RAMIX - A Step towards Understanding Atmospheric Mercury Chemistry and Tekran® Observations

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From August 22 to September 16, 2012, atmospheric mercury (Hg) was measured from a common manifold using different methods during the Reno Atmospheric Mercury Intercomparison eXperiment (RAMIX). This was the first experiment to measure atmospheric Hg while spiking elemental Hg, $HgBr_2$, ozone, and water vapor into a manifold in the field. During this project, the University of Nevada group operated one Tekran® 2537 unit and two Tekran® 2537/1130/1135 systems, while the University of Washington team managed the Detector for Oxidized Hg Species (DOHGS), and the group from University of Miami applied a Laser-Induced Fluorescence (LIF) technique and operated a Tekran® 2537 unit. The spiking manifold was designed by the University of Washington group and operated independently of those managing the DOHGS during the experiment. Spike recoveries were calculated when data were collected simultaneously by one free standing Tekran® system and by one connected to the sampling manifold. Using the Tekran® data, GEM recoveries were ~76 $\pm$ 7%, while for $HgBr_2$ these were 17 $\pm$ 3%. O_3 and water vapor spike recoveries ranged from 81 to 95% and 88 to 110%, respectively. The low $HgBr_2$ recovery by the Tekran® system could be attributed to loss of the spike in the manifold, low recovery by the denuder, ozone and water vapor interferences, or instrument artifacts.

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