

GEOS-Chem during NOMADSS: Near-real-time analyses

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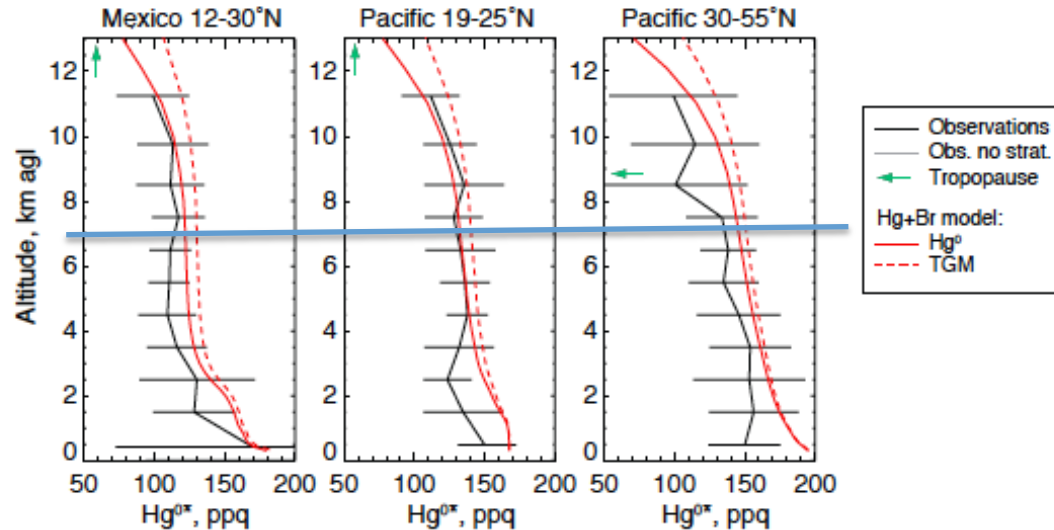


Near-real-time analyses

- GEOS-Chem simulations at 0.5×0.67 degree nested for North America
- Hg, CO, potentially full chemistry simulations
- Allow us to compare preliminary data with model results to guide planning decisions

Previous Hg aircraft model-measurement analyses

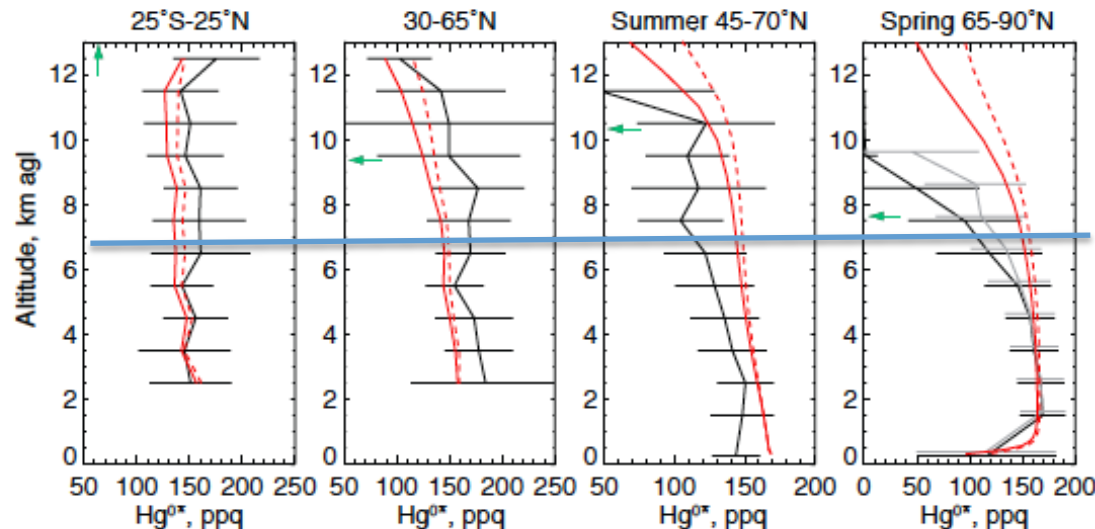
A. INTEx-B



Holmes et al., 2010

Roughly uniform concentrations of Hg(0) throughout troposphere, consistent with long lifetime.

B. CARIBIC



Possible surface enhancements in source regions

Hg(II)?

Resolution of source regions: now able to model at finer scale

Holmes et al., 2010

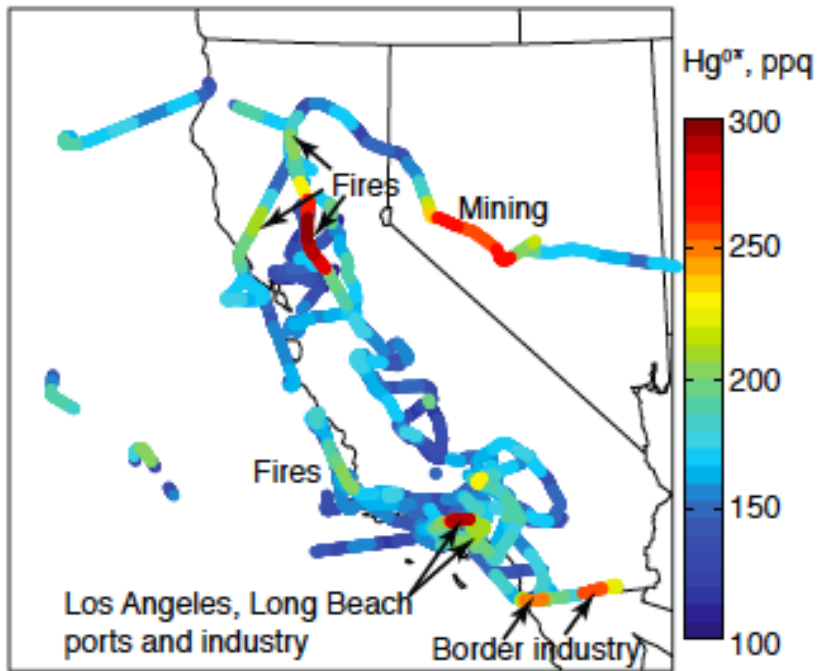
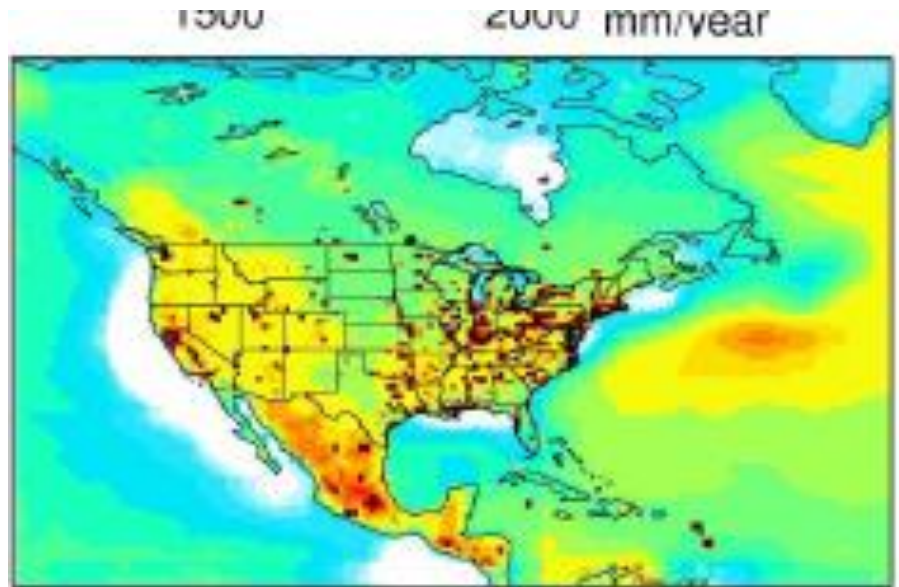
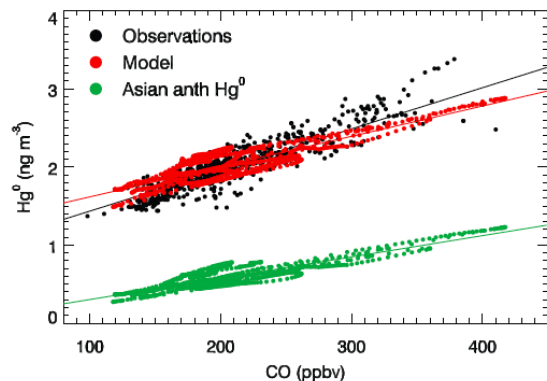


Fig. 12. Mercury distribution in the boundary layer (<2 km a.g.l.) during ARCTAS flights over California and Nevada (June 2008). Sources are identified through correlations with other species (CO , O_3 , CH_3CN , HCN).



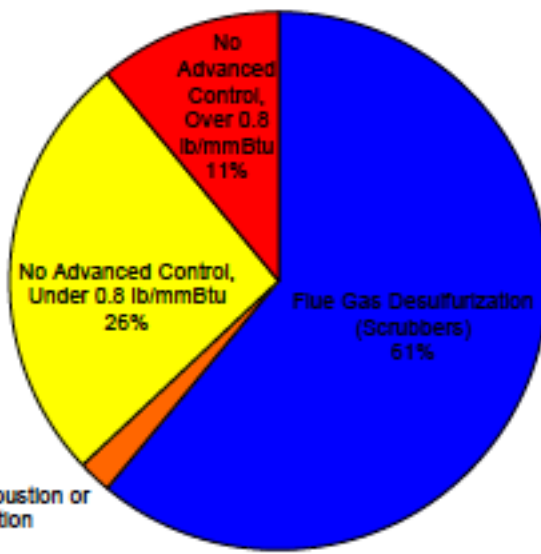
Zhang et al., 2012

Comparisons for Hg: Coal-influenced

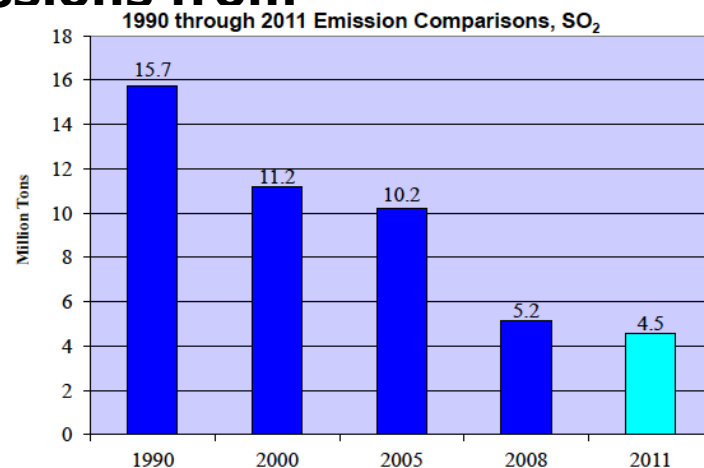


Strode et al., 2008

CO, other pollution tracers will help us quantify Hg emissions from power plants

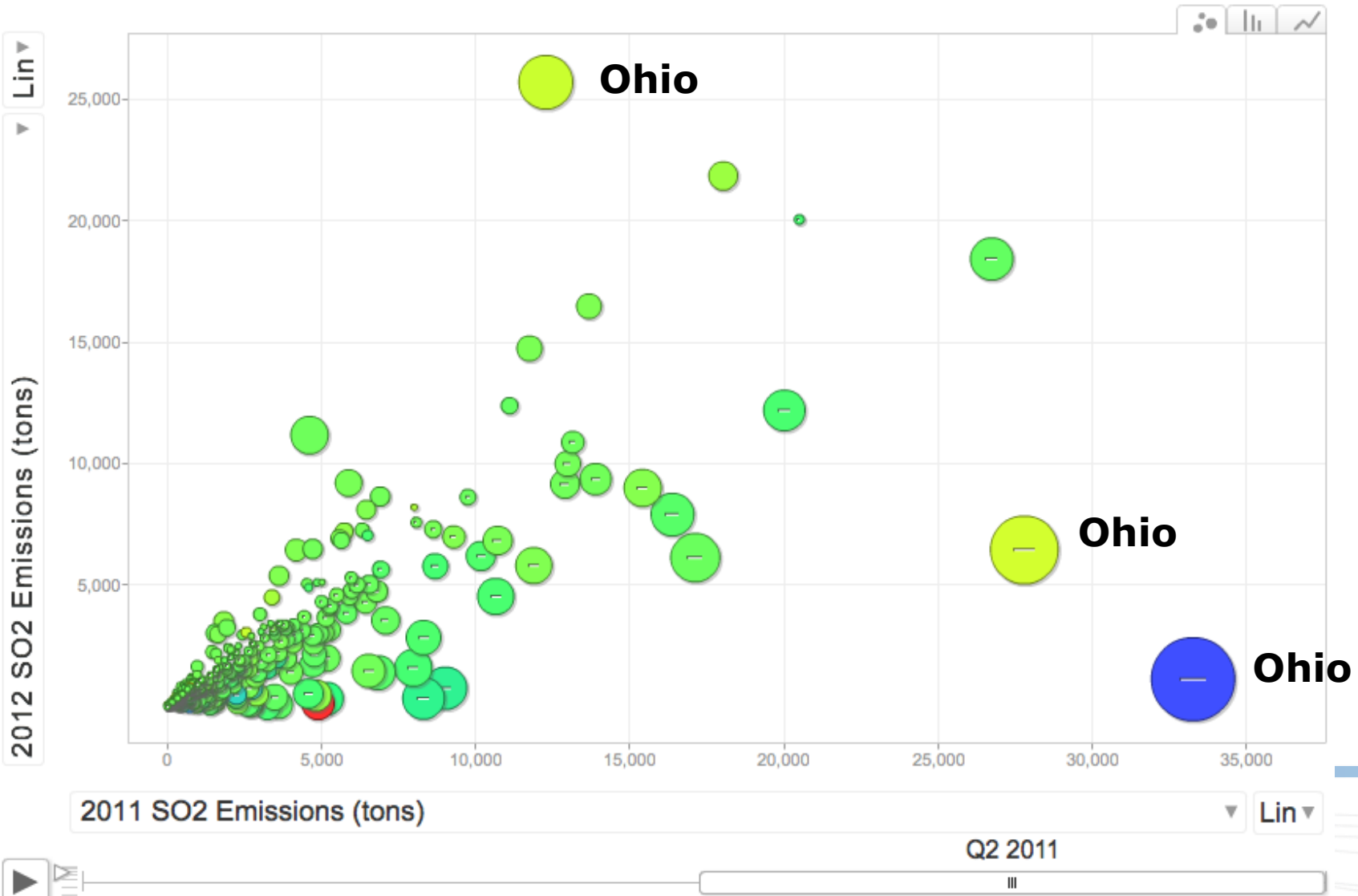


SO₂ control by % of generation, 2011

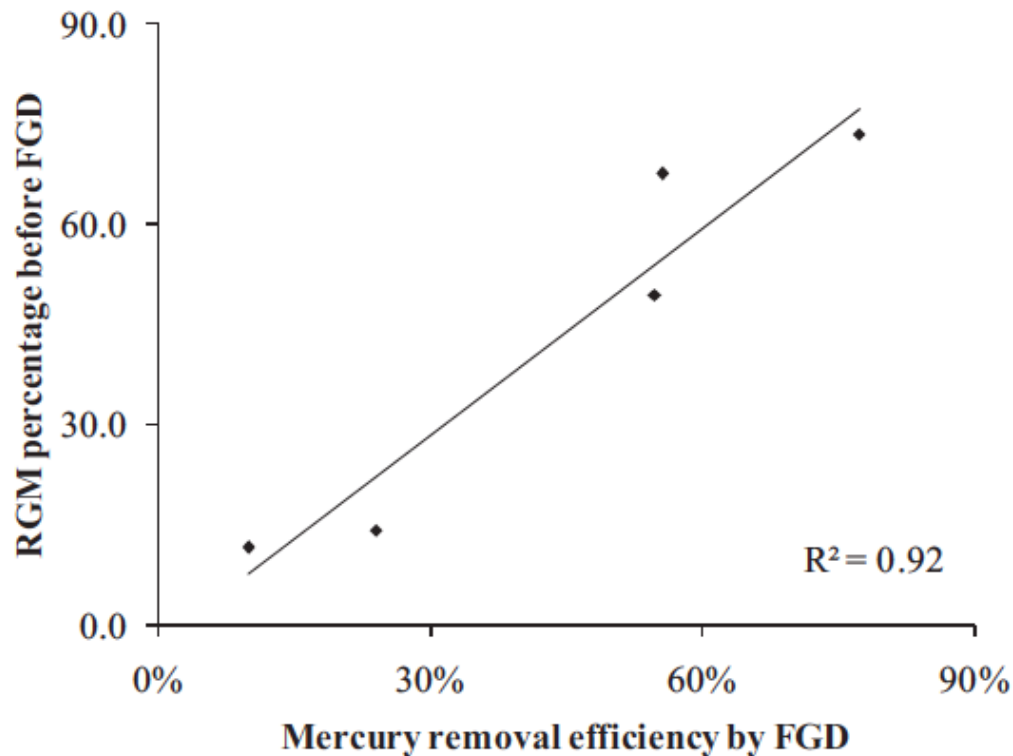


How much of a signal will we see given recent emissions decreases?

2012 vs 2011 SO2 emissions



Speciation of Hg emissions



FGD changes speciation of mercury at point of emission:

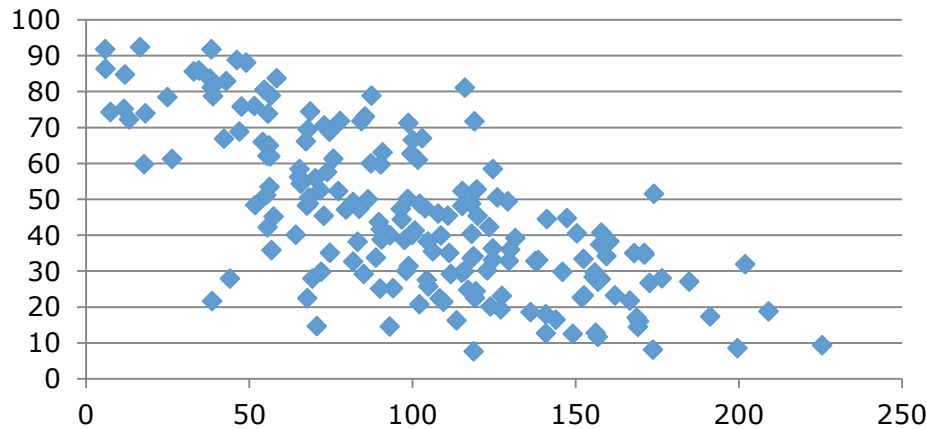
Less Hg(II) relative to Hg(0)

But, in-plume reduction is an ongoing question...

Figure 4. The relationship between efficiency of FGD and RGM before FGD.

Comparisons for Hg: Free Trop.

RH vs RGM (model @ MBO)



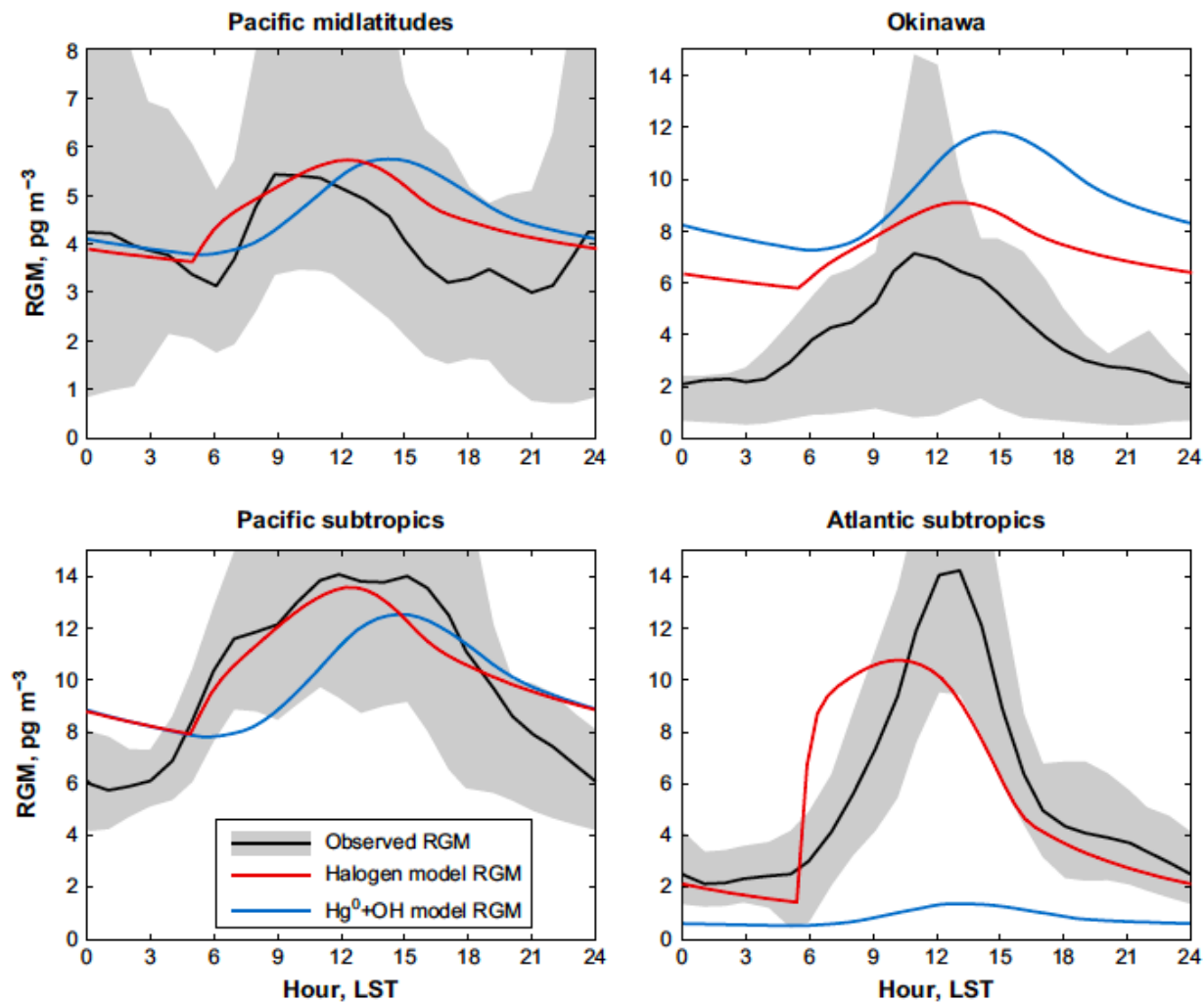
We expect to see enhanced Hg(II) in dry, higher-altitude air.

◆ rh

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O₃?

Comparisons for Hg: MBL



**Br chemistry
Sea-salt interactions**