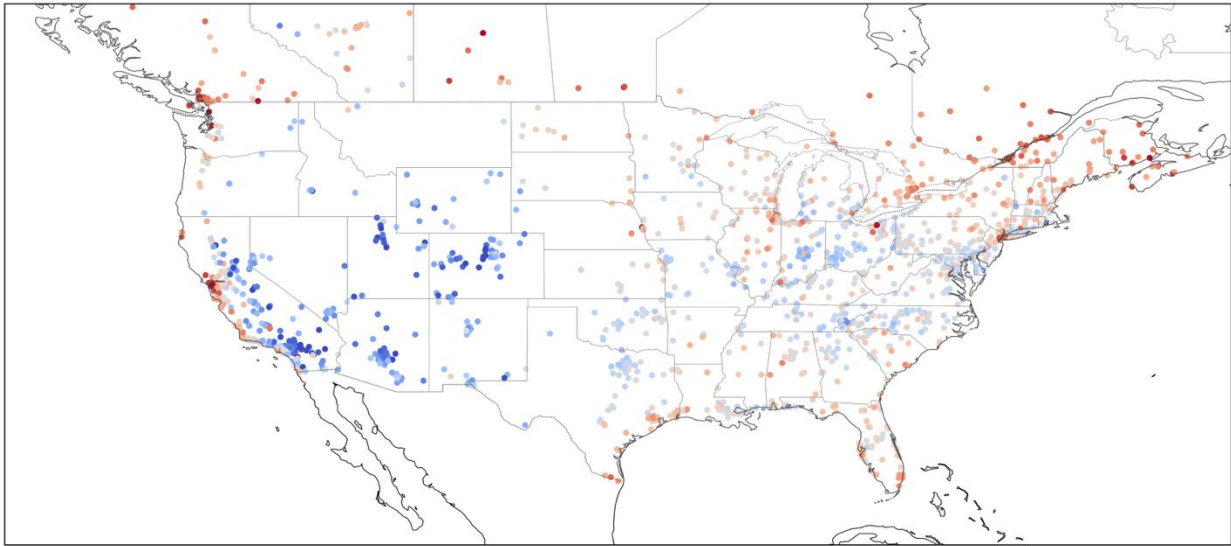
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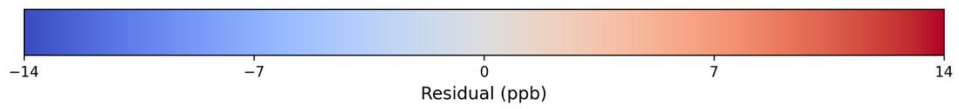
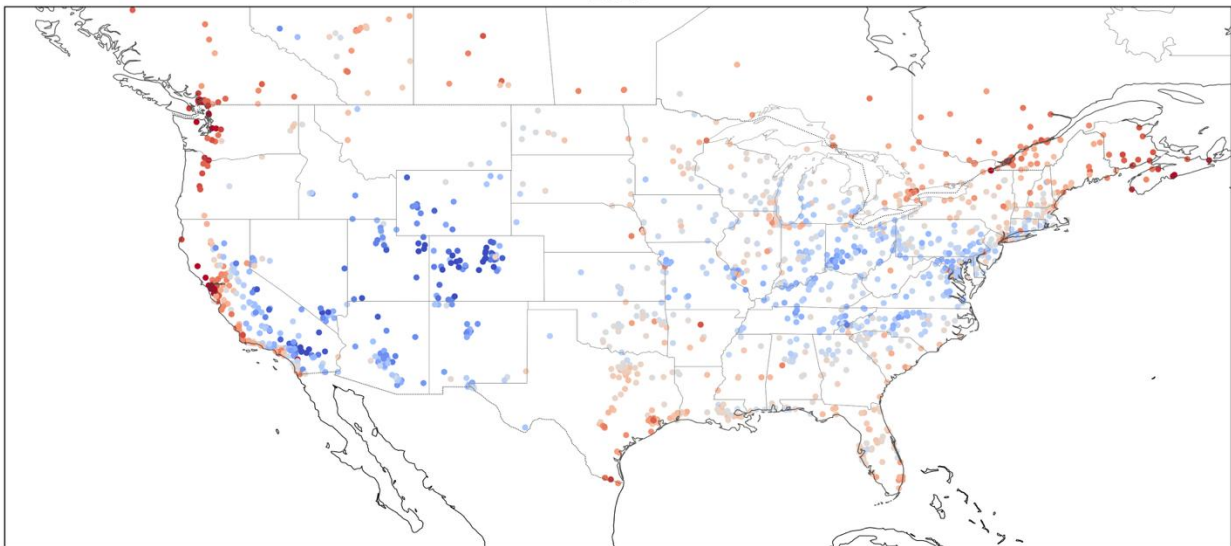
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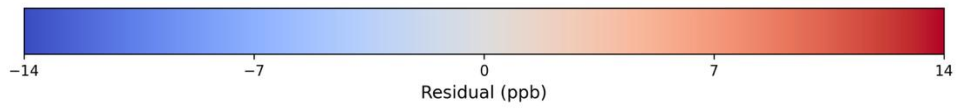
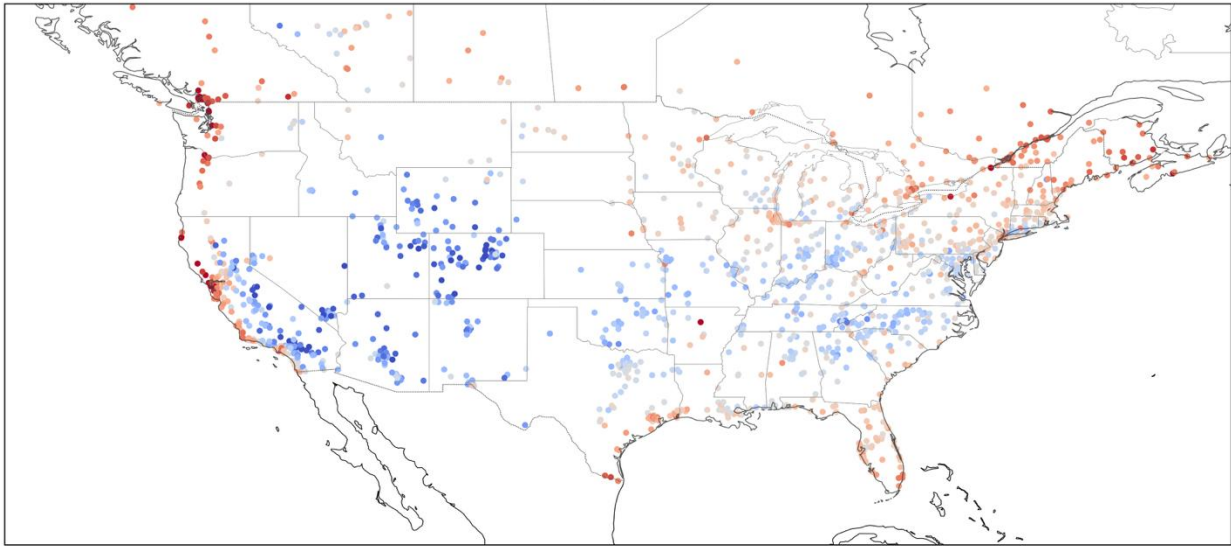
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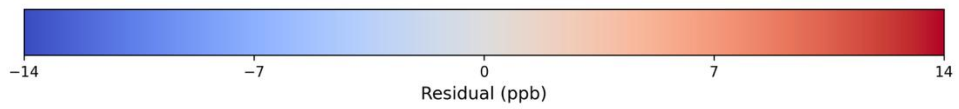
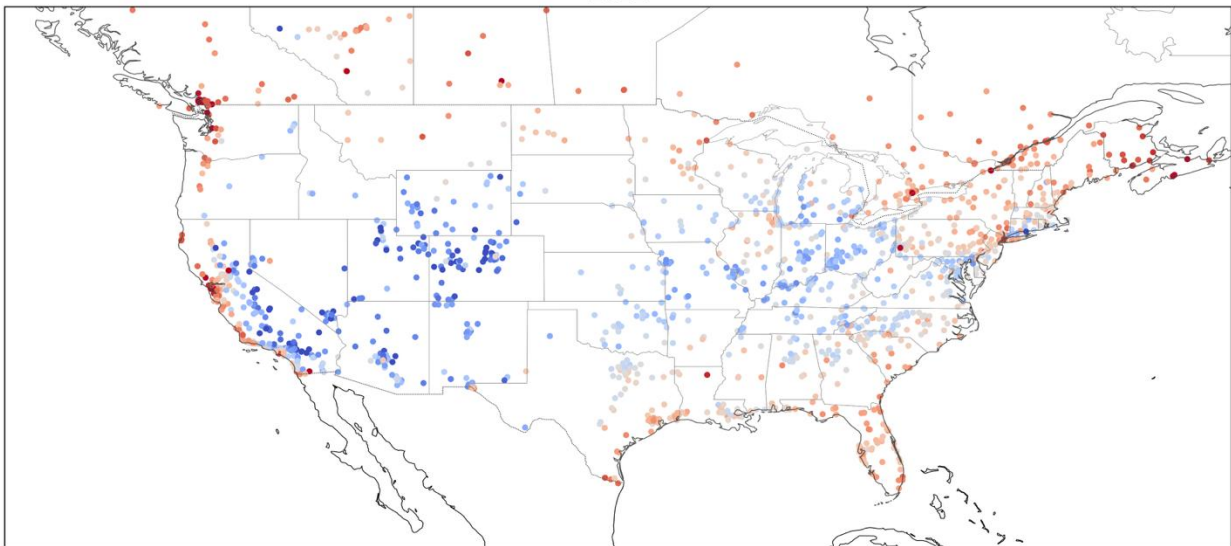
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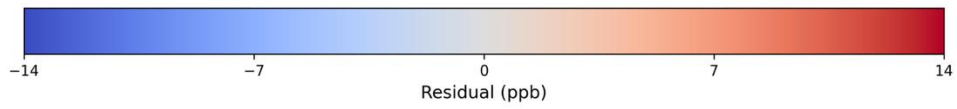
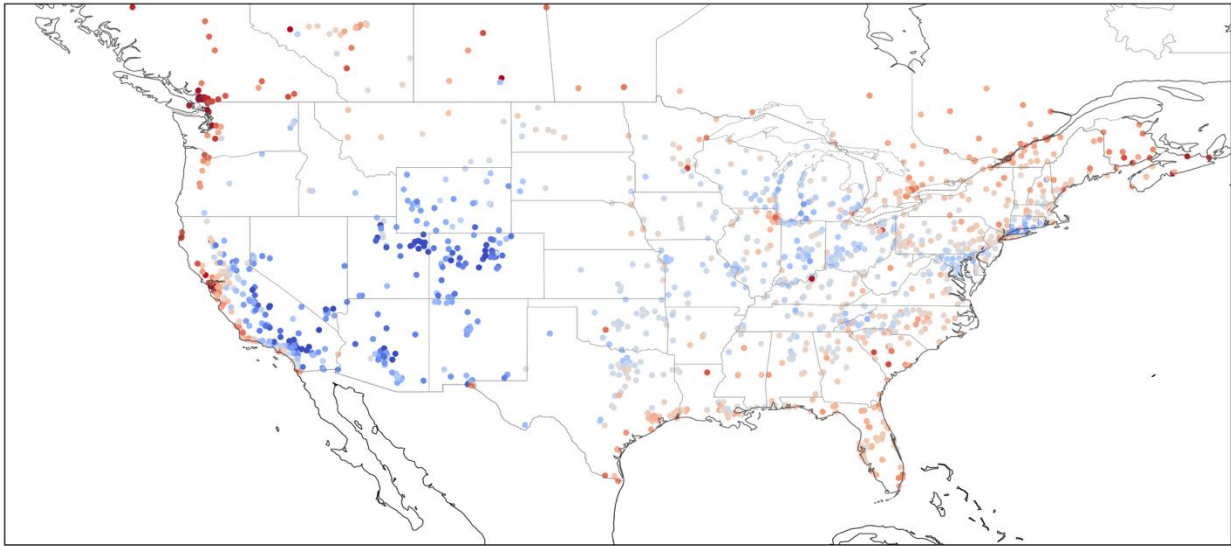
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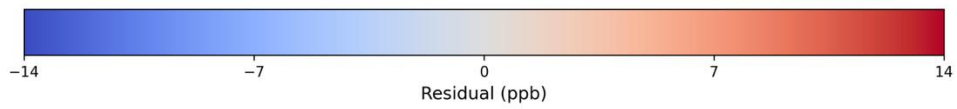
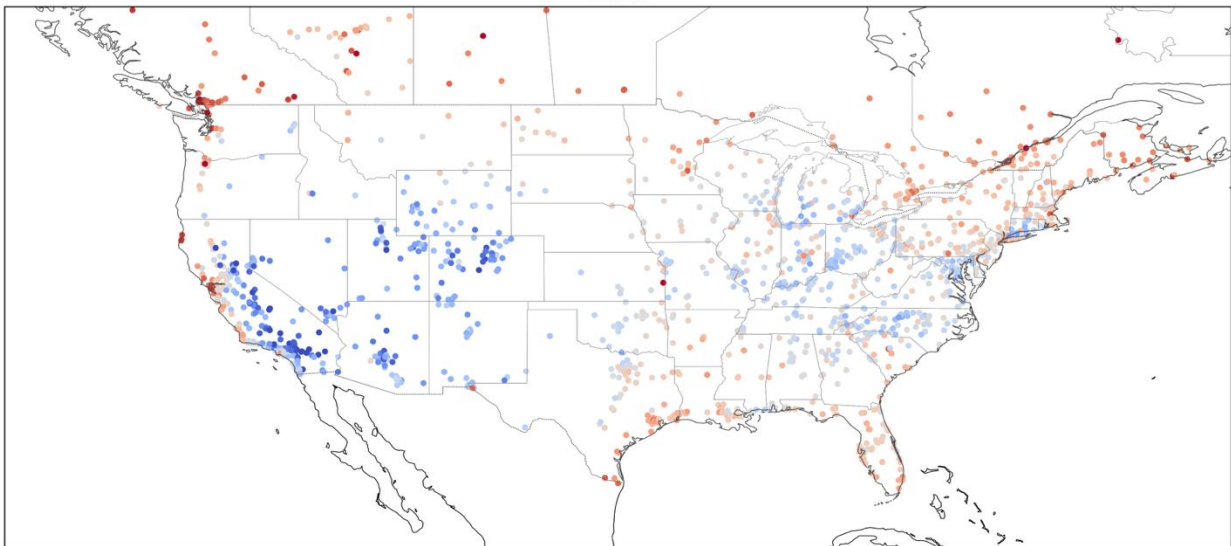
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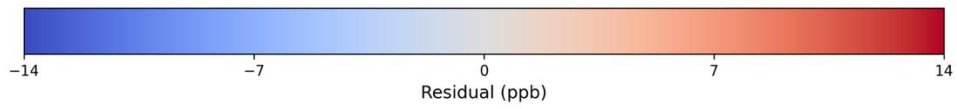
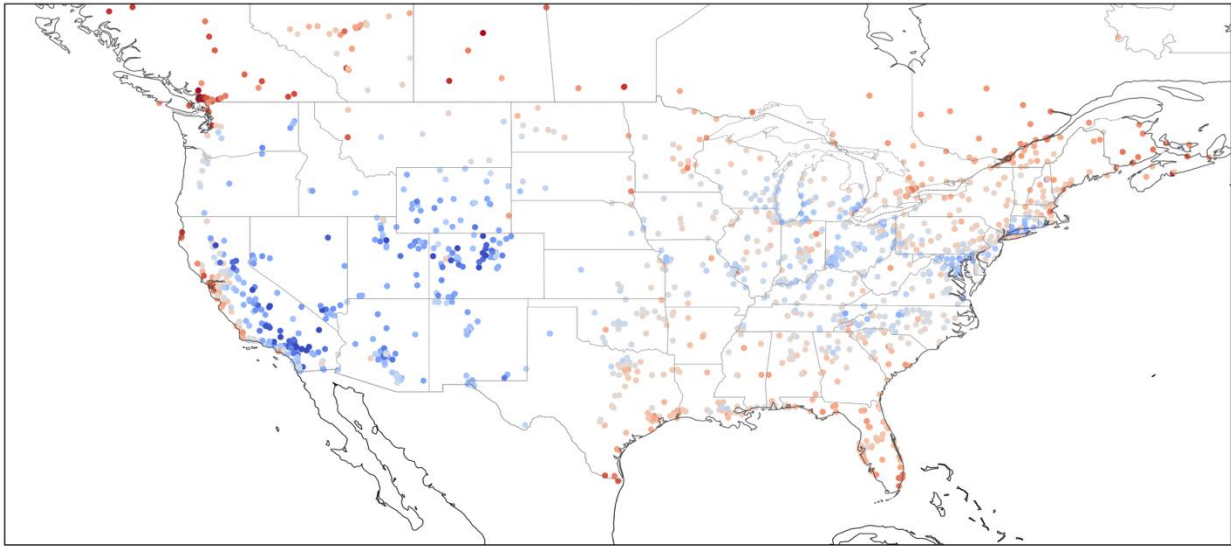
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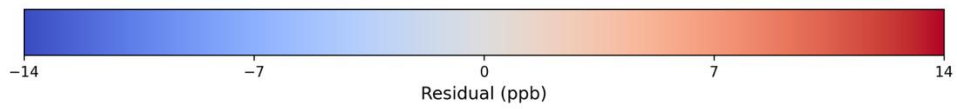
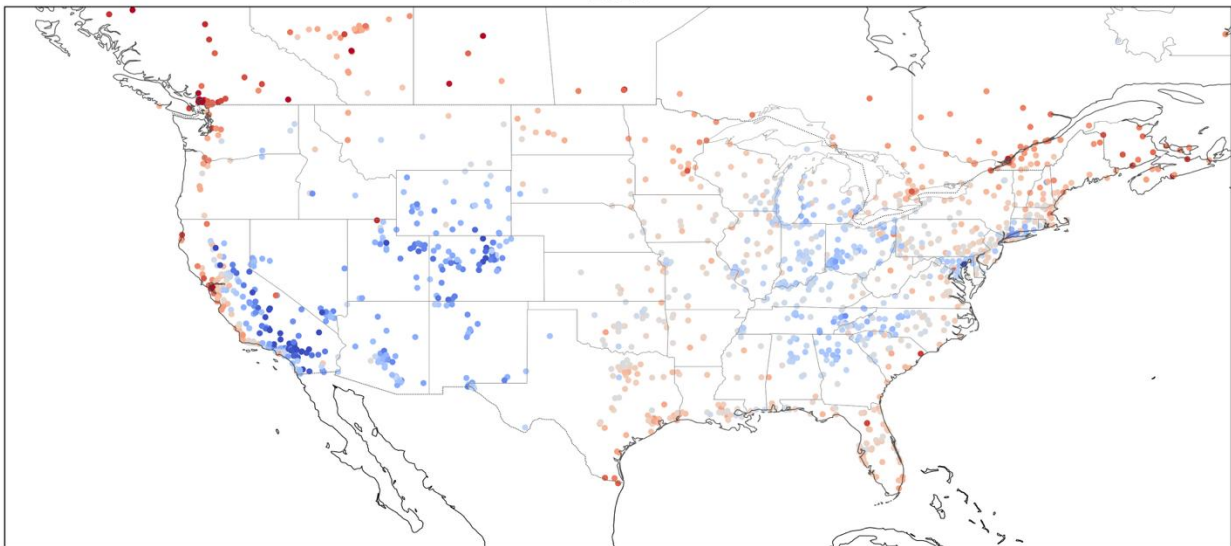
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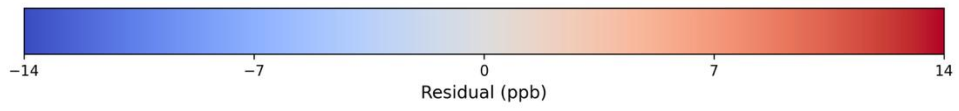
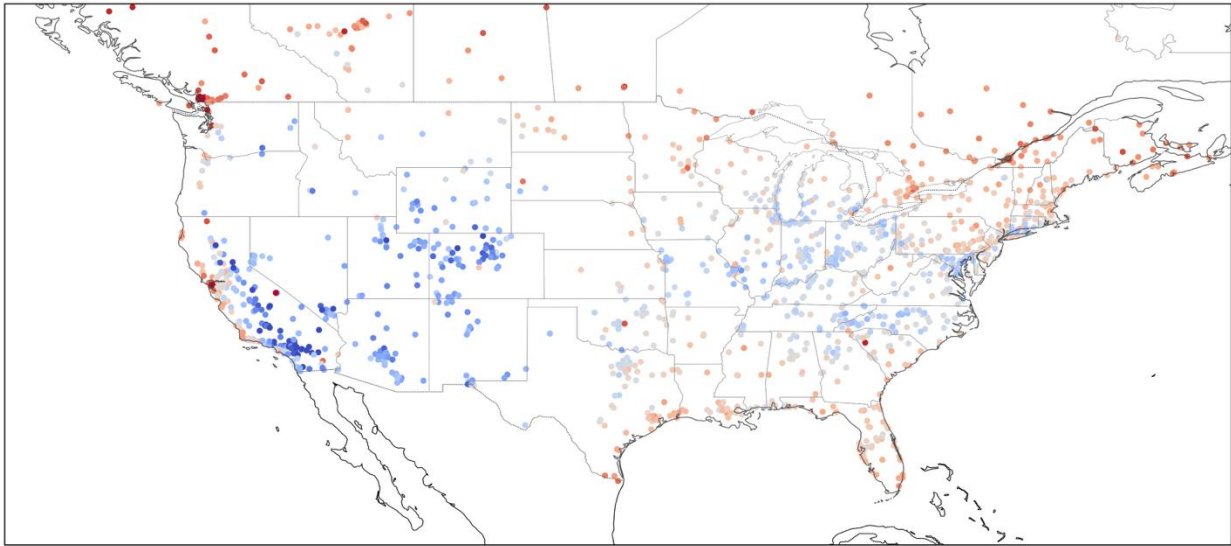
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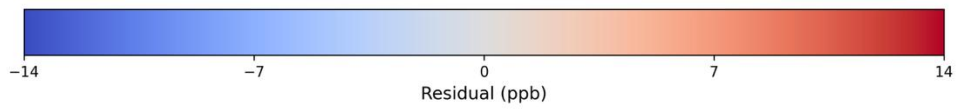
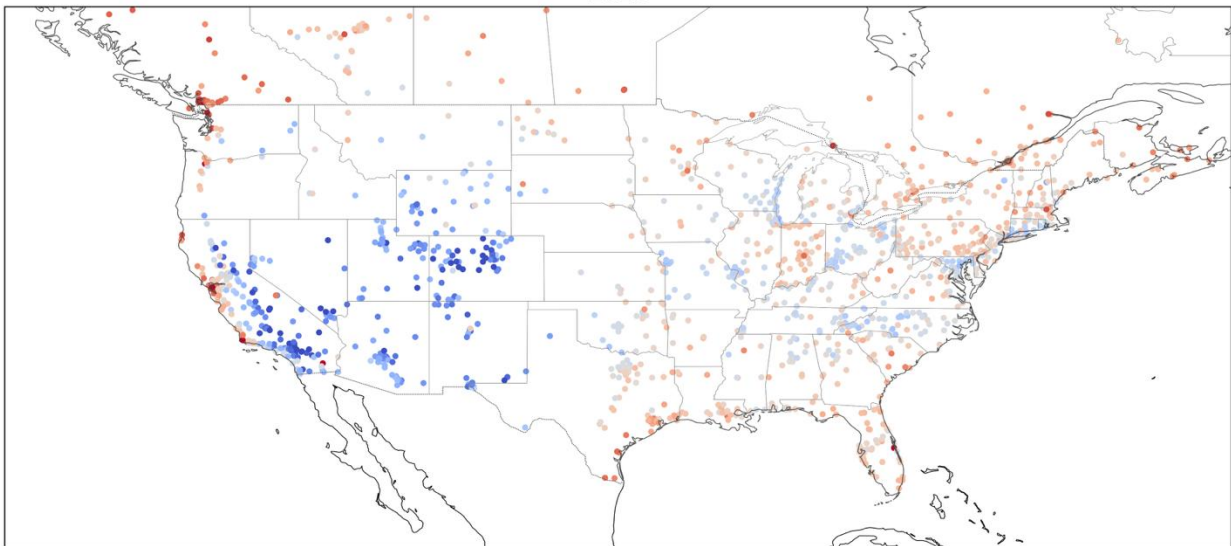
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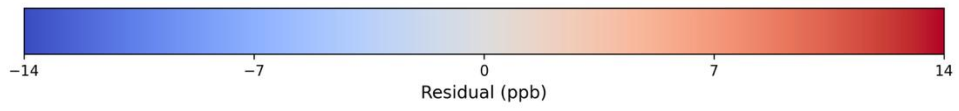
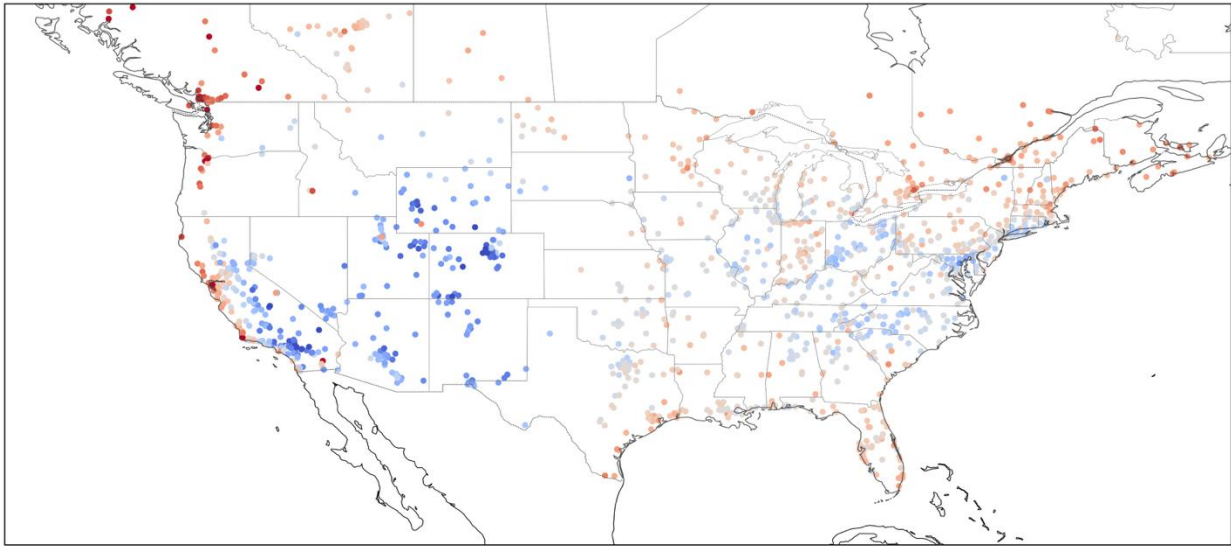
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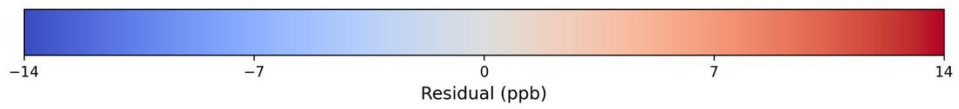
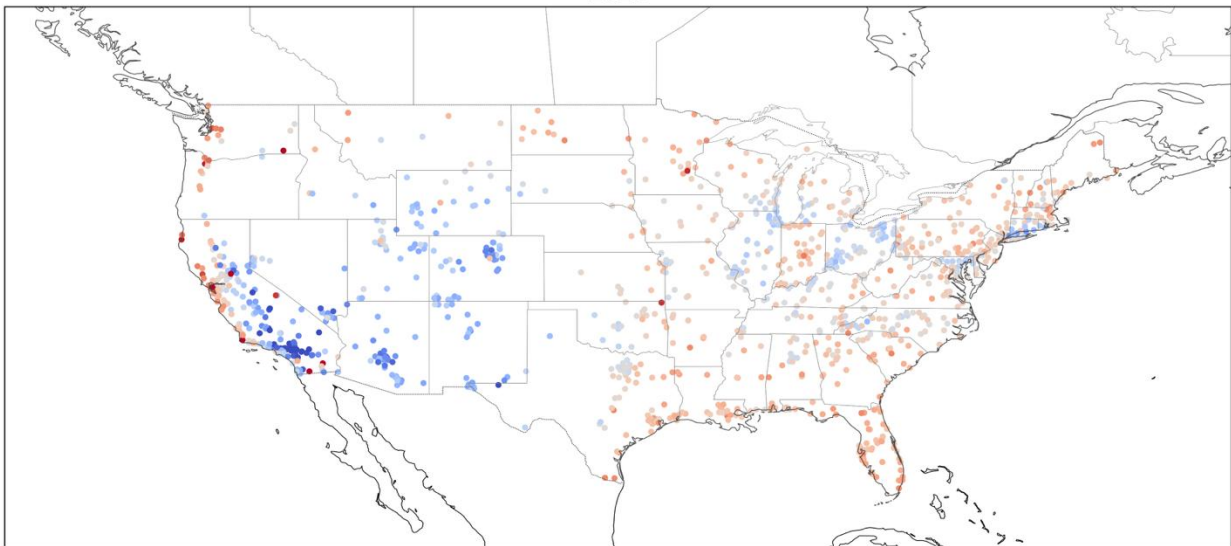
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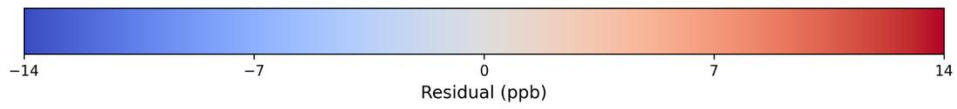
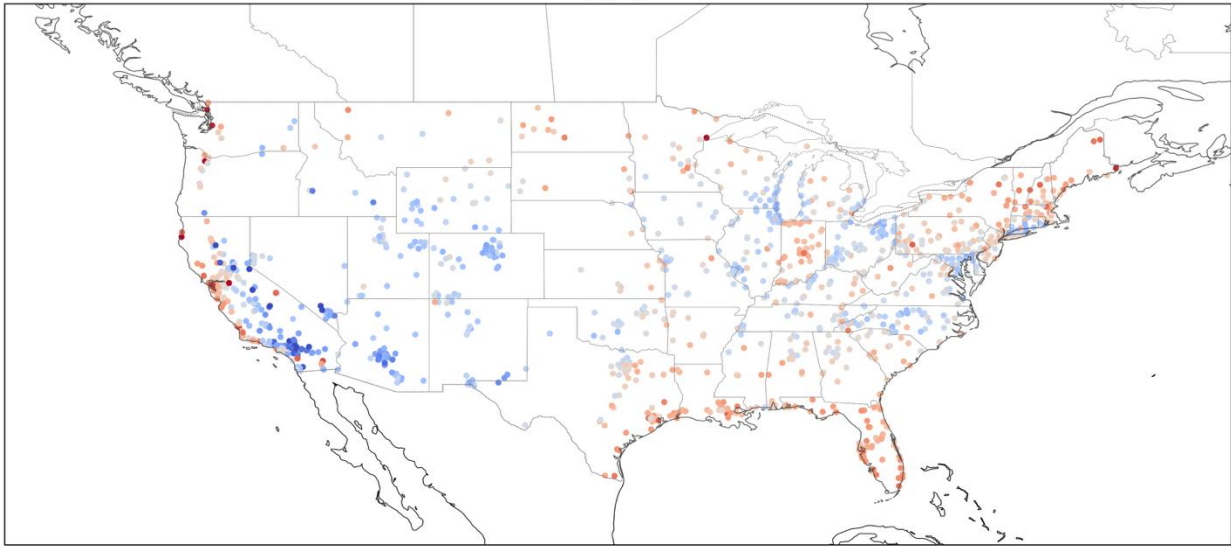
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2022

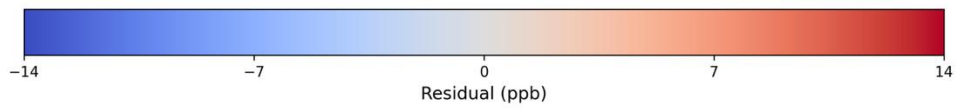
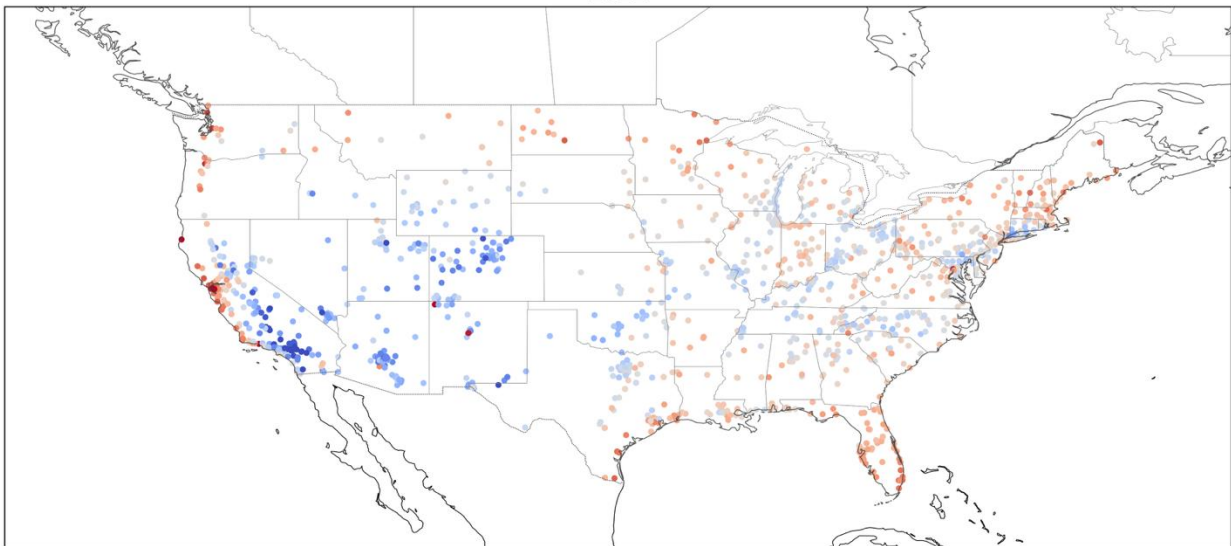
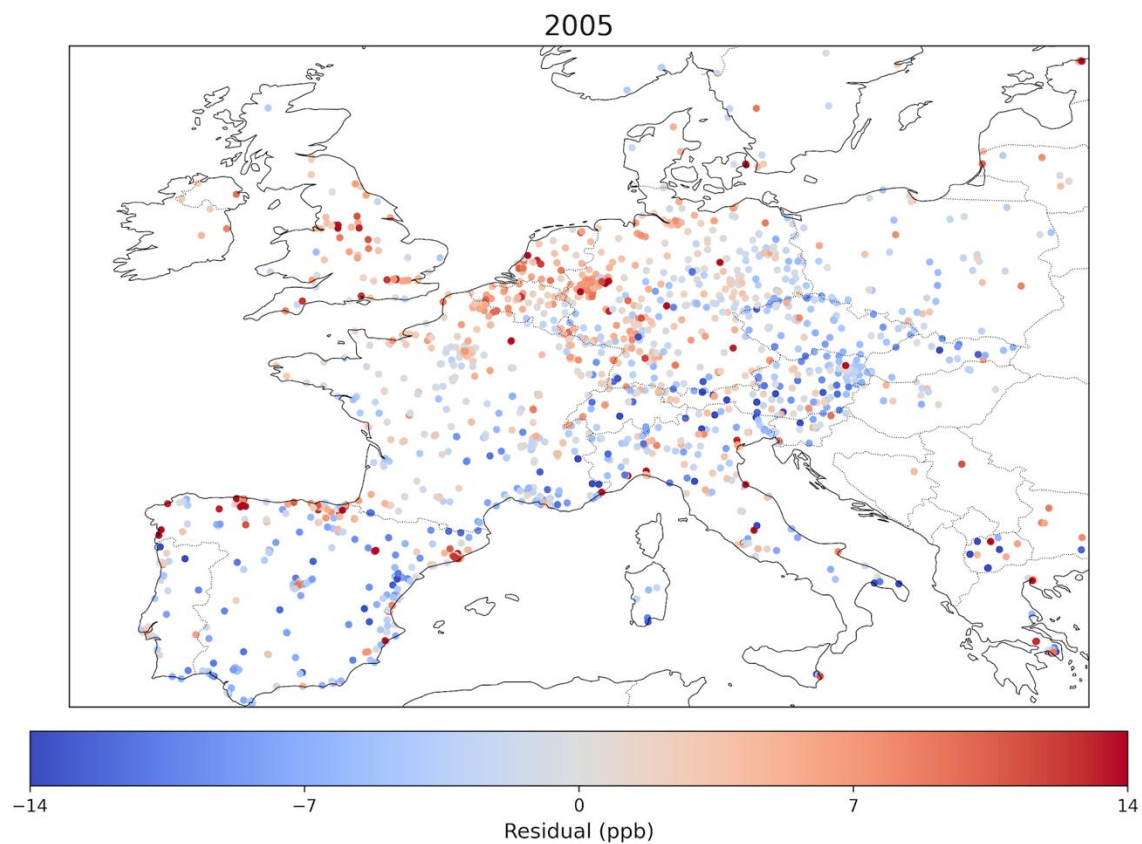
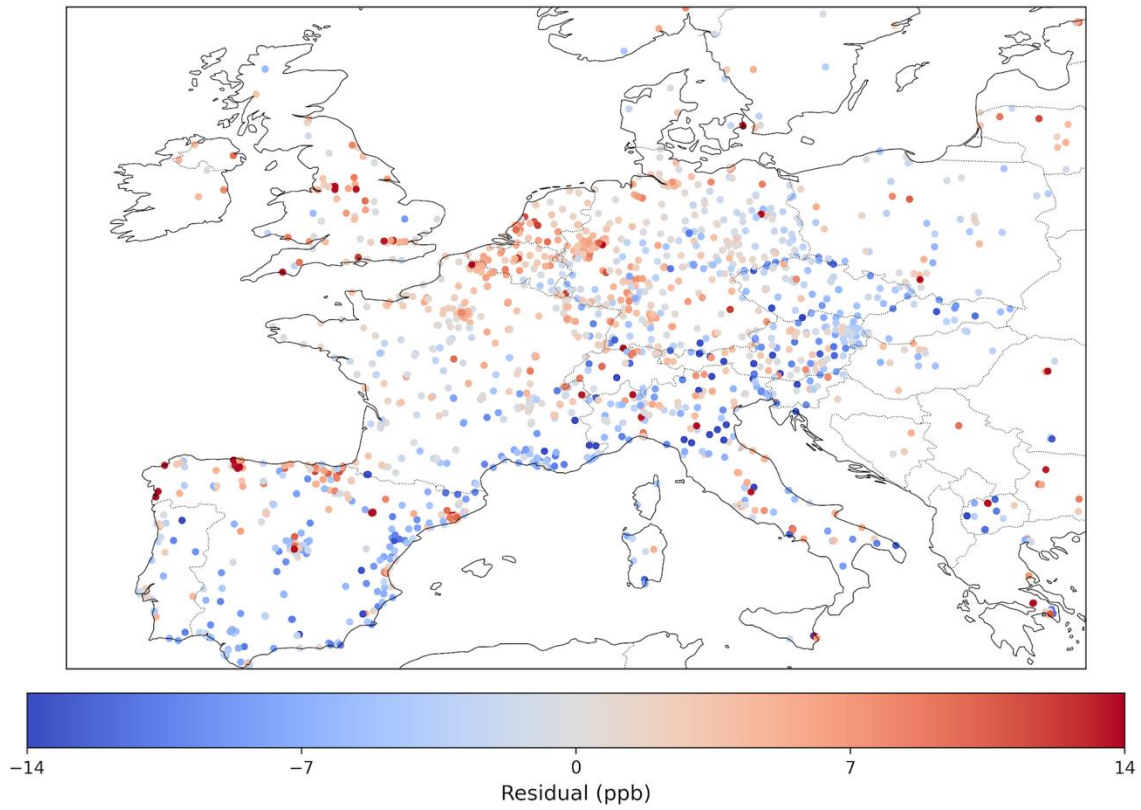


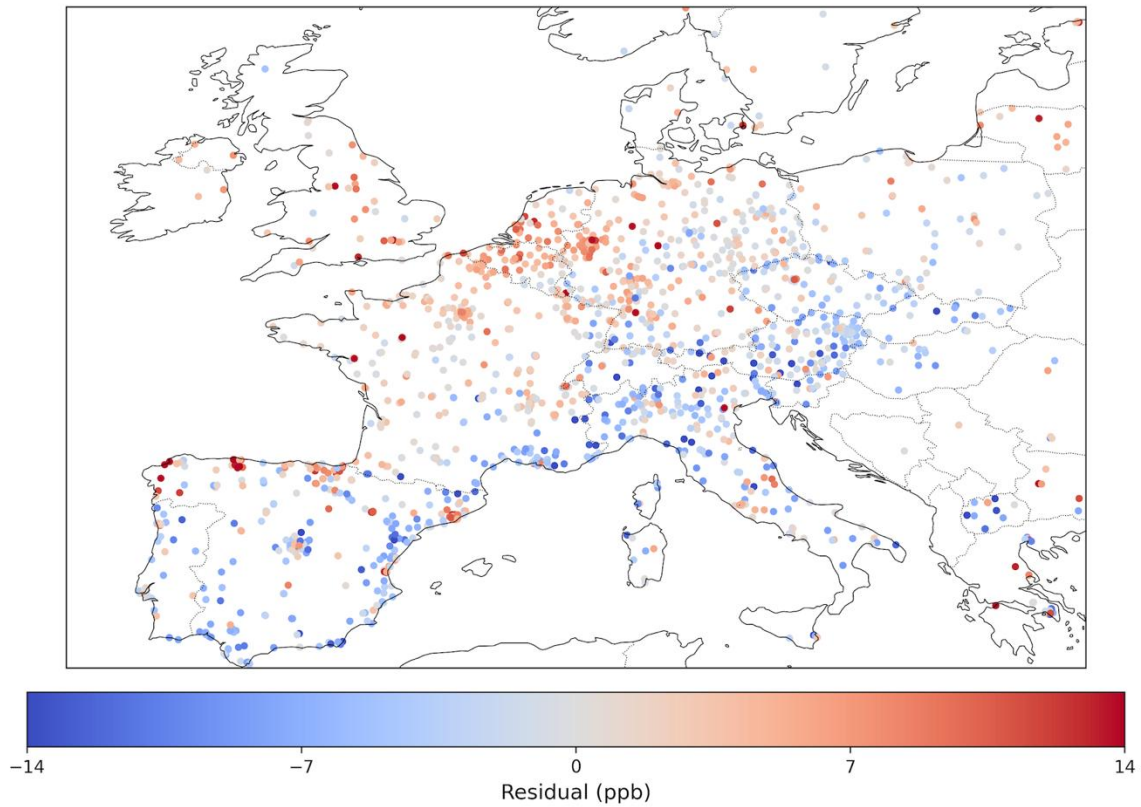
Figure S3. Residual maps (satellite-based prediction minus observed) for Europe for ground-level DMA8 ozone averaged over all months in each year from 2005-2022. Blue points reflect an underprediction of measured ground-level ozone and red points reflect an overprediction of measured ground-level ozone.



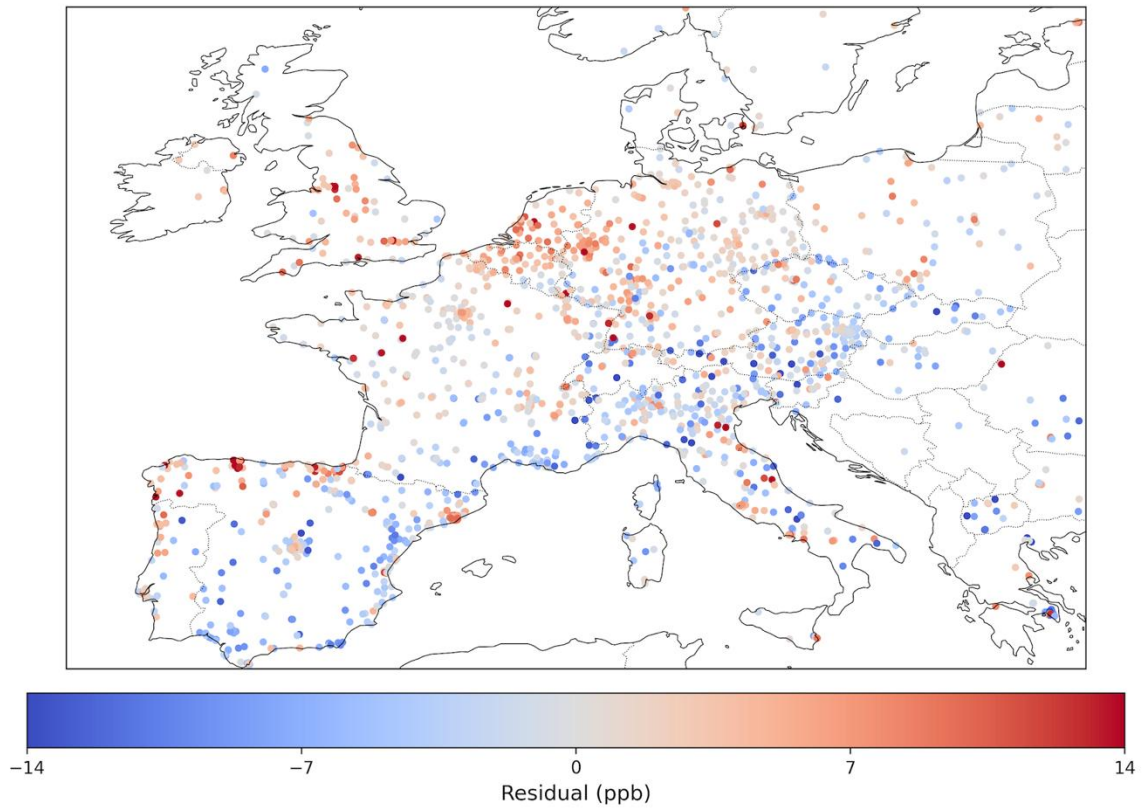
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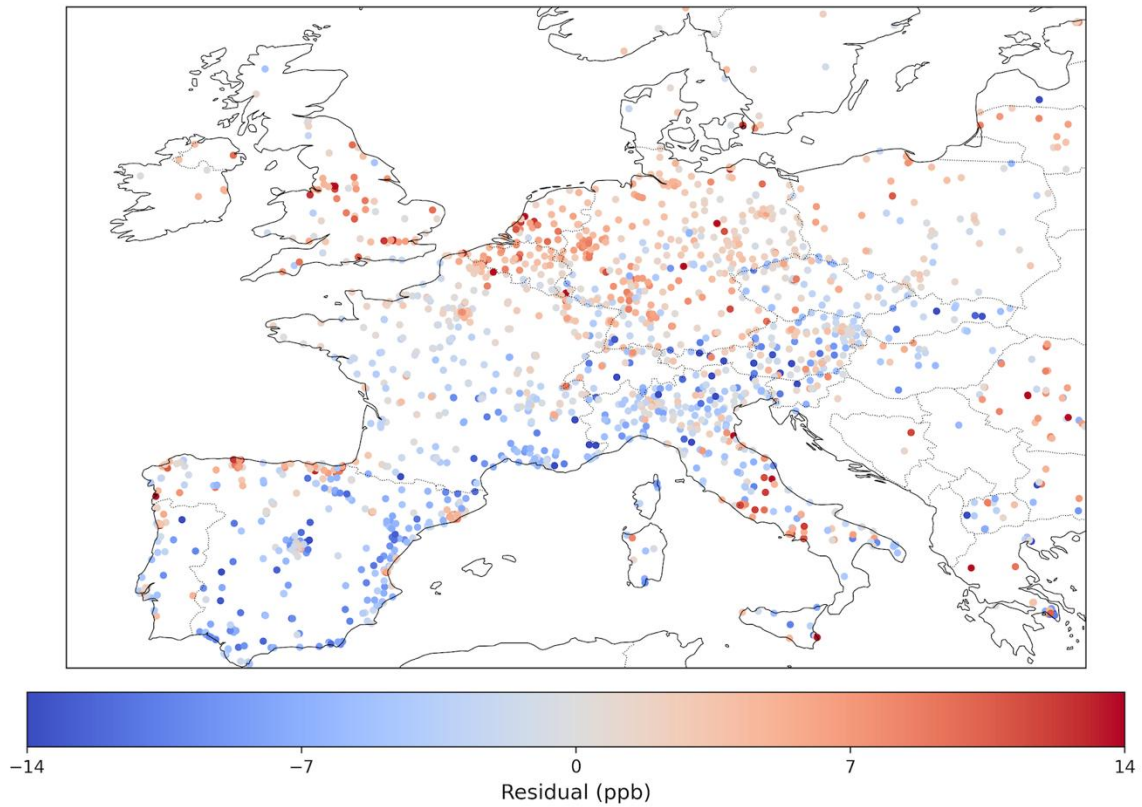
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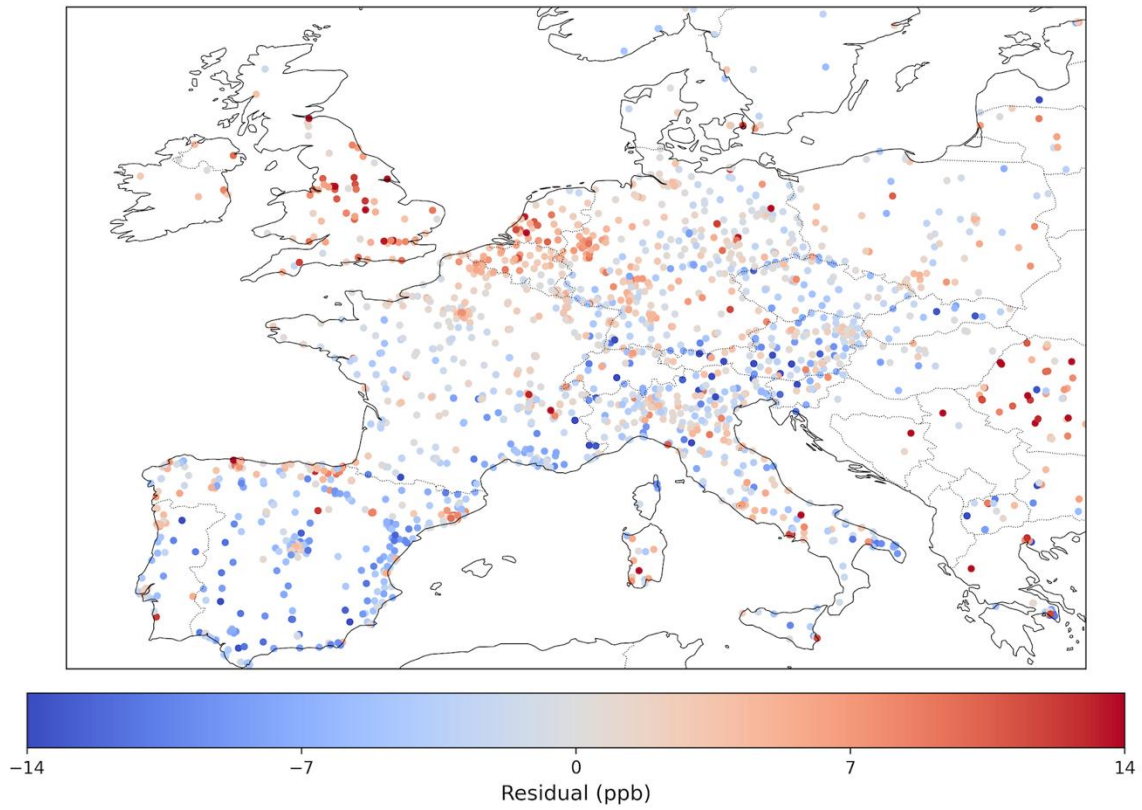
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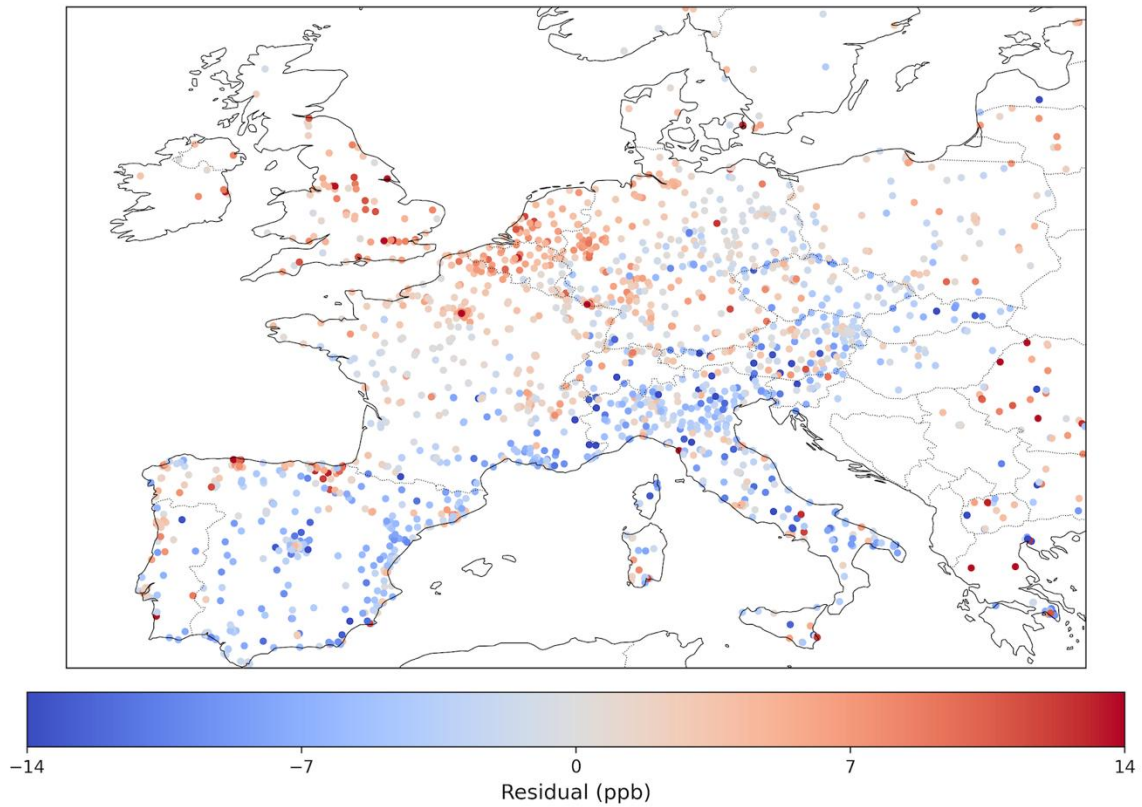
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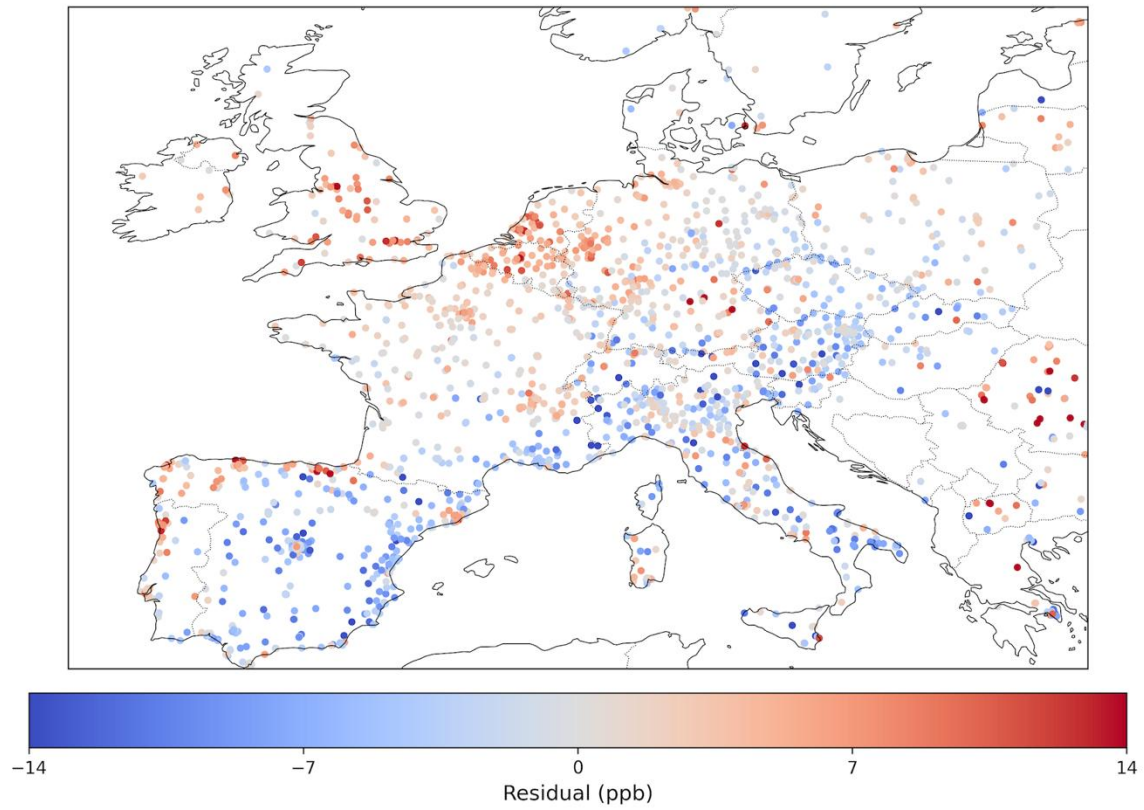
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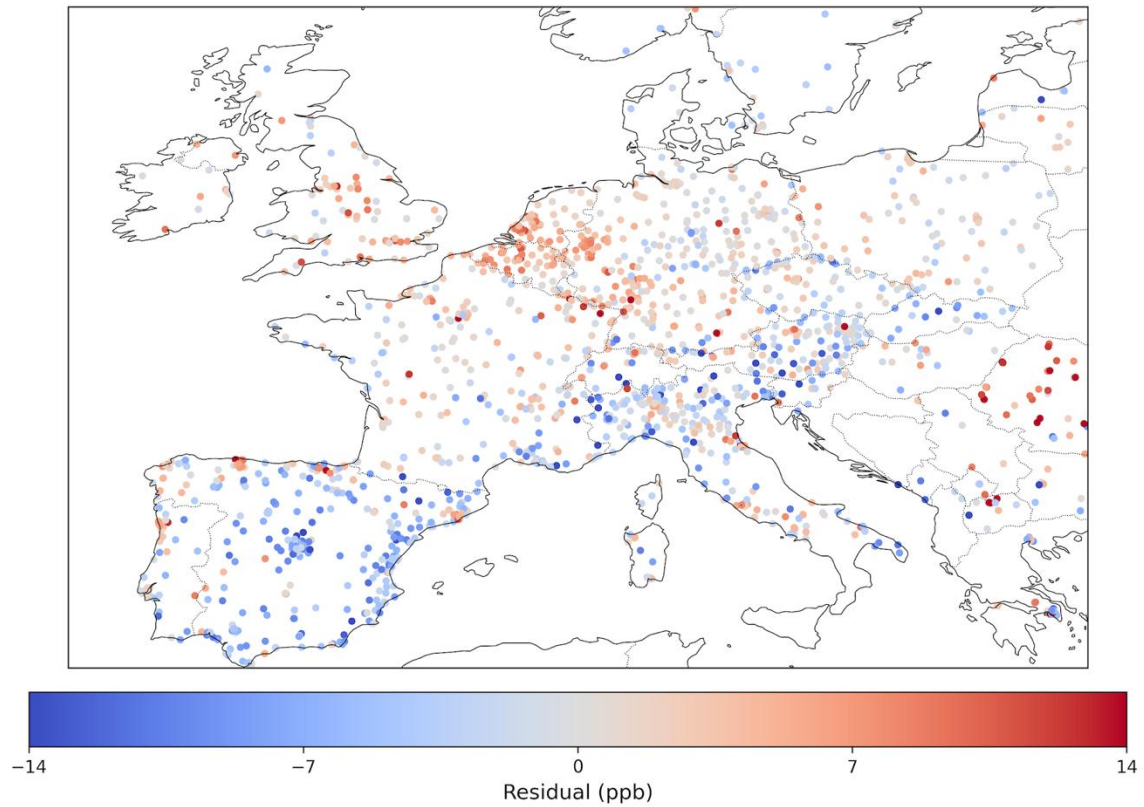
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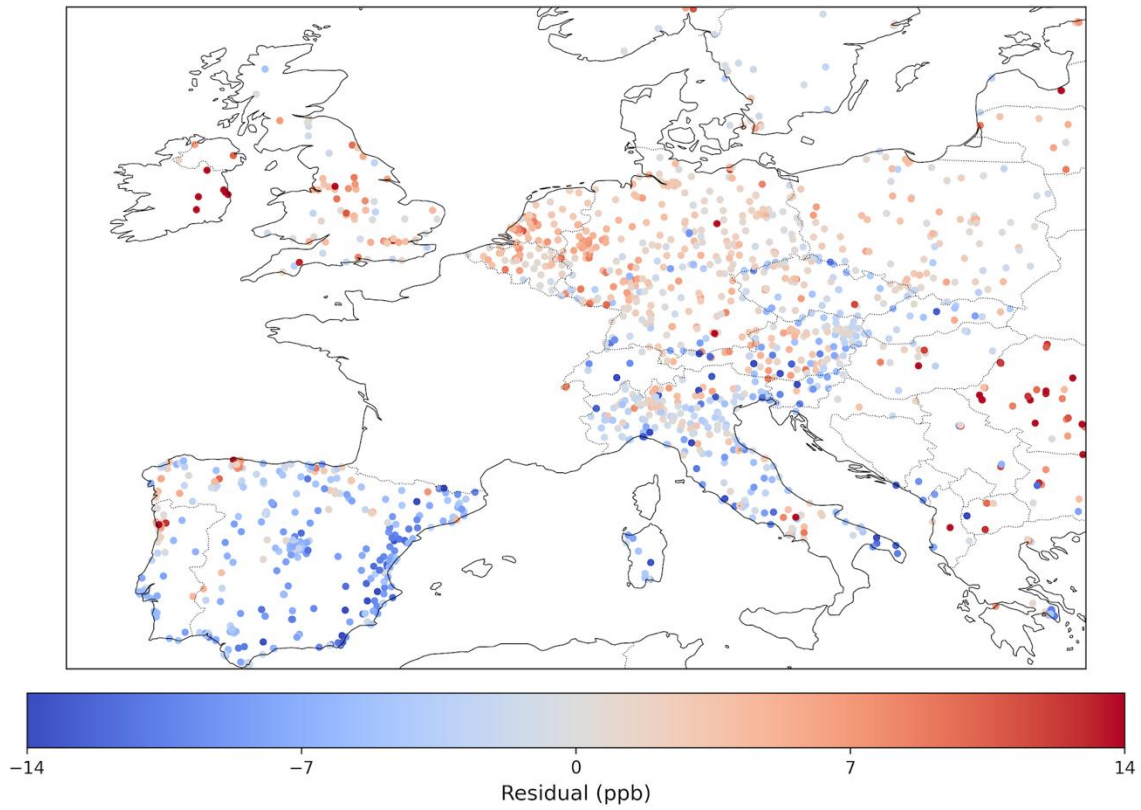
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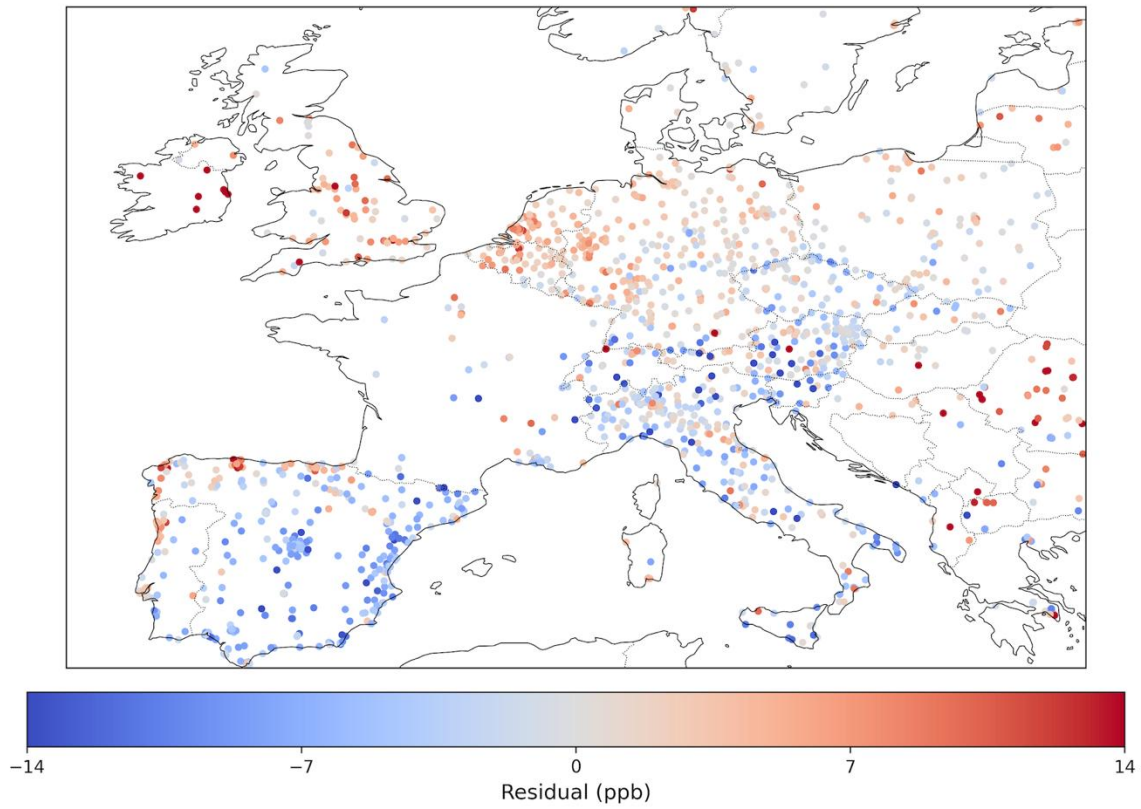
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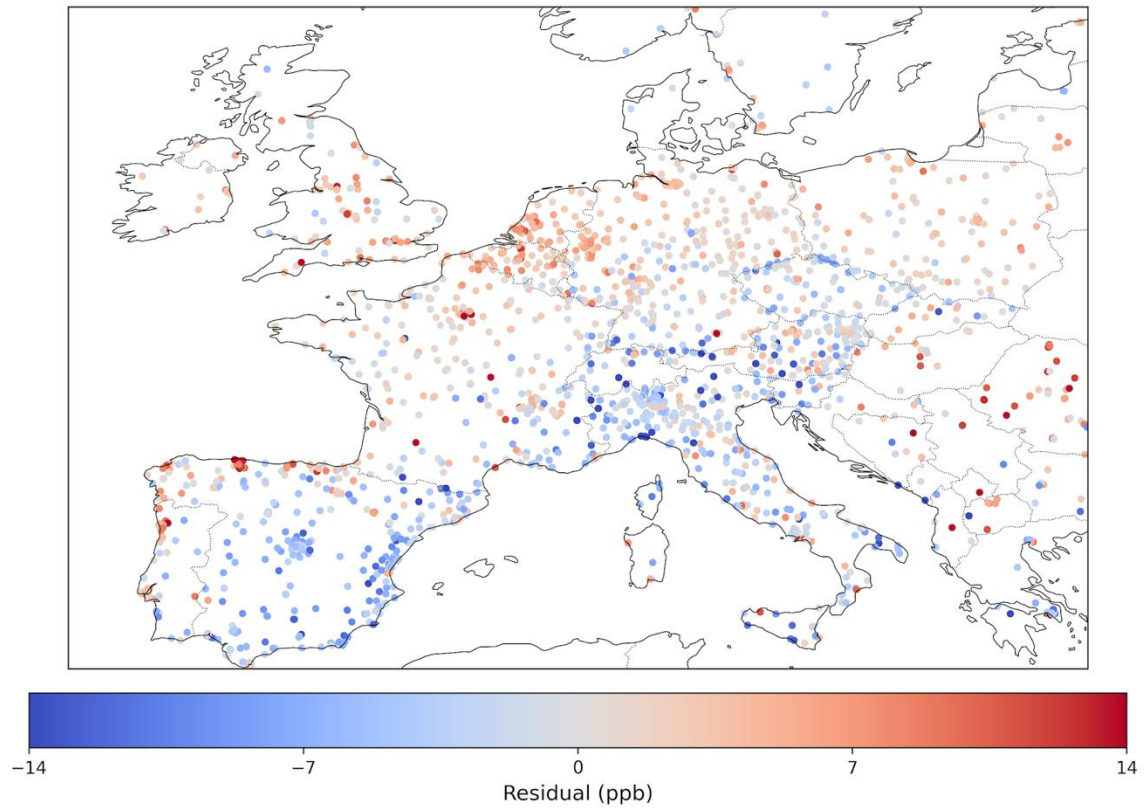
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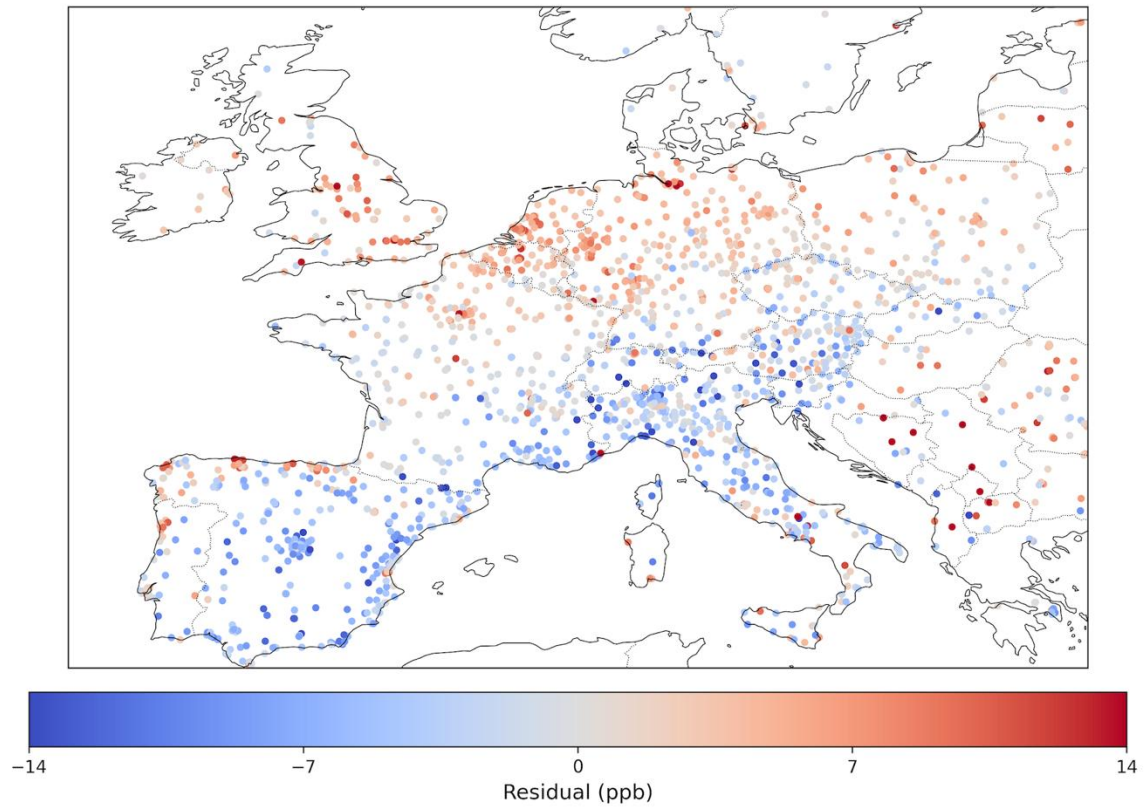
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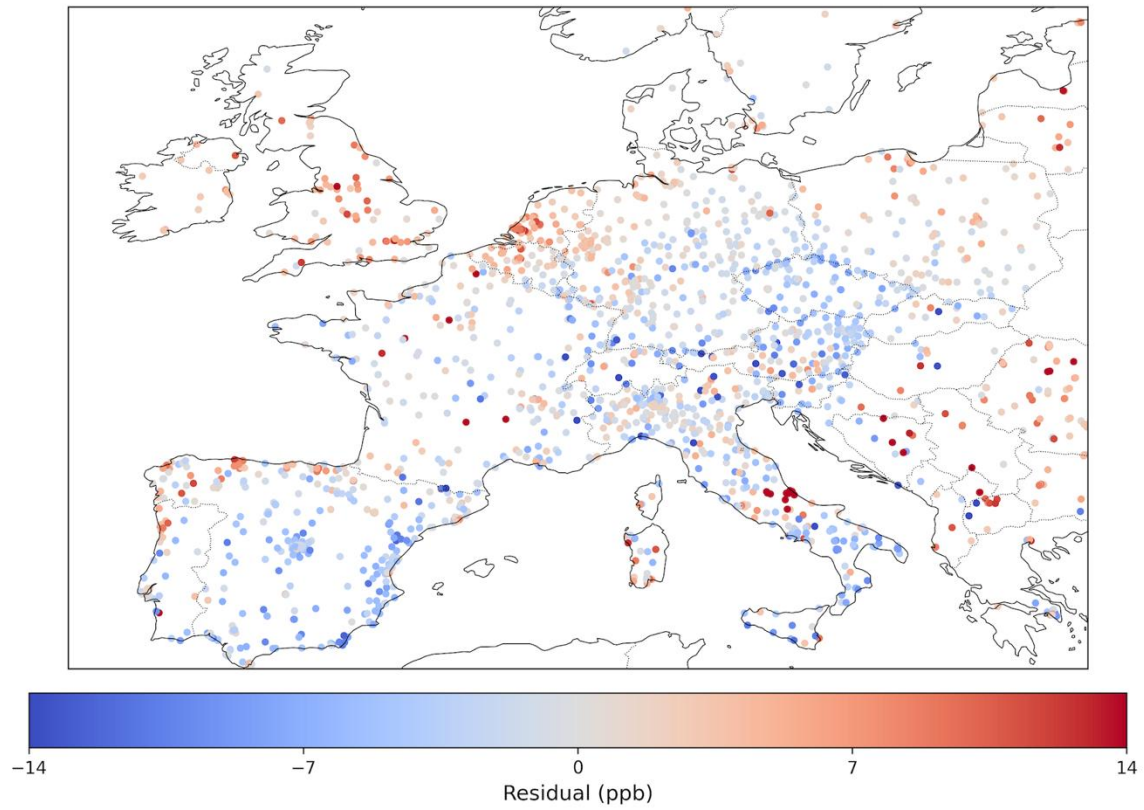
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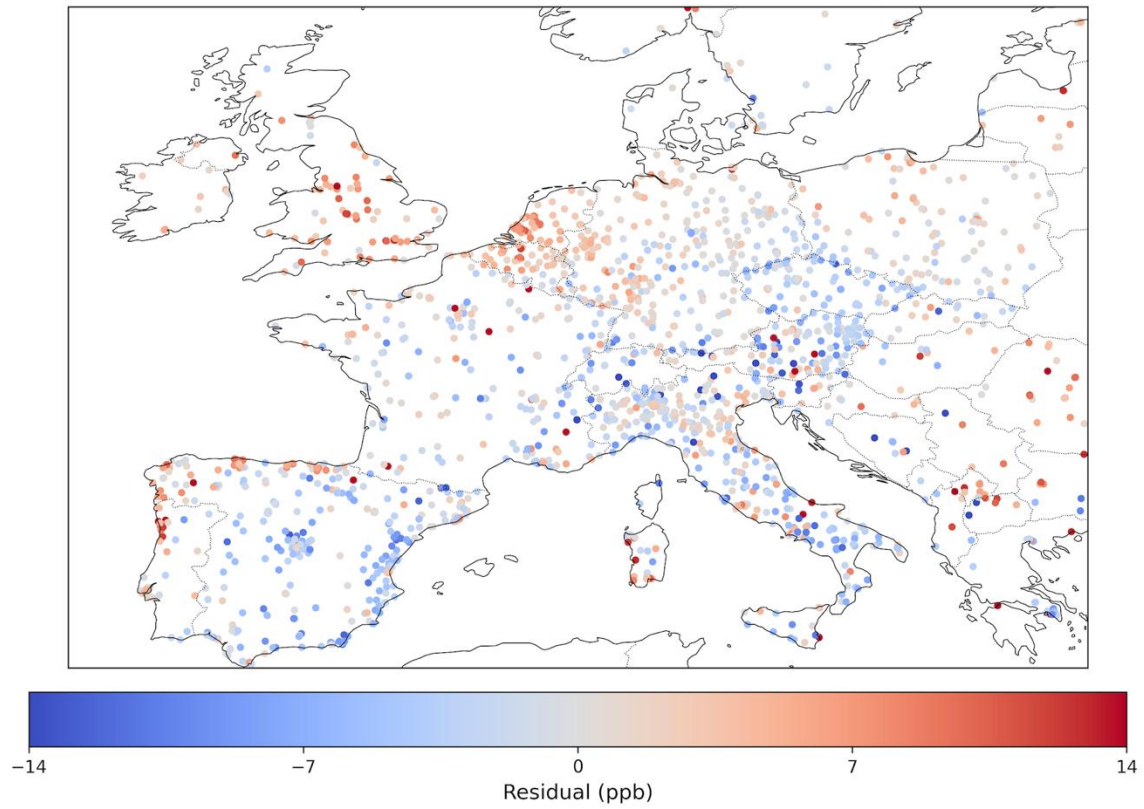
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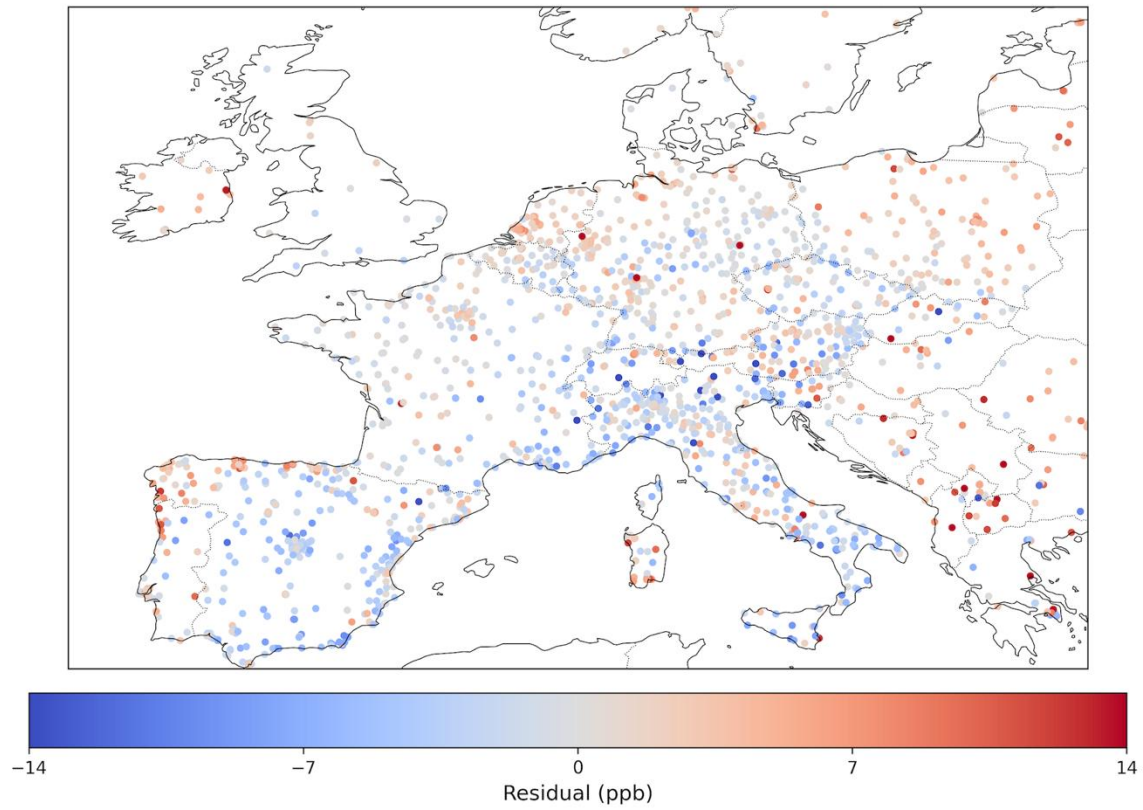
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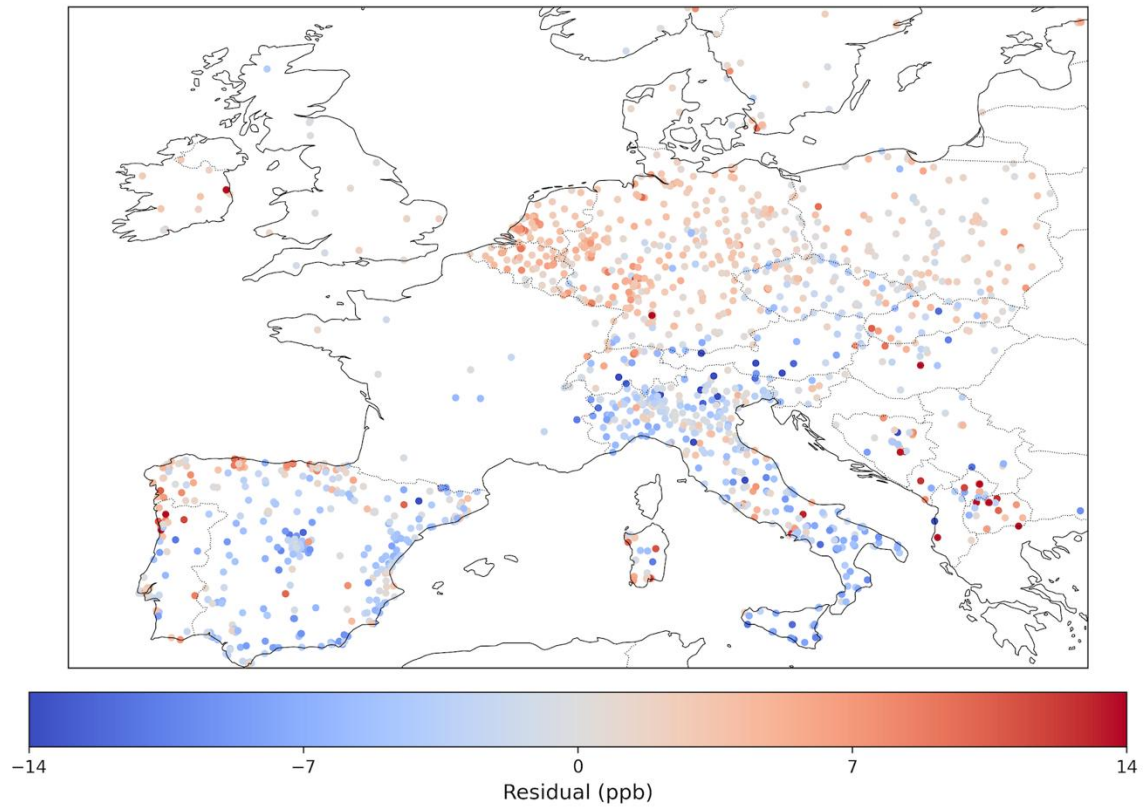
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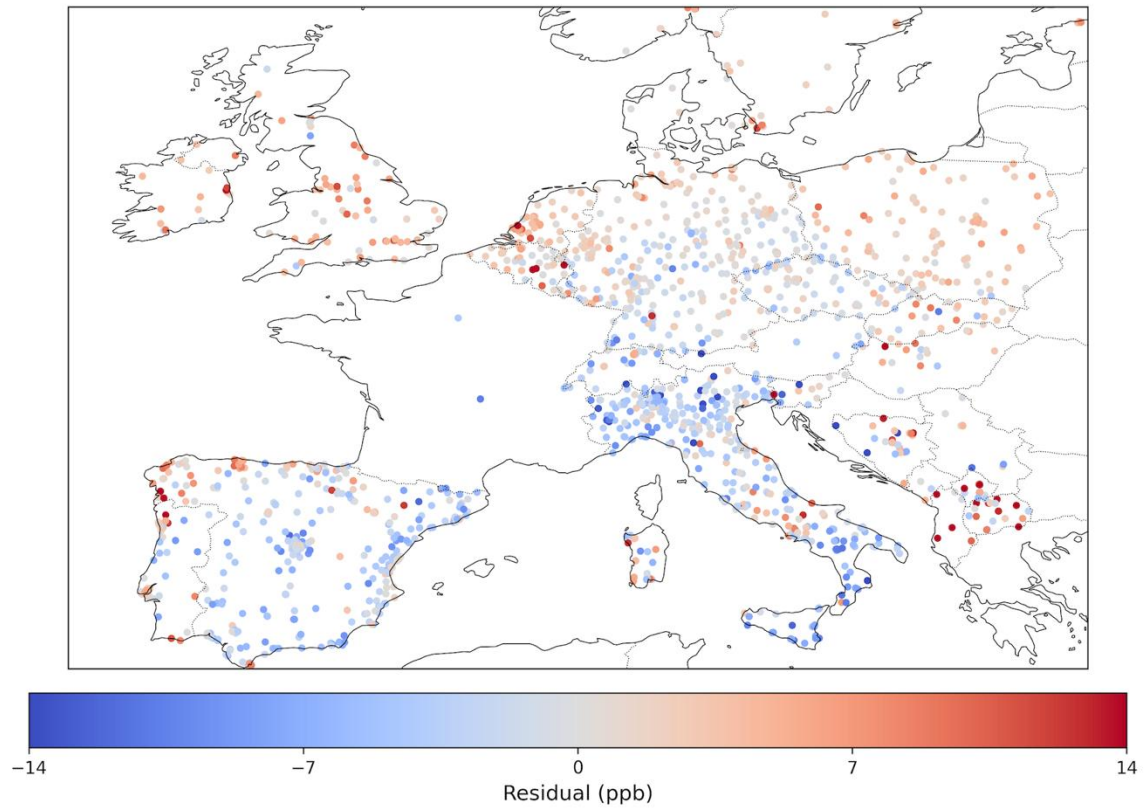
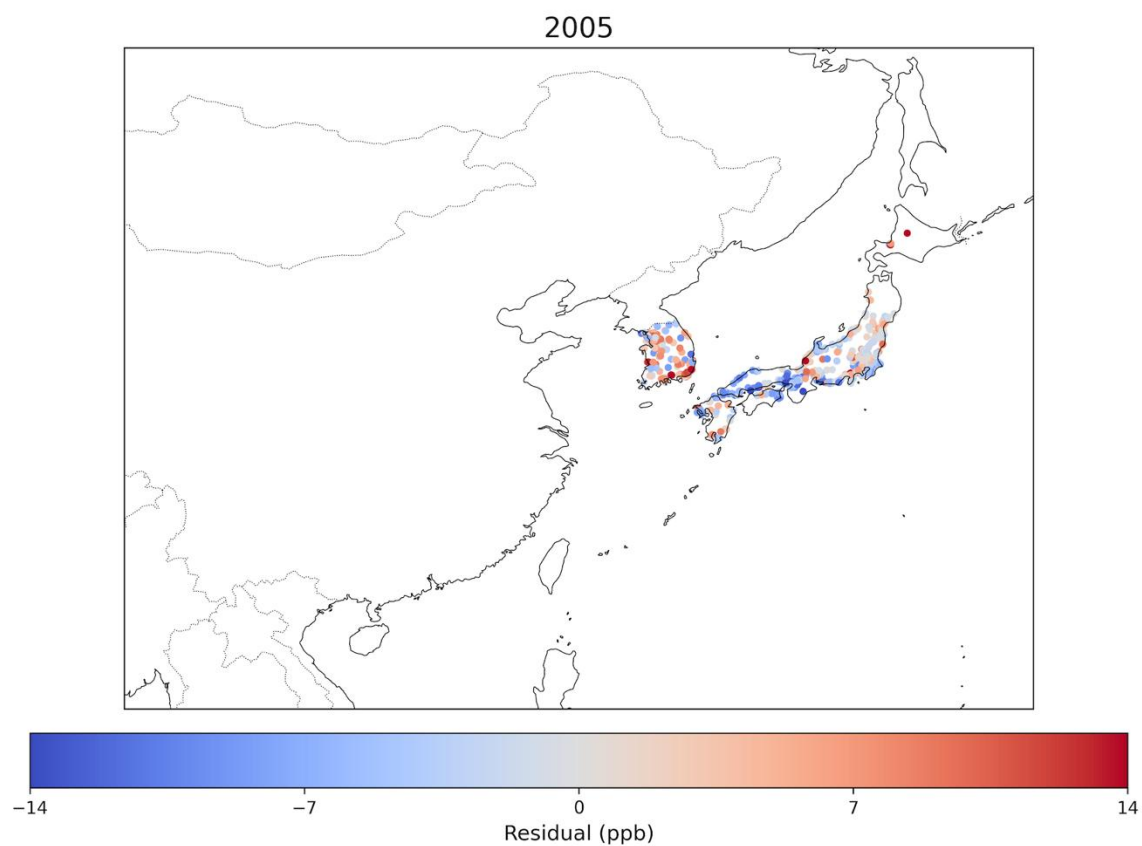
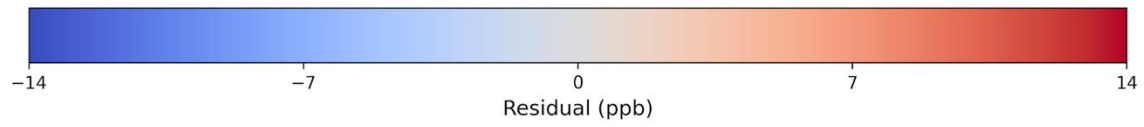
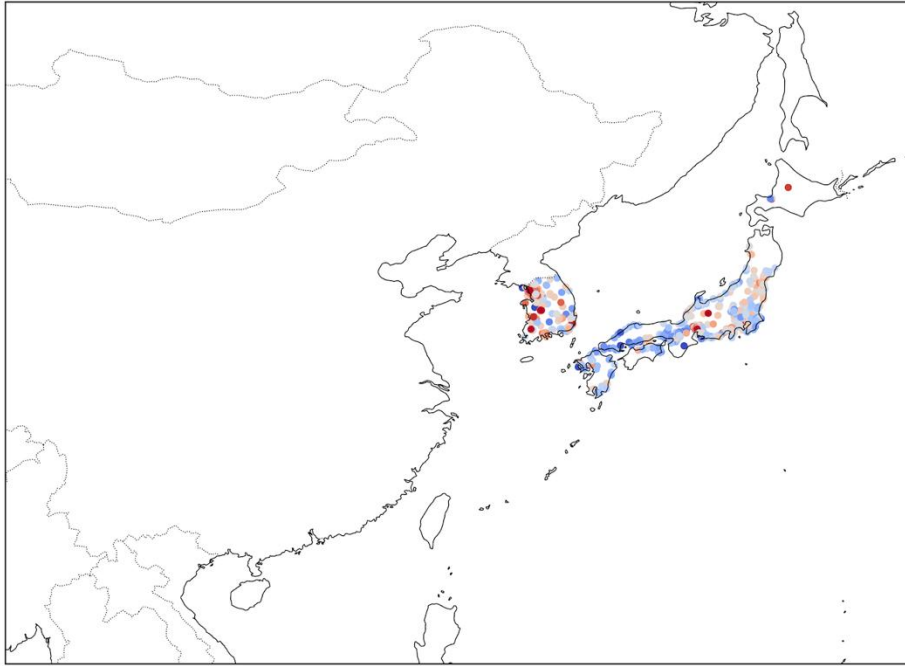


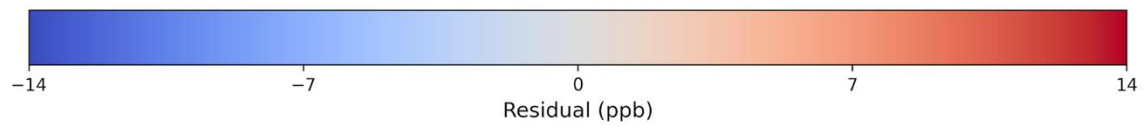
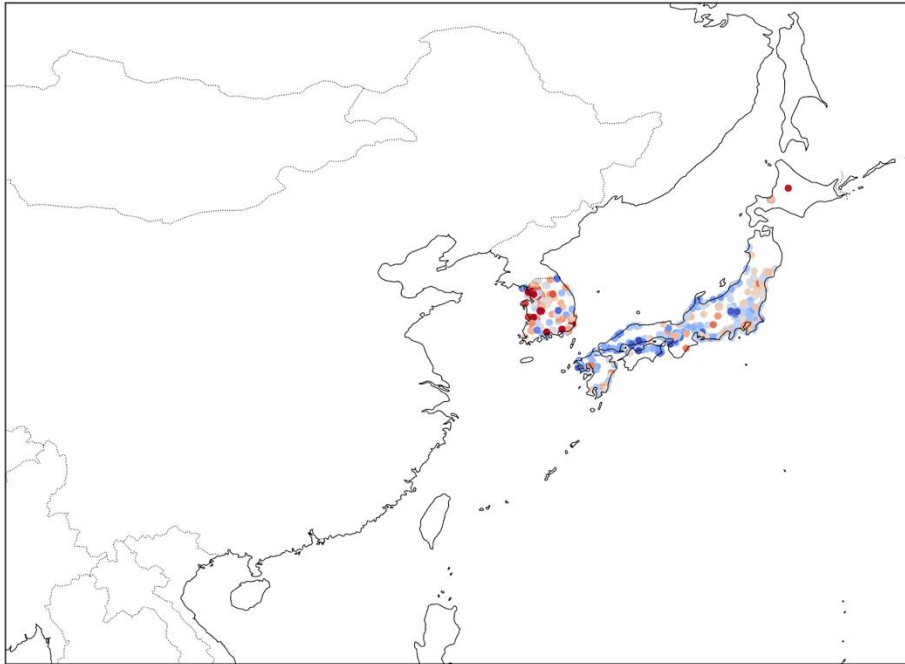
Figure S4. Residual maps (satellite-based prediction minus observed) for East Asia for ground-level DMA8 ozone averaged over all months in each year from 2005-2022. Blue points reflect an underprediction of measured ground-level ozone and red points reflect an overprediction of measured ground-level ozone.



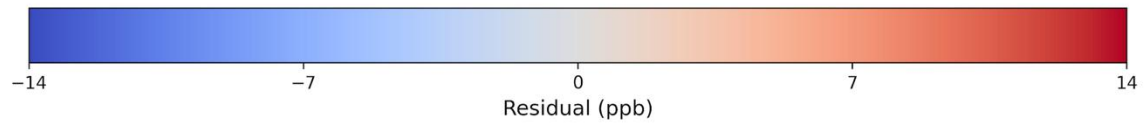
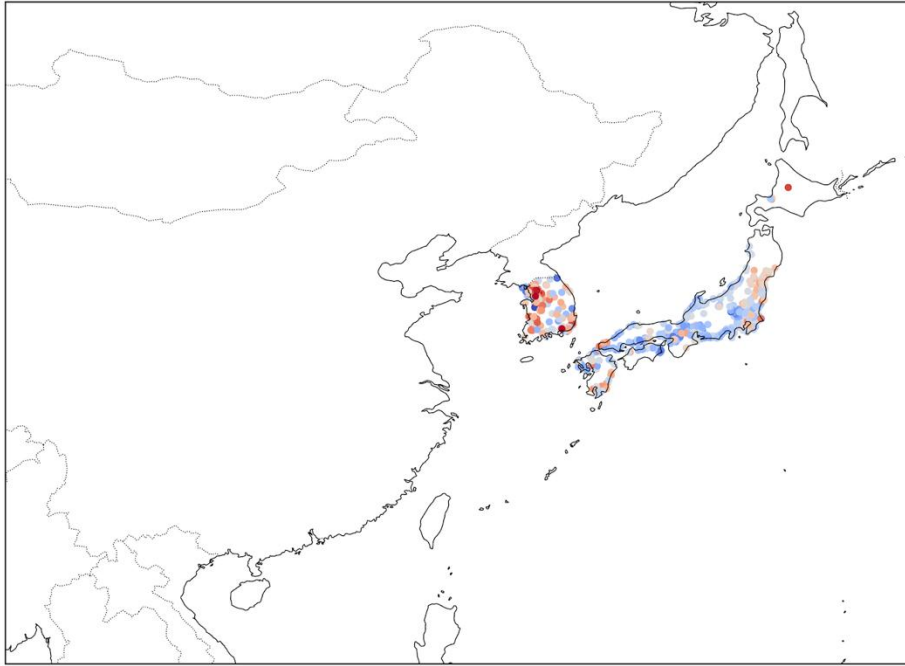
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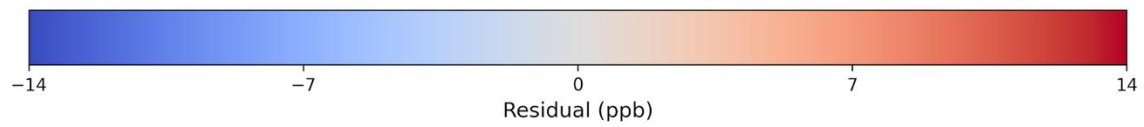
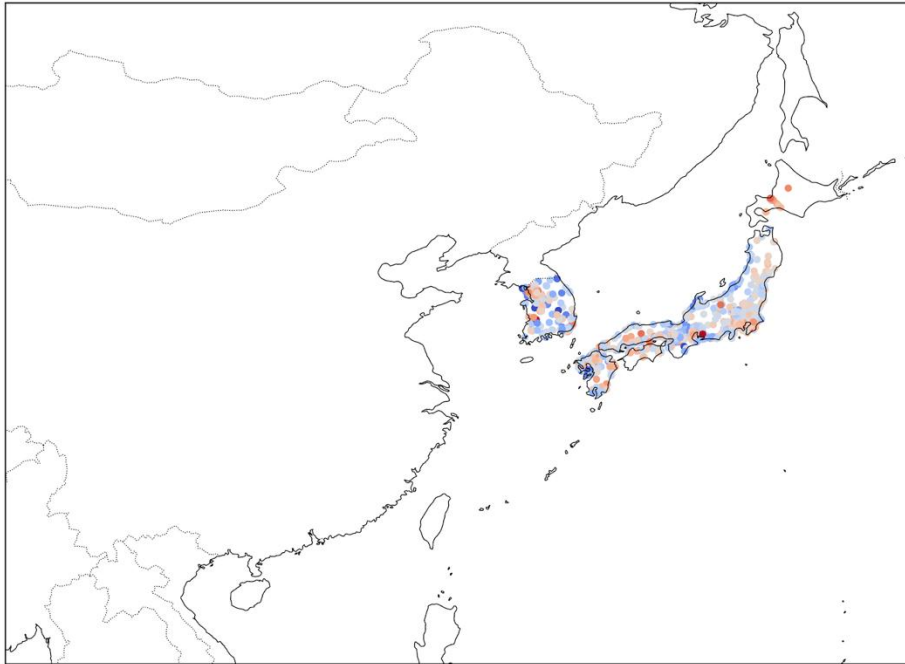
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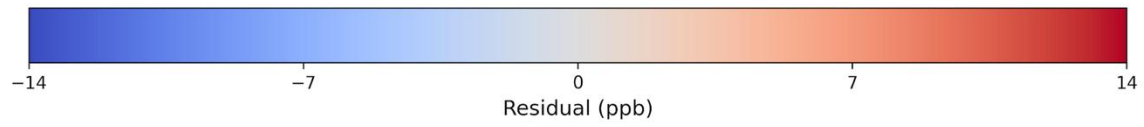
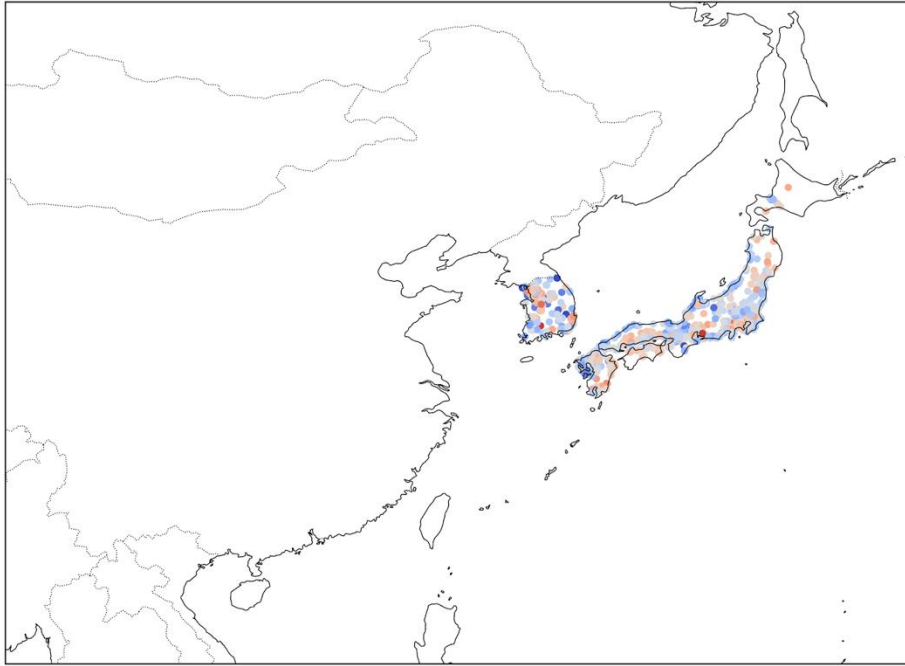
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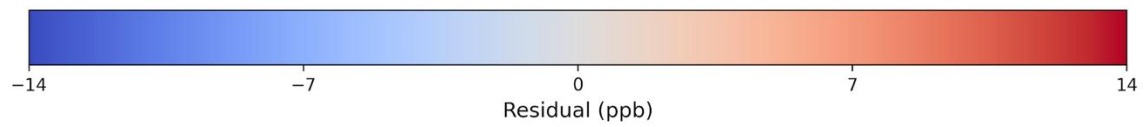
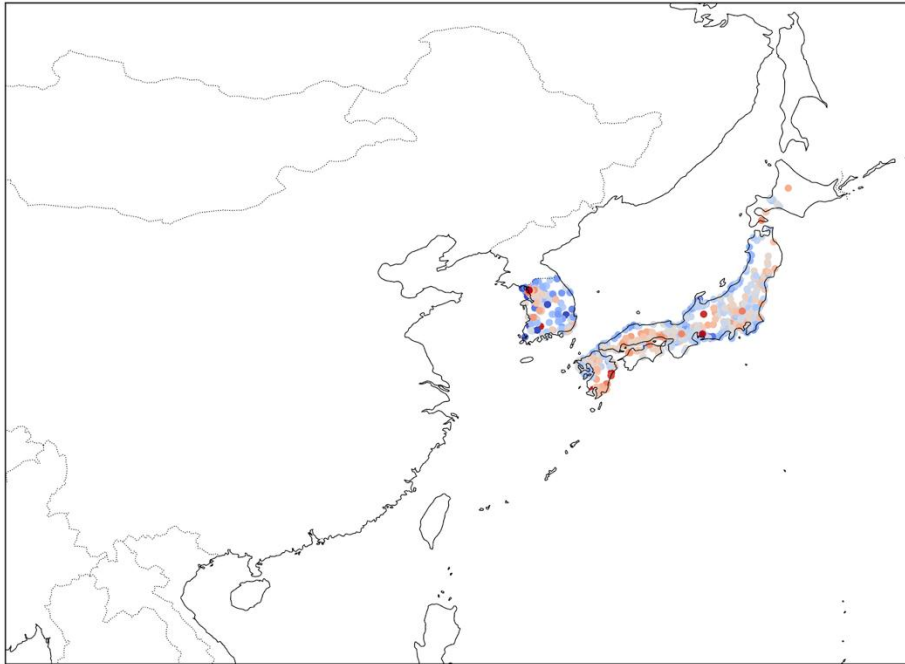
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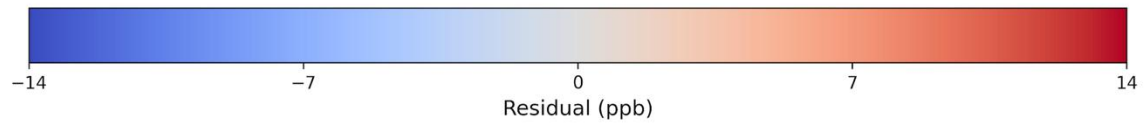
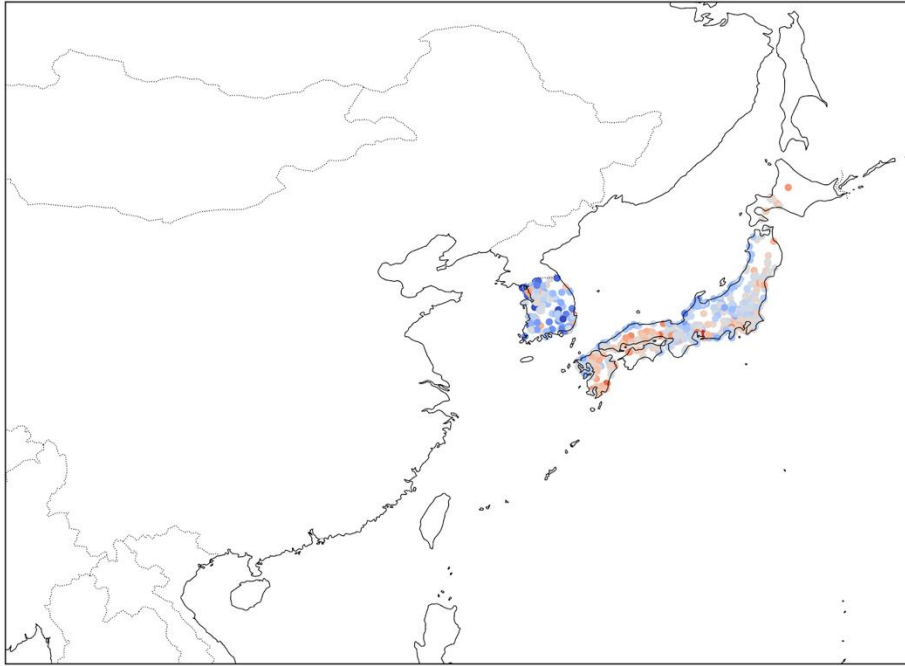
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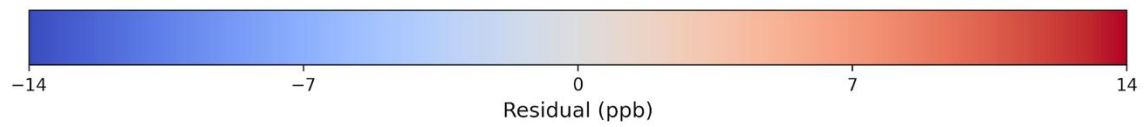
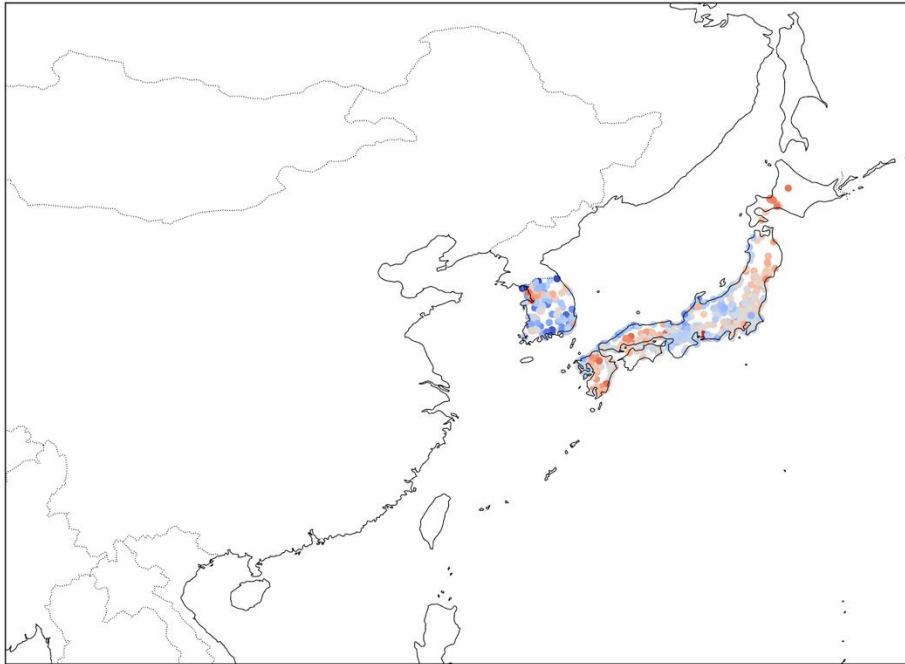
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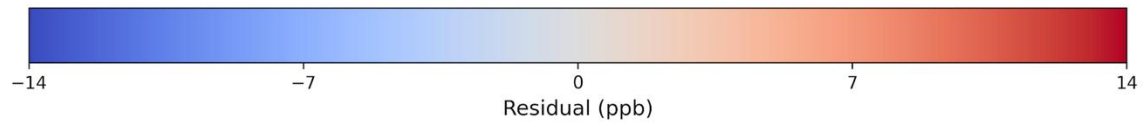
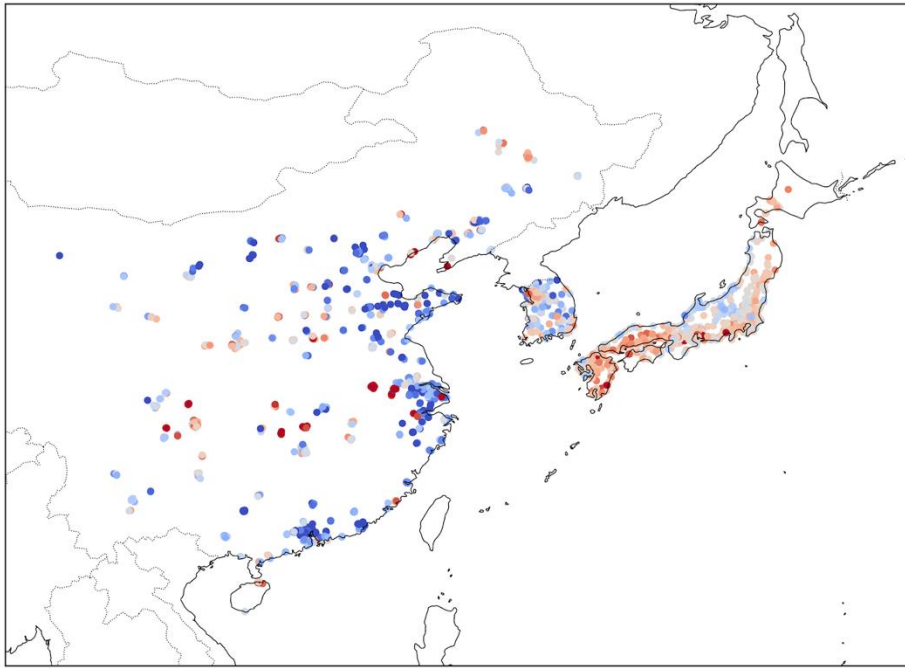
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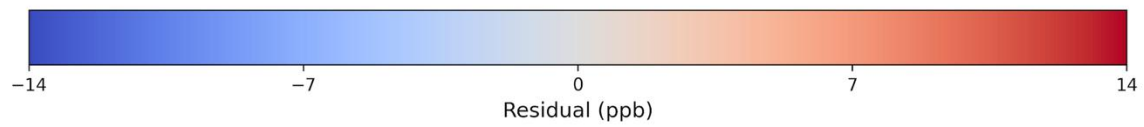
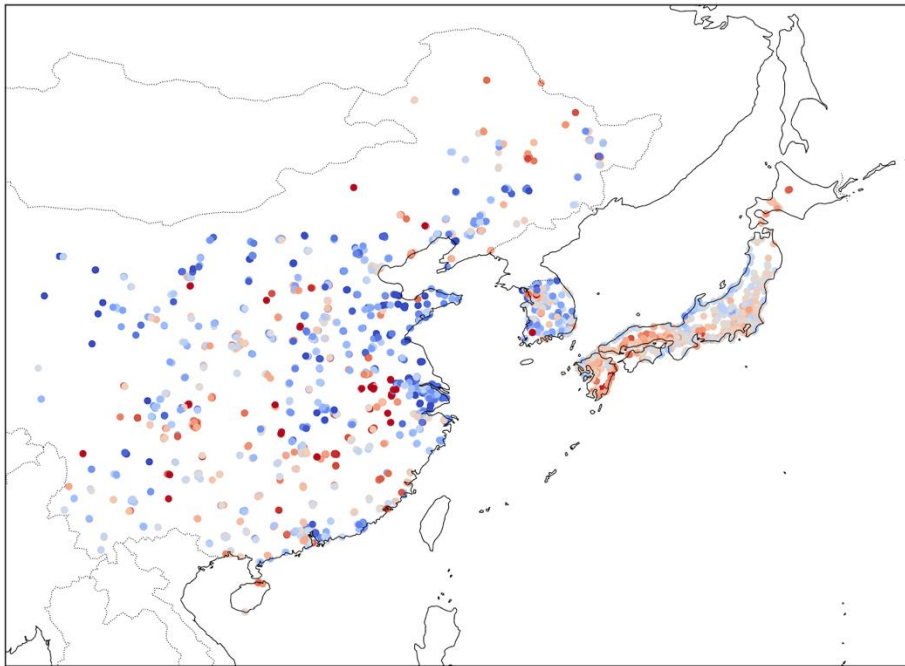
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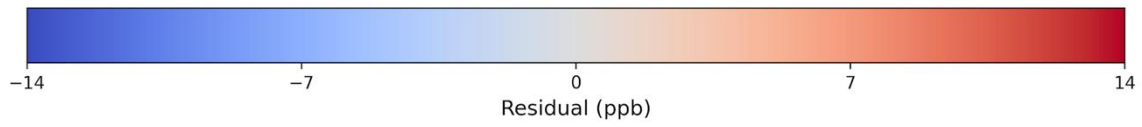
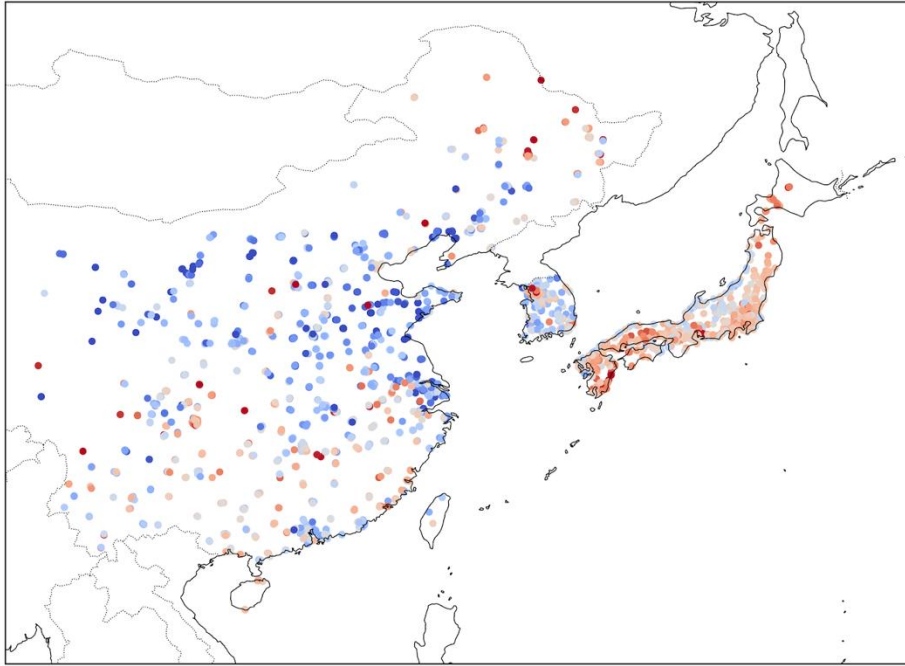
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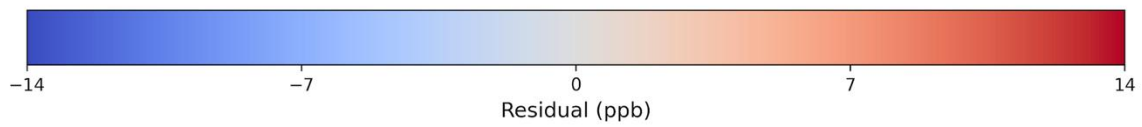
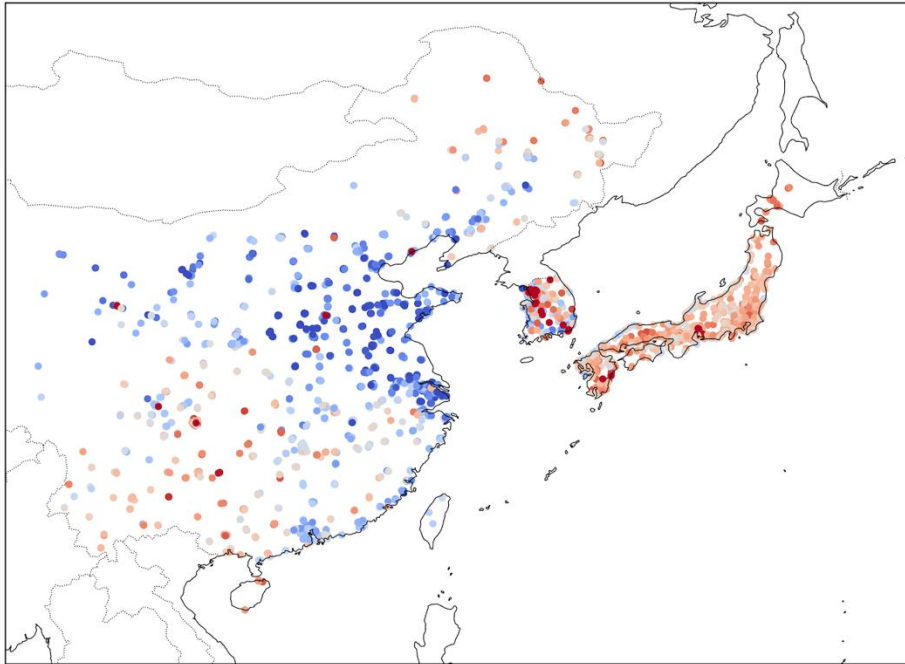
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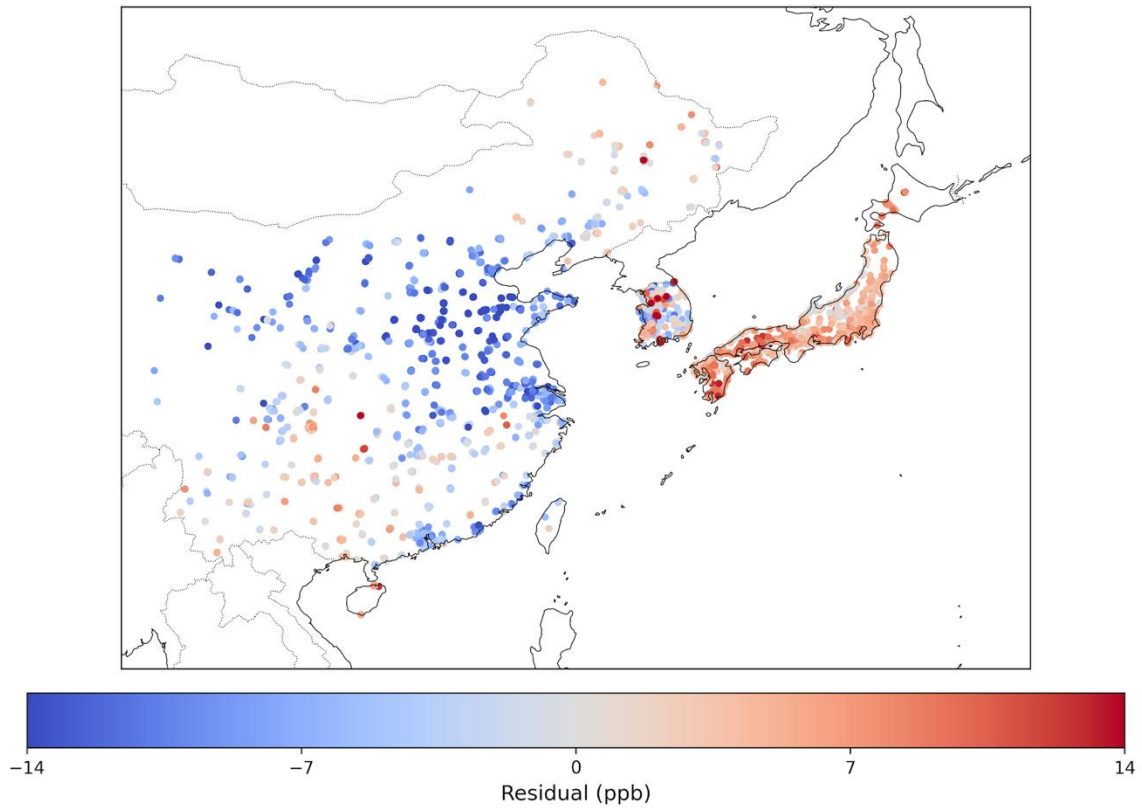
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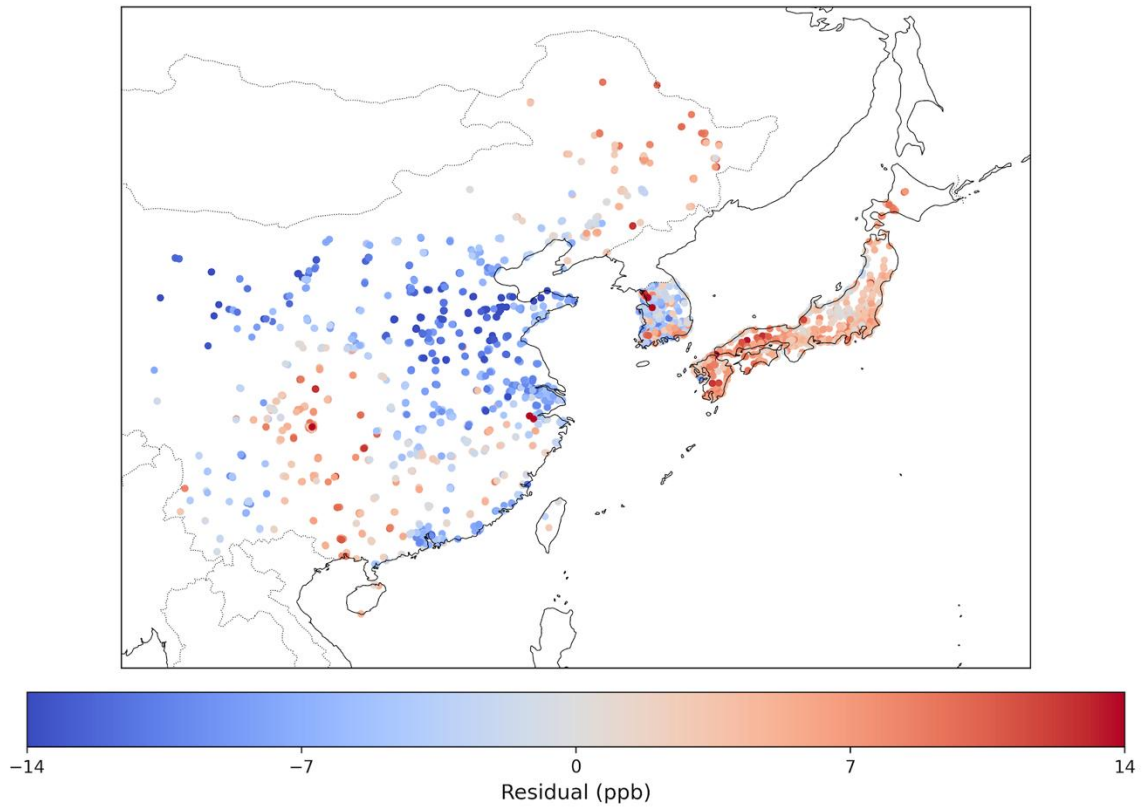
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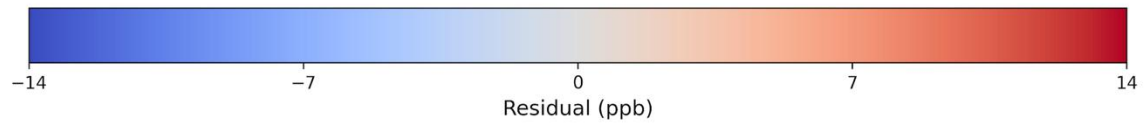
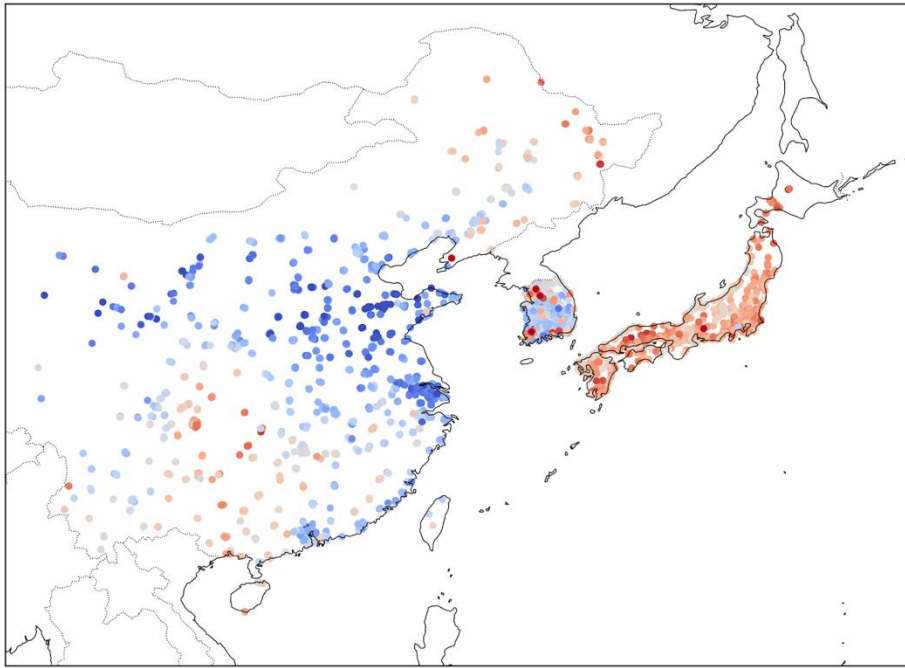
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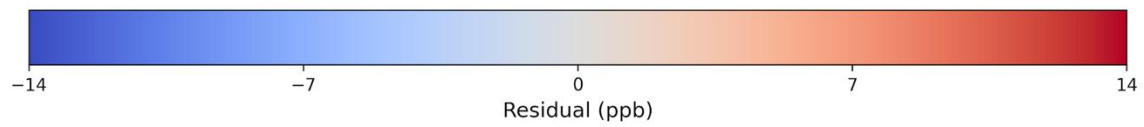
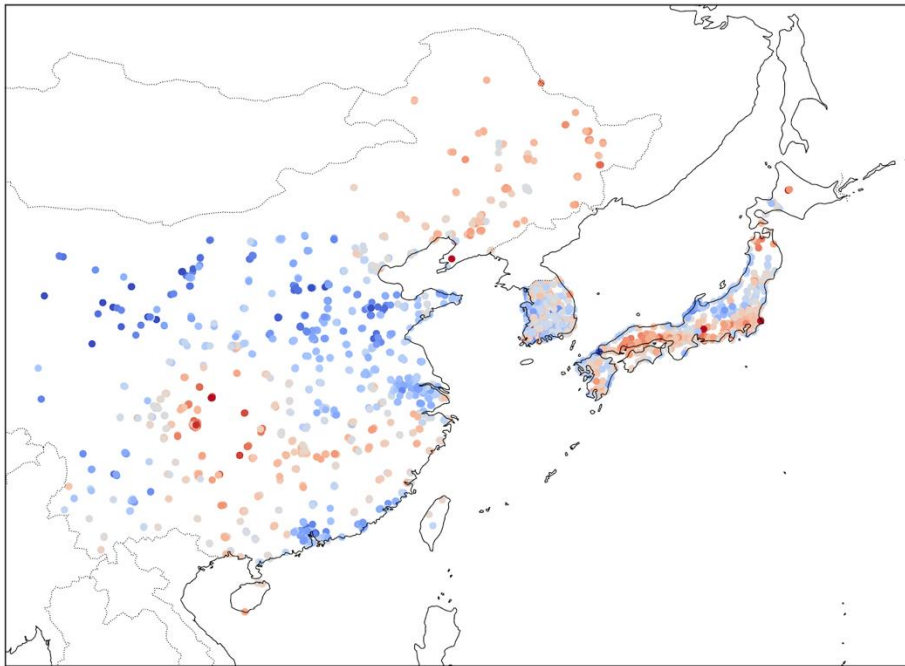
2019



2020



2021



2022

