

Thank you, Mr. Chairman, Senators, Ladies and Gentlemen.

Today we grieve for those who were injured, lost their lives, families, homes, or jobs because of violent weather in recent days and weeks. We can never make them whole. But we can best honor their loss and suffering by working together to reduce risks of further tragedy in coming years. So thank you for taking time – in the midst of so many competing claims on your attention – to convene this conversation on disaster preparedness.

The United States, because of its size and its location, arguably bears a unique degree of risk from natural hazards. We suffer as many winter storms as Russia or China. As many hurricanes as China or Japan. Our coasts are exposed not just to storms but to earthquakes and tsunamis. Dust bowls and wildfire have shaped our history. **And, as this past week reminds us, 70 % of the world's tornadoes, and some 90% of the truly damaging tornadoes, occur on our soil.**

In addition, because of our global reach, disasters a world away call for a U.S. response: earthquakes in Haiti and Chile, a tsunami in Japan, floods in Pakistan.

Our current disaster preparedness, though improving, remains far from ideal. Warnings are more accurate and timely, but too often are lost, or garbled, or misunderstood, in that “last mile,” where they struggle to reach those actually in harm’s way. Compromises in land use and building codes mean our homes aren’t always the unassailable fortresses we might hope. 85% of the small businesses who close their doors as a result of disaster never reopen. The dollar amount of property loss and business disruption is growing faster than GDP. And virtually every disaster very quickly also becomes a public health emergency.

We can and should do better. We need to:

- **Step up funding and maintain the year-to-year continuity of funding**, for day-to-day operations, and continuing modernization of, essential warning systems. Today, most specifically and urgently, some \$800M in additional funding is needed for NOAA’s Joint Polar Satellite System (JPSS), *in this fiscal year* (FY2011), to avoid an unacceptable gap in satellite coverage beginning no later than 2017<sup>1</sup>. To avoid a repetition of this oversight in future years, it would help if the Office of Science and Technology Policy would develop a policy with respect to long-term observations of and study of the Earth. We need this, because we will need to make short-term observations forever; and we need this because the Earth, the atmosphere, and the oceans vary on time scales of decades and centuries.
- **Bring to bear not just meteorology and engineering, but also social science.** Pushing that warning message the last mile? Helping those in danger to save themselves? Here’s where we need advice from communication scientists and sociologists. The title of this hearing asks the question: *Are investments paying off?*

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<sup>1</sup> See, e.g., <http://www.aviationweek.com/aw/generic/story.jsp?id=news/asd/2011/04/07/07.xml&channel=space>

We think so, but we don't know how much. Toward this end, more economic analysis of benefits and value would sure be useful. And more funding support for the supporting social science (amounting to no more than "sales tax" on the much larger engineering and natural-science outlays) is needed to build our capacity for such analysis.

- **Learn from experience.** We do this in aviation. The National Transportation Safety Board plays a key role. Absent a similar agency to study loss of life, property, and economic activity to natural hazards, we do the opposite of learn from experience; we "rebuild as before"<sup>2</sup>. This condemns future generations to pain and suffering down the road.
- **Exercise public-private partnerships:** To build America's disaster preparedness requires that government and the private sector collaborate effectively at all levels: (1) NOAA with the aerospace firms who build NOAA satellites and ground systems; (2) NWS with the broadcasters and private firms who deliver weather warnings (this is actually working rather well)<sup>3</sup>; (3) at the local level to build community disaster resilience<sup>4</sup>; (4) bringing in insurers to provide incentives for better land use and building codes; and finally (5) with respect to private-sector role in hazard mitigation and disaster relief, as so well exemplified by organizations such as the Business Civic Leadership Council of the U.S. Chamber of Commerce.
- **Explore No-Adverse Impact Policies for flood<sup>5</sup> and other hazards<sup>6</sup>,** as propounded by the Association of State Floodplain Managers and the newly-formed Natural Hazard Mitigation Association. (This is timely given the legal battle developing on whether to blow up a two-mile section of levees on the Missouri side of the Mississippi River to reduce the threat of flooding on the Illinois side<sup>7</sup>.)
- **Track progress/keep score.** Over a decade ago, an NAS/NRC study recommended that the Department of Commerce maintain statistics on U.S. losses to natural

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<sup>2</sup> Eosco, Gina M., William H. Hooke, 2006: Coping With Hurricanes. *Bull. Amer. Meteor. Soc.*, **87**, 751–753.

<sup>3</sup> Fair Weather: Effective partnerships in weather and climate services NAS/NRC BASC (2003)  
<http://www.nap.edu/openbook.php?isbn=0309087465>

<sup>4</sup> Building Community Disaster Resilience through Private-Public Collaboration, NAS/NRC BESR (2010)  
[http://www.nap.edu/catalog.php?record\\_id=13028](http://www.nap.edu/catalog.php?record_id=13028)

<sup>5</sup> As suggested by the Association of State Floodplain Managers:  
<http://www.floods.org/index.asp?menuID=460&firstlevelmenuID=187&siteID=1>

<sup>6</sup> Natural Hazard Mitigation Association: <http://www.nhma.info/>

<sup>7</sup> [http://www.washingtonpost.com/national/mayor-orders-evacuation-of-ill-town-as-river-water-bubbles-up-behind-levée-rain-adds-to-woes/2011/05/01/AFOexTQF\\_story.html](http://www.washingtonpost.com/national/mayor-orders-evacuation-of-ill-town-as-river-water-bubbles-up-behind-levée-rain-adds-to-woes/2011/05/01/AFOexTQF_story.html)

hazards<sup>8</sup>. We give priority to what we measure. That proposal should be implemented.

Three concluding points.

First, as we consider these and similar policy options, we might contemplate the U.S. Department of Commerce as a suitable agency home. The Department already has many of the needed pieces in place. Second, in looking at the benefits of these measures we should keep in mind that they each embody potential for building international goodwill and international markets for U.S. products and services. And finally, we should not forget the impact of each of these measures on jobs – the preservation of jobs and our domestic economy in the face of natural hazards, and the creation of jobs to serve those emerging international markets.

Thank you, Mr. Chairman, Senators, Ladies and Gentlemen.

*[The references and citations support these recommendations in greater depth.]*

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<sup>8</sup> The Impacts of Natural Disasters: A framework for loss estimation. NAS/NRC CGER (1999)  
<http://www.nap.edu/openbook.php?isbn=0309063949&page=27>