

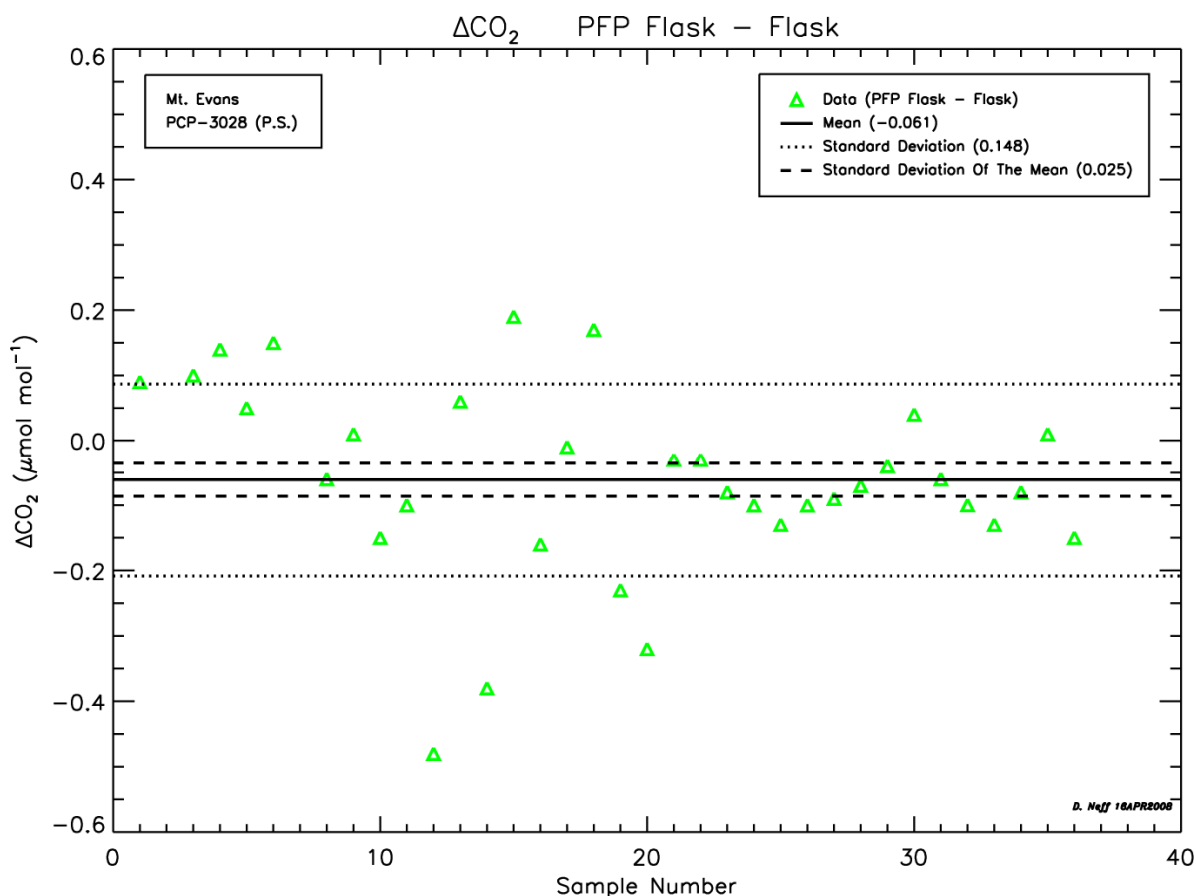
## Estimating Measurement Uncertainties for Programmable Flask Package (PFP) Air Samples: A Mountaintop Intercomparison with the Cooperative Global Network Manual Sampler

D. Neff, S. Wolter, D. Guenther, and A. Karion

Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, CO 80309; 303-497-4271, Fax: 303-497-6290, E-mail: don.neff@noaa.gov

Near-simultaneous real air samples were obtained near the summit of Mt. Evans (elevation ~4350 m; located ~50 miles west of Denver, Colorado) using both the ESRL GMD PFP sampling system and the manual 2.5L flask portable sampler (PSU). This general PSU design has been in use for more than 10 years in the ESRL/GMD Cooperative Global Air Sampling Network, and network measurements from PSU samples have been well characterized.

The mixing ratios of six atmospheric trace species ( $\text{CO}_2$ ,  $\text{CH}_4$ ,  $\text{CO}$ ,  $\text{H}_2$ ,  $\text{N}_2\text{O}$ ,  $\text{SF}_6$ ) were compared from these two systems to provide estimates of measurement uncertainties associated with the PFP for each of these six species and to look for potential biases between these two sampling systems. The field location was chosen in order to sample atmospheric air relatively free of influence from nearby sources or sinks, with low variability over the sampling timescale, in order to provide for better sample intercomparison.



**Figure 1.** This plot displays the difference of ESRL/GMD measurements of the dry-air mole fraction between a series of near-simultaneous carbon dioxide samples from the PFP system and the manual sampling system. The mean, standard deviation, and the standard deviation of the mean of these measured differences are also indicated.