• The IPCC summary does not mention explicitly that—thanks to the inclusion of previously neglected aerosols in global circulation models (GCMs)—its 1995 temperature forecasts are one-third less than the range of values endorsed just 3 years ago. Yet statesmen signing a Global Climate Treaty in Rio, including George Bush, were assured that the IPCC forecasts represented a "scientific consensus" and were "of the highest quality."

• The cooling effects of aerosols have been well recognized for some 30 years and have been invoked by climate scientists, such as Murray Mitchell and Reid Bryson, to explain the climate cooling observed between 1940 and 1975. Yet aerosols were incorporated into GCMs only recently—and only imperfectly. Man-made aerosols encompass a wide variety of particulates—sulfates from the emission of SO_2 in fossil fuel combustion to smoke and soot from forest clearing and other biomass burning. Because these have quite different optical properties, their climate effects will also be quite different.

GCMs consider only the "direct" effects that involve scattering of solar radiation and thus an increase in albedo. It is generally acknowledged, however, that the indirect effects, involving the nucleation of cloud droplets, are more important and far-reaching. Unfortunately, these are also difficult to model reliably. To the extent that pollution control by major emitting nations is reducing the creation of sulfate aerosols, one would expect the *current* average warming rate to be greater than 0.3°C per decade, and one would expect to see enhanced regional differences, making the disagreement with observations even greater.

In view of the above, it is difficult to give credence to the statement that "over recent decades the observed spatial pattern of temperature change *increasingly* resembles the expected greenhouse-aerosol pattern" (*1*) (emphasis added). The research has not yet, to my knowledge, appeared in the peer-reviewed literature, violating a major rule of the IPCC. More important, there has not been time for an independent scrutiny to see, for example, whether the resemblance really "increases," irrespective of the GCM and aerosol scenario that are used.

• The summary does not make it explicit that the IPCC time scale for warming has now been stretched out—doubled, in fact, from 2050 to 2100—making any possible impact less dramatic. The summary also does not mention an authoritative U.S. government statement; it quotes a global warming as low as 0.5°C by 2100—only half of the IPCC's lowest 1995 prediction. Such a low value, while barely compatible with current observations, would be inconsequential and even difficult to detect in view of the large natural fluctuations of the climate. Global warming would become a nonproblem. The mystery is why some insist on making it into a problem, a crisis, or a catastrophe—"the greatest global challenge facing mankind" (*1*).

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1. "Working Group I report of the IPCC," available from Bruce Callander, bacallander@email.meto.govt.uk

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Oxidative Stress and Apoptosis in HIV Infection

Jon Cohen's article of 25 August ("Researchers air alternative views on how HIV kills cells," p. 1044) summarizes a recent discussion of AIDS researchers about "Alternative models of HIV pathogenesis." CD4-gp120 interaction, leading to T cell death by apoptosis, is likely to play a major part in the final deterioration of the immune system in AIDS. In this context, we would like to draw attention to the role of reactive oxygen intermediates (ROI's) and neopterin-derivatives. HIV infection is associated with an increased production of cytokines, ROI's, and neopterin-derivatives. Increased neopterin is correlated with the selective loss of the MHC self-restricted $CD4^+$ T cell functional response and of $CD4^+$ T cells in patients with HIV-1 infection (*1*), and neopterin concentrations predict rapid disease progression (*2*). Likewise evidence is accumulating that processes of programmed cell death and latent virus activation may be linked to "oxidative stress" in HIV infection (*3*).

Recent data demonstrate a potential role of neopterin and 7,8-dihydroneopterin in oxygen free–radical-mediated processes. We have shown that 7,8-dihydroneopterin may superinduce tumor necrosis factor (TNF)–α–mediated programmed cell death, accompanied by an increased formation of ROI's (*4*). On the basis of these observations, we propose that neopterin and 7,8-dihydroneopterin, excreted in close correlation (*2*), are likely to join the line of agents and cytokines such as interferon-γ and TNF-α that rule over the fate of cells in HIV infection. Continuous activation of T lymphocytes may lead, along with several other mechanisms, to the build-up of an autokrine loop and finally to the exhaustion of the immune system (*5*).

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4. G. Baier-Bitterlich *et al.*, *FEBS Lett.* **364**, 234 (1995).
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Space Propulsion

James Glanz ("Plasma physicists seek new uses for the legacy of fusion," News, 8 Dec., p. 1569) describes a space propulsion device based on a "leaky" nuclear fusion mirror machine, as proposed by Terry Kammash of the University of Michigan. I proposed the same device almost 40 years ago, providing a detailed preliminary engineering design in two reports, both entitled "The thermonuclear rocket engine" (dated 1 February 1957 and 30 June 1957) to the Aerojet General Corporation. The concept was also described in some detail in the open literature (*1*) and to a generation of graduate aerospace engineering students at Princeton University who took my course "Nuclear Powerplants" (1957–1967). I guess the old adage "there's nothing new in the world" may have some basis after all.

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1. J. Grey, *Astronautics*, October 1959, p. 23.

Corrections and Clarifications

A table entitled "The favored 30" accompanying a News & Comment article by Jocelyn Kaiser about Howard Hughes Medical Institute (HHMI) grants to medical schools ("Med schools receive Hughes windfall," 12 Jan., p. 138) inadvertently omitted two schools. Those omitted were the University of California, San Francisco, School of Medicine and the University of Texas Southwestern Medical Center at Dallas, each of which received a $4-million award—the largest awards given by HHMI. The missing grants awarded by HHMI are shown below. Also, the name of the University of Chicago Pritzker School of Medicine was misspelled.

THE MISSING TWO

$4,000,000

University of California, San Francisco, School of Medicine
University of Texas Southwestern Medical Center at Dallas

In the news article by Jon Cohen "AIDS trials take on peer review" (News & Comment, 5 Jan., p. 20), the table on page 21 should have listed the University of Washington at Seattle instead of Seattle University and the University of Pennsylvania instead of Pennsylvania State University.

Letters to the Editor

Letters may be submitted by e-mail (at science_letters@aaas.org), fax (202-289-7562), or regular mail (*Science*, 1333 H Street, NW, Washington, DC 20005, USA). Letters are not routinely acknowledged. Full addresses, signatures, and daytime phone numbers should be included. Letters should be brief (300 words or less) and may be edited for reasons of clarity or space. Letter writers are not consulted before publication.