

## **2017 AMS Annual Meeting**

### **“Observations Lead the Way”**

In all issues facing the American Meteorological Society (AMS) and the professions it serves, the first priority should always be to obtain the necessary observations and information. Whether to address numerical weather prediction, climate, situational awareness, economic value of forecasts, societal impacts, or any other need, data-driven, science-driven decisions move our community and society forward.

With the theme **“Observations Lead the Way,”** the 2017 AMS Annual Meeting unifies the Society’s vision of where the field is right now, and how it will advance in the future. Today’s models simulate and predict on spatial and temporal scales at much higher resolution than the databases used to initialize them. The greater need for advances has always gone back and forth between the observation portfolio or model sophistication, but right now observations are the greatest need. Therefore, the Annual Meeting will hold a special symposium, **“Observation Symposium: Progress, Problems, and Prospects,”** that will identify the highest-priority observational needs across the weather, water and climate enterprise. In addition, many of the conferences and symposia at the meeting will have sessions addressing the greatest observational requirements in their disciplines.

The **“Observations”** theme will infuse nearly all components of the 2017 Annual Meeting. For example, in the traditional realm of weather forecasting, it encompasses numerical weather prediction, data assimilation, process studies to help improve model physics, and verification. It also includes tools for assessing observational value such as observing system simulation experiments, data impact studies, and forecast sensitivity-to-observation techniques. Additional related topics include ensemble forecasting, targeted observations, reanalyses, reforecasts, and probabilistic forecasting (expressing uncertainty).

Observations will drive the AMS community’s role in the interdisciplinary collaborations necessary to face the world’s increasingly complex challenges. Climate and weather models are becoming more complex and inclusive of other components of the earth system. Increasingly, nontraditional data are required to validate physical algorithms and verify resulting predictions. Thus, there is a great need for cloud water and ice, aerosol, land and sea ice, soil, vegetation, water cycle, ecological, air quality, and other observations to aid in the development and verification of coupled models, as well as a need for reliable climate reference network observations of traditional variables at finer scales. Annual Meeting conferences related to climate, hydrology, urban studies, and chemistry will address these issues.

In the social sciences, data are needed to determine the economic importance of weather forecasts and other environmental information to society so that, in turn, the meteorological enterprise can accurately represent its value to policy makers. Data on how society obtains, interprets, and responds to information about severe weather events are needed, as are data on how best to convey information about climate change to the public and policy makers. Thus, a **“Special Symposium on Individual, Social, and Cultural Observations in Weather and Climate Contexts”** is being organized to address what is currently known on these topics and what information is still needed to make further progress.

For the AMS community, the theme of **“Observations Lead the Way”** means continual innovation: investigating novel approaches to gathering data with platforms such as cell phones, cars, trucks, and aircraft, and striving to protect threatened resources such as frequency allocations. The theme includes the

development and use of data management tools such as data mining, statistical analysis, visualization, crowd-sourcing, etc. which in turn lead to “big data” issues related to data availability, dissemination, metadata, and archiving. It also means considering alternatives for funding new observing ideas and capabilities; weighing the role of the private sector in new observing capabilities, especially in the satellite arena, and what the implications are for government data-buy policies; and taking into account the specific needs of the transportation, energy, agriculture, and health sectors, among others.

The global community is facing enormous challenges from environmental threats, the food–energy–water nexus, disease, and human health. Solutions to these challenges can be informed by environmental observations. To address such overarching issues, the 2017 AMS Annual Meeting will begin with a Presidential Forum on “Earth Systems Observations in Service to Society.” The Forum will convene a panel of distinguished leaders from several disciplines to discuss these and related issues, such as CO<sub>2</sub> emission monitoring requirements implied by the Conference of the Parties (COP21) agreement in Paris.

Through “Observations Lead the Way,” the 2017 AMS Annual Meeting will embrace and strengthen the Society’s role in the world today, from the questions we all face to the answers we hope to provide.