

# Development of an In Situ Gas Chromatograph – Mass Selective Detector for the Purpose of Measuring Long-Range Pollution Transport from Asia

J.L. Neu<sup>1,2</sup>, B.C. Daube<sup>3</sup>, B.G. Lafleur<sup>3</sup>, S.A. Montzka<sup>2</sup>, F.L. Moore<sup>3</sup>, G.S. Dutton<sup>3</sup>, B.D. Hall<sup>2</sup>, J.W. Elkins<sup>2</sup>

<sup>1</sup>National Research Council Fellow; 303-497-4294; Fax: 303 497-6290, E-Mail: Jessica.Neu@noaa.gov

<sup>2</sup>NOAA Climate Monitoring and Diagnostics Laboratory, 325 Broadway, Boulder, CO 80305

<sup>3</sup>Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, 80309

We present our progress on the development of an automated, 3-channel gas chromatograph (GC) with mass selective detector (MSD) and two electron capture detectors (ECDs). We hope to deploy the instrument in Winter 2004 at a Pacific CMDL station to make hourly in situ measurements of a variety of atmospheric species with a wide range of lifetimes, including CFCs, HCFCs, HFCs, peroxyacetyl nitrate (PAN), methyl halides, nitrous oxide (N<sub>2</sub>O), and sulfur hexafluoride (SF<sub>6</sub>), with the primary goal of characterizing the episodic long-range transport of pollution from Asia.

Our efforts have been focused on the development of the MSD channel, including testing of adsorbent materials for pre-concentrating the sample and optimizing the chromatography to improve resolution and accuracy. We have begun to intercompare our results with those of the flask gas chromatograph (GC) MSD for selected flasks and are working to improve our methods based on these results. Progress has also been made on the electron capture detector (ECD) channels, with particular emphasis on the development of a dynamic dilution system to produce calibration standards in situ for the peroxyacetyl nitrate (PAN) ECD channel.

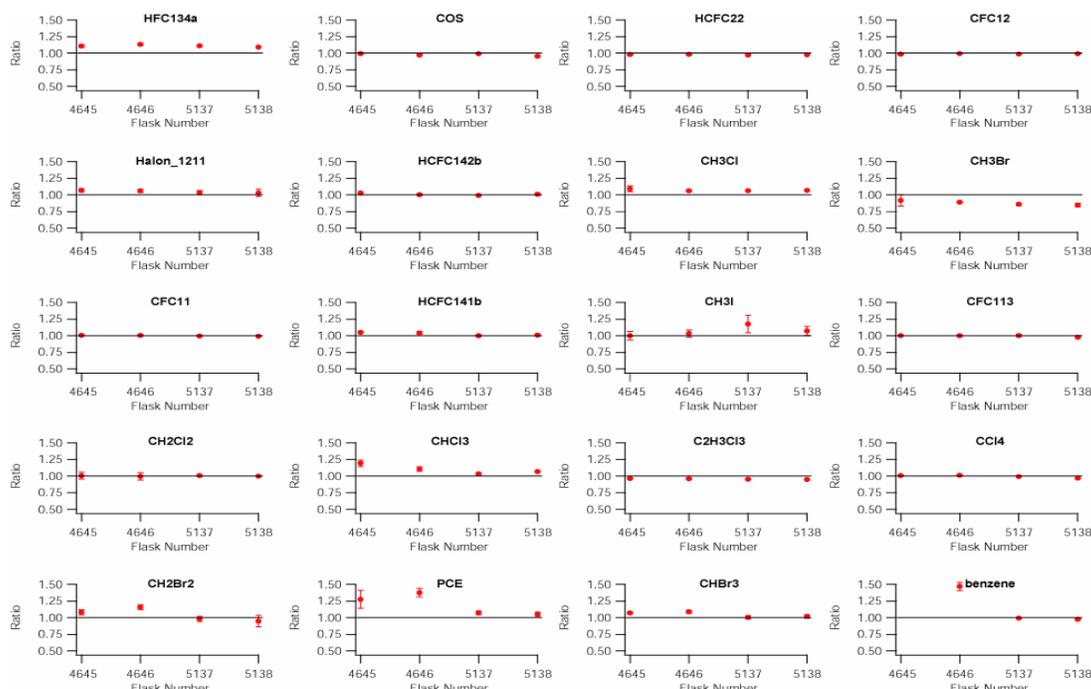


Figure 1. Ratio of results from the in situ GC-MSD under development to those from the flask GC-MSD for four flasks.