Discussion Draft

Meeting Minutes of the Subcommittee on Disaster Reduction

5 February 2009, 10:00 a.m. to 12:00 p.m., Department of Commerce, Room 5215

Italics indicate absent members. "T" indicate members participating via teleconference.

Officers

David Applegate (USGS), Chair
Margaret Davidson (NOAA), Vice-Chair (T)
Dennis Wenger (NSF), Vice-Chair

NSTC Liaison

Jonathan Kolak (OSTP)

Designated Representatives

BLM *Edwin Roberson*
Ronald Huntsinger
CDC *Mark Keim*
DHS *Bruce Davis*
DHS/FEMA Mike Buckley
DHS/USCG *Steven Cohen*
DOD *Al Johnson*
DOE *Patricia Hoffman*
DOT Sheila Duwadi
Cheryl McQueary
Tim Schmidt
EOP / OSTP Jonathan Kolak
EDA *Audrey Clarke*
EPA *Peter Jutro*
Stephen Clark
FERC *Berne Mosley*
HUD *David Engel*
NASA Andrea Donnellan
NGA *Stephen Homeyer*
NGB *Dave Wilmot*
NIH *Allen Dearry*
NIST *William Grosshandler*
Jack Hayes
NOAA Margaret Davidson (T)
NSF Dennis Wenger
OPHS *Sven Rodenbeck*
State Cari Enav
Fernando Echavarria
USACE *Barbara J. Sotirin*
Dimitra Syriopoulou
USAID *Sezin Tokar*
USDA *Melissa Simpson*
USFS *Susan Conard*
USGS *David Applegate*
Paula Gori (T)

Other Attendees

DHS/FEMA Stephen Carruth
IBHS Tim Reinhold
NASA Craig Dobson
NIST Long Phan
NOAA John Gaynor
David Green
Maria Honeycutt
Margaret McCalla
Mark Powell
Timothy Schott
NGA Dana Miller
Secretariat Emily Wallace
Barbara Haines-Parmele
State Nellie Moore
USGS John Haines

Agenda

10:00 Welcome and Introductions
10:05 Approval of January Meeting Minutes
10:10 Report from the Chair
10:20 Report from the Vice-Chairs
10:30 Report from the NSTC Liaison
10:40 Storm Surge/Coastal Inundation State of the Union
11:00 Panel Presentations and Discussion: Alternative Approaches to Measuring and Communicating Hurricane Intensity
11:55 Close and Next Actions

Handouts

- Agenda
- January Meeting Minutes
- USGEO Paper: Observing Earth Observations
- USGEO Membership List
- National Academies Disasters Roundtable #24 Announcement

I. Call to Order and Introductions

Subcommittee on Disaster Reduction (SDR) Chair David Applegate (USGS) called the meeting to order at 10:02 a.m.

II. Approval of Meeting Minutes

The January Meeting Minutes were approved with no abstentions or oppositions.

III. Report from the Chair

Subcommittee Chair David Applegate (USGS) began his report by introducing the USGEO Document *Observing Earth's Vital Signs* and asking members to review and provide comments to their USGEO member representative by Monday, February 9th.

Applegate (USGS) reported an error in the earlier announcement of the 2009 Annual Natural Hazards Research and Applications Workshop. Workshop activities will take place Wednesday thru Saturday, July 15th—18th, 2009. The Hazards and Disasters Researchers Meeting will immediately follow the workshop on Saturday, July 18th and extend through Sunday, July 19th. Members who wish to attend should ask the SDR Secretariat (ewallace@grs-solutions.com) to facilitate their invitation.

The SDR Chair next reminded members of the National Academies Disasters Roundtable titled *Cascading Disasters: How Disasters Unfold*, which will take place on February 26th, 2009 in Irvine, California. A strong partnership exists with the Roundtable. Bill Hooke and Lauren Alexander will be present at the March SDR meeting to report on the workshop.

Applegate (USGS) informed SDR members that Margareta Wahlström of the United Nations International Strategy for Disaster Reduction (UN/ISDR) will be in the United States next month and, if her schedule permits, would like to participate in the March SDR meeting or a special session of the SDR. Ms. Wahlström serves as in the dual role of UN Assistant Secretary-General for Disaster Risk Reduction and Special Representative of the Secretary-General for the implementation of the Hyogo Framework for Action.

IV. Report from the Vice-Chairs

Vice-Chair Dennis Wenger (NSF) reminded members that he is preparing a brief overview of SDR/ISDR activities for the Department of State. He requested that members inform him of any past or present agency involvement with ISDR by email (dwenger@nsf.gov) by February 10, 2009.

Vice-Chair Margaret Davidson (NOAA) reported that she had a small role in planning the panel presentation on measuring and communicating hurricane intensity.

V. Report from the NSTC Liaison

On behalf of Jon Kolak (OSTP), Dave Applegate (USGS) stated that the WindHRP Working Group has been reconstituted to produce a Congressionally-mandated Windstorm Impact Reduction Program Biennial Progress Report for Fiscal Years 2007-2008. The goal is to turn out a draft report by early March. The second WindHRP teleconference call is scheduled February 5th at 3:00 p.m. Let Emily Wallace (Secretariat) know if you wish to be involved in the teleconference.

Applegate (USGS) further reported that MaxOMB dropped access privileges for members to the SDR page last week. The glitch has been straightened out and members should no longer be experiencing this problem. Members should edit their profile if they have not already done so.

VI. Presentation: Storm Surge/Coastal Inundation State of the Union – Jamie Rhome
David Applegate (USGS) introduced Jamie Rhome, on assignment to OSTP from NOAA, to discuss storm surge and coastal inundation. Rhome is currently the Storm Surge Team Lead at the National Hurricane Center (NHC) in Miami, Florida, serving as an expert on storm surge and coastal inundation for the Nation's hurricane program. He also acts as the OSTP liaison for storm surge-related research and development of reduction and implementation techniques with partners at the National Oceanic and Atmospheric Administration (NOAA), Federal Emergency Management Administration (FEMA), U.S. Army Corps of Engineers (USACE), U.S. Geological Survey (USGS), and the academic community.

Rhome (NOAA/OSTP) began by noting that his presentation would be from a NOAA – rather than a White House – perspective.

Rhome (NOAA/OSTP) relayed to members that coastal population growth and sea-level rise have created an increased vulnerability to storm surge/coastal inundation. Without a Federal body responsible for coordinating initiatives to mitigate and reduce the effects of storm surge, disjointed data sources, discordant and counterproductive efforts, and inefficient application of scientific and technological advances remain obstacles to enhancing the safety of our coastal communities.

Margaret McCalla (NOAA) noted that storm surge cuts across both meteorology and oceanography and asked about the role of the Office of the Federal Coordinator for Meteorology (OFCM). Rhome confirmed that OFCM definitely plays a role in the storm surge hazard community.

Rhome (NOAA/OSTP) explained that a growing percentage of the U.S. population resides in the coastal zone. Mike Buckley (FEMA) noted that the definition of "coastal" varies widely and asked Rhome to define it. Rhome noted that his definition was predicated on a percentage of county line that is along a coast. Paula Gori (USGS) stated that the definition of "coastal" is also a geography and social science question. By some definitions Fairfax County, VA is also perceived as residing in a coastal zone, she noted. She further suggested that Rhome clearly indicate the definition of "coastal" in his presentation.

Rhome (NOAA/OSTP) noted that the combination of sea-level rise and a multiplying coastal population is making our Nation increasingly vulnerable to storm surge and coastal inundation. It provides a higher "base" for future surge/inundation events thus producing an increasing threat to coastal communities, ecosystems, transportation systems, economic viability, and energy infrastructure.

The current challenge of addressing storm surge/coastal inundation vulnerability lies in insufficient inter/intra-governmental coordination and communication of science and technology; an overall lack of standards; the lack of a storm surge/coastal inundation coordination body; and poor linkage between government and academia. All the expertise and knowledge being utilized and collected by partnering agencies needs to be pulled together to develop better modeling and communication efforts. One potential solution is to ask OFCM to take on a larger role and more exhaustive approach to coordinating storm surge/inundation risk reduction efforts.

Margaret Davidson (NOAA) agreed that the expertise needed for storm surge and coastal inundation is large and therefore requires a community approach. The lack of an existing unified approach has allowed major gaps to open.

Rhome (NOAA/OSTP) further noted the need for an interagency team to assume common ownership and take a consistent approach to storm surge/inundation risk reduction. The lack of an existing community approach is hindering progress and limiting opportunity, resulting in inadequate service to our customers/constituents. For example, HAZUS, FEMA's software program for estimating potential losses from disasters, currently lacks a storm surge component.

Rhome (NOAA/OSTP) proposed the development of an interagency working group (IWG) under the auspices of the SDR noting that the Subcommittee has already completed a roadmap for coastal inundation in the Grand Challenges Implementation plan. The purpose of the IWG would be to evaluate existing storm surge/coastal inundation research, data, and agency operating plans; coordinate agency priorities, planning and budge processes; and serve as the primary channel for communicating collective expertise and fostering sound policy making.

John Gaynor (NOAA) noted that OSTP has traditionally not wanted NSTC entities to implement and/or execute ideas.

Mike Bukley (FEMA) stated that the HAZUS software is in a more favorable position this year to support the introduction of a storm surge model. In the past, FEMA was moving towards a model funded by the National Science Foundation (NSF). There may now be an opportunity to look into models other than the NSF-funded model.

Margaret McCalla (NOAA) urged Rhome to contact the Academic & Science division of the Office of the Federal Coordinator for Meteorology (OFCM). Rhome noted that OFCM represents a possible place to house this effort but questioned if it would be inviting enough to the oceanography side.

Dennis Wenger (NSF) stated that joint work is being done between NSF and NOAA. He also noted that no group meets monthly to discuss collaboration across agencies. Margaret Davidson (NOAA) suggested documenting all existing relationships and tasks being covered related to coastal inundation across the SDR agencies.

John Haines (USGS) noted that a perception exists regarding the lack of coherent efforts in coastal inundation. Margaret Davidson (NOAA) suggested documenting what is happening versus what is needed.

David Applegate (USGS) noted that after publishing the Grand Challenges, it was obvious that the big question was how to meet them. Can SDR point to where agencies are moving forward and where they are not? Do certain hazards need a coordination mechanism? SDR is hard pressed to be a mechanism for executing the Grand Challenges but can serve as a mechanism to measure progress.

Jon Kolak (OSTP) asked if there was value in providing additional granularity to the implementation plans. He also noted that OSTP is not in a position to form a working group just yet. He is, however, gathering feedback for OSTP leadership to make an informed decision once the transition is finalized.

Paula Gori (USGS) asked the group to consider forming an ad hoc group with agencies and non-profits similar to the Coalition of Organizations for Disaster Education (CODE) convened by the

American Red Cross. CODE is composed of Federal government agencies and national not-for-profit organizations that work together to develop and disseminate consistent educational information for the public about disaster preparedness. The coalition meets as needed to discuss disaster preparedness awareness and education messages to ensure consistent, accurate and timely messages.

David Applegate (USGS) noted that the concept of forming an ad hoc group brings up an interesting issue of moving outside the Federal family with the non-profit sector. Gori noted that having the non-profit sector present when making decisions provides a good opportunity for input.

It was recommended that Paula Gori (USGS) approach CODE about briefing the SDR.

Long Phan (NIST) agreed that a national coordinating body is needed and noted the existence of a three year interagency extreme wind and storm surge collaboration effort with the National Institute of Standards and Technology (NIST), the National Weather Association (NWA), the National Hurricane Center (NHC), and the University of Florida. FEMA and the U.S. Army Corps of Engineers (USACE) are also being approached to become involved.

VII. Panel Presentation: Alternative approaches to Measuring and Communicating Hurricane Intensity – John Gaynor, Tim Schott, Mike Buckley, Margaret Davidson, Mark Powell and Tim Reinhold
David Applegate (USGS) introduced John Gaynor (NOAA) to facilitate the panel presentations.

Gaynor (NOAA) noted that the presentations would concentrate on the impact of hurricanes on coastal communities and regions. Gaynor stated that Mark Powell (NOAA/Atlantic Oceanographic and Meteorological Laboratory (AOML)) and Tim Reinhold (Institute for Business and Home Safety) would begin the discussion on new metrics for hurricane impacts; Timothy Schott (NWS) would discuss experimental NWS tropical cyclone impact graphics and be followed by Mike Buckley (FEMA), who would discuss the FEMA mitigation perspective. Margaret Davidson (NOAA) would then conclude the panel by tying things together under the resilient coastal communities banner.

Mark Powell (NOAA) began by noting that he was basing his presentation on the paper titled "Tropical Cyclone Destructive Potential by Integrated Kinetic Energy," published in the Bulletin of the American Meteorological Society, Volume 88, Issue 4 (April 2007).

Powell (NOAA) noted that despite excellent forecasts and warnings, people act on perceived vulnerability. As a result, Americans need a better way to assess the risk of hurricanes and a replacement for the arguably outdated and ineffective Saffir-Simpson hurricane scale.

The motivation for a new hurricane metric focuses on the following factors: intensity is important but independent of size; wind radii are important but independent of intensity; destructive potential depends on both; and a metric to convey this to the public is necessary.

Powell (NOAA) explained that wind stress on the ocean scales upward with the wind speed and forces waves and storm surge to develop integrated kinetic energy (IKE). Integrated kinetic energy represents a framework that captures the physical process of ocean surface stress driving up waves and surge while also taking into account structural wind loading and spatial coverage of the wind. Integrated kinetic energy was computed from the gridded, objectively analyzed surface wind fields of 23 hurricanes, which included a range small, medium and large storms. A rating measuring the destructive potential was constructed by weighting wind speed threshold contributions to the

integrated kinetic energy, based on observed damage in Hurricanes Andrew, Hugo, and Opal. A combined storm surge and wave destruction potential rating was assigned according to the integrated kinetic energy contributed by winds greater than tropical storm force. The ratings are based on the familiar 1–5 range, with continuous fits to allow for storms as weak as 0.1 or as strong as 5.99.

Powell (NOAA) concluded his presentation by noting that this enhancement to the current Saffir-Simpson scale was proposed last spring at the 2008 National Hurricane Conference to help get more accurate messages and warnings of risk to the public.

Timothy Schott (NWS) began his presentation by introducing the Tropical Cyclone Hazards Graphics as an experimental, internet-based product suite consisting of four tropical cyclone hazards: wind**,** tornado**,** coastal flooding**,** and inland flooding. Schott explained that a suite of four graphics will be generated and posted by selected, coastal Weather Forecast Offices (WFOs) during the 2009 Hurricane Season when tropical cyclone watches and/or warnings are issued by the Tropical Prediction Center/National Hurricane Center (NHC) for the WFO area of responsibility.

These WFO-generated graphics are assessments made by forecasters which measure the potential impact of tropical cyclone. These assessments are based on official forecasts and associated forecast uncertainties from the Tropical Prediction Center, the Storm Prediction Center, and the Hydrometeorological Prediction Center. The graphics will generally be provided by the WFO every six hours while tropical cyclone watches and warnings are in effect for the WFO area of responsibility.

Each graphic could have up to six color indicators as follows: Gray representing "No" impact(s), Blue representing "Very Low" impact(s), Yellow representing "Low" impact(s), Orange representing "Moderate" impact(s), Red representing "High" impact(s), and Fuchsia representing "Extremely High" impact(s).

Paula Gori (USGS) asked if the impact graphs will vary for a storm that crosses two different Weather Forecast Offices (WFOs). Schott (NWS) noted that the graphics would differ and that they are working on interoffice collaboration efforts, including integration of the graphs into a common database.

Schott (NWS) continued his presentation by highlighting the 2009 impact graphics effort. By the end of 2009, all 23 coastal Weather Forecast Offices along the Atlantic and Gulf coasts will issue graphics when their area is under a tropical cyclone watch and/or warning, and products will link to WFO's companion (text) Hurricane Local Statement. More information regarding this effort can obtained at: http://www.weather.gov/os/tropical.

Paula Gori (USGS) noted that she currently utilizes the NOAA Portal hurricane site to give advice on landslide potential and asked if the impact graphics site will link to the portal. Schott (NOAA) indicated that the site will likely remain separate while in the experimental phase.

Long Phan (NIST) asked if the impact graphics provide any difference in technical products. Schott (NWS) replied that the graphs are a result of complex algorithms that take boatloads of quantitative information and distill it into graphics.

In presenting the FEMA mitigation perspective, Mike Buckley (FEMA) noted that the agency asked NOAA for a storm surge model in the 1970s. Due to FEMA's requirement to make the code

available for public review, however, there was not sufficient manpower or knowledge to move forward. As a result, FEMA developed its own storm surge model.

Buckley explained that FEMA examines storm surge in terms of what is most suitable for the flood insurance program and the flood insurance rate map. The agency tries to capture from a statistical stand point the depth or elevation of varying sequences, runs a series of potential storm impacts based on a variety of different parameters (size, pressure, forward speed, track of storm), and then adds wave conditions. FEMA selected a three foot wave as a benchmark to indicate a high hazard to coastal areas.

Buckley (FEMA) noted that the current Saffir-Simpson hurricane scale is more helpful in an operational context as opposed to a mitigation context. Although worthwhile, an enhanced Saffir-Simpson scale would also probably be more helpful to the public than to FEMA.

Margaret Davidson (NOAA) concluded the panel discussions by noting the relationship to community resilience. Davidson (NOAA) stated that her wish is to go further and not limit the work to a physical model. She submitted that there are other attributes such as age and condition of infrastructure, extent of vulnerable populations, and existence of sensitive ecosystems (role in wave continuation) that should be included on an impact index.

Davidson (NOAA) asked the SDR, when thinking about disasters, to also recognize that the same strategies used to measure and communicate hurricane intensity can also be utilized to measure and predict climate change. We can work together smarter on the operational modeling side as well as the risk communication and response side. It is appropriate for an interagency group to be formed even though all agencies are under-resourced.

Timothy Schott (NWS) stated that there is a need to get to local effects. Site specific communication of risk may be an early warning communication tool that needs to be added as a storm approaches.

Long Phan (NIST) noted that storm surge is highly dependent on location. He questioned the usefulness of an integrated kinetic energy (IKE) approach when you do not have the issue of site dependency considered. Powell (NOAA) noted that tremendous resources go into existing forecasts that do not fully capture local effects, which IKE by design is not intended to incorporate.

Maria Honeycutt (NOAA) asked Mike Buckley (FEMA) how to integrate these models into the mitigation side. She noted that obtaining credibility at the community level has been challenging. When different products are utilized with different purposes, we do not do a good job helping practitioners understand the differences in products or communicate the differences to the public. Honeycutt (NOAA) asked if the new model would help influence better decision making in a post-disaster challenge. Buckley (FEMA) responded that there has always been a challenge communicating risk. If a refined scale is utilized, how will local emergency managers respond regarding evacuation? Local emergency managers tend to build a safety margin into their decision making. As a result, a refinement of scale may not necessarily make for better decision making.

Jon Kolak (OSTP) noted that the storm surge scale is somewhat qualitative and will vary slightly. A consistent graphic may not be feasible due to variations in the distinctions. Schott (NWS) responded that consistency between adjacent offices is a valid concern. Overall, the graphics will be focused on taking forecasted storm surge in any given area so it will be relatively consistent. A national data base should facilitate interoffice collaboration.

Long Phan (NIST) asked Tim Schott (NWS) how loss of power is compensated for. Schott (NOAA) noted that people can continue to use battery-operated weather radios to receive information.

Dave Applegate (USGS) concluded the discussion by stating that the SDR will follow up on the issue of storm surge coordination.

VIII. Close and Next Actions.
David Applegate stated that the next SDR meeting will be held March 5th.

IX. Adjournment
The meeting adjourned at 1202: p.m.

X. Future Meetings
The SDR meets on the first or second Thursday of every month from 10 a.m. to 12 p.m. unless otherwise noted.

March 5, 2009	July 2, 2009	October 1, 2009
April 2, 2009	August 6, 2009	November 5, 2009
May 7, 2009	September 3, 2009	December 3, 2009
June 4, 2009		

XI. Agenda Items and Other Communications with the Subcommittee
Please send proposed agenda items and any other items intended for distribution to the full Subcommittee to Emily Wallace (ewallace@grs-solutions.com).

XII. Contact Information SDR Leadership
David Applegate, Chair, 703-648-6714, applegate@usgs.gov
Margaret Davidson, Vice Chair, 843-740-1220, Margaret.davidson@noaa.gov
Dennis Wenger, Vice Chair, (703) 292-8606, dwenger@nsf.gov

Secretariat
Emily Wallace, 703-560-7448, ewallace@grs-solutions.com

XIII. Summary of February Actions

Action	Lead	By When
SDR financial support: Contact Dave (applegate@usgs.gov) if you would like a personalized support request letter to your agency.	SDR Members	Standing
Contact Emily (ewallace@grs-solutions.com) to receive copies of the Grand Challenges for Disaster Reduction Implementation Plan packets or CD.	SDR Members	Standing
Let Emily or Dave know how you use the implementation plans, including when you link to the plans from your agency websites.	SDR Members	Standing
Send Emily or Dave additional distribution suggestions, including relevant contact information.	SDR Members	Standing
Let Emily know if you are interested in funding the National Research Council Study on Measuring Community Resiliency.	SDR Members	ASAP

Let Emily know if you are interested in attending the Annual Hazards Workshop in Boulder (ewallace@grs-solutions.com).	SDR Members	ASAP
Review and edit titles on OMB MAX.	SDR Members	ASAP
Send David Applegate (applegate@usgs.gov) and/or Emily Wallace (ewallace@grs-solutions.com) speaker suggestions for the Annual Hazards Research and Applications Planning Workshop plenary sessions.	SDR Members	ASAP
Review the USGEO Document *Observing Earth's Vital Signs* and provide any comments to their USGEO member representative by Monday, February 9th.	SDR Members	February 9, 2009
Send Dennis Wenger (dwenger@nsf.gov) a summary of any agency activity related to ISDR.	SDR Members	February 10, 2009
Coordinate a CODE briefing to the SDR.	Secretariat	Spring 2009