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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Modelling chemistry over the Dead Sea: bromine and ozone chemistry" *by* L. Smoydzin and R. von Glasow

L. Smoydzin and R. von Glasow

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Reply to J. Savarino

Thank you very much for your interesting comment.

It is indeed true that we only discussed potential natural uncertainties related to the bromine source by degassing of halogen compounds out of the Dead Sea water.

The additional, potentially also highly variable injection of bromine compounds into the Dead Sea water or directly into the atmosphere by the Dead Sea Bromine Company shall be discussed in a revised version of the manuscript.

We agree, that the local anthropogenic emissions could contribute to the fast and strong increase in BrO mixing ratios as was observed at the Evaporation Ponds. They could further explain a temporal as well as spacial variability of the bromine contend (depending on the emissions from the Dead Sea Works) in the different ponds at the

southern end of the Dead Sea and thus the varying bromine emission strength. This would also be an explanation for the highly variable BrO mixing ratios as observed over the Evaporation Ponds. Furthermore, the factory emissions could also contribute to the enhanced BrO concentrations that were detected south of the Dead Sea, in air masses that have crossed the desert before crossing the instrumentation site.
However, the emissions by the Dead Sea Bromine Company cannot be the only reason for the enhanced BrO mixing rations over the Dead Sea. Hebestreit et al. (Science, 1999) point out that the diurnal variation of industrial emissions like NO_x and SO_2 are different than the diurnal variations of BrO concentrations. They even ruled out that the factory emissions are a bromine source due to the time variation of the BrO signal.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 4525, 2009.