USGS
science for a changing world

Preconference Short Courses

Monday
June 22, 2009

8:00 AM	**Short Course Group I –** Knowledge Integration and Mapping
	Short Course Group II – Anticipating and Adapting to Climate Change in Coastal Deltas
9:45 AM	**Refreshment Break**
10:15 AM	**Short Course Group I –** Anticipating and Adapting to Climate Change in Coastal Deltas
	Short Course Group II – Knowledge Integration and Mapping
12:00 Noon	**Buffet Lunch**

Course Work

Knowledge Integration and Mapping

This short course will help participants value and differentiate (a) meaningful and mindful understanding of science; (b) episodic, procedural, and declarative knowledge in science; and (c) the types of knowledge claims that scientists employ. Participants will explore examples of computer-based visual knowledge representation and visual knowledge integration in the biological and geological sciences—using selected riverine and lacustrine ecosystem issues as examples. They will then learn the principles of tag cloud diagramming and scientific concept mapping. Participants will begin guided construction of a concept map of their own areas of expertise and research. The presenters are proposing that DRAGON creates a digital repository of lake and river scientists' research expertise maps to be posted on the project's Web server for open, worldwide access, connectivity, and use. It will be possible to construct an integrative map of the Partnership's collective expertise, as well as to identify knowledge and expertise gaps where research is inconclusive, missing, or still needed. Free concept mapping software that can be downloaded and run on PCs and Macs as on-screen mapping applications will be available to participants and their institutions. This software also allows users to embed video clips, audio clips, and images into their concept maps to make them multimediated as well.

Anticipating and Adapting to Climate Change in Coastal Deltas

This training session will provide an overview of how climate change affects deltaic land forms and alters the processes that created and sustain them. It will examine how human development patterns can accelerate or ameliorate the impacts of climate change. Case studies of impacts that have been observed in deltas from several world regions will be presented, along with examples of adaptation strategies that (1) decrease coastal hazards and impacts on human settlements or (2) increase the longevity of low-lying deltaic ecosystems even as sea-level rise accelerates. Lessons learned from the New Orleans region of the Mississippi River Delta will be highlighted, along with new strategies for integrating climate change information in the design of levees, flood control structures, and coastal restoration projects.

Instructor Biographies

Instructors: Dr. James Wandersee and Dr. Renee Clary

Professor James Wandersee of the Department of Educational Theory, Policy, and Practice (Biology Education Program), Louisiana State University, and Professor Renee Clary, of the Department of Geosciences (Geoscience Education Program) at Mississippi State University, are the co-founders of the EarthScholars™ Research Group. Wandersee is a botanist and chairs the Teaching Section of the Botanical Society of America; Clary is a geologist and serves as the Director of the Dunn-Seiler Geology Museum at MSU. Their well-published research group's primary focus is on enhancing the integration of geological and biological (especially, geobotanical) knowledge during science instruction, in both formal and informal educational settings. They make frequent use of knowledge representation tools in their work—including concept maps and tag cloud diagrams—as they study human visual cognition in the context of college students' learning of their chosen sciences. They stay close to their respective sciences by continuing to co-conduct, co-present, and co-publish botanical and geological research, as well as attend major scientific professional meetings worldwide. Wandersee and Clary are elected lifetime Fellows of the Linnean Society of London and the Geological Society of London, respectively.

Instructor: Dr. Virginia Burkett

Virginia Burkett is the Chief Scientist for Global Change Research at the U.S. Geological Survey. She was formerly Chief of the Forest Ecology Branch at the USGS National Wetlands Research Center. Burkett has served as Secretary and Director of the Louisiana Department of Wildlife and Fisheries, Director of the Louisiana Coastal Zone Management Program, and Assistant Director of the Louisiana Geological Survey. She has published extensively on the topics of global change and low-lying coastal zones. As a lead author of the coastal chapters in the Intergovernmental Panel on Climate Change's third and fourth assessment reports (2001, 2007), Burkett has developed a global community of partners working on climate change in coastal systems. She coordinated both the Coastal and Southeast synthesis chapters of the U.S. National Assessment of climate change and its impacts (2001) and is a lead author of an updated national synthesis report for the United States (2009). She has co-authored reports for The Wildlife Society (2004), the United Nations Convention on Biodiversity (2005), the Everglades Task Force (2007), and the U.S. Department of Transportation (2008) that address climate change impacts and potential adaptation strategies. Burkett has been appointed to more than 40 commissions, committees, science panels, and boards during her career. She is an editor of the international journal *Ethics in Science and Environmental Policy*.