(SA) IRD layers is unknown. However, the layers we described in our report correlate across 12° of latitude (greater than 1300 kilometers). Although a correlative relation has not been established with the SA events, discrete glacial-aged IRD layers have also been reported in numerous other South Atlantic cores (*1*). The northernmost record of SA events (at 41°S) was situated north of the Polar Front even during the last glaciation (*2*). This supports the interpretation that SA events are not simply an artifact of increased iceberg survivability due to decreased glacial sea surface temperatures, and it implies that the associated influx of icebergs was of sufficient numbers or sizes or both to survive the comparatively warm water at 41°S. Consequently, we believe that IRD analysis of additional core locations around the South Atlantic will support our proposition that the SA events are areally extensive, although only further work can prove this unequivocally.

Clark and Pisias contend that "[t]he IRD records from the South Atlantic...appear to share more in common with the non-Heinrich IRD layers in the North Atlantic than with the Heinrich layers" and because the non-Heinrich detrital carbonate layers of the North Atlantic have been associated with cold events, they represent "a stable, climatic response of marine ice-sheet margins to a climate forcing." To establish the age control of the cores we described, we used linear interpolation between radiometrically determined ages and ages derived from correlation of the oxygen isotope record to SPECMAP [(*3*); see description in our report]. The limited occurrence of carbonate within South Atlantic sediments poses a significant obstacle to high-resolution radiocarbon dating of such sequences (*4*). Therefore, the chronology is not precise enough to discuss with confidence the duration of each of the individual SA events. However, with the exception of events SA1 and SA3, accumulation rates of total lithics during SA events rise to about 10 times that of ambient rates (greater than 60 times the ambient rates in the case of SA0). Thus, similar to the Heinrich events interpreted as evidence of surging of the Laurentide Ice Sheet, the SA events appear to be both areally extensive and rapidly deposited. Also, correlation of the South Atlantic marine core from site 1094 to the Vostok Ice Core did not reveal a similarly strong association between the SA events and regional cold events (*5*). Thus, they do not appear to represent a stable response of marine ice-sheet margins to a regional climate forcing.

Finally, we agree with Clark and Pisias that the linkages between the physics of ice sheets and the formation of an IRD signal have not been clearly established. Several statements made by Clark and Pisias suggest they equate ice-sheet instability with surging. Although many researchers would similarly restrict the definition of ice-sheet instability to mean a surge, we use the term in the manner defined by Clark and Pisias, to encompass "either mechanical or a highly nonlinear response to a given forcing." We differ from Clark and Pisias in that we hesitate to postulate what the precise nature is of the nonlinear response to forcing. A surge is one means by which Antarctic Ice Sheet instability could result in increased influx of debris-laden icebergs to the South Atlantic. However, so too could a rapid disintegration of ice-shelves as a result of sea-level rise (*6*). Whether and in what ways such vastly differing ice-sheet behaviors leave differing imprints on IRD records remains to be answered.

Sharon L. Kanfoush
Department of Geology, Utica College of Syracuse University, Utica, NY 13502, USA, and Department of Geological Sciences, University of Florida, Gainesville, FL 32611, USA. E-mail: skanfoush@utica.ucsu.edu

David A. Hodell
Department of Geological Sciences, University of Florida. E-mail: dhodell@geology.ufl.edu

Thomas P. Guilderson
Lawrence Livermore National Laboratory, Livermore, CA 94550, USA, and Department of Earth and Planetary Sciences, Harvard University, Cambridge, MA 02138, USA

References

1. N. D. Watkins, M. T. Ledbetter, T. C. Huang, in *Antarctic Geoscience: Third Symposium on Antarctic Geology and Geophysics* (University of Wisconsin, Madison, WI 1982), pp. 1013–1016; D. G. Smith, M. T. Ledbetter, P. F. Ciesielski, *Mar. Geol.* **53**, 291 (1983); L. D. Labeyrie *et al.*, *Nature* **322**, 701 (1986).
2. U. Brathauer and A. Abelmann, *Paleoceanography* **14**, 135 (1999).
3. D. G. Martinson *et al.*, *Quat. Res.* **27**, 1 (1987).
4. Shipboard Scientific Party, in *Southern Ocean Paleoceanography*, vol. 177, *Proceedings of the Ocean Drilling Program, Initial Reports* (Ocean Drilling Program, College Station, TX, 1999), chap. 1, p. 35 (also available at http://www-odp.tamu.edu/publications/177_IR/177TOC.HTM).
5. S. L. Kanfoush *et al.*, in preparation.
6. C. L. Hulbe, *Paleoceanography* **12**, 711 (1997).

Life Expectancy in Eastern Europe

In his News Focus article "Stress: The invisible hand in Eastern Europe's death rates" (9 June, p. 1732), Richard Stone highlights the potentially important role that psychosocial stress plays in cardiovascular disease mortality and suggests that this factor, at least in part, explains the epidemic of heart disease in Eastern Europe and the former Soviet Union. Although this is an important issue to raise, Stone says that life expectancy "plummeted" in Eastern Europe in the early 1990s; however, for many countries in the region the opposite, in fact, occurred: life expectancy began to rise after 1989, following the decades of stagnation in life expectancy that began in the mid-1960s. This is particularly true in the countries that more successfully implemented market reforms. In Poland, for example, male life expectancy at birth rose from 66.2 years in 1990 to 68.1 years in 1996 (*1*), and in the Czech Republic, male life expectancy at birth rose from 67.5 to 70.4 years between 1990 and 1996 (*2*). A graph in Stone's article even shows the increase in life expectancy in Hungary in the early 1990s.

Also in contrast to Stone's article, cardiovascular disease mortality has fallen in many East European countries in the 1990s (*3*). Although it is true that many countries of the former Soviet Union suffered severe declines in life expectancy in the early 1990s—especially Russia, Ukraine, and the Baltic countries—the mortality experiences of the former socialist countries in that period were far from uniform.

Elizabeth L. Brainerd
Center for International Development, Harvard University, 79 John F. Kennedy Street, Cambridge, MA 02138, USA. E-mail: elizabeth_brainerd@harvard.edu

References

1. *Rocnik Demograficzny* (Demographic Yearbook 1998) (Central Statistical Office, Warsaw, 1998), p. 309.
2. *Statistická Roc enka C eské Republiky* (Statistical Yearbook of the Czech Republic, Prague, 1997), p. 122; *ibid.*, p. 125.
3. W. A. Zatonski, A. J. McMichael, J. W. Powles, *Br. Med. J.* **316**, 1047 (1998); M. Bobak, Z. Skodova, Z. Pisa, R. Poledne, M. Marmot, *J. Epidemiol. Commun. Health* **51**, 272 (1997).

Response

Brainerd is right to point out that mortality in the former socialist countries was not uniform between 1989 and the early 1990s. Stone's article covered several but not all of the issues discussed at the NATO Advanced Research Workshop ["Increase in Coronary Heart Disease in Central and Eastern Europe: Stress- and Gender-Related Factors," 20 to 24 May 2000, Budapest (*1*)].

The most striking feature of the health crisis in many Eastern European countries is that it did not affect those groups that are considered especially vulnerable, such as children and the elderly, but instead affected those of working age. For example, between 1989 and 1993, mortality, primarily due to cardiovascular conditions, among 30- to 49-year-old men (divided into four age groups) rose 70 to 80% in Russia, 25 to 52% in Ukraine, and 7 to 13% in Poland; among women, the increases were 52 to 57%, 20 to 28%, and 4 to 11%, respectively (*2*). Furthermore, estimates of excess mortality (that is, absolute number of people who have died exclusively due to rises in age- and sex-specific death rates and not because of aging or population growth) show very different health prospects for men and women, especially in Romania, Poland, and the Czech

Republic, where excess mortality rose for men during 1989 to 1993, but became negative for women (*2*).

Thus, the transition period in Eastern Europe has not affected the health of all people in all countries in the same manner. Specifically, Brainerd points to a recent increase in male life expectancy at birth observed in Poland, the Czech Republic, and Hungary. She suggests that this may be the case because these countries have more successfully implemented market reforms. However, the time of transition was also a time of increasing income inequality: countries with the largest increases between 1989 and 1996 were Russia and Ukraine, and those with the smallest were Poland, the Czech Republic, and Hungary (*3*).

Although improvements in life expectancy have been observed in some Eastern European countries over the past 5 years, the outlook for the future remains bleak: no change—or a further decrease—in life expectancy at birth among men of the former socialistic economies of Europe is expected for the next 20 years, whereas women's life expectancy is projected to remain unchanged or to increase (*4*). The fact that the health crisis in many Eastern European countries continues to assert a greater effect on men than on women suggests that men may be more vulnerable to the socioeconomic and political changes characterizing the transition period. Specifically, conditions of loss of control over life, economic deprivation, and social isolation may be more threatening to those embracing traditionally male roles. Indeed, research has shown that men's coping with stressful events is less adaptive physiologically, behaviorally, and emotionally compared with women (*5*). Intervention efforts aimed solely at traditional health risks such as smoking, excessive alcohol consumption, high blood pressure, and obesity will be insufficient to improve the situation in Eastern Europe. A more productive approach to increase life expectancy for both men and women might be to strengthen social relationships, decrease social isolation and depression, and increase adaptive coping skills.

Gerdi Weidner
Department of Psychology, State University of New York, Stony Brook, NY 11794–2500, USA

References

1. G. Weidner, M. Kopp, M. Kristenson, Eds., "Heart disease: Environment, stress, and gender" (*NATO Sci. Ser. Ser. I*, in press).
2. UNICEF, *Central and Eastern Europe in Transition: Crisis in Mortality, Health and Nutrition* (UNICEF International Child Development Centre, Florence, Italy, 1994).
3. C. Hetzman, A. Siddiqi, M. Bobak, in (*1*).
4. J. L. Murray and A. D. Lopez, *Lancet* **349**, 1498 (1997).
5. G. Weidner, *J. Am. Coll. Health* **48**, 291 (2000).

CORRECTIONS AND CLARIFICATIONS

Cover: (15 Sept.). The satellite image of Antarctica on the cover of this issue was mistakenly printed as a mirror image.

Letters: "Less is moa," response by R. N. Holdaway and C. Jacomb (1 Sept., p. 1472). The last sentence of the second paragraph mistakenly referred to an "educational layer" in the archaeological record. The sentence should have read, "We cannot see why one moa collagen date was preferred over two marine shell dates...from the same cultural layer."

News: "Searching for the mark of Cain" by M. Enserink (28 Jul., p. 575). The definition of NOS on page 578 should have read "nitric oxide synthase," not nitrous oxide synthase.

News of the Week: "Brown dwarf's flare opens x-ray eyes" by C. Seife (21 Jul., p. 373). Thomas Fleming is an astronomer with the University of Arizona's Steward Observatory, not Lowell Observatory, which is a private research observatory.