

GIS EDUCATORS DAY

Sunday, November 13, 2011 / 8:30 a.m. - 5:00 p.m.

Agenda-at-a-Glance			
8:30 a.m. - 9:00 a.m.	Coffee/Continental Breakfast & Registration — Gallery		
9:00 a.m. - 9:30 a.m.	Welcome Remarks & Introduction/ Overview of the Day — Broadway 1 & 2		
	HANDS-ON WORKSHOPS	ORAL PRESENTATIONS	PANEL PRESENTATIONS
LOCATION:	High Rock	Broadway 3	Broadway 4
9:45 a.m. – 10:45 a.m.	Online Mapping: Browser-based GIS	1. What do GIS, GPS, & Trout Have in Common? 2. Educational Opportunities through Invasive Species Mapping	Educating Indispensable Geospatial Professionals for the 21st Century
11:00 a.m. – 12:00 p.m.	It's in the Cloud: Locating and Sharing Data with ArcGIS.com	1. Does FOSS GIS Offer More Opportunities for Developing Strong Foundational GIS Skills? 2. Developing a Geospatial Workforce Through Virginia's Community Colleges	Demonstrating Tools for Teachers from T3G2011
12:15 p.m. – 12:45 p.m.	Initiatives in Spatial Literacy – The Gentle Path ★ <i>Oral Presentation</i>	Frogs, Peepers, and Salamanders, Oh My!: An introduction to Vernal Pools using GIS	Living in a GIS World as a MAC User ★ <i>Oral Presentation</i>
12:45 p.m. – 1:30 p.m.	LUNCH — Broadway 1 & 2		
1:30 p.m. – 2:30 p.m.	GeoNews - Creating Presentations in ArcGIS Explorer Online	1. Do It Yourself Aerial Photos 2. Integrating Geospatial Technologies in a Field Studies Course	Teaching GIS: It's More than Buttonology
2:45 p.m. – 3:45 p.m.	Introduction to ArcGIS Desktop	1. 4-H and National Wildlife Refuges: Kids Get Feet Wet with Geospatial Technology 2. Nashua Trail Blazers: Reaching Reluctant Learners with GPS/GIS Technology, Mapping, and Snow Shoe Expedition	Three GIS Educators, Three Topics, Three Techniques
4:00 p.m. – 5:00 p.m.	Introduction to LIDAR Data	1. State Extension-based Resources for GIS 2. Engaging Students with Interactive, Web-based Mapping	Aligning Your Geospatial Curriculum with the Geospatial Technology Competency Model (GTCM)

SESSION ABSTRACTS

Hands-on Workshops

High Rock

<p>9:45 a.m. – 10:45 a.m.</p>	<p>Online Mapping: Browser-based GIS <i>Charlie Fitzpatrick, Esri Schools Program Manager</i></p> <p>The availability of web-based mapping resources has grown exponentially! Explore a variety of sites and learn how to begin using GIS in your classroom to visualize data and promote spatial thinking using only a web browser.</p>
<p>11:00 a.m. – 12:00 p.m.</p>	<p>It's in the Cloud: Locating and Sharing Data with ArcGIS.com <i>Charlie Fitzpatrick, Esri K-12 Education Manager</i></p> <p>ArcGIS.com is a Web site for experiencing the full range of online ArcGIS. ArcGIS.com enables you to add basemaps and data to your ArcGIS desktop applications, to store and share your own maps and applications with others, to create and save interactive maps, and to participate in public or private groups. The ArcGIS.com portal provides you with up to 2 GB of storage space. In this workshop, participants will learn how to use ArcGIS.com's online mapping applications, to access free data and maps, and to register for a free account which enables you to save and share data and maps within specific groups or across the GIS community.</p>
<p>12:15 p.m. – 12:45 p.m.</p>	<p>Initiatives in Spatial Literacy – The Gentle Path ★ <i>Sharron Macklin, Williams College</i></p> <p>Even as books become digital and chalk boards become smart, there remains a hesitancy among faculty to require students to take courses involving the use of technology – essentially to use more than a chalk board and a book. How many faculty use GPS technology in their cars to navigate to new places, yet shun the use of Google Earth or other virtual maps in their classroom? Have they considered that visual elements might facilitate a student's navigation in a new sphere of learning? Initiatives in Spatial Literacy, ISL, has been developed to encourage faculty understanding of spatial thinking and with its inclusion in classes, enhances critical thinking skills and multi-dimensional concepts. By providing pedagogy focused spatial modules, in-class student mentors, and free download-able applications, the ISL program helps faculty devote minimal class time to learning technology tools. With the global connectivity afforded by the internet, an education without provision for the development of critical spatial skills would seem to be incomplete. ISL can provide a gentle path to spatial literacy.</p> <p>★ Oral Presentation, not a hands-on workshop</p>
<p>1:30 p.m. – 2:20 p.m.</p>	<p>GeoNews - Creating Presentations in ArcGIS Explorer Online <i>Charlie Fitzpatrick, Esri Schools Program Manager, Kathryn Keranen, GIS Education Consultant</i></p> <p>ArcGIS Explorer Online is a browser-based GIS viewer that gives you an easy way to explore, visualize, and share spatial information. Learn how easy it is to access ready-to-use basemaps and layers from ArcGIS Online, add notes, photos, and videos, perform spatial analysis and create presentations with this versatile tool.</p>
<p>2:45 p.m. – 3:45 p.m.</p>	<p>Introduction to ArcGIS Desktop <i>Sharron Macklin, Williams College</i></p> <p>Promote spatial literacy in your school! This workshop provides a gentle introduction to ArcGIS software and GIS concepts. Participants will explore their own neighborhood using free, online data and images. Learn shortcuts to creating your own data layers to build a personal project.</p>
<p>4:00 p.m. – 5:00 p.m.</p>	<p>Introduction to LIDAR Data <i>Kathryn Keranen, GIS Education Consultant, Lyn Malone, WORLD VIEWS Spatial Technologies for Education</i></p> <p>This session consists of three parts: Part 1: Explanation of LIDAR for the Northeast Project which has been funded by the USGS with American Reinvestment and Recovery Act money. Part 2: Brief explanation of the math and science behind LIDAR. Part 3: Hands-on skill session covering: Accessing the point file information of downloaded LIDAR Conversion of LIDAR into an ArcGIS compatible format (las to multipoint or ascii 3D to feature class) Visualizing LIDAR data in a variety of ways: TINs, Contours, Profiles, 3D</p> <p>Participants will receive a CD with documents and data used for the session.</p>

Oral Presentations

Broadway 3

9:45 a.m. –
10:45 a.m.

What do GIS, GPS and Trout Have in Common?

Judy Tumosa, NH Fish & Game Dept, Ina Ahern, Plymouth (NH) Regional High School

Join us in taking a journey through your watershed and bringing it into the classroom. Learn how to use a variety of technological tools to investigate water quality and assess the fisheries (trout) habitat in your local water body. Discover how to begin your study using GIS maps to plan potential testing sites, use GPS to locate those sites in the field, gather water quality data using meters, then return to the classroom to analyze the data and post it on GIS maps to share with other schools and community partners. Students can put technology to practical use to determine the health of their watershed.

Educational Opportunities through Invasive Species Mapping

Jennifer Dean, Invasive Species Biologist NY Natural Heritage Program

iMapInvasives is an online mapping system that supports conservation professionals who combat the threat of invasive species. It also provides another role by engaging students in their communities through invasive species mapping projects and early detection surveys. Students gain hands-on experience in collecting biological data and using geospatial technology, while making tangible data contributions to the state's early detection network and assisting with the protection of natural resources. Projects can include mapping the invasive plants of their school grounds, or surveying trees in their town park for destructive invasive beetles. These contributions increase the impact of the iMapInvasives dataset for land managers, scientists, and policy makers. Learn about training opportunities and how to get your students out mapping.

11:00 a.m. –
12:00 p.m.

Does FOSS GIS Offer More Opportunities for Developing Strong Foundational GIS Skills?

John Van Hoesen, Green Mountain College

I think most educators would agree that a high percentage of introductory GIS courses rely on proprietary software as the medium to teach foundational GIS theory and skills. This is likely a reflection of the plethora of accessible teaching material and the large market share that such software holds in the geospatial industry (Duratech, 2009). This market share suggests that students should be competent with these programs; however I question the (seemingly) accepted bias that fundamentals are best taught using any proprietary software package. When students are learning basic skills within a singular software environment, how well will they transfer them to other proprietary or FOSS alternatives? Guided by the GIS 20: Essential Skills (Clemmer, 2010) I will present one model of teaching foundational GIS skills using multiple FOSS alternatives that require students to transfer knowledge and skills between different interfaces. I will also argue that this approach builds a stronger understanding of the 'why' behind mouse clicks, fosters independent problem solving, and nurtures the Neogeography movement. My intention is to promote dialog about how best to teach foundational skills before migrating to proprietary software, not an effort to discourage the use proprietary products.

Developing a Geospatial Workforce Through Virginia's Community Colleges

Wendy Stout, NASA Virginia Space Grant

The NASA Virginia Space Grant Consortium (VSGC), community college faculty, high school teachers and the geospatial industry are working together to prepare Virginia's future geospatial workforce by providing VCCS faculty and high school teachers in Virginia with professional development in geospatial technology. These workshops bring together precollege, higher education, and geospatial industry leaders to build a strong cohort of educators committed to preparing geospatial technicians to meet workforce demand in Virginia. Participating faculty receive hands-on training in using global positioning systems (GPS), geographic information systems (GIS), and remote sensing including classroom ready materials and GIS data for Virginia and their local area. The goal is to develop academic pathways in geospatial technology that will serve as models for all community colleges in the VCCS, produce educational materials, and providing career awareness of geospatial technology. The curriculum developed through the project is being driven by the needs of business and industry in the Commonwealth. The Virginia Community College System and other educational institutions are well positioned to increase geospatial literacy among Virginia's future workforce.

<p>12:15 p.m. – 12:45 p.m.</p>	<p>Frogs, Peepers, and Salamanders, Oh My!: An introduction to Vernal Pools using GIS <i>Lara Bryant, Keene State College</i></p> <p>Vernal pools are temporary bodies of water found on the landscape primary during the spring season. These seasonal wetlands are critically important for a variety of amphibians which rely upon them for breeding habitat. Due to their temporary nature, vernal pools do not support resident fish populations which often prey upon amphibians. Therefore, these pools provide viable breeding ground for a number of different amphibian species. Given their role, protection of vernal pools are vital. To become more aware of the importance of these pools, school systems need to integrate this topic into the curriculum. Geographic Information Systems (GIS) provide many ways to teach students about vernal pools. GPS units and computer software programs allow students to gain a better spatial understanding of where vernal pools are located in given areas, such as a local city or town. Through GPS units, students not only learn how to use the devices but also how they are helpful when trying to document vernal pools. Additionally, GPS waypoints can be uploaded to computer programs like ArcGIS. With the waypoints, students are able to plot coordinates of each vernal pool that was visited and then map the results on the computer. Relating GIS to other academic subjects creates an engaging, interactive curriculum for students, while also providing a variety of teaching tools.</p>
<p>1:30 p.m. – 2:20 p.m.</p>	<p>Do It Yourself Aerial Photos <i>Carolin Ferwerda, Wellesley College</i></p> <p>You can make your own georeferenced aerial imagery for approximately \$100 using common materials and a handheld, consumer grade digital camera. This is a great way to obtain imagery with fine spatial and temporal resolution on a budget, and it engages your students in multidisciplinary activities, from the physics of flight to GIS skills such as georeferencing. All you need is some time, ingenuity, and the guides developed by the Public Laboratory for Open Technology and Science (http://publiclaboratory.org/home). Based on my experiences attending a workshop and collecting imagery at Wellesley College, I will explain how you can build a balloon, launch it, and use the imagery. I will also talk about how this can be used in education (higher, secondary, and informal ed) to teach students multidisciplinary skills, remote sensing concepts, and engage them in a project that can be applied to real-world problems.</p> <p>Integrating Geospatial Technologies in a Field Studies Course <i>Eddie Bevilacqua, SUNY ESF</i></p> <p>Forest and natural resource management students at SUNY ESF are required to take a 4-week field studies course in the Adirondack Park, NY. The main purpose of the course is to introduce students to procedures and methods associated with the identification, measurement and understanding of forest landscapes, foundation skills needed in upper division courses. Four main components are set to meet this purpose: (i) field dendrology and ecology, (ii) land navigation, (iii) forest measurements and sampling, and (iv) synthesis. The land navigation component introduces students to procedures associated with forest surveys and overland navigation, including coordinate systems, mapping traverses and the use of global positioning systems (GPS). The measurements week includes discussion on the use of aerial photography in natural resources inventory procedures. The synthesis week requires students, working in groups, to design an inventory to measure, describe and report on all natural resources found within a 20-ac forested compartment. Student groups are created so that at least one member has previously taken an introductory GIS class. As part of the synthesis report, students are required to produce an inventory map, allowing students to integrate, using GIS and GPS technology, their field measurement data with orthoimagery.</p>
<p>2:45 p.m. – 3:45 p.m.</p>	<p>4-H and National Wildlife Refuges: Kids Get Feet Wet with Geospatial Technology <i>Susan Hoskins, Cornell University-Institute for Resource Information Sciences; Jim Hooper, 4-H Youth Development Educator, Ontario County; Elliot Patnode, 4-H member and Teen Rep on the NYS and National 4-H GIS/GISP Leadership Teams</i></p> <p>Youth from 4-H clubs in New York got their feet wet this summer working with US Fish & Wildlife National Wildlife Refuge staff to map refuge resources. Going behind the scenes, into the marshes, where visitors are usually limited to the feathered, furred and finned kind, young map-makers brought their geospatial skills to the field. Students trained in the use of global positioning system receivers, geographic information systems software and the tools of remote sensing, undertook projects that included invasive species, habitat and trail mapping. Youth learned about the importance of refuge environments to plant and animal species and visited local National Wildlife Refuges to experience the unique habitats directly. Refuge staff received valuable data sets for use in management plan development and evolving citizen science programs and many new friends of the refuges. This collaboration of the U. S. Dept. of Agriculture's youth development program, 4-H, and the U. S. Fish and Wildlife Service continues the decades-long history of educating youth to be learners, leaders and land stewards.</p>

<p>2:45 p.m. – 3:45 p.m.</p>	<p>Nashua Trail Blazers: Reaching Reluctant Learners with GPS/GIS Technology, Mapping and Snow Shoe Expedition <i>Marianne O'Connor, Bill McIntosh, Marc Laquerre - Nashua School District; Angelo Marino, Nashua City GIS</i></p> <p>The Outside Connections Club emerged as a service learning-expeditionary after school program for at-risk middle school students. Through a grant, the 21st Century Extended Day Program operates at various Title 1 schools in Nashua, offering after school enrichment activities for students. The Outside Connections Club started as a snow shoe club where 15 students, most identified special education, were presented with a challenge: help coordinate a mapping project with Nashua City officials to obtain waypoint data on trails through unmarked city park. Students were trained in use of GPS and coordinated with City GIS officials to gain knowledge of the area. Further coordination with UNH Cooperative Extension and NH Project Learning Tree helped develop a program where the students applied field investigations while working on the trails and honing their skills on snow shoes. Animal tracking, a bird census activity, and science inquiry investigations were also integrated. The students thrived in this environment and eagerly stayed after school to continue their involvement. The project resulted in the creation of a city map, a spawn project involving waypoint data on dog poop, and further field investigations all completed on snow shoes. By the end of the 12 week period, the students gained self confidence on snow shoes, completed a journal activity about their participation and also passed their science classes. A presentation on this coordinated effort with two city agencies, six outside agencies and four middle school leaders will be discussed, with video, photos and interviews.</p>
<p>4:00 p.m. – 5:00 p.m.</p>	<p>State Extension-based Resources for GIS <i>Shane Bradt, UNH Cooperative Extension</i></p> <p>Geospatial outreach programs run through Cooperative Extension currently exist in 12 states across the country. While the exact nature of these programs vary from state to state, all Geospatial Extension Specialists (GES) work to provide basic education on geospatial technologies, and excel at applying geospatial techniques to areas of concern in their states. Through the collaborative efforts of the national GES network, many training materials, tips and tricks, as well as GPS equipment is made available to teachers hoping to use GIS and GPS in the classroom. This session will cover the nature of the GES program, as well as, explore a variety of ways for teachers to get support from Cooperative Extension-based geospatial outreach programs.</p> <p>Engaging Students with Interactive, Web-based Mapping <i>Curtis J. Denton, U Conn; Jack Dougherty, Trinity College, Michael Howser, MAGIC</i></p> <p>Creating active and engaging learning experiences that explore content within content is a critical component of the educational experience for students. In the last few years web-based mapping has emerged as a powerful tool to engage students, encourage collaboration, and examine problems from a spatial perspective. As educators, these web-based mapping resources enable us to harness freely available resources to create interactive maps to foster critical thinking and spatial literacy skills. Over the past year, the University of Connecticut Libraries Map and Geographic Information Center – MAGIC and Trinity College have developed On the Line, a web-book that includes interactive maps based on freely available tools and resources that present maps and data within context. This presentation provides participants an opportunity to explore techniques for harnessing the power of Google Earth, Google Fusion Tables, Google Maps and other resources to create interactive learning experiences that enable students to explore spatial problems in the classroom via inquiry based geographic exploration.</p>
<p>Panel Presentations</p>	
<p>Broadway 4</p>	
<p>9:45 a.m. – 10:45 a.m.</p>	<p>Educating Indispensable Geospatial Professionals for the 21st Century <i>Richard D. Quodomine, NYS DOT, Lara Bryant, Keene State College, Tora Johnson, University of Maine at Machias, Tao Tang, Buffalo State College</i></p> <p>This panel is sponsored by the NYS GIS Association and is the first of two panels aimed at sharing perspectives for improving the preparation of geospatial professionals for careers in both the public and private sector. This panel features representatives from higher education who will provide their perspectives on methods for educating students to step into the role of an indispensable geospatial employee. There are two elements to a strong geospatial career skillset: hard, geospatial technical skills such as cutting-edge GIS usage and development, and soft skills such as teamwork, critical thinking and cultural awareness in the context of geospatial competency, education and growth</p>

	<p>of the geospatial industry. The panelists will also share their ideas for using geospatial education as a means of civic engagement and service learning. The audience is encouraged to discuss openly, fostering an ongoing conversation to meet the needs of young people, educators, employers, and the community, given the undeniable relevance of geospatial technology in every facet of 21st century life.</p>
11:00 a.m. – 12:00 p.m.	<p>Demonstrating Tools for Teachers from T3G2011 <i>Eileen B. Allen, SUNY Plattsburgh, Neil Corri, Cornell Cooperative Extension, Amy Work, IAGT, Kytt MacManus, CIESN, Robert Woolner, Hopkinton, NH MS/HS</i></p> <p>Participants in this year's Teachers Teaching Teachers GIS Workshop (T3G2011) will demonstrate skills and how they will integrate the experiences in their own teaching. Teachers from a broad variety of teaching positions learned tools to enhance teaching, brainstormed teaching methods, and integrated teaching approaches using GIS. This panel will demonstrate ArcGIS Online and web maps, teaching approaches with a variety of GIS tools, teaching resources and ways to integrate them into a variety of teaching situations, information on incredibly helpful blogs, and a discussion about pedagogy and the learning pyramid. Throughout, we will model teaching with GIS, demonstrating a mix of resources that decreases reliance on PowerPoint and how we can customize all of this for our own needs. Amy Work will be our moderator.</p>
12:15 p.m. – 12:45 p.m.	<p>Living in a GIS World as a MAC User ★ <i>Shane Bradt, UNH Cooperative Extension</i></p> <p>Up until recently, being both a Mac user and a GIS user was quite difficult, and at times, frustrating enough to be preventative. Over the past few years, however, more and more options for using GIS on a Mac have appeared. New GIS software has emerged that is Mac OS X native, and plenty of GIS options now exist online, completely removed from the Mac/PC operating system debate. In addition, with Intel-based chips and more horsepower, Macs are much more capable of running Windows software through a variety of virtualization techniques. This presentation will focus on the range of options for using GIS on a Mac, and will foster discussion on the best approaches for working with GIS on Macs in the classroom.</p> <p>★ Oral Presentation, not a panel presentation</p>
1:30 p.m. – 2:20 p.m.	<p>Teaching GIS: It's More than Buttonology <i>Glenn Hazeltan, Northeastern University Jeffrey Dunn, U Conn Northeastern University, Adena Schutzberg, ABS Consulting Group, Inc., Keith Ratner, Salem State</i></p> <p>We all know that the skills and knowledge required to do GIS need to be learned. Methods have been developed that combine learning these skills with challenging the student's capacity to problem solve and explore alternative solutions. This panel discussion will focus on how well these two related objectives are being met and what we might be able to do to enhance the learning process.</p>
2:45 p.m. – 3:45 p.m.	<p>Three GIS Educators, Three Topics, Three Techniques <i>Adena Schutzberg, ABS Consulting Group, Inc., Alex Chaucer, Skidmore College, Jon Caris, Smith College</i></p> <p>Three GIS educators will teach mini-lessons. The goal is to share ideas and techniques (even topics) for in-residence, online, or informal educating. The discussion will encourage feedback and explore how to tweak these methods for use in different environments with different student populations.</p>
4:00 p.m. – 5:00 p.m.	<p>Aligning Your Geospatial Curriculum with the Geospatial Technology Competency Model (GTCM), <i>Phillip Davis, GeoTech Center, Ann Johnson, GeoTech Center, Amy Work, IAGT</i></p> <p>The Department of Labor's Geospatial Technology Competency Model (GTCM) is the nation's de-facto standard defining the skills and competencies for workers in all areas of the geospatial industry: GIS, remote sensing, surveying, etc. Jack Dangermond has called for the National Geospatial Advisory Council to endorse the GTCM as their standard as well. How can educators align their own curriculum with this new standard? This presentation will describe the GeoTech Center's pioneering research in helping educators understand and create curriculum that meets the GTCM standard. We will describe faculty development workshops we have been conducting that have resulted in ready-to-use Introductory GIS course packs designed to meet the GTCM. Assessment tools to evaluate one's own curriculum will be demonstrated and resources shared with participants.</p>