side effects—after all, these HDFs presumably exist to help humans, not the virus. It's also a tall order to discover effective inhibitors against HDFs, says Deborah Nguyen, who with colleagues at the Genomics Institute of the Novartis Research Foundation in San Diego, California, recently published a more limited siRNA study to identify new HIV treatment strategies. "Unfortunately, I think this barrier won't be crossed for a while," predicts Nguyen, who says industry's interest in anti-HIV drug R&D is also waning.

Elledge acknowledges the hurdles but counters that many marketed drugs against other diseases target human proteins and provide more benefit than harm. And the hundreds of HDFs his group has identified may play limited roles in human health and development. "Perturbing one may not have a profound effect on a cell, but it may on HIV," he says. Yet he agrees that this flood of new data is confusing: "It takes some hard thinking about where to go next."

Greene says the most immediate challenge is to elucidate the molecular details of how these 273 HDFs interact with HIV. "Currently, the authors can only suggest possible connections," he says. "But what a great starting point." **–JON COHEN**

GEOPHYSICS

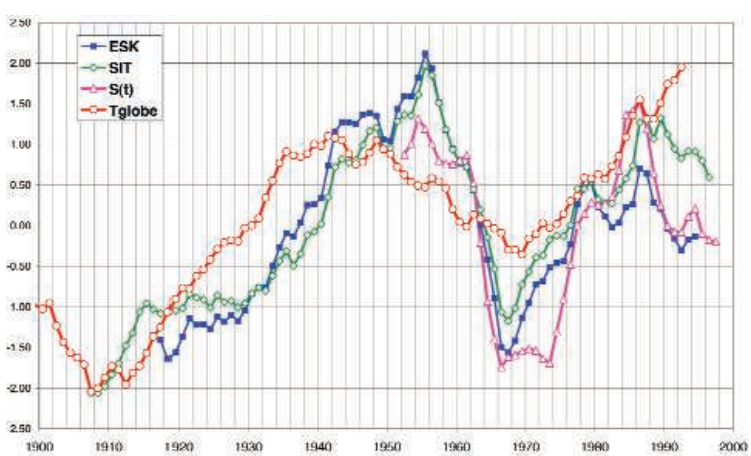
Daggers Are Drawn Over Revived Cosmic Ray–Climate Link

Last year, climate change scientists thought they had driven a silver stake through the idea that fluctuations in solar activity were behind global warming in the last century. Now, a high-profile team led by geophysicist Vincent Courtillot, director of the Institut de Physique du Globe in Paris, has sought to raise the dead in a paper linking changes in Earth's magnetic field to temperature variations in recent millennia.

The paper, which appeared last year in *Earth and Planetary Science Letters*, has drawn fierce criticism, including a rebuttal in the 15 January issue of *EPSL*, and sparked a rancorous debate on a climate blog. "There is nothing new nor valuable in Courtillot's paper," asserts Gilles Delaygue, a geochemist at the University Paul Cézanne Aix-Marseille 3. Not so, says Courtillot. "If we are proven to be right, this will seriously backlash on scientists' credibility," he says.

To illustrate how the sun and Earth's magnetic field influence climate, Courtillot's team presented a graph depicting how fluctuations in solar brightness and the strength and orientation of the geomagnetic field shifted up and down in unison with global temperatures during the past century. This was particularly apparent, they claim, from 1940 to 1970, when a decrease in solar brightness and subsequent weakening of the geomagnetic field was followed by a 0.2°C decline in average annual global temperatures. On centurial scales, Courtillot's team speculates that a higher flux of cosmic rays seeds cloud formation; more clouds would result in lower temperatures. On a millennial scale, they argue, changes in Earth's inner dynamo lead to rapid shifts of our planet's magnetic dipole. Currently, the magnetic north and south poles are located near the geographic poles, funneling cosmic rays into a bone-dry lower atmosphere. According to the team, when the dipole wanders toward more humid latitudes, more cosmic rays may interact with water vapor in the lower atmosphere, influencing cloud formation.

Their study challenges reports last year from the United Nations Intergovernmental Panel on Climate Change (IPCC), which hold that the primary driver of global warming in the past century is rising atmospheric concentrations of carbon dioxide and other greenhouse gases, largely from industrial and auto emissions. Courtillot is one of a handful of credible scientists who reject IPCC's bottom line. "Magnetic field fluctuations and sun pulses fit with global temperature change better than carbon dioxide does," he asserts, reviving a hypothesis that many scientists believe the IPCC reports had discredited. Knowing they are touching a sore spot, Courtillot cautions: "We are not yet drawing conclusions nor giving definitive explanations. We are providing new evidences from observations." He and his team acknowledge that "anomalous warming" in the past 2 decades apparently cannot be linked to solar or geomagnetic activity, although they decline to ascribe it to greenhouse gases.



More than a coincidence? In this controversial figure, Vincent Cortillot and colleagues argue that variations in Earth's geomagnetic field (ESK and SIT) and solar irradiance are linked to global temperatures in the 20th century, until the advent 2 decades ago of what they call an "anomalous warming."

Climate change researchers have set out to strangle the hypothesized climate-geomagnetism connection in its crib. In a comment in *EPSL*, Delaygue and climatologist Edouard Bard of the Collège de France point to flawed analyses of temperature records and other data that they claim undermine the study. Above all, they dismiss the proposed link between solar brightness and cooling in the middle of the 20th century. That cooling, Bard says, is known to be linked to sulfate aerosols, mainly from industrial emissions. "This was an obfuscation of a well-understood phenomenon," geophysicist Raymond Pierrehumbert of the University of Chicago in Illinois commented on RealClimate.org, a Web site run by climate scientists. Climatologist Phil Jones of the University of East Anglia in Norwich, U.K., adds that there is no need to invoke geomagnetism to explain the temperature record.

This is unlikely to be the last word in the saga. "Many mechanisms that have been debunked have not been debunked at all," claims Courtillot, who says that he will soon publish two studies arguing that methods used to measure global temperature need to be revised. Delaygue and many others, however, say that Courtillot's group is doing more harm than good by downplaying the carbon dioxide–climate change link. **–JACOPO PASOTTI**

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