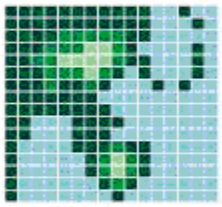


GIS in Action 2011

FINAL PROGRAM

Of the Nineteenth Annual GIS in Action Meeting

March 29 & 30
Smith Center, Portland State University
Portland, OR

Conference at a Glance

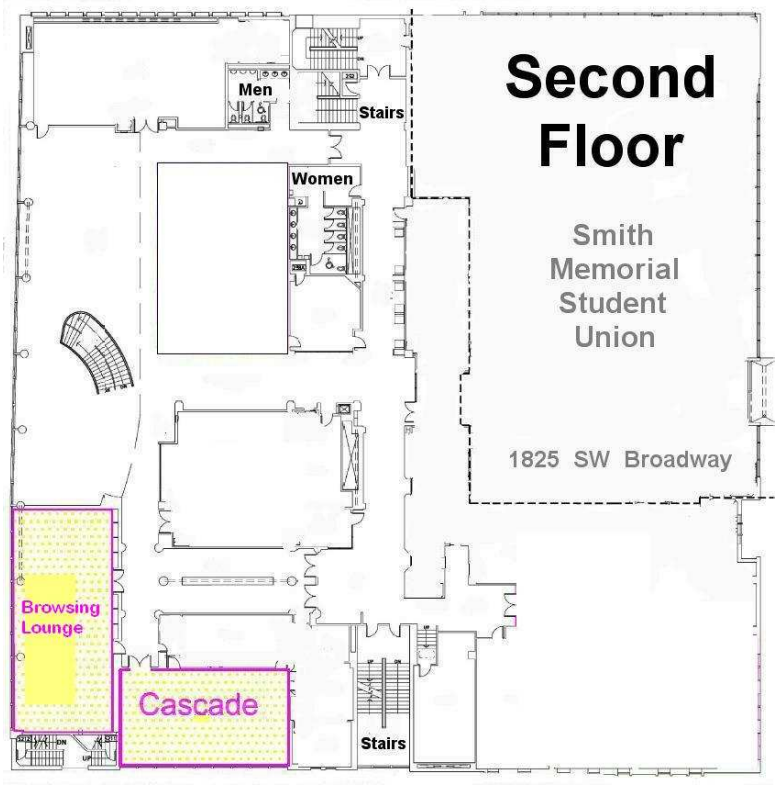
Tuesday, March 29

DAY 1	TRACK A Sessions (Room 328)	TRACK B Sessions (Browsing Lounge)	TRACK C Sessions (Cascade Room)
7:30-2 PM	**REGISTRATION**		
8:30-10:00 AM	**Welcome and Opening Session** **Jim Geringer** Governor of Wyoming (former)		
10:30-12:00 PM	**Open Source Smack Down**	**Accuracy and Precision**	**3-D GIS & Mobile Scanning**
12:00-1:30 PM	**LUNCH** **Ballroom**		
1:30-3:00 PM	**URISA & ACS**	**ArcGIS Add Ins**	**3-D GIS Project Planning**
3:30-5:00 PM	**Introduction to Map Automation – ArcGIS 10**	**Practically LiDAR**	**Scripting and Beyond**
5:00-7:00 PM	**VENDOR EXHIBIT AND SOCIAL**		

Wednesday, March 30

DAY 2	TRACK A Sessions (Room 328)	TRACK B Sessions (Browsing Lounge)	TRACK C Sessions (Cascade Room)
7:30-2 PM	**REGISTRATION**		
8:30-10:00 AM	**Analysis and Operations**	**Local Government Open Map Consortium**	**ArcGIS and the Amazon Cloud**
10:30-12:00 PM	**Deriving Geographic Data**	**Collaborative GIS**	**Web Mapping with GeoServer**
12:00-1:30 PM	**LUNCH** **Ballroom**		
1:30-3:00 PM	**ESRI and Open Source**	**Watershed Terrain Analysis**	**Web Mapping with GeoServer (continued)**
3:15-3:45 PM	**Update on Japan Crisis Mapping - Ballroom**		
3:45-5:00 PM	**Closing Session** **Scott Nelson** Jobs and Economy Senior Policy Advisor to Governor John Kitzhaber		
5:00-8:00 PM	**GIS Spatial sponsored by Women in GIS (food & beverages)** **Music by Lincoln High School Jazz Combo (invited) – Room 328**		

Smith Center



Welcome to GIS in Action: 2011

This is the Nineteenth annual conference hosted by the Columbia Region of the American Society of Photogrammetry and Remote Sensing (ASPRS), the Oregon-Southwest Washington Chapter of the Urban and Regional Information Systems Association (URISA) and Portland State University (PSU). Each year, ASPRS and URISA collaborate to hold this informational conference on current issues in the Geospatial Information Community. The Portland State University Geology Department will join us again this year to host the conference at the PSU campus. Last year's conference at PSU was a great success. Join us again this year for what will be another successful opportunity to meet colleagues in the geospatial industries and organizations, to learn about emerging topics and recent advances in GIS applications and to discuss our problems and solutions together.

This event features a one-fee, two day format, packed with information presented in concurrently running workshops and sessions on both days. There will be three tracks each day consisting of panel discussions debating hot topics, traditional sessions with 2-3 presentations per session and technical workshops providing in-depth discussion of issues and training in applications most relevant to the geospatial community.

On-site registration opens at 7:30AM on Tuesday, March 29th and will remain open through 11:00AM on Wednesday March 30th. The conference begins at 8:30AM on Tuesday with an opening address by Jim Geringer, former Governor of Wyoming, and will be followed by concurrent sessions and workshops. The Annual Vendor Social will be held Tuesday from 5:00PM to 7:00PM. The conference will continue on Wednesday beginning at 8:30AM with concurrent sessions and workshops followed by a closing session.

Conference Highlights:

- The **Exhibit Hall** will open on Tuesday at 10:00AM and remain open until Wednesday at 2:00PM. The hall will feature as many as 20 vendors in GIS related technology and services. This is an opportunity to see and discuss the latest advances in the industry.

- The **Vendor Social** will be held on Tuesday evening from 5:00PM to 7:00PM in the Exhibit Hall. Join your peers in a more relaxed atmosphere with music, food and beverages. **Music will be provided by the award-winning Cleveland High School Jazz Band.** *You will also find two free drink tickets in your registration packet.*

- The **Poster Session** will be held during the Vender Social. *Ballots for the People's Choice are included in your registration packet.* Please take it to the Exhibit Hall and vote.

GISP and Professional Development Hour Credits:

Selected technical sessions allow 9 to 12 hours to apply toward professional development renewal requirements for PLS, PE, RRP as appropriate.

Attendance at this conference also provides education points for GISP training requirements as follows:

	Credits Earned Each Day
Renewal of GISP Credential:	1

PLANNING COMMITTEE

Conference Co-Chair, Keith Massie	Program Chair, Greg Newkirk
Conference Co-Chair, Doug Smith	PSU Coordinator, David Percy
Finance, Steven Lennartz	Vendor Coordinator, Marcus Glass
Poster Session, Vivek Shandas	Publicity & Website, Amy Esnard
Volunteer Coordinator, Nadia Jones	Audio Visual Coordinator, Peter Alward

SPONSORING ORGANIZATIONS

Oregon/SW Washington URISA Chapter

The Chapter seeks to advance knowledge in the design, operation, and dissemination of urban and regional information systems. It provides a forum for a variety of issues related to information systems serving its members, related professionals, decision-makers and the public. Members live and work in Oregon and Southwest Washington.

The Chapter seeks to accomplish objectives in the following areas:

- Education
- Professional Development
- Coordination, Networking and Information Clearinghouse
- Policy Advocacy

Anyone having a serious interest in GIS and urban information systems is encouraged to join. You can be placed on the membership list by visiting www.orurisa.org

Columbia River Region of ASPRS

The American Society for Photogrammetry and Remote Sensing (ASPRS) is a scientific association serving over 7,000 professional members around the world. The ASPRS mission is to advance knowledge and improve understanding of mapping sciences to promote the responsible applications of photogrammetry, remote sensing, geographic information systems (GIS), and supporting technologies.

The Columbia River Region of ASPRS provides a local interface for members to receive information concerning national and regional events and maintain recognition as mapping science practitioners. The Region's programs are effectively utilized by members to acquire necessary information, develop relationships, and maintain their knowledge base. The annual GIS in Action conference, co-sponsored with the Oregon Chapter of URISA, is an important component of the Columbia River Region's educational and communication goals.

Portland State University is a center of opportunity for nearly 25,000 undergraduate and graduate students. Located in Portland, Oregon, one of the nation's most livable cities, the University's innovative approach to education combines academic rigor in the classroom with field-based experiences through internships and classroom projects with community partners. The University's 49-acre downtown campus exhibits Portland State's commitment to sustainability with green buildings, while many of the 124 bachelor's, master's and doctoral degrees incorporate sustainability into the curriculum. PSU's motto, "Let Knowledge Serve the City," inspires the teaching and research of an accomplished faculty whose work and students span the globe.

Our vision is to be an internationally recognized urban university known for excellence in student learning, innovative research, and community engagement that contributes to the economic vitality, environmental sustainability, and quality of life in the Portland region and beyond.

The mission of Portland State University is to enhance the intellectual, social, cultural and economic qualities of urban life by providing access throughout the life span to a quality liberal education for undergraduates and an appropriate array of professional and graduate programs especially relevant to metropolitan areas. The University conducts research and community service that support a high quality educational environment and reflect issues important to the region. It actively promotes the development of a network of educational institutions to serve the community.

Hotel & Parking

Hotel accommodations can be made at two nearby facilities. University Place offers two double beds or one single king bed for $67/night. Mention that you are coming for a conference affiliated with Portland State University. The hotel is located south and east of the conference location at 301 SW Lincoln ST. You can reach the hotel at 503-221-0140 or at http://cegs.pdx.edu/stay/upl. Hotel Madera is located north of the conference location at 515 SW Clay ST. You can reach the hotel at 877-484-1084 of at http://www.hotelmodera.com.

More information about parking at PSU can be found on the following at http://transportation.pdx.edu/visitors/parking. Parking rates start at $3/hour. The Parking One structure is the closest location to the conference facility. Other parking can be found on campus, on street or at nearby parking lots.

Travel

The Smith Center is at the corner of Harrison and Broadway (see map below). The closest Light Rail Stop is the PSU Urban Center. Additional information about public transportation to the conference can be found at http://www.trimet.org/maps/citycenter.htm. Or, the following link can be used to plan your trip: http://ride.trimet.org/?by=8:30%20am&date=3/29/2011&to=PSU.

Meals

Box lunches are provided both days with registration. A continental breakfast is offered each morning. Also, light refreshments are provided at the Vendor Social on Wednesday.

A limited number of vegan and gluten free meals are available on request. Please check in at the registration desk if you have any special dietary needs.

TUESDAY MARCH 29, 2011

7:30 AM **Conference Registration Opens: Lobby**

8:30 – 10:00 AM **OPENING SESSION** **BALLROOM**

Jim Geringer, Governor of Wyoming (former)

Governor Jim Geringer is a native of Wyoming, reared on the family farm near Wheatland. At Kansas State University he was involved in several activities and served as Student Body President. Through the Air Force ROTC program he was then commissioned as an officer in the United States Air Force. During his time on active duty, he worked as project officer on space programs integrating space boosters and satellites for both the Air Force and NASA, including the Global Positioning Satellite System, early warning systems and the Mars Viking Lander. From 1983 to 1994, Geringer served in the Wyoming Legislature, including six years each in the House and the Senate. During that time, his full-time jobs included work as a contract administrator for the construction of a large coal-fired electric power plant and going into agriculture production full time. The Geringers built up their farming operation starting from scratch – the old-fashioned way.

Jim was elected as Wyoming's 30th governor in 1994 and completed his second term in January 2003. During his time in office Geringer implemented strategic planning tied to performance based budgeting and when he left office, provided Wyoming state government with a budget surplus, one of very few states to make that claim early in 2003.

Geringer's advocacy for technology in government has centered on the end result of using technology to enhance citizen services, emphasizing the benefits of integrated service delivery and enterprise-wide solutions. That advocacy has led Jim to join in a full-time capacity with Environmental Systems Research Institute (ESRI) the top provider of geographic information systems software. Governor Geringer and his wife Sherri base their consulting business, The Geringer Group, at their farm in Wheatland, Wyoming.

10:00 **EXHIBIT HALL OPENS**

PARTICIPATING VENDORS:

GeoNorth, LLC
Platinum Sponsor
www.geonorth.com

i-TEN Associates
www.i10assoc.com

Continental Mapping Consultants
www.continentalmapping.com

L-3 STRATIS
www.L3Stratis.com

GeoLine, Inc.
www.geoline.com

Surdex Corporation
www.surdex.com

Esri
www.esri.com

The PPI Group
www.theppigroup.com

Open Source
www.opensourcegis.org

AeroMetric, Inc.
Platinum Sponsor
www.aerometric.com

King County GIS Center
www.kingcounty.gov/operations/GIS

Cascade Architectural & Engineering
www.caes.com

Professional Land Surveyors of Oregon
www.plso.org

Pictometry
www.pictometry.com

Pacific Alliance Technologies
www.pat.ca

Electronic Data Solutions
www.elecdata.com

Resource Supply, LLC
www.resourcesupplyllc.com

TRACK A	Open Source Smack Down	Room 328
10:30 – 12:00	Moderator: David Percy	

Presenters: David Percy, Darrell Fuhriman, Christian Schumann-Curtis

Open Source GIS software has proven to be reliable, fast, and cartographically pleasing on the WWW, however it has lagged behind commercial systems on the desktop.

In this session we will highlight the capabilities of some of the leading, most feature-rich, desktop applications in the open source ecosystem. These will include, but are not limited to, Quantum GIS, gvSig, ILWIS, and MapWindow.

TRACK B	Accuracy and Precision	Browsing Lounge
10:30 – 12:00	Moderator: Chris Aldridge	

i) Using Survey Grade GPS for High Accuracy GIS
Jon Ashenbach

Many GIS professionals are looking for much better accuracy with GPS equipment. Jon Aschenbach looks at two case studies in which survey-grade GPS equipment was used to collect centimeter-level GIS data.

The first case study involves a large area of sand dunes in South Africa. Local scientists suspected the dunes were disappearing at an alarming rate, but were unable to quantify the loss until they began using a survey-grade GPS system. The survey grade GPS is capable of 1 to 3 centimeter elevation accuracy with a 5 second occupation time. Over 100,000 GPS points were collected on the sand dunes, enabling scientists to create a terrain model and characterize the sand erosion.

The Second case study involved collecting data on snow levels at the Mt. Hood Ski Resort. The challenge was to understand the optimal placement of a snowboarding half-pipe. If placed improperly at the beginning of the season, the half-pipe would need to be moved during midseason which is costly and time-consuming. Using survey-grade GPS, snow levels were measured at both during peak season in the winter and at minimal snow levels in late summer.

Jon Aschenbach will describe the equipment and procedures necessary to collect survey grade accurate GPS data for both case studies.

ii) The Accuracy and Precision Revolution …What's ahead for GIS?
Jeff Nighbert

The ability to develop accurate and precise information is not new. Map makers and land surveyors have long been able to create information with a certain level of accuracy and precision, but the ability to determine and view locations with sub-meter accuracy is now in the hands of millions of people. Commonly available high resolution digital terrain and aerial imagery coupled with GPS enabled handheld devices, powerful computers and internet technology is changing the quality, utility and expectations of geographic information systems to serve society on a grand scale. The public's ability to share and collaborate using geographic information over the internet is also pervasive. This accuracy and precision revolution has raised the bar for GIS quite high. This pervasive capability will be the drivers for the next generation of geographic information systems as well as the next generation of GIS professionals.

There is a "revolution" going in GIS referring to the change in the fundamental accuracy and precision kernel of commonly used geographic data brought about by new technologies mentioned above. For many ArcGIS users this kernel was about 10 meters or 40 ft. at a scale of 1:24,000. With todays and coming technologies, GIS is looking at 1 meter and sub meter accuracy and precision. There are probably places where this

standard already in place, such a large city or metro area GIS. This level of detail is far from the case in natural resource management agencies such as BLM or the Forest Service. But as lidar, gps and high resolution imagery begin to proliferate GIS as standard sources for "ground" locations, GIS professionals will begin to feel the consequences in three areas: data quality, analytical methods, hardware and software consequences.

iii) Advancing Geology: From Data Creation to Map Production
Rachel Lyles, DOGAMI

The Oregon Department of Geology and Mineral Industries (DOGAMI) has been creating geology data and maps for many years. However, the processes from which the geologists create these products have continually evolved. From software packages to new file structures; USGS 7.5' Quadrangles to LiDAR derivatives; and simple symbology to cartographic representations: DOGAMI's entire methodology has undergone significant changes in order to produce a better product.

These transformations have enabled the geologists to create more accurate data with fewer errors. The database mangers have also moved from individual files (shapefiles and tables) to robust geodatabases with built-in topologies and relationship classes that can also be integrated into DOGAMI's statewide legacy geology database. Finally, the cartographers are creating more standardized maps using Esri's geologic template with cartographic representations. This presentation will highlight the conversion processes and the tests and strategies that were developed in order to move to the techniques currently employed.

TRACK C 10:30 – 12:00	**3-D Mobile Scanning and Imaging** *Workshop with Richard Hill, PPI*	**Cascade Room**

We will be explaining the newest advancements in 3D Mobile Scanning and Imaging and providing an inside look at how the systems work. I will explain the capabilities of this technology (everything from Roadway Management to 3D Street-View City Mapping), best practices, and how it integrates with your 3D Map or CAD software. Join us for an exciting look at the future of data collection. We will also have The PPI Group's Topcon IP-S2 there for people to see.

12:00 – 1:30	**LUNCH**	**BALLROOM**
12:15 – 1:15	**Oregon/SW Washington URISA Chapter Meeting**	**Room 328**
TRACK A 1:30 – 3:00	**URISA and ACS** Moderator: Shayna Denny	**Room 328**

i) Significant changes and activities at URISA
Cy Smith, URISA President

URISA International has initiated a wide-ranging series of changes to better meet the needs of the membership. These changes include:

- $20 Introductory Membership for Chapter members extending to the end of 2011
- Development of an Advocacy Agenda to be used by URISA Board, Chapter and Committee leaders and others to advocate for solutions to member issues with Congress, Tribal Councils, State Legislatures, County Commissions, City Councils, etc.
- Geospatial Maturity Assessment to be used by cities, counties, tribes, or regional governments to gauge their level of geospatial maturity and benchmark themselves against their neighbors and similar jurisdictions around the world.
- Standardized Return on Investment methodology for measuring the benefits that

have accrued to governments and communities as a result of developing and using GIS technology and geospatial data.

ii) American Community Survey (ACS)
Richard Lycan, Professor Emeritus PSU

The first release of five year data from the American Community Survey (ACS) is scheduled for December 2010. These data will provide information on smaller cities, counties, zip code areas, other administrative geographies, and down to the level of census tracts and block groups, based on data collected in ACS surveys from 2005 to 2009. These data will provide detailed socioeconomic information on persons, households, and housing units and are the replacement of the Summary File 3 data previously tabulated from the long form census questionnaire. Users of these data need to be aware how these data will differ from the earlier long form data published by the census, in particular: the increased sampling error, the use of five year pools of data, the imposition of controls to the survey data totals, and the differing ways that unreturned and incomplete questionnaires are managed. Those who are planning to map the small area data have a particular obligation to their audience to be cautious about over interpreting spatial patterns and need to learn how to explain the meaning of these data to their clients.

iii) Creating a more open state government using interactive maps and web mapping services
Erik Endrulat, ESIPD Geospatial Enterprise Office

The State of Oregon Dept. of Administrative Service's Geospatial Enterprise Office (GEO) has works across state government to create interactive web mapping applications for the public that provide information on topics including ARRA stimulus spending, OWEB restoration projects, and locations of planned and current wind farm operations.

In addition to map applications, GEO also provides web services for Framework geospatial datasets, including hydrography, transportation, and cadastral themes. This presentation will discuss how GEO is leveraging mapping services and lightweight map viewers to avoid data redundancy and improve open access to standards-based geospatial information.

TRACK B **ArcGIS Add ins** **Browsing Lounge**
1:30 – 3:00 Moderator: Keith Massie

i) ArcGIS Desktop Customization using Addins
Jeff Barrett

Desktop add-ins are also new at ArcGIS 10. Add-ins provide an easier means for building and sharing customizations that extend desktop applications. The add-in programming model provides developers with a declaration-based framework for creating a collection of customizations conveniently packaged within a single compressed file. Add-ins are easily shared between users and don't require installation programs or COM registration. Add-ins can also be made available over network shares, making it easier to synchronize updates within an organization.

Level: Intermediate / Advanced

ii) Migrating ArcGIS VBA scripts to ArcGIS 10 add-ins
Lesley Bross

The Center for Spatial Analysis and Research (CSAR) at PSU is currently engaged in a multi-year agreement with the USDA-NRCS, National Water and Climate Center (NWCC) to develop a spatial decision support system (SDSS) for improving water forecast accuracy. The SDSS is intended to improve the performance of and user experience with the existing GIS Weasel tool developed by USGS. Weasel is an ESRI AML-based

application developed on Arc/Info. The NWCC uses Weasel to prepare watershed GIS layers for areas of interest (AOI), delineate hydrological response units (HRU), and generate HRU physical parameters that are used in hydrological models to forecast water supply.

Phase one of the project (2009-2010), the AOI Preparation Phase, was developed on ArcGIS 9.X with VBA. The system was created as an ArcMap map template (.mxt) and is being used by NWCC water forecasters for watershed analysis. With the deprecation of VBA, it became apparent that this was not a viable approach for phase 2, the HRU Delineation phase (2010-2011). Security and installation concerns at the NWCC excluded the use of ESRI .NET components that require the modification of the Windows registry during deployment. Fortunately, the appearance of client add-ins with ArcGIS 10 provided a third way.

In this session we will talk about our transition from VBA to VB .NET. The specific topics include: The big differences between VBA and VB .NET for VBA developers; The efforts to re-use our code from phase one; The set-up of a development environment on a shoestring budget; The new skills needed for VBA developers transitioning to .NET.

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TRACK C **Project Planning for 3-D Mobile Scanning and Imaging** **Cascade Room**
1:30 – 3:00 *Workshop with Richard Hill, PPI*

This workshop will be focused on the planning aspect of 3D Mobile and Imaging data collection and the preparation involved in order to use a mobile data collection system like Topcon's IP-S2. Everything from the route to be driven to the specific data that needs to be collected, factors like the weather and time of day will play a major part as well and will need to be assessed ahead of time. With the latest advancements in technology, collecting data is literally a snap but the preparation for the project insures that the data that you collect is useful and relevant.

TRACK A **Introduction to Map Automation in ArcGIS 10** **Room 328**
3:30 – 5:00 Jeff Barrette, Software Development Team, Product Engineer, Esri

ArcGIS 10 introduces the ability to automate mapping tasks through a new Python mapping module. Gain an overview of the arcpy.mapping module and see demonstrations of how it can be used to process MXD documents, map layers, data frames, and layouts in batch. Printing and exporting map documents and creating PDF map books via Python will be covered as will the creation of script tools that can be used in an interactive ArcMap session. You'll also be introduced to the best resources and fastest ways to start writing your own mapping scripts in ArcGIS 10.

Level: Beginning / Intermediate

TRACK B **Practically LiDAR** **Browsing Lounge**
3:30 – 5:00 Moderator: Doug Smith

i) The Columbia River LiDAR Project
Jacob Macdonald

The U.S. Army Corps of Engineers recently finished a 2800 square mile LiDAR acquisition covering the floodplains of the Columbia River downstream of the Canadian border, the

Snake River below Brownlee Dam, the Clearwater River below Dworshak Dam, the Pend Oreille, Clark Fork, and Flathead Rivers between Hungry Horse Dam and the Canadian border, and the Kootenai River between Libby Dam and the Canadian border. This data was collected to support hydraulic engineering and economic analysis associated with upcoming treaty negotiations with Canada over the multi-use management of the Columbia River water. Because this data will primarily be used for hydraulic modeling, LiDARgrammetric hydro flattening and ground model definition were requested. This presentation will include a tour of the extent of the dataset, an explanation of the need for LiDARgrammetry, and discussion of data management issues associated with such a large project.

ii) LiDARgrammetry for the Columbia River LiDAR Project
Doug Smith

Overview of methodology used and lessons learned for the photogrammetric quality control component of the Columbia River LiDAR project. This project included high density LiDAR for over 2800 square miles of the Columbia River 500 year flood plain corridor and major tributaries. Photogrammetric review and edit of stereograms generated from LiDAR intensity data (often called "LiDARgrammetry") played a critical role in the project and was used for the quality control review of the data, detailed 3D delineation of water boundaries and addition of supplemental breaklines to model cliffs and other rough terrain not represented by the ground model. These value added tasks were needed to enhance the standard LiDAR deliverables for an additional level of detail and accuracy needed to support the Army Corps of Engineers intended floodplain modeling work.

iii) Data management and quality control for large scale lidar mapping projects using the geodatabase: mapping the Columbia River System.
Cam Patterson

When the US Army Corps of Engineers undertook to map the entire Columbia River system from the Columbia Bar to the upper Flathead River in Montana with high-resolution lidar, the project encompassed more than 2800 square miles (almost 2 million acres) of 3D point data, which is somewhere well past the 50 billion points mark. These point data were delivered from the lidar contractor (Watershed Sciences, Inc.) in LAS format, tiled to files containing about 20-million points each, resulting in several thousand files (plus thousands of additional derivative raster tiles) that needed to be reviewed to assist the COE with accepting and managing the data. We used the ArcGIS geodatabase data model to reorganize the deliverables from the collection and processing production order (13 individual data deliverables over 5 months) into 29 blocks of data, each encompassing a hydrologic modeling reach of the river system, and each compiled into a single geodatabase data structure with full metadata and high-performance access by GIS software clients. These datasets were enhanced for hydraulic modeling by "lidargrammetric" stereomodel derived breakline data generated by David Smith & Associates that accurately delineated water body boundaries and features not well modeled by the lidar ground model. For the largest reach of the river system, Bonneville Dam to the beach, we were able to integrate a bathymetric mosaic compiled and converted to the NAVD88 vertical datum by David Evans Associates, mapping all below-water terrain with the most recent available bathymetry. For this project, the geodatabase turned out to be an excellent vehicle to organize the deliverables and to help capture and correct many of the inevitable errors that crop up when processing thousands of files in a project of this scope. The methodology also provided COE engineers, analysts and data managers an invaluable "jump start" on establishing a data management framework suitable for enterprise-level management of all topographic and bathymetric datasets for the entire system on an ongoing basis. [This talk will include a live demo navigating the geodatabases in ArcGIS]

TRACK C	Scripting and Beyond	Cascade Room
3:30 – 5:00	Moderator: Paul Ferro	

i) Beyond arcgisscripting and ArcPy: using Python for spatial data management and processing
Grant Miller-Francisco

If you use ArcGIS, chances are you're aware that Python can be used to script geoprocessing tasks, and (at version 10) manage some aspects of map production. That's great...what else can it do? Python offers a wealth of other resources for managing, processing, and presenting spatial data.

Aimed primarily at GIS professionals who use ArcGIS and have some familiarity with Python, this practical presentation will demonstrate some Python packages that can help us think outside the arcgisscripting/ArcPy box. The emphasis will be on lightweight scripts that can be easily integrated with ArcGIS workflows. Topics covered might include:

- Working environment (PyPI, pip, virtualenv)
- Geospatial heavy lifting (GDAL/OGR, Shapely)
- Handling diverse data formats (tablib, xlrd/xlwt, json, xml, kml)
- Data presentation (ReportLab)
- Web mapping (web development frameworks, map stacks)

ii) Is the ESRI SILVERLIGHT API for me?
Jill Romans
The ESRI Silverlight API for ArcGIS Server is the latest addition to the ESRI ArcGIS Server toolkit. The buzz surrounding Silverlight has left many wondering if Silverlight is a good fit for their organization. This presentation will focus on the Silverlight API, comparing it with the .NET ADF and the Flex API, as well as demonstrate a configurable Geospatial Silverlight viewer for municipalities in which information such as Map service(s), graphic layers, and tabular information to be displayed are stored in an xml configuration file. The goal of the configurable viewer is that a developer is not needed when the information to be displayed in the Silverlight viewer is changed, only the configuration file needs to be modified before deploying the new application.

iii) Creating Tide Stage Lines from Lidar and VDatum
Randy Dana

Lidar data collected for the Oregon coast provides accurate bare-earth digital elevation models of the land/sea interface. NOAA's VDatum tool provides good approximations for the elevation of various tide stages along the outer coast and lower estuaries. A scripted process brings these two data sets together to produce vector representations of specific tide stages, where the source data permit. Discussion will include methods to compare lidar flight times to recorded tide heights to estimate for which tide stages useful vector results may be produced.

5:00 – 7:00 PM	VENDOR HOSTED SOCIAL	BALLROOM

WEDNESDAY MARCH 30, 2011

7:30 AM **Conference Registration Opens: Lobby**

8:30 – 10:00 AM **CONCURRENT TRACKS**

TRACK A **Analysis and Operations** **Room 328**
8:30 – 10:00 Moderator: Bob Haas

i) Wind Turbine Shadow Flicker Analysis
Adam Roberts

As wind energy establishes a greater foothold in the energy market, public reaction to proposed projects becomes a greater challenge for developers and permitters alike. One potential negative effect of wind turbines is called 'shadow flicker.' According to WindWorks! Northwest, "Shadow flicker occurs when – at precise latitude, wind direction, and height of the sun – rotating wind turbine blades cast shadows upon stationary objects. According to some sources, this effect may even be detrimental to people's health. Knowing where there is the potential for shadow flicker can help developer's site turbines, and can help permitters gain approval for a potential project.

Though a few proprietary wind design software packages provide the ability to map and analyze shadow flicker potential, there lacks a straightforward GIS approach to this issue. By enabling the analysis in GIS software, we can allow for more variables to be introduced into the analysis. Land cover, which could block the flicker effect, could be incorporated into the model with ease, and this would make the analysis more malleable. There are several potential methods for analyzing this potential effect: raster creation based on PyEphem derived sun angles, a modified solar radiation calculation, and 3d shadow modeling. Each method has its strengths and weaknesses, based on size and type of facility being proposed, along with the type and quality of the data available

This Presentation will discuss the different approaches to analyzing potential shadow flicker, and will showcase examples of each. The pros and cons will be presented, as well as a discussion of different applications for these workflows.

ii) Management & implementation of remote sensing for ordnance disposal operations
Peter Hille

Military munitions and related constituents on both active and retired installations represent a principal environmental, health, and safety issue on millions of acres of public and formerly publicly owned land. Due to the large cost associated with traditional "Mag and Flag" Ordnance and Disposal operations, technologies such as LiDAR and Orthophotography, Digital Geophysical Mapping (Helicopter and Ground based), X-Ray Fluorescence, and Synthetic Aperture Radar are utilized. Mr. Hille will discuss the central role the GIS plays in the management, deployment, and implementation of these technologies to provide for a cleaner safer environment.

iii) Virtual Emergency Network of Multnomah
Amy Esnard

Multnomah County and its partnership with the State of Oregon and the Bureau of Homeland Security have been creating a prototype for a Virtual USA pilot project. The prototype is called VENOM, the Virtual Emergency Network of Multnomah. The application is based on Esri's ArcGIS Server technology and will serve regional and Multnomah County's ECC's.

TRACK B	**Local Government Open Map Consortium**	**Browsing Lounge**
8:30 – 10:00	Moderator: Dean Anderson	

Several state, county and city organizations have partnered over the past two years to implement a consistent web-based tool to access geographic information. The group performed an extensive review of business and functional requirements, examined currently available tools, and tested tools with several prototypes. The group paid special attention to meeting Oregon business needs and implementation procedures that do not need specialized programmers and meet standard IT installation requirements. The group selected "GeoMoose," an open source web mapping tool based on MapServer and OpenLayers technology. The GeoMoose consortium is a framework for broad application support and development using the open source model. This session will consist of a panel discussion where panelists will demonstrate how this tool is being used in their organizations to meet its needs. Applications reviewed will range from simple public access, to integration with Assessment and Taxation systems, Auto Dialer Service Integration, and using WMS services to share views of data

TRACK C	**Using ArcGIS Server in the Amazon Cloud**	**Cascade Room**
8:30 – 10:00	John Sharrard, GIS Solutions Engineer, Esri	

Join this session to learn how to leverage the Amazon cloud with ArcGIS Server. You will learn how to setup ArcGIS Server in the Amazon Elastic Computing Cloud, typical deployment patterns and workflows. We will also discuss how to estimate costs for your ArcGIS Server deployment in Amazon and present several projects running ArcGIS Server in the Amazon cloud.

TRACK A	**Deriving Geographic Data**	**Room 328**
10:30 – 12:00	Moderator: Eric Brewster	

i) LiDAR-Based Solar Site Assessment Analysis
Adam Roberts

With increased public and governmental attention focused on alternative energy resources, urban solar has emerged as a viable option for micro-scale development. Solar radiation is a readily available source of energy which can be harnessed through photovoltaic (PV) cells. Cities, Counties and States are seeking ways to evaluate the potential of urban sites for solar installation. Whether on a site-by-site basis or a city-wide basis, GIS technologies can be leveraged to assess the solar potential for these entities.

Using LiDAR elevation data, 3d models (and stereo-pair imagery, in some cases,) we are analyzing the potential of specific sites for PV solar installations. Through the high resolution of LiDAR elevation data, the buildings and potential obstructions such as trees are captured, and can be used with ArcGIS' Solar Analyst to calculate a solar potential surface. For planned sites, or sites constructed after the LiDAR flights, 3d models are constructed from design plans, and the model are incorporated into the LiDAR DEM raster. For some sites, potential parking canopies can also be incorporated into the raster as potential PV installation locations.

Once the potential radiation surface has been created, it can be clipped to existing rooflines and analyzed for potential construction obstacles (HVAC units, etc.) Minimum radiation thresholds are then applied and PV capacities can be calculated for the sites. The client now has a quantitative comparison of sites which allows them to select the most productive locations for their installations.

This Presentation will discuss techniques and examples from Analyses performed for

the City of San Jose, CA. Region-wide batch analysis examples and map-enabled public outreach websites will also be discussed.

ii) Data Near Here: Ranked Geospatial-Temporal Search of Scientific Data
Veronika Megler and David Maier

The past decade has seen an explosion in the number and types of sensors deployed, many of which provide a constant stream of observations. Each observation within a stream may have a geographic location and a time associated with it, in addition to one or more sensor measurements. With this plethora of sources, scientists have difficulty finding observations relevant to their research. A scientist may be looking for ``any observations within 1,000 meters of 46.25N,-125W in May 2009''. However, datasets from April or June may also be relevant - especially if no match is found in May. But how do you rank "April, at that location" against "May, from a little further away"?

Scientific search has focused on visualization of specific data; geographic search has focused on relating place names to physical locations. Neither of these approaches helps the scientist initially locate data of interest.

We present a research prototype that uses Information Retrieval techniques to address this problem in the context of an ocean observatory and research center. The observatory has a large inventory of observations across many datasets; each individual dataset has a limited spatial or temporal extent. The prototype features multi-scale metadata created via hybrid of curated and automated extraction from scientific data. Searches return ranked results in real-time to combined geospatial and temporal search criteria. Results are shown using text and a Google Mashup. Our approach complements existing visualization and analysis tools.

iii) Risk assessment methodologies for sewer systems using advanced asset management
Mark Liebe

The City of Portland has developed a number of GIS-based, high resolution risk assessment tools and processes for its Advanced Asset Management program in planning sewer work. The methodology involves a wide variety of spatial data correlated to finely resolved asset inventory and inspection records. Factors such as sewer condition grades, estimated useful life, high resolution cost estimation, and risk assessment, among others, provides for a much wider range of management options then previously available.

TRACK B	**Collaborative GIS**	**Browsing Lounge**
10:30 – 12:00	Moderator: Jon McDowell	

i) GeoCollaboration and Mobile GIS Solutions
Bill Timmons and Brad Tatham

This session will review several different approaches to mobile GIS solutions. GeoCollaboration opportunities and mobile solutions will be presented for real time integration and stored collection. A variety of mobile collection hardware, associated software and the means to access and add additional data to extend the capabilities of GIS infrastructure will be presented.

GIS software combined with mobile data capture solutions can eliminate technology boundaries for access to GIS data and allow for mobile data collection by end users with no GIS experience. This can be accomplished when GIS professionals distribute their data in manageable formats thus leveraging their investment in geospatial data. Mobile data collection solutions provide for access to and creation of geospatial features and data by public works, planning, appraisers, emergency responders, operational managers, associated support personnel and the general public - many who have no

background in GIS or databases. These solutions provide intra agency and inter agency coordination for workflow requirements as well as a better understanding of the roles and responsibilities of each.

By enabling and expanding the base from which spatial information can easily be captured and providing the capability for an ongoing dialogue decisions can be reached for planning purposes as well as in times of disaster and emergency events that can save lives and protect infrastructure and property.

Communication between the agencies and or the general public allows for access to existing data with the ability to input new data and comments in a spatial context. Objectives of agencies can then provide for interactive solutions that fit for those in the field and allow for evaluation by those who manage agencies or determine the solutions to events that could happen, events developing and for post event response.

By the end of this session, attendees should be familiar with the concepts and technologies to:

1. Understand a variety of approaches to mobile GIS that integrate with ESRI solutions.
2. Differentiate the approaches by function and usability in completing tasks
3. Understand the opportunities and underlying limitations of field GIS work
4. Be aware of the role of GIS professionals, GIS users and field workers in mobile GIS
5. Describe the end results of data gathering and integration opportunities

ii) Depaved Database: Building and Maintaining a Database for the Community Non-Profit Depave
Drew Swayne

Depave, a project of Portland nonprofit CityRepair, leads a citizen-driven effort to remove unnecessary pavement and re-green Portland neighborhoods. Depave's goals are to reduce stormwater runoff, reconnect the community with nature, and restore habitat for people and wildlife. Since 2008, Depave has completed 18 depaving events engaging more than 700 volunteers and removing over 65,000 square feet of pavement from the parking lots of schools, churches, community spaces, and non-profit organizations.

iii) Rethinking Bike There! 2010: Collaboratively Changing the Semantics and Semiotics of Portland Metro's Bike Map
Matthew Hampton

Metro's 8th edition Bike There! map has recently come off the press. Learn how focus groups, inter-governmental cooperation and co-development informed a full redesign of this regional product. Covering over 1 million acres, this map includes data from 2 states, 5 counties and 30 cities with larger-scale inset maps of critical areas. The new design strips away complex coding and delivers an informative cartography targeted to increase bike use, safety, and discovery of the region. Matthew will show the historical development of Bike There! while exploring how the changes are meant to increase the visual communication of suitable route selection.

TRACK C 10:30 – 12:00	**Web Mapping with GeoServer – Free your maps, free your data (first of two sessions)**	**Cascade Room**

Mike Pumphrey, OpenGeo Division of The Open Planning Project (TOPP)

GeoServer is an open source software server written in Java that allows users to share and edit geospatial data. Designed for interoperability, it publishes data from any major spatial data source using open standards. See how GeoServer, along with OpenLayers, a free and open source web map client, can complement or replace proprietary GIS solutions.

This session will introduce attendees to GeoServer. Attendees will learn how to load, publish, and share geospatial data. Discussion will include the GeoServer user interface, OGC web services, map styling with SLD, and OpenLayers. The class will start as a discussion and will move to a hands-on workshop as time allows. Anyone interested in web mapping is encouraged to attend, but familiarity with basic GIS concepts is suggested.

12:00 – 1:30	**LUNCH & POSTER AWARDS**	**BALLROOM**
12:00 – 1:30	*OR-URISA Board of Directors Meeting*	*Room 328*
TRACK A 1:30 – 300	**ESRI and Open Source** Moderator: Eric Bohard	**Room 328**

i) ESRI and Open Source
John Sharrard, GIS Solutions Engineer, Esri

This presentation will discuss how Esri is involved in the open source community including:

- Development and management of open source geospatial projects
- Integration of open source tools, languages, libraries, integrated development environments (IDE), and Web server technologies
- Participation in open source events and organizations
- Contributors to open source geospatial projects
- Adherence to interoperability within the managed open source geospatial projects
- Implementation of the GeoServices REST API .

Particular attention will be given to open source geospatial projects, including Esri Geoportal Server, ArcGIS Editor for OpenStreetMap, and the Esri ArcGIS Silverlight Toolkit.

ii) Web Mapping using Open Source and generally free to use tools (ie. Google Maps)
TJ Maciak

The Community Research Institute at the Johnson Center for Philanthropy from Grand Rapids, MI has been exploring the use of common open source and free to use services for web based GIS applications to help our partners (non-profits, foundations and various community organizations) display some of their data in a visual way. This session will briefly explore the technical essentials of what a small organization needs to implement in order to get a web mapping application out for public consumption as well as briefly go over our first foray into the mobile application world on an Android device and the inner workings of the "cloud" based GIS service behind that application.

TRACK B	Watershed Terrain Analysis	Browsing Lounge
1:30 – 3:00	Moderator: Erik Strandhagen	

i) Basin Analysis GIS for USDA-NRCS National Water and Climate Center Water Forecasting
Geoffrey Duh

The Center for Spatial Analysis and Research (CSAR) at PSU is currently engaged in a multi-year agreement with the USDA-NRCS, National Water and Climate Center (NWCC) to develop a spatial decision support system (SDSS) for improving water forecast accuracy. The SDSS is intended to improve the performance of and user experience with the GIS Weasel tool developed by USGS. Weasel is an ESRI AML-based application developed on Arc/Info. The NWCC uses Weasel to prepare watershed GIS layers for the areas of interest (AOI), delineate hydrological response units (HRU), and generate HRU physical parameters that are used in hydrological models to forecast water supply.

This presentation is to describe the design and functions of the SDSS developed during Phase I (2009-2010). The SDSS, called Basin Analysis GIS (BAGIS), was developed at CSAR using the VBA development environment in ESRI's ArcMap. The main purposes of BAGIS are to delineate the boundaries of watersheds (i.e., AOIs) and generate reports and maps for locating potential snowpack monitoring sites such as SNOTEL within the AOI. BAGIS provides functions for 1) managing and organizing basin analysis data, 2) preparing terrain datasets for AOI delineation, 3) delineating AOI, 4) performing spatial computation, and 5) generating maps and Excel reports. BAGIS is being used at NWCC and PSU on both ArcGIS 9.X and 10 platforms. I will also give a brief description on the design of Phase II model, HRU Delineation GIS.

ii) Using Turbidity Monitoring and LiDAR-Derived Imagery to Investigate Sources of Suspended Sediment in the Little North Santiam River Basin, Oregon, Winter 2009–2010
Steven Sobieszczyk

The Little North Santiam River Basin is a 111-square mile watershed located in the Western Cascades of Oregon. The Little North Santiam River is a major tributary to the North Santiam River, which is the primary source of drinking water for Salem, Oregon and the surrounding communities. Consequently, water quality conditions in the Little North Santiam River, such as high turbidity, affect treatment and delivery of the drinking water. Between 2001 and 2008, suspended sediment from the Little North Santiam River accounted for 69% of the total load that passed the treatment plant. Recent studies suggest that much of this sediment originates from landslide activity in the basin. Using airborne Light Detection and Ranging (LiDAR)-derived imagery, 401 landslides were mapped. Landslide types vary by location, with deep-seated earth flows and earth slumps common in the lower half of the basin and channelized debris flows prominent in the upper basin. Over 37% of the lower basin shows evidence of landslide activity compared to just 4% of the upper basin. In-stream turbidity monitoring and suspended-sediment load estimates during the winter of 2009–2010 demonstrate a similar distribution of sediment transport in the basin. During a 3-month study period, from December 2009 through February 2010, the lower basin supplied 2,990 tons, or 91% of the suspended-sediment load to the Little North Santiam River, whereas the upper basin supplied only 310 tons of sediment. One small 23-acre earth flow in the lower basin, the Evans Creek Landslide, supplied 28% of the total suspended-sediment load.

TRACK C	Web Mapping with GeoServer – Free your maps,	Cascade Room
1:30 – 3:00	**free your data (second of two sessions)**	

Mike Pumphrey, OpenGeo Division of The Open Planning Project (TOPP)

3:15 – 3:45 PM	Update on Japan Crisis Mapping	BALLROOM

i) Update on Japan Crisis Mapping
Rafa Guttierrez

With the disaster that's fallen upon Japan in the past week, there's been a rush of geographic data streams hitting the web. There are mashups and visualizations everywhere and some people who are jumping into CrisisCamps wanting to help. At the forefront are OpenStreetMap contributors who are using a variety of tools such as JOSM, Potlatch2, QGIS, Merkaartor, and even ArcGIS. There are also folks contributing other types of data such as 3D visualizations and climate analyses.

3:45 – 5:00 PM	CLOSING SESSION	BALLROOM

Scott Nelson – Jobs and Economy Senior Policy Advisor to Governor John Kitzhaber

Scott Nelson grew up in Corvallis and graduated from Corvallis High School. He served as policy director to Governor Kitzhaber's 2010 gubernatorial campaign and now serves as Governor Kitzhaber's senior policy advisor on jobs and the economy.

Before returning to Oregon full time and re-engaging in policy and politics, Scott spent 5 years in the Washington, DC, and Portland offices of K&L Gates LLP, counseling clients on a range of regulatory and policy issues, including energy, government ethics, political law, and tax.

Prior to joining the firm, he served on the staff of U.S. Senator Byron Dorgan (D–ND) in several capacities, most recently as deputy chief of staff. Scott was also a Clinton Administration appointee to the U.S. Department of Energy under Secretary Bill Richardson.

During law school, Scott was a legal fellow in the office of Governor Mark Warner and served for two years as a law clerk in the U.S. Attorney's Office, Western District of Virginia.

He graduated from Carleton College, Northfield, Minnesota and the University of Virginia School of Law, Charlottesville, Virginia.

PSU Campus Map