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Testimony
of
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I appreciate the opportunity to share perspectives on weather forecasting in general and water forecasting in particular. Water is essential for human life and prosperity. Yet it often manifests itself in ways that put life and property in jeopardy. If there is too much or too little water, or whether it rains too much-too quickly, or even just unexpectedly, it presents challenges to individuals and businesses alike. U.S. businesses lose more than $500 billion each year because of water and weather-related issues. Thus short term warnings and forecasts as well as sub-seasonal, seasonal, and decadal forecasts are essential for planning and mitigation efforts.

The Weather Company and our subsidiary brands, The Weather Channel (weather.com) and Weather Underground (wunderground.com), provide millions of people and businesses around the world with the best weather forecasts, content and data, connecting with them through television, web, mobile, and tablet screens, as well as through our outside publishing partners including Apple, Samsung, Google and Facebook.

Our services provide critical decision support to a wide variety of business sectors. For example, our precipitation forecasts are essential for the agricultural sector for a range of decisions including watering and fertilizer application, as well as estimates of crop yields. In addition, our daily, sub-seasonal and seasonal forecasts are used by thousands of clients globally in the energy, insurance and aviation sectors clients in a wide variety of applications.

The Weather Company is a global enterprise headquartered in Atlanta, GA with operations centers in Andover, Massachusetts; Madison, Wisconsin; San Francisco, California; and other centers in the U.S. and around the world.

Recognizing the importance of weather and climate to the U.S. and global economy and the leading role we play in helping consumers and businesses make smarter decisions, IBM purchased The Weather Company a little over a year ago.

Our company like other U.S. companies are able to compete globally in the marketplace by leveraging the foundational capabilities including data, models and basic research provided by NOAA, NASA and other federal agencies. We improve the forecast and tailor products to customers' needs, utilizing other environmental, business, and social data and our deep understanding of business sectors to enable effective decision making.

The public, private and research sectors have worked together effectively in many areas. I would highlight the implementation of GOES R which is on-going. Through NOAA

efforts, the private sector has been engaged every step of the way and able to provide input to improve utilization of this tremendous national resources.

I'll highlight two areas where the private, public and research sectors should be working work together to keep people safe from water threats and improve decision making.

Improved presentation of hazardous water warnings

The Weather Company is an essential partner in the NWS's public safety mission. We deliver on our web and mobile properties and through our partners, the National Weather Service's warnings to consumers, unaltered, with attribution and in a timely fashion. However, it troubles us to see the public often confused about this critical lifesaving information. Due to message composition and labeling, they are sometimes unable to comprehend the threat to their property and lives.

While, we applaud NWS' efforts to revamp its watch and warning paradigm we are concerned those efforts will still fall short of what is needed and may be too slow to evolve relative to the rapid pace of social change and communications technology.

Through The Weather Channel and our media partners, we are in the business of communicating information to the public and have garnered vast expertise in this critically important service. How the public consumes information has changed dramatically and we are leading those changes. The private sector has capabilities in this area that are unmatched in the other sectors. For that reason, the private sector must be more fully embraced by the government in the warning process to accomplish the needed transformation in how we collectively contribute to the public safety mission.

For example, for floods, flash floods and storm surges, we should be routinely delivering personalized information that clearly shows where the individual consumer is with respect to the expected or ongoing flooded areas -- right on their mobile device. We should be showing what surrounding areas are expected to be impacted under water and by how much. We should be depicting safe escape routes and other specific action recommendations. The current paradigm of generic worded messages and even the static images fall well short of serving the public effectively.

Accelerate New Technologies to Operations

The second area is on the necessity to accelerate new technologies from research to operations. We applaud the joint effort of the National Centers for Atmospheric Research and NOAA that has advanced the community water modelling effort, known as WRF-Hydro now in operations at the NWS and providing critical stream and river forecasts. Beyond its utility to the general public, it also provides a valuable resource which we will utilize to serve business interests in sectors such as ground transportation. For example, rail companies need hyper local

information about the potential of rail bed washouts to be proactively reroute trains, position repair crews and supplies.

A key area that should be addressed though is observations. In this case, I would point to the NASA's satellite Global Precipitation Mission, known as GPM. This mission has been extremely successful providing observations of global rainfall. However, because it is a NASA research mission the data isn't reported in a timely enough fashion to allow us to utilize the data for real time precipitation forecasting and alerting. Further, as a private company we are reluctant to invest in NASA missions because their long-term futures are uncertain.

The time and expense of satellite missions no longer allows us the luxury of having research missions and then follow on operational missions. This 1970s era paradigm of NASA flying research missions and then NOAA following years later with operational missions is no longer effective in meeting the nation's needs[1]. We should be selectively looking at research missions that have a potential high value return and take the steps to make them operational. The private sector could provide valuable input in selecting those missions. We believe GPM is clearly one.

Budget Choices

Finally, I'd like to comment on what I know will be difficult budget choices before the committee.

The ground- and space-based observations, modeling, and data archiving for weather, water, and climate provide foundational data sets for our value-added services. And, all major advances in weather and climate forecasting have been powered by federally sponsored research. These critical infrastructure programs underpin the nation's economic and national security and should be strengthened.

While it may be tempting to focus solely on water forecasting on times scales from minutes to months, the reality is local governments, businesses and many other public and private interests, seek to understand longer term weather and water trends as they make their critical infrastructure decisions. For sensitive businesses, an occasional drought may be acceptable but more frequent droughts would result in a different mitigation action. Availability of sufficient fresh water for both cities and agriculture is a critical national security issue, and having accurate long-term predictions of its supply is necessary for effective long-term planning and infrastructure.

[1] Because of necessity the Soumi NPP mission which was intended to be a research mission became an operational mission. This is the exception to the rule, not the norm though.

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Federal dollars should focus on these foundational scientific capabilities which will enable the extremely capable private sector to better serve the nation.

Thank you.