THE SOCIETY FOR ORGANIC PETROLOGY

NEWSLETTER

Vol. 27, No. 3 September, 2010 ISSN 0743-3816

28th TSOP ANNUAL MEETING
July 31 – August 4, 2011
Halifax, Novia Scotia
Canada

Start Planning Now

28th Annual TSOP Meeting
July 31 – August 4, 2011
Halifax, Novia Scotia, Canada

DETAILS TO COME IN DECEMBER ISSUE
WATCH YOUR EMAIL FOR FURTHER ANNOUNCEMENTS

The Society for Organic Petrology

TSOP is a society for scientists and engineers involved with coal petrology, kerogen petrology, organic geochemistry and related disciplines. The Society organizes an annual technical meeting, other meetings, and field trips; sponsors research projects; provides funding for graduate students; and publishes a web site, this quarterly Newsletter, a membership directory, annual meeting program and abstracts, and special publications.

Members may elect not to receive the printed Newsletter by marking their dues forms or by contacting the Editor. This choice may also be reversed at any time, or specific printed Newsletters may be requested.

Members are eligible for **discounted subscriptions** to the Elsevier journals *International Journal of Coal Geology* and *Review of Paleobotany and Palynology*. Subscribe by checking the box on your dues form, or using the form at www.tsop.org. You will then be billed by Elsevier. Contact Paul Hackley <phackley@usgs.gov>if you do not receive a bill or have any other problems with a subscription. For the best prices on subscriptions to **AGI**'s ***Geotimes***, see their web site at www.geotimes.org/current

TSOP is a Member Society of AGI and an AAPG Associated Society.

The Society for Organic Petrology Newsletter

ISSN 0743-3816 published quarterly

DEADLINES: December Issue: December 5, 2010
March Issue: March 5, 2010

Writers, Photographers and Associate Editors Needed!

GUIDELINES:

The TSOP Newsletter welcomes contributions from members and non-members alike. Readers are invited to submit items pertinent to TSOP members' fields of study. These might include meeting reports and reviews, book reviews, short technical contributions including those on geologic localities or laboratory methods, as well as creative works such as poems, cartoons and works of fiction. Color illustrations may be possible in some issues.

Please do not embed **graphics** or **photos** in word processor files. You can provide photos or other graphics as slides or prints (which will be returned after being scanned) or as digital files (300 dpi preferred) via email or on cd or dvd. Low resolution images are discouraged as they cannot be reproduced well in print. **Text** is preferred in Microsoft Word, RTF or plain text formats.

Contact the **Editor:**

Rachel Walker
1529 N. Alabama St
Unit D
Indianapolis, Indiana
USA 46202
e-mail: drrachelwalker@gmail.com

Address Changes

Please report any changes in address or contact information to: Paul Hackley, TSOP Membership Chair, phackley@usgs.gov

Members can update their own information by logging into the secure TSOP website: www.tsop.org/mbrsonly/

Society Membership

The TSOP Newsletter (ISSN-0743-3816) is published quarterly by The Society for Organic Petrology and is distributed to all Society members as a benefit of membership. Membership in the Society is open to all individuals involved in the fields of organic petrology and organic geochemistry. For more information on membership and Society activities, please see:

www.tsop.org

For purposes of registration of the TSOP Newsletter, a permanent address is: The Society for Organic Petrology, c/o American Geological Institute, 4220 King St., Alexandria, VA 22302-1520 USA

Contents

❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄

Officers and Committee Chairs are reminded to provide their records to Ken Kuehn, **TSOP Archivist**. Please contact Ken at **kenneth.kuehn@wku.edu** for further information.

❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄

Institutional Level Dues Supporter

On behalf of TSOP Council we would like to say thank you to the following Institutional Level Dues Supporter for their consistent support of the Society and its goals.

- Albert V. Tamashausky, Asbury Graphite Mills

President's Letter

Dear colleagues,

Many of you gathered together to attend TSOP's 2010 Annual Meeting this year, held from September 12th to 15th in Denver, Colorado. For those of you who attended, I am confident you share my opinion that this meeting was a great success. Chair Mark Pawlewicz stepped in late in 2008 as per the request of past President, Leslie Rupert, to host a North American meeting after several years of TSOP meetings being held away from our home continent. In a relatively short period of time, Mark put together a fantastic conference, which impressed us all as much for its superb technical caliber as it did for its laid-back, friendly approach. We were reunited with both old and new friends and colleagues, as well as a number of students from across the globe who shared their fantastic projects with us.

This meeting would not have been possible without the tireless efforts of many individuals including: Mark Pawlewicz (Chair); the organizing committee: Pau Hackley, Mike Lewan, Ron Johnson, Brett Valentine; Short course: Peter Warwick; Leslie Rupert (TSOP past President); all the individual members of TSOP Council and Committees; our generous sponsors: Core Lab and USGS; and most importantly, the active participation of our distinguished presenters, students and many other individuals who worked in the background to ensure the success of the meeting.

This year we had a chance to pay tribute to the career of the recipient of TSOP's highest award, (Castano Award) Fari Goodarzi, for his life-time scientific achievements. I would also like to express my sincere gratitude for the service of our long time member, Councilor, and Advisor, Sharon Swanson, the distinguished recipient of TSOP's 2010 Service Award. I would also like to congratulate, on behalf of TSOP Council and the Committees, the recipients of this year TSOP's Ralph Gray and Dal Swaine Awards for Best Published Papers; Spackman Awards for best thesis; and finally the Best Student Paper awards. We wish great success in your career and we are honoured to have you in our society.

TSOP is strong as evident by our growing number of general and student members (231 members), more than half of whom are international. Also, the series of successful annual meetings, high quality conference proceedings published in International Journal of Coal Geology, active research committees, and vibrant competition for various TSOP technical and service awards are all a testament to the healthy growth of our scientific family.

We have annual meetings planned up to 2014, with a waiting list for 2015 and beyond. As the result of the tireless efforts by TSOP past and current Council and most notably Ms. Sharon Swanson, TSOP is now a charitable organization, which facilitates tax-deductible donations by individual and corporate donors. This has already made a difference as is evident by the generous donation of Core Lab. I invite all members and especially those associated with industry to help TSOP financially either personally or through your employers. This goes a long way in promoting our scientific community and in encouraging students to build a future in organic petrology.

We should now begin to focus on our next meeting, TSOP Halifax 2011. Please join me in supporting the organizers of the meeting, Prasanta Mukhopadhyay and Mike Avery, in putting together another successful North American meeting.

Finally, Peter Crosdale completed his elected position as the Councilor. Peter brought great discussions and was a strong voice in TSOP Council. On behalf of the Council I would like to thank his service and wish him well in his future endeavors. I would like to welcome our recently elected Councilor (2010-2012), Shifeng Dai, beginning his term effective September 13, 2010. We look forward to working with him.

Please do not hesitate to contact me with questions, suggestions, or advice.

Best regards,
Hamed Sanei
TSOP President

❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄

In Memoriam

Long time TSOP member Cynthia Riediger lost her life on August 25th, 2010 while attempting to rescue another swimmer in Lake Erie. TSOP sends condolences to the Riediger family, Cynthia's two teenage daughters and their father Martin Fowler, GSC Calgary, also a long time TSOP Member.

Cynthia was working as a petroleum geologist with Shell Canada in Calgary and was for a number of years a professor at University of Calgary. She had also presented several papers at a number of TSOP meetings.

❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄

Libraries: TSOP Newsletter Sets Available

David Glick

TSOP has in stock many issues of paper copies of old Newsletters; with some additional reprinting, a few full sets of back issues can be assembled. TSOP will provide a limited number at no charge. Individual issues may also be available. Libraries will be given first choice, but interested TSOP members may also submit requests. All should remember that electronic versions are available on the web site; it should be verified before making a request that a library does want paper copies (a full set occupies approximately 4 inches / 10 cm of shelf space). Please contact David Glick **by November 30, 2010**, at <webmaster@tsop.org>.

❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄

2010 Spackman Award Recipients

A total of 8 applications were received by the TSOP Research Committee for the Spackman Awards in 2010, from applicants in the USA, Canada, Britain and Australia. The applications were assessed by an independent panel of senior TSOP members and, although all applications were of a very high standard, in the end the following awards were made:

Kristen Miller, University of Maryland ($1,000), for her PhD project entitled: *Metazoans of the Mesoproterozoic? A paleoenvironmental and paleobiological evaluation of biomarkers from the Vazante Group, Brazil.*

Chris Mays, Monash University ($600) for his PhD project entitled: *South Polar environments: new data and insights from the Tapuangi Formation, Chatham Islands, SW Pacific.*

Congratulations are extended to the winners of these awards. **Further details of the successful projects are given elsewhere in this Newsletter.** The assessment task was not easy, and those who were unsuccessful are welcome to apply again next year. All applicants are eligible for one year of free Student Membership of TSOP, and we hope that the outcomes of their various projects will be presented at future TSOP meetings.

Colin R. Ward
Chair, TSOP Research Committee

❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄

Metazoans in the Mesoproterozoic?: a paleoenvironmental and paleobiological evaluation of biomarkers from the Vazante Group, Brazil

Kristen Miller, University of Maryland

The global radiation of the Ediacara biota (575-542 Ma; Narbone, 2005) marks the transition from a microbially dominated world to a world shaped by animal (metazoan) life. The Ediacara biota, which first appear ca. 580 Ma (Canfield et al., 2007), represent the earliest known large bodied, architecturally complex metazoans in Earth's history (Narbone, 2005). While many studies have focused on understanding the environmental and biologic conditions that lead to the rise of the Ediacara biota (Canfield et al., 2007; McFadden et al., 2008), little is known about metazoan life that may have preceded them. Molecular clock studies for example, estimate the divergence of the metazoan lineage to have occurred as long ago as 1.3 Ga or as recent as 600 Ma (Skorokhod et al., 1999; Peterson et al., 2004; Douzery et al., 2004). Furthermore, sponges, specifically demosponges, are morphologically and genetically the most simple of extant metazoans and are therefore assumed to be the basal metazoans (Valentine, 2002). However, morphologic evidence for sponges has never been identified in deposits older than ca. 600 Ma (Li et al., 1998). This is due mainly to a lack of fossils preserved in ancient rocks.

The burial and preservation of organic matter in sediments however, can provide an avenue for understanding biogeochemical processes and evolution in early Earth's history without having to rely on fossils.

Biomarkers, for example, are fossilized organic compounds from once-living organisms that are preserved in sedimentary organic matter. Most biomarkers are the digenetic products of lipids that originate in cell membranes. These molecules form through specific biosynthetic pathways that are often unique to a particular organism or group of organisms (Ourisson et al., 1979). Furthermore, the robust hydrocarbon structure of lipids allows them to be preserved in sedimentary organic matter for billions of years (Summons et al., 1999; Brocks et al,. 2003a). Consequently, the specific structures and distribution of biomarkers in a geologic sample are indicative of the metabolisms, physiologies, and identities of the organisms that were present at the time of deposition (including, but not limited to Ourisson et al., 1979; Tissot and Welte, 1984; Moldowan et al., 1985; Peters and Moldowan, 1991; Summons et al., 1999; Brocks et al,. 2003a, b; Olcott et al., 2005; Love et al., 2009). Biomarkers, therefore, are perhaps the best tool for identifying metazoans in pre-Ediacara deposits and for understanding the environmental conditions necessary for early metazoan development.

For example, the biomarker 24-isopropylcholestane (24-IPC), which is indicative of marine sponges (Kerr et al., 1989; McCaffrey et al., 1994), was identified beneath the Marinoan cap carbonate (635 Ma) in the Huqf Supergroup of the South Oman Salt Basin and represents the oldest definite appearance of metazoans in the rock record (Love et al., 2009). However, another study tentatively identified trace amounts of 24-IPC in a single unit of the Vazante Group in Minas Gerias Brazil (Olcott, 2006) which was recently identified as being Mesoproterozoic in age (1.1 to 1.3 Ga; Geboy, 2006; Azmy et al., 2008; Rodregues et al., 2008; Geboy et al., *in review*). Therefore, if the 24-IPC identified in the Vazante Group is syngenetic (i.e. it is indigenous to the host rock) then this indicates that the metazoan lineage extends back into the Mesoproterozoic Era (1.6 to 1.0 Ga). This is consistent with the older end of the age range estimated by molecular clock studies (Skorokhod et al., 1999). Furthermore, it is widely believed that the oceans during the Mesoproterozoic were at least partially oxygenated (Kah et al., 1999; Kah et al., 2001; Frank et al., 2003) which would have been favorable for metazoan development. It is therefore hypothesize that metazoans developed in the Mesoproterozoic in response to increased oxygenation of the oceans and were largely unaffected by later Neoproterozoic glaciations.

The purpose of this study is to confirm the presence of 24-IPC in the Vazante formation and characterize the environmental conditions that existed when the Vazante was deposited. It is also necessary to confirm that the organic matter being analyzed from the Vazante group represents original deposition and does not include younger, non-syngenetic material. In order to accomplish these aims a total of 61 samples from three discrete intervals of organic-rich black shale in the Vazante Group were collected from a basin-wide distribution of 12 drill cores for biomarker and isotopic analysis. The soluble organic matter in these samples will be extracted and analyzed for a suite of paleobiologically and paleoenvironmentally significant biomarker classes including *n*-alkanes, acyclic and aromatic isoprenoids, hopanes and steranes. Additionally, compound-specific isotopic analysis (CSIA), which is a technique used to determine the carbon isotopic composition of individual compounds, will be performed on the biomarker samples in order to assess biomarker sources and syngeneity. Samples which show evidence of ample, well-preserved and uncontaminated biomarkers will then be analyzed for specific biomarkers such as 24-IPC.

Thus far, an initial set of 21 biomarker samples from one interval of organic-rich shale were extracted and structurally and isotopically analyzed. The structural results identified several samples with slightly bimodal *n*-alkane distributions, indicating possible mixing of two different oil sources (Peters et al., 2005). Therefore, the samples with the bimodal *n*-alkane distributions may contain some non-syngenetic organic matter. Redox sensitive biomarkers such as the ratio of pristane to phytane, C_{35} homohopanes to total homohopanes, and steranes indicate a mixture of oxic and reducing environmental conditions (Peters and Moldowan, 1991; Runnegar, 1991; Peters et al., 2005; Cao et al., 2009). Furthermore, isotopic enrichment of the *n*-alkanes relative to phytane is typical of Proterozoic units and may indicate intense heterotrophic reworking of organic matter under anoxic conditions (Logan et al., 1995).

Taken together, the structural and isotopic results may indicate that the organic matter was deposited under a stratified water column with oxygenated surface water overlying anoxic deep water. This is supported by carbon and sulfur isotopic analyses of the Vazante Group which indicate high rates of primary production and a small, isotopically enriched sulfate pool (Unpublished data, this study). Additionally, a stratified water column is supported by Fe speciation studies

(Geboy et al., *in review*).

If metazoans were present during the Mesoproperozoic when the Vazante was deposited then they would be restricted to the oxic zone. Therefore, a future search for 24-IPC will be focused on samples that display evidence of an oxic environment and contained no evidence of non-syngenetic biomarkers (i.e. bimodal *n*-alkane distributions). The same approach will be applied to the biomarker samples from the two remaining intervals of organic-rich shale which have yet to be analyzed.

References:

Azmy, K., Kendall, B., Creaser, R.A., Heaman, L., Oliveira, T.F. (2008) *Precambrian Research*, vol. 164, p. 160.

Brocks, J.J., Buick, R., Logan, G.A., Summons, R.E. (2003a) *Geochemica et Cosmochimica Acta*, vol. 67, p. 4289.

Brocks, J.J., Buick, R., Summons, R.E., Logan, G.A. (2003b) *Geochemica et Cosmochimica Acta*, vol. 67, p. 4321.

Canfield, D.E., Poulton, S.W., Narbonne, G.M. (2007) *Science*, vol. 315, p. 92.

Cao, C., Love, G.D., Hays, L.E., Wang, W., Shen, S., Summons, R.E. (2009) *Earth and Planetary Science Letters*, doi:10.1016/j.epsl.2009.02012.

Douzery, E.J.P., Snell, E.A., Bapteste, E., Delsuc, F., Phillip, H. (2004) *Proceedings of the National Academy of Sciences, USA*, vol. 101, p. 15386.

Frank, T.D., Kah, L.C., Lyons, T.W. (2003) *Geology Magazine*, vol. 140, p. 397.

Geboy, N.J. (2006) M.S. Thesis, University of Maryland, College Park.

Geboy, N.J., Kaufman, A.J., Walker, R.J., Miller, K.E., Brody, K.B., Sievers, N., Misi, A., Oliviera, T.F., Azmy, K., Dendall, B., Poulton, S. (2010) *Geology*, in review.

Kah, L.C., Lyons, T.W., Chesley, J.T. (2001*Precambrian Research*, vol. 111, p. 203.

Kah, L.C., Sherman, A.G., Narbonne, G.M., Knoll, A.H., Kaufman, A.J. (1999) *Canadian Journal of Earth Science*, vol. 36, p. 313.

Kerr, R.G., Stoilov, I.L., Thompson, J.E., Djerassi, C. (1989) *Tetrahedron*, vol. 45, p. 1893.

Li, C.W., Chen, J.Y., Hua, T.E. (1998) *Science*, vol. 279, p. 879.

Logan, G.A., Hayes, J.M., Hieshima, G.B., Summons, R.E. 1995. *Nature*, Vol. 376, P. 53.

Love, G.D., Grosjean, E., Stalvies, C., Fike, D.A., Grotzinger, J.P., Bradley, A.S., Kelly, A.E., Bhatia, M., Meredith, W., Snape, C.E., Bowring, S.A., Condon, D.J., Summons, R.E. (2009) *Nature*, vol. 457, p. 718.

McCaffery, M.A., Moldowan, J.M., Lipton, P.A., Summons, R.E., Peters, K.E., Jeganathan, A., Watt, D.S. (1994) *Geochimica et Cosmochimica Acta*, vol. 58, p. 529

McFadden, K.A., Huang, J., Chu, X., Jiang, G. Kaufman, A.J., Zhoul, C., Yuan, X., Xiao, S. (2008) *PNAS*, vol. 105, p. 3197

Moldowan, J.M., Seifert, W.K., Gallegos, E.J. (1985) *American Association of Petroleum Geologists Bulletin*, vol. 69, p. 1255.

Narbonne G.M. (2005) *Annual Reviews of Earth and Planetary Sciences* 33:421-442.

Olcott, A.N. (2006) Ph.D. dissertation, University of Southern California.

Olcott, A.N., Sessions, A., Corsetti, F.A., Kaufman, A.J., and de Oliviera, T.F. (2005). *Science*, vol. 310, p. 471.

Ourisson, G., Albrecht, P., Rohmer, M. (1979) *Pure and Applied Chemistry*, vol. 51, p. 709.

Peters, K.E. and Moldowan, J.M. (1991) *Organic Geochemistry*, vol. 17, p. 5.

Peters, K.E., Walters, C.C., Moldowan, J.M., eds (2005) *The Biomarker Guide*. Cambridge University Press, Cambridge.

Peterson, K.J., Lyons, J.B., Nowak, K.S., Takacs, C.M., Wargo, M.J., McPeek, M.A. (2004) *Proceedings of the National Academy of Science USA*, vol. 101, p. 6536.

Rodrigues, J.B., Pimentel, M.M., Buhn, B., Dardenne, M.A., Alvarenga, C.J.S., Armstrong, R.A. (2008) Unpublished extended abstract, Universidade de Brasília.

Runnegar, B. (1991) *Global and Planetary Change*, vol. 97, p. 97.

Skorokhod, A., Gamulin, V., Gundacker, D., Kavsan, V., Müller, I.M., Müller, W.E.G. (1999) *Biological Bulletin*, vol. 197, p. 198.

Summons, R.E., Jahnke, L.L., Hope, J.M., Logan, G.A. (1999) *Nature*, vol. 400, p. 554.

Tissot, B.P. and Welte, D.H. (1984) *Petroleum Formation and Occurrence*. Springer-Verlag, New York.

Valentine, J.W. (2002) *Annual Reviews of Earth Planetary Science*, vol. 30, p. 285.

❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄

The Chatham Islands: A Relic of the Cretaceous Global Greenhouse

Chris Mays, Monash University

Geological Context:

The mid-Cretaceous was an interval of climactic tectonic, biotic and climatic change across Gondwana. Supercontinental break-up was nearing completion, the global greenhouse climate was reaching an unparalleled zenith, and the rise of angiosperms caused a global floral turnover which far surpassed the Cretaceous-Paleogene mass extinction.

The Chatham Islands is an island complex ~860km east of Christchurch, New Zealand, near the eastern end of the submerged subcontinent "Zealandia" (see *Fig. 1*).

The rifting of Zealandia began during the Albian which formed a sedimentary graben-basin between Zealandia and Marie Byrd Land, West Antarctica.

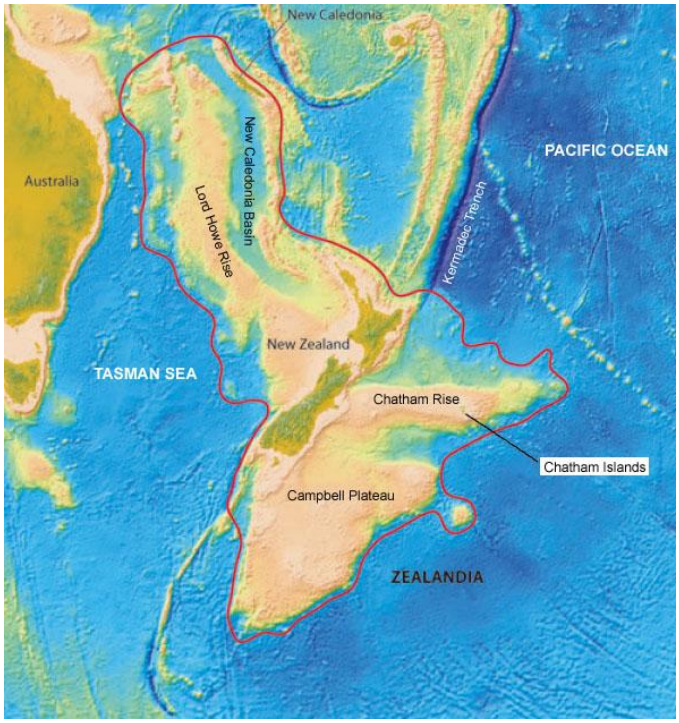


Fig. 1: *The modern extent of the subcontinent "Zealandia" (outlined in red).*

New data support the notion that this rifting occurred in a pulsed, two-stage process: firstly, a failed-rift system resulting in the Bounty Trough, and secondly, the onset of rifting which culminated in seafloor-spreading between Zealandia from West Antarctica during the Late Cretaceous (since ~84Ma). The Tupuangi Formation of the Chatham Islands was laid down in a continental basin during the initial failed rifting stage (Albian – Turonian). Recent palaeogeographic reconstructions estimate a latitude of the Chatham Islands at ~80°S during the time of deposition and, as such, this formation represents the southernmost-latitude mid-Cretaceous locality ever studied to date.

Project Aims:

The aims of my PhD research are three-fold:

1) Reconstruct the palaeoenvironment and palaeoclimate of the high southern latitudes of the mid-Cretaceous. *Methods:* sedimentology and stable carbon isotope ratios ($\delta^{13}C$) from coal and fossil plant remains.

2) Determine the floral assemblage of the region especially those taxa which contribute to the formation of peats. *Methods*: palaeobotanical (cuticle and leaf morphology) and palynological taxonomy.

3) Constrain the age of the Bounty Trough failed rifting sequence. *Methods*: spore and pollen biostratigraphy.

Hypotheses and preliminary results:

1) Palaeoenvironment and palaeoclimate:
   a. This research has revealed a fluvial to deltaic depositional environment with periodic marshlands and peat deposits suggesting a coastal plain setting. Fluvial energy decreases and coal seams become thicker and increasingly abundant upsequence (up to 1.5m thick).
   b. It is hypothesised that the $\delta^{13}C$ values will reflect an overall increase in temperature towards the top of the Tupuangi Formation, coinciding with previous estimates of global temperature trends, which indicate an extreme global greenhouse regime towards the Cenomanian-Turonian boundary (~93Ma).

2) South polar flora:
   a. Both the palynological and palaeobotanical records show an abundance of gymnosperms (especially Podocarpaceae, Cupressaceae & Araucariaceae) with minor ferns and a surprising diversity of angiosperms (up to 8 species). The floral ecology seems to be dominated by an overstorey of conifers, an understorey of angiosperm and ferns and several subsidiary species of aquatics. The coals are predominantly composed of Podocarpaceae and Cupressaceae wood and foliage with minor contributions of fern and angiosperms.

3) The dating of the failed rift:
   a. The spore and pollen biostratigraphy have placed it in the late Albian to Cenomanian (~95-101Ma), pre-dating the onset of seafloor spreading between Zealandia & Antarctica and supporting the theory of the Bounty Trough as an earlier failed rift basin.

Preliminary Interpretations:

The polar rift-basins that formed during the

separation of Zealandia and Antarctica were fed by large-scale, high-energy river systems. As the rift evolved, the subcontinent Zealandia began to subside. This, combined with the ongoing erosion of the topography, led to a decrease in fluvial energy, periodically culminating in widespread, stratified lakes and stagnant marshes. The climatic context of this rifting, was a climbing global temperature; a greenhouse Earth that was capitalized on by the flora and fauna. Throughout this rifting, the scene was presided over by a robust forest, analogous to the Eurasian and North American forests of today, which encircle the Earth at latitudes of 50 to 60°N. However, the Cretaceous conifer forests of the Southern Hemisphere were well within the southern polar circle (~70 to 85°S) and composed primarily of the southern hemispheric conifer families: Podocarpaceae, Cupressaceae and Araucariaceae. However, the ecological story of the Cretaceous Chatham Islands also depicts the rise of the flowering plants in the region, albeit struggling but inexorable. Originally evolving at low latitudes, the southward progression of the Angiosperms was paved by the mid-Cretaceous climatic crescendo, opening new ecological niches that had been dominated by conifers for the preceding 100 million years.

❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄

The Coal Geology Division of the Geological Society of America

Sarah Shearer

The Coal Geology Division (CGD) provides an opportunity for Geological Society of America (GSA) members interested in coal geology, carbon sequestration, coalbed methane production, coal petrography, and coal-related issues to discuss these topics both formally and informally. The organization also promotes research and provides opportunities for members to share information pertaining to coal geology. The CGD sponsors technical paper sessions at the annual GSA meeting. This year the CGD is sponsoring two sessions: "*Advances in Clean Coal Technology, Carbon Sequestration, and Enhanced Resource Recovery",* and *"Frontiers in Coal Science: Basic Research to Applied Technology"*. During the GSA annual meeting, generally held in October, there is a business meeting during which members may discuss coal geology in a casual setting while enjoying food provided by the division. In addition to interacting with each other, CGD officers also present the Gilbert H. Cady Award, recognizing an individual who has made a significant contribution to the science of coal geology. The Antoinette Lierman Medlin Scholarship(s) is presented to a student based on criteria that evaluates their thesis or dissertation research projects.

Information is provided to members by the CGD via a website and a newsletter. We encourage prospective members to access the website at http://www.uky.edu/KGS/coal/GSA/ if they are interested in joining our organization. Information about the upcoming GSA meeting, links to online coal resources, nominations for the Gilbert H. Cady Award, and information about the Antoinette Lierman Medlin Scholarship are available on the website. The newsletter is only sent out to members, but copies of the newsletters are also available on the website. For more information about CGD, please contact one of the officers listed on the website, or contact GSA staff.

❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄

"Geological and Technological Facets of CBM, Shale Gas, Energy Resources and CO_2 Sequestration" Nov. 19-20, 2010

The workshop is being held at the ***Department of Applied Geology, Indian School of Mines, Dhanbad, India*** from the 19-20th November, 2010.

Themes:

a) CBM resources: exploration, exploitation and experimental aspects
b) Coalification and maturity of organic matter; tight reservoir understanding
c) Characterization of shale for gas: exploration and extraction.
d) Kinetics of CBM, Shale gas, CO_2 sequestration and petroleum generation
e) Coal liquefaction, solvent extraction, coke making, active carbon, carbon nanotubes
f) Underground coal gasification
g) Geological aspects and basin evolution of coal and oil & gas fields of India
h) Coal and organic petrological aspects
i) Nuclear fuel exploration,extraction & disposal
j) Application of stable isotopes in energy resources.
k) Characterization of geological repository and storage for fossil fuels. and carbon dioxide.
l) SO_2, H_2S and CO_2 sequestration and their application in environmental protection.

m) Characterization and disposal of CBM, shale gas and hydrocarbon reservoir water.
n) Geotechnical aspects of energy resources and environment
o) Technical parameters for enhancement of CBM, shale gas, energy production and CO_2 sequestration
p) Gas hydrate formation, kinetics, exploration and extraction
q) Geostatistical modeling of energy resources
r) Coal preparation, mine waste disposal and environmental geochemistry
s) Non-conventional energy resources
t) Energy security and growth
u) State of art technologies

For further details please contact:
Dr. Atul K. Varma, Convener / Dr. R.K. Dubey, Organising Secretary, Conference Secretariat CSECS2010, Department of Applied Geology, Indian School of Mines, Dhanbad-826 004.
Email: atulvarma@hotmail.com / rkdubey1085@gmail.com.
Fax : +91-326-2296563; Tel : +91-326-2235449(AKV) / +91-326-2235637(RKD); Mobile: +91-9431724156 (AKV) / +91-9431711058(RKD);
Weblink: http://www.ismdhanbad.ac.in

****

Calendar of Events

2010-2011

October 11-14, 2010: 27th International Pittsburgh Coal Conference, Istanbul, Turkey. www.engr.pitt.edu/pcc

October 31 – Nov. 3, 2010: Geological Society of America Annual Meeting, Denver, Colorado, USA. www.geosociety.org/meetings/2010/

November 15-19, 2010: ALAGO 2010 Workshop and 12th Congress on Organic Geochemistry, Republica University,Montevideo,Uruguay. Contact: rmobarah@uol.com.br

March 20-22, 2011: Northeastern / North-Central GSA Meeting, Pittsburgh, PA. Abstracts deadline: 14 Dec. 2010 www.geosociety.org/Sections/ne/2011mtg/

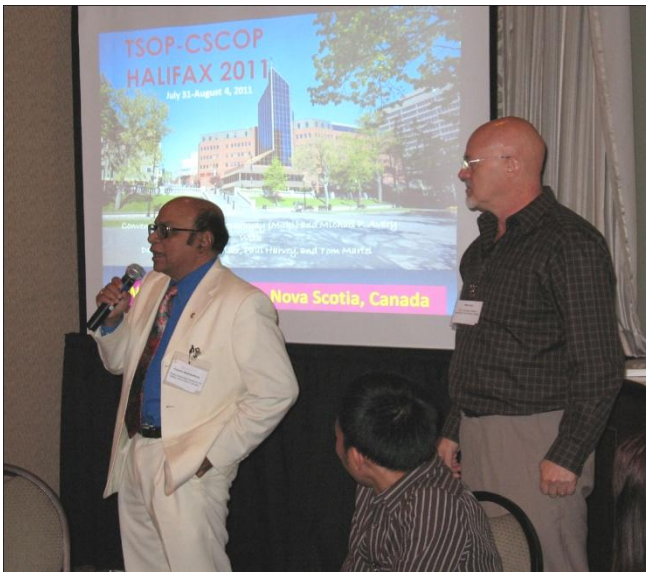
May 9-12, 2011: World of Coal Ash 2011 Conference will be held in Denver, Colorado at the Marriott Tech Center. Abstracts due by December 1, 2010. www.worldofcoalash.org/

❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄

Do you have calendar or meeting updates?
If so, please send them to the Editor: drrachelwalker@gmail.com

❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄ ❄

The Monday afternoon session with Jeff Quick presenting his paper as Meeting Chair Mark Pawlewicz looks on. (Photo by Dave Glick)



Muki and Mike Avery invite us all to the **Halifax Meeting** 11 months from now. (Photo by Dave Glick)

Sharon Swanson receives TSOP's Distinguished Service Award from Peter Warwick. (Photo by Dave Glick)

Dr. Fariborz Goodarzi (right) speaks after accepting the John Castaño Honorary Membership Award from Hamed Sanei and Isabel Suarez-Ruiz. (Photo by Dave Glick)

Meat as maturity analogy – Tim Ruble during his presentation titled
'Assessing the importance of pyrobitumen in unconventional reservoirs'
(Photo by Noelia Franco)