

# Annual Report, 2012-13



#### About the State Cartographer's Office

Established in 1974, the Wisconsin State Cartographer's Office (SCO) is a resource for information about maps, cartography, geographic/land information systems, and geospatial technology. We support Wisconsin's geospatial community and the general public through presentations, workshops, consulting, publications, catalogs and services, and information about events, jobs and emerging trends.

The SCO serves as a liaison between professionals in government, education, non-profits and the private sector, helping to expand the effective use of geospatial technology. We maintain ties with geospatial communities in other states and nationally to stay on top of trends and policies, and we collaborate on statewide initiatives with mapping agencies and associations.

As a unit within the Geography Department at UW-Madison, the SCO embodies the "Wisconsin Idea" by facilitating the transfer of knowledge and ideas between the university and citizens of the state.

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### **Statewide Orthophotography Planning**

In 2011-2013, the SCO led a project to identify the steps needed to implement a sustainable statewide aerial imagery program. Through surveys, Webinars, regional meetings, and interviews, we gathered input from stakeholders regarding their needs and expectations for such a program.

The primary output of the project is a business plan that summarizes the current state of aerial imagery projects in Wisconsin, and proposes a number of models that could be used to implement a sustainable statewide program.

Key findings:

- There is a long tradition of voluntary collaborative imagery projects in Wisconsin, but these generally are not viewed by the user community as sustainable or sufficient to meet long-term business needs.
- Public entities in Wisconsin (mostly cities and counties) spend an average of \$2.3 million annually on imagery. The benefits flow to users at all levels of government and the private sector. Users identified at least \$8.4 million per year in benefits from such imagery.
- Opportunities for cost savings through economies of scale are not maximized under current acquisition methods. Additional savings could be gained through improved efficiencies in contracting, data delivery, and quality control/quality assurance procedures.

Key recommendations:

- Identify a source of sustainable funding. Wisconsin has opportunities to provide necessary funding without requiring an increase in taxes or fees.
- Establish a participatory governance structure. The program will require participation from the user community to be effective.
- Identify a program administrator. An organization must be identified as the permanent home for the program.
- Identify an aerial imagery services organization. An organization must be identified to provide technical services to support the program.
- Establish a state imagery standard. The user community should establish a state minimum imagery standard to drive the collection of imagery.

Funding from the FGDC (Federal Geographic Data Committee) for this project is gratefully acknowledged.

For complete details see the project Website at orthoplan.sco.wisc.edu



### **Pronounce Wisconsin**

*Pronounce Wisconsin* is a new online pronouncing gazetteer for Wisconsin, delivering audio pronunciations for over 1700 Wisconsin places, including counties, cities, villages, and unincorporated communities.

Pronounce Wisconsin is a collaborative effort with Jackie Johnson, radio anchor and creator of <u>MissPronouncer.com</u>. The Pronounce Wisconsin application was created by John Czaplewski, an SCO student assistant, with assistance from AJ Wortley.

Pronounce Wisconsin includes pronunciations for over a thousand unincorporated communities in the state. These communities were mapped as part of the SCO's statewide



basemap project, launched in 2011 to develop a set of statewide GIS-based cartographic layers.

#### Selected Media Coverage of Pronounce Wisconsin

<u>Business Profile: Pronounce Wisconsin Interactive Map</u>. WisconsinEYE video, Dec. 3, 2012.

<u>Wisconsin State Cartographer's Office releases Pronounce</u> <u>Wisconsin</u>. The Wheeler Report, Dec. 13, 2012.

<u>New online map helps people pronounce Wisconsin city names</u>. 620 WTMJ News Radio (Milwaukee), Dec. 18, 2012.

<u>New online Wisconsin map helps pronounce names</u>. JSOnline/Milwaukee Journal Sentinel, Dec. 18, 2012.

- <u>New online Wisconsin map pronounces names</u>. WEAU (Eau Claire), Dec. 18, 2012.
- <u>O-c-o-n-o-m-o-w-o-c. Never mispronounce a Wisconsin city again</u>. Pioneer Press/TwinCities.com (Minneapolis/St. Paul, MN), Dec. 18, 2012.

<u>"Pronounce Wisconsin" interactive map now available</u>. WSAU (Milwaukee), Dec. 18, 2012.

<u>Pronounce Wisconsin Map Powered by Misspronouncer.com and</u> <u>Open Source</u>. Directions Magazine, Dec. 18, 2012.

- <u>Click map to hear place pronunciation</u>. Wisconsin State Journal, Dec. 19, 2012.
- Live radio interview about Pronounce Wisconsin (Sunny 97-7, Fond du Lac), Dec. 19, 2012.

Interactive state map assists on problematic pronunciations. College of Letters & Science News & Notes, April 1, 2013.

Interview for <u>Oconomo-Wuh? When Municipalities Are Mouthfuls</u>, <u>New Website Can Help</u>. Wisconsin Public Radio, April 19, 2013.

Pronounce Wisconsin application: maps.sco.wisc.edu/pronouncewi

Project description: <u>www.sco.wisc.edu/news/sco-releases-</u> pronounce-wisconsin-an-online-pronouncing-gazetteer-of-wisconsin.html

### **PLSS Pilot Project**

In 2011 the SCO announced a new pilot project to explore how to develop a more accurate Public Land Survey System (PLSS) digital representation for the state of Wisconsin. The intent of this project is to develop and test methods to aggregate accurate local data to update the statewide Landnet dataset produced by the Wisconsin Department of Natural Resources in the 1990s.

We are currently wrapping up this project. We have completed the data model to house the corner point data from our nine pilot counties, imported over 22,000 local corner points into the database, and categorized these points based on their type (e.g., section corner, quarter-section corner, etc.).



A primary goal of the pilot project is to define and test data integration methods that account for the existence of multiple coordinate values for any given corner point. Multiple coordinates occur in several contexts, including separate surveys being performed for the same logical corner point over time or across a county boundary. One of the major challenges we encountered was determining whether coordinates that are in close proximity to each other represent different representations of the same corner (sometimes called the "pincushion effect") or are truly different points (e.g., a meander point that is close to a section corner). In these cases additional attribute information (i.e., detailed descriptive corner data) would make these determinations easier to perform and more accurate.

### **ControlFinder and PLSSFinder**

We continue to spend a significant amount of effort on outreach, collaboration, and education of local units of government on the benefits of integrating their geodetic control and Public Land Survey System (PLSS) corner datasets into *ControlFinder* and *PLSSFinder*. Participation continues to grow, with numerous updated and new datasets added. System enhancements include a new GPX export tool for mobile GPS users. We are currently investigating enhancements to the Finders for mobile platforms as a possible direction for the future.

ControlFinder Statistics	2011	2013
National Geodetic Survey (NGS) Height Modernization Program (HMP) stations	4,811	6,922
NGS non-HMP stations (incl. 1,550 border state stations for 2013)	7,307	8,346
US Geological Survey (USGS) stations	10,384	10,384
Continuously Operating Reference System (CORS) stations (incl. 27 NGS CORS stations for 2013)	40	102
Number of counties contributing	18	22
County control stations	1,617	1,905
Total number of stations	24,159	27,659

PLSSFinder Statistics	2011	2013
Number of counties contributing	21	32
Total number of corners	58,433	86,341

These tables and graphs detail the expanding scope of the *ControlFinder* and *PLSSFinder* databases, and the increased use of the Finder applications online.

*ControlFinder* application: maps.sco.wisc.edu/controlfinder

PLSSFinder application: maps.sco.wisc.edu/plssfinder



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### WiscLinc

Work to update our geospatial data catalog, WiscLinc, continued through 2012-13. The culmination of these efforts will be a prototype GIS data portal aimed at the UW-Madison campus audience delivering datasets held in the Robinson Map Library archive. Such a portal will allow us to develop parameters useful in approaching a larger effort for all state users, such as a state GIS data clearinghouse.



As detailed in our new 2013-16 strategic plan, once this system is online we plan to retire WiscLinc and focus energy on *Find Wisconsin Data* narrative Website pages as a replacement.

Additional work in this area includes a collaborative effort with the Division of Intergovernmental Relations (Wisconsin Department of Administration) to update the statewide assessment of county geospatial data holdings, which will lead to the publication of an updated county GIS inventory report. The most recent report, from 2009, provides a structured view of county-based GIS capacity in Wisconsin through an inventory of GIS data assets, technical capacity, and management practices. The report is based on self-reported statistics for 2008-2009 using the Wisconsin GIS Inventory tool with answers provided by representatives of Land Information Offices (LIOs) in each county.

#### 2009 GIS Inventory Report:

www.sco.wisc.edu/images/stories/publications/FINAL County GIS Inv Report May2009.pdf

# Web Analytics

The SCO relies on Web technology to facilitate its community outreach mission of supplying geospatial information to professionals and the public. But how effective is our outreach strategy and who are we reaching?

In 2012-13 we focused some attention on these questions. We conducted a study to assess Web usage for one of our online applications (*WHAIFinder*). The results of the study were presented at a national conference and published online in the AutoCarto Proceedings. The project was also reported in Directions Magazine.

Essentially, we discovered that WHAIFinder usage is fairly evenly distributed across counties in Wisconsin, indicating fairly consistent levels of access. However, areas of higher-thananticipated and lower-than-anticipated usage were also discovered.

We also monitor and analyze SCO Website statistics to see what they reveal about visitors to the site.

The time-series graphs on this page depict variations in SCO Website traffic using weekly totals for pageviews, visits, and visitors.

The graphs begin in July, 2011, when we first started collecting data in this way. Spikes correspond to significant events, such as the release of a new online application.

Traffic has been trending upward since 2011 as shown by average weekly growth rates on the graphs. New visits (visits by users who have not been to the SCO Website before) are also growing, indicating some success in reaching a new audience.







### Web Analytics



### Web Analytics



#### Mapping Bulletin article:

www.sco.wisc.edu/news/study-examines-the-effectiveness-of-online-maps-for-community-outreach.html

#### WHAIFinder study:

www.sco.wisc.edu/images/stories/publications/2012/SCO autocarto2012 paper.pdf

#### Directions Magazine article:

www.directionsmag.com/articles/study-examines-the-effectiveness-of-online-maps-for-community-outreach/276681

# **Publications**

We published 65 Mapping Bulletin articles in the period covered by this report.

We updated our existing Infosheets and created a new one on the Pronounce Wisconsin application. <u>www.sco.wisc.edu/images/stories/publications/Pronounce\_Wisconsin\_InfoSheet2013.pdf</u>

We created a poster of UW-Madison that blends a modern color aerial photograph from July 2, 2010, with a historic black-and-white photograph from July 6, 1937. The poster highlights the dramatic changes that have occurred on campus and the surrounding community over this time period. www.sco.wisc.edu/news/new-poster-shows-dramatic-changes-to-uwmadison-since-the-1930s.html

We published a study that explores how Web analytics can be used to assess Web-based community outreach effectiveness. This study was also published the Auto-Carto 2012 proceedings. www.cartogis.org/docs/proceedings/2012/Veregin Wortley AutoCarto2012.pdf

Several short articles appeared in the July 2012 Wisconsin County Surveyor's Association Newsletter (<u>www.sco.wisc.edu/images/stories/topics/WCSA/2012%20July%20Newsletter.pdf</u>):

- B. Hemstead & J. Ellingson. (2012, July). National Adjustment of 2011.
- B. Hemstead. (2012, July). New export option now available in Finders.

One of the publications listed in our previous annual report finally appeared in print:

H. Veregin & T. Kennedy. (2012). Online Information Dissemination at the Wisconsin State Cartographer's Office using Map Services and APIs. In M. Peterson (Ed.), *Online Maps with APIs and WebServices* (pp. 279-298). Springer.



### **Conference Presentations**

- J. Lacy. Learning from the Past: A Blueprint for a Wisconsin Aerial Imaging Program. NSGIC Annual Meeting, Orlando, FL.
- H. Veregin & J. Mundt. State Geospatial Coordination Councils. NSGIC Annual Meeting, Orlando, FL. (Discussion session)
- H. Veregin & AJ Wortley. *Analysis of Web-usage* statistics to evaluate the effectiveness of online maps for community outreach. AutoCarto 2012, Columbus, OH.
- J. Lacy. Next Steps for the Wisconsin Aerial Imagery Business Plan. Wisconsin Land Information Association Fall Conference, Appleton, WI.
- H. Veregin, B. Hemstead & M. Goettl. *Virtual Parcel Integration Project*. Wisconsin Land Information Association Fall Conference, Appleton, WI.
- H. Veregin & R. Wencl. *WIGICC Elevation Workgroup Update*. Wisconsin Land Information Association Fall Conference, Appleton, WI.
- J. Lacy & H. Veregin. *Aerial Imagery Business Plan Workshops.* Stevens Point, Madison, Waukesha, Neenah, and Eau Claire, WI.
- H. Veregin, B. Hemstead & M. Goettl. *Integrating County Parcel Data Using Web Services*. GIS Day, University of Wisconsin-Milwaukee. Milwaukee, WI.
- J. Lacy. *Geospatial Cloud Computing Webinar*. Online. (Organizer and Discussion Moderator)
- J. Lacy. *Results of the 2012 Aerial Imagery Business Plan Project*. Wisconsin Land Information Association Annual Conference, Lake Geneva, WI.
- AJ Wortley & A. Miller. *Wisconsin Land Records Then* and Now – A First and Last Past Presidents' Perspective. Wisconsin Land Information Association Annual Conference, Lake Geneva, WI.
- AJ Wortley & J. Stoltenberg. Improving Access to Archived GIS data at UW-Madison: Best Practices for

Sustainable Preservation of Geospatial Data. Wisconsin Land Information Association Annual Conference, Lake Geneva, WI.

- H. Veregin & AJ Wortley. *Mapping Spatial Patterns of WHAIFinder Usage to Measure Community Outreach Effectiveness*. Wisconsin Land Information Association Annual Conference, Lake Geneva, WI.
- J. Lacy. Working Together to Save Taxpayer Resources. Maps Matter Open House at the Wisconsin Capitol, Madison, WI.



- AJ Wortley, J. Gregg & H. Veregin. *Mapping for Decision Makers: Site-level Viewshed Analysis on the Lower Wisconsin River.* 2013 Geospatial Summit, UW-Madison, Madison, WI.
- B. Hemstead. Using ControlFinder and PLSSFinder. Wisconsin Society of Land Surveyors Central Chapter Meeting, Wausau, WI.
- B. Hemstead. *PLSS Over the Years*. Wisconsin County Surveyors Association, Neillsville, WI.
- J. Lacy. *The Great Debate: To Sell or Not to Sell* (*Geospatial Data*). Wisconsin Land Information Association Spring Conference, Wausau, WI. (Organizer and Panel Discussion Moderator)
- B. Hemstead. *Analysis of Web-Statistics to Evaluate Online Maps.* Wisconsin County Surveyors Association, Neillsville, WI.

#### Improving Wisconsin's Broadband Mapping Initiative Using Address Point and Parcel GIS Layers

- Source: National Telecommunications and Information Administration, via Wisconsin Public Service Commission and Wisconsin Department of Administration (DOA)
- Amount: \$168,000
- Project Leads: H. Veregin (SCO), P. Herreid (DOA)
- Status: Awarded July, 2013; end date June 30, 2014
- Description: The Public Service Commission of Wisconsin has identified the development of a comprehensive rural address database as one of the key requirements for its broadband mapping initiative. The main deliverable of this project is an integrated geospatial database of parcels and addresses for the state, built up from bestavailable county and local data.

#### Business Plan Development for a Wisconsin Aerial Imaging Program

- Source: Federal Geographic Data Committee (FGDC) Cooperative Agreements Program
- Amount: \$39,999
- Principal Investigator: H. Veregin
- Project Manager: J. Lacy
- Status: Awarded February, 2011; completed April 2013
- Description: SCO was the lead organization on this grant in collaboration with the Wisconsin Department of Military Affairs and North Central Wisconsin RPC. The grant resulted in the development of a business plan for a sustainable aerial image acquisition program for the state. The final report was delivered in July, 2013.

### SCO in the News

- Wisconsin Study Examines the Effectiveness of Online Maps for Community Outreach. Directions Magazine, Sept. 12, 2012. Reprint of Wisconsin Mapping Bulletin article. <u>www.directionsmag.com/</u> <u>articles/study-examines-the-effectiveness-of-online-</u> <u>maps-for-community-outreach/276681</u>
- Just Ask Us: What are the highest and lowest points in Wisconsin? Wisconsin State Journal, Jan. 13, 2013. Interview with Jim Lacy about highest and lowest points in the state. <u>host.madison.com/news/local/</u> <u>ask/just-ask-us/just-ask-us-what-are-the-highest-</u> <u>and-lowest-points/article\_d32b59f0-5dbb-11e2-</u> <u>be94-001a4bcf887a.html</u>
- *Time Travel.* On Wisconsin Magazine, Summer 2013. Overview of the "Then and Now" poster showing UW-Madison through aerial photographs from 1937 and 2010. <u>onwisconsin.uwalumni.com/features/</u> <u>time-travel/</u>

Selected media coverage of Pronounce Wisconsin:

- Business Profile: Pronounce Wisconsin Interactive Map. WisconsinEYE video, Dec. 3, 2012. Half-hour video interview with Jackie Johnson, Howard Veregin, and John Czaplewski. <u>www.wiseye.org/Programming/</u> <u>VideoArchive/EventDetail.aspx?evhdid=7005</u>
- Wisconsin State Cartographer's Office releases Pronounce Wisconsin. The Wheeler Report, Dec. 13, 2012. www.thewheelerreport.com
- Interactive state map assists on problematic pronunciations. College of Letters & Science News & Notes, April 1, 2013. <u>news.ls.wisc.edu/?p=11560</u>
- Interview for Oconomo-Wuh? When Municipalities Are Mouthfuls, New Website Can Help. Wisconsin Public Radio, April 19, 2013. Interview with Jackie Johnson and Howard Veregin. <u>news.wpr.org/post/oconomowuh-when-municipalities-are-mouthfuls</u>

### Students

#### **Student Assistants**

The SCO provides opportunities for students to participate in office projects and initiatives, in order to apply what they have learned in the classroom and enhance their university experience.

- John Czaplewski completed his GIS Certificate degree while employed by the SCO. He is currently a Programmer Analyst in the Geoscience Department at UW-Madison. John developed the Pronounce Wisconsin online application, which also served as the basis for his GIS Certificate capstone project.
- Josh Gregg is currently completing his GIS Certificate degree. One of Josh's larger projects was a viewshed analysis for a study commissioned by the Lower Wisconsin State Riverway Board. This analysis served as Josh's GIS Certificate capstone project.
- Scott Moucka completed his GIS Certificate degree while employed by the SCO. He is currently GIS Planning Analyst with Erdman in Madison. Scott worked on numerous projects for the office, including database processing for our online Finder applications.
- Kim Ness completed her GIS Certificate degree while employed by the SCO. She is currently GIS Specialist with the Bad River Tribe in Odanah, WI. One of Kim's major projects was data development work for the SCO's statewide basemap project.
- **Steve Paling** is currently completing his GIS Certificate degree. Steve has assisted with the SCO's data catalogs, including the Aerial Photograph Finder and the Robinson Map Library data portal.
- Maira Utebaliyeva is an undergraduate student in Geography at UW-Madison. She is assisting with a project being worked on collaboratively by the SCO, the UW-Madison Cartography Lab, and Pangea Studios at UW-Whitewater. This project seeks to build an interactive map for the Wisconsin Economic Development Corporation (WEDC).

**David Vogel** is currently completing his GIS Certificate degree. In addition to other projects, David did research and mapping work on the highest points in Wisconsin for publication in the Wisconsin Blue Book. This work will form the basis of David's GIS Certificate capstone project.

#### Internships

The SCO also makes opportunities available for students who are looking for an internship for academic credit.

Margaret Raimann, an undergraduate student in Geography at UW-Madison, worked on a relief "colorization" project. This project used Python scripting to derive more effective color overlays for shaded relief. These techniques are being used for the SCO's statewide basemap project.

#### **Graduate Students**

Some SCO staff also serve on graduate student thesis committees to lend special expertise.

**Tim Kennedy**, Academic Program Specialist in the SCO, is also a PhD student in Geography at UW-Madison. Tim's dissertation co-advisors are Howard Veregin (State Cartographer) and Jim Burt (Professor of Geography, UW-Madison).

#### **Guest Lectures**

SCO staff are often called on to deliver guest lectures on specific topics. In 2012-13, AJ Wortley delivered guest lectures in the Geography and Urban and Regional Planning Departments.

# **Service-Learning Projects**

The SCO provides service-learning opportunities for students, in order to integrate meaningful engagement with the geospatial community into the educational experience. In 2012-13 the SCO worked on several projects involving GIS analysis and mapping for specific state agency business needs. In all cases, student assistance was integral to the project.

#### **Blue Book: Highest Points in Wisconsin**

Agency: Legislative Reference Bureau (LRB) Project description: Create map and table of the highest points in Wisconsin to update the official "Blue Book of Wisconsin" published by the LRB. This project was more involved than it might seem, due to changes in surveying methods and technology used to determine elevations.

Student involved: David Vogel

#### Lower Wisconsin Riverway Viewshed Analysis

Agency: Lower Wisconsin State Riverway Board Project description: Perform viewshed and observer point analysis to assess the visibility of a proposed frac sand mine from the surface of the Wisconsin River. Report on results at a public hearing. Student involved: Josh Gregg

#### Economic Development Impact Map

Agency: Wisconsin Economic Development Corporation (WEDC)

Project description: Develop an online interactive map to showcase WEDC-funded projects throughout the state. This is a joint project with the UW-Madison Cartography Lab and Pangea Studios at UW-Whitewater. The UW-Madison portion includes map interface design and QA/QC. Students involved: Maira Utebaliyeva, Josh Gregg

Students involved: Maira Utebaliyeva, Josh Gregg, David Vogel

### **Geospatial Summit**

The SCO leads the planning and implementation of the Geospatial Summit, an annual gathering of geospatial professionals at UW-Madison.

#### **Summit Highlights**

- Approximately 136 faculty, staff and students attended the 2013 Summit, up from 80 attendees in 2012.
- Attendees included faculty, staff and students from UW-Madison, UW-Eau Claire, UW-La Crosse, UW-Milwaukee, UW-Stevens Point, and UW-Whitewater; staff from Wisconsin local government, state agencies and the federal government; and representatives from the private sector, non-profits, and the broader geospatial community.
- Twenty-four research presentations were delivered.
- David Tulloch, Professor of Landscape Architecture at Rutgers University, gave the keynote presentation.
- Grant support and support from centers/departments on campus was obtained to sponsor the event.



### **Coordination and Outreach**

#### **Conference Attendance**

- Wisconsin County Surveyors Association Board Meetings, Aug. 2012, Nov. 2012, Mar. 2013, May 2013. Neillsville. (Hemstead)
- National States Geographic Information Council Annual Meeting, Sept. 2012, Orlando, Florida. (Veregin, Lacy)
- AutoCarto 2012, Columbus, Ohio. (Veregin)
- Wisconsin Land Information Association (WLIA) Fall Regional Conference, Oct. 2012, Appleton. (Veregin, Lacy, Hemstead, Kennedy, Wortley)
- Esri Wisconsin Users' Group (EWUG), Oct. 2012, Appleton. (Lacy, Kennedy)
- Presidents Council Annual Meeting, Oct. 2012, Wisconsin Dells. (Veregin, Lacy, Wortley)
- Milwaukee GIS Day, Nov. 2012, Milwaukee. (Veregin)
- Milwaukee Metro GIS Users Group, Nov. 2012, Wauwatosa. (Lacy)
- Annual Surveyor's Institute, Wisconsin Society of Land Surveyors (WSLS), Jan. 2013, Wisconsin Dells. (Veregin, Hemstead)
- American Society of Photogrammetry and Remote Sensing, Western Great Lakes Chapter Annual Meeting, Jan. 2013, Lake Elmo, Minnesota. (Lacy)
- Wisconsin Land Information Association (WLIA) Annual Conference, Feb. 2013, Lake Geneva. (Veregin, Lacy, Hemstead, Kennedy, Wortley)
- Maps Matter, Feb. 2013, Madison. (Veregin, Lacy, Wortley)
- Wisconsin Land Information Association (WLIA) Board Meeting, Mar. 2013, Bayfield. (Lacy)
- Free and Open Source Software for Geospatial (FOSS4G) North American Conference, May 2013, Minneapolis, Minnesota. (Wortley)
- National Digital Orthophoto Programs Steering Committee (NDOP), May 2013, via teleconference. (Lacy)
- Wisconsin Land Information Association (WLIA) Spring Regional Conference, May 2013, Wausau. (Veregin, Lacy,

Hemstead, Kennedy, Wortley)

Wisconsin Society of Land Surveyors (WSLS) Chapter Meeting, June 2013, Wausau. (Hemstead)

#### **University Activities**

#### Department of Geography, UW-Madison

- Continued partnership with Robinson Map Library on the Geospatial Multi-State Archiving and Preservation Partnership (GeoMAPP). (Wortley)
- Collaboration with Robinson Map Library on GIS data portal for UW-Madison campus audience. (Wortley)
- Chair, Geocomputing Committee. (Lacy)
- Member, Science Hall Computing Committee. (Wortley)
- Member, External Relations Committee. (Veregin)
- Member, GIS faculty search and screen committee. (Veregin)
- Member, Geography Department/Science Hall IT Manager hiring committee. (Wortley)
- Member, Science Hall Building Committee. (Hemstead)
- Member, planning team, Cartography Major for Grandparents University. (Lacy)
- Member, interview panel for Department payroll administrator. (Lacy)
- UW-Madison @ Wisconsin State Fair, outreach booth participant. (Wortley)
- Guest lecture, GEOG 377. (Wortley)

#### **Geospatial Alliance**

- Organized and hosted the annual Geospatial Summit.
- Maintenance of Geospatial Alliance Website. (Lacy)

#### **UW-Madison**

- Collaboration with Dr. Mutlu Ozdogan, Department of Forest Ecology, to find funding for an update to Wisconsin's statewide land cover dataset. (Veregin, Kennedy)
- Engagement with the University Communications team rearchitecting the UW online campus map (map.wisc.edu). (Wortley, with SCO student assistants, and R. Donohue and T. Buckingham from the UW-Madison Cartography Lab)
- Project with the UW campus map team to improve the aerial imagery used in the map. (Lacy)
- Worked with WisconsinView to make LiDAR-derived elevation data available for 20 Wisconsin counties. Also involved staff from USGS, Wisconsin DNR, Ayres Associates, and WIGICC. (Veregin)
- Campus talk on Geospatial Data Preservation, Research Data Series. (Wortley, with J. Stoltenberg, Robinson Map Library)
- Guest lecture, Urban and Regional Planning. (Wortley)

# **Coordination and Outreach**

• Member, College of Letters and Science Committee on Academic Staff Issues. (Lacy)

#### **UW System Campuses**

- Secured \$40,000 Educational Innovation grant from UW-Madison to initiate development of a Geodesign Certificate Program, a collaborative program between UW-Madison and UW-Stevens Point. (Veregin, project co-lead with J. Silbernagel, Landscape Architecture and Nelson Institute)
- Joint project with Martin Goettl, UW-Eau Claire, focusing on virtual parcel data integration using existing county Web map services. (Veregin, Hemstead)
- Participation in UW-Milwaukee GIS Council meetings. (Veregin)
- Participation at UW-Milwaukee GIS Day. (Veregin)
- Participation in discussions around geospatial ethics at UW-Eau Claire. (Veregin)
- Joint project with Pangea Studios, UW-Whitewater, to build an interactive Web map for WEDC, the Wisconsin Economic Development Corporation. (Veregin, Wortley, SCO student assistants, and T. Buckingham, UW-Madison Cart Lab).

#### **Other Universities**

• Member, Advisory Board, Masters of Geographic Information Science Program, University of Minnesota-Twin Cities. (Veregin)

#### **Professional Associations**

### Wisconsin Geographic Information Coordination Council (WIGICC)

- Ex officio member of WIGICC. (Veregin)
- Educational sector representative. (Kennedy)
- Member, Internal Operations Team. (Veregin)
- Member, Outreach/Communications Team. (Veregin)
- Participation in WIGICC face-to-face and conference call meetings. (Veregin)
- Participation in Permanence Working Group, formed to identify a pathway for permanency. (Veregin)
- Participation in Elevation Data Working Group, created to develop an inventory of elevation data, provide education, and develop standards. (Veregin)
- Participation in Economic Development Working Group, created to develop a plan for the state to use GIS in economic development applications. (Veregin)
- Administrative support to WIGICC. (Veregin)

#### Wisconsin Land Information Association (WLIA)

- WLIA Past-President. (Wortley)
- Member, Board of Directors. (Lacy)

- Chair, Awards Committee. (Wortley)
- Chair, Communications Committee. (Lacy)
- Chair, Nominations Committee. (Wortley)
- Chair, Scholarship Committee. (Wortley)
- Co-chair, Legislative Committee. (Wortley)
- Member, Awards Committee. (Hemstead)
- Member, Conference Committee. (Hemstead, Lacy)
- Member, Education Committee. (Hemstead, Lacy)
- Member, Nominations Committee. (Hemstead)
- Member, Membership Committee. (Lacy)
- Presentations at WLIA conferences.
- Participation in WLIA Summit on Governor's budget proposal. (Veregin, Lacy, Wortley)

#### Wisconsin Society of Land Surveyors (WSLS)

- Liaison to professional geodetic and surveying community to facilitate the discovery of user needs related to office online Finder applications. (Hemstead)
- Continue to build and expand relationships with the surveying community at the local, state, federal, and private sector levels to facilitate discovery and assessment of business data requirements. (Hemstead)
- Presentation at WSLS Chapter Meeting. (Hemstead)

#### Wisconsin County Surveyors Association (WCSA)

- Participation and informational presentations at all WCSA Board meetings. (Hemstead)
- Assistance developing educational material for county surveyors. (Hemstead)
- Maintenance of Wisconsin County Surveyors Directory and other Web content for surveying community. (Hemstead)

### State Agency Geographic Information Coordination team (SAGIC)

- Participation in SAGIC Meetings. (Lacy)
- Planning Committee, February 2013 "Maps Matter" event at State Capitol. (Lacy)

#### **County Land Information Offices**

- Attend LION (Land Information Officers Network) meetings.
- Participation in monthly teleconferences between DOA, LION, and WLIA. (Wortley)
- Engagement with Land Information Officers via Presidents' Council and specific projects.

#### Wisconsin Presidents' Council

- Coordination of October 2013 meeting. (Lacy)
- Participation in October 2013 meeting. (Veregin, Lacy, Wortley)
- Maintenance of agendas and meeting notes. (Lacy)

# **Coordination and Outreach**

### National States Geographic Information Coordination Council (NSGIC)

- Wisconsin State Representative. (Veregin)
- Member, State Caucus. (Veregin, Lacy, Wortley)
- National Digital Orthophoto Steering Committee Liaison. (Lacy)
- Member, Communications Committee. (Lacy)
- Participation in virtual and face-to-face state caucuses. (Veregin, Lacy, Wortley)
- Presentations and panel sessions at conferences. (Veregin, Lacy)

### American Society for Photogrammetry and Remote Sensing (ASPRS)

- Treasurer and "Webmaster," Western Great Lakes Chapter. (Lacy)
- Member, ASPRS Electronic Communications Committee. (Lacy)

#### **Mapping Agencies**

#### Wisconsin Department of Administration (DOA)/ Division of Enterprise Technology (DET)/ Geographic Information Office (GIO)

- Share WIGICC ex officio role with GIO. (Veregin)
- Discussions with new state CIO.

#### Wisconsin Department of Administration (DOA)/ Division of Intergovernmental Relations (DIR)

- Collaboration on statewide address/parcel project for Public Service Commission of Wisconsin.
- Update to statewide assessment of county geospatial data holdings, which will lead to an update of the 2009 county GIS inventory report. (Wortley)
- Participation in monthly teleconferences between DOA, Land Information Officers Network, and Wisconsin Land Information Association. (Wortley)

#### Wisconsin Department of Transportation (DOT)

- Collaborate and coordinate data ingest workflow (NGS, HMP, and WISCORS data) through working relationships with the Wisconsin National Geodetic Advisor and the Geodetic Specialists at DOT. (Hemstead)
- Maintenance of Web pages describing status and activities of the Wisconsin Height Modernization Program, WISCORS, transformation software, and the National Geodetic Survey. (Hemstead)

#### Wisconsin Department of Military Affairs (DMA)

• Collaboration on Federal Geographic Data Committee

grant, "Business Plan Development for a Wisconsin Aerial Imaging Program." (Lacy, Veregin)

• Member, Wisconsin Homeland Security Council GIS Information Sharing working group. (Lacy)

#### Wisconsin Department of Natural Resources (DNR)

- Discussion of Wisconsin land cover data update with DNR staff. (Veregin, Kennedy)
- Coordination with Floodplain Mapping team to deliver county LiDAR-based datasets to WisconsinView. (Veregin)
- Outreach to Forestry and Lands Divisions. (Wortley)
- Deer Trustee Report Implementation Plan Kickoff meeting. (Veregin)
- Ex Officio Member, Wisconsin Geographic Names Council. (Veregin)

#### Lower Wisconsin State Riverway Board

- Viewshed analysis to assist in a siting decision for a frac sand mine. (Wortley, Veregin, and SCO student assistants)
- Presentation to the Lower Wisconsin State Riverway Board Public Meeting. (Wortley and SCO student assistants)

#### Wisconsin Historical Society (WHS)

- Initiative to release statewide cemetery data. (Veregin)
- Creation of animated sequence of county change maps for map exhibit at Wisconsin History Museum. (Veregin)

#### Wisconsin Legislative Reference Bureau

• Initiative to update state facts and high points for Wisconsin Blue Book. (Lacy and SCO student assistants)

#### **Regional Planning Commissions**

 Collaboration with North Central Wisconsin RPC on Federal Geographic Data Committee grant, "Business Plan Development for a Wisconsin Aerial Imaging Program." (Lacy, Veregin)

#### **United States Geological Survey (USGS)**

- Provide voluntary custodianship for the USGS 3rd Order Vertical Control and station condition reports maintained in ControlFinder. (Hemstead)
- Coordination with staff from Upper Midwest Environmental Sciences Center, La Crosse, to deliver county LiDAR-based datasets to WisconsinView. (Veregin)

#### National Geodetic Survey (NGS)

• Coordinate and report issues and recommendations pertaining to station condition report forms. (Hemstead)

# **Strategic Plan Performance**

In the spring of 2010 the SCO developed a new strategic plan for 2010-13. The plan identifies five strategic priorities, each with a number of strategic initiatives. This page summarizes how we think we did.

### Priority I. Develop methods and best practices for statewide data development and data integration initiatives.

- Secured and completed FGDC grant to support statewide air photo business plan development.
- Secured funding for statewide address/parcel layer through the PSCW and DOA/DIR.
- ✓ Completed PLSS data integration pilot project.
- Completed components of the statewide basemap project, including an unincorporated places layer that was used in Pronounce Wisconsin.
- Worked on a virtual parcel data integration project to demonstrate how Web map technology can be used to model a statewide virtual data integration scenario.
- Continued to seek funding opportunities for updating statewide land cover data.

#### Priority II. Improve online data discovery and access for the geospatial community with the goal of providing efficient access to best available local and state data sources.

- Improved access to statewide control and PLSS data through upgraded Finder applications.
- Provided discovery and download access to 38,000 historic air photos of the state through the new WHAIFinder application.
- Partnered with the Robinson Map Library and UW Digital Collections in seeking sustained funding for the historic air photo repository, through a grant application to the National Endowment for the Humanities. (not funded)
- Increased completeness of ControlFinder and PLSSFinder coverage through expanded relationships with data contributors. Continue to pursue outreach to local units of government, professional organizations, state and federal agencies, and the private sector to acquire and integrate geospatial datasets for these applications.
- Continued to work with the Robinson Map Library to develop a point of access for high-demand geospatial datasets for UW-Madison users.

#### Priority III. Develop and maintain a coordination role between and within campuses of the UW system and other institutions of higher education in Wisconsin.

- Organize and host the annual Geospatial Summit for geospatial professionals on campus.
- Create and maintain Geospatial Alliance Website.
- Coordinate Geospatial Steering Committee meetings.
- Interact with other UW campuses through meetings, guest lectures, projects and outreach visits.
- Collaborate with other units of the UW-Madison Geography Department on mutual projects.
- Engage faculty researchers in geospatial research projects.
- Participate in development of inter-campus Geodesign program.

#### Priority IV. Engage in applied research and innovation to develop and disseminate information about new methods and practices.

- Presented information on SCO projects at national conferences.
- Published professional articles in journals, books and conference proceedings.
- Developed new SCO Technical Paper series to improve leveraging of geospatial technology.
- Developed and implemented cartographic standards for the ControlFinder, PLSSFinder and WHAIFinder applications, as a model for implementing cartographic design practices in a web environment.

### Priority V. Continue efforts to engage, educate, and support the Wisconsin geospatial community.

- Serve in leadership roles on various state and national organizations, including WLIA, WIGICC, NSGIC, ASPRS, and others.
- Support professional organizations at the state and national level through coordination efforts.
- Work toward establishment of permanent coordination council (WIGICC) through efforts to sustain the interim council, achieve visible successes, and develop a pathway to permanence.
- Redesigned and rolled out the new SCO Web site with enhanced content, functions and design.

# Strategic Plan, 2013-16

In early 2013 the SCO developed its strategic plan for 2013-16, with input from the Committee on State Cartography.



### Strategic Plan, 2013-16

### Strategic Priorities and Initiatives, 2013-16

Education and Training. Deliver and support geospatial education and training opportunities.

- ⇒ Provide education, consulting, and training opportunities for GIS users, in order to promote the advancement of geospatial technology across the state. Develop and implement in-person and online training opportunities, such as workshops, webinars, videos, and tutorials.
- $\Rightarrow$  Provide leadership and support for innovative geospatial initiatives in higher education, such as the inter-campus Geodesign Program.
- $\Rightarrow~$  Continue to support the efforts of the UW-Madison Geospatial Alliance, and maintain a leadership role in the annual Geospatial Summit.
- ⇒ Work to develop collaborative geospatial projects, initiatives, and events with other departments, other campuses of the UW system, and other institutions of higher education in Wisconsin. Facilitate opportunities for collaboration between the academic and non-academic communities.
- ⇒ Provide service learning opportunities for students, including students in the GIS Certificate program, the Geography program, and other departments and campuses of the UW system.
- ⇒ Demonstrate innovative uses of new Web and mobile mapping technologies.

Data Development and Integration. Develop methods and best practices for statewide data development and data integration, with the goal of supporting regional, state, and national analysis and decision support.

- ⇒ Support efforts to integrate local parcel data for the state and to develop plans for long -term sustainability of this data.
- ⇒ Support efforts to update the state's land cover dataset and to develop a maintenance plan for this dataset.
- ⇒ Continue to develop and promote the business case for an ongoing statewide aerial photography program.
- ⇒ Continue to build participation in ControlFinder and PLSSFinder. Foster the development of improved data models and best practices for survey control and PLSS data. Promote the Finders as the definitive source of survey control and PLSS data for the state.
- ⇒ Take steps toward becoming the state steward for an integrated, seamless statewide PLSS data layer.
- ⇒ Continue efforts to develop a statewide, cartographic database for mid-scale mapping, with the goal of publishing map services and datasets in a variety of formats.

Support and Engagement. Continue efforts to engage, inform, coordinate, and support the Wisconsin geospatial community.

- ⇒ Continue our leadership and coordination role in professional geospatial associations and organizations.
- $\Rightarrow$  Advocate for issues and policies that support and improve the state's geospatial community.
- $\Rightarrow$  Strengthen our social media strategy as a mechanism for engagement and information delivery.
- ⇒ Develop and implement an outreach plan to highlight the relevance and importance of Wisconsin initiatives, both within the state and beyond.

**Research and Innovation.** Engage in applied research and innovative projects to develop and disseminate information about new methods and practices.

- ⇒ Continue to advocate for and develop open source geospatial applications for practical and educational purposes.
- ⇒ Lead efforts to develop methods, best practices, and standards for Web cartography, GIS-based cartography, and digital mapping.
- ⇒ Engage in applied service projects that provide opportunities for innovation and applied student learning.
- ⇒ Seek opportunities to engage in funded research projects either as partner or lead. Publicize research results at conferences and in publications at the state, national and international levels.

 $\Rightarrow$  Engage faculty and staff across the state to help span the gap between pure and applied research, for the benefit of Wisconsin citizens.

**Data Discovery.** Improve online data discovery and access for the Wisconsin geospatial community and citizens, with the goal of providing efficient and timely access to best available data sources.

 $\Rightarrow$  Continue to work closely with the Department of Administration to assess and

report on geospatial data status and access in the state.

- ⇒ Make progress toward defining requirements for a Wisconsin spatial data system, including policies and procedures, stewardship, archiving, sustainability, and system design. Work closely with the Department of Administration on any reinvigorated effort to develop the Spatial Data Repository. Advocate for open access to Wisconsin geospatial assets.
- ⇒ Reconceptualize the provision of information about open access to Wisconsin GIS data. Partner with the Robinson Map Library (and other campus libraries) to provide online GIS data access for research and education for the academic community. Reengineer the SCO "Find Data" pages to point users to online data holdings. Retire WiscLinc and engage with any state agency geoportal efforts or initiatives.
- $\Rightarrow~$  Undertake the rebuilding of the air photo catalog in cooperation with Robinson Map Library.
- $\Rightarrow~$  Reengineer the Finder applications to make use of new Web mapping frameworks.
- ⇒ Explore the feasibility of combining the PLSSFinder and ControlFinder datasets and applications to streamline online data access and reduce redundancy in software development.
- $\Rightarrow~$  Continue to work with the Robinson Map Library to seek sustained funding and growth of the online Wisconsin air photo repository.

### **SCO Information**

#### **Permanent Staff**

Howard Veregin, State Cartographer veregin@wisc.edu 608-262-6852

Jim Lacy, Associate State Cartographer lacy@wisc.edu 608-262-6850

Brenda Hemstead, Data Services Professional hemstead@wisc.edu 608-263-4371

AJ Wortley, Senior Outreach Specialist <u>lwortley@wisc.edu</u> 608-265-8106

**Tim Kennedy,** Admin Program Specialist <u>ttkennedy@wisc.edu</u> 608-890-3793

In August 2013, Tim Kennedy will be leaving the SCO for a tenure-track position at UW-Stevens Point. We wish Tim all the best and hope to work with him in the future.

#### **Affiliated Staff**

Jay Scholz, IT Manager, Science Hall Susan Sauer, Financial Specialist, Geography Dept. (The SCO provides support to the Science Hall IT Manager and shares a Financial Specialist with the Geography Department.)

#### **Student Assistants**

John Czaplewski Josh Gregg Scott Moucka Kim Ness Steve Paling Maira Utebaliyeva David Vogel

#### **Student Interns**

**Margaret Raimann** 

#### Funding

The SCO is a unit within the Department of Geography, in the College of Letters & Science, at the University of Wisconsin-Madison. The SCO receives most of its funding from an annual base budget allocation from the College. In addition, ongoing financial support from the Division of Continuing Studies has facilitated the SCO's role in promoting the Wisconsin Idea through presentations, workshops, and participation in a variety of professional organizations. Grants and contracts make up the remainder of the SCO's funding sources.

#### **Contact Information**

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#### **Committee on State Cartography**

The Committee on State Cartography (CSC) is the SCO's steering committee, providing advice and feedback to the office. CSC members are drawn from the SCO's broad user community, and are appointed by the Dean of the College of Letters & Science at UW-Madison.

Traditionally, the CSC has been chaired by a faculty member in the Department of Geography at UW-Madison. Beginning in August 2011, our newest CSC chair is Rob Roth. Additional CSC members are as follows:

UW-Madison Non-Geography: Mutlu Ozdogan (Forest and Wildlife Ecology)

Higher Education: Ian Muehlenhaus (UW-La Crosse) State Geographic Information Officer: Curtis Pulford National Geodetic Survey Advisor: John Ellingson Local Government (LION): Fred Iausly (Dane County) State Government (SAGIC): Tony Van Der Wielen (Legislative Technology Services Bureau) Federal Government: Kent Peña (Natural Resources Conservation Service)

External At Large: Nancy von Meyer (Fairview Industries) Private/Non-Profit At Large: Adam Derringer (Ayres Associates)



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# Annual Report 2012-13

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