Summary for carbon monoxide data set.

This data set contains carbon monoxide measurements made from the NCAR C-130 in the
ACE-1 program. The data parameter is COCAL, the calibrated CO signal in ppbv. The carbon
monoxide instrumentation used an infrared absorption method (TECO 48 with a modified optical
system). After every 5 minute sampling period the instrument was zeroed for 2 minutes to take
baseline changes into account. The data during zeroing periods were eliminated from the data set
by setting them to -32767.0. The span was obtained by calibrating the instrument with a standard
cylinder of CO in air. Our standard was cross calibrated with a NIST SRM-standard.   The
vibration of the aircraft significantly increases the noise in the signal for this instrument. To
decrease the noise, two procedures were applied. The raw signal was smoothed by taking the
median of a running 15 second window over the whole data set. This procedure eliminates data
outliers. After the smoothing, a spline fit was calculated from the zeroing periods and the CO
signal was obtained by subtracting the zero spline from the data. To remove high frequency noise
further, a 45 second running average was then applied and the calibrated span was used to get the
CO concentrations. The time lag of the air entering the inlet to the measurement was determined
to be around 50 seconds; the data were shifted accordingly.

This data set is available on-line for download. Publications that make general use of
these data are requested to acknowledge Andre Prevot, Richard Schillawski and Greg Kok for
providing the data. Co-authorship is requested for significant use of these data in a publication.