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Keynote

Human Perception and Visual Thinking Tools for Environmental Science

Colin Ware

Abstract

Visualizations are cognitive support tools. They take advantage of human pattern perception, support working memory and help with cognitive model building. Lessons for cognitive tool building will be developed with three examples relating to the environment. The first is a tool for analyzing a marine food web, it informs the need to design so that the inner workings of a model can be understood. The second is visualization software for analyzing the behavior of tagged marine mammals. Its design was informed by studies of visual working memory. The third is a model of seaweed architecture, with lessons for mental model building and the role of visualization in explanation.

Invited Talk

Making Sense of Weather Data: The Meteorological Workstation NinJo

Kathrin Feige, Sibylle Haucke, Aiman Younis, Bruno Zürcher, Bo Bergmann, and Dirk Heizenreder

Abstract

For weather forecasters, it is of utmost importance to have quick access to the most recent meteorological data within a stable software system. Visualizing all of this data in a goal-directed way supports them to monitor current and potential future weather situations, to generate a forecast, or to warn the general public about severe weather events – in short, it supports them to efficiently make sense of the large volume and variety of relevant information that is generated every day. The meteorological workstation NinJo was designed to fulfill this requirement: It is a server-client system with the core task to process and visualize meteorological data. It is continuously developed within an international consortium, and in operational use at six weather services. This talk provides a tour through the system, covering usage, technical aspects, and current development efforts along the way.

Invited Talk

A Virtual Geographic Environment for Multi-Compartment Water and Solute Dynamics in Poyang Lake, China

Karsten Rink, Erik Nixdorf, Lars Bilke

Abstract

We give a demonstration of a Unity-based framework for the presentation, exploration and analysis of complex hydrological studies in large catchments. A Virtual Geographic Environment has been developed for the 162,000 km^2 catchment of Poyang Lake, the largest freshwater lake in China. It combines a wide range of 2D and 3D observation data sets with simulation results from both an OpenGeoSys groundwater model and a COAST2D hydrodynamic model, visualising water and solute dynamics within and across hydrologic reservoirs. The system aims at a realistic presentation of the study area, intuitive approaches to visualise interesting aspects of multi-variate data sets and easy-to-learn interaction techniques for navigation, animation, and access to linked data sets from external sources, such as time series data or websites.