AN ONLINE LAKE AND RESERVOIR INFORMATION SYSTEM

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In order to achieve sustainable management of water resources, it is important to integrate all the aspects required for a comprehensive understanding of the processes. A comprehensive information system should incorporate visualisation, computational analysis and modelling, relevant reference material and facilitate collaboration between managers, researchers and stakeholders. A system that is capable of meeting these objectives will provide the most effective environment for achieving sustainable management.

This is a challenge that demands an innovative approach when providing technological solutions. The role of information technology is critical as a mechanism for facilitating an understanding of the processes occurring in a water body. These processes occur over a range of temporal and spatial scales, requiring a system designed for visualisation at a variety of resolutions. The insight gained by accurately visualising all the processes occurring in lakes, reservoirs and estuaries will provide a significant basis for further developing our understanding.

The data visualisation tools included in the Online Lake and Reservoir Information System (OLARIS) support the simultaneous viewing of multiple parameters at a variety of temporal and spatial scales. It is capable of displaying data over time-scales from years to seconds (sampling frequency) as shown in Fig. 1. This is achieved by implementing a visualisation technique developed by Stephenson and Voorhees [1] who approached this as a hierarchically distributed caching problem. The visualisation component enables the interactive, real-time viewing of high quality images in an online environment, and is the first application of this technology in this context. This technology makes it possible to investigate the processes occurring in a water body at a variety of temporal and spatial scales.

The primary purpose of the Online Lake and Reservoir Information System is to provide an internet based decision support system for managers and a research support system for academics. The broad objective of the system is to encourage the participation of educators, students and the general public in understanding the processes occurring within the water bodies in our environment. With a better visualisation system, access to predictive and scenario models and supported by literature and collaboration among experts, OLARIS will become a focal point for advancing our understanding of the processes occurring in water bodies. It is this increased understanding and collaboration that will ensure the sustainable management of our lakes, reservoirs and estuaries well into the future.
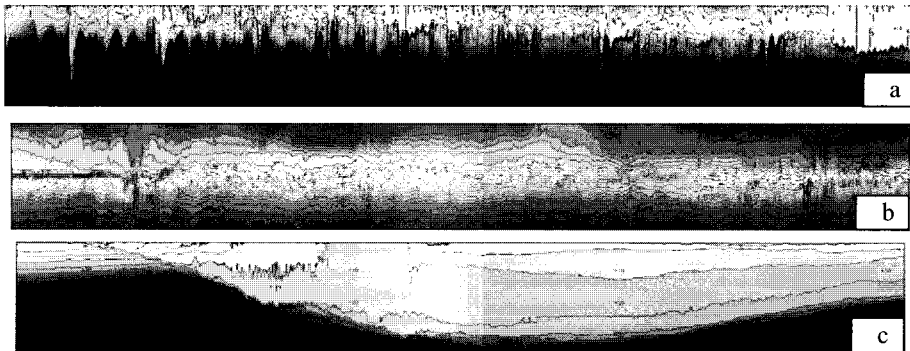
Fig. 1 Water temperature at an; a) annual, b) monthly, and c) sampling frequency timescale.

REFERENCES

Stephenson T. and Voorhees J., "IMACTS: An interactive, multiterabyte image archive", *Proceedings of the Fourteenth IEEE Symposium on Mass Storage Systems*, Monterey, California, 1995,   pp. 146-161.