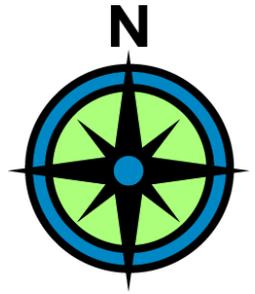


Spring Meeting Schedule

Register here and help with room planning by filling out this survey!

Tuesday, May 11, 2010, from 8:00 AM until 4:00 PM

Smith College Campus Center 72° 38' 19.38" W, 42° 19' 9.93" N



Hide All Abstracts

[Download a PDF of the Schedule](#)

8:00 – 9:00 Registration & Refreshments
 Campus Center Atrium (Second Floor)
 \$35.00 (Checks only, no Credit Cards or POs)

9:00 – 10:15 Session 1
 Campus Center Carroll Room 208

<p>Welcome and Opening Remarks Gina Torres, NEARC President Town of Groton, CT Jon Caris, Spatial Analysis Lab Smith College</p>	<p>Keynote Address — ESRI and ArcGIS Version 10: New Frontiers Matt Davis, Northeast Regional Manager ESRI</p>
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10:15 – 10:30 Break

10:30 – 12:00 Session 2

Government/Planning	Servers	Academic Collaborations
<p>Campus Center Carroll Room 208 Moderator: Mike Olkin</p>	<p>Campus Center Room 103/104 Moderator: Jim Scace</p>	<p>Campus Center Room 205 Moderator: Andy Anderson</p>
<p>↔ 10:30 Building Footprint, Digital Photography and LiDAR Data Fusion: Automatic Reconstruction and Texturing of 3-D Building Models Maria Fernandez, Joseph Clemenzi, Christopher Duncan, Tim Mathews, Jess Raeger, and Alexander Schreyer University of Massachusetts, Dept. of Natural Resources Conservation Niels Lacour and Alexander Stepanov University of Massachusetts, Facilities Planning Airborne LiDAR data is a rich but overwhelming source of elevation values that can be used to create 3-D city models that present many advantages for planning purposes. The goal of our study is to create a realistic 3-D model of the UMass Amherst Campus from LiDAR data and building photography. Within ArcGIS, we use previously derived building footprints to extract the cloud of points representing each building. We automatically reconstruct building 3-D mesh models from these points, classifying the LiDAR points based on elevation and geometric normals like slope and</p>	<p>Flipping ArcIMS to Flex — The Ups and Downs Jayson Brennen and Darren Mackiewicz CDM Presentation We all know the scenario... that trusty old ArcIMS site has been running fine for years and everyone loves it. However, this new fancy technology has come along where we can now have really cool-looking web applications that do flashy things and integrate data from anywhere on the planet... including the "cloud". The question is, should I abandon my old ArcIMS friend and move to one of the new-kids-the-block (Flex or Silverlight)? If so, what does it involve? Is there increased maintenance? Will it have the same functions? What are the plusses and minuses? This presentation will cover the process an agency may go through to migrate an existing web application to a new technology, review the benefits and pitfalls of the process, and provide development tips-and-tricks. Real world case studies and</p>	<p>Parents, Maps, and Public Schools: The SmartChoices Experiment in Greater Hartford, Connecticut Courtney Coyne, Tehani Guruge, and Jack Dougherty Trinity College Presentation SmartChoices, a web-based map application that helps city and suburban parents navigate public school choices in the metropolitan Hartford region, was created by a team of Trinity College students, staff, faculty, and community partners. Using ArcGIS, we digitized attendance zone boundaries and trackLocations for over 200 district and interdistrict schools, and constructed a parent-friendly, address-specific eligibility search tool that sorts results by school name, distance from home, racial balance, and test scores. To date, users have conducted over 4,000 distinct searches on the website, and we have conducted 94 in-depth parent interviews in workshops designed to bridge the digital divide. Our research findings reveal how and why SmartChoices influences parental decision making for</p>

aspect to obtain point clusters belonging to individual roof facets. Through trend fitting and plane intersections (breaklines), we obtain the building vertices that define the 3-D mesh models. These wire models are further "dressed up" or texturized in SketchUp by applying digital photos of the actual buildings. The collection of the Campus buildings can then be exported to the .kmz format or Google Earth for easy navigation and visualization, or used in multiple analytical applications towards energy efficiency (insolation, shading, energy generation), in architectural contexts (glazing, surface protection, insulation), and in planning (line of sight, trackLocation analysis).

speed/functionality benchmarking between old and new applications will be demonstrated.

parental decision-making for about two-thirds of our workshop participants. Our open-source software is freely available and can be modified for other regions. Try our website at:

<http://SmartChoicesHartford.org>

↔ 11:00

3D Planning Visualization with Sketchup and Google Earth

Chris Brown
MAPC

[Presentation](#)

Recently, MAPC has undertaken a new form of local planning assistance with 3D visualization creation and presentation. The work has ranged from a complete model of Boston's Chinatown to zoning reform in Weymouth Landing, MA. This presentation will detail best practices with 3D model construction and presentation methods primarily, with some tips and tricks for software from Sketchup, to Photoshop, to ArcMap, and online resources like Google's 3D Warehouse.

Real World ArcGIS, Flex, Cloud and Mobile Solutions

ESRI

Making ArcReader Files for Community Projects

Peggy Minnis
Pace University

[Presentation](#)

A service-learning course at Pace University provides community groups with maps. Since the groups always want changes in the maps, we've begun to use ArcPublisher to create ArcReader files that provide the users with the flexibility to manipulate their maps and customize them by themselves. Online instructional videos help the students to prepare the maps and the users to work with the maps.

↔ 11:30

Creating a Pseudo Master Address List

Doug Greenfield
City of Newton, Massachusetts

[Presentation](#)

The City of Newton does not have an official Master Address List. The official addresses are kept on vellum and paper sheets that are often torn, faded or missing. Given the many needs for good addresses we have developed a de facto GIS address points layer. This presentation discusses the creation methods, uses and future plans for this important data layer.

Interactive Mapping for Education: Collaborations for Success

Jeffrey Dunn and Michael Howser
University of Connecticut Libraries Map and Geographic Information Center - MAGIC

[Presentation](#)

The University of Connecticut Libraries Map and Geographic Information Center - MAGIC is in the early stages of developing a series of new GIS resources that are intended for use within the classroom. With a collection of over 200,000 print maps, MAGIC is experimenting with multiple avenues to increase usage of GIS datasets and digitized map collections by developing interactive activities that can be utilized by educators. By harnessing the power of Web 2.0 technologies, maps can become dynamic and with the development of Google Earth KML files and Google Map Mash-ups users will be able to explore geographic data and concepts within a familiar interface.

Expanding upon MAGIC's collaborative mantra, Trinity College and MAGIC have been awarded a \$100,800 grant from the National Endowment for the

Humanities (NEH) to develop GIS datasets and digitize historic maps that can be incorporated into online interactive mapping experiences. Join us as we explore the goals of this collaboration, a direct result of the Spring 2009 NEArc conference, and how you might benefit and/or collaborate on future projects at MAGIC.

12:00 – 1:15

Lunch

Campus Center Atrium (Second Floor)

◆ 12:15

Lightning Talks

Campus Center Carroll Room 208

Moderator: Guido Stein

Getting Social with Geo

Guido Stein

Applied Geographics

[Presentation](#)

Have you heard about Twitter? Have you wondered what Facebook and LinkedIn have to offer? This lightning round presentation will quickly review some of the social media sites and characters on the web and how they relate to the geo-spatial community.

I Still Can't Do What I Want to With GIS

Niels la Cour

University of Massachusetts Amherst

[Presentation](#)

I've been involved with GIS for 25 years and I'm still frustrated that it hasn't lived up to its potential for helping us live more sustainably on this planet. However, the trends are leading us closer to finally living the dream of having the power of GIS seamlessly integrated into the design processes that determine how we develop our human imprint on the Earth. Hardware has gotten faster and more powerful, data is more accurate and accessible, and software is more powerful and easier to use. But we still don't have GeoDesign as Jack Dangermond has envisioned it. We need it and I'll tell you why.

Master Address Database Is a Good Compliment to Municipal GIS

Jeff Amero

City of Cambridge

[Presentation](#)

Addressing is a key database for municipal GIS staff and users. It has been the key to integrating enterprise systems in Cambridge with GIS. Clearly from a recent NEARC listserv discussion and initiatives by MassGIS it is a topic of interest. I will rather quickly talk about how the addressing project has improved GIS workflow in Cambridge and some plans on how to leverage my investment now that I have a functional addressing database.

The Lightning Side of Online Mapping: Plug and Play Maps

Chris Duncan

GISmatters

From raw data to online, interactive, thematic map and legend in a web page in less than five minutes: a live demo of lightning-fast Plug and Play Maps.

Why Not Let the Data Do the Driving?

Mike Olkin

Town of Amherst

[Presentation](#)

Database- and XML-driven apps just make sense. Why build an app using a custom or proprietary configuration when that configuration itself may have a much longer life than the app that is built upon it? We'll take a quick at how a database-driven application configuration can work and how it has the potential to provide greater scalability, fewer headaches, and a common link for those who are more comfortable in a database than in a sea of obscure code.

GIS and Non-Profit Fundraising

Christopher Witt

[Presentation](#)

GIS has moved rapidly from a technology used primarily by geographers, environmental scientists, and planners to one employed by professionals working in public health, sales, and other diverse fields. This presentation will discuss how GIS can be incorporated into the fundraising efforts of universities, hospitals, and other non-profit organizations. Specifically, it will look at the application of GIS to development research – a sub-field of fundraising that involves analyzing the giving potential of existing donors, patients, or alumni and identifying promising new prospects.

The presentation will propose ways that GIS and spatial analysis and display can help development researchers analyze and expand their organizations' existing donor-bases. GIS can help researchers and fundraisers identify promising prospects, determine their giving potential, and decide how best to approach them. The goal is to show that GIS can serve as another powerful analytical tool in an organization's development research efforts.

Future at MAGIC

Michael Howser

University of Connecticut Libraries Map and Geographic Information Center - MAGIC

[Presentation](#)

The University of Connecticut Libraries Map and Geographic Information Center - MAGIC is looking to the future and wondering... what's next? Join us as we have a five minute thunderstorm to identify trends, potential applications, and how they can be applied to providing access to maps and GIS data.

Circles and Squares and Diamonds, Oh My! A Comparison of Ski Trails Around the U.S.

Will Ouimet and Andy Anderson
Amherst College

[Presentation](#)

Ski resorts across the country use a standard system to describe the increasing difficulty of their slopes: green circles, blue squares, black diamonds. But how do they really compare? A class of landscape-analyzing students at Amherst College used trail maps, orthoimagery, and digital elevation models to calculate topographic gradients and determine who has the steepest slopes and who overrates their trails.

Servers

Campus Center Carroll Room 208
Moderator: Walt Jaslanek

Government/Planning

Campus Center Room 103/104
Moderator: Niels la Cour

Environment

Campus Center Room 205
Moderator: Bill Guazo

Workshop

Bass Hall Room 103
Coordinator: Jon Caris

↔ 1:15

The Lighter Side of Online Mapping: Plug and Play Maps

Chris Duncan
GISmatters

Plug and Play Maps is a free web service that provides a truly simple way to serve existing shapefiles, tables, and other data formats as rich, interactive thematic maps in your web pages in situations where staff, finances, or time are scarce. With an easy what-you-see-is-what-you-get interactive Designer, you create compelling thematic maps and legends for your website from your data with a minimum of effort, choosing options from drop-down lists and checkboxes and previewing the results as you go. Designed to create smart, intuitive, and informative maps automatically, Plug and Play Maps also offers a range of more advanced options that let you refine the display of your data, including a full set of classification schemes, symbology options, feature selection with statistics, and interactive methods. While lacking the data processing and analysis abilities of true GIS, Plug and Play Maps may be a useful tool for quick visualization, map prototyping, and lightweight public data viewing. This talk will demonstrate the creation of several different map types using the online map Designer.

Keeping Track of All Those Layers: Use GIS Meta-Layers to Catalog Your Datasets

Brian Hebert
ScribeKey, LLC

[Presentation](#)

This presentation will explain how to use a combination of database, metadata, and ArcGIS technologies to create useful data catalogs and dictionaries which help to better manage large collections of GIS data. Current GIS data cataloging and metadata rely heavily on individual XML documents, which were designed primarily for describing single layers. By importing metadata, data profiles, and other dataset information into a single ESRI geodatabase, and creating associated geometric features representing GIS dataset outlines, the full power of GIS can be used for keeping track of large data layer collections and metadata.

Monitoring and Modeling Atmospheric Mercury in the Pioneer Valley

Jonathan Thrope and Karena McKinney
Amherst College

The concentration of mercury in the atmosphere has increased several-fold since pre-industrial times. In turn, deposition of mercury into the biosphere has been amplified, posing a threat to wildlife across the ecosystem as well as fish-consuming humans. This study uses real-time mercury air concentration and weekly wet deposition measurements, as well as local and regional air modeling, to assess mercury levels in the Pioneer Valley. The EPA's steady-state plume model AERMOD is used to simulate the dispersion and deposition of mercury from Mount Tom Station, a coal power plant in Holyoke, MA. Model results are compared to mercury levels observed at a field site 6.5 km from the plant, including wet deposition samples analyzed through the National Atmospheric Deposition Program Mercury Deposition Network, (NADP MDN), and continuous measurements of atmospheric total mercury made using a Tekran 2537B Mercury Vapor Analyzer. Additionally, back-trajectory modeling is applied to estimate regional sources of mercury. Multiple applications of ArcGIS have been applied throughout the research project to assess the model results and compare them to the real-time measurements.

City Infrastructure Building Using ArcMap Integrated Tools

Shar Govindan and Ryan Cournoyer
Bentley Systems Inc

This hands-on workshop focuses on creating municipal or utility network models within an ArcMAP interface. Learn how to clean up GIS data, correct topology connection errors, bring in data from multiple data sources, assign elevations to nodes from DEMs/DTMs, interpolate data, and hyperlink for water, wastewater and stormwater infrastructure using professional ArcGIS extensions.

↔ 1:45

Trials and Tribulations Building Web Services in Less Than Six Months

Jim Scace
Pioneer Valley Planning Commission

[Presentation](#)

Building Web Mapping Services from scratch appears daunting. When you don't really know the technology, the capabilities of the software and hardware and limited funding can be stressful and confusing. Vendor speak can often lead you astray. We will talk about how Pioneer Valley Planning Commission put together four functioning municipal web parcel applications in less than six months. What worked, what could be better, and where it is going from here.

The Renewable Energy Atlas of Vermont

Mike Brouillette
Vermont Center for Geographic Information

[Presentation](#)

The Renewable Energy Atlas of Vermont is a new, state-of-the-art GIS-based web application that identifies, analyzes and visualizes existing and promising trackLocations for renewable energy projects. The Atlas was developed in collaboration between the Vermont Sustainable Jobs Fund, Vermont Center for Geographic Information (Waterbury), Fountains Spatial (Montpelier), Overit Media (Albany, NY) and many helpful experts.

The Atlas is the first tool of its kind in the United States that enables end users to click on their town (or several towns or

county/counties) and select from a thorough suite of renewable energy options: biomass, efficiency, geothermal, hydroelectric, solar, and wind.

With the proliferation of energy committees in over 90 towns and cities, it's clear that Vermonters want a renewable energy and efficiency based economy. To support such efforts, a variety of new programs and funding sources have become available, including the Clean Energy Development Fund, Vermont Community Climate Change Grant Program and Community Energy Efficiency and Conservation Block Grants. Despite these opportunities, and the growing interest in taking advantage of them, Vermonters struggle with how to best navigate the process of moving projects from concept to reality.

The Atlas will assist town energy committees, the Clean Energy Development Fund and other funders, educators, planners, policy-makers, and businesses in making informed decisions about the planning and implementation of renewable energy in their communities - decisions that ultimately lead to successful projects, greater energy security, a cleaner and healthier environment, and a better quality of life across the state.

Charles River Pilot Study: What It Will Take to Meet the TMDL (Total Maximum Daily Load); or, GIS Analysis of Emerging Environmental Policy

Brian Brodeur

Massachusetts Dept. of Environmental Protection GIS Program

Presentation

The TMDL for the lower Charles River establishes phosphorus reduction goals for every city and town in the watershed. MassDEP, EPA Region One, and Tetra Tech conducted a pilot study in three headwater communities, Bellingham, Franklin, and Milford, to determine "what it would take to meet the TMDL" given the actual land use patterns and real world constraints to placing structural Best Management Practices (BMP's). The goal was to find the best combination of BMP's to achieve the required load reductions.

The project worked closely with local officials to ensure data quality, and realistic assumptions and scenarios. The study area was broken into Hydrologic Response Units (HRUs), areas with the same land use and hydrologic soil group. All areas within a HRU are expected to produce the same amount of runoff and same phosphorus loadings per unit area when exposed to the same hydrologic inputs. Hydrologic input consists of ten years of

↔ 2:15

Map.Harvard.Edu: Using ArcGIS Server With Javascript to Create a New Campus Map

Peter Siebert and Parvaneh Kossari
Harvard University Planning Office

Presentation

Although Harvard's experiments with interactive web mapping date back to the 1990s, until recently the public campus map has used a less dynamic platform. Recently we've released a new campus map application based on ArcGIS Server technology using the Javascript API. This presentation will look at our rationale for choosing this platform; elements of the map application's architecture and functionality; and an assessment of our experience so far - the good, the bad, the ugly.

Using GIS to Create a "One-Stop-Shop" Data Warehouse

Jamie Lo

City of Newburgh

David Pollack

Woodard and Curran

Presentation

The City of Newburgh aims to advance its existing GIS capacities and to facilitate the necessary platform for data integration from disparate applications (e.g. InHance, IPS, and RPS) used by but not limited to the Water, Codes, and Assessor to meet its growing and long range information retrieval needs. One of the most challenging data management problems is the City's inability to assimilate data maintained by different sources in real-time and in a relational database environment. GIS allows for a uniform, aesthetically attractive, and user friendly one-stop venue to improve information sharing, accessibility, and currency while affording added benefits in operational cost saving associated with walk-in customer care, data analyses, duplicate records entry and/or storage. The newly created ETL tool combining linked datasets enables automated warehousing and correlating of several spatial and non-spatial data formats in an efficient and coordinated manner. It also provided an expedient opportunity to undertake address

discrepancy between datasets. The enhanced web-based application offers data visualization, key word asset or document search, and mailing label generator. The goal of the City's "one-stop-shop" data warehouse is to address the dynamics of data and to accommodate the needs of a broad audience.

hourly rainfall. Constraints on installation of BMPs were developed comparing BMP design criteria with available data about depth to bedrock and depth to groundwater, soil permeability, and available space on site to install BMPs. These were designated Hydrologic Management Units (HMUs). Each HMU was assigned the BMP of choice, the best phosphorus-removing BMP that could be installed under those constraints. The Best Management Practice Decision Support System (BMPDSS) was used to optimize BMP sizing to meet the town phosphorus reduction goals at the lowest overall cost.

Results: Although not intended as a cost study, the relative cost difference between optimized and non-optimized scenarios is dramatic, and significant for stormwater management policy. Non-optimized approach costs run about two and a half times the optimal cost. Finding a way to implement a near optimal approach seems warranted.

2:45 – 3:00

Refreshment Break

Campus Center Atrium (Second Floor)

3:00 – 4:00

Session 4

	General Interest	Government/Planning	Social Science	Workshop
	Campus Center Carroll Room 208 Moderator: Andrea Newman	Campus Center Room 103/104 Moderator: Mike Olkin	Campus Center Room 205 Moderator: Andy Anderson	Bass Hall Room 103 Coordinator: Jon Caris
↔ 3:00	<p>Map Algebra at 30</p> <p>Dana Tomlin University of Pennsylvania</p> <p>It has been three decades now since the term "Map Algebra" was first introduced and, since then, its most widely-used implementation has been the Spatial Analyst extension of ArcGIS. This presentation will take a brief look back and longer look ahead at current prospects for the future development of this cartographic modeling language.</p>	<p>Procurement Practices and Principles for GIS Practitioners</p> <p>Tom Harrington Applied Geographics, Inc.</p> <p><u>Presentation</u></p> <p>An essential part of effectively managing a GIS in the public sector involves determining whether and how to procure third party products and services. This presentation starts with a discussion of the decision to outsource or purchase types of GIS components and support, and the important steps for ensuring you've defined your requirements and budget. The presentation then focuses on the procurement process, presenting a variety of Dos and Don'ts for planning, writing, and issuing a request for proposals, including proposal evaluation and scoring, interviews, BAFO, and award. Emphasis is given to ways to minimize risks and increase the clarity of your request, what to include and how to ask for the information you need, ways to organize and speed up the process, where to get help, and other tips. Examples drawn from a variety of reference materials will be presented to illustrate each of these topics.</p>	<p>Geographic Analysis of the Recent Recession</p> <p>Robert Jones Skidmore College</p> <p><u>Presentation</u></p> <p>The national unemployment rate in the recent recession has been the highest since the 1930s. However, focusing on the national rate masks the geographic dispersion of unemployment and hides its geographic origins. Applying GIS to the progression of unemployment rates by state reveals valuable insights into the origin of this recession.</p> <p>Geographic analysis of the United States further reveals that the US is made up of several economic regions each of which is different enough from the others to require a more regional analysis to understand "the" US economy.</p>	<p>Using CT ECO to View Connecticut's Environmental and Natural Resource Information Online</p> <p>Howie Sternberg Connecticut Department of Environmental Protection</p> <p>Emily Wilson University of Connecticut Cooperative Extension System</p> <p>The Connecticut Department of Environmental Protection (DEP) and the University of Connecticut Center for Land Use Education and Research (CLEAR) recently launched a new website, Connecticut Environmental Conditions Online (CT ECO) that includes the latest and most accessible online maps and tools for viewing Connecticut's environmental and natural resource information.</p>
↔ 3:30	<p>The USGS Geospatial Liaison Network</p> <p>Dan Walters, Lynn Bjorklund, Lin Neifert, and David Terrell US Geological Survey</p> <p>Sam Wear U.S. Geological Survey IPA Detail</p> <p><u>Presentation</u></p>		<p>A Road to Nowhere: Interstate Highways and Racialized Space in Omaha, Nebraska (1956-2010)</p> <p>Juliet Silberstein Amherst College</p> <p>"A Road to Nowhere" explores how interstate highway construction impacted segregation in Omaha, Nebraska. This case</p>	<p>The new CT ECO website, www.cteco.uconn.edu, includes environmental and natural resource information for Connecticut such as protected open space, farmland soils, wetland soils, aquifer protection areas, water quality classifications, and drainage basins. Each can be viewed separately or in conjunction with other environmental and natural</p>

Coordinating National Geospatial Program (NGP) Activities and Programs Throughout New England

The USGS Geospatial Liaison Network consists of USGS Geospatial Liaisons housed in National Spatial Data Infrastructure (NSDI) Partnership Offices across the nation. These liaisons and offices perform numerous partnership related functions in support of the NSDI, The National Map and Geospatial One Stop. They represent and coordinate National Geospatial Program (NGP) initiatives in state, local, and other federal agencies, cultivate and maintain long-term relationships, and develop partnerships and supporting agreements. The USGS Geospatial Liaison Network is the "local face" of the USGS NSDI and NGP programs:

<http://liaisons.usgs.gov/geospatial/>

The USGS state liaison network has helped develop and supports many strategic geospatial partnerships that continue to build the NSDI across the NEARC community. USGS state liaison representatives also assist governments and agencies applying for annual grant funding through the NSDI Cooperative Agreement Program (CAP) Grant program which has lead to numerous grant awards including support for strategic planning in the region.

This presentation will provide an overview of the USGS National Geospatial Program, highlight examples of projects supported by the NGP and describe how organizations can take advantage of NGP funding, products and services. USGS/Partner programs will be highlighted and discussed.

study starts in the aftermath of the Interstate Highway Act of 1956 and ends at the present through analysis of the process by which minorities in urban, mid-west Omaha were isolated from the suburbanization of middle-class whites in suburban West Omaha. The construction of Omaha's interstate and freeway system heightened the racial discrimination which was already present because of employment and housing discrimination, all of which was de jure segregation due to Federal policies. From 1959-1970, Omaha's Interstate-80 destructed an ethnic enclave in Southeast Omaha and stimulated white Omahans' migration to suburbia. Suburban sprawl by upwardly mobile white Omahans furthered the deterioration and racial strife in Northeast and Southeast Omaha (urban areas of Omaha). After Interstate-80 was completed, Omaha's city government developed the North Freeway in 1966 which went through Omaha's African American neighborhood but did not connect on the North side to any other highway, thus the "Road to Nowhere". Omaha blacks rioted in 1966, because of anger fostered by segregation, poor housing and poverty. Omaha city officials hastened the construction of the North Freeway through Northeast Omaha after the riots, as a way to divide the black community. Structural racism by the city government delayed the freeway's construction multiple times over the next twenty years. Blacks were barred from westward movement, in contradistinction to displaced whites in Southeast Omaha who were able to obtain housing in West Omaha. This displacement cemented spatial segregation between Omaha whites and African Americans. The heightened inequality and segregation due to Interstate-80 and the North Freeway created social and environment injustices that minority and poor white populations continue to endure. "A Road to Nowhere" concludes that the deteriorating and segregated conditions of Northeast and Southeast Omaha, which persist to this day, are caused by governmental policies exemplified by Omaha's implementation of the 1956 Interstate Highway Act.

resource information and orthophotography.

CLEAR and DEP will present a live demonstration of CT ECO that introduces the website and illustrates how natural resource and environmental information is now available to a wider range of users than before. A variety of data, tools and techniques will be covered that demonstrate how CT ECO can be used not only by the GIS proficient, but also by a casual map user.

CT ECO includes:

- Data and Resource Guides - Online descriptions of environmental data and maps.
- Map Catalog - Town maps in PDF format.
- Simple Map Viewer - Easy to use interactive map viewer for thematic maps.
- Advanced Map Viewer - Interactive map with more access to tools and data than the Simple Map Viewer.
- Map Services - For GIS users to connect CT ECO data with their desktop GIS.

4:00-5:00

NEARC User Group Forum / Open Discussion

Campus Center Pub (Ground Floor)

All Day

GPS Muster

On the lawn in front of the Campus Center

[Instructions](#)

Coordinator: Andy Kuether

Campus Center Atrium (Second Floor)

Coordinator: Jon Caris

Environmental Science

Quantifying Eurasian Watermilfoil in Candlewood Lake Using Remote Sensing

Martha Balfour

The Connecticut Agricultural Experiment Station

Invasive aquatic plants are problems in many Connecticut lakes and ponds. They negatively affect ecosystems, recreation and the value of nearby real estate. The Connecticut Agricultural Experiment Station's Invasive Aquatic Plant Program (CAES IAPP) has conducted field surveys of 162 lakes and ponds (www.ct.gov/caes/iapp) and found nearly two-thirds contained one or more of 11 invasive plant species. Eurasian watermilfoil (*Myriophyllum spicatum*), minor naiad (*Najas minor*) and curly leaf pondweed (*Potamogeton crispus*) are the three mostly frequently observed invasive species. Field aquatic plant surveys are costly and time consuming. Remote sensing utilizes aerial imagery to determine surface features including vegetation. If remote sensing could be found suitable for quantifying aquatic vegetation the benefits would be considerable.

Candlewood Lake is Connecticut's largest lake, 5086 acres, and is used both recreationally and for hydroelectric power generation. CAES IAPP has conducted field surveys of the lake for several years and found it to contain large areas of Eurasian watermilfoil and smaller areas of minor naiad and curly leaf pondweed. The watermilfoil is in large monostands that often reach the surface. Thirteen native aquatic plant species are also present. In 2008, four band (red, green, blue, and near infrared) aerial imagery of Connecticut was performed as part of the National Agricultural Imagery Program (NAIP). This imagery has one meter resolution and areas of Candlewood Lake's watermilfoil appear visible to the naked eye. Using ArcGIS 9.3.1 we compared these areas with our 2008 field surveys. The correlation was very good in many areas. In a few cases the imagery picked up watermilfoil that was likely missed by the field survey. Some areas had reduced visibility due to boat wakes, shadowing by trees, and other factors limiting this technique. Other species were not readily found because of their low abundance and distance from the water's surface. Considering the NAIP imagery is free to the public, it may have considerable value for remotely determining aquatic vegetation. The use of other software for analyzing the imagery could further improve

Landscape Analysis

Corn Planting and Suitable Lands in Iowa

Betsy Rakocy

Tufts University

I sought to analyze patterns of corn planting as they related to environmentally fragile lands in recent years. High commodity prices are a major concern for environmentalists, who predicted that price increases would result in catastrophic increases in acres planted with corn. One analysis by faculty at Iowa State University predicted that corn prices as high as \$3 per bushel would result in a million additional acres planted in corn in Iowa, many of which would be environmentally fragile and not suited to production. In the summer 2008, prices briefly spiked over \$7/bushel. The USDA estimated the annual average, however, at about \$4/bushel, which was slightly lower than the 2007 average price.

I sought to test the hypothesis of Secchi and Babcock informally by mapping:

1. Trends in acres planted with corn, and
2. I analyzed the latter by mapping elevation, soil classifications, soil erodibility, and land cover.

My analysis concluded that planted acres did indeed increase, but not by catastrophic rates. According to the model in question, more than one million new acres would have been in production by 2007 due to price spikes and significant increases in acres planted to corn in the southern and northeastern Iowa. My results suggest that high prices did not result in a significant increase in the use of fragile lands for corn, but rather led to more intensive use of lands which were already planted with corn.

Geology

Eruption Dynamics of the 7.7 Ka Driftwood Pumice-Fall, Makushin Volcano, Alaska

Allan Lerner and Peter Crowley

Amherst College, Dept. of Geology

Kirsten Nicolaysen and Richard Hazlett

Keck Geology Consortium

Makushin Volcano on Unalaska Island, AK is potentially the most threatening volcano in the Aleutian chain, being close to the largest Aleutian population centers of Dutch Harbor and Unalaska. Makushin has displayed evidence of very explosive Holocene volcanism. This study investigates the eruption chronology and triggering mechanism for the most recent of these highly explosive events – the 7.7 ka Driftwood Pumice-fall event. The andesitic pumice deposit reaches thicknesses of over 2 meters, and consists of four identifiable horizons of differing tephra size, color, and composition. Isopach constructions using ArcGIS estimate that the deposit covered at least 8100 km², with a total deposit volume of .25-.90 km³. These reconstructions show an eruption on the scale of the 1980 Mt. St. Helens eruption, with a VEI of 4-5.

Geochemical trends, disequilibrium mineral populations and zonation patterns within plagioclase and olivine xenocrysts show evidence of magma mixing between a bulk siliceous chamber and an under-plating basaltic injection. The calculated temperature difference between these two magmas is 100-200°C, large enough to initiate convection and volatile exsolution within the siliceous magma body. Diffusion rates based on the thicknesses of olivine rim zonation show a lag-time of ~six months to one year between the basaltic injection and the cataclysmic eruption – similar to delays between mafic injections and eruption onsets seen in numerous other volcanic systems.

The Driftwood Pumice occurs in the midst of numerous smaller ashfalls, many of which consist of light-dark ash couplets, similar to tephra differences within Driftwood deposit, though on a much smaller scale. The repeated occurrences of light tephra overlain by dark, more mafic tephra suggest that magma mixing via mafic injections is a common triggering mechanism for Makushin eruptions.

Transportation

Massachusetts Commercial Motor Vehicle Crash Maps Using ArcGIS

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UMassSafe is a multidisciplinary traffic safety research program housed in the University of Massachusetts Transportation Center in the College of Engineering at the University of Massachusetts Amherst. At UMassSafe, we seek to reduce the frequency and severity of crashes through the rigorous examination of safety-related data – both traditional and nontraditional – to better understand crashes, driver behavior, and related factors. One of our primary goals is to guide research-based projects into practice and drive practice-based projects toward the goal of dissemination.

UMassSafe has developed a commercial motor vehicle (CMV) toolkit to provide data and other information to law enforcement personnel on crashes, data quality issues and crash prevention methods via an electronic web-based toolbox. The toolkit includes maps of the CMV crashes throughout Massachusetts created using ArcGIS to assist the Massachusetts State Police Commercial Vehicle Enforcement Section (MSP CVES) target enforcement patrols to high crash trackLocations. These maps are being used to demonstrate which corridors and hot spots require targeted measures to prevent crashes involving CMVs. In addition, maps overlaying various years of CMV crash data are assisting the MSP CVES to evaluate the effectiveness of these targeted patrols and guide future programming.

correlations.

The Distribution and Temporal Dynamics of Water Hyacinth (*Eichhornia crassipes*) in Lake Dianchi

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The invasive water hyacinth (*Eichhornia crassipes*), one of the fastest growing plants in the world, can be devastating to an introduced environment as it will grow to cover an entire lake surface. This prevents sunlight from penetrating the water, eventually killing all aquatic plants which are necessary to provide oxygen to any organisms living in the lake. Currently, there is very little known of the distribution and temporal dynamics of *E. crassipes*. This knowledge is needed to determine how to best determine the effectiveness of control programs as well as identify other lakes at risk of a water hyacinth invasion. By using Geographic Information Systems (GIS) and Landsat remote sensing data, I created a mask of Lake Dianchi in China that excludes the land in all of the images, leaving only the lake. Through this process, I determined the number of pixels of lake water in each image. As the infestation of *E. crassipes* grows, the number of water pixels decreases as they are replaced with vegetative pixels. Through a comparison of baseline images, taken before the plant was introduced, the severity of the infestation in Lake Dianchi was determined quantitatively. By comparing patterns of invasion through time, the effectiveness of any control programs implemented will be determined and other lakes at risk of water hyacinth invasion will be identified.

Investigation Into the Health of the Ipswich River

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Wellesley College

In 2003, the Ipswich River, which provides approximately fourteen communities with water, was named the 3rd most endangered river in the United States due to extreme low flow conditions. One key indicator of river health is dissolved oxygen (DO). High levels of DO are necessary to maintain aquatic life, yet DO levels are periodically drastically reduced in the Ipswich River. Long term monitoring of DO by the Ipswich River Watershed Association has ensured early detection of biologic stress and contamination in the river. By analyzing the data compiled in 2003, I investigated the links between low DO levels, low flow and the anthropogenic activity of local communities and businesses using GIS.

Spatial Analysis of Lawn Management Practices in Three Towns in Massachusetts

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Wellesley College

By some measures, Boston has the country's second highest sprawl rate in the country. Some impacts of suburbanization include increased impervious surface cover and increased intensity of resource use including chemical lawn fertilizers and pesticides as well as water. This suburbanization trend is growing and has led to the "homogenization hypothesis" or the hypothesis that all suburbs, regardless of geographical location, are becoming similar in environmental impact and social attitudes. By surveying four towns in the Boston suburbs about lawn care management and preferences, we were able to examine variation in responses to help reject or accept the homogenization hypothesis in the Boston suburbs, which will then give insight into ecological and social impacts of lawns in New England and across the country. We first distributed surveys about lawn care management based on a stratified random sampling of single family households in the towns of Woburn, Ipswich, Danvers, and Burlington, Massachusetts. We used ArcGIS tools for spatial statistics to analyze the spatial distribution of responses, to assess whether or not the responses exhibit meaningful spatial patterns. Results will be used to inform similar research with colleagues in three other major U.S. metropolitan areas.

Characterizing the Solar Potential of Downtown Poultney, VT: A Field-Based Assessment of GIS-Derived Solar Radiation Estimates

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This project compares pyranometer data with solar radiation values modeled using ArcGIS in downtown Poultney, Vermont. Radiation models include a bare-earth scenario that only incorporates topography and a second scenario that incorporates the height of buildings along Main Street and on the campus of Green Mountain College. The primary goals are to evaluate the efficacy of modeling solar radiation versus collecting primary data using a pyranometer and whether incorporating buildings heights using 30-meter elevation data dramatically influences the resulting modeled data. We used a pyranometer to measure incoming solar radiation at five locations in

New York StreamStats: An Online Application for Basin Delineation and Streamflow Statistics

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StreamStats is a Web-based Geographic Information System (GIS) application that was created by the U.S. Geological Survey (USGS) and Environmental Systems Research Institute, Inc. (ESRI), in cooperation with New York State Department of Transportation (NYSDOT) and New York State Department of Environmental Conservation (NYSDEC) to provide users with access to an assortment of analytical tools that are useful for water-resources planning and management. StreamStats allows users to easily obtain streamflow statistics, basin characteristics, and descriptive information for USGS data-collection stations and user-selected ungaged sites. StreamStats makes the process of computing basin characteristics and streamflow statistics fast, accurate, and consistent. Examples of these characteristics available for New York include drainage area, stream slope, mean annual precipitation, as well as the 100-year flood and mean annual flow. StreamStats is accessed at <http://ny.water.usgs.gov> through a map-based user interface that appears in the user's Web browser.

Getting Active: An Exploration of the Accessibility of Foot Transportation in Northampton

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Smith College

The built environment has a major impact on quality of life for residents of an area. One of the selling points of Northampton as a real estate location is the availability of public transportation and the relative "walkability" of various neighborhoods. We collected data to determine if there is an association between homes that are within walking distance of various essential locations and the price of those homes.

the study area. GPS coordinates were collected at each pyranometer station using an HP iPAQ and external Bluetooth. We digitized building roof tops using a 1-meter full color NAIP orthophoto and estimated height to the eaves using an inclinometer and tape measure. Building heights were incorporated into the attribute table and the building layer was converted to a raster layer and added to a 30-meter DEM. We modeled solar radiation for the day and time of each pyranometer reading by using the Solar Radiation module in ArcGIS under bare-earth and building-corrected scenarios and compared the two results with primary data collected using the pyranometer.