

# Mapping for Sustainability

## Conference Agenda

### MIV Auditorium



All sessions listed in Eastern Time.

### Wednesday April 22<sup>nd</sup> 2009

12:00 am-1:00 pm Virtual check-in and icebreaker (Bret Olsen, Sean Connin)

5:00 pm-6:00pm Virtual check-in and icebreaker (Bret Olsen, Sean Connin)

We have allocated two 1-hr periods prior to the conference for participants to test their virtual connection and equipment, and to spend some time in informal conversation with others attending the conference.

### Thursday April 23<sup>th</sup> 2009

11:00-11:15 am Greetings (Sean Connin)

11:15 am – 12:15 pm Keynote Address: *Education in Action for a Sustainable Future: People, Planet, and Prosperity*. Dr. Debra Rowe. President, U.S. Partnership for Education for Sustainable Development.

The scale of future climate change impacts may be determined by our actions over the next few years to reduce global carbon emissions. Within this narrow window of opportunity, we can change our energy policies and modify our individual patterns of consumerism to reduce serious disruptions to the environment and society. The habitability of this planet thus depends on a systemic integration of private choices and public decisions to promote sustainability – but we must act quickly.

Many institutions of higher education have been champions while others have been slow to embrace sustainability as a goal for research, instruction, and management. This is not acceptable. As members of the academic community we can all be agents of change and scholarship in action. No longer can we be satisfied with classes and coursework that ignore our modern circumstances. We can offer curriculum built upon real world inquiry and problem solving.. One important role of higher education is to empower our students with skills and knowledge to contribute to a healthier society. We can help students experience how such engagement in societal improvement can help our students find more happiness and fulfillment in their own lives. These changes must filter through all sectors of the campus environment – student life, operations, purchasing, facilities, and strategic planning and community partnerships.

This presentation will consider national trends in higher education to define and promote sustainability in multiple contexts - with particular focus on resources available to educators for this purpose. While learning from examples taken from colleges and universities throughout the country, we will find inspiration to

participate in stewardship and service to benefit our communities and to view sustainability as a career path to catalyze change.

12:15-1:00 pm Lunch

1:00-2:00 pm

*Google Earth/Maps as a Platform to Communicate Geospatial Issues.* Sean Askay. Google Earth.

Traditional GIS platforms provide the power to analyze geo-spatial data, but usually fall short in helping us to present information to the general public in an engaging way. With the rise of web mapping technology and virtual globe programs like Google Earth, we have the opportunity to educate a much broader audience on the geospatial nature of the issues we face. I will present several examples of how environmental, humanitarian, academic and other organizations have used Google Earth and Maps, both internally and to communicate their message to the public.

2:00-2:15 break

2:15-3:00 pm

*Mapping Existing and Potential Forest and Grassland Biomass Resources in St. Lawrence County, NY Using GIS: a collaborative Student Project.* Carol Cady, GIS Specialist. St. Lawrence University.

As energy costs rise, alternatives to current heating fuel sources are increasing in popularity and demand. One alternative that has been adopted by residents in St. Lawrence County (SLC), NY is the use of biomass pellets derived from wood or certain types of grasses. As interest in pellet stove heating intensifies, the need for local biomass resources to produce pellets is predicted to increase. Since SLC possesses an abundance of forest and grassland as well as abandoned agricultural lands, creating an inventory of these lands has become a focus of the SLC Planning Office. This student project, supervised by the SLC Planning Office and St. Lawrence University faculty in Environmental Studies Department and the Library, used GIS to identify the location and quantity of existing and potential forest and grassland biomass sources throughout the county. Suitable areas were identified using soil, elevation, cadastral, hydrographic, and land use layers. The land area of SLC was evaluated and specific areas capable of accommodating biomass resources were identified. Areas of actively farmed cropland, lands with poor topological and soil characteristics, in close proximity to wetlands and water resources, and protected lands were removed from the inventory. Working with these restrictive parameters resulted in a very conservative estimate of production capability. The resulting areas of forest and grassland biomass resources were compiled into a series of maps depicting their occurrence within both privately held and publicly owned land. These data are beginning to be shared with interested individuals through the SLC planning office and will be used in models to assess the feasibility of biomass as a heat source for the SLU campus.

3:00-3:15 break

3:15-4:00 pm

*Mapping Electronic Waste, Industrial Manufacture, and Hazardous Substance Disposal.* Ashraf Ghaly. Professor of Engineering, Union College.

One of the primary benefits of GIS is the ability to formulate policy decisions and management alternatives for sustainability from analyses of geo-referenced data.

As an educator in civil engineering, I favor classroom activities that begin with “real world” problems in need of solution, and use such scenarios to train students in GIS and critical reasoning - in a manner that is relevant to their lives.

In this presentation, I describe a critical problem in waste management and recycling, the disposal of electronic products, as a basis for teaching undergraduate students GIS and alerting them of important spatial relationships between the accumulation of such waste, the potential release of toxic chemicals, and threats to human and environmental health.

4:00 -4:15 break

4:15-5:00 pm

*A GIS-based approach to assessing potential conflicts between commercial wind-power development and significant natural resource values across broad landscapes.* David Publicover, Senior Staff Scientist, Appalachian Mountain Club, Gorham, NH.

In the Northeast, wind-power is emerging as one of the most commercially viable sources of renewable energy. However, outside of the coast suitable wind is limited to higher-elevation ridgelines - generally the least-developed parts of the landscape and often areas of high ecological, recreational or scenic value. This creates a potential conflict between two worthy goals - renewable energy development and conservation of important areas of open space. The Appalachian Mountain Club (AMC) has developed a GIS-based approach to assessing these potential conflicts. Ridgelines with sufficient wind for commercial development based on publicly-available wind resource data are delineated and overlaid onto available data for ecological, recreational and scenic resources. This allows sites to be compared as to their relative potential suitability for development. The AMC uses this information both to evaluate its position on specific development proposals and to promote the adoption of siting policies that address the unique impacts of this emerging technology.

5:00-5:30 pm

Wrap-up Discussion: opportunity for general reflection, questions, socializing

## Friday April 24<sup>th</sup> 2009

11:00-11:15 am Greetings (Sean Connin, Diana Sinton)

11:00 am -12:15pm

Keynote Address: *Searching for Sustainability: From Conceptual Traps to Spatial Maps.* Monty Hempel, Hedco Professor and Director, Center for Environmental Studies University of Redlands.

Infusing concepts of sustainability into college and university curricula is a challenge worthy of the very best thinking and educational technology of our day. Viewed as an optimization problem, the challenge is how to move society toward simultaneous improvements in ecological integrity, economic vitality, and social equity (Environment, Economics, Equity – the three “E”s of sustainability). Creating the conceptual space, along with the physical space, for this kind of optimization may require new pathways of thought and action, assisted by integrative learning technologies that help people to visualize complex information. Spatial mapping appears to be one of the more promising ways to assist discovery of what sustainability requires within complex adaptive systems. Because almost all sustainability issues have geographic dimensions and spatial

components, the use of maps and geographic information systems can facilitate improved understanding of the interactions of the three “E”s within and across neighborhoods, communities, nations, regions, and around the globe. They can help growing numbers of visual learners grasp the critical interactions between human and natural systems. They may also prove to be invaluable for developing and monitoring indicators of sustainability. For example, one indicator of a sustainable community is arguably change over time in the “green space/black space” ratio (parks and open space/paved & impervious surface area). Today, a simple application of Google Earth and rudimentary GIS will allow citizens to systematically monitor such changes in their own community. Finally, mapping may facilitate the development of more effective “place-based management” approaches to sustainability – a strategy that calls for the integrated management of a full range of human activities and impacts taking place within landscapes or seascapes that can be defined by the interaction of their social and natural boundaries (e.g., watersheds). Reorienting higher education to address sustainability challenges more fully through place-based management strategies, indicators, and GIS-facilitated learning may create new and needed “open space” within the curriculum for knowledge that truly matters for the health and happiness of both current and future generations.

12:15-1:00pm Lunch

1:00-2:00 pm

*Mapping Inequality: Teaching GIS and Spatial Thinking to Undergraduate Social Science Students.* Jill Grigsby. Pomona College.

In this advanced undergraduate course I teach spatial techniques of analysis to clarify contemporary issues of inequality such as environmental justice, residential segregation, income and wealth disparities, and public school resources. Warren Roberts, a GIS specialist at the Claremont Colleges Libraries, and I developed a set of lab exercises. The students carry out a group project and two independent projects requiring the use of Arc-GIS.

2:00-2:15 break

2:15-3:00 pm

*GIS, Spatial Technologies, and Sustainability Education: Lessons from the Classroom and the Field.* Joe Bowersox. Willamette University.

In this presentation I will draw upon classroom exercises, group projects, and undergraduate/collaborative research projects to highlight opportunities for utilizing GIS and spatial technologies in teaching the principles of sustainability as well as advancing community sustainability efforts.

3:00-3:15 break

3:15-4:00 pm

*Managing Sustainability on Campus: GIS as a Whole College Approach.* Sharron Macklin. Williams College.

For the past decade, liberal arts colleges have endeavored to diffuse GIS into the curriculum. With GPS (Global Positioning System) being integrated into everyday devices such as cell phones, cameras and PDAs, the time is right for GIS to play a major role in college infrastructure and promote sustainability.

This workshop will look at the administrative areas that would benefit from GIS application and analysis; the steps in developing a “whole College GIS approach”; and case studies of colleges currently incorporating GIS in their infrastructure. Colleges seeking to adopt administrative use can achieve a

symbiotic relationship between academic and administrative GIS users, and examples of this will be presented.

4:15-5:00 pm

LENS: Learning Spatially at the University of Redlands. Diana Sinton, University of Redlands

LEarNing Spatially (LENS) is a campus-wide initiative promoting spatial literacy as a foundational component of a liberal arts university. This is one outcome of Redlands' institutional dedication to spatial thinking in programs, research and curriculum. In this presentation I will share curricular and research projects that reflect core notions of place-based management, one potentially key element of sustainability.

5:00-5:30

Wrap-up discussion

## **Monday April 27<sup>th</sup> 2009**

\*4:00-5:15 pm

*Google Earth Workshop.* Sean Askay (and/or other members of Google Earth Outreach) will offer an informal help session for participants seeking information and advice to develop their own teaching and research projects in Google Earth. This workshop is open to participants registered for the full conference.

\* The Google Earth Workshop is open to participants of the full conference and is included in the registration cost.