The Eastern Section of the Society for Sedimentary Geology
~ ES-SEPM ~
February 2010 Newsletter

President's Column

Upcoming Joint GSA Meetings

Dear Colleagues –

This past year has been another exciting time for our Section and the officers would like to thank our members for taking an active part in ES-SEPM activities. In 2009, we welcomed new professional and student members, in keeping with the continuing increase in the membership over the past few years.

In February 2009, I had the opportunity to represent the Eastern Section at a special SEPM Strategy Planning Meeting in Tioga, TX. Among many important issues discussed at this workshop, recruiting young geoscientists in U.S. and abroad (one third of current SEPM members are under 40) and improving on the already very highly-ranked SEPM journals (JSR and Palaios) and Special Papers, were discussed as key strategies for moving forward. It was important to highlight that our section is relatively "isolated" from the typical venues of the annual AAPG/SEPM Conference – most of them are west of the Appalachians. The Best Student Paper Award competitions at sectional GSA meetings allow representatives of ES-SEPM to attend this annual event, however one of our outstanding challenges is the visibility of the recently merged Section that encompasses a large portion of eastern North America (see the new Section logo).

The upcoming Joint NE-SE GSA Conference in Baltimore, MD (13-16 March 2010) promises a record attendance and presents an ideal opportunity for all ES-SEPM members to take an active part in increasing the visibility of the Section and the Society. In addition to the Sunday evening Reception and Keynote Address by the SEPM Foundation President Tim Carr, we are planning to co-sponsor an exhibit booth that will provide a focal point for current members and a way to attract new scientists and students to the Section. The next Joint NE-NC GSA Meeting will take place in Pittsburgh, PA in 2011 and we are looking forward to interacting with our colleagues from the Great Lakes Section of SEPM.

A new call for the election of ES-SEPM officers will be coming up shortly and we look forward to your continuing input and nominations. We are currently looking for a Newsletter Editor and hope you can volunteer some of your time to aid in disseminating information to our members several times per year. If you wish to join us as an ES-SEPM officer, please feel free to contact us. We encourage your participation in section activities and look forward to your initiative in proposing or chairing sessions that deal with exciting aspects of sedimentology. For example, in contrast to co-sponsoring an already approved list of sessions, the 2010 GSA meeting is a great example of a conference where ES-SEPM took a leading role in encouraging and endorsing session proposals before they were submitted to the organizing committee. This is reflected in the high number of both oral and poster contributions.

Finally, if you plan to continue your support of the Section in the coming years, please consider a Life Long Membership. We also recently conferred Honorary Life-Long Memberships on the founding members of the Section who were instrumental in its early success and continuing growth.
We wish you a productive 2010 academic and field season and look forward to working with you on making our section a vital part of SEPM.

Sincerely yours,

Ilya Buynevich, *ES-SEPM President*, Temple University

Joint NE and SE GSA Conference, March 13-16, 2010, Baltimore, Maryland

- March 14, 2010 - ***ES-SEPM Reception and Keynote Address*** by the SEPM Foundation President **Tim Carr** (West Virginia University):

THE CHALLENGE OF SEDIMENTARY GEOLOGY – AN INTEGRATED LEARNING PROCESS FROM SAND GRAINS TO PLATE TECTONICS

The challenges of the 21st century are global in scale and require integrated approaches. The late Nobel laureate Dr. Richard E. Smalley listed the "Top Ten Problems of Humanity for Next 50 Years[1]" His list in order of priority is:

1. Energy
2. Water
3. Food
4. Environment
5. Poverty
6. Terrorism & war
7. Disease
8. Education
9. Democracy
10. Population

Many of the "problems" for humanity listed as the highest priority in Smalley's list such as energy, water and the environment are the direct subject of sedimentary geology. To efficiently address these global issues, the various fields of sedimentary geology face common challenges related to:

- Sharing exponentially increasing volumes of data
  - Organizing, storing, disseminating, processing and visualization
- Addressing heterogeneity of data, laboratory and software technologies,
- Meeting the requirement for time critical learning
  - Handling temporally obsolete knowledge
  - Addressing problems such as global climate change
- Conducting analyses at regional to global spatial scales
- Curation of data and preservation of scientific analyses
- Developing a learning process as a collaborative process
  - Crossing Teams, Agencies, Communities & States

In our digital era, sedimentary observations and measurements become digital raw data that are understood in this context as anything that can be ingested by a computer. We process raw data through qualitative and quantitative models to extract the meaning of raw data that is narrow in scope and has a simple organization. We refer to the extracted meaning as information. From information, we derive knowledge which is an interpretation of information that is broad in scope and it is orderly synthesized. Finally, the knowledge is used for in order to support the end applications such as optimal spatial placement of sensors, continued sampling or to support the decision makers with end applications.

[1] "Top Ten Problems of Humanity for Next 50 Years", Professor R. E. Smalley, Energy & NanoTechnology Conference, Rice University, May 3, 2003

This learning process can be viewed as a closed loop that goes from observation often from sensors and instruments on the surface or in the subsurface to data to information to knowledge. One example would be the design and location of measurement verification and accounting (MVA) systems for secure long-term geologic storage of CO2 or understanding the controls on the spatial distribution of organic-rich facies in an unconventional hydrocarbon play. Spatially and temporally varying observations flow into models and then the models determine the spatial and temporal samples of next observations in a closed loop system. Such complex problems, including large volumes of observations, computationally demanding models, and closed loop paradigms, cannot be solved without the involvement of multiple community experts in multiple areas of sedimentary geology. The challenge to sedimentary geology in addressing "Problems of Humanity for Next 50 Years" lies in providing a basic *infrastructure for enabling collaborative scientific efforts* that are characterized by distributed sensing, distributed human expertise and distributed technical and computational resources.

- ***Best Student Paper Award:***

The winner of the 2010 Eastern Section SEPM Best Paper competition will be chosen from student presenters (oral and poster) at ES-SEPM co-sponsored sessions and will have the opportunity to present at the 2011 annual AAPG Conference in Houston, through a travel grant funded by SEPM.

- ***ES-SEPM Sponsored Sessions:***

The Integration of Marine and Non-marine Subsurface Sediments to the Interpretation of the Stratigraphic Record of the Atlantic Coastal Plain. Jesse Thornburg and Stephen Peterson (Temple University).

The Impact of Climate Change on Barrier Island-Backbarrier Systems. Michael S. Fenster (Randolph-Macon College) and Duncan M. Fitzgerald (Boston University).

Connecting Continent and Sea: Paleoecologic Studies of the Eastern North American Continental Margin from Coastal Plain to Abyss. Neil E. Tibert (University of Mary Washington) and H. Allen Curran (Smith College).

Eastern Ichnology: Advances in Paleoenvironmental Applications of Trace Fossils. Jacob Benner, (Tufts University) and Ilya Buynevich (Temple University).

Ancient and Modern Carbonates of Eastern North America. Bosiljka Glumac and Sara Pruss (Smith College).

2009 Northeast GSA Conference, Portland, Maine

- ***ES-SEPM Keynote Address*** by **Stephen T. Hasiotis** (University of Kansas) - member of the Global SEPM Council and co-editor, PALAIOS:

UNDERSTANDING THE DIFFERENCES BETWEEN CONTINENTAL AND MARINE TRACE FOSSILS AND THEIR IMPLICATIONS: ICHNOLOGY FOR THE 21ST CENTURY

The study of ichnology has come a long way since its inception and it continues to evolve, as we comprehend better how organisms interact in the environment. In particular, progress is being made in understanding the implications of trace fossils in the continental realm and how they can be used in conjunction with paleontology, sedimentology, stratigraphy, geochemistry, and paleogeography to solve geologic problems. Organisms in all domains display behaviors that greatly expanded our definition of ichnology. Ichnology is the study of all organism behavior—not just animals. Accordingly, a trace fossil is the product of an organism interacting with a medium in an environment, which generates a three-dimensional physical structure—the resultant trace fossil can be micrometers to kilometers in scale. Though behaviors and resultant trace fossils may be similar morphologically in continental and marine settings, the organisms and behaviors that produced them and the physicochemical factors that controlled their distribution, depth, diversity, and abundance can be strikingly different. Ongoing research with modern terrestrial and aquatic organisms in the field and laboratory reveal the behaviors behind the production of burrow morphologies whose genesis and significance would otherwise be misinterpreted. The study of these modern traces, organisms, and their distribution allows us to recognize how their burrow morphologies and sedimentary associations record the environmental, ecologic, hydrologic, and climatic settings in which they are formed. Comparison of these modern structures and their tracemakers to trace fossils in continental deposits in the geologic record provide stronger clues about the implications of trace fossils for interpreting and reconstructing the sequence of events and conditions that produced those deposits. They also provide information on the evolution and radiation of organisms and ecosystems where the body fossil record is poor. As a result of these new research endeavors, trace fossils are being used to (1) extend the fossil record and understand the radiation of organisms, (2) interpret more accurately environments of deposition and the extent of pedogenesis that have modified those deposits, (3) contribute to understanding better the effects of climate change on biota, environments, and hydrologic systems, and (4) correlate significant surfaces in continental strata and identify subtle but significant shifts in physicochemical conditions and environments.

- ***ES-SEPM Co-Sponsored Symposia:***

Sea Level and Salt Marsh Ecogeomorphology. Beverly Johnson, (Bates College) and Julia Daly (Univ. of Maine at Farmington).

Modern Glacial Processes and the Glacial Sedimentary Record: In honor of Joe Hartshorn. Carl Koteff, (USGS), Tom Weddle (Maine Geological Survey) and Michael J. Retelle, Bates College).

- ***ES-SEPM Co-Sponsored Theme Sessions:***

Geoarchaeology: Sites, Substrate, Sources, and Context. Alice R. Kelley (University of Maine), and Allen Gontz (Univ. of Massachusetts, Boston).

Glacial and Paraglacial Coasts: Stratigraphy, Processes, and Geomorphology. Dan Belknap (University of Maine).

2009 Southeast GSA Conference, St. Petersburg, Florida

- ***ES-SEPM Keynote Address*** by the Global SEPM President **Steven G. Driese** (Baylor University):

MULTY-PROXY APPROACHES TO INTERPRETING CLIMATE AND TIME IN THE GEOLOGIC RECORD USING VERTISOL

Vertisol-like paleosols, which are clay-rich and exhibit abundant evidence for extensive shrink-swell processes, contain important paleoclimate information that is generally under-interpreted by geologists. Paleoclimatic studies based on paleosols are hindered by a lack of diagnostic climate indicators determined from thorough studies of climosequences in modern soils. Recent NSF-funded research examined Vertisols formed on late Pleistocene (<35 ka) Beaumont alluvium in the Coastal Prairie region of Texas along a climatic transect. These studies have characterized distinctive morphological and chemical features that correlate well with climate and identified possible paleoprecipitation proxies that include total Fe content of soil Fe-Mn nodules, depth to pedogenic carbonate (DTC), Ti:Zr content vs. depth, and total element mass-flux; the Chemical Index of Alteration minus Potassium (CIA-K) climofunction also is useful applied to Vertisols. Interpretation of paleosols is confounded, however, by the development of common soil features in response to different soil-forming factors. A Vertisol study that included a chronosequence from the Brazos Valley in Texas included pedons sampled as part of the previous climosequence study and younger Vertisols formed on alluvial terraces and floodplains

within the same drainage system. Initial findings suggested that vertic properties are acquired in as little as a few hundred years, and that steady-state conditions are achieved in only a few thousand years. But there is the potential for confusion between young soil age and lower mean annual precipitation. The diagnostic morphological and chemical characteristics identified in Vertisols were used to interpret mean anuual precipitation and duration of pedogenesis for Vertisol-like paleosols occurring within the Appalachian basin stratigraphic succession in order to reevaluate their paleoclimatic and time significance.

- ***ES-SEPM Co-sponsored Theme Session:***

Event Sedimentation along the Gulf of Mexico. Doug Haywick (University of South Alabama).

Membership Information

Become and Stay Active!

To determine your current membership status, please check the mailing label of this newsletter. Following your name you will see "Stu" for student members or "Pro" for professional members. These indicators are followed by a year designation: for students it's the year they joined the section, and for professional members it indicates their membership dues status (for example, "Pro 10" means paid up through 2010). If your paid-up status is for a year earlier than 2010, you owe dues now. If your mailing label has your name and address only, and you are no longer a student, then your dues payment is currently due in the amount of $8 and will be credited for 2010 (and beyond if additional money is sent). Student members are not required to pay dues, but please let us know about your current status and ensure that we have your updated contact information. We would like to avoid too many "Return to Sender" situations. Thanks to all of you who have recently paid your membership dues, and we hope to hear from the rest of you soon.

Get Membership for Life!

Are you tired of constant reminders about paying your $8 ES-SEPM dues each year? For a contribution of $100 or more you can now become a life-long member of ES-SEPM!!! For more information, please see the **Membership Form** included in this Newsletter.

New Life-Long Members:

Gail Ashley
Ilya Buynevich
Duncal M. FitzGerald
Bosiljka Glumac
John C. Kraft
Heather Macdonald
F. Daniel Russell Jr.
Randolph P. Steinen
Charles W. Welby

Honorary Life-Long Members:

Gerald M. Friedman
Gerard V. Middleton
John B. Southard
H. Allen Curran

Thank you all for your contributions!

ES-SEPM Officers

President: **Ilya Buynevich**
Assistant Professor at Temple University in Philadelphia, Pennsylvania
coast@temple.edu

Vice-President: **Stan Dunagan**
Assistant Professor of Geology at the University of Tennessee at Martin
sdunagan@utm.edu

Secretary/Treasurer: **Bosiljka Glumac**
Associate Professor of Geosciences at Smith College in Northampton, Massachusetts
bglumac@smith.edu

Councilor for the Northeast: **Cynthia Coron**
Professor of Geology at Southern Connecticut State University
coronc1@southernct.edu

Councilor for the Southeast: **Doug Haywick**
Associate Professor of Geology at the University of South Alabama in Mobile
dhaywick@jaguar1.usouthal.edu

Newsletter Editor: vacant

ES-SEPM Keynote Speaker Steve Hasiotis and ES-SEPM Councilor for the Northeast Cynthia Coron at 2009 NE GSA Meeting in Portland, Maine

Eastern Section-SEPM
Bosiljka Glumac, Secretary/Treasurer
Department of Geosciences
Smith College
Northampton, MA 01063

Address Correction Requested

Attention!!! Membership information ↓

MEMBERSHIP FORM

NOTE: This form is for New Members or for Current Members to update membership information. If the information on your mailing label is correct and we have your e-mail address, there is no need to return this form with your dues payment. Current members – *please pass this form on to prospective new members, both professionals and students as appropriate.*

Membership type:

Please check one: Professional ($8/year*) ___ Student (free) ___

* make checks payable to: Eastern Section SEPM
**for a contribution of $100 or more become a life-long member!!!

Name: _____

Title/Occupation: _____

e-mail: _____

Would you like to have your e-mail included on our online list of members? _____

Address: _____

_____

Professional interests: _____

_____

Web page (if you wish to have a link from the ES SEPM page)**:**

_____

Return completed forms with dues payment as applicable to:

Bosiljka Glumac
Eastern Section SEPM Secretary/Treasurer
Department of Geosciences, Smith College
Northampton, Massachusetts 01063

e-mail: bglumac@smith.edu

You can find a copy of this form and other pertinent information at: **www.essepm.org**