Evidence shaky for Sun's major role in past climate changes

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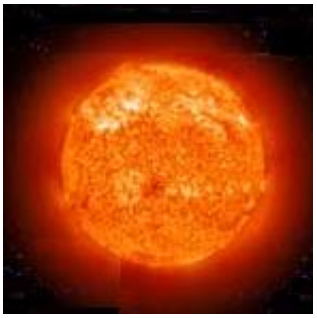

Computer models of Earth's climate have consistently linked long-term, high-magnitude variations in solar output to past climate changes. Now a closer look at earlier studies of the Sun casts **doubt** on evidence of such cycles of brightness, their intensity and their possible influence on Earth's climate. The findings, by a solar physicist and two climate scientists funded by the National Science Foundation, appear in the October 1 issue of the journal *Science*.

"The relationship between the Sun's variability and its influence on climate remain open questions," according to Cliff Jacobs, program director in NSF's division of atmospheric sciences, which funded the research. "This study adds another piece to the puzzle and will spur efforts to unravel this complex relationship."

Scientists have attributed observed climate changes to a combination of natural variations and human activities. Computer models of global climate reproduced an observed global warming during the first half of the 20th century when two solar influences were combined: a well-documented 11-year sunspot cycle and decades-long solar cycles now in dispute.

A more pronounced warming observed during the century's last decades is attributed to greenhouse gases accumulating in Earth's atmosphere and is not part of the study.

"Removing long-term solar cycles from the input to climate models takes away about a tenth of a degree [Celsius] of early 20th century warming," says Tom Wigley, a climate scientist at the National Center for Atmospheric Research (NCAR) in Boulder, Colo. "This suggests that other influences on past climate changes may play a greater role than the solar one."

Peter Foukal of Heliophysics Inc., Gerald North of Texas A&M University, and Wigley co-authored the paper.

The 11-year sunspot cycle is not questioned in the Science paper, but its effect alone is "probably too little for a practical influence on climate," the authors write. They also briefly consider possible influences of ultraviolet and cosmic ray fluxes in Earth's climate.

The scientists think that long-term brightness variations of the Sun may exist, but more convincing evidence is needed, they say. New technologies now available can provide better data for understanding Sun-climate relations, they conclude. NASA co- funded the research.

Source: National Center for Atmospheric Research