



Preparedness comes to the fore

Threats raise interest

by Bob Gurda

911. We teach children how to use that telephone number for reaching emergency responders.

9-11. A very similar set of numerals now brings to mind the events of September 11th that were seared into the national consciousness. That those awful events have their own connection to emergency preparedness and response is highly ironic.

The nation and world have been awakened to the need for a level of preparedness that was barely thinkable just a few months ago. Some of that preparedness relates to the business of mapping and geographic information. After all, maps and the data behind them are often produced to serve future needs including uses we can't necessarily predict.

Readiness through information

Stories of inadequate information, difficulty accessing or evaluating information that is known to exist, have been seeping out of New York City since September 11. Such stories aren't new, but in the harsh glare of the 9-11 light the value of information has been appreciated anew. Without information and the ability to use it quickly, the society simply isn't prepared.

Being able to use information rapidly means knowing where it is, knowing a lot about it, and having permission to access it. These characteristics can be mined very quickly from a full and current metadata record.

It's yet unclear if the military actions in Afghanistan have been hampered due to lack of "off the shelf" mapping, but within our own country there is plenty of evidence that information related to homeland security is not in the condition it ought to be. If we're lucky, that data exists; if we're really lucky, there is high-quality metadata describing the data. The stakes have always been high; it sometimes takes a crisis to make that clear.

What if...

If a certain dam were sabotaged, what downstream areas would be immediately affected? Whose drinking water, electricity, and ground transportation routes would be diminished, with all the attendant consequences—short-term and long-term? In looking

at the potential for repairing or rebuilding the damaged infrastructure, what options (and their effects) might be considered as compared to the original site and components?

These are all questions that could be answered with the help of good spatial data, analysis, and visualization.

Detective work

Beyond the more glamorous kinds of police work that can benefit from mapping and GIS (as exemplified by the current TV series, *The District*), there are the more common daily tasks carried out by our public safety officials. Here, the value of spatial information tools is obvious. In Wisconsin, we are starting to see some serious use of GIS tools within the law enforcement community.

Bioterrorism's challenge

The Anthrax episodes on the east coast have raised concerns everywhere. Regardless of which biological or chemical agent one wants to consider, the capacity to accurately estimate how the materials might become dispersed or how an epidemic might spread can be better understood by employing spatial analysis.

The challenge goes beyond what most of us have conceived as an integrated GIS system. Having access to real-time wind information could be critical. Knowledge of population distribution—not only by place of residence but by work or recreation location depending on the day of the week or time of day—could be equally important. Land location of potentially hazardous substances can't be a mystery if rapid and appropriate response is required.

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WLIB News

by Ted Koch

The Wisconsin Land Information Board last met on October 3 in Madison. The Board's next meeting will be held in mid-December. For agendas and minutes, go to www.doa.state.wi.us/olis/wlip/index.asp.

Board approves grant amounts

At its October 3 meeting, the Board approved the availability of nearly \$1.8 million for year 2001 local land information grants. This amount of funding will be available to counties in the form of four different grant categories. To be eligible to use grant funds, counties must submit a grant application to the Board through the WI Department of Administration's Office of Land Information Services no later than January 31st, 2002.

In its October 3 action, the Board allocated \$21,600 to the Education and Training grant category. For this grant, each of the state's 72 counties is eligible for up to \$300 annually for pertinent courses or workshops.

To the Base Budget grant category, the Board allocated \$411,584. This amount will be available to those 29 counties whose retained revenue (from document recording fees collected by the County Register of Deeds) were less than \$35,000 from July 1, 2000 thru June 30, 2001. The grant provides the difference between the amount collected within the county and \$35,000.

In the Contribution-Based Grant category, the Board made available \$796,885. For this grant, all counties are eligible for an amount that is proportional to the county's total contribution to the WLIP over the past fiscal year.

For the fourth grant category, Strategic Initiative, the Board set aside \$566,816. However, before establishing eligible activities for this grant, the Board requested its Chair appoint a temporary committee to study and make recommendations on eligible activities.

Committee will recommend expenditure policy

At its October 3 meeting, the Board requested that chair Ted Koch appoint a temporary committee to establish guidelines regarding the county's use of the additional

dollar being collected on each document filed in the county Register-of-Deeds Office. This committee has made its recommendations, which have been incorporated into materials provided to the county Land Information Offices.

The extra dollar collected for the recording of land records documents at the County Register-of-Deeds Office was part of the current state budget signed into law in late August by Governor McCallum. The additional dollar stays within the county, but has to be used to provide better public access to housing-related data.

Regarding the Strategic Initiative grant, the same temporary committee has made recommendations to the board on the qualifications and requirements for grants that are intended to be focused on projects that will provide Internet-accessible housing and assessment sales data, and related systems-integration projects.

WLC News

The Wisconsin Land Council last met on October 9 in Madison.

The Council's next meeting is scheduled for January 24 in Madison. For minutes and agendas, visit www.doa.state.wi.us/olis/wlc/land_council.asp.

GIS pioneers to continue efforts

Niemann and Miller retire

by Bob Gurda

Of the many names associated with Wisconsin's tradition of progressive GIS development, few are as central to its development as Ben Niemann and Al Miller. Both retired this last summer, but they're still pushing the envelope to get GIS acknowledged, accepted, and appreciated.

Niemann, a professor at UW-Madison, and his long-time colleague Miller, an academic staff member at the university's Sea Grant Institute, worked together on many fronts over the years. Prior to his 17-year stint as director of Sea Grant's Advisory Services, Miller was with the Wis. Dept. of Administration's Coastal Management Program.

Wisconsin's first GIS proposal?

Few people have read it in recent years, but Miller authored a proposal for a Wisconsin state GIS years before such ideas even saw the light of day in most other places. After leaving his state agency position, he continued his interest in GIS and the modernization of land records, amongst other things eventually serving as the first president of the WI Land Information Association.

That early proposal and other artifacts of history will become important components of the story of GIS in Wisconsin. In fact, Niemann and Miller are working on exactly such a history which may reach the publication stage within the next year.

Laying the groundwork

Ben Niemann not only served as a professor for many years, but also served the state through the Extension Service. His interests in the process of land records modernization led to a stream of research findings and a cascade of students who absorbed his enthusiasm and determination to develop a bottom-up approach that emphasizes the role of local government — the place where so many land records transactions happen on a daily basis.

Niemann has worn many hats, including an early stint as chair of the Wisconsin Land Information Board. Like Miller, he served as president of the WLLA.

A muskie connection

Rumor has it that Niemann and Miller have perfected a novel method of catching the elusive muskellunge through fly-fishing techniques. The geographic location of their research site is vaguely known, but precise coordinates may someday appear in a GIS data set, replete with exhaustive metadata.

The continuing quest

In retirement, both Niemann and Miller seem busier than ever. Ben remains a member of the Land Information Board and its Executive Committee, and is working on research and writing projects. Miller continues a long-term project to teach K-12 teachers how to use GIS. It's only appropriate; pioneers are forever pushing back the frontier.

by Ted Koch

I had the opportunity recently to attend a national specialty conference focused on the collection of earth elevation data. Some exciting developments occurring in this area made the trip very worthwhile.

The meeting was sponsored by two organizations, ASPRS (American Society of Photogrammetry and Remote Sensing), and MAPPS (Management Association for Private Photogrammetric Surveyors). ASPRS is a long-standing organization of professionals involved in mapping, photogrammetry, remote sensing, and GIS. MAPPS, on the other hand, is a trade and advocacy organization representing more than 150 private sector firms which provide mapping, aerial photography, and related image processing services.

The purpose of the conference was to present the latest developments in terrain modeling technologies. Because these tools directly measure the elevation of terrain, foliage and structures, they are changing the way data is produced and used, particularly with new applications that may not have been possible previously.

New technologies, acronyms

Specifically, conference speakers presented details on LIDAR, IFSAR, SONAR, and digital cameras. These collection techniques have recently matured sufficiently so they are now beginning to appear commercially.

LIDAR (Light Detection and Ranging), an aerial laser scanning process using airborne GPS and other measurement systems, has developed to the point where digital elevation models of the ground and features above ground can be collected relatively accurately and quickly. A number of commercial firms which have traditionally produced terrain model information using photogrammetric measuring techniques are now offering the collection of terrain data using LIDAR.

Jump in, but carefully

Of course, with the promise and hype associated with new technologies comes the predictable fact that there will be new and different types of problems to confront. Often, technology advances more rapidly than quality assessment techniques, and

this condition is true with the new terrain measuring processes. Customer purpose and need, coupled with data accuracy and usability—e.g., is it in a projection/coordinate system and format I can use?—makes for a complex formula involving data creation and customer use. Solving such a formula takes experience and appropriate analysis.

User manual debuts

One of the major highlights of the conference was the announced availability of a 500+-page ASPRS-produced book, *Digital Elevation Model Technologies and Applications: The DEM Users Manual.* This publication brings together a wide variety of current material related to terrain data and data collection not available in any other single source.

The manual will be a highly valuable resource for the work currently in progress by the Land Information Board's Elevation Data Task Force (see *Bulletin*, Winter 2001 issue).

The task force will be delivering its final report to the Board later this winter.

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Actually, some of this information would be just as useful in dealing with a natural disaster such as the devastating tornado that ripped across Burnett County this last summer (see stories on pages 6-7).

Will resources be forthcoming?

Just at the time when concerns over preparedness are on the rise, the economy has retrenched, and that means fewer income and sales tax collections to support public programs in general. As scarce resources end up being shifted toward preparedness investments, what other budget areas will suffer?

It is possible that some resources will surface that will accelerate the pace of basic spatial data collection. The U.S. Geological Survey, as part of the general federal government examination of preparedness, has begun a broad inventory of available data over the

nation's larger cities. In Wisconsin, the Milwaukee and Madison areas are initial subjects of this effort.

Federal funds may flow to the states to enhance preparedness. Will spatial data and the tools to use it effectively be part of the discussion?

Spatial data is infrastructure

It's become almost a mantra with some of us lately, but if we consider our spatial data to be a part of our information infrastructure, then it ought to be funded over the long term with that thought in mind. Many other parts of our society's infrastructure, typically thought of as physical assets such as transportation, energy distribution, and communications systems, are funded as capital investments. Our most basic information resources deserve similar treatment. How else can we be prepared?

Statewide tour heads for the back stretch

Metadata workshops to continue in spring

by AJ Wortley

The State Cartographer's Office has just finished the autumn leg of its 12-month Wisconsin Metadata Workshop tour across the state. Workshops were recently held at UW-LaCrosse, UW-Stevens Point and Lac Courte Oreilles Ojibwa Community College near Hayward. We will take a break from workshop offerings until more predictable travel conditions return in spring.

A Timely Offering of Hands-on Training

Metadata documentation, as a practice, has risen in priority in recent years in the face of increasing data management needs, regional application development, disaster preparedness, and increasing user community awareness.

The Federal Geographic Data Committee has provided seed funding in the form of grants for several years now to encourage metadata development and dissemination through a distributed on-line Clearinghouse network. One such grant from the FGDC has subsidized this workshop series which focuses on hands-on metadata creation to meet the federal metadata standard, which

is also Wisconsin's standard. Workshop attendees will improve everyone's ability to share and compare data documentation, leading to more informed geospatial data access and use and better interoperability for data consumers.

Content Tailored to Needs

We have used information from each workshop's registration questionnaires to guide the emphasis in one direction or another. Overall reaction from participants has been very favorable toward our current metadata workshop content and format. Attendees especially appreciated the hands-on exercises, group discussion, and the hard-copy reference materials distributed in the form of a binder and CD-ROM.

Watch Clearinghouse for Updates

We are currently planning our spring and summer set of workshops in areas of the state not yet visited. Information on dates and locations for these workshops should be available on the Wisconsin Land Information Clearinghouse (WISCLINC) website in December. Feel free to contact me at the SCO to express interest in having a workshop in your area.

Madison campus coordinates short courses

SIAC funded to coordinate geospatial information technology training

by AJ Wortley

Take your pick: ESRI-certified software short courses.... applied spatial analysis training.... metadata workshops.... SIAC at UW-Madison will be offering it all. SIAC, the Spatial Information and Analysis Consortium, will shortly be providing a unified approach to technical geospatial short courses on the UW-Madison campus.

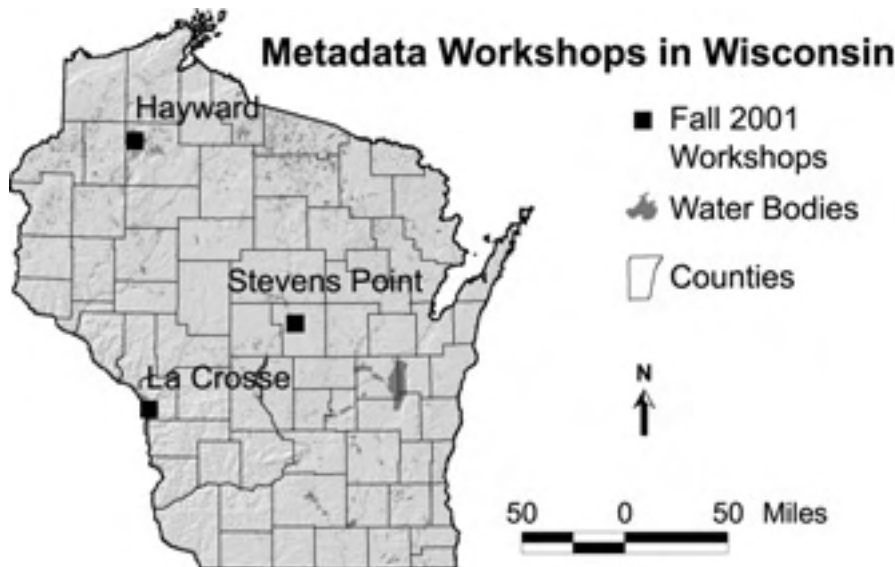
SIAC, an ad hoc group of departmental faculty and staff at UW-Madison, recently received funding to better coordinate and expand the University's offerings in this niche. The funding comes under the university's new Wisconsin Idea grant program, and will run for three years after which the program is expected to sustain itself.

Efforts will concentrate on coordinated marketing, workshop administration, and new workshop development including applied topics such as land use planning, land records management, and environmental protection.

Building from several strengths

This expansion of short courses and their delivery will build on the slate of topics offered routinely in recent years through the Land Information and Computer Graphics Facilities (LICGF) and Engineering Professional Development (EPD) at UW-Madison. Currently, the coordination effort is conducting initial market research as well as adding relevant courses to the newest brochure from LICGF.

Other UW-Madison departments/facilities initially involved in the effort include: Geography Dept., Environmental Remote Sensing Center, State Cartographer's Office, Urban and Regional Planning Dept., Soil Science Dept., Applied Population Laboratory, and Civil Engineering's Spatial Data Acquisition and Analysis Laboratory.



Q: *Can you tell me the coordinates for PLSS corners near my property so that I can find them on the ground using a hand-held GPS receiver?*

A: Your question has several parts. Even if you are lucky to be in a part of our state where all of the information is readily available and highly accurate, you may still fail to locate the corners.

First, the ground location of Public Land Survey System (PLSS) corners in Wisconsin is not known in every case. The situation varies from county to county. Although the recovery and re-marking of corners continues to get attention as part of land records modernization activities carried out by local governments, some work remains to be done. The county surveyor or land information office is your best source of this information.

When a PLSS corner is marked with a sturdy and modern monument, often a more visible witness post is erected nearby to alert people that they are in the vicinity of the actual corner.

Once a corner's ground location has been determined and marked, it then becomes possible to measure its position (e.g., in latitude/longitude). These values (perhaps expressed in a planar coordinate system such as UTM) are what you would use in guiding yourself to the corner using GPS.

In some cases, PLSS corner coordinates may be available but are also known to be lacking in accuracy sufficient for you to use GPS to navigate right up to the spot. This can happen when the coordinates are derived from a map (such as a USGS topographic quadrangle) that depicts PLSS corners in their likely positions. While studies have shown that such positions are usually within 40 feet of actual, a few cases where the inaccuracy was more like 200 feet are also known!

One final issue here involves the accuracy of your GPS receiver. Even with a monumented PLSS corner and highly accurate coordinates for that corner, your receiver may not guide you close enough to find the actual spot you're seeking. A less expensive GPS receiver generally can't compete with a professional model, for a number of reasons. In addition, a tree canopy or nearby structures may also interfere with signals coming from GPS satellites, making your task more difficult.

While you're considering these technical factors, also remember that traipsing around the countryside in a quest to visit PLSS corners may involve your crossing others' property. Make sure to ask for permission first!



Q: *What career opportunities are there in the mapping field, and where is training available in Wisconsin?*

A: There are a number of career paths and many have strong employment potential. Education is a very important factor, and Wisconsin schools have a number of programs to choose from to help get you ready, and to provide continuing education.

Mapping has expanded into a variety of application disciplines in recent years at the same time as the field has been transformed by computerization. So not only have some of the jobs changed from what they were, but the qualifications are different, too.

The broad field of mapping — including field surveying, photogrammetry, cartography, spatial analysis, image processing, GIS, end user application development, and more — is in many ways more integrated than it used to be, and the jobs today are more widely distributed in small organizations than previously.

A minimum of two years of education beyond high school is essential, and a college degree opens even more doors. Some colleges offer majors in programs that are part of mapping field, and others offer minors (such as in GIS). A recent development has been post-graduate certificate programs in GIS which are more skill-oriented than the traditional masters degree.

Regardless of which part of the mapping field fits your interests and abilities best, you should plan on studying computer programming, and gaining an understanding of information management more generally.

As in most fields of work these days, it is also important to be committed to lifetime learning. A diploma from a program will open doors for you, but you will need to continue to adapt your skills to new approaches.

In recent years the demand for skilled people in the mapping fields has outstripped the supply. Those who have chosen a career direction in this area have had a variety of opportunities. With the growth of GIS in many organizations, the demand shows no sign of lessening, although in times of economic retrenchment we may see some slowing of the rate of growth in these types of positions.

For brief descriptions of, and contact information for Wisconsin's post-secondary educational programs in the mapping field, visit the SCO web site's GIS education section at www.geography.wisc.edu/sco/references/weblinks/gis_education.html

On being prepared when disaster strikes

Kathy Swingle is the Burnett County Surveyor and Land Information Officer, and has worked for the county for 14 years. When a major tornado leveled most of the village of Siren on the evening of June 18th, county offices were instrumental in coordinating the emergency response. Recently we visited Siren and Kathy's nearby office to get a firsthand impression.

Where were you when the storm struck?

Although I live outside Siren, I happened to be in town that evening. When threatening weather reports were broadcast, my son found me and we went to his house here in town. The tornado came through about 8:30 p.m., heading almost straight east. It had started east of Grantsburg and ended west of Spooner, a total track length of about 35 miles. Siren was the only concentrated area of settlement that it affected directly. My son's house sustained only minor damage, but many neighbors weren't so lucky.

Landsat 7 passed right over Siren the morning after the tornado

How quickly did the recovery efforts begin?

In June, our daylight extends well past the time the tornado came through, so there was time to assess some of the damage locally before nightfall. Telephone access and electric power were essentially non-existent due to lines being down.

Even though volunteers and others worked to clear roads all night, morning was when things really started to happen. We set up shop in the Emergency Operations Center (EOC) at the courthouse. Our role was to collect, organize, and display spatial information — basically to provide whatever information the field workers and the coordinators might find helpful. The DNR Incident Command Team stepped up to the plate and really provided coordination to the operation.

However, despite having gone through mock forest fire exercises with the DNR, we weren't completely ready to spring into instant action. We had practiced mapping projects with Pete Engman of their staff during the mock fire exercises. Before he could get his laptop linked into our GIS system at the EOC, however, we had to locate a network adaptor card, create user names and passwords. Now we realize this should have all been set up before hand.

How did you begin mapping the path of the tornado?

We had a variety of reports about roads blocked by debris — mostly parts of trees. As more specifics from people using our Trimble ProXR GPS units started coming in, it became clearer what had happened, and where. We were hampered somewhat in receiving this information by a low density of cellular telephone towers.

one-meter orthophotos came in very handy for planning

Then, using our GIS layers of roads and building structures overlaid on the orthophotos, we were able to identify where people might be injured and where we would find damaged structures in the tornado path. From that information, crews could attempt to try to account for people. We're lucky that only 3 people died from the tornado's effects, considering the geographic extent of the devastation.

We heard that some satellite imagery came in useful. What was that?

Professor Tom Lillesand of UW-Madison heard about the tornado and checked to see what satellite tracks might be helpful. Luckily, Landsat 7 had passed right over Siren the morning after the tornado, and that the imagery was of good quality since there were no clouds. Then, he and his colleagues at the Environmental Remote Sensing Center did a comparison processing of that image with another from about a month earlier. The difference between the two vividly showed the track of the tornado. Even though we knew where the tornado path crossed roads, we didn't have a good grasp on what areas had been affected between those transects before we saw that difference image.

Were you able to make use of airborne imagery, too?

We quickly arranged for aerial photography over the path, and our contractor was able to bring a plane in on June 22. We chose natural color film, and a flying height yielding about 1 square mile per photo. With its high level of detail, this imagery has been very helpful for loggers in their planning for dealing with the large amount of downed timber.

So far, we haven't had these new photographs converted to digital orthophotos. But we found that the 1-meter resolution orthophotos pro-



Kathy Swingle points out Siren on a Landsat image of the tornado path.

duced under the federal program a few years ago, although quite a bit less detailed than the 1-foot images we had acquired several years earlier for some of our lake areas, came in very handy for planning. Using our GIS software, we overlaid our building structures layer, printed the images, and taped them up on a wall in the EOC to make a continuous map of the entire tornado path for use by the volunteers. We were also able to project from a computer to a screen and zoom in to any area of interest to show the very latest information.

There must have been a swarm of media for a while. Was that a problem in getting your work done?

It wasn't a big issue, as most of our work was inside the EOC. We did ask the Twin Cities media people, who had helicopters, to try to find farm animals and report their positions with our GPS equipment. It turned out that the helicopter rotors interrupted the signals coming from the GPS satellites too much.

There were all sorts of people around, helping out. It may have been a bit chaotic at times, but people worked together extremely well.

We used a digital plat book to index our fresh aerial photographs

Any other lessons you learned that might help your peers be as prepared as possible if such an event were to strike them?

There are plenty of lessons. First, we were actually quite well prepared, and the mock forest fire exercises we had done with the DNR are part of the reason for that. On the other hand, there are a number of things we wished we hadn't had to struggle with.

continued on next page...

Two-date comparison emphasizes damage

Satellite image shows tornado track

by Bob Gurda

Only seventeen miles down the road from the village of Siren, WI, is a settlement with the name of Luck. On June 18, Siren was hit by a tornado. Luck, as luck would have it, was spared.

Tom Lillesand must have thought he was in luck just hours later, though. Lillesand, Director of the Univ. of Wis.-Madison's Environmental Remote Sensing Center, made a few phone calls after hearing about the tornado, and had U.S. Geological Survey staff check the fresh imagery acquired by the Landsat 7 satellite's Enhanced Thematic Mapper the morning after the tornado.

That the satellite happened to pass over the Siren area the very next morning was a stroke of luck itself. Landsat's fixed orbit brings it back over any particular spot only every 16 days.

Doubly lucky

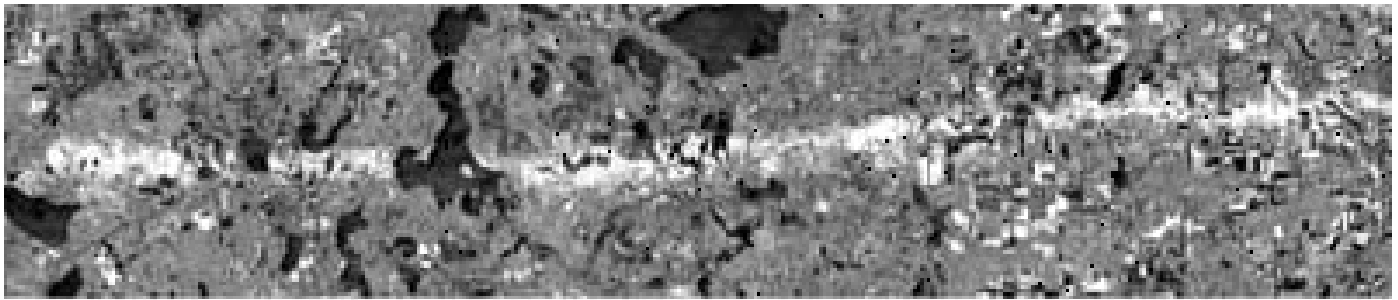
Not only had Landsat's timing been impeccable, but clear skies meant the imagery had a good chance of being useful in analyzing

the zone of damage. Upon glancing at the imagery, Lillesand knew he could use it.

What would make the June 19th image even more useful, though, would be another image over the same area collected 32 days earlier. Then, by performing a digital comparison, anything in the land cover that had changed would be easy to locate.

Quick results, quick viewing

In a very short time, Lillesand and his colleagues had carried out the difference analysis and posted the results on a web site. For the whole story and a look at the images (plus animations developed from weather data), surf over to www.ersc.wisc.edu/research/SirenTornado/.



Path of the Siren tornado, showing the middle portion centered just east of Siren. Image courtesy USGS EROS Data Center with processing by Environmental Remote Sensing Center, University of Wisconsin-Madison

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For instance, there was some information on where various hazardous materials had been stored. Of course, the tornado would have moved (or ruptured) the containers for these materials in some cases. We found it hard to assimilate this information into our operation. In some cases, we knew it was likely that something like an electrical transformer or vehicle had been dropped into a lake, but we didn't know much about the potential issues regarding potential pollution or hazards to people using the lakes later for recreation such as water skiing.

In a more general sense, a few fairly simple preparations would have been beneficial, such as

making sure we had all of the useful GIS databases referenced to a common coordinate system.

In looking back on some of the maps we made, it's clear that in the confusion some of them didn't get delivered to the correct location in the field. In general, the maps also didn't always have date/time stamps and appropriate words as disclaimers and to indicate source materials.

On a more positive note, one of our local private surveyors created a plat book backdrop layer over our address/structure map which was very valuable for both local volunteers (who used the

landowner names) and the out-of-area volunteers (who used the addresses.) We also used this digital plat book as an index for our fresh aerial photographs. This made it easy to identify a particular frame of imagery covering any point of interest on the ground.

Hopefully our experience will be helpful to people in other places. When a tornado comes to visit, you need to be prepared, and that includes your land information and GIS capabilities.

GIS tales from the hinterlands

Things are hopping in Wisconsin

by Bob Gurda

What is the state of the state? That is, what's up with mapping and GIS in Wisconsin?

Based on visits to over 40 GIS/land information operations across Wisconsin over the last 6 months, and reports from several companies, the SCO staff can report almost uniformly good news.

On the road again

Since the formation over ten years ago of county land information officers as the local contact point for the Wis. Land Information Program, our office's in-state travel plan has focused on these people and their cohorts.

The University of Wisconsin-Madison's Division of Outreach provides us with travel funds to help make our road trips possible. In our visits, Ted Koch, and AJ Wortley, and I always appreciate the hospitality of the many people we visit.

Progress, progress, and.....?

The changes in mapping and GIS across Wisconsin are substantial, particularly over the span of 13 years that I have been visiting local governments. There is too little space here to tell all the stories of technical achievements and institutional successes, as well as a few sobering tales of impediments and misfortune.

The last few years have seen a flowering of capabilities, as available data, more powerful software and hardware, and experienced staff created a synergistic mix. Every county is making advances, and some have developed particularly innovative solutions. In many cases, funds from sources such as the local property tax level are supplementing the document filing fees collected under the Land Information Program.

Of course, not all the news is rosy. Broad acceptance of land records modernization is not yet the rule in every place. Some data developed in earlier years has had to be discarded due to lack of accuracy or lack of documentation. Staff turnover has slowed some operations. Despite the base budget provided to counties that collect the lowest amounts of document filing fees, some jurisdictions are making painfully slow progress. And, from a larger perspective, documentation (metadata) and standardization of common data sets largely remains an unmet challenge.

In the remainder of this article I want to describe several notable stories gleaned from our recent travels. For a broader picture of the situation, see the LIO Survey www.doa.state.wi.us/olis/wlip/survey2000/index.asp and county profiles published in back issues of Land Records Quarterly which are viewable on the Wis. Land Information Association's website: www.wlia.org.

Bringing assessors into the fold

All counties need to provide information about real property to local assessors on an annual basis. (Unlike many other states, Wisconsin's assessment function is located at the local level of

government). In Waupaca County, the Real Property Lister Clyde Tellock now produces a CD-ROM for each assessor with orthophoto images, the property map GIS layer, and a free GIS viewing program. Clyde reports that it's a very popular service with the assessors.

Getting that sign post nailed down

An emerging trend is the county highway department becoming a user of GIS. Spatially enabled inventories of signs and culverts are an easy application to start on.

Marquette County's county surveyor, Jerry Smart, has built a jig to quickly position a GPS antenna over a highway sign post. The device allows the driver of the specially outfitted truck to stop next to a sign, slide the roof-mounted jig (with antenna attached) over the post, collect GPS signals briefly, retract the jig, and go on to the next sign. This procedure eliminates the need to get out of the truck, saving considerable time.

Using orthos in surveying

Barron County's Mark Netterlund illustrated how he was able to help the local school district make a smart decision on whether an expensive land survey was called for. A piece of land had been donated to the district for outdoor education, but some people thought that a neighboring land owner may have made some improvements across the property line, on the district's property.

As it was a rural setting and fence lines weren't visible, Netterlund used the county GIS system to overlay parcel boundary lines on top of 1-meter-resolution digital orthophotos. Even though he knew that the accuracy of the orthophoto would allow an error of up to 30 feet, it was clear on the screen that the land improvements were over the property line by well more than that much. As a result, Netterlund, himself a Registered Land Surveyor, felt very confident in advising the district to invest in ground survey work, all without leaving his office.

Multi-jurisdictional participation

In Sheboygan County, the land information program has a formal advisory committee that includes representatives of county departments as well as municipalities. Through this mechanism, the municipalities have shared in some of the revenues raised under the state's land information program. Such an arrangement sets the stage for work toward compatible data models and simplified sharing of completed data sets.

Heading for the web

A number of counties are in the process of making land information accessible through web sites. This ranges from listings and reports to more complex mapping functions. With concerns

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Not a fail-safe system

GPS signals are vulnerable to jamming

by Bob Gurda

GPS has become so commonly used by both professionals and casual users in recent years that we may be at risk of taking the technology for granted. In fact, GPS signals can easily be masked, making our receivers useless. In these times of heightened awareness over our national security, it's worth evaluating how vulnerable we might be in this regard.

Could it happen?

While we haven't heard any reports about the signals from GPS satellites having been jammed, presumably it would be fairly easy to do so. The satellites broadcast their signals over wide areas and from a great distance above the earth's surface. The signals arriving at the surface are necessarily quite weak, and could be overwhelmed by a spurious signal from another source operating at the same electromagnetic frequency.

A more nefarious scenario would involve someone broadcasting GPS-like signals providing incorrect positioning information!

Current military issues

GPS was developed originally for military uses, but has become wildly popular in civilian circles for everything from precise geodetic positioning to recreational navigation. Reports surface occasionally that the military is developing a next-generation system for their own use, and more robust protection from jamming may be one of its design goals.

Operators of the current GPS system apparently can selectively alter (or even halt) signals when a particular satellite appears above the horizon in any part of the world. This allows some tactical control of positioning capabilities in active military settings. We have not heard of any such modification of the usual transmissions over U.S. lands during the period of the current military campaign in Afghanistan.

Testing and back-up tools

It's always a good idea to calibrate and test measurement equipment, and to make multiple observations to provide checks and validation. With GPS receivers, consider all the things that might go awry, affecting your use of this tool. One worst-case scenario is having your receiver fail totally, maybe from something as simple as spent batteries; when venturing afield in unfamiliar territory, remember to take along a trusty compass and map!



Workshop covers GIS, GPS and remote sensing

K-12 teachers receive technical education

by Ted Koch

This past summer, teachers from eleven Wisconsin school districts traveled to upstate New York for four days of "hands-on" training in GIS, GPS and remote sensing technologies. Overall, the workshop attracted approximately 90 teachers from eight northeastern and upper-midwestern states.

Wisconsin was well represented, with a contingent of sixteen teachers from eight high schools, three middle schools, and five elementary schools. Selection of the attendees was coordinated by the WI Dept. of Public Instruction.

Ambitious curriculum

The workshop included hands-on computer work and field data collection with GPS receivers. Topics covered include the nature of spatial data, operations using several GIS software packages, the principles of remote sensing, and building a classroom curriculum employing the use of GPS data and GIS software. Once the basics were covered in these areas, the workshop focused on working with data and software tools in a computer lab setting, including several teachers demonstrating how they use GIS in the classroom.

Only modest costs to attendees

Teachers attending were required to pay a \$200 registration fee, but otherwise all transportation, room and board, and training materials were provided through a grant from the National Aeronautics and Space Administration (NASA). Upon completion of the workshop, teachers received one graduate credit from the State University of New York College of Environmental Science and Forestry (SUNY-ESF) at Syracuse, and the opportunity to purchase a used hand-held GPS receiver at the discounted cost of \$50.

The workshop, called CORSE 2001, was based on several similar workshops held during the previous two summers in different locations. Sponsors for this workshop included the International Center for Remote Sensing of the Environment, SUNY-ESF, Cayuga County Community College, and the NASA Regional Applications Center for the Northeast. The workshop was conducted at the community college which is located in Auburn, NY.

Experience rated positively

Overall, the workshop received excellent evaluations from attendees, with Wisconsin teachers commenting that they had learned a lot and picked up skills useful for future classroom projects. Let's hope that what these teachers learned will be transferred to the next generations of Wisconsin GIS practitioners.

Over 1,000 images on line

NASA offers “Visible Earth” catalog

by David Handley

Satellites have been effective platforms for collecting various types of earth information for several decades now. The number of such images is certainly huge, but probably can't even be inventoried, as they reside in a variety of archives.

To help scientists, educators, the media, and the general public, NASA has collected an assortment of particularly interesting images from around the world, and placed them into an on-line catalog called Visible Earth. The catalog includes eight images of parts of Wisconsin or the immediate region.

A Landsat scene of lower Manhattan, taken September 12, 2001.



Search in multiple ways

One of the central utilities of the site is the numerous methods of searching or browsing for specific types of images. You can search by image date, area, or by particular satellite sensor.

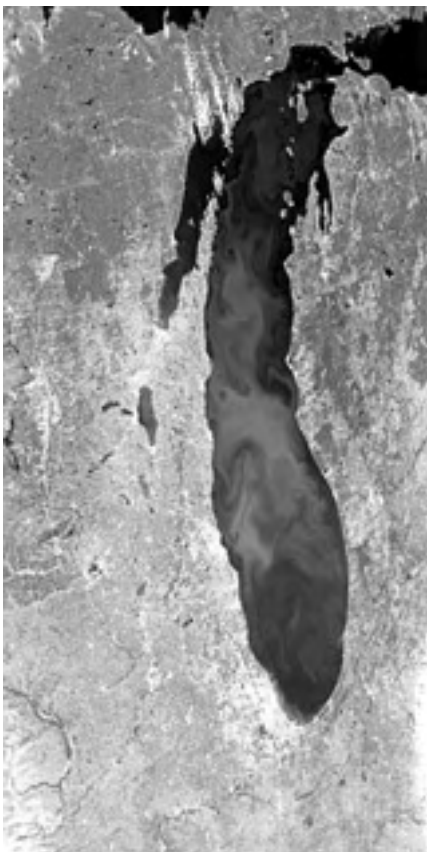
Perhaps more useful, though, is the subject matter search, which provides a listing of a diverse range of topics and sub-topics within them. For example, assorted topics in agriculture, oceanography, and human dimensions are listed, with sub-topics including crop irrigation, sea surface temperature, and transportation infrastructure.

Image files on the site tend to be rather large - some are upwards of 5 or 6 MB,

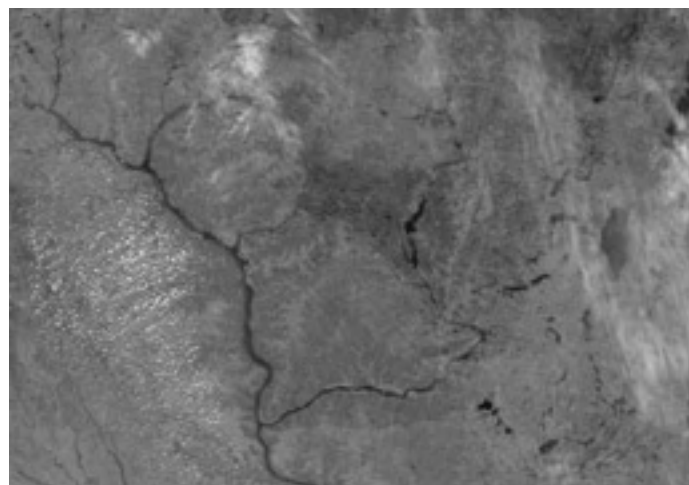
which could make for a lengthy download. Fortunately for people with slower connections to the Internet, most scenes are offered in lower resolution sample images.

While the majority of images on this site are satellite-based, there are various other types scattered throughout, such as digital terrain models, data visualizations, 3-D anaglyphs, as well as a few flyover animations. A useful feature is that many of the pages have links to other sites that provide background information on the sensor, the method of image analysis, or the subject matter of the image.

Check out the Visible Earth Catalog on the web at visibleearth.nasa.gov.



SeaWiFS image showing patterns caused by calcium carbonate (chalk) precipitated in the warm surface water of southern Lake Michigan, September 7, 1999.



MODIS image of southern Wisconsin taken during high levels of the Mississippi, April, 2001

Students join SCO staff

by Bob Gurda

Since our last report, three additional students have joined the SCO's staff. Mandi Kornhoff and Tom Gleason are working with A.J. Wortley, finishing up the OrthoFinder web site this semester. Both are students in the Geography Department's GIS Graduate Certificate program.

An undergraduate in Geography & GIS, Kevin White has just joined us. He will be working with the SCO website team.

To honor Paul Wolf

Fund-raising begins for Professorship

by Bob Gurda

Emeritus Professor Paul Wolf trained hundreds of future surveyors and photogrammetrists over the span of 1970-1993 at the University of Wisconsin-Madison. Now his department of Civil and Environmental Engineering has begun a campaign to raise \$1 million to fund a new faculty position with the purpose of maintaining its tradition of excellence in the area of geospatial information engineering.

Principal will not be spent

With the help of the University of Wisconsin Foundation, contributions to the Paul R. Wolf Professorship Fund will be invested. Only earnings, and no principal, will go to support the new position, thereby providing a continuing stream of resources.

Wolf known as teacher, mentor

Prof. Wolf received teaching awards, such as from the American Society for Photogrammetry and Remote Sensing, but the testimonials of his students themselves speak to more than his instructional prowess. A brochure prepared as part of the fund-raising effort contains quotations from several students now holding faculty positions as well as others highly placed in business, industry, and government. It is clear that Wolf was as much a mentor to

these people as he was a teacher in the usual sense.

How you can join in

The University of Wisconsin Foundation can accept almost any kind of assets as contributions, including cash, appreciated securities, and real or personal property. Pledges can be made for periodic contributions into the future. For details, contact Debra Holt of the Foundation at 608/263-0779.

New schedule begins 2nd semester

Robinson Map Library cuts hours

by Bob Gurda

Effective January 22, 2002, the A.H. Robinson Map Library on the UW-Madison campus will permanently reduce the time when it is open to the public to 20 hours per week. Monday hours will remain as before, but Friday the library will be closed all day. Other days the doors will be open for four hours.

The schedule change will allow the overworked library staff to catch up on cataloging and storing maps and aerial photographs that have arrived in recent years.

Special semester break hours

In the month prior to the new schedule taking effect, the library will also be open fewer hours than currently. This follows a tradition during times when university classes are not in session. From Dec. 26 through January 21, hours will be 10 a.m.-noon and 1:00-3:00 p.m. on Mondays, Wednesday, and Fridays.

New schedule after Jan. 21

The reduced schedule, beginning January 21, will be:

Monday: 8:00 a.m.-noon; 1:00 - 5:00 p.m.

Tuesday: 9:00 a.m.-1:00 p.m.

Wednesday: 2:00 p.m.- 6:00 p.m.

Thursday: 9:00 a.m.-1:00 p.m.

Friday: closed

Use the web to keep current

Access news stories from the SCO

by Bob Gurda

We are pleased to announce a new feature on the SCO web site. Now you can have quicker access to fresh information by visiting our revised news page.

While the stories we post for your reading look much like any other web page, in fact a database is hard at work behind the scenes, producing web pages on demand. Once we post a fresh story to the database, it is instantly viewable through anyone's web browser.

The web site and the *Bulletin*

Will we carry all of the web site's news stories in the *Bulletin*? No, that wouldn't be practical. However, some web site stories will be the seed for longer pieces in newsletter form. Other stories won't make it to the *Bulletin* because they are either too specialized or are no longer newsworthy by the time we get ready to publish on paper.

Get the news while it's hot

We publish the *Bulletin* four times each year, but often we discover information that becomes stale by the time we can get it into print. By checking our news page regularly, you can see it all.

As a recent case in point, the Wisconsin Academy is staging, during most of November, an exhibit of rare maps from the early days of Wisconsin. We didn't hear about this event until after the previous issue of this newsletter had gone to print. The exhibit will be closed before you read these words.

However, from reading out web news story, you would have been able to make plans to take in this unique event.

Check out our news section (just one click away from the front page of our web site) and let us know what you think. And, as always, if you have news to publicize, let us know.

New publication on Pleistocene

Waukesha geology mapped

by Bob Gurda

Home to parts of the world-famous Kettle Moraine, Waukesha County's glacial geology has recently been studied and mapped in detail. The results are contained in Publication 99 of the Wisconsin Geological and Natural History Survey (WGHNS), *Pleistocene Geology of Waukesha County, Wisconsin*.

The publication is in three parts: a soft-cover booklet of 33 pages plus two color plates, one a map at 1:100,000 scale (28"w x 18"h) and the other illustrating eight east-west cross-section profiles (horizontal scale 1:200,000) evenly spaced at 3-mile intervals.

The booklet itself contains 32 illustrations such as ground photographs, aerial photographs, maps, diagrams, and tables.

Bulletin 99 is available from the WGNHS in Madison for \$15, or the map alone (folded) for \$5. Call 608/263-7389 or surf the web over to www.uwex.edu/wgnhs.



Covers Wis. & neighboring states

NGS offers updated annual CD-ROM

by Bob Gurda

Information on geodetic control points in Wisconsin has again been issued on CD-ROM by the National Geodetic Survey (NGS). This product contains information and searching software to discover the location and details about a variety of both horizontal and vertical control stations used for engineering and surveying purposes.

The CD-ROM's contents cover not only Wisconsin but all the surrounding states and several beyond (13 in all comprising a "north-central states" block). The effective date of the control point "datasheets" is November, 2001.

Control point info also found on web

The same geodetic control point information the NGS places on the annual CD-ROM can also be found on the NGS web site. Since that site is updated periodically during the year, for some points the web-based information is more current than what appears on the CD-ROM. To search for a control point "datasheet" on the web, go to www.ngs.noaa.gov/datasheet.html.

Third order vertical not included

It is important to note that this product does not include information on 3rd Order vertical control stations installed by the U.S. Geological Survey. To find this type of information, visit the SCO web site's new section: www.geography.wisc.edu/sco/geodetic/USGS/counties/countyoutline.html.

Developed by multi-agency team

Map shows state's ecoregions

by Bob Gurda

A new map of Wisconsin divides the state into regions and sub-regions based on a holistic approach to landscape management. Titled *Level III and IV Ecoregions of Wisconsin*, the map is the product of a group of scientists drawn from government agencies including the Federal Environmental Protection Agency and the Wis. Dept. of Natural Resources.

The result places parts of Wisconsin into one of six Level III regions, all of which spread outside the state. Examples include the Driftless Area and the Northern Lakes and Forests. Nested within that framework, Level IV regions further subdivide those areas within the state into 27 smaller units. Examples include the Lake Superior Clay Plain, the Coulee Section, the Wisconsin/Michigan Pine and Oak Barrens, and the Glacial Lake Wisconsin Sand Plain.

Many possible approaches

This is not the first attempt to classify Wisconsin into areal units that reflect its ecology, but previous efforts have predominantly used one or another element of the landscape, such as soils or water quality. Further, the earlier maps generally avoided considering the ways in which people have modified the landscape.

This latest work draws heavily on the previously published work including maps of geology, soils, vegetation, etc., and attempts to achieve a result that will be helpful for multi-agency and cross-disciplinary approaches to ecosystem management. The map sheet measures 29½" high x 38½" inches and includes several small national map insets as well as explanatory text. The ecoregions map itself is 13½" x 14 3/4" at a scale of 1:1,500,000.

Copies available

Copies of the map are available in color from Dick Lillie of the Wis. DNR (lillir@dnr.state.wis.us) or Jim Omernik of the EPA in Corvallis, OR (omernik@mail.cor.epa.gov).

Paper explains rationale and process

The authors of the map have documented their work in a paper published in the *Transactions* of the Wisconsin Academy of Arts, Sciences, and Letters (Vol. 88, 2000, pp. 77-103).



Shows detailed terrain via shading

State map highlights relief, elevations

by Bob Gurda

Another member has joined the family of large Wisconsin wall maps. This one, measuring 42 inches square, depicts the state's terrain and elevations. At a scale of 1:500,000, it matches up nicely with a number of other state maps produced over the last several decades.

This map, entitled *Landscapes of Wisconsin*, shows the state's land surface through the use of color and shaded relief, which give the map an almost three-dimensional, textural feel by simulating the appearance of sunlight and shadow. Wisconsin Geological and Natural History Survey (WGNHS) staff developed the map from available digital information about elevation derived from the U.S. Geological Survey's most detailed topographic quadrangle map series.

Cartographic approach

Hydrography (water) features are included on the map, providing additional clues to the slope of the terrain, especially in flatter areas. Also shown on the primary map are county boundaries and names, named county seats, and major highways.

Elevations are colored in a range from green (lowest elevations) to earthier tones (highest elevations). This is a traditional schema but on this map the gradations are smooth, not step-wise, providing a more elegant character.

Shading of the terrain has been created analytically through computer software that simulates a light source emanating from the northwest. The level of detail this provides far exceeds previously published maps of Wisconsin's terrain.

Interpretation tells the stories

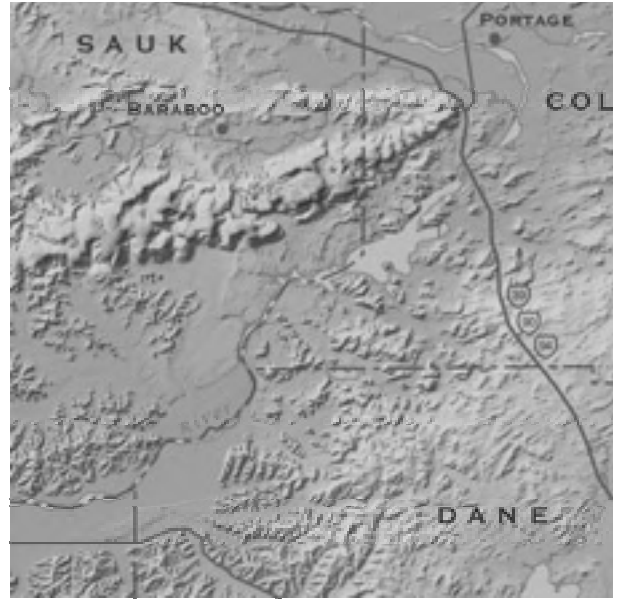
For those of us who aren't intimately familiar with the state's geology, text provides a general background. Additional text explains the geological landscapes of twelve prominent areas including the Blue Hills, Blue Mounds, and Kettle Moraine. A small map helps locate those features on the larger map. Another small map shows the location of the most recent glacial ice sheets at their farthest stage of advance.

Companion maps as a suite

For people who have lots of wall space, the new map will look perfect alongside maps such as *Wisconsin Land Cover* and *Glacial Deposits of Wisconsin*, and others at the same scale. Any one of these maps is attractive and educational, but together they will open windows to an even deeper understanding of our state's natural history

To order...

Landscapes of Wisconsin is available for \$10 from the Wisconsin Geological and Natural History Survey, 3817 Mineral Point Road, Madison, Wisconsin 53705-5100; telephone 608/263.7389. Mail-order customers should add \$4.50 for shipping and han-



A portion from the Landscapes of Wisconsin map showing the Baraboo Hills, Wisconsin River Valley, and Lake Wisconsin

dling; Wisconsin residents should also sales tax (depending on county of residence) to the entire amount of the order. MasterCard and Visa customers may telephone their orders (608/263.7389) between the hours of 8 am and 4:30 pm, Monday through Friday.

(source: WGNHS)

Things are hopping in Wisconsin, continued from page 8

over personal privacy (e.g., who owns what land, and the details of improvements), there isn't a single clear path that is easy to follow in configuring such web sites, but the interest to get public information out to the people is growing.

Scanning is the real deal

If there is a single resounding success story, it is the use of digital scanners for creating images of paper documents. Not only are many counties now routinely scanning all documents that become recorded at the Register of Deeds office, but in many cases the staffs are working backwards in time to scan older documents, too. The same approach is often used with paper records such as PLSS corner remonumentation reports

With a solid computerized indexing system, document scanning is delivering benefits in reduced time for both officials as well as citizens and their agents.

It's interesting to wonder how much research time involved in the process of parcel mapping would have been saved in the 1990's if all documents had already been scanned. Of course, the document scanning technology wasn't mature and economical at the time, so it's a moot point.

Using chaordic model for collaboration

GeoData Alliance takes its first steps

by Bob Gurda

Sometimes the very thought reminds me of the title of one of my favorite books, *The Immense Journey* by Loren Eiseley. While that book is a collection of essays about the evolution of life, there are parallels to the challenges a new organization called the GeoData Alliance (GDA) is preparing to address.

Biological evolution is known to science as a complex organic process extending over time and developing both by incremental change as well as major breakthrough. Similarly, the GDA has just begun its first small steps down a long and winding road toward addressing daunting issues in the development and use of geospatial data and tools.

At the 4th National GeoData Forum held recently in Denver, CO (and convened by the GDA as its first formal action), attendees got a good taste of the fundamental concept underlying the GDA: chaordism. But, more on that later.

Why (yet) another organization?

Some have asked if we really need yet another national (or international) organization in the geospatial information arena. After all, the Federal Geographic Data Committee (FGDC) has been playing a coordinating role for the best part of 10 years. More recently, the Open GIS Consortium has been addressing a series of technical standards issues within the industry.

In addition, we have established professional groups such as URISA, ASPRS, GITA, IAAO, ACSM, etc. We also have organizations formed at particular levels of government: NSGIC, NaCO, ICMA, tribal groups, etc. [editor's note: to decode these acronyms, visit the SCO web site's *List of Acronyms*].

All of the established groups address issues of geospatial data development, distribution, and use in some way or other. Yet when a National Academy of Public Administration (NAPA) panel studied the situation in 1997 (see *Geographic Information for the 21st Century: Building a Strategy for the Nation*), they recommended that a new overarching organization be formed to include all of the professional interests and sectors of government and non-government. In particular, NAPA said that the FGDC should step back from attempting to be the leading national coordinating body and participate more simply as a federal sector representative.

NAPA's rationale was that the world of geospatial data is incredibly diverse. The group of people and organizations that design, build, catalog, distribute, and use the stuff is complex to begin with. But, once one considers the additional people who ultimately stand to benefit from a robust geospatial data infrastructure, you end up with a group far more complex than is represented by any existing organization.

Chaordism emerges as a concept

While people were chewing on the NAPA report and continuing to struggle with the knotty institutional issues of funding, control-

ling, and achieving recognition of the value of geospatial data, a concept for managing complex groups—called “chaordism”—was being tested in several completely different venues. Seemingly a paradoxical idea, chaordism was promoted as a fusion of chaos and order.

Supporters of chaordism point to its flexibility and non-hierarchical organization model as a promising approach to addressing problems long unresolved despite attempts based on other. They describe the liberating sense of trust and camaraderie. Focused on a common problem, people with an interest in seeing a resolution come together in an open environment to seek solutions, with everyone involved considered as equals.

Others less familiar with the concept wonder how such a fuzzy idea will deliver lasting results when applied to the geospatial information domain. They also may be suspicious that people committed to the GDA approach will draw energy away from other initiatives that are bearing some fruit. Such a concern may be unfounded as the GDA is open to anyone and could become a large umbrella under which both existing and new initiatives could flourish.

For some examples of other arenas in which chaordism is being implemented, check out the non-profit Chaordic Alliance: www.chaordic.org.

Organizational details

Individuals as well as organizations can join GDA. A group within GDA can self-organize to address a particular issue. GDA's Council of Trustees, which is elected from membership sectors each year, is deliberately given little power under the GDA Constitution.

The trustees had their first meeting at the close of the Denver meeting, and will be electing officers shortly.

When will we have answers?

Time will tell if the GDA succeeds. According to experts in organizational theory, the process will have to unfold methodically to evolve successfully. These same experts believe that the GDA is well positioned to build on the collaborative workplace environment ushered in by the Information Age.

Watch for news of activities affiliated with GDA. These will not be activities identified by GDA's Council of Trustees; rather, issues and approaches will bubble up from groups of the members with the GDA's infrastructure providing logistical help. Acceptance will also become apparent as more people and institutions officially join the GDA.

Highlights of the conference

The GDA has compiled a short summary of the conference, hitting the high points of group sessions and keynote speeches. To read that information, or to find out more about the GDA, visit www.geoall.net.

2002

though January 19, 2002, **Cartographic Treasurers of the Newberry Library** (exhibit). Contact Newberry events office at 312/255-3595.

January 23-25, 2002, **Wisconsin Society of Land Surveyors Annual Institute** will be held at the Holiday Inn in Stevens Point, WI. Call 414/549-1533.

January 24, 2002, **Wisconsin Land Council** will meet in Madison. Contact OLIS at 608/267-2707 or visit www.doa.state.wi.us/olis/wlc/land_council.asp.

February, 2002, **Wisconsin Metadata Development Workshop** will be held in River Falls, WI. Contact AJ Wortley at 608/265-8106.

March 12-15, 2002, **Wisconsin Land Information Association Annual Conference** will be held at the KI Convention Center in Green Bay, WI. Visit www.wlia.org.

March 17-20, 2002, the **Geospatial Information & Technology Association (GITA) Annual Conference 25: Bringing IT Together: Charting the Course** will be held in Tampa, FL. Contact: 303/337-0513 or www.gita.org.

March 19-23, 2002, the **Association of American Geographers** will hold their annual meeting in Los Angeles, CA. Visit www.aag.org.

April 9, 2002, **Map Design Workshop** will be held in Madison, WI. Contact Bob Gurda at 608/262-6850.

April 22-26, 2002, **ACSM 2002 Annual Conference & Exhibition and the 22nd Federal of Surveyors Annual Convention** will be held in Washington, D.C. Contact Linda Hachero at 301/530-1619 or visit www.survmap.org.

May 2-3, 2002, **Wisconsin Land Information Association** will hold its membership meeting at the Racine Marriott Hotel, Racine, WI. Contact WLIA at 800/344-0421 or at abarrett@uniontel.net.

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

Will meet in Green Bay, in March

WLIA planning 14th annual conference

by Bob Gurda

The Wisconsin Land Information Association is laying plans for its annual conference. In 2002, at least 600 people are expected in Green Bay for educational workshops, an array of technical sessions, keynote speeches, vendor exhibits, and more. Every year, this is the big GIS meeting in our state.

This year the conference will be a bit later in the calendar than usual, March 12-15. The theme is **"LIS – The Fabric of our Lives"**. The event will take place at the KI Convention Center and Regency Suites Hotel in downtown Green Bay.

To locate details, visit WLIA on the web at www.wlia.org or phone 800/344-0421.

Weathers aftermath of Sept. 11

NACIS stages annual meeting

by Bob Gurda

The North American Cartographic Information Society (NACIS) held its annual meeting in Portland, Oregon this fall, not long after the terrorist events of September 11. Nevertheless, it was one of the group's strongest meetings, according to Prof. David Woodward of the UW-Madison's Geography Department.

NACIS has never been a large organization but its members clearly are a dedicated lot. Over 200 traveled to Oregon which is somewhat of a hotbed of quality cartographic activity. The subject of the keynote speech was the new *Atlas of Oregon*.

Comparison to ACSM?

The traditional organization for cartographers in the U.S. is the American Carto-

graphic Association which changed its name to the Cartography and Geographic Information Society (CAGIS) several years ago. It is one of the organizations under the umbrella of ACSM, the American Congress on Surveying and Mapping.

Woodward noted that people giving talks at ACSM conferences have to compete with numerous other concurrently scheduled sessions, and in recent years this has often meant speaking to mostly empty rooms. At NACIS, by contrast, the audiences seem more committed and informed on cartographic issues.

Another contrast between the two groups is in the area of publications. For some years, ACSM journals were very thin and published up to a year late. The NACIS journal, *Cartographic Perspectives*, is

now peer-reviewed and its quality continues to rise.

Wisconsin roots

NACIS held its first conference in Milwaukee and its administrative offices are there. Staff of the American Geographical Society's Library (associated with UW-Milwaukee) have been involved from early on. Christine Reinhard of the SCO was also instrumental in forming NACIS. People from several other Wisconsin institutions have been active in NACIS in recent years.

For more info...

You can learn about NACIS via their web site, www.nacis.org. Their 2002 annual meeting will be held in Columbus, Ohio in October.

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 1st Floor of Science Hall.

Our permanent staff consists of five 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, IS Resource Support Technician (608/263-4371), and Ana Rumm, Financial Specialist (608/265-9368), 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...

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

www.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:

www.wisclinc.state.wi.us

At this site you can search and read 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 February 1, 2002.

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Please send all comments, corrections, and news items to:

State Cartographer's Office
Room 160 Science Hall
550 N. Park Street
Madison, WI 53706-1491
phone: 608/262-3065
fax: 608/262-5205
email: sco@facstaff.wisc.edu

State Cartographer's Office
Univ. of Wisconsin-Madison
Rm. 160 Science Hall
550 N. Park Street
Madison, WI 53706-1491

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