



Very-short-lived brominated substances (VSLBr) and inorganic bromine (Bry) in the Pacific tropical tropopause layer

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Organic very-short-lived brominated substances (VSLBr) and inorganic bromine species (Bry) play an important role in the chemistry of upper troposphere/lower stratosphere (UT/LS) region. Their distribution, vertical structure, and variability provide information about sources and transport. In addition, an accurate quantification of the reactive and reservoir species defines the halogen budget and assists in the assessment of the ozone depletion potential for brominated trace gases. In the last decade, there have been efforts to better understand the chemical and physical processes that occur in the Tropical Tropopause Layer (TTL), including convection, dehydration, and heterogeneous recycling reactions, which influence the partitioning of the trace gas species that enter the stratosphere. However, uncertainties in the estimation of the organic and inorganic partitioning of bromine and the input to the stratosphere still persist.

Based on the measurements of samples collected by the Global Hawk Whole Air Sampler (GWAS) during the NASA-Airborne Tropical Tropopause Experiment (ATTREX), and chemistry climate simulations (using CAM-Chem along ATTREX flight tracks), we will examine the vertical distribution of selected organic species in the UT/LS of the Eastern and Western Pacific. We also will describe the budget and partitioning of bromine at the tropical tropopause and evaluate the contribution of bromine to ozone destruction in the lower stratosphere.