An Update on the Fossil-fuel Carbon Dioxide Inventory

Andres RJ, Marland G, Boden TA

Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831-6335 USA, andresrj@ornl.gov

ABSTRACT

The fossil-fuel carbon dioxide emissions inventory available on the GEIA website (geiacenter.org) has been updated with the latest available data. While the GEIA website contains one degree latitude by one degree longitude data for the decadal years of 1950, 1960, 1970, 1980, 1990 and 2000, contact with the first author can gain annual data sets for each year from 1751-2003. All of these data sets are based on a fixed within-country population distribution. The ungridded, national data are available in tabular form from the Carbon Dioxide Information Analysis Center (CDIAC) website (cdiac.esd.ornl.gov/trends/emis/em_cont.htm). In addition to the traditional GEIA product of the mass of emissions, also available from the first author is the del 13 C signature of these emissions at the same spatial resolution and for the same years. These isotope data are largely based on the work described in Andres et al. (2000, Carbon dioxide emissions from fossil fuel consumption and cement manufacture, 1751-1991, and an estimate of their isotopic composition and latitudinal distribution, in Wigley TML, Schimel DS (eds.) The Carbon Cycle. Cambridge: Cambridge University Press. 53-62). Both the mass data set and the isotope data set are amenable to creating latitudinal plots for comparison to other data sets. Latitudinal plots clearly show the continued growth in emissions with time as well as the slow shift toward larger contributions from more equatorial latitudes. This changing distribution is due primarily to population growth and the increasing standard of living (supported by increased fossil-fuel consumption) in Asian countries. Data users can contact any of the authors if they need assistance using these data sets or if they need specialized data sets for particular applications. Work is underway to supply data sets at monthly time steps for many large countries and to improve data on the distribution of emissions within countries.

GENERAL DATA FLOW DIAGRAM WITH SOME REPRESENTATIVE PLOTS