

living in the **ANTHROPOCENE**

PROSPECTS FOR CLIMATE, ECONOMICS, HEALTH, AND SECURITY



A ONE-DAY SYMPOSIUM SPONSORED BY THE SMITHSONIAN'S GRAND CHALLENGES CONSORTIA

DATE AND TIME

Thursday October 9, 2014 • 9:15 a.m. – 6:30 p.m.
Reception in the Rotunda following the symposium.

LOCATION

Baird Auditorium, National Museum of Natural History
10th St. & Constitution Ave., NW, Washington, DC

HUMANS ARE TRANSFORMING THE CLIMATE and environments of the Earth at an accelerating rate through agriculture, urbanization, transportation, the use of fossil fuels, and many other activities. Our global imprint, and the certainty that more than seven billion people will profoundly change the environment and biota of the planet for many generations to come, have led many scientists to recognize a new period of geological time called the *Anthropocene*, or Age of Humans. Restoring Anthropocene environments to pre-industrial conditions may be impossible, but the future need not be apocalyptic if we act soon. To make a livable Anthropocene, we must use our scientific knowledge to forecast environmental change and develop more resilient societies and cultural institutions that can adapt to the changes we can no longer avoid. This symposium features the views of leaders in the fields of climate, health, economics, and security who will consider the problems we face and offer possible solutions. Following each talk, a panel of Smithsonian scholars and thinkers will discuss the issues raised by the presentation.

The four Smithsonian Grand Challenges, which bridge the Institution's scientific and scholarly pursuits, are ideally suited to host a discussion of this breadth. The global changes now taking place cross-cut all of the themes of the Grand Challenges from *Unlocking the Mysteries of the Universe*, with a broad perspective on alterations in the atmosphere and landscapes of the Earth, to *Understanding and Sustaining a Biodiverse Planet*, which investigates the past, present, and future of climate change effects on the natural world, to *Valuing World Cultures and Understanding the American Experience*, in which transformations in human history, culture, and art are spotlighted across civilizations. Each of these Grand Challenges can learn from and inform the others with respect to the massive alterations that our civilization is experiencing today and will continue to experience into the foreseeable future. Only through such discourse and debate will we be able to understand the scope of the challenges and determine the solutions demanded by the Anthropocene.

Photo above: Igloolik, Nunavut, Canada, 2003. Rapid climate warming is affecting lives in rural indigenous communities like Igloolik by changing the resources on which people depend. Photo by Katherine Fogden/National Museum of the American Indian.



Smithsonian Institution

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| 9:15 a.m. | Opening remarks | W. John Kress, Interim Under Secretary for Science, Smithsonian Institution |
| 9:30 a.m. | James J. Hack | <i>Navigating in a Virtual World</i> |
| | Panel Discussion | Bert Drake, Emeritus Senior Scientist, Smithsonian Environmental Research Center William Fitzhugh, Senior Archaeologist, National Museum of Natural History Brian Gratwicke, Interdisciplinary Research Biologist, Smithsonian Conservation Biology Institute |
| | Moderator | Kirk Johnson, Sant Director, National Museum of Natural History |
| 11:00 a.m. | BREAK | |
| 11:30 a.m. | Rachel Kyte | <i>Fit for Purpose: The Global Economy We Need to Live Well in the Anthropocene</i> |
| | Panel Discussion | Eric Hollinger, Archaeologist, National Museum of Natural History Melissa Songer, Conservation Biologist, Smithsonian Conservation Biology Institute Cori Wegener, Cultural Heritage Preservation Specialist, Office of the Under Secretary History, Art, and Culture |
| | Moderator | Tim Johnson, Associate Director for Museum Programs, National Museum of the American Indian |
| 1:00 p.m. | BREAK | |
| 2:00 p.m. | Drew Jones | <i>Solving Climate Change in 20 Minutes: A Guided Simulation</i> Co-presenter: Bethany Patten, The MIT Sloan School of Management |
| 2:30 p.m. | George Luber | <i>The Health Consequence of a Changing Climate</i> |
| | Panel Discussion | Whitman Miller, Research Scientist, Smithsonian Environmental Research Center Suzan Murray, Chief Veterinarian, National Zoological Park Rick Potts, Director, Human Origins Program, National Museum of Natural History |
| | Moderator | Pierre Comizzoli, Acting Director, Consortium for Understanding and Sustaining a Biodiverse Planet |
| 4:00 p.m. | BREAK | |
| 4:30 p.m. | Adm. Thad Allen | <i>Confronting the Increased Complexity in the Interface of the Natural and Built Environment from Katrina to Space Weather</i> |
| | Panel Discussion | Martin Collins, Curator, National Air & Space Museum Kristofer Helgen, Zoologist, National Museum of Natural History Gabrielle Tayac, Historian, National Museum of the American Indian |
| | Moderator | Nancy Bechtol, Director, Office of Facilities, Engineering, and Operations |
| 6:00 p.m. | Thomas L. Friedman | <i>What Mother Nature Teaches about American Foreign and Domestic Policy</i> |
| 6:30 p.m. | Closing Remarks | W. John Kress |



W. JOHN KRESS

Dr. W. John Kress is Interim Under Secretary for Science at the Smithsonian and a research scientist and curator with the Department of Botany at the National Museum of Natural History. He was formerly Director of the Consortium for Understanding and Sustaining a Biodiverse Planet at the

Smithsonian. He was born in Illinois and received his education at Harvard University (BA, 1975) and Duke University (PhD, 1981) where he studied tropical biology, ethnobotany, evolution, pollination ecology, and plant systematics. Among his over 125 scientific and popular papers on tropical botany are his several books. *The Weeping Goldsmith* describes his experiences exploring for plants in the isolated country of Myanmar. Dr. Kress is also interested in the intersection of science and art. To this end he has published two original art projects: one called *Botanica Magnifica* with photographer Jonathan Singer, and the second a book on plant evolution, entitled *The Art of Plant Evolution* with Dr. Shirley Sherwood using contemporary botanical art to illustrate the diversity of the plant world. He was the botanical leader in developing the tree identification smart phone app, *Leafsnap*, which utilizes image recognition technology, with a team from Columbia University and the University of Maryland. In 2011 this team received the Edward O. Wilson Biodiversity Technology Pioneer Award for *Leafsnap*. Dr. Kress was also a pioneer in the development and utilization of DNA barcodes in plants and recently published *DNA Barcodes Methods and Protocols* (with David Erickson), which is the authoritative text in this field. He is a Fellow of the American Association for the Advancement of Science and has been an Adjunct Professor of Biology at George Washington University in Washington, DC, and Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences, in Yunnan. In November 2013, Dr. Kress received the Parker/Gentry Award for Excellence and Innovation in Conservation and Environmental Biology from the Chicago Field Museum.

FIRST SESSION

Navigating in a Virtual World



JAMES J. HACK

James J. Hack directs the National Center for Computational Sciences, a leadership computing complex at Oak Ridge National Laboratory (ORNL) providing high performance computing resources for tackling scientific grand challenges. His responsibilities include the identification of major high

performance computing needs from scientific and hardware perspectives, and the implementation of strategies to meet those needs as machine architectures continue to evolve. He also served as a founder and first Director of the Oak Ridge Climate Change Science Institute, which integrates scientific projects in modeling, observations, and experimentation with ORNL's powerful computational and informatics capabilities to answer some of the most pressing global change science questions. After receiving his Ph.D. in Atmospheric Dynamics from Colorado State University in 1980, Hack became a research staff member at the IBM Thomas J. Watson Research Center,

where he worked on the design of high-performance scientific computing architectures. He moved to the National Center for Atmospheric Research in 1984, an NSF-sponsored laboratory, in Boulder Colorado. He went on to lead in the development of NCAR's global atmospheric model, known as the Community Climate Model. Before coming to Oak Ridge at the end of 2007, he was serving in the roles of senior scientist, head of the Climate Modeling Section, and deputy director of the NCAR Climate and Global Dynamics Division. He is author or co-author of over 100 scientific or technical publications. He has served as an editor for the *Journal of Climate*, given testimony to Congress on the topic of climate change, and recently completed participation as a member of a National Research Council Study on A National Strategy for Advancing Climate Modeling. He is also actively involved on a number of national and international advisory and steering committees among which include the Department of Energy Office of Science and National Science Foundation appointments.



BERT DRAKE

Dr. Bert G. Drake, Senior Scientist, Emeritus, Smithsonian Environmental Research Center, was leader of two major projects on the impacts of rising atmospheric CO₂ and climate change on plant and ecosystem processes. The Chesapeake Bay wetland study, now in its 28th year, is the longest running

field experiment of its type ever undertaken. In collaboration with NASA, the CO₂ study was expanded in 1996 to include a scrub oak forest on Merritt Island Wildlife Refuge at the Kennedy Space Center, Florida. These studies produced more than 140 papers in referred journals. Dr. Drake received the Smithsonian's Distinguished Research award in 2005.



WILLIAM W. FITZHUGH

Dr. William Fitzhugh is an anthropologist specializing in circumpolar archaeology, ethnology, and environmental studies. After two years in the US Navy he attended Harvard University where he received his PhD in anthropology in 1970, and thereafter took a position at the National Museum

of Natural History. As director of the Arctic Studies Center and Curator in the Department of Anthropology, he has spent more than thirty years studying and publishing on arctic peoples and cultures in northern Canada, Alaska, Siberia, and Scandinavia. His archaeological and environmental research has focused upon the prehistory and paleoecology of northeastern North America, and broader aspects of his research feature the evolution of northern maritime adaptations, circumpolar culture contacts, cross-cultural studies, and acculturation processes in the North, especially concerning Native-European contacts. His public and educational activities include curating four exhibits at the National Museum of Natural History, production of films, including the NOVA specials, *Mysteries of the Lost Red Paint People*, *Norse America*, and several other Viking films. He is an Advisor to the Arctic Research Commission, represents the Smithsonian and arctic social science in various inter-agency councils, serves on the Smithsonian Science Commission, and holds various other administrative and advisory posts.



BRIAN GRATWICKE

Brian Gratwicke, Interdisciplinary Research Biologist, leads the Smithsonian Conservation Biology Institute’s amphibian conservation program devoted to confronting global amphibian declines. Brian’s active research program is focused on finding a cure that could help to mitigate the

threat of chytridiomycosis, a devastating amphibian disease that has been implicated in the recent extinctions of more than 90 amphibian species around the world. Brian designed and spearheaded the zoo’s *Panama Amphibian Rescue and Conservation Project*. The initiative based in Panama now has 10 full-time staff and 2 amphibian ark facilities with a goal of creating ex-situ assurance populations for up to 20 amphibian species in danger of extinction. Before working at the Smithsonian, Brian was assistant director of Save The Tiger Fund at the National Fish and Wildlife Foundation. At the Foundation he was deeply involved in the process of defining threats, conservation actions to mitigate those threats, and measures of conservation success. Hailing from Zimbabwe, Brian has worked on conservation projects in Africa, Asia, North and Central America, and the Caribbean and has published more than 30 peer-reviewed papers and over 50 popular articles.



KIRK JOHNSON

Kirk Johnson has been the Sant Director of the Smithsonian’s National Museum of Natural History since October 2012. Johnson is a paleontologist who has led expeditions that resulted in the discovery of more than 1,400 fossil sites on all continents. His research focuses on fossil plants, the extinction of

the dinosaurs, and methods for dating rocks and fossils. He is known for his scientific books and articles, popular books, museum exhibits, presentations, and collaborations with artists. In 2010–11, he led the *Snowmastodon Project*, the excavation of an amazing ice age site near Snowmass Village, Colorado. This dig was featured in the NOVA documentary, *Ice Age Death Trap*, and in Johnson’s book, *Digging Snowmastodon: Discovering an Ice Age World in the Colorado Rockies*. At the National Museum of Natural History, Johnson leads a staff of nearly 500 who, each year, host more than 7 million visitors, publish more than 600 scientific papers, and care for 127 million specimens in the world’s largest natural history collection.

SECOND SESSION

Fit for Purpose: The Global Economy We Need to Live Well in the Anthropocene



RACHEL KYTE

Rachel Kyte is World Bank Group Vice President and Special Envoy for Climate Change. She oversees work on climate change adaption, mitigation, climate finance, and disaster risk and resilience across the institutions of the World Bank Group, including International Bank for Reconstruction and

Development (IBRD), International Development Association (IDA), International Finance Corporation (IFC), and Multilateral Investment Guarantee Agency (MIGA). The climate change group is focused on ensuring that all Bank Group operations integrate climate change and take into account the opportunities that inclusive green growth presents. The group is also an advocate for global climate action. Ms. Kyte previously served as World Bank Vice President for Sustainable Development and was the International Finance Corporation Vice President for Business Advisory Services and a member of IFC’s management team. She is a professor of practice in sustainable development at The Fletcher School of Law and Diplomacy at Tufts University. She holds a master’s degree in international relations from Tufts University and a bachelor’s degree in history and politics from the University of London.



ERIC HOLLINGER

Dr. Hollinger is an Archaeologist in the Repatriation Office of the National Museum of Natural History’s Anthropology Department where he works with Native American tribes on their repatriation claims for human remains and cultural objects from the museum. He has degrees from the University of

Missouri and the University of Illinois and has done field work in Ecuador, the Caribbean, and throughout the Midwest and the Plains. Before coming to the Smithsonian Institution in 2001 he worked in repatriation at Harvard University and the University of Illinois. Now working with tribes from across the country, he is pioneering the use of 3D digital technology for the reproduction of Tlingit Indian objects in the repatriation context. He also studies the Smithsonian’s modern trash, ranging from scraping plates in the museum restaurants to conducting waste audits for facilities. He is Co-Chair of the National Museum of Natural History’s Greening Task Force, serves on the Facilities Recycling Task Force, and is an editor of the Smithsonian’s Sustainability Matters Newsletter. He has been active in a number of sustainability initiatives, from composting in Smithsonian restaurants to converting museum exhibit banners into reusable tote bags.



MELISSA SONGER

Melissa Songer is a Conservation Biologist at the Smithsonian Conservation Biology Institute focused on the conservation and ecology of endangered mammal species in Asia. Her research is focused on using advanced geospatial technologies to detect human transformation of the landscape

and assessing impacts on endangered species and ecosystems in order to help sustain and restore species in the wild. She integrates extensive collection of ecological data in the field, including surveys of endangered species, their movements, and assessments of human communities, with spatial models. Her current projects include restoring Przewalski’s horses to China’s Gobi desert, movements of Asian Elephants, human-elephant conflict in changing landscapes in Asia, human-nature coupled systems in Myanmar and China, and understanding giant panda landscapes and the effects of climate change on their habitat. Melissa has over 30 peer-reviewed articles and chapters on conservation ecology, 30 presentations at professional meet-

ings, and many educational articles written for the general public. She also trains wildlife professionals, graduate students, and teachers in conservation GIS and geospatial technologies and has trained more than 600 individuals representing over 40 countries.



CORINE WEGENER

Corine Wegener is the Cultural Heritage Preservation Officer in the Office of the Under Secretary for History, Art, and Culture at the Smithsonian Institution. She coordinates the Smithsonian's role in emergency response and recovery for cultural heritage threatened by natural disasters, human conflict,

and other challenges. Her connection to the Smithsonian began with the Haiti Cultural Recovery Project, where she served as international project coordinator for the preservation of more than 30,000 objects of Haitian heritage after the devastating 2010 earthquake. Her recent projects include assistance for cultural heritage in New York after Hurricane Sandy and emergency training workshops for cultural heritage professionals from Mali, Syria, and other countries experiencing armed conflicts. Before her arrival at the Smithsonian, Wegener was associate curator in the department of Decorative Arts, Textiles, and Sculpture at the Minneapolis Institute of Arts. In her concurrent Army Reserve career, she served her last assignment as the Arts, Monuments, and Archives officer for the 352d Civil Affairs Command in Baghdad, Iraq. Wegener assisted staff at Iraq National Museum in the aftermath of the devastating looting and supervised the preservation and freezing of the water damaged collections known as the Iraqi Jewish Archive. Now retired from the Army Reserve, she continues to serve on the board of the Civil Affairs Association and organizes regular military cultural heritage awareness events at the Smithsonian. In 2006, Wegener founded the US Committee of the Blue Shield, part of an international organization dedicated to raising awareness of the 1954 Hague Convention for the Protection of Cultural Property in the event of Armed Conflict. Wegener lectures and writes about the importance of cultural property protection during natural disasters and armed conflict. She holds a BGS from the University of Nebraska-Omaha and dual MA degrees in Art History and Political Science from the University of Kansas.



TIM JOHNSON

Tim Johnson is Associate Director for Museum Programs at the National Museum of the American Indian. He manages the museum's largest organizational group structured across two fully programmed facilities in Washington and New York encompassing exhibitions, education, interpretive

services, publications, film and media production, seminars and symposia, and visual and performing arts programs. In the course of his work Mr. Johnson has edited, conceptualized, or strategically initiated several Smithsonian books showcasing Native arts and history. He is also co-founder and publisher of the museum's flagship quarterly membership magazine *American Indian*. During his tenure at the museum he has successfully supervised popular and critically acclaimed exhibits representing myriad orientations from ethnography and history to contemporary arts. On July 7, 2007, in conjunction with Al

Gore's Live Earth global initiative, he launched the museum's Mother Earth Festival to diffuse American Indian knowledge and scientific evidence concerning environmental sustainability to thousands in attendance and millions watching around the world. Designed to enhance public education about human induced climate change, it stands as one of the Smithsonian Institution's most widely viewed public programs. Now an annual event renamed the Living Earth Festival, it brings together scientists, renewable energy technologists, tribal resource managers, educators, and cultural performers and exhibitors. As an extension of his cultural values and knowledge of the impacts of climate change, Mr. Johnson, who is Mohawk from Six Nations of the Grand River, installed a 10kW solar voltaic generation system that supplies clean renewable power to Ontario's electrical grid, and recently worked with Kayanase ("New Path"), a Haudenosaunee ecological restoration company, to plant approximately 1,362 trees of indigenous Carolinian forest variety (black cherry, hackberry, red oak, bur oak, red osier dogwood, and swamp milkweed) on two acres of vacant family property in Six Nations.

INTERACTIVE SIMULATION

Solving Climate Change in 20 Minutes: A Guided Simulation



DREW JONES

Drew Jones is Co-Founder and Co-Director of Climate Interactive, a top-rated climate change think tank that creates accessible, policy-maker-oriented simulations. He and his team at CI and MIT Sloan developed C-ROADS, the user-friendly climate simulation in use by the US State Department, John

Holdren in the White House, and the analysts for the Chinese government. Trained in system dynamics modeling at Dartmouth College and MIT, Jones has worked at Rocky Mountain Institute and served dozens of clients ranging from the CDC to Harley Davidson to the U.S. Government Climate Change Negotiators. He teaches Systems Thinking and Sustainability at MIT and the UNC Chapel Hill's Kenan Flagler Business School. Jones can be reached at apjones@climateinteractive.org and www.climateinteractive.org.

THIRD SESSION

The Health Consequence of a Changing Climate



GEORGE LUBER

Dr. George Lubber is an epidemiologist and the Associate Director for Climate Change in the Division of Environmental Hazards and Health Effects at the National Center for Environmental Health, Centers for Disease Control and Prevention. Since receiving his PhD in Medical Anthropology from the

University of Georgia, and joining CDC in 2002, Dr. Lubber has served as an Epidemic Intelligence Service (EIS) Officer and staff epidemiologist at the National Center for Environmental

Health. His research interests in Environmental Health are broad and include the health impacts of environmental change and biodiversity loss, harmful algal blooms, and the health effects of climate change. Most recently, his work has focused on the epidemiology and prevention of heat-related illness and death, the application of remote sensing techniques to modeling vulnerability to heat stress in urban environments, and Climate Change adaptation planning. In addition to managing the Climate Change Program at CDC, Dr. Lubber is a Co-Chair of the Climate Change and Human Health Interagency Workgroup at the US Global Change Research Program, a Convening Lead Author for the U.S. National Climate Assessment, a member of the American Anthropological Association's Presidential Task Force on Climate Change, and a lead author for the Intergovernmental Panel on Climate Change (IPCC), Fifth Assessment Report. He is also Adjunct Professor in the Departments of Environmental Health, Anthropology, and Environmental Science at Emory University.



WHITMAN MILLER

Whitman Miller is a Research Scientist at the Smithsonian Environmental Research Center. He received his Doctorate in Environmental Science and Engineering from the University of California, Los Angeles. Prior to joining SERC in 1998, Miller served as the John A. Knauss Marine Policy

Fellow in Senator John Glenn's office, sponsored by NOAA/California Sea Grant. A primary focus of Miller's research is marine and estuarine invasive species biology and ecology. He is the Director of the National Ballast Information Clearinghouse, a collaborative effort of the Smithsonian Institution and the US Coast Guard that tracks the behavior of commercial ships, the leading vector for the global transfer of marine invasive species. Miller also conducts research on ocean acidification and its effects in coastal ecosystems, including the development and deployment of better instruments for measuring carbon dioxide in the aquatic environment. An overarching theme of Miller's work is a desire to understand the effects of human activities on natural ecosystems.



SUZAN MURRAY

Dr. Suzan Murray, DVM, DACZM is the Chief Veterinary Medical Officer of Smithsonian's National Zoological Park and the head of the Department of Wildlife Sciences. She oversees the clinical and pathology board-certified residency programs and helped to create and foster Smithsonian's

International Veterinary Training program—a unique initiative in which veterinarians from developing nations come to the United States to learn the latest techniques in wildlife diagnostics, surveillance, and treatment. She also created a veterinary SWAT team that is capable of responding to wildlife emergencies globally—from removing a poacher's snare from an endangered gorilla to assisting elephant training programs in Burma. Recent outings have included developing preventative medicine and diagnostic protocols for Giant Pandas in China, supporting primate field research at Mpala Ranch with partners in the Kenya Wildlife Services, and developing a wildlife pathology laboratory in Uganda. Dr. Murray currently serves as the Smithsonian

Institution's co-principal investigator on a USAID Emerging Pandemic Threats program grant which combines wildlife surveillance and international training in the quest to predict and prevent the next major emerging pandemic threat to humans (i.e. SARS, Ebola, etc.). In addition, she is a member of the federal Foreign Animal Disease Threats subcommittee of OSTP which helps protect US agriculture from animal diseases. Her team was called in to help respond to and mitigate the effects of the Gulf Oil Spill in 2011.



RICK POTTS

Paleoanthropologist Rick Potts directs the Human Origins Program at the Smithsonian's National Museum of Natural History, where he also holds the Peter Buck Chair in Human Origins. After receiving his PhD in biological anthropology at Harvard University in 1982, he taught at Yale before joining

the Smithsonian in 1985. Rick's research investigates Earth's environmental dynamics and the processes that have led to human evolutionary adaptations. His ideas about the significant effect of environmental instability on human evolution have stimulated wide attention and new studies in the Earth sciences, paleontology, and experimental and computational biology.

Bridging across many research disciplines, Rick's field projects are located in the East African Rift and in southern and northern China. His latest work in the Rift Valley of Kenya has gained international attention as the first project to obtain a long drill core from an early human site in Africa, which will provide a detailed climate record spanning the past 500,000 years. Rick is curator of the Smithsonian's Hall of Human Origins, and is author of the companion book *What Does It Mean To Be Human?*



PIERRE COMIZZOLI

Pierre Comizzoli has worked as a Doctor in Veterinary Medicine in French Guyana to study the seasonal reproduction of different mammalian species living in the rain forest. He also has been in charge of programs monitoring animal health and reproduction (sheep, goat, and cattle) in

the African Sahelo-Saharan region. During his Master and PhD thesis, Dr. Comizzoli studied reproductive biotechnologies in bovine and deer species. He then worked on the implementation of assisted reproductive techniques and genome resource banking at the National Museum of Natural History in Paris. In 2002, Dr. Comizzoli joined the Smithsonian Conservation Biology Institute in Washington, DC, as a staff scientist to develop new projects on gamete and gonadal tissue cryo-banking for rare and endangered species. Dr. Comizzoli now coordinates a Smithsonian-wide initiative to improve the management and use of biomaterial and environmental repositories within the Institution. He also is in charge of conservation projects on wild carnivores and ungulates in Northern Africa (Chair of the Scientific Committee of the Sahara Conservation Fund) as well as in Southeast Asia (Member of the IUCN/SSC Saola Working Group). In 2014, Dr. Comizzoli was appointed as the Acting Director of the Consortium for Understanding and Sustaining a Biodiverse Planet.

FOURTH SESSION

Confronting the Increased Complexity in the Interface of the Natural and Built Environment from Katrina to Space Weather



ADMIRAL THAD ALLEN

Booz Allen Executive Vice President Thad Allen is a leader in the firm's Departments of Justice and Homeland Security business in the civil market. He leads the development of thought leadership and client engagement regarding the future direction of law enforcement and homeland security.

He is known for his expertise in bringing together government and non-government entities to address major challenges in a "whole of government" approach designed to achieve a unity of effort. Mr. Allen completed his distinguished career in the US 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 US Environmental Protection Agency, DHS, the Departments of Defense, Interior, 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 US 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. He previously served as Commander, Seventh Coast Guard District, where he oversaw all operations in the southeastern United States and in the Caribbean. Prior to joining Booz Allen, Mr. Allen served with the Rand Corporation. He is a Fellow in the National Academy of Public Administration and a Member of the Council on Foreign Relations. Mr. Allen also currently serves as a director on the Coast Guard Foundation and Partnership for Public Service. New York Governor Andrew Cuomo appointed Mr. Allen to the New York State Respond Commission tasked with finding ways to ensure that New York State is ready to respond to future weather-related disasters. He is a 1971 graduate of the US Coast Guard Academy. He holds a Masters in Public Administration from The George Washington University—from which he received the Alumni Achievement Award in 2006. He also holds an MS degree in management from the Sloan School of Management at the Massachusetts Institute of Technology. Mr. Allen has been awarded honorary doctorate degrees from George Mason University, the National Defense University, and the National Graduate School.



MARTIN COLLINS

Martin Collins is a curator at the Smithsonian National Air and Space Museum. His research focuses on the history of the United States in the world after 1945, as seen through the history of technology. He serves as editor of the journal *History and Technology* (Routledge) and is managing editor of

the book series *Artefacts: Studies in the History of Science and Technology*, published by the Smithsonian Institution Scholarly Press. He currently is working on a history of communications satellites and globalization in the 1990s, as seen through the multinational satellite telephony venture, Iridium.



KRISTOFER HELGEN

Kristofer M. Helgen is a Smithsonian Research Zoologist and head of mammalogy at the National Museum of Natural History in Washington, DC, where he oversees the largest museum collection of mammals and the most-visited Hall of Mammals in the world. His work focuses especially on

research in museum collections and biological expeditions in the tropics to document mammal biodiversity and study environmental change. He has worked as a zoologist in 50 countries and documented dozens of previously overlooked species of living mammals, including the Blue-Eyed Spotted Cuscus, the Greater Monkey-Faced Bat, and the Olinguito. He appears regularly on television and radio programs and his discoveries are regularly profiled in the international press. He received a Bachelor's degree in Biology from Harvard University, and a PhD from the University of Adelaide in Australia, based on studying the evolution of mammals in New Guinea. He holds honorary or affiliate academic appointments at the Australian Museum in Sydney, the American Museum of Natural History in New York, George Mason University in Virginia, the Bishop Museum in Hawaii, the Natural Sciences Research Laboratory at Texas Tech University, and the National Geographic Society, where he was inducted as a National Geographic Explorer in 2009. In 2013 he was recognized among the Most Innovative People Under 40 by *Business Insider* magazine. Originally from Minnesota, he now lives in Arlington, Virginia, with his wife Lauren, also a biologist, and son Daniel.



GABRIELLE TAYAC

Dr. Gabrielle Tayac, a member of the Piscataway Indian Nation, earned her PhD and MA in Sociology from Harvard University, and her BS in Social Work and American Indian Studies from Cornell University. Her scholarly research focuses on American Indian identities, religious traditions, and social movements, maintaining a regional specialization in the Chesapeake Bay.

Gabrielle has served in staff and advisory capacities for numerous organizations including Amnesty International, Survival International, National Geographic, the Maryland Commission on Indian Affairs, the Accokeek Foundation, the National Park Service, and the Mid-Atlantic Regional Center for the Humanities. Most recently, she was appointed by Maryland Governor Martin O'Malley to the Historic St. Mary's Commission. Gabrielle is a member of the American Academy of Religion and the Native American and Indigenous Studies Association. She also works as a community advocate alongside indigenous peoples from Latin America, especially with US-based members of the National Association of Indigenous Salvadorans (ANIS). On October 12, 1992, the 500th anniversary of Columbus's landfall and as a co-founder of the hemispheric League of Indigenous Sovereign Nations, she was one of the organizers of the largest civil actions north of Mexico calling for indigenous rights at

United Nations in New York City. Since 1999, Gabrielle has been on staff at the Smithsonian National Museum of the American Indian. Her curatorial credits include the inaugural show, *Our Lives: Contemporary Native American Life and Identity*, *Return to a Native Place: Algonquian Peoples of the Chesapeake*, and *IndiVisible: African-Native American Lives in the Americas*. She is currently working on new permanent exhibitions for NMAI's New York and Washington, DC venues. She continues to speak to diverse audience, ranging from kindergarten classrooms to the White House. Most importantly, Gabrielle shares her life with her two children, Jansikwe and Sebastian Medina-Tayac, in Takoma Park, Maryland.



NANCY BECHTOL

Nancy Bechtol is the Smithsonian's Director of the Office of Facilities, Engineering, and Operations (OFEO). OFEO, with a staff of 1,900, is responsible for the Institution's facilities planning, programming, real estate, architectural history and preservation; engineering, design, construction, and cost estimat-

ing; maintenance, operations, and horticulture; and security, safety, health, and environmental management. With 12 million square feet of space, the Institution's 19 museums, 9 research centers and the National Zoo are located in Washington, DC, six states throughout the country, and Panama and Chile. Prior to her role as the Director of OFEO, Ms. Bechtol was the Director of the Office of Facilities Management and Reliability (OFMR) at the Smithsonian Institution from 2001–2012. In 2006, the Smithsonian received APPA's highest honor for facilities management, the National Award for Excellence in Facilities Management. Ms. Bechtol has received recognition from the Smithsonian Institution during her 18-year tenure for superior leadership and management of her staff, managing facility emergencies, for utilizing the interior and exterior landscapes as horticultural exhibition spaces, and for the professional leadership in managing all horticultural collections, most notably the Archives of American Gardens and an orchid collection. Ms. Bechtol graduated from the University of Maryland in 1980 with a Bachelor of Science degree in Horticulture. She received her Masters degree in 1984 from the University of Delaware through the Longwood Program in Public Garden Administration. She became a Certified Facility Manager through IFMA in 2007. She resides and gardens in Silver Spring, MD, with her horticultural husband and two amazing daughters.

SUMMARY SESSION

What Mother Nature Teaches about American Foreign and Domestic Policy



THOMAS L. FRIEDMAN

Thomas L. Friedman won the 2002 Pulitzer Prize for commentary, his third Pulitzer for The New York Times. He became the paper's foreign-affairs Op-Ed columnist in 1995. Previously, he served as chief economic correspondent in the Washington bureau and before that he was the chief White

House correspondent. In 2005, Mr. Friedman was elected as a member of the Pulitzer Prize Board. Mr. Friedman joined The Times in 1981 and was appointed Beirut bureau chief in 1982. In 1984 Mr. Friedman was transferred from Beirut to Jerusalem, where he served as Israel bureau chief until 1988. Mr. Friedman was awarded the 1983 Pulitzer Prize for international reporting (from Lebanon) and the 1988 Pulitzer Prize for international reporting (from Israel). Mr. Friedman is the author of *From Beirut to Jerusalem*, which won both the National Book Award and the Overseas Press Club Award in 1989. *The Lexus and the Olive Tree* was the winner of the 2000 Overseas Press Club Award for best non-fiction book on foreign policy. His 2002 book *Longitudes and Attitudes: Exploring the World After September 11* consists of columns he published about the attacks. *The World is Flat: A Brief History of the Twenty-first Century*, issued in April 2005 and updated in 2006 and 2007, received the inaugural Goldman Sachs/Financial Times Business Book of the Year Award. *Hot, Flat, and Crowded* was published in 2008, and a paperback edition was issued a year later. His sixth and most recent book, *That Used to Be Us: How America Fell Behind in the World We Invented and How We Can Come Back*, co-written with Michael Mandelbaum, was released in September 2011. Born in Minneapolis on July 20, 1953, Mr. Friedman received a BA degree in Mediterranean studies from Brandeis University in 1975. In 1978 he received a Master of Philosophy degree in Modern Middle East studies from Oxford. Mr. Friedman is married and has two daughters.