INTERNET TOOLS for Planning, Conservation & Environmental Protection

In an effort to increase awareness of Internet resources available to local governments and citizen planners, the Wisconsin Department of Natural Resources (DNR) has initiated a technical assistance program focused on Internet tools for planning, conservation, and environmental protection. This program has been made possible by a water quality management grant awarded to the DNR by the U.S. Environmental Protection Agency (EPA).

As part of our technical assistance program we are writing articles that highlight Internet tools resources available. It is our hope that the information provided here will ensure that all involved in local planning processes have equal access to valuable information and analysis tools. Gaining access to these free Web-based planning tools will assist communities with preliminary selection of alternative approaches to watershed and community planning. When community planners, developers, and citizens have access to similar information they are more readily able to interact and jointly discover possible solutions to land use issues.

This series of articles can be found online at
http://dnr.wi.gov/org/es/science/landuse/CompTools/local.htm

ForestPal: Software on Demand
www.forestpal.com

The development and availability of web-mapping software in the late 1990s spawned a proliferation of Internet sites that enable citizens to access government-maintained data and information useful in local environmental protection and planning. Despite new map making abilities and access to data on the Internet, filtering through the large number of available products can be discouraging for any user. ForestPal is a Web site that provides information about Geographic Information Systems (GIS), Global Positioning Systems (GPS), and map making, while highlighting programs that work efficiently and are relatively simple to learn.

ForestPal is the continuation of a Web site created by DNR private lands and certification specialist, Paul Pingrey, called Digital Grove. ForestPal offers the same service of helping others explore the potential of GPS, GIS, and digital mapping technology. By focusing on low-cost and free tools and data sources, this Web site offers practical information that can help local government officials, natural resource managers, and citizens quickly start to make maps and use geospatial data.

ForestPal can be found at www.forestpal.com and is

broken into the following six categories: Basic Map Data, 3D Maps, Mapping Toolbox, Field Data Collection, GPS, and Links. The software and data sources contained in these categories were selected based on suggestions from mapping enthusiasts and the personal experience of Paul Pingrey.

Basic Map Data

This portion of the Web site contains descriptions of the four basic categories of geographic data: images; lines, points, and areas; elevations; and spatial databases. Clicking on any one of the many examples of map data will bring you to a more in-depth description and provide sample maps.

Map images defined in this section include aerial photos (digital orthophotos), digital topographic maps (digital raster graphics), space imagery, and shaded relief raster data. The user will learn about these different types of images, how they are produced, and what they represent.

Lines, points, and areas are created by using mathematical expressions. These data are referred to as vector data. Explore this section to find out what vector data is used to represent and link with the Tatuk Internet Map Server to experiment with this type of data.

Digital Elevation Models (DEM) are used to create 3D images of landscape. Wire frames or colors represent a grid of numbers that record vertical ground positions at evenly spaced horizontal intervals. Three types of DEMs are explored in greater detail.

A Geographic Information System (GIS) is a spatial database used to visualize spatial data in relation to geographic features. GIS is the driving force behind many Internet tools.
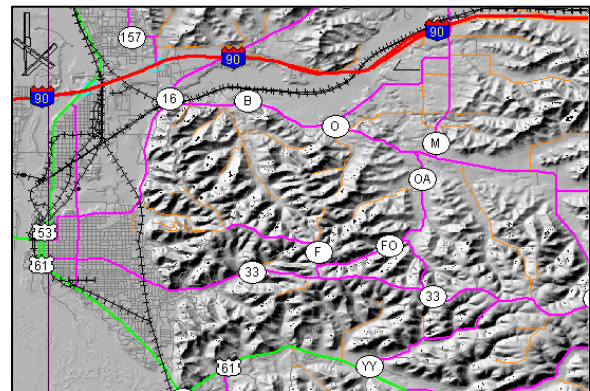
Shaded relief image combined with Digital Line Graph transportation data.

3D Maps

Three dimensional photos and maps can help resource managers quickly analyze a variety of site management data. Despite looking very complicated, once mastered, the steps in creating 3D images are fairly simple. The *3D Maps* section contains information on how to create 3D maps using 2D data.

3D elevation map of Devil's Lake State Park.

There are five programs featured in this section that can be used to generate 3D views. Following links on the page, a user can view tutorials of how sample maps were made, go to a 3D product Web site, and in some instances, download a free trial of the program. Also discussed are overlaying techniques and 3D animations.
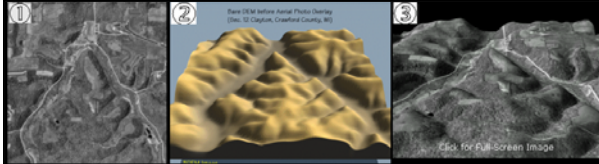
Three images showing the conversion of an aerial photo and a bare 3D terrain model to a Digital Elevation Model with an aerial photo overlay.

Mapping Toolbox

The *Mapping Toolbox* contains a listing of useful programs to view and adjust cartographic data and to make maps. There are four products that are favorites of ForestPal in which links are available to either download the free software or a free trial version. The featured products are Forestry GIS (fGIS), Epi Info, TatukGIS Viewer, and Global Mapper. Other products are broken into four categories: spatial mapping software, data collection and timber cruising tools, GPS tools, and other utilities. If there is interest in obtaining even more titles of mapping tools, a link has been provided to the *List of GIS software* page on the Web site Wikipedia.
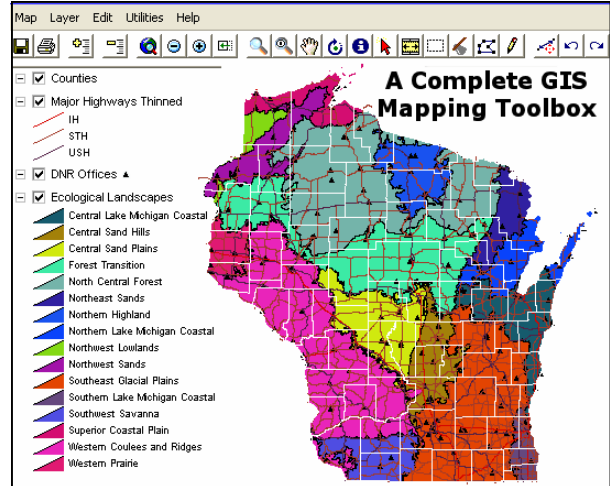
fGIS was designed for natural resource managers who are not GIS specialists. An unlimited copy can be downloaded for free from ForestPal.

Field Data Collection

This section contains software and tools useful for field managers who measure timber or other resources. The free tools can be used for conducting forest inventories or collecting other data.

GPS

GPS explores some different types of GPS equipment available on the market and discusses the positive and negative attributes associated with each model.

Links

Links includes a listing of links to mapping resources available on the internet.

For More Information:
WDNR's land use website
www.dnr.state.wi.us/org/es/science/landuse

www.epa.gov/waterspace

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