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## NOAA Earth System Research Laboratory Global Monitoring Conference, Boulder

31 July, 2007

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On May 2-3, 2007, over 200 participants from 16 countries and 17 of the United States attended the 36th annual meeting of scientists who monitor the changing composition of the global atmosphere. At the conference, 37 oral papers and 28 posters were presented, covering the newest observations on carbon dioxide, trace gas, aerosol, and solar radiation trends in the earth's atmosphere. Presentations at these annual conferences often precede publication of the same data in refereed journals.

#### Background:

Since the early 1970s NOAA has hosted an annual gathering of scientists conducting global monitoring of the atmosphere. In the early days, most of these participants were related to the NOAA Baseline Atmospheric Observatories such as Mauna Loa, Hawaii; Barrow, Alaska; South Pole, Antarctica; or Samoa Observatory, American Samoa. In more recent years the conference has drawn international participants from more recently established atmospheric observatory operations in countries such as South Africa, Kenya, Algeria, China, Taiwan, Australia, Italy, Germany, France, Korea, Japan, Canada, Argentina and Brazil among others. Most global atmospheric observatories are patterned after NOAA's and many have identical instrumentation, allowing for easier and more accurate intercomparability of data.

#### Significance:

Over the years, preliminary data and analyses, which later became major scientific publications, were first presented at these meetings. This has been the case for trends in stratospheric ozone concentrations related to the Antarctic Ozone Hole, the unpredicted decrease in global atmospheric methane growth rates, the fast decline in ozone depleting chlorofluorocarbons following the Montreal Protocol, the suggestion (now proven) that carbonyl sulfide is important in plant respiration and thus the global carbon cycle, the first reports on "global dimming", the first data on the advancing snowmelt (spring) in the Arctic, the immediate decrease in solar radiation reaching the earth's surface following large volcanic eruptions, the flow of Asian aerosols and pollution to the United States, the high absorption of solar energy (due to black carbon) in aerosols flowing out of India, the low scavenging of aerosols in clouds when black carbon aerosols are present, the halogen-mediated total destruction of Arctic boundary layer ozone, documentation of the sources and transport paths of Arctic Haze, and the first data suggesting the presence of a northern terrestrial sink for atmospheric carbon dioxide.

New findings presented at the 2007 meeting show that there may be a large source of methane from open pit coal mines in Alberta, Canada, that there is no measurable effect yet of methane expected to be released by permafrost thawing, that volatile organic compounds have annual cycles much like carbon dioxide, that the growth rates of

chlorofluorocarbon substitutes, which have been decreasing for over the past 3 years, may now be increasing, that an upper tropospheric summertime ozone maximum in the south-eastern United States is associated with NOX produced from lightning, that unexplained high water vapor super saturations exist in upper tropospheric clouds in the tropical western Pacific, that soil is the major sink for global atmospheric hydrogen, that the Arctic is not a significant source of methyl chloride as once thought, and that the "ozone hole" in 2006 was one of the deepest and largest ever observed.

**More information:**

<http://www.esrl.noaa.gov/gmd/annualconference/index.html>

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