Meeting Minutes of the Subcommittee on Disaster Reduction

07 February 2013, 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.

Co-chairs

David Applegate (USGS)
Margaret Davidson (NOAA)
Dennis Wenger (NSF)

OSTP Liaison

Tamara Dickinson (OSTP)

Designated Representatives

BLM *Edwin Roberson*
CDC *Mark Keim*
DHS Bruce Davis (T)
DHS/FEMA *TBD*
DHS/USCG *Austin Gould*
DOD *Al Johnson*
DOE *Patricia Hoffman*
DOT Sheila Duwadi
EOP/OMB *Grace Hu*
EOP/OSTP Tamara Dickinson
EPA *Peter Jutro*
Stephen Clark
FERC *Pamela Romano*
HUD *Dana Bres*
NASA Craig Dobson
NGA *Paul Lewis*
NGB *TBD*
NIH *Allen Dearry*
NIST *Marc Levitan*
NOAA *Margaret Davidson*
Christopher Strager
NPS *Marcy Rockman*
NSF *Dennis Wenger*
OPHS Estella Jones
State Fernando Echavarria
USACE *Steven Cary*
Dimitra Syriopoulou
USAID Sezin Tokar
USDA *TBD*
USFS *Elizabeth Reinhardt*
Carlos Rodriguez-Franco
USGS David Applegate
USNRC *Jennifer Uhle*

Other Attendees

BLM Ronald McCormick
DHS/FEMA Chris Vaughan
EOP/CEQ David McCoy
Jamie Pool
EPA Brendan Doyle (T)
Eric Koglin (T)
Paul Kudarauskas
FERC Marsha Palazzi
HUD Kevin Bush
NASA Michael Goodman
NGA Jerry Tuttle
Kimberly Walls
NOAA Nell Codner (T)
Maria Honeycutt (T)
NSF Kishor Mehta
State Rajan Sen
USACE Andrew Bruzewicz
USCG Tung Ly (T)
USFS Jason Steinmetz
USGS Matt Rollins
USNRC Brett Rini
Secretariat Bret Schothorst
Barbara Haines-Parmele

Agenda

10:00 Welcome and Introductions
10:05 Report from the Co-chairs and Approval of Minutes
10:10 Report from the OSTP Liaison
10:25 Discussion of SDR Policy Priorities for the Next Administration
10:55 Presentation: NGA Integrated Work Group for Readiness, Response, and Recovery (IWG-R3) and After-action Report on Hurricane Sandy
11:25 Presentation: FEMA Use of Remote Sensing and Geospatial Information during Hurricane Sandy to Identify Interagency Issues and Needs
11:55 Close and Next Actions

Handouts

- February Meeting Agenda
- Draft January Meeting Minutes
- SDR Policy Priority Discussion Slides

I. Welcome and Introductions

National Science and Technology Council (NSTC) Subcommittee on Disaster Reduction (SDR) Co-chair David Applegate (USGS) called the meeting to order at 10:02 a.m., and participants introduced themselves.

II. Report from the Co-chairs and Approval of Minutes

The January meeting minutes were approved with no changes.

III. Report from the OSTP Liaison

In the monthly report from the OSTP Liaison, Tammy Dickinson (OSTP) described the Presidential Innovation Fellows program, which pairs top innovators from the private sector, non-profits, and academia with top innovators in the Federal government to collaborate during focused 6-12 month "tours of duty" to develop solutions that can save lives, save taxpayer money, and fuel job creation. The first round of five projects was launched in August 2012 with 18 inaugural Fellows. The second round will include nine projects, including topic areas on disaster response and recovery and open data initiatives that would be of particular interest to SDR members. Applications to be a Round 2 Fellow will be accepted until March 17. More information on this initiative can be found at: http://www.whitehouse.gov/innovationfellows.

Dickinson also briefly mentioned the ongoing work of the SDR ad hoc working group focused on post-Sandy S&T lessons learned and future research opportunities for the coordination of interagency Federal S&T planning and investment. Agencies are still encouraged to submit input to the effort by contacting the SDR Secretariat (bret.schothorst@mantech.com) and copying our OSTP Liaison (tdickinson@ostp.eop.gov). Once information has been received from all Federal agencies interested in participating, a draft version of the white paper will be shared with the working group for additional review, with the hopes of having a well-vetted document in place to distribute and briefly discuss at the SDR's March meeting.

IV. Discussion of SDR Policy Priorities for the Next Administration

As a follow-on stemming from discussions at the January SDR meeting, the Subcommittee reviewed overarching disaster risk reduction policy priorities that will promote interagency S&T coordination and can feed into the White House OSTP roadmap for the new term. Of the items that were discussed in January as the most pressing for the SDR to address (or continue addressing) into 2013, Dickinson recommended moving forward on the following: to consider the advisability of implementing OSTP and SDR taskings related to multi-agency and multi-hazard coordination laid out in pending Congressional legislation, such as the Strengthening The Resiliency of Our Nation on the Ground (STRONG) Act and the reauthorizations of the National Earthquake Hazards Reduction Program (NEHRP), the National Windstorm Impact Reduction Program (NWIRP), and the National Tsunami Hazard Mitigation Program (NTHMP).

Please contact Tammy Dickinson (tdickinson@ostp.eop.gov) copying the SDR Secretariat (bret.schothorst@mantech.com) if you are interested in assisting with a draft white paper addressing this SDR priority. Another near-term priority discussed was to pilot an assessment of the progress of the short-, mid-, and long-term goals outlined in one of the SDR Grand Challenges for Disaster Reduction implementation plans. Please let the SDR Secretariat (bret.schothorst@mantech.com) know if you are interested in piloting such a progress assessment for one of the implementation plans. SDR leadership will also reach out to the hazard-specific coordination entities such as NEHRP (earthquake implementation plan) and NIDIS (drought implementation plan) to gauge their interest in this effort.

For information and as a refresher, the ten priority bullets that the SDR is currently considering are listed below:

- Coordinate with the National Research Council regarding the recommendations contained in their national resilience study (http://www.nap.edu/catalog.php?record_id=13457), specifically related to the development of a national interagency database of disaster-related loss information and the creation of a national resilience scorecard in conjunction with DHS and their existing built environment assessment tools (http://www.dhs.gov/building-and-infrastructure-protection-series-tools-0);
- Collaborate with other NSTC bodies such as the Infrastructure Subcommittee and with the National Security Staff within the Executive Office of the President on promoting resilience of the built environment as well as within the PPD-8 campaign to build and sustain national preparedness, including the disaster recovery and mitigation frameworks;
- Explore concepts for a Federal interagency framework to provide S&T guidance during disaster response and recovery through real-time assessment of data and information, rapid research to inform decision makers, and immediate mobilization of Federal S&T resources;
- Consider advisability of implementing OSTP and SDR taskings related to multi-agency and multi-hazard coordination laid out in pending Congressional legislation, such as the Strengthening The Resiliency of Our Nation on the Ground (STRONG) Act (http://www.kerry.senate.gov/imo/media/doc/STRONG%20Act%20Legislative%20Text.pdf) and the reauthorizations of the National Earthquake Hazards Reduction Program (NEHRP), the National Windstorm Impact Reduction Program (NWIRP), and the National Tsunami Hazard Mitigation Program (NTHMP);
- Continue ongoing efforts to draft a post-Sandy white paper focused on S&T lessons learned as well as future research opportunities for the coordination of interagency Federal S&T planning and investment; and
- Continue ongoing coordination of Federal activities in the role of U.S. National Platform for the UN International Strategy for Disaster Reduction (UNISDR), including working with the State Department on logistics for the upcoming UNISDR 4th Global Platform Meeting in Geneva, Switzerland in May.
- Engage with OSTP on Earth observation data interoperability initiatives associated with the National Earth Observations Strategy disasters societal benefit area;
- Collaborate with USGCRP on the role of disaster risk reduction in climate change adaptation policies, including input to the Intergovernmental Panel on Climate Change assessment process and development of a multi-hazard North American risk model in conjunction with the National Research Council;
- Promote research best practices and the real-time application of crowdsourcing and other social media tools for disaster management; and
- Assess progress of the short-, mid-, and long-term goals outlined in the SDR Grand Challenges for Disaster Reduction implementation plans, working with hazard-specific coordination entities such as NEHRP, NWIRP, NTHMP, and the National Space Weather Program.

Sezin Tokar (USAID) mentioned that the United Nations International Strategy for Disaster Reduction's 10-year Hyogo Framework for Action (HFA) plan to make the world safer from natural hazards expires in two years in 2015, and she suggested that the SDR could consider timing its progress assessments of the short-, mid-, and long-term goals outlined in the SDR Grand Challenges for Disaster Reduction hazard implementation plans to coincide with the renewal of this revised international disaster risk reduction strategy (known as HFA2).

V. Presentation: NGA Integrated Work Group – Readiness, Response, and Recovery (IWG-R3) and After-action Report on Hurricane Sandy

Applegate introduced Jerry Tuttle, who is Chief of the Analysis and Technology Branch in NGA's Integrated Work Group – Readiness, Response, and Recovery (IWG-R3). Tuttle and his branch are tasked with facilitating technology initiatives to support IWG-R3 operations. Responsibilities include influencing enterprise programs to fill IWG-R3 requirements, developing and testing mobile applications, developing and testing web-based services for enhanced analytics, and developing web-based dashboards and landing pages to visualize NGA's response efforts and analytic production.

To begin his presentation, Tuttle briefly touched on some items that NGA discovered as part of its after-action report from Hurricane Sandy, which unfortunately had not been made public yet at the time of his presentation and limited his ability to present many aspects of the report. Tuttle noted that on a routine basis and after most natural disasters – including every hurricane response since 1992 – NGA conducts an after-action report consisting of numerous interviews with lead Federal agencies and first responders on the ground in the wake of the event to assess the impact of the agency in disaster relief efforts. Within the business processes of the IWG-R3, 16 different issues were identified during Hurricane Sandy both internal to NGA and external to its Federal customers that relate to the agency's performance on providing geospatial analysis and support during the event. According to Tuttle, these were characterized into four categories: 1) operational capabilities; 2) training and tradecraft; 3) technology; and 4) policy. Tuttle outlined that one of the most critical findings from the report that he was able to share at this time was the lack of a consolidated NGA cloud-based web space to streamline the process of disseminating geospatial data and information both internally to its analysts and externally to its Federal customers.

Tuttle stated that the IWG-R3 serves as a valuable tool to identify opportunities for improvement in disaster response and is engaged in several technology initiatives that leverage both embedded and enterprise technology programs and support projects to address issues identified in their Hurricane Sandy after-action report. Those initiatives both already accomplished and currently underway to address these findings include:

- *IWG-R3 Dashboard:* A web based situational awareness tool that characterizes and displays significant natural and man-made events occurring worldwide by consuming dozens of information feeds and applying "sense-making" data algorithms against the information. It conveys NGA's level of effort against the events and serves as an access point to NGA-supported events. It also enables customers to answer three questions: 1) what significant events are currently of concern; 2) is NGA applying resources against any current events; and 3) what is the NGA level of effort.
- *IWG-R3 Event Pages:* The event pages provide services and capabilities for situational awareness and an online repository of all information related to an event that NGA is involved with. This information includes a request for information (RFI) tool, access to GEOINT data, services, and products, links to GEOINT information services, situation assessments, and other communication and collaboration tools. This resource enables all NGA analysts and customers to maintain situational awareness, post or retrieve RFIs, and improves efficiency.
- *IWG-R3 RFI Tool:* The RFI tool was developed for NGA mission partners to leverage the use of the World Wide Web domain to request GEOINT support during a humanitarian assistance and disaster response event. This tool allows the user to enter in requests to R3 analysts and provides R3 with a method to track production requirements and provide status to the user.
- *Online Map Atlas:* By hosting the Map Atlas pages online, NGA enables first responders to quickly access only the pages needed, versus waiting for a book to be bound and shipped. R3 damage assessments are overlaid with infrastructure and population data to provide an online gridded reference document over the entire disaster area. During Hurricane Sandy, FEMA was able to use the Map Atlas pages to quickly declare large areas as disasters and speed the reimbursement process from months to days.

- *SAR Flood Tool:* The SAR Flood Tool developed by the NGA InnoVision R&D office helps analysts quickly detect flooded areas using automated algorithms. Flooded areas can be assessed in minutes per image versus up to 30 minutes using manual extraction methods.
- *Rapid R3:* NGA contracted with DigitalGlobe for rapid commercial imagery services for direct support to disaster events, including three levels of service available depending on the severity of the event and imagery available within hours of acquisition. This resource enables tremendous time savings and improved access to commercial and third party imagery for analyst exploitation.
- *Unclassified Integrated Analytic Environment:* NGA is working on an online analytic capability that integrates data, tools, workflows, and product templates allowing analysts to work more effectively online. This tool facilitates improved collaboration and coordination between R3 analysts.
- *Identity Management Program:* NGA is working to establish an Identity Management Program that provides a centralized access control program, manages user access to NGA online services, and eliminates multiple login and access problems for both internal and external customers of NGA data, products, and services.
- *Cross Domain Transfer:* NGA is working on an enterprise with automated and semi-automated capability to transfer information across all networks and classification levels that enacts tremendous time savings and improved access to data, products, and information for analyst exploitation.
- *Apple B2B iTunes Service:* NGA is working to establish a Business-to-Business service that would allow access to NGA applications via iTunes versus an NGA App Store.
- *SAR Flood Tool Improvements:* R3 and InnoVision R&D is working on identifying augmentative processes to integrate with SAR flood tools in order to overcome problems using the tool in urban areas for improved analytic results and extended utility of the tool into urban areas.
- *Photo Phenomenology:* InnoVision R&D is working to develop a capability to harvest, geo-reference, and visualize panoramas of hand-held, crowdsourced photography available from social media, commercial websites, and other sources. This resource will tap into underutilized sources of imagery for improved analytic capability for damage assessments and predictive analysis.

Fernando Echavarria (State) inquired as to whether the NGA IWG-R3 Dashboard is protected by a secure firewall or if it's readily accessible to other Federal agencies as well as to state and local entities by way of sharing agreements. Tuttle noted that the tool exists outside of the agency's protected firewall, but since the information is designated "For Official Use Only," it still needs to be controlled by NGA. One of the ways the agency was able to circumvent that issue during the Hurricane Sandy disaster was to create a universal username and password login so all Federal emergency responders in the field had the necessary access to data and information from the portal for an extended time period after the event. Regarding the sharing of USG information with state and local partners, Tuttle noted that unfortunately data is not always available to entities at those lower levels due to policy and legal concerns and user-specific licensing agreements. NGA is, however, in the process of looking at innovative ways to share its geospatial information outside the Federal scope by hosting the data on more public-facing government servers so it's accessible on a limited basis to state and local partners for purposes related to the disaster.

Michael Goodman (NASA) asked if the worldwide Dashboard is linked to the International Charter on Space and Major Disasters (http://www.disasterscharter.org/web/charter/home) and its declarations of disasters. Tuttle wasn't sure if that was the case but noted that NGA tries hard to ensure that information in the tool is from accurate USG hazards data sources (65 data feeds in all). In response to a follow-up question from Tokar regarding if the Dashboard uses any international data feeds in additional to its domestic sources, Kimberly Walls (NGA) – who presented the NGA IWG-R3 with Tuttle – replied that as of now domestic sources comprise all of the data sets that are fed into the tool. Walls added that the

coordination of a cross-agency, multidisciplinary approach to hazards data collection is one of the challenges that NGA is facing with regards to supporting this effort.

Bruce Davis (DHS S&T) wondered if the NGA Integrated Analytic Environment capability has the ability to take advantage of available commercial tools in addition to the USG ones currently being utilized. Tuttle outlined that this resource is able to employ custom NGA tools as well as commercial tools available through the agency's contracts and licensing agreements to facilitate a development environment that combines both industry and Federal government resources. Walls added that their agency is looking at open source alternatives for existing proprietary applications to avoid running into potential licensing challenges and to increase the access and availability of its tools, such as Apple's iTunes business-to-business application distribution service. She also noted that NGA is in the process of moving from a full-service business model for its customers to more of a self-service one so they can focus on high-level value-added support to its geospatial data analysis resources.

To close his presentation, Tuttle mentioned the difficulty at NGA during disasters in efficiently: 1) passing unclassified information from an open source network up to a secure domain for analysis with agency-specific tools; and 2) pushing the final product back to an unclassified computer system for dissemination to its public users. Tuttle highlighted that this process takes an extraordinary amount of time and effort on the part of their security team, and that the agency hopes to have an automated or nearly-automated system in place in the future to streamline that transfer process. According to Tuttle, this problem is one that NGA has persistently struggled with as a member of the Intelligence Community (IC) – how to expediently and safely move unclassified but secure information to users that exist outside of the protected IC infrastructure.

VI. Presentation: FEMA Use of Remote Sensing and Geospatial Information during Hurricane Sandy to Identify Interagency Issues and Needs

Applegate introduced Chris Vaughan, who was recently appointed as FEMA's first Geospatial Information Officer. In this role, he will champion and coordinate geospatial technologies within FEMA's response and recovery programs as a means to improve information sharing with the emergency management community. Prior to joining FEMA in 2010, Vaughan worked for NGA as an Imagery Analyst supporting various DHS missions to include the Homeland Security Infrastructure Program (HSIP). While at NGA, he also deployed in support of various GEOINT operations that supported FEMA's Urban Search and Rescue Incident Support Teams.

FEMA incorporates a "whole community" approach to geospatial operations during disasters, which is guided by DHS's Federal interagency Geospatial Concept of Operations (GeoCONOPS) to document the use of geospatial capabilities for homeland security support, lay the groundwork for improved sharing of resources and information, and serve as a guide for all stakeholders involved in the Federal homeland security mission and want to understand geospatial's role and impact. During Hurricane Sandy, FEMA was able to make use of novel information management techniques under GeoCONOPS, like a readily accessible cloud-based information storage environment that reduced operation and maintenance costs, enhanced information sharing and dissemination, and processed unprecedented amounts of geospatial data before, during, and after the event. Vaughan noted that significant progress has been made on this front, outlining that the USG's geospatial capability during Hurricane Sandy was much more advanced that it was even just one year ago.

According to Vaughan, there are over 1,000 layers of geospatial data due from various Federal entities before, during, and immediately after any given disaster, 68 of which fall under FEMA's purview in the areas of mitigation, response, and recovery. FEMA relies on its collaborative partnerships with other agencies in the geospatial community – such as NOAA, USGS, NGA, NASA, and USACE – for the remainder of the information. In order to streamline this data exchange process, Vaughan highlighted that

the FEMA and the rest of the geospatial community is moving away from traditional business processes that utilize email and phone calls as the primary means of communication to more cloud-based, remote systems that facilitate open sharing, accessibility, integration, robust cataloguing, and geotagging – which is the process of adding geographical identification metadata to various media such as photographs, videos, and websites.

Vaughan highlighted that during Hurricane Sandy and based on the real-time availability of geospatial data, the FEMA Modeling Task Force (MOTF) based in Denver, Colorado was able to produce hurricane modeling analysis, power outage maps, and other publically available analytical information. Before Hurricane Sandy hit, the MOTF also produced pre-landfall risk matrices, county impact analyses, and a coastal flood-loss atlas that allowed FEMA to determine where to fly the planes tasked with collecting pertinent imagery data related to the event. In addition, FEMA was able to proactively task the Civil Air Patrol (CAP) to collect 157,000 geotagged images based on the work of the MOTF, which supported expedited rental assistance to over 44,000 housing applicants.

To sort through the imagery data collected by the CAP, Vaughan mentioned a novel damage assessment methodology devised from a geospatial innovation through the National Defense University and Naval Postgraduate School that was launched in the wake of Hurricane Sandy, whereby 6,000 volunteers sorted through the CAP geotagged images from the disaster to determine to what extent structures – specifically residential homes – were damaged. This analysis resulted in 137,000 publically available individual structural assessments, which was coordinated through Google's Crisis Map (http://www.google.org/crisismap/weather_and_events) and a first-of-its-kind "Check Your Home" web application developed by FEMA (http://fema.maps.arcgis.com/home).

In response to questions from Sheila Duwadi (DOT) and Paul Kudarauskas (EPA) regarding FEMA's role in functioning as a central clearinghouse or touch point for all geospatial data during disasters, Vaughan noted that although there is no "official" clearinghouse, FEMA tentatively provides a lead interagency coordination mechanism in that vein for the Federal geospatial community through a variety of resources, such as a professional geospatial information manager certification and credentialing process. FEMA also took the lead on hosting a daily national geo-coordination call during Hurricane Sandy, which looked at more efficient ways for the Federal government to disseminate geospatial and remote sensing information to its interagency partners.

VII. Adjournment

Applegate adjourned the SDR December meeting at 11:59 a.m.

VIII. Future Meetings

SDR meetings in 2013 will be held from 10:00 a.m. to 12:00 p.m. on the dates listed below in the Lincoln Room of the White House Conference Center:

2013

- ✓ Thursday, March 7
- ✓ Thursday, April 4
- ✓ Thursday, May 2
- ✓ Thursday, June 6
- ✓ Thursday, July 11 (to avoid proximity to the Independence Day Federal holiday)
- ✓ Thursday, August 1
- ✓ Thursday, September 5
- ✓ Thursday, October 3
- ✓ Thursday, November 7
- ✓ Thursday, December 5

IX. 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 the SDR Secretariat Bret Schothorst (bret.schothorst@mantech.com).

X. Contact Information

SDR Leadership

David Applegate	Co-chair	703-648-6600	applegate@usgs.gov
Margaret Davidson	Co-chair	843-740-1220	margaret.davidson@noaa.gov
Dennis Wenger	Co-chair	703-292-8606	dwenger@nsf.gov
Tamara Dickinson	OSTP Liaison	202-456-6105	tdickinson@ostp.eop.gov

Secretariat

Bret Schothorst	703-388-0312	bret.schothorst@mantech.com
Barbara Haines-Parmele	703-388-0309	barbara.haines-parmele@mantech.com

XI. Summary of February Actions

Action	Lead	By When
Email the OSTP Liaison Tammy Dickinson (tdickinson@ostp.eop.gov) copying the SDR Secretariat (bret.schothorst@mantech.com) to assist in drafting a white paper to consider the advisability of implementing OSTP and SDR taskings related to multi-agency and multi-hazard coordination laid out in pending Congressional legislation.	SDR Members	ASAP
Email the SDR Secretariat (bret.schothorst@mantech.com) copying the OSTP Liaison Tammy Dickinson (tdickinson@ostp.eop.gov) if willing to pilot an assessment of the progress of the short-, mid-, and long-term goals outlined in an SDR Grand Challenges for Disaster Reduction implementation plan.	SDR Members	ASAP
Contact the SDR Secretariat (bret.schothorst@mantech.com) copying OSTP Liaison Tammy Dickinson (tdickinson@ostp.eop.gov) to participate in the ongoing efforts of the ad hoc working group focused on post-Sandy S&T lessons learned and future research opportunities in the aftermath of the disaster.	SDR Members and Federal Colleagues	ASAP
Contact OSTP Liaison Tammy Dickinson (tdickinson@ostp.eop.gov) copying the SDR Secretariat (bret.schothorst@mantech.com) to participate in the initiative to incorporate natural hazards data sets to the Safety Data Community.	SDR Members and Federal Colleagues	Standing

Email OSTP Liaison Tammy Dickinson (tdickinson@ostp.eop.gov) copying the SDR Secretariat (bret.schothorst@mantech.com) to participate in a small working group or task force to discuss a disaster reduction- or community resilience-focused grand challenge or incentive prize highlighting Federal interagency programs, partnerships, and collaborations.	SDR Members and Federal Colleagues	Standing
Please consider supporting the work of the SDR and its Secretariat through a contribution from your agency. Let Co-chair David Applegate (applegate@usgs.gov) know if you need an agency-specific request letter.	SDR Members	Standing
Contact OSTP Liaison Tammy Dickinson (tdickinson@ostp.eop.gov) if it would be helpful for OSTP to issue a letter to your Department requesting new (or re-affirmed) designation of representatives. Ideas for other entities that should be represented on the SDR are also welcome.	SDR Members	Standing
Contact Co-chair Dennis Wenger (dwenger@nsf.gov) if your agency is able to provide funding support to the University of Colorado-Boulder's Natural Hazards Center.	SDR Members and Federal Colleagues	Standing
Contact the SDR Secretariat (bret.schothorst@mantech.com) if you are interested in participating in the SDR Coastal Inundation Working Group.	SDR Members and Federal Colleagues	Standing
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 and Federal Colleagues	Standing
Contact the SDR Secretariat (bret.schothorst@mantech.com) to receive copies of the Grand Challenges for Disaster Reduction.	SDR Members	Standing