

see Cuba following the Chinese model of "perestroika yes, glasnost no."

Other scientists, however, are not as optimistic and even talk about the possibility of a popular uprising or civil war. Some complain about the political control in the institutes—like it used to be in the old Soviet Union, where at least one top-level manager always belonged to state security; they complain about restrictions on foreign travel, which they encounter even if they are invited and paid to attend, and about having to perform work for which they have not been trained, such as unpaid "volunteer" labor unrelated to science a la Soviet "subotniki." They are also concerned about the current government directive to ACC institutes to self-support their convertible currency needs by developing commercial enterprises, as is happening in Russia [see *Roederer*, 1992].

The Cold War has come to an end—but not for all. Some residues remain, and for those who must suffer the consequences, these are not residues but bitter reality. This is not the time for the international scientific community to pass political judgement on our desperate colleagues in Cuba; rather, it is a time to help them bridge an extremely difficult and uncertain period of impending transition.

This assistance must go far beyond financial help, which as long as the embargo lasts could not be delivered by U.S. institutions anyway. It requires positive efforts to promote the establishment of professional contacts with Cuban scientists; the international bodies of the International Council of Scientific Unions (ICSU) could assist effectively with this. We should reassure our Cuban colleagues that we understand and care about their predicament, making an extra effort to send them preprints, reprints, books, and donating journal subscriptions.

We should persuade our colleagues in Russia to reestablish former ties with Cuban laboratories and scientists and to seek financial support from international or private foundations for such programs. We should try to get personally involved in cooperative projects with Cuban scientists in fields that are relevant to their scientific future, such as area-specific global change research, oceanography, computer modeling, and related software development. (A word of caution to geoscientists residing in the United States: Penalties can be imposed by the government for any personal action deemed by the Treasury Department to benefit Cuba's economy. This includes donations of scientific equipment and teaching courses in Cuba. Call the Treasury Department at 202-622-2520 for instructions.)

I can only hope that a new policy toward Cuba will be developed that contemplates a country in transition—a policy crafted to help Cuba and its scientists gradually and patiently reenter the family of American nations in equality and freedom.—*Juan G. Roederer, Geophysical Institute, University of Alaska Fairbanks*

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SECTION NEWS

HYDROLOGY



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Shirley J. Dreiss (1949–1993)

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The hydroscience community recently lost one of its true leaders. In rainy weather on December 14, 1993, Shirley Dreiss lost her life in a collision with a cement truck while driving from Santa Cruz, Calif., to San Francisco Airport.

Shirley, 44, was professor and chair of the Department of Earth Sciences at the University of California at Santa Cruz. A superior research scientist and educator, the breadth of her activities and interests were perhaps unnoticed by many because of her modesty and generosity. To those in the field she maintained an international reputation as a hydrogeologist with recognized expertise in diverse topics including arid basin hydrology, quantitative analysis of flow through karst aquifers, moisture and contaminant transport through unsaturated soils, and the hydrogeology of subduction zones.

After obtaining her B.S. in geology from the University of Texas at Austin, she was awarded a national Science Foundation Fellowship and then received her early training from two of the fathers of modern hydrogeology. She took her M.S. with Stan Davis at the University of Missouri, where she developed an interest in karst hydrology. At Stanford University she worked with Irwin Remson, continuing in the area of karst hydrology and developing an innovative linear systems approach to describe flow through karst.

Irwin Remson said of Shirley, "She was a gifted scientist with a unique combination of strong quantitative skills combined with truly innovative ideas. Her thesis research re-

quired virtually no faculty supervision. There was little that anyone could add to Shirley's brilliant formulations and implementations."

In recent years Shirley was propelled to a leadership role in the hydroscience community. She served as a member on two National Academy of Sciences Committees; one to study the Mono Lake ecosystem in eastern California and another to evaluate the Environmental Protection Agency's Environmental Mapping and Assessment Program. She was a prominent member of two scientific panels of the Ocean Drilling Program. Shirley was active in AGU as a conference convener and contributor to *Water Resources Research*. She was an associate editor of *Geology*, and a member of the NSF Hydrologic Sciences proposal review panel. From its first meeting in 1977, Shirley was active in the San Francisco Bay Area Chapter of the Association of Women Geoscientists.

Her scientific achievements gained widespread attention during her tour as the 1991–1992 Birdsall Lecturer of the Geological Society of America in which she brilliantly discussed, in two different lectures, groundwater flow through karst and subduction zone hydrogeology.

One of Shirley's first graduate students, Melitta Rorty, recalls that, "Shirley was always a great advocate for me, both during grad school and in my professional career, and in many ways I feel fortunate to have had a woman advisor in such a male-dominated field." One of her most recent doctoral graduates, Barbara Bekins, now at the USGS, captures an image of Shirley held by many as an individual with "enormous energy and enthusiasm."

While both were graduate students at Stanford, Shirley met her husband, David Freyberg, currently associate professor in the Department of Civil Engineering at Stanford. Together they represented a powerful "AGU" pair, contributing greatly to the field of hydrogeology. Her tragic loss is felt by all of us, but by none greater than Dave Freyberg, her companion of 14 years, as well as Shirley's parents and two brothers.

The Dreiss Memorial Fund has been established at the GSA Foundation to provide funding for the newly renamed Birdsall-Dreiss Distinguished Lecturer Series. Those wishing to contribute may send their donations to GSA Foundation, Dreiss Memorial Fund, 3300 Penrose Place, PO Box 9140, Boulder, CO 80301.—*Steven M. Gorelick, Stanford University, Stanford, Calif.*

