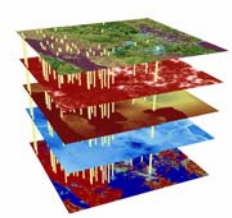

GeoSpatial Advisor™

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In This Issue

Calendar of Events: August-September

August 7–11: ESRI's International User Conference, San Diego, CA

September 18-20: AWRA Wetlands Restoration Dialogue Preliminary Program, Ft Lauderdale, FL

September 15: AWRA Florida Section Meeting, Delray Beach, FL

Small Town GIS

Medium and large cities across the world have launched enterprise level GIS programs to help them manage everything from infrastructure, population growth, tax collection, to utility billing. These programs provide municipalities with a wealth of benefits including enhanced database management, growth planning, and advanced visualization. Success stories are common and the need for accurate spatial data is growing. While returns on investment are usually high with a well-managed GIS program, they can require significant staff and monetary resources to initiate.

Smaller towns, while still in need of the same capabilities, tend to have limited staff and resources. Fortunately, there are a growing number of options available to small towns for affordable GIS implementation. Obtaining quality datasets for nominal or no cost is becoming more common. In Florida, for example, one can access 1-m aerial imagery through www.labins.org. Larger regional or state governmental agencies might offer funding support: Suwannee River Water Management District, for example, is helping many small towns get started with a GIS program by supplying a PC, software, and basic datasets. Towns can then build on this basic structure by adding in infrastructure maps, property appraiser data, school zones, utility lines, location of redevelopment areas, or natural resource data. Another option available to small towns is inexpensive or free software packages. Sharing data through internet or intranet map serving (e.g., Manifold IMS) avoids the need for multiple software licenses. There are also a number of basic GIS viewing packages (e.g., ArcReader, ArcExplorer) offered at no charge. Staff whose duties require access to GIS data but not complex analysis or calculation tools can benefit greatly from implementing these options. Finally, outsourcing GIS needs to compensate for lack of staff is also becoming more common as the number of full-service GIS companies continues to grow, producing more competitive pricing. Outsourcing GIS carries the benefit of using services on an as-needed basis and utilizing the expertise of a larger staff than could otherwise be hired in house. Taking advantage of different combinations of these options as they arise can help small towns with limited resources develop a fully-functional, comprehensive GIS program.

Your input and feedback is very important to us: if you would like to write an article or letter to be included in the GeoSpatial Advisor, email your piece to Alex Wood at awood@adgeo.net for consideration.

(AGI reserves the right to excerpt, condense and/or grammatically edit your document to fit our newsletter format.)

Category of Links

The State of Indiana has a very useful Internet Map Server here:
http://129.79.145.5/arcims/statewide/viewer.htm

AGI is testing Internet Map Servers for Leon County, Florida.

Leon School Zones:
http://71.49.16.29/leonsch/
Leon County General:
http://71.49.16.29/leon1/

...to which we'd love to get your feedback:
info@adgeo.net

Contact Us

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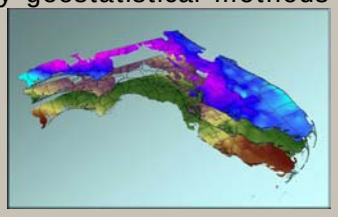
Tips and Tricks: Predicting the Subsurface

We might come into contact with a dataset consisting of measurements taken over a particular area for which we might want to characterize thickness of a material or strata. There are many geostatistical methods available that can be used in a GIS to predict the thickness: inverse distance weighted, splining, kriging etc. These methods are excellent for estimating the presence or thickness of a material for those areas of a study area that lack data. However, a common problem resulting from using these methods can be the prediction of negative thickness. Though a material might thin to only a couple feet thick, we know it's impossible for it to have negative thickness. And "fixing" these areas by selectively changing the values can bias the predicted surface and affect its standard error results.



A solution we have found useful is to first predict the upper and lower extent of a subsurface material, as opposed to characterizing the actual thickness. Measurements are relative to sea level or depth below surface in this scenario, so negative values are acceptable and real. Once the upper and lower surfaces are characterized, we execute a simple upper-minus-lower surface spatial calculation to return a difference, or thickness model, of our material of concern. We won't claim this method isn't without its own set of issues...sometimes we can still get a few negative thickness values. Look for our future newsletter article on how to apply another statistical process to objectively reclassify these remaining negative areas and still maintain data integrity.

Miscellaneous: GIS to Maximize Data

Suppose you had a large study area in which you were searching for a particular occurrence. Let's assume you also had a good idea of some of the factors causing or controlling the occurrences. Let's further suppose you had already located some occurrences and you wanted to maximize this knowledge to not only find more, but reduce the level of effort to do so.

One approach to this involves taking those locations we already have and viewing their distribution spatially with respect to each factor we think is causing the occurrence. Is there a relationship? Does it make sense? For example, if we're looking for hotspots to invest in land, what common characteristics have the most profitable areas had? After associating each factor spatially with the known occurrences, we combine these results together in a map of the best areas to search. We now have a picture telling us where to focus our efforts in finding new locations of our target. It's based on data we collected about the occurrences we already had. In other words, we have a map of the area that tells us where to look for a greater chance of finding the occurrence. This is the basic idea behind a weights-of-evidence analysis: identify, to the extent possible, what is controlling the occurrences of interest, what association those occurrences share with controlling factors, and combine them into a map that displays the best areas. If you have ArcGIS, it's free to download and install. A final benefit of this method is as the map is used to find new occurrences; one can add them back into the analysis to develop a new, even more usable display of the best areas to find more occurrences.