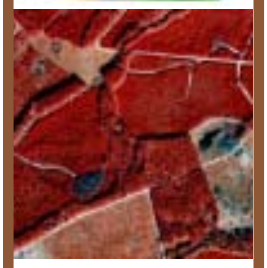
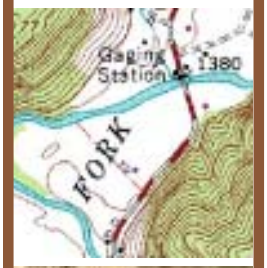
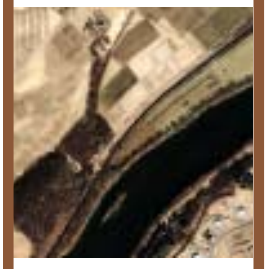
The Virginia Geospatial Newsletter

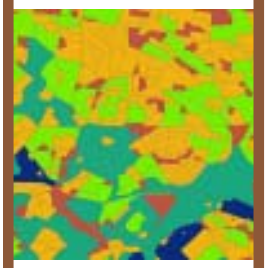
Showcasing GIS, Remote Sensing and GPS Supported Products and Services in the Commonwealth

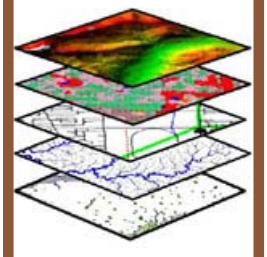
Volume 1, Number 1 **Fall, 2003**











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Introducing The Virginia Geospatial Extension Program

A partnership with the Virginia Space Grant Consortium and Virginia Cooperative Extension

by John Companion
Research Programs Manager
Virginia Space Grant Consortium

Geospatial tools such as GIS allow users to precisely define any location on the face of the earth and then to add layers of information to describe what is at that location. It is a way to combine data from many sources about a specific area and to display it in a graphical format. GIS is used for management of resources, urban planning, homeland security, and a host of other necessary tasks. GIS technology provides a basis for better understanding and improved stewardship of natural resources and public services. It also provides important decision-making tools to enhance the economy and quality of life.

For several years, the Virginia Space Grant Consortium (VSGC) has focused on the goal of establishing a Space Grant Geospatial Extension Specialist within Virginia Cooperative Extension (VCE) and the College of Natural Resources at Virginia Tech. In 2003 that goal became a reality with the award of a Space Grant Workforce Development Grant to the VSGC. Virginia Tech and the George Mason University-led VAx-MAGIC initiative are also providing substantial resources.

An Advisory Committee, with representatives from VSGC, VCE, the Virginia Community College Sys-

(Continued on Page 3)

What is Geospatial Extension?

The key goal of geospatial extension is to expand opportunities for citizens and organizations across the Commonwealth to apply geospatial tools such as geographic information systems (GIS), global positioning systems (GPS), and remote sensing data, analysis and interpretation to help with local needs.

Steve Umberger,
Director of Virginia Cooperative Extension

The Geospatial Newsletter

The Virginia Geospatial Newsletter is a quarterly publication developed through the Virginia Geospatial Extension Program, in conjunction with the Virginia Geographic Information Network. The purpose of the Virginia Geospatial Newsletter is to highlight innovative geospatial products and services throughout the Commonwealth, and to widely disseminate this information throughout Virginia.

If you have suggestions or comments, or if you would like to contribute to the newsletter, please contact John McGee at the Virginia Geospatial Extension program (jmcg@vt.edu).

What's on the Inside

K-12 Education

- Coming to Your Neighborhood School -

Virginia Mapping Science Curriculum

by Stanford T. Hovey
Geo-Spatial Technologies Consultant

The Virginia Public School Systems' students will soon be having the opportunity to learn about the mapping sciences by having a Geographic Information Systems (GIS) curriculum to use. Over the past two (2) years the Education Committee of the Virginia Association for Mapping and Land Information Systems (VAMLIS) has been leading an effort to introduce GIS into the middle and high school environments within the Commonwealth. The opportunities exist to install this kind of technology module within the technology laboratories in our public schools. Map data in digital form and remote sensing imagery (aerial and satellite photography) are readily available covering Virginia, inexpensive hardware and software is available and on-line teacher training can be supported to make this a reality. Work sessions have been held during 2003 at the state Career and Technical Education Resource Center of the State Department of Education to plan and structure the initial GIS curriculum to be in place during the 2004-2005 school-year.

There is an increasing benefit to students coming out of high school to directly enter the workforce or continuing to higher education. Private and government positions are increasing using the geo-spatial technologies within many applications as well as jobs involved in the technical disciplines of surveying, GIS, mapping, remote sensing, digital image processing and navigation with the Global Positioning System (GPS). The job opportunities are local, national and international and the public's use of this type of information in day-to-day communication, business and recreational endeavors is rapidly expanding.

The VAMLIS has supported the promotion, planning, familiarization and materials definition for GIS to be introduced into the K-12 environment. VAMLIS led panel discussions to encourage GIS in K-12 a couple of years ago. Many meetings have been held to expand the awareness of this area of technology among the state's technology educators and administrators, and work is ongoing to set-up a way for the professionals in mapping/GIS/remote sensing workplace to work directly with local school systems to facilitate the realization of this activity.

Currently, a GIS Resource Guide is being prepared by the CTE Resource Center within the State Education Department with the help of VAMLIS members and others. This will lead into the actual GIS curriculum to be used by teachers and set-up the Standard-of-Learning (SOL) requirements for topics such as GPS, mapping, geo-spatial terminology, image-related handling, etc. There is, also, activity ongoing to obtain grant funds to assist in the teacher training across the state. The Virginia Geographic Information Network (VGIN) Office is coordinating the development of state digital orthophotography and other datasets to be used by the schools. The VGIN invited the VAMLIS to host a "GIS in K-12" exhibit at the 2003 GIS Day in Richmond this past February. As a result of this opportunity, members of the VAMLIS and representatives from the Governor's School in Roanoke were able to meet with Senator John Watkins, who is a strong proponent of GIS within Virginia.

The near-term future will be challenging and exciting for the public school systems' administrators, teachers and students as they become aware of the many benefits to augment the learning of other subjects such as history, mathematics and science as well as being a help in commonplace applications where geo-spatial data will help to increase the efficiencies and effectiveness of day-to-day activities.

From left to right: Senator Watkins; Megan Flora, a student at the Roanoke Governor's School; Stan Hovey; and Fred Hoffman, a teacher at the Roanoke Governor's School.

Community Colleges

GIS Software is Available to Virginia's Community Colleges

by Bill Guzek
Project Consultant
Institute of Excellence for Advanced Technology

The Virginia Community College System (VCCS) Institute of Excellence for Advanced Technologies (IE-AT) has spearheaded an effort to bring Geographic Information Systems (GIS) technology to Virginia Community Colleges. With the assistance of Virginia Tech (VT), the IE-AT has entered into an educational licensing agreement with ESRI to make GIS software available to VCCS Colleges. The agreement also includes access to the extensive collection of educational resources of the ESRI Virtual Campus.

GIS software brings the power of visualization to the analysis of any location-based data. This allows users to rapidly identify regional trends or better understand location-based data. Using GIS you can study not only a map but any possible map. You can visualize land elevation, climate, political boundaries, population density, energy and resource usage and anything else, in whatever large or small part of the world that interests you.

Bob Bailey, Director of the IE-AT, stated, "This is truly a powerful interdisciplinary technology which has application to many industries." We are starting to see more and more companies using this technology and needing people with the skills to work with this technology." Its wide applicability spans Environmental Science, Emergency Preparedness, Planning, Business and Marketing, Information Technology, Civil Engineering Technology, Surveying and CADD as well as other areas.

Currently 19 community colleges have signed up to take advantage of the program. A few colleges have begun developing curricula for GIS certificate programs. Danville Community College recently installed the software on a number or computers to facilitate the work that its students are doing on a summer project with NASA. The courseware and software started to roll out in July and August with full deployment at all participating colleges by year-end. The

Currently, 19 community colleges have signed up to take advantage of the program.

IE-AT is also working with personnel from the Virginia Geospatial Extension Program, based at VT to assist educators that need help understanding GIS. Plans for regional GIS education seminars are also in the works.

Information and guidelines for accessing the software and courseware have been released and are available on the CADD portal at www.IEATCADD.com
This is currently the central repository for GIS-related information and links.

For more information on GIS at VCCS contact Bob Bailey at bbailey@vccs.edu or Bill Guzek at bguzek@vccs.edu.

The Virginia Geospatial Extension Program

(Continued from page 1)

tem, the Virginia Geographic Information Network (VGIN), NASA, Sea Grant, state agencies, and the Virginia Access-Mid Atlantic Geographic Information Consortium has been established to help guide the effort and ensure the most extensive networking and program impact.

The primary objective of the program is to give focus and coherence to Geospatial education and activities throughout the Commonwealth. The program will facilitate educational programs and workforce training to help deal with the serious shortfall of professionals and trained specialists who can utilize geospatial technologies at the local, regional, and state levels.

The program will serve as a state resource through Space Grant to NASA data, research and educational resources, as well as for cooperation with other Space Grant geospatial programs. Assistance will also be given to educational outreach programs such as 4-H and to teacher enhancement programs such as VSGC's OVERSpace (Observing Virginia's Environmental Resources from Space) project which provides a statewide professional development program for Virginia's secondary school educators and a network for using geospatial technologies as effective teaching and learning tools in partnership with the Virginia Department of Education.

John McGee is the Geospatial Extension Specialist at Virginia Tech. He serves as a statewide resource for Extension agents, state agencies, local governments, and other end users. He will be organizing workshops to help them learn how to apply geospatial technologies and data to solve local problems.

VAx-MAGIC is funding a supporting geospatial applications designer to facili-

(Continued on Page 8)

Virginia Access Mid-Atlantic Geospatial Information Consortium:

Decision Support Tools for Policy Makers Based on NASA/NOAA Satellite Data

by John Companion
Research Programs Manager
Virginia Space Grant Consortium

The Virginia Access Mid-Atlantic Geospatial Information Consortium (VA-MAGIC) is a consortium of Mid-Atlantic universities whose mission is to develop a remote sensing, applications, geospatial/temporal data and information system. Interactive decision support tools based on NASA and NOAA data, supplemented by VA-MAGIC's value-added capabilities are can be used for planning and decision making by state and local governments, businesses and the community at large.

With funding from NASA's John C. Stennis Space Center, George Mason University's Center for Earth Observation and Space Research leads the project which includes: Virginia Space Grant Consortium (VSGC), Old Dominion University, James Madison, Hampton University, William and Mary, the Virginia Institute of Marine Science, Virginia Tech, the University of Virginia and the University of Maryland College Park.

An advisory group composed of local, state and regional officials helps define how the tools should interact with their decision-making processes. They also evaluate and help optimize the finished products, which will be available via the Internet throughout the region. One such product is an online GIS tutorial, which can be found at: http://www.vims.edu/gis/

Another example, created under VA-MAGIC, is advanced courses in distributed GIS and algorithm/modeling in GIS. The joint work done by VA-MAGIC in disseminating information on the recent Hurricane Isabel impacts can be seen at the VA-MAGIC website listed below.

VA-MAGIC intends to make remote sensing of the earth's surface into routinely used information tools for local, city and state planning. To reach that goal VA-MAGIC is funding a broad spectrum of project activities, such as: new curricula and training programs for community colleges and undergraduate institutions, supporting student research projects, training Cooperative Extension agents to work with clients on GPS-based solutions for land use, and developing specific applications for local needs, such as emergency planning for flooding in Fairfax County.

Recognizing the need for each partner to educate the other, VA-MAGIC has set up communication paths with government at all levels. To craft geospatially enabled tools that will complement the decision-making process, scientists must comprehend the process and know the real needs. The policy makers, in turn, need to understand the potential of the tools being produced and how to use them effectively.

By supporting the development of curricula and standards for geospatial education, VA-MAGIC is helping to build a first class Geospatial workforce for the future, and shape career paths to benefit the several states. Showing students the power of science, educating the workforce, developing new and powerful tools with which to plan the future, VA-MAGIC covers all the bases!

For further information, visit the VA-MAGIC website at: http://philler.scs.gmu.edu/VAccess

Deployment of a Mobile GIS Solution for Henrico County's Public Safety Vehicles

by Alfredo C. Frauenfelder
GIS Coordinator
Henrico County

Henrico County, Virginia, is a suburban locality of approximately 265,000 people. The county covers an area of about 242 square miles and is part of the Richmond Metropolitan Area that is home to over one million people. The County's real estate base is made up of more than 100,000 parcels, while there are over 72,000 water customers and more than 78,000 sewer customers. While Henrico County is a locality adjoining the city of Richmond, it has a wide variety of land uses from high density residential to wide-open agricultural fields. The wide variation in land uses in the county cause a considerable challenge to public safety agencies. This is compounded by the location within the county of the Richmond International Airport and the Richmond International Raceway. These two facilities cause a considerable volume of visitors who traverse the county on a regular basis.

The county has been implementing a detailed and highly accurate Geographic Information System (GIS) program to enhance the level of service delivery and increase the efficiency of county agencies. The GIS program started in 1998. It includes accurate planimetric base map layers that are controlled by an extensive geodetic control network. The functionality of the GIS has been successfully deployed in many county agencies, including planning, real estate assessments, public works, and recreation and parks. It has been a goal of the county to extend the functionality of the GIS to field personnel.

During the summer of 2002, the county deployed a mobile GIS solution based on ESRI's MapObjects software toolset. This application makes it possible to embed general GIS functionality into the county's mobile dispatch information resources.

The county has deployed mobile computers in all 500 police vehicles, as well as at mobile command and response units, and in fire equipment. The dispatch information generated in the County's Communication Center is transmitted to the mobile units via CDPD wireless technology. The mobile computers have CDPD modems that receive the information and display it on the officer's computer screen.

The information provided by the dispatch system gives officers in the field an overview of calls pending, as well as the individual status and other related information on each call. Officers can use the mobile dispatch system to respond to calls and to receive information about an emergency without needing to use the voice radio. This system provides officers with the address where the call was originated, as well as the relevant cross street names.

The County contracted for the preparation of an ESRI MapObjects application that can accept the address information from the mobile dispatch information to geocode the location of the call. In this way the officer strikes a software button to pass the address information to MapObjects. The address is geocoded against the County's own road centerline layer with exact address ranges. The application provides the officer with an interactive map plotting the locations of calls. The officer has the ability to perform basic GIS functions, such as pan, zoom, and basic identification queries.

Through the use of this technology, field officers get the ready-made ability to find out from where a particular call is being made. This allows the officers to plan their response route. The GIS layers include detailed planimetric, cadastral, and administrative layers, in addition to the county's color digital orthocorrected aerial photography. This level of detail and accuracy gives officers the ability to plan their response and become fully informed of the lay-of-the-land of the location to where they are responding to a call. The system's functionality also gives officers the ability to perform basic GIS queries and analysis.

The GIS information used in this application is stored locally in the mobile computer's hard drive. This information is refreshed periodically to ensure that the officers have the current information available. The CDPD wireless communications is used to transfer the text-based dispatch information to the mobile dispatch module of the application. The address portion of the text string is supplied to MapObjects for geocoding of the incoming calls.

The system gives officers considerable capabilities that they never had before. It has considerably eased the way that officers determine where they must go and provides them with enhanced capabilities to plan their response and react to emergencies. The implementation of such technology tools make it easier for public safety response personnel to perform their duties. Henrico County officers are very excited about continuing the use of this technology and being part of any upgrades in the future.

The Virginia Forest Resource Information Mapper (ForestRIM)

by Mindia Brown
GIS Manager
Virginia Department of Forestry

The Virginia Department of Forestry (VDOF) collects and generates important spatial GIS information regarding the state's forest resource, such as map layers of forest cover, gypsy moth defoliation, woodland homes communities, dry hydrants, and the wildfire risk assessment. However, producing this information is not valuable unless VDOF staff and the public can use it. Thanks to funding from the US Forest Service, VDOF developed the Virginia Forest Resource Information Mapper (ForestRIM), a GIS application that takes advantage of the ubiquity of the Internet to:

ForestRIM gives people a tool for better, more informed decision-making.

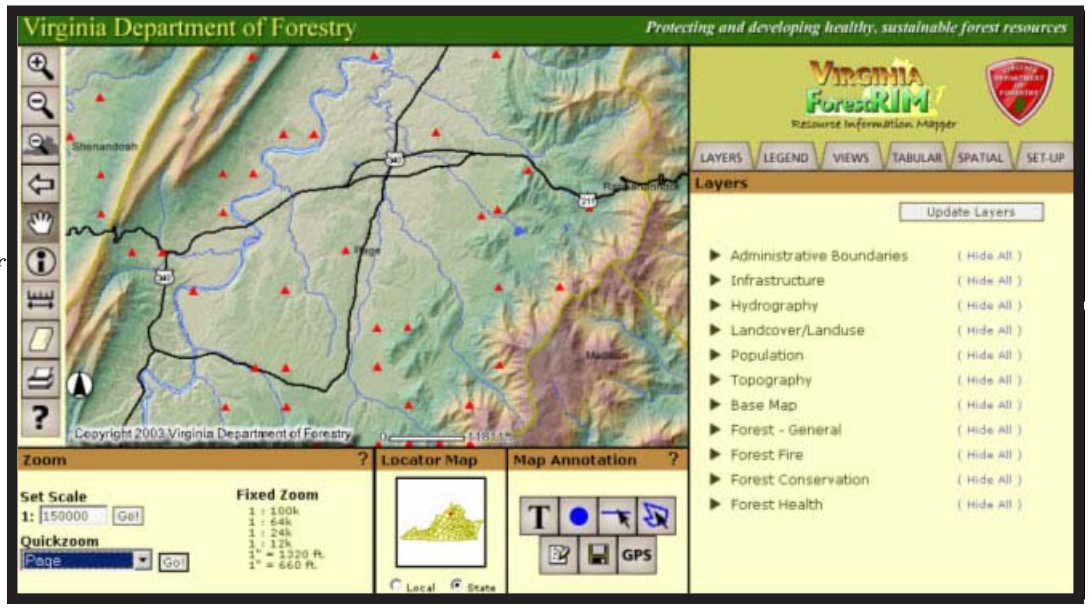
- Provide VDOF staff and the public-at-large with easy access to forest resource information in the form of 100+ map layers
- Provide users with ability to view map layers by zooming to desired scales and areas
- Allow users to measure distance and area
- Give users the ability to query map layers, either spatially (e.g. *Show me all of the Woodland Homes Communities within 5 miles of a dry hydrant*) or by attribute (e.g. *Show me all of the Fire Incidents greater than 15 acres in size*)
- Allow users to make professional-quality map outputs with Title, Legend, Scale Bar, Map Comments, etc.
- Provide users with tools to add their own map annotations, such as points, lines, polygons and text (and for VDOF staff, the ability to upload GPS points).

VDOF employs the Internet as the delivery mechanism for this application to minimize software purchases and maintenance of multiple copies of GIS data. By developing this mapping application, VDOF can more effectively and efficiently share tools and information in a way that is tailored to its internal users, as well as to external customers. In fact, ForestRIM is part of a larger agency goal to overhaul how information is collected, managed, and distributed by VDOF.

Specifically, ForestRIM provides people with the ability to examine the spatial relationships between features, such as the number of residential communities in zones of high wildfire risk or the pattern of population growth across the landscape and how it relates to forest lands. Most importantly, ForestRIM gives people a tool for better, more informed decision-making. Map layers for ForestRIM include:

- High-resolution aerial photography (mid-1990s and 2002)
- USGS Topo Quads
- Wildfire Risk Assessment
- Woodland Homes Communities Locations
- Dry Hydrants Locations, Fire and Rescue Locations, VDOF Offices
- Forest Cover derived by VDOF from satellite imagery and Forest Inventory and Analysis data
- Conserved Lands, Riparian Buffers, Forest fragmentation, and forest health maps
- Roads, Airports, Hospitals, Public Schools, Railroads, Bridges, Tunnels
- Waterways, Waterbodies, Watersheds, Public Drinking Water Source Areas
- Jurisdictional Boundaries

For more information about ForestRIM, please visit the VDOF web site at www.vdof.org and click on "GIS"



A screen shot of ForestRIM's user-friendly interface

Cooperative Extension

Integrating GPS and GIS into the 4-H Curriculum

by Staci England, Jeff Kirwan and Michael Clifford
Virginia Cooperative Extension

Virginia Cooperative Extension (VCE) began integrating Global Positioning Systems (GPS) and Geographic Information Systems (GIS) technologies into the 4-H curriculum when volunteer leaders of a rural 4-H club in Tazewell County first requested a program in 2000. Since that time, the 4-H Natural Resources curriculum committee and the College of Natural Resources at Virginia Tech have collaborated to develop a curriculum supported by six kits containing 20 GPS units each. Over 50 4-H agents and volunteers have been trained in the use of GPS and GIS technologies. Three web sites further facilitate the adoption of technologies into K-12 and 4-H club settings.

4-H is pursuing three objectives with GIS and GPS technology instruction:

1. Allow youth to experience GIS and GPS technologies in a fun, informal environment so that they can apply knowledge learned and achieve further success in the future.
2. Allow youth to participate in the scientific process so that they will understand how natural resources management decisions are made.
3. Build the capacity for 4-H, VCE and the Virginia land grant universities to assist K-12 teachers and community leaders with youth development activities

The 4-H Natural Resources and Environmental Education (NREE) web site, http://www.ext.vt.edu/resources/4h/eenr.html, provides 4-H agents and adult volunteers with resources to conduct programs. The Virginia Tech Forestry Outreach web site (FORSite), http://www.fw.vt.edu/dendro/forsite/contents.htm, provides K-12 teachers and students with opportunities to access GIS products and participate in scientific investigations that utilize GPS and GIS. A third web site called Teacher Bridge, (http:// teacherbridge.cs.vt.edu/public/projects/NOAA+Project/Home,) allows teachers in the Shenandoah River watershed to share data with Virginia Tech and develop lesson plans that use GPS/GIS to direct watershed education and restoration projects.

Youth can access forestry information about any county in the eastern US by using this interactive map linked to USFS forest inventory and analysis data and Virginia Tech dendrology fact sheets.

4-H agents and volunteers search for "Bubba the lost hunter" during a two-day workshop

We feel the rapid adoption of GPS and GIS technology has stimulated new interest in 4-H natural resources projects and will increase our ability to manage natural resources in a rapidly urbanizing state. Future plans call for the integration of GPS and GIS to increase awareness of and appreciation for the urban/community forest. Collaborative efforts at all levels will further enable our ability to assist K-12 teachers and students and to increase public awareness of the role of technology in managing resources.

Federal Government

USGS: People on the Landscape

by Roxanne H. Lamb
Cartographer/Virginia Liaison
United States Geological Survey

A Mapping Partnership Office (MPO), co-located in the U.S. Geological Survey's (USGS) Water Resources Discipline Office, has been established in Richmond, Virginia to strengthen the USGS' Geography presence and foster future collaboration. The establishment of this MPO will create new opportunities for partnership on *The National Map*, as well as other State and USGS integrated science initiatives.

The National Map is a consistent framework for geographic knowledge needed by the nation. It provides public access to high quality, geospatial data and information from multiple partners to help inform decision making by resource managers and the public. *The National Map* enhances America's ability to access, integrate, and apply geospatial data at global, national, and local scales. *The National Map* will be built on partnerships with Federal agencies, state and local governments, universities, and the private sector.

Meet Roxanne Lamb, the USGS liaison dedicated to Virginia

The new Virginia State Liaison for Geography is Roxanne H. Lamb. Lamb has been with the USGS for 15 years, in

(Continued next page)

USGS

(continued from page 7)

both the Eastern Region Geography and Geology disciplines. She brings a wealth of experience to this position as a former State Liaison to Pennsylvania, New Jersey, Maryland, Delaware, West Virginia, Virginia, and North Carolina.

Lamb will provide primary support in establishing the MPO to service the Commonwealth of Virginia. She will be available to attend state meetings and serve on committees as a USGS representative.

You can reach Roxanne Lamb at (804) 261-2653 or through Email: rhlamb@usgs.gov Her address is 1730 E. Parham Road, Richmond, VA 23228.

The Virginia Geospatial Extension Program

(Continued from page 3)

tate the development of distance learning products in support of Geospatial workforce and other educational needs.

Part of NASA's National Space Grant College and Fellowship Program, the Virginia Space Grant Consortium is a coalition of Virginia universities, NASA centers, state agencies, and other organizations with an interest in science and technology education and research. For additional information, contact the Virginia Geospatial Extension Program at jmcg@vt.edu or visit the program's Web site at http://www.cnr.vt.edu/gep. For more information on the Virginia Space Grant Consortium, visit http://www.vsgc.odu.edu

Geospatial Data

Digital Orthophotography: The Virginia Base Mapping Program (VBMP)

by Bill Shinar
Coordinator
The Virginia Geographic Information Network

In 1997 the Virginia General Assembly established the Virginia Geographic Information Network (VGIN) a division within the Department of Technology Planning, under the direction of the Virginia Secretary of Technology. VGIN is mandated to coordinate, facilitate and promote the wise and effective development and use of spatial data, GIS, and related technologies across the Commonwealth.

Comparison of Virginia local government's development and use of GIS in 2000 with the Federal Geographic Data Committee (FGDC) "framework" survey from 1999 indicated that spatial data and GIS technology were being adopted by local governments in Virginia at a very rapid rate (a growth of 33% between 1999-2000). VGIN's study identified the base map resource type, scale, and date that each active county and city was using to develop their spatial data and GIS. This information revealed that Virginia's local governments were creating a "patchwork quilt" of geographic information systems built upon diverse map bases, with varying accuracy, scales, orientation and dates. As a result, while each system provided very adequate functionality within the jurisdiction, Virginia communities were ultimately (see http://www.vgin.state.va.us/documents/Documents_Quilt_Map_Links.html.) building an inefficient spatial information infrastructure across the Commonwealth, which could potentially severely reduce the efficiency and effectiveness of many local, regional, and state business applications that require multi-jurisdictional or regional data.

Many communities are justifiably focused on parochial needs including tax assessment and facilities maintenance. However, a significant portion of local government responsibilities (economic development, emergency preparedness and response, planning and resource protection) require communities to access and work with data from outside their individual jurisdictions to be effective. Therefore, in order to promote the effective and economically efficient development and sharing of spatial resources across the Commonwealth, and to realize the highest and best use relative to cost, the Commonwealth of Virginia established a consistent foundation or base map resource upon which local government spatial data, applications, and GIS could be consistently developed and maintained.

On October 10, 2001, the Virginia E-911 Wireless Services Board voted to fund the acquisition and distribution of high-resolution digital orthophotography, statewide, through the Virginia Base Mapping Program. The goal of the VBMP was to establish one consistent, accurate, foundational base map to efficiently support statewide implementation of Phase II wireless E911 (E911 for Cell Phones).

On January 29, 2002, the Commonwealth contracted with VARGIS LLC. of Herndon, Virginia to produce full color, leaf-off, digital orthophotography for the entire land base of Virginia. Statewide, imagery was developed at one of 3 scales depending on population density (with upgrade options):

- 1:4,800 scale (2' resolution) in rural areas
- 1:2,400 scale (1' resolution) in urban and suburban areas and

- 1:1,200 scale ($^1/_2$' resolution) in areas where localities choose the option to purchase higher accuracy product.

The extent of each scale was initially determined by evaluating population and housing densities to determine those areas that would be flown for 1:4,800 and 1:2,400 scale imagery.

The VBMP has made the digital orthophotography available through a number of data products. These include: (1) the high resolution imagery in a State Plane projection, (2) the high resolution imagery, compressed at 1:18 (MrSID), (3) one-meter imagery (resampled from the high resolution imagery) in a statewide Lambert Conformal Conic projection, and (4) the one-meter imagery, compressed at 1:18 (MrSID). Each of the products are available as a statewide dataset, county/city dataset, or by individual tiles (photographs).

Every county and city in the Commonwealth has received, at no cost, the digital orthophotography, digital terrain model, and ancillary data (supporting data) for their county or city jurisdiction and extending at least 1,000 feet beyond the jurisdictions border.

State agencies, planning districts, and Virginia universities and colleges can choose the products that they need and only pay for the cost of the transfer media (CDs or DVDs).

VBMP digital orthos, digital terrain models, and ancillary data are available at commercial rates to the private sector through VARGIS, LLC of Herndon, VA, by contacting Trent Casi at 1-800-834-0225.

The VBMP's digital orthophotography products are licensed. The license allows each government or organization free use of the data, and only restricts the government, agency, or organization from redistributing the digital product to the private sector or distributors. All funds collected as part of the VBMP data distribution go into the Virginia GIS Fund and will only be used to support the maintenance of the data products in the future.

Questions From the Field...

Where can I locate aerial photography for my property?

Aerial photography is available from several different sources. The USGS Digital Ortho Quarter Quad (DOQQ) data is an aerial photograph product. This photography is available at 1 meter resolution and supports mapping scales of 1:12,000. The imagery can be downloaded from the Terraserver (http://www.terraserver.com) in UTM coordinates, or from the Virginia Economic Development Partnership (VEDP) in the Lambert Conformal Conic projection (http://gis.vedp.org/htdocs/mrsid_doqq.htm). DOQQ imagery is available for most of the Commonwealth in color infrared (Pittsylvania is only available in black and white). These images are a bit dated. The majority of the photography was acquired in 1994 or 1997. DOQQ data is not licensed, and can be downloaded off the Internet . It can be distributed and shared freely.

Virginia Base Mapping Program (VBMP) imagery is a product that is of higher quality than the USGS DOQQ's. It is available at one of three scales: 1:4,800 (2' resolution), 1:2,400 (1' res.), or 1:1,200 (6" res.). Scale is contingent on population density. For more information about the VBMP and acquiring imagery from the VBMP, refer to the VBMP article in this issue of the newsletter.

What is SiRFstar?

SiRFstar is a relatively new chipset that is available in selected GPS receivers. The SiRFstar chip provides an improvement on standard GPS receivers by providing location awareness where other approaches cannot, including under dense foliage, in steep ravines and in "urban canyons". The chip is may be ideal for certain applications, including forestry and public safety. While the GPS receivers containing the SiRFstar chip are more sensitive to GPS signals and can register signals where other GPS receivers can not, there is a performance cost.

Individuals using SiRFstar receivers, for example, report increased "lag time" associated with the processing and displaying of coordinate information. SiRFstar chips are more sensitive, and therefore home in on weaker GPS signals than other GPS receivers. These receivers are therefore more susceptible to interference (i.e. multipath errors), which can impact accuracy. Many GPS units that support the SiRFstar chip allow users to bypass the chip when their application does not warrant the increased sensitivity.

What is "metadata", and what does it have to do with geospatial data?

Metadata is often described as "data about data". More simply stated, metadata is descriptive information that is used to inform people about important aspects of the data.

All food products contain information on the package that describes the ingredients used, and the nutritional content of the food. This information is similar to metadata, as it tells you, the consumer, specific information about the product in a consistent format. Therefore, one product or brand can easily be compared to another food product, or brand.

Users of geospatial data also have questions about data layers that they obtain from other sources. These questions may include: What is the accuracy of the data? How large is this data set? What is the geographic extent of the data set? When was the data created? How often is the data updated? What is the projection of the data layer?

Metadata is simply a text (or hypertext) file that addresses many of these issues. Metadata facilitates the sharing of geospatial data, by providing background information about the dataset being shared. Metadata is also considered to be a form of data insurance, as it documents the procedures that were used to create and update the dataset. It also provides contact information, so that questions associated with the data can be fielded appropriately. Metadata is synonymous with data integrity.

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