NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE

Contact: Jana Goldman
301-734-1123 / Jana.Goldman@noaa.gov

EMBARGOED UNTIL 1 p.m. EST
Tuesday, Nov. 17, 2009

When it Comes to CO_2, What Goes Up Isn't Always Coming Down

More CO_2 Emitted, But Little Change in Amount Absorbed By Natural System

The ocean and the land are natural sponges, or sinks, that absorb carbon dioxide, or CO_2, from the atmosphere. But a group of international scientists, including two from NOAA, have found that the emissions are outpacing the ability of the sinks to soak up the excess CO_2.

"More CO_2 is staying in the atmosphere instead of being absorbed by the ocean and land sinks, like trees and other vegetation," said Richard Feely, Ph.D., an oceanographer at NOAA's Pacific Marine Environmental Laboratory in Seattle and an expert on ocean acidification, the change in the ocean's chemistry because of excess CO_2. "We're concerned that if the natural sinks can't keep pace with the increased CO_2 emissions, then the physical and biological impacts of global warming will accelerate over the next century."

Feely and Thomas Conway, a research chemist at NOAA's Earth System Research Laboratory in Boulder, Colo., were among a team of 31 scientists who contributed to "Trends in the sources and sinks of carbon dioxide," published today in *Nature Geosciences*. The scientists are also members of the Global Carbon Project, an international collaboration that works to develop a complete picture of the global carbon cycle.

Using a variety of data including direct observations, computer-generated models, and estimates from countries' energy statistics, the team created a global CO_2budget – or amount of CO_2produced and consumed -- from 1959 to 2008. The researchers write that during that time, an average of 43 percent of each year's CO_2 emissions remained in the atmosphere.

The team did note a spike in global CO_2 emissions from 2000 and 2008, likely attributed to manufacturing in developing countries, as well as a rising use of coal as fuel.

Unlike other studies that only consider fossil fuel use to measure CO_2 produced by human activities, this team included emissions from changing land use, such as deforestation, logging and intensive cultivation of cropland soils, which also emit CO_2.

NOAA's Mauna Loa Observatory has been monitoring CO_2 since 1958, when Charles Keeling, after whom the Keeling Curve is named, began analyzing air samples and charting the amount of CO_2 in the atmosphere. Those measurements were used in this study and are a vital part of NOAA's suite of climate services.

NOAA and its national and international partners are working together to better understand the extent of ocean acidification and its effect on coastal and ocean ecosystems. Activities include physical and chemical sensors on ships, moorings and floats track CO_2 and pH levels in the ocean and satellites monitor sea surface temperatures.

NOAA understands and predicts changes in the Earth's environment, from the depths of the ocean to the surface of the sun, and conserves and manages our coastal and marine resources. Visit http://www.noaa.gov.