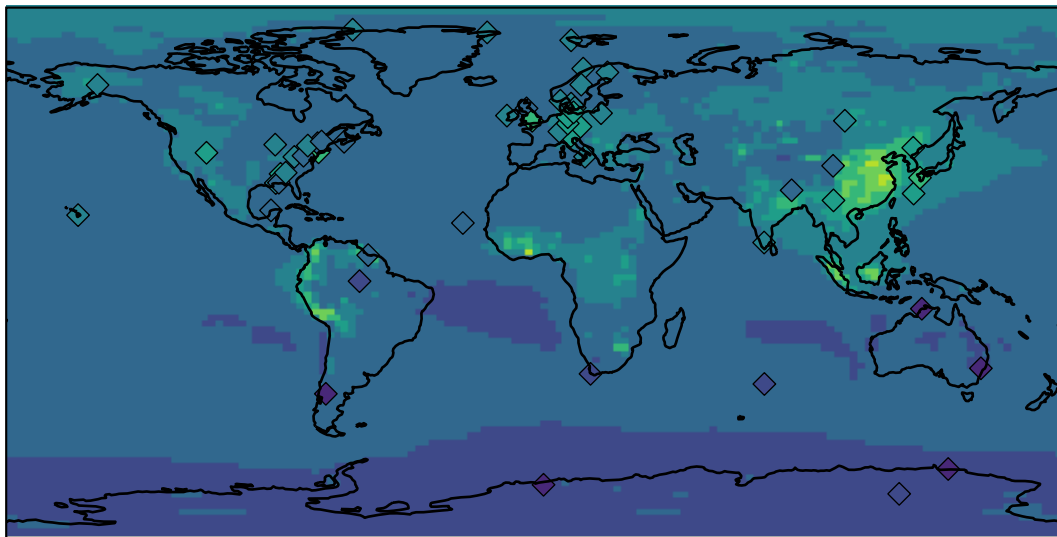


# Reference Model Version: Surface TGM



Terrestrial  $R^2 = 0.465$

Mean Mod. =  $1.33 \pm 0.12 \text{ ng m}^{-3}$

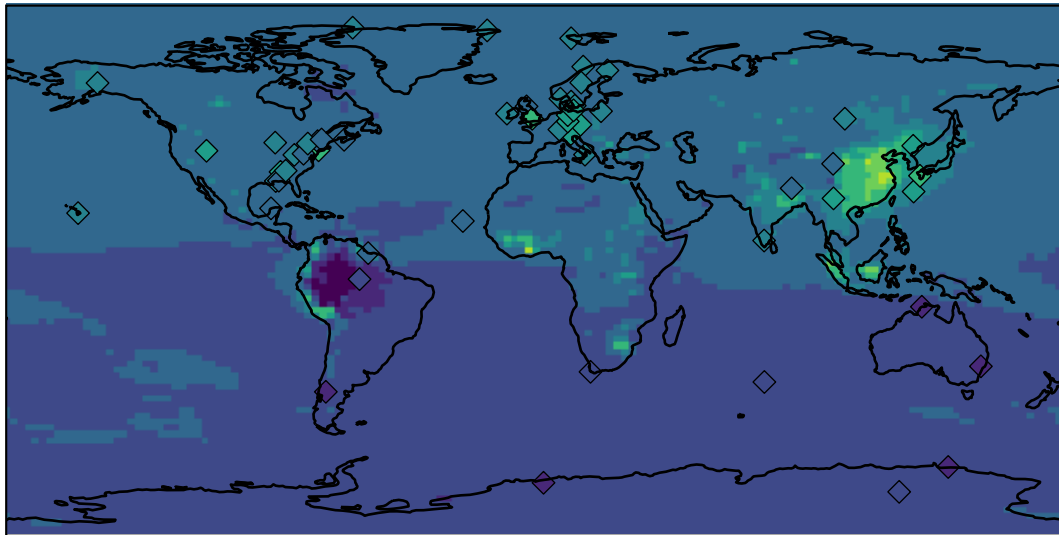
Mean Obs. =  $1.39 \pm 0.26 \text{ ng m}^{-3}$



0.75 0.95 1.15 1.35 1.55 1.75 2.30 2.90 3.50

Not Linear  $\text{ng m}^{-3}$

# New Model Version: Surface TGM

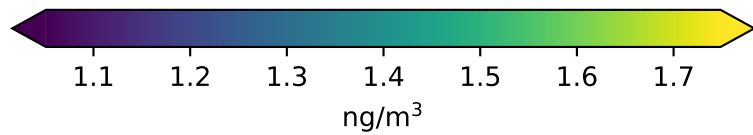
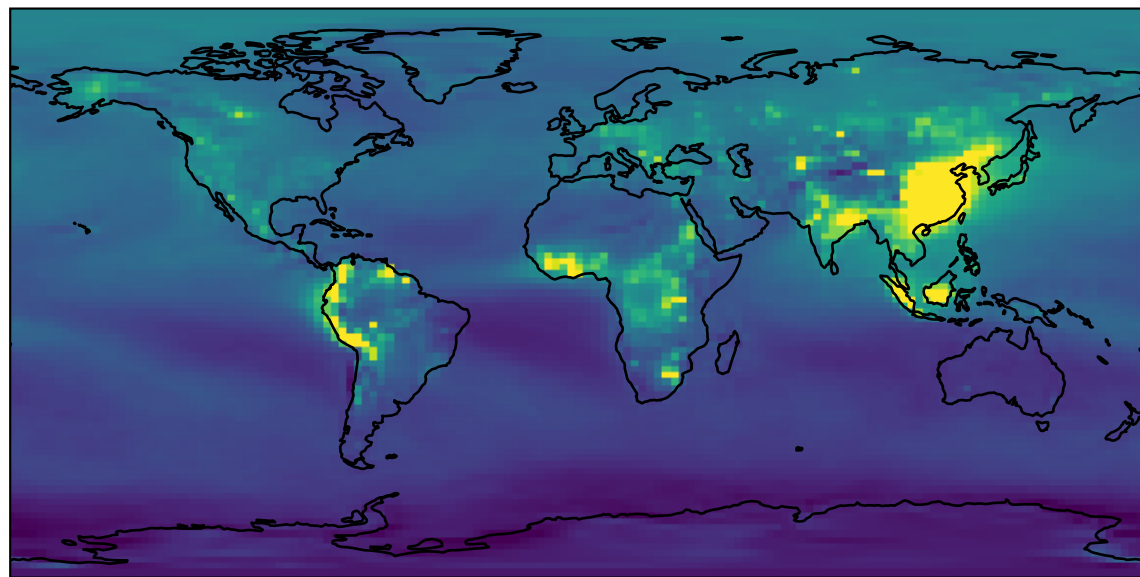


Terrestrial  $R^2 = 0.457$

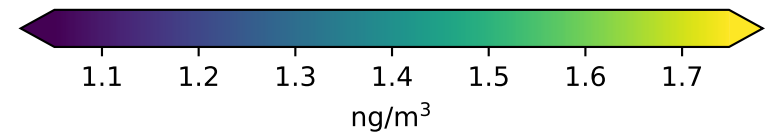
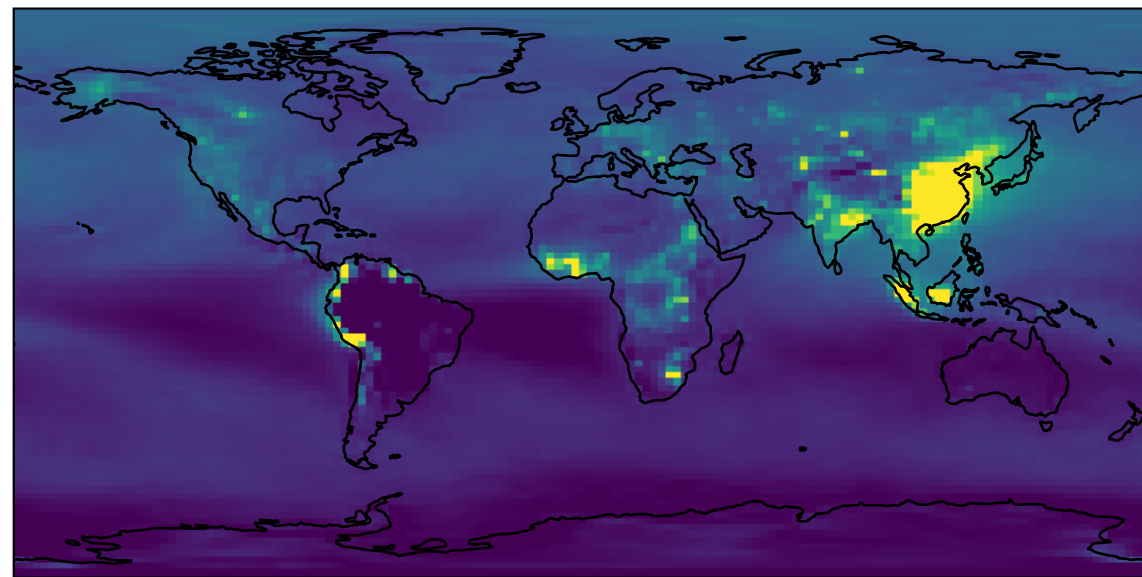
Mean Mod. =  $1.23 \pm 0.12 \text{ ng m}^{-3}$

Mean Obs. =  $1.39 \pm 0.26 \text{ ng m}^{-3}$

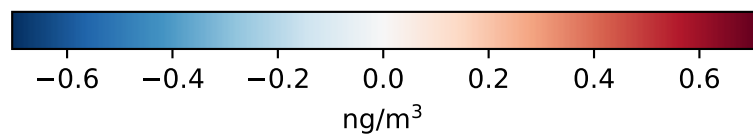
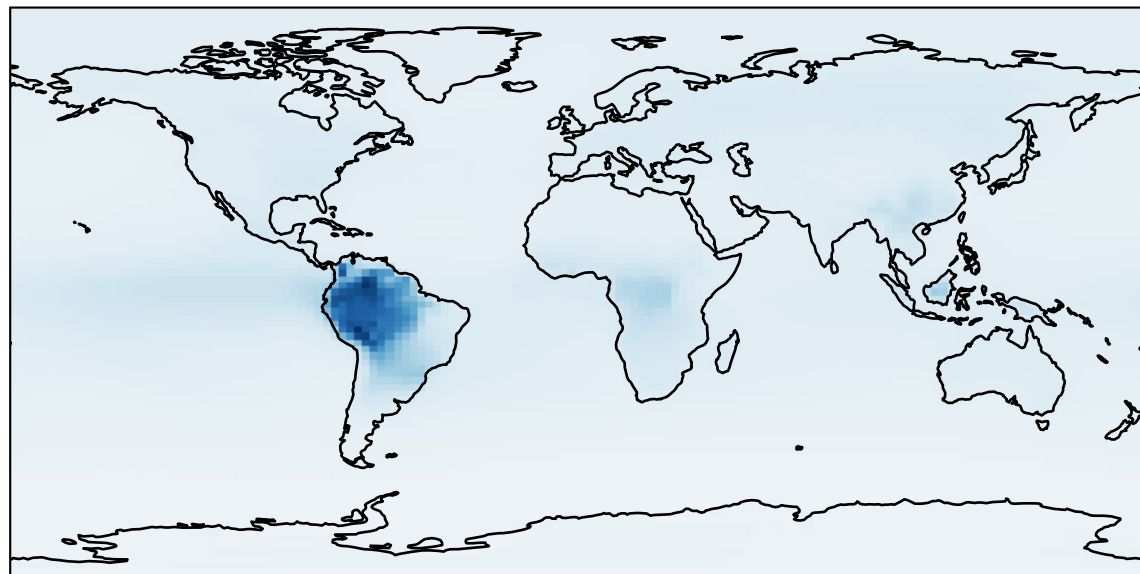
Reference Model Version: Surface TGM



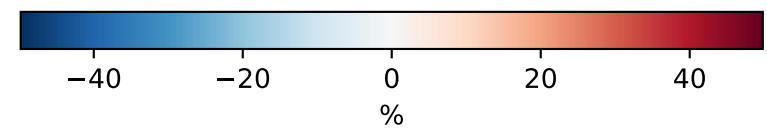
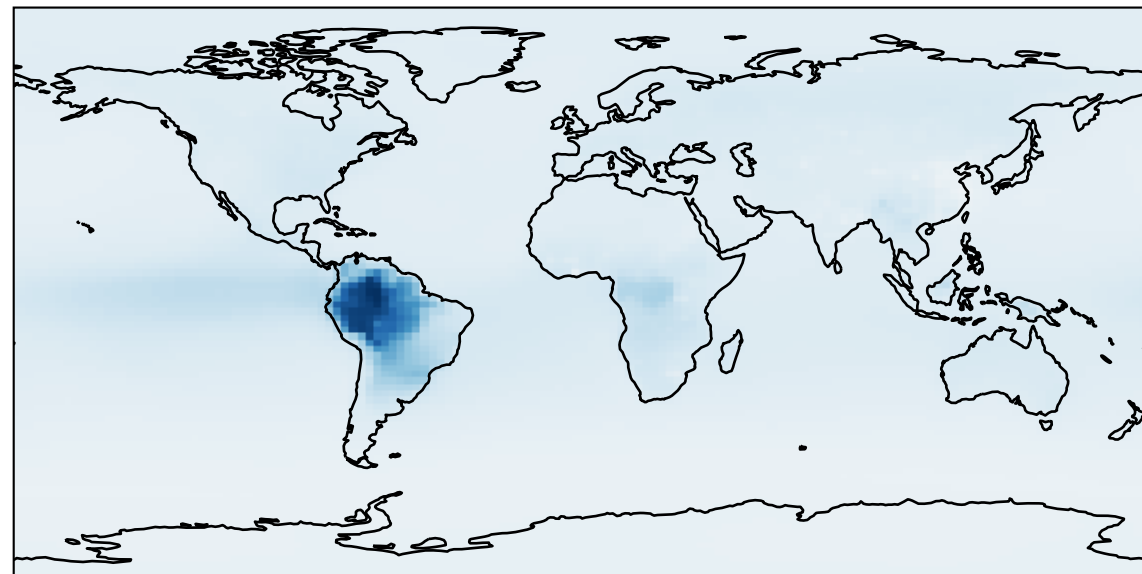
New Model Version: Surface TGM



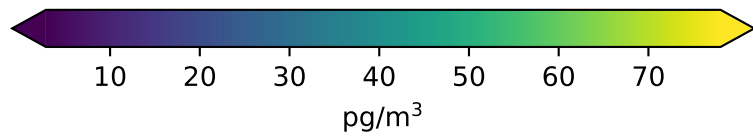
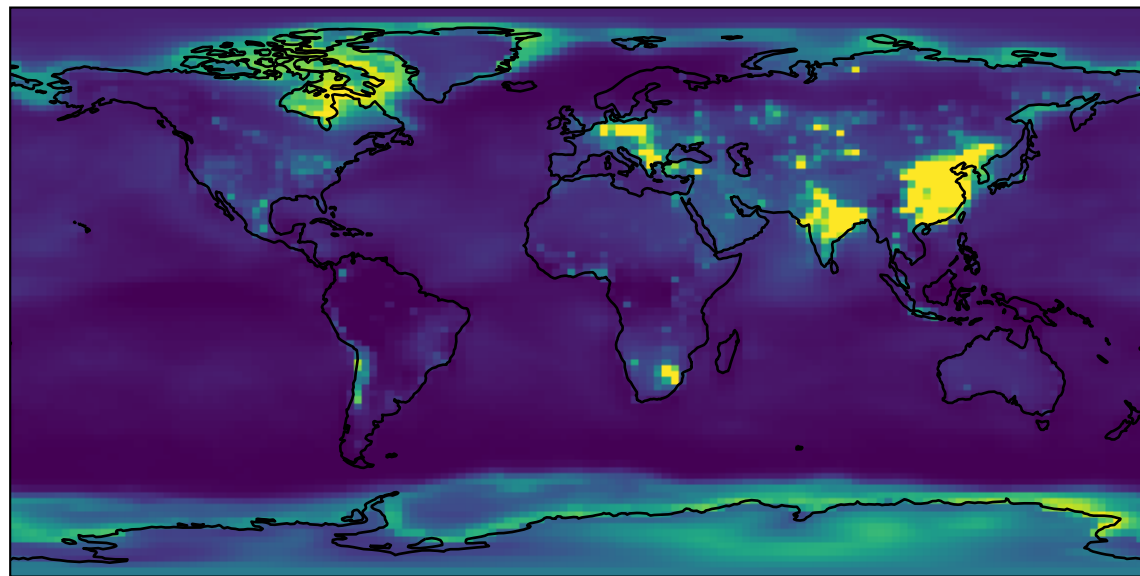
Absolute Difference



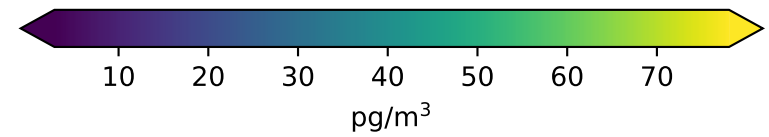
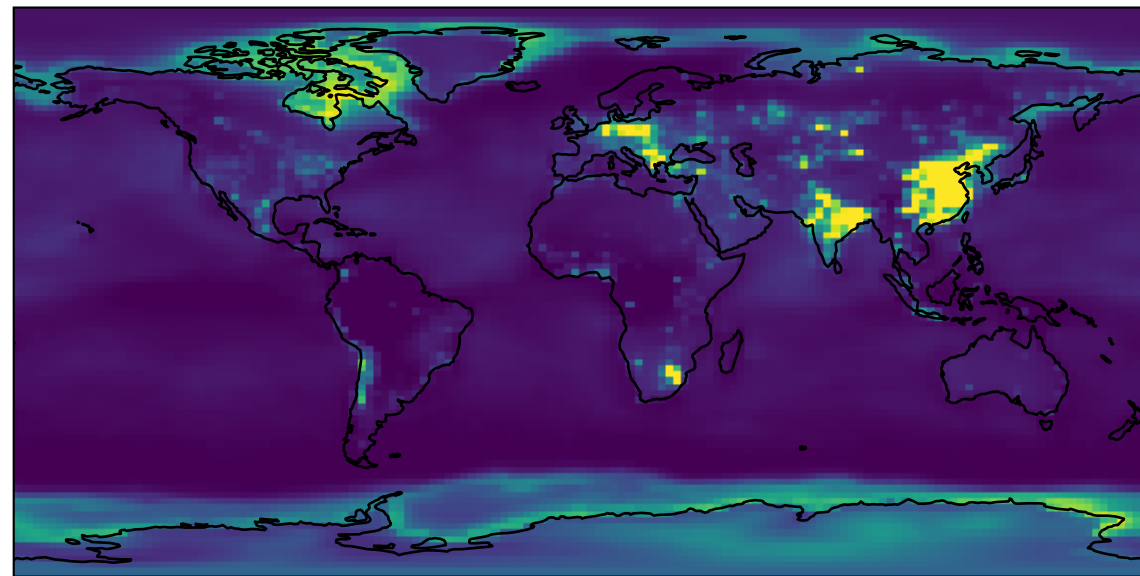
Percent Difference (%)



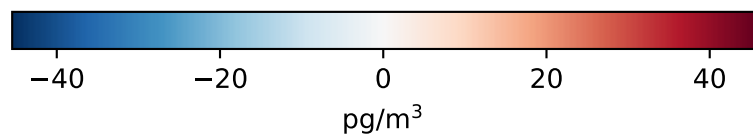
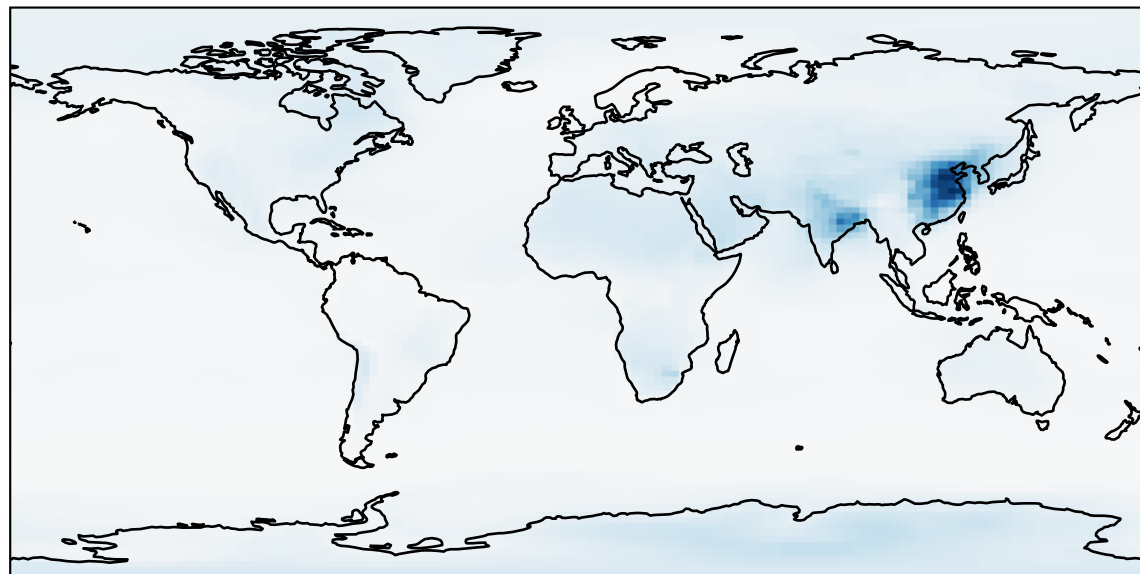
Reference Model Version: Surface Hg(II)+Hg(P)



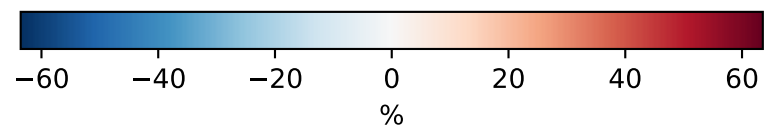
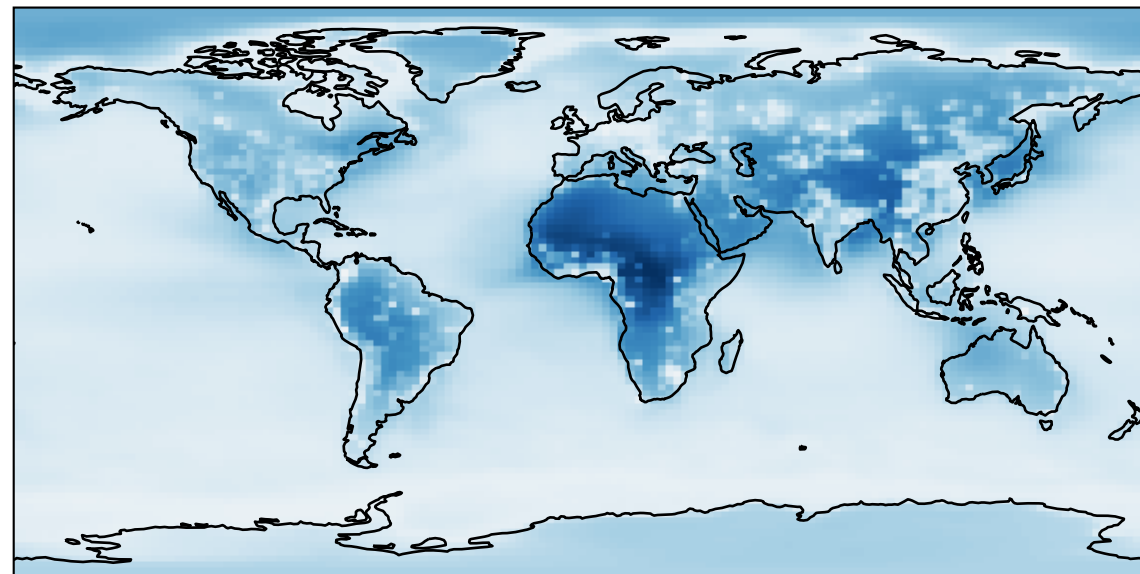
New Model Version: Surface Hg(II)+Hg(P)



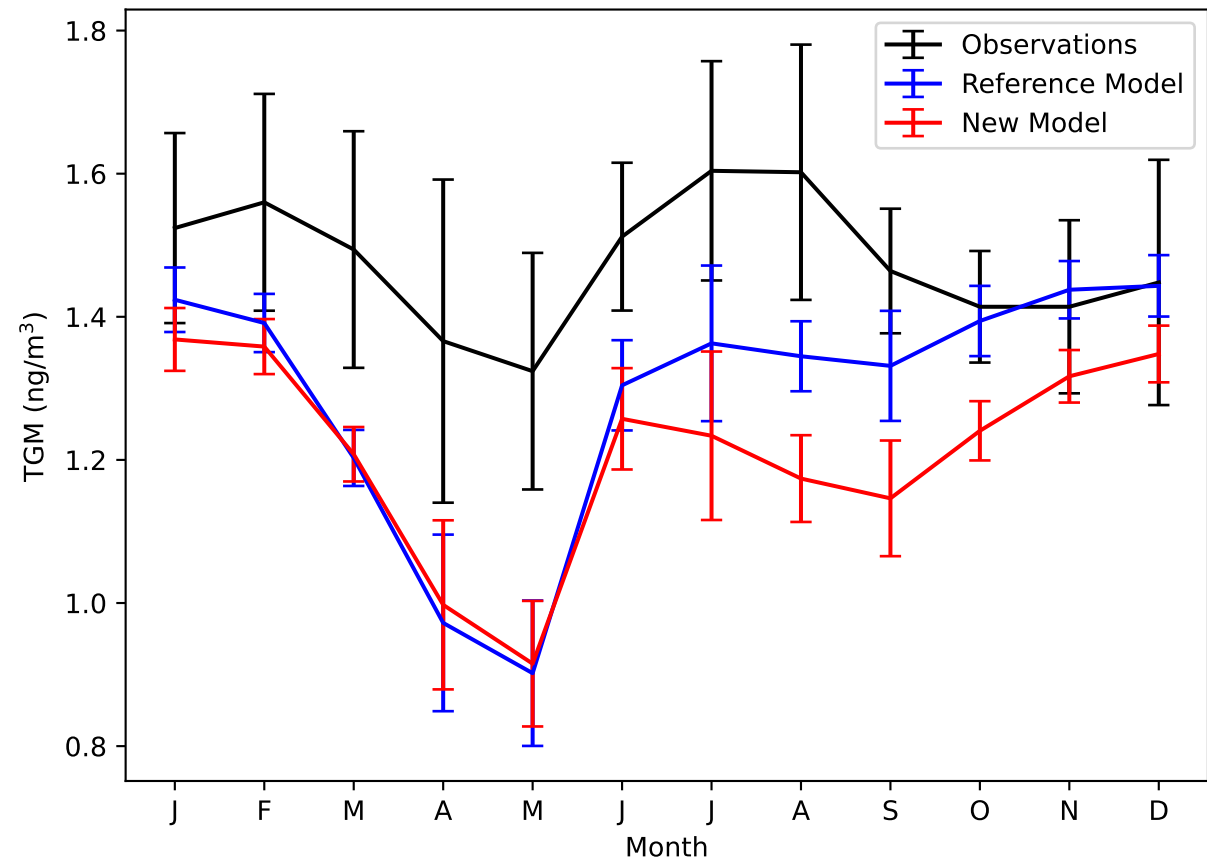
Absolute Difference



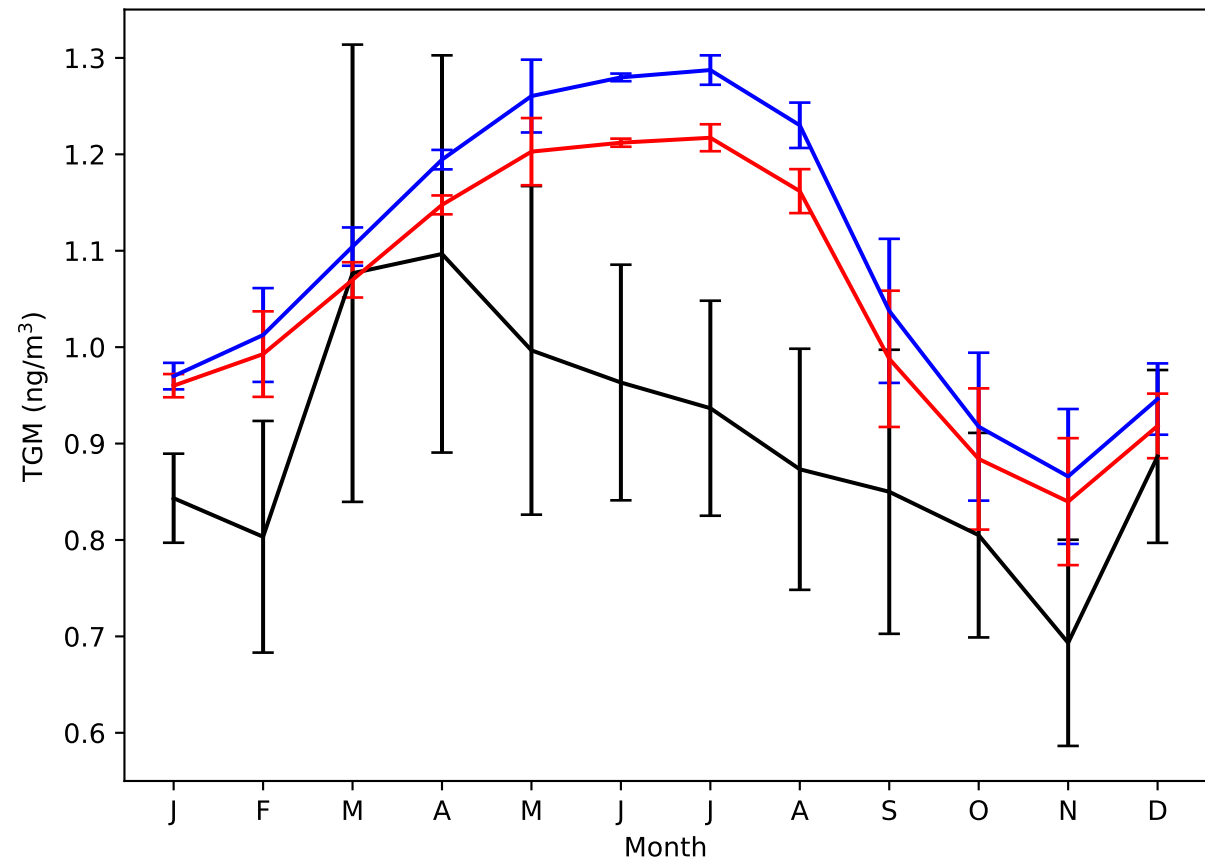
Percent Difference (%)



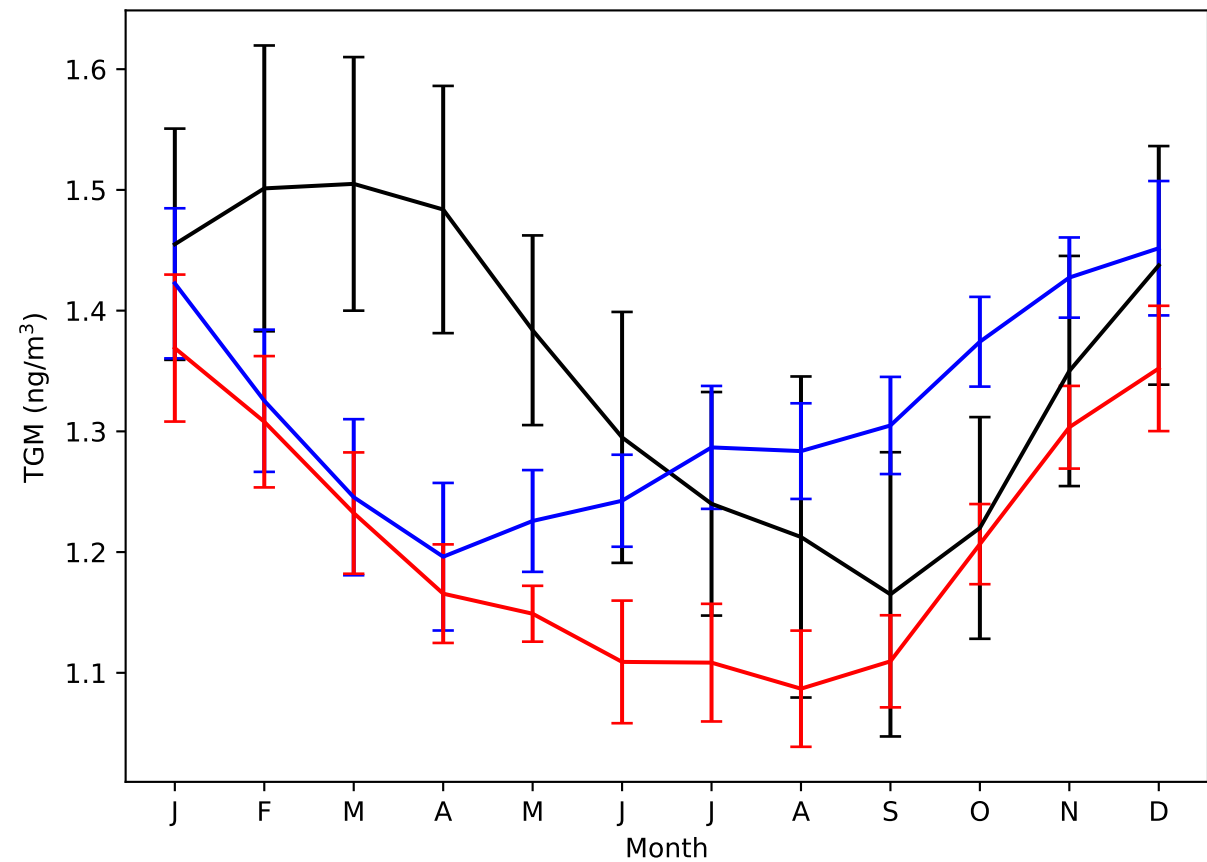
Arctic



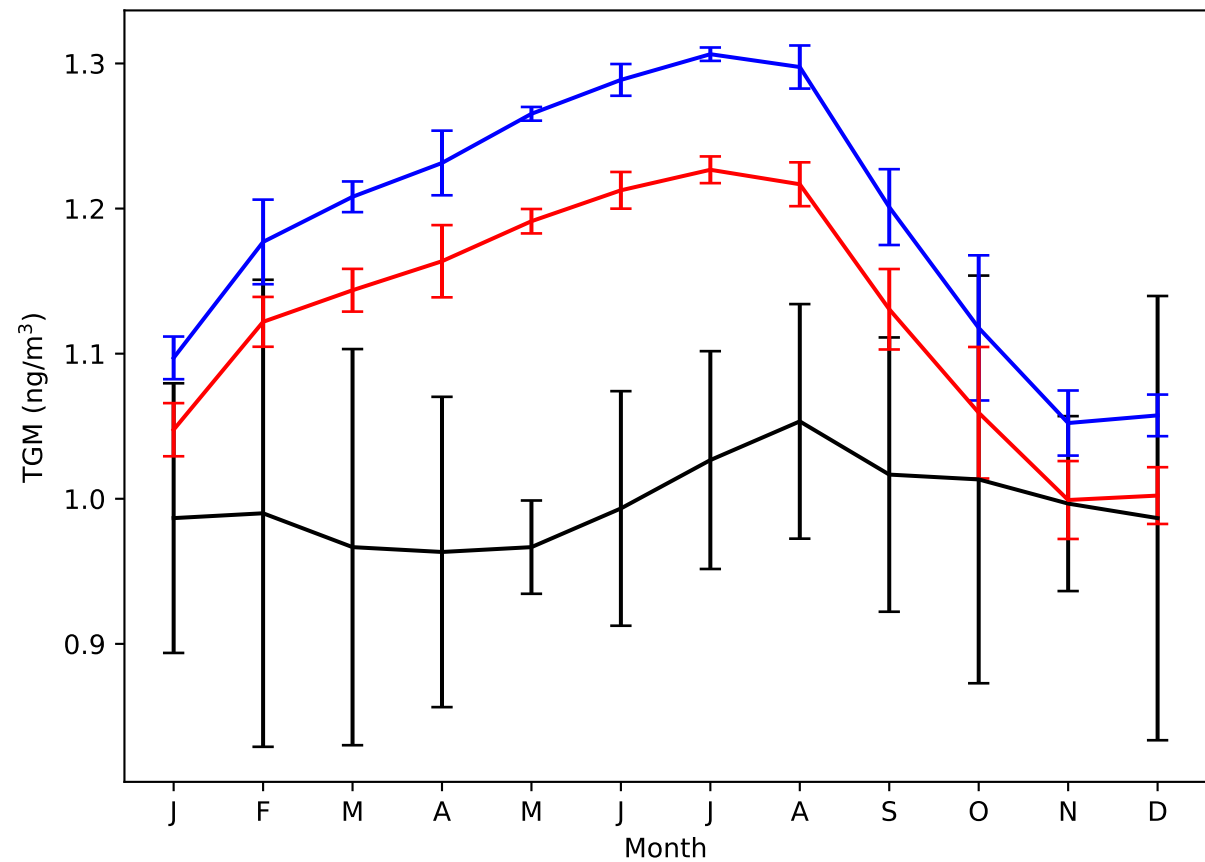
Antarctic

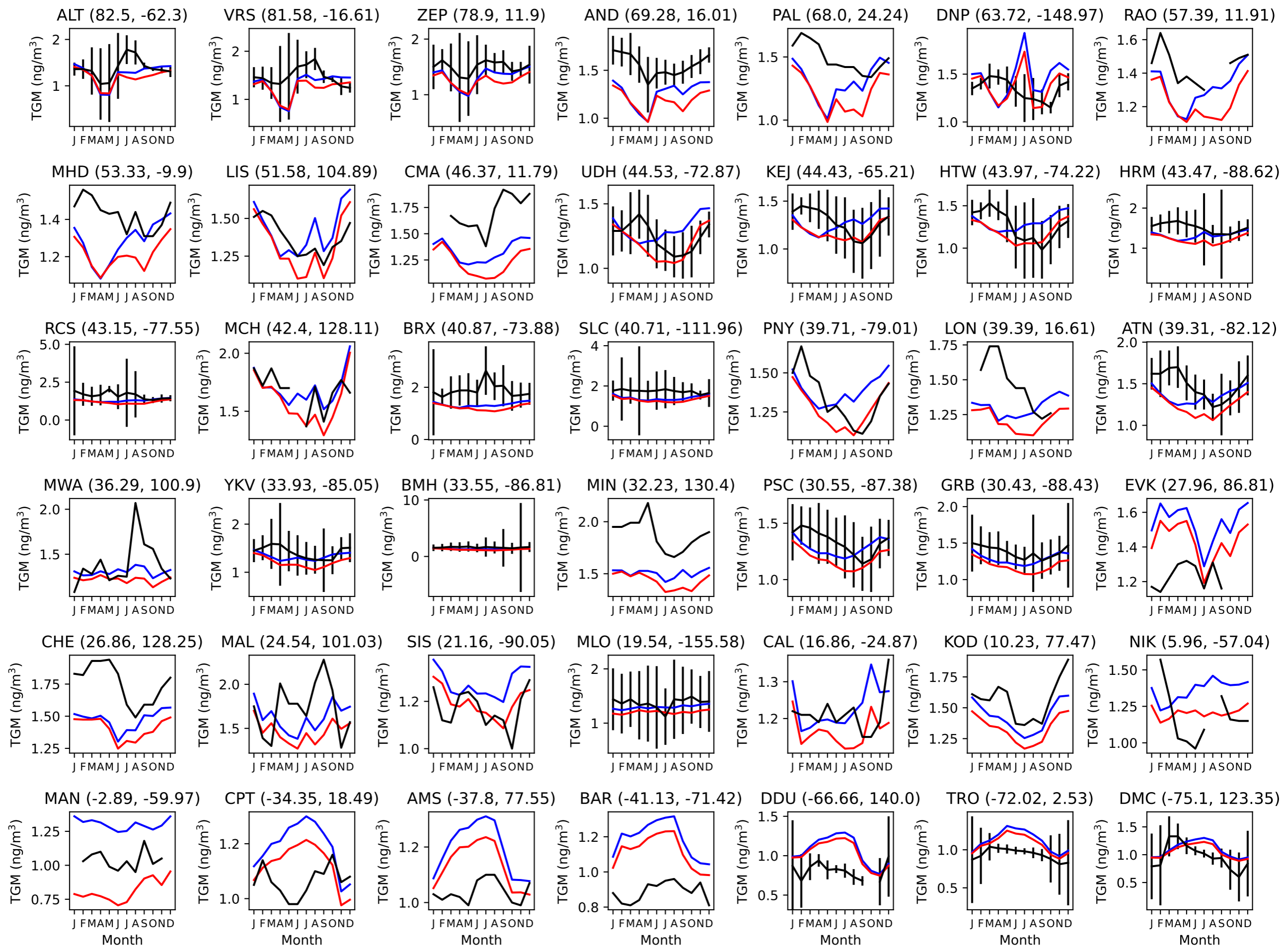
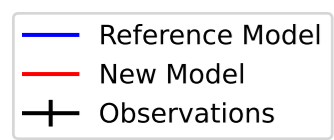


Northern Mid Latitudes

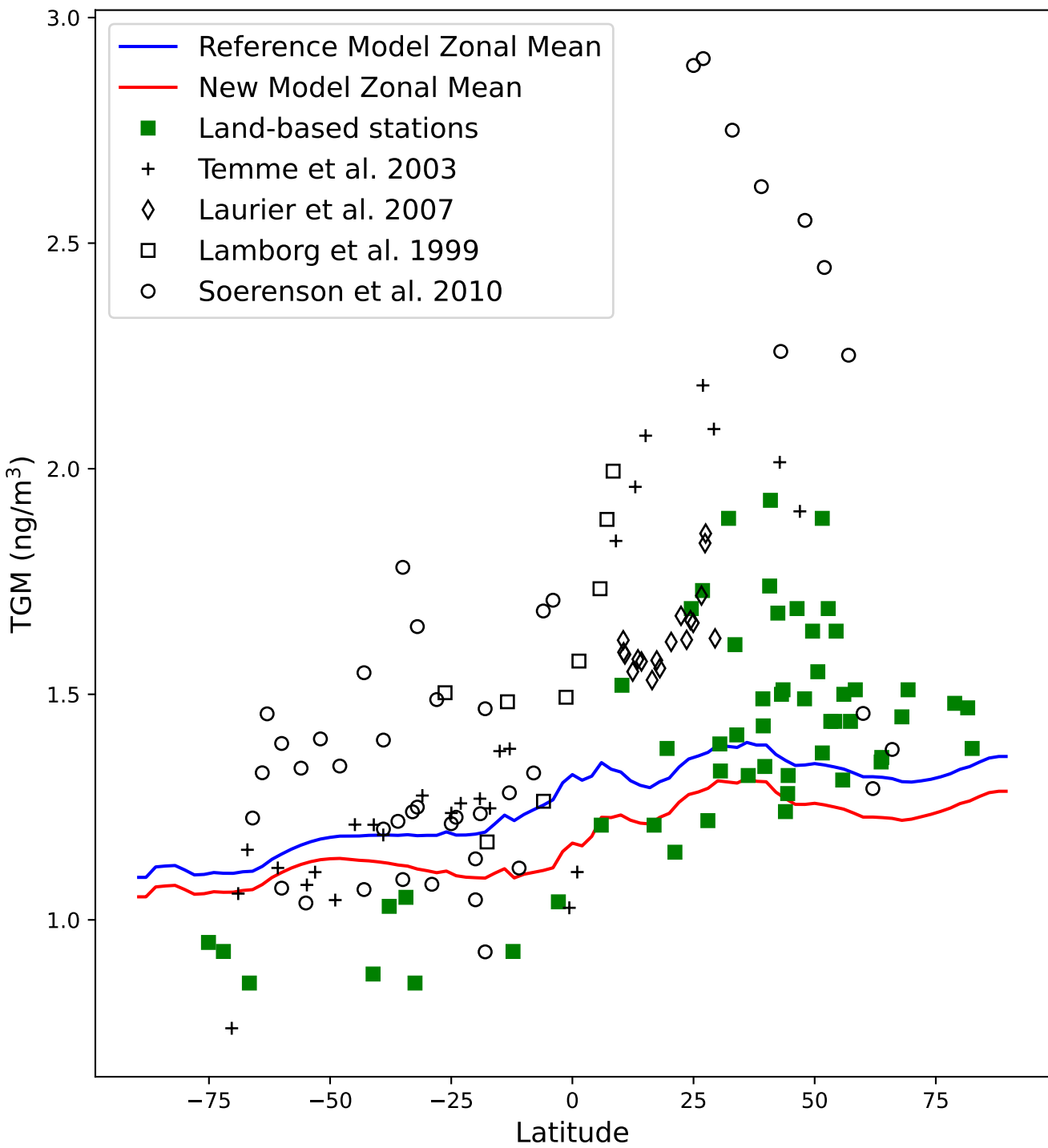


Southern Mid Latitudes

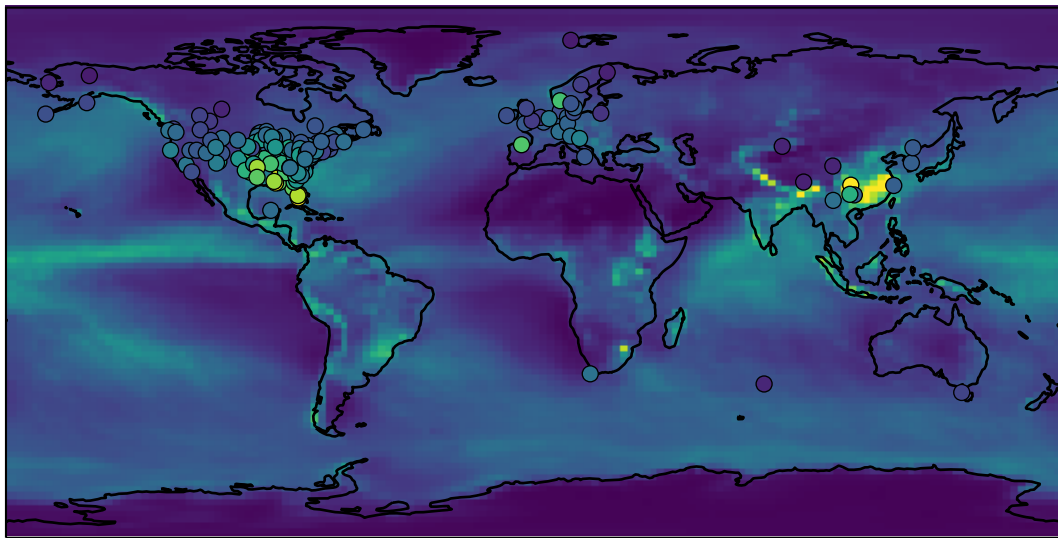




# Surface TGM



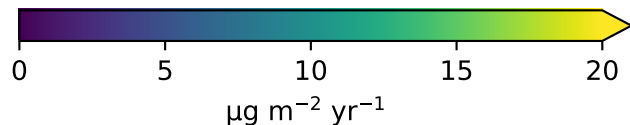
# Wet Deposition, Reference Model (2015), obs from Shah21



$$R^2 = 0.37$$

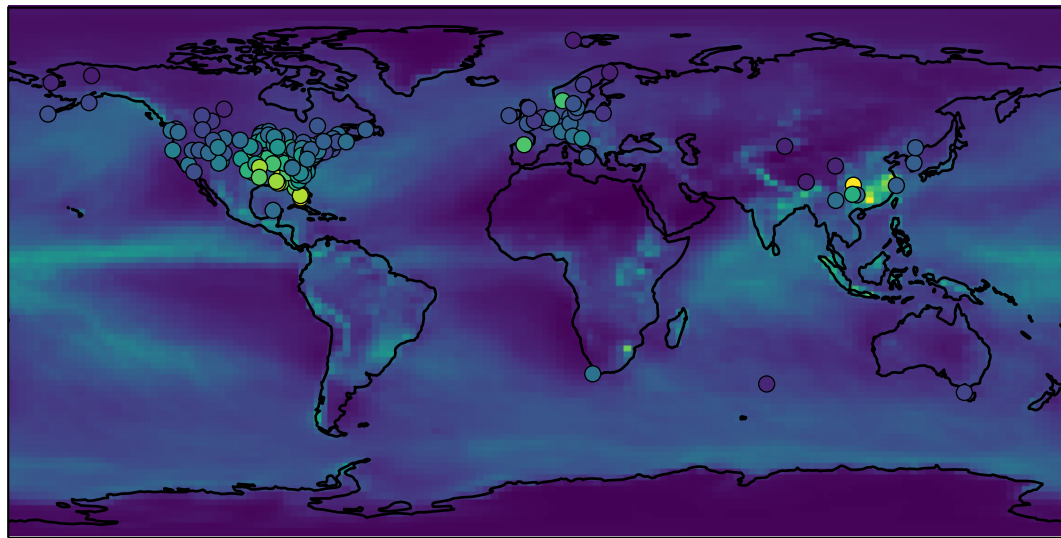
$$\text{Mean Mod.} = 6.2 \pm 2.4 \mu\text{g m}^{-2} \text{ yr}^{-1}$$

$$\text{Mean Obs.} = 8.3 \pm 4.4 \mu\text{g m}^{-2} \text{ yr}^{-1}$$





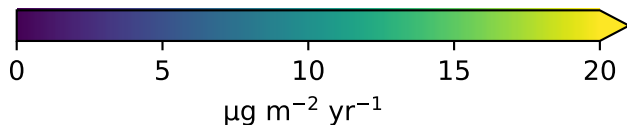
# Wet Deposition, New Model (2015), obs from Shah21



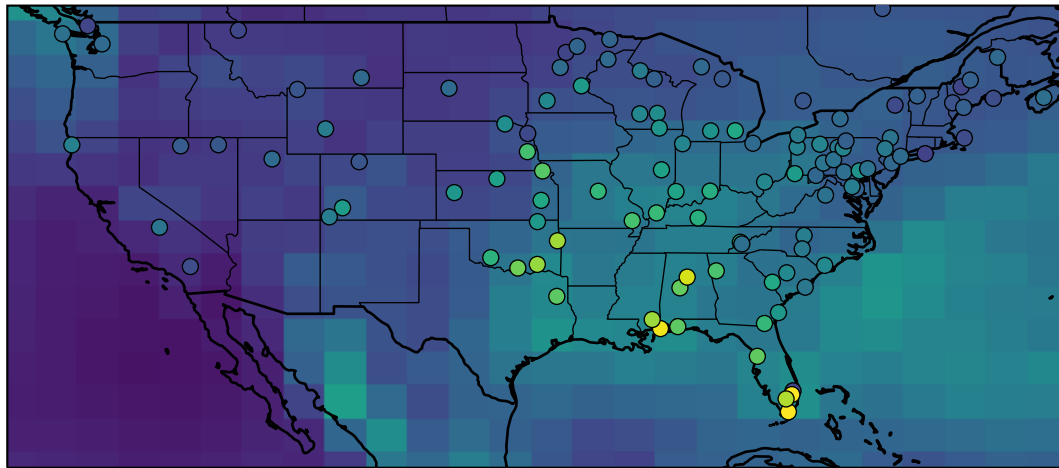
$$R^2 = 0.355$$

$$\text{Mean Mod.} = 4.5 \pm 1.7 \mu\text{g m}^{-2} \text{ yr}^{-1}$$

$$\text{Mean Obs.} = 8.3 \pm 4.4 \mu\text{g m}^{-2} \text{ yr}^{-1}$$



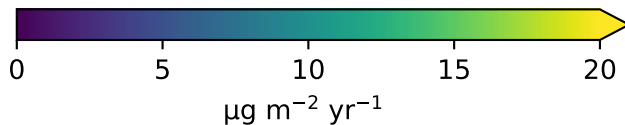
# Hg Wet Deposition, Reference Model (2015), MDN (2015)



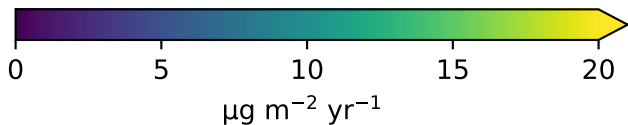
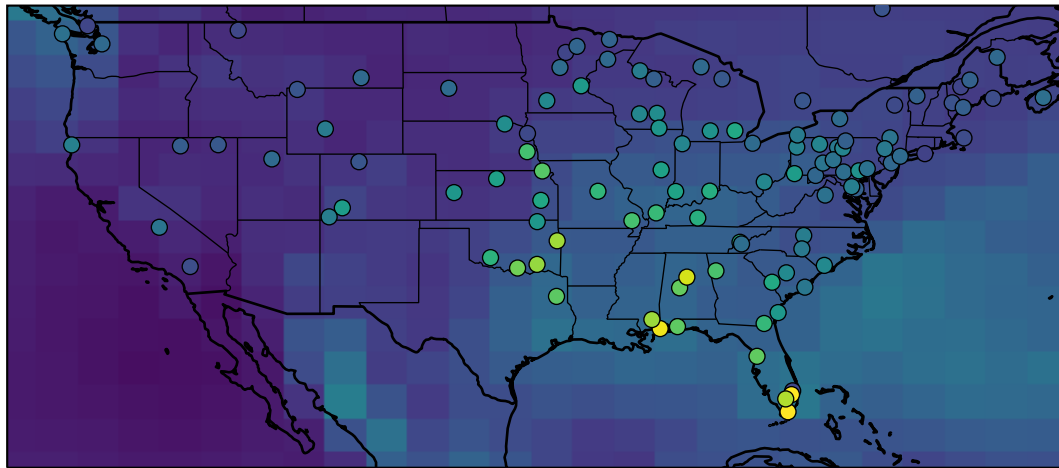
$$R^2 = 0.508$$

$$\text{Mean Mod.} = 6.2 \pm 1.9 \mu\text{g m}^{-2} \text{ yr}^{-1}$$

$$\text{Mean Obs.} = 8.9 \pm 4.1 \mu\text{g m}^{-2} \text{ yr}^{-1}$$



# Hg Wet Deposition, New Model (2015), MDN (2015)



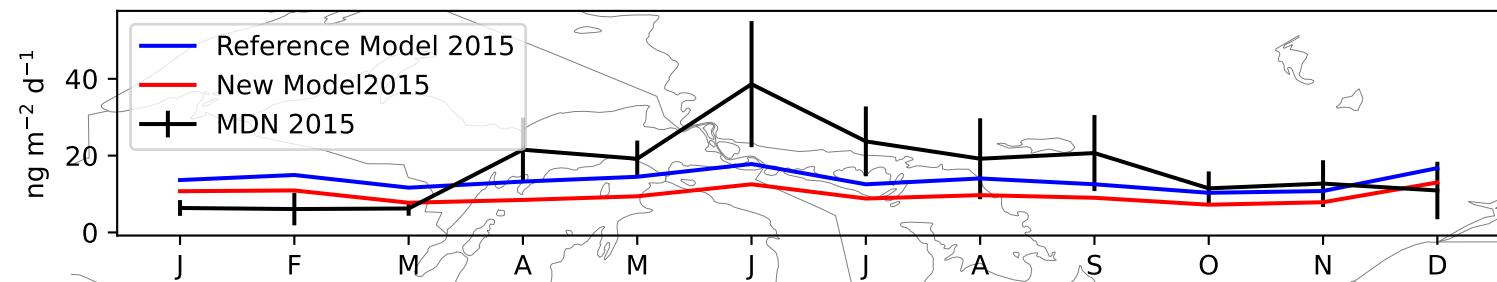
$$R^2 = 0.486$$

$$\text{Mean Mod.} = 4.5 \pm 1.5 \mu\text{g m}^{-2} \text{yr}^{-1}$$

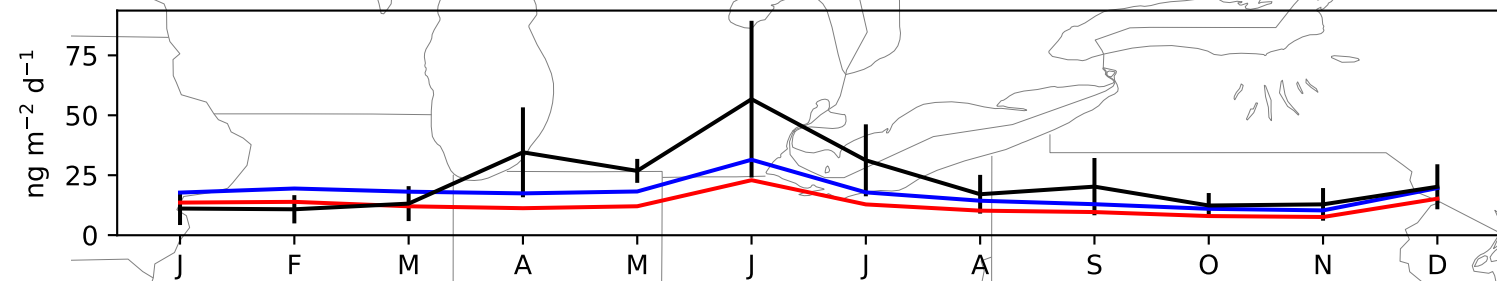
$$\text{Mean Obs.} = 8.9 \pm 4.1 \mu\text{g m}^{-2} \text{yr}^{-1}$$

# Wet deposition fluxes, Eastern USA

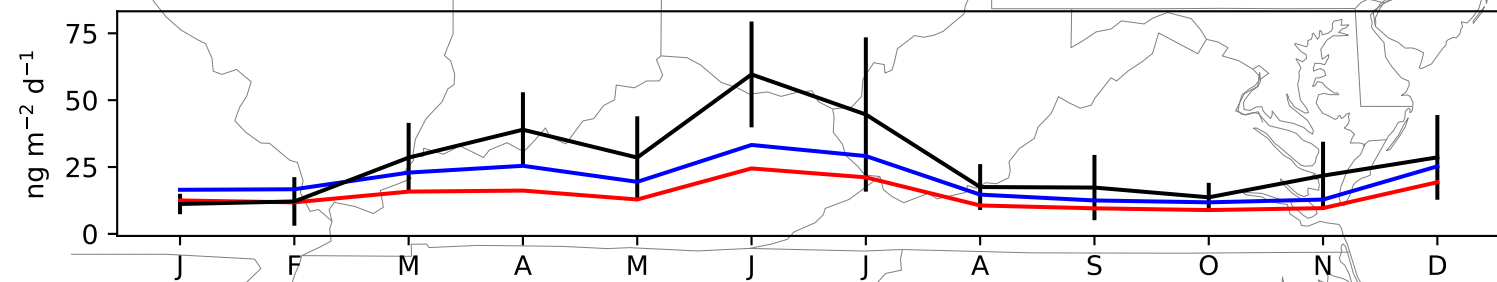
46 °N (7 sites)



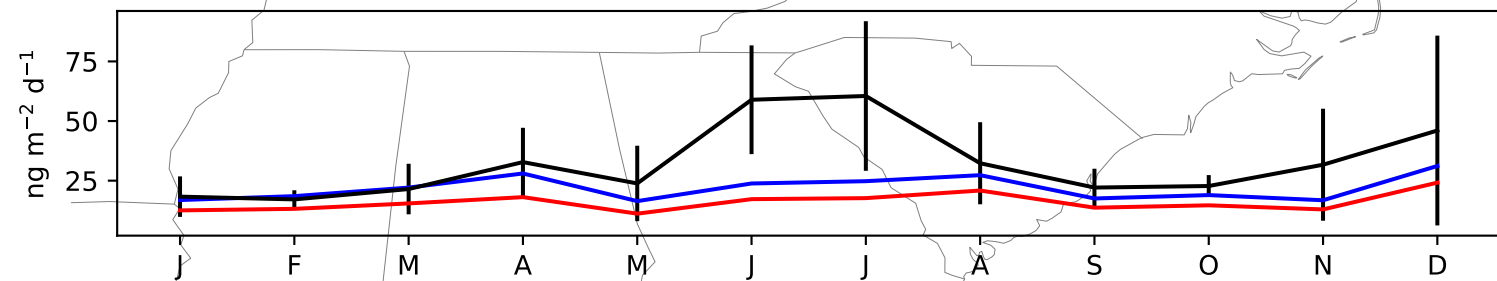
42 °N (21 sites)



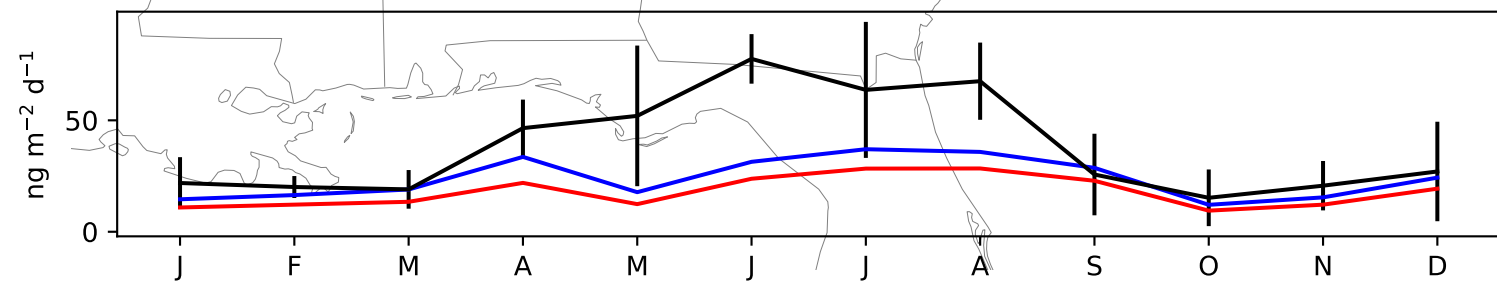
38 °N (14 sites)



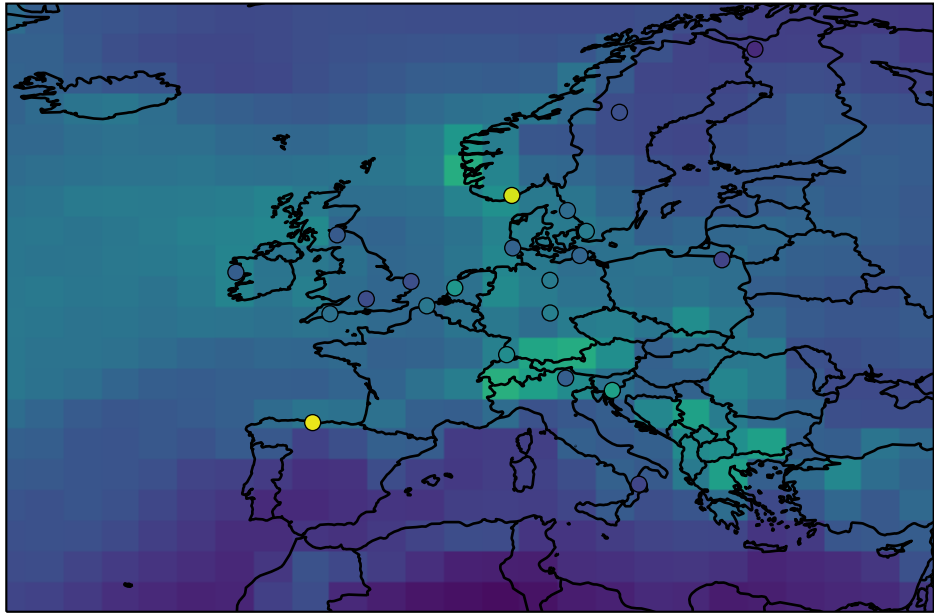
34 °N (8 sites)



30 °N (5 sites)



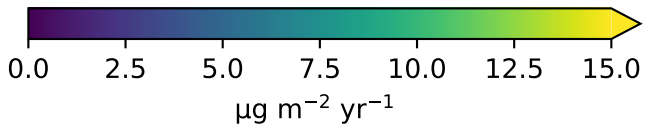
# Hg Wet Deposition, Reference Model (2015), EMEP (2013-15)



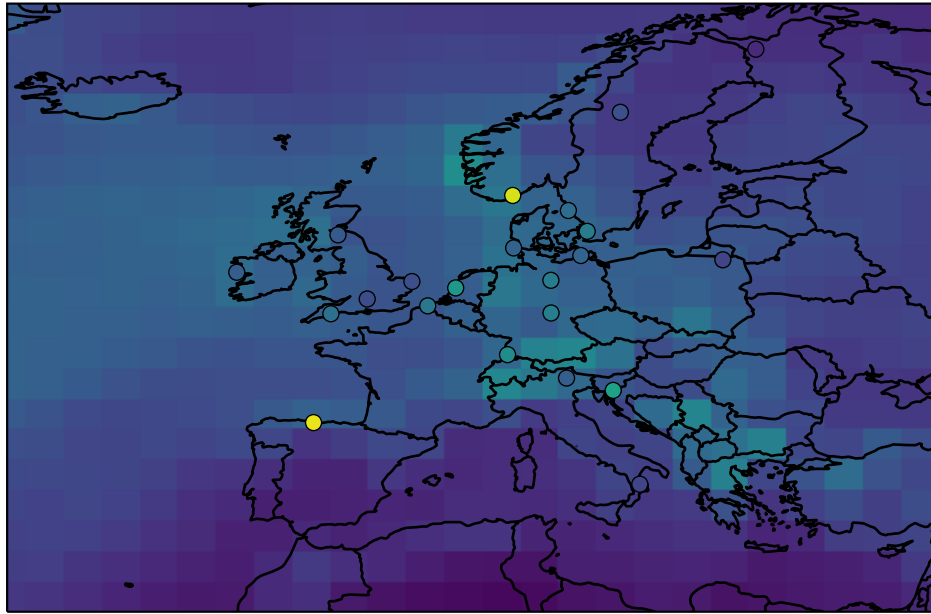
$R^2 = 0.235$

Mean Mod. =  $5.6 \pm 1.1 \mu\text{g m}^{-2} \text{yr}^{-1}$

Mean Obs. =  $5.9 \pm 3.1 \mu\text{g m}^{-2} \text{yr}^{-1}$



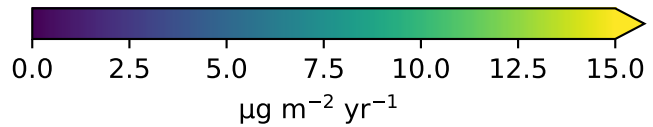
# Hg Wet Deposition, New Model (2015), EMEP (2013-15)



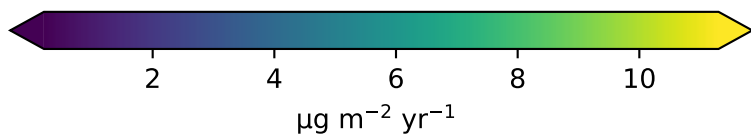
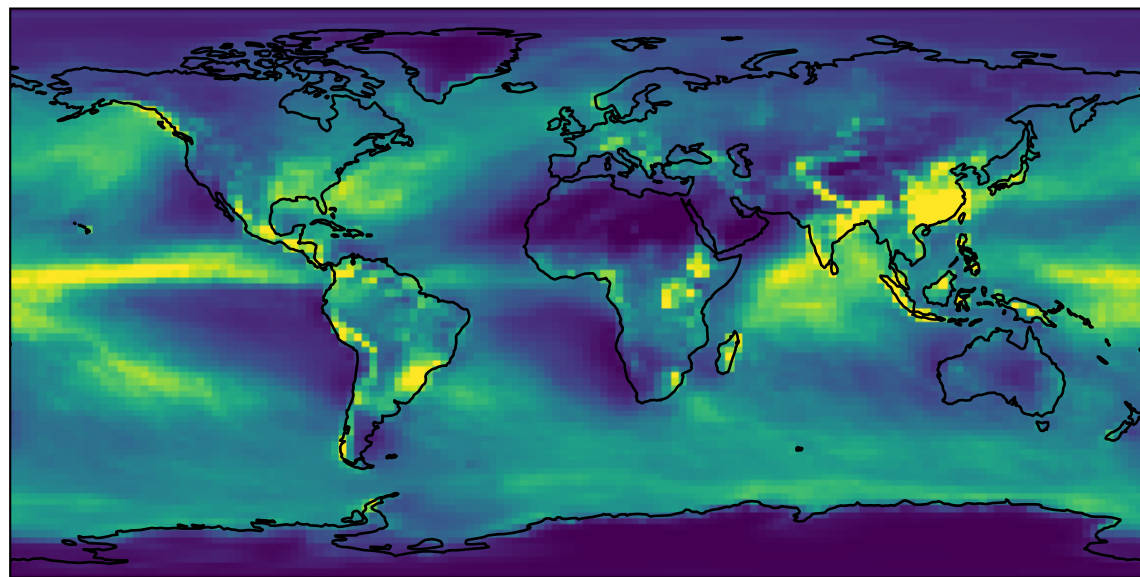
$R^2 = 0.258$

Mean Mod. =  $4.3 \pm 0.9 \mu\text{g m}^{-2} \text{yr}^{-1}$

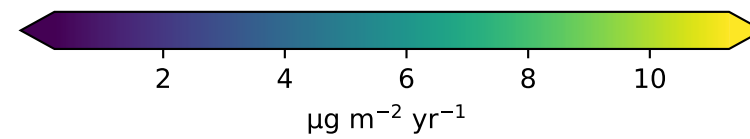
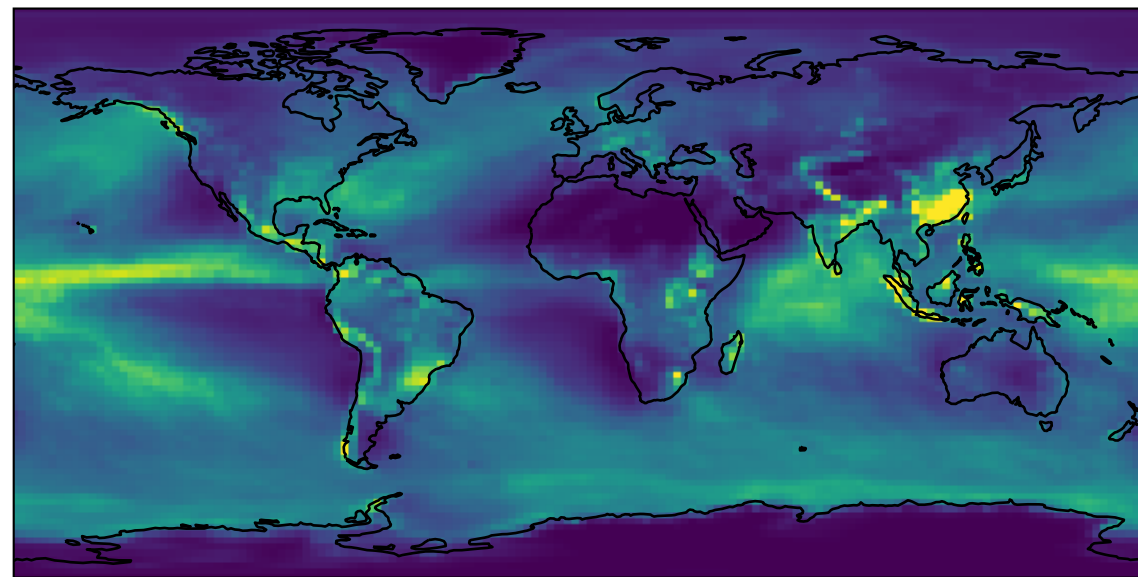
Mean Obs. =  $5.9 \pm 3.1 \mu\text{g m}^{-2} \text{yr}^{-1}$



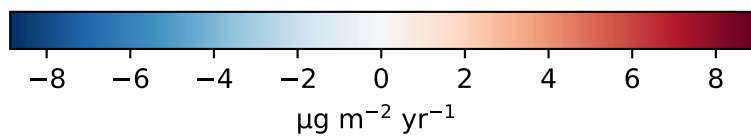
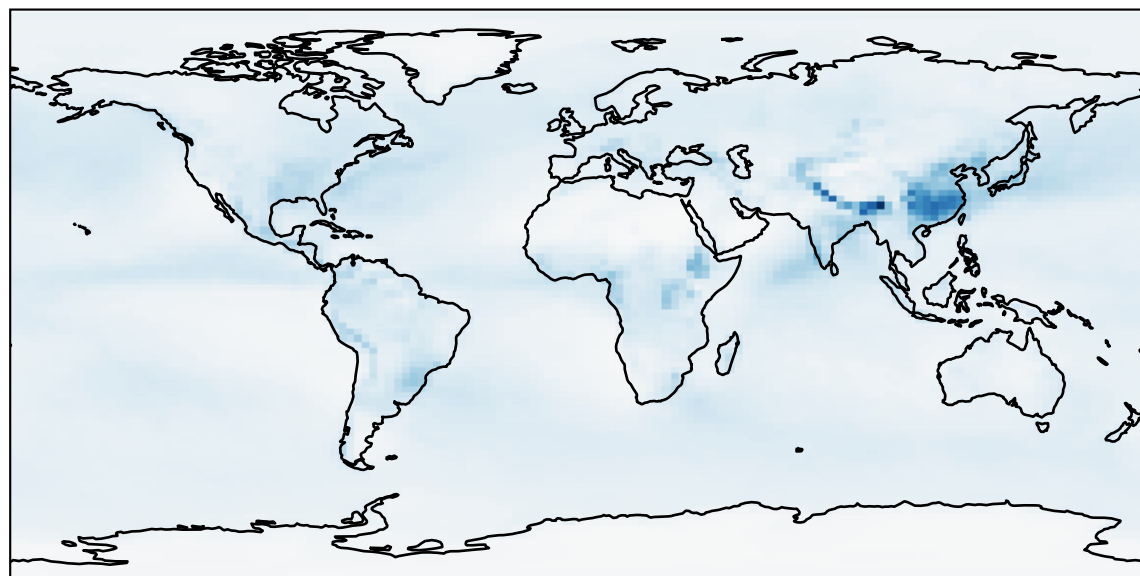
Reference Model Version: Total Wet Dep



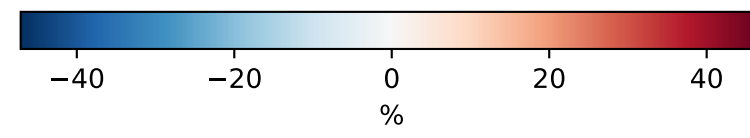
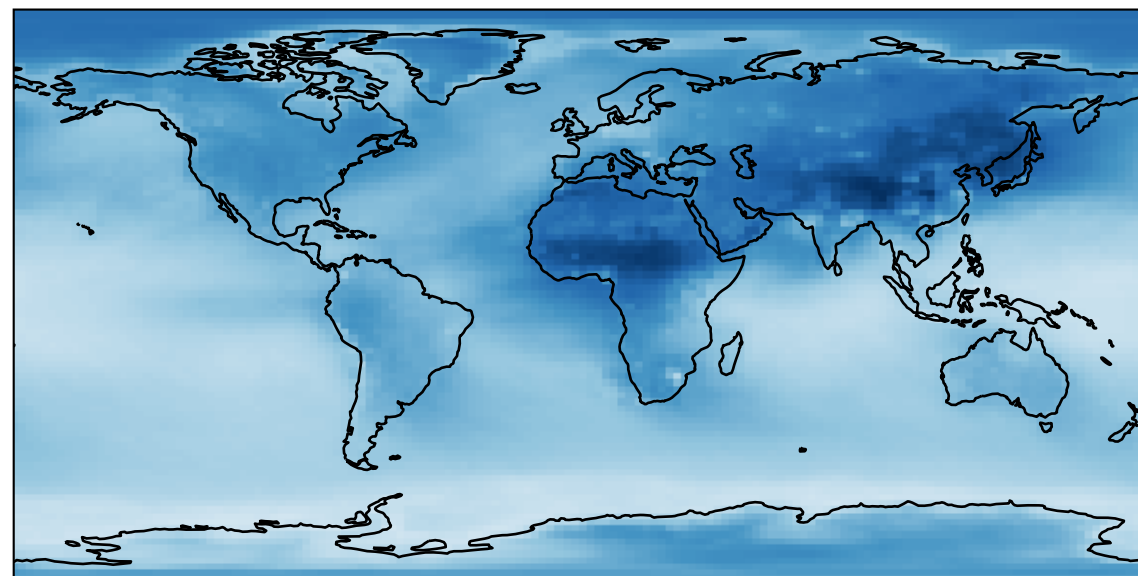
New Model Version: Total Wet Dep



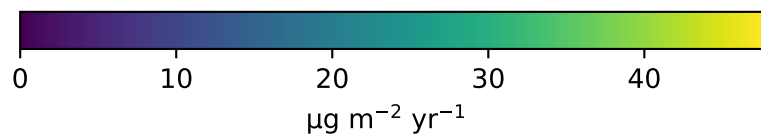
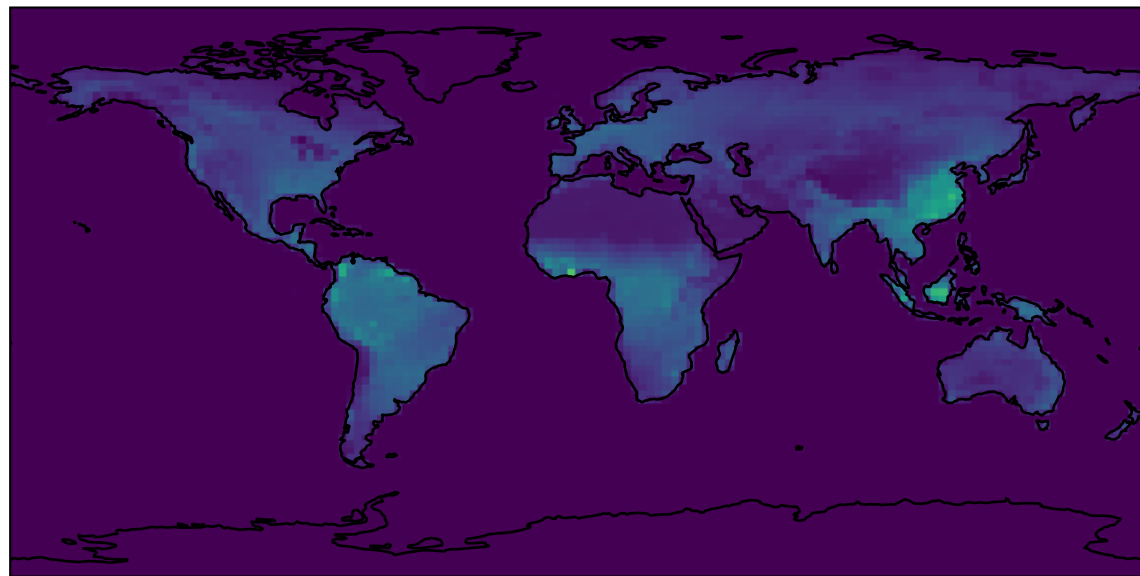
Absolute Difference



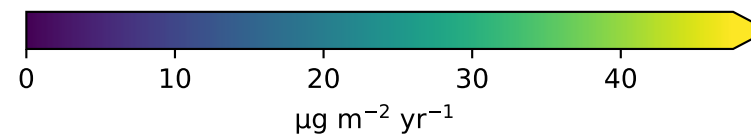
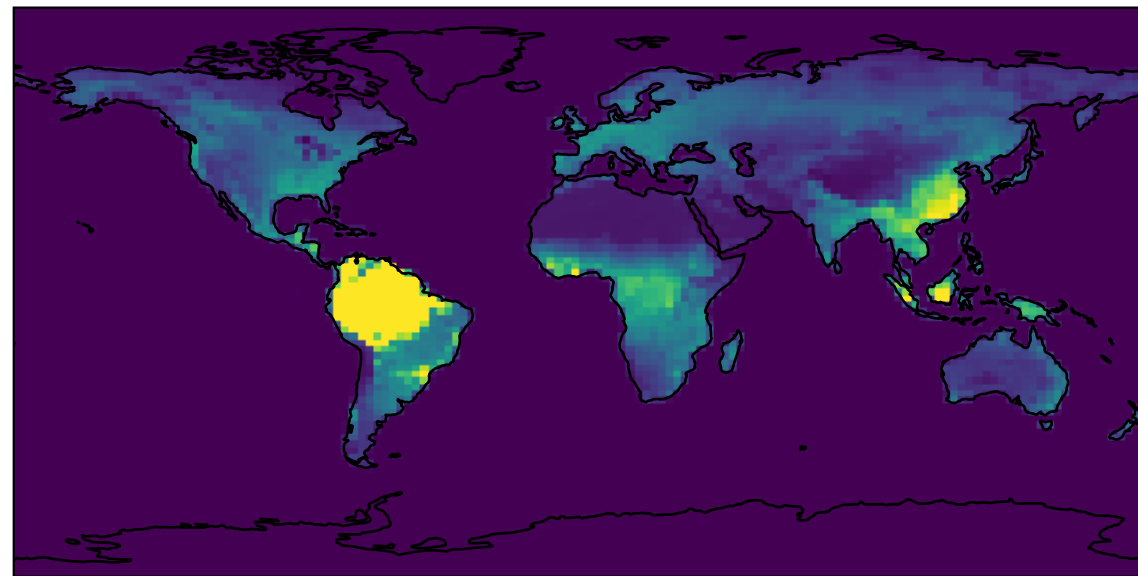
Percent Difference (%)



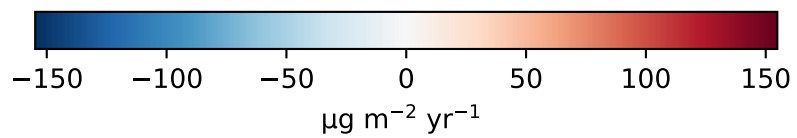
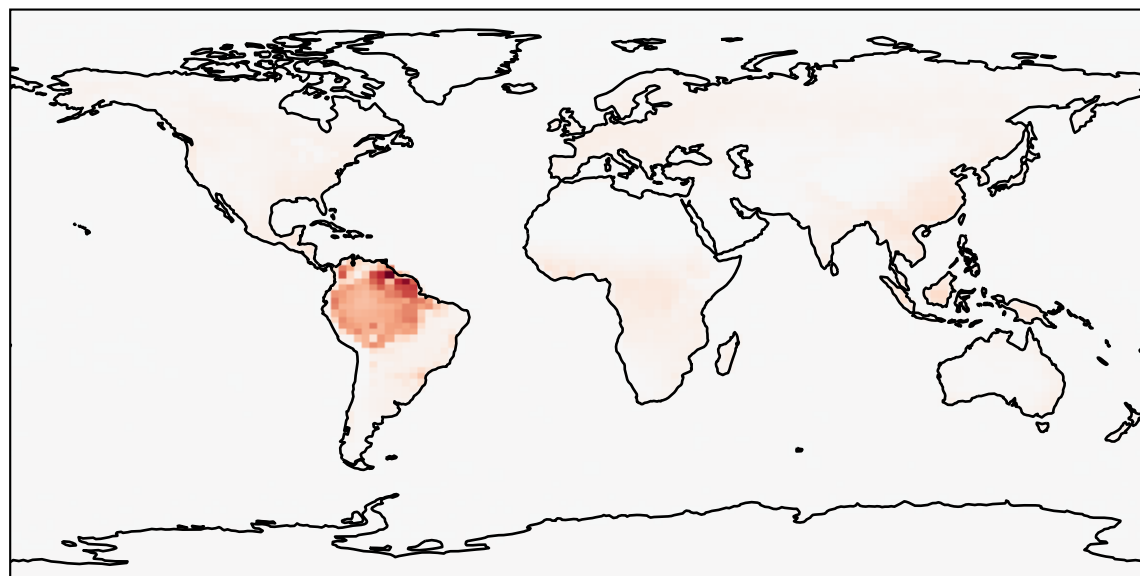
Reference Model Version: Hg(0) Dry Dep



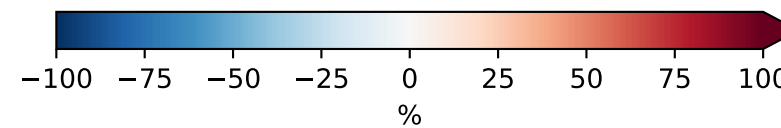
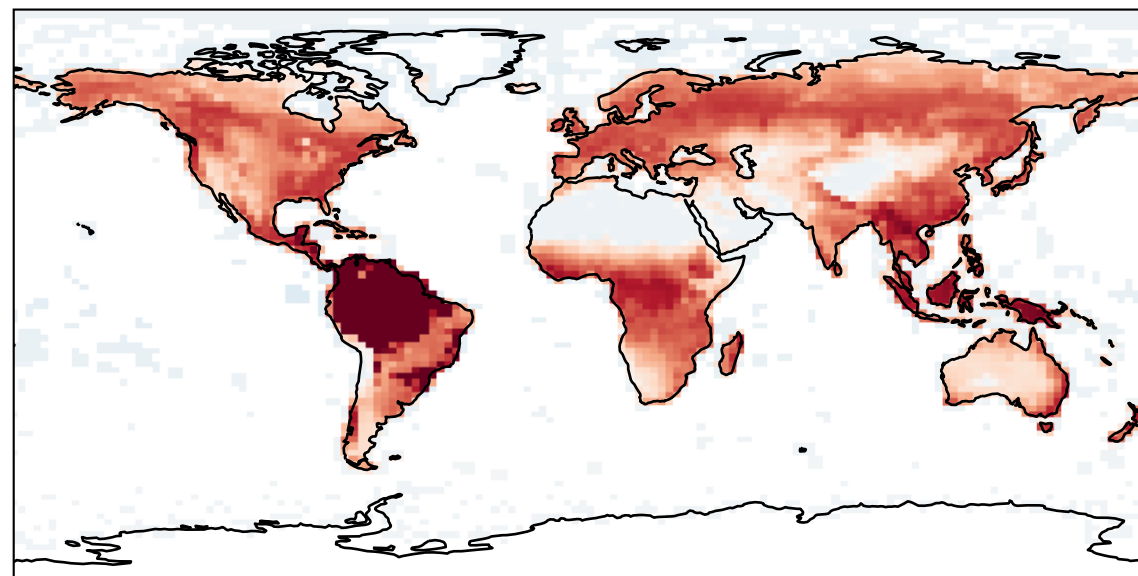
New Model Version: Hg(0) Dry Dep



Absolute Difference

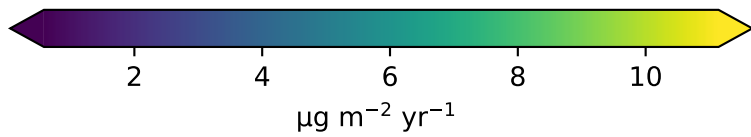
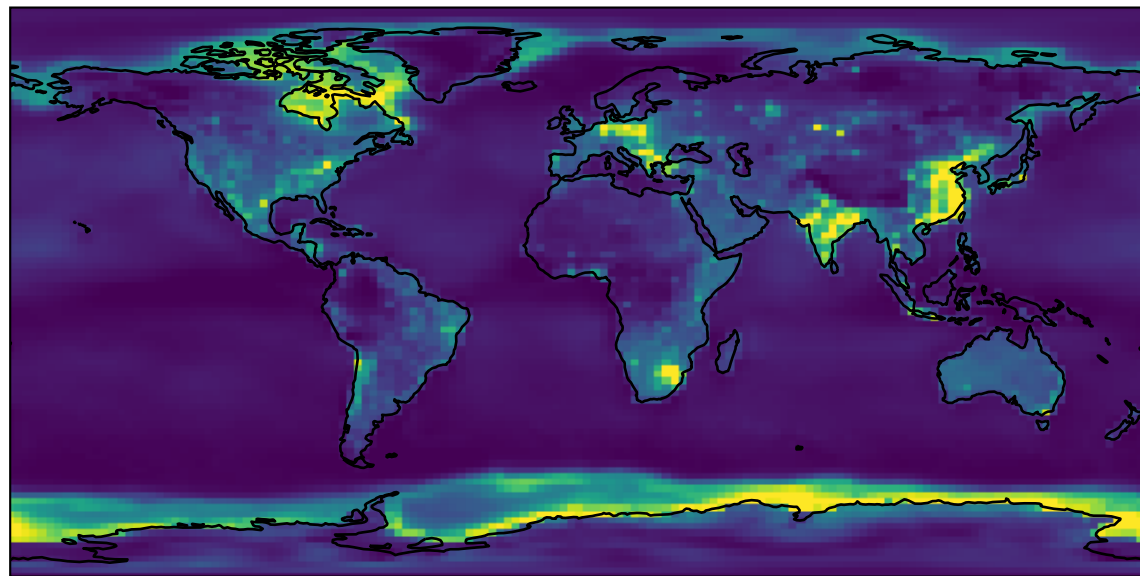


Percent Difference (%)

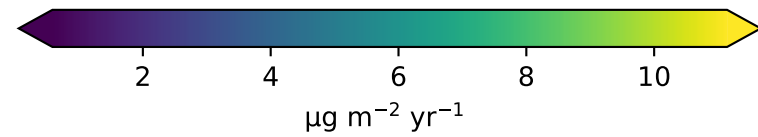
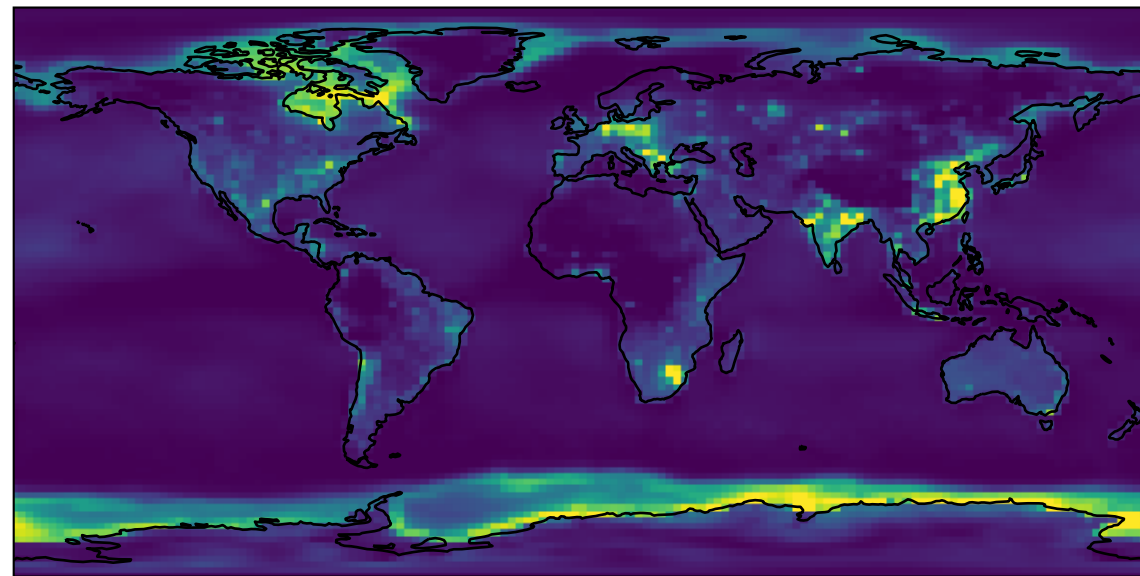




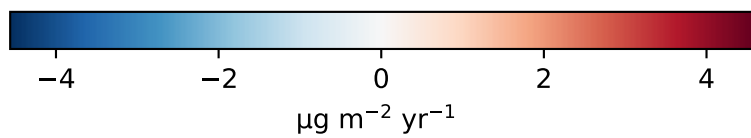
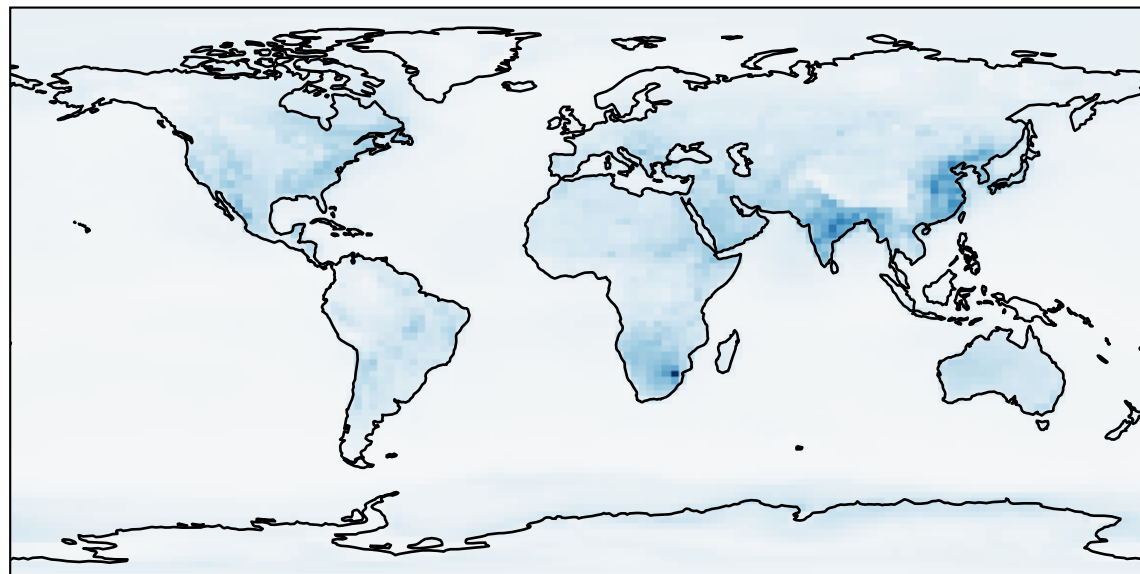
Reference Model Version: Hg(II)+Hg(P) Dry Dep



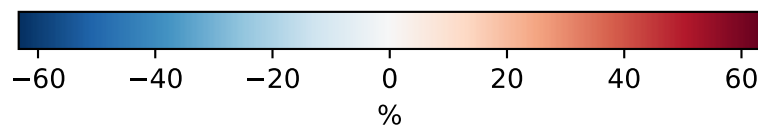
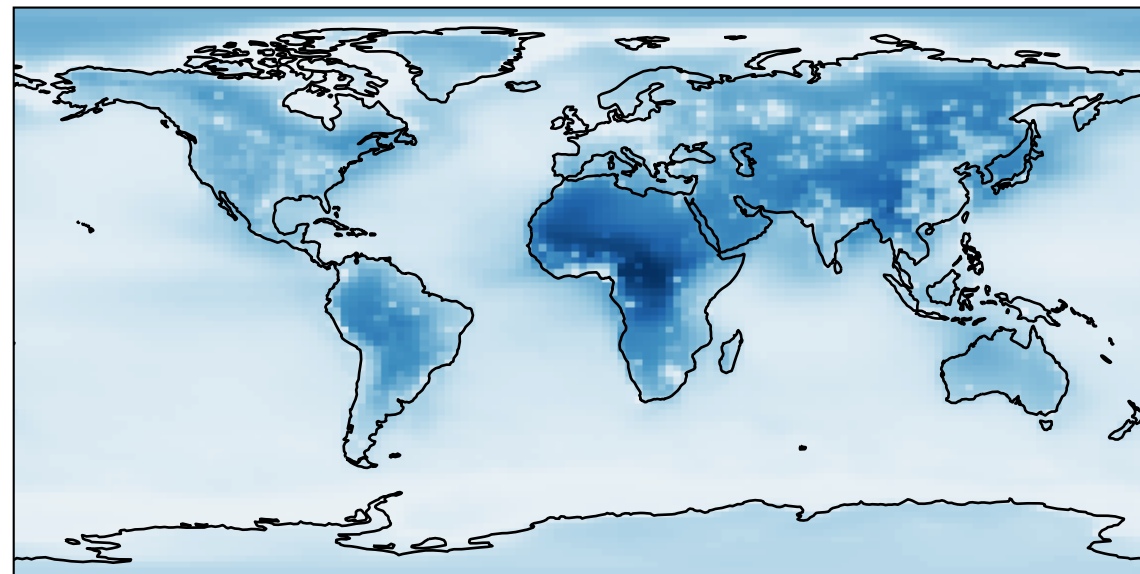
New Model Version: Hg(II)+Hg(P) Dry Dep



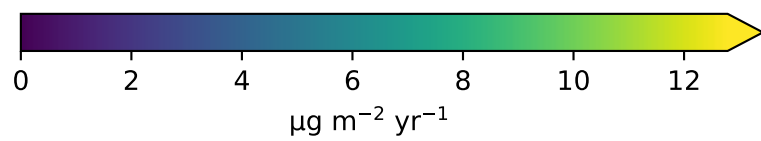
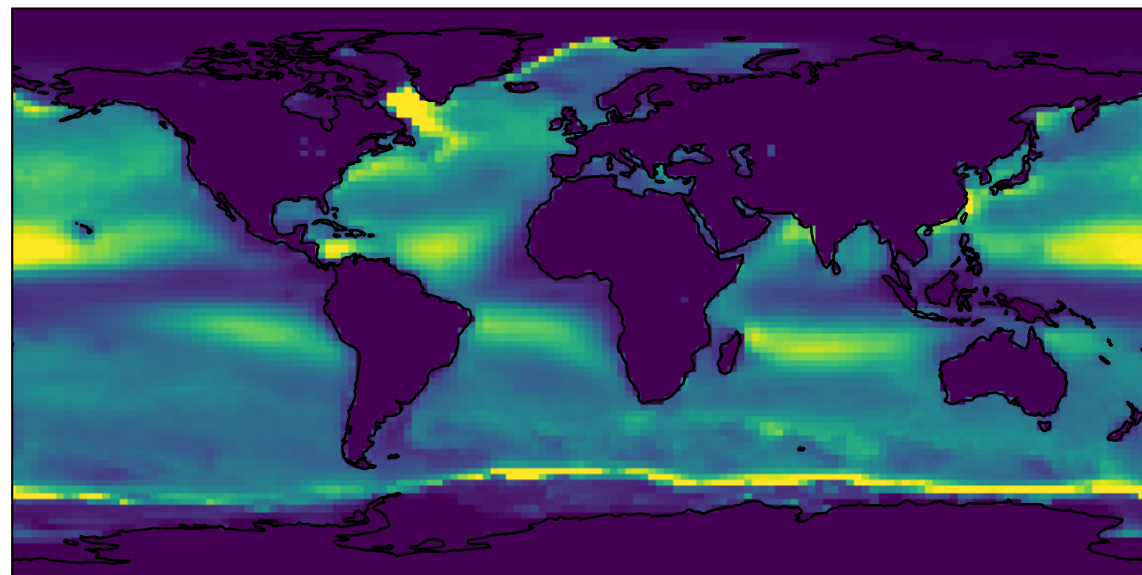
Absolute Difference



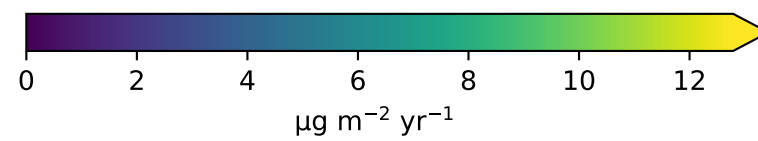
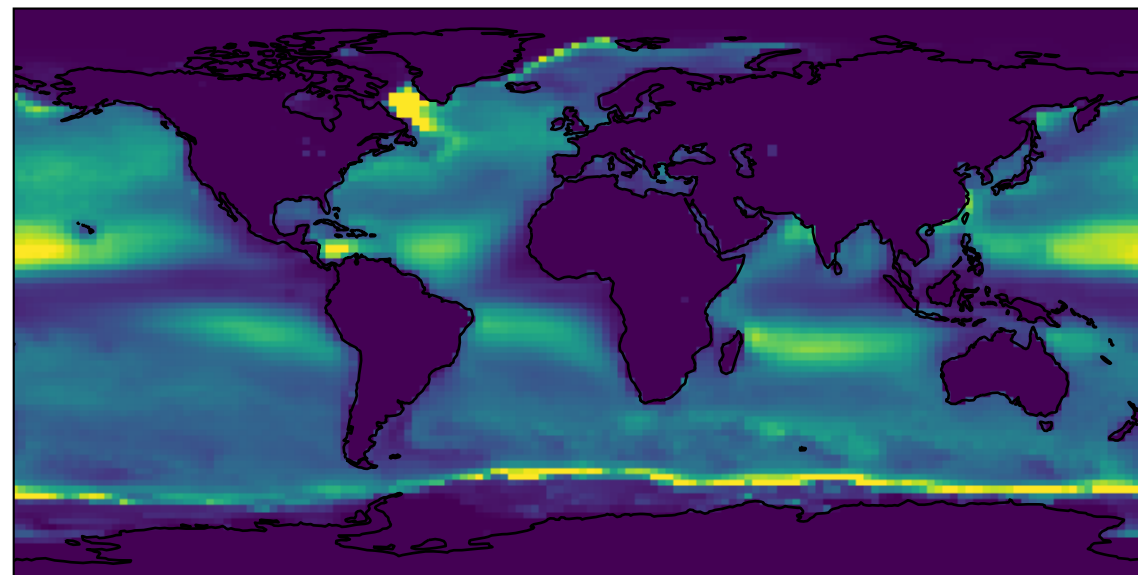
Percent Difference (%)



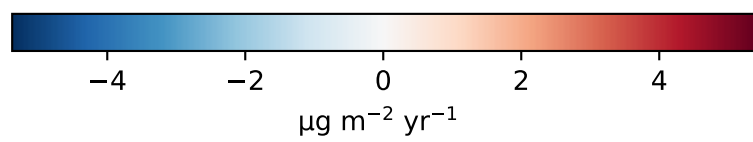
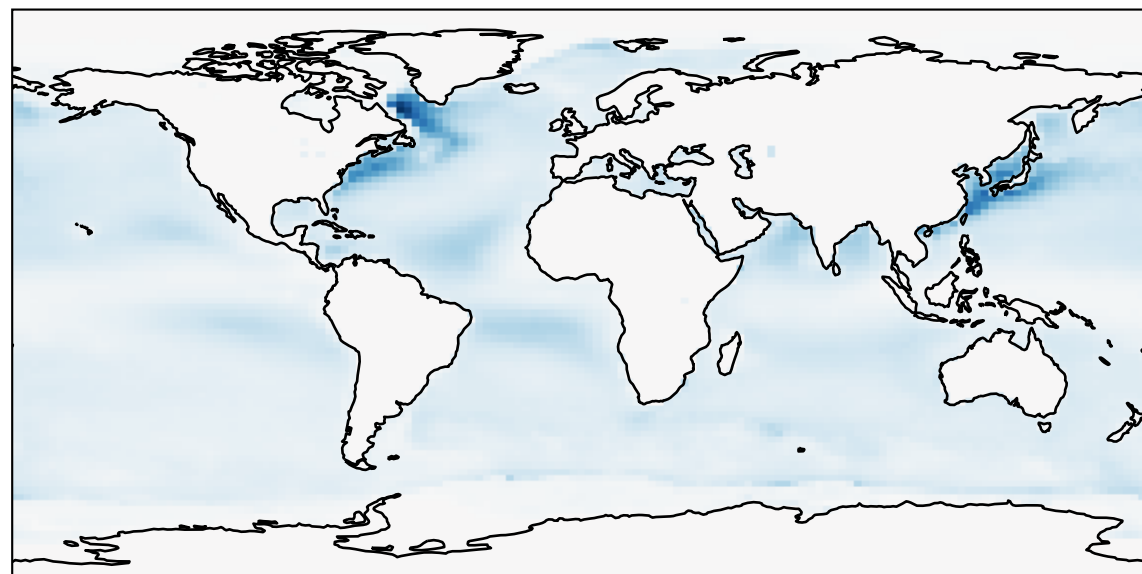
Reference Model Version: Sea Salt Uptake



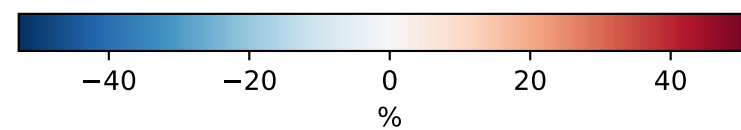
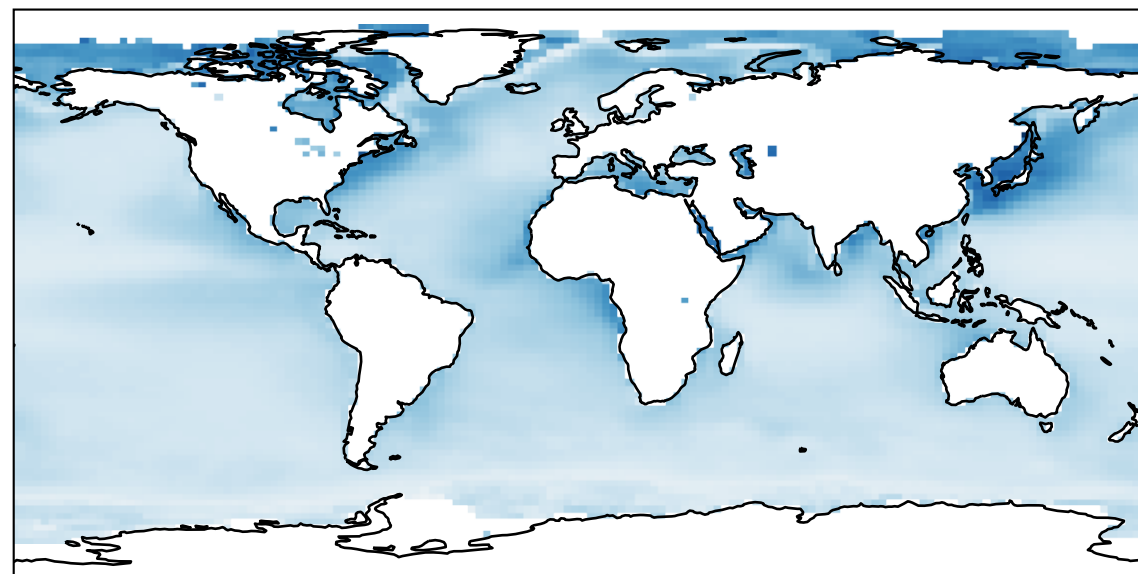
New Model Version: Sea Salt Uptake



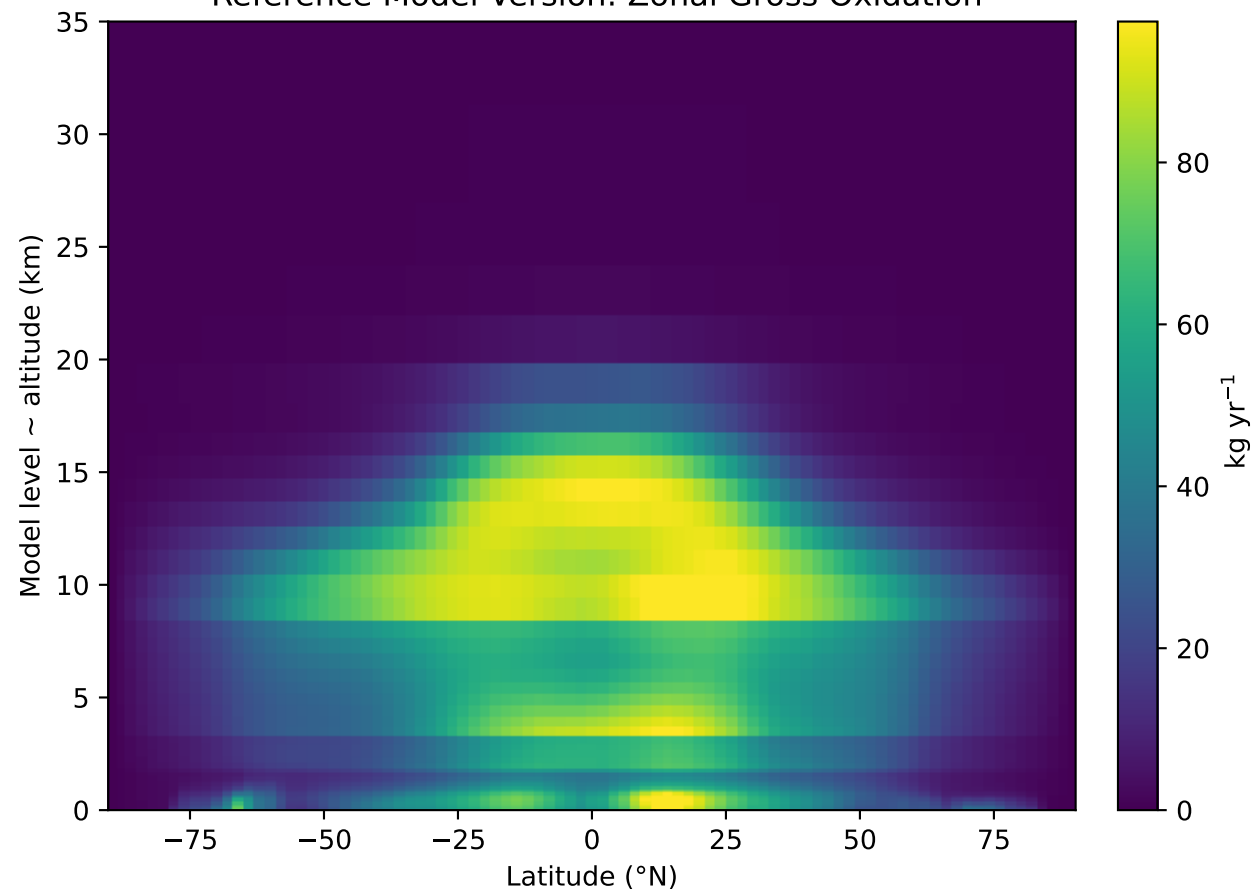
Absolute Difference



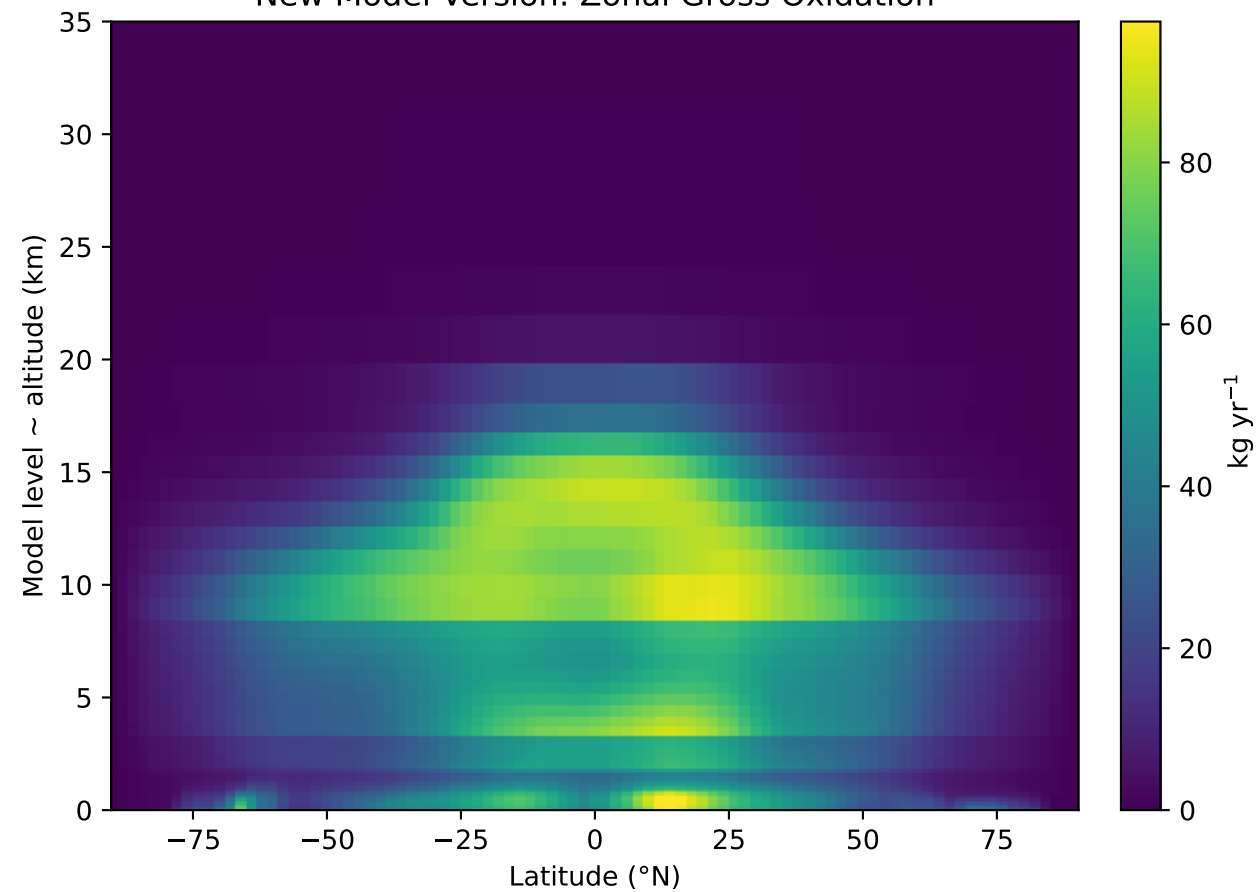
Percent Difference (%)



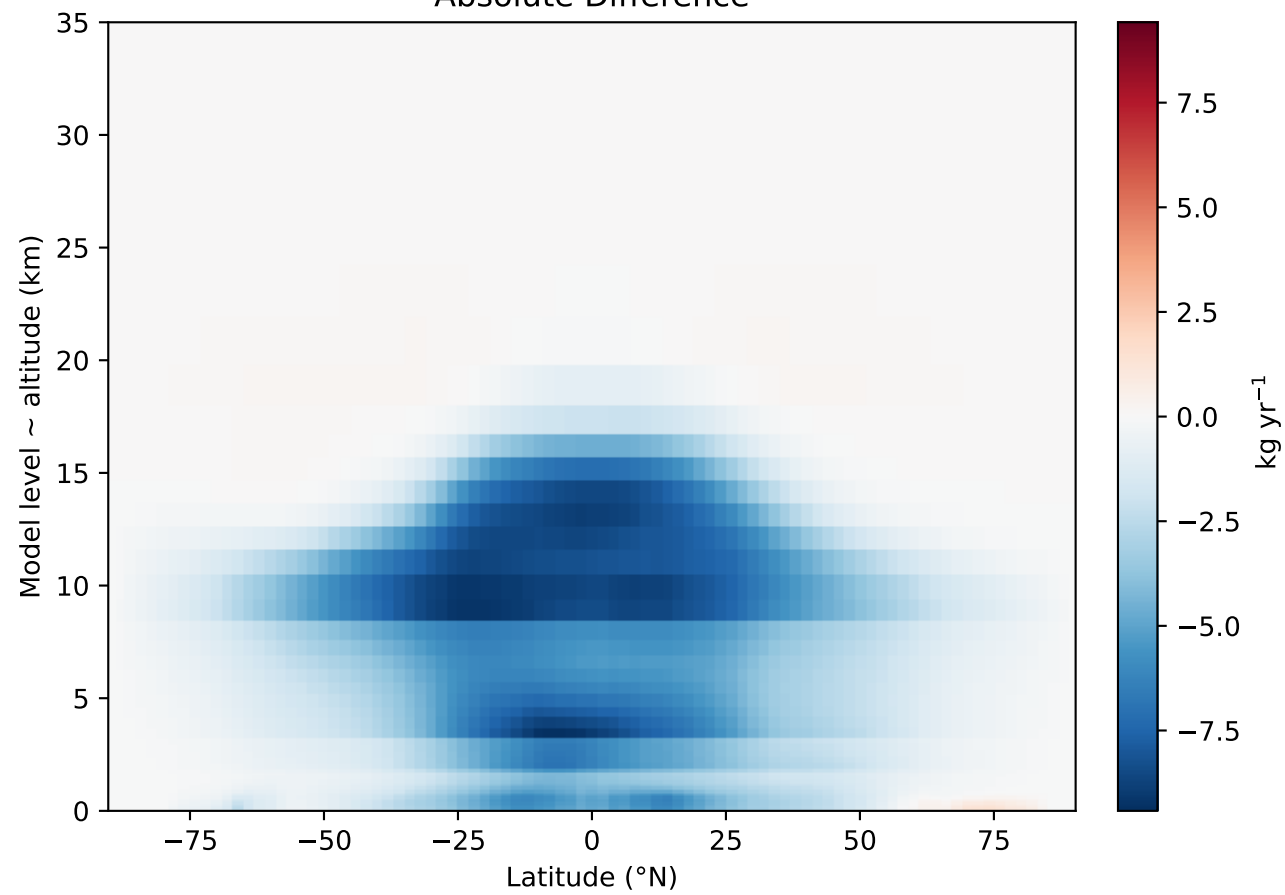
Reference Model Version: Zonal Gross Oxidation



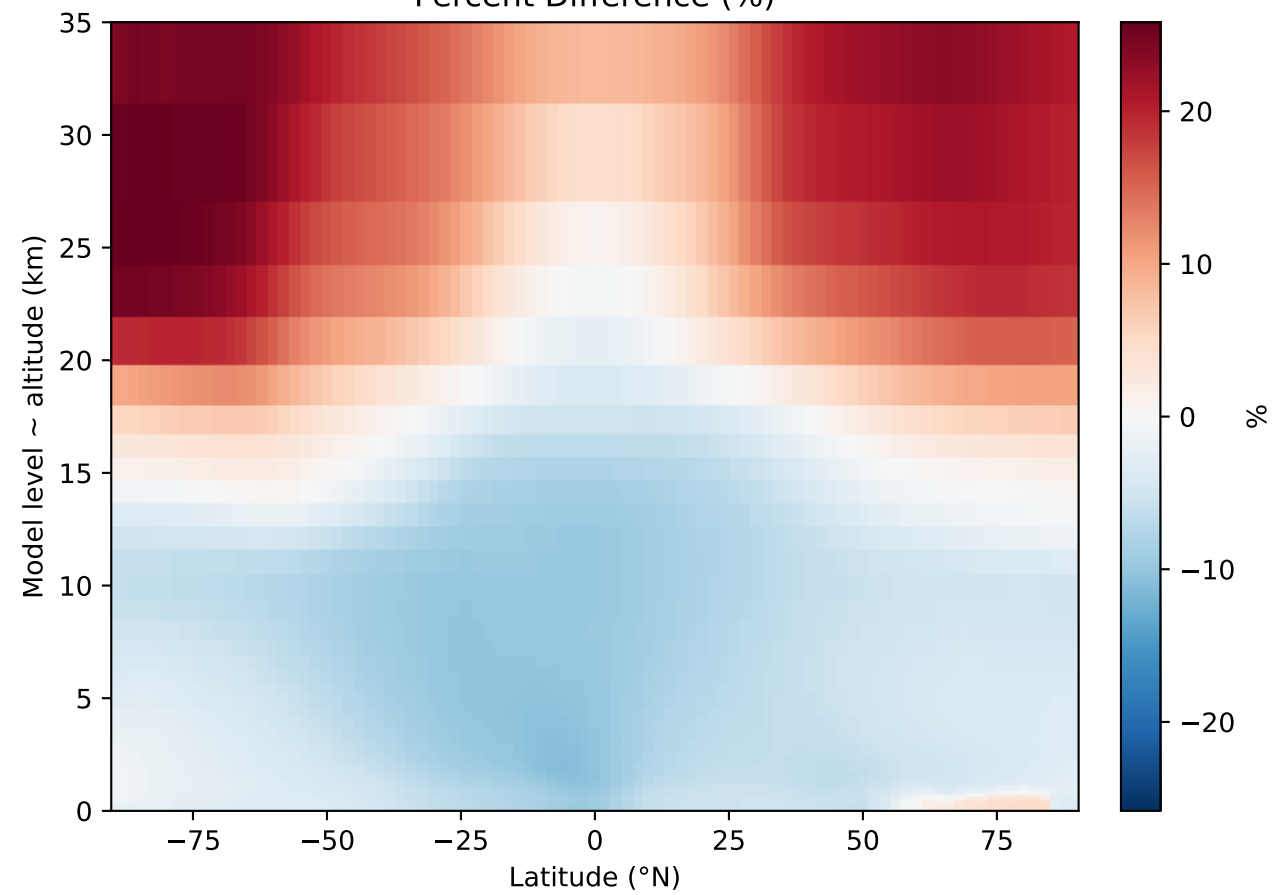
New Model Version: Zonal Gross Oxidation



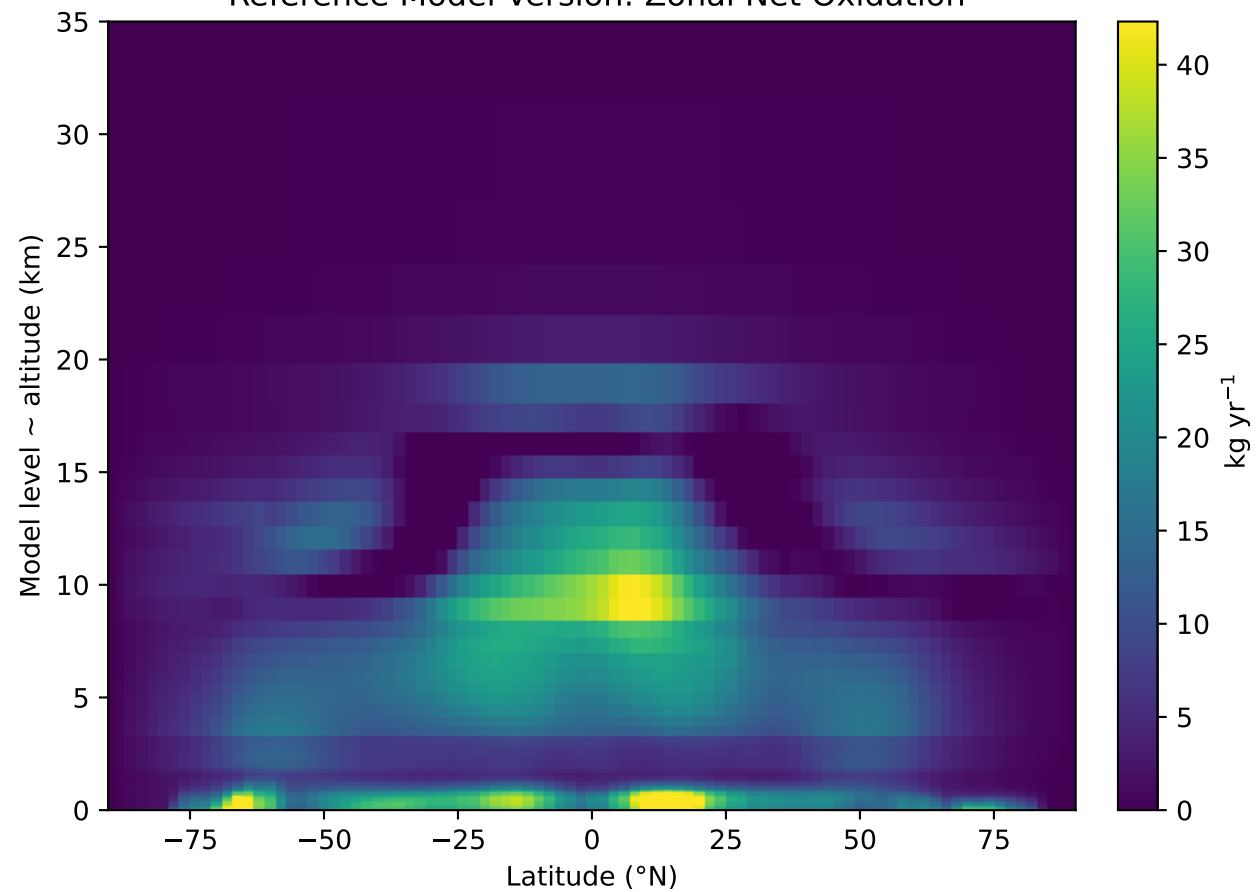
Absolute Difference



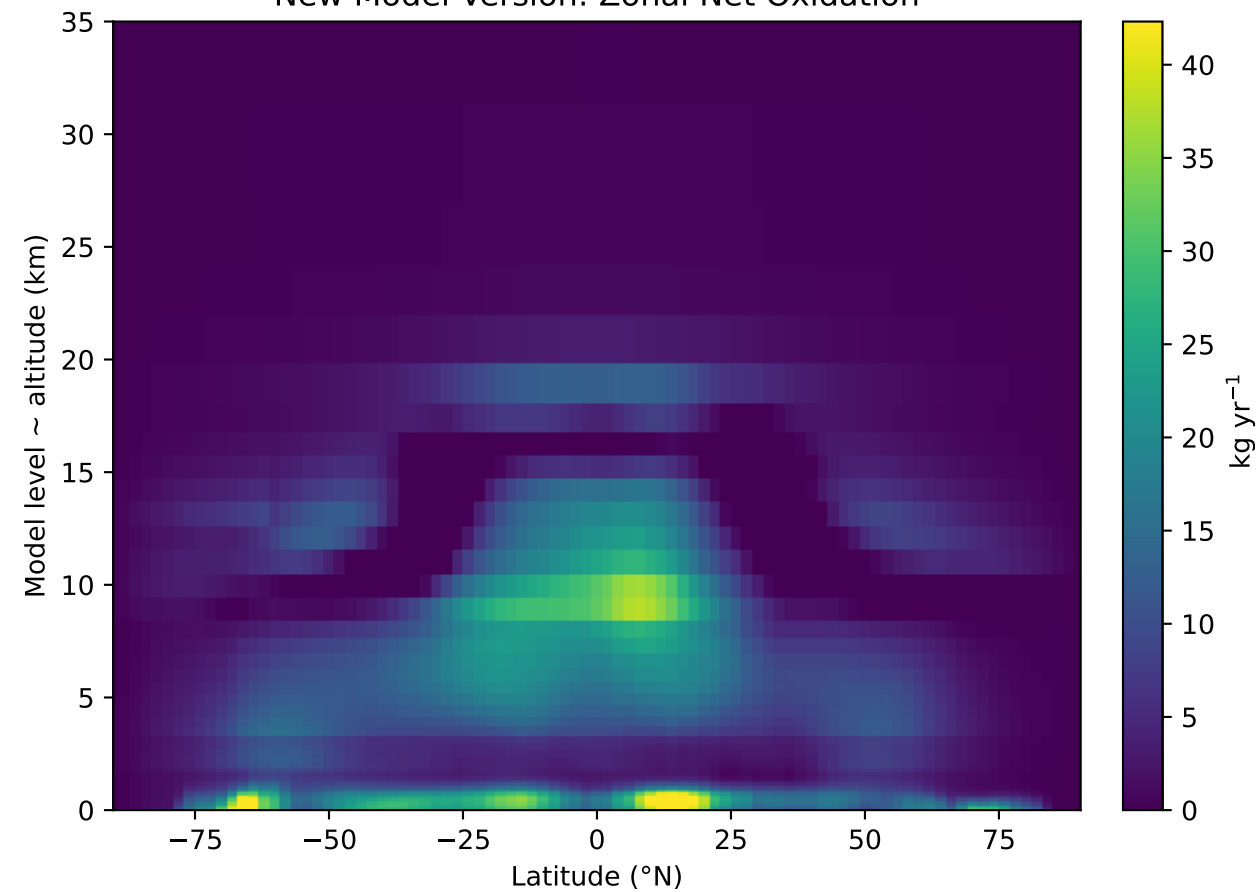
Percent Difference (%)



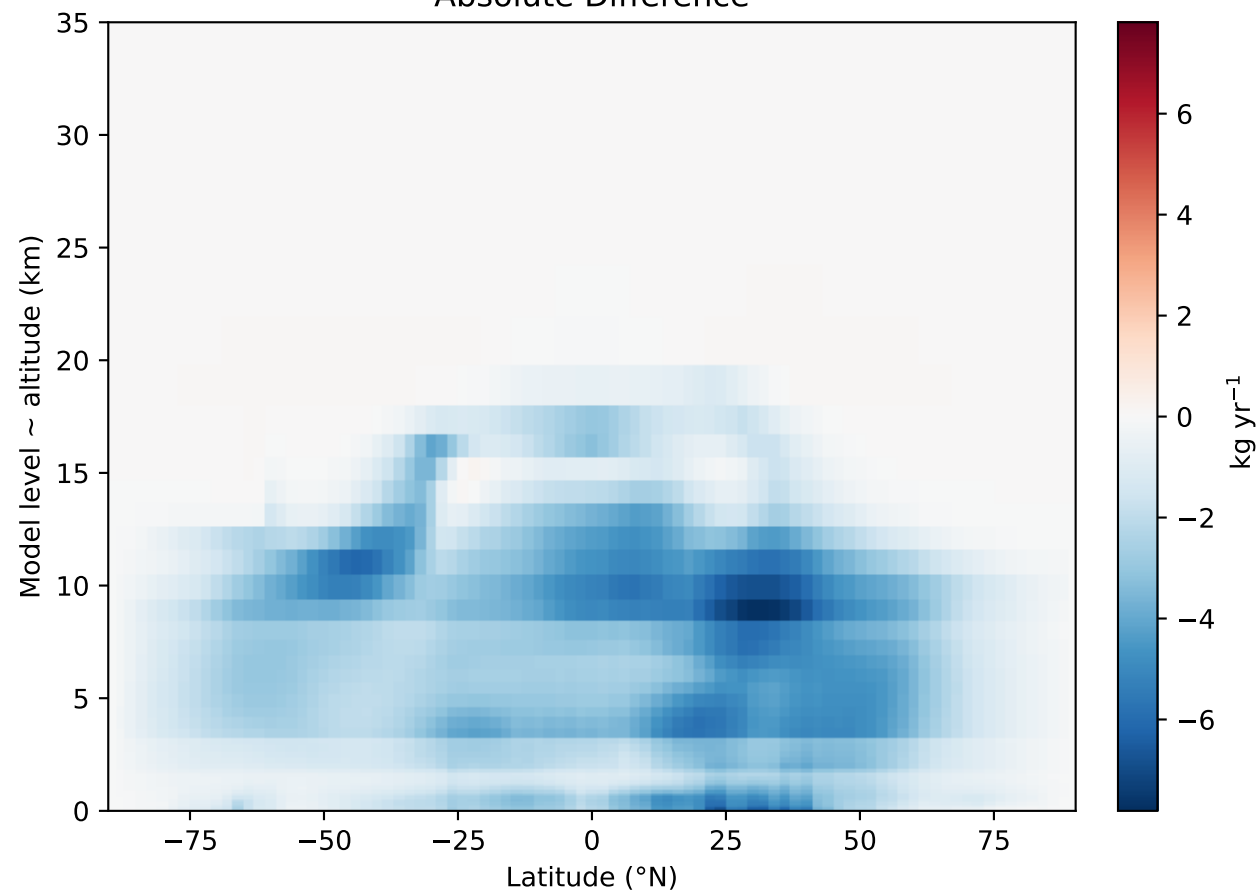
Reference Model Version: Zonal Net Oxidation



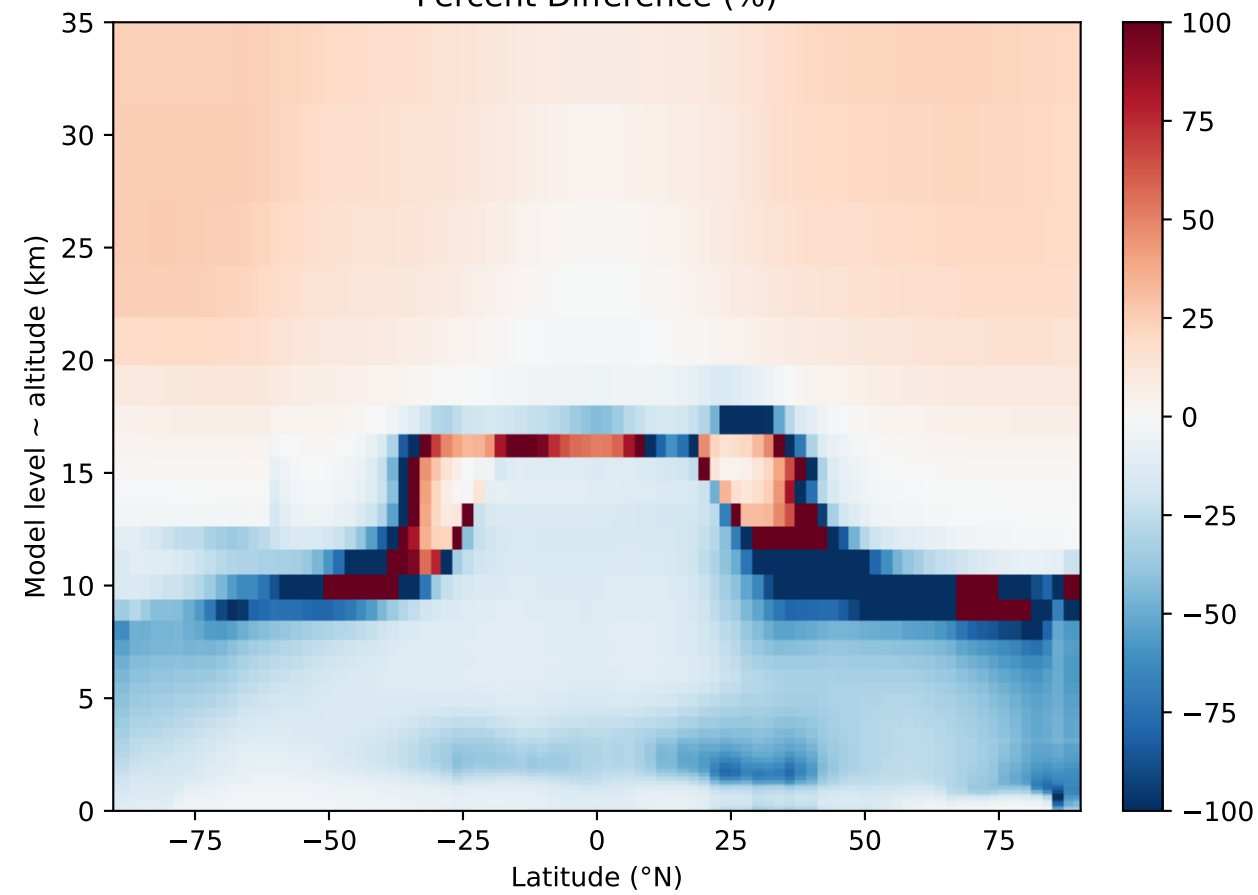
New Model Version: Zonal Net Oxidation



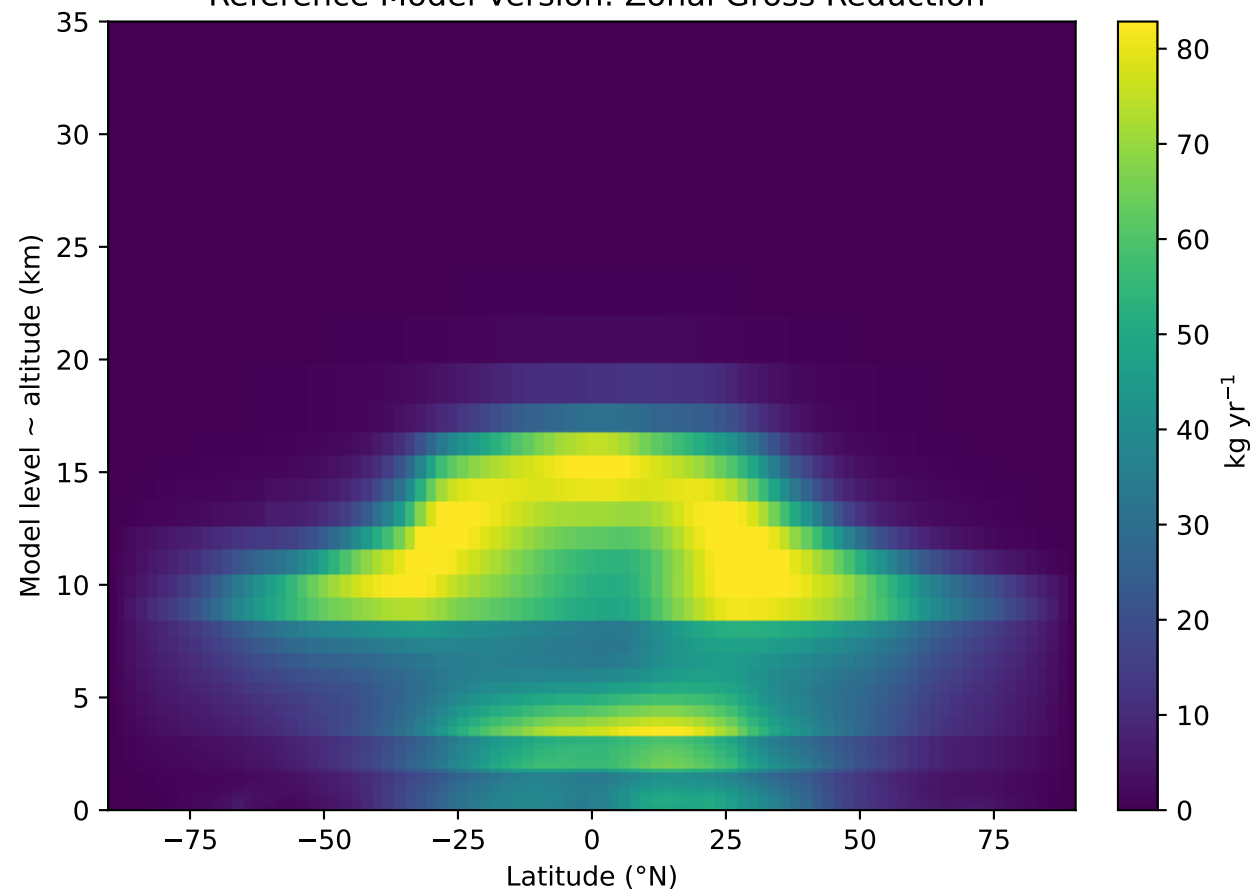
Absolute Difference



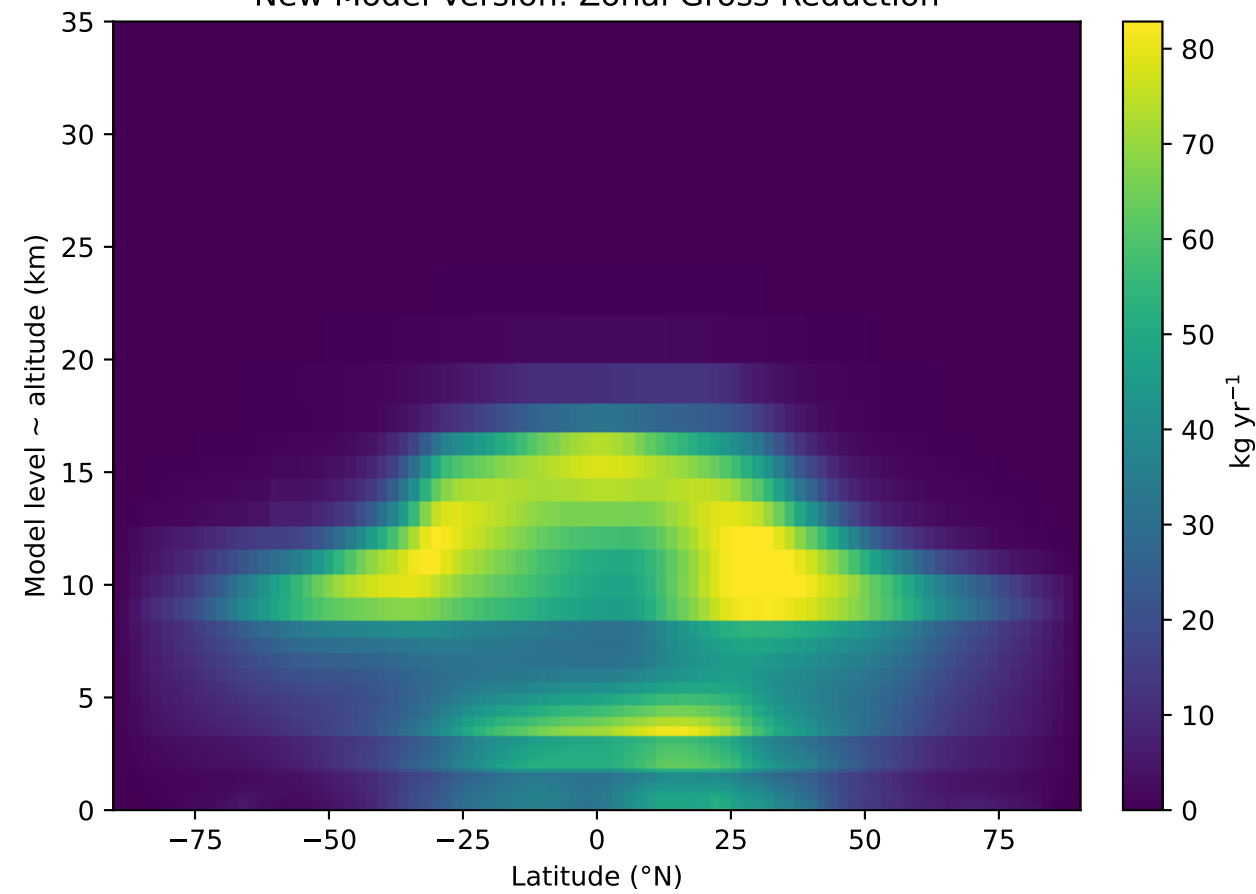
Percent Difference (%)



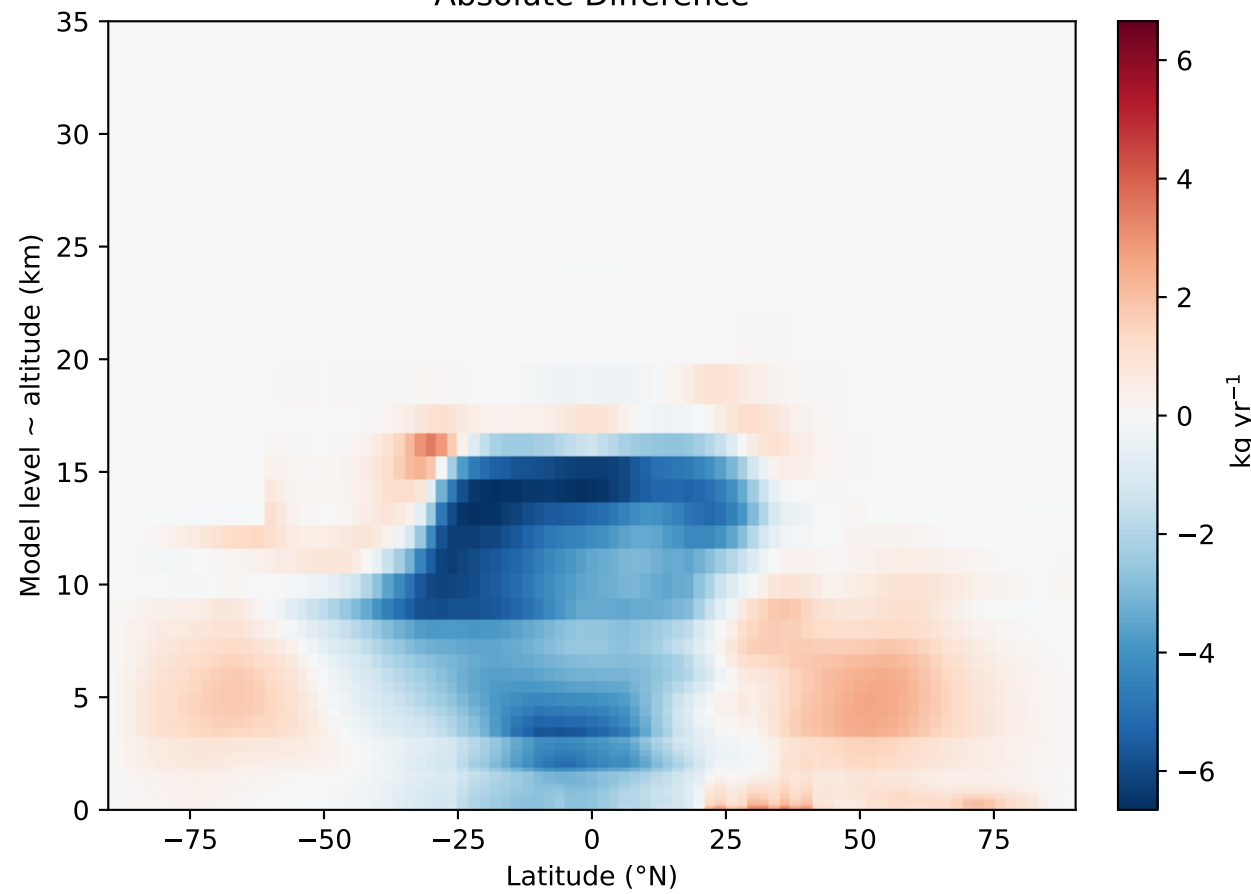
Reference Model Version: Zonal Gross Reduction



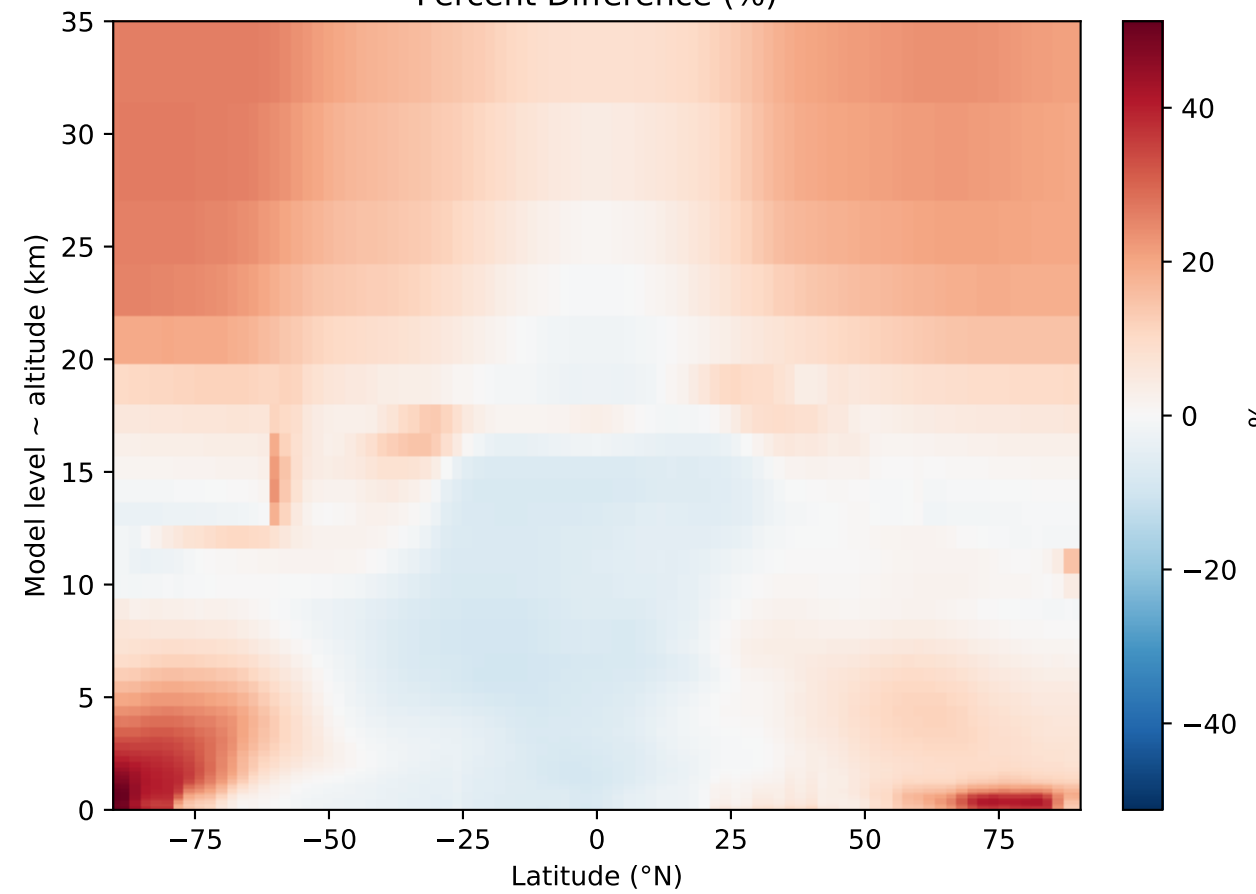
New Model Version: Zonal Gross Reduction



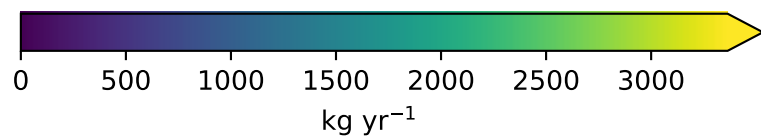
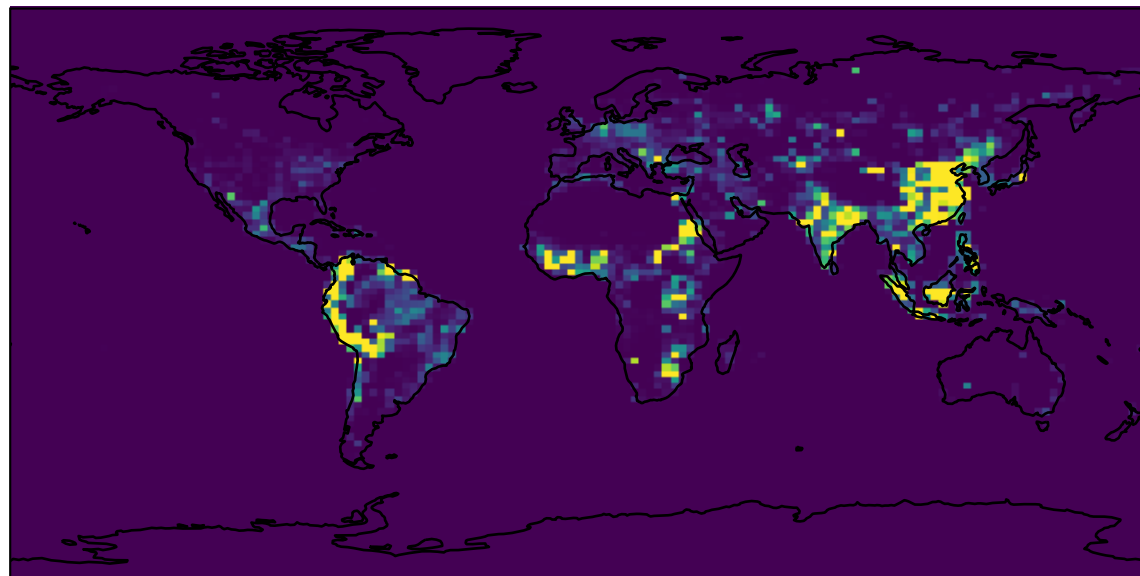
Absolute Difference



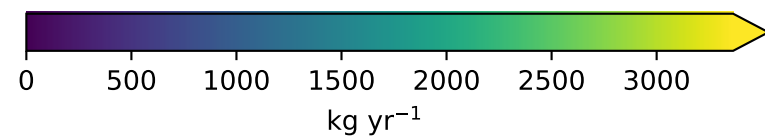
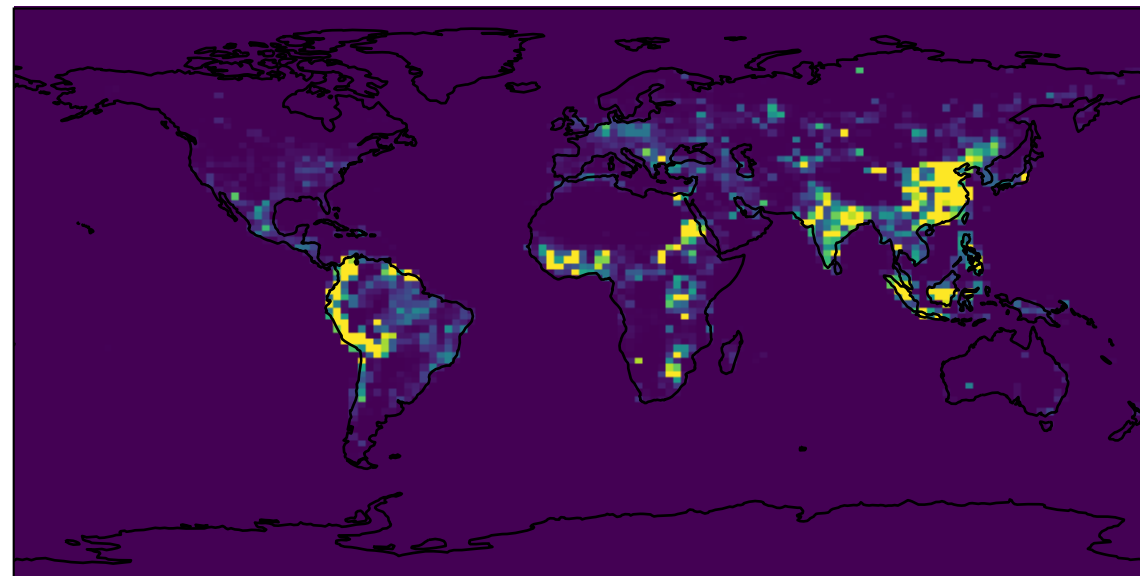
Percent Difference (%)



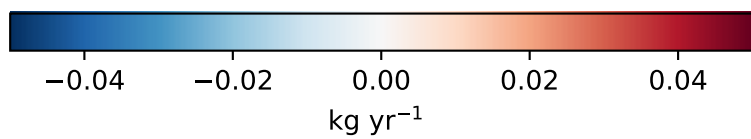
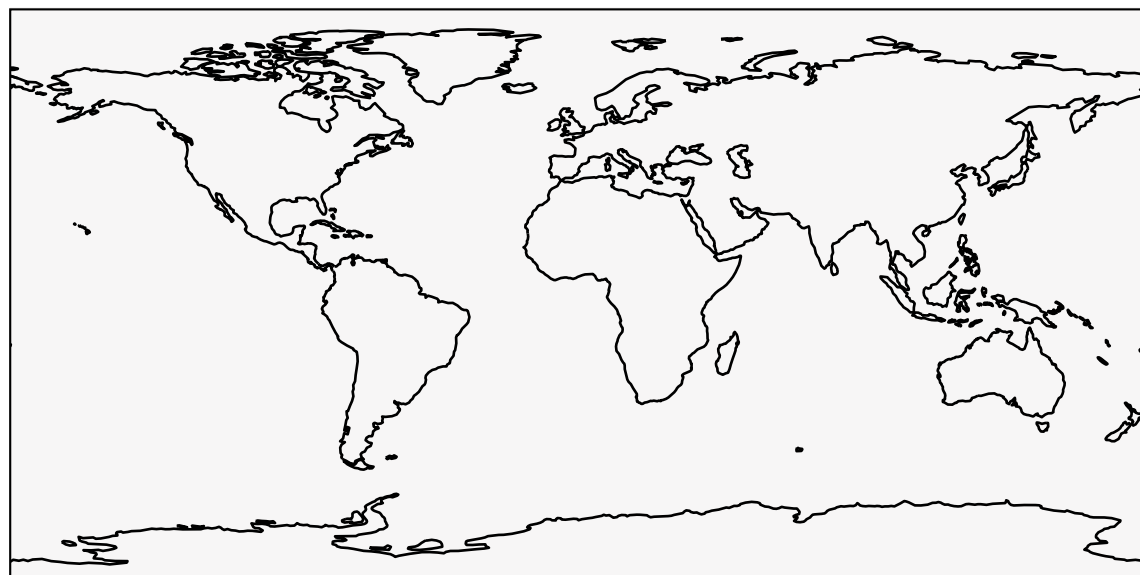
Reference Model Version: Anthro Emissions - Hg(0)



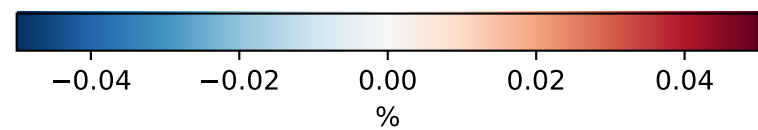
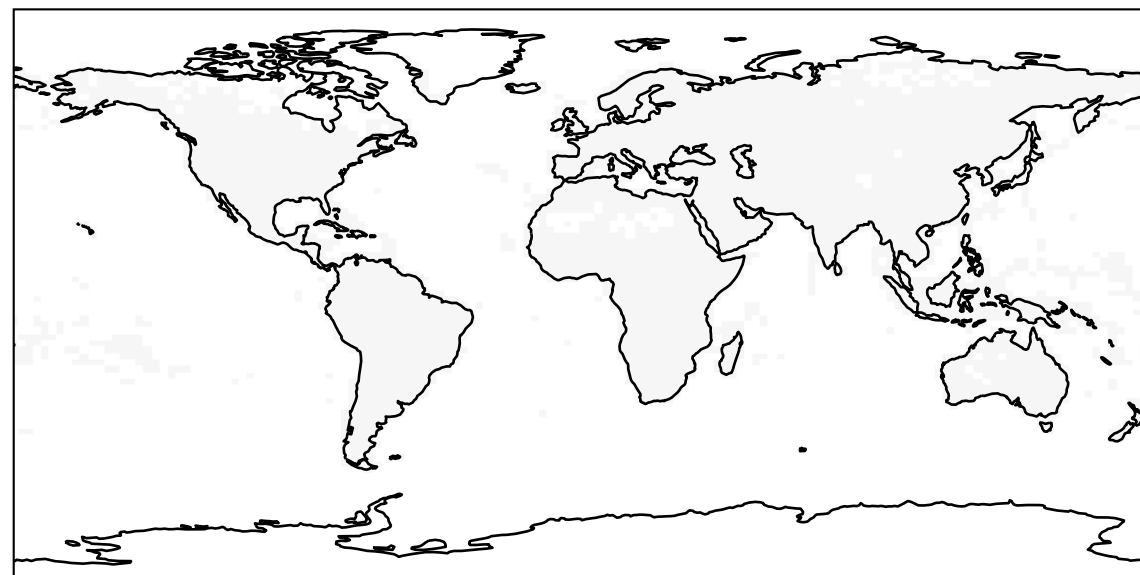
New Model Version: Anthro Emissions - Hg(0)



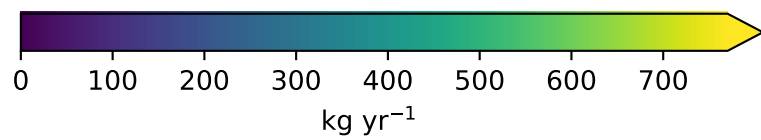
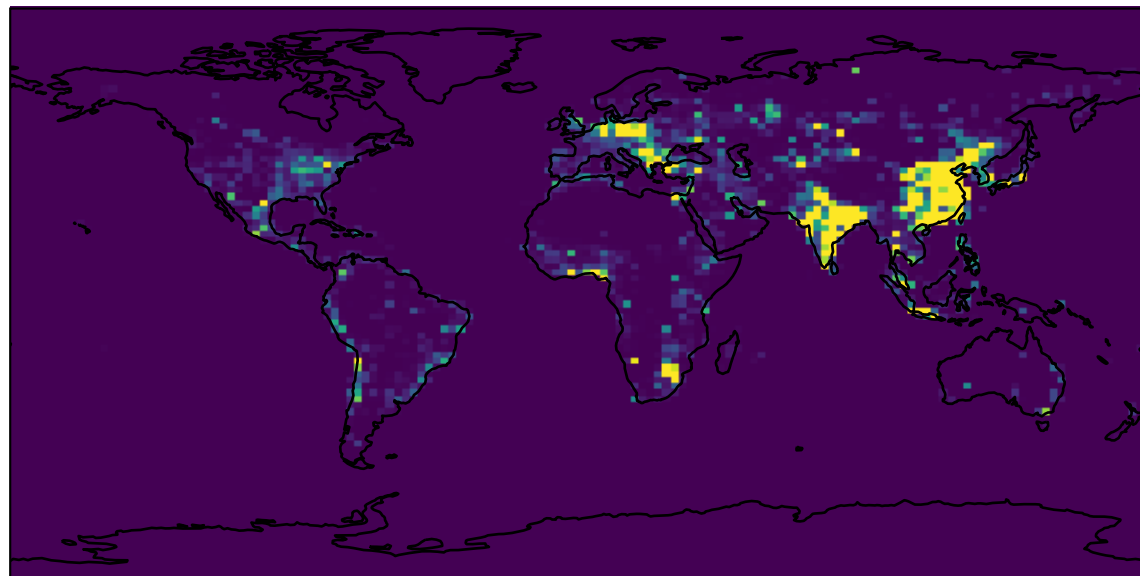
Absolute Difference



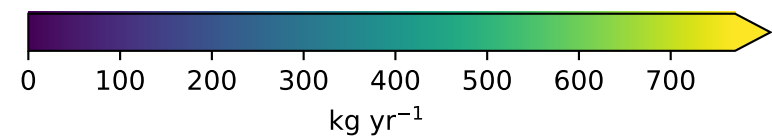
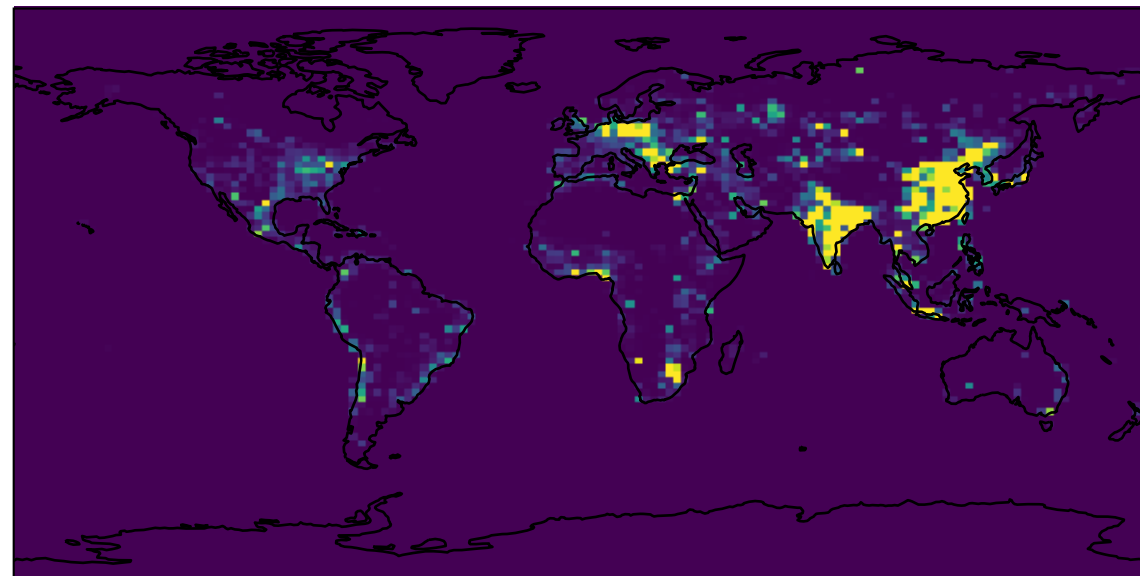
Percent Difference (%)



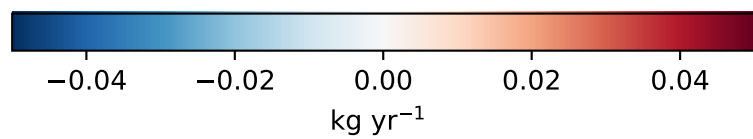
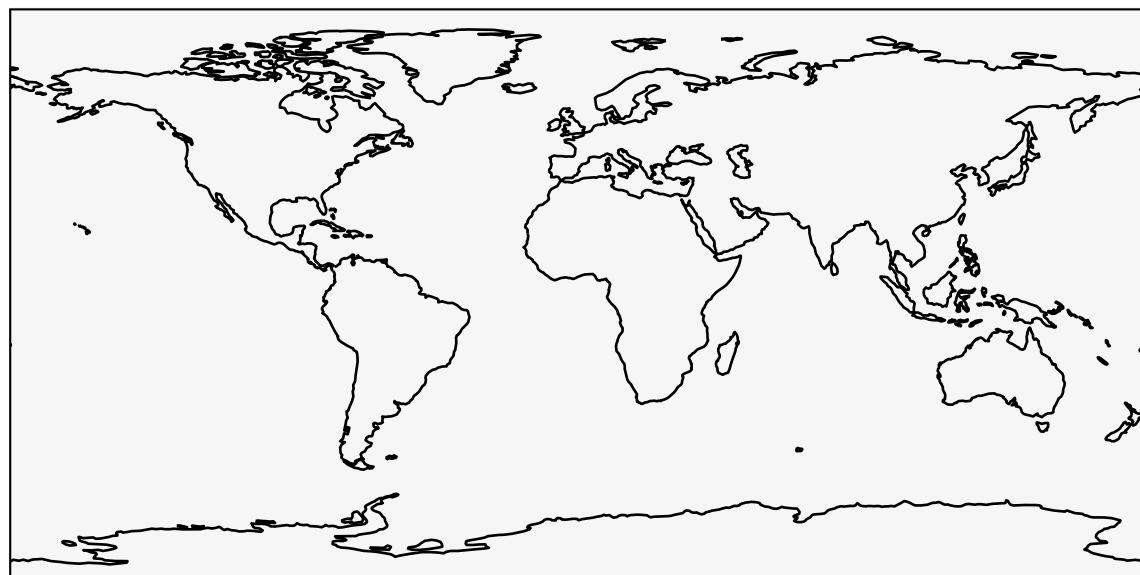
Reference Model Version: Anthro Emissions - Hg(II)+Hg(P)



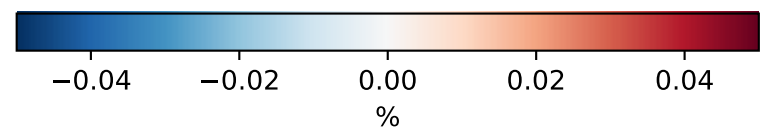
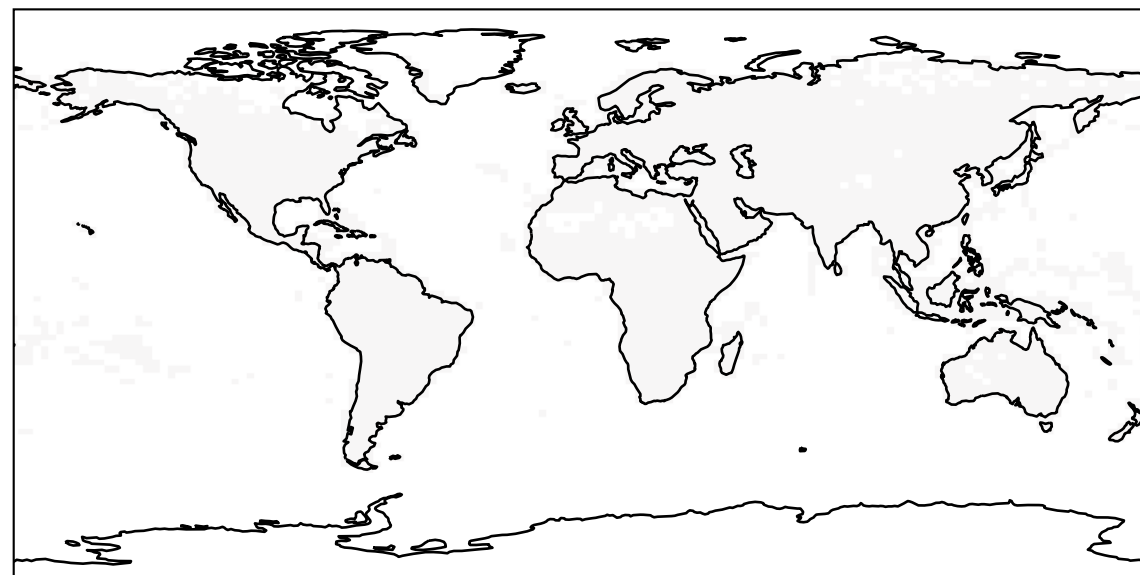
New Model Version: Anthro Emissions - Hg(II)+Hg(P)



Absolute Difference

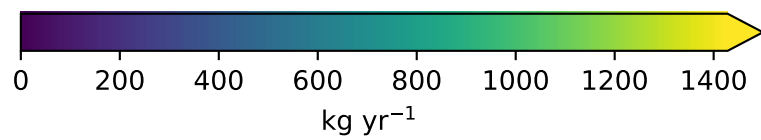
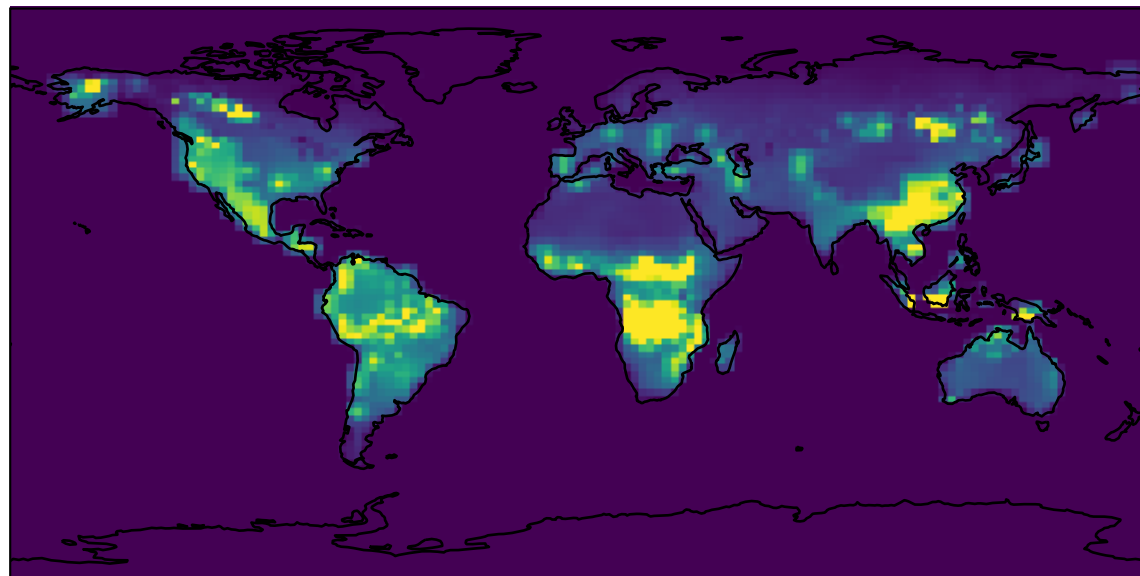


Percent Difference (%)

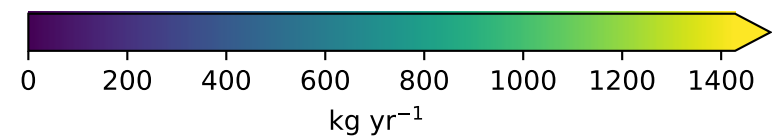
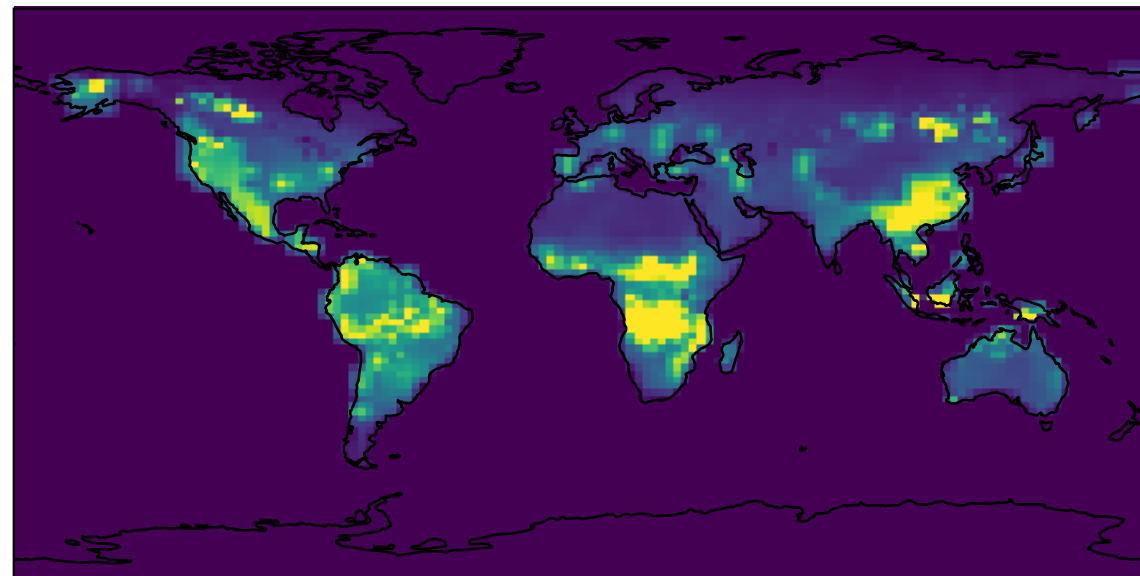




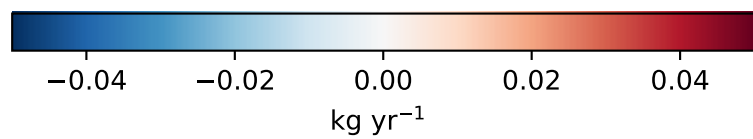
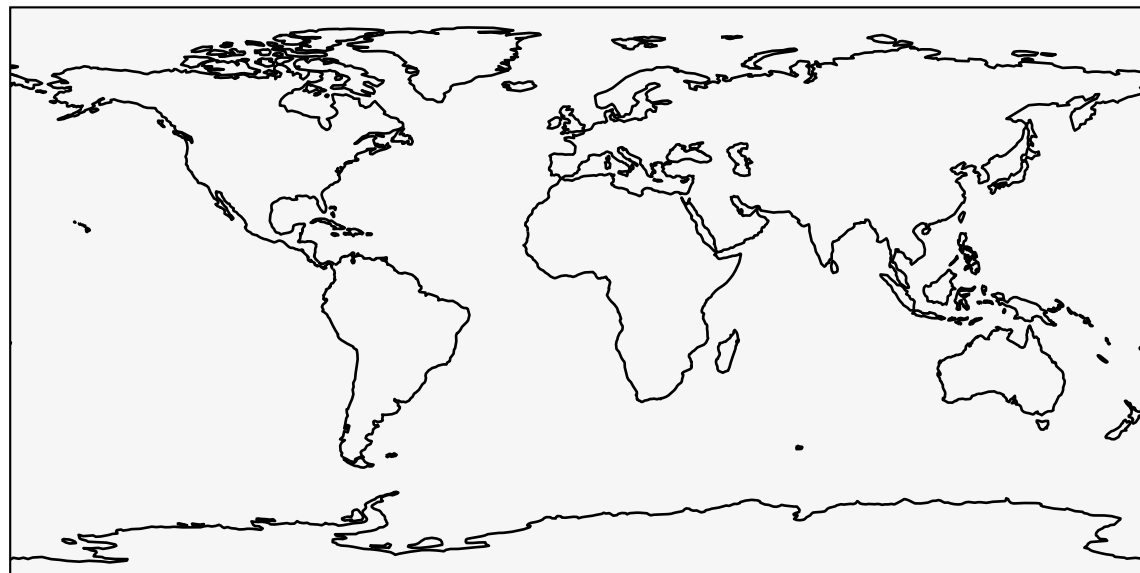
Reference Model Version: Direct Terrestrial - Geo, BB, & Soil



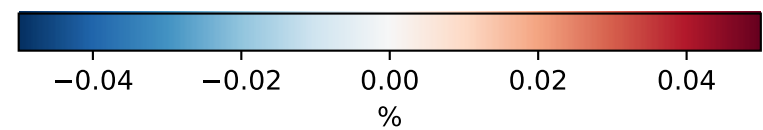
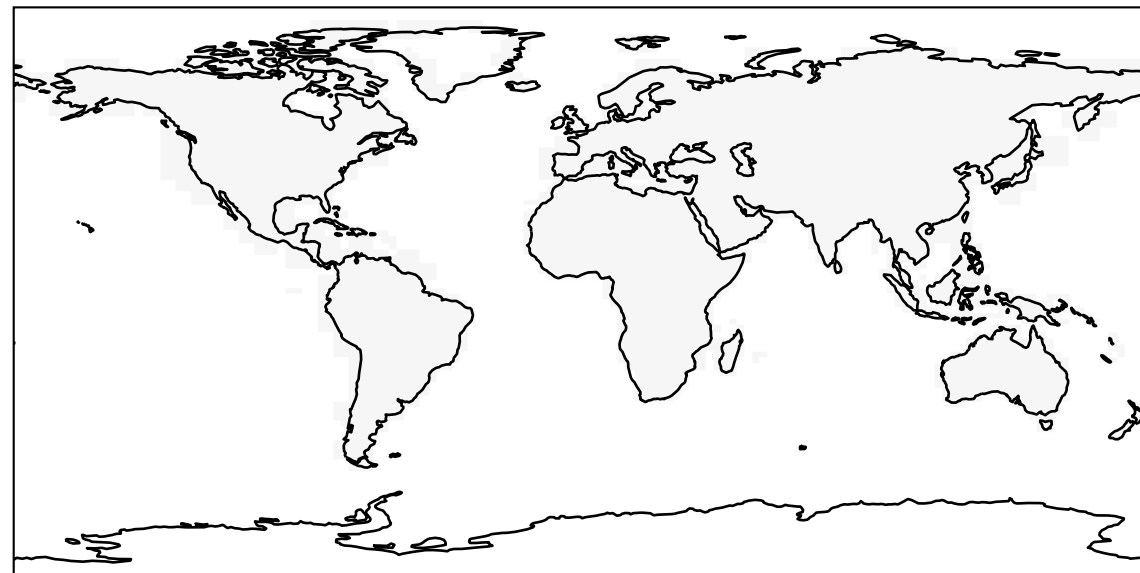
New Model Version: Direct Terrestrial - Geo, BB, & Soil



Absolute Difference

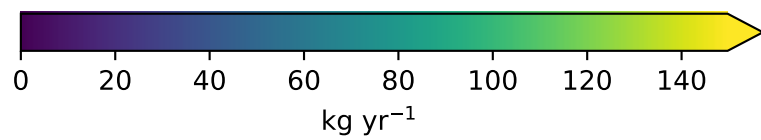
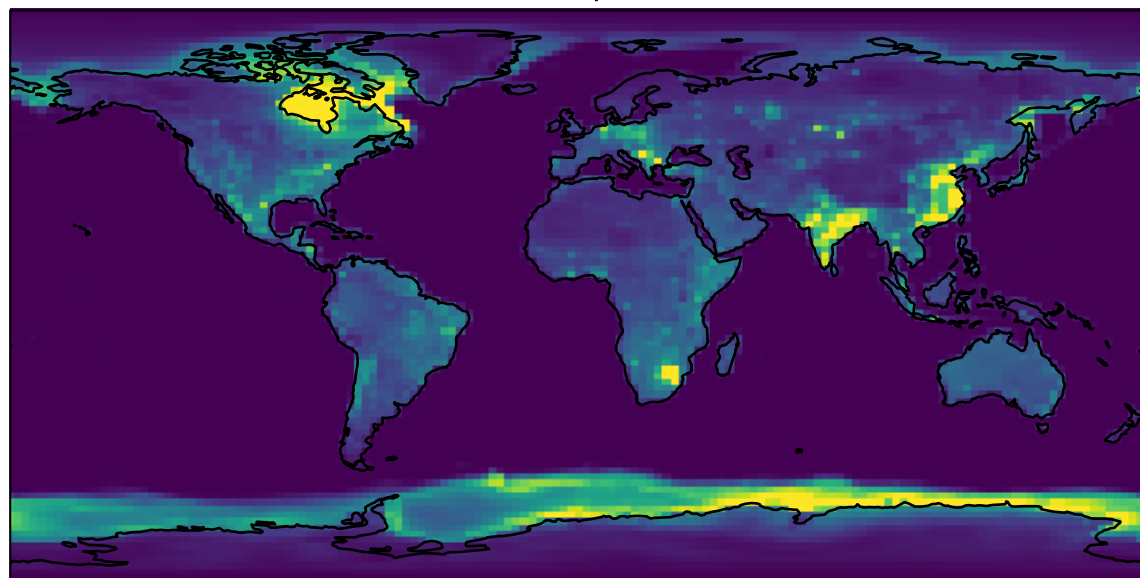


Percent Difference (%)

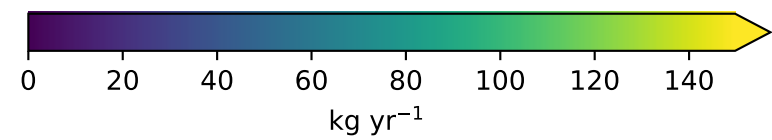
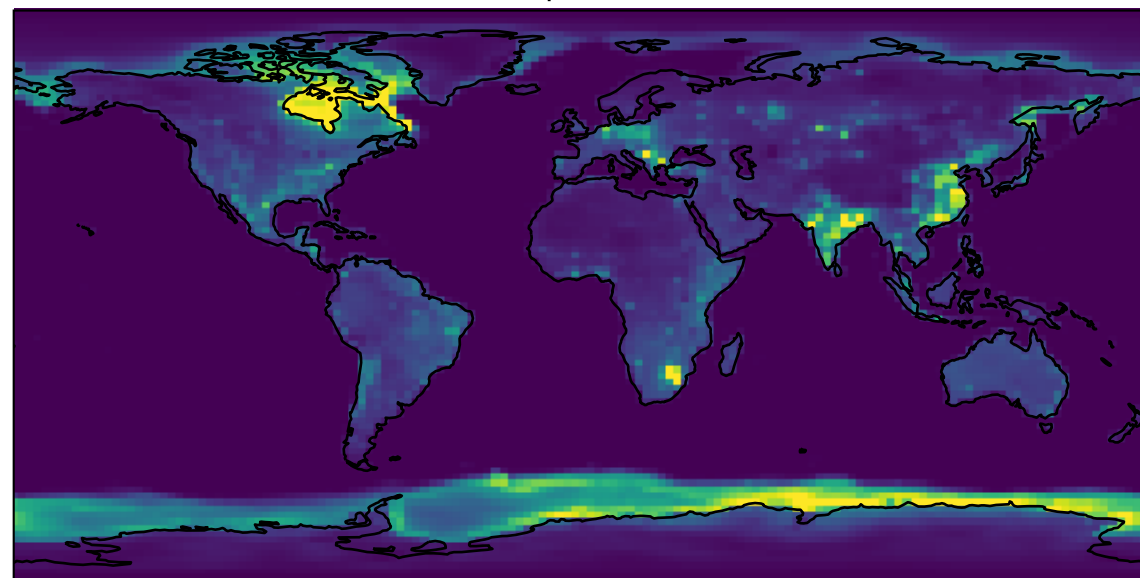




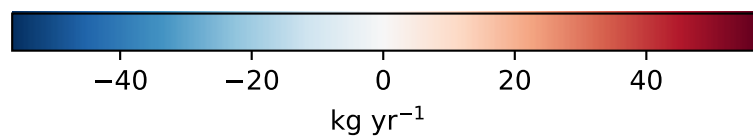
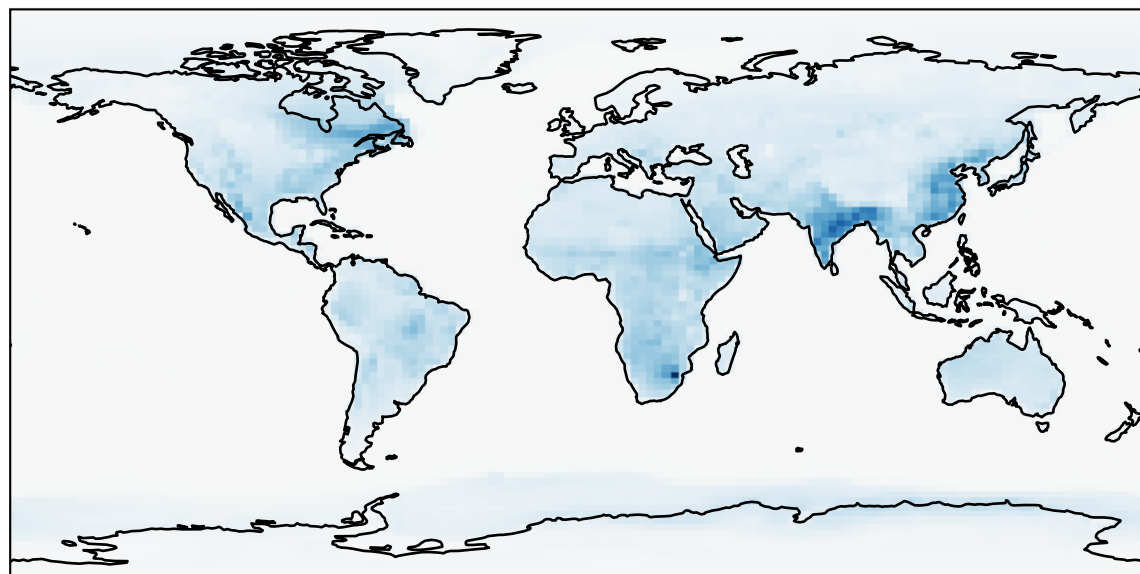
Reference Model Version: Prompt Re-emission - Land & Snow



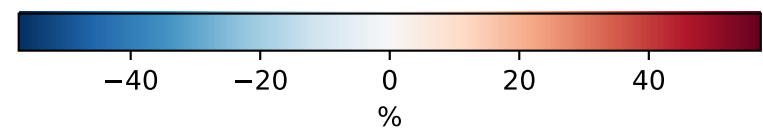
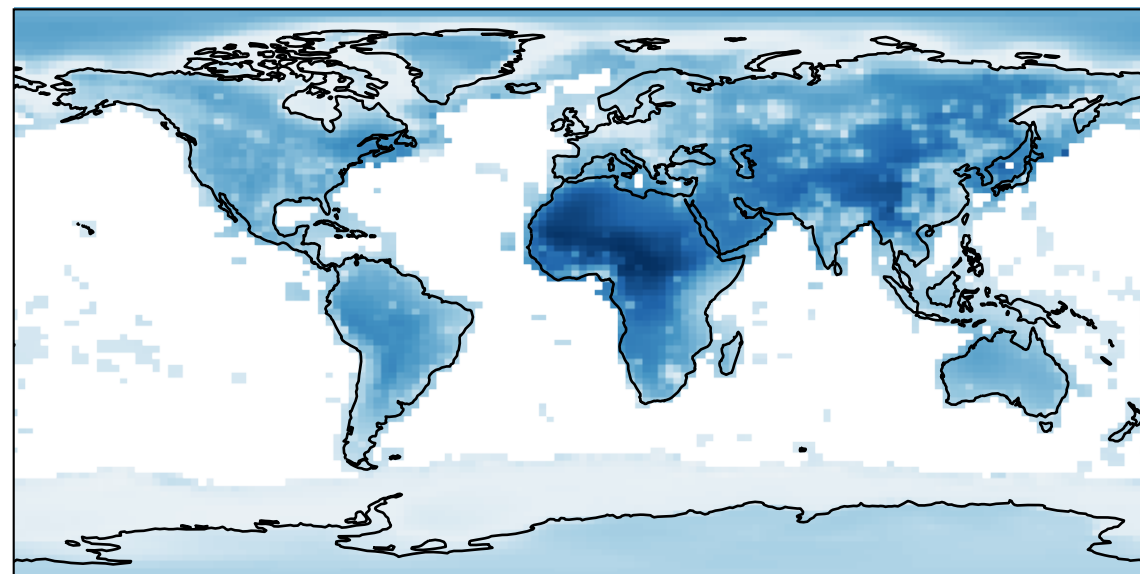
New Model Version: Prompt Re-emission - Land & Snow



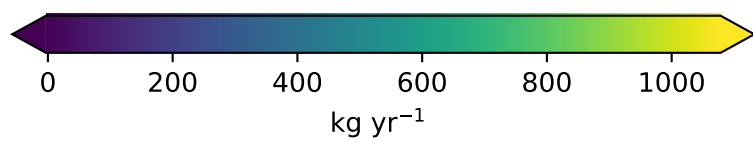
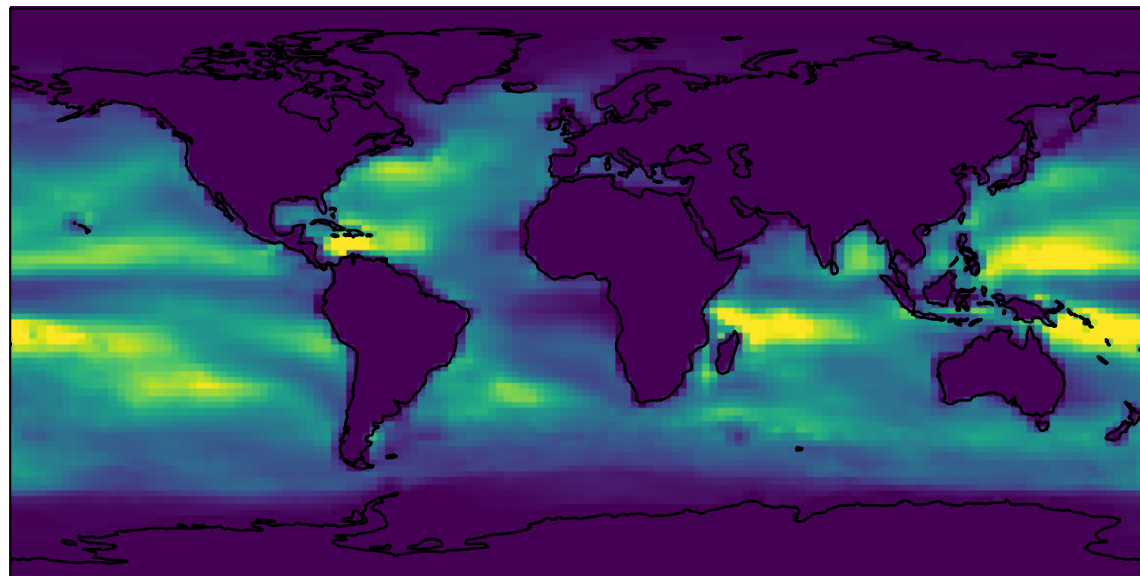
Absolute Difference



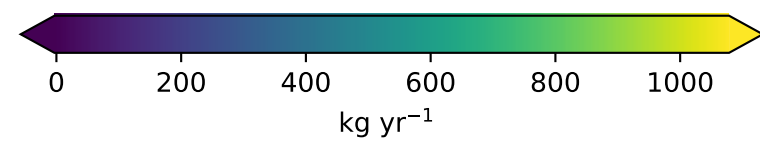
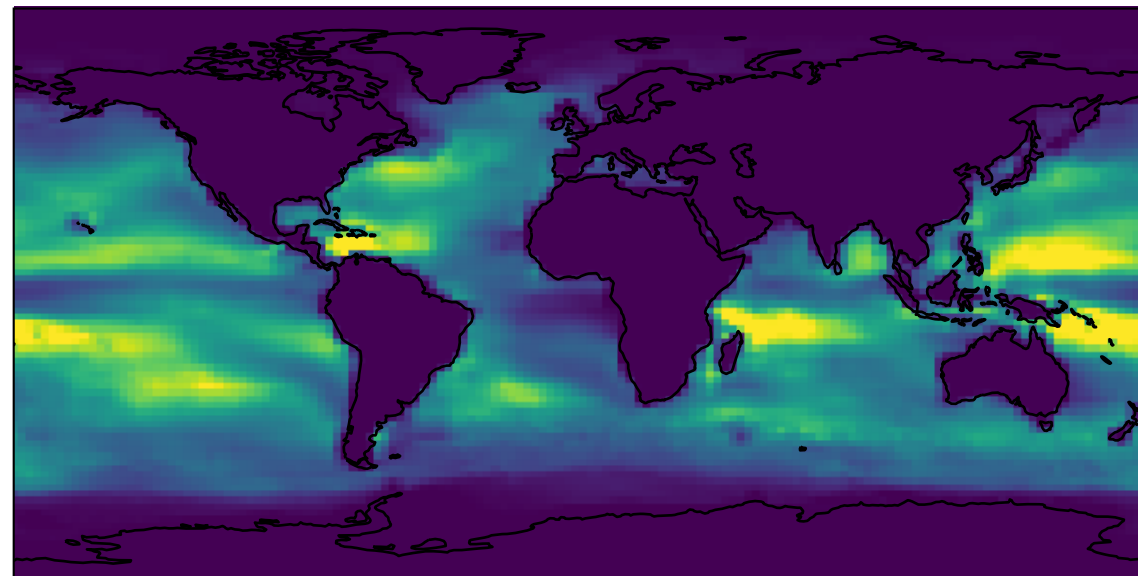
Percent Difference (%)



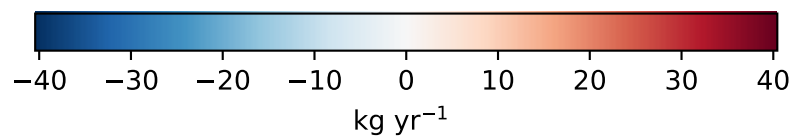
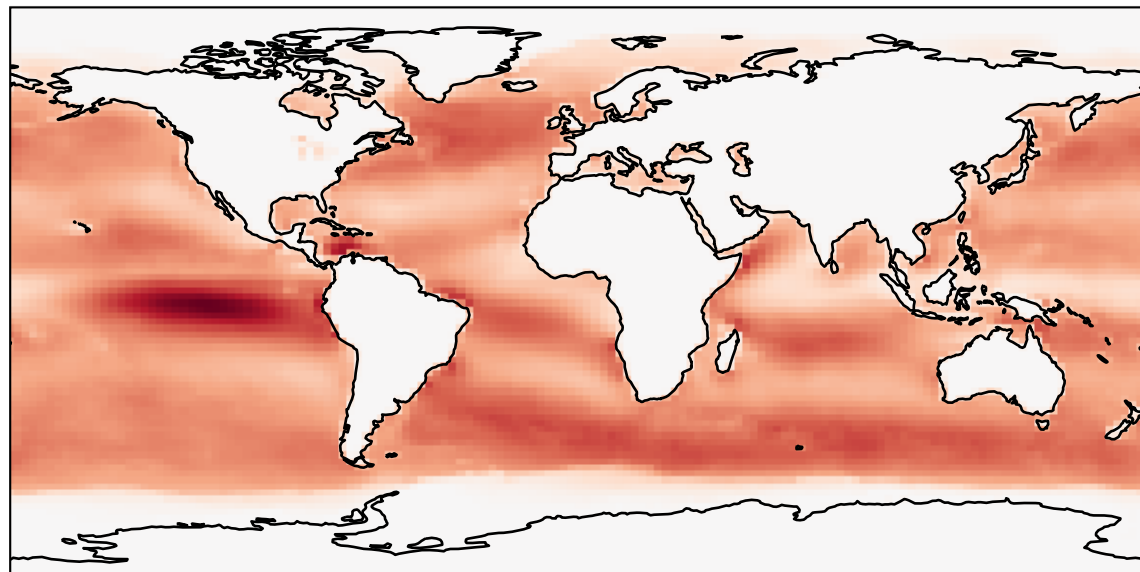
Reference Model Version: Net Ocean Evasion



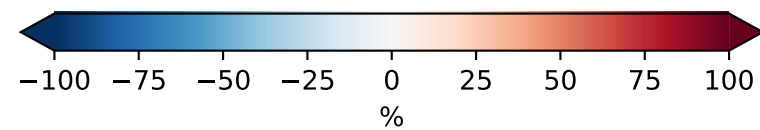
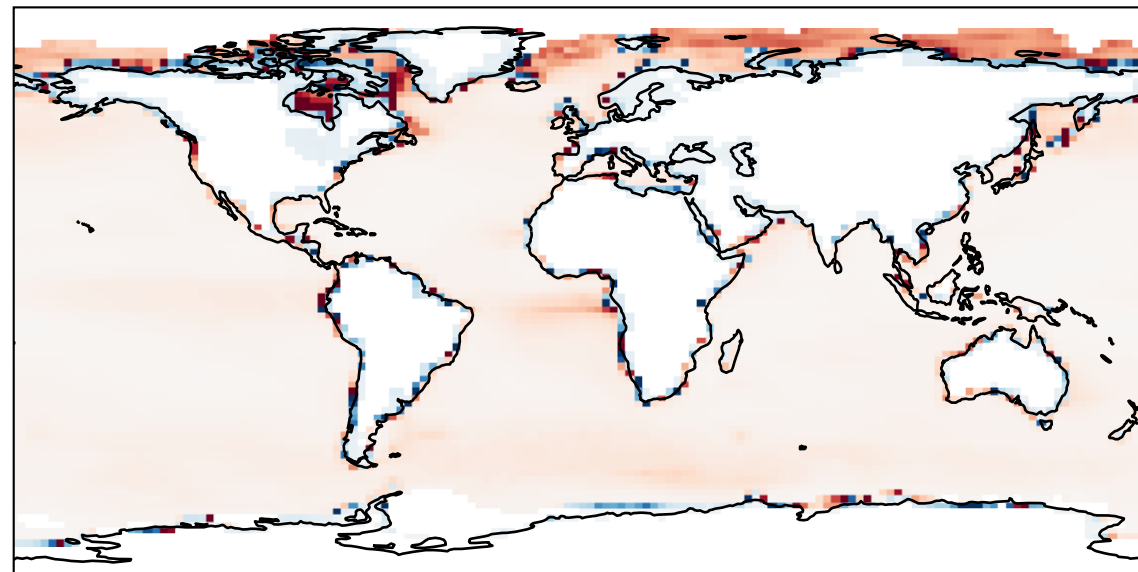
New Model Version: Net Ocean Evasion



Absolute Difference



Percent Difference (%)



	EmisHg0anthro	EmisHg2HgPanthro	EmisHg0geogenic	EmisHg0soil	EmisHg0biomass	EmisHg0land	EmisHg0snow	EmisHg0ocean	DryDep_Hg0	DryDep_Hg2	DryDep_HgP	WetLossTot_Hg2	WetLossTot_HgP	LossHg2bySeaSalt	Gross_Hg_Ox	ProdHg2fromHg0
Ref	1826.3	399.02	250.17	836.29	360.08	93.46	159.28	2918.6	1271.8	1065.5	27.118	2222.1	310.97	1876.2	17553.0	5110.9
New	1826.3	399.02	250.17	836.29	360.08	66.717	143.44	3035.4	2372.3	876.69	21.126	1806.0	212.23	1626.6	16319.0	4141.1