



NAME modelling activities for the CAST-CONTRAST-ATTREX VSLS measurements

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The Numerical Atmospheric dispersion Modeling Environment (NAME) model is used to assess the spatial and temporal variability of transport of very short-lived halogenated organic species (VSLS), in particular bromoform, dibromomethane and methyl iodide, within the West Pacific tropical region. The NAME modelling results are compared with airborne measurements of VSLS taken during NASA ATTREX, NCAR CONTRAST and NERC CAST campaigns in January-March, 2014. NAME model aims to link the aircraft measurements to examine the vertical distribution of VSLS in the West Pacific troposphere. The major focus will be on assessing vertical transport in deep convection which is one of the crucial factors in redistributing chemicals within the tropical troposphere.

The work presented shows the analysis of NAME runs made from the ATTREX flights over the East Pacific in January-February, 2013 and the ATTREX and CONTRAST flight tracks over the West Pacific in January-March, 2014. Each ATTREX 2013 and 2014 flight track is divided into segments, from which particles are released and followed backward to identify the low-level sources of air. Particles (15,000 per single point along the flight track) are released from the flight altitudes tracks and followed 12-days backwards. Fractions of trajectories are calculated according to particles which crossed below 5 and 1 km (corresponding to low troposphere and oceanic boundary layer, respectively). Then, initial concentrations for VSLS are assigned to particles which originated from below 5/1 km and final concentrations at flight altitudes are determined. NAME modeled results are compared with ATTREX VSLS flight measurements. Interannual variability of atmospheric transport of VSLS in the Tropics is studied by performing mock ATTREX-flight NAME runs for years: 2005-2014, with emphasis put on strong ENSO phase years.