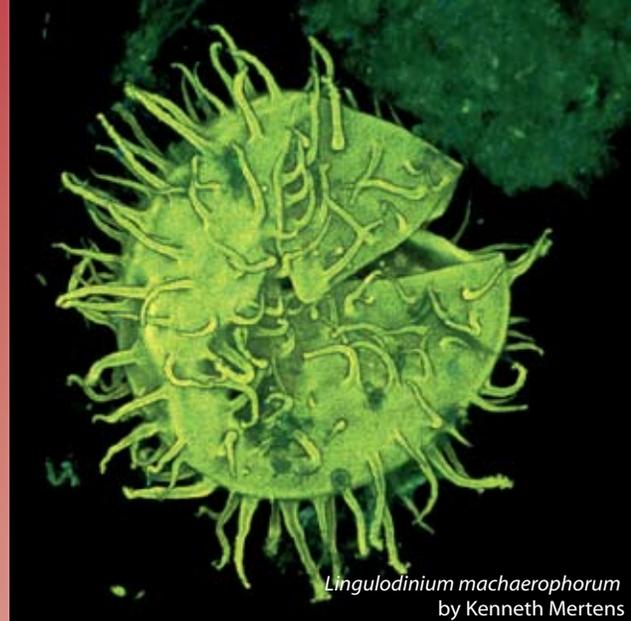
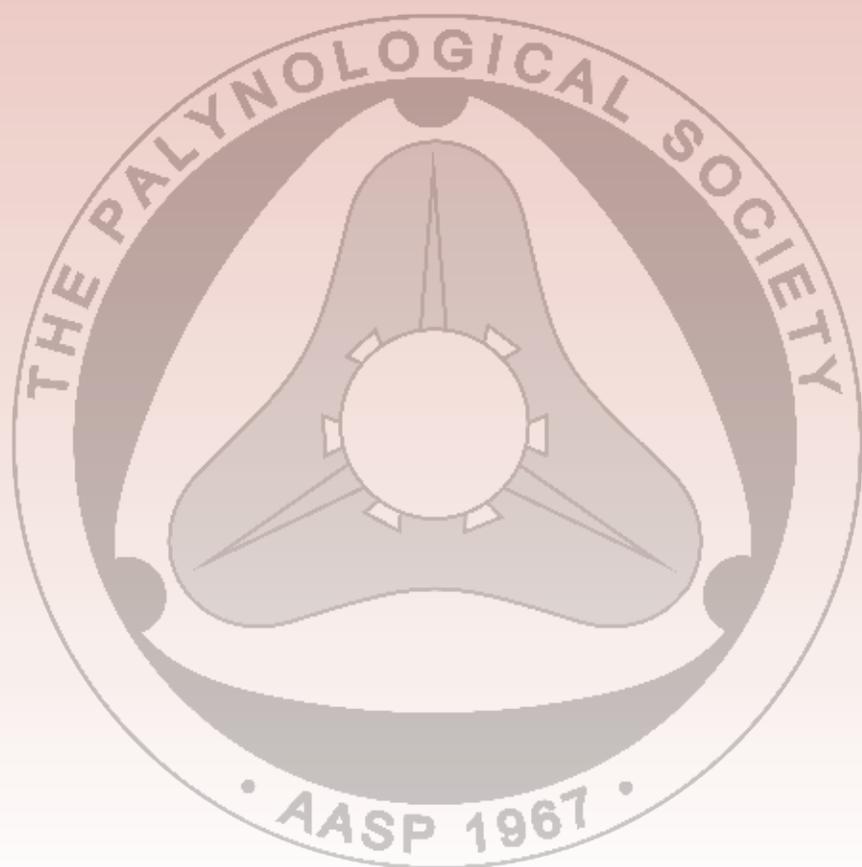


# AASP- THE PALYNOLOGICAL SOCIETY



*Lingulodinium machaerophorum*  
by Kenneth Mertens



## NEWSLETTER



**September 2010**  
**Volume 43, Number 3**



# A.A.S.P. NEWSLETTER

Published Quarterly by the AASP - The Palynological Society

September 2010  
Volume 43, Number 3

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# A.A.S.P.

## The Palynological Society

The American Association of Stratigraphic Palynologists, Inc. - AASP-The Palynological Society - was established in 1967 by a group of 31 founding members to promote the science of palynology. Today AASP has a world-wide membership of about 800 and is run by an executive comprising an elected Board of Directors and subsidiary boards and committees. AASP welcomes new members.

The AASP Foundation publishes the journal *Palynology* (annually), the *AASP Newsletter* (quarterly), and the *AASP Contributions Series* (mostly monographs, issued irregularly), as well as several books and miscellaneous items. AASP organises an Annual Meeting which usually includes a field trip, a business luncheon, social events, and technical sessions where research results are presented on all aspects of palynology.

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Sophie Warny, Editor

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Sophie Warny, [swarny@lsu.edu](mailto:swarny@lsu.edu), Department of Geology and Geophysics & Museum of Natural Science, Louisiana State University, E235 Howe Russell Geoscience Complex, Baton Rouge, 70803, Louisiana, USA.

The AASP Newsletter is published four times annually. Members are encouraged to submit articles, "letters to the editor", technical notes, meetings reports, information about "members in the news", new websites and information about job openings in the industry. Every effort will be made to publish all information received from our membership. Contributions which include photographs should be submitted two weeks before the deadline. Deadline for next issues of the newsletter is **November 15**. All information should be sent by email. If possible, please illustrate your contribution with art, line drawings, eye-catching logos, black & white photos, colour photos, etc. **We DO look forward to contributions from our membership.**

# A way of knowing

By Joyce Lucas-Clark

Many of us now in AASP are teachers. The one thing I can think of that I like to tell teachers of science is to teach science itself, that is, let your students come away from your class with a sense of what science is and what it is not. Here is part of what I tell them.

The term “science” comes from the Latin verb “scire” meaning *to know*. However, both in Latin, and presently in English, science does not refer to all kinds of knowledge, nor of every way in which one may “know.” Science refers to knowledge which can be demonstrated, objectively, in the concrete, factual realm of reality. Matters which are inherently outside of “objective reality,” those things which are “subjective” or internal and cannot be demonstrated objectively, are outside of the realm of natural science.

Science is distinct from *the humanities and the arts*, which also deal with facts and the concrete, but in the context of values and aesthetics. A piece of art or literature communicates largely through an appeal to human emotions and sense of beauty or importance. This is not to say that the “truth” so communicated is not valid; it is simply not the subject or method of science.

Science is distinct from *human law*, which also deals with facts, but for the purpose of establishing justice, right and wrong, ethics. While scientists, being human, often find themselves dealing with ethical questions in their work, ethics is not the subject of their work. Science itself is amoral. It is purely to know what is.

Science is distinct from *theology and religion* because it does not deal with the spiritual and the *supernatural*. The spiritual is not demonstrable, objectively, and the supernatural is by definition outside of the “natural” or objective reality. Furthermore, one can explain all things by invoking the supernatural, whereas science can never explain all things. Science is inherently uncertain, while theology is certain.

Scientific inquiry is characterized by *objectivity*. A scientist, ideally, does not become attached to a certain hypothesis and seek to “prove it.” Rather, he adopts *multiple working hypotheses* and seeks to eliminate them. He also accepts that there will always remain a degree of uncertainty in his conclusions. It is the hallmark of a good scientific principle or theory that one can state clearly how it could be *disproved*.

“Science is about inquiry and discovery, unearthing the unanticipated, spotting surprising relationships in complex systems, confronting and coping with divergent streams of evidence, looking at data skeptically and allowing knowledge to accumulate over time.” (Richard Atkinson and Michael Feurer, SJMN, 7/23/06)

On this final note, I would like to say that I have enjoyed being president of AASP. I hope Paul likes it as well.

Joyce

# The Concise Geologic Time Scale

James G. Ogg, Gabi Ogg and Felix M. Gradstein



Don't let the title fool you. Even though it is a concise geologic time scale, no eras, periods, epochs, or ages/stages have been left out! The entire geologic time scale is shown on the page facing the title page, and includes a column with absolute age dates in millions of years. In addition, a handy pocket-size laminated International Geologic Time Scale is included with the book, complete with a sea-level column, and the numerical ages, in millions of years, for each geologic time subdivision. A footnote to the full-color Geologic Time Scale states that the "Definition of the Quaternary and revision of the Pleistocene are under discussion. Base of the Pleistocene is at 1.81 Ma (base of the Calabrian), but may be extended to 2.59 Ma (base of Gelasian). The historic "Tertiary" comprises the Paleogene and Neogene, and has no official rank."

As we know, the geologic time scale is the framework, or calendar, and foundation upon which geologists decipher Earth's history. As stated in the Introduction (Chapter 1), "This book is a summary of the status of that scale and some of the most common means for global correlation. It is intended to be a handbook; therefore, readers who desire more background or details on any aspect should utilize the suggested references at the end of each section, especially the detailed compilations in *A Geologic Time Scale 2004*" (previously reviewed in the *AASP Newsletter*, vol. 39(1) 2006).

The Introduction further goes on to discuss the international divisions of geologic time and their global boundaries, drawing upon the main goals of the International Commission of Stratigraphy and its predecessors under the International Geological Congresses, and the importance of precise Global

Boundary Stratotype Sections and Points (GSSPs). Although much progress has been made, approximately one-third of the 100 geologic stages still await international definition with precise GSSPs. Figure 1 shows the International Stratigraphic Chart with those boundaries that have ratified GSSPs (as of March, 2008).

The rest of the Introduction briefly discusses the use of fossils, stable-isotope ratios, sea-level changes, and geomagnetic reversals to subdivide the geologic time scale and for correlating rock units among widely separated regions. In addition, the methods for assigning numerical ages are also discussed, followed by a section devoted to the *TimeScale Creator* database and chart-making package which is available as a JAVA package from the ICS website ([www.stratigraphy.org](http://www.stratigraphy.org)). The Introduction concludes with an annotated list of selected on-line references relating to the geologic time scale, i.e., paleobiology, historical geology, paleontology, and paleogeographic maps.

Chapter 2 – Planetary Time Scale, discusses the formal stratigraphic systems developed for the surfaces of Earth's Moon, Mars, and Mercury, as well as a short discussion of Venus and some of the other solar system bodies. A full color time scale is given for the Moon, Mars, and Venus, showing the period name and numerical age for each body, as well as major planetary events. An up-to-date annotated reading list and selected on-line references and imagery is also provided.

The rest of the book (chapters 3 – 15) covers the Precambrian (Chapter 3) and the periods of the Phanerozoic (chapters 4 – 15). Each chapter includes: "(1) International divisions of geologic time and their global boundaries. (2) Selected biologic, chemical,

sea-level, geomagnetic and other events or zones. (3) Estimated numerical ages for these boundaries and events, and (4) Selected references and websites for additional information on each period.” With the exception of a few black and white photos, this book is lavishly illustrated with full-color paleogeographic maps for each period, charts, and photographs of outcrops of some of the named GPPSs.

Rather than go over each chapter, I’ll summarize Chapter 7 – Devonian Period, which is my favorite geologic period and follows the arrangement of all of the chapters. Just as in all of the chapters, the first page of Chapter 7 features a full color paleogeographic map of the Devonian Period (390 Ma) provided by Christopher Scotese. A short section on the history of the Devonian System (named by Roderick Murchison and Adam Sedgwick in 1839 from rock exposures in Devon County, England) and an overview of the Silurian – Devonian boundary placement at Klonk, near Prague, Czech Republic starts off the chapter. Interestingly, “this boundary stratotype, ratified in 1972, has the distinction of being the first official GSDSP.” A color photograph of the GSSP at Klonk, and a diagram of the stratigraphy of the base-Devonian GSSP complete this section.

The next section discusses the international subdivisions of the Devonian, and provides a chart giving the GSSP location, latitude, longitude, boundary level, correlation events, and references for each of the Devonian stages (Lochkovian, Pragian, Emsian, Eifelian, Givetian, Frasnian, Famennian).

The third section covers selected aspects of Devonian stratigraphy, including biostratigraphy, anoxic events, and the carbon-isotope curve. Conodonts provide the standardized global biostratigraphic framework for the Devonian. It is also pointed out that because of the initiation and diversification of land plants in the Devonian, a miospore zonation allows for correlating marine and terrestrial strata. Unfortunately, only conodont, ammonoid, and ostracode zonations for the Devonian are provided in Figure 7.4. This figure shows the numerical age, Epoch/Age, conodont, ammonoid, and ostracode biozonations, anoxic events,  $^{13}\text{C}$  isotope curve, and major eustatic trends for the Devonian Period.

The last section discusses how the numerical time scale was derived and the differences between what is shown in Figure 7.4 and some of the numerical dates in *Geologic Time Scale 2004*. Future work involves the need for additional radiometric age dates within each stage, and “the compilation of a global composite standard for conodont zoned strata that removes possible distortions due to sea-level changes and regional sedimentation-rate influences.”

Just as in all the other chapters, this one concludes with acknowledgments, further readings, and selected on-line references.

Following Chapter 15 – Quaternary Period, are two appendices. Appendix 1 shows, in two figures, the standard colors established by the *Commission for the Geological Map of the World* for the international divisions of geologic time. Appendix 2 lists the references for the Ratified GSSPs for geologic stages. The book concludes with a detailed Index.

In my opinion, this is a “must have” book for anyone involved in the geosciences. Just as the title says, this is a concise overview of the geologic time scale and provides the reader with beautiful paleogeographic maps for each geologic period, a brief history of each period, and complete chronologic, biostratigraphic, geomagnetic, eustatic change, and isotope curve information, where appropriate, in individual geologic period charts.

Considering the comprehensive amount of information, easy to read writing style, and full color illustrations, this book is a steal at \$40. The editors and authors are to be congratulated on producing such a fine volume and at a very reasonable price.

Reed Wicander  
Department of Geology  
Central Michigan University  
Mt. Pleasant, Michigan 48859

**The Concise Geologic Time Scale** by James G. Ogg, Gabi Ogg, and Felix M. Gradstein (eds.). ©2008. Cambridge University Press, New York, New York. ISBN 978-0-521-89849-2. 177 pages. \$40.00 (hardback)

## Editor's report

### MANAGING EDITOR'S REPORT

All members should have received their copy of Part 1 of Volume 34 of *Palynology* during June. The official publication date was 1<sup>st</sup> June 2010. This was of course the first issue produced by Taylor and Francis and it comprises five articles over 145 pages.

Three of the articles are relatively long papers. Part 2 will be published during December 2010 and is already full. I will be in a position to confirm the running order by the time of the next Newsletter. I do hope that all readers like the new style and format of our journal. The editorial team at Taylor and Francis are sincerely thanked for their hard work during this transition period. Manuscript submission rates continue to be healthy and I will have news regarding online submission very soon. I anticipate the online submission system going live later this year.

James B. Riding, Managing Editor – AASP – The Palynological Society  
British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham NG12 5GG, UK  
Tel: +44 (0)115 9363447, E-mail: [jbri@bgs.ac.uk](mailto:jbri@bgs.ac.uk) or [editor@palynology.org](mailto:editor@palynology.org)

## Students in the news...



### **Congratulations to Thomas Verleye, the 2009 AASP GRADUATE STUDENT Scholarship Recipient**

**Thomas Verleye, [thomas.verleye@ugent.be](mailto:thomas.verleye@ugent.be), Ghent University**

I'm Thomas Verleye (1984), and I'm a PhD student since January 2008 at the Research Unit Palaeontology of Ghent University in Belgium. The research for my master thesis in Geography (June 2007, also obtained at Ghent University) dealt with the Holocene palynology of the Southwestern Black Sea. I used dinoflagellate cysts as proxy for the reconstruction of Holocene salinity changes in order to determine the timing and mode of the reconnection with the Marmara and Mediterranean Sea (see Verleye et al., 2009 *Palynology* 33, 77-100). This research was carried out under the supervision of Kenneth Mertens. My interests in palynology, climatology and oceanography even grew during that year, and made me decide to continue research in these fascinating scientific fields.

My PhD research deals with the Late Quaternary palaeoenvironmental changes along the western South-American continental slope, based on dinoflagellate cyst analysis and TEX<sub>86</sub>. The research is funded by the Institute for the Encouragement of Innovation through Science and Technology in Flanders (IWT), and is carried out at Ghent University under the supervision of Stephen Louwye. I have chosen to work in the Southern Hemisphere (SH) because of my interests in the active role of the SH high latitudes in the initiation of rapid climate variability as suggested by recent modelling studies. Firstly, I analyzed the dinoflagellate cysts of 123 samples (25 cal ka BP – Present) of Site ODP 1233 (41°S) offshore Chile. This core is located in the northern part of the Antarctic Circumpolar Current, an area characterized by a large latitudinal sea-surface temperature (SST) gradient which makes this region very sensitive to latitudinal shifts of oceanographic and atmospheric circulations (see Verleye and Louwye, 2010 *Quaternary Science Reviews* 29, 1025-1039). An independent validation of the results will be made by the geochemical proxy TEX<sub>86</sub>, which will be used to reconstruct past SST changes (NIOZ, the Netherlands). The ODP1233 records will be compared with the dinoflagellate cyst and/or organic SST proxy records of site ODP1242 (8°N, Panama Basin) to verify the “tropical driver hypothesis”, in which the tropics are considered as the trigger for centennial/millennial scale climate changes.



**Congratulations to Regina Dickey (pictured with her advisor Professor Tom Yancey) for winning the "best talk" award at AAPG**

**Winning abstract:**

Palynology across a sequence boundary, Wilcox Group, Bastrop, Texas

Regina L. Dickey and Thomas E. Yancey  
Department of Geology and Geophysics,  
Texas A&M University, College Station, Texas

The Paleogene aged Wilcox Group, deposited primarily during the Laramide orogeny of the Late Cretaceous and Paleogene (70-40 mya) in the western United States, preserves the paleoclimatological and paleoenvironmental record of a critical interval and economically important petroleum resources. The biota of the Wilcox Group in the northwestern part of the Gulf of Mexico is poorly documented, despite the high level of interest in the interval. The section is thick but fossil content is sparse, except for the pollen and spores of terrestrial land plants, which are widely distributed. The organic acids produced by the decay of plant tissue have resulted in the diagenetic loss of nearly all carbonate remains. Therefore, palynology provides the best means of determining age relations and documenting the record of environmental change for these deposits.

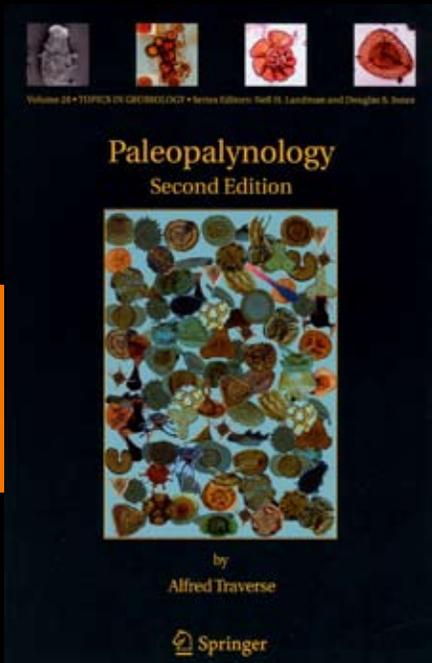
A rich assemblage of well-preserved palynomorphs occurs in the Calvert Bluff and Carrizo Formations in Bastrop County, which also contain a major sequence boundary. In Bastrop County, Calvert Bluff strata consist of shoaling-upwards, fine-grained shallow marine deposits; the sequence boundary is marked by a paleosol and incised channel fill; and the overlying Carrizo Formation is a transgressive marine sand deposit. The lowest exposure of Calvert Bluff contains marine macrofossils and forams and the uppermost exposure contains a rich pollen and spore assemblage of the *Thompsonipollis magnificus* megazone. Pollen in the incised fluvial channel of the sequence boundary is rare and mostly reworked. Instead, the channel assemblage consists primarily of freshwater algal cysts. Nearby strata of the transgressive upper Carrizo section (10 m or 33 ft.) contain sparse Early Eocene dinoflagellates and foram chamber linings including *Apectodinium homomorphum* and *Wetzeliella spp* (articulata group). Palynomorphs indicate the PETM boundary is present and probably lies within the Calvert Bluff Fm.



**Congratulations to Sandra Garzon for being awarded one of the AAPG student grants (J. Elmer Thomas Past-Presidents Grant) for her palynological research.**

Sandra is currently conducting a master at LSU. This is a collaborative project between Sophie Warny (LSU) and Carlos Jaramillo (STRI). Sandra is scheduled to graduate at the end of the Spring 2011 semester.

The title of her master thesis is:  
Palynomorphs from Upper Cretaceous sequences in central Colombia: Using paleopalynology as a correlation tool for oil exploration.



**A book review by Reed Wicander  
Department of Geology  
Central Michigan University**

**Paleopalynology 2<sup>nd</sup> ed.** by Alfred Traverse. ©2007. Springer, Dordrecht, The Netherlands. ISBN 978-1-4020-6684-9. 813 pages, 210 illustrations, 14 in color. \$129.00 (softcover)

*Paleopalynology* 2<sup>nd</sup> edition follows the successful publication of the first edition in 1988. As Al Traverse states in the Preface to the second edition, and as all authors know from experience, “critical colleagues found things that even the careful editorial process had missed.” Based on the many comments and suggestions from users of the first edition, as well as students in Al’s various palynology courses, “what was wanted was a revision of the first edition, not a completely new book.” Consequently, there is an emphasis on new material for those topics that had become seriously outdated since the first edition (specifically dinoflagellates, acritarchs, cryptospores, and including palynofacies and other topics), as well as corrections and revisions in all the chapters. In addition, the General Bibliography has been updated and expanded, the Glossary has been extensively revised, and there are 14 color plates, a feature not found in the first edition.

Whereas the first edition was 600 pages, the second edition comes in at 813 pages. Although the page size is the same, the second edition’s font size is slightly smaller, allowing for even more information. Another difference, and a very helpful one I think, is that following the chapter

title, there is an outline of topics covered in the chapter, along with the page number where each topic starts. This is a feature seen in most current college/university textbooks, and a nice addition to the second edition.

The second edition has one more chapter than the first (19 vs. 18). Chapter 7 has been renamed “Cambrian to Silurian Non-Marine Palynology,” and contains some updated figures and text, bringing it more in line with what is covered in the chapter than the previous edition’s “Silurian Palynology” title.

Chapter 12 has also undergone a renaming to better fit the contents, as well as expansion and updating of its contents. The section on acritarchs has been revised and expanded, as well as adding a new figure of the tasmanitids, and some new photos and caption material for the figure of large and small Triassic palynomorphs. The section on megaspores remains pretty much the same, with some minor rewriting. The last section, dinoflagellates, has also been updated with the addition of some new figures and a color plate, which although referenced at the end of this chapter, is placed in the next chapter.

Chapter 16 has been renamed “Holocene Palynology” and a new section titled “Theory of Pollen Analysis” added at the end of the chapter.

Chapter 17 has also been renamed to reflect the addition of new material, such as a short

discussion on palynomorph taphonomy. A new figure in the section on “Pollen Rain” was added to this edition, and rather than renumber the figures, the author (or editor) simply called it Figure 17.4x! What is interesting is that in the new edition, Figure 17.4x (formerly Figure 17.21 of the first edition) replaces the citation to Figure 17.4 in the previous edition. However, there is now no reference to Figure 17.4 (which still appears in the same place as in the first edition). Figure 17.4x (along with color Plate 17.1) was added to illustrate the new information presented in a new section “Spores/Pollen/Other Palynomorphs in Water.” In a book of this size, there are bound to be minor glitches and typos, and this was the most obvious one that I found. The rest of the material in Chapter 17 of the first edition now forms the basis for Chapter 18 in the second edition.

Chapter 18, titled “Differential Sorting of Palynomorphs into Sediments: Palynofacies, Palynodebris, Discordant Palynomorphs” begins with a somewhat lengthy discussion of palynofacies and related matter. As stated, “the subject of palynofacies and its interpretation and significance in various practical connections” has greatly expanded since the publication of the first edition. Therefore, this subject gets an entire chapter devoted to it, beginning with three color plates showing the various types of palynofacies assemblages. Section two is an updated version of what was in the first edition. A new section on “Palynofacies” has been added to this edition, reflecting the new research in this topic that has been published since the first edition. The rest of the chapter follows the format from Chapter 17 with some updating.

Chapter 19 covers the same material and has the same title as Chapter 18 from the first edition, but with considerable updating. For example, the initial section on “Post-depositional Alteration of Palynomorphs: Thermal Maturation (= “Carbonization”) has been extensively revised and updated to include the various papers by Batten (1996), Duggan and Clayton (2005), Hartkopf-Fröder et al. (2001), Waterhouse (1998), and others. An updated color Figure 19.2 (formerly Plate 1 of the first edition) of “spores/pollen exine

coloration acquired with geothermal maturation (= coalification), along with related information about thermal alteration of organic matter in general” and a new color Figure 19.3 showing changes in acritarch color and fluorescence (from Duggan and Clayton, 2005) are welcome additions to this edition.

The second section on “Marginal Palynology” has also been updated, as has section 3 “Palynostratigraphy = the Use of Palynology for Stratigraphy,” which includes a new figure (Figure 19.5) of William G. Chaloner’s 2005 “quick and dirty” dichotomous key for getting a first order approximation of the age of a productive palynological maceration of a rock sample.”

The fourth section on “Data Management in Palynostratigraphy” has, as one would expect, been extensively updated, and a new section on “Computer-based Programs for Palynostratigraphy and Other Paleopalynological Projects” added.

The final section on “Paleopalynological Systematics: Nomenclature” is completely new and reflects the author’s view on the state of palynological nomenclature. This is an especially interesting and informative section covering why we, as paleopalynologists, “should be grateful to be more or less sealed off [from the] efforts by well-meaning but misguided folks to overturn the existing system for naming organisms formally.” Al also gives the reader an overview of “other nomenclatural tomfoolery” such as those 21<sup>st</sup> century biology movements that are “gathering steam to overthrow the now huge system of hundreds of thousands of names of organisms and supplant it with this or that system based on the latest biological information.” Other asides included in this section, point to the fact that “in addition to some advantages paleopalynological nomenclature has because of the relative isolation of our systematics from outside influences (*nobody out there cares!*), [my emphasis] we have some disadvantages.” These include the fact that many of the palynomorphs we work on are not botanical, but are animal fossils. The author goes into great detail about the differences between the International Code of Zoological Nomenclature

(ICZN) and the International Code of Botanical Nomenclature (ICBN) and the problems that can arise for paleopalynologists who work with spores, pollen, acritarchs, dinoflagellates, and chitinozoans.

The final paragraph of this chapter refers the reader to Traverse (1996) and his overview of “nomenclature and taxonomy: systematics.” In particular, Al refers to the discussion of a movement towards a “unified system of bionomenclature” (USB). As he states in this second edition “the discussed code of bionomenclature has not come to fruition, though the idea is not dead, and it may well be the wave of the future and a good thing.”

*Paleopalynology* 2<sup>nd</sup> edition, concludes with an extensive Appendix on palynological laboratory techniques, an updated Glossary, an updated and extensive General Bibliography, and an Index.

In my opinion, this is an excellent general book on paleopalynology, and certainly worth the \$129.00 price tag. It contains a wealth of information for both the beginning, as well as the professional palynologist. It has been painstakingly updated, and particular attention has been paid to the comments by readers of the first edition. The outline that is found at the beginning of each chapter of topics covered in the chapter, along with the page number where each topic starts, is an excellent addition to this edition. My main complaint is that the reproduction of some figures is not as sharp or as crisp as it is in the first edition, such as, for example, Figure 17.1, p. 500 of the second edition. Other than that, I consider myself a fan of this edition. Furthermore, I especially enjoyed the personal comments by the author that are sprinkled throughout the book, as well as the new photos and comments about some of the better known palynologists.

In conclusion, I think Al is being modest when he states that “this book provides most of the information necessary to teach a good university/college course on palynology.” I would say that there is more than enough information here to teach a GREAT university/college course on palynology, and that this edition will “continue to serve frequently as a handy one-volume reference to palynological subjects.”



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## Past in Pictures...

At the AASP 29th Annual meeting and concurrent 9th IPC meeting held in Houston, Texas, June, 1996, the AASP members who have had a connection with New Zealand palynology gathered for a group photo.

From left to right they are: Graeme Wilson, David Pocknall, Dave McIntyre, Dallas Mildenhall and Geoff Norris. Photo by S.A. Jarzen.

Send the newsletter editor your memories at [swarny@lsu.edu](mailto:swarny@lsu.edu)!

# OBITUARY: Satish K. Srivastava



Satish K. Srivastava passed away at the USC University Hospital Thursday, June 17, 2010, after a long and dignified struggle with diabetes.

Satish was born June 28, 1935, in Sitapur, Uttar Pradesh, northern India, the only son of Hazari Lal and Sheopyari Srivastava. As a child, Satish showed an insatiable curiosity for botany, chemistry and zoology that eventually led to a Bachelor of Science degree in these subjects in 1954 from Agra University, Uttar Pradesh, India.

Satish first saw pollen through a microscope while employed at the Forest Research Institute (**FRI**) in Dehradun, northern India, where he worked from 1954 to 1957 under the direction of the distinguished Indian paleobotanists H. S. Rao and G. S. Puri. From 1957 - 1968, he worked at the fledgling Indian Oil & Natural Gas Commission (**ONGC**), also at Dehradun. At ONGC his duties included examining both rock-samples and modern pollen samples

used to study the annual pollen-rain of Dehradun. His initial training came largely from studying the texts of Erdtman, Faegri and Wodehouse, but later in 1957, the Soviet palynologist N. D. Mtchedlishvili visited the ONGC. During her stay, she generously taught Satish pollen extraction techniques and acquainted him with Cretaceous pollen and spore identification. In addition to Mtchedlishvili, while at ONGC, Satish met Robert Potonié, Gunnar Erdtman, Basil Balme and Pierre Legris. The Palynologist-In-Charge at ONGC was A. K. Gosh, whom Satish assisted in several co-authored publications, and by 1963 Satish was author of a dozen papers. His first independent palynological investigation was of the Siwalik Formation of Punjab, northern India, published in 1958.

Though a successful palynologist, Satish felt the need to bolster his credentials with a post-baccalaureate degree, and was advised to contact Charles R. Stelck at the University of Alberta.

Stelck replied by inviting Satish to apply to the U of A, with a stipend of \$167.50 per month (Canadian). Satish completed a Masters Thesis on the mammal-beds of the Edmonton Group in 1965 and his Ph.D. in 1968 on the same formation and in 1968 he accepted a Killam Fellowship at the University of British Columbia. Also in 1968, Satish attended the first Annual AASP meeting in Baton Rouge -- he's number 41 in the group picture, standing next to Al Traverse.

His fellow palynology students at the University of Alberta were Gerhard Bihl, Pier Binda, Byong Il Chi, Rex Harland, Len Hills, Chaitanya Singh, Bob Snead, Bindra Thusu and Anan Yorke. By 1970, when his Killam Fellowship ended, Satish had finished 40 publications. His fellow students at the University of British Columbia included Rolf W. Mathewes and Ken Piel.

In 1970, at the invitation of Lucy M. Cranwell, Satish came to the Geochronology Laboratory at the University of Arizona as a visiting scientist. While there, Ken Piel and Harry Leffingwell invited Satish to visit Union Oil, in La Habra, California, to present his Ph.D. thesis. And, while in La Habra, Satish visited Warren Drugg and Al Loeblich, Jr. After an informal interview, Al invited him to work for Chevron (COFRC).

His future then comfortably secure, his focus changed to the love of his life, Rosalind Catterall, whom he had met five years earlier. In 1970, she was teaching in Horsefly, B.C., 540 miles north of Vancouver. They were married July 14, 1970, and during the time before his Visa was awarded, and he was officially employed, Satish was paid under contract to Chevron.

During the 1970's Satish developed a deep understanding of the paleo-biogeography of *Aquilapollenites* pollen in a series of publications emphasizing plate-tectonics. These were among his 28 publications during the 1970's.

In the 1980's Satish shifted interest to dinoflagellate cysts. In 1981 & 1982, Satish studied with Bill Evitt at Stanford University and in 1984 Satish published on Barremian dinoflagellate cysts from Southeastern France, followed in 1992 by a monograph on dinocysts of Cenomanian–Coniacian of the Southern United States.

Also, in the 1970s and 80s Satish published a series of papers on the K/T extinction impact-hypothesis. Satish studied the Scollard Formation, central Alberta, Canada. True to his academic independence and honesty, he concluded "The floral extinctions were selective and gradual across the KTB in Scollard ... The source of the Ir anomaly does not appear to have affected the flora catastrophically." (Rev. Palaeob. Palynol.1994, 83:137-158.)

Satish retired from Chevron in 1986, but retained an active consulting service until the time of his death. During that period he also served as an Adjunct Full Professor at USC, and trained petroleum palynologists for PETROCI (Petroleum Company of Ivory Coast). He continued actively publishing, eventually totaling over 143 peer-reviewed publications. He was elected a Fellow of the Linnean Society of London in 1980; Councilor of the Indian Association of Palynostratigraphers in 1979, 1980 & 1983, President in 1984 and Fellow in 1985; and President of the Southern California Palynological Society in 1991.

At its 2006 annual meeting, the American Association of Stratigraphic Palynologists bestowed upon Dr. Satish K. Srivastava its **Medal For Scientific Excellence**, the highest honor given by AASP for palynological research. In making the award, Sharma Gaponoff, Past President of AASP, presented this award based on Satish's "Comprehensive Contributions in Taxonomy, Paleoecology, Stratigraphic Palynology, and Continental Paleogeography". She said, "He will always be remembered for his standards of excellence, his thorough and meticulous research and his cross-disciplinary assimilation of thoughts and ideas."

We are saddened by the passing of this great palynologist. He will be missed by many, but especially by our community.

Owen Davis and Sharma Gaponoff.  
Based on materials on the AASP History Page <http://www.palynology.org>



## INTERNATIONAL FIELD WORKSHOP ON VINDHYAN SUPERGROUP, CENTRAL INDIA (20<sup>th</sup> – 31<sup>st</sup> January 2010)

Birbal Sahni Institute of Palaeobotany (BSIP) co-sponsored an International Field Workshop on Vindhyan Supergroup, Central India organized under the aegis of the Palaeontological Society of India (PSI), Lucknow. In recent years, the international scientific community has showed a great interest in the geological studies of the Vindhyan succession. Palaeobiological and palaeomagnetic studies have challenged some of the established paradigms about the evolution of life and age of the basin. More than a decade ago, two scientific discoveries (Seilacher *et al.*, 1998 and Azmi, 1998) prompted the PSI to convene an international field workshop on the Vindhyan Supergroup. It successfully provided an opportunity to all interested international researchers to visit the specific sites and discuss the implications of papers in understanding the evolutionary history of life. In recent years, publication of Malone *et al.*, 2007, Azmi *et al.*, 2007, 2008 and Bengtson *et al.*, 2009 once again triggered the debate among the international scientific community.

After the gap of eight years, another international field workshop was organized by the PSI to assess the latest developments reported in the palaeobiology, palaeomagnetism, isotope geochemistry, geochronology, basin evolution

and oil prospects of the Vindhyan basin. Several classical sections were chosen for the study in the field of palaeobiology, sedimentology and economic geology spread over the two states-Uttar Pradesh and Madhya Pradesh. During the eleven days field-workshop, participants studied 31 spots covering 2000 km of distance on bus/taxi and examined the representative lithostratigraphy of the Vindhyan Supergroup. The organizing committee incorporated all of the major specialities related to the topics-palaeobiology, sedimentology, geochronology and palaeomagnetism-so there was something to interest everyone in the delegation.

The formal inauguration was held in the Birbal Sahni Institute of Palaeobotany on 20<sup>th</sup> January 2010. Dr. N. C. Mehrotra, Director BSIP was the Chief Guest of the function. Dr. Mukund Sharma, the Organizing Secretary, introduced the problem of Vindhyan, aims & objective of the workshop and scope of the 10 days long itinerary. Four lectures on the Proterozoic palaeobiology and Vindhyan Supergroup were delivered. Prof. Adolf Seilacher, Tubingen University, Dr. N. J. Butterfield, Cambridge University, Dr. O. P. Pandey, National Geophysical Research Institute and Dr. Bijai Prasad of Oil and Natural Gas Corporation Limited delivered these lectures.

Chitrakoot, Rewa, Maihar (Satna) and Khajuraho cities were the camping stations during the field workshop for the delegations. Three to four spots were visited everyday, providing ample time for observations and discussions on every spot. After examining the crucial section of Chitrakoot section, the common consensus among the participants was that there were no proof of megascopic advanced life which decisively indicate the Cambrian age of the Semri Group or even any other part of the Vindhyan basin. Search at famous Chorhat locality, that previously recorded triploblastic animal traces, did not through up any new similar fossil remain. After extensive discussions on the Chorhat spot, Prof. Adolf Seilacher put forward an alternative explanation about the origin of (?) triploblastic structures that was not a product of animal activity. It is likely that he will publish the alternative explanation soon. Participants have collected samples for further investigations, which may result in collaborative projects among Indian as well International researchers. Phosphatic occurrence in Tirohan Limestone at Janki Kund, Chitrakoot, Molar Tooth structures in Bhandar Limestone at Girgita, Emaliya in Maihar and Rohtasgarh Limestone near toll gate in Sidhi district, carbonaceous Rohtasgarh Limestone in Bistara Mines, Katni are some of the new important research aspects which have drawn attention of the international community. Large oolites in Bhandar Limestone is possibly be another important aspect of future study. Extensive collection of *Chuarina* made by the participants in Dulni River Section at Maihar is likely to add to our knowledge.

Meticulously prepared 107 pages Field Guide-Book with coloured photographs and location maps was an added advantage to all the participants. All the 31 spots, covered during the workshop, were well marked and discussed in the field guide. It is a collection item for those who wish to undertake field work in the Vindhyan basin in future. It would be appropriate if PSI publishes the field guide book and make it available to all those who are interested in Vindhyan studies.

Birbal Sahni Institute of Palaeobotany and Centre of Advanced Study in Geology, University

of Lucknow co-sponsored the event. Organizers are grateful to Maihar Cement Factory, Bhadanpur and National Mineral Development Corporations, Majhagawan Diamond Mines for hosting the lunch and the invite of erstwhile Maharaja of Rewa on the Republic Day of India. Financial assistance from Ministry of Earth Sciences, Government of India, Oil and Natural Gas Corporation Limited, Council of Scientific and Industrial Research, National Geophysical Research Institute and International Geological Correlation Programme-512 are kindly acknowledged.

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## Nova Scotia 2010

**Wednesday 29<sup>th</sup> September to Saturday 2<sup>nd</sup> October 2010**  
**Harbourview Holiday Inn, Dartmouth, Nova Scotia**

**Joint Meeting of [AASP-The Palynological Society](#),  
the Geological Association of Canada Paleontology Division, and  
CAP- Canadian Association of Palynologists**

**Local Organizing Committee.** Rob Fensome, Nelly Koziel, Peta Mudie and Graham Williams,  
Geological Survey of Canada, Bedford Institute of Oceanography, Dartmouth, Nova Scotia

### **Society Representatives.**

For AASP-TPS — Francine McCarthy, Brock University, St. Catharines, Ontario;  
For GACPD — Mike Melchin, St. Francis Xavier University, Antigonish, Nova Scotia; For CAP —  
Elisabeth Levac, Bishops University, Sherbrooke, Quebec.

**Location.** The meeting will be held at the Harbourview Holiday Inn in Dartmouth, Nova Scotia, with a modern conference centre overlooking the Halifax skyline across Halifax Harbour. The Inn is minutes away from buses and ferries that take visitors directly to historic downtown and waterfront Halifax, with its many dining venues to suit all tastes, a variety of traditional pubs (some with their own brews), and opportunities for harbour cruises. The hotel is also across the road from a sports complex, including swimming pool and gym; and close to downtown Dartmouth with its own waterfront attractions, restaurants and pubs. Dartmouth is known as the City of Lakes and is the starting point of the historic Shubenacadie Canal, a Nineteenth Century link between the Atlantic and the Bay of Fundy. Short bus rides or drives take the visitor to the seashore and attractive waterside walks. Autumn foliage should be in its early stages at the time of the meeting, and the weather is usually (but not always) fine and temperate in early fall, so participants should bring layers of clothes to adapt to changing temperatures.

**Costs (all in Canadian Dollars).** Pre-registration will be \$190, \$90 for students; on site registration will be \$225 and \$110 respectively.

The hotel rate at Harbourview Holiday Inn Hotel will be \$149 plus taxes per person for single or double occupancy, with \$15 for additional beds. The organizing committee will do their best to play “match-maker” for individuals seeking to share rooms. We encourage participants to stay at the Harbourview Holiday Inn --- the more rooms we use, the better will be the price for the meeting rooms. Door-to-door airport bus transport from Halifax International Airport is about \$21.

**Meeting Events.** The social program includes an opening night “Meet and Greet” and public lecture. Natalia Rybczynski of the Canadian Museum of Nature has agreed to give the public talk on new Cenozoic mammals from the Arctic, and the Arctic’s role as an evolutionary pump. Natalia is an excellent speaker and has been involved with exciting Arctic finds, including the preserved remains of a beaver dam. A dinner is planned for GAC Paleo Division and business lunches for CAP and AASP, accompanied by traditional Nova Scotian Town Crier, bagpipers and the Order of Good Cheer awards. Dependent on interest and availability, a mid-conference harbour cruise aboard the sternwheeler Harbour Queen will be planned.

**Technical Sessions.** The planned technical program will accommodate more than 60 talks (with two concurrent sessions), including keynotes. The sessions will include:

**1) Paleobotany in all its aspects.** Conveners, Graham Williams and John Calder. This session will highlight macro and micropaleobotany (palynology of spores and pollen) and talks on how the two subdisciplines shed new light on ancient plant communities and evolution are especially welcome. The session could include talks on classic localities such as Joggins and other North American Carboniferous localities, as well as those elsewhere. Another focus could be the impact of evolving plant cover on sedimentation. It is hoped to include some contributions relating to the K/T boundary and other work of Doug Nichols (recently deceased).

**2) Canadian Paleontology.** Conveners, Mike Melchin and Paul Johnston. Some of the world’s most significant paleontological discoveries have been Canadian. Possible topics could include the Mistaken Point fauna, Burgess Shale, Tiktaalik, Miguasha fish, Joggins vertebrates and invertebrates, and Wasson Bluff.

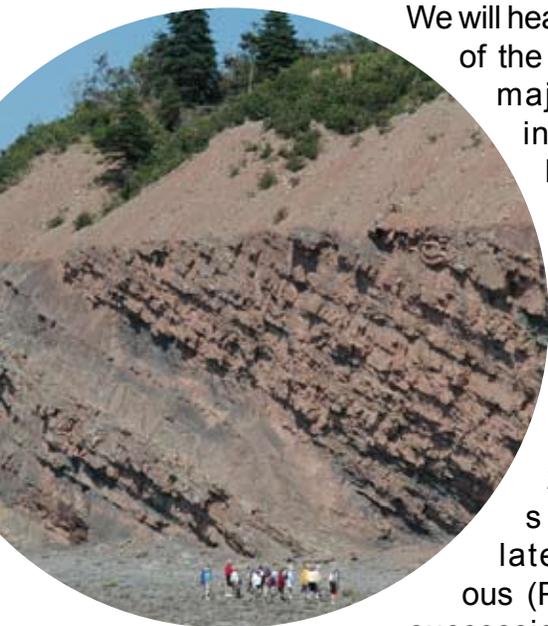
**3) The Amazingly Diverse World of Quaternary Palynology: A Session in Celebration of the Career of Jock McAndrews.** Convener Francine McCarthy. The versatile palynological career of Jock McAndrews and his students has covered the spectrum from Holocene freshwater dinocysts and other non-pollen palynomorphs, through the archaeopalynology of mammoth skulls and varved lake sediments to volumes on modern pollen morphology and identification. In celebration, a keynote talk will be given by Roger Byrne from the University of California at Berkeley, Jock’s first post-doctoral associate and co-worker at Crawford Lake in 1973. Roger is now studying wildfire records and human impacts of landscapes using varved marine sediments off California and Mexico.

**4) New frontiers in paleobiology.** Conveners, Rob Fensome and Peta Mudie. One focus of this session will be the integration of molecular and fossil data, and several potential speakers have been approached on this topic — Kazumi Matsuoka will give a keynote talk on DNA and the classification Pleistocene – Recent dinocysts. Another focus could be on the elucidation of the phylogeny of groups such as ferns and angiosperms using both molecular and fossil data.

**5) General session.** Convener, Elisabeth Levac. Papers addressing industrial uses of paleontology are especially encouraged.

**Field Trips.** Two field trips are being planned, both on the Saturday 2<sup>nd</sup> October. At the moment, participant costs are about \$100 Canadian for each trip, inclusive of lunches and museum entrance fees, based on a minimum of 20 and a maximum of 29 people per trip.

**Field Trip 1 --- Bay of Fundy: Parrsboro Shore and Joggins Fossil Cliffs**



We will head to the shores of the Bay of Fundy, major stops being in the Five Islands-Parrsboro area and Joggins, the latter designated a UNESCO World Heritage site in 2008 for its spectacular late Carboniferous (Pennsylvanian) succession exposed in the famous "Fossil Cliffs". The

trip's coordinators will be Rob Fensome and Graham Williams, with various experts "chipping in" along the way. We will leave the hotel at 8.00 am and head to the north shore of the Minas Basin, where we will explore either the Mesozoic rocks at Five Islands or the mid Carboniferous section at East Bay, Parrsboro, the choice depending on tide constraints. The first underwater turbines for tidal power generation in North America are currently being installed in the Bay of Fundy near Parrsboro. The site has been chosen because offshore is the Minas Channel, through which more water flows during a tide change than the water flowing from all the world's estuaries during equivalent time. We will eat lunch at the Fundy Geological Museum, which highlights Canada's oldest-known

dinosaurs.

In the afternoon, on the way to Joggins, we will stop at the Cobequid Fault, Nova Scotia's ancient answer to the San Andreas Fault (though no longer active). Once at Joggins, we guarantee low tide and the possibility to explore both the exciting new Joggins Fossil Centre and the cliffs. This part of the trip will be coordinated by Melissa Grey, Science and Education Coordinator at the Joggins Fossil Centre. Joggins was the haunt of Victorian geological superstars William Dawson, Charles Lyell, Abraham Gesner (discoverer of kerosene) and William Logan (first director of the GSC). The site was also mentioned in Darwin's Origin of Species, and is associated with coal mining and Canadian confederation. All of this historical interest is in addition to the fact that it is home to the world's earliest known reptiles and land snails, and spectacular fossil tree trunks (if erosion cooperates). There is also a till section for Quaternary enthusiasts.

We will take "tea" at the Joggins Fossil Centre and thence return to Dartmouth via the Trans-Canada Highway and Veterans Memorial Highway. This will be a long day trip and participants should not plan on taking an evening flight.





### ***Field Trip 2 --- Nova Scotia's Atlantic Shore: Quaternary and Environmental Geology***

This field trip will explore Nova Scotia's Atlantic Shore, focusing on Quaternary and environmental geology. The coordinator will be Peta Mudie, and leaders at particular sites will include geologists Ralph Stea, Bob Taylor, Mike Parsons, Peter Giles and archaeologist Roger Lewis. This trip will also leave the hotel at 8 am. First stop will be West Lawrencetown, where we will see a wave-eroded section of a drumlin with older Hartlen and younger Lawrencetown tills, and Cambrian bedrock outcrops with glaciated grooves and striations. The drive will then take us along the coastline of embayments to the Chezzetcook drumlin field and salt marsh, via Minesville abandoned gold mine, with its ongoing history of arsenic and mercury pollution from tailings. At Chezzetcook, we will view vegetation zonation and explore the history of the salt marsh.

The trip will then continue to Peggy's Cove, southwest of Halifax, where (weather permitting) we will eat lunch near Peggy's Cove lighthouse perched on glacier-scoured Devonian granite, part of the South Mountain Batholith, the largest granitic body in the Appalachian Orogen. The unique landscape of Peggy's Cove and surrounding areas was produced by the Wisconsinan glaciation. On retreat of the ice, rising sea level filled the scoured areas, forming an endless array of

coves and inlets now hosting an endemic ice-age relic flora and ponds filled with bog moss, sundew and pitcher plants.

On the return trip, we will first examine exposures of Mississippian Windsor Formation shell-bearing carbonates near Glen Margaret, then explore the Quaternary geology and archaeology of eastern St. Margaret's Bay, and visit one of the last remaining Mi'kmaq shell middens on Indian Point where the coast is rapidly changing from erosion and urban development. Roger Lewis, of the Nova Scotia Museum of Natural History, will talk about the history of Mi'kmaq archaeological sites in the region before our return to Dartmouth.

Don't miss all the stimulating and fun events at Nova Scotia 2010 — registration will be available in spring 2010. Contact Rob Fensome ([rfensome@nrcan.gc.ca](mailto:rfensome@nrcan.gc.ca)), Peta Mudie ([pmudie@nrcan.gc.ca](mailto:pmudie@nrcan.gc.ca)) or Graham Williams ([graham.williams@nrcan.gc.ca](mailto:graham.williams@nrcan.gc.ca)) for more details and updates.

Page 34 top: Joggins' Fossil Cliffs, Canada's newest UNESCO World Heritage Site.

Page 34 bottom: Tidal flats at Five Islands, on Nova Scotia's Minas Basin, site of the highest tides in the world.

Above: Drumlin at Lawrencetown on Nova Scotia's Eastern Shore.



Photos : Pablo Etchevers

## SYMPOSIUM ON THE PALEOGENE OF SOUTH, CENTRAL AMERICA AND THE CARIBBEAN La Plata, Argentina, 20-24<sup>th</sup> September, 2010

A symposium on the Paleogene of South and Central America will be held at the X Argentinean Congress of Paleontology and Biostratigraphy and VII Latin American Congress of Paleontology (La Plata, Argentina, 20-24<sup>th</sup> September, 2010).

The aim of the symposium is to have an overview of research related to the Paleogene of South and Central America, facilitating the exchange of information and integration of results from different disciplines and regions.

Participants are invited to submit abstracts on all aspects of the Paleogene of South and Central America/Caribbean, particularly on stratigraphy, biostratigraphy, paleogeography, paleontology, paleoecology, and paleoclimates. Contributions on global aspects of the Paleogene and from other regions of the world are also welcome.

Details and deadlines for submission of abstracts will be at the Congress's web page. (<http://www.congresospaleo2010.fcnym.unlp.edu.ar>). For details on the symposium, please contact Carlos Jaramillo ([jaramilloc@si.edu](mailto:jaramilloc@si.edu)) or Carolina Nañez ([carolina.nanez@yahoo.com](mailto:carolina.nanez@yahoo.com)).

The Society for Organic Petrology  
27th Annual Meeting

Theme: Advances in Organic Petrology

September 12-16, 2010 - Denver, Colorado, USA



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## ANNUAL MEETING ANNOUNCEMENT AND CALL FOR PAPERS

Denver, Colorado, USA  
Sheraton Denver West Hotel

September 12-16, 2010



## 8th EUROPEAN COAL CONFERENCE

part of GeoDarmstadt 2010

October 10-13, 2010  
Darmstadt, Germany

**Second Circular**

[www.geodarmstadt2010.de](http://www.geodarmstadt2010.de)

### Introduction

The 8<sup>th</sup> ECC is organised on behalf of the *European Coal Geology Group*, an informal association uniting academics and applied scientists and technicians from industry and the public sector. Their interests are primarily concerned with the geology of European coal deposits, with special attention to environmental issues surrounding the continuing importance of coal as an energy source in Europe. As the hard coal mining continues to contract in some countries, the problems and opportunities related to mine closure are also considered. The newer technologies of Coal Bed Methane (CBM), Coal Mine Methane (CMM) and Underground Coal Gasification (UCG) are becoming more important as traditional mining is challenged, and the opportunities for underground storage of CO<sub>2</sub> continue to promote lively technological debate.

The 8<sup>th</sup> ECC follows those in Leicester (UK) 1993, Prague (Czech Republic) 1995, Izmir (Turkey) 1997, Ustron (Poland) 2000, Mons (Belgium) 2002, Belgrade (Serbia) 2005 and Lviv (Ukraine) 2008.

The conferences continue to bring together the coal industries of Western and Eastern Europe, encompassing studies of both lignite and hard coal, underground and surface mining, economic and environmental issues and problems. We hope that the conference will lead to significant progress in understanding the geological nature of our coal deposits and the technical solutions during and after their utilisation. As part of **GeoDarmstadt**, we hope to communicate these topics to a wider audience and encourage a multidisciplinary exchange of ideas.

The 8<sup>th</sup> ECC is organised in the framework of GeoDarmstadt 2010, in conjunction with the annual meeting of the Deutsche Gesellschaft für Geowissenschaften (DGG) and the Geologische Vereinigung (GV).

**All organisation communication including registration and the submission of abstracts must be performed over the internet at [www.geodarmstadt2010.de](http://www.geodarmstadt2010.de).**

**In the frame of the ECC8 we plan to publish full papers of the accepted contributions to this conference in a special volume of the International Journal of Coal Geology. Authors who plan to publish should send a message to [juch@gd.nrw.de](mailto:juch@gd.nrw.de).** Please note that all manuscripts for publication shall be finished and submitted not later than one month after the conference.

### Organisation

DGG / TU Darmstadt

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