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The state of greenhouse gases in the atmosphere using global observations through 2007

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The latest analysis of data from the WMO-GAW Global Greenhouse Gas Monitoring Network, a comprehensive network of the Global Climate Observing System (GCOS), shows that the globally averaged mixing ratios of carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) have reached new highs in 2007 with CO_2 at 383.1 ppm, CH_4 at 1789 ppb and N_2O at 320.9 ppb. These values are higher than those in pre-industrial times (before 1750) by 37%, 156% and 19%, respectively. Atmospheric growth rates in 2007 of CO_2 and N_2O are consistent with recent years. The mixing ratio of CH_4 shows the largest increase since 1998. The NOAA Annual Greenhouse Gas Index (AGGI) shows that from 1990 to 2007 the atmospheric radiative forcing by all long-lived greenhouse gases has increased by 24.2%. The combined radiative forcing by the most abundant ozone depleting substances, CFC-11 and CFC-12, exceeds that of N_2O. They are decreasing very slowly as a result of emission reductions under the Montreal Protocol on Substances That Deplete the Ozone Layer.