

95th AMS Annual Meeting

4-8 January 2015

Phoenix, Arizona

THEME

Fulfilling the Vision of Weather, Water, Climate Information for Every Need, Time, and Place

THEME DESCRIPTION

People, businesses, and government agencies depend increasingly on weather, water, and climate information matched to their specific needs, delivered when and where it is most useful to them. Businesses already receive just-in-time weather information to make truck routes more efficient and wind turbines more productive. Consumers optimize their daily routines around rain or severe weather. Such information increasingly factors into broad issues such as healthcare, as collaboration teams are discovering new ways to apply weather and climate information to advance preparedness. We are converging on a day when such information is embedded – often implicitly – within nearly every decision or action people take. New requirements and innovative use cases emerge almost daily. Yet the revolution in how weather, water, and climate information gets used is just beginning. It will make our lives safer, more productive, and more enjoyable – and produce billions of dollars of enhanced economic growth through reduced losses and improved economic productivity.

To enable this user revolution, the information we provide will be by necessity of higher quality, more customized to individual needs, and finely-tuned for each time and place of interest. Advances in observational systems, computational modeling, dissemination tools, and basic science can help make this possible. So can a growing cohesiveness of our multi-faceted community. Many challenging problems – in both research and applications – remain to be solved if we are to succeed. Further improvement to the collaboration and data sharing among our public, private, and academic/research sectors (and the disciplines within them) will also be required.

The challenge for our community is this: *collaborate and innovate to develop – and ultimately deliver – actionable, user-specific weather, water, and climate information across spatial and temporal scales in support of our nation's safety, health, and prosperity.*

The meeting theme explores how our community is turning this vision into reality. Its focus is the scientific, technical, and professional advances – ongoing and anticipated – required to develop and deliver widespread, highly-customized weather, water, and climate information. These encompass the basic and applied science and technology that makes it all possible, operational processes for generating the information, and means for enabling improved end-use of this information:

- SCIENTIFIC AND TECHNOLOGICAL ADVANCES
 - Enhanced basic and applied science within the academic and research sector leading to more accurate, precise, and timely information, ranging across our primary domains of weather, water, and climate along with enabling fields
 - Emerging scientific applications that will allow us to develop expertise to appropriately and efficiently meet the challenges of our changing technological world, following recent examples such as space weather, coastal meteorology, health care, agriculture, forestry, natural resources, air quality/chemistry, transportation, and others

- Cross-disciplinary science and community collaboration to create specialty information matched to specific user needs
- Observational system advances, including ad hoc mesonets, multi-satellite retrievals, and citizen-level observations via vehicles and phones that fill in the gaps within our foundational observations and preserve existing observations
- Modeling and data assimilation advances that allow enhanced quality, and fine space- and time-scale improvements to predictive capabilities along with a wide range of use-specific forecasts, including improved climate projections
- Improved use and communication of uncertainty in forecasts for weather and climate
- Increased attention to extreme events and their impacts, including potential evolution of their space and time occurrence in response to climate change
- Fundamental research using state-of-the-art models, observations, and/or techniques which reveals new capabilities that can be applied to improve operations and support
- New approaches to develop, transmit, digest, analyze and store large amounts of “big data” in a manner that supports the new user demands
- Advanced technologies for post-processing and decision support, including artificial intelligence
- APPLICATIONS AND END-USES
 - Processes and techniques for improving the transition of research into end-use
 - Socioeconomic research to better understand how people use meteorological information, ensuring that what we generate gets to the right people in useful ways
 - Innovative business models leveraging the strengths of the meteorological sectors to improve the quality and usefulness of information for decision making
 - Organizational and business methodologies that make it possible to deliver the best collection of information/data to the right end-user at low cost, where and when they need it, across all use domains
 - Communication and delivery system advances that make it easier to receive customized information exactly matched to need, location, and time for the user
 - Advances in working with end-user organizations such as the energy infrastructure, air quality agencies, and health agencies to assure weather influences on society are managed effectively and the enterprise provides services that meet their needs
 - Closer developments with governmental agencies to address environmental security issues in both responding to disasters and preparing for the future
- EDUCATION AND PROFESSIONAL DEVELOPMENT
 - Education and professional development to ensure our students, researchers, and workforce can continue to push the forefront of weather, water, and climate information capabilities
 - Professional issues and policy approaches to ensure we as a community guide these new activities with integrity and that we serve all needed uses effectively
 - Community diversity at all levels, encompassing cultural, ethnic, and gender issues
- CROSS-CUTTING AND INTEGRATIVE ADVANCES
 - Innovative means for bringing together disciplines and capabilities from across our activities