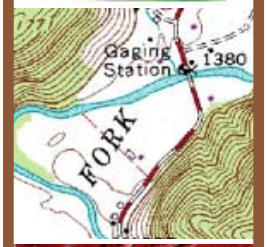
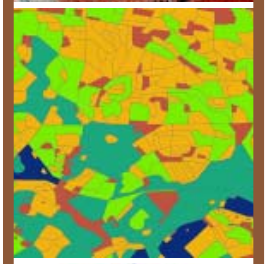
The Virginia Geospatial Newsletter

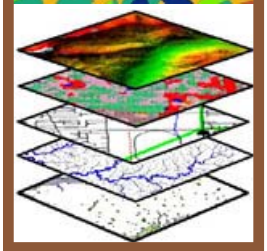
Showcasing GIS, Remote Sensing and GPS Supported Products and Services in the Commonwealth

Volume 4, Number 4 Fall, 2006

The Virginia Geospatial Extension Program is a partnership between the Virginia Space Grant Consortium and Virginia Cooperative Extension







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Expanding GIS Education at Tidewater Community College

By:
George McLeod
GIS Instructor
Tidewater Community College

Tidewater Community College (TCC) has a longstanding tradition of responding to the educational needs of the workforce in southeastern Virginia. This tradition is frequently evoked when new market segments and industries are created virtually overnight by the rapid development and employ of advanced technologies. TCC can be thought of as a "first responder" when it comes to the development of training materials and techniques to produce the skilled employees that will become the lifeblood of these industries. TCC's growing commitment to the support of training in geospatial science and technology is a prime example of this tradition.

In recognition of the designation of geospatial technology as a key component of the President's High Growth Job Training Initiative, TCC has begun to develop GIS/geospatial coursework designed to meet the specific needs of the workforce in southeastern Virginia. The foundation of this curriculum is being designed with the use of two important guideposts, the Hampton Roads Regional GIS Survey conducted by Old Dominion University (ODU) and the Geographic Information Science & Technology Body of Knowledge (BoK) recently published by the University Consortium for Geographic Information Science (UCGIS). Survey responses from nearly fifty geospatially-related organizations are being analyzed to pinpoint the most highly valued employee skills and the most preferable training delivery methods. In conjunction, the BoK is used to define the

(Continued on Page 7)

The Virginia Geospatial Newsletter is a quarterly publication developed through the Virginia Geospatial Extension Program, a partnership between the Virginia Space Grant Consortium (VSGC) and Virginia Cooperative Extension (VCE). The newsletter is published in conjunction with The Virginia Geographic Information Network (VGIN).

The purpose of the Virginia Geospatial Newsletter is to highlight innovative geospatial products and services throughout the Commonwealth and to widely disseminate geospatial knowledge and awareness 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 or [540] 231-2428).

What's Inside

Isle of Wight County Brings GIS Online

By:
Kari Sletten
Information Technology Director
Isle of Wight

Isle of Wight County launched its online GIS website in April 2006. The site is hosted by Spatial Systems Associates, who has been working with the County on GIS initiatives since 2000. The purpose of the online mapping site is to distribute the County's GIS information to County Staff and the public more efficiently.

Previously, citizens seeking GIS information for the County had to take a trip to the Courthouse and pay up to $30 per hour for customized hardcopy or digital maps. Like many Jurisdictions with a growing population, meeting the increasing amount of requests was difficult with a small staff. It was important to the County to be able to provide the same level of service faster, easier, and at a cheaper cost to the public.

The County has received a lot of positive feedback regarding the new site. Citizens like the convenience of being able to access the site from their home or office and also being able to access the information beyond normal business hours. The Citizens have especially liked being able to access the information at no cost.

The online map service can be accessed by going to Isle of Wight County's homepage at http://wwwliwus.net and clicking on the "Online Maps" button on the maroon Quick Links bar at the top of the page. After accepting the terms and conditions of use, you will be directed to the website, where you can view the following types of information: Points of Interest, Streets, Tax Parcels, Zoning, Parks, Town Boundaries, Development Service District Boundaries, Aerial Photography, and Topography.

> *In addition to improving public access to GIS information, the site has also improved access to GIS information for the County's staff.*

You can pan around the County, zoom in, and find information based on location; or you can search for property based on physical address or Map Number. Once you enter in the address or Map Number, this site automatically zooms to the selected location. Many of the data layers are scale dependent, so more detailed information appears as you zoom to a larger scale. You also have the option of turning layers on and off in the table of contents.

In addition to improving public access to GIS information, the site has also improved access to GIS information for the County's staff. Because of the high cost of licensing GIS software, the only staff members who previously had

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Isle of Wight County's online mapping site showing the courthouse area.

VITA Update

State Agency GIS Coordination

By:
Dan Widner,
Virginia Information Technologies Agency

In the last issue of the Geospatial News Quarterly you read about the new Integrated Services Program (ISP), which represents the merging of Public Safety and Virginia Geographic Information Network (VGIN) functions here at the Virginia Information Technologies Agency (VITA). In this article I want to discuss with you the current initiatives under way with state agency GIS coordination.

After a period of inactivity VGIN has reinitiated a regular working group of selected state agency GIS representatives called the State Agency User Advisory Group. Presently this group is meeting on a monthly basis and is composed of a representative from the following agencies: Conservation & Recreation, Economic Development Partnership, Emergency Management, Environmental Quality, Forestry, Game & Inland Fisheries, Health and Transportation. The thinking behind the formulation of this group was to:

1. have a core, manageably sized group that represents as broad a perspective as is reasonably possible
2. enable VGIN to access a frequently recurring GIS work group for dialog and collaborative purposes.

Information about the activities of the working group will be disseminated at the Quarterly State User Group meeting and through the soon to be released website of the Integrated Services Program. The goals of the work group include dialog, collaboration and openness in communication, with a focus upon meeting the needs and requirements of GIS for the state agencies. We intend to "walk the talk" for these goals and want you to tell us if we are not. (NOTE: You probably are already aware that there is a recurring State Agency User Group that meets on a quarterly basis. This is a volunteer, self organized and rotational group of State Agency GIS Users that meet to share ideas and information pertaining to state agency GIS matters.)

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The initial focus of the workgroup is Framework Data. Framework data is a fundamental foundation for all of our GIS needs. The sooner it's available and accessible the better for all. Using the FGDC data themes as a guideline http://fgdc.er.usgs.gov/framework/faqframe.html#themes the workgroup is looking at the current status of these themes as statewide data layers. We are identifying what is available by theme, what are its status and currency, developing action plans for maturing data where necessary, and prioritizing what to work on. Here is a quick summary of these themes.

- Imagery: 2002 data will soon become public, with 2006/07 imagery collection and processing underway – estimated availablility: late 2007/early 2008.
- Hydrography: Statewide high resolution linework collected in 2002. Many data issues to be addressed. Action plan being developed. In interim, discussing plans to make statewide NHD available.
- Elevation: Data from the 2002 Digital Terrain Model will be made available in the form of TINs. Action plan being developed.
- Transportation: Statewide road centerline with addressing will be available first quarter 2007. Statewide rail data now available.
- Governmental Units: A state level jurisdiction file maintained by DCR is current de facto standard. Ideas for improving accuracy being discussed by workgroup.
- Cadastral: Currently only available at the local level. Assessment and prioritization needs to be completed.
- Geodetic Control: Currently available on a sporadic basis at local level and VDOT. Assessment and prioritization needs to be completed.
- Metadata: Priority item for VGIN (code of Virginia mandate). Currently pursuing solutions – more to follow.

Availability of the Framework data is only the beginning of the possibilities to be offered at the state level. There are many more layers of data, information and services that need to be considered. User needs will be the driving force behind our efforts. Two of the realities recognized by ISP are: 1) users set the priorities and 2) priorities drive what we do. This is why communication and user involvement is crucial as we move GIS forward for Virginia.

See you in the next issue of the Newsletter!

Planning District Commissions

Regional Councils as a Geospatial Unit of Analytical Geography

By:
Tom Christoffel, AICP, Senior Planner
Northern Shenandoah Valley Regional Commission

On May 20, 2005, the Northern Shenandoah Valley Regional Commission learned that 2030 Growth projections from the Washington, D.C. Metropolitan Washington Council of Governments anticipated a need for 600,000 workers from outside their footprint and that further, those workers would require an additional 400,000 units.

Four years after 9/11, the Northern Shenandoah Valley housing prices were on their way to doubling, commute times were getting longer and, further, the region itself was already short of labor, so there was no excess to export to the Washington, D.C. MSA. The projections promised 25 more years of the current pressures and further congestion in the greater Mid-Atlantic region.

The Commission voted for staff to work with the Wash COG staff and other regional councils to consider if there were some way to balance the work-housing-transportation relationships.

At the first meeting in October, 2005, Regional Council staff from throughout the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV Combined Statistical Area (CSA) shared perspectives of transportation, workforce and housing relationships between their area and the CSA. The scope of impact expanded to the extent that the term Super-Region was applied to the Mid-Atlantic states involved and it stuck.

The second meeting in February, 2006 included Wilmington, Delaware's MPO – WILMAPCO on the recommendation of the Baltimore Metropolitan Council. Their analysis of transportation and mobility data further expanded the Mid-Atlantic Super-Region to contain the District of Columbia, Delaware, Maryland, New Jersey, Pennsylvania, Virginia and West Virginia.

Analysis

Regional Council and related Metropolitan Planning Organization analyses were based on movements between jurisdiction within their region, and to some degree, to points outside the home region. The WILMAPCO process called "Planning on the Edge," considered surrounding regions like Baltimore and the Delaware Valley – Philadelphia, and demonstrated the value of a region to region perspectives.

To apply this to the Mid-Atlantic would be easy for Virginia, with its complete system of Planning Districts. The regions organized in 1968 under the Virginia Area Development Act had become the basis of Sub-State District data since 1972 when Governor Linwood Holton's Executive Order 15 made is a requirement that State agencies using sub-state districts use Planning Districts or multiples. Though the courts and highway department were exempted, the Virginia Department of Transportation has come to use the Planning District boundaries and Commissions that serve that geography for MPO and rural transportation planning.

The only other state with a complete network system of regional councils was West Virginia. Data was not compiled by region to the degree it is in Virginia. The advantage in Virginia is that the Planning District number could be used like a FIPS code to aggregate data to regions. The lack of similar systems in northern States, has been a long term barrier to nation-wide regional analysis. Another issue to solve is that of multi-level regions like Wash COG which includes the Northern Virginia Planning District jurisdictions, but is not itself a substitute for the Northern Virginia Regional Commission, serving Planning District 8.

While many have considered this a GIS problem, that is not truly the case. A query for Counties, Cities or Towns along I-95 or I-81 could easily be generated from GIS, but the same could not be done for regional councils, because the data set has not been defined. It might be possible in Virginia, but not in the other states.

The key to regional analysis of the regions of the Mid-Atlantic Super-region was to first code counties and cities to regions. This I accomplished in tandem with a project undertaken through my e-newsletter, Regional Community Development News. For 2006 I have chosen to look at every state in search of a complete, single layer of regions where all or most have a regional council staff.

Results

Figure 1 shows the Mid-Atlantic Regional Planning Areas. This is currently a draft. Where counties were not included in a formal regional council,

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The Virginia Geospatial Extension Program

Virginia Department of Health (VDH) Personnel Engage in GIS Training

By: Christine Blinn, Ph.D.
Virginia Geospatial Extension Program

As GIS usage continues to proliferate into many new areas with the increasing availability of data and software, the need for widespread training and awareness of geospatial technologies continues to grow. There are many strong supporters of geospatial technologies throughout the Commonwealth and in all sectors of both private and governmental agencies. These individuals, like Chris Adkins (previously with the Virginia Department of Health), are helping others see the endless applications of geospatial tools and their high potential for cost savings in day to day activities. Along with wise investments in hardware, software, and personnel within organizations for the acquisition, creation, updating, maintenance, and/or quality assurance of spatial data, their utility can only be realized by increased usage. Increased usage requires that others within an organization are both aware of the available resources and have the necessary skills to use these tools in their areas of focus.

The Virginia Department of Health (VDH) recently partnered with the Virginia Geospatial Extension Program (GEP) to provide their personnel with a series of 2-day Introduction to GIS workshops across the state during the summer of 2006. A total of four workshops were conducted across Virginia, including: Blacksburg, Richmond (2), and Hampton during July and August 2006. Topics covered included ArcMap Interface Basics, Data and Data Sources, Digitizing and Analyzing Data, Attributes and Data Tables, GPS and GIS, and Address Geocoding. Address Geocoding was included in the GEP's introductory GIS training materials for the first time at the request of VDH. In follow-up conversations with attendees, Chris Adkins reported that the new geocoding section was particularly useful. One participant of the VDH workshop series on the evaluation questionnaire described the workshop as a "great comprehensive overview of capabilities/uses of GIS". Other comments in response to the best features query included "individualized attention," "Virginia-specific exercises," and "being able to work interactively with the software."

If you would like to learn more about **GIS**, **GPS**, **Remote Sensing**, and **Geospatial Metadata** educational opportunities through the Virginia Geospatial Extension Program, contact:

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or
Christine Blinn: cblinn@vt.edu
(540) 231-5525

Numerous examples of how this technology could be or is being used within VDH became apparent at each of the workshops. These included the collection, display, and querying of attribute information associated with well or septic field locations, exploration of census trends and how they relate to public health, tracking the spread of disease outbreaks, and mapping the location of hospitals and other health related facilities, just to name a few. Having both the necessary data and skills to use the data prior to an emergency situation is critical to effective and timely response. These skills also allow for more effective analyses that can help with early detection of trends that may lead to the prevention or minimization of impacts. With the number of large natural and human caused disasters that have occurred around the world in recent history and the increased alarm over the potential impacts of Avian Flu and other diseases, it is reassuring to see that health personnel are taking advantage of geospatial tools to continue to improve the effective and efficient management of health concerns around the Commonwealth.

Since a wide range of topics are covered in the Introduction to GIS workshops in a relatively short period of time, manuals with the step by step instructions and additional practice exercises are provided to allow participants to be able to review what they have learned and to also serve as a reference for working with their own data layers. Digital copies of the manual, other supporting materials, and all data layers used during the training are also provided on CD to participants. Data layers and examples used in the GEP Introduction to GIS workshops focus on Virginia and are customized to the needs of the customers.

4-Year College / University

GMU's Professional Certificate Program in Geographic Information Sciences

By: Jeanne Spencer
GIS Program Manager

Initiated over seven years ago, the GIS Certificate Program at George Mason University was designed to fit the needs of adult professionals looking to acquire the necessary tools to improve their GIS skills. Since the program's inception, hundreds of students have attended classes towards a certificate and found their GIS knowledge and skill level greatly improved. From Crime Mapping to Environmental Applications, a variety of core courses and electives are available to customize a certificate to many different career interests in GIS.

The Office of Continuing Professional Education (OCPE) currently offers two non-credit certificates for students to pursue: **Geographic Information Systems** with two concentrations available: *Crime Mapping* or *Defense & Intelligence*, and the recently added, **Mapping for Public Safety and Homeland Security**. Each certificate requires the completion of six core courses and two elective courses. Classes meet for three consecutive days: Thursday, Friday and Saturday from 8:00am to 3:00pm. The small sized classes are taught in a seminar style atmosphere and focus on teaching students how to use GIS to solve problems in their respective fields of practice. Once the prerequisite courses are satisfied, students can take classes individually without pursuing a certificate. However, most prefer to take all eight classes for career advancement and recognition.

The instructors in the GIS Certificate program are experts in their fields and teach the applica-tion oriented classes through a combination of lecture and exercises. The computer lab is outfitted with new computers in individual work stations, including 19" flat screen monitors for high quality graphics. Many students say what they like best about this program, besides the instructors, is the opportunity for networking and idea sharing. They also like the flexibility of the schedule. With most core courses offered twice a year and electives offered once, a student can typically earn a certificate within one year.

Students who participate in the GIS Certificate program come from a variety of backgrounds and represent many different industries. Defense contractors, public safety groups, urban planners and environmental organizations are some of the segments represented. In addition to the open enrollment program on campus, George Mason University has also been selected by a number of government contractors and federal agencies toprovide specific GIS group training at their facilities. With an extensive list ofcourses to choose from, this program is well recognized in the DC, Maryland and Virginia area as the leader in GIS training.

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The George Mason University GIS Certificate Program classes are conducted in state of the art teaching facilities

Tidewater CC

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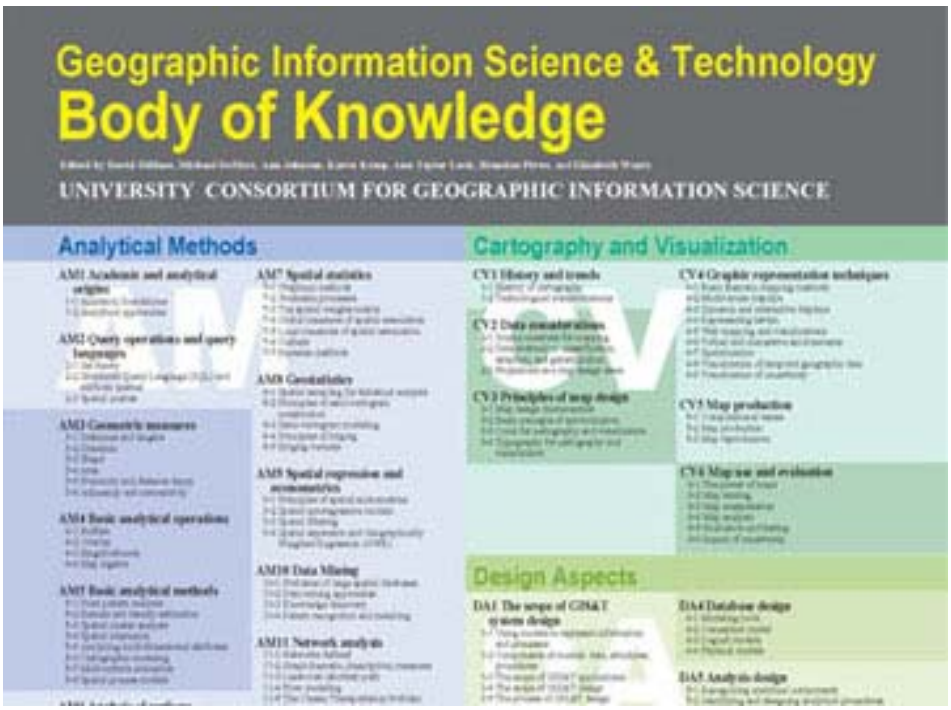
universally accepted concepts that underlie each of these highly valued skill sets. The intended outcome of this process is to produce students/ employees who have a both a firm grasp of geospatial science and an immediate technical value within the workforce.

Editor's note:
A pre-press version of the BoK can be accessed through:
http://www.ucgis.org/priorities/education/modelcurriculaproject.asp

The most recent crop of GIS students at TCC has wasted no time in utilizing their newly acquired skills. These students are employed at the National Oceanic & Atmospheric Association (NOAA), the Army Corps of Engineers, the Cities of Portsmouth and Norfolk, and even NASA's Jet Propulsion Laboratory, just to name a few. One particular student admitted that her only prior "GIS" experience was the use of a Garmin GPS receiver. During the course of one semester, her progress was so dramatic that she has since been asked to prepare GIS maps for pilots' use in a spraying contract on Mackay Island National Wildlife Refuge. It is exactly this type of experience that TCC hopes to replicate with every geospatial course offering.

Example of a student project for Mackay Wildlife Refuge

At present, GIS is being incorporated into three areas at TCC: Geology, Civil Engineering and Modeling and Simulation. GIS courses can be used as electives in both the AAS for Civil Engineering Technology and in the new AAS in Technical Studies: Modeling and Simulation. The Math and Science Division on the Virginia Beach campus is also offering a course specifically targeted to Earth Science teachers in the Virginia Beach City Public Schools system. This course primarily focuses on how GIS (specifically, ArcGIS) can be incorporated into earth science classes at the secondary school level. Discussions are also underway with Old Dominion University to streamline the transfer process for those students wishing to pursue four-year degrees in Geography/GIS. In support of this effort TCC and ODU have agreed to share course syllabi and establish an ongoing dialogue regarding geospatial course content. This establishment of ties with educators from secondary level through university is moving TCC towards becoming a leading producer of geospatial education in southeastern Virginia.



UCGIS Body of Knowledge (BoK)

Northern Shenandoah Valley Regional Commission

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districting used by agencies such as the Department of Transportation or for meeting housing planning requirements. In Delaware, the Counties remain the primary sub-state district/region. Numbers were assigned to group counties in order to compile for the analysis. According to Wendi Stine, GIS Analyst, this is the primary innovation relative to this project. Once the geography is defined, compilation and application of traditional tools can go forward.

Figure 2 Net Population Change 2000-2005 and Figure 3 Percentage Population Change 2000-2005 were the first applications of the new regions for analysis. For Virginians, the percentage growth map explains, for example, the steep rise in housing costs post 9/11. NoVA area job growth and related population pushed south and west in search of housing. Net change does not demonstrate the real impact.

This has been established as a pilot with support of the Federal Collaboratory Expedition process and its use to develop a "region builder" function in LandVIEW7 where a single layer of State Standard regions, like the Virginia Planning Districts, would be a base to which individual counties could be added or subtracted to get the region of analysis, or combinations of regions could be easily added.

The key to this is an appropriate geo-code, one free of the tyranny of the alphabet contained in FIPS codes today.

Figure 1

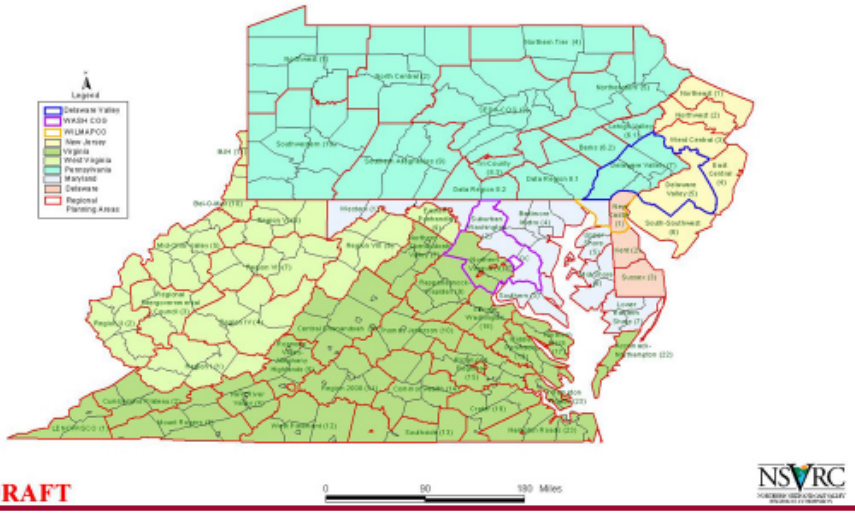


Figure 2

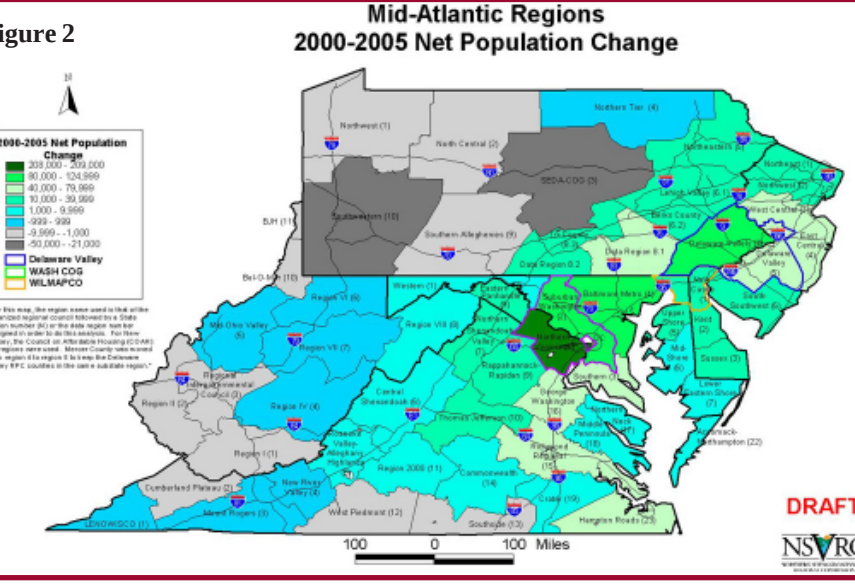
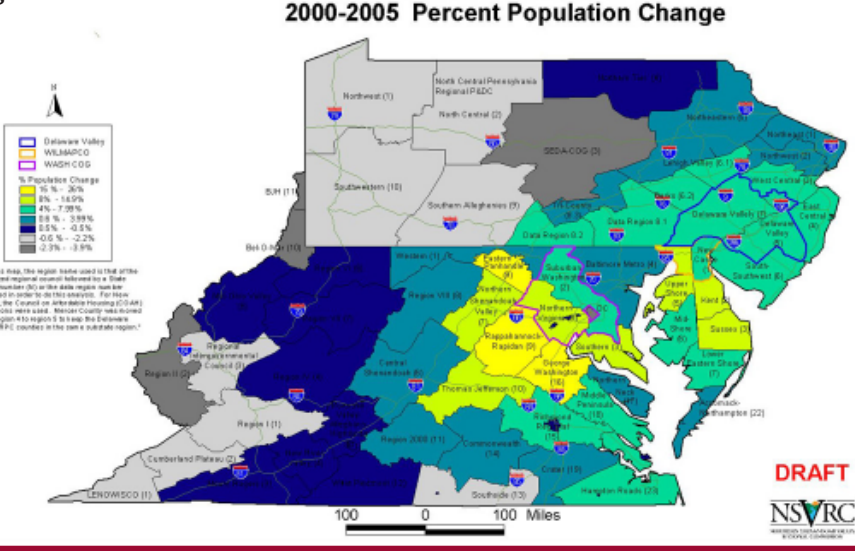


Figure 3



Isle of Wight County GIS Goes Online!

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access to the GIS were those who would need it on a regular basis to perform their essential job duties. Staff who needed GIS information infrequently for special projects had to enlist the help of the GIS staff. Now, however, County staff can use the online mapping site. One of the greatest benefits of the site is that you don't have to have specialized training in GIS software to know how to use it, the tools are as simple and intuitive as any of the popular online maps, so staff who use it infrequently don't have to remember something from an ancient training session.

The County plans to increase the functionality of the site in the near future by adding additional map layers and a printer friendly layout feature.

George Mason Professional Certificate

Continued from Page 7

Classes are held on the Prince William Campus of George Mason University in Manassas, Virginia, located near Route 66 and the Route 234 bypass in Manassas (against traffic for those of you coming from Northern Virginia). For students traveling from out of town, there are several local hotels convenient to campus. Directions can be found at the following link: http://www.gmu.edu/welcome/Directions-to-GMU.html.

If you would like more information about the George Mason University GIS Certificate Program please visit our web site: http://ocpe.gmu.edu/certificate_programs/gis.html or contact Program Manager, Jeanne Spencer at 703-993-8337 or jspence2@gmu.edu.

Happy Holidays!

Special Feature

GeoTag Those Holiday Photos!

Planning on taking some family snapshots over the holidays? Well "get with the program" and Geotag your photos. Geotagging is the process of integrating geographic reference information with your digital images (i.e. geocoding photos). There are a number of free software programs that can be used to geotag your images. Further more, you do not need to have access to a global positioning system receiver (GPS) to Geotag (if you are connected to the Internet)!

One option, is to use Picasa, which is a free software program that works in conjunction with Google Earth to quickly locate (or geotag) the place your photos were taken.

Once you have your photos stored in Picasa, simply select a group of photos that you want to 'geotag'. Then choose the "Tools ->Geotag with Google Earth" option. Google Earth will display the thumbnails of your photo. Select a photo, and interactively identify (using GoogleEarth) the location where the photo was captured. You can zoom-in as close as you want. Finally, select the "Geotag" button.

You can also select a group of photos taken at the same location and choose the "Geotag All" option.

Picasa can be used to generate a Google Earth file with snapshots of your photos as a map by choosing "Tools->Geotag->Export to Google Earth". Select the "Tools->Geotag->View in Google Earth" and your geotagged photos will automatically appear when you look at their respective locations.

This information can be shared with family and friends!

For additional information and instructions, refer to Digital Geography: http://www.digitalgeography.co.uk/262

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