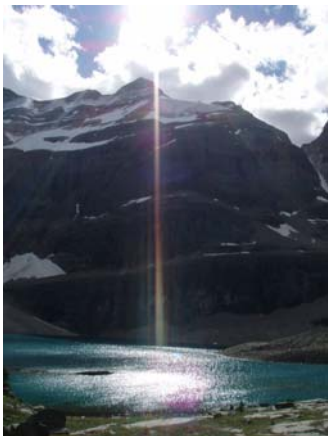


Call for Papers:  
Special Issue of *Limnology and Oceanography*



***Lakes and Reservoirs as Sentinels, Integrators, and Regulators of Climate Change***

This is an open call for papers for a special issue (SI) of *Limnology and Oceanography* (L&O) focused on lakes and reservoirs as sentinels, integrators, and regulators of climate change. The SI will follow an AGU Chapman Conference that will be held at Lake Tahoe September 8-10, 2008. All papers that are directly relevant to the conference topics will be considered through the abstract vetting and review process described below.

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**General Description and Objectives of the Special Issue**

Lakes and reservoirs comprise a small portion of the Earth's total surface area, yet they are likely to play a substantial role both as regulators of future climate change, and as integrators of the present and past effects of climate change on terrestrial and aquatic ecosystems. Lentic ecosystems are the lowest point in the surrounding landscape and as such can provide information on how climate change alters not only aquatic ecosystems, but also the terrestrial ecosystems in the surrounding watershed. Alterations in seasonal temperature and precipitation patterns as well as climate control of carbon flux into and out of lakes may play a central role in both the ecology of aquatic and terrestrial communities and ecosystems, and in global biogeochemical cycles. For example, long-term trends of changes in dissolved organic matter (DOM) have been observed in several regions around the world. The chromophoric component of DOM (CDOM) is a major mediator of climate variability through its influence on ultraviolet (UV) and photosynthetically active radiation (PAR), carbon cycling, energy flow, and aquatic food-web structure. Similar climate effects can be recognized for changes in the flux of energy, water and other dissolved substances that act as ecological subsidies among terrestrial, aquatic and atmospheric domains. The purpose of this L&O SI is to

synthesize and advance our understanding of the mechanisms by which lakes record, integrate, respond to, and regulate climate variability.

This L&O SI will focus on examining the potentially important roles of lakes and reservoirs in global climate change, particularly in regard to changes in the flux of energy, water and carbon into, within, and out of lake basins and the consequences for aquatic and terrestrial communities and ecosystems. The four central themes of the L&O SI are as follows:

1) **Lakes and reservoirs as sentinels of present climate change.**

*Working Group Chair: Rita Adrian, IGB, Berlin, Germany*

<http://www.igb-berlin.de/abt2/mitarbeiter/adrian/index.shtml>

As the lowest points in the landscape, lakes and reservoirs are highly responsive to the effects of climate forcing. Physical, chemical, and biological processes in lakes and reservoirs respond to changes in energy, water (including ice development) and dissolved substances over time scales ranging from short-term oscillations to multi-decadal trends. Papers are encouraged that demonstrate the mechanisms by which climate affects lakes, as well as the consequences of these mechanisms for the structure and function of ecological, chemical or physical components of lakes.

2) **Lakes and reservoirs as integrators of past climate change.**

*Working Group Chair: Peter Leavitt, University of Regina, Canada*

<http://www.uregina.ca/biology/faculty/leavitt/index.htm>

The sediments of lakes and reservoirs integrate effects of climate variability on terrestrial and aquatic ecosystems over decades to millennia through the deposition and preservation of diverse materials derived from land, lake and atmosphere. This theme will feature papers that quantify how climate has influenced lakes in the past, demonstrate how climate interacts with natural or human disturbance, or which use historical insights to model or forecast climate effects. Any retrospective approach is suitable (microfossils, geochemistry, physical stratigraphy), although preference will be given to studies that advance our insights into the mechanisms of lake response to climate variability.

3) **Lakes and reservoirs as regulators of future climate change.**

*Working Group Chair: Lars Tranvik, Uppsala University, Sweden*

[http://www.ebc.uu.se/limno/staff/Lars\\_Tranvik/home.html](http://www.ebc.uu.se/limno/staff/Lars_Tranvik/home.html)

This working group will examine the effects of lakes and reservoirs on modulating regional climate but also the global carbon cycle. Recent estimates suggest that the rate of deposition of fixed organic carbon in lakes and reservoirs exceeds that being deposited in the world's oceans. As such, lakes and reservoirs may account for a substantial portion of the "missing carbon" sink resulting from anthropogenic fossil fuel burning and hence contribute to the regulation of climate change. Lakes are often observed to contain CO<sub>2</sub> and other greenhouse gases at concentrations above air-equilibrium, and in some environments such as the arctic tundra aquatic ecosystems may act as major conduits for the transfer of terrestrial carbon to the atmosphere. One portion of the carbon cycle in lakes and reservoirs that remains poorly understood in this respect is the role of photobleaching by UV and longer wavelengths and

how it influences the production and processing of organic matter by microbial autotrophs, heterotrophs, and mixotrophs.

4) **Scaling and modeling the role of lakes and reservoirs in climate change.**

***Working Group Chair: Murray MacKay, Environment Canada, Toronto, Canada***

Climate effects on aquatic ecosystems range from the molecular level response of UV-induced DNA damage and temperature dependent enzyme kinetics to direct and indirect food web responses at the population, community, and ecosystem levels. The timing of the response of lakes to climate change ranges over time scales of days (thermal stratification in response to storm events) to millennia (sediment records). On a regional scale great lakes play an important role in modulating regional climate patterns, which influence terrestrial ecosystems as well. Tools for examining these responses may range from the use of the ways that stable isotope ratios are altered by climate effects on biochemical pathways to remote sensing and satellite imagery approaches to quantifying the distribution and abundance of lakes and large scale regional or global responses such as the drying of the Aral Sea. Sophisticated scaling and modeling approaches are required to integrate these disparate levels of response of lakes to climate change at local, regional, and global scales.

**Publication**

The L&O special issue will consist of 20-25 papers, assuming average printed paper length is 10 pages, figures and equations are not excessive, and authors pay for free access and for any color plates. The format of the SI will follow the general format of the four major themes to be covered at the Lake Tahoe conference: lakes as sentinels, integrators, and regulators of climate change, and a modeling session. Criteria for accepting papers for submission will be established through an abstract vetting process carried out by the conference organizers and editors in consultation with the Editor-in-Chief of L&O as outlined on the SI portion of the L&O web site. Submitted papers must be directly relevant to the core questions that are developed by the working group leaders, conference co-organizers, and program committee.

**Time Line of Events**

November 2007 – Call for abstracts on ASLO and AGU websites. Conveners work with organizing committee and working group chairs to make decisions on key invitees – up to 30 per working group. Decisions will be made on who will participate in the NCEAS workshop (consider ability to teleconference at NCEAS), and an NCEAS proposal will be written for a workshop sometime in March-April, 2008.

29 February 2008 – Abstracts due, to be submitted through AGU website.

1-27 March 2008 – Abstract vetting to be carried out by Williamson, Saros, Vincent, and Smol. Decisions will be made in two areas:

- 1) *Conference participation*: Accept or decline the first author as a conference participant who will present at the conference. Categories of presentation include participant (poster presentation), keynote, or synthesis paper. All participants will be engaged in one or more working groups and have the

opportunity to contribute to a synthesis paper in one of the four key subject areas. All accepted abstracts will be published by AGU regardless of whether or not a full manuscript is either submitted or published.

- 2) *Publication in the L&O SI*: Accept or decline the abstract for submission as a full manuscript to the special issue of L&O. Accepting for submission means only that the manuscript will be eligible for review for consideration for publication in the L&O SI due to the relevance of the topic to the theme of the conference as well as the potential for the work to make a solid scientific contribution. Papers must follow standard L&O submission requirements – see <http://www.aslo.org/lo/instructions/authors.html>. Authors should keep in mind the need for the abstract to be informative rather than indicative – see [www.southernct.edu/~brownm/inform\\_ab.html](http://www.southernct.edu/~brownm/inform_ab.html).

Early April 2008 – Decisions on acceptance of abstracts and conference participation emailed to authors.

30 July 2008 - Deadline for housing reservations and conference registration. (AGU will give full refunds until August 25, 2008.)

8 August 2008 – Drafts of synthesis manuscripts due to all working group members and conveners.

8-10 September 2008 – Conference at Lake Tahoe: three full days of talks, posters, discussions, writing, and activities.

September 15, 2008 – Manuscript submission deadline for all papers, including syntheses and keynotes. Submit papers to the Editor-in-Chief of Limnology and Oceanography. **In order to assure timely publication of the L&O SI and in fairness to all participants, no late manuscripts will be considered – this deadline is firm; late submissions will be published only as abstracts by AGU.**

**Questions** about this Special Issue can be directed to the conveners of the Special Issue.

**For questions** about the Tahoe Climate-Lakes Conference contact AGU at e-mail [chapman-help@agu.org](mailto:chapman-help@agu.org) or call the AGU Meetings Department at +1 202-777-7332.