

Limnogeology Division Newsletter

Volume 8. Number 1 October 2010



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From the Editor

Peter Drzewiecki Storrs, CT

Greetings!

Welcome to the fall edition of the Limnogeology Newsletter. By now, many of you are preparing your presentations for the upcoming GSA meeting in Denver. Others of you may be hoping you were preparing your presentations!

This edition of the Newsletter contains an update on the Annual GSA Meeting, and other informational items including:

- A message from your division chair,
- Limnogeology Division election results,
- An update on economic interest in Mesozoic rift basin lake deposits of the east coast US,
- A report on the 18th International Sedimentological Congress,
- Kerry Kelts Student Research Award and Israel C. Russell Award winners,
- Limnogeology related sessions at the 2010 Annual GSA Meeting, and
- A list of upcoming limnogeology-related meetings

I hope you find this information useful. As always, please send me any announcements, etc. you want distributed to other members of the division. I would also love to receive more technical articles for the Newsletter.

Cover Photo: Lonesome Lake, White Mountains National Forest, New Hampshire (photograph by Peter Drzewiecki)

Message from the Chair

Michael Rosen Carson City, NV



Michael Rosen coring at Big Soda Lake, NV. (Photo by Liam Reidy)

This is my last newsletter message, as the outgoing chair of the Division. Before writing this I took the opportunity to look at my first chair's message in 2008, to see if the Division had accomplished the goals that we had put forward at the time. We definitely succeeded in creating a new outstanding achievement award, although it has taken two years to accomplish this. We decided to name the award after I.C. Russell instead of K.O. Stanley, but other than that the award is up and running. We will award the first I.C. Russell Award at GSA in Denver at our business meeting. I won't spoil the event by announcing the winner here; you'll just have to come to the business meeting at 6 PM on Tuesday November 2 (Election Day!). Despite the economic

hardships over the last couple of years, we have managed to increase the Kerry Kelts Student Scholarship fund to over \$10,000. However, the Russell and Kelts awards continue to need your help (money) to be sustainable. Please contribute to both these funds when you renew your memberships this year.

Membership in the Division has remained relatively stagnant. This may be due to the economic downturn, but our dues are not high (\$10) and it is used to support the Kelts Scholarships. We should have a membership that is double the current 200 or so members. If you know someone doing limnogeology or paleolimnology, please encourage them to join the Limnogeology Division. It will help students almost immediately. We had a relatively modest presence, but very successful meeting in Portland with 2 topical sessions that were well attended. This year at Denver we have more than 6 sessions (see below) and another free core workshop being held at the

USGS Core Repository in Lakewood. Next year's meeting in Minneapolis is a Limnogeology paradise, so please suggest topical sessions for this meeting. We plan another core workshop at LacCore, a core description short course as well a possible field trip. So expect a variety of events in 2011.

This year, the Kerry Kelts Student Scholarship Award had a number of high quality applicants, that proposed work on diverse and very interesting topics. This year we decided to give only one award so that the amount could be increased. The winner will be announced at the Limnogeology Division business meeting at GSA, but is also listed below in this newsletter. I think the Division is in very capable hands with our two new officers Dan Deocampo (Chair) and Amy Myrbo (Vice-Chair). Having worked with Dan as the Vice-Chair for two years allows me to tell the Division that his energetic and inclusive style will be a great asset to the Division. Amy is equally energetic and inclusive, so between the two of them expect great things in the next 2-4 years. As I depart as chair, I'd like to extend particular thanks again to David Finkelstein and Peter Drzewiecki for continuing on as Treasurer and Secretary, respectively, for two more years. These are the guys that keep the Division going and in the black! Peter will be stepping down two years' time, so if you are interested in contributing to the Division, please let us know and we will put you on the ballot.

Rather than dwelling on accomplishments or failures, I'd just want to leave by saying it was a pleasure serving the Division as Chair. I hope I have succeeded in leaving the Division as an active, viable Division that will continue well into the future. As I said the Division is in capable hands, so I can "retire", knowing that the future of the Division is bright.

I wish you all a successful year both scientifically and personally and I hope to see you all at GSA in Denver.

Michael Rosen
Limnogeology Division Chair

Limnologelogy Division Election Results

Peter Drzewiecki Storrs, CT

Elections of new officers for the Limnogeology Division occurred this past September. Daniel Deocampo, the current vice-chair, won election to chair for 2010-2011. Amy Myrbo was elected to vice chair. Welcome aboard Amy!

David Finkelstein will serve as Treasurer once again, Peter Drzewiecki will continue as Secretary, and David Warburton will remain division webmaster.

The new officers will commence their terms at this year's Annual Business Meeting at the GSA Annual Meeting (see announcement later in this newsletter). We would like to express our appreciation to Michael Rosen (outgoing division chair) for all his hard work over the past years.

Interest in Old Lakes

Economic Interest in East Coast Rift Basin Lake Shale

Peter Drzewiecki Storrs, CT

I recently participated in a meeting between members of the United States Geological Survey and State Geologists from northeastern states regarding the hydrocarbon potential of the Mesozoic rift basins that occur along the eastern margin of North America. These basins, among the earliest ever explored in the United States, were not considered as exploration targets as recently as a few years ago. However, with new play concepts developed from West Africa analogs, and with recent production success in the nearby Marcellus Shale, interest in these basins has once again grown. Of

particular interest are the organic-rich shale layers that record deposition in anoxic perennial lake environments. Although these source rocks no longer support a conventional hydrocarbon system because they are typically over-mature (Pratt et al.,

1988), they have potential for shale gas, and as a reservoir for CO₂ sequestration.

The Mesozoic rift basins are typically half-grabens that developed along the east coast of North America in association with the opening of the Atlantic Ocean during the late Triassic and early Jurassic Periods.

They are filled with thick successions of continental strata that record deposition in arid to semi-arid climates in the north and more humid climates in the south (Olsen et al. 2005).

The middle part of the rift-fill succession of many of these basins is lacustrine in nature.

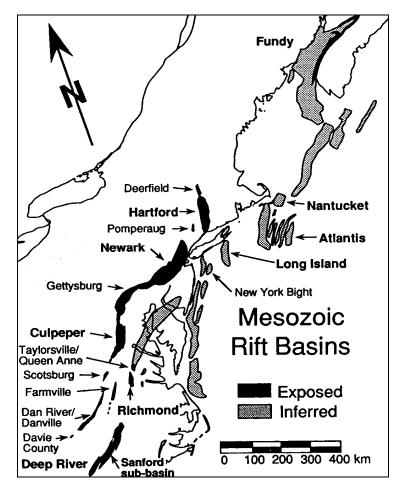


Figure 1. Location of Mesozoic rift basins along the eastern margin of North America. Lacustrine shale sequences within these basins are the focus of renewed exploration interest in these basins. From: Schlische and Olsen, 1990.

For example, deposition in the Hartford Basin is characterized by alternating reddish-brown playa mudstones and gray to black perennial lake mudstone (Figure 2; Gierlowski-Kordesch and Rust, 1994). The reddish-brown mudstone is ripple cross-laminated and contains abundant mudcracks, attesting to deposition under arid climatic conditions (Figure 3). Pedogenic alteration is common in certain intervals within this facies. Laminated black shale (Figure 4) is interpreted to have formed in anoxic perennial lakes. Some lake intervals contain abundant fish fossils, while others contain

evaporite molds, evidence of lake development under a variety of climatic conditions.

The laminated black shale is typically surrounded by beds of gray mudstone with some

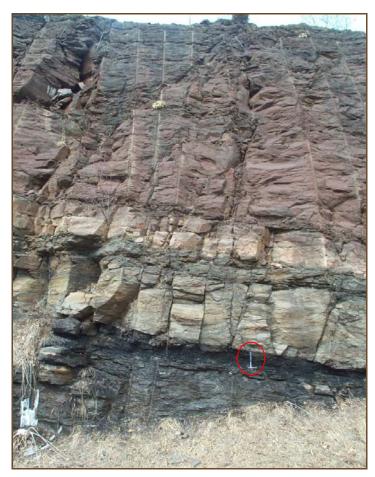


Figure 2. Outcrop of the Lower Jurassic East Berlin Formation (Cromwell, CT) showing perennial lake facies (black mudstone at the base), lake margin facies (gray mudstone), and playa facies (reddishbrown mudstone). This formation records fluctuations between arid and more humid climates. Note hammer (circled) for scale.

burrows and mudcracks, interpreted to be lake margin facies.



Figure 3. Core sample of ripple cross-laminated reddish-brown mudstone from the lower Portland Formation (Lower Jurassic) of the Hartford Basin. Note the large sand-filled mudcrack at the top.

At one time, the quality (and likely the quantity) of organic matter preserved within these black shale deposits was excellent for hydrocarbon production. Spiker et al. (1988) determined that the organic matter originated from both vascular and nonvascular (algal) sources. Pratt et al. (1986) measured TOC values up to 3.8%, numbers confirmed by recent unpublished data. However, the basin appears to have already generated hydrocarbons in the past, and much of the basin is currently mature or overmature (Pratt et al., 1988). Bitumen commonly fills fractures, faults, and porosity within



Figure 4. Left – Outcrop of laminated black shale surrounded by more massive gray shale in the Lower Jurassic East Berlin Formation of the Hartford Basin (Cromwell, CT). Right - Core sample of laminated black shale from the lower Portland Formation (Lower Jurassic) of the Hartford Basin. This lithology contains up to 6% organic carbon.

sandstone facies in the Hartford basin (Figure 5). Clearly, it is too late for an active conventional hydrocarbon system. These observations are consistent with conclusions made by Morley (1999), who noted that cratonic rift basins typically have a low hydrocarbon potential.

Figure 5. Bitumen in a fault from the Hartford Basin. (Photo from Mark Evans)

The current interest in the Mesozoic rift basins lies in both unconventional resources

(shale gas, coal methane, geothermal energy), and in the offshore rifts that more likely preserve regional post-rift seals and reservoirs that seem to be required to have an economic hydrocarbon accumulation (Morley, 1999). Organic rich lake shale also has the potential to serve as a reservoir for CO₂ sequestration operations. Although there are much data that need to be collected to determine the ultimate potential of these rift systems, clearly the lakes have done their part to make the system work!

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Report on the 18th International Sedimentological Congress

By Elizabeth Gierlowski-Kordesch Ohio University Athens, Ohio

Every four years the International Association of Sedimentologists (IAS) holds its International Sedimentological Congress in venues all over the world. Just recently, its 18th Congress was held in Mendoza, Argentina (Sept. 26 – Oct. 1), called 'Sedimentology at the Foot of the Andes." There were numerous contributions involving lakes, both posters and talks, so limnogeologists and paleolimnologists had much to

see. Studied lake deposits from deep time included a siliciclastic freshwater lake from the Triassic of Argentina, a carbonate-rich system from the Jurassic of Patagonia (Argentina), floodplain lake carbonates associated with perennial siliciclastic-rich fluvial deposits through the Phanerozoic, rift lakes from the Aptian of Brazil, the Miocene



Photo 1

Pannonian lake system in central Europe, and deep lacustrine clays from the Miocene of the Czech Republic. The sediments of present-day lakes were investigated in the context of climate change as well as sedimentologic processes. Featured lakes included Lake Biwa (Japan), many "lagunas" in South America, Pantanal (Brazil) lake deposits, and Lakes Peipsi and Verevi (Estonia). The ICDP (International Continental Drilling Program) session profiled lakes whose sediments were drilled or that are proposed to be drilled. These included Lake Malawi (East Africa), Lake Van (Middle East), the Dead Sea (Israel), Lake Ohrid (Macedonia and Albania) and Laguna Potrok Aike in Patagonia



Photo 2



Photo 3

(Argentina). Lake science is clearly booming and potential for scientific advances quite high.

Field trips associated with the conference took advantage of the nearby Andes Mountains as well as other localities in Argentina and Brazil. A mid-conference field trip through the Andes to the border with Chile (see Photo 1) highlighted sedimentation and tectonics from the Miocene-Pliocene as well as the Cretaceous and Jurassic fold-thrusts to the Permo-Triassic and Cretaceous volcanics. Thermal spring deposits in the high Andes composed of carbonates and sulfates attest to the continuing heat derived from the subduction of the Pacific plate. The highest mountain (volcano) in the Americas, Cerro Aconcagua (6967m asl), peaked out of some clouds for the field trip participants. The high point for me was the Triassic lacustrine-alluvial system of the Cuyana Basin (Potrerillos Fm.) shown in Photos 2 and 3. Tuffs within this succession date this depositional system as ~240 myr old. The wonderful exposure is to be envied.

Evenings were spent drinking the fine wines of the area and eating tasty Argentinean dishes! The congress dinner even included dancing! The conveners did a wonderful job in organizing this conference. I am looking forward to the 19th International Sedimentological Congress to be held in Geneva, Switzerland in 2014.

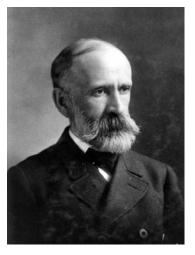
2010 Kerry Kelts Award

The 2010 Kerry Kelts Student Research Award Winner is **Maarten Van Daele**. Maarten was chosen from a pool of excellent proposals this year. He will receive \$1000 from the division for his research on the "**Imprint of the Mw 8.8 Maule earthquake (27 February 2010) on lake sediments in South-Central Chile**".

Maarten will be presented with this award at the annual Division Business Meeting on Nov. 2 (see announcement below).

Congratulations to Maarten and good luck with your research!

2010 Israel C. Russell Award



The Limnogeology Division has selected a recipient for the first Israel C. Russel Award! This award was established to honor those who have made significant career contributions to lake research and education. The winner will be announced at the annual Division Business Meeting on Nov. 2 (see announcement below). We hope you are able to come and support your colleagues!

Israel Russell (1852-1906), circa 1900 Public Domain image from: http://upload.wikimedia.org/wikipedia/commons/e/e1/ Israel_Russell.jpg

Announcement for the 2010 GSA Annual Meeting

Peter Drzewiecki Storrs. CT

Reaching New Peaks in Geoscience



(http://www.geosociety.org/meetings/2010/)

The 2010 annual meeting of the Geological Society of America will take place from October 31 – November 3, 2010, in Denver, Colorado. The theme for the conference is *Reaching New Peaks in Geoscience*. The meeting website is:

http://www.geosociety.org/meetings/2010/

The Limnogeology Division is sponsoring or co-sponsoring a core workshop and 7 sessions at this meeting. Be sure to take advantage of all the posters and presentations being offered!

Core Workshop - Friday, October 29, 2010

The Limnogeology Division is sponsoring core workshop at the 2010 GSA Meeting on October 29 from 9 AM until 4 PM. The workshop will take place at the USGS Core Research Center in the Lakewood suburb of Denver, not at the Convention Center. The purpose of the workshop is for limnogeologists to look at cores together and discuss possible interpretations that might help people develop a deeper understanding in their own cores. We will be looking at Green River Formation cores and possibly other cores either brought by participants or from other USGS researchers.

There is no cost for the workshop so you are on your own to make it to Lakewood

and back. Bus routes can be found at http://www.rtd-denver.com/. A map of the Core Research Center (CRC) location within the Federal Center as well as a map of Denver can be found at: http://geology.cr.usgs.gov/crc/location.html.

Please remember to bring an ID such as a drivers license or other government ID.

Sessions sponsored by the division include:

T23. Reconstructing Interactions between Humans and the Natural Environment during the Holocene

GSA Archaeological Geology Division; GSA Limnogeology Division; GSA Quaternary Geology and Geomorphology Division

Michelle F. Goman, Presiding

Time: Wednesday, November 3, 8:00 AM-12:00 PM Location: Colorado Convention Center: Room 107/109

T23. Reconstructing Interactions between Humans and the Natural Environment during the Holocene (Posters)

GSA Archaeological Geology Division; GSA Limnogeology Division; GSA

Quaternary Geology and Geomorphology Division

Time: Wednesday, November 3, 8:00 AM-6:00 PM

Location: Colorado Convention Center: Hall B

T97. Temporal Trends in Anthropogenic Contaminants from Lacustrine, Coastal, and Marine Sediment Cores: The Good, the Bad, and the Future

GSA Limnogeology Division; GSA Geology and Health Division; GSA Quaternary Geology and Geomorphology Division; GSA Sedimentary Geology Division Michael R. Rosen, Presiding

Time: Sunday, October 31, 8:00 AM-12:00 PM Location: Colorado Convention Center: Room 108

T98. African Lakes and Paleolakes: Processes, Paleoenvironments, and Paleoclimate

GSA Limnogeology Division; GSA Sedimentary Geology Division; GSA Quaternary Geology and Geomorphology Division; GSA Archaeological Geology

Division; GSA International Section; Paleontological Society

Daniel Deocampo, Presiding

Time: Tuesday, November 2, 8:00 AM-12:00 PM

Location: Colorado Convention Center: Room 107/109

T99. Limnogeology: Interdisciplinary Studies of Lakes and Paleolakes (Posters)

GSA Limnogeology Division

Time: Wednesday, November 3, 8:00 AM-6:00 PM Location: Colorado Convention Center: Hall B

T100. Of Isotopes and Lakes: A Tribute to Mike Talbot

GSA Limnogeology Division; GSA Mineralogy, Geochemistry, Petrology, and Volcanology Division

David B. Finkelstein and Thomas C. Johnson, Presiding

Time: Sunday, October 31, 1:30 PM-5:30 PM

Location: Colorado Convention Center: Room 108

T100. Of Isotopes and Lakes: A Tribute to Mike Talbot (Posters)

GSA Archaeological Geology Division; GSA Limnogeology Division; GSA Quaternary Geology and Geomorphology Division

Time: Monday, November 1, 8:00 AM-6:00 PM Location: Colorado Convention Center: Hall B

In addition to the technical sessions, there are some other Division items you

Limnogeology Booth

should be aware of:

Come visit us at Exhibitor Booth 132 in the exhibition hall. Stop by to let the division know what you are up to, and see how we can help you with your research.

Finally, do not forget the...

GSA Joint Sedimentary Geology and Limnogeology Divisions
Business Meetings & Awards Reception
Cosponsored by Society for Sedimentary Geology (SEPM)

Tuesday, November 2, 6:00 PM - 8:00 PM,

Denver Convention Center: Room 110/112

Upcoming Meetings

Geological Society of America (GSA) Annual Convention

October 31- November 3, 2010

The **Geological Society of America** will hold its Annual Meeting in Denver, Colorado, USA. The conference theme is *Reaching New Peaks in Geoscience*. Abstract Deadline was August 10, 2010.

The meeting website is: http://www.geosociety.org/meetings/2010/

Future Meetings are scheduled for:

2011 - Minneapolis, Minnesota USA: 9-12 October

2012 - Charlotte, North Carolina: 4-7 November

2013 - Denver, Colorado, USA: 27–30 October

2014 - Vancouver, British Columbia, Canada: 19-22 October

International Association of Theoretical and Applied Limnology (SIL)

SIL 2013 Congress

The **32nd Congress of the International Society of Limnology** will take place in Debrecen, Hungary in 2013. The 33rd congress will be held in Turin, Italy, in 2016. For more information about these meetings, see the SIL website: http://www.limnology.org/

SIL announced the 13th EWRS International Symposium on Aquatic Plants & the 2nd International SIL Workshop of Working Group on Macrophytes (27-31 August 2012) in Poznan, Poland. For information, please contact Dr. Krzysztof Szoszkiewicz (kszoszk@au.poznan.pl)

North American Lake Management Society (NALMS)

November 3-5, 2010

The 30th International Symposium of the North American Lake Management Society will take place in Oklahoma City, Oklahoma, USA. The Abstract Deadline has passed, and registration is currently open.

The website is: http://www.nalms.org/nalmsnew/nalms.aspx?id=116

International Lake Environment Committee (ILEC)

December 7-11, 2011

The **14th World Lakes Conference (WLC)** will take place in Austin, Texas (USA) from December 7-11, 2011. Abstract Deadline has not been posted yet, but should be soon.

The WLC website is: http://www.rivers.txstate.edu/wlc14

International Paleolimnology Association (IPA)

August 20 – 24, 2012

The 12th International Paleolimnology Symposium of the International Paleolimnology Association will take place in Glasgow, UK. An abstract deadline has not yet been posted. The IPA is currently soliciting ideas for themes.

The IPA Symposium website is: http://www.paleolim.org/index.php/symposia/

American Society of Limnology and Oceanography (ASLO)

2011 ASLO Aquatic Science Meeting (February 13-18, 2011)

The aquatic science meeting of the American Society of Limnology and Oceanography will be held in San Juan, Puerto Rico, USA. Deadline was October 11, 2010.

2012 ASLO Ocean Science Meeting (February 19-24, 2012)

The ocean science meeting of the American Society of Limnology and Oceanography will be held in Salt Lake city, Utah, USA. Abstract deadline: Not published yet.

2012 ASLO Summer Conference (June 6-13, 2012)

The summer conference of the American Society of Limnology and Oceanography will be held in Lake Biwa, Otsu, Japan. Abstract deadline: <u>Not published yet.</u>

2013 ASLO Aquatic Science Meeting (February 17-22, 2013)

The aquatic science meeting of the American Society of Limnology and Oceanography will be held in New Orleans, Louisiana, USA. Abstract deadline: Not published yet.

The website listing all these conferences is: http://www.aslo.org/meetings/aslomeetings.html

American Association of Petroleum Geologists Annual Conference and Exhibition

April 10-13, 2011

The **2011 Annual Conference and Exhibition of the American Association of Petroleum Geologists** will take place in Houston, Texas. Abstract deadline has passed.

The conference website is: http://www.aapg.org/houston2011/index.cfm

The **2012** Annual Conference and Exhibition of the American Association of **Petroleum Geologists** will take place in Long Beach, California from April 22-25, 2012.

Desert Symposium 2010

April 22-25, 2011

The **25**th **Annual Desert Symposium** will take place in the Desert Studies Center, Zzyzx, California. The theme for the 2011 meeting is "SOUTHERN EXPOSURE: A trip through southern California Desert outcrops". An Abstract deadline does not seem to be available, but last year it was January 23, 2010.

The conference website is: http://biology.fullerton.edu/dsc/school/symposium.html

5th International Limnogeology Congress

Summer, 2011

The 5th International Limnogeology Congress (ILIC5) will be held in Germany in the Summer of 2011. Stay tuned for details.

International Association for Great Lakes Research (IAGLR)

May 30 – June 3, 2011

The 53rd Annual Conference of the International Association for Great Lakes Research (IAGLR) will take place in Duluth, Minnesota. The deadline to propose a session is October 22, 2010. Abstract deadline: <u>January 14, 2011.</u>

The conference website is: http://www.iaglr.org/conference/presenters.php

International Society for Salt Lake Research (ISSLR)

May 8-16, 2011

The 11th International Conference on Salt Lake Research (ISSLR) will take place in Miramar, Cordoba, Argentina, in May of 2011. More information will be forthcoming.

The conference proposal website is: http://www.isslr.org/ISSLR2011/Bucher%202011.pdf

Go to the Limnogeology Division website at:

http://rock.geosociety.org/limno/index.html

To get the latest information on other Limnogeology meetings and workshops...

David Warburton, Webmaster

If you don't have access to our website, please contact a Division officer for a list of meetings.

If you have any news you would like to be sent out to the division, please submit it to Peter Drzewiecki at drzewieckip@easternct.edu