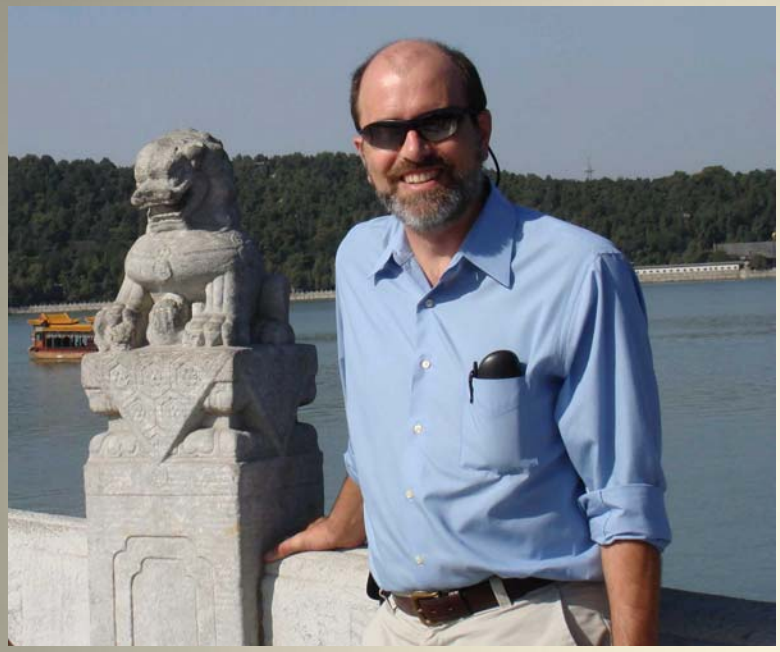
Lazo self-introduction and overview of SIP and related activities

Jeff Lazo

Monday – September 21, 2009

Jeff Lazo



- **BA – Economics and Philosophy – University of Denver – Denver, CO**
- **MA and PhD Environmental Economics – University of Colorado, Boulder**

- **Pennsylvania State University**
- **Stratus Consulting, Inc.**
- **National Center for Atmospheric Research**

Societal Impacts Program

- Societal Impacts Program
  - Mission

> . . . improve the societal gains from weather forecasting by infusing social science and economic research, methods, and capabilities into the planning, execution, and analysis of weather information, applications, and research directions.

  - www.sip.ucar.edu
  - lazo@ucar.edu

- National Center for Atmospheric Research

- The National Oceanic and Atmospheric Administration (NOAA)
  - federal agency focused on the condition of the oceans and the atmosphere
  - major supporter of the Madrid Conference
  - funded development of the Economics Primer

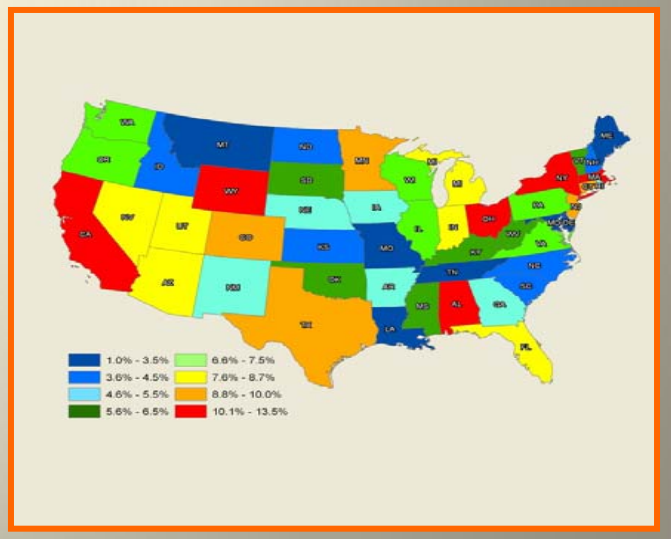
1 - Primary Research

"Internal" Funding

- Overall US Sector Sensitivity Assessment
- Household Survey
  - Communicating Uncertainty (*WAF – October 2008*)
  - Sources, perceptions, uses, and values (*BAMS – May 2009*)
  - Geospatial Analysis – under preparation (*WCAS*)
  - Analysis of Decision Making – under preparation (*Meteo. Appl.*)
- Hurricane Household Valuation (*Weather and Forecasting)*
- Storm Data
- Communication of Forecast Uncertainty (*BAMS Nov 2009)*

External Funding

- Google-Africa (*Google*)
- Hurricane Forecast Improvement Project (*NOAA*)
- Communicating Hurricane Information (*NSF*)
- Warning Decisions: Extreme Weather Events (*NSF*)



Warning Decisions: Extreme Weather Events

Overview

- **Integrated study of warning systems and processes with a focus on**
  - **hurricanes in Miami, Florida**
  - **flash floods in Boulder, Colorado**
- **Economics, meteorology, sociology, and risk communication**

Objectives

- **address role of uncertainty throughout the warning process**
- **identify factors influencing organizational and public decision making and action during extreme weather events;**
- **characterize public preferences for different attributes of forecast and warning information.**

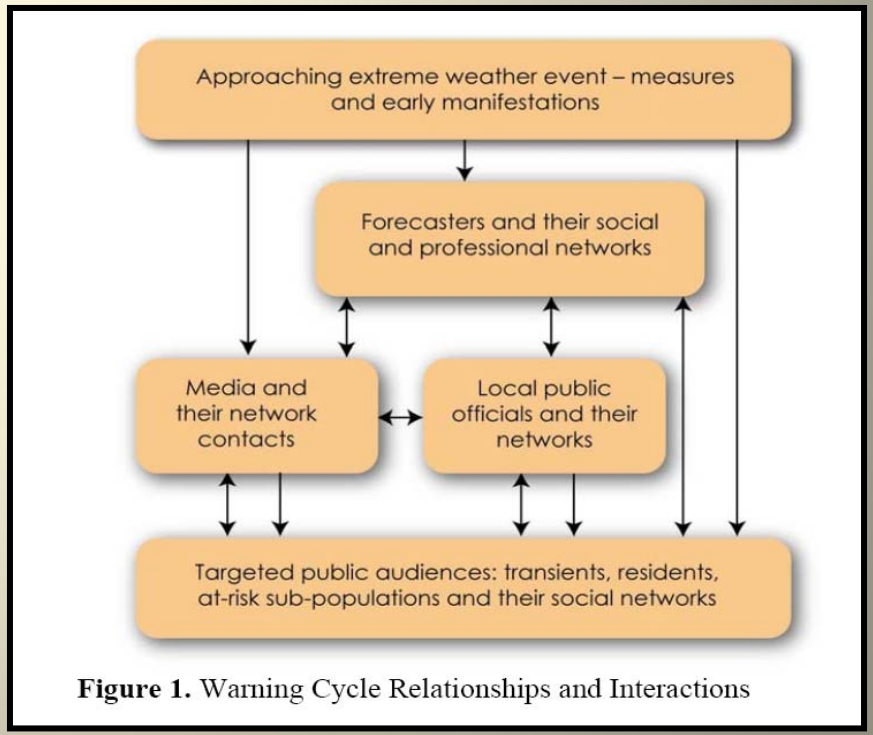


Figure 1. Warning Cycle Relationships and Interactions

2 - Weather and Society Integrated Studies (*WAS*IS*)

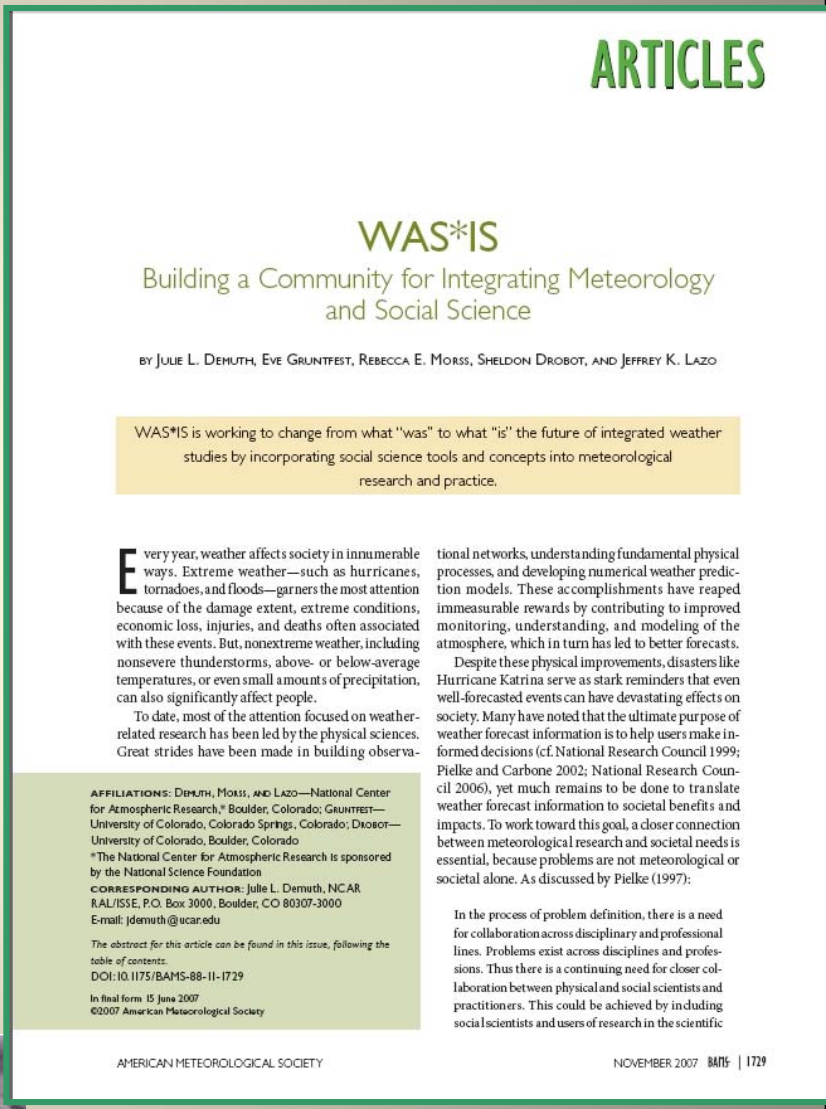
Integrate weather and social science to empower practitioners, researchers, and stakeholders, in all sectors of the weather enterprise, to forge new relationships and to use new tools for more effective socio-economic applications and evaluations of weather products.

-7 workshops - 197 participants

-Demuth, et al. *BAMS*

-Planning for next year:

- **Boulder Summer 2010**
- **WAS*IS Caribbean**
- **WAS*IS Canada**



ARTICLES

WAS*IS

Building a Community for Integrating Meteorology and Social Science

BY JULIE L. DEMUTH, EVE GRUNTFEST, REBECCA E. MORSS, SHELDON DROBOT, AND JEFFREY K. LAZO

WAS*IS is working to change from what "was" to what "is" the future of integrated weather studies by incorporating social science tools and concepts into meteorological research and practice.

Every year, weather affects society in innumerable ways. Extreme weather—such as hurricanes, tornadoes, and floods—garners the most attention because of the damage extent, extreme conditions, economic loss, injuries, and deaths often associated with these events. But, nonextreme weather, including nonsevere thunderstorms, above- or below-average temperatures, or even small amounts of precipitation, can also significantly affect people.

To date, most of the attention focused on weather-related research has been led by the physical sciences. Great strides have been made in building observational networks, understanding fundamental physical processes, and developing numerical weather prediction models. These accomplishments have reaped immeasurable rewards by contributing to improved monitoring, understanding, and modeling of the atmosphere, which in turn has led to better forecasts.

Despite these physical improvements, disasters like Hurricane Katrina serve as stark reminders that even well-forecasted events can have devastating effects on society. Many have noted that the ultimate purpose of weather forecast information is to help users make informed decisions (cf. National Research Council 1999; Pielke and Carbone 2002; National Research Council 2006), yet much remains to be done to translate weather forecast information to societal benefits and impacts. To work toward this goal, a closer connection between meteorological research and societal needs is essential, because problems are not meteorological or societal alone. As discussed by Pielke (1997):

> In the process of problem definition, there is a need for collaboration across disciplinary and professional lines. Problems exist across disciplines and professions. Thus there is a continuing need for closer collaboration between physical and social scientists and practitioners. This could be achieved by including social scientists and users of research in the scientific

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3 - Information Resources

www.sip.ucar.edu

- **Extreme Weather Sourcebook – updated to 2006**
  - $11.6B / year weather damages (1955-2006)
  - Led to research project on quality of damage data
- ***Weather and Society Watch***
  - 300+ subscribers
  - Quarterly newsletter – including special issue for AMS mtg.
  - Contributions from ***you***!
- **Societal Impacts Program Discussion Board**
  - 200+ participants


NCAR

Weather and Society Watch

A Publication of NCAR's Societal Impacts Program (SIP) Volume 2, Number 2, January 18, 2008

Weather, Climate, and Four Societies

by Rick Anthes*

In the Spring 2007 *UCAR Quarterly* (www.ucar.edu/communications/quarterly/spring07/president.jsp), I wrote about my visit to Cuba in March as part of a delegation from the American Meteorological Society (AMS) to the Cuban Meteorological Society (SOMET). I was proud to be part of an effort, led by my good friend Oswaldo (Os) Garcia—a native Cuban who is now head of the geosciences department at San Francisco State University— to establish a relationship between the two meteorological societies.

hurricanes, climate, and mesoscale research and forecast models. Despite the tight restrictions on U.S.–Cuba interactions, meteorologists in both countries already benefit from each others' work. The INSMET scientists have access to desktop computers that are powerful enough to run modern limited-area weather prediction models; the one they are using is a nested-grid version of MM5. Currently they make one operational run a day using a three-domain nested-grid version of MM5, the Penn State/NCAR mesoscale model. This version allows weather features to be

information as necessary during hurricanes and other extreme weather events. Forecasts of hurricanes and

(continued on page 12)

4 - Develop and Support Weather Impacts Community

WMO

- WWRP Social and Economic Research and Applications Working Group
- Public Weather Service Task Force
- Morss, Lazo, Brown, Brooks, Ganderton, and Mills. 2008. *BAMS*

NOAA

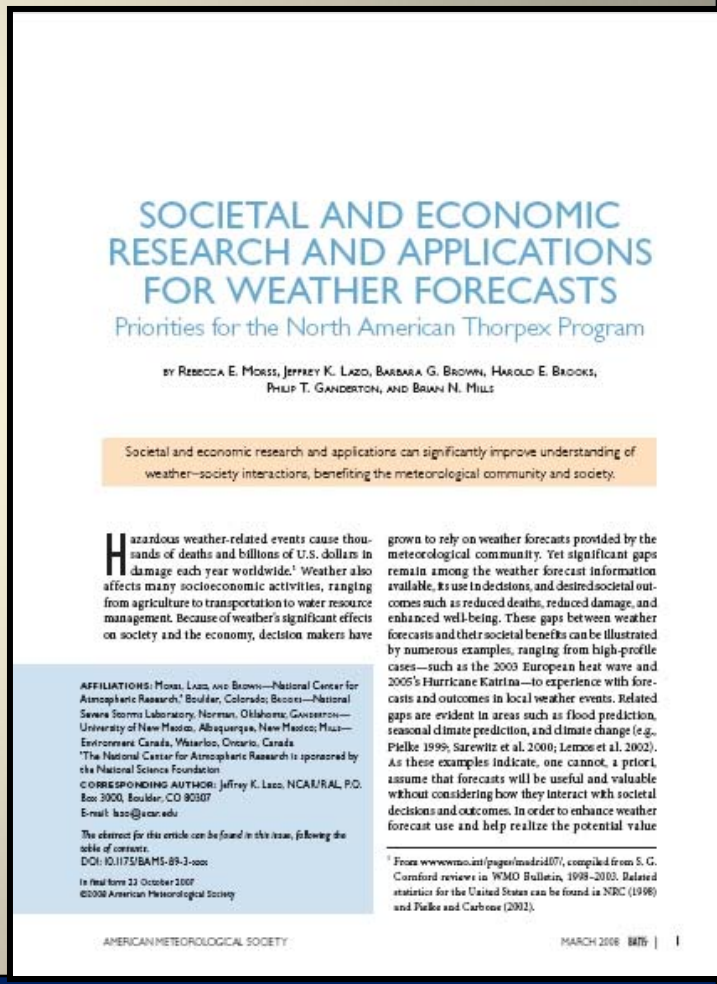
- Social Science Working Group
- ESRL-NCAR Seminar Series
- Weather and Water Mission Goal
- Hurricane Forecast Socio-Economic Working Group

AMS

- Board on Societal Impacts
- Ad Hoc Committee Uncertainty in Forecasts
- Policy Forum on Valuation
- Editor - *Weather, Climate, and Society*

NRC

- Communication Uncertainty
- Multifunction Phased Array Radar
- USWRP Summer Workshop 2009



SOCIETAL AND ECONOMIC RESEARCH AND APPLICATIONS FOR WEATHER FORECASTS

Priorities for the North American Thorpex Program

BY REBECCA E. MORSS, JEFFREY K. LAZO, BARBARA G. BROWN, HAROLD E. BROOKS, PHILIP T. GANDERTON, AND BRIAN N. MILLS

Societal and economic research and applications can significantly improve understanding of weather–society interactions, benefiting the meteorological community and society.

Hazardous weather-related events cause thousands of deaths and billions of U.S. dollars in damage each year worldwide.[1] Weather also affects many socioeconomic activities, ranging from agriculture to transportation to water resource management. Because of weather's significant effects on society and the economy, decision makers have grown to rely on weather forecasts provided by the meteorological community. Yet significant gaps remain among the weather forecast information available, its use in decisions, and desired societal outcomes such as reduced deaths, reduced damage, and enhanced well-being. These gaps between weather forecasts and their societal benefits can be illustrated by numerous examples, ranging from high-profile cases—such as the 2003 European heat wave and 2005's Hurricane Katrina—to experience with forecasts and outcomes in local weather events. Related gaps are evident in areas such as flood prediction, seasonal climate prediction, and climate change (e.g., Pielke 1999; Sarewitz et al. 2000; Lemos et al. 2002). As these examples indicate, one cannot, a priori, assume that forecasts will be useful and valuable without considering how they interact with societal decisions and outcomes. In order to enhance weather forecast use and help realize the potential value

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[1] From wwwwmo.int/pages/madrid07/, compiled from S. G. Cornford reviews in WMO Bulletin, 1998–2003. Related statistics for the United States can be found in NRC (1998) and Pielke and Carbone (2002).

AMERICAN METEOROLOGICAL SOCIETY

MARCH 2008 BAMS | 1

Your Objectives for the Workshop

- What are your objectives for this workshop?
- What are your expectations for this workshop?
- What would we need to do / what would have to happen in the next five days for you to feel this workshop was successful?
- What do you want to be able to do / need to be able to do when you go home?
- Write down the names or 3 economists you can work with/ will work with on economic analysis projects when you go back home?