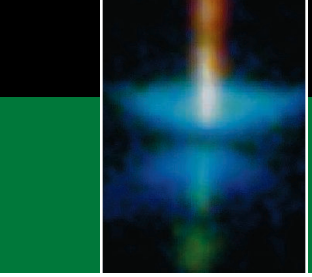
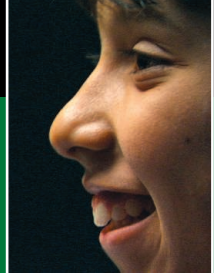


Birth and death of cosmic rays

1184



SPORE Prize Essay

1192

to tease apart the distinction between intrinsic and apparent temperature sensitivities (*1*). However, they omitted the soil carbon stocks most vulnerable to climate change—northern permafrost and most wetlands were excluded from the data (*2*).

In his related Perspective "The carbon dioxide exchange" (13 August, p. 774), P. B. Reich concludes that Mahecha *et al*.'s study "reduces fears" that biotic feedbacks to climate change will amplify the effects of temperature increase. Yet Mahecha *et al*.'s analysis of data from mostly upland forests, grasslands, and croplands cannot represent the temperature sensitivity of decomposition during the phase change from frozen to liquid water in thawing permafrost (*3*). Similarly, large stocks of relatively labile carbon become exposed to aerobic decomposition when wetlands drain, and this climate sensitivity cannot be modeled with data dominated by upland ecosystems.

When carbon stocks hitherto protected by frozen or anaerobic conditions become vulnerable to high rates of decomposition due to climate change, temperature will be important. I urge readers not to be lulled into a false sense of security by misinterpretations of Mahecha *et al*.'s results.

ERIC A. DAVIDSON

The Woods Hole Research Center, Falmouth, MA 02540–1644, USA. E-mail: edavidson@whrc.org

References

1. E. A. Davidson, I. A. Janssens, *Nature* **440**, 165 (2006).
2. C. Tarnocai, *Global Biogeochem. Cyc*. **23**, GB2023 (2009).
3. C. J. Mikan, J. P. Schimel, A. P. Doyle, *Soil Biol. Biochem*. **34**, 1785 (2002).

Response

I APPLAUD DAVIDSON FOR REMINDING US TO be careful of how general statements may be perceived, both in and out of context. Mahecha *et al*.'s conclusions were based on analyses of upland ecosystems, primarily forests and grasslands. When I wrote that their work "reduces fears that respiration fluxes may increase strongly with temperature, accelerating climate change," I intended my interpretation to be applied only within the narrow constraints of the study conditions.

It is true that such conclusions cannot be applied to long-term responses of wetlands and permafrost, where much belowground carbon resides globally. Mahecha *et al*.'s conclusion that the medium-term sensitivity of ecosystem respiration to temperature may be modest could greatly underpredict carbon losses as permafrost thaws or wetlands drain, and it would be an illogical way to model processes involving large, episodic disturbances.

In the long term, changes in amounts and temporal patterns of precipitation may lead to more droughts and floods. Climate change can also indirectly influence terrestrial ecosystem structure and function, resulting in more fires, windstorms, and disease and pest outbreaks. If these direct or indirect climate effects lead to structural breakdown of existing communities (which often occur with floods, severe droughts, forest dieback, or wildfires) or slower but substantive shifts in structure as communities metamorphosize, carbon losses from decomposition and combustion would spike upward, too. Applying short-term analysis of ecosystem respiration by temperature would not serve as an accurate metric for modeling such processes either.

Davidson provides a valuable reminder that we need to maintain a holistic, long-term, and global perspective on biotic feedbacks to the global carbon cycle.

PETER B. REICH

Department of Forest Resources, University of Minnesota, St. Paul, MN 55108, USA. E-mail: preich@umn.edu

LIFE IN SCIENCE

Lab Family Feud

I had just returned from a year-long sabbatical abroad. Refreshed, I looked forward to beginning another productive year. My plans were soon derailed. In my absence, the social fabric of my lab had deteriorated to a point where squabbling, backstabbing, and even screaming were common. My response to this turmoil was indecisive at best. After one particularly painful encounter, it dawned on me that I was in way over my head.

In desperation, I turned to the head of my university's human resources office, who was a trained family therapist. After talking to her individually, she suggested group sessions with all of the lab members. After just one session, she gave us her diagnosis: We were a dysfunctional family, complete with rebellious adolescents (senior students), impressionable children (junior students), and impotent parents (technicians and the principal investigator).

I don't know if it was the shock of forced group therapy or the skill of the therapist, but the sessions worked. The students and technicians relearned how to live and work together, the new students in the lab weren't exposed to continued tension, and I regained control of the lab.

Years in science had done little to prepare me for the psychological challenges of running a lab. I've since recommended the use of an organizational psychologist to several other lab heads. A few hours of concentrated work can go a long way toward resolving interpersonal problems, and more productive science is sure to follow.

DANIEL A. CHAMOVITZ

Department of Molecular Biology and Ecology of Plants, Tel Aviv University, Tel Aviv 69978, Israel. E-mail: dannyc@tauex.tau.ac.il

EDITOR'S NOTE

This is an occasional feature highlighting some of the day-to-day humorous realities that face our readers. Can you top this? Submit your best stories at www.submit2science.org.

CREDIT: PETER HOEY/WWW.PETERHOEY.COM

Letters to the Editor

Letters (~300 words) discuss material published in *Science* in the previous 3 months or issues of general interest. They can be submitted through the Web (www.submit2science.org) or by regular mail (1200 New York Ave., NW, Washington, DC 20005, USA). Letters are not acknowledged upon receipt, nor are authors generally consulted before publication. Whether published in full or in part, letters are subject to editing for clarity and space.

Published by AAAS