

GeoSpatial Advisor™

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Calendar of Events: September-October

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

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

September 21: Jackson County Spring Working Group, Marianna, FL

October 3: Wakulla Spring Working Group, 9:00A-3:00P, FDEP Douglas Bldg., Tallahassee, FL

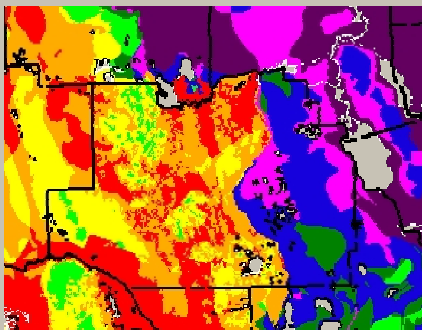
October 5: ESRI 9.2 Seminar, Park Plaza Hotel, Tallahassee, FL

October 5-6: GIS Expo, Palm Beach County Convention Center, West Palm Beach, FL

Marion County Aquifer Vulnerability Assessment

Marion County, Florida and Advanced GeoSpatial Inc. have entered in to a contract to complete an aquifer vulnerability assessment project for the Marion County area. The project involves characterization of intrinsic vulnerability of the Floridan Aquifer System, the most important source of fresh water in Marion County, using a statistical approach known as weights of evidence.

Results of this project will allow the county to focus protection of ground-water resources in more sensitive areas overlying the Floridan Aquifer



System. All aquifers are vulnerable to contamination to some degree and different areas require different levels of protection. The aquifer vulnerability assessment will allow the identification of areas in Marion which, based on predictive spatial analysis, are more vulnerable to contamination from land surface. Existing methods (such as DRASTIC; see image at left) can be based on obsolete data and don't always take

advantage of recent advancements in GIS and the wealth of recently collected data. Our project's output will be a model of vulnerability of the Floridan Aquifer System across the Marion County area, which can be used to replace models like DRASTIC.

Ultimately, this type of aquifer vulnerability modeling allows for a proactive approach to protection of ground-water resources, which increases the value of protection efforts. Model output will assist county planners, environmental regulators, water resource managers, local governments, developers, and other professionals in meeting their objectives for enhancing protection of ground-water resources and land-use planning.

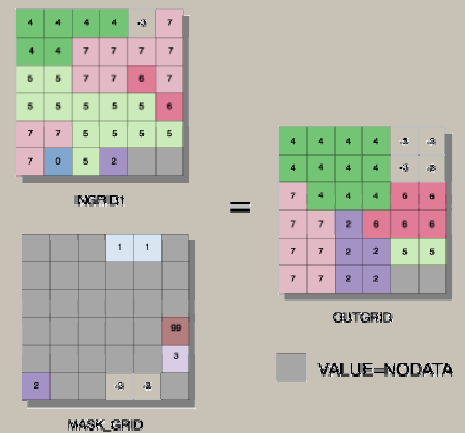
The project will be supported by a Technical Advisory Committee comprised of professionals of the St. Johns River and Southwest Florida water management districts, Florida Department of Health, Florida Department of Environmental Protection, University of Florida, Alachua and Marion counties, and other professionals. The first meeting for the TAC is set for the third week of September, and the project is scheduled to wrap up in March of 2007. Look for progress and results of this very interesting project in future newsletter articles.

Tips and Tricks: Predicting the Subsurface II; Reclassifying Predicted Negative Values

Last week we presented our approach to characterizing the thickness of subsurface material using GIS. Our approach involved an initial step of characterizing the upper and lower extent of our material of concern, as opposed to just a strict thickness prediction model. Then, by performing a spatial calculation, we arrive at a thickness model by subtracting the two surfaces. We also introduced an inherent problem with our method which was the calculation of negative values resulting from the surface calculation. Our goal is to develop a final thickness surface that is valid and has no negative values. But we also want to preserve the statistics associated with the surface prediction output, and avoid selectively changing the values which can bias the predicted surface and affect its standard error results.

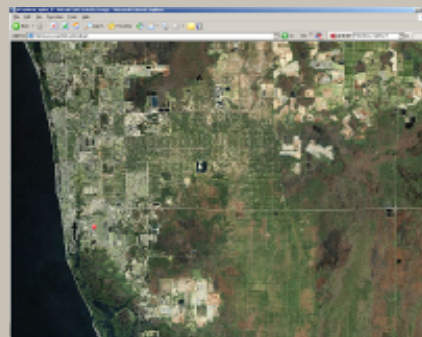
One of our approaches in the past has been to use a function in ESRI's ArcGIS package known as 'nibble'. Nibble allows the user to apply a nearest neighbor calculation (based on Euclidean distance) to 'nibble' away those cell values we know to be erroneous and replace them with values that better represent our surface. The values used for the replacement, as opposed to being best guess or expert assigned, are based on the values of the nearby cells, which we know are good values. The trick is to create a mask grid which matches the negative values and essentially sets these negative value cells as targets for replacement using the nearest neighbor values when the nibble function is executed. This is a great way to apply a statistical process which can objectively reclassify these remaining negative areas and maintain data integrity.

Illustration



Nibble Function illustrated (image from ESRI's ArcGIS Desktop Help)

Miscellaneous: Manifold Toolbar



Manifold has just released a beta version of a geographic toolbar which is used in Internet Explorer. You can download and install it by clicking [here](#). You can use the default imagery and streets from Microsoft Virtual Earth or you can add in modules to run Google Earth images and Yahoo Streets as well. Instructions are also on the page. We found it to be an excellent tool to grab a quick image or street map. The

functionality is very simple: scrolling your mouse controls the zoom, and you can pan the map easily by simply clicking and dragging.

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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

Geography Quizzes

<http://www.nasm.si.edu/research/ceps/gaw/>

Interesting perspective of the world throughout these distorted maps based on subject:

<http://www.sasi.group.shef.ac.uk/worldmapper/index.html>

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