



Wisconsin **MAPPING BULLETIN**

Topo maps re-emerge as "new" product

by Bob Gurda & AJ Wortley

Virtually overnight, familiar maps such as the federal topographic series have sprung up as a scanned product in a variety of incarnations. At the same time, software programs customized to use these files are also appearing.

These developments bring computerized mapping to a broad new group of people without the need for specialized training. At the same time, this trend means a fresh wave of use and benefits arising from the considerable investment in major mapping projects in the 1970s and 1980s.

While prices and features vary from one product to another, it is possible to gain some significant functionality with costs as low as some home software titles. These files can also be the basis for more complex applications such as incorporation with portable GPS receivers or as part of a GIS.

The USGS topo quad as source material

If you use traditional printed U.S. Geological Survey "topo quads" you now have access to a variety of scanned versions of this map series for use with computers. Not only is there now statewide coverage of the USGS "Digital Raster Graphic" or DRG (and its WISCLAND variant), but a number of private companies deliver similar or complementary products which go by different names.

Traditionally, mapping is a slow process with the final product being a printed map sheet. By contrast, in only a few years we have seen development of virtually national coverage of scanned versions of the most widely used federal map series: the 1:24,000-scale, 7.5-minute topographic quadrangle maps which number about 45,000 sheets covering the lower 48 states. This activity represents a potentially large spin-off benefit from the investment in that mapping series.

Uses from basic to complex

In the most direct application, the maps (or sections of them) can simply be viewed on a screen or reproduced on a desktop color ink jet printer (plotting a full map sheet at traditional publication scale requires a larger device). Some software will allow measurements such as distance between points or area calculations, or will allow you to "join" adjacent maps (a computerized approach similar to trimming paper maps and taping them edge to edge).

At the high end, the scanned maps can become a base layer upon which to display other geographically referenced information. Because the topo map is familiar to many people, it can be a particularly effective part of such a display.

Finding out, keeping track

Vigorous developments in this arena of scanned topographic maps means that product features and availability can change day to day. In this article we can give you only a glimpse of the overall situation and directions it appears to be moving.

At least two private companies have statewide coverage of scanned topo maps, and their packages of map files for individual states may be significantly less expensive than buying you own copy of the USGS DRGs for Wisconsin. On the other hand, the USGS product is not copyright protected, so you can make copies from any source at your disposal.

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by Ted Koch

Board Meetings

The Wisconsin Land Information Board (WLIB) met most recently on October 21 in Madison. The next scheduled meeting of the board is December 17 in Madison. The meeting schedule for 1998 has not yet been set.

1997 and 1998 grant programs approved

Local government grant-in-aid programs both for 1997 and 1998 were formally approved by the board at its October 21 meeting. The board approved the 1997 program on an 8-2 vote, while the 1998 program was approved on a slim 6-5 margin, with Chair John Laub casting the tie-breaking vote.

In the last issue of the *Bulletin* (July, 1997) we reported that the board at its June 24 meeting had rescinded earlier action approving a 1997 program. That action was necessitated by the fact that accounting discrepancies had led to the situation that the board did not know in June how much money was available for grants. This accounting problem was reconciled during the summer.

To be eligible for 1997 grant funds, counties will be required to submit an application containing the scope of work proposed for the funds, a project budget, and completion time-line within 18 months. All proposed projects have to be consistent with WLIB approved plans, and must be used for parcel boundary mapping and associated attributes or for activities directly supporting parcel mapping such as geodetic control placement, Public Land Survey System remonumentation, or digital orthophotography or planimetric mapping as a base for parcels. Grant funds available to any county will equal approximately 79% of the July 1, 1995 - June 30, 1996 revenue contributions made by a county to the board. The remaining 21% not returned to the counties will be used for board operating expenses plus base budget and education and training grants to the counties.

For 1998, the grant program will be further simplified. Again, counties will receive all funds contributed to the board less that used for board expenses and other grants. However, for 1998, the board voted to impose no restrictions on how the funds can be used, will not require a grant application to the board, and will not require a project completion report. This represents a dramatically simplified process as compared to the first five years of the grant program.

Board accepts audit report

At its October 21 meeting, the board voted to accept the audit report on the condition of Board grant files, and to accept the recommendations made in response to the report

by the Board's Audit Committee. The Board will use the committee's recommendations for policy changes in the coming months. The grant file audit was conducted by McGladrey and Pullen, a certified public accounting firm in Madison.

King announces departure as Exec. Director

Doug King, Executive Director of the board, has announced his intention to leave the board at the end of December, and return to his position as a Senior Information Technology Consultant within the Wisconsin Department of Administration (DOA). King has been on loan to the board from the DOA since October, 1995. Efforts will begin in November to recruit a new director who will serve both the WLIB and newly created Wisconsin Land Council. King has not announced whether or not he will be an applicant.

State Budget Enacted

by Bob Gurda

It was over three months late, but finally the legislature passed the budget bill for the biennium, and the governor signed it after making his line-item vetoes.

For those of us in the land information arena, the most significant aspect of the bill was the preservation of the Land Information Board and the simultaneous creation of a new Land Council which will focus on land use concerns. Both will face "sunsets" in 2003.

The two organizations will share an enlarged staff including a 50/50 Executive Director position. The state cartographer is statutorily specified as a member of both the board and the council.

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Developments in Local Government

Big gains in recent years

GIS advances in rural counties

by Ted Koch

Earlier this fall, I stopped in Baraboo to see Ted Brensen, **Sauk County** Cartographer and manager of the Sauk County Land Information Office. I had visited Ted's office about five years earlier and was eager to see what changes might have occurred there.

New approaches, new quarters

The first very obvious example of change was the location of the LIO in the striking new county office building in downtown Baraboo, and the second the spacious new office layout for Ted and his assistant. However, the most pleasing aspect of change was to hear and see the manner in which work is now being accomplished in comparison to 5 years earlier. Gone is the manual drafting of detailed parcel maps that Ted had so meticulously produced for more than 10 years, replaced by state-of-the-art computers, and mapping software with all data now being shareable with other offices on the county's electronic network.

In our brief visit, Ted related how the county's support of the mapping program had grown over the years, and how retained fees from the state's Land Information Program were helping to sustain parcel mapping of some very critical population growth areas, such as near Wisconsin Dells. Having "banked" some of those retained fees also helped the county respond quickly to a partnering opportunity with the National Resources Conservation Service for digital orthophotography and digital soils mapping.

The story is repeated in similar settings

As I left Sauk County, I was reminded of the dramatic growth in GIS/LIS investment and applications occurring recently in many rural Wisconsin counties. Within the past several months, I have seen recruitment announcements for GIS positions in **Juneau and Iowa Counties**. **Trempealeau County** has a new GIS Coordinator, and **Monroe County** added such a position the past year. I am sure there are other similar new positions in other rural counties that I'm not yet aware of.

In **Clark County**, Jeff De Mez is producing a County Land Information Office Newsletter. The August issue shows how GIS can address several county functions. In this same issue, Jeff mentions that a base budget grant award of approximately \$2500 from the WLIB will fund ESRI ArcView software training to ten people in five county offices.

If this trend continues

All of this strikes me as pretty amazing stuff. Hardware, software, training, enthusiastic employees and county managers and boards embracing and adapting to so many changes and successful new approaches. In the recent past, much of this was at best a dream. What a difference five years can make.

Just imagine five more years....

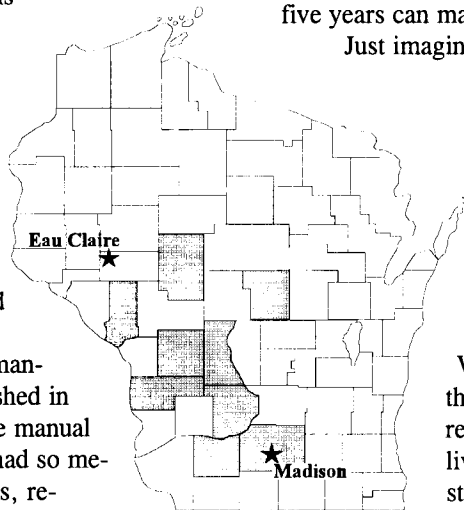


Image layer helps GIS thrive

Counties & cities rely on their orthos

by Bob Gurda

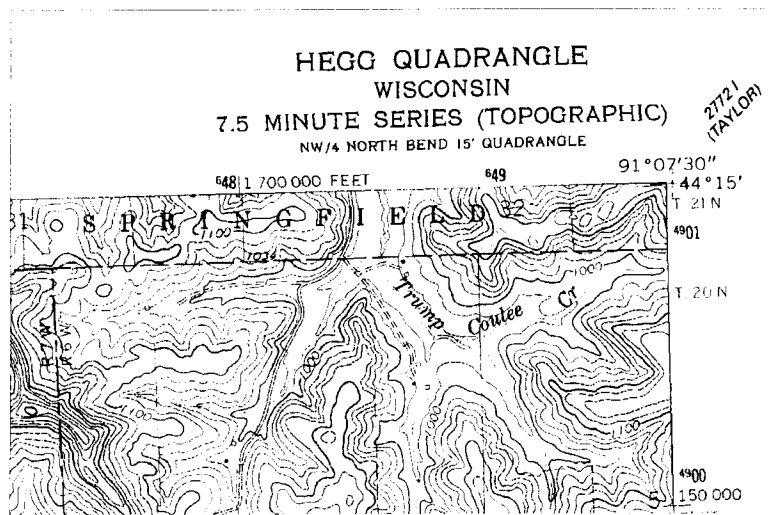
Digital orthophotographs have arrived in Wisconsin. I mean that in more ways than simply that these geometrically-corrected computerized images have been delivered for use over more than half of our state.

Indeed, the whole idea of using these images in everyday work clearly has arrived in one place after another. Not only are we seeing this happen in county government, but more recently cities have been joining the movement.

Demonstrations by several counties at the September meeting of the Wisconsin Land Information Association in La Crosse made it clear that routine activities using the orthophoto image on-screen have arrived.

- **Portage County** showed how they use the image backdrop to evaluate and adjust parcel map lines, obviously not to the same level of accuracy that more complex methods would deliver, but adequate for enough uses to justify the process at this time.
- **Vernon County** showed the use of the ortho image in conjunction with extreme flood event analyses based on their digital terrain model (which was prepared as part of their digital orthophoto production contract). This process helps support zoning determinations.
- **Dane County** loaned a set of plots made from their county-wide orthophotos, one per township, which we pinned up on the wall to make a seamless view. That made a truly impressive display. The **City of Madison** used the county images for a year or so before deciding to get their own at higher resolution: 6 inch pixels. The **City of Eau Claire** is doing a similar project right now.

These three examples are only a few of the success stories based on orthophoto imagery. While none of these implementations are trivial, the computing power and trained people have arrived to support the use of this data, and this fact is evident even in some rural areas.



continued from page 1...

Topo maps re-emerge as "new" product

To determine current product availability or to view samples, you may need to do some "surfing" on the World Wide Web. To help you do this in a structured context, we have added a section to the SCO web site that profiles the products we are aware of and provides links so that you can navigate to those web sites on your own.

The DRG from USGS

We have profiled the standard federal DRG product in previous issues and it is well represented by USGS web site information. In a nutshell, each map sheet becomes a TIFF file related to the UTM coordinate system. The files are packaged in groups each of which contains the map images for an area of 1 x 1 degree of latitude x longitude. There are 29 such blocks covering Wisconsin (and extending across the border).

The federal DRG product is available for all blocks in Wisconsin, on CD-ROM (one disc per one-degree block) at a price of \$32 each plus shipping. Each disc includes viewing software. Contact USGS at 573-308-3500.

Variations on the theme

Under WISCLAND, cooperators have assembled funds to support enhancements to the USGS standard DRG product that make it more useful for Wisconsin in conjunction with certain common GIS software.

Products similar to the DRG are available from companies that are scanning the same USGS maps, but according to different specifications. You may be able to specify the coordinate system you prefer, and the software for viewing the images may be customized for the job.

How to find out more

Beginning in the next column, we have inserted an abridged version of the information now available for viewing on the SCO web site. There you will find web site links for many of the scanned topo map data products and viewing software of which we are aware, as well as viewable samples of DRG images.

If you have further questions, contact the SCO.

Down to Earth Perspective on the Digital Raster Graphics

How are DRGs different from my own scanned maps?

Geo-referencing information is added to the DRGs to associate the maps with their true position on the ground. This allows for some viewing software to give coordinate positions, automatically calculate map scale or distances, and perform other spatial manipulations of the maps. Also, other geo-referenced digital information (Digital Line Graphs or Digital Orthophoto Quadrangles) may be overlaid more easily by matching coordinates.

What kind of software do I need to view a DRG?

If you buy a set of DRGs on CD-ROM from the USGS, the disc includes two graphics viewing packages for use with Windows: ArcView 1.0 and Aerial View Lite. Other graphics programs that handle large TIFF files will also work but all may not take advantage of the geo-referencing information available with the image. Two other viewing programs, WinCATS and dlv32, are available to download from the USGS's Internet site.

Are all DRGs essentially the same?

USGS has developed standards for production of DRGs in order to build a national standard data set. However, the age and accuracy of the most recent topo quad available will have some effect on the quality of the DRG files. Also, the USGS product is not copyrighted.

On a final note, some local agencies have taken the program one step further. In Wisconsin, the Wisconsin Department of Natural Resources has enhanced the standard DRG product through work funded under WISCLAND. This is a copyrighted product that reprojects the DRGs into both WTM 27 and WTM 83 (1991) coordinate systems. It also recodes the collar part of the mapsheet to facilitate joining adjacent digital mapsheets. The WTM 27 form of the WISCLAND-enhanced DRGs is available statewide, and the WTM 83 (1991) form is in work. Contact the SCO for details.

Can I get a DRG for anywhere in the U.S.?

The state of Wisconsin has been completed and is encompassed on twenty-nine CD-ROMs for the entire state. The USGS expects to have the current DRG production program complete nationwide in early 1998; the majority of states are complete. You can view a status map of the U.S. at a USGS web site.

continued on next page...

Down to Earth Perspective on the Digital Raster Graphics

Where do I get these digital maps?

We recommend that you order DRGs from the ESIC office in Rolla, MO at 573/308-3500.

Each 1 degree block is identified by the latitude and longitude of its southeast corner (e.g., block 44089 is centered over Portage County, and those DRG files cover the West half of the USGS 1:250,000-scale map "Green Bay").

Are there other digital maps similar to DRGs?

Yes, several companies have been offering scanned topo maps for a few years. In recent months some additional scanned topographic products have emerged. Some companies offer data to use in various existing graphics packages while others offer data along with custom software to view, manipulate, and extract images.

Included here are a few similar products that we have encountered. This is by no means an exhaustive nor most up-to-date list. Also, the target audience for these companies may range from business/GIS applications to outdoor enthusiasts.

Color Raster Topographic Maps by Land Info International, Ltd. (geo-processed and tiled image data): 303/369-6800.

Below are a few features of Land Info's topographic data: Choice of map image with margin or geo-referenced seamless mosaic. Complete topographical map coverage of the United States with USGS 7.5-minute topographic maps at 1:24,000-scale, international maps available from 1:50,000 to 1:250,000-scales; geo-referenced to real-world coordinates; 16-point geo-referencing control; 4 bit - 14 color composite; 250 dots per inch; Tagged Image File Format (TIFF) 5.0; samples are available from Land Info's website.

Land Info has extensive agreements with other companies to distribute data (data vendors) as well as utilize their topographic data in new software (software vendors). We include a few of these below.

Related Data Vendors

EarthWatch, Inc. (example of distributor of similar digital data products): 800/469-1225.

EarthWatch Inc. distributes the Land Info US State Series color raster topographic maps among its other digital data products. Attributes of data offered are the same as Land Info description above. Potential advantages offered by EarthWatch and other data distributors include on-line subscriptions to downloadable data sets.

OMNI Resources: 800/742-2677 (another distributor of Land Info's data).

Related Software Products

Topoguide by Hanta Yo (software utilizing Land Info color raster topographic maps): 888/426-8296.

This company offers a software package aimed at the outdoors enthusiast. Land Info raster data is incorporated as map source upon which outdoor experiences may be recorded, maps printed and other functions.

NAVITRACKER by Navitrack International: 905/42-1553.

GPS-Pro product series by MPN Components Inc.: 888/477-7761.

USGS Quad Sheet Image Mosaics by GIS Technology Inc. (GTI) (edge-matched image catalogs delivered on 4mm or 8mm tape): 909/798-8030.

Some features of GTI's image data include: Image catalogs composed of quarter-quad size tiles making panning and zooming more efficient at display scales; smooth edgematching at tile boundaries; USGS topo maps at 1:24K, 1:100K, 1:250K & 250 dots per inch; available in TIFF, GIF, JPEG, and ARC/INFO grid formats; image catalogs available for arbitrary geographic areas; custom file formats, projections, and orders upon request.

Sure!Maps Raster by Horizons Technology, Inc. (Sure!Maps Raster seamless, full-color, georeferenced maps on CD-ROM including viewing and extraction software): 800/828-3808.

Sure!Maps Raster features include: 1:24K USGS topographic coverage of the top 60 U.S. metropolitan areas; 1:100K & 1:250K USGS topo coverage of entire US; seamless 7.5' x 7.5' images; 9-point geo-referencing control; 8-bit - 256 color; 250 scan resolution resampled to ~125 dpi; TIFF, TGA, BMP export formats; new downloadable image catalog on-line; sample images available from website.

U.S. Terrain Series with G-REF by Earthvisions, Inc. (US Terrain Series digital USGS topographic maps on CD-ROM with viewing, annotation, search, and extraction software): 800/627-7236.

Some features incorporated by Earthvisions include: 7.5' x 7.5' proprietary image format with information border; adjacent map screen capture option; 1:24K and 1:100K coverage of Wisconsin and other states; very high scan resolution resampled to ~160 dpi; TIFF and MS Windows BMP export formats; viewing, annotation, manipulation, and extraction software with versatile functions included on each CD-ROM.

Statewide Data Developments

Gear-up extends statewide

State campuses teach GIS

by Bob Gurda

Wisconsin universities mirror an academic trend that extends world-wide: instruction in GIS has become a standard offering as compared to ten years ago.

We recently did a surfing survey (via Internet web sites) of the 4-year campuses in the University of Wisconsin System and found either specific courses in GIS or at least significant GIS content in one or more courses at almost every location. We didn't locate comparable information for the major private colleges in the state.

We have built a new section of our web site

that lists the campuses and provides links into their GIS-related web sites. The level of detail at these sites varies, but they are the best places to grasp quickly the breadth, depth, and context of GIS instructional offerings.

The Madison tradition

That the oldest and largest campus leads the way is hardly a surprise. But, many people aren't aware of the Madison campus' long and rich tradition in the several academic units that contribute to the mapping and spatial information sciences. This tradition began in the pre-computer age.

As Steve Ventura profiles in his article on page 7, the campus faculty in this broad connected arena have created an organization (SIAC) to help coordinate across their units. Such an organization is a necessity since these faculty are situated in eight different buildings and report to at least four different administrative units.

Milwaukee's a major player, too

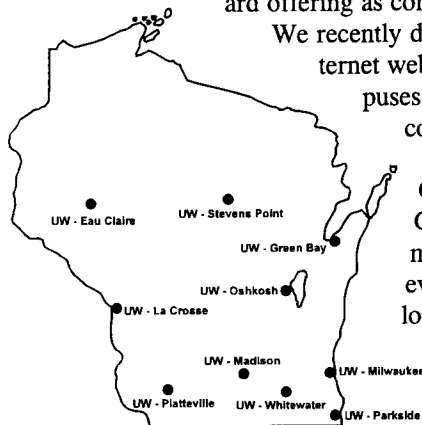
At UW-Milwaukee, a robust program that concentrates on urban applications of GIS is led by William Huxhold in the Urban Planning Department. Another major node is in the Geography Department.

GIS spread in the UW System

We have been aware of faculty teaching and research in GIS at most of the campuses over recent years, but were pleased to find specific GIS courses at all the campuses except Superior and Stout (River Falls has courses, we believe, but they aren't described on the web site). At most of these campuses, the GIS focus is within one department.

Tech schools also active

Chippewa Valley Technical College in Eau Claire has a GIS Technician program, and several other of its sister campuses teach geography or land surveying.



University of Wisconsin-Madison
**Campus-wide Symposium on
Spatial Information
and Analysis**
Friday, November 14
9 am - 4 pm
Union South (corner of Randall & Johnson Dr.)
[check "Today in the Union" for room number]

**9 am - noon: Geographic Information
Sciences on the UW-Madison campus**
Who is doing what — brief reports on research in geographic information sciences from a broad spectrum of the campus

1 pm - 2 pm: Keynote Address
"New Directions in
Geographic Information Science"
Michael Goodchild — Director of the National Center for Geographic Information and Analysis, and Professor of Geography at University of California, Santa Barbara

2 pm - 3 pm: Open Discussion —
"The future of SIAC and GIS at UW"
• Results from the SIAC inventory of campus activities — technology, research, curriculum, training, technical support, etc.
• Presentation of SIAC undergraduate curriculum proposal
• Discussion of future directions and activities for SIAC

3 pm - 4 pm Reception

Universities Coordinate their Approach to GIS: the UCGIS

by Steve Ventura*

Is GIS a technology, a discipline, a fad, a what?

Academics around the country are beginning to believe that it may be an emerging discipline. They have formed the *University Consortium for Geographic Information Science* (UCGIS) to think about this question, to identify key research and education issues in GIS (note, in this case, that GIS stands for geographic information *science*, not *system*; see below), and to promote the interests of the GIS community, particularly as affected by federal policy and activities.

Academics are beginning to believe that GIS may be an emerging discipline.

UCGIS was formed in 1995 as "a non-profit organization of universities and other research institutions dedicated to advancing our understanding of geographic processes and spatial relationships through improved theory, methods, technology, and data." Member institutions participate through delegates and an elected board who meet at an annual assembly and various national GIS conferences.

In 1996, UCGIS developed a research agenda consisting of ten items, from more than 80 submitted ideas about the important GIS research issues. These items have become a road map as the organization attempts to influence funding agencies and research organizations on how to most effectively allocate limited research dollars — to establish funding priorities that "balance intellectual curiosity with the need to solve immediate and practical problems." (The research priorities can be reviewed at www.ucgis.org/research.html).

Interestingly, and I consider — importantly, the UCGIS research agenda includes an item called "GIS

and Society." The research community is charged with getting a better understanding of the societal im-

Researchers want to better understand the societal impacts of GIS, both benefits as well as negative aspects.

pacts of GIS, both the benefits and the potentially more negative aspects... science conscious of its own impacts.

This last summer, UCGIS established education priorities, asking what are the key issues facing GIS educators at all levels of instruction, and how can we better deliver, educate, and train future users of geographic information science and related technologies. Issue papers were written around eight topics:

- *emerging technologies for delivering GIS education,*
- *supporting infrastructure,*
- *access and equity,*
- *alternative designs for curriculum content and evaluation,*
- *professional education,*
- *research-based graduate GIS education,*
- *learning with GIS, and*
- *accreditation of institutions and certification of professionals (the issue least likely to have any real solutions in the near term).*

The education priorities can be viewed in detail at www.ncgia.ucsb.edu/other/ucgis/ed_priorities/contents.html.

UCGIS represents academia in discussions with federal agencies on GIS.

UCGIS has assumed an important role representing the academic community in discussions with federal agencies on GIS, pointing out the current and potential contributions of GIS research and education to na-

tional scientific and public policy issues.

For example, UCGIS is developing a partnership with the Federal Geographic Data Committee to support research and development needed for the National Spatial Data Infrastructure. Last Spring, UCGIS briefed congressional leaders and agency heads on the important role of GIS in issues such as environmental quality, economic competitiveness, governmental efficiency and effectiveness, and public safety.

GIS professionals of Wisconsin have UW-Madison's SIAC as their conduit into UCGIS.

The University of Wisconsin-Madison was one of about 30 charter members of UCGIS (whose ranks continue to grow). Through the auspices of its Spatial Information and Analysis Consortium (SIAC), UW has helped guide many of the important decisions and choices made by UCGIS.

SIAC is a collection of faculty, staff and students that coordinate GIS research, instruction, and outreach on the Madison campus. SIAC is your (GIS professionals of Wisconsin) conduit into UCGIS.

Please let us hear comments, ideas, or other thoughts about UCGIS and particularly elements of the research agenda or education priorities as shown at the above Web addresses.

**Steve Ventura is an Associate Professor, Environmental Studies and Soil Science, at the University of Wisconsin-Madison. He is currently the chair of SIAC and also a UCGIS delegate.*

You can contact Steve at 608-262-6416; sventura@macc.wisc.edu; 1525 Observatory Drive, University of Wisconsin-Madison, 53706.

Internet Website Developments

...diversifying and deeping

SCO Website grows and grows

by Esteban Chiriboga

As previously advertised, the SCO web site has continued to grow in the last three months and I expect this trend to continue unabated. We invite you to "surf" over to our site any time to see what's new or to dig deeper than you may have on your previous visits.

Aerial & satellite, and ortho info

The online version of the *Wisconsin Catalog of Aerial Photography* now includes information on missions flown in 1997 and we are taking pains to ensure that the listings remain as current as possible.

There is also a greatly expanded satellite and aerial photography section which covers topics like orthophotography and photogrammetry. In addition, you will find an extensive collection of links to remote sensing related sites as well as some sample images.

DRGs come to the fore.

A brand new section focuses on Digital Raster Graphics (scanned images of topographic maps) and related products. We attempt to answer some of the most common questions about DRGs and provide links to companies that distribute them.

Download offerings expand

The SCO's recently updated 16-page guide *Wisconsin Soil Mapping* is available for download as a .PDF format file. This guide provides a detailed thematic overview of soil mapping from a Wisconsin perspective as well as the current status of soil mapping in Wisconsin. A reader program needed to these Adobe Acrobat files is available free on the Internet.

This edition of the *Mapping Bulletin* will be available for download as a .PDF file along with the three previous issues published in 1997.

What's next?

In active work status right now are sections on cartography and GIS resources for school instruction, and on geographic facts and statistics that have a mapping slant. Look for those and other improvements to appear before our next newsletter is published.

As always we welcome feedback regarding the SCO and WISCLINC web pages. Please contact us with information or suggestions regarding our online resources so that further expansion of our Internet services can better serve the mapping community of Wisconsin.

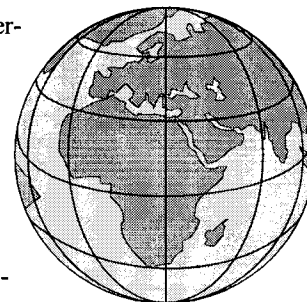
See our website address on page 16 of this newsletter!!

Find the map on the web

Where in the "world" is that watershed?

by Bob Gurda

We've stumbled on another interesting site on the World Wide Web, one that locates watersheds in the U.S., including those that have active water quality projects. It's named "Surf Your Watershed". This site is linked with the GNIS site (USGS' Geographic Names Information System on the web).



The watershed locator site was developed by the U.S. EPA, and it links to yet other sites for information specific to each watershed.

Note, too, that this query tool is built to search only within the U.S. (despite our headline for this story).

Try it out...

Here's how you can take advantage of a link between these two sites. Go to the GNIS site (mapping.usgs.gov/www/gnis/) and query the database using city and state names. It will return basic geographic information about that city, and further will provide links to either a map of the location or further details about the location.

If you select the latter choice, the information you'll get in return will let you link to the EPA site which will provide you with a map of the watershed within which the city lies. You'll also get a population estimate for the watershed, a statistic for length of streams and shorelines, and information on percentages of general categorized of land cover.

EPA site has much more

The EPA site more generally (www.epa.gov/surf/iwi) will let you search within any of the watersheds in any state or browse through a variety of information on water quality and other environmental parameters and programs.

Questions & Answers

Q: The manufacturer of my new hand-held GPS unit recommends that I use a metric grid reference system. Can you point me to any readily available maps that already have UTM grid lines on them?

A: One printed map series comes to mind immediately. The U.S. Geological Survey's 1:100,000-scale topographic maps have a Universal Transverse Mercator (UTM) grid (graticule) with 10,000 meter spacing. This translates to a grid spacing, at map scale, of 10 cm (or a little less than 4 inches). Along the edges of the map are ticks that carry the northing or easting coordinate values. With a simple millimeter rule you could derive or plot rough UTM coordinate values for any point on the map.

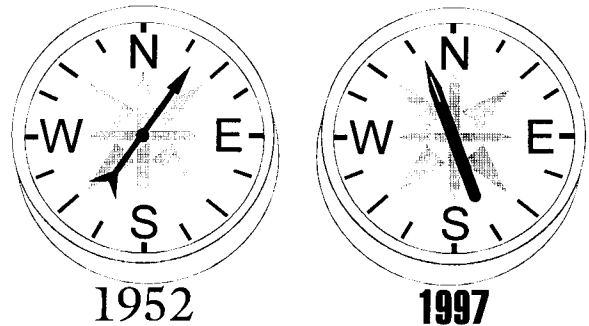
UTM is a worldwide coordinate system primarily used by federal agencies. Eastern Wisconsin (east of the 90th meridian) falls into zone 16 while the western part is in zone 15.

The degree of detail and number of features shown on the 1:100,000-scale USGS map series is quite a bit less than is carried on the more widely known 1:24,000-scale series, but for your purpose it may work well. Remember that the stated accuracy of well-defined points at a scale of 1:100,000 is plus or minus 166 feet 90% of the time.

In Wisconsin you have your choice of 2 varieties of this map series. The typical USGS maps at this scale each cover 30 x 60 minutes (north-south and east-west, respectively). They measure 29 x 40 inches although the standard product is folded down to 4 x 8 inches. For Wisconsin these maps have a 10 m contour interval and to cover all of the state you would need 49 sheets (17 of which extend over significant portions of adjacent states).

The same map content (except contours are either 20, 40, or 80 feet depending on the terrain) is also available by county (for Wisconsin only). These maps vary in size since the counties themselves are a variety of shapes and sizes.

The standard USGS 1:100,000-scale map series is also included as part of the new DRG product (digital files scanned from paper maps) profiled on page 9 of our previous issue (July, '97).



Q: I'd like to know what the magnetic declination was in 1952 at a point. Can you provide this for me?

A: A year ago this would have required either you or us using a computer program that can be downloaded from the National Geophysical Data Center (NGDC). Now you can submit your inquiry interactively over the Internet through NGDC's web site. In fact, you can even use this service to extract the shifting magnetic declination values for a point over a range of years.

Point your web browser to www.ngdc.noaa.gov/cgi-bin/seg/gmag/fldsnt1.pl. You need to know the latitude and longitude, your approximate elevation, of your point of interest. You then choose either a single date or the beginning and end of a span of time (beginning no earlier than 1900).

This service provides not only the more familiar horizontal declination but also vertical declination (both of which are angular elements) as well as six force elements. Finally, you receive values estimating how rapidly each of these elements is (was) changing.

For historic declination information from years 1750 to 1995 (for the conterminous U.S. only), the NGDC has another program also accessible over the web at www.ngdc.noaa.gov/seg/potfld/ushd.html. This reports only the horizontal declination. Note also that this program needs longitude to be positive, while the program described above takes west longitudes as negative.

Finally, it may help you understand the results of your web search better if you consult the SCO's guide *Wisconsin Magnetic Declination* which soon will be available for download in PDF format from our web site.

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.

Statewide Data Status

SCO to help gauge the nation's progress

Survey to measure "framework" status

by Bob Gurda

Wisconsin is about to embark on its part of a national effort to determine the development status of geospatial data. This project is sponsored by the Federal Geographic Data Committee (FGDC) and carried out by the National States Geographic Information Council (NSGIC). The SCO is serving as Wisconsin's coordinator for this project.

The focus of this information collection is to better understand how much data exists out across the country in the form of "framework" — a term used by the FGDC that includes some but not all of the digital data types of interest to state and local governments. Framework relates to another concept promoted by the FGDC, the National Spatial Data Infrastructure (NSDI).

On diskette now, the net later

State, regional, county, and (larger) city government contacts will be asked to complete a modestly short survey in the November/December time frame. The survey comes on a diskette; necessary software will run directly from the diskette, although Windows 3.1, 95, or NT is a necessity.

The completed surveys will be collected nationally, and since the responses will be in digital form, the data will be relatively easy to compile and analyze. In the future, the information may be posted on the Internet and the vision is that it will be possible to update various entries through that means, too.

Rewards are part of the picture

Each organization that completes its survey can redeem coupons for several products donated by Environmental Systems Research Institute (ESRI) including a copy of Business Map software (retail \$99).

More generally, the collected information will be invaluable in helping steer how federal funds are invested in mapping and spatial data collection. The SCO decided to facilitate this survey in Wisconsin since our state will benefit from better coordination that may be a result.

Why another survey?

Wisconsin Counties, in particular, may feel as though they have already been sufficiently surveyed. This current national survey, however, is much simpler than what is collected annually by the Wisconsin Land Information Board. One county Land Information Officer tested a pre-release version of the survey and pronounced it "easy to complete".



Full house in La Crosse hears about options

Interest grows for statewide orthos

by Bob Gurda

A virtual smorgasbord of options awaits counties and others considering development of digital orthophotos (DOPs). This was the message conveyed to a packed house early in September as part of the WLIA quarterly meeting.

Each option has its own costs and benefits, but at least one of those choices has become much less expensive in the last year: the federally-operated National Digital Orthophoto Program. Under that program, only 25% of the cost needs to be raised from others than the primary federal partners. Non-federal projects have taken a number of forms in Wisconsin, so there is good experience from which to make informed choices.

What are some impediments?

We surveyed the 22 counties which don't have 100% existing or planned DOP coverage and found some widely held views: costs are a problem, as is lack of current aerial photography. With the advent of the 25% mentioned above, and with new NAPP photography scheduled next spring statewide (to replace what was acquired in 1992), these concerns start becoming manageable. At the same time, those counties that have been using DOPs are excellent examples of the many benefits that can accrue from such an investment.

The "space" option

Some people are also eagerly awaiting a new era of commercial satellite systems that, provided they are successfully launched beginning this winter and then prove to deliver quality images at reasonable prices, may compete with DOPs. Since many people seem to need spring time ("leaf-off") images, though, one has to hope for clear skies on the day the satellite is overhead. It will probably be several years before we know the answers.

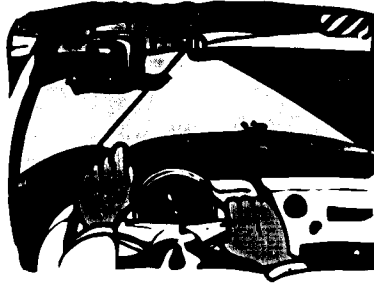
News from the SCO

a busy period as usual

SCO staff on the road

by Bob Gurda

This summer and fall we have been about as busy with activities outside Science Hall as here "back at the ranch." While our meetings, conferences, presentations, and associated travel always come along at a steady clip, this seems to have been an especially busy time.



On the campus

Close by on the UW-Madison campus we have been involved in a number of activities. Ted Koch helped with the production of the satellite videoconference (held October 15), and has continued as secretary for SIAC meetings.

Right here in Madison

Off campus but still in our backyard, Ted has invested considerable time in his role as a member of the Land Information Board, and particularly its Executive Committee. Now that the state budget has finally been enacted, the new Land Council will be forming and Ted will also be a member of that group.

In addition, we continue to participate approximately monthly in several groups including the State Interagency Land Use Task Force, the State Interagency Data Sharing Workgroup, the Coastal Management Program's Natural Hazards Advisory Group, and the State GIS Managers Council. The WISCLAND Steering Committee also met early in October, and the Wisconsin Interagency Soil Survey Group met mid-month.

Out around the state

Ted, Brenda Hemstead, and I all attended the WLIA meeting in La Crosse in September where the SCO co-sponsored the Thursday evening program on statewide orthophotography. All three of us are members of WLIA board/committees or task forces, in fact Brenda moderated the Friday program in her board member role as co-chair of the Education Committee. As part of that trip Ted and I visited the Sauk County LIO, the La Crosse County LIO and the Mississippi River Regional Planning Commission.

Later that month I attended a meeting of the Western Wisconsin Land Information Network in Eau Claire, and then visited both the City of Eau Claire as well as the Clark County LIO. The day before that trip I spoke at the

annual meeting of the Wisconsin Real Property Listers Association which met at Madison's new Monona Terrace Convention Center.

On the national scene

Over this same period, I attended the ESRI User Conference in San Diego, and Ted attended the URISA Conference in Toronto as well as the NSGIC Conference near Portland. Ted also recently traveled to Sioux Falls, SD in his role as representative from NSGIC on the National Digital Orthophoto Steering Committee.

Staff adjustment provides relief

SCO gains computer caretaker

by Bob Gurda

As you read our newsletter each issue, you don't have a way to know what technical hurdles we may have to overcome to produce the articles, illustrations, or the camera-ready copy. Trust me that there have been many such challenges, and too often they have come up unexpectedly.

Anyone who works much with computers has been through these kinds of problems...the benefits of computers are always balanced with the reliability and capacity of hardware and software upon which we have come to rely more and more.

New staffer

This month, however, we have a new source of assistance in dealing with computer issues. We have hired, together with the UW-Madison Geography Department, a shared computer systems manager. This is a full-time, permanent position, a change from part-time student positions which have carried both organizations a long way from humble beginnings. But both we and the department decided that we needed a more robust and enduring source of technical support. We're pleased that the Dean's office in the College of Letters and Science agreed with us.

Paul Gunther began in this role on October 15. He has several years of experience performing the very kinds of hardware/software/network duties that he'll be responsible for here. Plus, we're excited that with degrees in Geography and Environmental Studies from San Jose State University, he'll be able to help us in developing GIS and related capabilities both in-house as well as on the Internet.

Publications & Products

Focus on research into spatial linkages

New journal to address modeling

by Bob Gurda

A journal has emerged to support research interests in the area of geographical, ecological, environmental, and spatial modeling. An international effort, *Geographical & Environmental Modeling* is published in the United Kingdom, edited in Canada, and sports an editorial board of international breadth.

This new publication seeks to be "...at the global forefront of research and commentary in the modeling of contemporary ecological, social, and spatial problems."

The individual subscription rate is \$44.00 per year (two issues), and other details can be found at the publisher's website, www.carfax.co.uk/gem-ad.htm.

(source: Carfax)

continues the 1997 look

Survey produces 1998 calendar

by Bob Gurda

Another striking historical photograph by H. H. Bennett of the Wisconsin Dells is featured on the second calendar produced by the Wisconsin Geological and Natural History Survey (WGNHS) in a series *Wisconsin in Geologic Time*. Like the 1997 edition, this wall calendar is printed with duo-tone inks on heavy coated paper, producing a detailed and warm image.

Measuring 24 x 29 inches, copies purchased by mail will be delivered rolled. The price is \$6.00 per copy.

For ordering details, call WGNHS at 608/263-7389 or visit their web site at www.uwex.edu/wgnhs/.

Stocking stuffers ready to go

SCO may have what you need

As the holidays approach, you might want to consider an item or two available from the SCO to fill out your gift list.

Our handbook *Wisconsin Coordinate Systems* is perhaps a bit too serious for casual bedtime reading, but the *Madison Area Satellite Image Map* and the *Cultural Map of Wisconsin* have been popular with a wide variety of people. These items go for modest prices in the \$2 - \$10 range.

Another idea would be an aerial photograph of someone's property or favorite recreational area, maybe even in enlarged format. We don't sell these kinds of products, but we can help you identify options over any particular area of the state and then steer you toward the supplier of prints.

USGS lays groundwork for a major change

National Atlas moves into the digital age

by Bob Gurda

The U.S. National Atlas is crossing the threshold into a new era. You can view samples of the new edition on the World Wide Web, a completely different medium as compared to the printed product last published in 1970.

In fact, the 1970 edition is out of print, and its distribution was not as wide as the new version will be because the purchase price of \$100 discouraged many people from acquiring a copy for home use. Both the old atlas and its forthcoming replacement are products of the U.S. Geological Survey (USGS) which has announced a publication date of 1998 for the new edition.

By use of a mix of software, Internet, and CD-ROM, the new National Atlas of the United States of America will include, but go beyond, the traditional high-quality maps that present information showing the entire country or major subsections. It will be designed for use on home computers with tools to query geographic databases.

Four components on tap

In addition to pre-formatted maps, the atlas will include national geospatial and geostatistical data sets, analytical software and display tools, and multi-media presentations highlighting national issues and condition. Further, this suite will be fitted with links to sites on the World Wide Web for access to updated regional data and software.

Release set for late 1998

USGS indicates an autumn 1998 date for final release of the new product, with prototypes appearing late this year. Partners in the development process include a wide range of federal agencies, and there will be commercial partners to assist in developing tools and targeting the overall product to the general public.

For further information and early samples of the new atlas, visit its web site at www-atlas.usgs.gov.

(source: USGS)

New county plat books

The following 1997 Wisconsin County Land Atlas and Plat Books are now available from Rockford Map, for \$25 plus tax and shipping: Adams, Burnett, Dane, Florence, Langlade, Lincoln, Marinette, Sawyer, Sheboygan and Winnebago Counties. For ordering details, contact: Rockford Map Publishers, Inc., P.O. Box 6126, Rockford, IL 61125, phone (orders only) 800/321-1MAP; for customer service information, call 815/399-4614.

National Academy to advise on replacement

USGS Director retires

by Bob Gurda

Secretary of the Interior Bruce Babbitt has announced the selection of Dr. Mark Schaefer to serve as Interim Director of the U.S. Geological Survey (USGS). Dr. Gordon Eaton, director since 1994, had announced earlier this September his plans to retire at the end of that month.

Schaefer will serve for 120 days, while a search is conducted for a permanent replacement.

Eaton's legacy

A geologist by training, Eaton worked for USGS for 16 years earlier in his career, and later was an academic administrator in several states. He was the 12th director in the 118-year history of the USGS. He overcame attempts to abolish the USGS while leading the bureau through a significant downsizing and restructuring. Establishing an integrated approach to science, he oversaw the incorporation into the USGS of the former National Biological Service and part of the former Bureau of Mines. A key priority of Dr. Eaton's was to provide an increased emphasis on the bureau's responsiveness to customers.

Finding a new director

The process of selecting a new director of USGS will take several months. Babbitt has indicated that he will ask the National Academy of Sciences for advice. The position is a presidential appointment subject to Senate confirmation.

Schaefer's roles

Schaefer currently serves as the Deputy Assistant Secretary for Water and Science, the part of the Secretary's office that oversees the USGS and the Bureau of Reclamation. He will continue to occupy that position and return to it full-time when a new director is selected, or after the 120-day interim appointment expires.

"I am pleased that Dr. Schaefer has agreed to provide leadership for the day-to-day operations of this very important science agency during this transition period," said Babbitt. "He has worked closely with the USGS and has earned a reputation as a skilled, knowledgeable and decisive manager."

A neurobiologist by training, Schaefer holds a B.A. from the University of Washington, and a Ph.D. from Stanford University. Before joining the Interior Department in 1995, he served as Assistant Director for Environment in the Office of Science and Technology Policy, Executive Office of the President (1993-95), where he was responsible for a variety of domestic environmental science, technology and education issues.

(source: USGS)

Temporary assignment made permanent

Witmer named to head NMD

by Bob Gurda

A few weeks before his retirement announcement, USGS Director Gordon Eaton named Richard Witmer to the position of Chief Geographer and Chief of the USGS National Mapping Division (NMD). Witmer had been leading NMD in a temporary capacity for two years.

Witmer joined USGS in 1974 as a physical scientist after earning a Ph.D. in geology and geography from the University of Florida. Later, after administering geographic and cartographic research within NMD he moved into its senior leadership group.

In recent years, he has played key roles in improving access to national classified assets, facilitating the Congressionally-mandated study of geographic information resources, and making USGS the first federal agency to join the Open GIS Consortium.

(source: USGS)

Wisconsin connections broad and deep

Sherman affected many here

by Bob Gurda

Professor John Sherman of the University of Washington died one year ago but it is clear that his legacy will persist for a very long time. Although he did not teach in Wisconsin, he had many connections, many of which come to light in a recent set of articles and reminiscences in the recent issue of *Cartographic Perspectives* (number 27, Spring 1997), the journal of the American Cartographic Information Society.

The guest editors of the volume, which is dedicated to Dr. Sherman, are Greg Chu (UW-LaCrosse) and Barbara Battenfield (Univ. of Colorado, and UW-Madison during the mid-1980's). Arthur Robinson contributed the introductory tribute; he, Sherman, and George Jenks (Univ. of Kansas) arguably were the three people primarily responsible for the rise of cartography as an American academic discipline after World War II.

Two of the featured articles are by people with Wisconsin connections: Battenfield, and Nick Chrisman (UW-Madison during the mid-1980's also). Of the eight tributes and reminiscences, Phil Muehrcke, Jon Kimerling, and John Campbell all have strong Wisconsin ties.

This is fascinating reading in the history of American cartography including GIS, and I recommend it highly.

(source: *Cartographic Perspectives*)

Events

December meeting lands in Appleton

WLIA to gather in Fox River valley

by Brenda Hemstead

The Wisconsin Land Information Association (WLIA) will hold its winter quarterly membership meeting at the Paper Valley Hotel in Appleton on December 4 & 5. Non-members are welcome!



Thursday evening

On December 4th, there will be a free evening session featuring an "Open Forum on Parcel Mapping" sponsored by the WLIA Parcel Mapping Task Force. This 2-hour program will cover presentations and discussions on current parcel mapping practices in the state including: methodologies, standards, maintenance, and metadata issues.

Friday morning

The next morning's program begins at 9:30 a.m. (\$20 registration includes lunch) will include updates and discussion regarding the Wisconsin Land Information Board, Program, Grants, State Budget, and the Land Use Council.

Then will follow a presentation on precision agriculture, an emerging field that employs many land information technologies including GIS, GPS and digital orthophotography. Late morning will include presentations on GIS User Groups coordinated by the East Central Regional Planning Commission and the Bay-Lake Regional Planning Commission, focusing on benefits including data sharing and collaborative projects.

Friday afternoon

After lunch and business meeting, members and guests can participate in an open forum on "What is a Land Information Office" (LIO) that will include discussion of training, responsibilities, benefits, the newly created Land Information Officers Council, and whether WLIA should produce a LIO Practitioner's Manual.

To register or for further information on WLIA call 800/344-0421.

Over 100 sites linked in

Metadata videoconference flies high

by Bob Gurda

Months of preparation paid off when, on October 15, many hundreds if not thousands of people tuned in to a national satellite videoconference on metadata. Produced in Madison by UW-Madison and UW-Extension, the preparations

were orchestrated by David Hart of the Land Information and Computer Graphics Facility.

In addition to live presentations, the program featured several pre-recorded vignettes, periods for call-ins from viewers, and an entertaining segment on metadata software tools by our former colleague Hugh Phillips who moved to Florida a few months back.

International connection

Actually, the broadcast went international to three sites in Canada in addition to 106 sites in 34 states. Wisconsin and Minnesota accounted for 35 and 15 sites, respectively. Viewers were signed up in 33 Wisconsin counties.

Other states with notable presence included Oregon (7 sites), New York (4), California & Illinois (3 ea.). Program presenters came from Wisconsin, Illinois, Minnesota, Florida, Vermont, Louisiana, Virginia, and Montana.

Copies on cassette may be coming

This two-hour program will likely be available on video cassette in the near future, but probably not at your neighborhood video rental store. Let us know if you would like to be informed when this question is resolved.

Coordinated by a committee of the National States Geographic Information Council, the program was funded by a grant from the Federal Geographic Data Committee.

(source: David Hart)

Call for Participation issued

WLIA gets set to "deliver" Annual Conference

by Brenda Hemstead

The Wisconsin Land Information Association (WLIA) has issued a "Call for Participation" in conjunction with its upcoming eleventh annual conference. Scheduled for March 2-5, 1998 at the Holiday Inn West (soon to be the Madison Marriott) in Middleton, the conference theme is slated as "Wisconsin Land Information - WE DELIVER!"

The WLIA conference provides an opportunity for the association to highlight progress toward its vision of improving Wisconsin government and services through land information modernization. It will showcase the creative and diverse partnerships that are helping make that vision a reality.

You are invited to share your news, successes, and lessons learned with fellow WLIA members via a pre-conference workshop, technical session, poster, or Public Night demonstration of technology and applications.

For additional information call WLIA at 800/344-0421 or email: abarrett@uniontel.net.

Selected Regional Conferences and Technical Meetings

1998

November 7, 1997, **Advanced Techniques in GIS** will be held at the UW-Milwaukee School of Architecture and Urban Planning building from 8:00 a.m. to 5:00 p.m. Contact: Janet Tibbetts at 414/229-4016.

November 13 & 14, 1997, **Spatial Data Administration** will be held at the UW-Milwaukee School of Architecture and Urban Planning building from 8:00 a.m. to 5:00 p.m. Contact: Janet Tibbetts at 414/229-4016.

November 14, 1997, **Symposium on Spatial Information and Analysis** will be held at Union South on the UW-Madison Campus from 9am to 4pm. Contact: Steve Ventura at 608/263-2086.

November 18, 1997, **The Map Society of Wisconsin** will meet in the American Geographical Society Collection at 7 p.m., 3rd floor east, Golda Meir Library, UW-Milwaukee. Robert Burnham, Science writer, discusses *"From Parchment to Pixels, Mapping the Stars"*. Call the Collection at 800/558-8993 or 414/229-6282; or contact Scott R. McEathron.

December 4-5, 1997, **Wisconsin Land Information Association Quarterly Meeting** will be held at the Paper Valley Inn in Appleton, WI. Contact: WLIA at 800/344-0421.

December 4-5, 1997, **GIS in Illinois Conference** will be held at the Hyatt Hotel in Oak Brook, IL. For more information contact ILGISA, Center for Governmental Studies, Northern Illinois University, DeKalb, IL 60115 or call 815/ 753-1906.

December 17, 1997, **Wisconsin Land Information Board Meeting** will be held in Madison. Contact: WLIB at 608/267-2707.

January 7, 1998, The **WISCLAND** Steering Committee meeting will be held 1:00 - 3:00 p.m. at the USGS- Water Resources Division office located at 8505 Research Way in Middleton, WI. For more information contact Bob Gurda at 608/262-6850 or e-mail at rfgurda@facstaff.wisc.edu.

January 22, 1997, **The Map Society of Wisconsin** will meet in the American Geographical Society Collection at 7 p.m., 3rd floor east, Golda Meir Library, UW-Milwaukee. Jim De Young, Milwaukee Art Museum, discusses *"Conservation Considerations for Maps"*. Call the Collection at 800/558-8993 or 414/229-6282; or contact Scott R. McEathron.

January 28-30, 1998, **The Wisconsin Society of Land Surveyors Annual Conference** will be held at the Holiday Inn in Stevens Point, WI. Contact: WSLs at 414/549-1533.

March 2-5, 1998, **Wisconsin Land Information Association's Annual Conference** will be held at the Holiday Inn West (soon to be the Madison Marriott) in Madison, WI. Contact: WLIA at 800/344-0421.

June 4-5, 1998, **Wisconsin Land Information Association Quarterly Meeting** will be held at the Monona Terrace, Madison, WI. Contact: WLIA at 800/344-0421.

September 3-4, 1998, **Wisconsin Land Information Association Quarterly Meeting** will be held at the Fox Hills Resort in Mishicot, WI. Contact: WLIA at 800/344-0421.

December 3-4, 1998, **Wisconsin Land Information Association Quarterly Meeting** will be held at the Heidl House in Green Lake, WI. Contact: WLIA at 800/344-0421.

For Bulletin and web site

Send us your calendar items

We are now focusing our calendar listing on events scheduled in Wisconsin and the nearby region. When you keep us informed of your organization's meetings, workshops, classes, etc. we can help spread the word to several thousand people.

Even if you are not seeking additional people to attend an event, announcing it keeps others informed and helps us all coordinate our schedules.

Often, events are scheduled and then occur in time frame that is too short to get them listed here before they have taken place. To deal with this problem, we also maintain a list of scheduled events on our web site.

To deal with the events outside our region which we formerly included in the *Bulletin* calendar, we now provide links through our web site to national and international calendars maintained by other organizations. These listings are similar to what has been carried for years in several publications that serve the mapping and GIS fields, but which many people in our state may not have seen regularly.

Between the *Bulletin* and our web site, plus the linked sites, you now have access to much more information about events than previously.

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), 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 36.25 (12m). In addressing this role, the SCO functions in a number of ways:

- publishes the *Wisconsin Mapping Bulletin*, catalogs, guides, brochures, and other documents 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.
- 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.

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 2, 1998.

Editor: Bob Gurda

Illustrations: Brenda Hemstead, Chin-Chung Tang, and Jeff Bogenschneider

Desktop publishing: Brenda Hemstead

Mailing: UW-Extension Bulk Mail

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

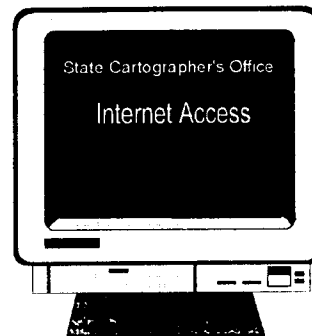
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About our Internet Web site...

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

Here, you will find 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 and browsing software to check out the SCO's homepage at

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



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 prototype metadata files, download certain data files, learn about our continuing work in this area, and link to other state clearinghouses.

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