

AGU Revises Position Statement on Climate Change

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Earlier this month, *Eos* published three of the four position statements that were adopted by the AGU Council at its 14 December 2007 meeting. Last week, AGU released the fourth statement, "Human Impacts on Climate." AGU formulates and maintains a number of position statements that reflect the concerns of the Union, none of which extends beyond

the range of available geophysical data or the norms of legitimate scientific debate.

The climate statement has been extensively revised from its original 2003 version, largely because of the significant amount of scientific data that have become available in the past 4 years. The statement also has been substantiated by the release last year of the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report.

At a 24 January 2008 news conference at AGU Headquarters, Michael Prather, the chair of the panel that revised the statement, answered questions from the press. AGU president Tim Killeen and panelist Bette Otto-Bliesner also were on hand to respond to reporters' questions.

All AGU position statements can be found at http://www.agu.org/sci_soc/policy/sci_pol.html.

—KATE VON HOLLE, AGU Public Affairs Administrator

Human Impacts on Climate

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The Earth's climate is now clearly out of balance and is warming. Many components of the climate system—including the temperatures of the atmosphere, land, and ocean, the extent of sea ice and mountain glaciers, the sea level, the distribution of precipitation, and the length of seasons—are now changing at rates and in patterns that are not natural and are best explained by the increased atmospheric abundances of greenhouse gases and aerosols generated by human activity during the 20th century. Global average surface temperatures increased on average by about 0.6°C over the period 1956–2006. As of 2006, eleven of the previous twelve years were warmer than any others since 1850. The observed rapid retreat of Arctic sea ice is expected to continue and lead to the disappearance of summertime ice within this century. Evidence from most oceans and all continents except Antarctica shows warming attributable to human activities. Recent changes in many physical

and biological systems are linked with this regional climate change. A sustained research effort, involving many AGU members and summarized in the 2007 assessments of the Intergovernmental Panel on Climate Change, continues to improve our scientific understanding of the climate.

During recent millennia of relatively stable climate, civilization became established and populations have grown rapidly. In the next 50 years, even at the lower limit of impending climate change, an additional global mean warming of 1°C above the last decade, is far beyond the range of climate variability experienced during the past thousand years and poses global problems in planning for and adapting to it. Warming greater than 2°C above 19th century levels is projected to be disruptive, reducing global agricultural productivity, causing widespread loss of biodiversity, and—if sustained over centuries—melting much of the Greenland ice sheet with ensuing rise in sea level of several meters. If this 2°C warming is to be avoided, then our net annual emis-

sions of CO₂ must be reduced by more than 50% within this century. With such projections, there are many sources of scientific uncertainty, but none are known that could make the impact of climate change inconsequential. Given the uncertainty in climate projections, there can be surprises that may cause more dramatic disruptions than anticipated from the most probable model projections.

With climate change, as with ozone depletion, the human footprint on Earth is apparent. The cause of disruptive climate change, unlike ozone depletion, is tied to energy use and runs through modern society. Solutions will necessarily involve all aspects of society. Mitigation strategies and adaptation responses will call for collaborations across science, technology, industry, and government. Members of the AGU, as part of the scientific community, collectively have special responsibilities: to pursue research needed to understand it; to educate the public on the causes, risks, and hazards; and to communicate clearly and objectively with those who can implement policies to shape future climate.