

Grassroots network of limnologists, ecologists, information technology experts, and engineers who have a common goal of building a scalable, persistent network of lake ecology observatories

GLEON13 New Sites / Site News Abstracts

Kye Ewing¹ Evelyn Gaiser², and Hilary Swain¹

Upgrading and Enhancing Access to Lake Annie Buoy Data

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After reviewing changes made to the Lake Annie Buoy since G12 we will discuss data management with regards to the web presentation of metadata and data output. Automated raw data streaming and Quality Assurance procedures will also be covered.

David M. Johnson

Smith Mountain Lake: Next Steps

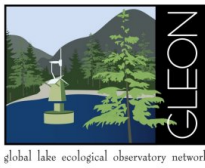
Ferrum College, Ferrum Virginia

Although a buoy equipped to collect data at high frequency has not yet been deployed, Smith Mountain Lake is a registered GLEON lake. Smith Mountain Lake will be introduced to the GLEON membership and some of what we've learned about the lake from 24 years of trophic monitoring will be summarized. The presentation will include a brief description of the monitoring program, spatial variability of trophic state indicators, and some interesting conductivity profile data. Future plans include locating a HFS buoy on the lake to better describe seasonal variation of lake stability and developing a circulation model for the lake, followed by an eutrophication model, eventually to be coupled to a watershed model. I want to understand the lake dynamics, how it interacts with its watershed and, eventually, how it responds to changes in landuse and changes in climate. This will be interesting scientifically and useful for effectively managing the lake.

Jennifer L. KLUG¹, Gregory L. Bollard², and James R. Conant²

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In May 2011, Friends of the Lake Inc., a non-profit organization, in partnership with Fairfield University and GLEON deployed a monitoring buoy on Lake Lillinonah, northwest Connecticut, USA. Lake Lillinonah is a large, eutrophic hydroelectric impoundment on the Housatonic River. Algal blooms in the summer impair recreation and lead to hypoxic bottom waters. Friends of the Lake is a volunteer run, advocacy organization founded in 2003 to help improve water quality in Lake Lillinonah. Volunteers took a lead role in raising awareness, securing funding, supplying expertise for buoy set-up and deployment, and are crucial for ongoing maintenance. Our presentation will highlight the important role of citizen scientists in sensor deployment, water quality monitoring, and public outreach and will discuss the benefits of partnerships between community members and universities. We will also present a brief summary of what high-frequency data have taught us about lake dynamics in this complex system including the impact of Hurricane Irene.

John D. LENTERS¹, Kenneth M. Hinkel², Christopher D. Arp³, Richard Beck², Wendy R. Eisner², Karen E. Frey⁴, Guido Grosse³, Hongxing Liu², Brittany L. Potter¹, and Amy Townsend-Small²

The Circumarctic Lakes Observation Network (CALON): A new opportunity for GLEON expansion on the Arctic Coastal Plain of northern Alaska

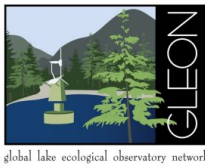
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Roughly one-quarter of the lakes on Earth are located in the Arctic, with their origin and distribution largely controlled by the presence of permafrost, glacial history, and the regional water balance. About half of the Arctic Coastal Plain (ACP) of northern Alaska is covered with thermokarst lakes and drained lake basins, making these features the dominant landscape elements and a crucial component of the Arctic system. Thermokarst lakes are intimately tied to the regional climate through their energy and water budgets and profoundly affect permafrost structure. Arctic lakes also release large quantities of carbon dioxide and methane and absorb up to 35% more solar energy than the surrounding tundra. These lakes play a vital role in Arctic ecology, and there is growing concern that biological communities and lake productivity may be increasingly vulnerable to the effects of climate warming. Water quality degradation and changes in lake hydrology are additional concerns for indigenous communities, since lake systems play a crucial role in the



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subsistence, culture, and heritage of native peoples. We describe here a recent initiative to establish a Circumarctic Lakes Observation Network (CALON) as part of the NSF-funded Arctic Observing Network (AON). The project builds upon an existing lake monitoring program on the ACP, with significant expansion to begin in 2012. As part of this expansion, we propose to establish two new GLEON sites on the ACP that will increase the diversity of lakes within the network, as well as provide new opportunities for collaborative research.

James A. RUSAK¹ and Christopher McConnell¹

dygraphs: A free and easy-to-implement interactive graphing utility for displaying time-series data on websites

Ontario Ministry of the Environment, Dorset Environmental Science Centre, Dorset, Ontario, CANADA

Web-based graphical displays of real-time data often need to be hosted by third-party servers and typically only produce static plots. “dygraphs” is an open source JavaScript library that produces interactive, zoomable charts of time series without using an external server or Flash. It is designed to display dense data sets from simple csv files and also enables users to explore and interpret their plots. The dygraphs library renders plots very quickly and has options to average data over any time-frame, plot running averages, calculate and plot standard deviations and display annotations. THELMA’s real-time automated meteorology and water temperature, oxygen and chlorophyll sensors on Harp Lake, Ontario are used as examples to demonstrate the features and efficacy of this graphics library.