

FISH 503 Advanced Limnology (University of Idaho, Moscow Campus)

Data management and visualization

Module Goals: This module aims to familiarize participants with aspects surrounding the collection, storage, manipulation, analysis and presentation of data collected from limnological research. Theory will be reinforced by hands-on laboratory components in which various aspects of data management and visualization will be used. Participants will learn the importance of high quality data in research, tracking and managing data, QA/QC procedures, requirements of visually presenting the data, as well as hands-on experience working with large data sets to accomplish particular objectives for analysis and presentation.

General Description

Advances in sensor technology and data transmission capabilities from remote locations, combined with short sampling intervals means that great quantities of data can, and are generated as part of specialized or even routine monitoring programs. How does one deal with such large amounts of scientific data -let alone make them understandable to others or the public? These questions drive this workshop. We will examine the data generation from the planning stages of a program through it's actual collection, transmission, storage, and finally how to present it to different audiences. Chain of custody for samples and data will be explored, what is required for a thesis, a published manuscript, or in court. How are data managed once they are generated, what quality assurance/quality control is implemented/needs to be implemented and who decides? How does one develop and incorporate standard operating procedures (SOPs) into research programs? How and what role does a laboratory information management system (LIMS) play in the processing of samples. The visualization part of the module will examine how various data are best disseminated to different audiences.

The lab part of the course will examine the management/analysis of data set using various approaches (spreadsheet, database, and perhaps specialized software e.g., Equis5 LakeWatch, CTech's MVS) to examine the pros/cons of each - interfaces, friendliness, and amount of time required for specific tasks. Different output forms and summary data will be generated to rate approaches and give participants first hand Experience.