

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—garner 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 observa-

tional 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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planning process from the outset. Social scientists and users must be accepted as full partners in the process of focusing science on societal problems, not simply token participants. Similarly, user groups must reach out to the scientific community. Professional societies, of both scientists and practitioners, ought to encourage this cross-fertilization. (p. 262)

In this regard, the next great leap in meteorology arguably could be the comprehensive incorporation of social sciences. To achieve this, a formal, organized framework for fully integrating meteorology and social science both in research and practice is needed. To facilitate this cultural change within the weather enterprise, Weather and Society*Integrated Studies (WAS*IS) was created.

In this article, we outline the evolution of the WAS*IS program from conception to implementation through the summer of 2006. We begin by describing the development, evolution, and scope of the WAS*IS program, followed by a discussion of the WAS*IS workshops, which have been the primary mechanism for implementing WAS*IS thus far. We then highlight some achievements of WAS*IS and discuss possible future directions of the program.

WHAT IS WAS*IS? What would eventually evolve into WAS*IS originated as an idea for a workshop to introduce meteorologists who are enthusiastic about the societal impacts of weather, but do not know how to begin pursuing such efforts, to social science. However, the interface of weather and society is interdisciplinary by nature, so, as the idea evolved, the targeted audience was broadened to include meteorologists (and other physical scientists), social scientists, and practitioners to work jointly at this crossroads. All of this fed into the creation of what is now the WAS*IS¹ program.

The WAS*IS vision is to change the weather enterprise by comprehensively and sustainably integrating social science into meteorological research and practice. The WAS*IS mission for achieving this vision is to establish a framework for a) building an interdisciplinary community of practitioners, researchers, and stakeholders—from the grassroots up—who are dedicated to the

integration of meteorology and social science, and b) providing this community with a means to learn about and further examine ideas, methods, and examples related to integrated weather–society work.

Regarding the first part of the framework, we believe that developing a community of people who realize the value of and need for integrated studies is the best way to create change. Furthermore, by growing the community from the grassroots up, WAS*IS is a capacity-building movement that is energized and reinforced by the passions, experiences, and ideas of its people. This group will generate long-term collaborative efforts on integrated weather–society research and applications, and will provide career mentoring and support. The interdisciplinary community will also grow beyond the group of WAS*IS participants as each person propagates the WAS*IS vision and creates new connections with friends and colleagues.

Regarding the second part of the framework, WAS*IS provides opportunities to learn about integrating meteorology and social science, as well as opportunities to undertake such work. There are few formal paths for focusing on these issues in traditional settings, and without a formal means for focused learning, people have to rely on ad hoc methods to learn and implement new tools and concepts, which can be frustrating and ineffective.

The primary mechanism for implementing WAS*IS currently is through workshops. The WAS*IS workshops provide participants with the initial, focused interaction with peers as well as a forum to explore ideas, methods, and examples related to integrated weather–society work. Bringing together people for several days to develop relationships, to learn, and to brainstorm together is invaluable for fostering energy and making WAS*IS sustainable. Following the workshops, participants then continue to interact and collaborate. The resultant knowledge and relationships garnered through WAS*IS are key to better serving society's weather-related needs.

Goals for achieving the WAS*IS mission. Five goals guide the implementation of WAS*IS. The first three goals are carried out largely through the WAS*IS workshops. The fourth and fifth goals are facilitated by the workshops and, to some extent, discussed during them, but these goals primarily are pursued subsequent to the workshops. We introduce the goals below and then discuss them in further detail in subsequent sections.

GOAL 1: LAY THE GROUNDWORK FOR CONDUCTING INTERDISCIPLINARY WORK BY LEARNING NEW STRATEGIES AND ADDRESSING TYPICAL CHALLENGES. Because there

¹ The idea for a WAS*IS-type activity originated from Eve Gruntfest. Through the support and efforts of several people, Weather and Society*Integrated Studies was created under the National Center for Atmospheric Research (NCAR) Societal Impacts Program (SIP), with additional support from the National Oceanic and Atmospheric Administration's (NOAA's) U.S. Weather Research Program (USWRP). Since its inception, WAS*IS has received much additional support, as noted in the acknowledgements.

are unique challenges to interdisciplinary work, the WAS*IS program works to consider some strategies for success, to recognize typical roadblocks and pitfalls, and to acknowledge the long time frame and sustained commitment needed to do interdisciplinary work well. WAS*IS particularly emphasizes tactics and difficulties in the context of integrating social science into weather research and applications.

GOAL 2: TEACH BASIC TOOLS AND CONCEPTS THAT ARE FUNDAMENTAL FOR CONDUCTING INTEGRATED WEATHER–SOCIETY RESEARCH AND APPLICATIONS. To strengthen the sensibilities and aptitude of WAS*IS participants, in large part the WAS*IS program teaches and discusses basic tools and concepts for conducting interdisciplinary weather and social science work. Because most of the WAS*IS participants have had either formal training or experience in meteorology, the workshops focus primarily on presenting social science concepts in a weather-related context. However, because participants come from a broad range of backgrounds, some sessions also focus on operational meteorological actors and processes, because a major way in which weather and society intersect is through weather forecasts, watches, and warnings.

Although important, these training and dialogue sessions serve only as an introductory exposure to the topics discussed. By no means do we expect that the WAS*IS participants will become experts about any of the tools or concepts after an introductory session. Rather, the intent is for the group to learn a little about them and to better understand their applicability. Being armed with this knowledge expands the WAS*IS participants' options for embarking on future integrated efforts, whether by further exploring a tool or concept themselves or by finding experts with whom they can join forces.

GOAL 3: LEARN ABOUT EFFECTIVE INTEGRATED RESEARCH AND APPLICATIONS THROUGH REAL-WORLD EXAMPLES. WAS*IS also highlights and discusses real-world examples of integrated weather–society work. From these case studies, participants learn to identify both what has and has not previously worked in terms of the tools and methods used, partnerships initiated and built, and challenges faced. These examples provide WAS*IS participants with novel perspectives, new ideas, and tangible, realistic assessments regarding integrated studies.

GOAL 4: IDENTIFY AND PURSUE RESEARCH, APPLICATION, AND EDUCATIONAL OPPORTUNITIES FOR INTEGRATED WEATHER AND SOCIAL SCIENCE WORK. The WAS*IS program is infused with open discussion and brainstorming centered on pressing challenges and opportunities for integrating social science into meteorology. This provides the

participants with an initial forum to apply the tools and concepts learned through WAS*IS, to examine topics relevant to the weather–society interface, and to begin developing integrated projects. WAS*IS participants can then extend these discussions to launch new projects with their WAS*IS colleagues and others.

GOAL 5: IMPROVE AND FURTHER FACILITATE THE ONGOING RELATIONSHIPS AMONG PRACTITIONERS, RESEARCHERS, AND STAKEHOLDERS IN METEOROLOGY AND THE SOCIAL SCIENCES. Through WAS*IS and the subsequent outreach efforts of WAS*IS participants, new relationships are being established and existing relationships are being strengthened among practitioners, researchers, and stakeholders in meteorology and the social sciences. Through these valuable interactions, WAS*IS is moving from training concepts and tools to actual integrated weather–society efforts in practice.

THE WAS*IS WORKSHOPS. When we began WAS*IS in the summer of 2005, we originally planned it as a one-year, single-workshop venture. However, WAS*IS received such interest and support that it quickly grew into three workshops within the first year, each with a slightly different structure.

We held the first WAS*IS workshop (the Boulder WAS*IS) in Boulder, Colorado, as two 5-day sessions in November 2005 and March 2006. During the planning and implementation of the Boulder WAS*IS, participants and others supported holding more WAS*IS workshops to reach a broader audience and continue building the community. As a two-part, two-week workshop in Boulder, the first WAS*IS required substantial financial resources and a significant time and travel commitment from participants. To introduce WAS*IS to people unable to attend the original two-week version, we developed two additional workshops, each with a different format to fulfill slightly different goals. The second workshop was a three-day WAS*IS in Norman, Oklahoma (the Norman WAS*IS, held in April 2006), targeting a community where a critical mass of meteorologists and social scientists already exists. We selected the shorter format to encourage broad attendance from the Norman university and NOAA communities and because interactions among participants were already somewhat facilitated by their collocation and existing relationships. The third workshop was a one-session, eight-day WAS*IS in Boulder (the Summer WAS*IS, held in July 2006). We held the workshop in summer to promote participation from students and others who have difficulty attending workshops during the regular school year.

*Workshop participants (the WAS*ISers).* Because the weather enterprise encompasses researchers, practitioners, and stakeholders with wide-ranging goals, training, and experience, the interdisciplinary audience for WAS*IS is equally as diverse. Though similar in their passion for integrating meteorology and social science, the “WAS*ISers” come from a variety of disciplines, such as anthropology, communication, economics, geography, hydrology, meteorology, psychology, and sociology; some come from interdisciplinary backgrounds, with formal training and/or experience in more than one discipline. The WAS*IS participants also span the public, private, and academic sectors, and they include people in all stages of their careers, though

we particularly emphasized early career participants. By choosing a diverse group of individuals, WAS*IS promotes relationships among people from various backgrounds, allowing the participants to learn not only from the workshop, but also from each other.

Other than the Norman WAS*IS, which primarily consisted of local residents, the WAS*IS program completely supported the travel costs of the selected participants² for the Boulder and Summer WAS*IS workshops. As such, all interested parties were required to apply to participate by submitting a resume, interest statement, and reference letter from their employer, professor, or colleague. The Web-based application was advertised via a variety of

² Because the WAS*IS program is federally funded, the WAS*IS participants who were federal employees could not receive travel support from WAS*IS. Thus, all federal employees' travel was supported by their own agency.

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e-mail newsletters and news groups, at conferences, and by word of mouth.

The first three WAS*IS workshops included a total of 86 selected participants (see sidebar). Nearly all were U.S. residents, but two participants came from abroad, including a graduate student from France and an employee of the German Weather Service. Table 1 summarizes the participants, their affiliations (by sector), and whether they have had formal training in meteorology and social science.

Workshop content. As with the workshop structure, the workshop content evolved from the Boulder WAS*IS through the Summer WAS*IS for three main reasons. First, the varying lengths of the workshops necessitated some changes, especially regarding the time we had to dedicate to each part. Second, with each

successive workshop, we modified the content based on participant feedback through formal evaluations about which sessions were most successful, which needed additional or less time, and what additional topics could be covered. Last, we altered each workshop slightly based on the experiences and interests of the participants as determined by their applications. We will continue to modify each future WAS*IS workshop slightly based on these factors. Nevertheless, the three workshops included, and future workshops will continue to include, the same basic content, discussed below; Table 2 provides corresponding examples of presentations given at the three workshops.

In general, we organized the workshops around a mix of presentations, group discussions, and small-group work to support goals 1–5 described in the previous section. In the WAS*IS spirit of capacity building,

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^aAs of summer of 2006.

^bBased on when they attended the WAS*IS workshops.

^cAttendees of the Boulder WAS*IS.

^dAttendees of the Norman WAS*IS.

^eAttendees of the Summer WAS*IS.

TABLE 1. Number of participants selected for each WAS*IS workshop, their affiliations by sector at the time of their attendance, and their formal training* in meteorology and social sciences.

	Government employees	Private sector and nonprofit employees	Academic employees	Graduate students	Total	Percent of participants with meteorological training	Percent of participants with social science training
Boulder WAS*IS	8	2	5	8	23	83%	22%
Norman WAS*IS	11	1	11	9	32**	75%	19%
Summer WAS*IS	8	3	10	10	31	58%	36%
Total	27	6	26	27	86	—	—

*Some participants have formal training in both meteorology and a social science discipline, and some have formal training in neither.

**Four people who participated in Norman WAS*IS also participated in other WAS*IS workshops, two in the Boulder WAS*IS and two in the Summer WAS*IS.

we recruited outside experts to give presentations; but, we also called on several of the WAS*IS participants to share their expertise. We also instilled several overarching rules at each workshop. To encourage unity and build a strong community, we required participants to attend all workshop sessions. To facilitate communication and recognize the diverse backgrounds of people in interdisciplinary settings, we did not allow participants to use acronyms. Finally, to promote new ideas and dialogue, we encouraged participants to be open minded regarding all comments and suggestions throughout the workshop.

In line with goal 1, we included sessions to broadly address challenges associated with conducting interdisciplinary work. In one session, participants discussed the importance of carefully defining problems before attempting to pursue and solve them (see Morss 2005). This seemingly simple concept is invaluable for urging people to be conscientious and thorough in their work; thus, this notion permeated discussions throughout the workshop. In another session, participants discussed the importance of good communication when working with new colleagues, and especially when working across disciplines. For instance, recognizing and eliciting differences in how people interpret the same word and minimizing the use of jargon (like acronyms) can promote more effective communication. These types of discussions served as a valuable foundation for the WAS*IS workshops.

With this important groundwork laid, we devoted a large portion of the workshop to goal 2 to expose participants to basic tools and concepts that can be employed when doing interdisciplinary work. Although these ideas cannot be comprehensively addressed or mastered in the course of hours (or even days, weeks, or months), we wanted to provide the WAS*IS participants with basic understanding of their existence and utility. Because the participants' familiarity with the tools and concepts varied, those

with some experience were able to serve as resources to their fellow participants.

Some of the tools discussed during the WAS*IS workshops were geographic information systems (GIS), surveys, qualitative research methods, and decision support tools. The GIS session began with a brief overview of GIS and its applicability to societal impacts work. Participants subsequently used GIS in a mock exercise set along the Colorado Front Range to explore how social vulnerability characteristics can influence flash-flood risk. The sessions on surveys and qualitative research methods (e.g., interviews, focus groups) addressed topics such as the advantages and disadvantages of their use, elements of their design and implementation, and techniques for analyzing the resulting data. Participants then experimented with developing and critiquing survey questions and conducting focus groups and interviews to better learn the utilities and pitfalls of these methods as data collection tools. The session on decision support tools provided an overview on engaging end users and working with them iteratively to develop a tool that meets their operational needs. In addition to the presentations and exercises about the tools themselves, the workshops also included presentations to give participants a flavor of these tools used in real weather–society applications. Examples of these presentation titles can be found in Table 2.

To complement the sessions on tools, we included sessions to discuss key concepts relevant to the weather–society interface. One key concept participants discussed was the notion that there are several “publics” and not just one “public.” In other words, the weather user community is not a coherent entity that thinks and acts in a unified way. Rather, different users have varying experience, education, abilities, needs, and wants, all of which affect how they perceive and react in situations, and all of which vary throughout the course of their lives. Not recognizing

TABLE 2. A subset of presentations from the three WAS*IS workshops (not all presentations were given in all workshops). The presentations are shown only in reference to goals 1 through 3, because there were not explicit workshop presentations for goals 4 and 5.

WAS*IS goal	Presentation title
GOAL 1: Lay the groundwork for conducting interdisciplinary work by learning new strategies and addressing typical challenges	<ul style="list-style-type: none"> • The importance of problem definition • Speaking the same language: Challenges of interdisciplinary work
GOAL 2: Teach basic tools and concepts fundamental for conducting integrated weather–society research and applications	<p>TOOLS:</p> <ul style="list-style-type: none"> • Qualitatively assessing use of information by forecasters and end users during a meteorological field experiment • Using focus groups to evaluate risk perception of West Nile Virus • Developing a winter road maintenance decision support system <p>CONCEPTS:</p> <ul style="list-style-type: none"> • Communicating to national lay publics: Perspectives from the private and public weather sectors • Potential applications of economics to weather and society interactions • The effect of culture on risk perception, hazard mitigation, and warning response
GOAL 3: Learn about effective integrated research and applications through real-world examples	<ul style="list-style-type: none"> • A NOAA–USGS debris-flow warning system • Incorporating users into system design for the Collaborative Adaptive Sensing of the Atmosphere Program • City of Fort Collins: Regulatory changes after a natural disaster

this heterogeneity can lead to an oversimplification of the effects of weather on society. A second concept participants discussed was the idea of an “end to end to end” process (Morss et al. 2005), which emphasizes integrated, problem-oriented work that incorporates users’ needs and considerations. This process also explicitly recognizes the importance of iterative, multidirectional communication among researchers, application developers, and decision makers to coproduce knowledge and tools. Another concept participants discussed was the societal aspects of forecast verification. Verification of a forecast weather event most often relies on statistical measures, such as probability of detection and false-alarm rate. However, such hit-or-miss evaluations do not provide contextual information about the utility of the forecast. For example, “close calls” or “near misses” may provide some useful information to society, but these are still considered unverified events. Many current metrics do not help assess how to improve the value of forecast information to society. These are but a few of the many concepts that the WAS*IS participants contemplated throughout the workshops; additional discussion topics are listed in Table 2.

In line with goal 3, we included sessions and field trips for participants to learn how meteorology and social science are being integrated in real-world settings. One example was an interagency project led

by the U.S. Geological Survey and the National Weather Service to issue warnings for postfire flash floods and debris flows (NOAA–USGS Debris Flow Task Force 2005). Another example was the Collaborative Adaptive Sensing of the Atmosphere Program, which is working to integrate end-user needs into a new network of smaller, short-range radars. In addition to these two research-to-operations projects, another example was the postevent recovery and adaptation efforts of the city of Fort Collins following the 1997 flash flood.

To foster goal 4, we included several open discussion and brainstorming sessions about specific opportunities to conduct integrated weather–society work. These discussions led to several participants collaborating to develop theoretical, empirical, practical, or educational projects. In turn, these projects help achieve goal 5 by developing stronger relationships among researchers, practitioners, and stakeholders in meteorology and social science beyond the group of WAS*IS participants. Because these projects are evolving rapidly and new projects are blossoming, here we summarize only a few sample ongoing projects that WAS*IS helped initiate. These span the gamut of weather–society interactions both in focus and scale.

One project is taking a holistic look at the landscape of weather and society by mapping all of the entities that produce and receive weather information and their interactions. This “road map” is designed to

help people better understand the components and processes of the weather–society interface. Another project focuses on developing stronger government–private weather sector partnership ties, with emphasis on fostering more regular and robust communication and collaborative efforts between the two sectors, and on developing improved products for members of the public. A third project seeks to increase societal resilience to heat waves by using GIS to incorporate physical and demographic data to create a spatial analysis of vulnerability. Tying back to the aforementioned verification issues, another group is working to assess hazardous weather verification from a societal perspective by using a Web-based log to let people record their perceptions of the utility of near-miss forecasts. Two other projects relate to the communication of weather forecast uncertainty information through development of 1) an experimental NWS product that conveys the climatological range and forecaster confidence of temperature and precipitation forecasts, and 2) a survey to assess the public’s understanding, use, and perception of weather forecast uncertainty information, specifically pertaining to temperature and precipitation information.

The WAS*IS Web page (online at www.sip.ucar.edu/wasis) provides further information about the WAS*IS participants, agendas, and presentations from all the WAS*IS workshops, and summaries of WAS*IS-related projects.

WAS*IS ACCOMPLISHMENTS. In just one year, the WAS*IS movement produced several tangible and intangible accomplishments. The most important outcome continues to be the growing community of WAS*IS participants across the different workshops who interact with each other through e-mail, an online discussion forum, and conferences. This network provides a collegial environment for developing and discussing new ideas, tools, and suggestions in support of WAS*IS-type work. The network also offers career mentoring and support beyond what already exists within participants’ home organizations and environments.

The new, fruitful relationship among the WAS*IS community has already reaped several rewards. Participants have introduced one another and each other’s ideas to colleagues, furthering the WAS*IS network. Participant connections have helped build bridges with others in the weather enterprise to promote and disseminate products and information for integrating social science into meteorology. Participants also have helped organize WAS*IS sessions at conferences and workshops, including the annual meetings of

the Association of American Geographers in 2006 and 2007, the Hazards Research and Applications Workshop in 2006, and the American Meteorological Society in 2007, to inform others about WAS*IS and to showcase work that integrates meteorology and society. The interdisciplinary, collaborative projects summarized in the previous section are also tangible examples of the ongoing accomplishments of WAS*IS.

Because realizing the WAS*IS vision will take time and WAS*IS is only in its third year, we will evaluate the progress and success of the program in the next year and again in the future. In the meantime, the knowledge and ideas discussed in the previous section, combined with the accomplishments discussed here, are all steps toward achieving the WAS*IS vision of changing the weather enterprise by fully integrating social science and meteorology. In addition, there is immeasurable potential that stems from creating this cohort that can continue developing relationships, conducting integrated weather–society work, and advocating for the integration of meteorology and social science over the course of their careers.

FUTURE DIRECTIONS OF WAS*IS. Although WAS*IS initially was slated to be a one-year, single-workshop venture, it continues to grow and evolve because of strong interest and support. The three workshops held in the first year began building a WAS*IS community dedicated to integrating social science into meteorology and arming community members with means for undertaking such efforts. Future efforts will grow the WAS*IS community further and deepen the existing community.

Building on the first-year successes, two more WAS*IS workshops were held in 2007—an Australia WAS*IS workshop (28 January–2 February 2007, in Mount Macedon, Australia) with 30 participants and another Summer WAS*IS workshop (12–20 July 2007, in Boulder) with 29 participants. The intent is to continue facilitating WAS*IS workshops in specific locations to build a local and regional capacity, as appropriate, and to host the summer workshop on an annual basis. In addition, to enhance the existing WAS*IS community and reach beyond the bounds of the workshops, an edited volume of the WAS*IS projects is being developed. This collection will highlight the methods, results, and cooperative efforts of successful integrated weather and social science projects. This compendium is designed to be used in undergraduate- and graduate-level courses (e.g., in atmospheric science, geography, hydrology, environmental science), and as a reference for scientists and practitioners to apply in their own work.

Several other options are being considered to expand upon the workshops to deepen and broaden the WAS*IS movement. One option is developing means to support research, grant writing, and conferences that emphasize the integration of meteorology and social science. In addition, there could be WAS*IS workshops either with an “advanced” focus on specific topics or tools, or that introduce meteorological tools and concepts to social scientists. Finally, WAS*IS could be developed into a full, interdisciplinary course in university programs.

In closing, this article has outlined the need to comprehensively and sustainably incorporate social science into meteorology. WAS*IS is among the first organized efforts that aims to make the integration of meteorology and social science the rule rather than the exception by developing a grassroots community of people who are dedicated to creating this change throughout their careers. With this approach, WAS*IS recognizes and addresses societal aspects of weather in a sustained, bottom-up way, complementing other efforts, such as the American Meteorological Society’s Policy Program (information online at www.ametsoc.org/atmospolicy/index.html) and The Observing System Research and Predictability Experiment (THORPEX) Societal and Economic Research and Applications (SERA) program (Morss et al. 2008), to achieve the broader vision.

The movement has come a long way in one year, but working toward this vision is a long-term process that will challenge the viewpoints of the weather enterprise. Like all pioneering efforts, the path will include roadblocks and wrong turns, and answering the questions, or even figuring out what questions to ask, will take time. Thus, realistic expectations, patience, and continued perseverance are necessary. However, when we succeed, WAS*IS will have helped the meteorology community to better understand weather–society interactions, for both routine weather and extreme events, so that society may better reduce vulnerabilities and make better decisions associated with the weather.

For more information about WAS*IS as it continues to evolve, please visit www.sip.ucar.edu/wasis/.

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