Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Collisions and Reactions of HNO_3 and N_2O_5 with Sea Spray Mimics[1] MICHAEL SHALOSKI, Univ of Wisconsin, Madison, TIMOTHY BERTRAM, Univ of California, San Diego, GILBERT NATHANSON, Univ of Wisconsin, Madison, CENTER FOR AEROSOL IMPACTS ON CLIMATE AND THE ENVIRONMENT (CAICE) TEAM — Heterogeneous reactions occurring at the surface of sea spray aerosol (SSA) droplets can lead to changes in the chemical compositions of the droplet, the denitrification of the atmosphere, and the production of chlorine-containing gases. These processes ultimately influence both ozone and methane concentrations and air quality. We explore these reactions through gas-liquid scattering experiments in vacuum using salty and surfactant-coated glycerol (a low vapor pressure liquid) as a proxy for SSA. HNO_3 and N_2O_5 are atmospherically-relevant species that can dissociate and react at or near the surface of a protic liquid. In particular, N_2O_5 may react with the solvent to generate HNO_3 and glycerol nitrate and may react with near-interfacial Cl^- to generate $ClNO_2$, Cl_2, and HONO. Our initial experiments will focus on reactions of DNO_3 to monitor the competition between HCl and HNO_3 formation and desorption.

[1]Funded through the NSF Center for Aerosol Impacts on Climate and the Environment (CAICE)

Michael Shaloski
Univ of Wisconsin, Madison

Date submitted: 13 Nov 2013 Electronic form version 1.4