

Meeting Minutes of the Subcommittee on Disaster Reduction

2 December 2010, 10:00 a.m. to 12:00 p.m., White House Conference Center Lincoln Room

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

Officers

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

NSTC Liaison

Sarah Stewart Johnson (OSTP) (T)

Designated Representatives

BLM *Edwin Roberson*

Daniel Lechefsky

CDC Mark Keim

DHS Bruce Davis (T)

DHS/FEMA Stephen Carruth

DHS/USCG *Steven Cohen*

DOD *Al Johnson*

DOE *Patricia Hoffman*

DOT *Kelly Leone*

Sheila Duwadi

EOP/OSTP Sarah Stewart
Johnson (T)

EDA *Audrey Clarke*

EPA *Peter Jutro*

Stephen Clark

FERC *Pamela Romano*

HUD *David Engel*

NASA Craig Dobson

NGA Chris Crosiar

NGB *Daniel Bochicchio*

NIH Allen Dearry

NIST *William Grosshandler*

NOAA *Margaret Davidson*

Roger Pierce

NSF Dennis Wenger

OPHS Sven Rodenbeck (T)

State Nicholas Suntzeff

Brian Lieke

USACE *Steven Cary*

Dimitra Syriopoulou

USAID *Sezin Tokar*

USDA *TBD*

USFS *Carlos Rodriguez-*
Franco

USGS Paula Gori

Other Attendees

BLM Marietta Eaton

EPA Marcy Rockman (AAAS)

NOAA Nell Codner (T)

Helen Wood

NSF Kostas Triantis

Secretariat Ross Faith

Barbara Haines-Parmele

American Inst. of Architects

Janice Olshesky

National Resource Council

Kevin Brown

Lea Shanley

Scripps

Bernard Minster

Agenda

10:00 Welcome and Introductions

10:05 Approval of October Meeting Minutes

10:08 Report from the Chair

10:15 Report from the Vice-Chairs

10:22 Report from the NSTC Liaison

10:30 Presentation: NRC Report on Precise Geodetic
Infrastructure

11:00 Presentation: Architectural Resilience for Disasters

11:40 Summary of ISDR Workshop and Assessment
Submission

11:50 Recognition of Helen Wood

11:55 Close and Next Actions

Handouts

- Agenda
- October Meeting Minutes
- Letter of Opportunity to Support SDR FY2011
- Request for Agency Feedback for Hyogo Framework Review

I. Call to Order and Introductions

Subcommittee on Disaster Reduction (SDR) Chair David Applegate (USGS) called the meeting to order at 10:03 a.m. and the participants introduced themselves.

II. Approval of October Meeting Minutes

The October Meeting Minutes were approved with no changes.

III. Report from the Chair

The subcommittee’s 2011 meetings are scheduled to be held on the first Thursday of each month in the Lincoln Room of the White House Conference Center. Noting that the August meeting is subject to cancellation, the 2011 SDR meeting dates are:

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

Applegate reported that he sent a letter on December 1st to the official SDR agency representatives asking for contributions to support the subcommittee and the work of the Secretariat. The last similar request for agency support was made in the spring of 2009. Applegate offered to furnish tailored letters for individual agencies upon request.

The UN-World Bank report, “Natural Hazards: UnNatural Disasters: The Economics of Effective Prevention,” is available at <http://www.gfdrr.org/gfdrr/NHUD-home>. Applegate thanked Sezin Tokar (USAID) for alerting the SDR to the release of this important report.

Colleagues at the National Oceanic and Atmospheric Administration (NOAA) asked that the SDR be informed of an upcoming regional workshop of the Group on Earth Observations Coastal Zone Community of Practice. The workshop will focus on “Earth Observation Support for Sustainable Tourism in Small Island States” and will take place in San Juan, Puerto Rico March, 9-11, 2011.

Applegate reported that he recently attended a multi-day meeting on international floodplain management held by the U.S. Army Corps of Engineers (USACE) and the Federal Emergency Management Agency (FEMA). The meeting brought together participants from 19 developed and developing countries to discuss shifting focus from flood defense to a more integrated risk management approach. An interesting observation was that even the Netherlands, despite its efforts to build and maintain an impregnable levy system, is starting to consider issues of preparedness and evacuation in case breaches do occur. The impact of Hurricane Katrina has been largely responsible for this shift in Dutch thinking.

IV. Report from the Vice-Chairs

SDR Vice-Chair Dennis Wenger (NSF) stated that he attended a multi-day workshop on disaster recovery, which was recently held at the University of North Carolina-Chapel Hill’s Center for the Study of Natural Hazards and Disasters. Sponsored by the Public Entity Risk Institute (PERI) and with support from the NSF, the workshop convened academic researchers to debate the elements of a general theory of disaster recovery and - most importantly - to establish a research agenda that will inform and test the theory. This research agenda will be used to approach government agencies and foundation funding sources that may be willing to invest in the study of identified topics over the next five years. More information about the workshop and the longer-term initiative is currently available on the website, <http://recoverytheory.web.officelive.com/default.aspx>, which will be updated as the summary from the workshop and other materials are completed.

V. Summary of ISDR Workshop and Assessment Submission

(Discussion of the ISDR Workshop and U.S. Input for the Global Assessment Report for Disaster Risk Reduction was moved forward in the agenda to accommodate speaker schedules.)

Applegate thanked the National Science Foundation for hosting the North American Workshop on Mid-Term Review of the Hyogo Framework for Action, which was held on November 3. The SDR organized the workshop in its capacity as the U.S. National Platform for—and at the request of—the UN’s International Strategy for Disaster Reduction (ISDR).

At the workshop, representatives of the Canadian, Mexican, and United States National Platforms for the ISDR were joined by civil society stakeholders from each country to discuss progress, success strategies, and barriers with respect to implementation of the disaster risk reduction principles and goals of the Hyogo Framework for Action (HFA). (This year marks the mid-point of the Hyogo Framework’s decadal lifespan, so the ISDR has been conducting a series of workshops and other review mechanisms to gather feedback on the effectiveness of the HFA.) The workshop participants also discussed opportunities for cross-border collaboration, efforts beyond North America, and strategies to reduce urban disaster risk.

The ISDR encourages national platforms to be multi-sectoral, which poses a challenge for the U.S., as the SDR is a federal body. While the SDR was able to invite U.S.-based nongovernmental organizations (NGOs), the National Academies Disasters Roundtable, and other civil society stakeholders to participate in the November 3 workshop, a mechanism through which the U.S. National Platform could improve engagement with these other sectors would be worthwhile to explore, as stakeholders from these sectors had expressed interest in providing input to the U.S. platform previously at the 2009 Global Platform meeting and most recently at the November 3 workshop. Allen Deary (NIH) stated that other NSTC entities have held listening sessions and workshops in the past to seek feedback from the non-federal sector and suggested that the SDR might adopt such an approach to expand input to the U.S. National Platform.

On a related topic, Applegate asked agencies for their input in order to bolster the U.S. contribution to the UN’s 2011 Global Assessment Report on Disaster Risk Reduction. The Global Assessment Report (which will incorporate the outcomes of the November 3 workshop) seeks to measure how well countries are doing with implementing the principles and goals of the Hyogo Framework for Action. Applegate thanked NOAA and the National Institute of Standards and Technology (NIST) for responding to a previous request, made at the October SDR meeting. The U.S. contribution to the Global Assessment Report, which is essentially comprised of the SDR’s answers to a UN questionnaire, is currently a 25 page document. Given that the document’s length and layout is a bit unwieldy for agencies to respond to, Applegate instead asked the agencies to provide feedback by the January 6 SDR meeting on the following two questions.

- What are the primary steps that your agency has taken to improve disaster resilience during the past two years?
- What if any procedures are in place at your agency to assess how major development projects, especially infrastructure, may affect hazard impacts and disaster risk?

Several members noted that their agencies partner and collaborate with stakeholders from other sectors, like NGOs and professional organizations. Agencies were therefore also asked to address the following question.

- What non-governmental organizations and other civil society stakeholders is your agency working with to advance disaster risk reduction in the U.S. and abroad? Please give a short description of the primary collaborative efforts and partnerships?

Agencies are invited to send their responses to Applegate (applegate@usgs.gov) and the Secretariat (ross.faiith@mantech.com). Steve Carruth (FEMA) asked how disaster resilience was being defined in the first question. Wenger stated that while disaster risk reduction is the primary thrust of the ISDR, incorporating more broadly defined resilience efforts would probably be appropriate.

Applegate also noted that Mexico will be hosting an ISDR Regional Platform meeting, probably sometime in March. The Global Platform meeting is scheduled for May 8-13, 2011, and a call for nominations to the U.S. delegation will go out in the next month or two.

Regarding federal interaction with the NGO community, Nick Suntzeff (State) noted that there were approximately 6,000 NGOs operating in Haiti and that the organization of all the different groups was a major challenge. Carruth noted that Haiti's earthquake experience had caused FEMA to start looking into ways to better handle response to catastrophic events.

VI. Report from the NSTC Liaison

Sarah Stewart Johnson (OSTP) provided an update about the outcomes of the October 21 meeting of the Committee on Environment, Natural Resources, and Sustainability (CENRS), which is the parent body of the SDR. The President's Science Advisor and Director of the White House Office of Science and Technology Policy (OSTP), John Holdren, spoke at the meeting about the President's goals for sustainability. The CENRS principals in attendance spoke about how issues of sustainability affect their agencies. The topics discussed included: national aspects; sustainable development; looking at humans as part of the ecosystem; building the knowledge base for sustainability; developing the workforce; sustainable agriculture; education; infrastructure; human resources; the need for a longer-term view; the role of grant-making agencies; data, private sector and commercial interests; and determining resiliency in the system. In advance of the meeting, all eight of the CENRS subcommittees (including the SDR) had responded to a questionnaire about how the issues each subcommittee handle fit in with sustainability challenges. Sustainability will likely be a topic of future CENRS meetings.

The CENRS is expected to meet four times per year and is scheduled to meet next on February 1st. There will probably be some materials that the subcommittees will need to develop for that meeting.

Another likely topic for the February CENRS meeting is the overall structure of the committee, including what new subcommittees may be needed and which existing subcommittees can be merged. It is envisioned that a new subcommittee on renewable energy will be created to, among other things, look at siting issues related to renewable energy projects that are being supported with stimulus funds. A second new subcommittee on mineral supply chain, with a focus on strategic minerals and rare earth elements, is also expected.

At the October CENRS meeting, four issues were defined as critical and will draw much of the committee's time during the coming year.

- **Global Change.** The U.S. Global Change Research Program (USGCRP) is currently undergoing a strategic planning process that involves a shift in focus from observation and prediction to response and decision-making.
- **Oceans and Coasts.** The focus will be on how the new National Ocean Council (NOC) can provide coordination and integration of stewardship and planning for oceans, coasts, and the Great Lakes. The effort will be linked to the work of the Joint Subcommittee on Ocean Science and Technology (JSOST).
- **Deepwater Horizon Oil Spill.** The focus will be on long-term monitoring and environmental restoration, emphasizing robustness of data gathering and integration.
- **Integration of Science and Technology for Sustainability.** The CENRS will be examining current metrics for sustainability in an effort to determine if they are adequate and identify what

metrics are necessary. The effort will tie into the National Research Council's recently launched study that will examine sustainability linkages across the federal government.

In addition to these four critical issues, other topics that OSTP's Associate Director for Environment, Shere Abbott, pointed to for the coming year were basic science of place-based understanding, tools for decision-making, standards and metrics for sustainability, a consensus approach to capacity building and education, and the international aspects of sustainability.

Applegate stated that the SDR might want to have a broad discussion among the agencies at its January meeting on the role of disaster reduction in sustainability. He noted that the SDR had provided some brief thoughts about linkages between disaster reduction and sustainability for consideration at the October CENRS meeting, but indicated that there might be an opportunity to develop these linkages further, perhaps during a longer SDR workshop on the topic in the future.

The OSTP Associate Director for Environment has signed off on the formalization of the SDR Coastal Inundation Working Group. OSTP is currently discussing options to make the body a joint-working group of the SDR and JSOST. The working group may also interface with the Climate Change Adaptation Task Force. Stewart Johnson encouraged developing these ties further over the weeks ahead in order to showcase the joint working group at the February 1st CENRS meeting as an example of how subcommittees that handle overlapping issues can collaborate to improve efficiency and leverage complementary expertise.

VII. Presentation: NRC Report on Precise Geodetic Infrastructure

Dr. J. Bernard Minster, professor of Geophysics at the Institute of Geophysics and Planetary Physics (IGPP) of the Scripps Institution of Oceanography, University of California, San Diego, provided an overview of the National Research Council's newly released study on Precise Geodetic Infrastructure. The study, which Minster chaired, was undertaken in response to a request by federal agencies, led by NASA, for the National Research Council (NRC) to assemble a team of leading geodesists to examine what support was needed for precise geodetic infrastructure.

The field of geodetic science, with roots in military navigation, is approximately 3,000 years old. In the 1960's geodesy became very important for calculating ballistic missile trajectories during the Cold War. Today, the range of applications is extensive. Beyond military use, geodesy now allows for civilian GPS navigation, precise timekeeping for finance and science, more efficient agriculture, measurement of the Earth's changing geology, including geo-hazards, such as earthquakes and volcanic eruptions, as well as a myriad of other measurements, data, and systems that benefit society.

Essentially, precise geodetic information rests on the ability to measure three characteristics of the Earth. First, geodetic precision depends on the ability to measure the geometry of the Earth and how its geometry changes as a function of time, which is essential for mapmaking. Second, geodesy requires the measurement of Earth's orientation in space, since it wobbles and rotates at different rates. Third, precise geodesy requires measurement of the Earth's gravity field.

One of the goals of geodetic science is to continually improve measurement of the Earth's geophysical characteristics as they change over space and time. Technological advances have propelled the science swiftly forward during the last 50 years, improving precision at a rate of one order of magnitude per decade since the launch of Sputnik in 1957. As an example of this progress, experts in the field are now able to determine the center of the Earth to within one-half of an inch. Geodesists are now challenged by the complexities of maintaining precise measurements down to the centimeter over long periods of time, ranging from months to years, and even spanning decades. Monitoring volcanic and seismic hazards, and especially sea level rise, fall into this more challenging, long-term domain, along with floodplain mapping. But progress in the field will only advance as far as the geodetic infrastructure allows it to, and

moreover, maintenance of that infrastructure remains critical to many modern conveniences, such as GPS car navigation.

Minster stressed that the role and importance of geodetic infrastructure is underappreciated. The result is that some of the equipment has not been upgraded since the 1970s, and the network remains sparse and unevenly balanced around the Earth. Beyond these concerns, the U.S. faces a shortfall of young, rising American geodesists, which has ramifications for national security. Continued U.S. leadership in the field will require modernization and upgrades to the network and education of the next generation of American experts.

In the near-term, the U.S. and especially NASA must improve capabilities for satellite laser ranging and very long baseline interferometry. Satellite laser ranging (SLR) is a geodetic technique in which a laser signal is transmitted from a ground-based station, reflects off specially designed mirrors (retro-reflectors) placed on satellites, and is received back at the station. SLR provides range tracking data for precision orbit determination of geodetic satellites. Very long baseline interferometry (VLBI) is a geodetic technique using large, ground-based, parabolic-dish radio telescopes to observe quasars (the most distant objects in the cosmos). VLBI sites provide information on the Earth's rotation and the direction of the Earth's spin axis. These and other state-of-the-art technologies have been developed over the past decade and quite recently installed at NASA's Goddard Space Flight Center in Greenbelt, Maryland. Minster stressed the need for a firm decision to install and maintain these newer technologies at other locations around the U.S.

In the long-term, the U.S. needs to partner internationally to install geodetic infrastructure at strategic locations around the world in order to provide a robust, global system of geodetic networks. The NRC study recommends that 24 of the fundamental geodetic infrastructure sites (like the site at NASA-Goddard) are needed around the world. There has been some recognition at the international level that geodetic infrastructure is needed, but Minster maintained that these efforts need to be better supported by organizations such as the Group on Earth Observations (GEO).

Helen Wood (NOAA) spoke in her capacity as Co-Chair of the U.S. Group on Earth Observations (USGEO). She explained that the individuals and agencies who work directly with satellite and in situ observing systems fully understand the importance of precise geodesy and the infrastructure needed to support it. GEO, on the other hand, has been focused largely on advancing the political and policy agreements needed to realize improved interoperability, identify data collection gaps, and promote fuller and more open sharing of Earth observations data. Wood recommended having a follow up conversation with Minster about how GEO and USGEO could provide support and visibility for a plan of action to ensure that the needs of precise geodesy are not overlooked.

Craig Dobson (NASA) stated that he was currently engaged with government officials from Colombia, who have expressed interest in establishing a geodetic station in the Llanos area of their country. Colombian officials are expected to visit the NASA-Goddard site during the coming weeks to further explore this effort. Minster encouraged NASA to join the International Charter for Space and Major Disasters.

On the domestic front, the NRC study recommends upgrades for the National Geodetic Survey, which is comprised of continuously operating receiver systems (mostly GPS) scattered across the U.S. Specifically, the study recommends increasing the quality of the receiver systems in the eastern part of the country to correspond with the higher quality systems in the western U.S. The effort would require multi-agency collaboration. To accomplish this, the NRC recommends establishing a "federal geodetic service" that would promote collaboration among agencies on geodetic issues. Minster noted that his briefings and the study recommendations have been well received by the agencies involved.

In response to a question from Paula Gori (USGS), Minster explained that for the recommendations of the NRC study to be realistic, the scientists who generated them had to discuss funding and cost to some degree, but as those issues lied outside the charge of the study, no formal recommendations on funding and cost were made. Minster also noted that the issue of education was also outside of the study mandate, but in subsequent discussions with the agencies, it had become clear that the looming shortfall of qualified U.S. geodesists was a critical issue that needs to be addressed. Lea Shanley (NRC) reported the National Geospatial-Intelligence Agency (NGA) had recently commissioned a National Academies study to examine workforce issues in the field, and the study panel was expected to be finalized shortly.

VIII. Presentation: Architectural Resilience for Disasters

Applegate introduced Janice Olshesky, President of Olshesky Design Group. Olshesky founded the firm in 2000 with an emphasis on sustainable design and has grown it to also include an emphasis on disaster resilience. Olshesky is a member of the American Institute for Architect's Disaster Assistance Task Force. In 2008 and 2009, she served as a member of FEMA's Mitigation Assessment Team (MAT) working in the aftermath of Hurricane Ike. She was also was part of the American Institute of Architects Tsunami Disaster Relief effort in Sri Lanka in 2005.

Olshesky's presentation focused on how architectural design can be used to mitigate hazard impacts. She drew from her experiences with Hurricane Ike and Sri Lanka, and provided examples from Haiti. After reviewing Haiti's seismology and the destruction left by the January 12th earthquake, she discussed the construction materials and techniques that had been used to build Haiti's critical infrastructure and buildings, which to varying degrees consisted of reinforced concrete, reinforced concrete with in-filled walls, and masonry block. These structures by and large did not incorporate seismic design and the materials were typically substandard. Moreover, structures that were reinforced often had only one reinforcing rod in a given area where they should have had five or six. Similarly, the vast majority of Haiti's single family dwellings had been designed poorly, with no consideration of the seismic hazard, and constructed with substandard materials, including unreinforced masonry, adobe, and concrete block.

Olshesky made the following points and recommendations regarding Haiti's reconstruction.

- The buildings that survived the earthquake – the 12 story Digicel building and the U.S. Embassy among them – followed guidelines of the international building code or other codes incorporating seismic hazard mitigation features.
- Ninety miles from Port-au-Prince, a residence constructed of sandbags also survived while most neighboring structures did not. Built by the Cal Earth company, this type of **earth/sandbag construction** meets California's earthquake building codes.
- Olshesky also noted that **bamboo** may be a viable construction material for use in rebuilding residences in Haiti as structures built from the wood can be engineered to withstand both hurricane and earthquake impacts. (The AIA team assisting in Sri Lanka after the Indian Ocean Tsunami struck the island in 2004 had recommended reconstruction using bamboo since the wood is very strong and grows quickly. The team recommended that Sri Lanka, which had a shortage of wood in general, invest in re-growing its bamboo forests for eventual harvesting.)
- **Steel frame structures** – both commercial and residential – resting **on concrete slab foundations** can be engineered to comply with the California seismic code and the Miami-Dade hurricane code.
- The **Structural Concrete Insulated Panel (SCIP) system**, which can be engineered to meet seismic and hurricane requirements, fared well in Hurricane Andrew and Hurricane Ike, and has been considered for use by Sri Lanka's ministry of housing.
- Olshesky also showed examples of experimental **Audubon houses** that had been constructed on the Bolivar Peninsula in Texas.
- One common feature of many institutional buildings that survived inundation from Hurricane Ike and the tsunami in Sri Lanka was an open ground floor containing structural pillars but few or no

walls. The storm surge and tsunami wave washed through the ground floor, around the pillars, and left very little damage.

For Haiti's reconstruction, Olschesky recommended a multi-hazard approach, including the development of multi-hazard maps, to address and mitigate the impacts of earthquakes, landslides, hurricanes, and storm surge. She also recommended that those involved in Haiti's reconstruction work with the Caribbean Uniform Building Code (CUBiC), which is beginning to incorporate the international building code.

Mark Keim (CDC) stated that one of the challenges Haiti will face during recovery is lingering health issues. He referenced new studies that show that displaced disaster survivors, even after coming back to their hometowns, have elevated disease rates, particularly a worsening of chronic diseases, and early fatality rates. There are even thoughts now that the most significant health effect of disasters is not physical trauma, but mental and behavioral trauma that goes on for 20 or 30 years afterwards.

Sheila Duwadi (FHWA) mentioned that her recent visit to Katmandu, Nepal had underscored the city's high vulnerability to a major earthquake. She asked if there was some mechanism that could be used to focus on Katmandu and other vulnerable cities to improve building codes and planning pre-event.

Nick Suntzeff (State) mentioned that the Government of Nepal had reached out to the U.S. Embassy in Katmandu to request assistance in conducting a country-wide study of disaster resilience. Suntzeff stated that the Department of State was currently discussing the issue internally.

IX. Recognition of Helen Wood, former SDR Chair, upon her Retirement

Applegate presented a framed poster of the *Grand Challenges for Disaster Reduction* to Helen Wood, who has retired from full-time federal service, in recognition of her contributions to the disaster reduction community as former SDR Chair.

X. Adjournment

The meeting adjourned at 12:02 p.m.

XI. Future Meetings

In 2011, the SDR will meet from 10:00 a.m. to 12:00 p.m. on the first Thursday of each month in the Lincoln Room of the White House Conference Center. The meeting dates are:

Thursday, January 6, 2011	Thursday, May 5, 2011	Thursday, September 1, 2011
Thursday, February 3, 2011	Thursday, June 2, 2011	Thursday, October 6, 2011
Thursday, March 3, 2011	Thursday, July 7, 2011	Thursday, November 3, 2011
Thursday, April 7, 2011	*Thursday, August 4, 2011	Thursday, December 1, 2011

*Subject to cancellation

XII. 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 Ross Faith (ross.fairh@mantech.com).

XIII. Contact Information

SDR Leadership

David Applegate	Chair	703-648-6714	applegate@usgs.gov
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Dennis Wenger	Vice Chair	703-292-8606	dwenger@nsf.gov

Secretariat

Ross Faith	703-388-0308	Ross.Faith@ManTech.com
Barbara Haines-Parmelee	703-388-0309	Barbara.Haines-Parmelee@ManTech.com

XIV. Summary of December Actions

Action	Lead	By When
Send agency responses for U.S. input to UN/ISDR Global Assessment Report to Dave (applegate@usgs.gov) and Ross (ross.faith@mantech.com).	SDR Members	January 6, 2011
Send Sezin Tokar (stokar@usaid.gov) your ".gov" e-mail address to receive USG-only updates from USAID on global disaster response activities.	SDR Members	Standing
Contact Ross (ross.faith@mantech.com) to receive copies of the Grand Challenges for Disaster Reduction Implementation Plan packets or CD.	SDR Members	Standing
Let Dave (applegate@usgs.gov) or Ross (ross.faith@mantech.com) know how you use the implementation plans, including when you link to the plans from your agency websites. Send Ross or Dave additional distribution suggestions, including relevant contact information.	SDR Members	Standing