NCAR

Weather and Society Watch

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Incorporating IMPACTS into Your Research, the Right Way!

by Eve Gruntfest* and Cedar League**

At the June 2007 American Meteorological Society Weather Analysis and Forecasting (WAF) meeting in Park City, Utah, 16% of abstracts contained the term "impact" in their titles. This percentage is up from the 2005 WAF meeting in Washington, D.C., where only 6% of the titles contained the word. Although it's encouraging that meteorologists are considering impacts in their research more and more, the "impacts" in the WAF talks were often woven in only superficially.

For example, a talk about the "societal impacts" of Hurricane Katrina showed 2005 Fox News Web sites. In this case, literally thousands of easily accessible Web sites could have been combed for more contemporary summaries of Katrina impacts. In another presentation about the impacts of the December 2006 major snowstorms in Colorado, the talk was really about the meteorology of the storm; the "impacts" part was represented by a photo of a colleague's house buried under three feet of snow!

Societal impacts are an integral component of meteorological research—in fact, the impacts of weather forecasts on society are just as important as the forecasts themselves. When we incorporate impacts into meteorological research, we must consider socioeconomic factors such as the affected regions and neighborhoods, the economic status and cultural values of the affected residents, and the amount and severity of damage after hazard events, among many others. In this context, the impacts themselves tell a story—structured around who, what, where, when, and why.

Yet meteorologists don't generally receive any formal training in how to consider socioeconomic impacts. In this brief editorial, we aim to help physical scientists find information about impacts to enrich their research and presentations.

The impacts of weather forecasts on society are just as important as the forecasts themselves.

We can only scratch the surface in the lists that follow, but our intention is to help direct scientists to some of the resources they can use to incorporate societal impacts in a meaningful way.

University Resources

- The University of Colorado at Boulder Natural Hazards Center summarizes "Quick Response" research that gives statistics and backgrounds for more recent extreme events: http://www.colorado.edu/hazards

- The Hazards and Vulnerability Research Institute at the University of South Carolina focuses on developing "theory, data, metrics, methods, applications, and spatial analytical models for understanding the newly emergent field of hazard vulnerability science": http://www.cas.sc.edu/geog/hrl/

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This vehicle was severely damaged by a snowplow during a March 2003 blizzard in Boulder, Colo. (Photo by Emily Laidlaw)

In This Issue

Life and Death Decisions in the Path of a Violent Tornado

by Ernest Ostuno*

On April 3, 1956, the worst tornado in the history of western Lower Michigan killed 17 people and injured more than 200 others. Thirteen people died in Hudsonville and four perished in the northwestern suburbs of Grand Rapids.

In preparation for observing the storm's 50th anniversary in 2006, the Grand Rapids National Weather Service (NWS) Forecast Office, along with members of the local emergency management community, embarked on a project to document the tornado's impact on the communities it struck. As part of this project, we put together a documentary video and a Web site. Our primary goals were to raise local public awareness about the threat of tornadoes and to teach severe weather safety tips.

The F5 tornado moves through the northern outskirts of Hudsonville, Mich. on April 3, 1956. (Photo by Myrtle Coats)

The project team interviewed approximately two dozen people who had been in the path of the tornado, asking questions about their level of awareness leading up to the storm and how they reacted once the tornado was sighted. I summarize several of those interviews in this article.

Typical of most tornado events, some people were caught totally unaware of the impending storm, while others had some foreknowledge of the threat. After killer tornadoes struck in Wisconsin early that afternoon, the National Severe Storms Forecast Center issued a "tornado forecast" (the 1956 equivalent of a tornado watch) for much of western Lower Michigan at about 2:15 p.m. Several interviewees had heard weather forecasters mention tornadoes before the storm struck. Some schools were let out early and Civil Defense (the 1956 equivalent of emergency management) was alerted.

The tornado began at approximately 6:30 p.m., when many people were having dinner and were not listening to the television or radio. A Civil Defense post near Grand Rapids quickly sighted the storm, though, and the U.S. Weather Bureau (the 1956 equivalent of the NWS) issued a tornado warning. Television and radio stations began broadcasting the warning and continued with live updates on the course of the storm through Hudsonville and near Grand Rapids. Broadcasters warned people to go to their basements. Several interviewees mentioned this advance warning, which was credited with saving many lives along the path of the storm.

The experiences of those in the path of this tornado illustrate the importance of teaching severe weather awareness to the public.

None of those interviewed had seen a tornado before this storm. At first, many people in Hudsonville mistook the tornado for a column of smoke from a large fire, a sight with which they were familiar because several fires had occurred in the area in the years leading up to 1956. Some did not take evasive action until they literally watched nearby homes being torn apart by the tornado.

The first fatality occurred about five minutes after the tornado began, when a farmhouse that was home to a family of five was demolished and the mother was killed. This family had been unaware of the tornado and did not have time to react when it struck.

The picture window of the house faced west; the tornado approached from the southwest. The next-door neighbors sighted the tornado out their window, which faced southwest. They made it to the basement in time and suffered only slight injuries when their house was swept away. Minor differences, such as the view afforded from a window, made the difference between life and death.

The decision to outrun the tornado in a car worked for some people, but did not work for others. Three people in two separate cars were killed trying to drive out of the path of the storm. Several others were injured, including a family that drove into the tornado from their home, which the tornado missed. This family had never seen a tornado before and did not recognize what was happening. The decision was made to flee the house based on a desire to "get out of there before the house blew away," even though they had a basement.

One family that was directly in the path of the tornado was lucky to survive as they drove away literally at the last second. They did not make

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From the Director

A Visit to Obninsk, Russia
by Jeff Lazo*

I was in Obninsk, Russia in September with Rodney Weiher, NOAA's chief economist, for a meeting on U.S.-Russia cooperation on the benefit of the information-related activity of National Hydrometeorological Services.

Home to about 80,000 people and located 60 miles southwest of Moscow, Obninsk houses a 315-meter-tall observation tower, built in 1958, equipped for measuring for meteorological phenomena. The tower is an official landmark of Obninsk and is next to the Russian Research Institute for Hydrometeorological Information - World Data Center (RIHMI-WDC).

Another less obvious Obninsk landmark is a 60 megawatt nuclear power station—part of the aptly-named "science city" and the first civilian nuclear power station in the world. This power station was part of the reason the city apparently didn't appear on official maps until after the fall of communism. Incidentally, the Obninsk Meteorological Tower also measures radioactivity.

One thing I have found since becoming director of the Societal Impacts Program is that there is worldwide interest in societal impacts of weather and weather forecasts. I have also found that there are not enough qualified people doing valid social science research in this area. Because of this, I have had the pleasure (or pain while flying in economy class on a ten hour flight) of visiting China, Australia, Canada, and several European countries to talk and meet about societal impacts and weather forecasts and the work we are doing in the Societal Impacts Program.

Across all these countries, I've noticed that people in the hydro-meteorological community are very passionate about what they do. Most of them are passionate largely because they feel their efforts have real-world societal benefits and not *just* because they like the science. I think they know intuitively—and from their own experience— that society benefits in significant and important ways from their work. And they're looking more and more to societal impacts research to better quantify, characterize, understand and monetize these benefits in support of their work.

This visit to Russia, as well as a previous visit to China, to discuss economic analysis raised some interesting issues for me as an economist. First and foremost in my mind (but not explicitly discussed at the meetings) was the question of how to do economic analysis where there is no history of market economics.

Western economic theory and methods are based largely on our functioning markets, in which prices are reasonable indicators of the value individuals place on the goods and services they buy and sell. In the West, even if forecast services are measured using nonmarket methods, we still presuppose functioning markets for other goods.

Another question is whether, or what amount of, resources should be going to social science research and analysis when resources for forecasting systems are so limited. To the extent that social sciences can help secure more resources for forecasting and warning systems to benefit society and to help prioritize and improve where such resources are used, then I would say there are good reasons for such analysis.

The Obninsk Meteorological Tower (Photo by Jeff Lazo)

In general, though, I think that social sciences (mainly economics) are understood primarily as a way to justify budgets, with little consideration given to how these sciences can benefit society. I hope that, over time, the understanding can shift away from justifying budgets and toward how the social sciences benefit society.

Finally, I note that there is a fairly extensive history of economic policy in particular doing the wrong thing when trying to help developing (or should I say "non-developing") countries.[1] With the increased use of economics and other social sciences in assessing impacts and values of hydrometeorological services in such countries, I think the interesting and perhaps unanswered question is: What will the proper role be for social science research?

[1] See William Easterly's 2001 book, *The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics* (Cambridge, MA: MIT Press).

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How Much Does a Natural Disaster Really Cost?

by Nathaniel Bushek*

On August 29, 2005, Hurricane Katrina made landfall in Louisiana, devastating the Gulf Coast region and causing an estimated $81 billion in damage….

On August 29, 2005, Hurricane Katrina made landfall in Louisiana, devastating the Gulf Coast region and causing an estimated $125 billion in damage….

On August 29, 2005, Hurricane Katrina made landfall in Louisiana, devastating the Gulf Coast region and causing an estimated $40.6 billion in damage….

The monetary differences in the above statements are obvious. Yet, none of these statements are intentional fabrications, and all are asserted by reputable organizations. So how can we explain these divergent truths? And, more importantly, what can we do to reconcile them?

First, let's start with the sources of the statements. The first figure of $81 billion is the original Hurricane Katrina damage estimate, including uninsured losses, reported by the National Hurricane Center. The second figure is the revised estimate of $125 billion, which includes uninsured losses and flooding, reported by the National Climatic Data Center (NCDC). The third figure, $40.6 billion, is the estimated total of filed insurance claims, reported by Insurance Information Institute[1].

Despite the differences, all three Hurricane Katrina figures are regularly used in preparing presented cost estimates[2]. And such inconsistencies in damages estimates are not exclusive to Hurricane Katrina. Similar inconsistencies appear in hurricane, flood, tornado and other damage data. Many of the inconsistencies can be explained by the fact that there is no single, consistent and comprehensive definition for "damages" or "costs" of natural disasters.

In the Hurricane Katrina example, all three estimates are made by groups that define "damage" differently and the resultant difference in estimates is enormous—and this is only a single example from a single disaster. When comparing estimates across temporal and spatial scales, the fluctuations in definition of damage are further magnified, greatly diminishing accuracy and precision. For example, sometimes property damage includes damages from flooding; sometimes it doesn't. Historical measurements often include agricultural damages in property damage; recent values do not. Sometimes inland damages from hurricanes are included in property damages[3]; sometimes they're confined to coastal areas.

Contents ruined by muddy October 2000 floods in Bevendean, England (Photo by Ilan Kelman; http://www.ilankelman.org/)

Disasters can tear apart cultural structures, cause psychological and physical health problems for survivors, and widen the gap between the haves and the have-nots.

Let's skip ahead now to a world where we have found a gold standard for the definition of "damages" or "costs" of natural disasters. Unfortunately, we're still faced with a myriad of issues. One of the foremost is this: where do these damage figures come from and how reliable are these figures? Before beginning data collection to update SIP's Extreme Weather Sourcebook, I had pictured hundreds of damage appraisal specialists working long hours to tally up dollars and cents in the region's devastated towns and cities. But in reality, the only on-ground appraisals conducted are for insured property (aside from FEMA appraisals to public property and infrastructure where federal assistance is being sought).

With few exceptions, damage estimates are usually a manipulation of insurance claims totals. Total hurricane damage (including uninsured losses), for example, is generally estimated by doubling the insured loss figure. But given the diversity of disasters and damages, as well as socioeconomic realities of areas affected, is the "constant times two" method really accurate?

The obstacles associated with maintaining data collection consistency are exemplified in the following NWS directive, concerning preparation of information for *Storm Data*[4], a NCDC publication:

"Property damage estimates should be entered as actual dollar amounts, if a reasonably accurate estimate from an insurance company or other qualified individual is available. If this estimate is not available, then the preparer has two choices: either do not make damage entries, or make an estimate."

The vagaries of this statement are likely magnified by the varying

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Scientific Outreach for Scientific Advocacy

by Ilan Kelman*

On August 8, 2007, New York City was pummeled by storms. Public transport was disrupted, thousands lost power, and a tornado damaged several homes. The media and the public demanded answers, especially about why the storm caused so much trouble and whether more such events could be expected in the future. Scientists, including me, were asked about the link of severe weather events to climate change.

Jim Hansen, director of NASA's Goddard Institute for Space Studies in New York, summarized the answer when he was quoted on http://www.livescience.com as saying "You cannot blame a single specific event, such as this week's storm, on climate change. However, it is fair to ask whether the human changes have altered the likelihood of such events. There the answer seems to be 'yes.'" That statement is a perfect example of science outreach and communication. It is scientifically accurate, succinct, and stated in plain English.

Other scientists offered additional perspectives. Also on livescience.com, I was quoted as noting that inadequate investment in infrastructure was an important factor in the event's impacts, irrespective of the influence of climate change. The journalist made it clear, as I had stated during the interview, that I do not have specific proof for New York City, but was commenting on a pervasive national pattern related to infrastructure and extreme events. Whatever the weather or climate does, urban infrastructure is being used more intensely by increasing populations without adequate maintenance or retrofitting.

Is it fair to use science for such interpretation? Two years earlier, Hurricane Katrina's remnants caused widespread flooding in a Kentucky town and a 10-year-old drowned in a drainage culvert. A local newspaper, interviewing me by telephone, implied that the local authority should have upgraded the drainage system, but did not. Did I agree? I felt that such interpretation would be going too far, especially since I did not know the town, so I stayed with general statements about needing investment in infrastructure. I was quoted accurately and fairly including my support for raising taxes to invest in community improvements, a statement I repeated in an interview about Katrina that was published in Newsweek.

The statement about taxes was succinct and in plain English, but it could be critiqued as being too political. I could be accused of using scientific outreach to promote policies based on political opinions. Whether or not my recommendations are appropriate, it could be alleged that I had overstepped the bounds of science by interpreting what should be done to alleviate the observed problem.

I would argue that my statement was scientifically accurate. Numerous scientific studies published in international peer-reviewed journals discuss the need for investing in community projects to reduce the detrimental impacts of weather events. In the absence of an understanding philanthropist or a generous corporation, taxes are necessarily the main source for this form of investment.

Reams of scientific studies also demonstrate the large return on investment gained from using tax money to help communities reap the rewards of weather–from precipitation providing water resources to the ecological services enhanced by wind storms and wildfires—without suffering casualties or infra-structure damage. The return on investment can be over $40 saved for every dollar invested in local projects. By promoting this science, I would hope to convince others that the policies I advocate are appropriate and scientifically sound.

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Fall color infuses the historic Mt. Hope Cemetery in Rochester, N.Y. (Photo by Samuel Barber)

Advocacy *(continued from page 5)*

The lesson for scientific outreach is to use scientific skills, qualifications, and knowledge, not only to provide scientific information, but also to explain how and why we should act in response to that scientific information. Advocacy based on science is an important part of scientific outreach.

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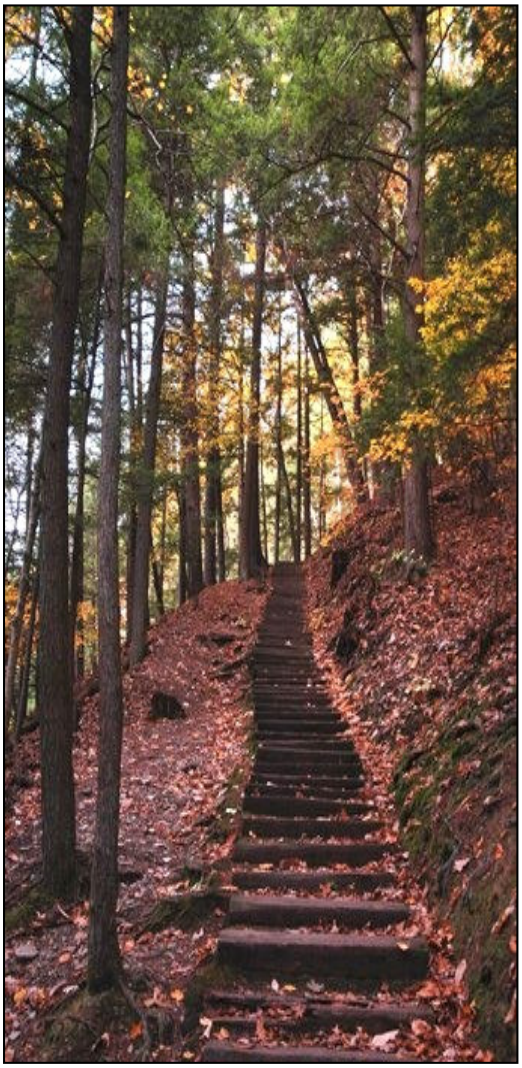

Fall leaves decorate steps in Robert Treman Park, south of Ithaca, N.Y. (Photo by Samuel Barber)

Simple Tips for Interacting with the Media

by Ilan Kelman

1. Know your key messages before the interview and stick to them. Think about how to say those messages in different ways, especially with personal anecdotes and examples. Try to answer any questions based on those key messages with real-life evidence.

2. State the obvious. Assume that the audience is intelligent, but ignorant of the topic—a statement that applies to most of us anyway. If you are too basic or too wordy, the journalist will intervene and let you know.

3. Be concise.

4. Be yourself, but don't relax too much or become too informal. Instead, stay focused and be aware of what you and the journalist are saying—and how that could represented or reinterpreted after editing.

5. Avoid jargon, academic phrases, equations, and big words. Don't speak in "academicese."

6. If your interview will be edited, remember to take a deep breath and pause before each answer. You're not in a conversation. You're giving sound bites from which the journalist or editor will pick and choose. If you mess up, stumble, or wish to rephrase, say "I would like to do that again." Then, pause and start again. Don't be afraid to ask the journalist before the interview whether he or she is looking for a specific phrase, quotation, or angle. *But, if the interview is live or if the journalist doesn't want to do any editing, the rules are different.* Once, a senior U.K. politician who was being interviewed on the radio stumbled on his words, swore, and asked to redo his answer. The journalist's response was "Sorry, but we are actually live on the air."

7. Treat journalists with respect. They are professionals and know what they're doing within the boundaries of their job—exactly as scientists are professionals who know what we're doing within the boundaries of our jobs.

8. Never speak off the record. Assume that everything you say will be attributed to you. Treat every microphone as live and recording, even if the journalist says it is not or says that it is a test run.

9. If you don't know, say so. Never say "No comment." Instead, comments such as "I don't know enough to answer that question" work. If the journalist will be available for a few days, offer to research the question and follow up. Do so responsibly.

10. Never become angry or upset. Don't be evasive, hostile, or condescending. Be as helpful as you can, but set clear limits on what you know and will say. If you make a mistake, say so (especially in a recorded interview) rather than trying to cover up the error.

11. Ask for questions or topics in advance, which can help in setting limits on the topics to which you can speak. Nonetheless, be prepared for the journalist to deviate from that list or to ask different questions.

12. Use common sense and draw on your emotional intelligence quotient as well as your intelligence quotient.

• The Disaster Research Center at the University of Delaware "conducts field and survey research on group, organizational and community preparation for, response to, and recovery from natural and technological disasters and other community-wide crises": http://www.udel.edu/DRC

Hurricane Katrina Resources

The impacts of Hurricane Katrina have been widely studied by a vast number of organizations and universities. The following research centers are examples of where physical scientists can obtain information on the impacts of Katrina and other hurricane disasters:

• The Social Science Research Center has compiled a series of articles related to the impacts of Katrina: http://understandingkatrina.ssrc.org

• The Urban Institute is dedicated to post-Katrina recovery and has compiled a list of papers related to rebuilding the community: http://www.urban.org/afterkatrina

• The Katrina Research Project on Equity provides a clearinghouse of articles, a Web site, and journals devoted to the role of race and class in the post-Katrina recovery process in the Gulf Coast and in displaced communities: http://www.katrinaresearch.org

• The Hurricane Digital Memory Bank compiles photos and stories of Katrina (and Rita) survivors, family, friends, and workers: http://www.hurricanearchive.org

Several universities have research programs dedicated to studying the impacts of Katrina and other hurricanes:

• The International Hurricane Research Center at Florida International University conducts "multi-disciplinary research to safeguard people, the property, and the built and natural environments from hurricanes": http://www.ihc.fiu.edu/

• The Katrina Research Center at University of Southern Mississippi facilitates the "gathering of historical and current information and knowledge on the natural, physical, social, political and economic effects of and recovery from Hurricane Katrina as well as from other disasters": http://www.usm.edu/katrina/index.html

Other Resources

• NOAA's National Climate Data Center makes storm data available on the Web, including details from each severe event: http://www.ncdc.noaa.gov/oa/climate/sd/

• The National Weather Service's Office of Climate, Water, and Weather Services also posts useful summaries of weather events: http://www.nws.noaa.gov/om/hazstats.shtml

• The Centre for Research on the Epidemiology of Disasters provides a comprehensive list of global disaster and impact data: http://www.cred.be

• Capitalweather.com is a weather blog for Washington, D.C., where researchers can pose questions to local residents and forecasters.

We also recommend the vast SIP resources, including this newsletter, the WAS*IS (Weather and Society Integrated Studies) Web site at http://www.sip.ucar.edu/wasis and the Extreme Weather Sourcebook at http://www.sip.ucar.edu/sourcebook.

These are but a few starting places for information gathering, and we invite you to e-mail if you have other resource recommendations or comments. And we hope that in the growing and continuing quest to incorporate social science and societal impacts into meteorology, we'll see the word "impacts" being used in more thoughtful, sophisticated, careful, and useful ways.

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This building was severely damaged during an April 2007 tornado in Rosita Valley, Texas. (Photo by Ilan Kelman; http://www.ilankelman.org)

Disaster Cost *(continued from page 4)*

interpretations made at the NWS regional offices where this data compilation takes place. *Storm Data* leaves the damage column blank for many important events when the preparer chose not to make an estimate. Entries will often be insured damages only, but easily read as total damages. Furthermore, *Storm Data* is an often used source of damage data, providing information for the NCDC's Storm Events Database[5], University of South Carolina's Spatial Hazard Events and Losses Database for the United States[6], and the Extreme Weather Sourcebook.

Now for a really slippery issue: How do monetary measures of property damage represent the larger impacts felt by the people, communities, and economies that endure natural disasters? First, when estimating property damages, socioeconomic differences are not taken into account. A classic example is the comparison of property damages between Connecticut and Mississippi. According to damage data from the Extreme Weather Sourcebook, Connecticut and Mississippi have close totals of hurricane damages over the last 107 years. But can we really say that equivalent property damages in the richest state and the poorest state in this country represent equivalent amounts of suffering and hardship?

It seems that the priority has been to have a statistic, not to have a comprehensive, accurate, and consistent statistic.

Second, there are many other quantifiable impacts that are not included in or represented by damage estimates. For example, flooding in industrial areas can cause hazardous chemicals to be released, polluting recreational areas, killing fish, and contaminating drinking water. Economic analysis can measure the lost revenue from a devastated fishing industry, and non-market analysis can attempt to measure the losses to recreational areas and aesthetic devastation. While these types of losses are often categorized as indirect, they are felt no less due to this categorization, and their impacts need to be appropriately and consistently recognized. However, this is attempted only in case studies and rarely included in damage estimates.

Finally, some impacts are very difficult, if not impossible, to quantify. Disasters can tear apart cultural structures, cause psychological and physical health problems for survivors, and widen the gap between the haves and the have-nots. An increase in mold and particulate matter in the air can cause an increase in asthma and other respiratory problems. A disaster refugee living in a FEMA trailer while facing unemployment could be at increased risk of depression and alcoholism. All of these issues, as well as an initial evacuation, can cause whole shifts in regional demographics. These are but a few examples of how disasters affect millions of people in ways immeasurable to those who do not share their experience. Excellent case studies on various social, economic, and epidemiological impacts caused by disasters do exist, but they are rare, making it difficult to compare non-quantifiable impacts across time, place, and type of event.

Perhaps the realities of implementation make a perfect loss estimation method unattainable. Yet, it also seems that many of the discrepancies in disaster data may also be the result of a lack of priority. Throughout my work on the Extreme Weather Sourcebook, I've found that some data on natural disaster impacts seem to have been haphazardly collected in order to produce basic statistics, regardless of inherent inaccuracies. It seems that the priority has been to have *a* statistic, not to have *a comprehensive, accurate, and consistent* statistic.

Calls for improvements in loss estimation echo in other discussions as well. A recognition of the importance of reliable loss data is seen in publications by the National Research Council[7] and the Heinz Center[8], in working groups of the United Nations' International Strategy for Disaster Reduction[9], and in the work of many other scientists. These organizations and scientists recognize that accurate loss data is a necessary element for making informed decisions concerning disaster relief and mitigation efforts. Policy makers and scientists alike need to be able to have an accurate understanding of past disaster losses in order to be able to reduce the losses that may result from future events. Likewise, relief and rebuilding efforts following a disaster can never be complete if significant impacts go unnoticed.

To really understand the impacts of natural disasters, we must find and use a consistent method of quantifying all damages that CAN be quantified. In addition, we must begin to recognize and regularly study non-quantitative

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Remnants of a car after a March 2004 flood in Scott's Ferry, New Zealand (Photo by Ilan Kelman; http://www.ilankelman.org/)

Disaster Cost *(continued from page 8)*

damages by incorporating social and environmental perspectives. We fear natural disasters because of the path of devastation they often leave in their wake. If disaster researchers, policy makers, and citizens want to be able to mitigate the impacts of disasters, we need to begin to recognize in depth and with great accuracy exactly what the costs of those impacts are.

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[1] See the Hurricane Katrina Fact File at http://www.iii.org/media/research/katrinafacts07/

[2] While the difference between many definition choices, such as including flood damages or not, is blurry and therefore somewhat understandable, the difference between insured losses only and all losses is not. Yet, some sources, such as *Storm Data* and all those citing *Storm Data*, regularly present unadjusted totals received directly from the insurance industry.

[3] The Extreme Weather Sourcebook, http://www.sip.ucar.edu/sourcebook/, lists hurricane damages in Ohio!

[4] See http://www.weather.gov/directives/sym/pd01016005curr.pdf

[5] See http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms

[6]See http://www.sheldus.org

[7] The Impacts of Natural Disasters; A Framework for Loss Estimation, National Research Council. Naval Academy Press, Washington D.C., 1999.

[8] The Hidden Costs of Coastal Hazards and Human Links to Coastal Disasters, See http://www.heinzctr.org/publications.shtml

[9] See http://www.unisdr.org/eng/task%20force/tf-working-groups3-eng.htm

Job Opportunities

Policy and Outreach Coordinator

The Association of State Floodplain Managers (ASFPM) in Madison, Wis. seeks a policy and outreach coordinator to advance flood policy analysis and outreach, assist in writing publications, develop promotional campaigns, and support policy and program projects that lead to the reduction of flood losses throughout the nation.

This is a full time position, and the location of the position is negotiable. Application closing date is Thursday, Nov. 15, 2007.

Select candidate requirements include: a minimum of six years experience and knowledge in federal government affairs and advocacy; knowledge of, and networking in, the floodplain and natural resources management industry; experience and familiarity with state/local governments and resource management issues; and a college degree plus experience in business, communications, natural resources, law, nonprofit management, or related field. Preference will be given to Certified Floodplain Managers (CFM).

ASFPM is a national, nonprofit, professional membership association with 11,000 members and 26 State Chapters throughout the United States. Membership in the ASFPM continues to expand, along with the appeals for assistance that the organization receives from local, state and federal entities, as well as our partners in the non-profit, academic, research, and private industry sectors. The policy and outreach coordinator will better serve the needs of ASFPM's members by responding to these growth needs.

For more information, please visit http://www.Floods.org/Files/ASFPM_Policy_Outreach_Coord_Announcement_0907.pdf.

Faculty Director

The University of Colorado at Boulder seeks to hire a Faculty Director for the Center for Science and Technology Policy Research of the Cooperative Institute for Research in Environmental Sciences. The successful candidate must have an established interest in interdisciplinary research and teaching, and must be willing to contribute to both undergraduate and graduate teaching related to science and technology policy. Applicants must have demonstrated achievement in science and technology policy research.

The position will carry tenure within an academic department to be mutually decided upon by the candidate and department. Possibilities include Geography, Political Science, Environmental Studies, Communications, and numerous other departments. The position will allow substantial time for research, as well as leadership and administrative service as center director.

Required qualifications include a Ph.D. in a field relevant to science and technology policy, a demonstrated record of excellence in extramurally supported research, and a commitment to teaching at the undergraduate and graduate levels.

To apply, applicants should submit a letter of application, curriculum vitae, a statement regarding teaching experience, and three names to be used for letters of reference to http://www.jobsatcu.com, job posting number 802370. Questions can be directed to CIRES Human Resources (Dempsey@CIRES.Colorado.edu).

Review of applications will begin Nov. 15 and continue until the position is filled.

Conferences and Opportunities

28th Conference on Hurricanes and Tropical Meteorology

Conference Date: April 28-May 2, 2008
Location: Orlando, Fla.
Abstract Deadline: November 15, 2007

A planned special session, entitled "Forecast Uncertainties in the Tropics," will address the issue of predictability at all space and time scales with respect to various tropical weather phenomena, with particular focus on ensemble prediction systems, probabilistic forecasting methods, and communicating uncertainties to forecast users. For more information on the conference, please visit http://www.ametsoc.org/meet/fainst/200828Hurricane.html.

Institute for Business & Home Safety (IBHS) Annual Conference on Property Loss Reduction

Conference Date: November 8-9, 2007
Location: Orlando, Florida

This year's conference theme is "Stronger Together." Scheduled speakers include Bob Hartwig, president and chief economist of the Insurance Information Institute, and Alex Soto, president of the Independent Insurance Agents & Brokers of America and president of InSource Inc. For more information, please visit http://www.ibhs.org/congress/.

Association of American Geographers (AAG) Annual Meeting

Conference Date: April 15-19, 2008
Location: Boston, Mass.
Abstract Deadline: October 31, 2007

The 2008 week-long meeting is expected to host approximately 7,000 geographers and related professionals from around the world and feature over 4,000 scientific and scholarly presentations, workshops, and field trips. Planned special events for the meeting include a reception for international attendees, an exhibition hall showcasing the latest books, publications, and technology in geography, and an opening night celebration, complete with live entertainment from the New England region. Attendees also will have many opportunities to explore the rich cultural and physical geography of Boston and the surrounding New England area through informative field trips and excursions.

Abstracts for paper and poster presentations are being accepted online now. For more information please visit http://www.aag.org/annualmeeting.

Natural Hazards Review Call for Papers

Editors-in-chief Kathleen Tierney and James E. Beavers and assistant co-editor Christine A. Bevc invite your submission of articles for publication in the Natural Hazards Review (NHR), a cross-disciplinary journal for the study and reduction of natural hazards losses. NHR focuses on combining the natural and social sciences and welcomes contributions advancing integrated approaches to risk analysis, reduction and management.

Social and behavioral science topics include issues related to hazard mitigation and human response, as well as significant issues related to the built environment such as land use, building standards, and the role of financial markets and insurance. Physical science topics include those pertinent to understanding the hazardous character of the world and the performance of the structures that we build to accommodate our way of life. Engineering topics include the characterization of hazards and the planning, design, construction, maintenance, performance and use of structures in the physical environment.

Manuscript submissions, editorial inquiries, comments, or suggestions may be sent to the American Society of Civil Engineers, Journals Production Department, 1801 Alexander Bell Drive, Reston, VA 20191. Additional information, including complete manuscript preparation instructions, is available online at http://scitation.aip.org/nho/.

the decision to leave until they saw houses disintegrating. As they backed out of their driveway, debris from those houses pummeled their car. As has been demonstrated many times, it is safe to drive away from a tornado only when it is a good distance away and when you know which direction to drive to avoid it.

Some last-second decisions led to tragedy. A group of eight people decided to seek shelter in a neighbor's house, but four died when they were caught in the open as the barrage of high-speed projectiles struck. Even more tragic, two of the fatalities were a mother and daughter who lived in a home that was only slightly damaged by the tornado; earlier that afternoon, the mother had heard about the severe weather approaching and, being nervous because her husband was away at work, decided to visit her parents.

Perhaps the most interesting story was that of a woman who had grown up in Iowa and had seen the destruction left in the wake of a powerful tornado there when she was a child. On April 3, 1956, she was living in Hudsonville, a mother of two young children nervously looking out the window at the gathering storm clouds. Although she had heard about the risk of tornadoes on the radio earlier, her husband chastised her for scaring the children. A lifelong Michigan resident, he assured her that tornadoes "don't happen here." Within minutes, they heard what sounded like a continuous explosion, and opened their front door to the sight of the F5 tornado less than half a mile away. They did not have a basement so they sought shelter under the kitchen table. The house was swept away and only the mother and oldest son survived. Across the street, eight members of a family survived without serious injury as they took shelter in a shallow ditch.

The experiences of those in the path of this tornado illustrate the importance of teaching severe weather awareness to the public. Many of the fatalities involved people who were not paying attention to the developing storm. Some of them assumed that the risk of tornadoes was so negligible it could be ignored. Others were aware of the impending storm but made bad decisions when trying to avoid it. Still others had not heard about the potential for tornadoes that day, which contributed to them not noticing it until it was too late to seek adequate shelter. Public awareness campaigns can prepare people for tornado threats, thus mitigating some of these factors. Dozens of survivors were interviewed and expressed a common theme; even though they had no experience with a tornado before, they felt the threat was not so small that it could be ignored. Many of them credited broadcasters on television and radio with saving their lives by making them aware of the tornado while they still had time to seek shelter.

*Ernie (Ernest.Ostuno@noaa.gov) is a senior forecaster at the National Weather Service in Grand Rapids, MI. Visit http://www.crh.noaa.gov/grr/science/19560403/tornados/ for more details on the April 3, 1956 tornado.

A slab is all that remains of a Hudsonville, Mich. home where two people were killed on April 3, 1956.
(Photo by Ann Van Norden)

Speak Up!

Weather and Society Watch is dedicated to providing a forum through which you, our reader, can express your research findings, questions and opinions about the societal impacts of weather and weather forecasting in an informal manner, in your own words. But we can't publish your thoughts unless you send them to us! If you would like to write about a particular topic or respond to any previous work—or if you just want to volunteer ideas for future articles and/or authors—please contact Emily Laidlaw at laidlaw@ucar.edu. Additionally, we will gladly publish any relevant photographs, job openings, conference announcements, fellowship opportunities and any other similar announcement or opportunity. So if there's something you've been meaning to contribute, however large or small, don't wait any longer. Our readers want to hear from YOU.

During the next few weeks, please also be on the lookout for an email about our upcoming *Weather and Society Watch* reader satisfaction survey, which will enable you to tell us how we've done so far—and where we should go next! The email will provide a link to the online survey, which should only take you 5-10 minutes to complete!! Your participation in the survey is crucial to helping us improve the newsletter and publish more of what you want to see. As always, we thank you for reading and contributing to *Weather and Society Watch*. We hope our second year of publication, which begins with this issue, will be even better than the first!

About *Weather and Society Watch*

Weather and Society Watch is published quarterly by the Societal Impacts Program (SIP) at the National Center for Atmospheric Research (NCAR). The University Corporation for Atmospheric Research (UCAR) operates NCAR with support from the National Science Foundation and other sponsors.

The purpose of *Weather and Society Watch* is to provide a forum for those interested in the societal impacts of weather and weather forecasting to discuss and debate relevant issues, ask questions, and stimulate perspective. The newsletter is intended to serve as a vehicle for building a stronger, more informed societal impacts community.

Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of NSF or other sponsors. Contributions to *Weather and Society Watch* are subject to technical editing at the discretion of SIP staff.

Weather and Society Watch is available on the World Wide Web at: http://www.sip.ucar.edu/news/. Archives of *WeatherZine*, a previous weather impacts newsletter upon which *Weather and Society Watch* was modeled, are available on the Web at http://sciencepolicy.colorado.edu/zine/archives/.

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About SIP

All aspects of the U.S. public sector, along with the nation's economy, are directly and indirectly affected by weather. Although the economic impacts of weather and weather information on U.S. economic agents have been loosely documented over the years, no definitive assessments have been performed, and information generated from the previous studies is difficult to locate and synthesize.

SIP, initiated in 2004 and funded by NOAA's U.S. Weather Research Program (USWRP) and NCAR, aims to improve the societal gains from weather forecasting. SIP researchers work to infuse social science and economic research, methods and capabilities into the planning, execution and analysis of weather information, applications, and research directions. SIP serves as a focal point for developing and supporting a closer relationship between researchers, operational forecasters, relevant end users, and social scientists concerned with the impacts of weather and weather information on society. Program activities include primary research, outreach and education, and development and support for the weather impacts community.

For more general information on SIP, contact Jeff Lazo at lazo@ucar.edu or http://www.sip.ucar.edu.