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Very Short-lived Bromomethanes in the Upper Troposphere/Lower Stratosphere during CARIBIC May 2009 to May 2011

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Reactive halogenated compounds including brominated very short-lived substances (VSLS) play an important role both in the stratosphere, where they impact on stratospheric ozone, and in the troposphere, where they participate in catalytic ozone destruction and aerosol formation. According to the latest WMO figures, brominated VSLS could be responsible for 1-8 ppt contribution to the stratospheric bromine burden. However, observations of brominated VSLS in the upper troposphere/lower stratosphere are relatively sparse.

In this study we present measurements made during the CARIBIC project from May 2009 to May 2011 using a negative ion chemical ionisation (NICI) mass spectrometer instrument. NICI is a "soft" ionisation technique that gives enhanced detection limits for electronegative species such as halocarbons. The CARIBIC project deploys a large range of automated instruments in an airfreight container aboard a Lufthansa A340-600 passenger aircraft. The container system also houses two automated bottle samplers which are analysed for various compounds. As part of the project we measure a range of halogenated compounds in the bottle samples. We will present profiles of bromoform ($CHBr_3$), dibromomethane (CH_2Br_2), dibromochloromethane ($CHBr_2Cl$), bromodichloromethane ($CHBrCl_2$) and bromochloromethane (CH_2BrCl) and compare results with previous measurements of brominated VSLS.