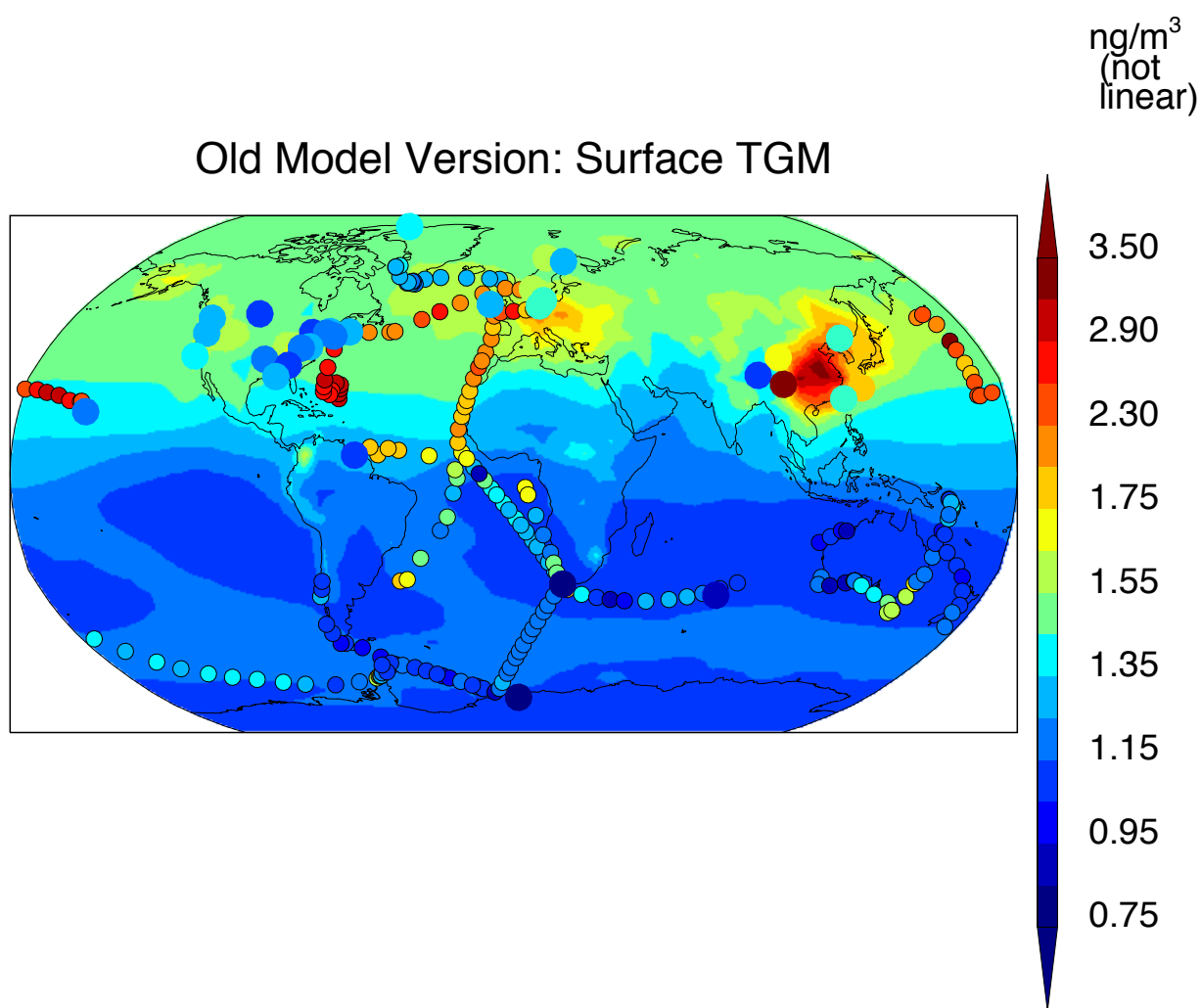


Terrestrial $R^2 = 0.50$

Mean Obs. = 1.48 ± 0.30 ng/m³

Mean Mod. = 1.47 ± 0.14 ng/m³

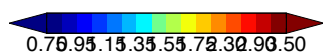
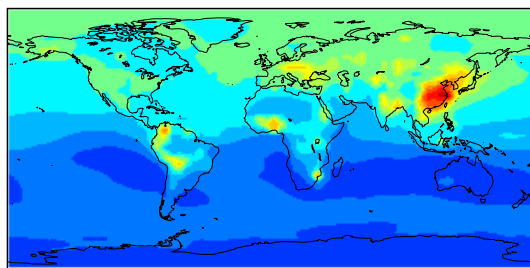


Terrestrial $R^2 = 0.30$

Mean Obs. = 1.48 ± 0.30 ng/m³

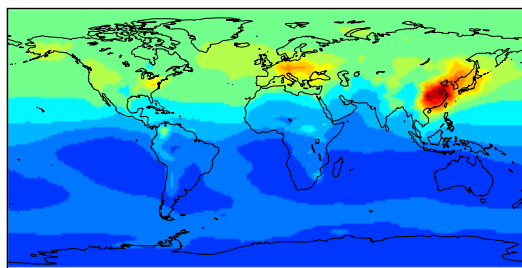
Mean Mod. = 1.54 ± 0.19 ng/m³

New Model Version: Surface TGM



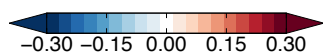
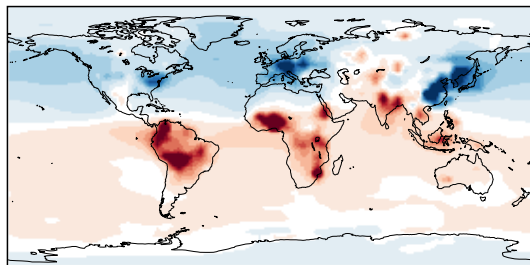
ng/m³
Not Linear

Reference Model Version: Surface TGM



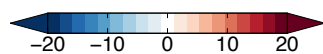
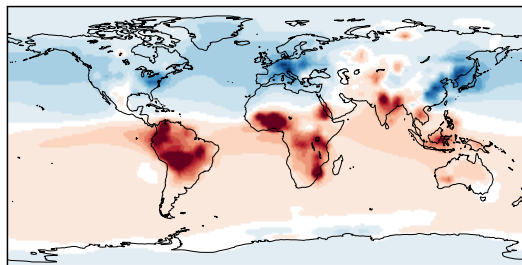
ng/m³
Not Linear

Absolute Difference



ng/m³

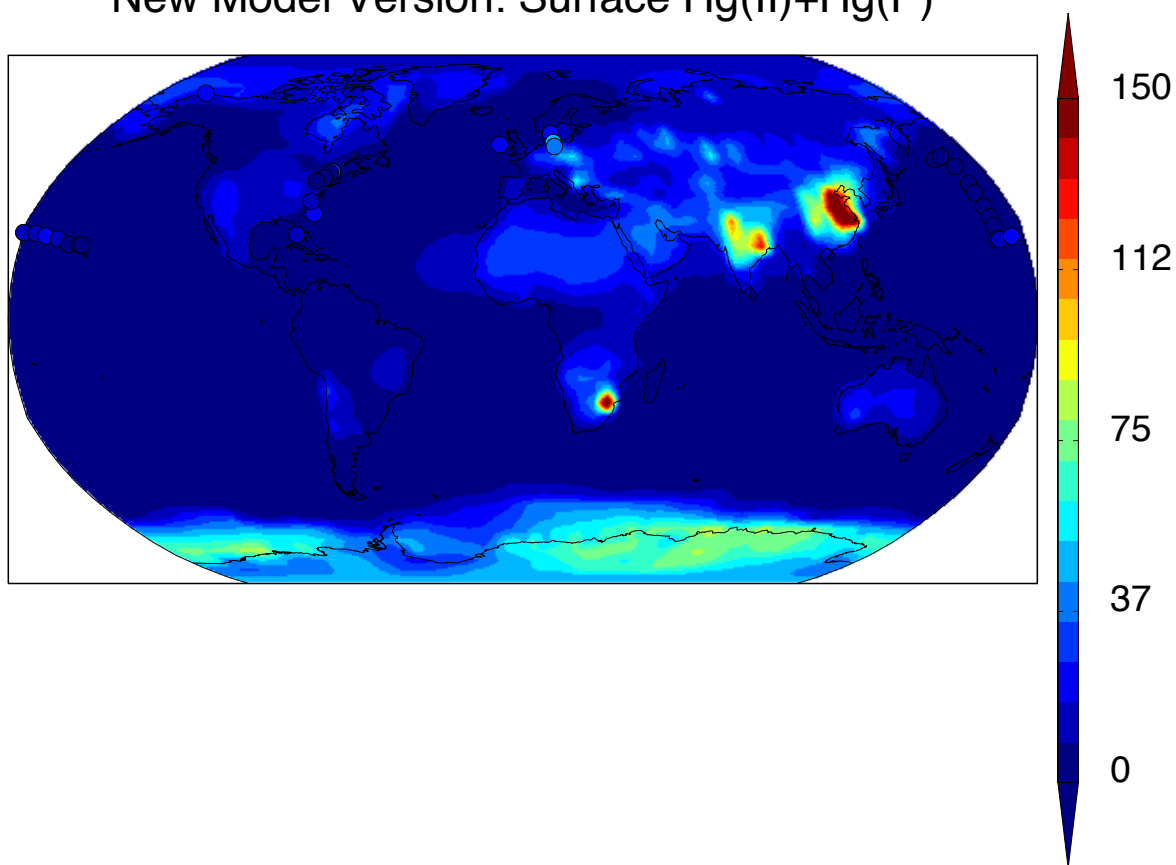
Percent Difference



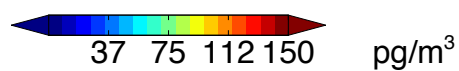
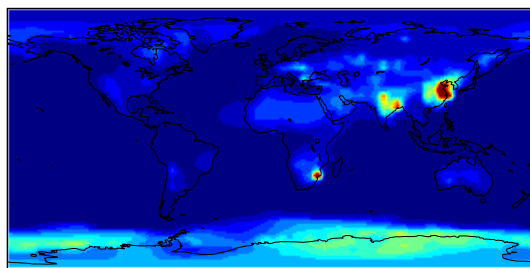
%

pg/m³

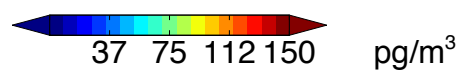
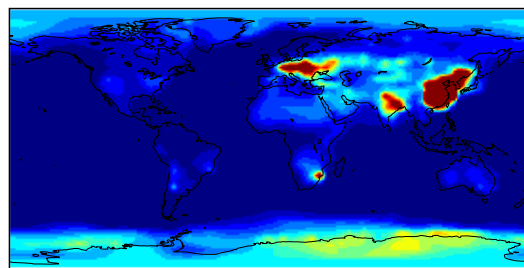
New Model Version: Surface Hg(II)+Hg(P)



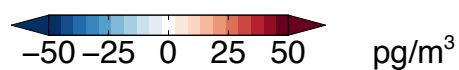
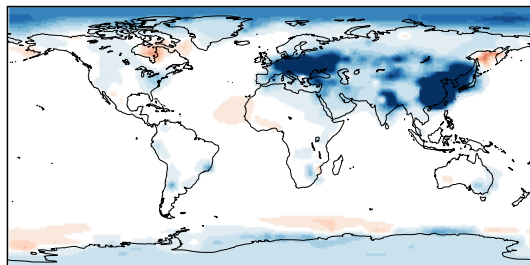
New Model Version: Surface Hg(II)+Hg(P)



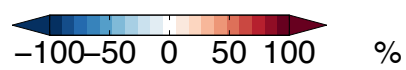
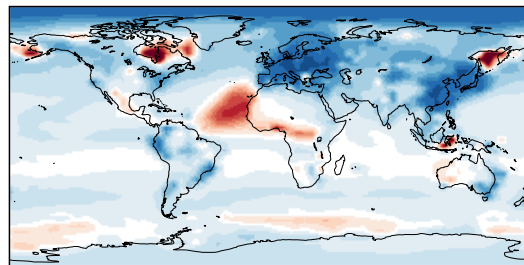
Old Model Version: Surface Hg(II)+Hg(P)



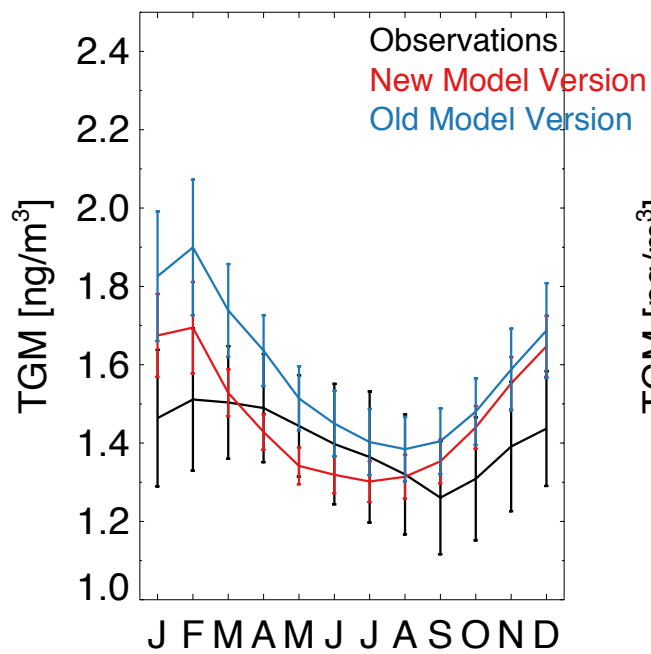
Absolute Difference



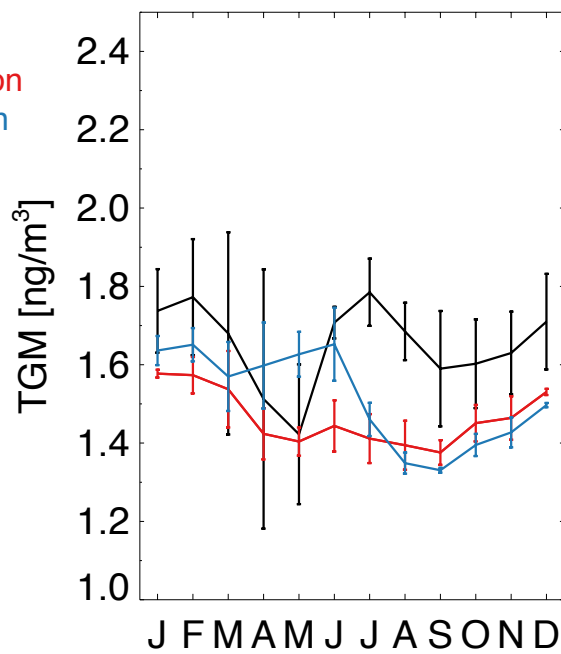
Percent Difference



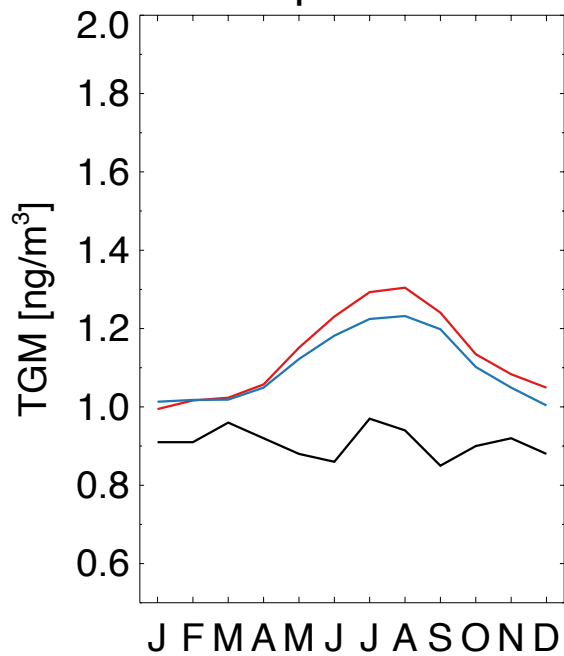
Mid-latitudes



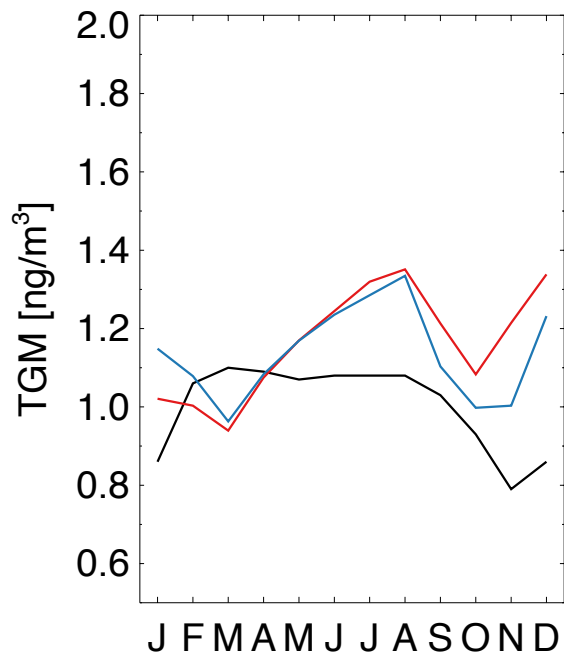
Arctic

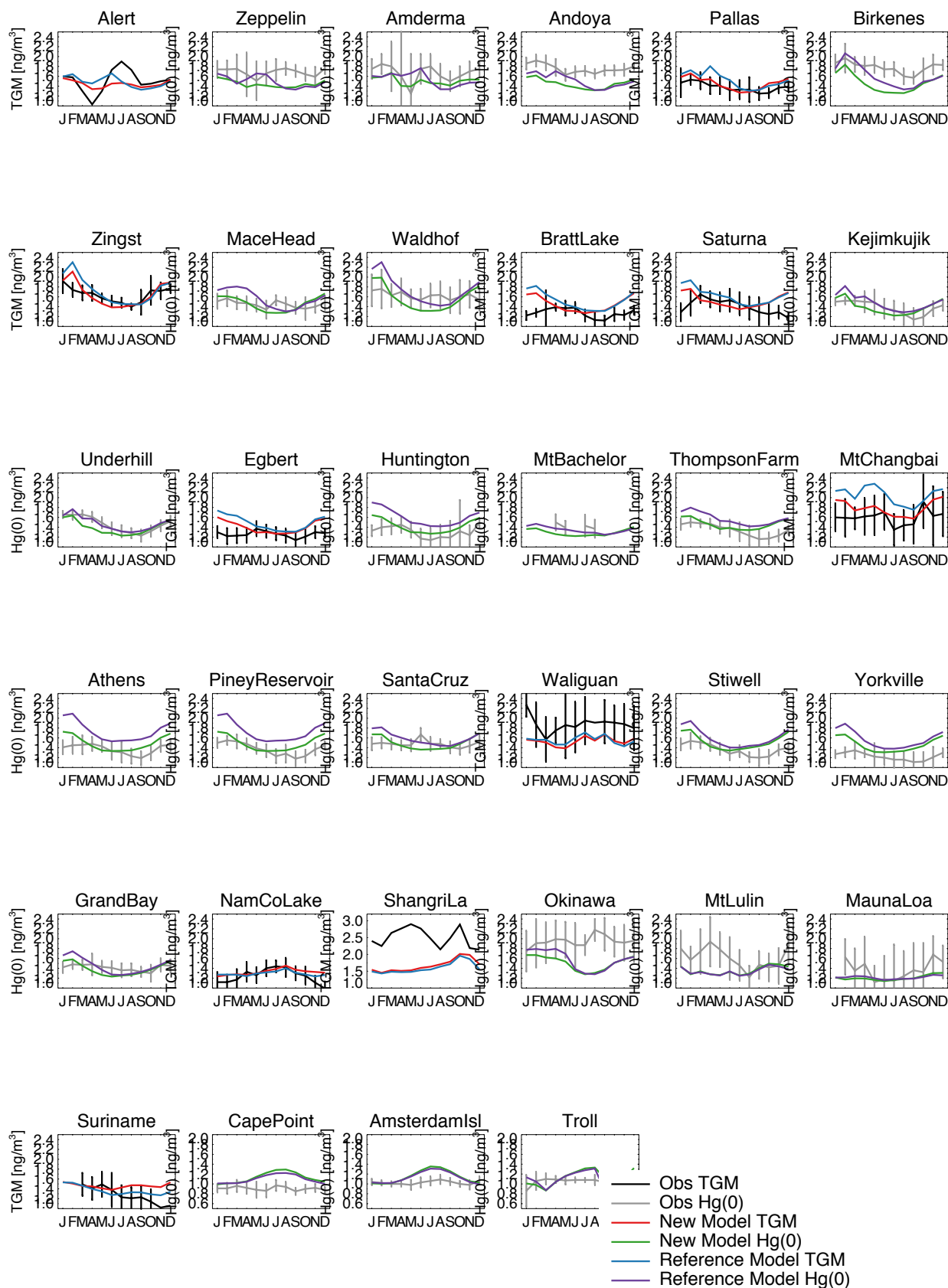


Cape Point

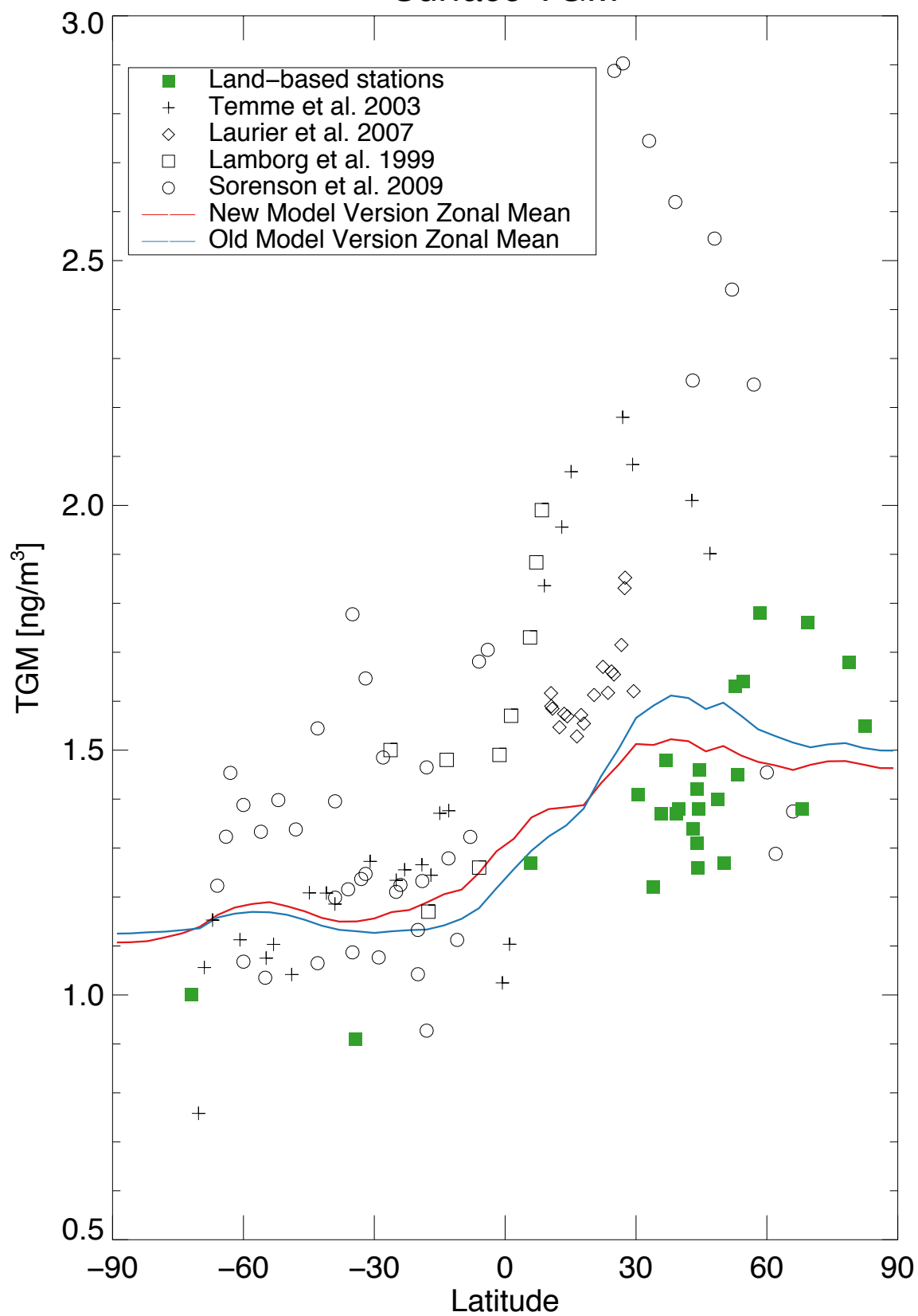


Troll Research Station



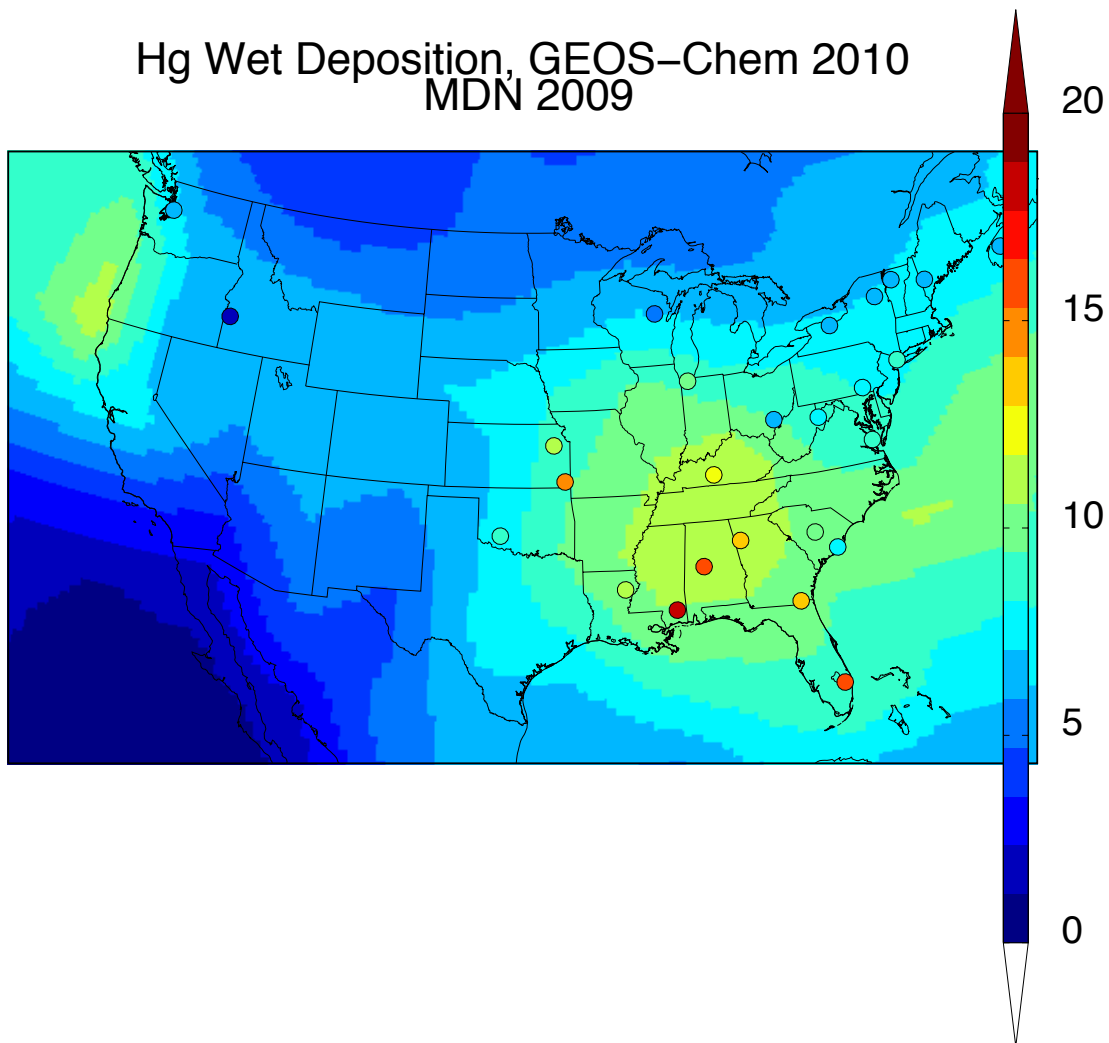


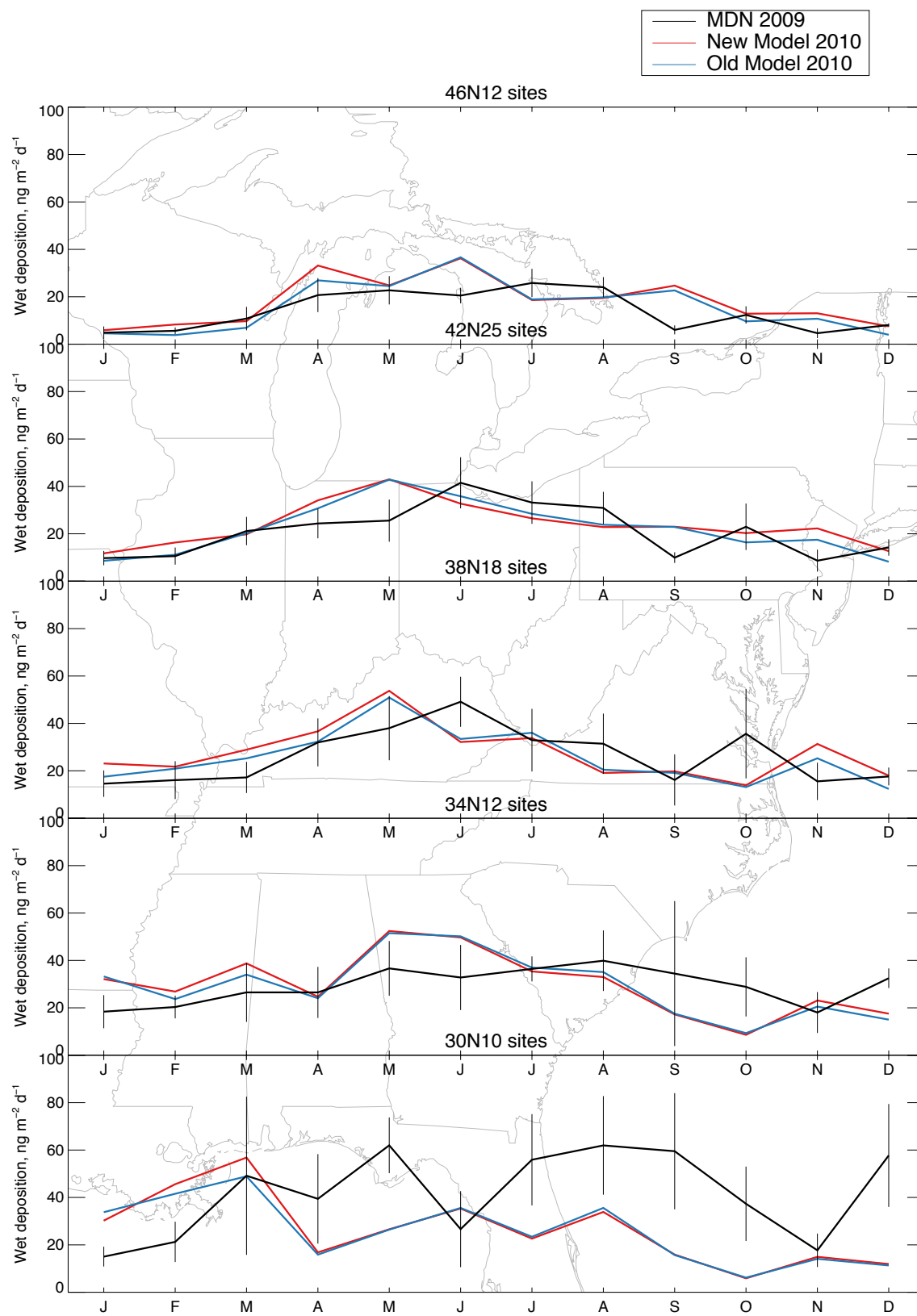
Surface TGM



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

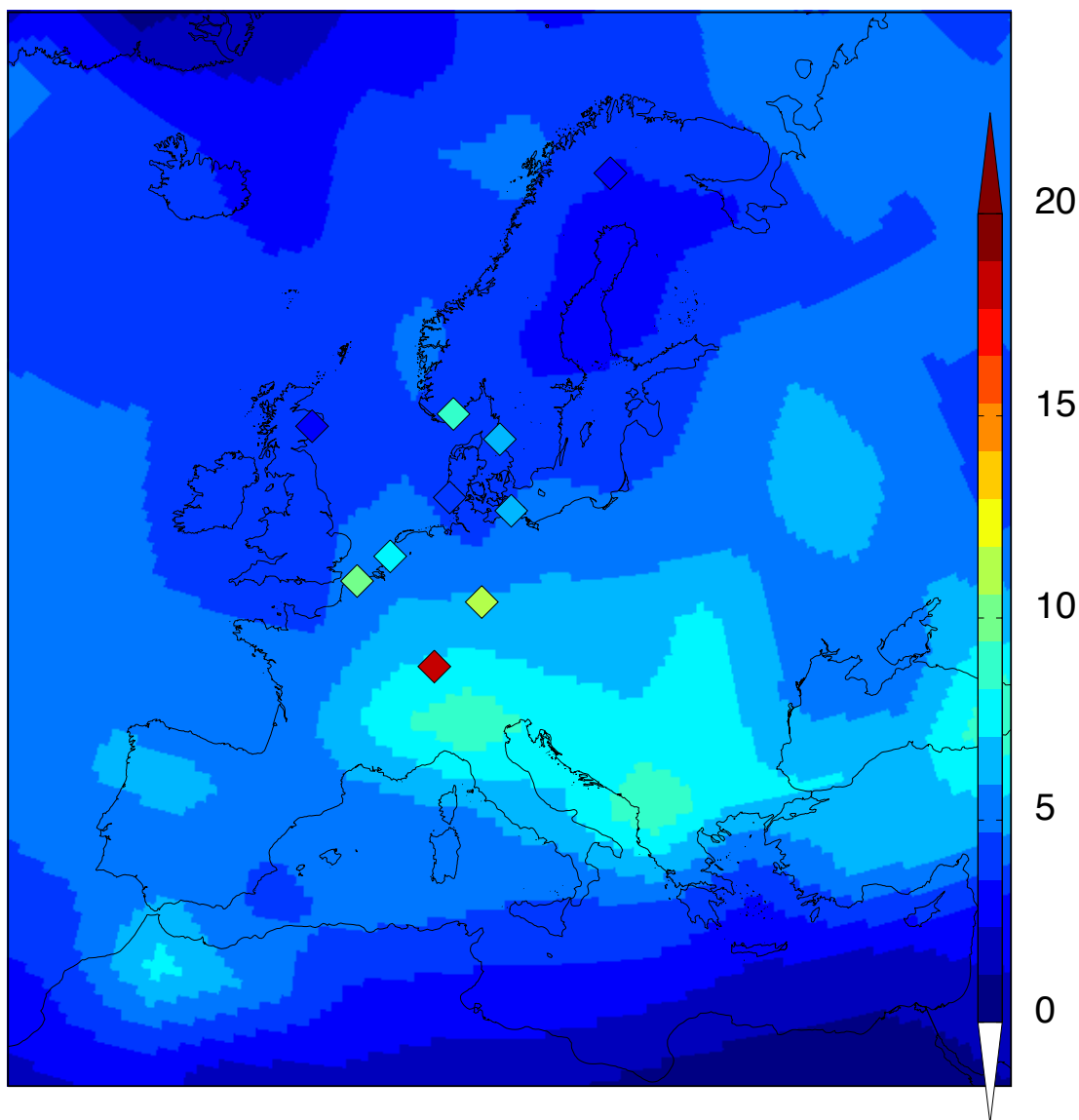
Hg Wet Deposition, GEOS-Chem 2010
MDN 2009



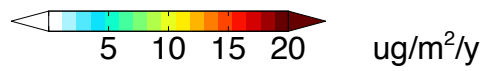
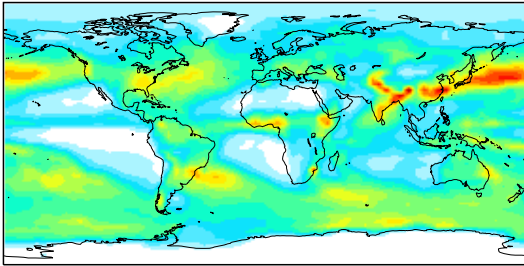


Hg Wet Deposition, GEOS-Chem 2010
EMEP 2007

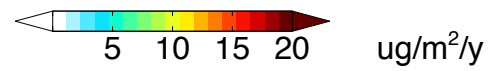
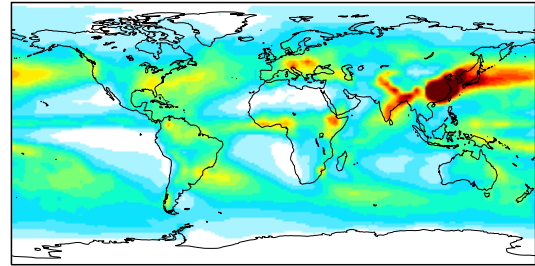
$\mu\text{g m}^{-2} \text{y}^{-1}$



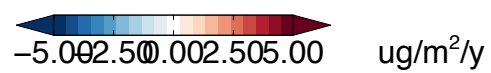
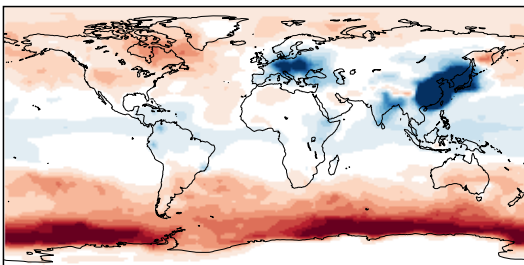
New Model Version: Total Wet Dep



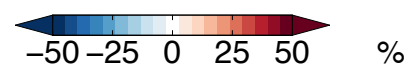
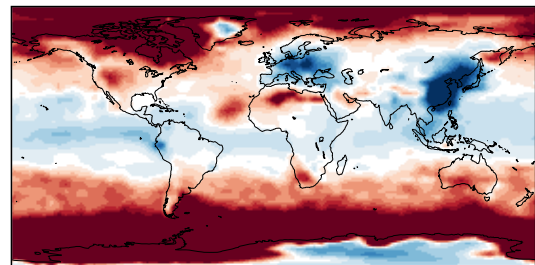
Old Model Version: Total Wet Dep



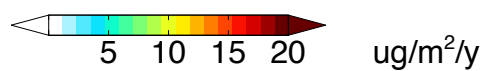
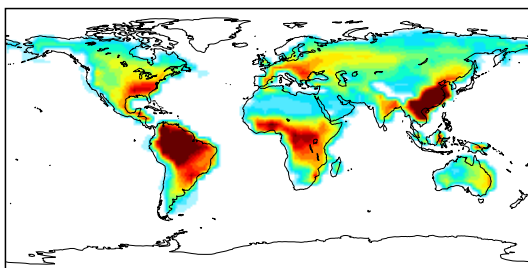
Absolute Difference



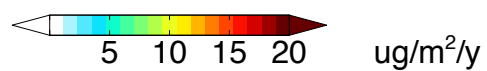
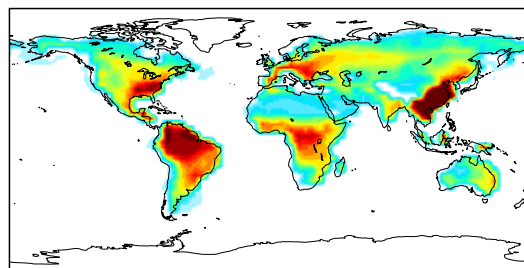
Percent Difference



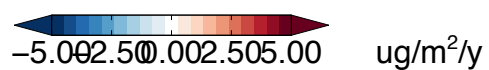
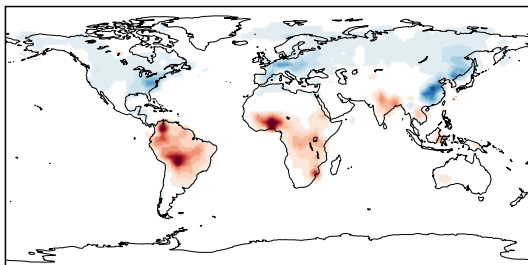
New Model Version: Hg(0) Dry Dep



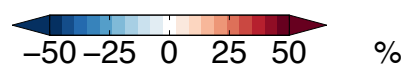
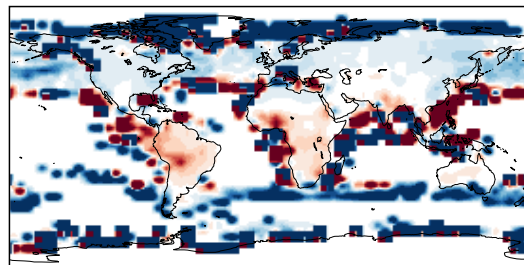
Old Model Version: Hg(0) Dry Dep



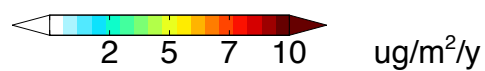
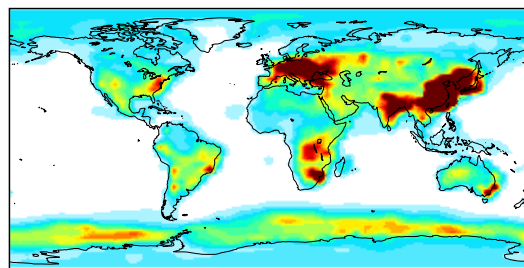
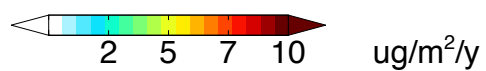
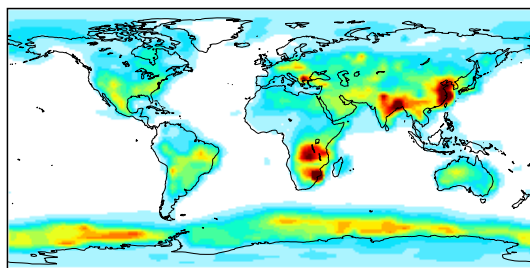
Absolute Difference



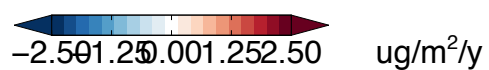
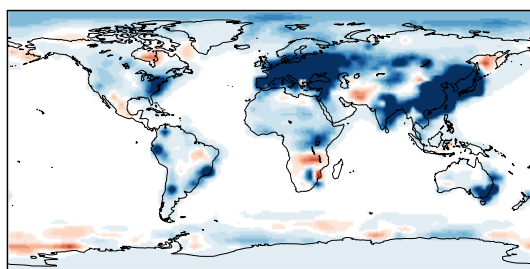
Percent Difference



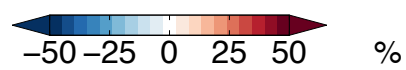
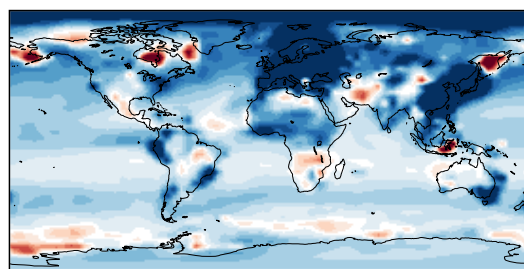
New Model Version: Hg(II)+Hg(P) Dry Dep Old Model Version: Hg(II)+Hg(P) Dry Dep



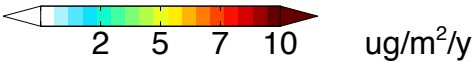
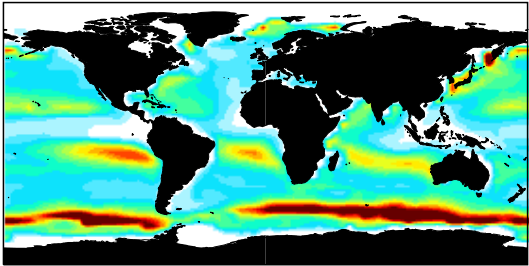
Absolute Difference



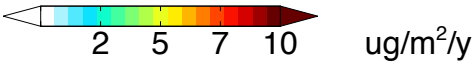
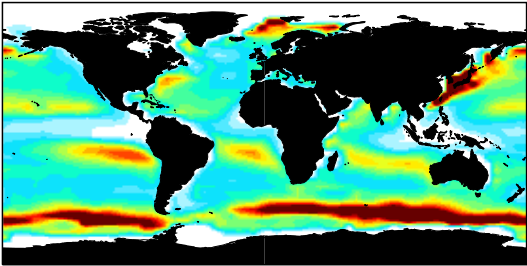
Percent Difference



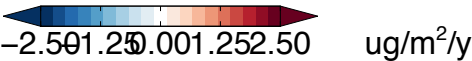
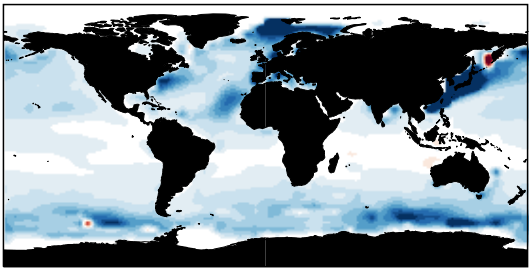
New Model Version: Sea Salt Uptake



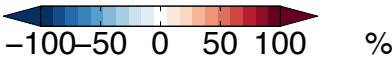
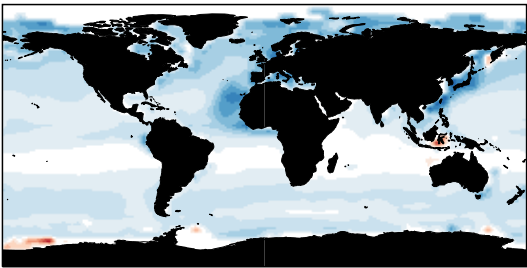
Old Model Version: Sea Salt Uptake



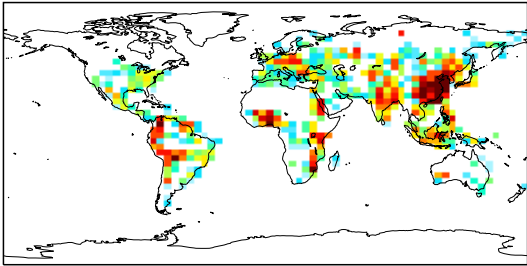
Absolute Difference



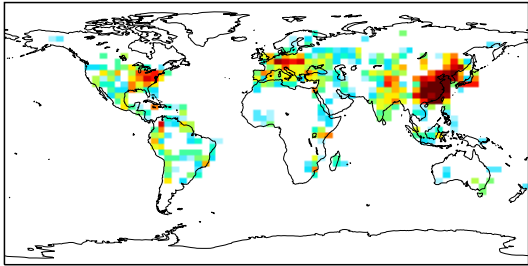
Percent Difference



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

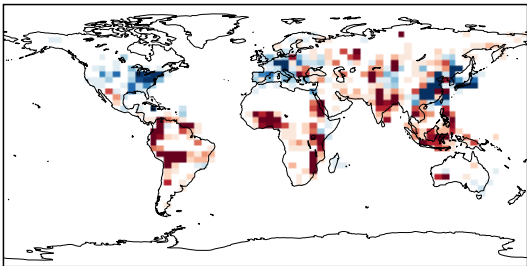


1.E-02 -0E+00 +0E+02 kg/y



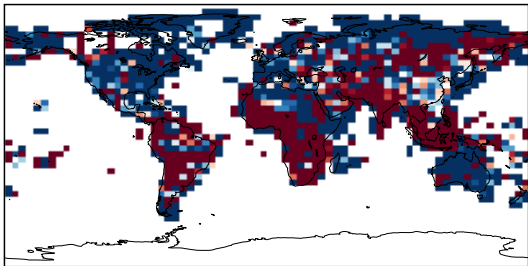
1.E-02 -0E+00 +0E+02 kg/y

Absolute Difference



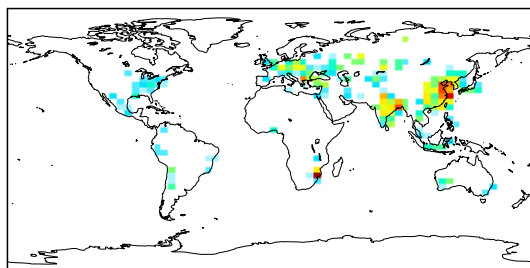
-20 -10 0 10 20 kg/y

Percent Difference

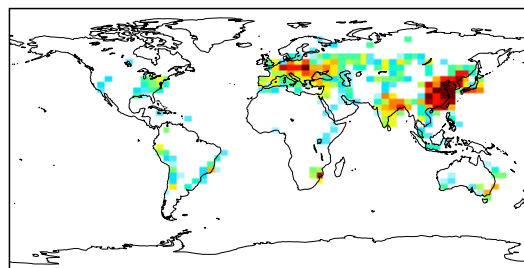


-50 -25 0 25 50 %

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

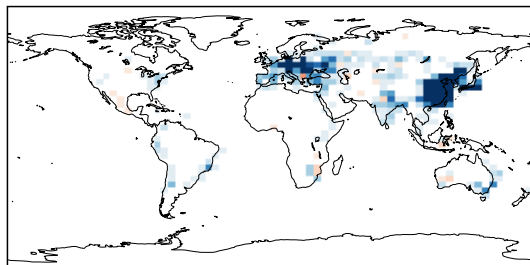


1.E-02 -0E+00 0E+02 kg/y



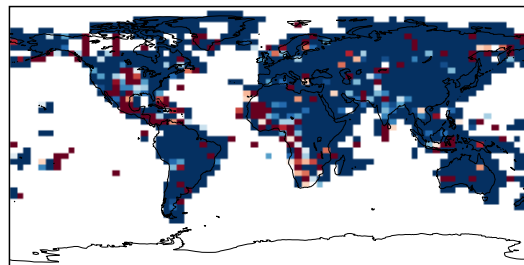
1.E-02 -0E+00 0E+02 kg/y

Absolute Difference



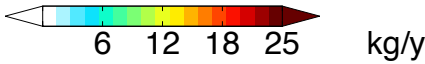
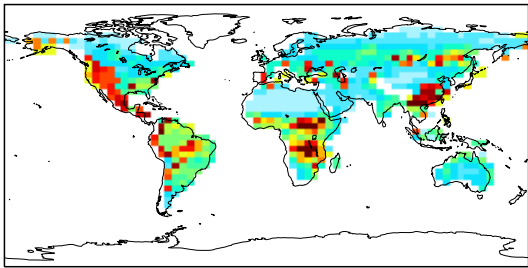
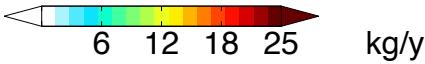
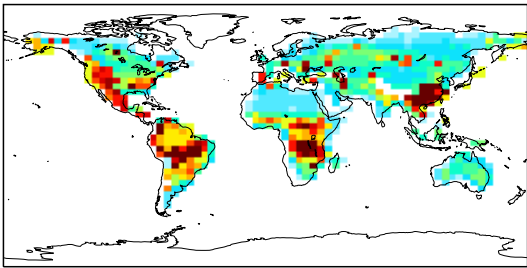
-20 -10 0 10 20 kg/y

Percent Difference

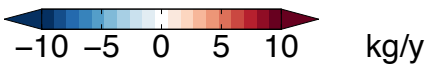
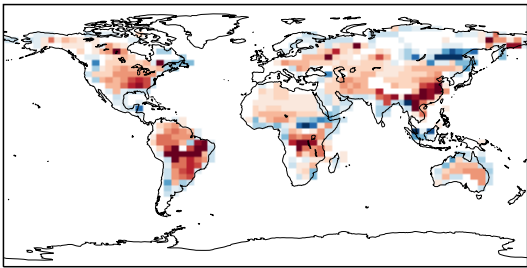


-50 -25 0 25 50 %

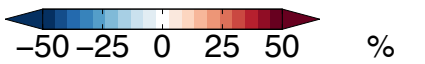
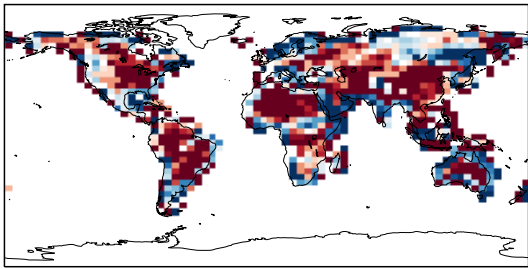
New Model Version: Direct Terrestrial – Geo, BB, & Soil



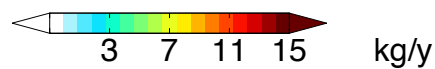
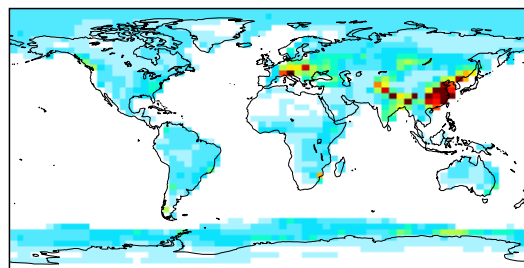
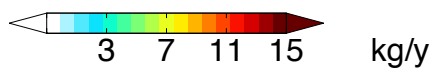
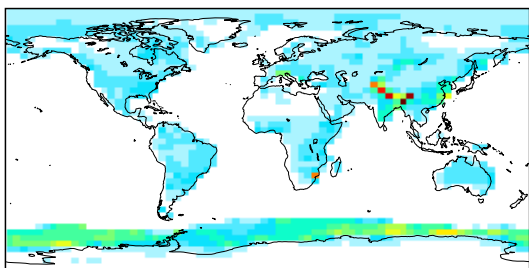
Absolute Difference



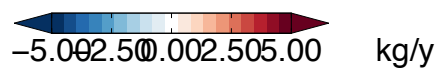
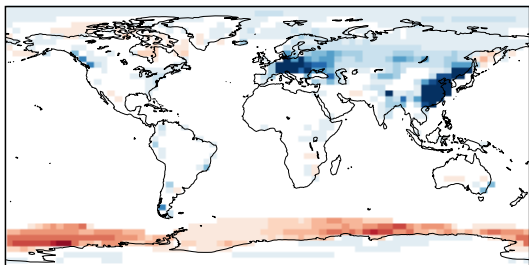
Percent Difference



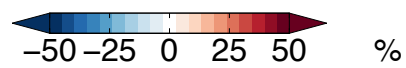
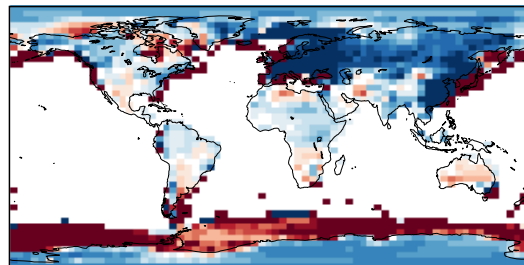
New Model Version: Prompt Reemission – Land & Snow Old Model Version: Prompt Reemission – Land & Snow



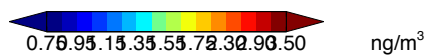
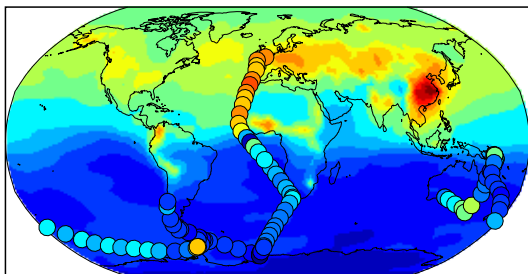
Absolute Difference



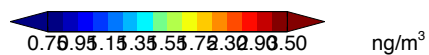
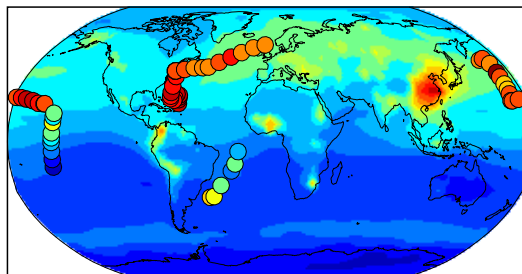
Percent Difference



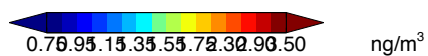
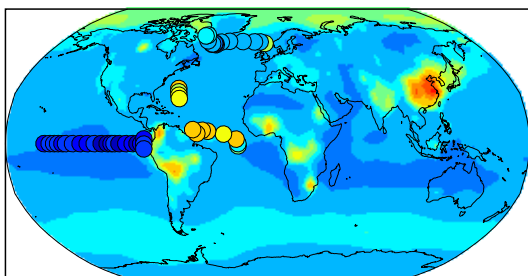
MBL Hg(0) December – February



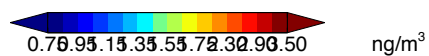
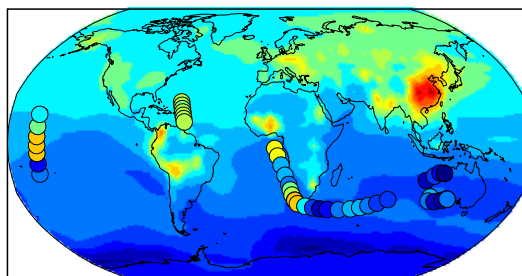
MBL Hg(0) March – May



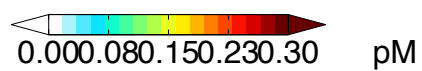
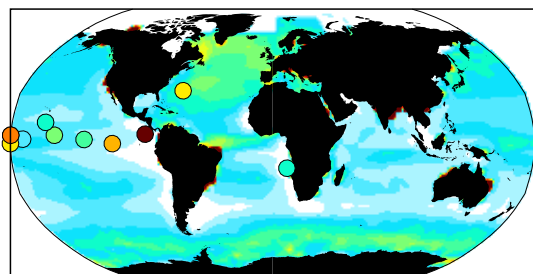
MBL Hg(0) June – August



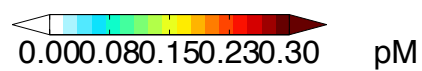
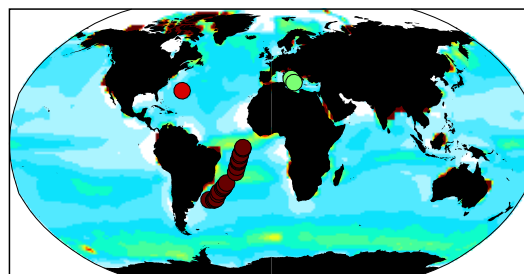
MBL Hg(0) September – November



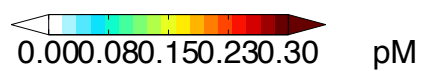
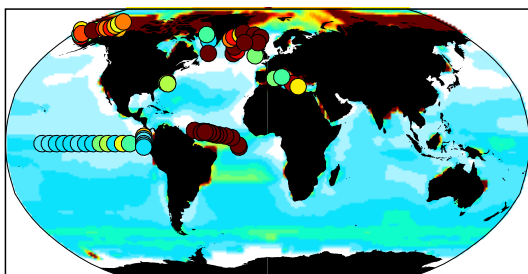
Ocean Hg(0) December – February



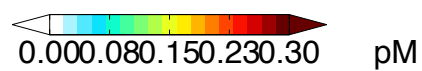
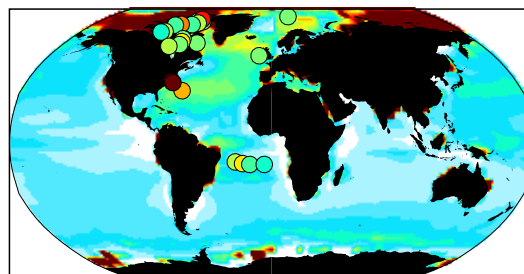
Ocean Hg(0) March – May



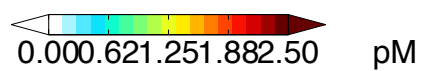
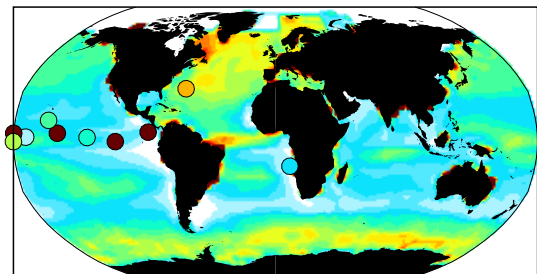
Ocean Hg(0) June – August



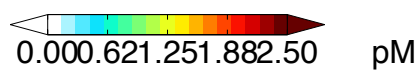
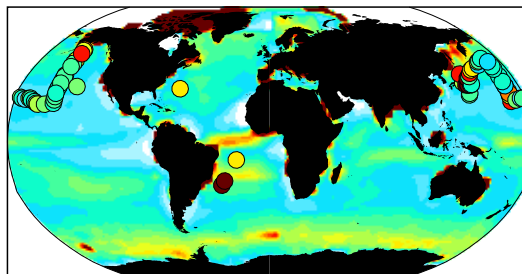
Ocean Hg(0) September – November



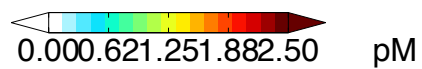
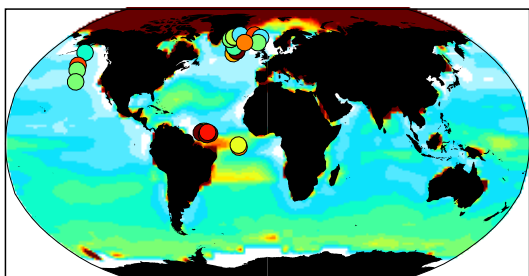
Ocean Total Hg December – February



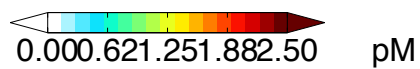
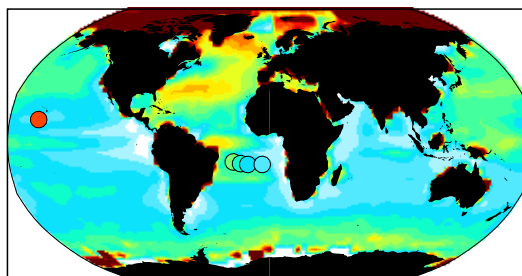
Ocean Total Hg March – May



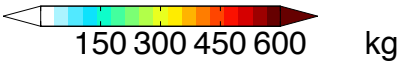
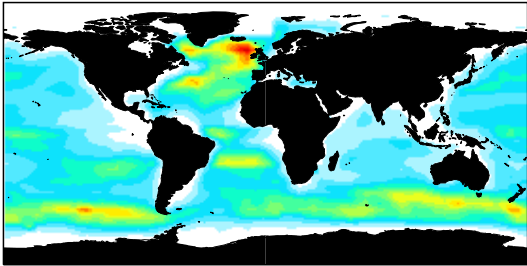
Ocean Total Hg June – August



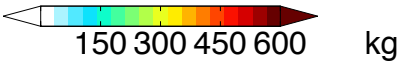
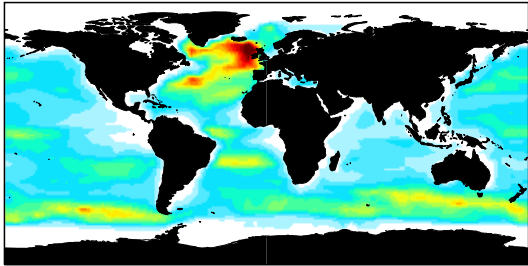
Ocean Total Hg September – November



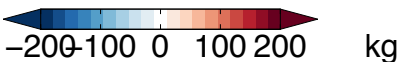
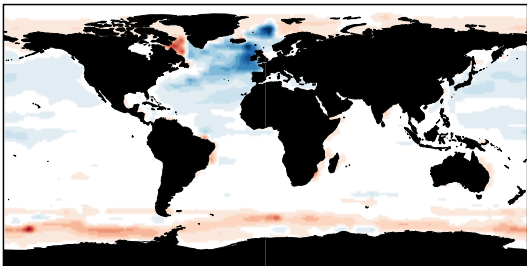
New Model Version: Ocean Hg(0) Mass



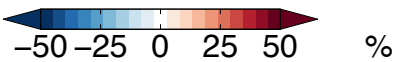
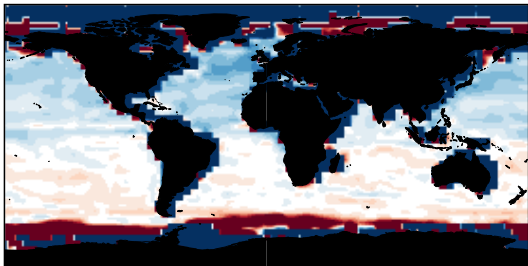
Old Model Version: Ocean Hg(0) Mass



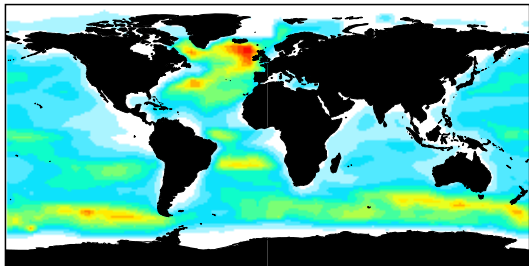
Absolute Difference



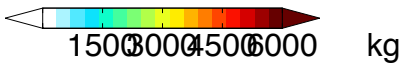
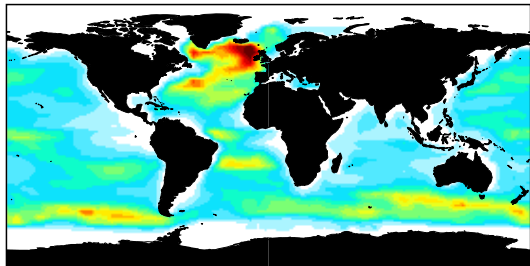
Percent Difference



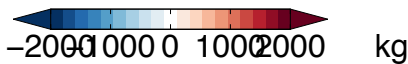
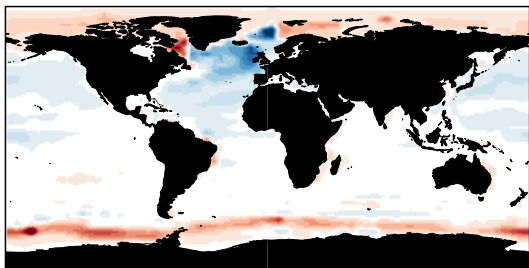
New Model Version: Ocean Hg(II) Mass



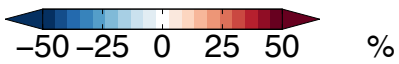
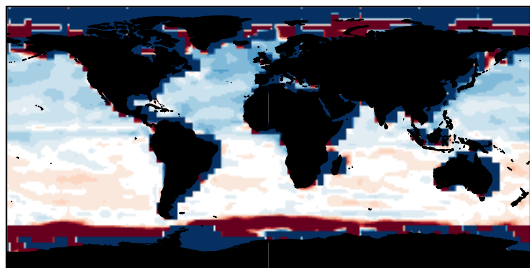
Old Model Version: Ocean Hg(II) Mass



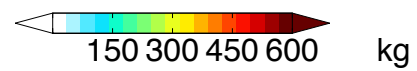
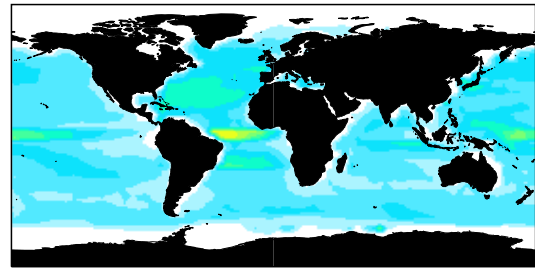
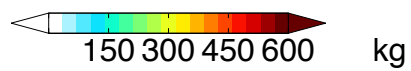
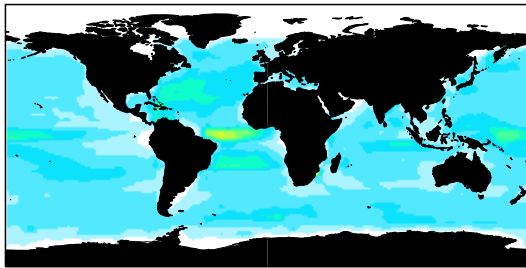
Absolute Difference



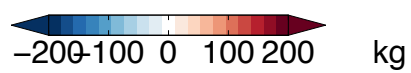
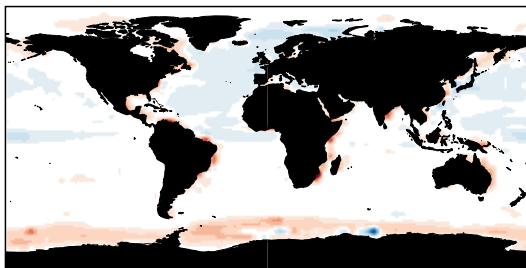
Percent Difference



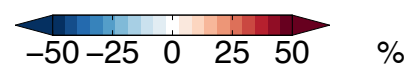
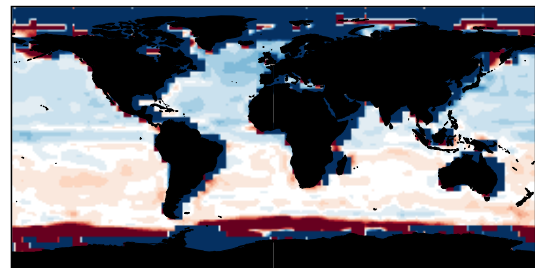
New Model Version: Ocean Particulate MassOld Model Version: Ocean Particulate Mass



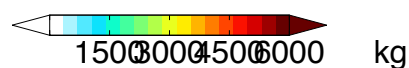
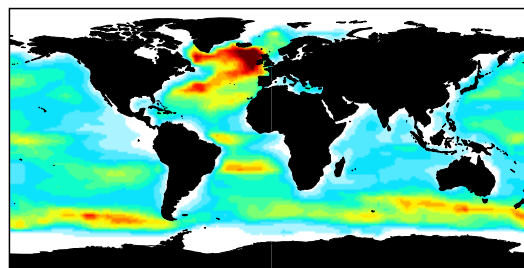
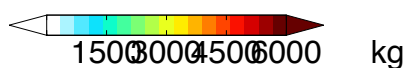
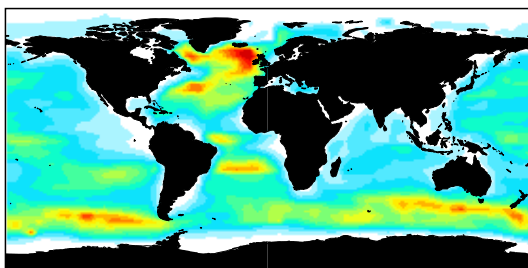
Absolute Difference



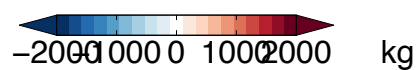
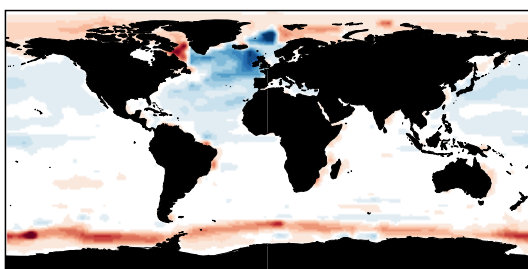
Percent Difference



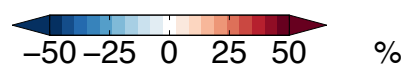
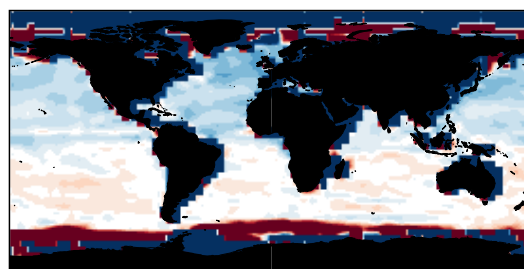
New Model Version: Ocean Total Inorganic Hg Mass Old Model Version: Ocean Total Inorganic Hg Mass



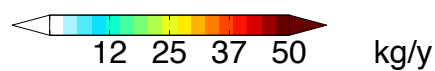
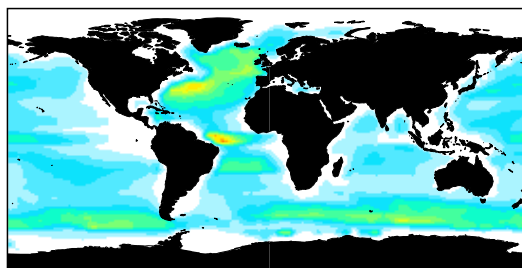
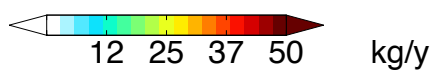
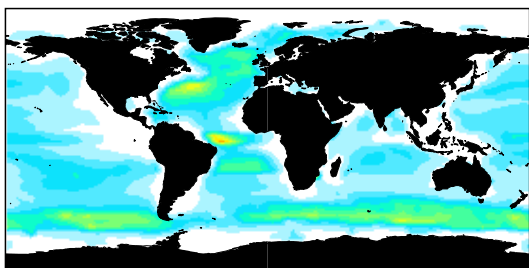
Absolute Difference



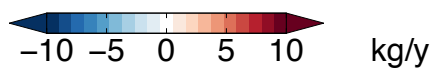
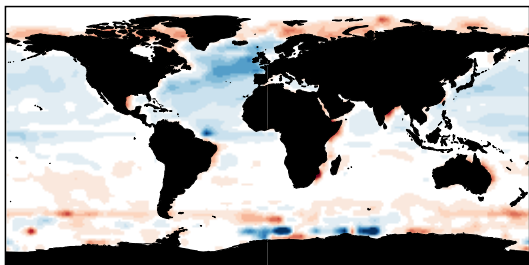
Percent Difference



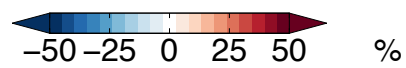
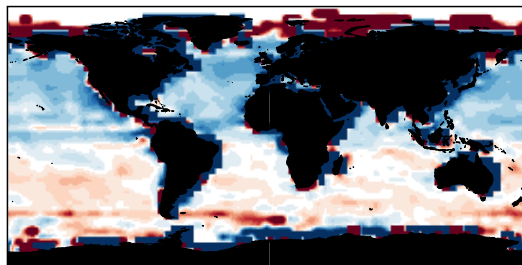
New Model Version: Gross Ocean Evasion Old Model Version: Gross Ocean Evasion



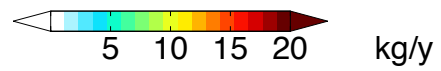
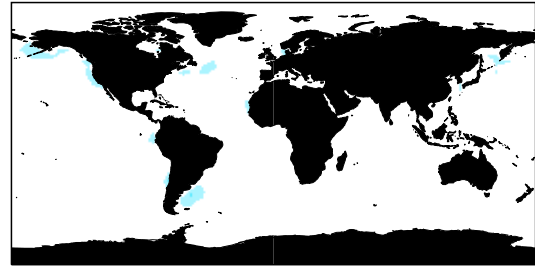
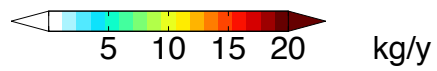
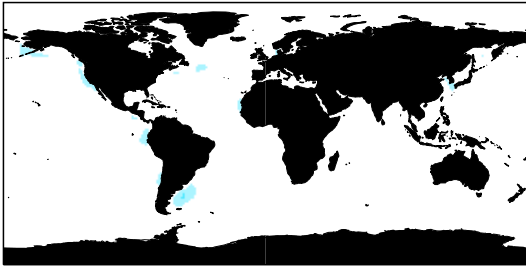
Absolute Difference



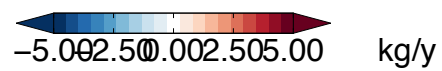
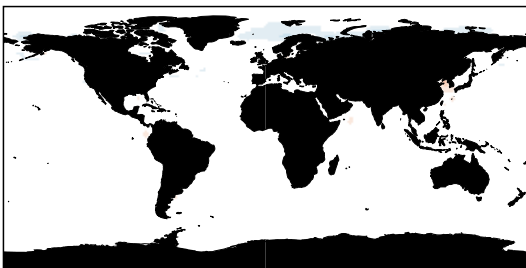
Percent Difference



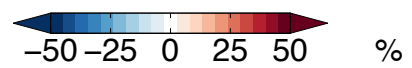
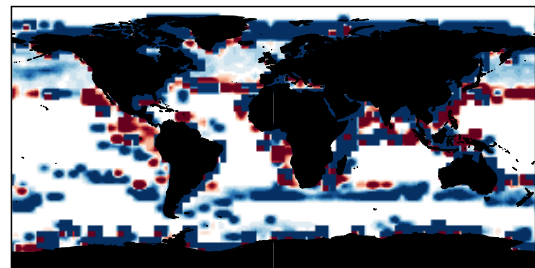
New Model Version: Gross Ocean Hg(0) Uptake ~~Old~~ Model Version: Gross Ocean Hg(0) Uptake



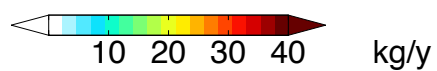
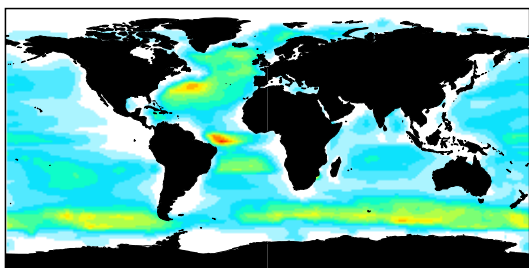
Absolute Difference



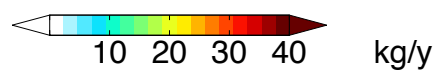
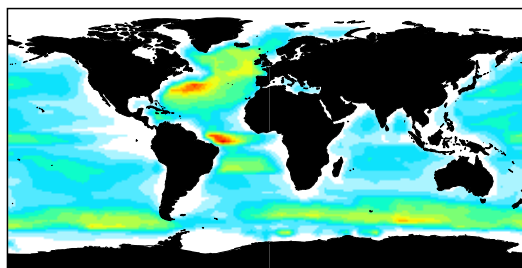
Percent Difference



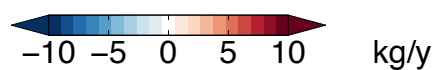
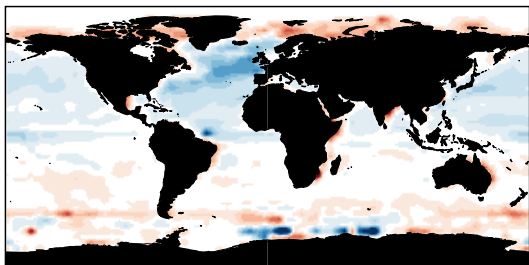
New Model Version: Net Ocean Evasion



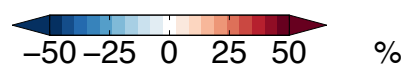
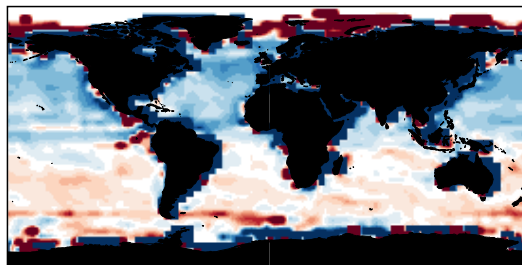
Old Model Version: Net Ocean Evasion



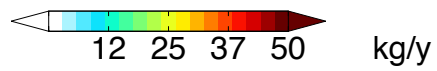
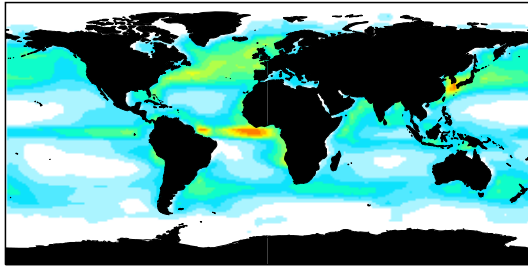
Absolute Difference



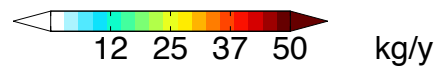
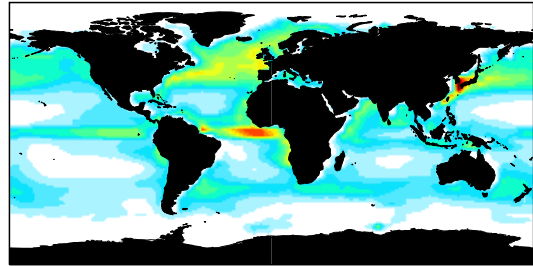
Percent Difference



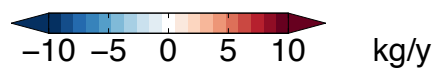
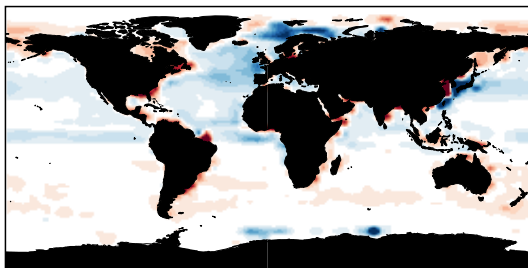
New Model Version: Ocean Hg Sinking



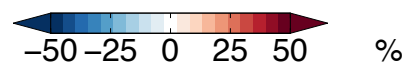
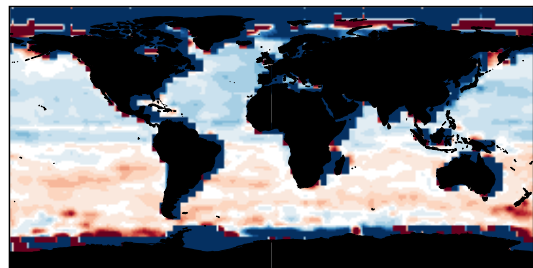
Old Model Version: Ocean Hg Sinking



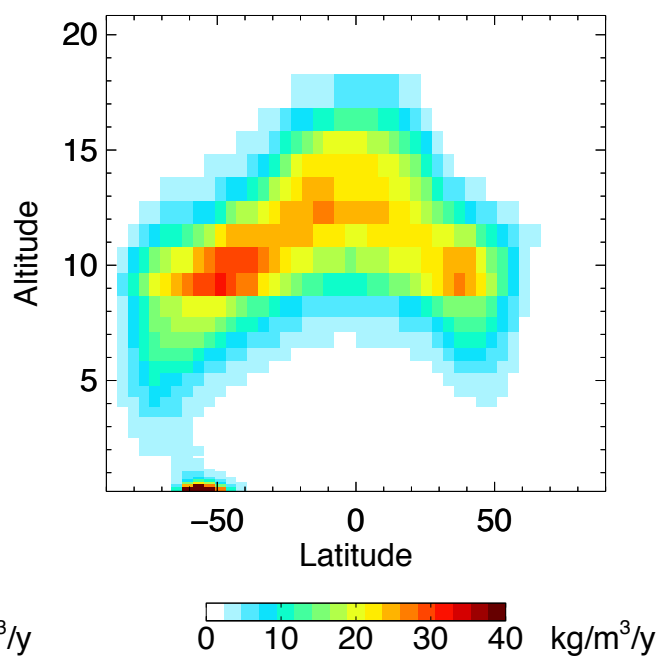
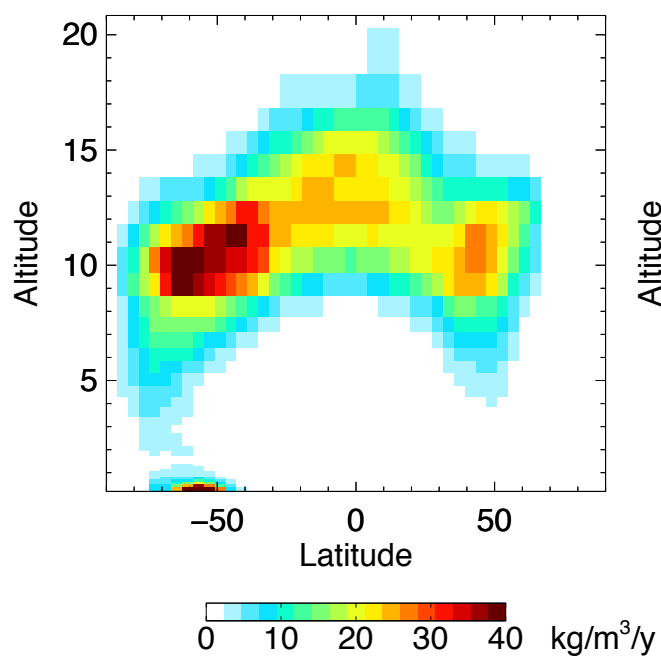
Absolute Difference



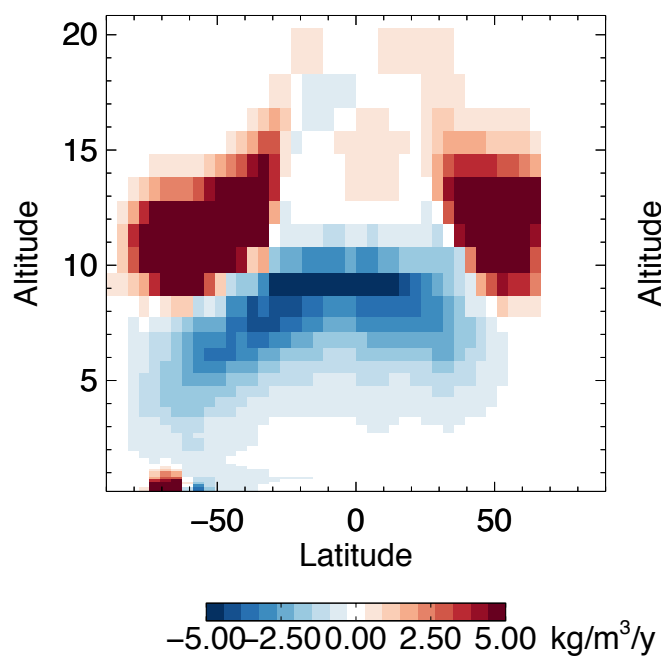
Percent Difference



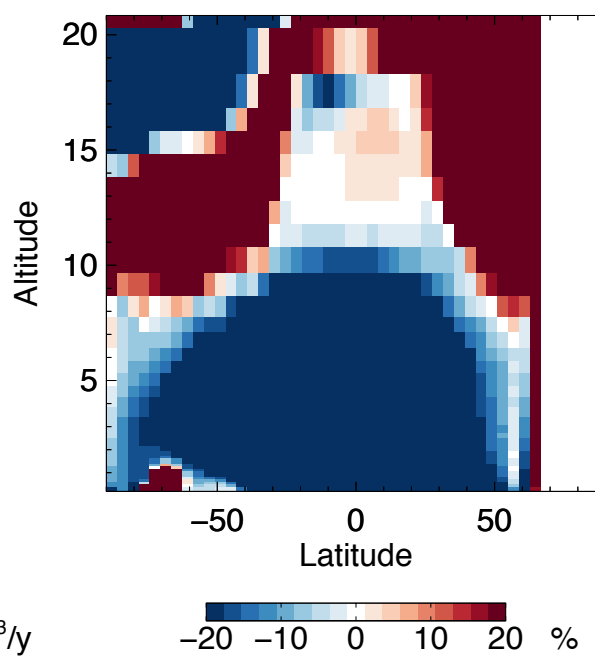
New Model Version: Zonal Gross Ox by Br Old Model Version: Zonal Gross Ox by Br



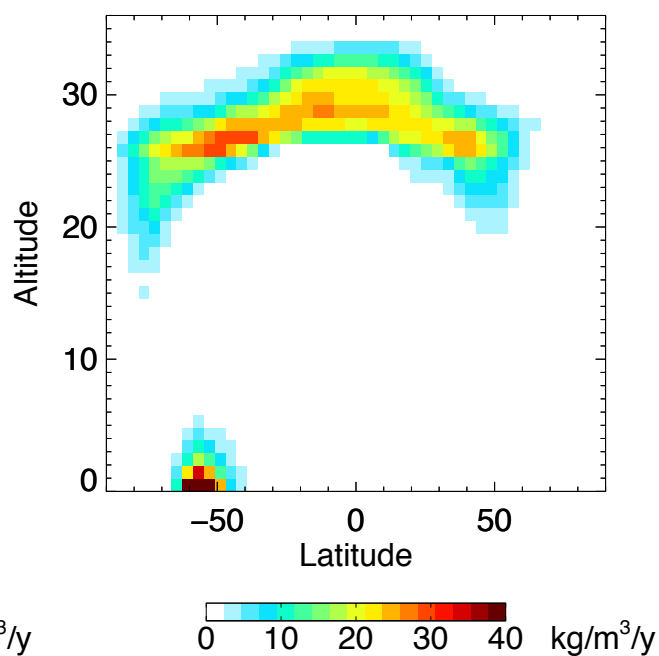
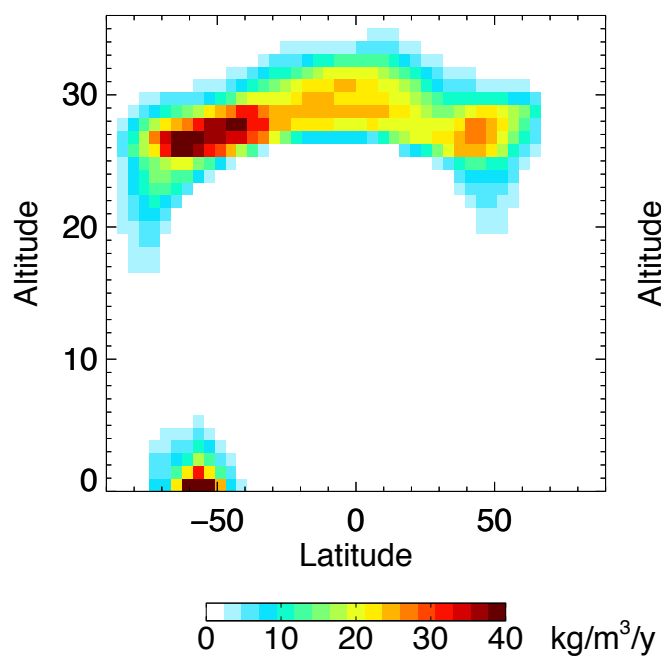
Absolute Difference



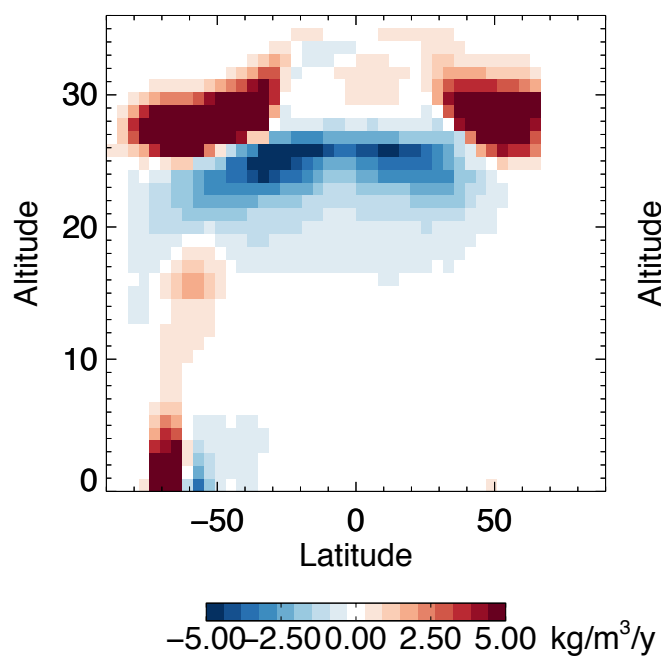
Percent Difference



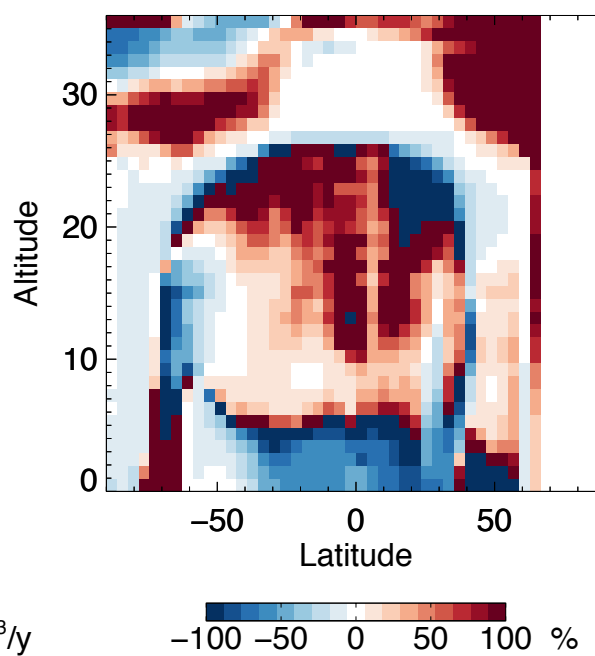
New Model Version: Zonal Net Oxidation Old Model Version: Zonal Net Oxidation



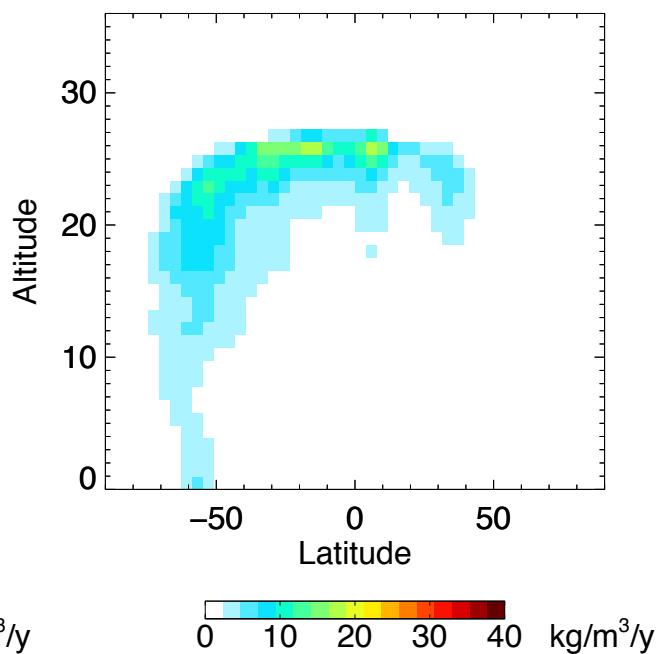
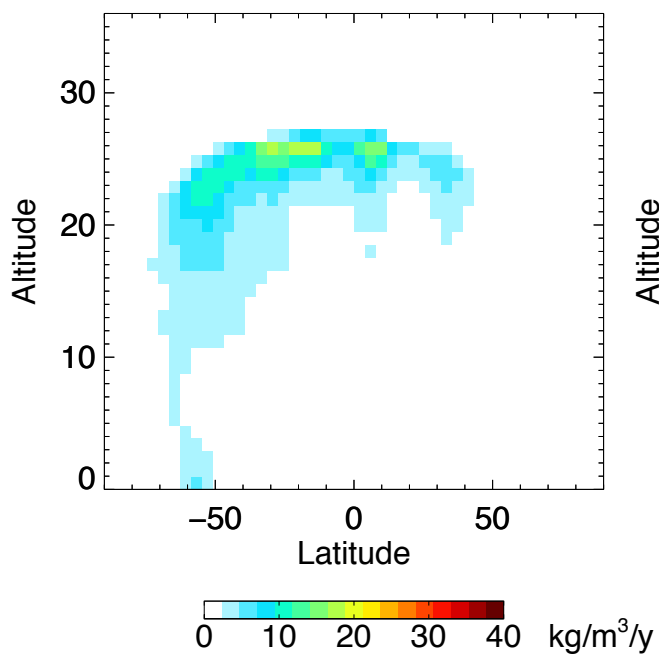
Absolute Difference



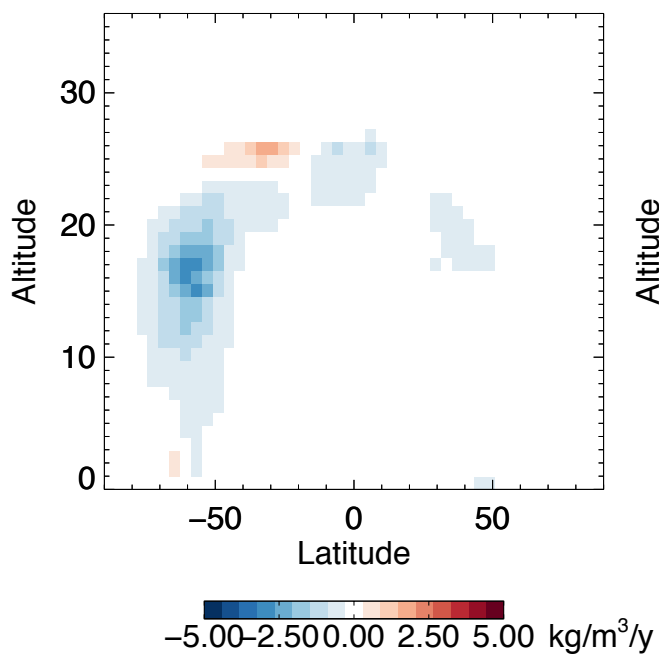
Percent Difference



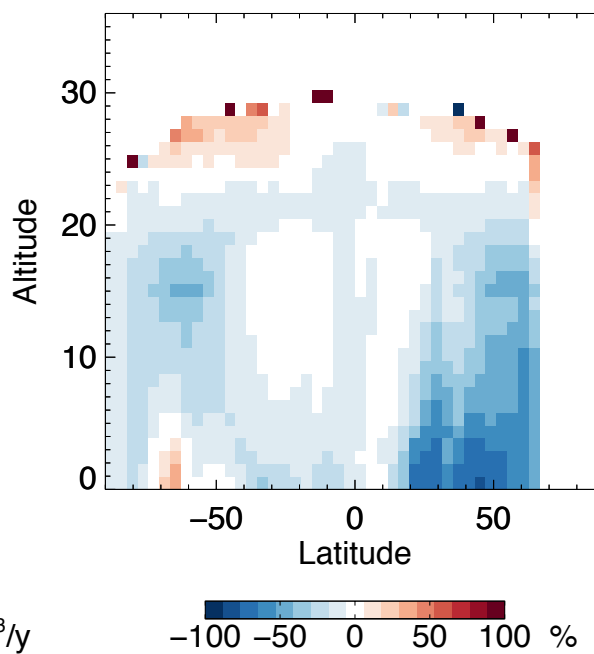
New Model Version: Zonal Gross Reduction Old Model Version: Zonal Gross Reduction



Absolute Difference



Percent Difference



OLD MODEL VERSION NEW MODEL VERSION

TROPOSPHERIC MASS		DEPOSITION	
Hg ⁰ :	4016	3984 Mg	Hg ⁰ dd: 1309 1331 Mg/y
Hg ² :	301	344 Mg	Hg ² dd: 1009 714 Mg/y
Hg ^P :	223	204 Mg	Hg ^P dd: 67 28 Mg/y
			Hg ² wd: 2088 2471 Mg/y
SURFACE OCEAN MASS		Hg ^P wd: 497 267 Mg/y	
Hg ⁰ :	226	232 Mg	Hg ⁰ oc uptake: 58 56 Mg/y
Hg ² :	2387	2529 Mg	Hg ² seasalt: 1209 1015 Mg/y
Hg ^P :	162	181 Mg	TOTAL DEPOSITION: 6239 5885 Mg/y
EMISSIONS		REDOX	
Hg ⁰ anthro:	1106	1558 Mg/y	Gross Ox by Br: 5872 5970 Mg/y
Hg ² anthro:	748	229 Mg/y	Gross Reduction: 1763 1557 Mg/y
Hg ^P anthro:		Mg/y	Net Oxidation 4109 4412 Mg/y
Hg ⁰ geo:	249	250 Mg/y	
Hg ⁰ soil:	730	892 Mg/y	
Hg ⁰ bb:	223	239 Mg/y	
Hg ⁰ land re:	269	207 Mg/y	
Hg ⁰ snow:	198	189 Mg/y	
Hg ⁰ oc evasion:	2574	2602 Mg/y	
TOTAL EMISSIONS:		6100 6169 Mg/y	