Disasters and Environment

SCIENCE, PREPAREDNESS, AND RESILIENCE

13th National Conference on Science, Policy and the Environment | Washington, D.C. | January 15-17, 2013

VISION

The 13th NCSE National Conference on Science, Policy and the Environment addresses the intersection of disasters and the environment, drawing upon lessons from events like Superstorm Sandy, the 2012 wildfire season, the 2011 Tōhoku earthquake and tsunami, and a host of other disasters that are occurring with greater frequency and severity. Conference participants will chart a path for science-based decision-making that will lead to more resilient communities worldwide.

The complexities of environmental disasters are reflected in the many cross-cutting sessions that bring together leaders from the scientific, diplomatic, emergency management, conservation, business, disaster response, educational, and policy communities.

Whatever your background, I hope that you will be challenged in a constructive way to consider these issues from new and different perspectives; work across traditional boundaries; and, to bring a solutions-oriented approach to developing outcomes.

Look around and you will see many knowledgeable individuals with whom you can begin new relationships and launch initiatives to address the myriad challenges related to environmental disasters.

Perhaps this is your first NCSE conference, or perhaps you have been to all thirteen (and there are some who have). Either way, you are in for a terrific experience, filled with opportunities for growth and impact. So, welcome. Let's roll up our sleeves and get to work!

Peter Saundry
Executive Director

CONTENTS

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"YOU'VE NEVER SEEN IMAGES LIKE THIS BEFORE... IT DESERVES TO BE SEEN AND FELT ON THE BIG SCREEN"

–ROBERT REDFORD

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– Justin Chang, VARIETY

"HEART-STOPPING"

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– Joe Neumaier, NEW YORK DAILY NEWS

A FILM BY THE PRODUCER OF THE ACADEMY AWARD®-WINNING "THE COVE"

CHASING ICE

A FILM BY JEFF ORLOWSKI

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FEATURING JAMES BALOG • ADAM LEWINTER • SVAVAR JONATANSSON • TAD PFEFFER • JASON BOX MUSIC BY J. RALPH
ORIGINAL SONG BEFORE MY TIME MUSIC AND LYRICS BY J. RALPH PERFORMED BY SCARLETT JOHANSSON AND JOSHUA BELL EDITED BY DAVIS COOMBE
WRITTEN BY MARK MONROE DIRECTOR OF PHOTOGRAPHY JEFF ORLOWSKI PHOTOGRAPHY BY JAMES BALOG ASSOCIATE PRODUCERS STACY SHERMAN • BILLY RAY • JAMES BILLMAIER
EXECUTIVE PRODUCERS DAVID J. CORNFIELD • LINDA A. CORNFIELD PRODUCED BY PAULA DUPRE' PESMEN • JERRY ARONSON PRODUCED & DIRECTED BY JEFF ORLOWSKI

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We must use every tool at our disposal to help local communities protect the environment and public health and build the foundation for lasting economic growth.
— Lisa P. Jackson

Symposium 8: Envisioning Resilient and Sustainable Communities

Moderated by Dr. Alan Hecht — Director for Sustainability
Office of Research and Development, EPA

Tuesday, January 15, 2013

2:00 – 3:30 p.m.

Agenda

**Note: Sessions Located in Atrium Hall Unless Otherwise Noted*

Tuesday, January 15, 2013

7:15 a.m.	Registration, Continental Breakfast, and Scientific Poster Presentations open
8:20 a.m.	Opening and Introduction: Peter Saundry, Executive Director, National Council for Science and the Environment (NCSE)
8:30 a.m.	Keynote Address: Margareta Wahlström, Special Representative of the Secretary-General for Disaster Risk Reduction, United Nations
9:00 a.m.	Keynote Address: W. Craig Fugate, Administrator, Federal Emergency Management Agency
9:30 a.m.	Exhibition opens Plenary 1: Japan 2011: Cascading Disasters
10:30 a.m.	Plenary 2: The Gulf Coast: Diverse Converging Issues
11:30 a.m.	Plenary 3: Aridity and Drought and their Consequences
12:30 p.m.	Lunch on your own
2:00 p.m.	Symposia A (11)
3:45 p.m.	Symposia B (12)
5:30 p.m.	Keynote Address: Amanda Ripley, author of *The Unthinkable: Who Survives When Disaster Strikes – and Why*
6:30 p.m.	Reception and Book Signing with Amanda Ripley
7:00 p.m.	Special Screening of the Award-Winning Documentary, *Chasing Ice* (Atrium Hall)

Wednesday, January 16, 2013

7:15 a.m.	Registration, Continental Breakfast, Scientific Poster Presentations open
8:00 a.m.	Exhibition opens
8:20 a.m.	Introduction: Peter Saundry, Executive Director, NCSE
8:30 a.m.	Keynote Address: Mark Tercek, President and CEO, The Nature Conservancy
9:00 a.m.	Keynote Address: Ellis M. Stanley, Sr., Emergency Management Expert
9:30 a.m.	Plenary 4: Feedbacks: Environmental Changes and Environmental Disasters
10:30 a.m.	Plenary 5: Climate Change and Disasters
11:30 a.m.	Plenary 6: The "Human Factor" in Environmental Disasters
12:30 p.m.	Lunch on your own – breakout workshop leaders will meet
2:00 p.m.	Breakout Workshops (23 concurrent sessions)
5:30 p.m.	NCSE Lifetime Achievement Award: Hon. Richard Benedick, U.S. Ambassador (ret.), Founding President, NCSE 13th Annual John H. Chafee Memorial Lecture: Jane Lubchenco, Under Secretary of Commerce for Oceans and Atmosphere and Administrator, NOAA
6:30 p.m.	Reception

Thursday, January 17, 2013

8:00 a.m.	Continental Breakfast and Exhibition open
8:20 a.m.	Introduction: Peter Saundry, Executive Director, NCSE
8:30 a.m.	Keynote Address: Pete Thomas, Chief Risk Officer, Willis Re
9:00 a.m.	Keynote Address: Thomas Loster, Chairman, Munich Re Foundation

9:30 a.m.	Plenary 7: Building Resilient Communities
10:30 a.m.	Plenary 8: No Regrets Resilience: Saving Money, Saving Lives
11:30 a.m.	Keynote Address: Nancy Lindborg, Assistant Administrator, Bureau for Democracy, Conflict, and Humanitarian Assistance, USAID
12:00 p.m.	Keynote Address: Senator Mary Landrieu (D-LA), Co-Chair, Congressional Hazards Caucus
12:30 p.m.	Networking and Buffet Lunch (with youth mentoring tables)
2:00 p.m.	Adjourn

Leadership Committee

Susan Cutter
Director, Hazards & Vulnerability Research Institute, University of South Carolina

David Kaufman
Director, Office of Policy and Program Analysis, Federal Emergency Management Agency (FEMA)

Margaret Leinen
Associate Provost for Marine and Environmental Initiatives and Executive Director, Harbor Branch Oceanographic Institute, Florida Atlantic University

Marcia McNutt
Director,U.S. Geological Survey (USGS)

Tony Michaels
Managing Partner and Director, Proteus Environmental Technologies

*Represented by **David Applegate**, Associate Director for Natural Hazards, USGS and **Lucy Jones**, Science Advisor for Risk Reduction, SAFRR Project, USGS*

Franklin Nutter
President, Reinsurance Association of America

Peter Saundry
Conference Chair and Executive Director, National Council for Science and the Environment (NCSE)

Chris Shore
Director, Natural Environment and Climate Issues, World Vision International

Kathryn Sullivan
Assistant Secretary of Commerce for Environmental Observation and Prediction, Deputy Administrator and Chief Scientist (Acting), NOAA

*Represented by **Margaret A. Davidson**, NOAA Office of Ocean and Coastal Resource Management Acting Director and **Emily Wallace**, NOAA*

Advisory Group

The 13th National Conference on Science, Policy and the Environment: *Disasters and Environment: Science, Preparedness, and Resilience,* is the result of the dedicated work of many people inside and outside of the National Council for Science and the Environment.

The Core Planning Group shown on the previous page set the initial vision and scope of the conference.

Members of the Advisory Group met on conference calls throughout 2012 to define the themes, work with session coordinators, develop new sessions, recruit speakers, advance the solutions-oriented outcomes, and assist this event in countless ways.

The Advisory Group members and session leaders were assisted throughout by NCSE staff members Lyle Birkey, David Blockstein, Stevenson Bunn, Marisa Campbell, Caley Corsello, Marissa Duda, Allison Feldman, Steven Feldman, Shelley Kossak, Gabriel Marty, Chris Prince, and Lilah Sloane.

To these advisors, session leaders and staff, I express my deep appreciation and gratitude.

Peter Saundry
Executive Director

- Clayton Adams, Team Assistant, United Nations Environment Programme
- Gordon Binder, Senior Fellow, World Wildlife Fund
- Frederick "Skip" Burkle, Senior Fellow and Scientist, Harvard Humanitarian Initiative
- Kitty Courtney, Marine Environmental Scientist, Tetra Tech
- Rear Admiral Scott Deitchman, Associate Director for Terrorism Preparedness and Emergency Response, National Center for Environmental Health and Agency for Toxic Substances and Disease Registry, Centers for Disease Control and Prevention
- Reginald DesRoches, Professor and Associate Chair, School of Civil and Environmental Engineering, Georgia Institute of Technology
- Paul Domich, Executive Secretary, Infrastructure Committee, CIP-Consulting Inc.
- Gus Felix, Global Head of Operational Risk Management, Citigroup
- Elizabeth Ferris, Co-Director, Project on Internal Displacement, The Brookings Institution
- Joseph Fiksel, Executive Director, Center for Resilience, The Ohio State University
- Sherrie Forrest, Program Officer, Disasters Roundtable, The National Academies
- Gerald E. Galloway, Research Professor, Glenn L. Martin Institute Professor of Engineering, University of Maryland
- Mary Glackin, Former Deputy Under Secretary for Oceans and Atmosphere, NOAA
- Robyn Hannigan, Professor and Chair, Environmental, Earth and Ocean Sciences Department, University of Massachusetts, Boston
- Alan Hecht, Director for Sustainable Development, Office of Research and Development, U.S. EPA
- Peter Jutro, Deputy Director for Science and Policy, National Homeland Security Research Center, U.S. EPA
- Amy Luers, Director, Climate Change, Skoll Global Threats Fund
- Ann Patton, 2nd Vice President, Natural Hazard Mitigation Association
- Daniel Petz, Senior Research Assistant on Natural Disasters, The Brookings Institution
- Ben van der Pluijm, Bruce R. Clark Collegiate Professor of Geology; Professor of the Environment; Director of the Global Change Program, University of Michigan
- Ed Saltzberg, Managing Director, Security and Sustainability Forum
- Ayse Sezin Tokar, Hydrometeorological Hazard Advisor, Office of U.S. Foreign Disaster Assistance, USAID
- Godfrey Uzochukwu, Professor and Director, Interdisciplinary Waste Management Institute, North Carolina A&T State University

Tuesday, January 15, 2013

Detailed Agenda

7:15 a.m. **Registration, Continental Breakfast, and Scientific Poster Presentations open**

8:20 a.m. **Opening and Introduction:** ***Peter Saundry***, Executive Director, National Council for Science and the Environment (NCSE)

8:30 a.m. **Keynote Address:** ***Margareta Wahlström,*** Special Representative of the Secretary-General for Disaster Risk Reduction, United Nations

9:00 a.m. **Keynote Address:** ***W. Craig Fugate***, Administrator, Federal Emergency Management Agency (FEMA)

9:30 a.m. **Exhibition opens**

Plenary 1: Japan 2011: Cascading Disasters
Moderator: ***Jon Hamilton***, Correspondent, Science Desk, NPR

- ***Timothy Mousseau***, Professor of Biological Sciences, University of South Carolina
- ***Yoshimi Inaba***, Chairman, Toyota Motor Sales, U.S.A., Inc.
- ***Koji Tomita***, Deputy Chief of Mission, Embassy of Japan in the United States of America
- ***Admiral Robert Willard (USN, Ret.)***, Commander, U.S. Pacific Command 2010-2012; President and CEO, Institute of Nuclear Power Operations

10:30 a.m. **Plenary 2: The Gulf Coast: Diverse Converging Issues**
Moderator: ***Admiral Thad Allen (USCG, Ret.)***, Senior Vice President, Booz Allen Hamilton

- ***Marcia McNutt***, Director, U.S. Geological Survey (USGS)
- ***Jerome Zeringue***, Executive Director, Coastal Protection and Restoration Authority of Louisiana and Management Team Chair, Gulf of Mexico Alliance
- ***Nancy Rabalais***, Executive Director and Professor, Louisiana Universities Marine Consortium
- ***Bernard Goldstein,*** Chair, Coordinating Committee of the Gulf Region Health Outreach Program

11:30 a.m. **Plenary 3: Aridity and Drought and their Consequences**
Moderator: ***Veronica Johnson,*** News4 Meteorologist, NBC Washington

- ***Margaret Hiza Redsteer***, Research Scientist, U.S. Geological Survey (USGS)
- ***Luc Gnacadja***, Executive Secretary, United Nations Convention to Combat Desertification (UNCCD)
- ***Donald Wilhite***, Professor of Applied Climate Science, School of Natural Resources, University of Nebraska-Lincoln
- ***Roger S. Pulwarty***, NOAA National Integrated Drought Information System Director and Physical Scientist

12:30 p.m. **Lunch on your own**

2:00 p.m. **Symposia A (11)**

1. International Roles in Environmental Emergencies
2. Tools to Identify Vulnerability to Disasters: Part 1
3. Inundation Risk and Vulnerability Assessment
4. Preventing Catastrophic Losses to the Cascading Effects of Forest Fire
5. Lifeline Services at the Interface of the Built and Natural Environment
6. Ecosystem Impacts from Nuclear Energy: Lessons from Chernobyl and Fukushima
7. Building a New Framework for Understanding and Mitigating Disaster Impacts on Ecosystems
8. Envisioning Resilient and Sustainable Communities
9. Climate Change, Communities, and Risk: Research from the U.S. Global Change Research Program and National Climate Assessment
10. Applying Models of Human Behavior and Memory in Disasters Across Space and Time
11. Florida: A Statewide Case Study of Alternative Approaches to Adaptation and Recovery

3:45 p.m. **Symposia B (12)**

12. Tools to Identify Vulnerability to Disasters: Part 2
13. Wildland Fire in a Changing Climate
14. Military Bases and their Communities
15. Coastal Cities: Planning for Resilience, Adaptation, and Sustainability – Lessons from the Northeast and Superstorm Sandy
16. Climate, Environment, and Readiness (CLEAR) Action Plan for Virginia – Incorporating Expertise from California's Bay Area and Philadelphia, PA
17. Mapping a Path to Resilience: The Intersection of Environmental Disasters, Ecosystem Services, and Security
18. Enhancing Preparedness and Building Resilience in the Rapidly Changing Arctic
19. Learning from Disasters: Environmental Disasters as Teachable Moments
20. Informing Disaster Resilience Policy
21. Women and Climate Change Disaster Resilience: Local to Global Ecological Impacts and Strategies
22. No Regrets Resilience along the Gulf Coast
23. Unmeasured Consequences of Major Natural Disasters and Conflict

5:30 p.m. **Keynote Address: *Amanda Ripley***, author of *The Unthinkable: Who Survives When Disaster Strikes – and Why*

6:30 p.m. **Reception and Book Signing with Amanda Ripley**

7:00 p.m. **Special Screening of the Award-Winning Documentary, *Chasing Ice*** (Atrium Hall)

Tuesday Keynote and Plenary Biographies

Opening and Introduction

Peter Saundry, Ph.D., is Executive Director of the National Council for Science and the Environment (NCSE). He provides day-to-day leadership to the organization and is responsible for overall program, financial and staff management, strategic planning and development. He has served as Executive Director of the organization since 1993 and has led the creation and implementation of many of NCSE's programs and initiatives. Dr. Saundry is an experienced leader in building coalitions of individuals and organizations to promote environmental science and its utility in addressing societal concerns. Dr. Saundry received a Ph.D. in Physics from the University of Southern California, an M.S. in Physics from Adelphi University, and a B.S. in Physics, with honors, from Southampton University, U.K.

Keynote Address

Margareta Wahlström is the Special Representative of the United Nations Secretary-General for Disaster Risk Reduction. She has over 30 years of extensive national and international experience in humanitarian relief operations in disaster and conflict areas, and in institution-building to strengthen national capacity for disaster preparedness, response, and for risk reduction. In November 2008, the United Nations Secretary-General Ban Ki-moon announced her appointment as the first Special Representative to the Secretary-General for Disaster Risk Reduction. Ms. Wahlström is based in Geneva and heads UNISDR, the United Nations Office for Disaster Risk Reduction. She has an academic background in economic history, political science, social anthropology, archaeology and philosophy of science. Ms. Wahlström is from Sweden.

Keynote Address

W. Craig Fugate began serving in the position of Administrator of the Federal Emergency Management Agency in May 2009. Prior to coming to FEMA, Fugate served as Director of the Florida Division of Emergency Management. Fugate began his emergency management career as a volunteer firefighter, Emergency Paramedic, and finally as a Lieutenant with the Alachua County Fire Rescue. Eventually, he moved from exclusive fire rescue operations to serving as the Emergency Manager for Alachua County in Gainesville, Fla. He spent a decade in that role until May 1997 when he was appointed Bureau Chief for Preparedness and Response for FDEM. In September 2003, again under Fugate's stewardship, the Florida Emergency Management Program became the first statewide emergency management program in the nation to receive full accreditation from the Emergency Management Accreditation Program. In 2004, Fugate managed the largest federal disaster response in Florida history as four major hurricanes impacted the state in quick succession; Charley, Frances, Ivan and Jeanne. In 2005, Florida was again impacted by major disasters when three more hurricanes made landfall in the state; Dennis, Katrina and Wilma. The impact from Hurricane Katrina was felt more strongly in the Gulf Coast states to the west but under the Emergency Management Assistance Compact or EMAC, Florida launched the largest mutual aid response in its history in support of those states.

Plenary 1: Japan 2011: Cascading Disasters

Jon Hamilton is a correspondent for NPR's Science Desk. Currently he focuses on neuroscience, health risks, and extreme weather. Following the 2011 earthquake and tsunami in Japan, Hamilton was part of NPR's team of science reporters and editors who went to Japan to cover the crisis at the Fukushima Dai-ichi nuclear power plant. Hamilton contributed several pieces to the Science Desk series "The Human Edge," which looked at what makes people the most versatile and powerful species on Earth. His

reporting explained how humans use stories, how the highly evolved human brain is made from primitive parts, and what autism reveals about humans' social brains. In 2009, Hamilton received the Michael E. DeBakey Journalism Award for his piece on the neuroscience behind treating autism. Before joining NPR in 1998, Hamilton was a media fellow with the Henry J. Kaiser Family Foundation.

Timothy Mousseau joined the faculty at the University of South Carolina in 1991 and is currently a Professor in the Department of Biological Sciences in the College of Arts & Sciences. His experience includes having served as Dean of the Graduate School, Associate Vice President for Research, Associate Dean for Research and Graduate Education in the College of Arts & Sciences, as a Program Officer for Population Biology at the National Science Foundation, on the editorial boards for several journals, and on NSF, USGS, and a variety of international grant foundation advisory panels. He recently served (2011-12) on the National Academy of Sciences panel to analyze cancer risks in populations near nuclear facilities. Dr. Mousseau has published over 140 scholarly articles and has edited two books: *Maternal Effects as Adaptations* (1998) and *Adaptive Genetic Variation in the Wild* (2000), both published by Oxford University Press. He is currently co-editor-in-chief of the annual review series, *The Year in Evolutionary Biology*, published by the New York Academy of Sciences. Since 1999, Professor Mousseau and his collaborators (esp. Dr. Anders PapeMøller, CNRS, University of Paris-Sud) have explored the ecological and evolutionary consequences of the radioactive contaminants affecting populations of birds, insects and people inhabiting the Chernobyl region of Ukraine, and more recently, in Fukushima Prefecture, Japan. Dr. Mousseau's current research is aimed at elucidating the causes of variation among different species in their apparent sensitivity to radionuclide exposure.

Yoshimi Inaba is chairman of Toyota Motor Sales (TMS), U.S.A., Inc., Toyota's U.S. sales, marketing, distribution and customer service arm in Torrance, Calif. He also serves as an executive advisor of Toyota Motor Corporation (TMC), Toyota's parent company in Japan. Mr. Inaba is responsible for Toyota's sales, marketing and external affairs operations in the Unites States. Mr. Inaba joined TMC in 1968, immediately after graduating from Japan's Kyoto University. His first overseas assignment was in 1985 at Toyota's German sales company, where he worked for three years. After returning to TMC in Japan, he spent five years at the Europe Division. He then moved to TMS in 1993, becoming senior vice president in 1996, responsible for sales and marketing for the Toyota and Lexus divisions. Mr. Inaba returned to Japan in 1997 and was named to TMC's Board of Directors (with managing director status) where he oversaw European and African operations. In 1999, Mr. Inaba moved back to the U.S. to become president of TMS, and in June 2003, he was made a senior managing director at TMC. In June 2005, he became an executive vice president, focusing on Toyota's Chinese operations. In June 2007, he was appointed president and chief executive officer of Central Japan International Airport Co., Ltd., and a senior advisor to the board of TMC. In June 2009, Mr. Inaba returned to TMC in his current capacity. He graduated from Kyoto University with a degree in economics. He also earned a master's degree in business administration from Northwestern University's Kellogg School of Business in1976.

Koji Tomita is Minister Plenipotentiary and Deputy Chief of Mission at the Embassy of Japan in Washington, DC. After graduating from the University of Tokyo, Minister Tomita joined the Ministry of Foreign Affairs (MOFA) in Tokyo in 1981. As a diplomat, he served in the UK, Singapore, Paris (OECD) and Seoul.Prior to his current post, he served as the Political Minister at the Embassy of Japan in Washington, DC for about 7 months. He was the Political Minister at the Embassy of Japan in the UK (2006-2009),Political Minister at the Embassy of Japan in Seoul (2004-2006), and Counsellor at the Permanent Delegation of Japan to OECD in Paris (1997-1999). In the Ministry of Foreign Affairs in Tokyo, he has held such posts as Director of National Security Policy Division & Policy Coordination Division of Foreign Policy Bureau (2001-2004), and Deputy Director-General of North American Affairs Bureau and Asian and Oceanian Affairs Bureau (2009-2012).

Robert F. Willard was elected President and Chief Executive Officer of the Institute of Nuclear Power Operations (INPO), located in Atlanta, Georgia, on May 9, 2012. On May 1, 2012, Admiral Willard

completed a distinguished Navy career as the Commander, U.S. Pacific Command, Camp H.M. Smith, Hawaii. An F-14 aviator, Willard served in a variety of west coast fighter squadrons; VF-24, VF-124, VF-2, and VF-51 aboard the aircraft carriers USS Constellation, USS Ranger, USS Kitty Hawk and USS Carl Vinson. He was Operations Officer and Executive Officer of Navy Fighter Weapons School (TOPGUN). He later commanded the "Screaming Eagles" of Fighter Squadron 51. Following nuclear-power training, Willard served as Executive Officer of USS Carl Vinson (CVN 70), commanded the amphibious flagship USS Tripoli (LPH 10) in the Persian Gulf during "Operation Vigilant Warrior" for which Tripoli received a Navy Unit Commendation and commanded the aircraft carrier USS Abraham Lincoln (CVN 72). As a Flag Officer, Willard twice served on the Joint Staff, was Deputy and Chief of Staff for U.S. Pacific Fleet at Pearl Harbor, Hawaii, commanded Carrier Group Five aboard USS Kitty Hawk (CV 63) and commanded the U.S. Seventh Fleet in Yokosuka, Japan. In March 2005, Willard became the 34th Vice Chief of Naval Operations; in May 2007, he assumed command of the U.S. Pacific Fleet; and on October 19, 2009, he became the Commander, U.S. Pacific Command, Camp H.M. Smith, Hawaii. His decorations include the Defense Distinguished Service Medal, Distinguished Service Medal, Legion of Merit and various other awards.

Plenary 2: The Gulf Coast: Diverse Converging Issues

Thad Allen, Senior Vice President at Booz Allen Hamilton, supports the firm's work with the Departments of Justice and Homeland Security. He leads the development of thought leadership and client engagement regarding the future direction of law enforcement and homeland security. Mr. Allen completed his distinguished career in the U.S. Coast Guard as its 23rd Commandant. In 2010, President Barack Obama selected Mr. Allen to serve as the National Incident Commander for the unified response to the Deepwater Horizon oil spill in the Gulf of Mexico. Working closely with the U.S. Environmental Protection Agency, the Departments of Defense, Interior, Homeland Security, Commerce, and Health and Human Services, state and local entities, and BP, he sought to bring a unity of effort to response operations. Prior to his assignment as Commandant, Mr. Allen served as Coast Guard Chief of Staff. During his tenure in that position, in 2005, he was designated Principal Federal Official for the U.S. government's response and recovery operations in the aftermath of Hurricanes Katrina and Rita throughout the Gulf Coast region. Other Coast Guard assignments included Commander, Atlantic Area, where in 2001 he led the Coast Guard's Atlantic Area forces following the September 11 attacks.

Marcia McNutt received a bachelor's in Physics from Colorado College, Phi Beta Kappa, Summa Cum Laude, and a doctorate in Earth Sciences from Scripps Institution of Oceanography. Dr. McNutt previously served as professor of Geophysics at Massachusetts Institute of Technology and as President and Chief Executive Officer of the Monterey Bay Aquarium Research Institute (MBARI), in Moss Landing, CA. Dr. McNutt has sailed as chief scientist on numerous oceanographic research voyages and published more than 100 peer-reviewed scientific articles. In 2009 she became Director of the United States Geological Survey, where her responsibilities include leading the Nation's largest water, earth, biological science and civilian mapping agency in its mission to provide the scientific data that enable decision makers to create sound policies for resource management and reducing vulnerability to natural hazards. The American Geophysical Union awarded Dr. McNutt the Macelwane Medal in 1988 for research accomplishments by a young scientist and the Maurice Ewing Medal in 2007 for her significant contributions to deep-sea exploration. The Coast Guard awarded her their Meritorious Service Medal, the second highest honor open to civilians, for her efforts during the Deepwater Horizon oil spill.

Jerome Zeringue currently serves as the Executive Director of the Louisiana Coastal Protection and Restoration Authority (CPRA). The CPRA's mandate is to develop, implement, and enforce a comprehensive coastal protection and restoration master plan. The CPRA is also directed to implement the integration of hurricane protection, storm damage reduction, flood control, infrastructure, and coastal protection and restoration efforts in accordance with the master plan and annual plans. In partnership with federal, state, and local government, including levee districts, the CPRA is working to establish a safe and

sustainable coast to protect Louisiana's communities, the nation's critical energy infrastructure, and our bountiful natural resources for generations to come. After serving as the Executive Director of the Terrebonne Levee and Conservation District for over a decade, Zeringue joined the Governor's Office of Coastal Activities in May 2008 to serve as Director of Policy and Programs. Soon thereafter, Zeringue assumed the role of Deputy Executive Director of the CPRA. In addition, Zeringue serves as Louisiana's Incident Commander for coastal flood fighting during hurricane and high water events. Zeringue was named the Management Team Chair of the Gulf of Mexico Alliance in 2011, taking an active lead on behalf of Governor Bobby Jindal. A native of Thibodaux, Zeringue holds a bachelor's degree in Zoology and a master's degree in Fisheries Biology both from Louisiana State University.

Nancy N. Rabalais, Ph.D., is a Professor and Executive Director at the Louisiana Universities Marine Consortium in Cocodrie, Louisiana, USA. Dr. Rabalais' research interests include the dynamics of hypoxic environments, interactions of large rivers with the coastal ocean, estuarine and coastal eutrophication, and science policy. She serves the Board of Trustees for the Consortium for Ocean Leadership, the Council for the University National-Oceanographic Laboratory System, the National and Southern Associations of Marine Labs, and the Board of Directors for GCOOS the Gulf of Mexico Coastal Ocean Observing System, and is Chair of the National Sea Grant Advisory Board. Dr. Rabalais is a MacArthur Fellow, American Association for the Advancement of Science Fellow, an Aldo Leopold Leadership Program Fellow, Past Chair of the Ocean Studies Board and Past President of the Estuarine Research Federation, and has received several awards for the research that she and her collaborators have conducted on hypoxia in the northern Gulf of Mexico. She earned her Ph.D. in Zoology from The University of Texas at Austin in 1983.

Bernard Goldstein is emeritus professor of environmental and occupational health and former dean of the University of Pittsburgh Graduate School of Public Health. Dr Goldstein is an elected member of the National Academies of Science Institute of Medicine (IOM). He has chaired numerous national and international committees related to environmental health including the recent NRC Committee on Sustainability and the US EPA. Currently he chairs the Coordinating Committee of the Gulf Region Health Outreach Program; the UNEP Emerging Issues Working Group on Chemical Governance; and the Society of Toxicology Issues Writing Team on Shale Gas. His experience includes service as Assistant Administrator for Research and Development of the U.S. Environmental Protection Agency, 1983-1985. His current activities are primarily related to shale gas and to sustainability.

Plenary 3: Aridity and Drought and their Consequences

Veronica Johnson is a meteorologist with News4's weather team. Her forecasts can be seen weekdays on News4 at 4 and on NBCWashington.com. She also hosts America This Week, a weekly 30-minute news show that airs both on NBC4 and on NBC Washington Nonstop. Prior to joining News4 in 2000, Johnson worked in Baltimore, both at WMAR and WBFF, in New York at WABC, and at The Weather Channel. She has contributed to local radio shows and programs on The Discovery Network. Johnson holds a degree in Atmospheric Science from the University of North Carolina at Asheville. She is an American Meteorological Society (AMS) seal holder and served on the AMS board from 2005 until 2007. Johnson is also a board member for the Inaugural Board of Enterprise Communication and serves as its Chair. Johnson also serves on the advisory board of Eyes on the Environment and is a member of the AMS Station Scientist Group.

Margaret Hiza Redsteer is currently a scientist at the USGS Flagstaff Science Center conducting work on climate change, drought, and related impacts to Native American communities in U.S. southwestern drylands. Margaret leads an interdisciplinary team of researchers that conduct studies on Navajo tribal lands and adjacent communities to examine linkages between geology, climate and land use history. This work provides a foundation for evaluating flood hazards and risks associated with dust and sand storms. In addition, Dr. Redsteer has also published studies that combine traditional knowledge with conventional

physical data sets to examine how climate change is affecting drought impacts in remote and poorly monitored regions of the U.S. She is a lead author on the IPCC (Intergovernmental Panel on Climate Change) working Group II Fifth Assessment Report chapter on Adaptation, Planning and Implementation, and is coordinating lead author for "Unique Challenges Facing southwestern Tribes," chapter 17 in the southwest technical report for the National Climate Assessment.

Luc Gnacadja is the Executive Secretary of the United Nations Convention to Combat Desertification (UNCCD). Since becoming Executive Secretary of the UNCCD in October 2007, Mr. Gnacadja has dedicated himself to mobilizing political will for the fight against desertification, land degradation and to mitigate the effects of drought. As a passionate advocate for land and soil, he is calling for a goal of sustainable land use for all and by all along with a target of Zero Net Land Degradation, to secure the continuing availability of healthy and productive land for present and future generations. Born in Benin, he is an architect by profession. He served as Minister of Environment, Housing and Urban Development of Benin from 1999 to 2005. He gained firsthand knowledge of the UNCCD process, over these years, in his capacity as Head of Delegation to the Conference of the Parties to the UNCCD, to UNFCCC and to CBD. In March 2003 he was honored with the "2002 Green Award" in Washington by the World Bank.

Donald A. Wilhite is a Professor of Applied Climate Science at the University of Nebraska-Lincoln. Prior to August 2012, Dr. Wilhite served as director of the School of Natural Resources, a position he held from 2007 to 2012. Previously, Dr. Wilhite was the founding Director of the National Drought Mitigation Center in 1995 and the International Drought Information Center in 1989 at the University of Nebraska-Lincoln. His research and outreach activities have focused on issues of drought monitoring, planning, mitigation, and policy and the use of climate information in decision making. He has authored or co-authored more than 140 journal articles, monographs, book chapters, and technical reports. Dr. Wilhite currently serves as chair of the International Organizing Committee for the High-level Meeting on National Drought Policy being organized for March 2013 by the World Meteorological Organization, the Food and Agriculture Organization and the U.N. Convention to Combat Desertification.

Roger S. Pulwarty is the chief of the Climate and Societal Interactions Division and the director of the National Integrated Drought Information System at NOAA. His research focuses on climate variability and change, social and environmental vulnerability, and on developing climate information services in the United States, Latin America, and the Caribbean. Pulwarty is a lead author on the IPCC Fourth Assessment Report (2007), the IPCC Special Report on Managing Extreme Events and Disasters (2011), and the UNISDR Global Assessment of Disaster Risk Reduction (2011).

Keynote Address

Amanda Ripley is a literary pragmatist. In her book and in her work for TIME and other magazines, she obsessively investigates the mysteries of human behavior—not just what we do, but why. For TIME and *The Atlantic*, she has chronicled the stories of American kids and teachers alongside groundbreaking new research into education reform. From New Orleans, La., she covered Hurricanes Katrina and Rita, helping TIME win two National Magazine Awards for stories that detailed the years of dysfunction leading up to the storms. She covered 9/11 from Manhattan, the sniper attacks from Washington and the catastrophic 2003 European heat wave from Paris. Over the years, Amanda has written or contributed to more than a dozen TIME cover stories, including Person-of-the-Year profiles of Bill and Melinda Gates, Rudy Giuliani, FBI Whistleblower Coleen Rowley and WorldCom Whistleblower Cynthia Cooper. She is currently an Emerson fellow at the New America Foundation. Amanda's book, *The Unthinkable*, was published in 15 countries. It was described by *TheNew York Times* as "a fascinating and useful new book" and by NPR as "The thinking person's manual for getting out alive." In 2012, Amanda executive produced *Surviving Disaster*, a PBS documentary based on the book.

SYMPOSIA

Tuesday, January 15, 2013: Sets A and B

*Invited

On Tuesday, January 15, two sets of concurrent symposia will provide focused discussion on critical cross-cutting topics. Symposia are 90 minute mini-plenary sessions comprised of coordinated presentations by a 3-5 diverse experts to provide insightful perspectives on the topic of the session, followed by moderated discussion among the speakers and a brief question-and-answer period and open discussion with all session attendees. Unlike breakout workshops, symposia do not develop recommendations for action.

Symposia A: 2:00 p.m. to 3:30 p.m.

1. **International Roles in Environmental Emergencies**
   (Polaris A)
   This session will discuss the elements necessary for strengthening prevention and response to environmental emergencies at international, regional, and local levels. Panelists will discuss the trends, challenges, and opportunities available through the variety of mechanisms designed to reduce communities' vulnerability to natural disasters and environmental emergencies.
   Moderator:
   Rene Nijenhuis, Officer-in-Charge/Humanitarian Affairs Officer, Environmental Emergency Section (joint UNEP/OCHA)
   Discussants:
   Muralee Thummarukudy, Senior Programme Officer (Disaster Risk Reduction), United Nations Environment Programme (UNEP)
   Dennisses Valdes, Deputy Director, US EPA Environmental Response Team
   Kjell Larsson, Chair of Advisory Group on Environmental Emergencies (AGEE)
   François Grunewald, Coordinator, Study on Disaster Preparedness, URD Group
   Fran Schulberg, UNEP Division of Technology, Industry and Economics
   Nathan Smith, Senior Manager, ICF International

2. **Tools to Identify Vulnerability to Disasters: Part 1**
   (Hemisphere B)
   This session will address the many ways in which analytical mapping tools (including satellite imagery) can be used to provide decision support to policy makers to help them mitigate and/or respond to ecological disasters. Discussants will also initiate a higher level discussion about the sorts of long-term capabilities U.S. and international decision makers will need to improve disaster planning and response efforts, and the sorts of investments required to build these capabilities.
   Moderator:
   Nancy E. Brune, Non-Residential Senior Fellow, Natural Security Program, Center for a New American Security
   Discussants:
   Joshua Busby, Lead Researcher, Climate Change and African Political Stability, LBJ School of Public Affairs, University of Texas—Austin
   Colleen "Kelly" McCue, GeoEye Foundation
   John Roskovensky, Sandia National Laboratories, U.S. Department of Energy
   Henry McDonald, Chair of Excellence in Computational Engineering, College of Engineering & Computer Science, The University of Tennessee at Chattanooga

3. Inundation Risk and Vulnerability Assessment

(Oceanic B)

We will provide an overview of powerful new hazard assessment and coastal inundation risk mapping tools that serve as important risk assessment and planning tools. Our panel will provide insight on the various components of community resilience particularly as it relates to coastal inundation and the use of flood information. When it comes to planning for sea level change impacts, the "one-size-fits-all" approach is not appropriate. There are simply too many scientific variables, risk perceptions, and political implications unique to each location to consider. For this reason a site-specific scenario approach is preferred. Considering a range of scenario possibilities lets stakeholders incorporate appropriate variables for their community when deciding how to best prepare for the future. We will also present the results of a coastal inundation risk and vulnerability study in Honolulu, Hawaii.

Moderator:

Dolan Eversole, University of Hawai'i Sea Grant College Program; NOAA Coastal Storms Program Regional Coordinator

Discussants:

Karl Kim, Director, FEMA National Disaster Preparedness Training Center; Professor of Urban and Regional Planning, University of Hawai'i, Manoa

Margaret A. Davidson, NOAA Office of Ocean and Coastal Resource Management Acting Director

Stephanie Lavey, Nicholas School of the Environment, Duke University

Dennis Hwang, Faculty, University of Hawaii Sea Grant College Program

4. Preventing Catastrophic Losses to the Cascading Effects of Forest Fire

(Continental C)

The debate is how to return fire to the landscape in a way that satisfies public opinion, aids the "fire climax" ecosystems, and not add particulate matter to the atmosphere whilst preventing atmospheric pollution and widespread property/home loss. We cannot control fire ignition any more than we can control the path of a hurricane or a tornado. But can control where and how a fire spreads. The debate is about preventing fires from burning areas we do not want them to burn. Yet the public is still at odds with mitigation science.

Moderator:

Gary Oram, University of Montana

Discussants:

Gray Reynolds, Former Deputy Chief, U.S. Forest Service

Lisa Warnecke, President, GeoManagement Associates, Inc. and Adjunct Professor, SUNY College of Environmental Science & Forestry

Miranda Mockrin, Research Biological Scientist, U.S. Forest Service

5. Lifeline Services at the Interface of the Built and Natural Environment

(Oceanic A)

Communities are highly dependent on certain "lifeline services" that provide energy, water, wastewater treatment, food, and communications. During disasters, disruption of lifeline services can significantly increase the scale and longevity of economic and social disruption, including loss of human life. This session will explore how critical vulnerabilities in lifeline services can be identified and what sort of actions will result in more resilient systems and communities. Discussants will explore our current tools and capabilities to identify problems far in advance and when major storms are imminent. They will also address response and recovery issues, as well as the major challenges that confront researchers and policymakers today. The session will provide useful background to breakout workshop 03: Grid Collapse: Electric Power and Disasters.

Moderator:

Paul Domich, Owner, CIP-Consulting, Inc.

Discussants:

Mary Lou Zoback, Consulting Professor, Department of Geophysics, School of Earth Sciences, Stanford University

Thomas Denis O'Rourke, Thomas R. Briggs Professor, Civil & Environmental Engineering, Sibley College of Engineering, Cornell University

Craig Gordon, Program Manager, National Infrastructure Simulation and Analysis Center (NISAC), Department of Homeland Security

Philip Palin, Coordinator, Regional Catastrophic Preparedness Grant Program, Mid-Atlantic Supply Chain Resilience Project

6. Ecosystem Impacts from Nuclear Energy: Lessons from Chernobyl and Fukushima

(Polaris B)

The nuclear industry, primarily those sectors producing energy or weapons, has long been the subject of intense scrutiny regarding the impacts that released radiation can have on the environment. From the earliest, seminal research demonstrating the negative effects that radiation can have on animals and humans (i.e. death, birth defects, genetic mutations, and cancer) to short- and long-term studies following radiological disasters or the atomic bombings, concerns regarding the effects on human and ecological health have been at the fore when radioactive material enters the environment.

Legacy contamination in the United States and elsewhere resulting from years of nuclear material processing for fuel or weapons has created a number of sites where ecological impacts remain a concern. These sites may be viewed as potential, insidious chronic disasters. Substantially more visible in terms of possible immediate and long-term ecological effects are those sites where technological, acute disasters have occurred. This includes the radioactive contamination released by such disasters as Chernobyl in 1986, and Fukushima in 2011. This symposium will discuss a spectrum of ecological effects caused by acute and chronic disasters resulting from the accidental or intentional release of radioactive material into the surrounding natural environment.

Moderator:

Jeffrey K. Wickliffe, Assistant Professor, Tulane University

Discussants:

Robert J. Baker, Professor, Texas Tech University

Stacey Lance, Assistant Research Scientist, Savannah River Ecology Laboratory

O. E. (Gene) Rhodes, Director, Savannah River Ecology Laboratory

Timothy Mousseau, Professor of Biological Sciences, University of South Carolina

7. Building a New Framework for Understanding and Mitigating Disaster Impacts on Ecosystems

(Continental B)

This session will explore the science of disturbance and resilience. Case studies will investigate how impacts on humans are affected through natural resources and ecosystem dynamics, and why understanding these processes is key in planning and response. It will set the stage for the following companion symposium (S 18) which expands on the ecological linkages to consider the valuation of ecosystem services and how that in turn impacts security. The session serves as an introduction to breakout workshop 09.

Moderator:

Deborah Brosnan, President, Brosnan Center; Environment and Policy Scientist, U.C. Davis One Health Institute

Discussants:

Dwayne Meadows, NOAA Endangered Species Conservation Division Fish Management Specialist

Michael Ziccardi, U.C. Davis School of Veterinary Medicine

Steven Murawski, Population Dynamics/Marine Ecosystem Analysis Professor and Downtown Progress-Peter Betzer Endowed Chair, Biological Oceanography, University of South Florida, College of Marine Science

8. Envisioning Resilient and Sustainable Communities

(Horizon B)

Community resilience and sustainability are closely linked. **Sustainability** efforts tend to focus on the long view, developing the capacity to support the needs of a growing population in the face of climate change, resource scarcity, and other environmental and economic pressures. **Resilience** efforts tend to focus on sudden events, developing the capacity to absorb and recover from shocks such as natural and anthropogenic disasters or interruptions in critical services. Both are key considerations in the planning and management of community needs, including transportation, infrastructure, land use, energy and water supply, waste management, local commerce, job creation, poverty alleviation, and emergency preparedness.

In a complex and turbulent world, unforeseen conditions can lead to unintended and cascading consequences, often undesirable ones. Therefore, **resilience is a prerequisite for realization of sustainability goals**. Community leaders need to strengthen natural capital, social capital, and economic capital so that residents and local businesses can survive, adapt, and flourish in the face of emerging trends and challenges. This symposium will explore how communities can align their efforts to achieve both resilience and

sustainability.
Moderator:
Alan Hecht, Director for Sustainability, Office of Research and Development, EPA
Discussants:
Joseph Fiksel, Executive Director, Center for Resilience, The Ohio State University
Mike Slimak, National Program Director, Sustainable and Healthy Communities Research Program, Office of Research and Development, EPA
David Orr, Professor and Special Assistant to the President on Sustainability and Environmental Affairs, Oberlin College
Peter Jutro, Deputy Director for Science and Policy, National Homeland Security Research Center, Office of Research and Development, EPA
Kathryn Nieland, Partner, PriceWaterhouseCoopers, LLP

9. Climate Change, Communities, and Risk: Research from the U.S. Global Change Research Program and National Climate Assessment

(Hemisphere A)

This session will highlight two major activities of the US Global Change Research Program (USGCRP), which coordinates and integrates federal research on changes in the global environment and their implications for society. These activities include the recently-released National Global Change Research Plan 2012-2021, which presents an ambitious vision for continuing global change research and coordination across 13 Federal agencies, and the National Climate Assessment, an important resource for understanding and communicating climate change science and impacts in the United States. Participants will have the opportunity to ask questions and provide feedback about USGCRP, the National Climate Assessment, and ways in which USGCRP can better inform sustainability planning and decision making.

Moderator:
Emily Therese Cloyd, Public Participation and Engagement Coordinator, National Climate Assessment, U.S. Global Change Research Program
Discussants:
Laura Petes, Ecosystem Science Advisor, NOAA Climate Program Office
William Solecki, CUNY Institute for Sustainable Cities, Hunter College of CUNY
William Hohenstein, Director, Climate Change Program Office, US Department of Agriculture
Lynne Carter, Southern Climate Impacts Planning Program, Louisiana State University
Gregg Garfin, Deputy Director for Science Translation & Outreach, Institute of the Environment, University of Arizona

10. Applying Models of Human Behavior and Memory in Disasters Across Space and Time

(Horizon A)

Disasters occur in different spatial and temporal frames, and our ability to understand, respond to, and mitigate disaster events is in large part determined by this space-time context. Diachronically, disasters can be perceived, remembered, and chronicled over many generations, even showing up in the archaeological record. Long-term disaster events or repeated events over space-time can leave a social memory that gives context as to how social groups and communities respond, adapt, or fail in the face of disaster. Synchronically, disaster response can be perceived on the level of shared individual experiences and memories, which collectively condition the ability of those individuals and the communities they comprise to adapt to and overcome disasters.
This symposium conceptualizes various models of space-time disaster response through the diverse and culturally mediated perspectives of the individual responder, community, and society. It proposes models of human response from psychological, political-economic, historical, ecological, and societal perspectives. Lessons learned from these models and their application to real-world examples, have significant value in the shaping of disaster response policy, community resilience to disaster, and life-saving familial and individual decision making in response to a disaster event.

Moderator:
Marcy Rockman, Climate Change Adaptation Coordinator for Cultural Resources, National Park Service
Discussants:
Christopher Dyer, Dean of Academic Affairs, Missouri State University, West Plains
George Hambrecht, Assistant Professor of Anthropology, University of Maryland College Park

Claudio Cioffi-Revilla, Professor of Computational Social Science and Director, Center for Social Complexity, George Mason University
Judith Mitrani-Reiser, Assistant Research Professor of Civil Engineering, Johns Hopkins University
Daniel J. Barnett, Assistant Professor, Johns Hopkins University, Bloomberg School of Public Health

11. Florida: A Statewide Case Study of Alternative Approaches to Adaptation and Recovery

(Polaris C)

The purpose of this session is to identify responses that have recently been developed for climate change adaptation and to explore new approaches in which organizational measures and practical "on the ground" experience can be integrated. The panelists will bring perspectives from municipal-level management, regional planning, county-level natural resource management, private energy industry (NextEra energy), statewide Florida Climate Institute, and state level leadership with a focus on Florida, one of the most vulnerable and "at risk" states in the nation. The purpose of the panel is to stimulate discussion of current actions and the development of additional innovative initiatives.

Moderator:

Mantha Mehallis, Director and Professor, Environmental MBA, Management Programs, Florida Atlantic University

Discussants:

Susanne Torriente, Assistant City Manager, City of Ft. Lauderdale, Florida
Jennifer Jurado, Director of Natural Resources Planning & Management Division, Environmental Protection & Growth Management Department, Broward County, FL
Rayburn Butts, Environmental Services Manager, Florida Power & Light
Leonard Berry, Director, Florida Center for Environmental Studies
Steve Adams, Senior Advisor, Climate Change Institute

Symposia B: 3:45pm to 5:15pm

12. Tools to Identify Vulnerability to Disasters: Part 2

(Hemisphere B)

This session will discuss existing hazard identification and risk mapping tools and the mechanisms available for sharing information with other experts and emergency responders for more transparent and comprehensive reporting. It will address how these tools can better prepare experts for deployment, how they can be strengthened, and how they can be incorporated into contingency planning and disaster management efforts at national and local levels.

Organizer:

Rene Nijenhuis, Humanitarian Affairs Officer, Environmental Emergency Section (joint UNEP/OCHA)

Moderator: ***Wendy Cue***, Chief, Environmental Emergency Section (joint UNEP/OCHA)

Discussants:

Birgitta Liljedahl, Swedish Defense Research Agency (FOI)
Leif Jonsson, Swedish Civil Contingencies Agency (MSB)
Elisabeth Krausmann, Joint Research Centre of the European Commission (JRC)
Charles Kelly, ProAct Network

13. Wildland Fire in a Changing Climate

(Oceanic A)

Our goal is to develop actionable items that enhance timely and effective evidence-based decisions that can be implemented a timely manner. We will discuss scientific approaches for developing unified responses. Although we will include case-study examples, our focus is national. Topics covered include climate change and needed changes in current practice, and an overview of some well-documented and useful scientific findings. These findings can help land managers, policy makers, and interested parties make more informed decisions. We will discuss ways to implement timely, well-informed corrective actions that will enhance ecological and community resilience in the face of climate change.

Moderator:

Carlos Rodriguez-Franco, USDA Forest Service, Director, Forest Management Sciences

Discussants:
Elizabeth Reinhardt, USDA Forest Service, National Program Leader for Fire Research
Don McKenzie, USDA Forest Service, Research Ecologist
David Peterson, USDA Forest Service,Fire and Environmental Applications Team Leader

14. Military Bases and their Communities

(Continental A)

Marstel-Day, LLC is assisting the Department of Defense to implement mission sustainment imperatives through the development and application of Encroachment Vulnerability Assessments. This session explores the goals, objectives, processes and outcomes of the Encroachment Vulnerability Assessments and highlights the relationship between preserving military missions and protecting the natural and built environment in and around military bases. This session will include examples of how military bases and their communities work together in the context of disaster response and identifying vulnerabilities to disasters. These examples include: the United States Air Force Academy, where Marstel-Day evaluated the mission impacts resulting from potential and actual forest fires near the Academy; and Joint Base Langley Eustis, where Marstel-Day analyzed the impacts associated with sea-level rise and how future climate change could impact both the economy and military operations in the Hampton Roads area.

Moderator/Discussant:
Lynn Engelman, AF/A7CII
Additional Discussants:
Col Ed Oshiba, AF/A7CI
David Epstein, AF/A7CX*

15. Coastal Communities: Planning for Resilience, Adaptation and Sustainability – Lessons from the Northeast and Superstorm Sandy

(Hemisphere A)

We will consider resilience from the perspective of disaster prevention and disaster response in the context of vulnerable urban areas. Extreme weather events are predicted to increase dramatically in our lifetime, both in frequency and in severity. More careful and prescient planning can prevent communities from the worst of harm caused by such changes, and other natural disasters, and create effective plans for long-term sustainability in coastal cities. We will consider the information needed by municipalities to plan for adequate resilience; what should be accomplished toward proactive planning and investment in vulnerable communities; and identify the best practices for the rapidly growing coastal cities of developing countries.

This symposium will focus on our insights from cities and communities in the Northeast United States. As Hurricane Sandy has just demonstrated, the current modus operandi in most communities is to focus on risk analysis and subsequent disaster recovery rather than risk reduction and prevention. The panel will bring the perspectives of science, city governance, civil engineering, planning, and economics to this topic. We will examine how decisions are made, what factors are important when addressing change, and what we can learn from best practice approaches.

Organizers:
Antje Danielson, Tufts Institute of the Environment, Tufts University; and ***Emily Geosling,*** Water: Systems, Science and Society Program, Tufts University
Moderator:
Kent Portney, Professor, Political Science, Tufts University
Discussants:
Paul Kirshen, Research Professor of Civil Engineering, University of New Hampshire
Jack Wiggin, Director, Urban Harbors Institute at University of Massachusetts, Boston
Samuel Merrill, Director, New England Environmental Finance Center; Associate Research Professor, Edmund S. Muskie School of Public Service, University of Southern Maine
Margaret Davidson, NOAA Office of Ocean and Coastal Resource Management Acting Director

16. Climate, Environment and Readiness (CLEAR) Action Plan for Virginia – Incorporating Expertise from California's Bay Area and Philadelphia

(Horizon A)

The Climate, Environment and Readiness Action Plan creates a framework to discuss and resolve climate change-imposed risks on families, cultural sites, economy, the natural resource base, and dwindling green spaces for a 5-jurisdiction Virginia region. The University of

Mary Washington leads the effort with support from the Fredericksburg Regional Chamber of Commerce, local business representatives, governmental bodies, private industry, and non-profit groups. This panel also brings in speakers from other cities with climate adaptation plans, including Philadelphia and San Francisco. Speakers will address the fact that large-scale environmental issues like natural disasters cannot be addressed by one entity alone. It is imperative that the devastating effects of a natural disaster are managed on the regional level. The coordination required for regional action cannot wait until after an event has occurred. Regional disasters require regional efforts and regional efforts require comprehensive planning.

Moderator:

Rebecca R. Rubin, President and CEO Marstel-Day LLC

Discussants:

Richard Finkelstein, Dean of Arts and Sciences, University of Mary Washington

Susan Spears, President, Fredericksburg Regional Chamber of Commerce

H. Lee Halterman, Partner, Marstel-Day LLC

Arrietta Chakos, Principal, Urban Resilience Strategies

Alex Dews, Policy and Program Manager, Mayor's Office of Sustainability, City of Philadelphia

17. Mapping a Path to Resilience: The Intersection of Environmental Disasters, Ecosystem Services, & Security – Where Do We Go from Here?

(Horizon B)

This session will focus on integrating our understandings of environmental disasters, valuation of ecosystem services, and security (environmental, national, social) as a means to maintaining or building ecological and social resilience to environmental disasters. It will present tools and approaches for assessing environmental disasters that can be used to inform policy, mitigation, and land-use planning decisions.

Moderator:

Tiff van Huysen, Ecologist, USDA Forest Service

Discussants:

David Saah, Managing Principal, Spatial Informatics Group

Hugh Safford, Regional Ecologist, USDA Forest Service

Maureen McCarthy, Executive Director, Tahoe Science Consortium

Dale Cox, Regional Program Officer and Hazards Coordinator, Pacific Region, USGS

18. Enhancing Preparedness and Building Resilience in the Rapidly Changing Arctic

(Continental C)

Originally not expected to become so disruptive until the mid-21st century and beyond, changes in the Arctic have been occurring much more rapidly than past projections, increasing the onset of impacts and the risks and likelihood of disasters in an area of the world that is ecologically fragile, geographically remote, and for which there are many governance challenges. Warming of the Arctic, thawing of the permafrost with associated release of carbon dioxide and methane, and melting of its snow and ice will not only amplify changes in the region, but also alter mid-latitude weather, amplify the pace of sea level rise around the world, and accelerate the onset of climate change impacts around the world. This symposium will summarize the changes occurring in the Arctic and the challenges these pose for efforts of Arctic nations and peoples to enhance preparedness and build resilience in the face of intensifying impacts from climate change, sea ice loss, sea level rise, and the increasing risks and likelihood of accidents and disruptive climate impacts.

Organizers:

Michael MacCracken, Chief Scientist for Climate Change Programs, Climate Institute

Moderators:

Robert Corell, Principal, Global Environment & Technology Foundation

Discussants:

David Kennedy, Assistant Administrator, National Ocean Service, NOAA

Ambassador David Balton, Deputy Assistant Secretary for Oceans and Fisheries, U.S. Department of State

Joel Clement, Director, Office of Policy Analysis, U.S. Department of Interior

John Englander, Author, "High Tide on Main Street: Rising Sea Level and the Coming Coastal Crisis"

19. Learning from Disasters: Environmental Disasters as Teachable Moments

(Continental B)

This session explores how environmental disasters have been and can be used as "teachable moments". Case studies of Superstorm Sandy, the Deepwater Horizon Gulf of Mexico oil disaster, and the extinction of the Passenger Pigeon will show how educators use environmental disasters to raise awareness of environmental problems and to develop solutions.

Organizer:

David Blockstein, Senior Scientist, National Council for Science and the Environment (NCSE)

Moderator:

Kevin Coyle, Vice President for Education, National Wildlife Federation (NWF)

Discussants:

David Blockstein, NCSE

Cutler J. Cleveland, Professor, Center for Energy and Environmental Studies, Boston University

Hunter Cutting, Director of Strategic Communications, Climate Nexus

20. Informing Disaster Resilience Policy

(Oceanic B)

While engineered systems can have a significant impact on the resilience of a system to disaster, the decisions that humans make and their behaviors before and after a disaster occurs can have an equally significant impact. This discussion will focus on the development and application of scientific methods that can be used to inform the development of climate and disaster resilience policies. Given the increasing frequency of disasters and shrinking budgets for mitigation and response, the use of the methods to inform policy and human behavior is key to ensure effective use of limited resources. Session discussants will summarize several models for improving the resilience of infrastructure systems.

Moderator:

Nancy E. Brune, Non-Residential Senior Fellow, Natural Security Program, Center for a New American Security

Discussants:

Jeremy P. Brashear, The Brashear Group LLC

Matt Fuchs, Deputy Director, Resilience Policy, DHS

Eric Vugrin, Principal Member, Resilience and Regulatory Effects Department, Sandia National Laboratories

Drake Warren, Rand Corporation

21. Women and Climate Change Disaster Resilience: Local to Global Ecological Impacts and Strategies

(Polaris B)

This session will look at the impacts of climatic change disasters such as drought, severe weather events and sea level rise and flooding. We will show how women are both uniquely impacted, and at the same time have developed community-based resilience strategies to minimize the impacts. Experts from the US, Africa, Asia, and Oceania regions will relay their personal stories about specific climate-impact disaster events, their approaches to helping their communities to being resilient in coping with these events, and specific steps in planning for them and being resilient in the future.

Moderator:

Vicky Markham, Director, Center for Environment and Population (CEP)

Discussants:

Tracy Mann, Director, Climate Wise Women

Nancy Kete, Managing Director for Resilience and Climate Change, The Rockefeller Foundation

Lorena Aguilar, Global Senior Adviser, International Union for the Conservation of Nature (IUCN)

Kim Lovell, Director, Global Population and Environment Program, Sierra Club

Thilmeeza Hussain, former UN Deputy Permanent Representative to the Maldives

22. No Regrets Resilience along the Gulf Coast

(Polaris C)

This session will bring together experts in risk research and practitioners in policy, planning, management, and restoration, as well as community members to explore how states, civil society, and others are developing plans that will lead to communities that are resilient to frequent and varied forms of natural disasters. The panel will seek to describe the factors that create vulnerability, disasters that have occurred, the media reaction, what kinds of response occurred

and why, and ongoing efforts to create a more resistant, resilient system that can mitigate consequences or prevent the effects of future hazards from becoming disasters. Panelists will discuss how we can best prepare to respond to a disaster, avoid rash decisions that may lead to ineffective use of limited funding or resources, and provide pre-disaster planning based in the best available science and engineering. Major topics will include:

- differences in planning versus disaster response;
- challenges to pre-disaster implementation;
- the role of climate change to not only address the disaster of today but to alter incorporate future conditions; and,
- the development and implementation of Louisiana's 2012 Coastal Master plan.

Organizers:

Natalie Snider, Coastal Resources Scientist Senior, Planning Division, Coastal Protection and Restoration Authority;
Denise Reed, Chief Scientist, The Water Institute of the Gulf; and ***Sandra Whitehouse,*** Senior Advisor, Ocean Conservancy

Moderator:

Charles "Chip" Groat, Director, Center for International Energy and Environmental Policy, The University of Texas at Austin and President and CEO, The Water Institute of the Gulf

Discussants:

Sandra Whitehouse, Senior Advisor, Ocean Conservancy
Kyle Graham, Deputy Director, Coastal Protection and Restoration Authority
Henry Willis, Associated Director RAND Homeland Security and Defense Center, RAND Corporation
Scott Frickel, Associate Professor, Sociology, Washington State University

23. Unmeasured Consequences of Major Natural Disasters and Conflict

(Polaris A)

It is common in the study of large-scale natural disasters and war to focus only on response to the direct consequences of the event. While direct consequences such as reported deaths and severe injuries easily captivate the public's attention, in the majority of major crises more people die and suffer long-term from indirect and preventable outcomes and yet only recently become the subject of study and research. This session will discuss findings from recent wars and major natural disasters and open discussion on what is required to better understand and mitigate these preventable outcomes in the future

- Defining Neglected Indirect Consequences of Disasters and Conflict.
- Case example from the Conflict in the Congo.
- Case study from the Haitian Earthquake & Hurricane Katrina.

Moderator:

Frederick M. Burkle, Jr., Senior Fellow & Scientist, Harvard Humanitarian Initiative, Harvard University; Senior International Public Policy Scholar, Woodrow Wilson International Center for Scholars

Discussants:

Richard Garfield, Clinical Professor, Schools of Nursing & Mailman School of Public Health Public Health, Columbia University
Leslie Roberts, Associate Clinical Professor of Population & Family Health, Mailman School of Public Health, Columbia University
David Abramson, Deputy Director & Director of Research, The National Center for Disaster Preparedness, Assistant Professor of Clinical Sociomedical Sciences, Mailman School of Public Health, Columbia University
Erik R. Svendsen, Associate Professor, Tulane University School of Public Health and Tropical Medicine, Department of Global Environmental Health Sciences

Wednesday, January 16, 2013

Detailed Agenda

7:15 a.m. **Registration, Continental Breakfast, Exhibition and Scientific Poster Presentations open**

8:20 a.m. **Introduction:** ***Peter Saundry***, Executive Director, National Council for Science and the Environment (NCSE)

8:30 a.m. **Keynote Address:** ***Mark Tercek*****,** President and CEO, The Nature Conservancy

9:00 a.m. **Keynote Address:** ***Ellis M. Stanley, Sr.,*** Emergency Management Expert

9:30 a.m. **Plenary 4: Feedbacks: Environmental Changes and Environmental Disasters**
Moderator: ***Juliet Eilperin***, National Environmental Reporter, *The Washington Post*

- ***Gary Machlis,*** Science Advisor to the Director, U.S. National Park Service
- ***Kathryn Sullivan***, Assistant Secretary of Commerce for Environmental Observation and Prediction, Deputy Administrator and Acting Chief Scientist, NOAA
- ***Tom Tidwell***, Chief, U.S. Forest Service
- ***Anthony Slatyer,*** First Assistant Secretary, Water Reform Division, Department of Sustainability, Environment, Water, Population and Communities

10:30 a.m. **Plenary 5:Climate Change and Disasters**
Moderator: ***Heidi Cullen***, Chief Climatologist, Climate Central

- ***Amy Luers***, Director, Climate Change, Skoll Global Threats Fund
- ***Doug Brown,***Director, Agriculture and Food Security, World Vision International
- ***Kristie Ebi***, Consulting Professor, Department of Medicine, Stanford University; former Executive Director, IPCC WGII (Impacts, Adaptation, and Vulnerability) Technical Support Unit
- ***Jim Murley,*** Executive Director, South Florida Regional Planning Council

11:30 a.m. **Plenary 6: The "Human Factor" in Environmental Disasters**
Moderator: ***Andrew Revkin***, Journalist and Senior Fellow for Environmental Understanding, Pace University

- ***David Kaufman***, Director, Office of Policy and Program Analysis, Federal Emergency Management Agency (FEMA)
- ***Gerald Galloway***, Research Professor, A. James Clark School of Engineering, University of Maryland
- ***Joe Ruiz***, UPS Corporate Contributions Manager and Humanitarian Relief Program Manager, The UPS Foundation
- ***Kathleen Tierney,*** Director, Natural Hazards Center, University of Colorado

12:30 p.m. **Lunch on your own – breakout workshop leaders will meet**

2:00 p.m. **Breakout Workshops (23 concurrent sessions)**

1. Ready or Not: Resilience Indicators
2. Connecting Tools with Decision Makers
3. Grid Collapse: Electric Power and Disasters
4. Coastal Communities: Planning for Resilience, Adaptation and Sustainability - Building

Resilience in Coastal Communities: An International Agenda
5. Mega-Fire and the Wildlands-Urban Interface
6. The U.S. Flood Control Program at 75: Moving from Flood Control to Risk Management
7. Impacts of Earthquakes on the Environment and Human Health
8. Resilient Buildings and Communities: Responding to Disasters and a Changing Climate
9. Policies and Frameworks for Integrating Resources into Disaster Planning
10. Reducing Risk and Vulnerability: A New Future in Green Disaster Management, Climate Change Adaptation and Disaster Risk Reduction
11. Natural Resource Managers and Disaster Risk Reduction: Protecting Coastal Ecosystems
12. Enhancing Preparedness and Building Resilience in the Rapidly Changing Arctic: Developing an Action Plan
13. Megadroughts
14. Environmental Emergencies: How to Manage Recent Trends of Climate Change and Urbanization
15. Building Community Resilience and Capacity through Extension Programs and Youth Corps
16. Responding to Drinking Water and Wastewater-Related Disasters and Preparing for Climate Change
17. Resilient Community Disaster Recovery
18. Legal Issues in Emergency Management
19. Out of Harm's Way: Natural Disasters and Population Movements
20. Supporting Community Resilience
21. Risk Perception and Communication: How We Respond to Disasters
22. Predicting and Responding to Famine
23. Cities and Disasters

5:30 p.m. **NCSE Lifetime Achievement Award**
Hon. Richard Bendick, U.S. Ambassador (ret.), Founding President, NCSE

13th Annual John H. Chafee Memorial Lecture
Jane Lubchenco, Under Secretary of Commerce for Oceans and Atmosphere and Administrator, NOAA

6:30 p.m. **Reception**

Wednesday Keynote and Plenary Biographies

Keynote Address

Mark Tercek is president and CEO of The Nature Conservancy, the world's leading conservation organization working around the world to save the lands and waters on which all life depends. The Conservancy uses a science-based, collaborative approach to solve complex global challenges: conserving critical lands, restoring the world's oceans, securing fresh water and reducing the impacts of climate change. Before joining The Nature Conservancy, Mark was a managing director at Goldman Sachs, where he played a key role in developing the firm's environmental strategy. He headed the firm's Environmental Strategy Group and Center for Environmental Markets, which worked to develop and promote market-based solutions to environmental challenges. Mark also headed various business units at the firm, including Corporate Finance, Equity Capital Markets, Consumer/Healthcare and Leadership Development. Mark also led Pine Street -- Goldman Sachs' leadership development program for the firm's Managing Directors and clients. Mark earned an M.B.A. from Harvard in 1984 and a B.A. from Williams College in 1979.

Keynote Address

Ellis M. Stanley, Sr.'s years of work experience in emergency management began as Director of Emergency Management for Brunswick County, North Carolina in 1975. Mr. Stanley was appointed in 1982 as the Director of the Durham-Durham County Emergency Management Agency where he worked very close with the world's largest research park in the North Carolina Triangle area and was heavily involved with hazardous materials planning. In 1987 Mr. Stanley was appointed by the Governor of Georgia as the Director of the Atlanta-Fulton County Emergency Management Agency. As part of the Public Safety Department for the City of Atlanta, Mr. Stanley served as a key advisor to the Public Safety Director. While in Atlanta, Mr. Stanley had extensive experience in major event planning (1988 Democratic National Convention, 1995 Mandela visit, and the 2006 International Olympic Games). Mr. Stanley was appointed in 1997 as Assistant City Administrative Officer for the City of Los Angeles and in 2000 as the General Manager of the Emergency Preparedness Department for the City of Los Angeles until his retirement in 2007. Mr. Stanley joined Dewberry, LLC in November 2007 as Director of Western Emergency Management Services. In March of 2008 Mr. Stanley was selected to be the Director of DNC Planning for the City & County of Denver, CO. Because of the success of the Democratic National Convention, August 29, 2008 was proclaimed "The Ellis Stanley Day in Denver".

Plenary 4: Feedbacks: Environmental Changes and Environmental Disasters

Juliet Eilperin, national environmental reporter for *The Washington Post*, has covered issues ranging from climate change to the 2008 presidential campaign for the Post. In the wake of the Deepwater Horizon explosion in April 2010, she wrote several investigative pieces exposing the lack of federal oversight over offshore drilling. Her environmental reporting assignments have entailed trekking on the Arctic tundra with Selma Hayek and Jake Gyllenhaal and searching on her hands and knees for rare insects in the caves of Tennessee. Ms. Eilperin has received numerous environmental fellowships and honors, including the 2011 Peter Benchley Ocean Award for Media. She is the author of "Fight Club Politics: How Partisanship is Poisoning the House of Representatives," and "Demon Fish: Travels through the Hidden World of Sharks."

Gary E. Machlis is Science Advisor to the Director, National Park Service, and Professor of Conservation at the University of Idaho. He is the first scientist appointed to this position with the NPS,

and advises the director on a range of science policy issues and programs. Dr. Machlis has served as Interim Associate Vice President for Research at the University of Idaho, and been a visiting professor at Nanjing Technological College in China and at Yale University. Dr. Machlis received his bachelor's and master's degrees from the University of Washington in Seattle, and his Ph.D. in human ecology from Yale. He has written numerous books and scientific papers on issues of conservation, including The State of the World's Parks (1985), the first systematic study of threats to protected areas around the world. He is currently at work on his next co-authored book, The Structure and Dynamics of Human Ecosystems, to be published by Yale University Press in 2012. His research has been published in journals as varied as Bioscience, Climatic Change, Conservation Biology, Society and Natural Resources, and Science.

Kathryn Sullivan is assistant secretary of commerce for environmental observation and prediction and deputy administrator for the National Oceanic and Atmospheric Administration (NOAA). She is also performing the duties of NOAA's chief scientist. As assistant secretary, Dr. Sullivan plays a central role in directing Administration and NOAA priority work in the areas of weather and water services, climate science and services, integrated mapping services and Earth-observing capabilities. As Deputy Administrator, she oversees the smooth operation of the agency. Dr. Sullivan's impressive expertise spans the frontiers of space and sea. An accomplished oceanographer, she was appointed NOAA's chief scientist in 1993. Dr. Sullivan was the inaugural director of the Battelle Center for Mathematics and Science Education Policy in the John Glenn School of Public Affairs at Ohio State University. Prior to joining Ohio State, she served a decade as President and CEO of the Center of Science and Industry (COSI) in Columbus, Ohio, one of the nation's leading science museums. Dr. Sullivan joined COSI after three years' service as Chief Scientist. Dr. Sullivan was one of the first six women selected to join the NASA astronaut corps in 1978 and holds the distinction of being the first American woman to walk in space. Dr. Sullivan holds a bachelor's degree in earth sciences from the University of California at Santa Cruz and a doctorate in geology from Dalhousie University in Canada.

Tom Tidwell has spent 33 years in the Forest Service. He has served in a variety of positions at all levels of the agency, including as district ranger, forest supervisor, and legislative affairs specialist in the Washington Office. As deputy regional forester for the Pacific Southwest Region, Tom facilitated collaborative approaches to wildland fire management, roadless area management, and other issues. As regional forester for the Northern Region, Tom strongly supported community-based collaboration in the region, finding solutions based on mutual goals and thereby reducing the number of appeals and lawsuits. In 2009, after being named Chief, Tom set about implementing the Secretary's vision for America's forests. Under his leadership, the Forest Service is restoring healthy, resilient forest and grassland ecosystems—ecosystems that can sustain all the benefits that Americans get from their wildlands, including plentiful supplies of clean water, abundant habitat for wildlife and fish, renewable supplies of wood and energy, and more. Under Tom's leadership, the Forest Service has charted a national roadmap for addressing climate change through adaptation and mitigation. Such challenges cross borders and boundaries; no single entity can meet them alone. Under Tom's leadership, the Forest Service is working with states, Tribes, private landowners, and other partners for landscape-scale conservation—to restore ecosystems on a landscape scale.

Anthony Slatyer is a First Assistant Secretary in the Australian Government Department of Sustainability, Environment, Water, Population and Communities. He heads the Water Reform Division of the Department. In this role, Mr. Slatyer was a lead adviser to the Australian Government on water resource policy responses to the extreme drought conditions in southern Australia from 2001 to 2010, including the development of new market based and regulatory approaches to managing water scarcity, and the recently finalized Murray-Darling Basin Plan. Before holding this position, Mr. Slatyer held a number of senior executive positions in the Australian Government, with environment, transport and regional development policy responsibilities. Mr. Slatyer has also held the positions of Executive Director of the Australian Government Bureau of Transport and Regional Economics, and Deputy

Secretary General of the Pacific Islands Forum based in Fiji. Mr. Slatyer holds degrees in Law and Arts from the Australian National University.

Plenary 5: Climate Change and Disasters

Heidi Cullen serves as Chief Climatologist for Climate Central — a non-profit science journalism organization headquartered in Princeton, NJ. She is a Visiting Lecturer at Princeton University and a Senior Research Fellow at the Wharton Risk Management and Decision Processes Center at the University of Pennsylvania. Dr. Cullen is the author of The Weather of the Future published by Harper Collins. Before joining Climate Central, Dr. Cullen served as The Weather Channel's first on-air climate expert and helped create Forecast Earth, a weekly television series focused on issues related to climate change and the environment. Prior to that Dr. Cullen worked as a research scientist at the National Center for Atmospheric Research (NCAR) in Boulder, CO. She received the NOAA Climate & Global Change Fellowship and spent two years at Columbia University's International Research Institute for Climate and Society working to apply long-range climate forecasts to the water resources sector in Brazil and Paraguay. Dr. Cullen received a Bachelor of Science degree in Industrial Engineering from Columbia University and went on to receive a Ph.D. in climatology and ocean-atmosphere dynamics at the Lamont-Doherty Earth Observatory of Columbia University.

Amy Luers has worked for over two decades at the intersection of environment, sustainability and economic development. She joined the Skoll Global Threats Fund as Director of Climate Change from Google, where she was the Senior Environmental Program Manager. At Google, Dr. Luers initiated and co-led the development of Google Earth Engine and the Google Science Communication Fellows Program, and traveled extensively in Latin America, South East Asia and Africa to support climate risk management programs. Prior to joining Google, Dr. Luers led the Climate Program for the Union of Concerned Scientists (UCS) in California and analyzed the impacts of alternative federal climate policy options. She is co-founder and former executive director of Agua Para La Vida, a small NGO dedicated to enhancing sustainable access to water supply in rural Latin America. Dr. Luers has conducted research and published widely on the vulnerability of social and biophysical systems to global environmental changes. She holds a Ph.D. in environmental science and an M.A. in international policy studies, both from Stanford University, and a M.S. and B.S. in environmental resources engineering from Humboldt State University.

Doug Brown is Director, Agriculture and Food Security at World Vision International (WVI) and responsible for the promotion of sustainable, productive and resilient agricultural livelihoods across the World Vision (WV) Partnership, internally through the development of organizational strategy, policy and practice as well as in external relationships. Prior roles within WV have included that of Senior Sector Specialist, Environment and Natural Resource Management at WV Canada, then as Research Advisor to the Southern Africa Livelihoods Emergency Response and finally as Climate Change Adaptation Specialist with WVI's Climate Change Response Initiative. Doug has taught in the areas of international development and economics and conducted research in Cameroon and Kenya focused on the relationship between household resource management decisions, poverty and environmental degradation. Prior to his doctoral studies he worked for over 10 years at the grass roots level in agricultural and community development in the Democratic Republic of Congo. Doug has a Ph.D. in the Economics of Development from Cornell University, a Certificate in Biblical Studies from Tyndale Seminary and a B.Sc. in Agriculture from the University of Guelph.

Kristie L. Ebi is a Consulting Professor in the Department of Medicine, Stanford University and an independent consultant who conducts research on the impacts of, and adaptation to, climate change, including on extreme events, thermal stress, foodborne safety and security, and vectorborne diseases. She has worked with WHO, UNDP, USAID, and others on assessing vulnerability and implementing

adaptation measures in Central America, Europe, Africa, Asia, and the Pacific. She was a coordinating lead author or lead author for the human health assessment for SAP4.6, the first US National Assessment, the IPCC Fourth Assessment Report, the Millennium Ecosystem Assessment, and the International Assessment of Agricultural Science and Technology for Development. Dr. Ebi's scientific training includes an M.S. in toxicology and a Ph.D. and a Masters of Public Health in epidemiology, and two years of postgraduate research at the London School of Hygiene and Tropical Medicine. She has edited fours books on aspects of climate change and has more than 100 publications.

Jim Murley has spent over three decades working on public policy issues important to Florida. Jim served as Secretary of the Department of Community Affairs under Governor Lawton Chiles working on comprehensive planning, economic development, energy and emergency management issues. He has served on various state commissions including the Florida Housing Finance Corporation, Florida Communities Trust and most recently served three years as the Chair of the Florida Energy and Climate Commission. Jim spent over 10 years with Florida Atlantic University overseeing research on urban and environmental issues. Jim currently holds the position of Executive Directors of the South Florida Regional Planning Council. In that capacity he is helping to lead an effort for the seven counties in Southeast Florida to develop a Regional Prosperity Plan. Jim is a graduate of Leadership Florida and a Fellow of the National Academy for Public Administration.

Plenary 6: The "Human Factor" in Environmental Disasters

Andrew Revkin joined Pace University as a senior fellow for environmental understanding. A prize-winning journalist, online communicator and author, he has spent a quarter of a century covering subjects ranging from the assault on the Amazon to the Asian tsunami, from the troubled relationship of science and politics to climate change at the North Pole. From 1995 through 2009, he covered the environment for *The New York Times*. While the media largely ignored the climate story until the last several years, Revkin spent more than 20 years immersed in this subject, producing more than 500 magazine and newspaper stories, two books, a prize-winning Discovery-Times documentary, "Arctic Rush," and hundreds of posts on his blog. His reporting on the political struggles over climate policy consistently led all competitors. In 2005 and 2006, he exclusively exposed efforts by political operatives to rewrite government climate reports in the White House and prevent NASA scientists from conveying their views on warming. His stories were quickly followed by the resignations of two presidential appointees.

David J. Kaufman was appointed Director of FEMA's Office of Policy and Program Analysis (OPPA) in September 2009. He is responsible for providing leadership, analysis, coordination, and decision-making support to the FEMA Administrator on a wide range of Agency policies, plans, programs, and key initiatives. Mr. Kaufman has extensive experience with homeland security and disaster preparedness issues. He has been a member of the faculty at the Naval Postgraduate School's Center for Homeland Defense and Security, where he taught in the Center's graduate and executive level education programs, and has served in several senior positions in the U.S. Department of Homeland Security and in FEMA. His service included establishing the Office of Preparedness Policy, Planning and Analysis in FEMA's National Preparedness Directorate, where as the Director he led policy and planning efforts for national preparedness; and Acting Director and Deputy Director of the Preparedness Programs Division in the Office for Domestic Preparedness. In 2008, Mr. Kaufman left government service to become Safety and Security Director for CNA, a non-profit think-tank that provides analysis and solutions to challenging problems for all levels of government. There he has worked on a range of homeland security issues including community engagement, risk management, and catastrophic planning, and supported the Quadrennial Homeland Security Review.

Gerry Galloway is a Glenn L. Martin Institute Professor of Engineering, and an Affiliate Professor, School of Public Policy, University of Maryland, College Park, Maryland. His focus is on water

resources and energy policy and management and disaster mitigation. He has served as a consultant to the Executive Office of the President, the U.S. Water Resources Council, the World Bank, the Organization of American States, and the UN World Water Assessment Programme. He is a member of the Louisiana Governor's Advisory Commission on Coastal Protection, Restoration and Conservation, a Department of State Energy and Climate Partnership of the Americas Fellow, and a consultant to Natural Heritage Institute Team reviewing dams and climate change in the Mekong Basin. He served for seven years as a member of the Mississippi River Commission and was assigned to the White House to lead the study of the Great Mississippi River Flood of 1993. A veteran of 38 years of military service, he retired from the military as a Brigadier General. He is a professional engineer, a member of the National Academy of Engineering, and a Fellow of the National Academy of Public Administration.

Joe Ruiz manages Corporate Grants for The UPS Foundation and oversees the UPS Humanitarian Relief Program. Joe is responsible for efforts to enhance the disaster preparedness and response capabilities of the humanitarian community through key partnerships in the public and private sectors that can benefit from UPS's logistical expertise and financial resources. Joe oversees logistical, financial and in-kind support for UPS humanitarian relief efforts. He also oversees the UPS Logistics Emergency Team (LET) loaned executive program with the United Nations Global Logistics Cluster, to prepare and deploy UPS logistics responders in response to natural disasters. Joe coordinates the UPS Logistics Action Team (LAT) program with the American Red Cross chapters to provide logistics support to disaster services coordinators in Georgia, SE Louisiana, Houston, San Francisco and Florida. Joe began his UPS career in 1988 and served in many capacities within the organization including Pacific Region Communications Manager and Southeast Region Employee Relations manager before joining The UPS Foundation in 2007.

Kathleen Tierney is a professor in the Department of Sociology and the Institute of Behavioral Science and Director of the Natural Hazards Center at the University of Colorado, Boulder. The Natural Hazards Center, which is funded by the National Science Foundation and a consortium of federal agencies whose missions center on disaster risk reduction, serves as a national and international clearinghouse on the social scientific and policy aspects of disasters. She has studied a wide range of disaster events, including earthquakes in the U.S., Japan, and Haiti; major hurricanes such as Hugo, Andrew, and Katrina; various technological disasters, and the terrorist attacks of September 11, 2001 in New York City. Her published work spans many topics, including hazard risk perceptions, disaster warnings, organizational responses to disasters, disaster recovery, social vulnerability to disasters, and the political economy of disasters. She is currently working on a book entitled *Social Foundations of Risk and Resilience*.

13th Annual John H. Chafee Memorial Lecture

Jane Lubchenco has been the undersecretary of commerce for oceans and atmosphere and administrator of NOAA since 2009. Nominated by President Obama in December 2008 as part of his "Science Team," she is a marine ecologist and environmental scientist by training, with expertise in oceans, climate change, and interactions between the environment and human well-being. She received her B.A. in biology from Colorado College, her M.S. in zoology from the University of Washington, and her Ph.D. in ecology from Harvard University. Her academic career as a professor began at Harvard University (1975-1977) and continued at Oregon State University (1977-2009) until her appointment as NOAA administrator. Lubchenco has served as president for the American Association for Advancement of Science (AAAS), the International Council for Science, and the Ecological Society of America, and served for 10 years on the National Science Board. She also served on the National Academy of Sciences' study on "Policy Implications of Global Warming" under the administration of George H.W. Bush.

Senator John H. Chafee (R--RI) was born in Providence, Rhode Island, in 1922. He earned degrees from Yale University and Harvard Law School. Upon the United States' entry into World War II, Chafee left Yale to enlist in the Marine Corps, and then served in the original invasion forces at Guadalcanal. In 1951 he was recalled to active duty and commanded a rifle company in Korea.

Chafee began his political career by serving for six years in the Rhode Island House of Representatives, during which time he was elected Minority Leader. He was then elected Governor by a 398 vote margin in 1962. He was re-elected in 1964 and 1966—both times by the largest margins in the state's history. In January 1969 he was appointed Secretary of the Navy and served in that post for three and a half years. He was elected to the United States Senate in 1976.

As Chairman of the Environment and Public Works Committee, the Senator was a leading voice in crafting the Clean Air Act of 1990. He led successful efforts to enact oil spill prevention and response legislation and a bill to strengthen the Safe Drinking Water Act. Senator Chafee was a long-time advocate for wetlands conservation and open space preservation and was the recipient of every major environmental award.

As senior member of the Finance Committee, Senator Chafee worked successfully to expand health care coverage for women and children and to improve community services for people with disabilities. In 1990, Senator Chafee spearheaded the Republican Health Care Task Force. He went on to lead the bipartisan effort to craft a comprehensive health care reform proposal in 1994.

Senator Chafee also was a leader in efforts to reduce the federal budget deficit and co-chaired the centrist coalition that produced a bipartisan balanced budget plan in 1996. He was an active proponent of free trade and was a strong supporter of the North American Free Trade Agreement (NAFTA). He served as Chairman of the Republican Conference for six years.

The Senator received awards and endorsements from such organizations as the National Federation of Independent Business, the American Nurses Association, the League of Conservation Voters, the Sierra Club, Handgun Control Inc., Planned Parenthood, Citizens Against Government Waste, and the National PTA.

On October 24, 1999, Senator John H. Chafee died from congestive heart failure. He is sorely missed.

The National Council for Science and the Environment

is proud to honor

Ambassador (ret.) Richard Elliot Benedick

with its

Lifetime Achievement Award

Ambassador Benedick has played a major role in global environmental affairs for the past forty years. He was chief U.S. negotiator and a principal architect of the historic 1987 Montreal Protocol on protection of the ozone layer (1987) and his acclaimed book, *Ozone Diplomacy: New Directions in Safeguarding the Planet*, is an environmental classic used in universities throughout the world.

Ambassador Benedick was a Special Advisor to Secretaries-General of both the 1992 United Nations Conference on Environment and Development (the Rio "Earth Summit") and the 1994 International Conference on Population and Development.

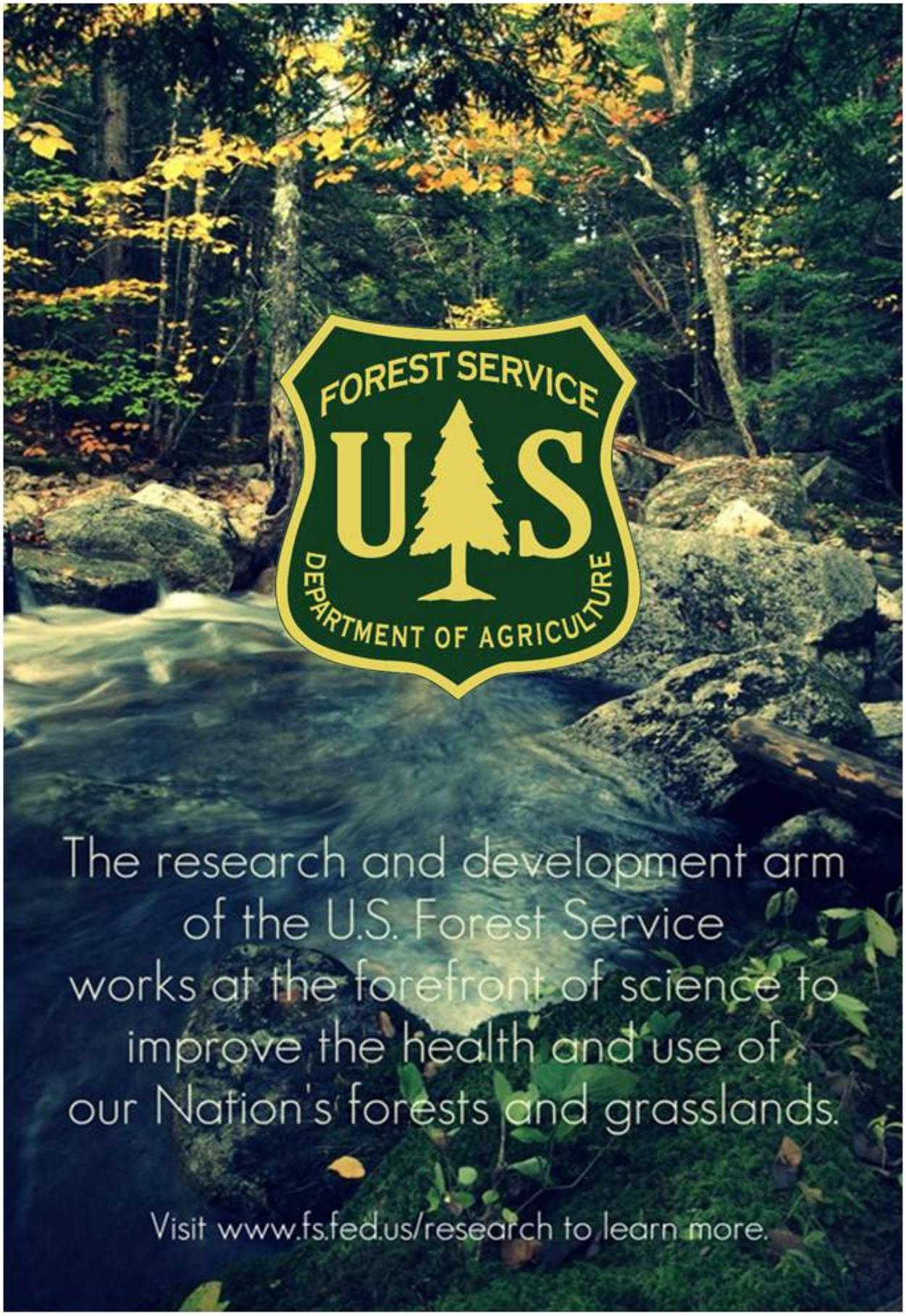
As Deputy Assistant Secretary of State for Environment, Health, and Natural Resources, he supervised policy formation and international negotiations on climate change, stratospheric ozone, biotechnology, tropical forests, oceans, wildlife conservation, and AIDS. A career diplomat, Ambassador Benedick served in Iran, Pakistan, Paris, Bonn, and Athens.

Most significantly for us, Ambassador Benedick served as the founding President of the National Council for Science and the Environment for nearly twenty years, guiding the organization, mentoring its staff, and establishing a second legacy of impact, advancing science in service of mankind and the natural world on which we all depend.

Ambassador (ret.) Richard Elliot Benedick

National Council for Science and the Environment

Improving the scientific basis for environmental decisionmaking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BREAKOUT WORKSHOPS

Wednesday, January 16, 2013 from 2:00 pm to 5:15 pm

*Invited

Breakout workshops are designed to develop recommendations for using science and education to improve decisions related to disasters and the environment. Each session is organized around a topic and will involve a combination of brief opening comments from invited experts in the field and facilitated participant group discussion to develop a set of 8-12 recommendations to the Obama administration, Congress, state and local government, business, nonprofit organizations, colleges and universities, and others.

1. Ready or Not: Resilience Indicators

(MD Classroom C-1)

A salon is a periodic gathering of notable people in a given field sharing ideas. We are expecting a spirited exchange as we discuss weather extremes (and the disasters they can become), one of the most tangible manifestations of climate change. Is our nation "weather ready"? How would we know? Businesses, non-profit organizations, government at all levels, individuals, families and communities can be caught unaware by extreme weather events, more frequent flooding and other impacts associated with climate change. How do we communicate the risk of extremes in a changing climate in a way that resonates and results in preparedness? Are there lessons that the hazards, sustainability and climate change communities can learn from each other? Are those lessons changing practices or are they simply being learned over and over again?

Organizers:

Margaret A. Davidson,NOAA Office of Ocean and Coastal Resource Management Acting Director; and ***Amy Luers,*** Director, Climate Change, Skoll Global Threats Fund

2. Connecting Tools with Decision Makers

(Hemisphere A)

This workshop will apply decision-making and planning tools discussed in earlier sessions, and explore how early warning and pre-planning for disasters can be improved. Using comprehensive risk assessments, including for complex disasters and global environmental change, participants will gain insight into how organizations such as the Tsunami Warning Center and US military integrate disaster hazards into planning. Participants will develop and apply assessment tools for complex disaster risks, including decision-making in the face of uncertainty and partnership strategies with colleagues and decision-makers.

The three-hour workshop will follow planning exercises developed for the US military and NATO, and will break participants into groups that develop disaster scenarios and the means to address them. Starting conditions for the disaster scenarios will be partly based on discussions in Tools to Identify Vulnerability to Disasters Part 1, and will employ rapid assessment tools described in the Part 2 symposium. Participants will also integrate 'wild card' factors and security impacts. After developing the disaster scenario and assessing vulnerabilities, workgroups will then devise policy responses for mitigation and adaptation.

Moderators:

Chad Briggs, Strategy Director, GlobalInt LLC and ***Tracy Briggs***, Executive Director, GlobalInt LLC

Discussants:

Kevin Kelley, Associate Director, Center for Island, Maritime, and Extreme Environmental Security, University of Hawaii

Robert Weiss, Department of Geosciences, Virginia Tech

William Lyerly, Director of International Affairs, Department of Homeland Security*

3. Grid Collapse: Electric Power and Disasters

(Compass)

This session will explore the cascading disasters that can result from, or result in, the collapse of a city's electrical grid. Loss of this critical lifeline service during a disaster can profoundly exacerbate the scale and longevity of economic and social disruption, including loss of human life. The session will explore safety measures that are currently in place and how can

government (both federal and local), utilities, and communities can be better prepared for such an event.

This session will also develop strategies to better identify and respond to vulnerabilities before a disaster occurs, forecasting extreme events which might trigger a collapse or when a major event may be imminent, and when responding to a collapse. Opportunities such as resilient microgrids will be part of the discussion.

Moderator:

Gary Geernaert, Director, Climate and Environmental Sciences Division, Office of Biological and Environmental Research, Department of Energy

Discussants:

Alan Berscheid, Project Leader, Los Alamos National Laboratory

Brandon Wales, Director, Homeland Infrastructure Threat and Risk Analysis Center, Office of Infrastructure Protection, National Protection and Programs Directorate, Department of Homeland Security

Ahsha Tribble, Senior Director of Response, National Security Staff*

Ed O'Lenic, Chief, Operations Branch, Climate Prediction Center, NOAA

4. Coastal Communities: Planning for Resilience, Adaptation, and Sustainability – Building Resilient Coastal Communities, an International Agenda

(MD Classroom C-2)

We will consider resilience from the perspective of disaster prevention in addition to disaster response. While extreme weather events are predicted to increase dramatically in our lifetime, both in frequency and in severity, more careful and prescient planning can prevent communities from the worst of harm caused by such changes, and other natural disasters, and create more sustainable cities for the long-term. With an abiding view to resilience and adaptation, rapidly growing coastal cities, especially those in developing countries, can better prepare for extreme weather events.

This workshop will:

- Consider the information needed by municipalities to plan for adequate resilience.
- Outline what can be done for proactive planning and investment in vulnerable communities.
- Collect suggestions on best practices from around the world.

Outcomes:

- Collect lists of databases from federal and international agencies and organizations that can provide forecasting data and transmitting information that will prepare municipal institutions to create more defined resilience plans.
- Highlight the opportunity costs and potential cost savings for a resilience strategy that emphasizes prevention over response.
- List effective policies around ports, levees, pollution control, and industrial zoning in US cities, as well as countries in Northern Europe, which havemanaged extreme water events effectively for hundreds of years.

Organizers/Moderators:

Emily Geosling, Program Coordinator, Tufts Institute of the Environment, Water: Systems, Society and the Environment; and ***Antje Danielson,*** Tufts Institute of the Environment, Tufts University

Discussants:

Ninian Stein, Director of Earthos and Visiting Professor, Environmental Science and Policy Program, Smith College

Kjell Larsson, Chair, Advisory Group on Environmental Emergencies (AGEE)

Thomas Loster, Chairman, Munich Re Foundation

Joanne Potter, Principal, ICF International

5. Mega-Fire and the Wildland-Urban Interface

(Continental C)

This workshop will address key topics that follow logically from Session 4: Preventing Catastrophic Losses to the Cascading Effects of Forest Fire and Session 14: Wildland Fire in a Changing Climate. We will focus on identifying solutions to the problem of unnaturally large and severe wildfire in frequent fire forests of North America. Significant attention has been focused on placing treatments in the wildland urban interface to protect property. However, the solution to increasingly large, severe, and unnatural fire requires a broader perspective. The workshop will begin with a brief overview of recent research that analyzed the effectiveness of treatments in the wildland urban interface, followed by 10 to 15 minute presentations by policy makers who have worked towards improving forest health and reducing fire risk over the last two decades.

The outcome will be an outline of actionable items to ameliorate anticipated negative changes over the next 2 to 100 years with the goal of converting landscapes that have become a liability into an asset for future generations.

Moderator:

Diane Vosick, Director of Policy and Partnerships, The Ecological Restoration Institute, Northern Arizona University

Discussants:

Amy Waltz, Fire Ecologist, The Ecological Restoration Institute, Northern Arizona University

Mark Rey, Former Under Secretary for Natural Resources and Environment; now with Livingston Group and Michigan State University as an Executive in Residence

Roy Johnson, Deputy Director, Office of Wildland Fire, Department of Interior

Chris Topik, Director of Restoring America's Forests, The Nature Conservancy; former Appropriations Staff, House Interior, Environment and Related Agencies Appropriations Subcommittee

6. The U.S. Flood Control Program at 75: Moving from Flood Control to Risk Management

(Horizon B)

The Flood Control Act of 1936, authorized the United States Army Corps of Engineers and other Federal agencies to undertake numerous steps to protect communities in floodplains from the devastation of flooding through the construction of levees, dams and structural measures. Over the last 75 years the U.S. approach to dealing with floods has been shifted by legislation and experience and has moved away from a primary strategy of seeking to control floods to one of managing the risks of floods through a broader array of measures in addition to infrastructure, including land use regulation, floodproofing, education, insurance and storage of flood waters in wetlands.

This workshop will explore the challenges and opportunities that confront the nation when seeking to protect life, property, and environmental values in flood zones over the next 75 years. A diverse range of perspectives illuminate the different possible approaches and their trade-offs.

Participants will identify or develop initiatives, partnerships and/or strategies for flood management that lead to long-term safety which is economically and environmentally sustainable. While new policies are unlikely to satisfy all constituencies, the workshop will seek to identify paths forward that all constituencies go in the right direction.

Moderator:

Gerald E. Galloway, Research Professor, Dept. of Civil and Environmental Engineering, University of Maryland

Discussants:

Peter Black, Professor of Water and Related Land Resources Emeritus, SUNY College of Environmental Science & Forestry

Michael Reuter, Director, North America Freshwater Program and Great Rivers Partnership, The Nature Conservancy

Sam Medlock, Policy & Partnerships Program Manager, Association of State Flood Plain Managers

John Anderson, Republican Staff Director, House Transportation and Infrastructure Committee Water Resources and the Environment Subcommittee

Betsy Cody, Specialist in Natural Resources Policy at Library of Congress, Congressional Research Service

Col. Ray Alexander, Deputy Chief, Office of Homeland Security; Program Director, U.S. Army Corps of Engineers Flood Risk Management Program

7. Impacts of Earthquakes on the Environment and Human Health

(International Gateway)

It is a truism in earthquake science that earthquakes don't kill people — buildings kill people. This can be generally extrapolated to say that without damage to human structures, the impact of earthquakes on the natural environment would be minimal. This session will explore the intersection of the human and natural environments that lead to significant vulnerability during earthquakes and how human perception of the problems affects the impact. The discussion will identify:

- Implications of known seismic vulnerabilities to damage to the natural environment
- Areas where the increasing complexity of modern society creates the potential for new physical, economic and social vulnerabilities to earthquake damage
- Policy approaches that could reduce some of this potential for loss.

Moderator:
Lucile Jones, Science Advisor for Risk Reduction, SAFRR Project, USGS
Discussants:
Charles Scawthorn, President, SPA Risk LLC and formerly Head of the Earthquake Disaster Prevention Systems Laboratory, Kyoto University
Geoffrey Plumlee, Research Geochemist, U.S. Geological Survey
Sandy Bond, Professor of Property Studies, Lincoln University, New Zealand
David Eisenman, Associate Natural Scientist, RAND and Director, UCLA Center for Public Health and Disasters

8. Resilient Buildings and Communities: Responding to Disasters and a Changing Climate

(Horizon A)

Communities and citizens rely on buildings as their residences, offices, schools and places of refuge. Communities also rely on a healthy environment to provide protection from extreme weather events, clean air, water and resources necessary for living. Results from scientific studies indicate that climate change will continue to exacerbate extreme weather events leading to new challenges for the design, construction and operation of resilient buildings while ensuring the natural world's resilience to the impacts of these events.

This session will explore:

- the latest policies and practices to understand and implement buildings and communities resilient to hazards and responsive to changing environments;
- the importance of including protection of indoor environmental quality into strategies for dealing with extreme weather events and continuing climate change;
- how decision support tools can be developed to empower local decision makers in planning for disasters and in considering green infrastructure as a disaster risk reduction tool; and,
- how the insurance sector considers mitigation efforts and green infrastructure.

Moderator:
Ryan Colker, Presidential Advisor, National Institute of Building Sciences
Discussants:
David Butler, Director, Medical Follow-Up Agency, Institute of Medicine, National Academy of Sciences
Roger Grant, Program Director, National Institute of Building Sciences
Sarah Murdock, Director of Climate Adaptation Policy, The Nature Conservancy
Laura Kolb, Indoor Air Quality, Office of Air and Radiation, U.S. EPA
Frank Nutter, Reinsurance Association of America
Yu Hongyuan, Professor and Deputy Director, Institute for Comparative Politics and Public Policy, Shanghai Institutes for International Studies (SIIS)

9. Policies and Frameworks for Integrating Natural Resources into Disaster Planning

(Polaris C)

This workshop focuses on ways to incorporate ecological and environmental issues in multi-sector policy and in disaster-management frameworks. Participants will help to craft specific recommendations tailored to emerging policies. It is a complementary workshop to Session 10 which addresses ecological issues from a place-based perspective, and the challenges associated with managed ecosystems. This session relates to symposium 07, "Building a New Framework for Understanding and Mitigating Disaster Impacts on Ecosystems."

Moderator:
Deborah Brosnan, President, Brosnan Center; Environment and Policy Scientist, U.C. Davis One Health Institute
Discussants:
Dwayne Meadows, NOAA Endangered Species Conservation Division Fish Management Specialist

10. Reducing Risk and Vulnerability: A New Future in Green Disaster Management, Climate Change Adaptation and Disaster Risk Reduction

(Polaris B)

This session will address how the failure to incorporate the environment into disaster management policy and practice leads to less effective disaster response and risk reduction, greater hardship for disaster survivors and a lost

opportunity to support ecosystem and human resiliency. It will explore how an environmental approach to disaster management can improve disaster response, contribute to a reduction of the disaster impact on disaster survivors and the environment and improve resilience. Participants will also discuss the myth of "no-regrets" and the relationship between climate change adaptation and disaster risk reduction and how integrating both approaches can improves disaster management programming.

Moderator:

Anita van Breda, Director, Humanitarian Partnerships, World Wildlife Fund (WWF)

Discussants:

Charles Kelly, ProAct Network

Eliot Levine, Senior Program Officer, Adaptation Program, WWF

11. Natural Resource Managers and Disaster Risk Reduction: Protecting Coastal Ecosystems

(Polaris A)

The workshop's goal is to identify opportunities to integrate natural resource managers throughout the disaster management cycle to minimize unintended impacts of hazard mitigation and disaster response and recovery on natural resources and ecosystems. Introductory presentations will lay the foundation for lessons learned, tools and resources, and current needs of place-based natural resource managers planning for and responding to disasters. A participant mix including natural resource managers and emergency response representatives will benefit from and contribute to this workshop's discussions.

During break-out groups, focused on the four phases of the disaster management cycle (mitigation, preparedness, response, and recovery), participants will identify existing tools, needs, and recommendations for developing an ecosystem-based approach for disaster risk reduction and resilience.

The break-out groups will meet in a round-robin sequence so all participants can provide input on each topic. The workshop outputs may be integrated with products generated in workshops W9 and W10, which focus on national frameworks, green practices, and integration of lessons learned and needs.

Moderator:

Kitty Courtney, Marine Environmental Scientist, Tetra Tech

Discussants:

Billy Causey, NOAA National Marine Sanctuary Program Southeast Regional Director

Nancy Wallace, NOAA Marine Debris Division

David Ruple, State of Mississippi, Department of Marine Resources/Grand Bay Estuarine Research Reserve

12. Enhancing Preparedness and Building Resilience in the Rapidly Changing Arctic: Developing an Action Plan

(Meridian B)

Arctic warming is creating both changes and challenges for the people and governments of the Arctic and other nations with Arctic interests. While some efforts are underway to address these challenges, much more will be needed in order to reduce the potential for accidents, increase preparedness to deal with them, and build the resilience to environmental threats needed to avoid their growth into regional disasters. This workshop is intended to provide an opportunity to discuss emerging and intensifying impacts affecting the region and describe the options available for addressing them, both available now and potentially developable in the future. The workshop product is to be a set of recommendations for consideration by the Arctic Council, national, local, and indigenous governments, and those seeking to protect or benefit from the region's resources. Specific steps that could be taken to limit the potential for damage, pollution, and loss of life as a result of global warming and induced environmental change will be identified, including consideration of which entities need to take which actions to govern what activities over what time period.

Organizers:

Michael MacCracken, Chief Scientist for Climate Change Programs, Climate Institute and ***Robert Corell,*** Principal, Global Environment & Technology Foundation

Moderators:

Raymond Arnaudo, Office of the Secretary (Policy Planning), U.S. Department of State

Discussants:

Anand Patwardhan, School of Public Policy at the University of Maryland

Stanley Rhodes, SBC Global Services

Commander Kenneth J. Boda, Office of Strategic Analysis, U.S. Coast Guard

Igor Krupnik, Ethnocologist/Research

Anthropologist and Curator of the Arctic and Northern Ethnology collections at the Smithsonian Institute, DC

Workshop 13. Megadroughts and Workshop 22. Predicting and Responding to Famine

Droughts and famine are distinct disasters that are often connected. These two workshops will explore the connection jointly, before separating into adjoing rooms to explore the unique aspects of each and develop strategies for more effectively forecasting, preparing for and responding to these two types of disasters.

Organizer:

Roger S. Pulwarty, NOAA National Integrated Drought Information System Director and Physical Scientist

13. Megadroughts

(Oceanic A)

Droughts are recurring natural phenomena. Research indicates that there have been many instances of long-lasting, severe droughts in the western United States throughout history, such as during the Medieval Warm Period (900-1300) and periodically lasting, such as within the Lake Tahoe Basin, from decadal to centennial timescales. There have been similar extended periods of drought around the world. If megadrought(s) repeat, the main difference between prior periods and the present are that temperatures are increasing, and resources are in many cases already at points of criticality. In this session, we will speak with some of the world's preeminent drought science, impacts and policy experts, on proactive planning for such droughts, the impacts of drought conditions on human health, and about innovations that have been introduced to secure water for ecological and environmental services in times of drought. We will begin with a brief overview of the nature of severe, sustained droughts emphasizing more recent events such as the 1930's, 1950's and the extended drought in the Southwest US, and then work towards an understanding of impacts, risk planning and management strategies.

Moderator:

Roger S. Pulwarty, Physical Scientist and Director, National Integrated Drought Information System, NOAA

Discussants:

Richard Seager, Palisades Geophysical Institute/Lamont Research Professor, Lamont-Doherty Earth Observatory at Columbia University

Donald Wilhite, Professor of Applied Climate Science, School of Natural Resources, University of Nebraska-Lincoln

Rear Admiral Scott Deitchman, Assistant Surgeon General, Associate Director for Environmental Health Emergencies, National Center for Environmental Health and Agency for Toxic Substances and Disease Registry, Centers for Disease Control and Prevention

Anthony Slatyer, First Assistant Secretary, Water Reform Division, Department of Sustainability, Environment, Water, Population and Communities

22. Predicting and Responding to Famine

(Oceanic B)

This workshop will explore the progress being made to identify and respond to regions around the world threatened by and impacted by major food shortages as a result of droughts, floods, and other factors. The Famine Early Warning System Network (FEWS NET) will be one of the mechanisms examined. Methods of responding to early warnings of famine and famine onset will be addressed. Participants will develop recommendations for advancing forecasting, preparation, and response to famine in the both near-term and the long-term.

Moderator:

Rajul Pandya-Lorch, Head of 2012 Vision Initiative and Chief of Staff, International Food and Policy Research Institute (IFPRI)

Discussants:

Gary Eilerts, Famine Early Warning System Network (FEWS NET), U.S. Agency for International Development

Scott Bode, Natural Resources Management Specialist, World Agroforestry Centre

Robert Johansson, Deputy Chief Economist, U.S. Department of Agriculture

Merry Fitzpatrick**,** Feinstein International Center, Tufts University

Doug Brown, Director, Agriculture and Food Security, World Vision International

14. Environmental Emergencies: How to Manage Recent Trends of Climate Change and Urbanization

(MD Classroom C-3)

The ability for governments to respond quickly and effectively to natural disasters is often limited by weakened local capacity and minimal preparedness efforts. These actions are often exacerbated by not knowing whom to call for assistance, or how assistance is requested. As vulnerability to these types of events increases with more densely populated societies, and with changes in the frequency of disasters, the need to bridge the gaps to preparedness and response activities becomes crucial.

This workshop will explore the tools and mechanisms available for strengthening preparedness and response activities by local and regional governments. Tools such as the training and knowledge-sharing platforms of the virtual Environmental Emergencies Centre (EEC), and methods of integrating industrial and technological hazards into contingency planning, will be discussed, as will the opportunities to better operationalize environmental considerations into emergency response activities. Participants will identify or develop partnerships, initiatives and/or strategies that:

1) will best support integrating secondary technological and industrial accidents into local contingency planning scenarios;
2) identify environmental considerations into emergency response and development activities; and,
3) recommend how the training and knowledge-sharing platforms of the virtual Environmental Emergency Centre be better utilized to strengthen the preparedness and response activities of disaster response managers and planners.

Moderator:

Carl Bruch, Senior Attorney and Co-Director of International Programs, Environmental Law Institute

Discussants:

Rene Nijenhuis, Humanitarian Affairs Officer, UN Office for the Coordination of Humanitarian Affairs

Dennisses Valdes, Deputy Director, US EPA Environmental Response Team

Shanna McClain, Southern Illinois University-Carbondale

Victor Flatt, Director, Center for Law, Environment, Adaptation and Resources (CLEAR); University of North Carolina Chapel Hill School of Law

15. Building Community Resilience and Capacity through Extension Programs and Youth Corps

(Meridian D)

Extension – the Cooperative Extension System of the US Department of Agriculture - has the requisite skills, community roots and tradition of helping clients adapt to changing environments. Extension and partner organizations (e.g., VOADs) provide community-based trainings that address youth development, community and economic development, leadership development, family and consumer sciences, and agricultural and natural resources. Extension has more relevant tools: facilitation skills, media access and experience developing and conducting needs assessment and evaluation programs.

Youth Corps are community and state-based organizations that can play a significant role in hands-on disaster relief operations, volunteer management, and distribution of educational materials. Working independently, as well as with state, local, and federal agencies like FEMA, the Corporation for National and Community Service, and the US Forest Service, there is a long history of Corps playing a significant role in direct response as well as preparation, mitigation, and recovery work.

Moderator:

Virginia Morgan White, Extension Disaster Education Network (EDEN) Immediate Past Chair

Discussants:

Rick Atterberry, EDEN Chair

Steve Cain, EDEN Homeland Security Project Director

Pat Skinner, EDEN Web Manager

Levi Novey, Communications Manager, The Corps Network

Joe Gersen, Director of Government Relations, Public Lands Coalition

16. Responding to Drinking Water and Wastewater-Related Disasters and Preparing for Climate Change

(Meridian E)

This session addresses disasters such as droughts, earthquakes, wildfires, and tornadoes that affect infrastructure for drinking water and wastewater systems, along with response, recovery, and mitigation from such incidents. Foremost is the preparedness and resiliency of

drinking water and wastewater systems. This session will provide an overview of the Water Sector (drinking water and wastewater utilities, along with their partners and stakeholders at the local, state, and federal levels) and discuss activities directed at enhancing the response and resiliency of the sector. It will provide an update on a variety of U.S. EPA emergency response activities, as well as information about federal coordination efforts to address response issues. It will look at how community water-based infrastructure systems, together with surrounding metropolitan areas and suburbs, can better prepare for developing sensible adaptation mechanisms to deal with the uncertainties of extreme weather events and climate change.

Moderators/Organizers:

Richard Weisman, Emergency Response Team (acting), Water Security Division, Office of Ground Water and Drinking Water, U.S. EPA; and ***Eugene Stakhiv,*** U.S. Co-Director, International Joint Commission (IJC) Upper Lakes Study, and Technical Director, UNESCO-ICIWaRM, Institute for Water Resources

Discussants:

David Goldbloom-Helzner, U.S. EPA, Office of Water

Nushat Thomas, U.S. EPA, Office of Water

Ed Hecker, U.S. Army Corps of Engineers Institute for Water Resources

Thomas Jacobus, General Manager, Washington Aqueduct, U.S. Army Corps of Engineers

17. Resilient Community Disaster Recovery

(Continental A)

Communities need to prepare before being hit by a disaster. Local leaders and governments will need to reopen schools, replace permanent housing, support small businesses and ensure workers can get to jobs. This approach calls for an integrated recovery strategy that coordinates the efforts of diverse stakeholders to mitigate the impacts of a disaster to a region in the months and years after the initial event. A recent National Research Council report, *Disaster Resilience: A National Imperative*, recommends the creation of a National Resilience Scorecard to assist in identifying issues and monitoring improvements in building community resilience. This workshop session will explore ways in which a scorecard could support community leaders and local governments in their efforts to advance long-term resilient recovery. The session will concentrate on three key areas: governance at local and regional levels; measures, metrics and indicators of successful recovery; and platforms for sharing information and data among stakeholders.

Organizers:

Mary Lou Zoback, Stanford University and Member, Disasters Roundtable, National Research Council

Ron Eguchi, ImageCat, Inc. and Member, Disasters Roundtable, National Research Council

Darlene S. Washington, DSW Consulting and Member, Disasters Roundtable, National Research Council

Sherrie Forrest, Staff, National Research Council

John H. Brown, Jr., Staff, National Research Council

Moderator:

Lauren Alexander Augustine, Director, Disasters Roundtable, National Research Council

Discussants:

Arrietta Chakos, Principal, Urban Resilience Strategies and Member, Disasters Roundtable, National Research Council

Reginald DesRoches, Karen and John Huff School Chair & Professor, School of Civil & Environmental Engineering, Georgia Institute of Technology and Member, Disasters Roundtable, National Research Council

Linda Langston, Linn County Supervisor, Iowa

Susan Cutter, Director, Hazards & Vulnerability Institute, University of South Carolina

18. Legal Issues in Emergency Management

(Atrium Hall)

The purpose of the workshop is to provide a forum to discuss major legal issues that arise during emergencies or natural disasters (e.g., evacuations, quarantine in the public health context, mutual aid, federal authorities, and liability of first responders) in the context of how they relate to reducing the severity of a disaster, and how understanding and addressing legal issues ahead of a problem has positive benefits that help create more resilient communities. This workshop will engage participants in a facilitated discussion based on case studies and

recent events highlighting a particular legal issue or sets of issues. Outcomes will focus on how to better educate the public and government personnel on relevant legal issues.

Organizer:

Erin N. Hahn, Johns Hopkins University Applied Physics

Moderator:

Russell Strickland, Manager, Division of Emergency Operations, Harford County, Maryland

Discussants:

Joshua Easton, Program Analyst at the Federal Emergency Management Agency; former Program Manager of the Urban Area Security Initiative at the Baltimore Office of Emergency Management

Michael Vesely, Senior Staff Attorney, University of Maryland Center for Health and Homeland Security

19. Out of Harm's Way: Natural Disasters and Population Movements

(Meridian C)

Local climate mitigation and adaptation are critical to the survival of communities in areas susceptible to climate change. This session will discuss how communities should increase their resilience to extreme weather, preserve and restore ecosystems that helped protect them from natural disasters in the past, and rebuild themselves to be more sustainable and more disaster-proof.

Organizer/Moderator:

William Becker, Senior Associate, Natural Capitalism Solutions

Discussants:

Larry Larson, Executive Director, Association of State Floodplain Managers

Tim Lovell, Executive Director, Tulsa Partners

Jim Schwab, Manager, American Planning Association Hazards Planning Research Center

20. Supporting Community Resilience

(Classroom A)

Many initiatives are underway to increase the resilience of communities to disasters. This workshop will explore a number of examples that provide important lessons to all seeking to support community resilience. Two specific examples include:

1. The American Red Cross Community Resilience Pilot program, focusing on the ARC Community Engagement Strategy (CES), is an ongoing process to build resilience by enhancing community collective action around preparedness.
2. The communities that represent the Alliance for Community Solutions use technology and analysis to improve resiliency while putting in place systems that, while critical in emergencies, are useful to the community on many levels on a day to day basis.

Outcomes will draw upon these practical and successful examples and include strategies for future efforts. The workshop will also result in new relationships and partnership that will have on-the-ground impact after the conference.

Organizers:

Molly Jones, Research Assistant, Security, Energy and the Environment, NORC at the University of Chicago; ***Douglas Himberger,*** Senior Vice President and Director, NORC at the University of Chicago; ***Michael Meit,*** Program Area Director, NORC at the University of Chicago; ***Jacqueline Yannacci,*** Program Manager, Community Resilience, American Red Cross; ***Joe Abrams,*** Member Chair, Alliance for Community Solutions; ***John Kiehl,*** Regional Service Director, Panhandle Regional Planning Commission

Moderator:

Michael Meit, NORC

Discussants:

Jacqueline Yannacci, American Red Cross

Joe Abrams, Alliance for Community Solutions

John Kiehl, Panhandle Regional Planning Commission

David Kaufman, Director of Policy and Program Analysis, FEMA

21. Risk Perception and Communication: How We Respond to Disasters

(Hemisphere B)

Researchers in psychology and communications have completed extensive research on the variability of the public's response to a range of risk communication strategies. This research has shown that many factors influence a person's perception of risk including whether the risk is voluntary, whether the phenomenon is understood by science, and the dread of the possible outcome. These factors affect the emotional content of the human response and the

degree that the probability of the hazard will influence decisions. Effective communication during crises needs to take these factors into account.

Moderator:

Timothy Sellnow, Associate Dean of the Graduate Program in Communication; Professor, University of Kentucky

Discussants:

Paulette Aniskoff, Director, Individual and Community Preparedness Division, FEMA*

Elchin Khalilov, Chairman, International Committee GEOCHANGE on Global Geological and Environmental Change and head of ArkNow

David Daigle, Associate Director for Communications, Office of Public Health Preparedness and Response, Centers for Disease Control

Susanna Hoffman , anthropologist and author of *Catastrophe and Culture* and *The Angry Earth*

Daniel J. Barnett, Assistant Professor, Johns Hopkins University, Bloomberg School of Public Health

22. Predicting and Responding to Famine

(Oceanic B)

Please refer to page 40 for the session description.

23. Cities and Disasters

(Continental B)

This workshop will explore the unique challenges that cities, with their large concentrated populations, confront; and how they respond to disasters. Recent examples range from New York City (Superstorm Sandy) to Port au Prince (Haitian Earthquake). Participants will develop strategies for enhancing the resilience of cities; supporting them in immediate aftermath of a disaster; and longer-term recovery.

Organizer:

Marc Magaud, French Embassy

Moderator:

Jennie DeVeaux, Vice President, ICF International

Discussants:

François Grunewald, Coordinator, Study on Disaster Preparedness, URD Group

Adenrele Awotona, Center for Rebuilding Sustainable Communities after Disasters, University of Massachusetts, Boston

Daniel Stevens, Emergency Preparedness Director, Vancouver, BC

Charles Setchell, Senior Shelter, Settlements, and Hazard Mitigation Advisor, USAID Office of US Foreign Disaster Assistance (OFDA)

Marie-Hermine de Montangon, Entrepreneurs du Monde

Thursday, January 17, 2013

Detailed Agenda

Note: All Sessions Located in Atrium Hall

8:00 a.m. **Continental Breakfast, Scientific Poster Presentations, and Exhibition continue**

8:20 a.m. **Introduction:** ***Peter Saundry***, Executive Director, National Council for Science and the Environment (NCSE)

8:30 a.m. **Keynote Address:** ***Pete Thomas,*** Chief Risk Officer, Willis Re

9:00 a.m. **Keynote Address:** ***Thomas Loster*****,** Chairman, Munich Re Foundation

9:30 a.m. **Plenary 7: Building Resilient Communities**
Moderator: ***Monica Brady-Myerov***, Reporter, NPR

- ***Susan Cutter***, Carolina Distinguished Professor and Director, Hazards & Vulnerability Research Institute, University of South Carolina
- ***Nancy Kete***, Managing Director, The Rockefeller Foundation
- ***Gus Felix***, Global Head of Operational Risk Management, Citigroup
- ***Joseph Fiksel***, Executive Director, Center for Resilience, The Ohio State University

10:30 a.m. **Plenary 8: No Regrets Resilience: Saving Money, Saving Lives**
Moderator: ***Elizabeth Shogren***, Correspondent, Science Desk, NPR

- ***Howard Kunreuther***, James G. Dinan Professor of Decision Sciences & Public Policy; Co-Director, Risk Management and Decision Processes Center, Wharton School, University of Pennsylvania
- ***Russ Paulsen***, Executive Director of Community Preparedness and Resilience Services, American Red Cross
- ***Abul Hassan Mahmood Ali***, Minister of Disaster Management and Relief, Bangladesh

11:30 a.m. **Keynote Address:** ***Nancy Lindborg***, Assistant Administrator, Bureau for Democracy, Conflict and Humanitarian Assistance, U.S. Agency for International Development

12:00 p.m. **Keynote Address:** ***Senator Mary Landrieu (D-LA),*** Co-Chair of the Congressional Hazards Caucus

12:30 p.m. **Buffet Lunch (with youth mentoring tables)**

2:00 p.m. **Adjourn**

Thursday Keynote and Plenary Biographies

Keynote Address

Pete Thomas has 37 years of insurance and reinsurance underwriting, broking and management experience. He joined Willis Re in October 2004 as a Senior Vice President and was promoted to Executive Vice President and Managing Director in 2005. He joined us from Arch Re where he worked as a management consultant. Prior to Arch Re Pete worked for PMA Reinsurance Management Company At PMA from 2001-2003, Pete was first a Senior Vice President and then an Executive Vice President responsible for strategic planning, claims, operations, information technology, underwriting services, accounting, contracts, human resources, and marketing. Prior to joining PMA Reinsurance, Pete was President and Chief Operating Officer of the Burlington Insurance Company, First Financial Insurance Company and Alamance Group (1997-2000). He spent much of his career at Guy Carpenter in increasingly more responsible roles (1978-1986 and 1990-1997) ending his tenure as a Managing Director. He took 1987-1990 to serve as a Senior Vice President at Trenwick American Reinsurance Company. He began his insurance career in 1976 as a licensed independent insurance agent at Allen, Russell & Allen, Inc., Hartford, Connecticut. Pete graduated from Catholic University, Washington, D.C., with a Bachelor of Art Degree in Philosophy.

Keynote Address

Thomas R. Loster, a geographer, was a member of the Geoscience Research Group at Munich Reinsurance Company, Munich, the world's leading reinsurance company, for 16 years. He was in charge of issues relating to weather perils, climate change and climate policy. His responsibilities also included the statistical analyses of worldwide natural catastrophes and trend analyses that appeared in a number of papers and publications. Mr. Loster was appointed chairman of the Munich Re Foundation in July 2004. The Foundation addresses major global challenges – environmental and climate change, water as a resource and risk factor, population growth and disaster prevention – and is committed to helping people exposed to risk situations. True to its motto "From Knowledge To Action", the Foundation aims to prepare people to deal with risks and to improve their living conditions as well as to minimize the risks to which they are exposed. Researching social vulnerability and building resilience through disaster prevention is one key pillar of the work of Munich Re Foundation.

Plenary 7: Building Resilient Communities

Monica Brady-Myerov began her career as a radio journalist in Kenya after graduating from Brown University in 1989 with a degree in international relations. She lived in Nairobi, Kenya, and worked as a freelancer, reporting for the Voice of America, Radio France International and many other news organizations. After two years, Monica moved her radio freelance operation to Brazil. In Rio de Janeiro, Monica filed reports for ABC Radio News, The Christian Science Monitor Radio and other outlets. Monica lived in Brazil for two years and speaks fluent Portuguese. Upon returning to the United States in 1993, Monica worked on Monitor Radio's award-winning "Morning Edition" radio program as a producer/editor. In 1995, Monica went back to the field as a correspondent for Monitor Radio's Washington bureau. In 1997, Monica joined NPR's Washington desk, where she covered political stories. She was also the key reporter covering the UPS strike that summer. In 1998 she joined Boston's NPR news station, WBUR. She is now a senior reporter and assistant managing editor for news at WBUR. In this position, Monica covers local issues, including welfare, housing, religion, the media and mental health. Many of her reports can also be heard on NPR's national news broadcast and "Marketplace" radio.

Susan Cutter is a Carolina Distinguished Professor of Geography at the University of South Carolina where she directs the Hazards and Vulnerability Research Institute. She received her B.A. from California State University, Hayward and her M.A. and Ph.D. (1976) from the University of Chicago. Her primary research interests are in the area of disaster vulnerability/resilience science—what makes people and the places where they live vulnerable to extreme events and how vulnerability and resilience are measured, monitored, and assessed. She has authored or edited twelve books, more than 100 peer-reviewed articles and book chapters. Dr. Cutter has also led post-event field studies of the role of geographic information technologies in rescue and relief operations. She has provided expert testimony to Congress on hazards and vulnerability and was a member of the U.S. Army Corps of Engineers IPET team evaluating the social impacts of the New Orleans and Southeast Louisiana Hurricane Protection System in response to Hurricane Katrina. She is also a coordinating lead author of Chapter 5 of the IPCC Special Report on "Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation."

Nancy Kete joined the Rockefeller Foundation in January 2012. As Managing Director, Dr. Kete leads the foundation's global work on resilience including developing strategies and practice for infusing resilience thinking throughout the foundation's work.During her 25 year career in government, civil society, and private sector, Dr. Kete brought technical, institutional, and managerial leadership to bear on a number of major environment and societal challenges. She has been a diplomat, a climate change negotiator, a social entrepreneur, and a highly successful fund-raiser. Before joining the Foundation, Dr. Kete spent thirteen years at the World Resources Institute (WRI), first as Director of the Climate, Energy, and Pollution Program and then as founder and Director of EMBARQ, a distinguished program that catalyzed environmentally sustainable transport solutions to improve quality of life in cities in Mexico, Brazil, India, Turkey and the Andean region. She also served on President Obama's National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling.

Gus Felix is the Global Head of Operational Risk Management for Citigroup. He has worked for Citi for the past 33 years in various posts around the world. Originally based out of New York, Mr. Felix covered assignments in Asia, Africa and South America, before moving to Athens in 1983 to work in Citibank's Middle East/Africa Division Headquarters. Following that post, he worked in Citibank Istanbul in corporate banking for three years. He then moved to London in 1987 where he worked in Citicorp Scrimgeour Vickers, the bank's equity and fixed income brokerage. In 1991, Mr. Felix was transferred to Madrid where he spent six years managing Citi's Securities Businesses, Broker/Dealer relationships, and banking products in Spain and Portugal. In 1997 Mr. Felix was seconded to the Saudi American Bank as the General Manager and Head of Corporate and Investment Banking, based in Riyadh, Saudi Arabia. In 2002, he assumed a new role as Head of Citigroup in Israel, where he worked for the next four years.In June 2006 he was transferred to another dual role as Head of Citigroup South Africa, and South Africa Head of Markets and Banking. He assumed his current role in September of 2009, and is now based in New York.Mr. Felix received his finance degree from Manhattan College in New York, after having previously studied engineering at the Stevens Institute of Technology.

Joseph Fiksel is Executive Director of the Center for Resilience at The Ohio State University, with a focus on integrated modeling of urban and regional economies. Previously he directed the Decision and Risk Management group at Arthur D. Little, Inc., and served as Vice President for Life Cycle Management at Battelle. He is an internationally recognized authority on sustainability and resilience, with over 25 years of research and consulting experience for multi-national companies, government agencies, and industry consortia such as the World Business Council for Sustainable Development. Currently he is serving as Special Assistant for Sustainability at the U.S. EPA, helping to incorporate systems thinking into the Agency's research and development programs. Dr. Fiksel holds a B.Sc. from M.I.T. and a Ph.D. from Stanford University. His latest book, Design for Environment, was published by McGraw-Hill in 2009.

Plenary 8: No Regrets Resilience: Saving Money, Saving Lives

Elizabeth Shogren is an NPR News Science Desk correspondent focused on covering environment and energy issues and news. Since she came to NPR in 2005, Shogren's reporting has covered everything from the damage caused by the BP oil spill to the environment of the Gulf Coast, to the persistence of industrial toxic air pollution as seen by the legacy of Tonawanda Coke near Buffalo, to the impact of climate change on American icons like grizzly bears. Prior to NPR, Shogren spent 14 years as a reporter on a variety of beats at *The Los Angeles Times*, including four years reporting on environmental issues in Washington, D.C., and across the country. While working from the paper's Washington bureau from 1993-2000, Shogren was given the opportunity to travel abroad on short-term foreign reporting assignments, including the Kosovo crisis in 1999, the Bosnian war in 1996, and Russian elections in 1993 and 1996. Before joining the Washington bureau, Shogren was based in Moscow where she covered the breakup of the Soviet Union and the rise of democracy in Russia for the newspaper.

Howard C. Kunreuther is the James G. Dinan Professor; Professor of Decision Sciences and Business and Public Policy at the Wharton School, and co-director of the Wharton Risk Management and Decision Processes Center. He has a long-standing interest in ways that society can better manage low-probability, high-consequence events related to technological and natural hazards. Dr. Kunreuther is a member of the World Economic Forum's Global Agenda Council on Insurance and Asset Management for 2011-2012, and in 2009-2010 served as co-chair of the Forum's Global Agenda Council on Leadership and Innovation for Reducing Risks from Natural Disasters. He is a member of the National Research Council's panel on Increasing National Resilience to Hazards and Disasters and serves the Intergovernmental Panel on Climate Change (IPCC) as a chapter lead author of the IPCC's 5th Assessment Report on Integrated Risk and Uncertainty Assessment of Climate Change Response.

Russ Paulsen leads nationwide community preparedness and resilience efforts for the American Red Cross. He was appointed to the position in November of 2011. Prior to this assignment, Russ led the Red Cross's long-term recovery efforts after Hurricanes Katrina and Rita, which provided mental health, case management, and community recovery services to survivors across the nation. He also served on the management committee for the September 11 Recovery Program. In his twenty-plus years with the Red Cross, Russ has served as principal deputy to the Chief Operating Officer responsible for national and international humanitarian programs, and has been the program manager for field transformation under two different Chief Executive Officers. Before being called to Washington, Russ spent 14 years with Red Cross chapters in the San Francisco Bay Area, initially as a volunteer leader after the Loma Prieta Earthquake. He served the chapter as Senior Disaster Manager, then Program Officer, then Director of Corporate Fundraising. While working in business continuity in the for-profit sector, Russ remained a committed volunteer. An Illinois native, Russ has a Bachelor's degree from the University of California, Riverside, and a Master's degree in political science from the University of California, Berkeley.

Margaret Arnold is a Senior Social Development Specialist with the World Bank, specializing in the social dimensions of climate change, disaster risk management, and community-based and gender-sensitive approaches to risk management. She leads work on pro-poor adaptation and resilience building for the Social Resilience cluster. Margaret has been with the World Bank since 1995, and has worked on urban development and post-conflict reconstruction in addition to DRM. She was part of a two-person team that established the World Bank's first unit focused on natural disaster risk management in 1998 (the Disaster Management Facility), and is credited with facilitating the Bank's recognition of disaster risk reduction as a development priority. She is one of the founders of the ProVention Consortium and served as Head of its Secretariat from 2007-2009.

The Honorable Abul Hassan Mahmood Ali, ***MP,*** serves as Minister of Disaster Management and Relief in Bangladesh. He received a B.A. with honors in 1962 and an M.A. in 1963 in economics from Dhaka University. Mr. Ali joined the Pakistan Foreign Service in 1966 and posted as Vice-Consul of Pakistan in New York in 1968. He joined the Bangladesh Liberation Movement in 1971 and was appointed as the

Representative of the Provisional Government of Bangladesh at Mujibnagar. Immediately after arriving in New York in 1968, Mr. Ali started to organize the small Bangladesh Community in the U.S. He served as Executive Assistant to Justice Abu Sayeed Chowdhury, Chief Overseas Representative of the Mujibnagar Government and Leader of the Bangladesh Delegation to the United Nations. After independence was achieved, Mr. Ali served as representative to the United Nations and later as Acting Consul General in New York. In the years that followed, he served in various capacities at the Foreign Ministry in Dhaka and at Bangladesh Missions abroad. Mr. Ali retired from active service in 2001 and joined the Awami League Party. He was appointed as Member of the Central Advisory Council of the Awami League in 2002 and later as Co-chairman of the Awami League Sub-Committee on International Affairs. Mr. Ali was elected to the Bangladesh Parliament as Awami League candidate from a rural constituency in Dinajpur in northern Bangladesh in 2008. He was elected as Chairman of the Parliamentary Standing Committee in the Ministry of Foreign Affairs.

Keynote Address

Nancy Lindborg is the USAID assistant administrator for the Bureau for Democracy, Conflict and Humanitarian Assistance (DCHA). She leads the efforts of more than 500 team members in nine offices focused on crisis prevention, response, recovery and transition. Since being sworn into office in October 2010, Ms. Lindborg has led DCHA teams in response to the Arab Spring uprising and numerous other global crises. She led the USAID Horn Drought Response and continues to spearhead USAID efforts to advance resilience as a means of helping communities out of chronic disaster. The nine offices of DCHA include the newly established Center of Excellence on Democracy, Human Rights and Governance, the Office of Foreign Disaster Assistance, the Office of Food for Peace, the Office of Transition Initiatives, and the Office of Conflict Management and Mitigation. Lindborg has spent most of her career finding solutions to long-standing issues involving transition, democracy and civil society, conflict and humanitarian response. Prior to joining USAID, she was president of Mercy Corps, where she spent 14 years developing it into a globally respected organization known for its innovative programs in challenging environments.

Keynote Address

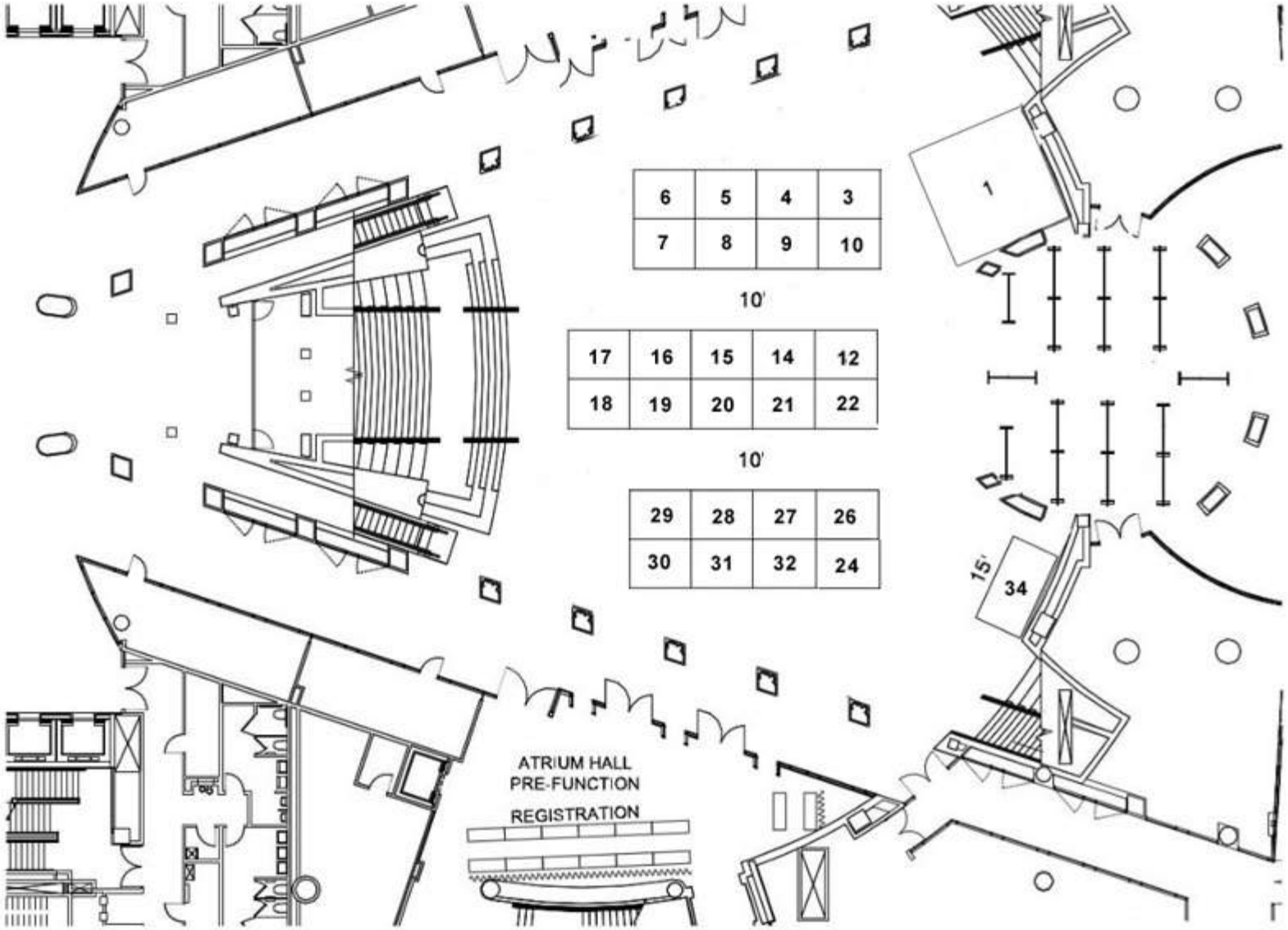
Mary L. Landrieu was first elected to the Louisiana state legislature at the age of 23. After serving eight years as a state representative and two terms as State Treasurer, in 1996 she became the first woman from Louisiana elected to a full term in the U.S. Senate. Senator Landrieu is currently the Chair of the Senate Small Business Committee, chair of the Appropriations Subcommittee on Homeland Security and a member of the Energy and Natural Resources, and Homeland Security and Governmental Affairs committees. The nonpartisan Congress.org has ranked Senator Landrieu as the tenth most effective legislator in the Senate. Senator Landrieu has been the leading voice in Washington for the Gulf Coast recovery effort. In the wake of Hurricanes Katrina and Rita and the failures of the federal levee system, she secured billions in recovery dollars and has worked extensively to jumpstart recovery projects. She is committed to reforming the Federal Emergency Management Agency to ensure the nation’s disaster response arm is speedy and effective the next time a disaster strikes the United States, be it natural or manmade. In the aftermath of the Deepwater Horizon disaster, Senator Landrieu introduced the RESTORE the Gulf Coast Act, which is a bipartisan, regional approach to address the immense economic and environmental damage to America's working coast. The RESTORE Act will, for the first time, direct 80 percent of the Clean Water Act penalties paid by BP directly to the Gulf Coast. This represents the largest single investment in environmental restoration in our nation's history. Senator Landrieu helped build a strong, bipartisan, hard-working coalition of Congress members to pass the RESTORE Act through Congress with overwhelming support. This historic legislation was signed into law on July 6, 2012, as part of a two-year transportation bill.

Exhibition

January 15-17, 2013

Tuesday Hours – 9:30 a.m. to 8:30 p.m.
Wednesday Hours – 8:00 a.m. to 8:30 p.m.
Thursday Hours – 8:00 a.m. to 2:00 p.m.
Note: Exhibits will be held in the Atrium

1	Toyota
3	American Meteorological Society (AMS)
4&5	National Center for Atmospheric Research (NCAR)
6&7	Diesel Technology Forum
8	College of Architecture at Texas A&M University
9	The Johns Hopkins University E^2SHI Program
10	Centers for Disease Control and Prevention (CDC)
12	Chatham University
14	Iowa Flood Center, University of Iowa
15	Little River Research and Design
16	Bard Center for Environmental Policy
17&18	WebsEdge
19	U.S. Environmental Protection Agency (EPA)
20	U.S. Department of Agriculture (USDA)
21	National Oceanic and Atmospheric Administration (NOAA)
22	U.S. Forest Service
24	U.S. Geological Survey (USGS)
26	Louisiana Coastal Protection and Restoration Authority
27	National Science Foundation (NSF)
28	ESRI
29	Royal Roads University
30	Island Press
31&32	National Council for Science and the Environment (NCSE)
34	National Aeronautic and Space Administration (NASA)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ATRIUM HALL
PRE-FUNCTION
REGISTRATION

Poster Session

Note: Posters will be up for the duration of the conference from Wednesday through Friday in the Atrium Oculus (please see map on previous page).

1. ***Living on the Edge: Technology, Prediction, and Human Behaviour in Two Landslide-prone Provinces in South-Western China***
   Kathleen Conners, Rebecca Elder, Krystal Lomas, Lita O'Halloran
   Ecosystem Management Technology Program, Sir Sandford Fleming College
2. ***Myotislucifugus*: Combating the spread of West Nile Virus in Urban Environments**
   Courtney Allison, Issam Hammoud, David Himelfarb, Kelly McLean, Sarmela Ramachandranathan
   Ecosystem Management Technology Program, Sir Sandford Fleming College
3. **Honeybee Decline in North America: Short-term Mitigations and Long-term Solutions**
   Sam Brown, Trevor Dezan, Emily Johnston, Josh Logel and Nick Shurben
   Ecosystem Management Technology Program, Sir Sandford Fleming College
4. **Phytoplankton Decline: Cascading Effects on Global Ecosystem Function**
   Justin Fujimoto, Jenny Fulton, Jordan McNamara, Katherine Moesker
   Ecosystem Management Technology Program, Sir Sandford Fleming College
5. **Power to the People: Minimizing Electricity Disruptions in the Face of Natural Disasters**
   Stefanie Ferri, Jody Marks, Jason Picard, David Ryrie
   Ecosystem Management Technology Program, Sir Sandford Fleming College
6. **Hazardous Material Contamination in the Great Lakes: Less Pollution is the Best Solution!**
   Curtis Dunnell, Eric Pade, Greg Meisner, Kim Pollock
   Ecosystem Management Technology Program, Sir Sandford Fleming College
7. **Another One Bites the Dust: Dust Clouds as Mechanisms of Aquatic Ecosystem Change**
   Monique Aarts, Brooke Smith, Grace Taurozzi, James Vandevenne
   Ecosystem Management Technology Program, Sir Sandford Fleming College
8. **Preparing for Environmental Refugees: An Ecological Approach to Urban Design**
   Emma Bennett, Holli Campbell, Amber Hawkins, Alannah Hunt, Lauren Smith
   Ecosystem Management Technology Program, Sir Sandford Fleming College
9. **Sparking a Difference in Adaptive Management: Identifying Fire Risk Communities in Western Canada**
   Dylan Goutos, Kari Jansen, Macall Robinson, Matthew Walmsley
   Ecosystem Management Technology Program, Sir Sandford Fleming College
10. **Environmental and Economic Hazards of the 75-year-old, 1936 U.S. Flood Control Program**
    Peter E. Black
    SUNY Environmental Science and Forestry
11. **Resilience without Qualms: Mississippi Women Survivors of Hurricane Katrina – Six Years Later?**
    Ophera A. Davis
    Independent Scholar
12. **Weathering Climate Risks: Advancing Corporate and Community Resilience**
    Steve Winkelman, Kelly Klima
    Center for Clean Air Policy
13. **Socio-economic Vulnerability of African Americans to Hurricanes in the Gulf Coast of the United States**
    Tanveer Islam
    Department of Emergency Management, Jacksonville State University

14. **Environmental Security Assessment in the Czech Republic**
    Blanka Loučková, Eliška Lorencová, David Vačkář, Tomáš Hák, Svatava Janoušková, Simona Losmanová
    Czech Globe, Global Change Research Centre, Czech Republic

15. **Social and Economic Benefits from Increased Flood Resilience of Ecologically-Beneficial Stream Crossing Design: Examining Tropical Storm Irene Impacts in Vermont**
    Amy Unthank, Nat Gillespie, Lauren Campbell
    U.S. Forest Service

16. **Modeling the Sensitivity of Tropical Cyclone Yasi to Environmental Factors such as Sea Surface Temperatures and Estimating its Effect on the Great Barrier Reef**
    Chelsea Parker, Amanda Lynch
    Brown University

17. **Community Resilience and Hurricane Ida: How Marginalized Salvadorans Lacking NGO and Governmental Support Cope with Climate Shock**
    Beth Tellman
    School of Forestry and Environmental Studies, Yale University

18. **Studies of Decision Making, Education and Social Aspects of Community Response to Accelerating Sea Level Rise**
    Larry Atkinson, Jenifer Alonzo, Rafael Diaz, Poornima Madhavan, Michael Robinson, Burton St. John, Elizabeth Smith
    Old Dominion University

19. **The Role of Applied Public Health Epidemiology in Disasters**
    Josephine Malilay, Michael Heumann, Rachel Roisman
    U.S. Centers for Disease Control and Prevention

20. **The Growth of Vulnerabilities: Development in the 100 Year Floodplain**
    Jaimie Hicks Masterson
    Texas A&M University

21. **Post-Disaster Applications of an Automated Rapid Damage Assessment Approach with a Combination of Laser Scanning Technologies and the Computational Geometry**
    Alireza Geranmayeh Kashani, David Grau
    University of Alabama

22. **Modeling Scenarios of Human Migration from the Republic of the Marshall Islands due to Sea-Level Rise**
    Donna Davis, Frank Farmer, Stephen Boss
    University of Arkansas

23. **Cumulative Regional Integrated Operability Score (CRIOS): To Assess Risks and Achieve Emergency Management Integration within Tribally Inclusive Geographic Areas**
    Anne Garland, Lloyd Mitchell, ARIES Student Participant Team
    Applied Research in Environmental Sciences Nonprofit, Inc. (ARIES) and University of Maryland, College Park

24. **USGS Seismic Risk Web Application: A Tool for Preliminary Risk Assessment**
    Anna Olsen, Sean McGowan, Nicolas Luco
    U.S. Geological Survey

25. **Analysis and Comparison of Geohazard Management in Diverse Geographic Locations Inhabited by Indigenous Communities**
    Kurt Swalander, Lloyd Mitchell, Anne Garland
    Applied Research in Environmental Sciences Nonprofit, Inc. (ARIES) and University of Maryland, College Park

26. **Local GIS Capacity in Northeast Coastal States, A Policy Analysis**
    Hannah Dean, John Duff
    University of Massachusetts, Boston

27. **Adapting to Wildfire: Rebuilding After Home Loss**
    Miranda H. Mockrin, Susan I. Stewart, Patricia Alexandre, Garry Sanfaçon, Volker Radeloff, Roger Hammer
    USDA Forest Service, Colorado State University, University of Wisconsin, Boulder County, CO, Oregon State University

28. **Tweeting Sandy: Observed Climate Risk Amplification Before, During, and After Hurricane Sandy**
    Peter Jacques, Gita Sukthankar, Claire Knox
    University of Central Florida

29. **The Vulnerabilities of the Gullah/Geechee Peoples in the Sea Islands, South Carolina**
    Sarah Meyers, Nicole Machuca, Annette Watson
    College of Charleston

30. **Acidification of Earth: An Assessment Across Mechanisms and Scales**
    Karen C. Rice, Janet S. Herman
    U.S. Geological Survey, University of Virginia

31. **Why Renewable Energy Matters**
    Gary Oram
    University of Montana

32. **Carbon Capital as a Mechanism to Fund Landscape-scale Wildfire Mitigation Projects in the West**
    Katharyn Woods, Jason Langer, Spencer Plumb, Erik Nielsen, Deborah Huntzinger
    Northern Arizona University

33. **Using Real-Life Events to Increase Students' Scientific Literacy**
    James A. Brey, Ira W. Geer, Robert S. Weinbeck, Elizabeth W. Mills, Kira A. Nugnes, Maureen N. Moses
    American Meteorological Society, National Science Foundation, National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration

34. **Strategies for Working with Place Memory in Community Disaster Recovery**
    Julia Badenhope
    Iowa State University

35. **ArkNow.net: How to Prepare a Population to Counter Natural Disasters Independently**
    Elchin Khalilov
    Scientific Research Institute for Prognosis and Studying of Earthquakes (Baku, Azerbaijan), International Committee GEOCHANGE on Global Geological and Environmental Change (Munich, Germany)

36. **The Peace Corps Master's International (PCMI) Program at the College of Charleston: A Tool for Addressing the Challenges of a Dynamic Environment**
    Nicole Machuca, Sarah Meyers, Cheryl Carmack, Benjamin Weiss, Tyler Hassig, Ashley Schnitker, Laura Mudge, Andrew Wynne, Tim Callahan, and David Owens
    College of Charleston

37. **Watershed Investment Programs to Help Support Evidence-Based Ecological Restoration in Fire-Adapted Forests**
    Abraham E. Springer, Sharon Masek Lopez, Diane Vosick, Wallace Covington
    School of Earth Sciences and Environmental Sustainability, Ecological Restoration Institute, Northern Arizona University

Collaborating Organizations

NCSE extends a special thank-you to the following collaborating organizations for their generous participation in the conference program and assistance in spreading the word about our conference.

Applied Ecological Services

Association of State Floodplain Managers

ASFPM 2013 Conference: Remembering the Past – Insuring the Future

Ball State Center for Energy Research/Education/Service

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Brandeis University, The Heller School for Social Policy and Management

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Imaging Notes

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National Hazards Mitigation Association

Opflex Solutions

Security and Sustainability Forum

University of the District of Columbia College of Agriculture, Urban Sustainability, and Environmental Sciences

U.S. Global Change Research Program

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Kyle Wilkinson

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Symposia Locations

All rooms are located on the Concourse Level.

Symposia A (2:00 pm – 3:30 pm)

Polaris A	1. International Roles in Environmental Emergencies
Hemisphere B	2. Tools to Identify Vulnerability to Disasters: Part 1
Oceanic B	3. Inundation Risk and Vulnerability Assessment
Continental C	4. Preventing Catastrophic Losses to the Cascading Effects of Forest Fire
Oceanic A	5. Lifeline Services at the Interface of the Built and Natural Environment
Polaris B	6. Ecosystem Impacts from Nuclear Energy: Lessons from Chernobyl and Fukushima
Continental B	7. Building a New Framework for Understanding and Mitigating Disaster Impacts on Ecosystems
Horizon B	8. Envisioning Resilient and Sustainable Communities
Hemisphere A	9. Climate Change, Communities, and Risk: Research from the U.S. Global Change Research Program and National Climate Assessment
Horizon A	10. Applying Models of Human Behavior and Memory Across Space and Time
Polaris C	11. Florida: A Statewide Case Study of Alternative Approaches to Adaptation and Recovery

Symposia B (3:45 pm – 5:15 pm)

Hemisphere B	12. Tools to Identify Vulnerability to Disasters: Part 2
Oceanic A	13. Wildland Fire in a Changing Climate
Continental A	14. Military Bases and their Communities
Hemisphere A	15. Coastal Cities: Planning for Resilience, Adaptation, and Sustainability – Lessons from the Northeast and Superstorm Sandy
Horizon A	16. Climate, Environment, and Readiness (CLEAR) Action Plan for Virginia – Incorporating Examples from California's Bay Area and Philadelphia, PA
Horizon B	17. Mapping a Path to Resilience: The Intersection of Environmental Disasters, Ecosystem Services, and Security
Continental C	18. Enhancing Preparedness and Building Resilience in the Rapidly Changing Arctic
Continental B	19. Learning from Disasters: Environmental Disasters as Teachable Moments
Oceanic B	20. Informing Disaster Resilience Policy
Polaris B	21. Women and Climate Change Disaster Resilience: Local to Global Ecological Impacts and Strategies

Polaris C	22. No Regrets Resilience along the Gulf Coast
Polaris A	23. Unmeasured Consequences of Major Natural Disasters and Conflict

Breakout Workshop Locations

*All rooms are located on the Concourse Level unless indicated otherwise (*Mezzanine Level).*

MD Classroom C-1	1. Ready or Not : Resilience Indicators
Hemisphere A	2. Connecting Tools with Decision Makers
Compass	3. Grid Collapse: Electric Power and Disasters
MD Classroom C-2	4. Coastal Communities: Planning for Resilience, Adaptation and Sustainability – Building Resilience in Coastal Communities: An International Agenda
Continental C	5. Mega-Fire and the Wildlands-Urban Interface
Horizon B	6. The U.S. Flood Control Program at 75: Moving from Flood Control to Risk Management
Intl Gateway*	7. Impacts of Earthquakes on the Environment and Human Health
Horizon A	8. Resilient Buildings and Communities: Responding to Disasters and a Changing Climate
Polaris C	9. Policies and Frameworks for Integrating Resources into Disaster Planning
Polaris B	10. Reducing Risk and Vulnerability: A New Future in Green Disaster Management, Climate Change Adaptation and Disaster Risk Reduction
Polaris A	11. Natural Resource Managers and Disaster Risk Reduction: Protecting Coastal Ecosystems
Meridian B	12. Enhancing Preparedness and Building Resilience in the Rapidly Changing Arctic: Developing an Action Plan
Oceanic A	13. Megadroughts
MD Classroom C-3	14. Environmental Emergencies: How to Manage Recent Trends of Climate Change and Urbanization
Meridian D	15. Building Community Resilience and Capacity through Extension Programs and Youth Corps
Meridian E	16. Responding to Drinking Water and Wastewater-Related Disasters and Preparing for Climate Change
Continental A	17. Resilient Community Disaster Recovery
Atrium Hall	18. Legal Issues in Emergency Management
Meridian C	19. Out of Harm's Way: Natural Disasters and Population Movements
Classroom A	20. Supporting Community Resilience
Hemisphere B	21. Risk Perception and Communication: How We Respond to Disasters
Oceanic B	22. Predicting and Responding to Famine
Continental B	23. Cities and Disasters

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Health security threats confront us every day. Some of the greatest threats come from sources that are part of our everyday lives. At NCEH/ATSDR, it's our job to be on alert and to use the best science and implement effective public health programs to find those threats and help people cope with them.

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SEES Mission: *to advance science, engineering, and education to inform the societal actions needed for environmental and economic sustainability and sustainable human well-being*

SEES activities highlight the National Science Foundation's unique role in helping society address the grand challenges of achieving sustainability, through support for interdisciplinary research and education. Over-arching goals for SEES programs span the scientific domains.

- **Build the knowledge base.** Support interdisciplinary research and education that can facilitate the move towards global sustainability.
- **Grow the workforce of the future.** Develop a workforce trained in the interdisciplinary scholarship needed to understand and address the complex issues of sustainability.
- **Forge critical partnerships.** Build linkages among existing projects and partners and add new participants in the sustainability research enterprise.

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Hazards SEES invests in strongly interdisciplinary research projects that:

- reduce the impacts of hazards
- enhance the safety of society
- contribute to sustainability
- are broadly applicable and transferrable
- develop new partnerships
- provide education and workforce development
- integrate across disciplines

Proposal deadline: February 4, 2013

For details: http: //bit.ly/hazard-sees

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- Arctic SEES - Coastal SEES - Cyber SEES
- Decadal & Regional Climate Prediction Using Earth System Models (EaSM) - Dimensions of Biodiversity
- Ocean Acidification - Sustainable Energy Pathways
- Interdisciplinary Research in Hazards & Disasters (Hazards SEES) - SEES Fellows - Sustainability Research Networks - Sustainable Chemistry, Engineering, and Materials - Water Sustainability and Climate

NSF Programs with SEES emphasis

- Dynamics of Coupled Natural and Human Systems (CNH)
- Partnerships for International Research & Education (PIRE)
- Research Coordination Networks (RCN)
- Small Business Technology Transfer (STTR)

Get the details on-line at http://nsf.gov/sees

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