
LAKE OKEECHOBEE GEOGRAPHIC DATA ANALYSIS

Mandate:

Lake Okeechobee Watershed Protection Program (LOWPP)

Background:

The Lake Okeechobee Geographic Data Analysis Project is part of the effort to integrate the Lake Okeechobee Ecological Database with Geographic Information Systems (GIS). This database contains over a million records of information. Location coordinates are part of each record; however, the data from each record are not accessible directly by GIS tools. This reduces the ability of researchers, scientists, and managers to efficiently search and graphically analyze data to determine spatial relationships.

Project Overview:

The overall goal for the integration effort is to establish a user-friendly interface that bridges databases and GIS. The current focus of the project is to generate an elevation map of the Lake Okeechobee watershed and the lake bottom, using point data from USGS topological data and other District or Division GIS data stored in databases. The interface in development is called the 3D Surface Analytic and Geostatistic Tool (3D SAG). When fully implemented, it will allow users to query databases for point data, and then perform various surface creation, visualization and analyses. It takes advantage of the latest technologies of ArcObjects to integrate Oracle database with GIS and can be used in surface and ground hydrology, elevation, and water quality analysis.

Application of Results:

With the integrated interface, it will be possible to generate contours, 3D views and fly-through animations of the Lake Okeechobee region; identify watersheds, determine surface and ground flow directions; analyze concentration and movement of phosphorus and other pollutants in the lake body; estimate water supply and flood retention capacity, and query cross-section of the lake bottom. These data mining results will assist the decision making process of managing water resources supporting ecological restoration efforts including CERP.