



Annual Meeting September 2009

AERC Congressional Briefing and Symposium:

Out on a Limb: Sustainability of Urban Ecosystems under a Changing Climate

The 2009 Association of Ecosystem Research Centers congressional briefing was one of our most successful events to date. We had a standing-room-only crowd of approximately 30 individuals representing three senatorial and one house offices, several staff members of the House Natural Resource Committee, agency representatives from EPA, NSF, NOAA, Army Corps, NRC, and USFS, and other organizations including ESA, AGU, AGI, AAAS, NCSE, Consortium for Ocean Leadership, and the Association of Science and Technology Centers. The science symposium was held at the National Museum of the American Indian, and was preceded by a tour of museum.

The topic of the briefing and symposium was the fourth in a series addressing climate change issues. The 2009 briefing and symposium presentations are posted on the updated AERC website at www.ecosystemresearch.org, as are the presentations from the 2008, 2007, and 2006 briefings and symposia, entitled **Responding to Climate Change: A Role for Ecosystems, Ecosystem Science: Informing a Sound Bioenergy Policy**, and **Ecological Tipping Points Associated with Global Climate Change**.

The AERC Congressional briefing and annual symposium was introduced by AERC President, **Lucinda Johnson**, who gave some background on AERC followed by a discussion of strategies for adapting to climate change. The speakers to follow nicely framed the issues and addressed possible solution for dealing with climate change in urban environments.

The first speaker, **Donald F. Boesch** (Center for Environmental Science, College Park, MD: “[What is the future of New Orleans?](#)”) provided a background on the geology of coastal Louisiana and the history of development of New Orleans. He discussed the factors that increased the vulnerability of the city to the storm surge resulting from Hurricane Katrina, including the deficiencies in infrastructure such as levees, flood gates, pumps, roads, power and communications, as well as confounding issues such as sea level rise, subsidence, and loss of sediments arriving to the Mississippi Delta. He reviewed ongoing efforts to redirect sediments into the deltaic plain to address the loss of sediments as one possible remediation, but stressed that efforts to mitigate climate change must occur in concert with efforts to adapt to changing conditions.



Photo credit: NOAA

The third speaker, **Dr. Peter M. Groffman** (Cary Institute of Ecosystem Studies, Millbrook, NY, "[The bio-geo-socio-chemistry of urban watersheds](#)"), focused on the city of Baltimore. Groffman provided examples of three "biogeosociochemical" analyses that focused on how humans and climate influence



Photo credit: Peter Mayer

nitrogen export from watersheds. They have documented the strong effect of drought, followed by wet conditions in increasing nitrogen export from urban, as well as agricultural and forested watersheds. With increased precipitation under changing climate, it appears that threats from nitrogen loading could increase. He also discussed nutrient cycling as influenced by newly restored urban streams and lawns. Human behavior and economics play a strong role in the nitrogen cycle, especially as related to delivery of lawn care services. Incorporating the human dimension is an essential component of urban watershed studies.

Dr. Allen P. Davis (Maryland Water Resources Research Center, College Park, MD "[Impacts of climate change on urban infrastructure](#)") moved the discussion from urban streams to urban infrastructure (e.g., transportation networks, structures, electrical and communication networks). Infrastructure design specifications were established during a period of climate stationarity; these designs do not accommodate today's average and extreme climatic conditions. Increased temperatures account for failures in electrical and communication networks due to increased demand and capacity limitations. Increased winds stress structures such as bridges, towers, and buildings. These and other climate stressors include drought, rainstorms account for an increased probability of failure. Stormwater flow is a particular concern because it affects the environment in numerous ways. Davis discussed the effectiveness of several novel technologies for addressing stormwater flows with respect to hydrological, biological and water quality endpoints.



Runoff from parking lot entering bioretention facility in Maryland.

Nancy B. Grimm (Arizona State University, Tempe, AZ. "[Global change in the urban century](#)") discussed environmental change across the globe in relation to land use and land cover change, altered biogeochemical cycles, altered hydrology, loss of biodiversity, and changing climate. More than half the world's population now lives in cities, which occupy between 3 and 4% of the land area. Effects of cities extend far beyond their boundaries, especially with respect to geochemical cycles such as organic carbon, total phosphorus and total nitrogen. Grimm then focused on a discussion of changing land use and biogeochemical cycles in the Phoenix, Arizona ecosystem.

Adapting to climate change will require us to incorporate a broad array of adaptive measures. **Douglas Farr** (Farr Associates, Chicago, IL “[Beyond green buildings: sustainable urbanism and the LEED Neighborhood Design Program](#)”), discussed the LEED Neighborhood Development program. While



The New Normal/Uptown
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In 2000, the Uptown District in Normal, Illinois began a redevelopment process anchored by LEED principals. Only two years later, the city passed an ordinance mandating LEED-rated buildings for all new development over 7,500 square feet in the downtown area.

member organizations present. Major items of business included the election of new officers, new member recruitment, and discussions on how to provide additional services for our member organizations. Dr. Erik Hobbie (University of New Hampshire, Institute for the Study of Earth, Oceans, and Space), replaced Dr. John Moore as a member-at-large. We welcomed the USDA Forest Service Institute for Applied Ecosystem Studies as a new member. Further agenda items included a survey of members being prepared by Alan Covich and Lindsay Boring to assess member needs and potential services.

Following the formal business meeting, Robert Gropp, director of the Public Policy Office at the American Institute of Biological Sciences (with whom we have a formal affiliation), discussed current policy issues and upcoming legislative priorities in a 40-minute presentation. He focused on legislation of interest to members with a focus on various aspects of climate change.

Future AERC Events

The 2010 meeting will be held **October 14 -15, 2010**. The congressional briefing and symposium topic will be “**Water and Food Production: National Security and Ecological Concerns.**” The Symposium will again be held on October 14 at the National Museum of the American Indian; the business meeting will be held on October 15 at the Smithsonian Ripley Center.

Our policy briefing will be expanded this year. Upon completion of the AERC business at noon on October 15, we will again host Robert Gropp to present an hour long briefing covering current policy issues, and highlighting upcoming initiatives and legislative priorities. We look forward to seeing you there.

The mission of the Association of Ecosystem Research Centers is to promote the use of ecosystem science to address environmental problems. AERC advocates support for ecosystem-scale research, provides information for scientists and policy makers, promotes training opportunities in ecosystem studies, and fosters collaboration among member institutions.

LEED buildings implement state-of-the-art conservation measures and inarguably save energy, they frequently do not address the intrinsic characteristics of a neighborhood. The LEED Neighborhood design addresses locations and linkages, neighborhood pattern and design, and green infrastructure and buildings. The standards incorporate 100 metrics that include energy and water use efficiency, access to transportation networks (especially walk-ways), and land conservation issues. A green building that is poorly sited and requires its occupants to travel individually by car is clearly not an effective way to reduce energy and emissions.

AERC Council Meeting

The AERC Council Meeting was held at the Smithsonian Institution September 25, 2009 with AERC officers and representatives of 14