Preliminary Trend Analyses of CMDL Carbon Monoxide Data

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CMDL began monitoring carbon monoxide in the late 1980s. The data from air samples collected in glass flasks have been analyzed by a variety of methods. We take a new approach using advanced time-series analysis techniques. The data show distinct seasonal cycles punctuated by events that can last several months (Figure 1). Major fires are clearly evident, however, widespread minor fires are more difficult to identify and could confound trends. Analyses of the current data indicate there has been a general downward trend driven primarily by changes in the first half of the time period of monitoring. These trends show a seasonal aspect, particularly for the Barrow location, with the decreases occurring primarily in the winter and spring months. This is in agreement with the factors known to dominate CO production and destruction, including anthropogenic emissions and reaction with OH. Differences between northern hemisphere and southern hemisphere data will be discussed.

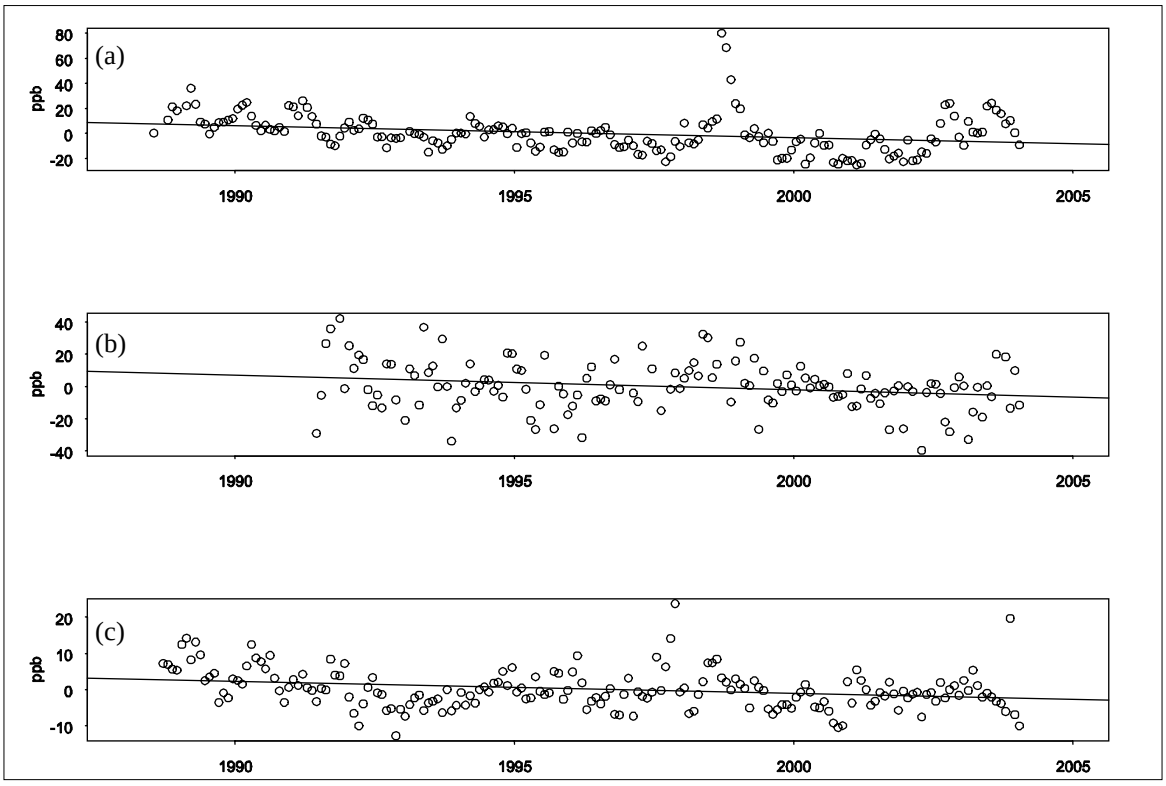

Figure 1. Deaseasonalized monthly averaged CO mixing ratios (a) Barrow, (b) Bermuda, and (c) American Samoa.