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Pisces Software Program

A tool for more efficiently analyzing hydrology model time series data for users from novices to modelers

What Is The Problem?

In water resource management projects and studies, it is often necessary to manage and analyze large amounts of hydrology data. For example, time series output data from numerical modeling tools are used to compare multiple scenarios or alternatives. Even with a small number of scenarios or alternatives, organizing, comparing, evaluating, and presenting the data can be difficult. Some hydrology models have output management features, but only those licensed and trained to operate these models can use them. Alternatively, spreadsheet or database tools can be used to compare, evaluate, and present. This can be a cumbersome and labor-intensive process that also requires specialized computer skills.

What Is The Solution?

Reclamation's Pacific Northwest Regional Office has developed an easy-to-use computer program called Pisces to manage, organize, and analyze time-series data. It does not require special computer skills or modeling experience to operate. Pisces accepts output data from common hydrologic models. With Pisces, users can access data immediately—simultaneously and independent from the hydrologic model. Users can easily graph any portion of the time-series data. Pisces provides convenient access to time-series model results and the ability to easily compare many different scenarios or alternatives. Pisces has specialized features that allow users to analyze and compare any combination of scenarios/alternatives. For example, a biologist can evaluate the difference in impacts to fish habitat (flows, temperatures, etc.) between multiple dam release scenarios for a specific river reach. The software has successfully evaluated over 100 sets of model output data.

Pisces is currently configured to work with output data from MODSIM, RiverWare, Bonneville Power Hydsim model, and the U.S. Army Corps of Engineers HEC-DSS format from hydrologic computer models. A scenario selector unique to Pisces converts massive amounts of output data into a summary form for each time series by scenario or alternative. Pisces can also be used to organize, graph, and analyze observed natural resource time series data. It is configured to accept data from Reclamation's Hydromet, AgriMet, and Hydrologic Database river and weather conditions , U.S. Geological Survey's National Water Information System, and other sources. Data in other formats can be entered as text files or as Microsoft Access and Excel files.

Who Can Benefit?

Pisces is most commonly used by participants and stakeholders in water resources planning projects and studies, including water and natural resource managers, hydrologists, engineers, biologists, irrigation district staff, and various others. It can also be used by anyone needing to manage and/or analyze any type of time series data sets.

Where Have We Applied This Solution?

Pisces has been used extensively for Reclamation-sponsored studies and planning efforts on the Columbia, Rio Grande, and Snake Rivers. It is also used frequently by Reclamation staff and others for managing Hydromet and AgriMet data.
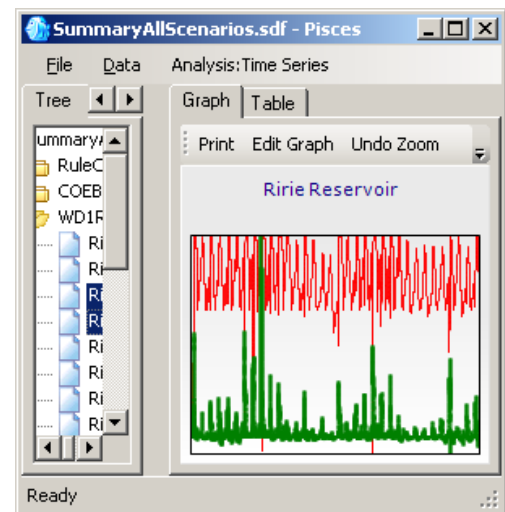
Pisces screenshot.

Future Development Plans

Since its inception in 2001, the software has been modified slightly as needed for specific project needs. It is expected that the software will continue to evolve as needed by particular users for their projects.

More Information

The software, user manual, and video demonstrations can be downloaded at: http://www.usbr.gov/pn/hydromet/pisces

Contact Information

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Collaborators

Reclamation's Science and Technology Program, Grand Coulee River Bank Stability Programs, Pacific Northwest Regional Office, and the Snake River, Yakima, Albuquerque. and Ephrata Area Offices.