Many of the programs being developed by the Institute are evolving into the National Resources Spatial Decision Support System to allow users to view any watershed in the continental United States. Called Digital Watershed (DW), the system allows users to access an area by state, address, or watershed.

A number of tools are incorporated into the program including a user-friendly adaptation of the EPA Basins tool, direct linkage of the selected watershed to rectified aerial photography through Google Earth, and automatic forwarding of a delineated watershed to a hydrologic model that computes runoff, peak flow and associated nonpoint source pollution.

The complexity and urgency of the world's environmental problems are going to be overwhelming if we don't do something effective to improve our collective abilities to deal with complex and rapid change of our environment. Here at the Institute of Water Research, we are building an environmental software system using the distributed computing technologies to build our collective abilities. To create a system to record patterns at different scales and understand different processes that shape these patterns is no easy task but it can be done if we aim high and act incrementally. This software will continue to grow with the ideal of once developed; new knowledge of our planet in the form of databases and models can be integrated into the system. We hope that this system will become part of our national environmental computing infrastructure and will also be able to answer questions about our environment based on information entered.

Since the watershed is considered to be the basic unit for the environment, we have developed online digital watershed website as our starting point. The digital watershed website is designed to provide both a centralized information repository and an online computing center for watersheds in the United States. This site is based on the comprehensive database of 8-digit watersheds for the whole continent of the United States, which is included in the EPA BASINS system. The database contains all regulated facilities, river network, DEM, state soil and other data layers. The digital watershed site is interconnected with Michigan's local level watershed information system by the scaling function. You can access the Michigan's local level watershed information system at http://www.hydra.iwr.msu.edu/water/.

With the advances in distributed computing technologies, online real time or quasi-real time environmental modeling has become a possibility. We believe that the online environmental modeling will become an essential part of our national environmental computing infrastructure. In Digital Watershed, we provide several modeling functions for users to evaluate consequences of their decisions. The DW also includes basic mapping functions, 3D visualization and watershed reporting capabilities. It also allows users to access EPA’s modernized STORET database on the fly by utilizing web services provided by EPA.