Before the United States Senate
Committee On Commerce, Science and Transportation

Statement of Robert Ryan
May 3, 2011

"American's Natural Disaster Preparedness: Are Federal Investments Paying Off?"

Thank you Chairman Rockefeller for the opportunity to present my thoughts on the importance of accurate weather forecasting, information and services during emergencies. Examining the current state of how federal agencies and federal investments in weather and climate research, forecasting and communication are doing, is extremely timely after the tragic tornado outbreak last week. I have had a brief time to prepare this document so I will present my thoughts as a number of items.

1. The science of meteorology has made tremendous progress in the last 50 years in understanding, observing and forecasting weather events from the next 10 minutes to storms that may be days away to general patterns weeks and months away

2. The investment in the hardware to observe weather and climate from traditional ground instruments to satellites and Doppler radars, coupled with the investment in fundamental research and understanding of weather and climate along with the investment in so-called super computers to make every more accurate forecasts has saved lives and been of tremendous economic benefit to the country.

3. The United States has more severe weather than any other country, 1200 tornadoes, 5000 floods, 10,000 thunderstorms each year and 14 Billion dollars in weather related losses

4. The organization that might be called a "Weather Enterprise" of public, private and academic sectors has worked cooperatively with shared goals of creating an integrated weather and climate information, forecast and communication system that serves all sectors well. This shared observational, forecast, communication "enterprise" with federal agencies as the lead, is unique to the United States and a great example to other countries of true government – private sector partnerships that benefit all citizens.

5. All providers and users of weather information whether to the public or to private sector clients or research institutions, depend on the federal government to be the open source and backbone of the information, data, model outputs, warnings and forecasts we all use. No meteorologist can make an accurate forecast, or deliver timely warnings to clients or emergency managers or the public without the core information, warnings, model data etc. openly provided by the National Weather Service, NOAA, NASA, FAA, EPA and other federal agencies. **This partnership with NOAA and NWS being the lead federal agencies of open operational weather information and data is vital and must continue for effective communication of warnings by traditional and new media to the public.**

6. Federal weather warning systems now in place such as NOAA Weather Radio are vital to broadcasters being able to communicate weather warnings to the public.

7. Cooperation between the National Weather Service and broadcasters during weather emergencies has been excellent. Federal agencies such as NOAA and the National Weather Service regularly reach out to broadcasters through workshops, various professional conferences and joint meetings with the emergency management community to solicit feedback and exchange ideas and information.

8. The recent tragic tornado outbreak (April 27, 2011) generated almost 300 tornadoes. About 90% of these tornadoes were correctly warned on. The average warning lead-time was 24 minutes but EF4-EF5 tornadoes, with winds speeds of 200 mph or higher are almost unsurviveable above ground. Preliminary estimates are that there may have been 4 or 5 EF4 or EF5 tornadoes on April 27 including the tornado that moved directly through Tuscaloosa, Alabama, a metropolitan area of more than 100,000.

9. The weather/climate prediction should be thought of as an end-to-end process. That is the actual forecast and or warning, the communication of the forecast and warning and the decision made by the user of that forecast or warning. **If a 100% correct forecast has been made and communicated, but the wrong decision has been made the forecast/warning process has failed.** A tragic example this link: http://news.yahoo.com/s//nm/20110430/us_nm/us_usa_weather_shelter

Suggestions for Improvements to Federal Services and Programs

10. Items to improvements in federal programs to support “timely and accurate forecast” include immediately restoring funding for the joint polar satellite system (JPSS) program. Some may argue that loss of polar orbiting data will not degrade our current weather/climate observing and forecasting skill . . . but, what if they are wrong! Polar and geostationary weather satellites are an integral and critical core element of providing very accurate weather forecasts and life saving planning and decision making for weather and other natural disasters from tornadoes and hurricanes to fires, drought, dangerous air quality and oil spills.

11. Integration of social science expertise into our core physical science institutions of observing, forecasting and communicating weather forecasts and warnings can help improve the critical decision making element of the end-to-end forecast process mentioned in item 9 above. Each of us feels we can improve communication to better help weather forecast/warning decision makers, including the general public, make better decisions especially during rare life threatening extreme weather events such as the recent tornado outbreak. The core weather enterprise federal agency NOAA's National Weather Service employs one social scientist-an economist. More understanding of how the public interprets and acts on weather warnings and statements about imminent natural disasters is needed. The use of customer satisfaction surveys (CSS) as required of federal agencies to show approval or "satisfaction" with forecast products is useful. But fundamental research of how forecasts from color coded warnings to simple descriptions to the needed wording for correct decision making before potential weather disasters, such as Katrina, snow storms, blizzards and tornadoes is very much needed. The next significant improvement in the value of weather forecasts will come from better communication and decision making as much as continued advance in the accuracy of the actual forecast.

Mr. Chairman thank you for the opportunity to present some thoughts I hope are helpful to you and the committee. All of us in the weather and climate community feel the federal investments are paying off. But as we know forecasting the weather will never be 100% accurate, we can and will work cooperatively to effectively communicate with the public and strive for 100% accurate forecasts and also 100% best decision making.

Respectively submitted

Robert T. Ryan