The International Council for Science (ICSU), a global non-governmental organization that comprises more than 100 national scientific bodies and 29 international scientific unions, submits that the greatest challenge facing us, as 21st-century scientists, is the widening gap between the advance of science and society’s ability to use it. (ICSU Report 2006). This broad notion underpins much of ICSU activity, which includes planning and coordinating inter-disciplinary research; actively advocating freedom in the conduct of science; acting as a focal point for the exchange of ideas; and supporting more than 600 scientific conferences, congresses, and symposia each year. A recently constituted ICSU panel on natural and human-induced environmental disasters, for example, is charged with gaining a better grasp on why, despite advances in scientific understanding of the natural and social causes for disasters, disaster losses continue to mount (CSPR Report 2005).

If the gap between science and society’s ability to use it is indeed widening, many meteorologists in general, and researchers in particular, ought to be concerned. We have responded over the years. NOAA, NASA, and NSF have all invested in applied research, systems development, technology transfer, rapid prototyping, decision support tools, community-based research, and extension services, in an effort to accelerate the societal benefits from science and technology. A new breed of experts, known variously as bridgers, information brokers, translators, or interpreters, is emerging to facilitate this work. Additionally, cost–benefit analyses and other socioeconomic research can help prioritize science and technology based on likely societal utility.

Such efforts are necessary, but are they sufficient? So far, the work has proven demanding, widespread support has been minimal, and improvements have been uneven and incremental at best. Moreover, the benefits of science (although they can be characterized) are not fundamental constants. Instead, they vary considerably, depending on the prevailing policy framework at all levels of government. Consider, for example, the differences between U.S. electricity deregulation and water resource management. Electricity deregulation and the growth of regional and national power grids has reduced margin (the surplus-generating capacity of private utilities, which had previously been largely idle).

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Extreme Weather Statistics at Your Fingertips

by Emily Laidlaw*

Chances are you’ve personally experienced at least one extreme weather event such as a hurricane, a flood, or a drought. But if you needed specific statistics on the losses caused by these events—damage dollar amounts, insured property losses, and numbers of fatalities and injuries, for example—would you know where to look?

If you haven’t heard of the Extreme Weather Sourcebook, you could be missing out on a wealth of useful data. The sourcebook is a simple, user-friendly Web site (http://www.sip.ucar.edu/sourcebook) that hosts a comprehensive database of U.S. extreme weather impacts statistics, sorted by state and dating in some cases back to 1900. You can view these statistics in several ways: alphabetized by state name, ordered by numerical rank, or listed from the state with the most losses to the state with the least losses.

The Lightning section currently features the greatest variety of data, ranking the number of lightning fatalities, injuries, and damage reports since 1959. There’s even a chart that compares casualty and damage reports for each state. In the Other section, you’ll also find a variety of interesting data, such as the annual average number of hail days and crop-hail, insurance-loss cost values since 1950.

Although right now the sourcebook contains data only through 2001, SIP staff members plan to begin adding more recent data to the site early this year. During the short time since SIP acquired the Web site from Roger Pielke, Jr. and his colleagues at the Center for Science and Technology Policy Research in August 2006, the number of sourcebook hits has increased by nearly 200%. We think this proves that the Extreme Weather Sourcebook merits not only preserving but also improving and promoting!

The SIP staff would like your feedback on the sourcebook. For example, how useful do you find the current information? What data would you like to see added? Can you suggest design features that might make the Web site more user-friendly?

To submit feedback on these and other topics, please send your thoughts to Emily Laidlaw at laidlaw@ucar.edu.

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At the same time, the value of accurately knowing tomorrow’s maximum and minimum temperatures (and hence future electricity demand) has increased. In contrast, water resource managers operate under a complex web of regulatory constraints (such as looking after the interests of the public, utilities, farmers and ranchers, fisheries, and indigenous peoples) that works against the use of forecasts in decision making (Rayner et. al 2005).

The previous examples, just two among many, illustrate the profound effect of policy on forecast value. Such examples strongly suggest that the key to increasing society’s ability to benefit from science lies primarily in the realm of communications, social science, policy, and even politics. Many physical scientists are uncomfortable operating in this sphere. The Navier-Stokes equations are silent on such subjects. The world of politics has a different set of rules. Accordingly, we should tread more cautiously, and arguably a lot more humbly, when on political or economic ground.

In the future, scientists, policy makers, and the public will have to collaborate more effectively if scientific advances are to rapidly improve the human condition.

Here’s one mistake we make. We think that if society is not benefiting from our work, it’s primarily because we simply haven’t articulated those benefits with sufficient clarity. We focus on improving our story, on using terms a layperson can understand, on broadening the reach of our message. But in fact, it’s far more likely that we haven’t listened closely to what society has been telling us it needs.

Take an example of an institution that listens well as part of its culture—NCAR’s Research and Applications Laboratory (there are other success stories, but this one is close to home). The RAL Web site focuses on end use and end users. And RAL’s management and staff are often on the road, visiting customers on site. Need a model to gauge your own abilities in this regard? Think about your significant other. If you’re meeting his or her needs, chances are it’s because you listen—and respond—well, not because you can make an eloquent case for what a nifty person you are.

In the future, scientists, policy makers, and the public will have to collaborate more effectively if scientific advances are to rapidly improve the human condition. And I’m overstating here a