THE MAP ANALYSIS PACKAGE AS THE CORE OF AN INTEGRATED WATER RESOURCE INFORMATION SYSTEM

Christopher Heivly
Social and Behavioral Sciences Lab
Gambrell Hall
University of South Carolina
Columbia, South Carolina 29205
(803) 777-7840

Alfred H. Vang
Richard E. Rouse
William C. Campbell
South Carolina Water Resources Commission

For the past several years, various public and private entities within South Carolina have been cooperating to develop a comprehensive automated information system. This information system is needed to assist in the management and inventory of the states water resources. By integrating hydrologic, demographic and economic variables the supply and demand of the states water resources can be efficiently monitored and projections for the future made. This paper will describe the process of integrating point, line and area data from a variety of sources to a uniform digital data base. The core of this process is the Map Analysis Package (MAP). This software, developed at Yale University, performs numerous analytical tasks and will be used to overlay a series of digital files for analytical purposes.

The South Carolina Water Resources Commission through the University of South Carolina Social and Behavioral Sciences Lab has recently integrated several geographic files for the building of a digital data base. At this time, this base consists of three files. The first file, a polygon based file, is composed of 694 water basins for the state of South Carolina, and parts of North Carolina and Georgia. This file was converted to a grid cell file using the USGS GIRAS polygon to grid conversion. The second file composed of average stream flow levels for over 250 sites was created with the Surface II mapping software and consists of an identical grid cell base of 1000 meters. The Surface II program was used to interpolate these average flows over the entire state. The third file is the state boundary and has also been referenced to these two files.

Other files which are being created are, a river reach file, the census county division file and the industrial site file. The river reach file provided by the U.S. Environmental Protection Agency (EPA), consists of digitized stream segments between 5 and 20 miles long and there are over 3,000 segments for South Carolina. The state CCD (Census County Division) file contains the coordinate boundaries for 294 CCD's within the state and will be used for demographic analysis. The USGS place name file is being used to extract latitude/longitude coordinates for industrial sites from the South Carolina Industrial Directory and all coordinates will then be converted to UTM coordinates and directly assigned row-column locations within a MAP data file.

Current development efforts include the use of new hardware and software at the SBS Lab. An IBM-XT370 will be used to run the MAP interactively. This process will greatly enhance the analysis aspect of the information system by being able to quickly manipulate various files available in the MAP package. The SBS Lab hardware configuration of a high resolution color frame buffer system (Vectrix) and comparable color monitor (Aydin), interfaced with the IBM-XT370 will be used to display these digital files. This color system will allow for the display of over 512 colors at one time at a resolution of 480 x 640.