

# Meeting Minutes of the Subcommittee on Disaster Reduction

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

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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)

## Designated Representatives

**BLM** *Edwin Roberson*

Daniel Lechefsky

**CDC** Mark Keim (T)

**DHS** Bruce Davis

**DHS/FEMA** *Deborah Ingram*

**DHS/USCG** *Steven Cohen*

**DOD** *Al Johnson*

**DOE** *Patricia Hoffman*

**DOT** *Kelly Leone*

*Sheila Duwadi*

*Tim Schmidt*

**EOP/OSTP** Sarah Stewart

Johnson

**EDA** *Audrey Clarke*

**EPA** Peter Jutro

*Stephen Clark*

**FERC** Pamela Romano (T)

**HUD** *David Engel*

**NASA** *Andrea Donnellan*

**NGA** *Stephen Homeyer*

Christy Crosiar

**NGB** *Daniel Bochicchio*

**NIH** Allen Dearry

**NIST** William Grosshandler

**NOAA** Margaret Davidson (T)

Roger Pierce

**NSF** Dennis Wenger

**OPHS** Sven Rodenbeck (T)

**State** Cari Enav

Fernando Echavarria

**USACE** Steven Cary

*Dimitra Syriopoulou*

**USAID** Sezin Tokar

**USDA** *TBD*

**USFS** *Carlos Rodriguez-*

*Franco*

**USGS** Paula Gori (T)

## Other Attendees

**EPA** Alona Bachi

Brendan Doyle

Marcy Rockman (AAAS)

**FEMA** Stephen Carruth

**NASA** Craig Dobson

Michael Goodman

Dalia Kirschbaum

**NOAA** Nell Codner

Maria Honeycutt

Bill Reid (T)

**NSF** Carib Oquendo

**OSTP** Kate Moran

**State** Nina Rosenberg

**USACE** Andrew Bruzewicz

**USAID** Wayne Pennington

**Secretariat** Kate Cantrell

Ross Faith

## Agenda

10:00 Welcome and Introductions

10:05 Approval of June Meeting Minutes

10:10 Report from the Chair

10:30 Report from State-USAID Haiti GIS Team

10:45 Report from the Vice-Chairs

11:00 DHS Field Work in Support of the NASA

    UAVSAR Mission

11:05 Presentation on Hurricane Impacts and Oil Spill

11:30 Report from the NSTC Liaison

11:45 Discussion on Oil Spill Response

11:55 Close and Next Actions

## Handouts

- Agenda
- June Meeting Minutes
- Space Weather Implementation Plan
- Disasters Roundtable Workshop Announcement
- *Public Roads* Article
- Announcement of a New CONICTY Bilateral Cooperation Programme
- Letter to UN Secretary General on Science & Engineering Recommendations from Rebuilding for Resilience Workshop
- NOAA's Oil Spill Response: Hurricanes and the Oil Spill
- Agency S&T Responses to Oil Spill (June 26 Update)

### **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. and the participants introduced themselves.

### **II. Approval of June Meeting Minutes**

The June Meeting Minutes were approved with no changes.

### **III. Report from the Chair**

Opening the chair's report with some administrative housekeeping, Applegate asked Members to hold the currently scheduled August 5<sup>th</sup> SDR meeting on their calendars for the time being. In years past the SDR has traditionally not met in August, and while Applegate reasonably expected that this year's August meeting would be cancelled as well, he stated that it would be useful to hold this date on calendars a while longer given current events. A note cancelling or confirming the meeting will be sent out later in July. In the event of cancellation, the subcommittee's business will continue to move forward via email.

Among the documents provided to Members for the meeting were copies of the recently printed *Grand Challenges for Disaster Reduction Implementation Plan: Space Weather*. Applegate noted that this document is the long awaited fifteenth implementation plan, which went into clearance in the Bush Administration and emerged from the clearance process in the Obama Administration. Essentially, the plan ran afoul – but not for any political implication – at the end of one administration and the beginning of the other as things were spinning down and spinning up. Creation of the plan was a collaborative effort with the National Space Weather Council (NSPC), which is led and overseen by the Office of the Federal Coordinator for Meteorology (OFCM). Applegate stated that he very much appreciated the NSPC and OFCM for working with the SDR on the document and for their patience during the lengthy clearance process. The plan was distributed at the June 8, 2010 Space Weather Enterprise Forum, and Applegate noted that a lot of good feedback was received for doing that. The distribution also was very timely with the upcoming solar maximum in 2011/2012, when space weather will be coming to the fore. Applegate thanked Sarah Stewart Johnson (OSTP) for her help in shepherding the document through the clearance process. For copies of the document, contact the Secretariat ([ross.fairh@mantech.com](mailto:ross.fairh@mantech.com)).

Applegate reminded Members that on July 8<sup>th</sup> from 9:00 a.m. to 1:00 p.m. the Disasters Roundtable will be holding at workshop at the Keck Building entitled "From Reality 2010 to Vision 2020: Translating Remotely Sensed Data to Assets, Exposure, Damage, and Losses." Expected speakers include: Bill Lehr from the National Ocean Service, speaking via teleconference about oil spill activities; Roger Clark from the USGS; and talking about wildfires, Everett Hinkley from the Forest Service and Vince Ambrosia from California State University-Monterey Bay. In addition, there also will be folks talking about earthquake activities. Chris Vaughn, the new remote sensing coordinator at FEMA, will be there as well. The scope of the workshop is intended to cover the broad range of hazards for which remote sensing is used.

Provided to Members during the meeting were copies of a recent article in Federal Highway's *Public Roads* magazine, written by Sheila Duwadi (FHWA), which draws on the *Grand Challenges for Disaster Reduction* and applies subject matter therein to transportation issues. Applegate commended Duwadi (who was unable to make the meeting) for doing a wonderful job with the article and cited it as a nice example of using the Grand Challenges to help inform agency policy and decision making. The article is available online at <http://www.fhwa.dot.gov/publications/publicroads/10mayjun/04.cfm>.

Also included in the meeting packets was an announcement for a new bilateral cooperation program between Chile and California relating to natural disasters (among other things). Applegate noted that this program links back to efforts presently underway to take the experience of the Chilean earthquake and apply lessons learned to improve the fairly similar building codes and infrastructure in the U.S. The Federal Highway Administration was one of the many agencies that sent a team down to Chile to look at how that country's infrastructure fared in the February 2010 earthquake compared to the impacts that both northern California and the Pacific Northwest in particular would face from a subduction zone earthquake.

Staying on the topic of lessons learned from recent earthquakes, Applegate referenced the SDR effort with NEHRP and USGEO that was begun in early spring for looking at lessons from the Haiti and Chile earthquakes. Because some of the engineering reports on the Chile earthquake were not yet out at that time, the SDR took a pause on the effort. With those reports now out, the stage looks set to rekindle the joint effort. Anyone interested in participating in activities of the ad hoc Haiti-Chile Lessons Learned Working Group should contact the Secretariat ([ross.faieth@mantech.com](mailto:ross.faieth@mantech.com)) to be added to the group's email list. The SDR will be getting this effort up and running in the next few weeks. The Geo-Engineering Extreme Events Reconnaissance (GEER) preliminary report on the geotechnical effects of the 2010 Chile Earthquake is at [http://www.geerassociation.org/GEER\\_Post%20EQ%20Reports/Maule\\_Chile\\_2010/Cover\\_Chile\\_2010.html](http://www.geerassociation.org/GEER_Post%20EQ%20Reports/Maule_Chile_2010/Cover_Chile_2010.html).

#### **IV. Report from State-USAID Haiti GIS Team**

Wayne Pennington (USAID) gave a presentation on geographical information systems (GIS) in support of Haiti's recovery. The GIS infrastructure of Haiti was severely damaged in the January 12<sup>th</sup> earthquake. The building that housed Haiti's National Center for Geospatial Information (CNIGS), a public agency within the Ministry of Planning, was destroyed. The leadership of CNIGS was killed. Most of the data was in fact recovered, but CNIGS no longer has the capacity to deal with it. The donors do support rebuilding GIS capacity within CNIGS, but they tend to view GIS as simplistic map printing. The UN Humanitarian Coordinator found that the biggest problem in the relief stage was lack of coordination; the responders did not know where people were as there was no central database or central mapping capability to provide this information. Pennington stated that the team's goal is to try to elevate and coordinate the use of spatial information in Haiti's reconstruction so that, unlike the relief effort, it is GIS-informed.

GIS applications are powerful decision making tools. Information that is assigned a latitude, longitude, or other coordinate in a database can be queried for projection onto a map, allowing for spatial comparison that becomes especially revealing when different categories of data are displayed on the same grid. Several categories or types of data can be layered in this manner, enabling relationship comparisons of environmental, economic and other types of societal indicators.

Pennington paused in explaining the immediate efforts of the State-USAID team to recall the workshop that the SDR convened from March 22<sup>nd</sup> to 23<sup>rd</sup> in Miami. The workshop was entitled "Rebuilding for Resilience: How Science and Engineering Can Inform Haiti's Reconstruction." Several SDR Members participated in the planning and execution of the workshop. It had broad-based participation from scientists, engineers, policy makers, sociologists, urban/regional planners, and others, including a number of participants from Haiti. The workshop participants produced key findings (or recommendations) in an effort to influence decision makers by advocating that Haiti's reconstruction should be informed by science and engineering. In his presentation to SDR Members, Pennington highlighted the following findings. The document is available online in its entirety at [www.iris.edu/hq/haiti\\_workshop](http://www.iris.edu/hq/haiti_workshop).

- **Hazard Assessment and Rebuilding Requirements**
  - **Data and maps** exist that describe natural hazards throughout Haiti, the most important of which are earthquakes, inland flooding, and landslides; these maps should be **used in planning and reconstruction**, with additional studies required for critical facilities.
  - **Maps must be tailored and improved**, with **studies** that include the Haitian scientific, engineering, and technical communities as part of their long-term development.
  
- **Long-Term Data Needs**
  - **Improved** topographic and bathymetric **information**, together with **field studies** of geology and soil classifications, will dramatically improve the **assessment** of many types of hazards.
  - **Remote-sensing data and studies** will enable repeated monitoring of changes in land-use, hazards, and crustal deformation.
  - **Monitoring networks**, including seismographs, GPS stations, rain gauges, river gauges, and other sensors, installed, maintained, and operated by teams that are primarily Haitian, will enable long-term improvements in agricultural and economic growth as well as hazard assessment and mitigation.
  - Creation of, and membership in, **regional groups of scientists and engineers** facing similar concerns throughout the Caribbean will continually increase the capacity of the Haitian communities to develop, improve, and provide a sense of ownership in assessment and mitigation efforts.

The common thread running through these recommendations is the need to gather and combine data in ways that promote effective geospatial information management. Pennington used a flow chart to underscore the importance of geospatial information management. In essence, civil society can use geospatial knowledge, information, and data to pressure the Government of Haiti to be transparent and accountable in making decisions for reconstruction. The ultimate goal is to foster good governance and sustainable development. Pennington pointed out that once data is made available on maps and databases, it becomes much easier to understand where and for what purpose reconstruction funds are going.

Geospatial data can inform decision making as to specific reconstruction and development issues, including: population; health and other services; infrastructure, utilities and transportation; land use and cadastral land ownership (meaning who owns what land and where the boundaries are); social and cultural characteristics; and natural hazards. All of this information needs to be fed into the reconstruction and development process, and the need for it is arguably highest at the outset to ensure the process gets off on the right foot. One of the largest problems impeding Haiti's reconstruction right now is, in fact, land ownership. It is often not clear who owns what land, or to where camps of internally displaced persons, for improving safety, can be legally moved.

Pennington showed a slide highlighting GIS information from the Google Earth and Ushahidi websites. He noted that several such GIS websites were stood up during the response phase in the public online domain - what might be called "Internet-2." One of the current concerns is that this sort of data is being lost as people have moved from the response phase into the reconstruction phase. Much of this data is simply no longer maintained, and Pennington stated that the GIS Team and others were having trouble finding it.

Moving to the next slide, Pennington showed two images depicting the evolution of an Open Street Map of Port-au-Prince, which was the best available map of the city's streets both before and shortly following the earthquake. GIS-knowledgeable volunteers added increasing detail to this map in the aftermath of the event. As a result of this phenomenal effort, an extremely good map had been produced within nine days of the earthquake. Pennington added, however, that while that the volunteer effort was huge at the response outset, momentum for it is being lost as we speak.

The State-USAID GIS Team was put together to help bolster Haitian capabilities for GIS-informed reconstruction. The team's efforts are focused around three priorities: promoting geographic science and technology to enable data-based strategic planning; empowering the Haitian government to use this technology; and advancing efficient and transparent GIS-informed decision making in the country. The team was composed of team leader Lee Schwartz (Geographer for State/INR), Nate Smith (USAID/OFDA), Ioana Bouvier (Development Alternatives, Inc.), and Wayne Pennington (USAID/EGAT, S&T).

Before departing for Haiti the team visited the National Geospatial-Intelligence Agency (NGA). Importantly, NGA agreed to go into coproduction with CNIGS once the center can get on its feet. Pennington stated that this was an important message for the team to be able to carry with it to Haiti. The team also visited:

- USAID Mission in Haiti, including Embassy personnel.
- Government of Haiti/Ministry of Planning/CNIGS management and EU representative to CNIGS. With its building collapsed, CNIGS staff is still camped out in storage units on the grounds.
- UN Office for the Coordination of Humanitarian Affairs (OCHA) information management. Several OCHA personnel died during the earthquake.
- International Organization for Migration (IOM) regarding displacement tracking.
- Government of Haiti/Ministry of Environment and the National Observatory of the Environment and Vulnerability (ONEV). Signed by the Haitian Environment Minister, the U.S. State Department's Assistant Secretary for International Organization Affairs, and the UN Special Representative for Disaster Risk Reduction, a letter supporting the key findings from the "Rebuilding for Resilience" workshop was sent to UN Secretary-General Ban Ki-moon. The State-USAID GIS Team was given a copy of the letter (which was provided to SDR members in their meeting folders).
- UN Deputy Special Representative for Haiti, who strongly supported efforts of the GIS Team.
- Government of Haiti Deputy Minister of Planning. The meeting was very fruitful. It turned out that Prime Minister Jean-Max Bellerive is the Minister of Planning, a position he maintained after becoming PM.
- UNDP Development Gateway.

The team's visit to Haiti resulted in one high level recommendation for the Interim Haiti Recovery Commission (IHRC). The team recommended that the commission support a strategy to enable geographically-informed, database decision making for prioritizing donor reconstruction funds through the appointment of a Chief Geographic Information Officer (CGIO) attached to the IHRC. Over time the CGIO position should be transferred to the Haiti Redevelopment Authority, and then to the Government of Haiti. Pennington stated that the recommendation had received strong buy-in. The team was having trouble determining whether potential candidates can, at present, actually apply for the position, but Pennington noted that it looks like the position will eventually be created. The recommendation calls for the CGIO to report to the IHRC Director of Strategy and Planning. This would allow the CGIO to advise the IHRC and influence its decisions at a fairly high level.

Pennington noted that the GIS Team also made a separate set of recommendations specific to the U.S. Mission and Embassy in Haiti. The Mission and Embassy are following the team's recommendations quite closely. Pennington added that several of these recommendations had actually been planned before the earthquake, so they had been an "easy sell."

Despite strong support from several organizations, Pennington stated that the GIS Team had been encountering resistance to its recommendations from some quarters. He noted that the resistance was interestingly not tied to funding matters, but to entrenched procedures of some intergovernmental organizations, which neither want nor see the need to add geographic data to their databases and decision making processes. In particular, pushback from the UN Development Programme (UNDP) had been extreme, and the reason for it, Pennington stated, is that UNDP thinks it is impossible to add geographic coordinates to its Synergy database system. Moreover, in an advance movement, UNDP set up roadblocks to the ideas of the GIS Team before the team had even presented them.

The UNDP's Synergy is a database system for tracking expenditure of funds. For administrative purposes the system breaks spending down by location, authority, and activity within projects. The GIS Team pointed out to UNDP representatives that dollars could be spent more efficiently and effectively if geographic information were added to its database and used to inform decision making. Such information could indicate, for instance, how much money is being used to build schools in flood plains, which is something that the UNDP is not currently able to calculate. Pennington acknowledged that UNDP's maneuvering is a bit of a problem right now, but he thought that the resistance could be overcome with some perseverance in searching for various routes through the bureaucracy.

Recapping his earlier remarks, Pennington added that the position of the Chief Geographic Information Officer (CGIO) appears to be "in the cards" at this point. The next step is to solicit nominations for candidates. Although funding support for CNIGS should come eventually, a commitment is still needed. At the moment CNIGS is caught in something of a "Catch-22." The donors are waiting for CNIGS to get its efforts back on track before committing funds, but the center cannot get its act together on its own for lack of leadership, funding, and workspace. Pennington stated that CNIGS was frankly tired of one group after another coming to offer support that is contingent upon CNIGS first standing up its operation without assistance. So CNIGS has asked that the GIS Team and others form a steering committee to develop a start-up plan and then help execute it. The U.S. Government is one of the leaders in advocating for GIS usage in Haiti. The French and the EU are also nicely involved. In fact, after the earthquake the EU quickly seconded to CNIGS an effective, senior level person, who was on hand at recent meetings between CNIGS and the GIS Team.

Cari Enav (State) commended Pennington on his work in advancing solutions to this clear need. She stated that anything in the government is bound to take time and sizable effort, and observed that this effort is definitely on the right track. Pennington reinforced this last point, noting that the effort had received support from Cheryl Mills, Counselor and Chief of Staff to the Secretary of State.

Nell Codner (NOAA) asked how often the GIS Team had encountered people who did not understand that vulnerability is created when schools are built in flood zones. Pennington answered that the team had encountered this lack of understanding a little bit at first, but was able to overcome these obstacles pretty quickly in most cases. The remaining holdout is the UNDP, which is maintaining the position that it is impossible to modify its Synergy database system to include latitude and longitude coordinates.

Pennington stated that the Interim Haiti Recovery Commission (IHRC) – now roughly three weeks into its efforts – is really just getting started with its work. The commission is being co-chaired by Prime Minister Jean-Max Bellerive and Former President Bill Clinton. Pennington added that the GIS Team's meeting with the UN Deputy Special Representative for Haiti produced a very valuable commitment from the UN that if the IHRC was not yet ready to support a Chief Geographic Information Officer once the position had been filled, the UN would take care of housing and office facilities until the IHRC ramped up.

The question was raised of whether displaced persons were still living in camps in flood plains, which could pose a problematic scenario as the hurricane season progresses. Pennington stated that he thought most of the camps were not located in flood plains.

Sezin Tokar (USAID) commented that there were some things about which not much can be done with regard to the issue of camps in flood plains. USAID is working with NGOs and other partners in Haiti on full-blown, multi-level communication and contingency planning. In this effort, USAID is working with the local governments on warehousing and stocking of commodities, and with communities on the evacuation plans and other types of readiness plans, especially for floods. Looking at the hurricane history for Haiti, most of the tropical storms that hit the country are tropical depressions, not full-blown hurricanes. With the proliferation of displaced persons, however, the situation in Haiti is obviously different than in years past. Flooding is the primary concern.

USAID is working with the World Meteorological Organization (WMO) and with NOAA to ramp up the meteorological service in Haiti. Like CNIGS, Haiti's meteorological service was destroyed as well. Météo-France, the French meteorological service, is providing backup until Haiti's meteorological service is restored to some image of its former self. Until then, Martinique will be the backup center. In a couple of days, USAID and its partners will begin training personnel in Martinique and at Météo-France for providing advice and assistance in redeveloping Haiti's meteorological capacity. USAID has been working with partners in the U.S. Government on a flash flood warning system for Haiti. The system came online today. Tokar stated that USAID was in the process of shipping emergency management network stations to Haiti.

Pennington stated that several unforeseen problems had slowed the process of Haiti's recovery. As an example, he summarized frustrations with efforts to clear rubble from the drainage ditches (or "canals") in advance of the flood season. Arrangements were made to pay people to clear rubble from the ditches and haul it out of town to a dump location. The haulers were paid when they came back with their empty trucks. As it turned out, in many cases the haulers had not dumped their rubble loads at the specified location, but rather into some other part of the "canal" system, out of sight of those doling out payment. The problem was discovered within a few days and the haulers were thereafter paid at the specified dump location. But the task of re-clearing the ditches has meant double-work and lost time.

Dennis Wenger (NSF) observed that like all post-disaster recovery processes, Haiti's will involve very complex coordination of several NGOs, international organizations, and the national government. He stated that the utility of tools like GIS databases would seem to be enhanced in cases where there is more centralized control over decision making and the reconstruction process. It is unlikely that Haiti's reconstruction will be controlled from a central decision making platform. Wenger commended the GIS Team's efforts to rebuild CNIGS, but at the same time expressed doubt that GIS applications would be a panacea for the difficulties of the recovery process. He stated that he was trying to envision how GIS would be used in the context and evolution of typical recovery processes.

Pennington answered that the Haitian government would ideally have a robust GIS capability 5 years from now. One way to accomplish that is to make CNIGS a central hub, to which various Haitian ministries and high-level NGOs connect their databases and feed information. In turn, the organizations would be able to mine CNIGS for information that they do not themselves collect, but which would be valuable in decision making to carry out their missions. Realistically, such a hub-and-spoke structure will take years to develop, but if the groundwork is laid now, there would be somebody moving in that direction and there would be an organization that knows where the databases are. Right now, nobody knows where the databases are or who maintains them. So it can only move in the right direction.

Tokar asked Pennington if he knew whether a UN Humanitarian Information Centre (HIC) had been established in Haiti. In years past the UN set up HICs as a common practice following major disasters, such as the 2005 Pakistan Earthquake and 2004 Indian Ocean Tsunami.

Pennington stated that he had not heard of any such UN body in Haiti. He added that the GIS Team had met with some UN people who were in favor of using GIS tools for reconstruction, so not all of the UN is against this. He noted that the team is moving very fast and far ahead in the GIS effort, but even in parts of the UN that are embracing GIS, collecting and formatting data is mostly a lower key volunteer effort. These parts of the UN do not seem to be talking to the UNDP, which seems to have more clout.

Enav asked whether the GIS Team was working with the UN Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER). Pennington stated that he receives UN-SPIDER newsletters and announcements, but that is it. However, several other groups that the GIS Team spoke with were working with UN-SPIDER.

Enav stated that the “Rebuilding for Resilience” workshop had generated four distinct categories of recommendations, GIS and data needs being one of them. She asked if Pennington could comment on the others. Pennington answered that he was seeing bit of traction “here and there,” but his observations were that progress overall was frustratingly slow. Answers to the simple question of where development of building codes stands do not seem to be available. Pennington added that Reggie DesRoches from Georgia Tech was scheduled to give a brownbag lunch talk in Washington, DC, next week and might have a better idea where progress with building codes stands. Pennington stated that he would pass details on to the Secretariat once he knew the time and place of the talk.

Staying on the theme of Haiti’s recovery, Applegate stated that he would be moderating a session on Haiti at the 2010 Annual Natural Hazards Research and Application Workshop. The workshop will take place from July 10<sup>th</sup> to 13<sup>th</sup> in Broomfield, CO. Applegate stated that he was hoping to get a better sense of groups from the research community and on the practitioner side who should be involved in advancing the “Rebuilding for Resilience” key findings. He added that the Interim Haiti Recovery Commission (IHRC) is one of the best hopes for incorporating hazard mitigation into the reconstruction. He thought that getting the IHRC to incorporate GIS could be a gateway for making progress on the issue of building codes and other key findings.

Enav stated that the State Department would be trying to push the key findings forward from a policy perspective.



## **V. Report from the Vice-Chairs**

Margaret Davidson (NOAA) participated on behalf of the SDR in a recent listening session in Miami-Dade County organized by the interagency Climate Change Adaptation Task Force. The principals hosting the meeting were NOAA Administrator Jane Lubchenko and Robert Verchick, the Deputy Associate Administrator at EPA's Office of Policy, Economics and Innovation. Thanks to Deb Ingram (FEMA) a pre-recorded video message from FEMA Administrator Craig Fugate was played as well. The Miami-Dade listening session, held on June 23<sup>rd</sup>, was the second of six such sessions that are being planned across the country at the request of the Council on Environmental Quality (CEQ).

Recapping the event, Davidson stated that in the time allotted to her on the program agenda she talked about the relationship between disaster mitigation, loss reduction and climate change adaptation relating to coastal inundation and wildland fire. She noted her impression that both principals and the CEQ folks seemed very happy with how the session turned out. About 100 people were in attendance. Miami-Dade County Mayor Carlos Alvarez kicked off the meeting, and the county clerk wrapped things up in the afternoon. About two dozen public speakers had the opportunity to voice their thoughts and concerns during two 30-minute public commenting sessions. Davidson added that it was a great opportunity to represent the SDR and to reinforce the points that the subcommittee had been trying to highlight for a while about the linkage between climate change adaptation and hazard mitigation. Applegate thanked Davidson for wearing the SDR hat at the meeting.

Shortly after the June 3<sup>rd</sup> SDR meeting, the Secretariat sent a two-pager on behalf of the ad hoc Coastal Inundation Working Group to the Office of Science and Technology Policy (OSTP). The two-pager identified gaps and opportunities related to coastal inundation for possible consideration in OSTP's FY2012 budget guidance. Davidson stated that in the interim she had also shared the two-pager with Tom Karl, the new director of the U.S. Global Change Research Program (USGCRP) and chair of the Subcommittee on Global Change Research. Karl was most interested and wanted to have further discussions on the opportunities identified in the two-pager and about how the working group could be structured, chartered and charged in a formal way. Davidson advocated formalizing the ad hoc working group in the near-term, particularly since there has been interest from other interagency venues. She raised for consideration the issue of whether the group would function most effectively as an SDR working group or a joint working group, including the USGCRP for instance. In raising the issue, Davidson granted that it need not be concluded today necessarily, but reiterated her view that a forward looking discussion on the subject was needed.

Sarah Stewart Johnson (OSTP) stated that she and Kate Moran (OSTP) were actually talking about the working group and two-pager before the meeting. As OSTP continues to restructure itself and the Committee on Environment and Natural Resources (CENR), it is focused on streamlining the working groups which have thematic ties to the Climate Change Adaptation Task Force and the USGCRP. Johnson stated that OSTP views the ad hoc working group on coastal inundation as having a very important role to play with application to the SDR but also to the task force and USGCRP. One option under consideration would be to have the working group report regularly to multiple parent bodies. Johnson stated that she thought OSTP would have a good sense of how the restructuring would play out by September. Regarding the two-pager, Johnson stated that the document had been delivered in time to Kei Koizumi, who is managing a lot of OSTP's budget work and is involved in discussions with the agencies on the budget guidance for FY2012.

Kate Moran (OSTP) stated that another reason OSTP is restructuring CENR is to better align adaptation efforts relating to ocean policy. In June of last year, the President called for an

Interagency Ocean Policy Task Force, led by the White House Council on Environmental Quality, to develop a recommendation for a national policy that ensures protection, maintenance, and restoration of oceans, our coasts and the Great Lakes. The task force will also recommend a framework for improved stewardship, and effective coastal and marine spatial planning. Efforts of the task force have been delayed due to the oil spill in the Gulf of Mexico, but Moran stated that release of the recommendations and report is expected soon. She stated that ocean policy is an area where the coastal inundation group could also provide some input. The future ocean policy will likely have two thrusts, one being resource management and the other science and technology. Resource management issues will probably not be housed under CENR, but science and technology will. However, in some ways the inundation group could still be important for both of those. Because of the importance of coastal inundation planning for ocean policy, the coastal inundation issue is obviously quite central in light of population impacts. Moran stated that she thought the concept that Davidson laid out was ideal, as it would not require separate coastal inundation groups working in ocean policy and adaptation policy, but rather, as a single group help to integrate science and technology as they relate to the coastal inundation and adaptation paradigm.

Transitioning to a separate subject, Dennis Wenger (NSF) encouraged SDR Members to reconsider supporting the University of Colorado's Natural Hazards Center. He recalled the visit that the center's director, Kathleen Tierney, paid to the SDR in February. Over its 36 year existence the center has played a critical role in linking three communities: the researchers, the practitioners, and the policy people committed to reducing disaster losses. Wenger stressed the center as a unique and vitally important, multidisciplinary institution that would have to be invented if it did not already exist. He thanked the agencies that had already made contributions to the center, but noted that the number of agencies that contributed this year had declined. For agencies that have supported the center in the past, and in some cases for decades, but have decided not to support it this year, Wenger asked them to rethink their decision, if possible, within the next month. Wenger also encouraged agencies to consider contributions as they wrap up with their FY2010 budgets. Any "pocket change" remaining in agency coffers would certainly be put to good use by the center. Agencies that are able to contribute to the center are invited to contact Wenger ([dwenger@nsf.gov](mailto:dwenger@nsf.gov)) to arrange an interagency transfer.

Wenger explained that the center submits a proposal to the National Science Foundation (NSF) every three years. The proposal includes a budget that outlines funding needed to carry out the center's operations, projects, and the Annual Hazards Research and Applications Workshop. Normally the proposal calls for \$950,000 a year. The center, however, has never received \$950,000 for any given year. NSF normally waits until the very last moment to actually make the award. In fact, four times over the past five or six years this award was the last NSF issued because the foundation waits to see if agencies can come up with additional money. Wenger expected that this year's award would be made sometime around the end of August. Recent funding levels have been in the neighborhood of \$700,000, though at times have dropped as low as \$600,000. Once again, Wenger stated that any support agencies can provide would be appreciated.

Applegate referenced an email he sent to SDR Members on June 30<sup>th</sup> encouraging individuals to participate in a series of online debates (really more like online discussions) that the UN International Strategy for Disaster Reduction (ISDR) is currently hosting through July 30<sup>th</sup> as part of its mid-term review of the Hyogo Framework for Action. Established at the World Conference on Disaster Reduction in 2005, the Hyogo Framework is the UN's ten-year blueprint for building resilience at national and community levels. With a decade now half gone, UNISDR is undertaking this review to mark progress (and lack thereof). Instructions on how to participate can be found at [www.preventionweb.net/english/hyogo/hfa-mtr/debates](http://www.preventionweb.net/english/hyogo/hfa-mtr/debates). Those who would like to engage in the

online discussions may find it useful to review the "Words Into Action" implementation plan, available at <http://www.unisdr.org/eng/hfa/docs/Words-into-action/Words-Into-Action.pdf>

Applegate stated that after today's SDR meeting he would be chatting with Enav about a request that State had received from Margareta Wahlström, the UN Assistant Secretary-General for Disaster Risk Reduction. Wahlström has asked the U.S. to host a regional workshop in support of the mid-term review. The North America region only includes the U.S., Canada, and Mexico, so the workshop should be fairly small.

Before moving forward with the meeting's agenda, Applegate took a moment to note that this meeting would be Enav's last with the SDR, and to thank her for her good work with the subcommittee stretching back over the past two years. Enav was instrumental in the "Rebuilding for Resilience" workshop and really in strengthening the role of the SDR as the national platform to ISDR at last year's Global Platform meeting. Applegate expressed his hope that the SDR would continue to have a strong State Department connection after Enav's departure. He wished Enav well in rotating into her next assignment and new role in Cuban matters.

## **VI. DHS Field Work in Support of the NASA UAVSAR Mission**

Setting the stage for his presentation, Bruce Davis (DHS) recalled previous SDR meetings at which NASA representatives had solicited proposals for flights of its L-band synthetic aperture radar instrument in support of imaging oil spill impacts to the wetlands of Louisiana. The instrument's formal name is UAVSAR, for Uninhabited Aerial Vehicle Synthetic Aperture Radar, although it is currently flown on a Gulfstream III jet. Davis was involved in proposing use of UAVSAR for assessing oil impacts to Louisiana wetlands. Once approved, the mission was coordinated by an interagency team that included several individuals, including Michael Goodman and Andrea Donnellan of NASA. Around the same time the mission was approved, a few glitches with the instrument were being corrected. After the work was completed, the instrument was deployed to Canada on a previously scheduled mission for a couple of weeks.

In the interim, Davis assembled a field team for deployment to Louisiana to support the mission on the ground. The mission was carried out with broad participation from several agencies, including NOAA, NASA, DHS, the Coast Guard, and others. Along the way, the U.S. Fish and Wildlife Service and local parties also became involved. The Environmental Response Management Application (ERMA) website was extremely useful to the team in understanding where the shoreline was oiled before heading into the field. The team also linked up with the Coast Guard's Research and Development Center out of New London, CT, which is interested in the new and emerging technologies to support the agency's mission.

The team badged in and obtained some requisite approvals for its mission from the incident command post at Houma, LA. Based on earlier episodes of cleanup volunteers setting foot on the marshes and doing some damage to wildlife, BP was quite sensitive to the idea of anyone heading out to these areas since it will be blamed no matter who is actually responsible for doing the damage. Davis stated that the Louisiana Oil Spill Coordinator's Office graciously provided the team with a botanist. The incident command post's environmental planning section provided an oil spill coordinator from the consulting firm ES&H. The consultancy has been hired for the single but important job of helping to coordinate the response.

Davis noted that hiring a boat that was not otherwise occupied in spotting oil, laying boom, or ferrying the media around had been difficult, but the team eventually found one to take it into the marshes. On June 23<sup>rd</sup> the team untied from the Sand Dollar Marina on Grand Isle and headed out

into Barataria Bay to assess surrounding wetland areas. En route the team happened upon a vessel of U.S. Fish and Wildlife Service (FWS) personnel, who decided to come along for the ride after hearing what Davis' team was doing. The team relied on the ERMA maps as a general guide and relied on the Fish and Wildlife Service folks and others for accessing more specific locations. The FWS was actually very helpful in passing on where exactly the boom and oil was and was not located.

Davis showed SDR Members a map of Barataria Bay. As the team headed north from Grand Isle, it circumnavigated one of the area's large rookeries, which was completely off-limits. Once at Bay Jimmy, a smaller bay within Barataria, the team surveyed two sites. It then headed east into neighboring Bay Batiste, where it surveyed an additional site before thunderstorms began to roll in early that afternoon. The team headed out again the following day. In all, it surveyed eleven sites. Davis' team coordinated its site work with Cathleen Jones, the NASA JPL Principal Investigator who was laying out the UAVSAR mission in the Gulf. Jones suggested that if the team could begin to survey more sites from north to south, the UAVSAR would be able to image at least one site in every east-west flight line, which would assist with calibrations.

Drawing on the ERMA maps, the team developed a very useful PowerPoint file with photos and Excel tables of the site work data, latitude and longitude coordinates, and notes embedded. Due to its size, the file cannot be easily transferred by email. Those interested in obtaining the information, which will be put up on a file share, should contact Davis ([bruce.a.davis@dhs.gov](mailto:bruce.a.davis@dhs.gov)). With only limited time, the team focused more on qualitative surveys and had to forgo collection of some of the quantitative data Davis had hoped to gather. The team was able to take some measurements in terms of water depth, standing vegetation height, and percentage of dead vegetation. And the qualitative focus did allow the team to survey more sites.

As the team worked, it recorded latitude and longitude coordinates, and in most cases characterized the sites for fifty meters in each cardinal direction. Jones also relayed to the team that a photo taken in each cardinal direction for each site would be immensely valuable to have. The team took these photos from the boat to avoid damaging the wetlands. Davis showed SDR Members a series of photographs of vegetation die-off at the marshland edges caused by oiling. The team did not see any areas where the oil had completely over-washed the marshes, but were told that this had in fact happened in some areas and that the wildlife in these places was in bad jeopardy. The oil that the team found on the vegetation was weathered and incredibly tacky. It is not easily washed off boats or one's hands. Davis stated that passive flushing will simply not help de-oil the vegetation.

The fear of Louisiana officials and of Fish and Wildlife Service personnel is that the oiled vegetation along the marsh edges will die off along with the root structures which hold the fragile wetland soil in place, which in turn would lead to erosion and loss of wetland acreage. As the oil is pushed deeper into the marshes, more area becomes vulnerable to erosion through this process, so officials are quite concerned about the over-wash that would be caused by a storm surge. Some of the scientists and local officials the team encountered favor conducting controlled burns of the oiled vegetation at low tide in hopes that the root structures would survive, rebound, and reduce wetland loss. This idea has evidently been shelved over concerns that the burnings would be controversial.

Peter Jutro (EPA) stated that the EPA has studied how much water would be needed in order to maintain the roots. He was doubtful that the oiled vegetation would burn well since the oil was so weathered. Davis stated that a guider might be needed to make it burn. The question was raised why this could not be tried out in a test run.

Davis suspected that the burnings were currently not being considered due to the threat of additional oil coming in, whereas if that vegetation were left in place, it might stop the next round of oil. Davis noted that officials at Grand Isle were monitoring another mass of oil that looked like it was going to be pushed by high wind and wave conditions into Barataria Bay. To prevent this from happening, some of the big skimmers had been repositioned to guard the entryways of major channels leading into the bay.

Craig Dobson (NASA) asked if Davis' team had coordinated its activities with Elijah Ramsey at the USGS National Wetlands Research Center in Lafayette, LA. Davis answered that the National Wetlands Research Center was conducting a separate activity focused on long-term monitoring and quantitative data gathering, such as ceptometer and density measurements, over 90-by-90 meter grids. Ramsey's team has gathered data at several such sites for monitoring of long-term ecosystem health. Davis noted that Ramsey had an obligation in China from which he could not escape, but Davis and Ramsey's teams were well coordinated in his absence. The work of Davis' team was complementary to that of Ramsey's team since it focused on characterizing wetland shoreline in areas where surveys using a 90-by-90 meter grid would not work so well.

The question was raised of whether the vegetation in the wetlands could actually handle and rebound from the oil spill. Davis answered that the rosaceae they found was doing relatively well. He displayed a photo in which the oil line was quite high and commented that the rosaceae was actually withstanding it. Apparently the east side of Barataria Bay has been hit the worst and a majority of the damage happened one night when skimming operations were not going on. So now operations are conducted 24 hours a day. Once a mass of oil is found to be heading towards the bay, all the skimmers go into high gear. Boats are sent straight through the oil mass, which is skimmed, collected onboard, and offloaded at port, whereafter the boats go back out to repeat the process. The absorbent boom is now being deployed using a more sturdy X-bracing system, which does a much better job of holding the boom in place than the previously used single pole system.

Applegate thanked Davis for the rundown of his team's important work.

## **VII. Presentation on Hurricane Impacts and the Oil Spill**

Applegate thanked Bill Read (NOAA/National Hurricane Center) for calling into the meeting to speak with the SDR.

Read stated that Hurricane Alex had not delivered any surprises to forecasters at the National Hurricane Center (NHC), so he was glad to be able to spend a few minutes speaking with SDR Members. Regarding the oil spill, he stated that the NHC had been involved since day one with initial discussions among scientists focusing on what the various impacts of tropical cyclones would be on the oil spill and vice versa. Read stated that tropical cyclones were his expertise and that his comments on oil aspects of the issue would be second hand.

Read began his presentation by noting that the summation of current hurricane science points to the impacts of high winds, heavy surges, and large waves associated with major storms, such as Katrina, Rita or Camille, being far more life threatening and damaging than any effect from the oil that has been released from the well. When a major hurricane hits an urbanized area, it uproots sewer systems and upturns chemicals stored in buildings, leaving behind a toxic mix that has to be dealt with. This is one of the reasons why people often cannot return to their communities immediately. So there is actually a fair amount of expertise with debris management and response companies on how to clean up toxins after storms. The companies have been engaged to look at what the issues might be when an inevitable storm hits the Gulf Coast this season.

Due to the Gulf of Mexico's shape, an east to west moving hurricane, such as Ike, sets all the water in motion towards the coastlines of Louisiana and southeastern Texas. In the case of Ike, Florida's Panhandle and even its west coast had water level elevations. In such a storm, the waves emanate out at an angle from the spiraling winds around the hurricane's eye, resulting in a build-up of water along the Gulf coastline to the north of the storm track.

Read stated that Alex drove home the fact that even a storm much smaller and farther south than Ike can still have an impact on the waters around the Deepwater Horizon oil spill. In the case of Alex, the swells interacted with wind and waves to disrupt the more sensitive aspects of the operation, such as skimming. Read noted that Alex was a warning shot, but also an example of possible impacts to clean up operations caused by storms that do not hit the area directly. Read stated that it was his understanding from conversations with other scientists that there could be some benefit from higher tropical storm wind and waves, as they tend to accelerate the weathering process of oil in the water. Read noted that it will be interesting to see if the weathering process can be quantified at all, even from a glancing blow like this.

The National Weather Service's New Orleans and Mobile forecast offices have been engaged since day one of the spill in providing specialized forecasts. The offices essentially take their basic forecasts and run them through graphics generators to provide information about the impacts from higher seas to decision makers who do not have time to get into the details. It takes about 24 hours for the seas generated by storms like Alex to settle down, so rough seas are probably in order for much of today. The seas will be reduced tomorrow and probably over the weekend more typical of what has been experienced over the last few weeks. Summertime weather produces a fairly flat gradient of one- to two-foot waves and not much tidal elevation, which is good for response operations.

Read stated that in his role at the National Hurricane Center (NHC), he is mostly focused on the aspects of saving life and property in the advance of a hurricane. In the case of the oil spill, the NHC provides insight and information that helps the unified area command and the incident command centers with making decisions about whether to pull assets out of the water and away from the coasts in advance of a tropical cyclone. The most commonly used graphic is the "cone," which indicates the center line of the track possibilities, the two-thirds confidence level of where the center of the storm will actually go over a five day period, and the intensity relative to depression. Read also ensures that public warnings get out to the oil spill responders and local officials who are making decisions about evacuation. Read noted that coordination on this front had been good. Down this far in Louisiana, there are a lot of one-way-out, two lane roads, and it would be a difficult scenario if all the extra people the region working on the oil spill response tried to leave the area simultaneously. Read noted that some coordination had been done to avoid the scenario.

Probability graphics are also key information that is used in briefing the team of Coast Guard, NOAA and BP officials which are involved making decisions involving hurricane impacts to clean up operations. The team is composed of technically savvy individuals who are actually involved in decision making for offshore drilling operations on a regular basis. The probability graphics are used for the day-in and day-out decision making of whether to shut down the drilling process and evacuate oil rig crews from the open Gulf. Read stated that there was probably a significant number of people in the deepwater sites off of Texas who had to be evacuated in advance of Alex because of the long lead times needed to shut down drilling operations. The decision makers are basically interested in probabilities for the onset of tropical storm force winds. At that speed and higher, small boat operations become unsafe near the platform, which is why their "threshold of pain" is so low. They

will tailor their decision to the onset of the winds and the relative threat of the center of the hurricane crossing over. If it looks like it will be a glancing blow, the decision becomes whether to evacuate or shelter in place and ride out the conditions.

Ten days ago Read met with officials from NOAA headquarters and the unified area command in New Orleans to come up with a plan on how to brief hurricane situations during the upcoming season. As a result of these conversations, the NHC is providing special briefings as needed. It also created spot probability forecasts for key cities along the coast and for the well site. Furthermore, the NHC created highly experimental, non-public products, including:

- 34, 50 and 64 knot wind speed probabilities out to 5 days at the Deepwater Horizon site for existing tropical cyclones (began last week);
- 5-day tropical cyclone genesis probabilities for tropical disturbances;
- And 34, 50 and 64 knot wind speed probabilities out to 5 days at the Deepwater Horizon site for tropical disturbances/waves (i.e., potential tropical cyclones) of note (began today).

Read stated that these products are actually “going where no man has dared tread before.” The NHC can do a pretty good job of assessing the relative risk for a large area of thunderstorms or a tropical wave to develop into a closed low and eventually into a tropical cyclone. But as for the details which are so important for determining the probabilities of exactly where that center will form, the skills needed to equate the probabilities created on the genesis to that of an existing cyclone do not exist. So the NHC is doing this experimental work specifically to support the sensitivities of the onsite decision makers given the critical and difficult nature of evacuating approximately 30,000 people who are working on cleanup operations. The NHC analysis and forecast branch is also providing an experimental gridded forecast for windspeed and waves at 12.5 kilometer resolution. The NHC has not had sufficient time to do any behind the scenes testing, evaluation and verification to determine what the error aspects of this particular forecast tool are, so the information generated with it is briefed with that caveat. These graphics are being integrated by the response folks and the unified command, and then sent out to the containment parties through the Environmental Response Management Application (ERMA) system.

The decision to evacuate in the face of a hurricane is vested in the unified area command. Admiral Thad Allen and core members of his staff read information provided by the NHC and get input from BP and others who have decisional requirements for getting people safely out of the area. Their decision to evacuate is based on a ten percent probability of 34 knot winds five days out. BP needs up to 116 hours lead time before the onset of tropical storm force winds (34 knots) for shutting down drilling operations and evacuating. The first 3 days are typically needed to shut down operations. The next 2 days are to evacuate the area. There is an understanding they may not get 116 hours if a storm develops in the Gulf (as opposed to the Atlantic). Evacuation for relief wells may require up to 140 hours. The lead time needed to shut down the containment operation is down to 72 hours. Decisions to shut down and evacuate deepwater drilling operations are usually made five days before the possible impact, and five days out, a 10 percent probability is about as high the forecast gets unless the threatening storm is already a large, powerful hurricane. The size of a hurricane is taken into account on the algorithm that produces the probabilities.

The decision makers do understand the vagaries of Gulf storms. In 1995 Hurricane Opal formed in the Gulf of Mexico and went from a high-end category one to a category five while moving rapidly northward. It passed to the southeast of New Orleans and made landfall on the Florida Panhandle. The evacuation had to be aborted because there was not enough lead time in the panhandle to get people out of harm's way. If a storm develops in a similar manner this year, this will be one of the

more intense briefing scenarios between the NHC and the decision makers because there is not any real skill for advance forecasting of rapid intensification.

Read stated that NHC conducted two briefings per day for Alex and the schedule worked well. Under the current plan, the NHC will initiate briefing based on a 2 percent probability of 34Kt winds. In other words, if there is a storm out there, the 2 percent figure is the first threshold of useable data. So coordination with the unified command begins at a very low level of probability.

Early on in the oil crisis there was a lot of mixed information coming from various people who had an official or at least a semi-official role. The NHC's goal is to make sure the NHC, unified command, and BP are on the same sheet of music when it comes to tropical systems. Once the NHC passes on the forecast, the decision making is totally the responsibility of the command. BP has their own meteorologist who takes part in the coordination calls with the NHC. Read stated that he had been very impressed with the openness of the coordination. There has been an encouraging willingness to talk differences and understand how the NHC produces forecasts for public needs and how BP produces forecasts for its more specific needs.

The tropical storm coordination calls take place twice a day, at 7:00 a.m. and 7:00 p.m. EDT. If there is a change in the interim that would impact the forecast, the NHC emails that information to the unified command. There were not any significant changes for Alex, but if there were, Read imagined that a short-notice teleconference would have been held. A relatively limited number of people are actually involved in the decision making, so the goal is to have only those people participating on the calls in order to streamline the conversation.

This year's seasonal hurricane outlook for the Atlantic is above normal and is actually the highest forecast in the 12 years that NOAA has been issuing them. Read stated that since no long-range estimate will be as accurate as a short-range forecast, the NHC prefers to forecast a range of events for the season (which represents the known skill), rather than a specific number (which would hide the fact that uncertainty exists). The range represents the standard deviations of the skill at forecasting long-range. Read noted that even if the number of hurricanes turns out to be on the low side of this year's projection, that number would still be above average over the long-term.

Read stated that the number of hurricanes in a season also is totally irrelevant to the problem at hand. During the 1992 Atlantic hurricane season there was only one hurricane that made landfall in the U.S. and only 7 storms altogether, but the one hurricane was Andrew, which devastated Florida before heading across the Gulf of Mexico, delivering 100 knot winds to the area of the Deepwater spill, and hitting Louisiana.

Michael Goodman (NASA) asked what the upwelling and the depth of mixing in the ocean would be when a hurricane passes over. He questioned whether the oil would be mixed at depth, possibly sink, and be dispersed within the water column, or be drawn up to the surface and then further dispersed along it. Read responded that the factors involved were outside his area of expertise, but the question might be answered in detail by an oceanographer with hazmat background, such as Nick Shay at the University of Miami. He continued in general terms by stating that several factors would likely influence the issue: the strength of hurricane being the primary one, but also the temperature density profile of the water as the hurricane passes over it.

Goodman stated that NASA was conducting a hurricane experiment, scheduled to start in mid-August, called GRIP (Genesis Rapid Intensification Processes). He stated that NASA had been working very closely with NOAA's Rob Rogers, who is involved in the Intensity Forecasting



Experiment (IFEX). He asked if the experimental NHC products could be made available to NASA internally. Read responded that it was possible and recommended that he and Goodman set up a conference call or a meeting here about the best way to convey it. He thought there would be a way to arrange a briefing as part of the experiment.

Roger Pierce (NOAA) congratulated Read and his team for quickly developing the experimental products and making them available. He added that he understood the difficulties involved and appreciated what Read was doing.

Sezin Tokar (USAID) thanked Read and his team for providing excellent briefings to all of USAID's missions in Central America. She also inquired whether it would be possible for USAID to be part of a briefing on NHC's experimental products.

Read stated that the experimental forecasts were only being made for cyclones impacting the oil spill area, so he did not think it would be of much help to the missions in Central America. The tropical weather outlook on the NHC homepage is actually a genesis forecast that has been verified. He commented that he had more confidence in that forecast being a useful product for the missions. It gives a two day genesis as well as a mid-range outlook, coordinated with NOAA's Hydrometeorological Prediction Center in Washington, each day at noon. He stated that the NHC historically has not possessed much skill beyond two day genesis forecasts and added that he was hesitant to provide products much beyond the skill-set of the forecasters currently working on the problem.

Applegate thanked Read for calling into the meeting, especially given his intense briefing schedule, and noted that the presentation was very helpful in understanding the range of potential impacts to the spill area from both direct hits and distant storms. He also thanked Nell Codner and Margaret Davidson of NOAA for lining up the presentation. In a separate vein of the topic of cascading disasters, Applegate noted that he and folks like Eddie Bernard of NOAA's Pacific Marine Environmental Laboratory had become involved in looking at how a tsunami generated in the Caribbean could impact the Gulf shoreline given the oil spill.

#### **VIII. Report from the NSTC Liaison**

Sarah Stewart Johnson (OSTP; NSTC Liaison) and Kate Moran (OSTP) thanked the SDR for pulling together the most recent roll-up of agency response activities. Moran noted that the document had been very helpful and was very much appreciated. She stated that on the broad scale the Administration has been criticized for what it is doing on the S&T front, so the summary that the SDR put together is excellent because it really shows what the Administration and the agencies are working on.

Moran, who is OSTP's point person for the response, recently returned from Houston where she had been working on Secretary Chu's team on the relief wells. She stated that the containment process may potentially change in the near future. The new process would involve a more substantial cap to capture more of the oil. The new cap would also allow better estimates of the total volume of oil that is flowing from the well.

Moran noted that she had been involved most recently on the technical side of evaluating the relief well operations. BP started directional drilling about three weeks ago, changing over from a top-driven bit to one that is driven by the mud flow. About three days ago electromagnetic instruments in the first relief well were actually able to sense and range the casing on the blowout well, so that question mark has been set aside. As of yesterday they were well within 100 feet, but it will still take

weeks to connect with the blown-out well since the drill team now has to string casing down the bore hole. Moran stated that she attended a recent meeting at which this process was reviewed and possible scenarios were rehearsed. There was a lot of confidence that this will work, but there are also a lot of details about what could happen and how to respond.

Although the well had not been stopped as of July 1<sup>st</sup>, Moran stated that the industrial-government response to this disaster has been amazing from a technological standpoint. The number of large ships working with so many remote submersibles is unprecedented. There are at least four additional vessels working on the relief well drilling operations. There are also operational aspects of managing various drilling and cleanup teams that have never been done before, let alone in deepwater.

Dr. Holdren and OSTP staff have been involved in all aspects of the technical part of the oil spill, including the details of switching out the top hat for this other piece of containment equipment. One of the considerations in deciding to make the switch is that there will be a period of time when the oil will flow freely, so there is a tradeoff involved. So the odds of technical success, the time the oil will be coming out of the wellhead, and the benefits of having better well control with the new equipment are all being weighed.

Moran stated that the ideal situation is called a dynamic kill in which heavy mud is pumped down the relief well intersecting with the reservoir to displace the oil and gas in the blown out well. The mud weight plus the friction of the flowing mud is what actually displaces the oil and gas and dampens the pressure in the blown-out well. The next step is to balance the mud weights between the blown-out well and the relief well such that an even balance of fluids is achieved, at which point the well is statically killed. Thereafter cement is injected to seal the blown-out well where it meets the reservoir. The final step is to actually seal the relief well.

The question was raised whether BP still intended to harvest oil from the reservoir in the future. Moran stated that the subject had not been discussed in any meetings she had attended. She expected such a decision would involve officials from the national security community and industry as well as economic considerations. Applegate commented that the Deepwater Horizon oil spill will probably be a bellwether for the long-term future of deepwater drilling.

As Moran mentioned over the phone during the last June SDR meeting, OSTP is looking into setting up a long-term science focus on the oil spill. No group has really been stood up to be that entity but OSTP is talking about that now. If the effort goes forward, Moran said she could see a significant role for the SDR in bringing its expertise. She hoped to have full discussions on the subject when the time is right.

While noting that he could not think of anything occurring on the magnitude of the Deepwater Horizon in the years that he had been in government, Peter Jutro (EPA) observed that what OSTP had often done extremely well in similar past cases was gather the right people to develop a research roadmap for how to make things work better in the future. He encouraged OSTP to use the force of being the White House science office to gather the right people to look at broad issues surrounding deepwater drilling and spills, including the planning, field operations, and technical issues. A sensitivity analysis should be done to figure out which of these aspects were actually inhibited because the science in which there was confidence is actually not available, but might be if developed through research. He stated that he realized that OSTP was very busy with the immediate problems of the spill, but he encouraged a process to begin scoping this approach.

Moran commented that Jutro's suggestion would be an excellent way to approach this as things settled down. Applegate offered SDR's assistance for the effort when OSTP is ready to move into that phase. He also noted that he was pleased to hear the roll-ups of agency response activities were being put to good use, especially given the clearance challenges faced by many of the agencies.

Moran stated that there had been emerging research pointing to lot of oil in the mid-level water column. The mid-level water oil will take a longtime to degrade because the microbes are not as active in the darkness and the cold water. Oil impacts along the Gulf coastline may therefore continue for a long time.

### **IX. Discussion on the Oil Spill Response**

Craig Dobson (NASA) stated that the UAVSAR flights last week were successful, and he expected that the instrument would be deployed to the Gulf in the future as conditions warrant and the flight schedule allowed. The data from the recent flights had been processed and was already available.

Michael Goodman (NASA) stated that the AVIRIS instrument, which previously flew on the ER-2 from May 6-25, was now currently back in the Gulf region at New Orleans. It is scheduled to fly from July 1-10. The May deployment focused mostly on measuring the volume of oil on the surface and the data from those flights was being process by USGS. For the July deployment the AVIRIS will be flown on a Twin Otter aircraft, which flies much lower and will be looking primarily at the impacts of oil on the marshes and bayous of the coastal ecosystem. Goodman also stated that it was certainly within the range of possibilities that the ER-2 would return with the AVIRIS for flights later in July or August to do more work in determining surface oil volumes.

Following up on his earlier presentation, Bruce Davis (DHS) stated that JPL was going to take his team's field notes to develop a training module for similar future activities. The idea had been raised for Davis' team to return to the Gulf to verify a sampling of 10 other sites where the UAVSAR has detected oil. The UAVSAR was actually flying when the team was in the Gulf, so the reliability was very good in terms of the correlation between the field observations and the remote measurements. If Alex drives the oil farther into the wetlands, the impacts may be more severe impact than what the current UAVSAR imagery indicates.

Roger Pierce stated that NOAA had flown two P3 flights to measure air chemistry due to concerns over health impacts to cleanup workers on the water and along shorelines. Ships were also being used to take air chemistry samples. A few hundred samples had been collected so far, but the analysis of all the data takes time.

Jutro stated that the EPA yesterday publicly released the first round of toxicity testing data for dispersants, which is available at <http://www.epa.gov/tri/>. EPA is doing more work on dispersant toxicity applications regarding surface oil change and remediation. EPA is also starting to look at what some of the impacts will be if a hurricane does hit. Some organoleptic issues have arisen in terms of taste and smell of the water supply and particularly with the hydrogen sulfide smells in the air, so EPA is looking into these issues. The agency is doing measurements of ozone concentrations and other testing that EPA reported at the June SDR meeting.

Dennis Wenger reported that NSF had processed 78 RAPID awards, of which about 42 are out the door.

Wrapping up the meeting, Applegate stated that the SDR's former chair, Helen Wood, was retiring after 42 years of government. A video and book of tributes is being put together in her honor. For those who wish to contribute, contact the SDR Secretariat (ross.faith@mantech.com).

**X. Adjournment**

The meeting adjourned at 12:00 p.m.

**XI. Future Meetings**

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

\*Note: The SDR's 2010 meetings are scheduled to be held at the White House Conference Center.

August 5, 2010  
September 2, 2010

October 7, 2010  
November 4, 2010

December 2, 2010

**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.faith@mantech.com).

**XIII. 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**

Ross Faith	703-388-0308	Ross.Faith@ManTech.com
Kate Cantrell	703-485-8053	Kate.Cantrell@ManTech.com

**XIV. Summary of July Actions**

Action	Lead	By When
Contact Dennis Wenger (dwenger@nsf.gov) if your agency can contribute funds in support of the University of Colorado's Natural Hazards Center.	SDR Member	ASAP
Let Ross (ross.faith@mantech.com) know if you are interested in participating in an ad hoc Haiti-Chile Lessons Learned Working Group.	SDR Members	Standing
Let Ross (ross.faith@mantech.com) know if you are interested in participating in an ad hoc SDR International Working Group.	SDR Members	Standing
Email Glenn Bethel (Glenn.Bethel@fas.usda.gov) if you would like to receive updates on sources providing data on the BP Oil Spill.	SDR Members	Standing
Send Sezin Tokar your ".gov" e-mail address to receive USG-only updates from USAID on global disaster response activities. (stokar@usaid.gov)	SDR Members	Standing

Action	Lead	By When
Contact Ross to receive copies of the Grand Challenges for Disaster Reduction Implementation Plan packets or CD. ( <i>ross.faith@mantech.com</i> )	SDR Members	Standing
Let Dave or Ross 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. ( <i>ross.faith@mantech.com</i> )	SDR Members	Standing