



NOAA Annual Greenhouse Gas Index (AGGI) - Update 2008

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For the past 30 years, the U.S. National Oceanic and Atmospheric Administration (NOAA) has monitored all of the long-lived atmospheric greenhouse gases. These global measurements have provided input to climate assessments (e.g., the quadrennial IPCC Climate Reports, as well as National Assessments, such as those under the auspices of the US Climate Change Science Program). Recently, efforts to make these data more useful and available have been undertaken through release of the NOAA Annual Greenhouse Gas Index (AGGI), <http://www.esrl.noaa.gov/gmd/aggi>. This index, based on the climate forcing properties of long-lived greenhouse gases, was designed to enhance the connection between scientists and society by providing a normalized standard that can be easily understood and followed. Continuous greenhouse gas measurements are made at baseline climate observatories (Pt. Barrow, Alaska; Mauna Loa, Hawaii; American Samoa; and the South Pole) and weekly flask air samples are collected through a global network of over 70 sites, including an international cooperative program for carbon dioxide and other greenhouse gases. The gas samples are analyzed at NOAA's Earth System Research Laboratory (NOAA/ESRL) in Boulder, using WMO standard reference gases prepared by NOAA/ESRL. The AGGI is normalized to 1.00 in 1990, the Kyoto Climate Protocol baseline year. For the year 2007, the AGGI was 1.24, i.e. global radiative forcing by long-lived greenhouse gases has increased 24% since 1990. The increase in the contribution from carbon dioxide (CO₂) alone was about 32% over this interval. Reductions in the growth rates of methane and the CFCs have effectively tempered the increase of CO₂ since 1990. During the 1980s CO₂ accounted for about 50-60% of the annual increase in radiative forcing by long-lived greenhouse gases, whereas, since 2000, it has accounted for 90% of this increase. The contribution from methane (CH₄) in 2007 increased for the first time since 1999. Preliminary values for 2008 will be evaluated and discussed with respect to the contributions from CO₂, CH₄, nitrous oxide (N₂O), chlorofluorocarbons (CFCs), and other evolving greenhouse gases in this presentation.