

# GeoSpatial Advisor™

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## Calendar of events: August 2005

August 8-10, Florida Rural Water Association Annual Conference, Hilton Daytona Beach Ocean Walk Village, Daytona Beach, FL (Alan Baker, P.G., of AGI will be speaking on "Well Field Suitability Analysis" at this meeting)

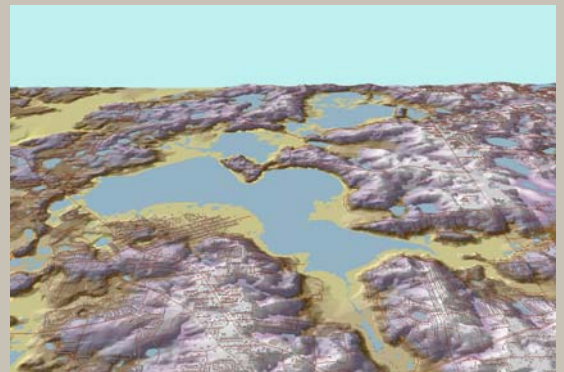
August 10-11, Geodatabase for Pavement and Asset Management, Georgia Tech Global Learning and Conference Center, Atlanta, GA

August 15-16, Programming and Customizing ArcGIS, Georgia Tech Global Learning and Conference Center, Atlanta, GA

## Using Geodatabases to Extend Our World

ESRI defines a geodatabase as "an integrated collection of geographic information." Geodatabases are developed and maintained using the ArcGIS software suite and are capable of storing and retrieving virtually any type of spatial data. ESRI touts their geodatabase method as being capable of modeling "the world better than any other geographic database management environment." Sorting through the tech-speak to understand exactly what a geodatabase is and does can be a little intimidating, however. At AGI, we strongly advocate use of geodatabases as a way to save time on projects, more accurately represent the real world, and most importantly add measurable value.

So what can geodatabases be used for? We have already presented in a past issue of the *GeoSpatial Advisor* how a geodatabase can be applied to develop an advanced model of municipal infrastructure. Such a geodatabase allows a utility company or municipality to greatly reduce the cost and effort of maintaining its system. But a geodatabase can also be designed to model many other types of geographic features or facilities. For example, converting CAD drawings and associated data tables for a multi-building complex, such as a hospital or college campus, is a very useful way to enhance tracking of building and facility maintenance, allow three-dimensional characterization, and greatly simplify data management.



Another significant advantage of implementing a geodatabase is the ability to easily maintain data integrity. The geodatabase design allows for four representations of spatial data: vector (points, lines or polygons), raster (grids or images), triangulated irregular networks (TINs) and addresses/locators. The geodatabase allows for a relational database to be enhanced through defining relationships between GIS objects and features and setting topology and validation rules that can reduce user input error and increase the confidence and reliability of the data. The geodatabase also allows a GIS user to better maintain data quality and ease the control of editing GIS work. These advantages make use of a geodatabase one of the best possible ways to model our world and environment.

## Category of Links

*An interactive map of space; lets the user travel around and explore:*  
<http://www.shatters.net/celestia/>

*Real time NASA satellite tracking application:*  
<http://science.nasa.gov/temp/StationLoc.html>

*USGS has photos from Hurricane Dennis:*  
<http://coastal.er.usgs.gov/hurricanes/dennis2005/photoset.s.html>

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## Tips and Tricks - Data Reference

When adding data to a map in ESRI's ArcMap software environment, the pathname to the physical location of the data on your computer is, by default, stored in the map document itself. If the data is later moved, deleted or changed, the pathname becomes invalid, and that data layer will be marked in ArcMap with a red exclamation point in the table of contents. This can create problems when a map and/or the associated data need to be distributed to various GIS users.

In order to avoid this error and distribute maps to other GIS users, it is necessary to change the way the map references data, so other users will not be required to re-map the pathname to the original data location. Relative paths can be used in a map to specify the location of the data contained in the map relative to the map's current location on a computer disk. It can be located in the same directory as the map or in a folder above or below the folder containing the map. As relative paths do not contain drive names, they enable the map and its associated data to be moved to any disk drive without having to repair pathnames to the data.

In order to change the data path properties in ArcMap to use relative paths, go to the 'File' menu, then select 'Map Properties.' In the 'Map Properties' dialog, there is a button for 'Data Source Options.' Selecting the option 'Store Relative Path Names' will keep all of the project data in subdirectories of the directory in which your map document is stored, thereby ensuring that pathnames do not become invalid when the map is moved to another computer or directory.

## Miscellaneous - Geo Project USA

**Zoto Inc.**, a company which provides its members with storage for digital photographs and controlled web access to photos, has launched a daring new effort. Called **Geo Project USA**, the goal of this effort is to visit and photograph every confluence point in the United States. A confluence point is defined as a geographic location where a whole-numbered minute of latitude intersects a whole-number minute of longitude, for example, latitude: 28°18'00", and longitude: -84°30'00". Though distance between longitude and latitude lines varies spatially, this is approximately equal to one photograph every one-square mile, or a photographic coverage of the U.S. on an approximate one-mile by one-mile grid. This equates to 4,554,000 million confluence points across the U.S. which will produce a sort-of continuous spatial photographic coverage of America.

It is estimated that this effort could take years to bring to a finish, and the project's founders invite willing participants from the general public to help out. All one needs to participate is a digital camera, a compass, and a basic GPS unit to collect the appropriate coordinates. To learn more about the project, visit the website [here](#).

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