

## First GIS-Day set for November 19

by Anna Weitzel

The National Geographic Society, the Association of American Geographers, and Environmental Systems Research Institute (ESRI) are starting a new tradition—GIS Day. Set for November 19, the Friday of the annual Geography Awareness Week, GIS-Day 1999 is a formal opportunity for local GIS users to host various events aimed at introducing geospatial technology to students and community members. Since 1987, the National Geographic Society has sponsored Geography Awareness Week to promote geographic literacy in schools, communities and organizations, with a focus on the education of children.

Over 1,300 organizations worldwide have volunteered to give demonstrations, host open houses, visit classrooms, or share their expertise with the public in some other way. As of October 25, 19 GIS-Day events have been scheduled in Wisconsin. A half-dozen involve educational demonstrations in elementary and secondary schools, and another half-dozen will be open houses and demonstrations hosted by county and city GIS operations. Additionally, the Chippewa Valley Technical College, UW-Eau Claire, and UW-Milwaukee plan to host an open house and provide GIS demonstrations. To search for an event in your area, visit the GIS-Day 1999 website at [www.gisday.com](http://www.gisday.com).

Governors in a number of states have signed GIS-Day proclamations. We anticipate that Governor Thompson will issue such a proclamation for Wisconsin.

If you wish to host or sponsor a GIS-Day event, it is not too late to do so. The GIS-Day website given above has a wide range of materials for download including logos, posters, signs, fliers, teaching and demo outlines, invitations and agendas.

Also, the SCO is contributing to the celebration by offering a new web page dedicated to GIS Day. The section features a listing of events around Wisconsin and links to various regional GIS projects. Users can also learn about the basics of GIS technology, its applications, and its history. Visit our special GIS Day segment at:

[feature.geography.wisc.edu/sco/gis/gisday.html](http://feature.geography.wisc.edu/sco/gis/gisday.html).

### Late breaking news . . .

#### **Governor signs budget**

October 27, 1999 - Governor Thompson today signed the long-delayed state budget. His action contained 255 vetoes which included striking a two year extension to the Land Information Board's sunset, retaining the current September 1, 2003 date, and removing the authority of the board to assess state agencies for costs associated with soil surveys and mapping.

Despite the vetoes, the signed budget preserves the overall scope of the statewide soils mapping and soil survey initiative which is a 6-year cooperatively funded program with the USDA-Natural Resources Conservation Service. In his veto messages, the Governor requested the WI Department of Administration and the board to work cooperatively to complete the soils project.

For more information on the budget, see page 3 and check the "News" section on the SCO web site.

#### **Highlights of this issue....**

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## WLIB News

by Ted Koch

Since the previous issue of the *Bulletin*, the Wisconsin Land Information Board (WLIB) met on August 18 and September 15. The board's next meeting is scheduled for November 17 in Madison.

### New draft grant rule approved

In August, the board approved the draft of a new administrative rule which details how the board will administer grant-in-aid funds to local governments in the future. The current grant rule expired two years ago. In the interim, the board has been managing grants on an emergency rule basis.

The draft rule will be forwarded to the WI Dept. of Administration for signature and the Legislative Council Rules Clearinghouse. The board plans to conduct four public hearings in the near future on the proposed new rule, with the hope that the rule will be approved by the Legislature in early 2000, with an anticipated effective date of March 1, 2000.

### County plans approved

In September the board approved nine updated county land records modernization plans. The nine counties are the first to have second generation plans approved. The initial plans of all 72 counties were approved between 1991-1993. County plans are supposed to be formally updated every five years, although a plan may be amended at any time.

Counties receiving plan approval included Bayfield, Buffalo, Burnett, Dodge, Door, Eau Claire, Langlade, Menominee and Oneida. Collectively, these plans revealed that these nine counties are setting ambitious goals for the next five years, and have made major progress in all areas of land records modernization since 1992. Their accomplishments include significant data development, the use of land records data across many county departments, and the use of advanced technology.

The nine approved plans plus 43 additional county plans awaiting board ap-

proval may be viewed at the Office of Land Information Services' website (look under *Wis. Land Information Program*): [www.doa.state.wi.us/olis/](http://www.doa.state.wi.us/olis/)

The deadline for submitting revised plans to the board was September 1. Additional plans will be brought to the board for approval at its next meeting in November.

### Wisconsin Land Information System resolution passes

At its September 15 meeting, the board passed a resolution calling for a WLIB and Wisconsin Land Council (WLC) to form a jointly chaired task force to study, develop, and recommend how Wisconsin should proceed to implement and fund a Internet-based, integrated land information system that is easily accessible to a wide variety of users. This resolution was presented at the WLC's meeting on September 23 (see story in next column).

### Board discusses strategic planning

At its September 15 meeting, the board discussed plans for a strategic planning effort to begin this fall. A specific schedule will be developed at future board meetings with a target date of early 2000 for a draft strategic plan available for review.

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## WLC News

The Wisconsin Land Council met on August 19, September 23 and October 14 in Madison. Future meetings are scheduled for November 10 and December 9, also in Madison.

### New officers selected

At the September 23 Council meeting, Executive Director Mike Blaska announced that Tim Hanna has been appointed Council Chair by Governor Thompson. Hanna, mayor of the City of Appleton and previously the Council's Vice-Chair, succeeds Mark Bugher. In mid-September, Bugher left his post as Secretary of the WI Dept. of

Administration to head the University Research Park in Madison.

At the October 14 meeting, members elected Terry Mulcahy to be the new vice-chair. Mulcahy is Deputy Secretary of the WI Dept of Transportation, and DOT's representative to the Council.

### Resource Working Group submits preliminary report

The Council's State Agency Resource Working Group has compiled a preliminary draft report outlining the statutory land use roles of state agencies. The report classifies nearly 50 state land use roles into three levels. Not all agencies or their roles have been analyzed. The Working Group will submit more detailed reports later this year.

### WLC accepts Technical Working Group report

At its October 14 meeting, the Council voted to approve three recommendations from the report prepared by the Council's Technical Working Group regarding the development of a state-wide computer-based land information system (WLIS) (That report was completed in May. See the Summer, 1999 issue of the *Bulletin* for details on WLIS).

The three recommendations cover implementation, policy and the future of the Technical Working Group. Previously, on August 19, the Council had approved the report's recommendations on the system's four architectural components—computer applications, data, technology, and organization. With its October 14 action, the WLC completed its approval of the report.

To further the development of WLIS, the Council voted on to create a ten-member project team to accomplish the implementation steps listed in the report, and forward its proposals to the WLC and WLIB no later than July 1, 2000. That timetable would enable proposals to be considered for inclusion in proposed state budget for the 2001-2003 biennium. The chairs of the WLC and WLIB will select the project team.

## State Cartographer's Commentary

### **High resolution, but at what price?**

by Ted Koch

With the successful launch in September of IKONOS, the first commercial, high-resolution imaging satellite (see page 9 for additional details), the dawn of a new era of aerial image products is finally here—at least that is what many are predicting. IKONOS has the capacity to collect one-meter resolution black-and-white images, and four-meter resolution color images world-wide.



(courtesy: Space Imaging, Inc.)

Up to this point, the best resolution satellite images have been in the 5-10 meter range. And, with at least two other companies planning similar satellite launches within the next year, competition between these imaging corporations may become strong.

The impact that high resolution products will have on mapping and geographic information activities is still difficult to judge. Although Space Imaging, Inc., the company that launched the IKONOS satellite, will not begin to sell its images for another 60-90 days while the satellite is tested and calibrated, there are reportedly many buyers waiting in the wings for the first products. Maybe not surprisingly, the initial markets for high resolution imagery are predicted to be large corporations such as the news media, and governments, particularly foreign governments.

### **National governments will benefit**

Governments, both the US and foreign, will be using commercially produced imagery for military and other purposes; however, the satellite companies are under the veil of "shutter control" which means the US government can order the commercial companies to stop imaging or not distribute images over areas of security concern. That censorship, if imposed, could potentially cost the satellite companies significantly.

In the US, the IKONOS launching changes the role of the government and private sector in satellite programs. While the federal government still launches satellites such as Landsat 7, the federal government will also become a commercial buyer and end user, similar to what state and local governments have been for a long time.

### **The cost factor for smaller customers**

For state and local governments to become paying customers, the commercial companies will have to develop marketing strategies on product licensing and costs that are compatible

and competitive with government requirements. Since commercial companies have to successfully market their products, the potential that they will supply imagery that is immediately useful to users is high. (This is in contrast to the imagery from the public Landsat 7 satellite which is distributed without terrain correction, thus requiring a purchaser to obtain or perform additional processing steps before the imagery is useful for most applications.)

However, commercial imagery's proposed licensing restrictions and cost levels will make it a poor buy for most state and local governments. This will have to change before the potential of commercial satellite imagery is realized for those types of users.



## Veto status of soil mapping unknown

### **1999-2001 budget sent to Governor**

by Ted Koch

The 1999-2001 Wisconsin State Budget passed the legislature on October 6 and was sent to the Governor for his action. As of this writing, the Governor's Office had not announced any specific action regarding the budget; however, he is expected to announce any vetoes and sign the document before the end of October. Although the state was required have its budget in place at the beginning of the fiscal year on July 1, disagreement within the legislature on key provisions has delayed passage for more than three months.

### **Will vetoes affect mapping provisions?**

The budget package before the Governor contains the state-wide soil mapping provision (see our Winter, 1999 issue for details) of \$4.2-million state expenditure over the next six years. There have been indications that the governor would veto this language, although no reason has surfaced from any direction.

### **Sunset extension and "Smart Growth" included**

Also, the budget contains language extending the Land Information Board sunset date by two years to September 1, 2005. Additionally, the budget contains a "Smart Growth" land use planning initiative which includes a land use planning grant program for local governments which would be managed by the Wisconsin Land Council.

Since the Governor has broad authority of line-item veto on proposed budgets, and since the legislature has historically never overridden any of the governor's vetoes, the final signed document may contain many differences from the version submitted to him by the legislature. To find out what appears in the final budget as enacted, check the "News" section of the SCO web site.



# Clearinghouse Connection

*Peering into the future*

## Community Clearinghouse

by AJ Wortley

With a year remaining in the Wisconsin Land Information Clearinghouse (WISCLINC) contract, we are fixedly gazing into our crystal ball to prepare for what the clearinghouse may be as we approach 2001. This planning seeks to ensure that WISCLINC succeeds in fulfilling its role as a clearinghouse for the land information community.

Functionally, of course, the clearinghouse will continue to provide access to geospatial metadata and data for Wisconsin as well as additional resources regarding metadata, other sources of data in Wisconsin; and generally strive to become the gateway to discovery of digital geospatial data that exists in Wisconsin. But the real question is how to ensure that the clearinghouse, as a whole, becomes a tool that best serves its primary community.

### Community vision

When speaking of community, it is important to recognize that WISCLINC serves the on-line side of



the community. That is, the clearinghouse appears in the form of a web site accessible over the Internet. A quick Internet search on the word 'clearinghouse' yields a long list of similar web sites labeled as "clearinghouses" of information for all kinds of communities. They range from entertainment and distance education clearinghouses aimed at the general public to many 'data', 'information', 'resource', and 'jobs' clearinghouses for various interests and professions.

Like WISCLINC, these clearinghouses help in discovering and sharing information at a speed previously unknown. As technology advances and more and more information is generated, we need to keep focus on what is most recent, and sometimes more importantly, what users find useful in a similar situation. A successful clearinghouse must continually provide this information and be able to adapt and update its strategy as the needs of the community change. And the only way to truly stay in touch with that community—the land information community—is through communication.

### The key is communication

Communication is nothing new; it had to exist for the community to form. What has changed is how fast we communicate, and how we can convey information to the whole community at once.

Current examples of communication through WISCLINC include some data holdings through metadata cataloguing and (soon) graphical communication of results of the WLIP's LIO survey performed in the last year. These few methods alone when magnified can open the doors of opportunity for collaboration and cooperation in sharing digital data itself as well as data production methods, distribution policies, and much more. As the vision becomes clearer as to how to best create these opportunities, more focus will land on what the community needs first. Without this attention to what a large portion of the community needs, a clearinghouse can rapidly become defunct. The Internet is cluttered with such derelict web sites.

### Come on down

Consider this an invitation to fire up, wire up, and surf out to visit the WISCLINC Clearinghouse website (the URL is on the last page of the bulletin or link from the SCO website.) If you have not ever visited before, take a close look to see what resources exist that might benefit you and your organization. If you have visited before, consider posting some metadata describing some of your data holdings.

If you are looking to create some metadata, look no further. In fact, take a look, then give us a call; we would be happy to help you get started. Whatever your experience is with the clearinghouse, please recognize that this project was funded by the Wisconsin Land Information Board with the land information community in mind. If you have a suggestion or cannot find what you seek, we encourage you to communicate with us directly.

### What does the future hold?

Our crystal ball is only so effective. Our contract lays out the general goals of the clearinghouse approved by the WLIP, but it is up to us to create the paths necessary to reach those goals and make the vision a reality. We can achieve this vision only with your input and support.

*Several more scheduled before March*

## Metadata workshop series begins

by AJ Wortley

Ah....metadata. Not only my favorite word, but for a pleasant first Friday in October, the favored topic of discussion by sixteen members of Wisconsin's GIS community.

Yes, the first in a series of four full-day Wisconsin metadata workshops has come and gone and was a positive experience for all based on post-workshop feedback. We received comments from evaluation forms describing the workshop as 'organized', 'very helpful', and 'professional', and crediting it with providing 'ready reference materials' that will be 'very useful in helping build good metadata.'

### First workshop held in Madison

We all gathered on October 8 at the Land Information and Computer Graphics Facility (LICGF) of the UW-Madison. The workshop was led by Wisconsin metadata workshop veterans David Hart (LICGF) and Hugh Phillips (3001, Inc.), joined by Jerry Sullivan (OLIS) and myself.

We presented a compilation of many of the metadata resources currently available and customized to better fit our Wisconsin audience and the needs of metadata producers today. Hugh Phillips wasn't carrying his metadata toolbox this time, but participants left with a toolbox of their own. It came in the form of a binder and CD-ROM produced for the occasion and filled with handy references and utilities to enable everyone to take the content of the workshop back to their respective shops. Many participants also left with their own metadata document for particular data or to serve as an organizational template for future efforts.

The final tally found sixteen of twenty possible seats filled. David Hart took an introductory poll of those present finding attendees representing a diverse cross section of the community including city government, state agencies, the university, a regional planning commission, and the private sector. Attendees also occupied equally diverse positions within those organizations. From the post-workshop evaluations, we received good reviews with positive feedback and constructive comments for continually improving the remaining three workshops.

### Hands-on, with Wisconsin in mind

We broke the day into two segments. The morning was a series of presentations geared toward all levels of metadata understanding from the introductory concepts to walking through an actual metadata document created by Winnebago county. The Winnebago county metadata was later used as a guide for



presenting the federal FGDC metadata standard with a local look and feel. The author of the example, Dave Levine, was in attendance and available to offer his personal experience.

After lunch we followed a different format. Hugh Phillips gave a short demonstration on a common set of metadata tools followed by a mentored opportunity for attendees to use those tools to begin creating metadata themselves. We only interrupted the hands-on exercise long enough to supplement it with another short software demonstration and the wrap-up.

Metadata creation efforts were moderated by six mentors providing plenty of personal assistance as well as an open forum for discussion ranging from use of the metadata editor to what constitutes data quality. In the end, nearly half of those responding listed the exercise as one of the most valuable portions of the experience.

### But wait, there are more to come...

A grant from the Federal Geographic Data Committee (FGDC) is the primary funding source for this series of four workshops, of which there are still three to come. Twenty-one governmental units from local to state agencies signed on to the grant agreement. Nine of these cooperators were either in attendance or involved in presenting the first workshop. It is worth noting that seven additional organizations from around the state were represented. The workshops are coordinated to accommodate as many as possible, so look into the coming dates if you are at all interested. Additional offerings of the metadata workshop are scheduled at or near the next two Wisconsin Land Information Association (WLIA) conferences (December 2 in Waupaca; late February in Waukesha), with another falling on January 28 in Eau Claire. With each workshop building on previous experience and suggestions, there is no better time to take advantage of this training opportunity. Contact me at the SCO if you want details.

### A handier way to get information

## **SCO refreshes its website**

by Anna Weitzel

Not only have we added some useful new sections to our website, but we've also made older sections easier to use by giving them a new look.

## **Little changes go a long way**

If you happened to have downloaded this copy of our *Bulletin* off our website, then you may have already seen the colorful changes we made. To help you easily navigate through our bulletin archives, we've taken care to highlight links to PDF versions of the *bulletin* and summaries of current and past issues.

Also, the satellite imagery section has a new look to make the search for satellite data easier. Be on the look out for similar changes in the geodetic section coming later this year.

## **New resources for hunters and anglers**

We've added a Fishing and Hunting Maps segment to the SCO website. Here you will find sources for hunting guides and lake maps including some inventories that are available on CD-ROM. Stop by the Recreational Maps section before you plan your next outdoors trip.

## **What's next?**

On our drawing board is a site-wide searching mechanism. This will help you more quickly find things on our web site that are several links removed from the front page, or see what different pages might relate to a particular topic.

Another section in work will profile the SCO's history, now that we have passed our 25<sup>th</sup> anniversary. We'll include some scanned pictures from the "early days".

### Statewide data at 1:500,000-scale

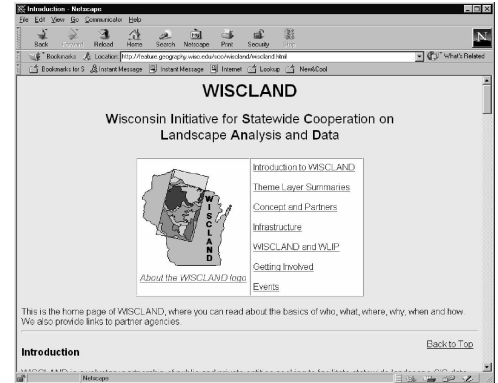
## **Printing date near for land cover map**

by Bob Gurda

A richly colored and finely detailed map of Wisconsin's land cover will be available within weeks. It is based on the WISCLAND land cover database that was interpreted from Landsat satellite imagery. From that database, the map uses thirteen generalized categories that together depict many of the patterns in the state's land cover.

At 1:500,000-scale, the map will measure about 42 x 50 inches. It will be available flat (rolled for shipping) from the SCO as well as the Wisconsin Geological and Natural History Survey. We expect the price to be about \$10.00.

The map includes notes on how the map was made as well as interpretive notes that help identify and explain many of the features and patterns on the map.



Check the SCO web site for news on this forthcoming product, or give us a call to inquire about its expected delivery date.

The Wisconsin Land Cover maps is a collaborative effort of several WISCLAND partner organizations. For information on WISCLAND generally or on the land cover database and map more specifically, visit the SCO website and navigate to WISCLAND.

### Let our fingers do the walking for you

## **Use the SCO's web site to save steps!**

by Bob Gurda

You probably have noticed that we include URLs (world-wide web addresses) along with some articles in this newsletter. You can simply start up your web browser program, type in the address we provide, and begin "surfing" to your chosen destination to gather details, images, and updates that we can't carry here in their entirety.

## **Take a short cut**

However, there's an easier (and potentially more productive) way to do the same thing. All you have to do is visit our web site and click on live links that we have created to support what you are reading here in print.

Those links are included in our overview of each issue of the *Bulletin*. Look under "New" which you can reach from our home page (the top of our website, the URL for which is listed on page 16 of this publication). There you will find a sentence or two about each article, and a linked URL (or several) where appropriate.

## **Find additional guidance this way**

Where major news has emerged since we printed the newsletter, on the website's *Bulletin* overview we will provide additional URLs that you won't find here in print.

For other news stories that don't necessarily relate directly to articles in print here, the "New" section is also the place to visit; look under "News Briefs."



# Private sector, professional and public service

*For this issue we visited Fred Halfen of Ayres Associates' Madison office. Fred was recently named Regional Vice President of the Madison office, where he has served as Vice President of Photogrammetry for a number of years. Ayres Associates is headquartered in Eau Claire. Fred was also appointed to a seat on the Wisconsin Land Information Board in 1998 by Governor Thompson, and has been very active in a variety of professional associations.*



skills and knowledge, but an ability to evaluate and solve problems that is so critical to our work.

***You've seen quite a series of improvements in photogrammetric equipment over the years. Will soft-copy approaches, available to most anyone with a powerful computer, undermine your primary business?***

The evolution in this area has been remarkable, that's for sure. We have been aggressive in pursuing digital approaches; we had the first two Intermap Stereoplotter workstations produced. They cost \$50,000 each and we had them connected to our company's mainframe computer in Eau Claire via a phone line! Now, all our computers are located right here, and with all the technical improvements our staff produces at least three times as much as we did back then.

We are actively involved with the soft-copy process, and it's not yet so simple that many people will want to try to use it. There are some formidable obstacles that researchers need to deal with; right now some of the automated data-capture features work over only about 50% of the landscape. I do think that the first serious use of soft-copy by our clients themselves will be in updating limited areas of existing mapping or orthophotos.

***As a volunteer in professional associations I have met and worked with all sorts of fascinating and influential people.***

***How has digital orthophoto work changed your business?***

This has been one of several revolutions in our business, along with digital mapping and GIS. These approaches have had far more impact than the steady improvements in photogrammetry equipment and software. We don't produce merely maps any more, rather integrated geo-spatial databases tied to an accurate image base. As a result, we are in more of a partnership with our clients rather than the old mode of responding to RFP's as they come in the door.

***You, and your management staff, are deeply involved in professional organizations. Is this a matter of personal choices, or company policy?***

It is our company policy to encourage and support this type of service. We also choose employees who are interested in carrying out this goal as a way of being a good corporate citizen. On a personal level, I have found my participation (in URISA, GITA (formerly AM-FM Intl.), WLIA, et al) to be very fulfilling. I have met and worked with all sorts of fascinating and influential people, and I have learned a great deal.

***WLIS won't work as a centralized system; it would be a waste of the taxpayers' money.***

***A recent challenge for you has come as a member of the Wisconsin Land Information Board. What observations do you have so far, especially since you have been a member of its Executive Committee since January?***

The board faces many challenges, but has weathered storms in the past with the support of a strong constituency. Now, a major problem is that three seats are vacant, awaiting the governor's action to appoint replacements. Local government is under-represented as a result.

I am happy that the board has been less controlling of local governments than was the case a few years back. I see the great potential of local government emerging more and more every day.

The most recent challenge in this vein is the controversy over how to build and operate a state Land Information System (WLIS). I was honored to serve as a member of the Wis. Land Council's Technical Working Group. That group produced a remarkable report, especially considering the time pressure we were operating under. Yet some people in state government seem to discount the advice in that report, and I believe that to be unfortunate.

It is clear that building that system will be a major undertaking and will require tremendous coordination. But it won't work as a centralized system, plain and simple; that would be a waste of the taxpayers' money.

***You graduated in Geography from UW-Eau Claire. How did you come to head a major photogrammetry operation?***

I started in Madison with a company named Alster & Associates, doing manual cartography. Along the way I got involved in stereo-compiling which brought me to contract work for USGS, developing topographic map sheets. I did both compiling as well as scribing. Eventually I became a project manager on the USGS contracts.

***Most of our staff are products of the University of Wisconsin System, and I can't say enough about how well they are prepared when we hire them.***

Ayres Associates, an architectural and engineering firm which then had no photogrammetry operation, bought Alster & Associates in 1978 and I continued as part of that team, advancing to production manager and then beyond.

***Given the current shortage of skilled labor, are you struggling to find qualified staff for your operation?***

We're doing pretty well. We don't necessarily hire people who already know their way around photogrammetry equipment. In fact, my experience is that people with a solid college education in the general field of spatial information can be trained on the equipment very successfully.

Most of our staff are products of the University of Wisconsin System, and I can't say enough about how well they are prepared when we hire them. It's not just their specific

### Congress declines to support \$40M proposal

## **C-FIP funds removed from federal budget**

by Bob Gurda

The Community-Federal Information Partnership (C-FIP) initiative will not be funded as part of the current federal budget. Although the federal budget has not yet been finalized as this issue goes to print, we have heard that the Congress removed C-FIP from consideration several months ago.

The basic idea of C-FIP is that a number of federal agencies would fund local efforts to collect and use information that benefits and the management of both local and federal programs. We covered the proposal in several issues of this newsletter over the last year (October 1998 and Winter 1999).

While not obviously controversial as an example of federal investment in local infrastructure, C-FIP is strongly supported by Vice President Gore as part of his Livable Communities Initiative. As a result, the Congress' action may be rooted more in partisan considerations than policy concerns, especially considering the upcoming presidential election.

The Dane County pilot project, one of six across the country initiated in 1999 to showcase the kind of partnerships that would be expanded under C-FIP, is moving forward despite this summer's congressional action.

(source: *Federal Geographic Data Committee*)

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### Panel considers future of USGS facility

## **Aerial camera calibration report released**

by Ted Koch

A draft report covering the future of aerial mapping camera calibration and related issues has been released by an advisory panel to the U.S. Geological Survey (USGS).

Since 1973, the USGS has operated the Optical Science Laboratory, serving as an official and neutral calibration facility for aerial mapping cameras in the US. Having a recent camera calibration report is a common requirement appearing in most aerial photography and digital orthophotography acquisition contracts.

Although the USGS has charged modest fees to camera owners for calibration services and reports, it has not recovered maintenance and equipment replacement costs. With the advent of digital aerial cameras and other airborne digital imaging systems the future role of the calibration lab, and its modernization, has come into question.

## **Panel urges continuation and enhancement**

The advisory panel, which was convened with the assistance of the American Society for Photogrammetry and Remote Sensing, has recommended that the USGS continue to calibrate film mapping cameras; work with industry to develop

standards for calibrating digital cameras; beginning next year, budget for the design, construction and operation of a digital camera calibrator facility; and research and implement a process of calibrating cameras under actual operational conditions.

## **Report and comment site available on the web**

In addition to its recommendations, the report includes discussions of the purpose for camera calibration, standards and specifications, reviews current imaging technology developments, and trends in imaging systems. The draft report can be viewed on the web at

[www.asprs.org/asprs\\_ccr\\_draft.html](http://www.asprs.org/asprs_ccr_draft.html).

Comments on the report can be made to the ASPRS Camera Calibration Report Discussion Forum at

[www.asprs.org/camera.html](http://www.asprs.org/camera.html).

(source: *ASPRS*)

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### New sensor delivers finer detail

## **Landsat 7 images now available**

by Bob Gurda

The U.S. Geological Survey is now filling orders for images collected from the Landsat 7 satellite which was launched in April.

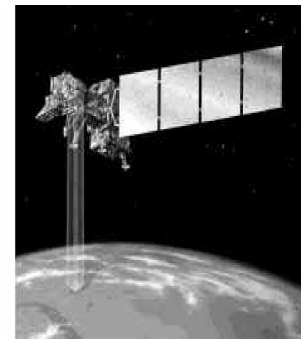
The primary difference in the images, as compared to what has been available from Landsats 4 & 5, is that the new images are crisper in the black-and-white channel (15 meters versus 30 meters previously).

Another difference, though, is that prices are now much lower than for images from the older satellites. The reason is that Landsat 7 is being operated completely within the public sector, while recent Landsat 4 & 5 images continue to be marketed through a private-sector vendor.

At present the USGS does not plan to offer Landsat 7 images that have been terrain corrected. This common pre-processing step is to be handled by private sector firms who will re-sell products on a market basis.

It is important to realize that Landsat imagery is much coarser in resolution than what is commonly available as digital orthophotos. The strength of Landsat data is its information captured from the (invisible) infra-red portion of the spectrum which can be analyzed by image processing software to reveal categories such as vegetation types.

To learn more about Landsat 7 and to preview selected images, visit the Landsat web site: [landsat.gsfc.nasa.gov/](http://landsat.gsfc.nasa.gov/)





*Space Imaging enthused by perfect launch*

## **IKONOS succeeds on second try**

by Bob Gurda

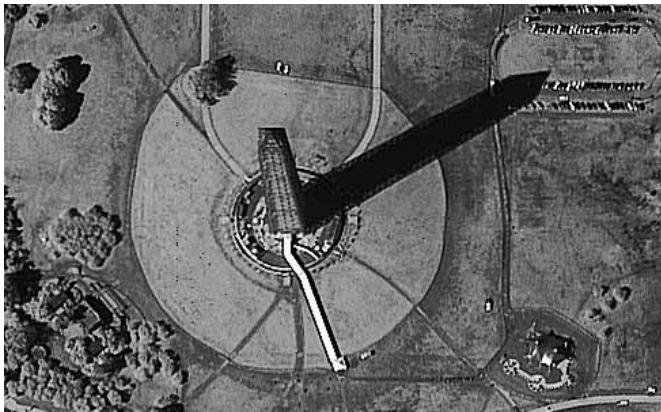
September 24, 1999—a day that will live in memory. At least for people close to Spacing Imaging, Inc., the successful launch that day of their IKONOS remote sensing satellite will be something they will never forget.

IKONOS is the first American commercial satellite designed to collect high-resolution imagery, and is especially meaningful since the company's first launch attempt (last spring) was unsuccessful and a competitor had a similarly bad experience. The instrument will collect images in black and white (at 1-meter resolution) and multi-spectral mode (4-meter), in each case providing crisper images than any previous commercial satellite.

Space Imaging, a privately-held company in Denver, CO, indicates that it expects to begin delivering products from IKONOS around the end of the calendar year. You can view sample images at:

[www.spaceimaging.com/IKONOS/firstimage.htm](http://www.spaceimaging.com/IKONOS/firstimage.htm)

(source: Space Imaging)



*Portion of an IKONOS image showing the Washington Monument in Washington, D.C.*

*New technologies emerging*

## **Elevation data set for break-out?**

by Bob Gurda

Many of us are becoming familiar with digital elevation data. These are now available for the entire state, although in various accuracies and formats.

However, newer approaches promise to deliver more detailed and more accurate representations of the terrain. While all of the bugs haven't been worked out yet and the prices are still high, there is great potential that may blossom into real opportunities fairly soon.

### **The currently available sources**

DEMs (digital elevation models) and DTMs (digital terrain models) are widely available today. The DEMs are generally produced by extracting elevation samples from sources such as contour lines on published maps; for example, the USGS 30-meter DEMs—at least the newer ones—are derived from the contour lines on 1:24,000-scale USGS quadrangle maps.

While DEMs are a regular grid of points (for instance, spaced at 30-meter intervals), DTMs have an irregular spacing, with points clustered more closely where the terrain has more variation. Many DTMs are produced in conjunction with engineering studies (e.g., highway design) or as a basis for digital orthophoto production. Depending on the number of points (which is the major factor influencing production cost), a DTM may only suffice to produce an orthophoto meeting certain accuracy standards, or may capture a richer level of terrain detail to support floodplain modeling.

### **What's on the horizon**

One way to quickly produce densely spaced digital elevation information is by image correlation processes that are part of what is being called "soft-copy photogrammetry". Here, the computer matches patterns in two (scanned) overlapping aerial photographs, and from these reconstructs the terrain. However, aerial photographs can't always reveal the bare ground surface well. Buildings, forests, and areas that have very smooth tones in the photo image all cause problems.

Higher tech approaches involve active sensors (which beam a signal to the ground and then measure the reflection). These instruments are carried in aircraft and are based on radar or LIDAR (Light Detection And Ranging).

At this point, radar costs less, can operate despite clouds or darkness, and penetrates some vegetation. LIDAR captures greater detail but is cost-prohibitive over large areas.

### **Preparing for future choices**

These new techniques and instruments hold promise for state-wide, detailed elevation information that would serve many needs. Opportunities may arise for organizations to pool resources in order to acquire this kind of information over large areas. Now is the time to start thinking in these directions.

**Q:** *How many other state cartographers are there in the U.S.?*

**A:** These days there are very few, but even at its peak there were only a handful. The institutional background is different in every state, so how these positions were established makes for a variety of stories.

Wisconsin's state cartographer position was created by the legislature in 1973, perhaps the earliest such position in this country. It has always been 100% supported by state funds, and has been located within the University of Wisconsin-Madison that entire time.

For a brief history of how our office has evolved over the 25 years to support the mission of the state cartographer, visit our web site and scan our new SCO history page.

In the 1980's, the U.S. Geological Survey promoted the concept of state cartographers, and particularly in western states where the federal government has large land holdings. As a result, several of those states established such positions, at least some of which were supported by USGS funds. We are aware that Oregon, Idaho, and Washington followed this path.

These state cartographers were housed in various agencies, but we don't believe that any of them were within universities. Over time the federal funding was reduced and either the states picked it up or eliminated the positions. Eventually, all of these positions vanished.

More recently, Arizona established a state cartographer position which is fully funded by the state. Over the last 10-15 years a wide variety of GIS coordination positions have been established in states from coast to coast, and some of these have roles similar to what Wisconsin's state cartographer has. Yet each is unique in its institutional setting, authority, and responsibilities.

Many of the people holding these positions work together on a national level through organizations such as NSGIC: the National States Geographic Information Council. The NSGIC website ([www.nsgic.org](http://www.nsgic.org)) provides a way to locate contacts in each of its member states.



**Q:** *I drove by some rural property and would like to find a map that shows who owns it as well as who owns the surrounding land.*

**A:** A plat book will probably serve your need. This is a book of maps, typically one page per survey township (an area about six by six miles), showing ownership across an entire county.

Most plat books are produced by private companies and sold directly or through local outlets. Often you can purchase these through an office in the county courthouse, or sometimes a private business such as a realtor or title company. Local libraries may have copies to borrow.

Note that, since 36 square miles are mapped on a single page, small land parcels cannot be shown. A plat book will indicate this with a notation such as "small plots".

Be aware, too, that the plat book only shows ownership as of a certain date. To determine more recent (or historic) changes in ownership, contact the county land information office. This is what the plat book publishers do when they update a volume.

More and more each year, counties and municipalities are using computerized systems to make their own maps of land parcels and other characteristics such as zoning, soils, wetlands, etc. However, to have a custom map made over a particular area you likely will have to pay a fee and may have to wait since county staff have to fit that extra work into their other duties. In some cases your best option could be to get copies of the computer mapping files and make the map yourself or find someone in the private sector to do it for you.

An interesting development is the recent emergence of plat books that are made from county computer mapping files. These may indicate lands open to the public better than a traditional plat book. A nice example is Price County, whose new plat book shows public forest lands (national, state, and county) in three shades of green and private forest lands open to the public in another color.

*Editor's Note: If you have a question, or had a question for which you found an answer that might be of interest to others, please let us know.*

### Clustering current events in map space

## Newsmaps.com creates a new geography

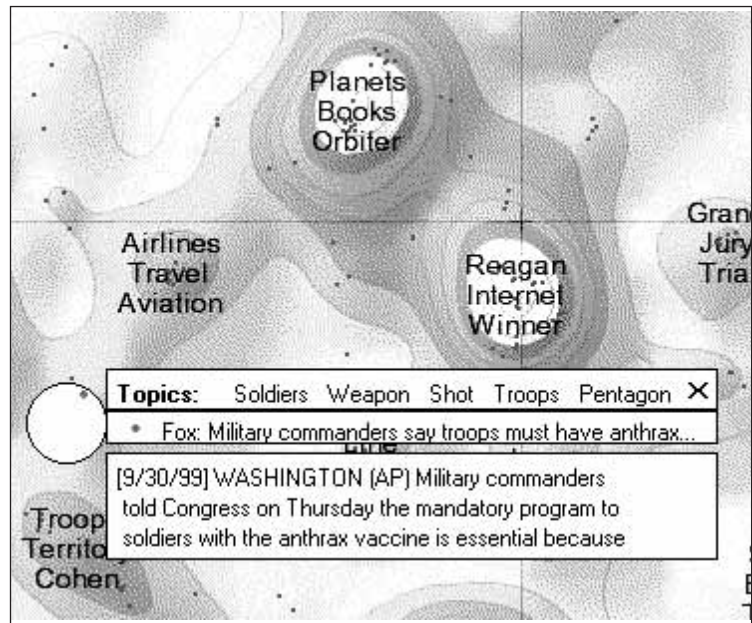
by Anna Weitzel

The daily news is an ever-changing landscape. Newsmaps.com recognizes this metaphor and takes it one step further by mapping out current events in the news and presenting them over the Internet.

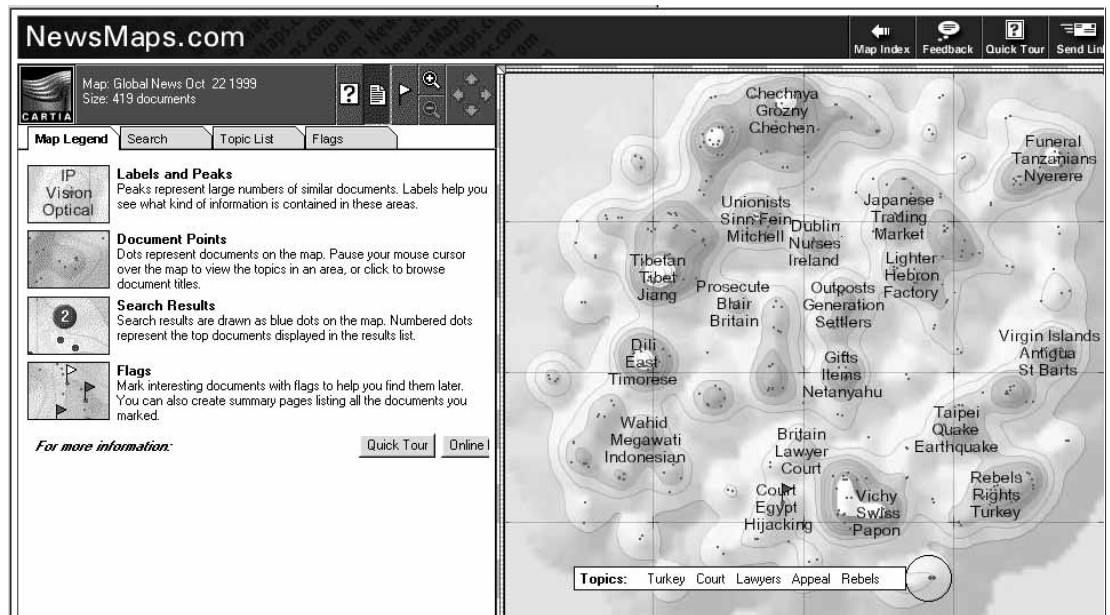
Newsmaps automatically scans several online news sources and then plots the stories according to topic on an interactive "topographic" map. Each story is placed in the vicinity of related stories, and a higher concentration of stories on one topic is designated by a higher "elevation". Users can zoom in on portions of the map, see headlines, or read a full story. Also, one can search the news for a particular string of words or topic, and the Newsmaps program will flag those stories on the map.

While the algorithms used to make these maps are somewhat mysterious to the user, Newsmaps nevertheless presents a unique view of the news. Users can quickly see what topics are currently dominating the daily scene and pick out any story of interest. There are separate maps for national, international, business, and technology news.

To experience Newsmaps' "Landscapes of Information", visit them at [www.newsmaps.com](http://www.newsmaps.com).



*News story capsules related to points on the map*



*A portion of a contour map of thematically clustered current events, from newsmaps.com*



*Resource mgmt. gets tech. boost*

## Upper Midwest RESAC sets sail

by Anna Weitzel

The course is set, and this fall the NASA-funded Upper Midwest Regional Earth Science Applications Center (RESAC) is on its way. The center is the collaborative effort of researchers at UW-Madison, University of Minnesota-Twin Cities, and Michigan State University. It will apply remote sensing and geospatial technologies to resource management issues in the upper Great Lakes states.



With a grant of \$1 million over three years, the Upper Midwest RESAC will investigate methods of modeling and monitoring environmental conditions in four focus areas and develop ways to transfer these techniques to resource managers and other potential users.

### Extending the technology

Considering the recent and upcoming launches of high-resolution sensing satellites, remote sensing technology and earth science research are advancing rapidly. However, beyond the laboratory the latest developments have not been used to their

full advantage because of difficulty in efficiently delivering the technology. In order to extend these mechanisms to a larger user community, NASA developed the Earth Science Applications Research Program (ESARP) which established seven RESACs across the nation through a competitive process. Each Center addresses specific questions within its region and distributes the results to partners in the community.

### Creating practical applications and partnerships

The Upper Midwest RESAC will address issues of environmental and economic importance in the following four areas: agriculture, forestry, water resources, and land cover and change. The center will apply biophysical process models and remote sensing data to questions within these areas. Some of the products that the center will create are an atlas of lake water quality, pest index maps, land cover and change maps, and forest inventories.

But the products are not the only goals of the center. The RESAC also has working partnerships in mind. Collaborating with various users, including farmers, forest managers, and many public agencies, the center will help to incorporate the modeling and monitoring tools into every-day management decisions by making them available over the Internet. In Wisconsin, organizations such as WISCLAND will be conduits for this type of outreach.

Agency staff and RESAC team members may also work together directly at agency offices or in university labs.

Furthermore, the consortium members hope to establish on-going programs and collaboration among the three universities involved.

For more information, see the Upper Midwest RESAC's web site at [resac.gis.umn.edu](http://resac.gis.umn.edu), or to learn about the other RESACs, visit NASA's Earth Science Enterprise at [www.earth.nasa.gov/apps/index.html](http://www.earth.nasa.gov/apps/index.html).

### Topics Being Investigated by Upper Midwest RESAC

Agriculture	Forestry	Water Resources	Land Cover and Use
Classification	Carbon Sequestration	Regional Hydrology	Land Cover Classification
Crop Yield	Classification and Inventory	Lake Water Quality	Land Cover Change Detection
Pest Indices	Growth and Yield Models		Pattern and Change Analysis
Soil and Grain Moisture			

*Association wades into a variety of topics*

## URISA makes strides in Chicago

by Bob Gurda

This summer's annual meeting of the Urban and Regional Information Systems Association (URISA) featured a wide range of sessions focused on important issues and emerging technology. As a professional conference it was satisfying in its choices and the depth of discussion that resulted.

I was pleased to see URISA offer a well-rounded program with high quality presentations. In recent years some professional associations in the mapping/GIS arena have struggled to fill sessions with speakers, and attendance has suffered in many cases. This year's event bodes well for the future of URISA which has come through some tough financial times recently.

### Wisconsin attendees plentiful

The Badger State has always been very active in URISA, and when the conference came to Milwaukee a few years back we were a large proportion of the attendance. This year I also saw dozens of Wisconsin people in Chicago, attending workshops and sessions, presenting workshops, and exhibiting their wares and work through vendor booths and Project Showcase. The Wisconsin Land Information Association was a featured cooperator in staging the conference.

Next summer URISA will hold its annual conference in Orlando, Florida.



*Service on NDOP leads to award*

## NSGIC honors Koch

by Bob Gurda

Our state cartographer, Ted Koch, received a Outstanding Service Award from the National States Geographic Information Council (NSGIC) at its recent annual meeting.

The award recognizes Ted's service as NSGIC's representative on the National Digital Orthophoto Steering Committee. He promoted the idea of NSGIC becoming the first non-federal member of the committee, and has been NSGIC's representative since the committee seat was created. For the last year he served as the NDOP's chair.

*Preparation for remote sensing and GIS professions*

## New Environmental Monitoring degree offered

by Anna Weitzel

This fall, the Institute for Environmental Studies (IES) at UW-Madison began offering the option of a non-thesis masters degree in Environmental Monitoring. Titled MS-Environmental Monitoring: Remote Sensing and Spatial Information Management, the new degree option recognizes the market demand for remote sensing and GIS professionals with real world technological experience.

By means of a capstone practicum, internship, or independent formative project, the program provides mid-career professionals and recent graduates with experience in managing complex projects that involve remote sensing and GIS applications. The Management Option, which was made possible through a grant from the Sloan Foundation, is offered in addition to the existing traditional masters and doctoral programs in Environmental Monitoring.

For more information visit the program's website:

[www.ersc.wisc.edu/empp](http://www.ersc.wisc.edu/empp)

*Huxhold given Horwood Award*

## Wisconsin people honored by URISA

by Bob Gurda

The Badger State's standing within the Urban and Regional Information Systems Association (URISA) history was further enhanced this summer through several awards.

Leading the parade was William Huxhold, currently a professor at UW-Milwaukee and previously the architect of the City of Milwaukee's GIS system. "Hux" was presented with URISA's highest honor—the Horwood Distinguished Service Award—for his long-standing involvement including serving as president during 1984-1985. Bill has been a member for 25 years and the Milwaukee GIS system was named as URISA's first "Exemplary System in Government" in 1981.

### Journal editors recognized

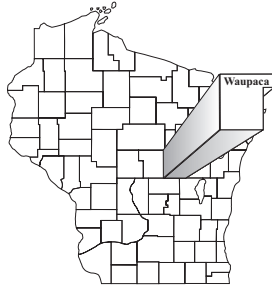
Madisonians Ben Niemann of the UW-Madison and D. David Moyer of the National Geodetic Survey, along with their co-editor Ken Dueker of Portland State University (Oregon), were honored for establishing the *URISA Journal* and guiding it through its early years.

*Dec. 2-3 includes workshop, seminar, and more*

## WLIA visits Waupaca

by Brenda Hemstead

The winter meeting of the Wisconsin Land Information Association (WLIA) will be held at the Best Western Grand Seasons Hotel & Conference Center in Waupaca on Thursday and Friday, December 2-3, 1999.



### Thursday: workshops & free seminar

On December 2, plans include two half-day workshops. The morning workshop, **"Forest Inventory Management using GIS"** will explore satellite imagery and aerial photography options, as well as GIS, for forest inventory management. The afternoon workshop, **"Farmland Preservation using GIS"** will show how to use GIS to view, analyze, and manipulate factors in the cultural and natural landscape that form patterns and trends important to sustaining agriculture in regional context. The registration fee for each workshop is \$35 member and \$45 non-member. Also in conjunction with the WLIA quarterly membership meeting, a workshop on **"Wisconsin GeoSpatial Metadata"** will be held at the Waupaca County Courthouse. It is an all-day 'hands-on' training opportunity highlighting the benefits and issues of metadata creation. To register contact Jerry Sullivan, WDOA Office of Land Information Services, phone: 608/264-6109.

A free two-hour seminar on **Land-Based Classification Standards (LBCS)** is scheduled for 7:00 p.m. on Thursday. LBCS provide a consistent model for classifying land uses based on their characteristics. The model extends the notion of classifying land uses by refining traditional categories into multiple dimensions, such as activities, functions, building types, site development character, and ownership constraints. It is the first comprehensive examination and update of classification systems for land use since the mid-1960's. This seminar is open to the public.

### Friday: Roundtable on data distribution

The morning's program begins at 8:30 a.m. (\$25 registration includes lunch) with legislative updates on the Wisconsin Land Information Program and recognition to Senators Welsh and Shibilski.

The balance of the morning will include a segment on **Difficulties with Legal Descriptions** and a roundtable discussion on **GIS/LIS Digital Data Distribution & Privacy Rights**. Questions, such as, "what is the appropriate policy to follow in responding to requests for data, and, do privacy rights conflict with Wisconsin Open Records Laws, as well as, how can privacy rights be respected at the same time that data is freely available over the Internet and at public terminals in court-

houses?" will be addressed to selected representatives for their response/ viewpoint.

Task force meetings and the land information office network meeting will follow the lunch and business meeting at 1:00 p.m.

Non-members are welcome! For details or to pre-register, contact WLIA at 800/344-0421 or through their website: [www.wlia.org](http://www.wlia.org).



*States gather for ninth annual meeting*

## NSGIC meets in New Orleans

by Ted Koch

The ninth annual conference of the National States Geographic Information Council (NSGIC) was held this year in New Orleans from August 27 to September 1. State Cartographer Ted Koch, and Georgia Hopf from the Dept. of Administration's Office of Land Information Services, represented Wisconsin at the meeting.

NSGIC, as an organization, attempts to provide a state voice on geographic information and technology issues, and advocates state interests. Representatives from approximately thirty-five states attended the New Orleans meeting.

### States have much in common

From the brief reports at the meeting, it is clear that many GIS issues appear in state after state. Building and maintaining Internet-based clearinghouses, and effectively coordinating GIS activities at a state level were two of the most frequently mentioned themes. Recently, a number of states have placed state GIS coordination under the direction of a cabinet-level title of chief information officer.

### Federal grants provide focus and resources

As an organization, NSGIC has in the past conducted a number of national projects in conjunction with the Federal Geographic Data Committee. Two of the most notable projects have been the 1997 metadata satellite conference, and the 1998 Framework Data Survey. Currently, NSGIC is actively working on a NASA-supported project designed to more easily bring remotely sensed data products to state and local government users. At the meeting, NSGIC representatives voted to encourage NASA to place emphasis on the creation of common products, and to develop pilot projects demonstrating uses and applications for remotely sensed data.



## Annual Conference in March

### **Call for Presentations Issued by WLIA**

by Brenda Hemstead

The Wisconsin Land Information Association has issued a "Call for Participation" for its upcoming 13<sup>th</sup> annual conference. Scheduled for February 29 - March 3, 2000 at the Grand Geneva Conference Center in Lake Geneva. The conference theme is "**Automation-Integration-Application: ACHIEVING THE VISION**". Proposals for presentations are due by November 1, 1999.

For more information on the conference, contact the WLIA at 800/344-0421 or visit their website at [www.wlia.org](http://www.wlia.org).

## Transportation is the focus for spring of 2000

### **GIS-T set to roll in to Twin Cities**

by Bob Gurda

In recent years there has been a proliferation of specialty conferences for people who work with GIS in various application niches. One of the longest running of these meetings deals with GIS applied to transportation: GIS-T.

The next GIS-T conference will be held in Minneapolis, MN, March 27-29, 2000. For more information, surf on the web to [www.oim.dot.state.mn.us/gist/symposia/index.html](http://www.oim.dot.state.mn.us/gist/symposia/index.html).

November 1, 1999, **Call for Participation** for the Wisconsin Land Information Association's Annual Conference scheduled for Feb. 29 - March 3, 2000. Contact: WLIA at 800/344-042 or [www.wlia.org](http://www.wlia.org).

November 10, 1999, The **Wisconsin Land Council** will meet in Madison. Contact: OLIS at 608/267-2707.

November 12, 1999, **Geospatial Information & Technology Association (GITA)** will hold its Wisconsin Chapter meeting at the Country Inn, Pewaukee. Contact Lori Ashley at 414/221-2587 or email: [lori.ashley@wepco.com](mailto:lori.ashley@wepco.com).

November 17, 1999, The **Wisconsin Land Information Board** will meet in Madison, WI. Contact: OLIS at 608/267-2707.

November 19, 1999, **GIS Day**-sponsored by the National Geographic Society, the Association of American Geographers, and Environmental Systems Research Institute to promote awareness of how GIS is used to deal with real-world applications within schools, businesses, and the general public. Visit [www.gisday.com](http://www.gisday.com).

December 2, 1999, the FGDC, OLIS, SCO, and LICGF will sponsor a **Geospatial Metadata Workshop** to be held at the Waupaca County Courthouse. For details on the workshop themes and registration, see the WISCLINC website or call Jerry Sullivan at 608/264-6109.

December 2-3, 1999, The **Wisconsin Land Information Association Quarterly Meeting (WLIA)** will be held at the Best Western Grand Seasons Hotel &

Conference Center in Waupaca, WI. Contact: WLIA at 800/344-042 or [www.wlia.org](http://www.wlia.org).

December 2-3, 1999, **Internet GIS** professional course will be offered as part of the GIS Continuing Education Series at UW-Milwaukee. The basic course fee is \$495. For more information, visit the School of Architecture and Urban Planning website: [www.sarup.uwm.edu/](http://www.sarup.uwm.edu/)

December 9, 1999, The **Wisconsin Land Council** will meet in Madison. Contact: OLIS at 608/267-2707.

December 13, 1999, **Accessing Wisconsin GIS Data Sets** training course will be held at the Land Information and Computer Graphics Facility (LICGF) on the UW-Madison campus. Visit the LICGF website: [www.lic.wisc.edu/](http://www.lic.wisc.edu/)

### **2000**

January 26-28, 2000, **Wisconsin Society of Land Surveyors Annual Institute (WSLS)** will be held at the Holiday Inn in Stevens Point, WI. Contact: WSLS at 414/549-1533.

January 28, 2000, The **Wisconsin GeoSpatial Metadata Workshop** will be held in Eau Claire, WI. Contact: Jerry Sullivan at 608/264-6109.

February, 1999, The **Wisconsin GeoSpatial Metadata Workshop** will be held at the Waukesha County Courthouse. For details on the workshop date, themes and registration, see the WISCLINC website or call Jerry Sullivan at 608/264-6109.

February 29 - March 3, 2000 The **Wisconsin Land Information Association's Annual Conference (WLIA)** will be held at the Grand Geneva Conference Center in Lake Geneva, WI. Contact: WLIA at 800/344-042 or [www.wlia.org](http://www.wlia.org).

March 18-23, 2000, **American Congress on Surveying and Mapping (ACSM)** will be held at the Statehouse Convention Center in Little Rock, AK. Visit ACSM website: [www.survmap.org](http://www.survmap.org).

March 26-29, 2000, **Geospatial Information & Technology Association (GITA) Annual Conference** will be held in Denver, CO. Contact: GITA at 303/337-0513 or their website: [www.gita.org](http://www.gita.org).

March 27-29, 2000, **GIS for Transportation Symposium** will be held at the Radisson South in Minneapolis, MN. Workshops will be held March 26. For more information, see the GIS-T 2000 website: [www.gis-t.org](http://www.gis-t.org).

May 22-26, 2000, **American Society for Photogrammetry & Remote Sensing (ASPRS) Annual Conference** will be held in Washington, D.C. Contact: ASPRS at 301/493-0290 or their website: [www.asprs.org](http://www.asprs.org).

*To see a more extensive calendar of regional events, and to use hot links to other calendars, visit the SCO website.*

## About the SCO...

The State Cartographer's Office (SCO), established in 1973, is a unit of the University of Wisconsin-Madison. The SCO is located on the 1<sup>st</sup> Floor of Science Hall.

Our permanent staff consists of six people—Ted Koch, State Cartographer (608/262-6852), Bob Gurda, Assistant State Cartographer (608/262-6850), A.J. Wortley, Outreach Specialist (608/265-8106), Brenda Hemstead, Administrative Assistant (608/263-4371), Paul Gunther, Information Systems Manager, and Liz Krug, Program Assistant (608/262-3065), plus several part-time graduate and undergraduate students.

The State Cartographer's position and mission is described in Wis. Statute 32.25 (12m). In addressing this role, the SCO functions in a number of ways.

- publishes the *Wisconsin Mapping Bulletin*, catalogs, guides, brochures, and other documents and maintains a web site to inform the mapping community.
- inventories mapping practices, methods, accomplishments, experience, and expertise, and further acts as a clearinghouse by providing information and advice in support of sound mapping practices and map use.
- participates on committees, task forces, boards, etc. The State Cartographer is one of the 13 voting members of the Wisconsin Land Information Board and one of 16 voting members on the Wisconsin Land Council.
- develops experimental and prototype products.
- serves as the state's affiliate for cartographic information in the U.S. Geological Survey's Earth Science Information Center (ESIC) network.

## About our Internet Web site...

We maintain a "homepage" on the World Wide Web.

Here, you will find links mentioned in *Bulletin* articles, information on a wide range of mapping topics, news items, functions and activities of the SCO, our on-line aerial photography catalog, a calendar of events, and links to related web sites. We encourage those of you with Internet access check out the SCO's homepage at

<http://feature.geography.wisc.edu/sco>



## About the WISCLINC Web site...

A second Internet resource is the on-line Wisconsin Land Information Clearinghouse (WISCLINC). Its address is:

<http://badger.state.wi.us/agencies/wlib/sco/pages/wisclinc.html>

At this site you can search metadata files, download certain data files, learn about our continuing work in this area, and link to other state clearinghouses.

## **Wisconsin Mapping Bulletin**

Published quarterly by the Wisconsin State Cartographer's Office. A University of Wisconsin-Madison outreach publication distributed free upon request.

News is welcome on completed or ongoing projects, published maps or reports, or conferences/workshops. Local and regional information is especially encouraged. The editor makes all decisions on content. Deadline for the next issue is January 10, 2000.

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