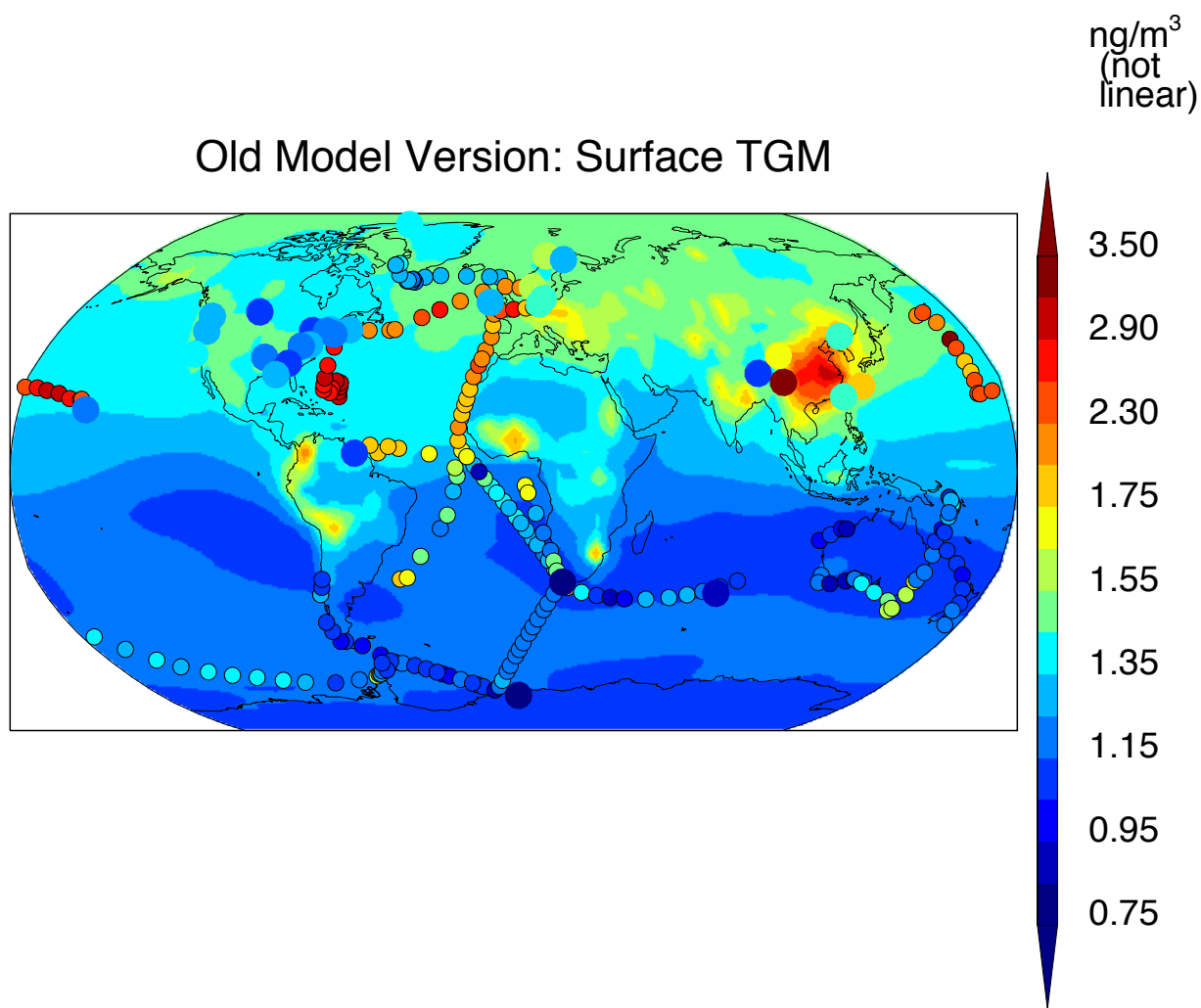


Terrestrial $R^2 = 0.51$

Mean Obs. = 1.48 ± 0.30 ng/m³

Mean Mod. = 1.45 ± 0.13 ng/m³

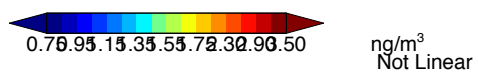
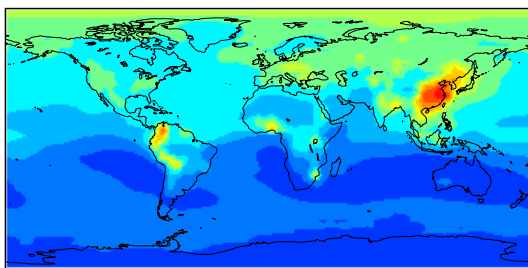


Terrestrial $R^2 = 0.50$

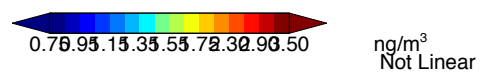
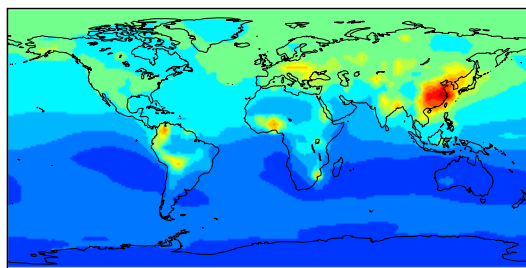
Mean Obs. = 1.48 ± 0.30 ng/m³

Mean Mod. = 1.47 ± 0.14 ng/m³

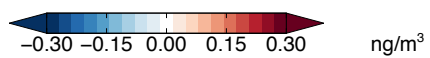
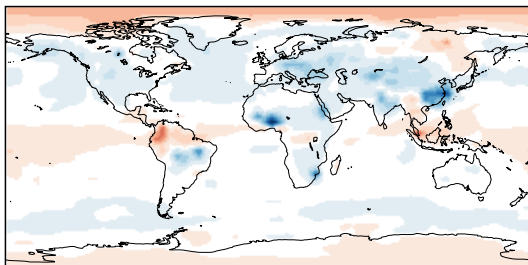
New Model Version: Surface TGM



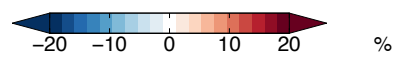
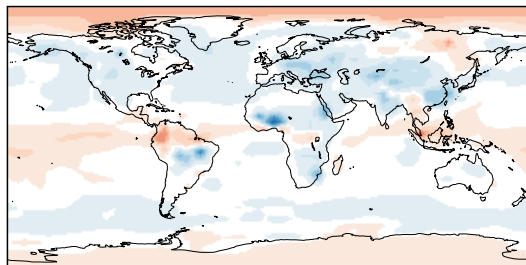
Reference Model Version: Surface TGM



Absolute Difference

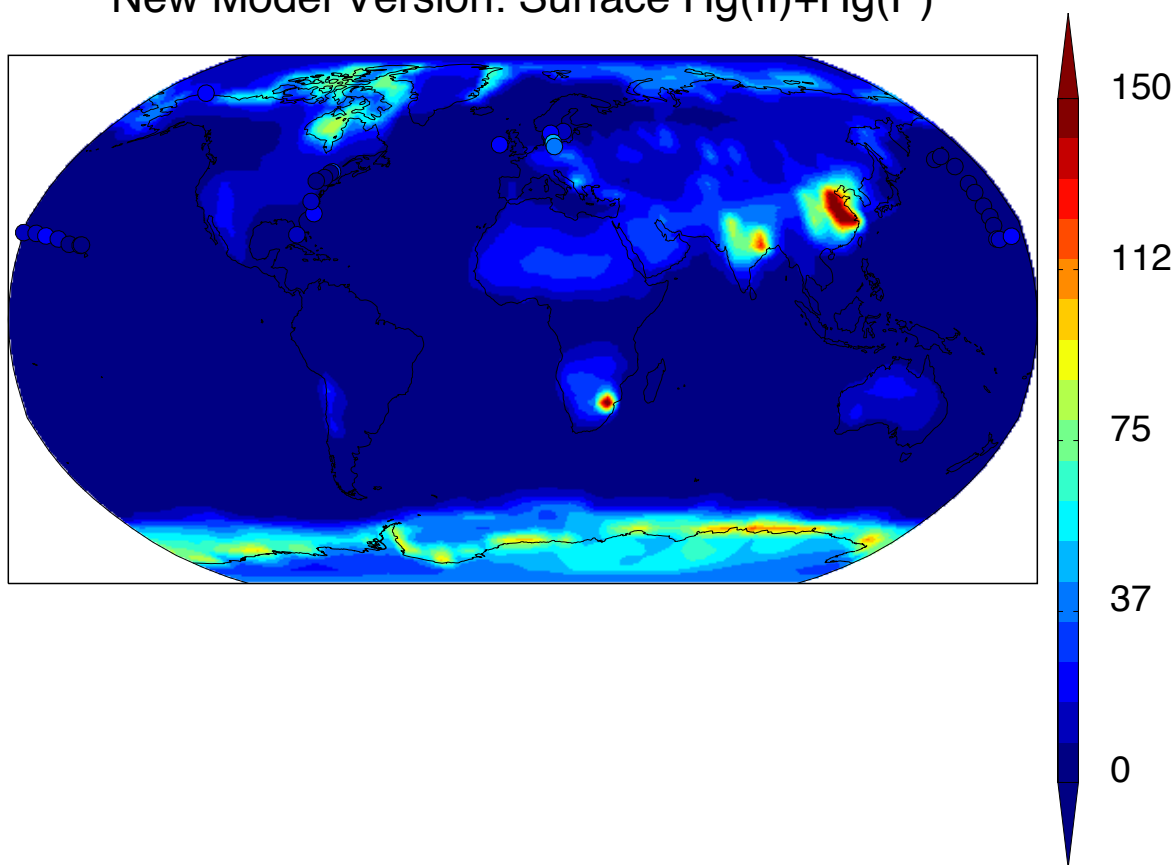


Percent Difference



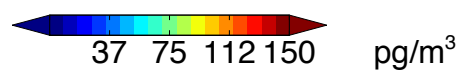
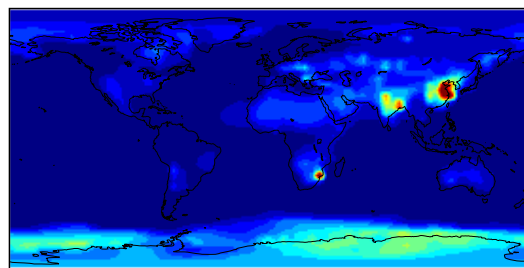
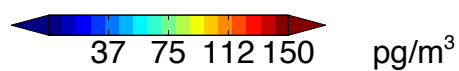
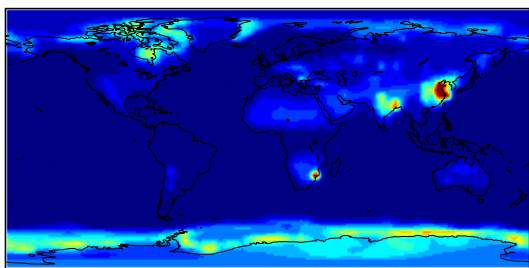
pg/m³

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

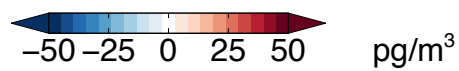
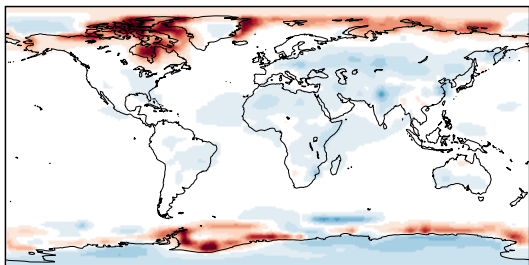


New Model Version: Surface Hg(II)+Hg(P)

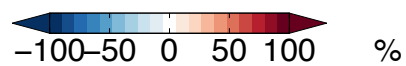
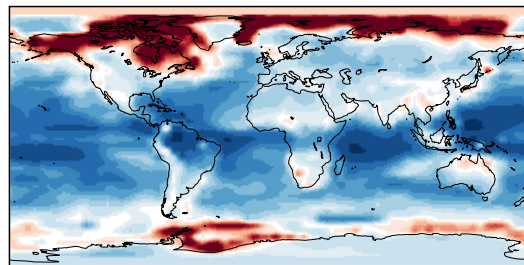
Old Model Version: Surface Hg(II)+Hg(P)



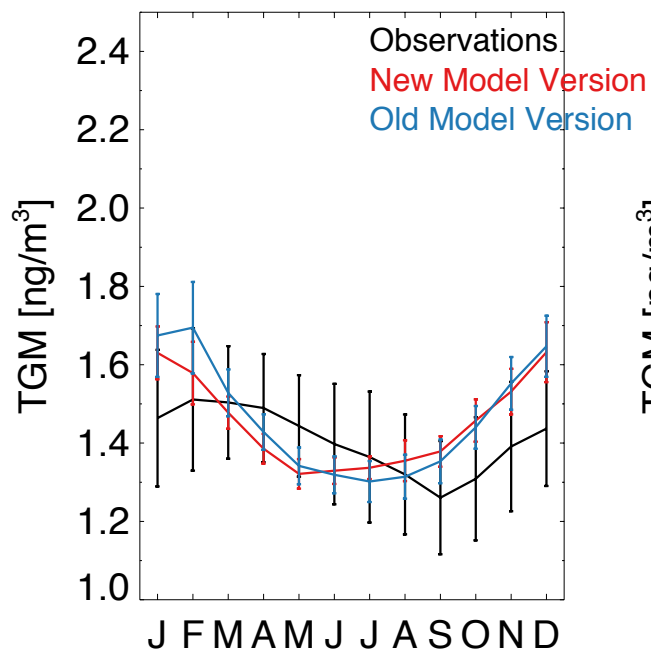
Absolute Difference



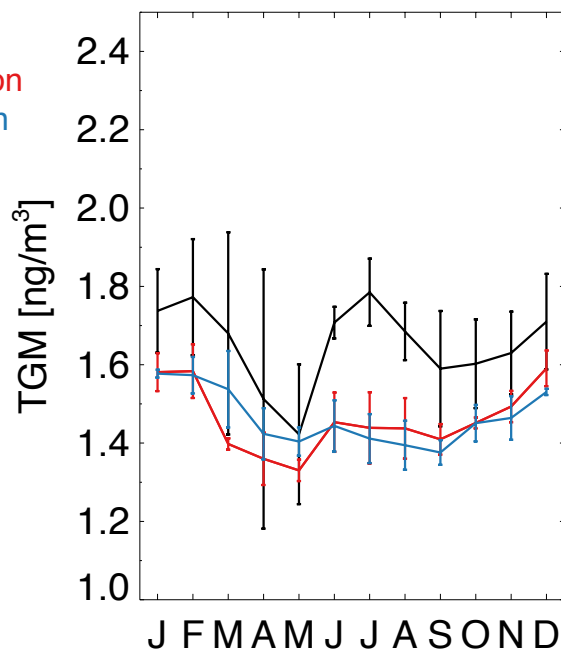
Percent Difference



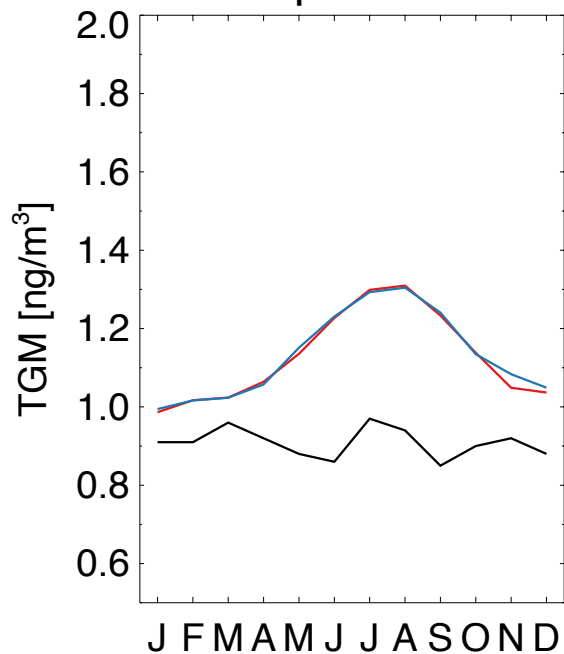
Mid-latitudes



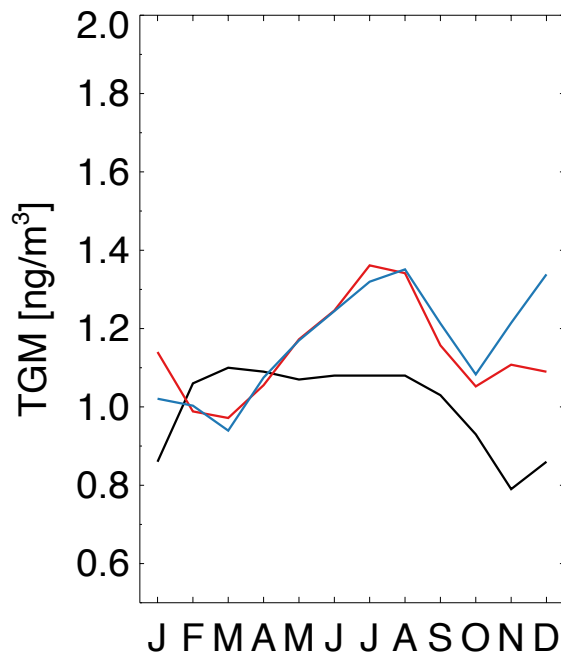
Arctic

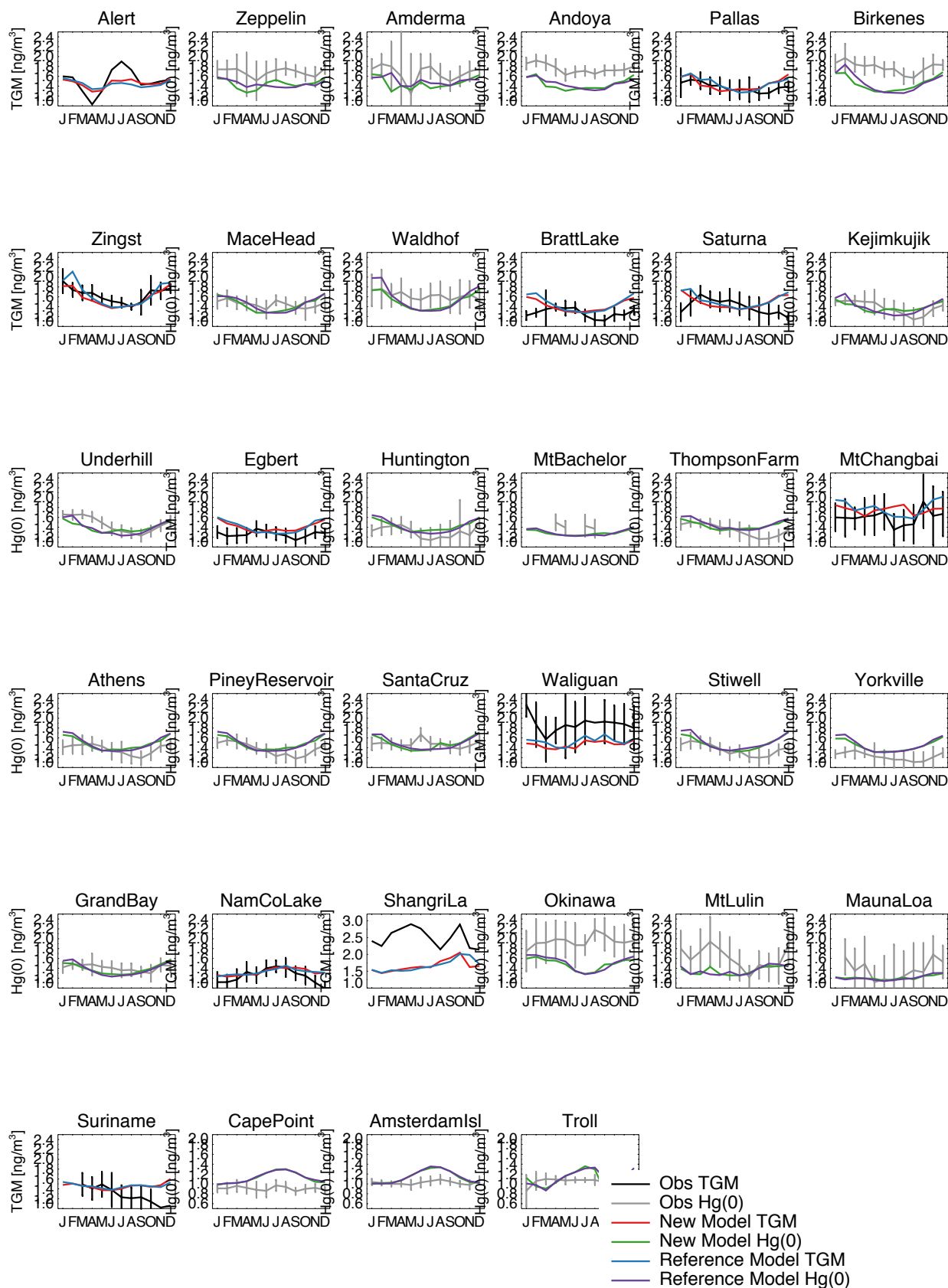


Cape Point

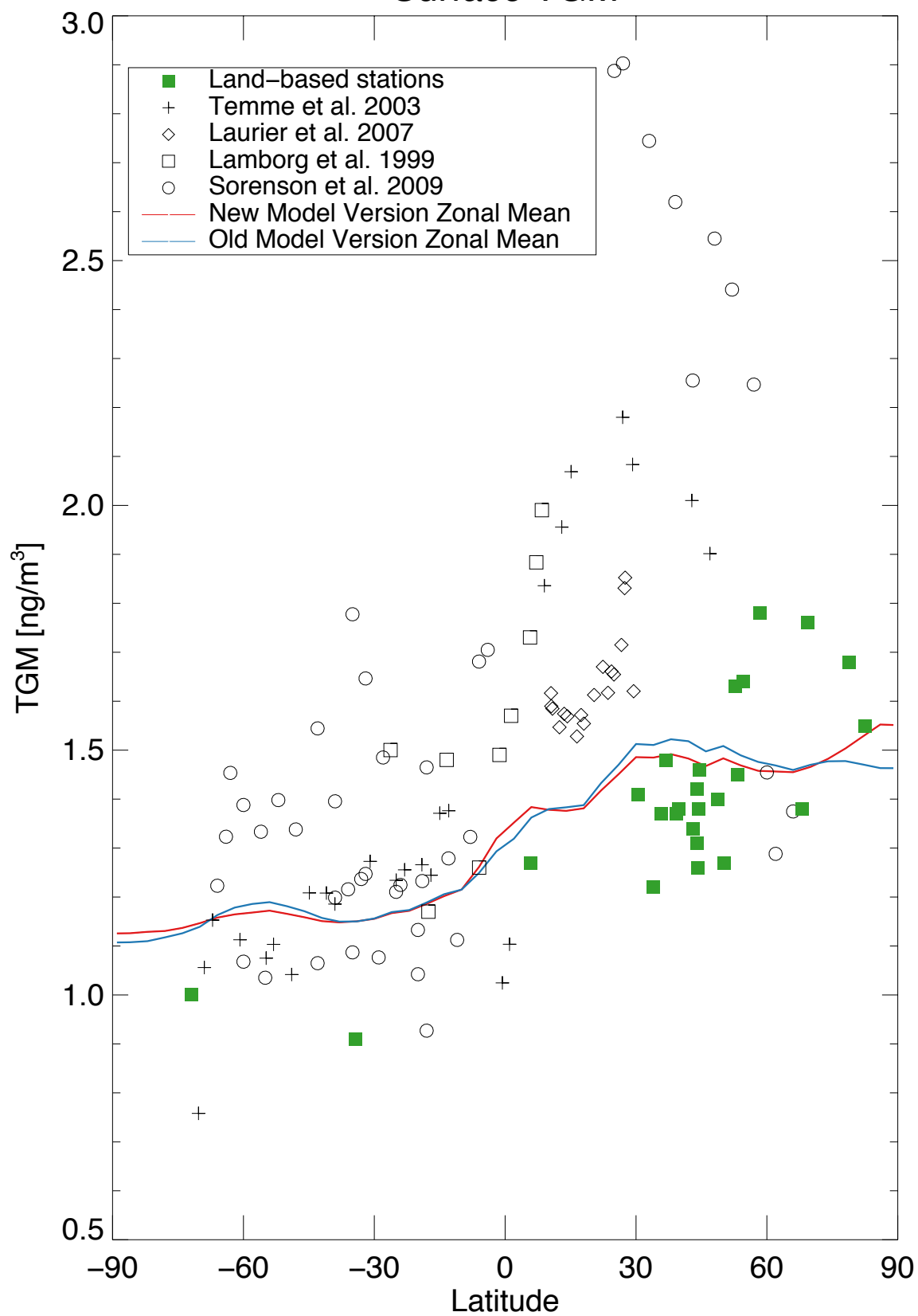


Troll Research Station



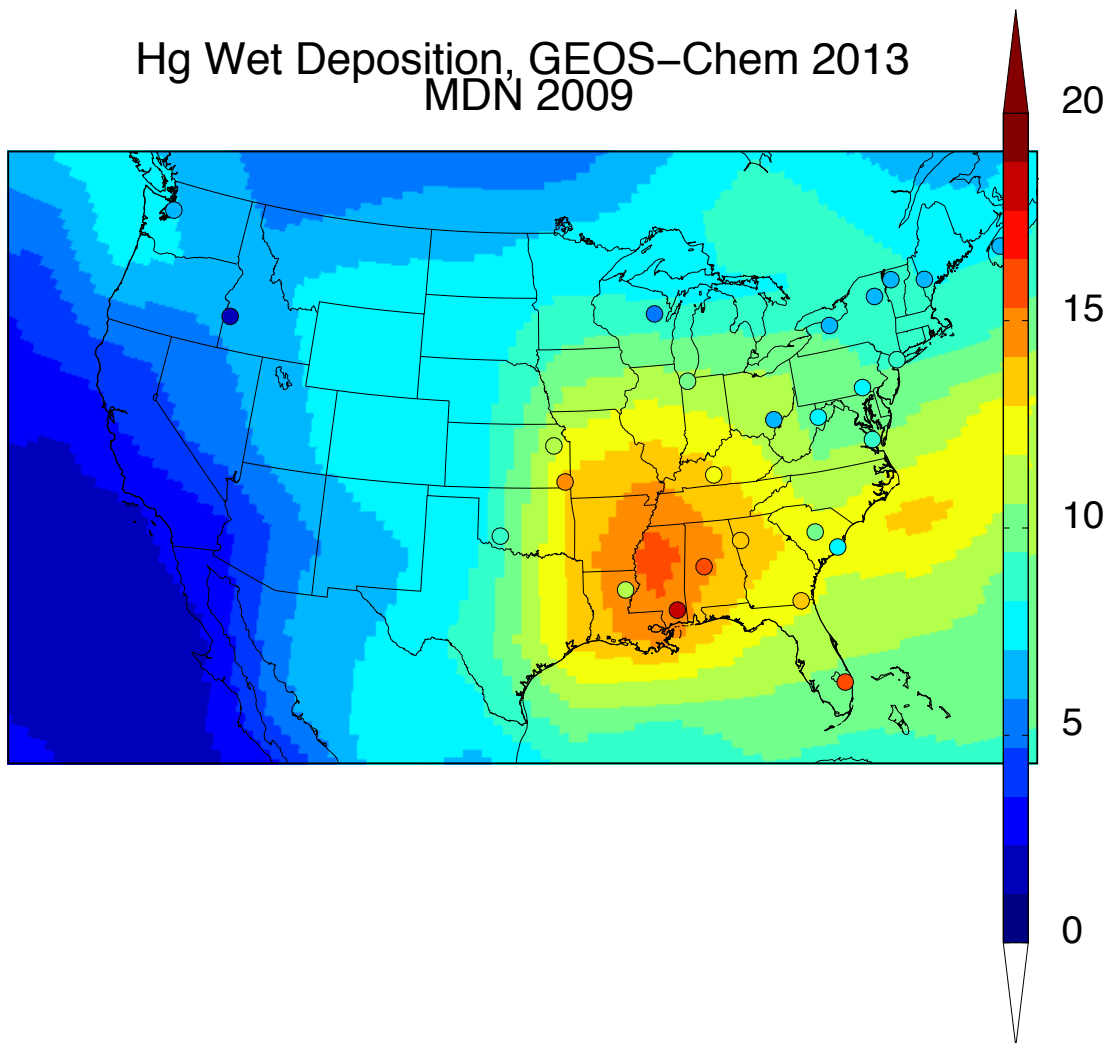


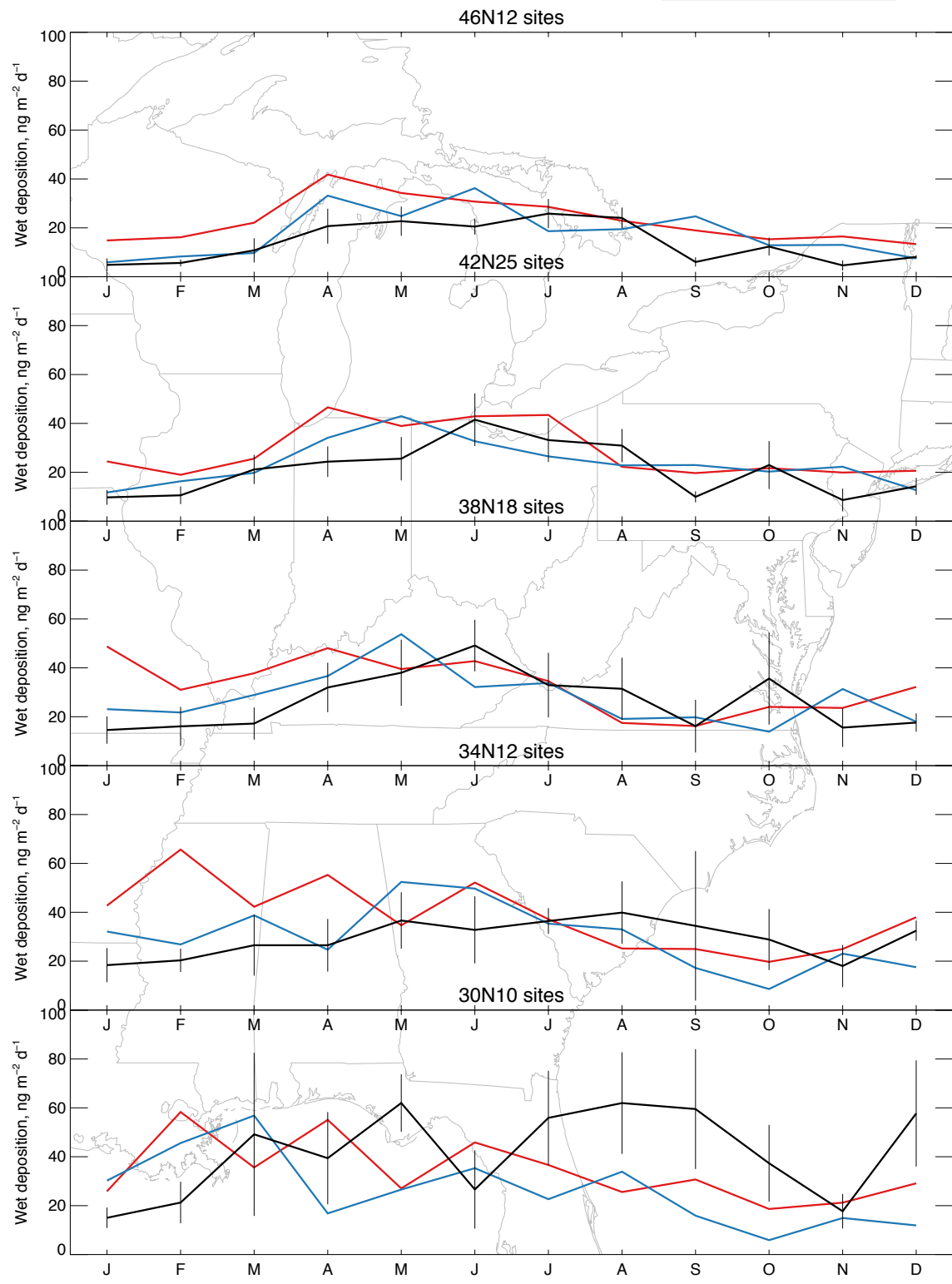
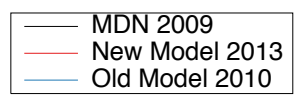
Surface TGM



$\mu\text{g m}^{-2} \text{y}^{-1}$

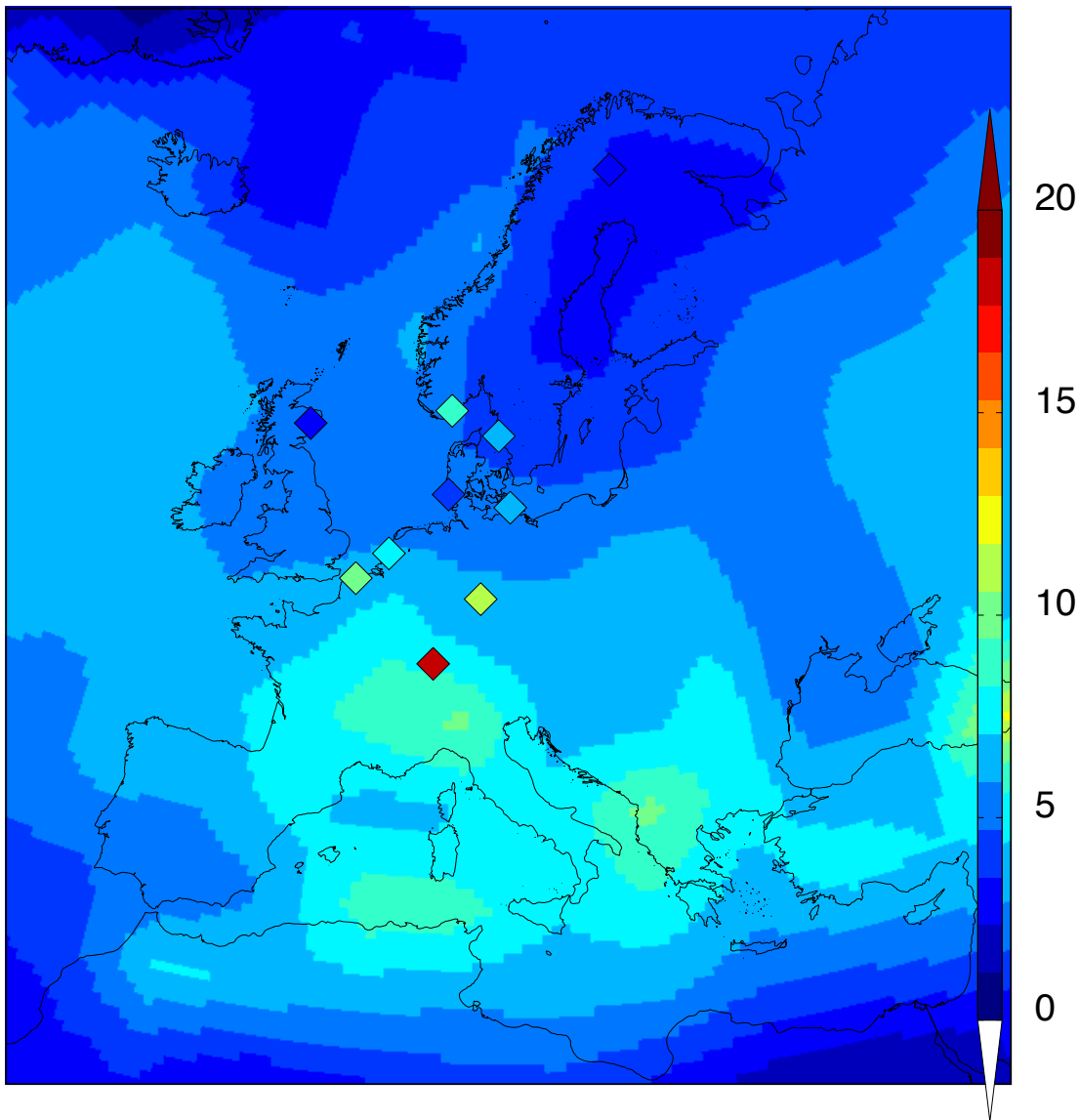
Hg Wet Deposition, GEOS-Chem 2013 MDN 2009



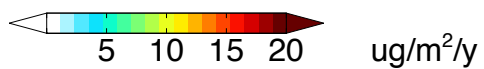
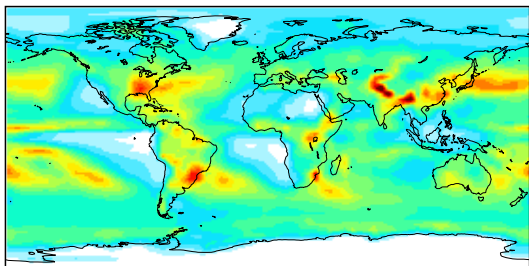


Hg Wet Deposition, GEOS-Chem 2013
EMEP 2007

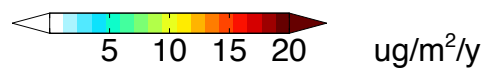
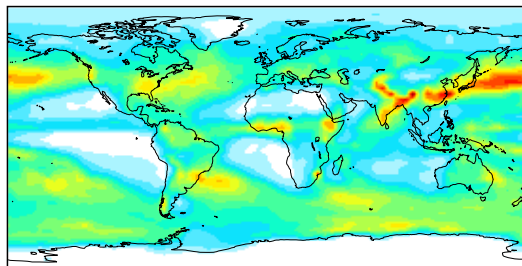
$\mu\text{g m}^{-2} \text{y}^{-1}$



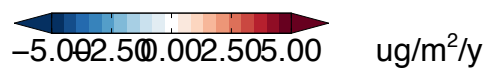
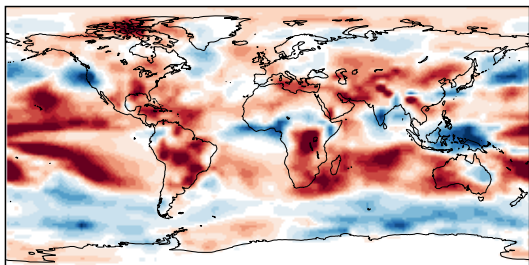
New Model Version: Total Wet Dep



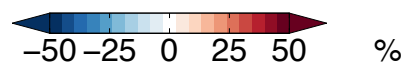
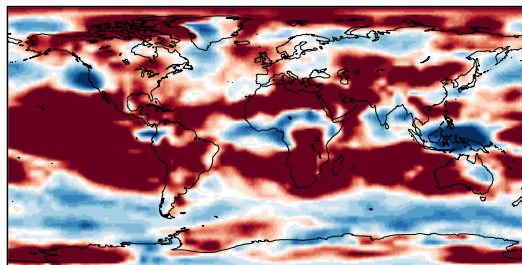
Old Model Version: Total Wet Dep



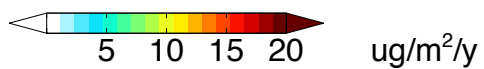
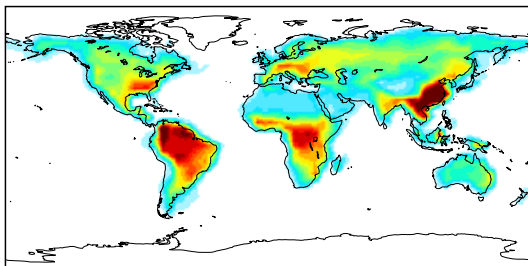
Absolute Difference



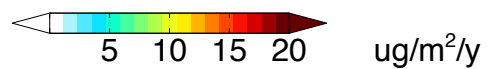
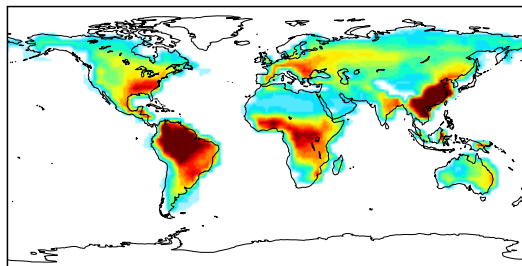
Percent Difference



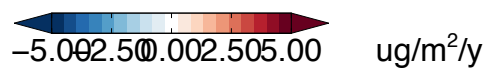
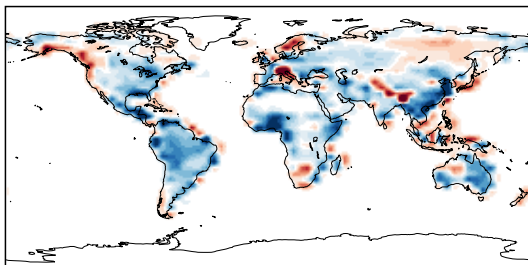
New Model Version: Hg(0) Dry Dep



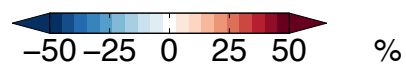
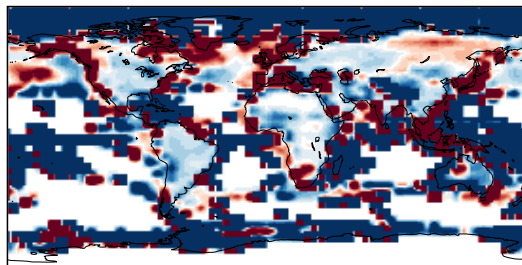
Old Model Version: Hg(0) Dry Dep



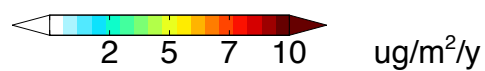
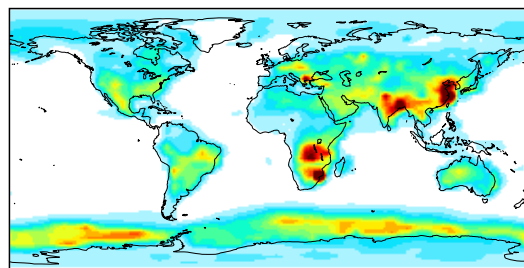
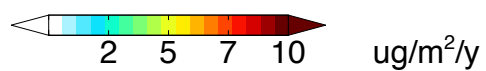
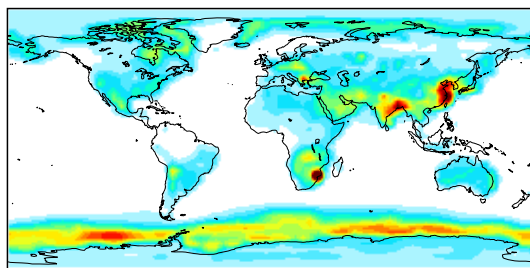
Absolute Difference



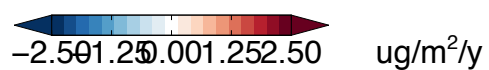
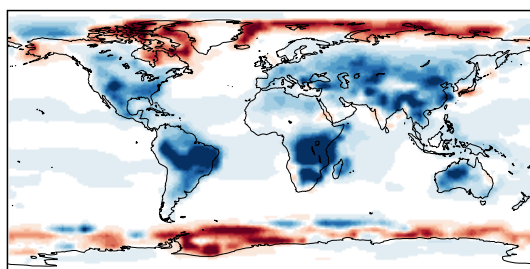
Percent Difference



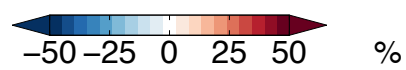
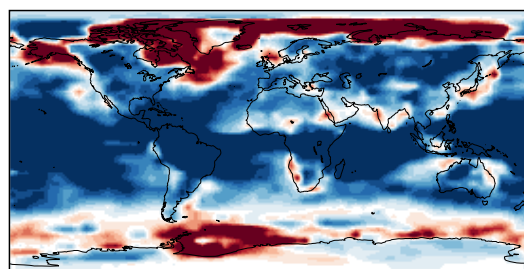
New Model Version: Hg(II)+Hg(P) Dry Dep Old Model Version: Hg(II)+Hg(P) Dry Dep



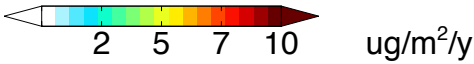
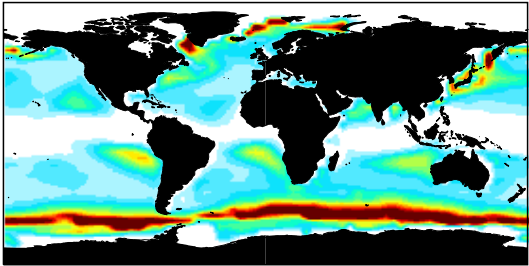
Absolute Difference



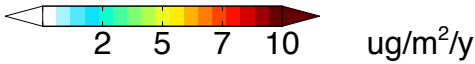
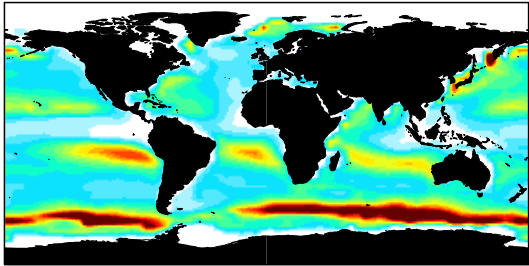
Percent Difference



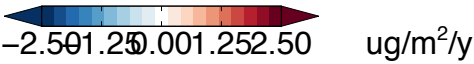
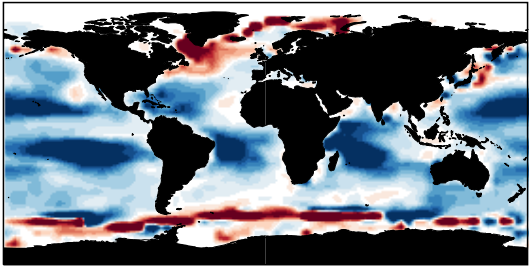
New Model Version: Sea Salt Uptake



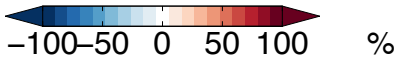
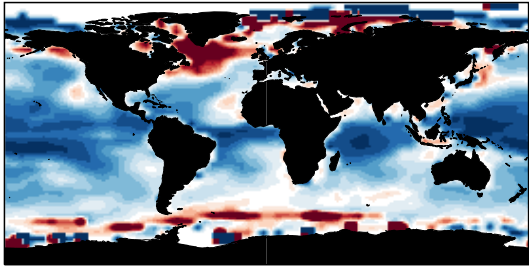
Old Model Version: Sea Salt Uptake



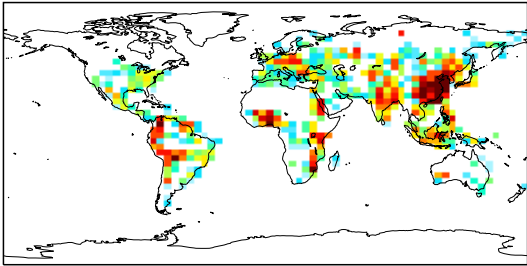
Absolute Difference



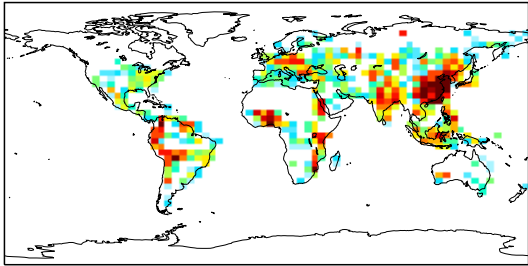
Percent Difference



New Model Version: Anthro Emissions – Hg(0)Old Model Version: Anthro Emissions – Hg(0)

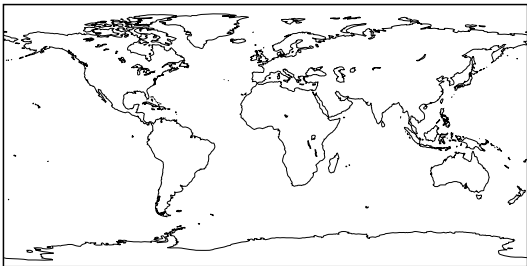


1.E-02-0E+00+0E+02 kg/y



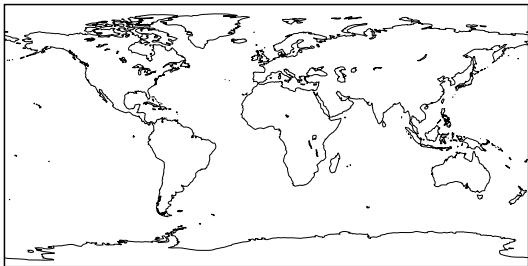
1.E-02-0E+00+0E+02 kg/y

Absolute Difference



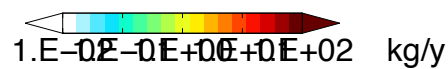
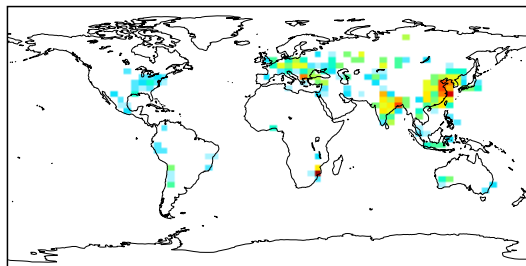
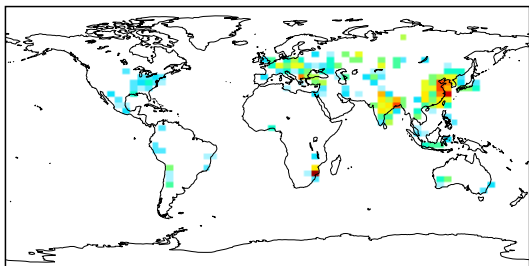
-20 -10 0 10 20 kg/y

Percent Difference

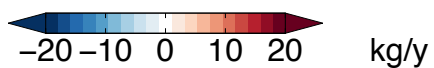
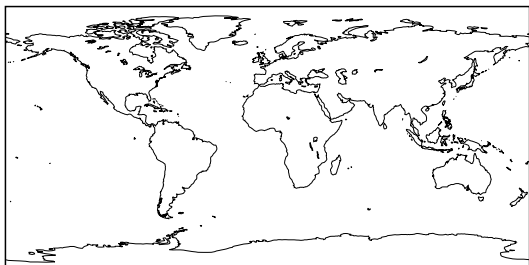


-50 -25 0 25 50 %

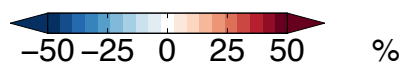
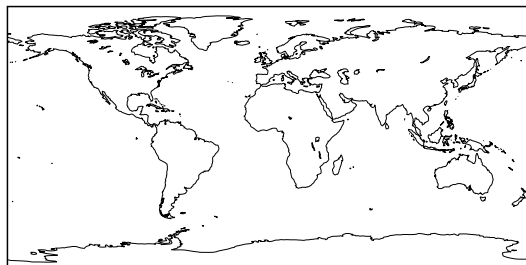
New Model Version: Anthro Emissions – Hg(0) + Hg(P) Old Model Version: Anthro Emissions – Hg(II) + Hg(P)



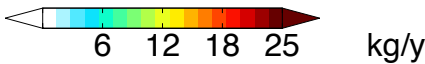
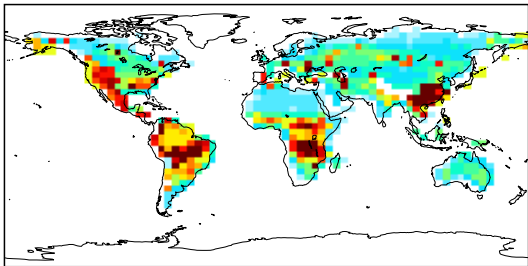
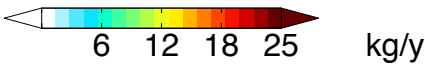
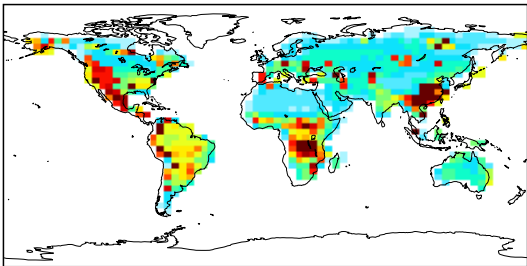
Absolute Difference



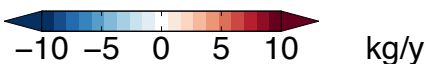
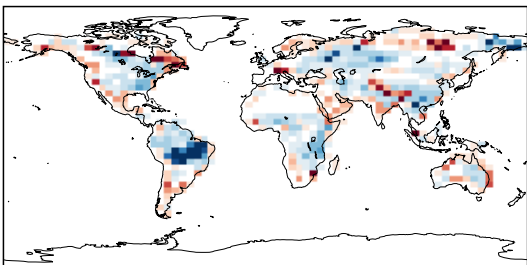
Percent Difference



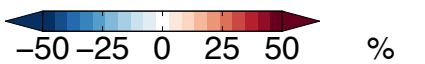
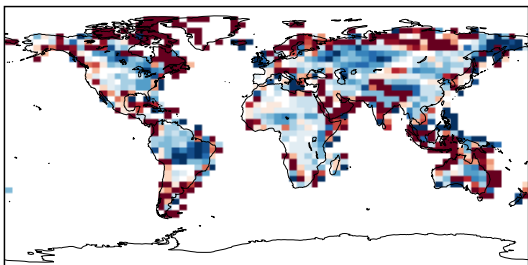
New Model Version: Direct Terrestrial – Geo, BB, & Soil Old Model Version: Direct Terrestrial – Geo, BB, & Soil



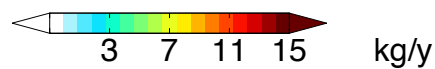
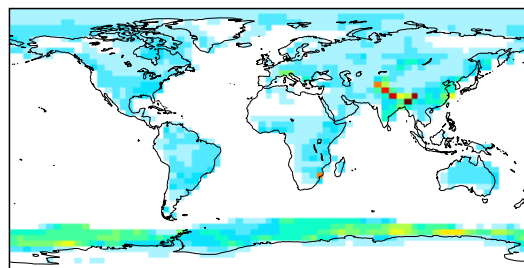
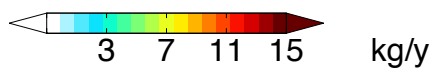
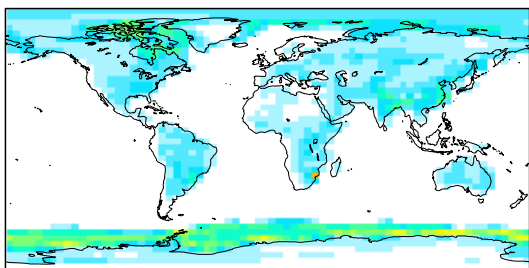
Absolute Difference



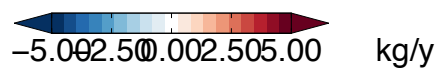
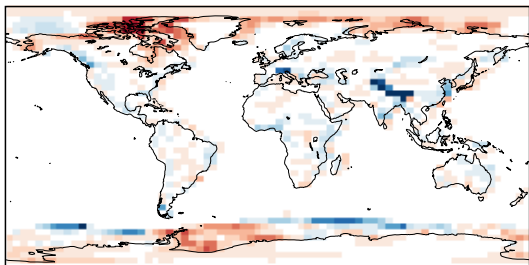
Percent Difference



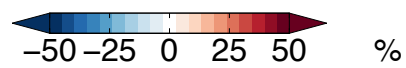
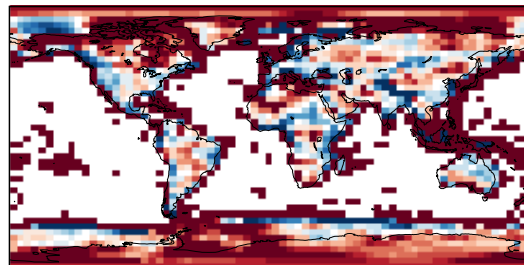
New Model Version: Prompt Reemission – Land & Snow Old Model Version: Prompt Reemission – Land & Snow



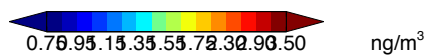
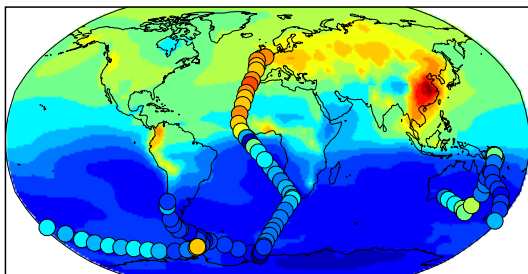
Absolute Difference



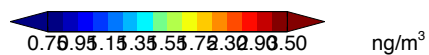
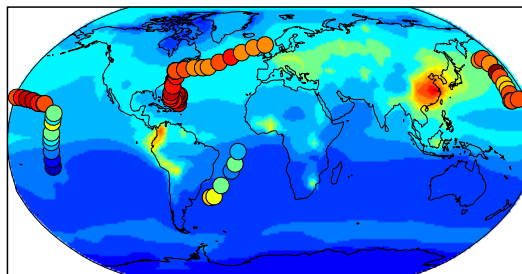
Percent Difference



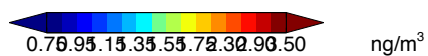
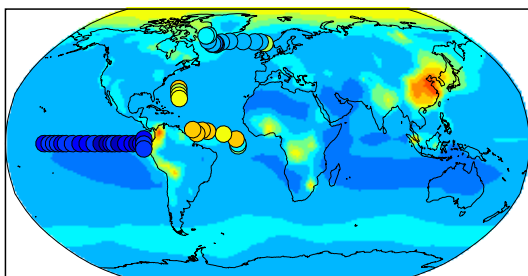
MBL Hg(0) December – February



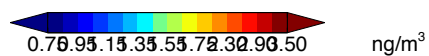
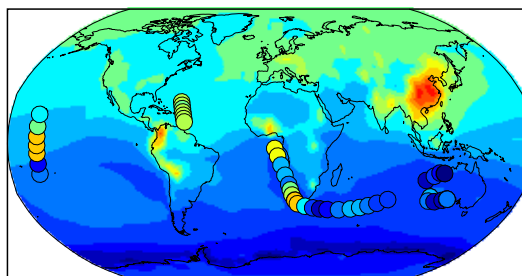
MBL Hg(0) March – May



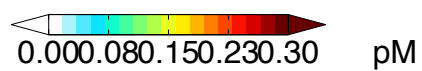
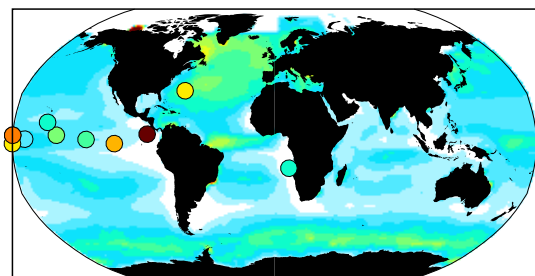
MBL Hg(0) June – August



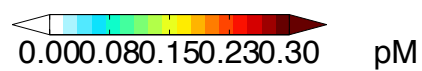
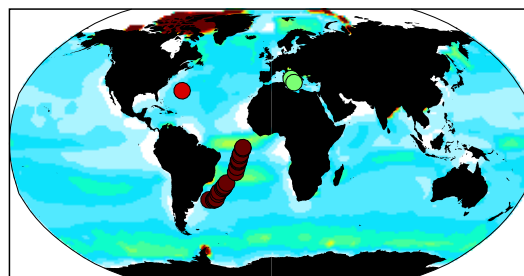
MBL Hg(0) September – November



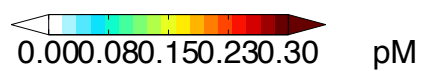
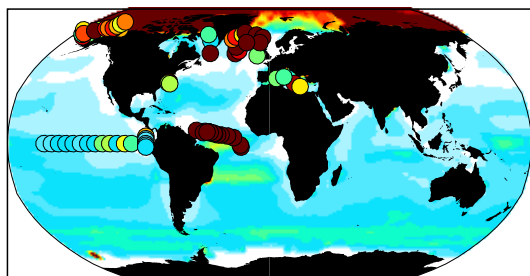
Ocean Hg(0) December – February



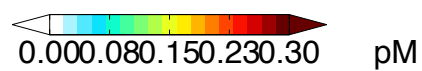
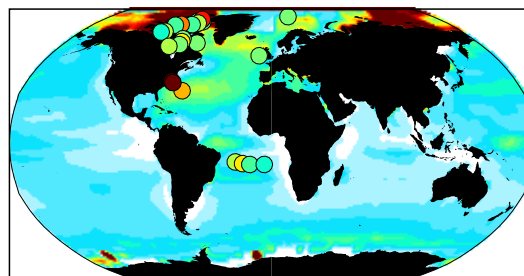
Ocean Hg(0) March – May



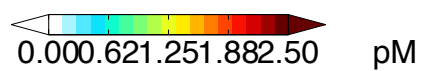
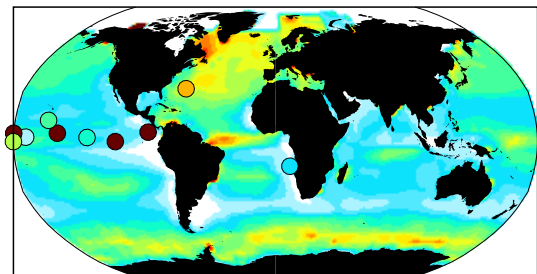
Ocean Hg(0) June – August



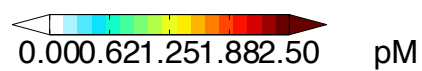
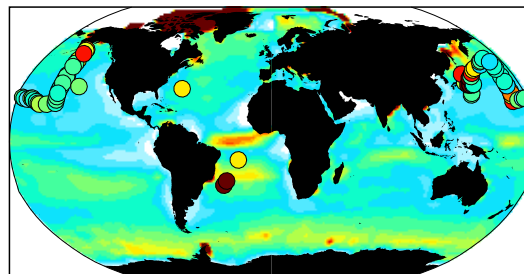
Ocean Hg(0) September – November



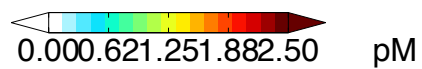
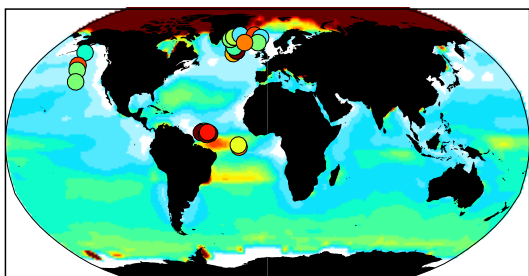
Ocean Total Hg December – February



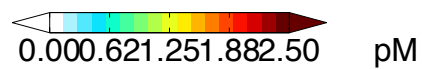
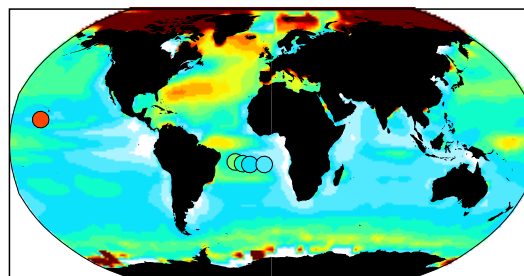
Ocean Total Hg March – May



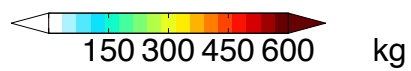
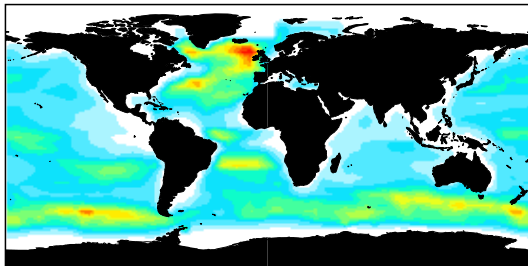
Ocean Total Hg June – August



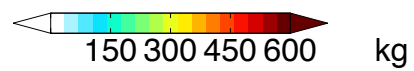
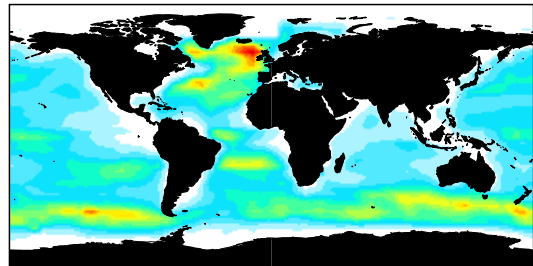
Ocean Total Hg September – November



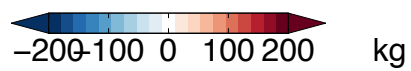
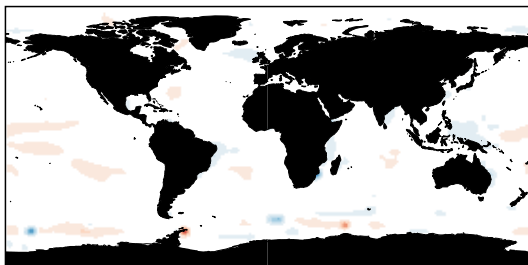
New Model Version: Ocean Hg(0) Mass



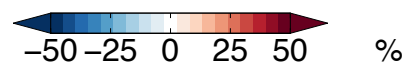
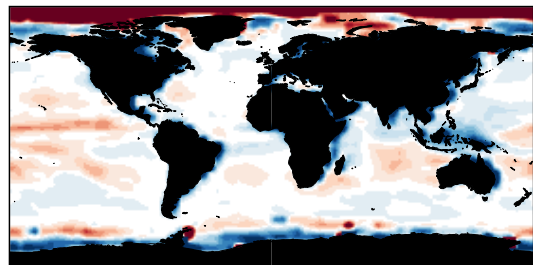
Old Model Version: Ocean Hg(0) Mass



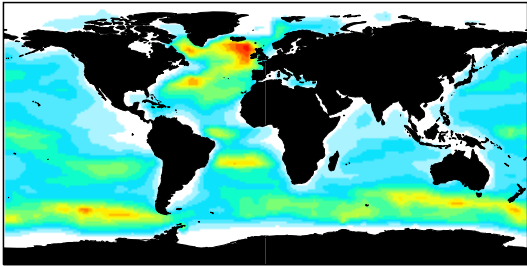
Absolute Difference



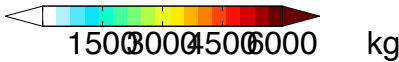
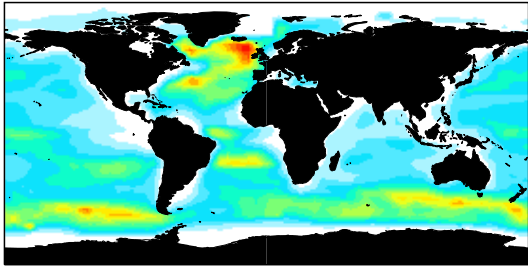
Percent Difference



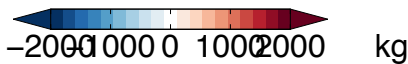
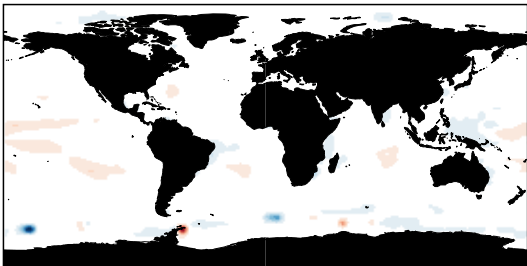
New Model Version: Ocean Hg(II) Mass



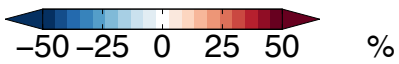
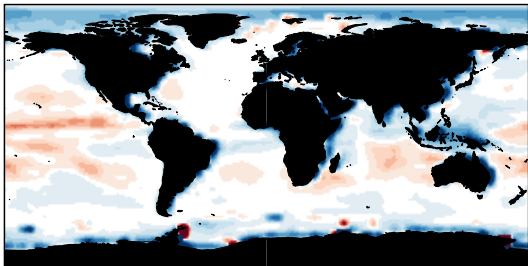
Old Model Version: Ocean Hg(II) Mass



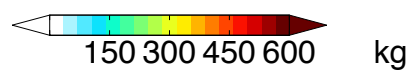
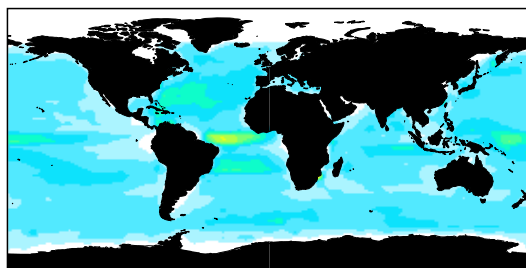
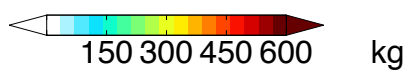
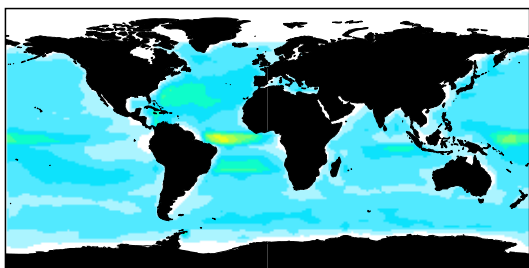
Absolute Difference



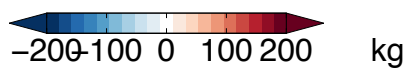
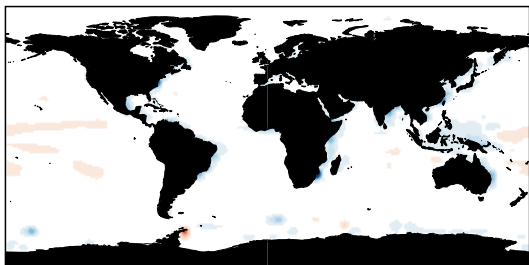
Percent Difference



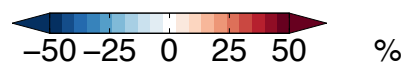
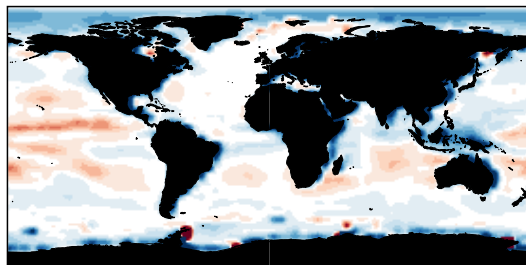
New Model Version: Ocean Particulate MassOld Model Version: Ocean Particulate Mass



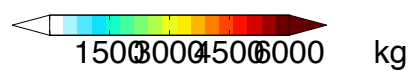
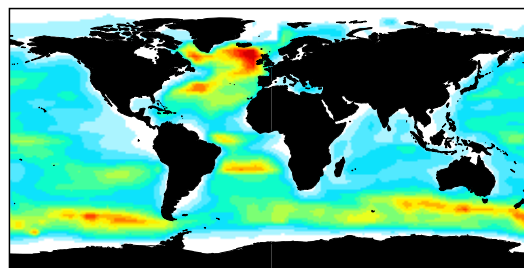
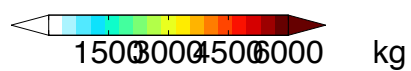
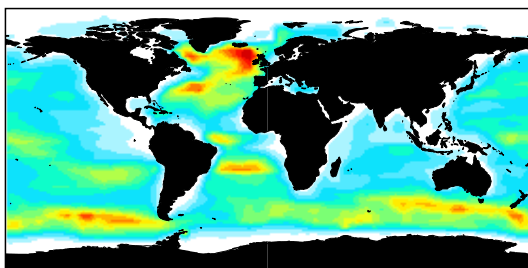
Absolute Difference



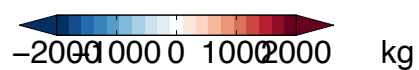
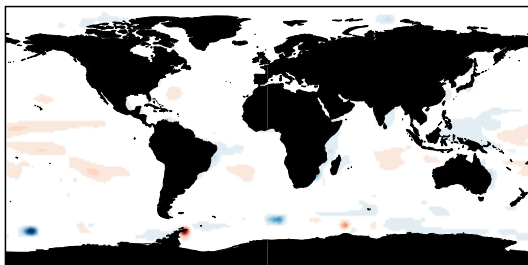
Percent Difference



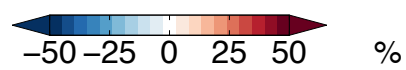
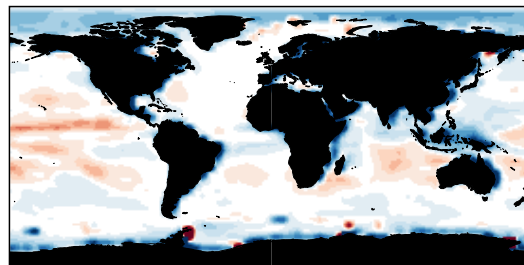
New Model Version: Ocean Total Inorganic Hg Mass Old Model Version: Ocean Total Inorganic Hg Mass



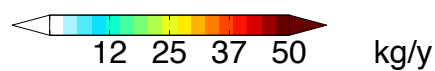
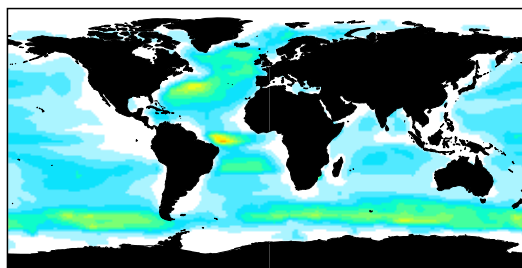
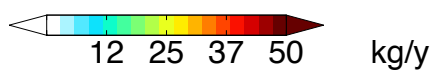
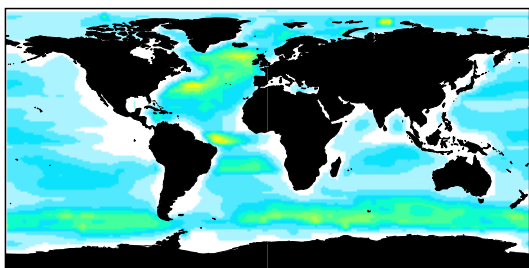
Absolute Difference



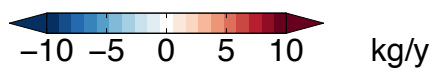
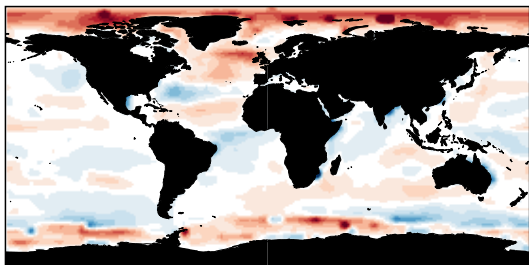
Percent Difference



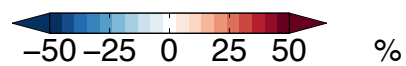
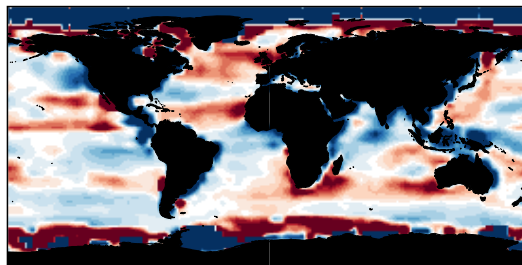
New Model Version: Gross Ocean Evasion Old Model Version: Gross Ocean Evasion



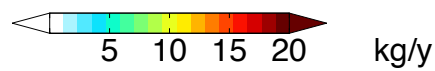
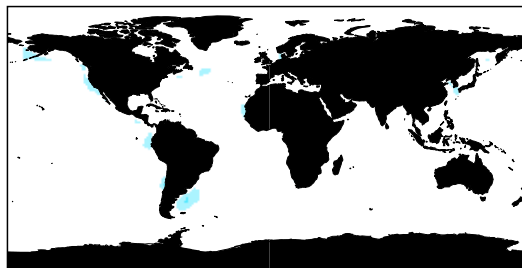
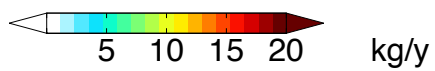
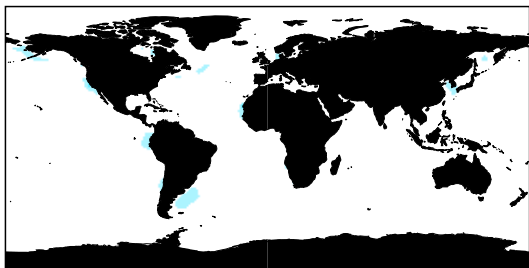
Absolute Difference



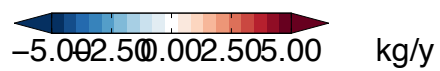
Percent Difference



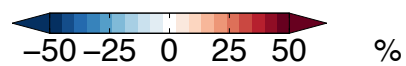
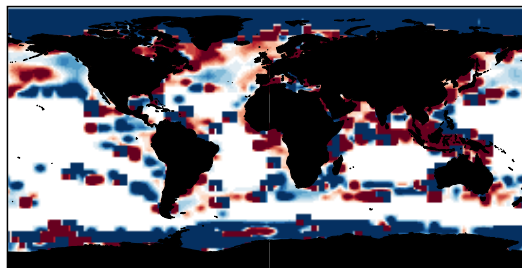
New Model Version: Gross Ocean Hg(0) Uptake ~~Old~~ Model Version: Gross Ocean Hg(0) Uptake



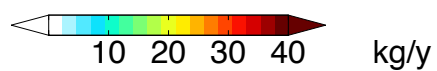
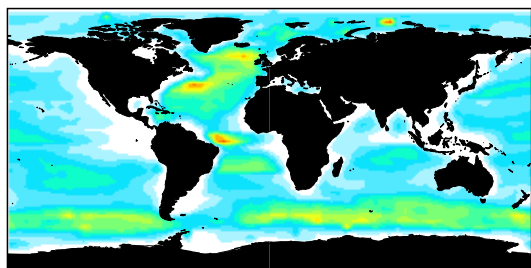
Absolute Difference



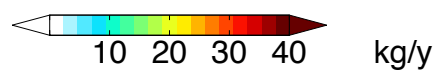
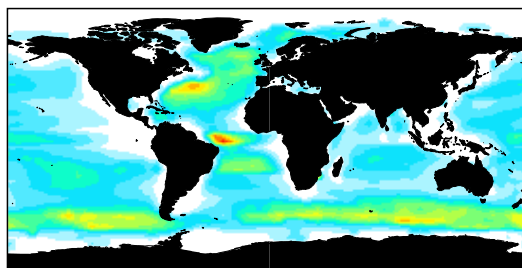
Percent Difference



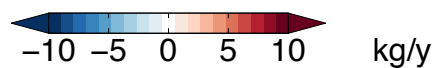
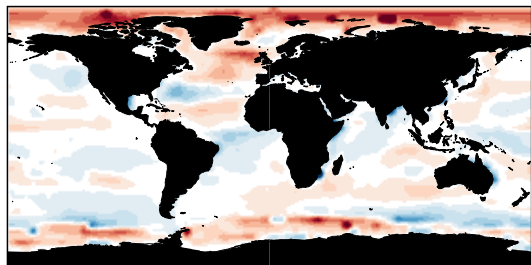
New Model Version: Net Ocean Evasion



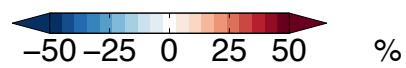
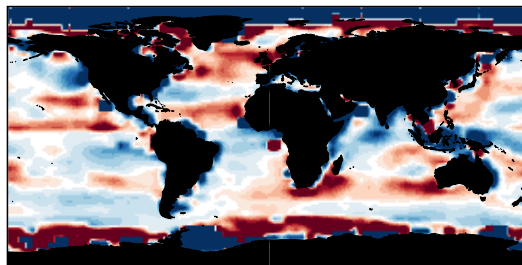
Old Model Version: Net Ocean Evasion



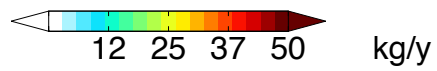
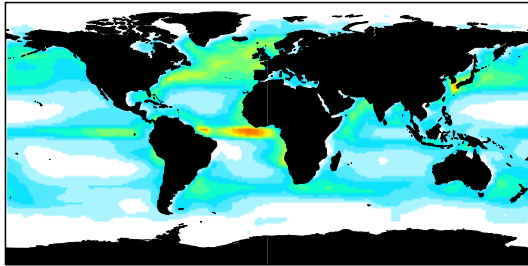
Absolute Difference



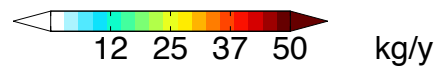
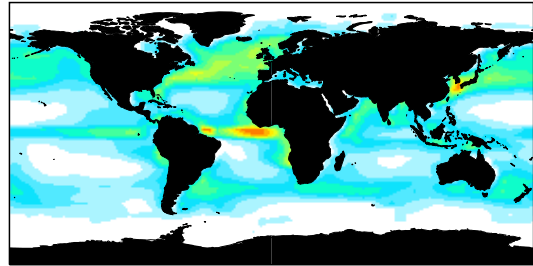
Percent Difference



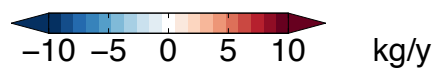
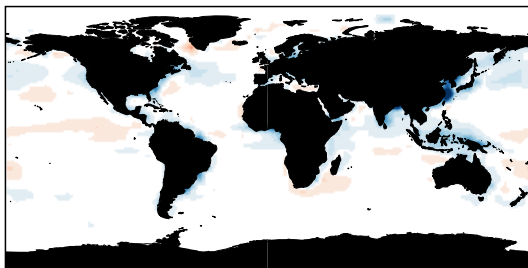
New Model Version: Ocean Hg Sinking



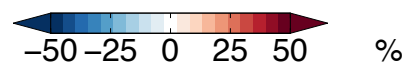
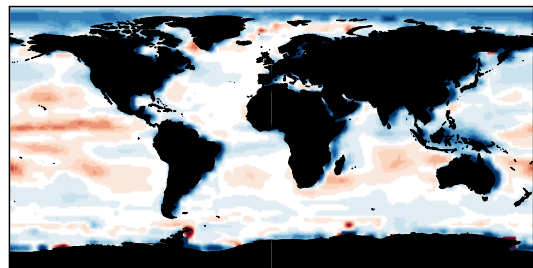
Old Model Version: Ocean Hg Sinking



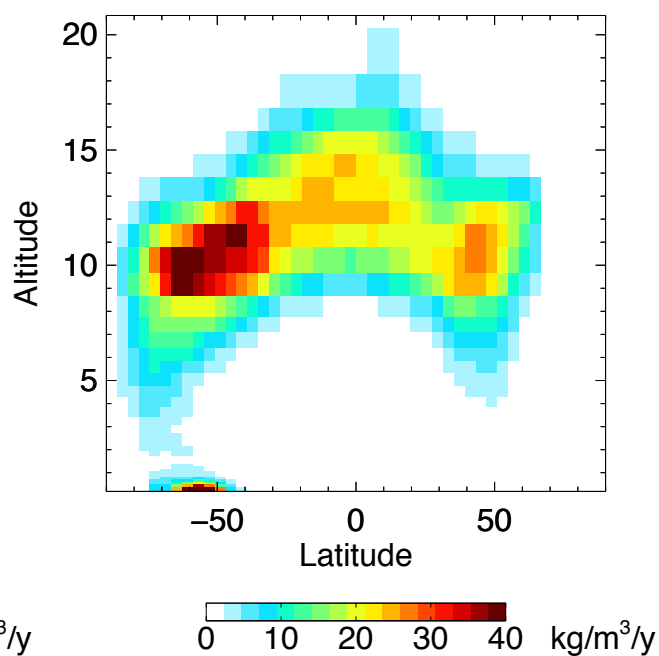
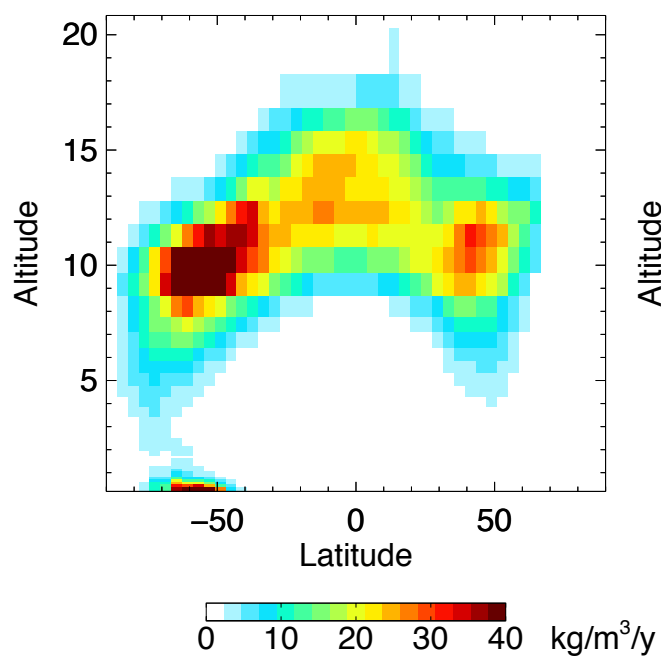
Absolute Difference



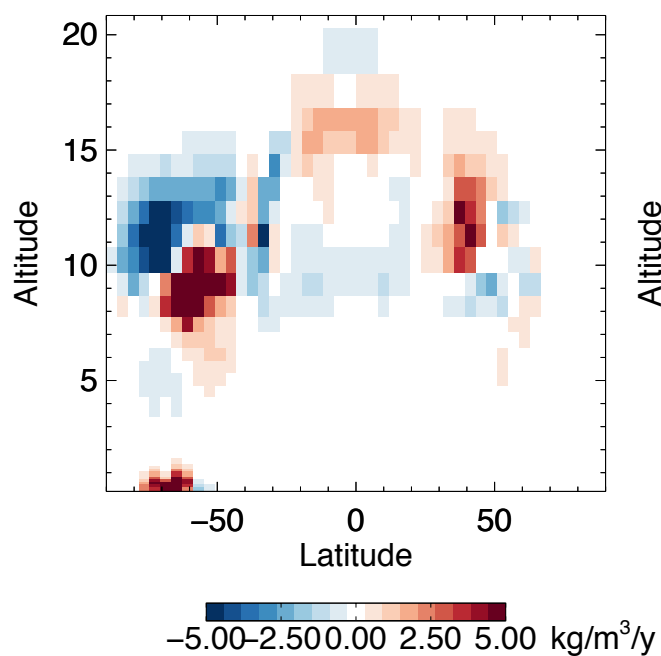
Percent Difference



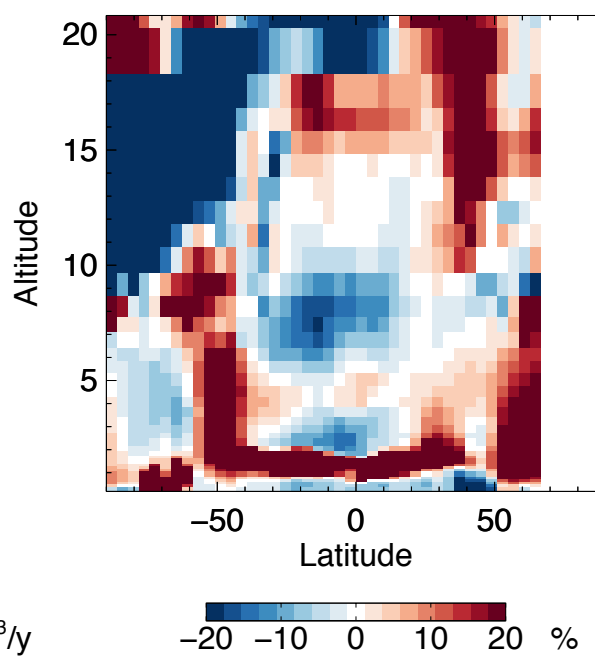
New Model Version: Zonal Gross Ox by Br Old Model Version: Zonal Gross Ox by Br



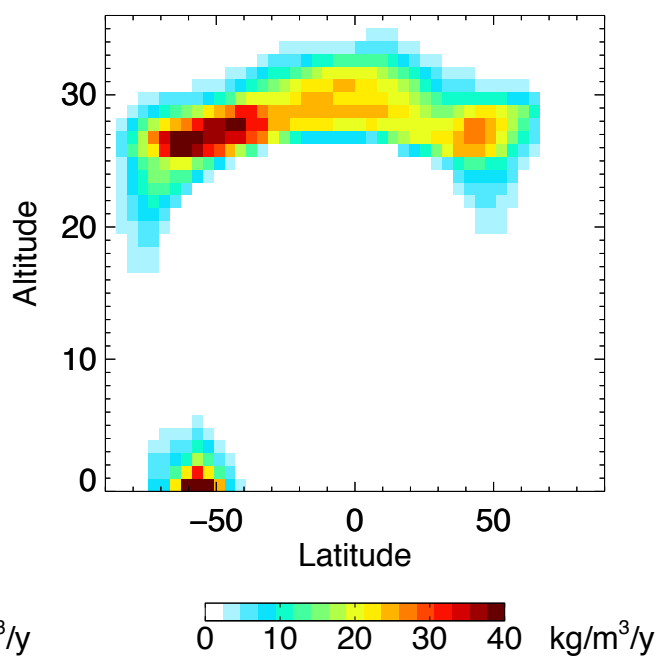
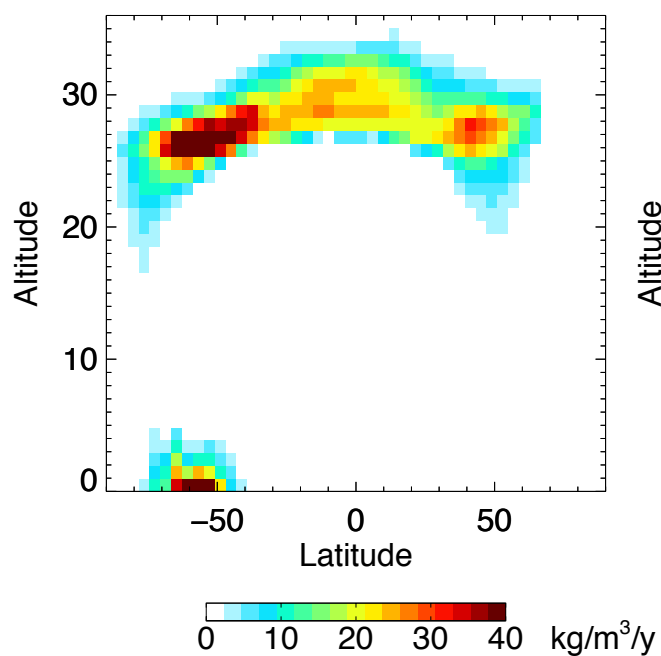
Absolute Difference



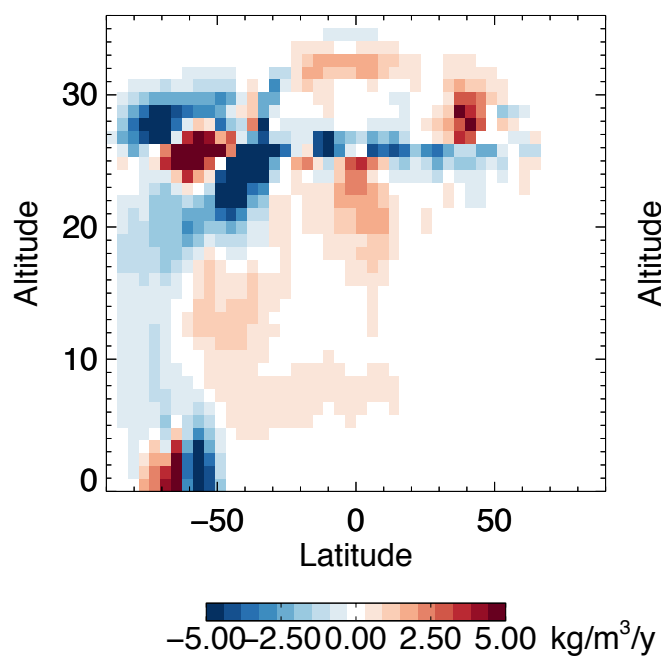
Percent Difference



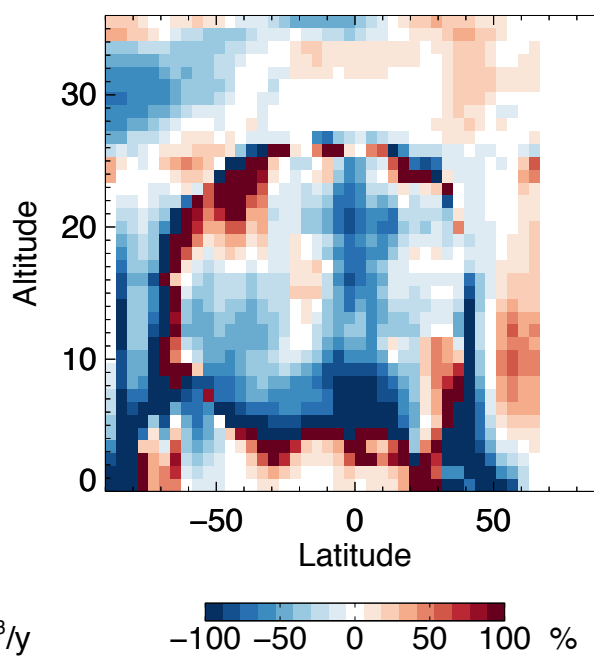
New Model Version: Zonal Net Oxidation Old Model Version: Zonal Net Oxidation



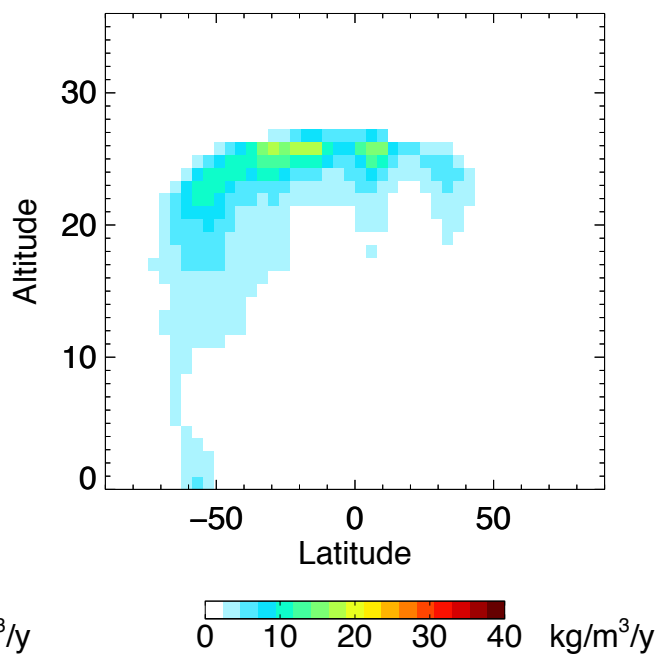
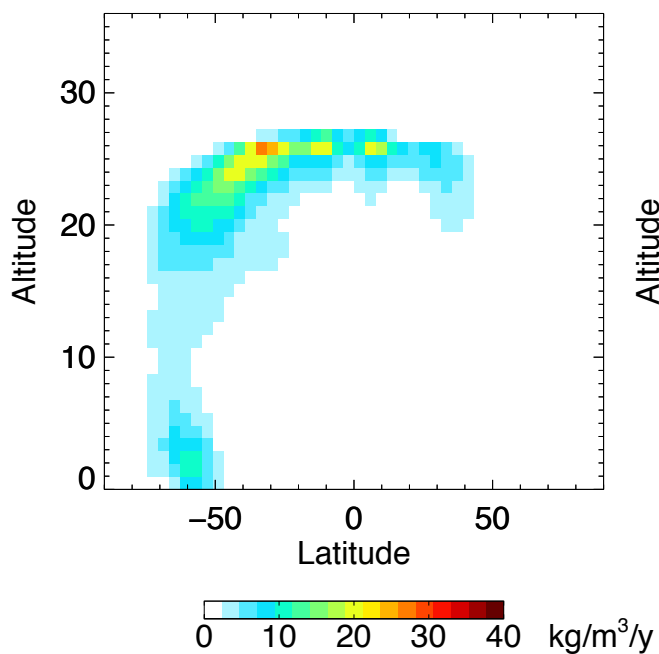
Absolute Difference



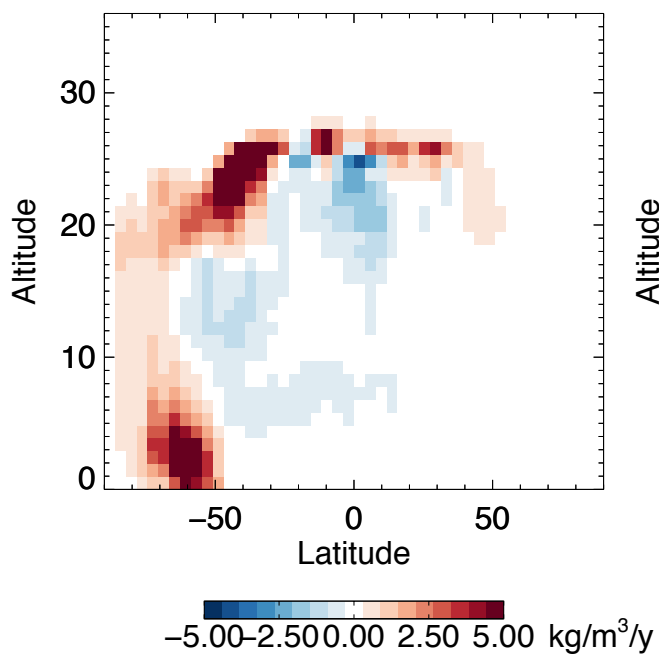
Percent Difference



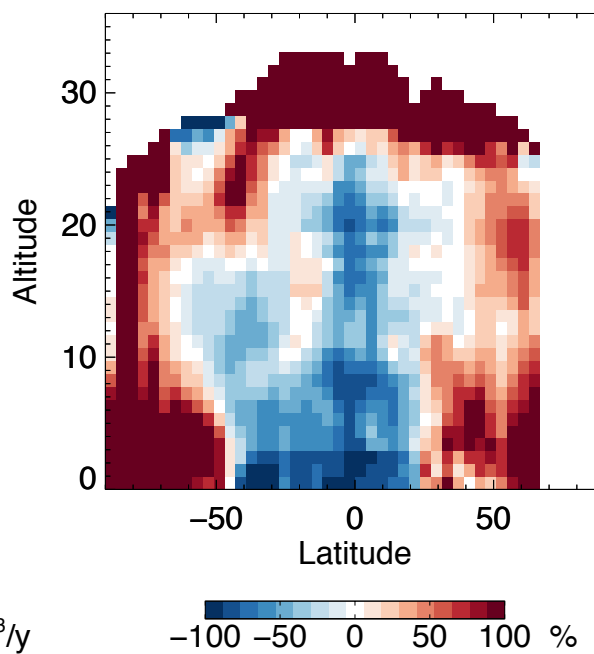
New Model Version: Zonal Gross Reduction Old Model Version: Zonal Gross Reduction



Absolute Difference



Percent Difference



OLD MODEL VERSION **NEW MODEL VERSION**

TROPOSPHERIC MASS		DEPOSITION	
Hg ⁰ :	3984	3973 Mg	Hg ⁰ dd: 1331 1221 Mg/y
Hg ² :	344	261 Mg	Hg ² dd: 714 562 Mg/y
Hg ^P :	204	147 Mg	Hg ^P dd: 28 22 Mg/y
			Hg ² wd: 2471 2868 Mg/y
SURFACE OCEAN MASS		Hg ^P wd: 267 375 Mg/y	
Hg ⁰ :	232	230 Mg	Hg ⁰ oc uptake: 56 61 Mg/y
Hg ² :	2529	2486 Mg	Hg ² seasalt: 1015 756 Mg/y
Hg ^P :	181	169 Mg	TOTAL DEPOSITION: 5885 5869 Mg/y
EMISSIONS		REDOX	
Hg ⁰ anthro:	1558	1558 Mg/y	Gross Ox by Br: 5970 6306 Mg/y
Hg ² anthro:	229	229 Mg/y	Gross Reduction: 1557 1896 Mg/y
Hg ^P anthro:		Mg/y	Net Oxidation 4412 4409 Mg/y
Hg ⁰ geo:	250	250 Mg/y	
Hg ⁰ soil:	892	869 Mg/y	
Hg ⁰ bb:	239	202 Mg/y	
Hg ⁰ land re:	207	216 Mg/y	
Hg ⁰ snow:	189	192 Mg/y	
Hg ⁰ oc evasion:	2602	2578 Mg/y	
TOTAL EMISSIONS:		6169	6097 Mg/y