



Development of the HIAPER Trace Organic Gas Analyzer (TOGA)

D.D. Riemer (1), E.C. Apel (2), A.J. Hills (2), B.C. Sive (3), R. Lueb (2), E.L. Atlas (1)

(1) University of Miami (driemer@rsmas.miami.edu, eatlas@rsmas.miami.edu), (2) National Center for Atmospheric Research (apel@ucar.edu, hills@ucar.edu, lueb@ucar.edu), (3) University of New Hampshire (bcs@ccrc.sr.unh.edu)

The TOGA is the next generation of the fast GC/MS (FGCMS) instrument recently developed by our group to measure select oxygenated organic compounds (OVOCs) in the troposphere. The FGCMS was successfully deployed on NASA and NCAR aircraft-based missions. The capabilities of the TOGA are substantially enhanced relative to the FGCMS. The chromatographically based, two detector (mass spectrometer (MS) and helium ionization detector (HID)) instrument will rapidly measure, with high accuracy and precision, a range of C₂-C₅ OVOCs, including alcohols and carbonyls, C₂-C₈ non-methane hydrocarbons (NMHCs), and select halocarbons. These compounds are integral components of many atmospheric chemistry cycles and include process intermediaries, oxidation products, and tracers of anthropogenic and biogenic activity. A number of the design issues involved in the TOGA instrument development will be described, including: weight and form factor limitations, sample inlet, sample enrichment, vacuum and sample pumping, chromatography and gas flows, detector modifications, and data acquisition.