

## The GLOBALVIEW-CO<sub>2</sub> Data Product

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GLOBALVIEW-CO<sub>2</sub> is a product of the Cooperative Atmospheric Data Integration Project for CO<sub>2</sub>. This international effort attempts to improve the spatial and temporal coverage of atmospheric CO<sub>2</sub> observations by integrating and extending existing data records into a globally consistent data product (Masarie and Tans, *J. Geophys. Res.*, 100, 11,593-11,610 [1995]). GLOBALVIEW-CO<sub>2</sub> is intended for use in inverse modeling studies where observed spatial and temporal patterns of CO<sub>2</sub> are converted into estimated patterns of sources and sinks. The latest version, released in August 2000, includes 141 smoothed CO<sub>2</sub> records derived from continuous and discrete land-surface, ship, aircraft, and tower observations contributed by 18 laboratories in 13 countries. Before these data can be integrated into a cooperative data product, we must ensure that spatial and temporal patterns among independent measurements are due to patterns in emission and transport and not due to differences in calibration or methodology among participating labs. Comparability between CO<sub>2</sub> records is assessed using results from ongoing and periodic intercomparison experiments (e.g., Masarie et al., *J. Geophys. Res.*, in press [2001]; Peterson et al., *World Meteorological Organization Report*, 132, 30-33, [1999]). Based on these results, measurement records thought to be comparable to within 0.2  $\mu\text{mol mol}^{-1}$  are then used as input to the data extension procedure. This produces synchronized, extended records comprised of CO<sub>2</sub> values extracted from a smooth curve fitted to actual data and derived “fill” values where data do not exist. Extended records are the basis of the GLOBALVIEW-CO<sub>2</sub> data product, which also includes: corresponding weight files; summaries of seasonal patterns, diurnal patterns, and atmospheric variability; the marine boundary layer (MBL) reference matrix used in the data extension process; uncertainty estimates; and extensive documentation. GLOBALVIEW-CO<sub>2</sub> is updated annually as new data are added and methods are improved. Since the first release in 1996, there have been more than 1,850 inquiries with an average of 32 electronic requests per month. GLOBALVIEW-CO<sub>2</sub> and a GLOBALVIEW-CH<sub>4</sub> are both freely available at <http://www.cmdl.noaa.gov/ccgg/globalview/index.html>.

Top: Measurements derived from discrete air samples collected at the CMDL cooperative site on Terceira Island, Azores. Values thought to be regionally representative ( $\square$ ) are used as input to the data extension procedure. Valid samples not representative on a regional scale (+) and samples compromised during collection or analysis (\*) are also shown. Bottom: The extended record for Azores includes smoothed values ( $\circ$ ), and interpolated and extrapolated values ( $\circ$ ) derived from the extension procedure. Actual data are not included in the

