Activity in the other direction includes visits to the Soviet Union, under the same program, by a half-dozen American sociology lecturers. Among them are Neil Smelser of the University of California at Berkeley and Kohn of Johns Hopkins, who will be going to Moscow in December. Soviet universities are also soliciting American Fulbright lecturers.

Kohn adds that Cornell University has made a unique arrangement with Igor Kon, the Soviet Union's leading expert on U.S. sociology, who will have a 2-week-per-year visiting professorship. Kon, says Kohn, has managed to keep abreast of the field while working at an institute in Leningrad—mainly by obtaining review copies of American books. He cleverly managed to convey the meat of the scholarship by beginning and ending his reviews with "Marxist diatribes," says Kohn. So knowledgeable is the Soviet sociologist that when he came to the ASA convention in August 1988, he was able to identify the main accomplishments of every author to whom he was introduced.

Kohn has also been involved in initiating a series of joint conferences, which have been in the planning stage since before Gorbachev took over. IREX and the ASA are supplying funds to support five U.S.–Soviet conferences that are being held alternately in the United States and the Soviet Union. The first, in 1987, was a conference on sociology and the psychology of work, held in Vilnius. This December there will be a conference in Moscow on public opinion research.

All this cross-fertilization—indeed, the blossoming Soviet interest in sociology generally—is regarded as good news both for the discipline and for U.S. Sovietologists in particular. Shelley notes that "academic positions for sociologists trained in Soviet studies have gone unfilled in recent years" and expects that to change.

Further, William V. D'Antonio, head of the ASA, says he hopes eventually to see U.S. students doing graduate work in the Soviet Union.

For its part, the ASA is looking toward bringing over another crop of Soviet students next year, this time including political scientists and economists, with the cooperation of the American Political Science Association and the American Economics Association. "Soviets are acknowledging that American sociology is where it's at," says D'Antonio. Shelley agrees. She reports that the United States—where sociology is a heavily quantitative field—was chosen as the destination for the 17 students because "French sociology is seen as too qualitative and German sociology too philosophical."

■ CONSTANCE HOLDEN

Global Warming: Blaming the Sun

A report that essentially wishes away greenhouse warming is said to be having a major influence on White House policy

A SLIM, UNREFEREED REPORT that many scientists have dismissed as biased and misleading is said to be at least partly behind the White House's recent temporizing on climate change.

And that is causing consternation among climatologists and other greenhouse experts, who are dismayed that this 35-page document by the George C. Marshall Institute, a Washington, D.C., think tank—rather than one of the massive, carefully researched and reviewed expert reports of the past several years—seems to be holding sway in the upper echelons of the Administration.

The report, "Scientific Perspectives on the Greenhouse Problem," is by three prominent scientists—William A. Nierenberg, director emeritus of Scripps Institution of Oceanography; Robert Jastrow, founder and former director of the Goddard Institute for Space Studies; and Frederick Seitz, president emeritus of Rockefeller University and past president of the National Academy of Sciences. The trio's other major foray into public policy was a vigorous defense of the Strategic Defense Initiative a few years ago.

Scripps

High-level proponent. *William Nierenberg, one of the authors, briefed White House officials.*

Summing up the abundant uncertainties that surround greenhouse models and predictions, the authors say it is too soon to take any actions to reduce greenhouse gases. And by their reckoning, there is little need to. They argue that there is no evidence that the modest temperature rise of 0.5°C that has occurred this century is correlated with emissions of greenhouse gases, and they predict that decreased solar activity in the next century will lead to a cooling trend likely to offset any greenhouse warming. All of this is couched in ample caveats, but the underlying message is that the entire problem has been overblown.

Several scientists are up in arms. Steve Schneider of the National Center for Atmospheric Research, for one, has denounced the report as a political document. Nearly 6 months after its release, he is still arguing about the report's scientific basis with Nierenberg, via letters.

"Noisy junk science," says Jerry Mahlman, director of the National Oceanic and Atmospheric Administration's Geophysical Fluid Dynamics Laboratory, where one of the major greenhouse models was developed.

A number of other respected climate researchers have suggested that the National Academy of Sciences review the study. The Academy is likely to weigh into the ruckus in some way—a couple of committees are looking at the report—though it will stop short of giving the document a formal review.

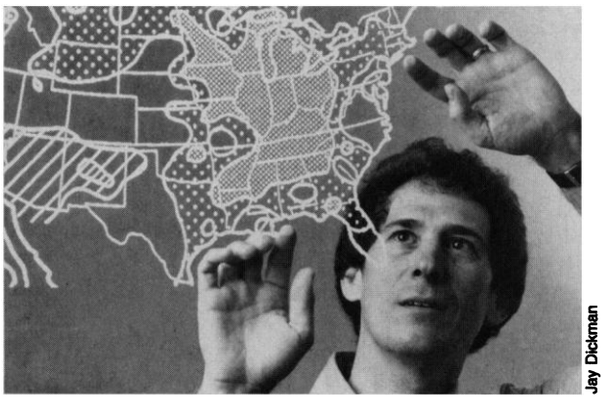
At the Environmental Protection Agency, Alan Hecht, deputy assistant administrator in the office of international activities, says he has "real problems" with the study and recently passed a critique of it onto EPA administrator William K. Reilly. As part of this informal review, Hecht asked Schneider for his comments on the report; Schneider's less-than-flattering letter is now circulating in the scientific community and on Capitol Hill, where Senator Albert Gore (D–TN), for one, is concerned.

The report does have its scientific supporters, including meteorologists like Jerome Namias of Scripps, and Richard Lindzen and Reginald Newell of Massachusetts Institute of Technology—distinguished scientists whose major work is largely outside the greenhouse field. On 23 September, Lindzen and Namias wrote to President Bush extolling the merits of the Marshall report and citing its conclusion that "current forecasts of global warming for the 21st century are so inaccurate and fraught with uncertainty as to be useless to policy-makers."

The message apparently has gotten

through, if not to Bush then to his chief of staff John Sununu, who, it is widely believed, is quite taken with the report. Says Schneider: "Sununu is holding the report up like a cross to a vampire, fending off greenhouse warming."

Just what impact the report has had on Administration policy is difficult to pin down, and Sununu's office is mum on the subject. But it has been widely reported that Sununu tried to block EPA head Reilly from attending an international meeting on climate change at The Hague in early November. At that meeting, the United States refused to commit itself to cutting emissions of carbon dioxide.



Jay Dickman

Leading opponent. *A critique of the report by climatologist Stephen Schneider has been widely circulated.*

Nierenberg, for his part, has been working hard to get the message into the White House. He personally briefed senior Administration staff, including representatives from the White House Office of Cabinet Affairs, the White House Office of Policy Development, the Council of Economic Advisers, and the Office of Management and Budget.

"I was impressed with the report," says Juanita Duggan, special assistant to the President in the cabinet affairs office. "Everyone has read it. Everyone takes it seriously. We have a coherent policy in the federal government that is not inconsistent with the Marshall Institute report."

"It is well worth listening to," adds Paul Roelling, a senior analyst in the White House Office of Policy Development. "They are eminent scientists. I was impressed."

But White House Science Adviser D. Allan Bromley, who was not yet in place when the report was released, seems to be distancing himself from it. "It has a distinguished group of authors, but there is no general consensus on the details and it has not been peer-reviewed," he said in a statement to *Science*.

All the critics concede that the first part of the report is a good description of the scientific uncertainties surrounding predictions of greenhouse warming. And everyone, not surprisingly, agrees with the report's plea for $100 million for more research.

Where the report veers from the mainstream is with the assertion that the warming trend of the past century was probably caused by increased solar activity and not by an accumulation of greenhouse gases—and that, ipso facto, the greenhouse warming next century will be small, perhaps 1°C.

The basis of the report is an analysis of this 0.5°C warming trend, which, the authors point out, does not follow the curve of rising emissions of greenhouse gases. Instead, they look for natural causes to explain the rise and find that solar variation mirrors it rather well. The authors' underlying assumption is that if they can break the connection between that 0.5°C rise and accumulating greenhouse gases, then all bets for future warming are off.

No such luck, says Schneider, who thinks they are setting up a straw man. "Could the sun have done it? Sure," he says, adding that a variety of natural phenomena could explain the temperature rise of the last century. But that, he adds, says nothing about the future greenhouse warming.

"There are uncertainties, but I can't think of any combination of them that could conspire to make the problem go away," says NOAA's Mahlman. Hypotheses are fine, he adds, "but to advise the White House on the basis of this type of argument? Give me a break. That is not responsible."

The reason people are worried about greenhouse warming, Schneider, Mahlman, and others say, is not because of the 0.5°C temperature rise during the past century but because emissions of carbon dioxide, chlorofluorocarbons, and methane are clearly increasing. And it is dead certain that if enough of these greenhouse gases are released into the atmosphere, where they trap heat, global temperatures will rise. The only question is how much, and by when.

Then the Marshall Institute pulls out another card. After analyzing the historical record of solar activity, which can be inferred from carbon-14 in tree rings, the authors predict that solar activity will decrease in the next century, leading to a mini Ice Age that will offset any greenhouse warming.

Preposterous, say solar physicists like John Eddy of the University Corporation for Atmospheric Research in Boulder, who calls their extrapolation "very shaky" at best. We simply don't have the ability to predict future solar activity, he says.

Curiously, Eddy was one of the sunspot experts Jastrow consulted in writing the report. "Bob Jastrow would call me at work and at home on Saturday and Sunday. I would say 'No, no, you can't make that prediction.' I was shocked when I saw what came out."

Jastrow says the emphasis his colleagues are putting on the solar variability discussion is a "distorted" reading of the report, maintaining, along with Nierenberg, that the solar variation hypothesis is just a minor part of their argument.

"Then why did they put it in?" snaps a senior Academy official.

Their bottom line, Jastrow insists, is simply that no scientific conclusion can be drawn about the future greenhouse warming, "and we have time to find out." They assert that with $100 million for supercomputers, answers to these questions will be forthcoming in 3 to 5 years, so why not wait before taking precipitous policy action?

"No one in his right mind would say that," counters Hecht at EPA, who, along with everyone else *Science* spoke with, says it will take a decade or more to address these questions.

In 25 years, Mahlman adds, "Congress will still be asking us questions we can't answer. I don't care if you pour $100 billion at the problem."

The biggest gripe people have with the report is that the authors, in summoning uncertainty to their cause, fail to acknowledge that it cuts both ways. Explains Schneider: "What we don't know is just as likely to make it worse as better."

Solar variability is a case in point. Schneider offers a counter scenario to that in the Marshall Institute report: That during the past 100 years, solar energy output was decreasing rather that increasing. And without that natural cooling, which masked the greenhouse signal, the earth's temperature would have warmed up twice as much. "It's pure speculation," he adds, but since no one really knows what the sun was doing 100 years back, "it is just as likely as theirs." Moreover, says Schneider, if the earth warms up 2° to 4°C, as models usually predict, "it will swamp anything the sun has done in the past 100 years."

John Perry, a meteorologist and staff director of the Board of Atmospheric Sciences and Climate at the National Research Council, agrees. "If the report had just said, in an evenhanded way, 'don't rely on the models because there are hellacious uncertainties,' we all would have applauded. But the way it comes across is that all the uncertainties are on the downside. I don't think that is very democratic." ■ **LESLIE ROBERTS**