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**INSIDE:** STEPPE: EARTH'S PAST, OUR FUTURE PLUS: PRESIDENT'S COMMENTS, SGD NEWS, NEWLY ELECTED COUNCIL MEMBERS, UPCOMING SEPM CONFERENCES AND SEPM SPONSORED MEETINGS



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## BEPOSITS, ARCHITECTURE AND CONTROLS OF CARBONATE MARGIN, SLOPE AND BASINAL SETTINGS CONTROLS OF CARBONATE MARGIN, SLOPE AND BASINAL SETTINGS

## Deposits, Architecture, and Controls of Carbonate Margin, Slope, and Basinal Settings

#### Edited by: Klaas Verwer, Ted E. Playton, and Paul M. (Mitch) Harris

Carbonate margin, slope and basinal depositional environments, and their transitions, are highly dynamic and heterogeneous components of carbonate platform systems. Carbonate slopes are of particular interest because they form repositories for volumetrically significant amounts of sediment produced from nearly all carbonate environments, and form the links between shallow-water carbonate platform settings where prevailing in situ factories reside and their equivalent deeper-water settings dominated by resedimentation processes. Slope environments also provide an extensive stratigraphic record that, although is preserved differently than platform-top or basinal strata, can be utilized to unravel the growth evolution, sediment factories, and intrinsic to extrinsic parameters that control carbonate platform systems. In addition to many stimulating academic aspects of carbonate margin, slope, and basinal settings, they are increasingly recognized as significant conventional hydrocarbon reservoirs as well. The papers in this volume, which are drawn from the presentations made at the AAPG Annual Meeting in Long Beach, California (USA), in May 2012, as well as solicited submissions, provide insights into the spectrum of deposit types, stratal configurations, styles of growth, spatial architectures, controlling factors behind variations, and the hydrocarbon reservoir potential observed across the globe in these systems. The sixteen papers in this Special Publication include conceptual works, subsurface studies and outcrop studies, and are grouped into sections on conceptual works or syntheses, margin to basin development.

Articles for this volume are available for purchase at the SEPM Online First webpage! http://www.sepm.org/OnlineFirst.aspx Catalog #40105 • List Price, Print/CD: \$100.00/\$80.00 • Member Price, Print/CD: \$60.00/\$48.00

#### **Concepts in Sedimentology and Paleontology 11**

#### Phanerozoic Paleoclimate: An Atlas of Lithologic Indicators of Climate

By: Arthur J. Boucot, Chen Xu, and Christopher R. Scotese, with contributions by Robert J. Morley

This publication combines the interpretations of two major sets of data. One is the geophysical data that is used to interpret the position of the tectonic plates through geologic time. The other is based on a long time search of the geological literature to find, record, and evaluate the lithologic descriptions of countless reports around the globe; paying careful attention to those lithologies that have climatic implications. The introduction to this volume includes a detailed discussion of the lithologies, mineralogies and biogeographies that are considered to be the most reliable in identifying the climatic conditions existing during their formation and how they are used or not used in this compilation. Global paleoclimatic zones based on the climatically interpreted data points are identified during twenty-eight time periods from Cambrian to Micoren using paleotectonic reconstructed maps. The paleoclimate of each time period is summarized and includes a discussion of the specific referenced data points that have been interpreted to be the most reliable for that time period and location.

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#### **Short Course Notes 56**

#### 

By: Paul M. (Mitch) Harris, Samuel J. Purkis, and James Ellis

Great Bahama Bank (GBB) has long served as a frequently visited and well-studied example of a flat-topped, isolated carbonate platform. As such, GBB stands behind much of our understanding of modern processes and products of carbonate sedimentation. The geological models derived from studies on GBB are commonly used to illustrate depositional facies variations and frequently serve as reservoir analogs.

We have used Landsat TM and ETM+ imagery and an extensive set of water depth measurements to first critically evaluate the magnitude and patterns of bathymetry across GBB. We then integrated the seafloor sample data of Reijmer et al (2009) along with a small number of additional samples with the Landsat imagery compiled into ArcGIS and analyzed with eCognition to develop a depositional facies map that is more robust than previous versions. The new maps, in our opinion, can serve as a template for better characterizing GBB at all scales, highlight future research areas where "ground-truthing" is needed to further investigate facies patterns, and facilitate better use of this isolated carbonate platform as an analog for both exploration- and reservoir-scale facies analysis. As examples of information that can be extracted from the maps, we analyze the platform margins of GBB with respect to their orientation, examine the relationship between water depth and facies type, interrogate facies position and breadth across the platform top, and relook at the occurrences of whitings relative the distribution of mud on the platform.

The geospatial data for GBB are compiled into a 3.9 GB GIS database which is included on the DVD of this digital publication. The GIS contains raw data, interpretive products, and visualization examples that were produced during development of the water depth and facies maps of GBB, including the Landsat TM imagery, DEM, images developed by combining layers in the GIS, and facies and whitings maps. In addition, the Projects folder of the GIS contains files that automatically display images, maps, and DEMs with an appropriate symbology in ArcGIS version 10.1 (.mxd), ArcGIS Explorer version (Build) 1750 and 2500 (.nmf), and GlobalMapper version 14-1 (.wks).

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Cover image: STEPPE IPC4 travel awardees. From left to right, top row: Evan P. Anderson, Heda Agic, Ryan Roney, Javier Luque, Robyn Dahl, Gary J. Motz, Daniel J. Field; bottom row:Jessica N. Tashman, Zuzanna Wawrzyniak, Lydia Tackett, Mike Donovan, John A. Fronimos, Montana Hodges, and Sarah Sheffield (not pictured: Erin E. Saupe)

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# **STEPPE: Earth's Past, Our Future**

#### Dena M. Smith and David Iler

STEPPE, Geological Society of America, PO Box 9140, 3300 Penrose Place, Boulder, CO 80301. mail@steppe.org

It's no secret that the sciences are facing significant existential challenges today. But beyond the headlines and sound bites, there is a path forward that will place the geosciences, specifically the deep-time geosciences, on a more solid foundation for the future.

#### In a word, that path is called "collaboration."

The first step (pardon the pun) in this process, we believe, was the formation of STEPPE (www.steppe.org), an NSFfunded consortium charged with promoting multidisciplinary research and education on the Earth's deep-time sedimentary crust. Officially, STEPPE is an acronym that stands for Sedimentary Geology, Time, Environment, Paleontology, Paleoclimatology and Energy. The breadth of research (and needed research) in these areas is critical addressing future energy sources, global climate change and species adaption -vital issues for both science and society.

On a "people level," the STEPPE community includes biologists, sedimentologists, geochemists, geochronologists, modelers, stratigraphers, and many more specialized, dedicated scientists. In fact, nearly one-third of earth science faculty employed at U.S. universities is working within one of the STEPPE disciplines (AGI, 2010). However, despite this deep pool of talent, many of us have found that it can be difficult to find partners for large collaborative groups. There has been little connection between those conducting basic and applied research. Add to the mix limited and possibly dwindling funding resources, and we find that maintaining a research program today can be a steep challenge, especially for early career scientists, those who most need to pursue their research interests during the pivotal years ahead.

Responding to these stark realities, and offering a positive path forward for the community, STEPPE has been charged with supporting the establishment and maintenance of multidisciplinary research and education teams. The goal is that these groups will be able to tackle the Big Science questions through the creation of new collaborative tools; workforce development; outreach across campuses, generations and continents; and the ability to more effectively communicate the benefits of deep-time science to the public and politicians. STEPPE itself was born out of collaborative community workshops that brought together scientists from across the disciplines to discuss the big questions and how best to address them. Emerging from these meetings was the clear need for increased funding and broader coordination (Badgley et al., 2011; NRC, 2012, Parrish et al., 2012).

The STEPPE coordinating office is funded through a cooperative agreement from the NSF's Paleo Perspectives on Climate Change (P2C2) program. Initial funding is for three years (beginning in March 2013) and the funds from NSF support primary personnel and the majority of current STEPPE activities. STEPPE began with three consortium members: SEPM, Geological Society of America, and the Paleontological Society. But even before the change of the calendar marks STEPPE's second year, STEPPE has already added a new consortium member, the Geological Society of London, officially making STEPPE an international program anchored by some of the most prestigious geoscience organizations on the planet.

Behind the scenes, STEPPE is working hard to build partnerships with more industry and academic institutions, lending our grant-writing, online, organizational and communications skills to bring geoscientists together in new and exciting ways.

Although STEPPE has been around for a relatively short amount of time, much has been accomplished. The main focus areas have included the creation and maintenance of a website that serves as a central information and collaborative portal; the support of new research synergies; international travel grants for students to expand their research and personal horizons; and exciting education/outreach collaborative projects that bring the tools and benefits of deep-time research to a wider group of scientists, teachers and students.

#### STEPPE WEBSITE: AN INFORMATION GATEWAY

The STEPPE website serves as a central portal to information for the community. A variety of materials have been synthesized and made more easily accessible via the website. The most prominent have been a searchable database of funding and fellowship opportunities, an archive



Figure 1: 2014 STEPPE Interns. Picture clockwise from the upper left; Lindsay Bowman, Katie Nold, Erin Leckey and Wassim Benhallam.

of STEPPE-discipline white papers and workshop reports, and an events calendar gathering opportunities from around the world for geoscientists to connect, learn and share.

The funding and fellowship database provides information and links to opportunities that are available across the STEPPE disciplines and includes NSF programs from both inside and outside the Geosciences Directorate; from other government agencies; and several non-profits, many on the periphery of deep-time science, but excellent opportunities that many overlook. This database can be sorted based on due dates, discipline areas or granting agency and is kept up-to-date by the STEPPE team.

White papers and workshop reports have come from NSF and NRC

workshops, from funded Research Collaboration Networks (RCNs) and other gatherings in our field. Participants in these efforts can be assured that their hard work, findings and conclusions are now available to a wider audience and will not be forgotten. New materials are added on a regular basis.

The events calendar provides information about upcoming professional society meetings, workshops, webinars, educational opportunities, field trips and gatherings. It is international in scope. List and calendar views make it easy to search for upcoming events and the STEPPE team is always interested in learning about new events to include in the calendar.

In addition to serving as an information portal, the STEPPE

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website also includes novel content that is meant to not only inspire and inform community members, but also to bring the complex topics our community addresses down to the individual, personal level. Our Featured Researcher section, for example, highlights community members and their work. These prestigious deep-time researchers come from across the STEPPE disciplines. In addition to discussing their science, these individuals provide advice to early career scientists and address the dynamics of today's research environment.

Original content has also been posted through the STEPPE blog, written by STEPPE staff members, interns and student awardees. Posts from STEPPE interns have provided policy updates from Washington, D.C., new research findings, and presentations from events and workshops. Last year's STEPPE student travel grant awardees provided posts on their adventures from Mendoza, Argentina, where they presented their research to an international audience during the 4th International Palaeontological Congress. These posts radiate the enthusiasm and drive that our top early career scientists harbor, an inspiring affirmation of the future of our science. Finally, the STEPPE news digest includes links to current research, information and announcements.

The STEPPE website also includes opportunities for direct participation from community members in a neutral, supportive environment free from institutional constraints. STEPPE members can join to publicize research and collaborate with others. The online collaborative group feature (powered by the familiar and robust WordPress platform) is an outstanding resource created by the STEPPE team. Online collaborative groups

allow users to manage their multiinstitution projects through calendaring services, communication platforms, and document and file sharing. Additionally, collaborative groups can disseminate highlights from their projects through blogging and social media tools. This amazing resource is available and customizable for your research or lab group's needs, with STEPPE support to guide you.

#### **NEW RESEARCH SYNERGIES**

STEPPE supports new research collaboration through a variety of means, including funding to support workshops that bring together multidisciplinary groups to develop proposals for external funding agencies. STEPPE provides grants of up to \$15,000 to help set-up, organize and fund participation in the workshops. Successful workshop proposals link multiple domains that commonly

operate independently and focus on processes and prediction. Proposals can also focus on better methods of analysis and characterization that are linked to physical, chemical or biological processes. Thus far, STEPPE has funded a workshop, "Biological and Environmental Transitions During the Neoproterozoic and Paleozoic," organized by Dr. Sarah Pruss of Smith College in the spring of 2014 (http://steppe.org/wp-content/ uploads/2014/08/NSF-reports/ STEPPE\_Workshop\_Neoprot\_ Pz\_2014.pdf). STEPPE expects to be able to fund three to four workshops per year.

STEPPE also supports research through partnership with other groups and initiatives that are interested in community cyberinfrastructure needs. The STEPPE coordinating office is in the process of writing collaborative grants which facilitate and build capacity for meaningful work across the STEPPE discipline areas. Data repository and accessibility, crossplatform integration, modeling, and the development of new tools and user interfaces are all a part of these initiatives.

For already existing collaborative groups and funded RCNs, STEPPE has committed to serve as the online repository of all associated documents (white papers/reports, papers, etc.) and to provide continuing online virtual collaboration space for these groups when their project funding ends. Projects such as the NSF EarthCubefunded RCN, Cyberinfrastructure for the Paleogeosciences (C4P), and the geothermal-focused SedHeat, are working with STEPPE to build in a sustainability component for the longerterm life of their projects. This will allow these groups to continue their important work even after NSF funding has ended.



Figure 2: STEPPE student travel grant awardees at the 4th International Palaeontological Congress in Mendoza, Argentina.



Figure 3: Participants in the "Collaboration for Change: Fossil Plants and Ancient Climates" project collecting fossils at the Florissant Fossil Quarry, Colorado.

STEPPE works to support symposia, townhall meetings, special sessions and workshops at a variety of professional meeting venues. For example, the coordinating office organized a symposium of deep-time research presentations at the Society for the Advancement of Chicanos and Native Americans in the Sciences (SACNAS) annual meeting in Los Angeles in the fall of 2014; hosted a townhall meeting for the CP4 group at the GSA 2014 annual meeting in Vancouver; and organized and moderated an Earth Life Transition-themed session at the 2015 American Association for the Advancement of Science (AAAS) meeting in San Jose, Calif. STEPPE

will co-sponsor future workshops at the 2nd International Conference on Stratigraphy, the Paleontological Society's short course, and collectionsthemed symposia at the GSA 2015 annual meeting. STEPPE is eager to assist with deep-time sedimentary crust-themed events and opportunities and would be happy to discuss the possibility of co-hosting, sponsoring, and/or advertising your upcoming events.

#### EDUCATION & OUTREACH COLLABORATIVES

Collaboration that supports workforce development, education and outreach is another important facet of the STEPPE mission. STEPPE has made great strides in this area through collaboration with consortium members and partners from academic institutions across the country and the world. As a result, STEPPE has been able to initiate an internship program; support student researchers to participate in international conferences; and develop education and outreach programs focused on K-12 students and teachers.

STEPPE's founding consortium members contributed additional funding to STEPPE in support of the establishment of the STEPPE internship program. The first group of interns began in the summer of 2014 and consisted for four geology graduate

students (Figure 1). One intern was based at GSA's Washington, D.C. office and focused on public policy under the guidance of Kasey White. The other three interns were based at GSA headquarters and were focused on science communication and education/ outreach. They worked to expand all of the website features and collaborated on the development of the STEPPE online collaboration platform. A new call for summer 2015 STEPPE Interns has gone out and applications will be reviewed in early March. There are four internship positions available this year: a policy position based in Washington, D.C., a non-profit administrator, a communications project manager, and a science journalist/social media administrator (the latter three based in Boulder). STEPPE interns participate in the GSA annual meeting, giving presentations about the program and helping to man the STEPPE exhibit booth. This gives the interns an opportunity to interact with a diversity of STEPPE colleagues and to serve as peer mentors to other early career scientists, as well as interact with the exceptional staff at GSA headquarters.

STEPPE, GSA, SEPM, Paleontological Society, the Society for Vertebrate Paleontology and the paleobotanical section of the Botanical Society of America were successful in applying for NSF funding to support student travel to attend the 4th International Palaeontological Congress in Mendoza, Argentina in September 2014. Fifteen students were able to attend and present their research at this meeting (Figure 2). They wrote about the importance of this opportunity and their own experiences in several blog posts that are featured on the STEPPE website (http://steppe.org/category/ ipc4/). In addition, the STEPPE travel



Figure 4: The Colorado team at Geosciences Congressional Visits Day.

awardees authored a collaborative paper (Luque et al., 2015), published in GSA Today (January 2015) and other society venues such as The Stratigraphic Record (SEPM) and PRISCUM (Paleontological Society) describing their experiences.

This year, STEPPE is working with the American Geosciences Institute (AGI), GSA, the Paleontological Institute and SEPM to obtain travel funding for students to attend the 2nd International Congress on Stratigraphy (STRATI 2015) and participate in a workshop on archiving the stratigraphic record to be held in Graz, Austria this summer.

Finally, STEPPE has partnered with science educators, teachers, the NSF-funded FOSSIL (Fostering Opportunities for Synergistic STEM with Informal Learners) Project, and the National Park Service to provide earth science teachers with a fieldbased professional development opportunity. This multi-day program,

"Collaboration for Change: Fossil Plants and Ancient Climates," was created to provide middle school teachers with fossil-collecting experience, adaptable classroom modules consistent with the Next Generation Science Standards (NGSS), and the training and confidence to teach Earth Science Concepts to students from a variety of backgrounds (Figure 3). This successful program is now part of a larger, national project that is focused on middle school teachers and students from urban schools with high-underrepresented minority (URM) populations in Chicago, metro Denver, Philadelphia and the San Francisco Bay area. This multi-institution collaborative grant includes STEPPE, Bowling Green State University, Bryn Mawr, the University of California at Berkeley, the University of Colorado Boulder and the University of Illinois at Chicago and is now pending with the NSF's Directorate for Education and Human Resources.

Although this is a paleontology-

focused K-12 program, the same model that was used to develop this project is clearly transferable to other STEPPE discipline areas. With the NGSS' increased focus on earth system sciences, the need to develop materials that incorporate the breadth of STEPPE discipline content has only increased.

#### A VOICE FOR THE DEEP-TIME SEDIMENTARY CRUST COMMUNITY

At its core, STEPPE is charged with being a voice for the community and building connections between groups that are at the forefront of communicating science. Science advocacy through the STEPPE policy internship and associated blogs has allowed the coordinating office to keep the community informed regarding important policy decisions and to discuss the need to organize and advocate on behalf of all STEPPE disciplines at all levels. Last year, members of the STEPPE coordinating office participated in Geoscience Congressional Visits Day (Figure 4). The opportunity to speak to members of Congress and their staffers about the important work that is being accomplished by STEPPE scientists, and how our disciplines uniquely contribute to society today and into the future, is invaluable. It is clear that the survival of our disciplines and the maintenance of funding to support this important work are largely contingent upon our own ability to engage effectively on this larger national stage.

Further, STEPPE is working with our professional society consortium members to provide greater exposure to the important research that is being accomplished by members of the community and published in our society journals. Items for the STEPPE new digest and blogs are actively solicited and further highlighted through the consortium research (http://steppe.org/ consortium-news/) and publication sections (http://steppe.org/publications/) of the website.

In the future, the STEPPE office will work to coordinate with professional society journals, institutional press offices and individual researchers to more fully coordinate the messaging of STEPPE disciplinary science. Additionally, current research results and associated images will be made available to faculty and other educators for use in their classrooms, further demonstrating the timeliness and relevance of STEPPE disciplinary science to younger scientists, teachers, administrators.

#### THE FUTURE

Building collaboration and partnership is central to the mission of STEPPE. Bringing together professional societies, academic institutions, industry partners and government agencies allows for greater coordination and creativity to support the scientific needs of the diverse STEPPE research and education community. Currently funded NSF initiatives often provide tailored support to specific portions of the STEPPE community, but each is easily adaptable to suit the needs of other discipline areas. If you, or members of your group, are interested in adapting any STEPPE activities to meet the needs of your project or specific discipline area, be sure to get in touch with our office.

In its short life, STEPPE has focused on creating a diversity of programs, all in support of Big Science. The STEPPE coordinating office is working to build consortium membership and to diversify the services that are provided, while staying true to the mission of serving the deep-time sedimentary crust community. STEPPE plans increased partnerships with other NSF-funded offices and initiatives and to begin

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collaborating on projects to avoid duplication and provide opportunities for greater efficiency. Working together will allow the community to streamline resources and allow all partners to accomplish much more together than any would be able to accomplish alone. While still in its infancy, the STEPPE coordinating office is poised to become a dynamic hub where members of the sedimentary crust community can find resources and build connections to tackle the Big Science questions in new and exciting ways.

#### REFERENCES

- AGI, 2010. Directory of Geoscience Departments 2010. American Geological Institute, Alexandria, VA.
- DETELON SCIENCE PLAN (BADGLEY, C., BOTTJER, D., CLAPHAM, M., ERWIN, D., GINGERICH, P., KELLEY, P., KOCH, P., OLSZEWSKI, T., RAYMOND, A., AND SMITH, D). 2011. Deep time earth-life observatory network (DETELON) science plan. 32pp. http://steppe.org/wp-content/ uploads/2014/07/DETELON\_Science\_Plan\_ Brochure1.pdf
- LUQUE, J., AGIC, H., ANDERSON, E.P, DAHL, R., DONOVAN, M., FIELD, D.J., FRONIMOS, J.A., HODGES, M., MOTZ, G.J., RONEY, R., SAUPE, E., SHEFFIELD, S., TACKETT, L., TASHMAN, J., WAWRZYNIAK, Z. 2015. Diversity in all its forms: IPC4 as and invaluable opportunity for STEPPE grant recipients. GSA Today, ISSN: 1052-5173, pp. 24-25.
- NRC COMMITTEE ON NEW RESEARCH OPPORTUNITIES IN THE EARTH SCIENCES AT THE NATIONAL SCIENCE FOUNDATION (LAY T., BENDER ML., CARBOTTE S., FARLEY KA., LARSON, KM., LYONS T., MANGA M., MAO H-K, MONTAŃEZ IP., MONTGOMERY DR., OLSEN PE., OLSON PL., WIBERG PL. AND ZHANG D.). 2012. New Research Opportunities in the Earth Sciences. National Academies Press, 117 pp.
- TRANSITIONS WORKSHOP REPORT (PARRISH, J., CONVENOR &ORGANIZER). 2011,. Transitions. 62 pp. http://www.uidaho. edu/sci/geology/sgpworkshop

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#### **PRESIDENT'S COMMENTS**

SEPM = Society for Sedimentary Geology. For many members, especially ones who joined more recently, this peculiar mis-match must seem perplexing. So what's up with the acronym? The answer is an interesting bit of history that still resonates with issues swirling about in the present. It all started in the late 1920s with a mini-scientific revolution---the recognition that stratigraphy has real practical value for making predictions in petroleum systems. There was an explosion of interest in methods of stratigraphic correlation, in no small part because there was funding to support it. Two rather disparate disciplines quickly came to dominate in this research---micropaleontology and heavy mineral studies in sandstones. A new division within the American Association of Petroleum Geologists was established to represent the interests of this vibrant new community and the Society of Economic Paleontologists and Mineralogists (SEPM) was born. In other words, from the start, SEPM was a multi-disciplinary collaboration. The proliferation of papers that flowed from this new research area was too much for the AAPG Bulletin to absorb and soon enough SEPM had two new journals of its own, the Journal of Paleontology and the Journal of Sedimentary Petrology. Check out volume 1 of JSP, 1931, and you'll see the clear evidence of what was going on. Of the 11 research papers that year, several address heavy mineral studies, quite a narrow range of topics, overall. Also very strange by modern standards, all but two of the papers are by single authors, and none are by women. So clearly SEPM has changed a lot! But in other ways, SEPM and its journals remain very true to their roots. That first volume includes two papers on limestones, another on marine sediments, and one on clays---clear foreshadowing of the expansion in topical coverage that was to come. Very similar to the author mix we see today, volume

1 authors came mostly from universities, with one oil company, a mining company, and two government agencies represented. Three authors in volume 1 were from outside of the US, setting the stage for the international authorship in our journals and in SEPM membership today. A charming editorial by Henry B. Milne (v. 1 p. 66-72) describes the economic and academic currents that influenced the formation of SEPM and its journals and the rather bold aspirations for expanding relevance that our founders envisioned. He noted that sedimentary geology had an inherent tendency to refer broadly across "sister sciences" and to "gain enormously" thereby. Referring to his colleagues of the time, he said "...their active interest extends to everything pertaining to sediments....."

A concern that I occasionally hear expressed is that, today, sedimentary geology has diversified to such a degree that some practitioners no longer consider themselves to be the "sedimentologists" or "stratigraphers" of SEPM's historical focus, but rather, identify as "paleooceanographers" or "paleoclimatologists", "marine geochemists", etc. There's a worry out there that perhaps SEPM cannot represent the interests of this expanded topical range. This concern isn't exactly new: even in 1931 Milne responded to concerns about continuing relevance saying, essentially, that the topic was as broad as the people doing it chose to make it. I believe that is still true, and SEPM continues to define itself as serving any and all of the fields devoted to understanding the sedimentary histories of planets. As Milner said, the goal has been, "...to foster research in the subject in every possible direction, to help the interpretation of academic thought, that it may be adequately translated into practical politics....'

Eighty-plus years on from our founding, we have, in fact, realized the aspirations of 1931 to an amazing degree, with the consequence that we now find a wonderfully diversified field of sedimentary geology positioned at the very nexus of the key societal issues of our day--- energy and environment. Let's embrace this position and use SEPM to its full advantage!

So, how can you make SEPM work for you and your own role in this great mission? It's easier than you might think. Is there a topic you want to see represented at a meeting? SEPM assigns its own technical chairs at the annual meetings of AAPG, GSA, and AGU, and through its sections, at other regional meetings. If you have a topic and a potential group of presenters just let SEPM headquarters know and the technical chair will eagerly await your suggestions. Their main job is to say "yes" and to arrange, advertise, and schedule your session. If you want something even larger and more focused the Research Councilor on the SEPM Council is tasked with organizing research symposia or a research conference. If you want an informal setting for a topic – form an SEPM Research Group. At a fundamental level, enthusiasm for a topic is really all that it takes. It's always been that way at SEPM----if it concerns the sedimentary rock record, we're for it! That's why the name was ultimately changed to Society for Sedimentary Geology.

This this is my last column before turning over the helm to in-coming president Janok Bhattacharya. I can't believe how fast the year has gone by---being SEPM president seems to make time speed up, perhaps because it's always a pleasure to work with the SEPM community. Please don't forget to sign up for the SEPM business luncheon at the upcoming annual meeting in Denver---the lunch is a great place to visit with friends and colleagues, hear some short reports on SEPM activities, and enjoy a presentation by the invited speaker. This year attendees will get to hear from mudrock guru Joe Macquaker. I hope to see you there!

Kitty Milliken, SEPM President



SEPM Society for Sedimentary Geology "Bringing the Sedimentary Geology Community Together" www.sepm.org



### SEDIMENTARY GEOLOGY DIVISION

Sedimentary greetings for 2015! We want to bring you up to date on happenings of the GSA's Sedimentary Geology Division (SGD) during 2014. Our current membership is ~1760, which makes SGD the 4th largest of the GSA divisions. We want to be even **bigger and better**, so please encourage other sedimentary colleagues and friends to join! We are happy to report strong growth in our student numbers and look forward to more student involvement and participation in our activities as we outline below.

## 2014 GSA ANNUAL MEETING RECAP

The SGD had a strong presence at 2014 Annual GSA meeting in Vancouver, British Columbia where we sponsored 28 topical sessions, 7 short courses, and I field trip. We had a wonderful turnout of over 40

papers in the SGD student poster session.

This year we had the best location in the convention center for our annual Seds & Suds icebreaker. We enjoyed our food, drink, and conversations with a gorgeous glassed view of the Vancouver waterfront and lights. We reviewed the progress of the STEPPE (Sedimentary Geology, Time, Environment, Paleoclimatology, Paleontology, Energy) NSF-supported consortium program (steppe. org) presented by executive director **Dena** Smith, and received words of encouragement from NSF Sedimentary Geology and Paleobiology program director Chris Liu. We also highlighted new directions of the NSF EarthCube initiative (earthcube.org) that looks to transform geoscience with data sharing through a cyberinfrastructure to do better science in new and unprecedented ways. It was terrific to have a great mix of both established and new faces at our gathering

### JOINT SEDIMENTARY GEOLOGY/ LIMNOLOGY BUSINESS MEETING AND AWARDS CEREMONY

The Joint Sedimentary Geology and Limno-geology Divisions Business Meeting and Awards Reception welcomed free food and drink (although we almost missed out on the drink as the keg arrived very late!) in collaboration with the Limnology Division.



Seds and Suds at the Annual GSA meeting Vancouver 2014



Chris Paola (right), 2014 Lawrence L. Sloss Award winner with citationist Dave Mohrig (left) and SGD Chair Margie Chan (center).

**Chris Paola**, of University Of Minnesota was honored as the 15th recipient of the Laurence L. Sloss Award. Dr. Paola is an international expert in fluid dynamics and physical processes of sedimentation. He has been a leader in studies of basin filling and controls on physical stratigraphy, dynamics of braided streams including vegetation interaction, particle fractionation in depositional systems, bedform dynamics, as well as autogenic processes and self-organization in landscape evolution. Dr. Paola is well known for his innovations with "Jurassic Tank", leadership in the sedimentary community, and mentoring of graduate students.

**Kelsi Ustipak** is our 2014 Student Research Award Recipient. She is a M.S. student at the University of Texas at Austin, studying with Dave Mohrig. Her project "Experiment to outcrop comparison of grain size distribution in transitional sediment gravity flow deposits in deep water" involves experiments on rheology of multiple surges with a single flow to produce banding in sediment gravity flows. Kelsi has literally jumped on board to serve as the first student representative on the SGD leadership and is simultaneously serving on the GSA student council. Thank you Kelsi for all your participation that is adding to fresh ideas to SGD and GSA!



Kelsi Ustipak (right) was this year's winner of the SGD Student Research Grant.

**SEPM-SGD Student poster winners** - The quality of student posters this year was exceptional and the judges were amazed at the high level of research combined with professional display that were presented by so many (over 40) poster participants. This year's 2014 SEPM-SGD "Sedimentary Geology: The Now and the Next Generations of Scientists" student poster winners were:

- Stokes, Maya F., Dwyer, S.M., and Nittrouer, J., "Growth faults and de-watering structures in prodelta sedimentary deposits, Western Irish Namurian Basin"
- Goers, Alexa, Rankey, G., Hasiotis, S.T, and Herbst, S.R., "Paleogeomorphic controls on ichnology and sedimentology of carbonate shorefaces: Pleistocene Crooked-Acklins Platform, Southern Bahamas"
- Mahon, Robert C., Shaw, J, Barnhart, K.R., Hobley, D. E.J.; McElroy, B., "Quantifying the completeness of shoreline trajectories in the stratigraphic record"
- Winkeler, Tyler S., van Hengstum, P.J., Schwehr, K.A., Reibenspies, J.H.; "Deglacial hydrological condition in tow underwater caves flooded by the western Floridian Aquifer"

**Randolph Williams** of the University of Wisconsin-Madison was selected for the 2014 Stephen E. Laubach Structural Diagenesis Award given by Structural Geology & Tectonics (SGT) division this year.

### COMING UP ON THE HORIZON

**Be sure to join us** for the 126th GSA Annual Meeting in Baltimore MD, October 2015. This year will celebrate the 200th anniversary of William Smith's map that changed the world. There will be a number of special events that will feature Smith's impact in many facets of geology. A Smith re-enactor and a special GSA Pardee session on Smith's contributions are just a few of the highlights.

This year's SGD meeting format will be NEW and DIFFERENT! We will combine the Seds and Suds and the awards reception into a single event on Tuesday night of the GSA meeting so it won't conflict with your alumni events on Monday evening. We will complete business early, with a beer in hand, and then segue into Seds and Suds with free food. We will feature a special activity called "BYE" (Bring Your Example), where you are invited to bring a small, single puzzling, engaging sedimentary-related or geo-art picture (e.g., max 18x18" or min 8 x 10" size) for us to informally walk around, look at, discuss, and hypothesize about. BYE should have twitter-style captions -nothing extensive. This is a great opportunity to get feedback on a baffling problem or something you want input on. We hope to foster fun student-professional input through this BYE activity, so don't miss it!



Let's talk about this "BYE" – What is this?? Is it a weird silica cementation pattern?

SGD is initiating a yearly postcard tradition, with the first one of the Jurassic Navajo Sandstone "the Wave" of Northern Arizona shown below. Watch for upcoming ones where BYE winners might get theirs published on upcoming postcards.



Other items SGD is looking forward to in the future:

- I. More international partnerships as GSA recently signed a commitment agreement with the European Geosciences Union (EGU).
- SEPM accepts proposals for funding to perhaps aid in SGD participation (e.g., student travel grants) to EGU meetings, to foster cooperation.

### FINALLY

**Get involved!** We could use your help and ideas in shaping SGD. You can be a judge, serve on a committee, help with our annual GSA events, or serve as an SGD officer.

Thank you to many who served on our 2014 committees:

Sloss Award Committee: Linda Kah, Ray Ingersoll,

- Janok Bhattacharya, Hugh Jenkyns, Maya Elrick, John Grotzinger, Michelle Kominz
- <u>Stephen E. Laubach Structural Diagenesis Research</u> <u>Award Committee</u>: Brenda Beitler Bowen, Ben van der Pluijm, Peter Eichhubl, Linda C. Kah
- JTPC Reps: Greg Ludvigson and Ed Simpson Council Liaison: Neil Fishman (Rocky Mountain

Affiliation)

### 2014 SGD OFFICERS:

Chair – **Margie Chan** Vice Chair – **Kate Giles** Secretary Treasurer – **Linda Kah** Student Representative – **Kelsi Ustipak** Webmaster – **Kelly Dilliard** 

## NEWLY ELECTED COUNCIL MEMBERS

The results of the SEPM Council election have been finalized and the newly elected SEPM Council members are listed below. These new Councilors will officially take office at the SEPM Annual Meeting in conjunction with the AAPG ACE meeting in Denver, CO in 2015.

#### President-Elect: Vitor Abreu, vitor.abreu@exxonmobil.com, (713) 431-4063

Vitor Abreu, a Senior Technical Consultant at Exxonmobil Upstream Research Company, is a longtime active member of SEPM, serving as SEPM Research Councilor (2004-2006), as well as organizing and chairing technical sessions at annual meetings and serving on the Annual Meeting Committee. More than 1000 students from around the globe have taken his SEPM short course on "Sequence Stratigraphy for Graduate Students" since 2000. This course has been taught at the US annual meeting, international meetings, at universities and geological societies around the world continuously since it was first offered. Vitor is the chief editor of SEPM's "Sequence Stratigraphy of Siliciclastic Systems – Atlas of Exercises", which has sold almost 3000 copies since publication in 2010. His Ph.D. work also had a strong impact on the SEPM Special Publication 60, where he documented glacial events in the Cenozoic and Upper Cretaceous and their correlation with sequence stratigraphic surfaces globally.

#### Paleontology Councilor: David Bottjer, dbottjer@usc.edu, (213) 740-6100

David J. Bottjer, a professor at University of Southern California, has been an active member of SEPM since 1974. He has served SEPM as Editor of Palaios (1989-1996) as well as being a member of numerous SEPM committees, including present membership on the Moore and Twenhofel Medal selection committees. He has been President of the Pacific Section SEPM (2001-2002) and the Paleontological Society (2004-2006), and is Editor-in-Chief of Palaeogeography, Palaeoclimatology, Palaeoecology (2000-). He is a Fellow of the Geological Society of America (1986), the American Association for the Advancement of Science (1999), and the Paleontological Society (2007), as well as an Honorary Member of Pacific Section SEPM (2014). In 2014 he was the recipient of the Moore Medal from SEPM.

#### Sedimentology Councilor: Michael Blum, mblum@ku.edu, (785)-864-4974

Mike Blum, a professor at University of Kansas, has been an SEPM member since 1988. He has previously served as Associate Editor for the Journal of Sedimentary Research, and as President of the Gulf Coast Section SEPM. He served as convener of the 7th International Conference on Fluvial Sedimentology in Lincoln, Nebraska in 2001, has organized or co-organized numerous sessions at national and international conferences, was a member of the NSF Margins Source-to-Sink Steering Committee, has served on numerous NSF and other review panels. Mike has previously held positions at Southern Illinois, University of Nebraska, Louisiana State University, and Exxonmobil Upstream Research. He is also a member of GSA, IAS, and AGU, and is currently planning to co-organize and convene an SEPM Research Conference on Deltas.

#### Student Councilor: Hannah Hilbert-Wolf, hilbertwolf@gmail.com, No phone listed

Hannah L. Hilbert-Wolf, a PhD candidate at James Cook University (Australia), has been a student member of SEPM since 2012. She is also a member of the GSA, SVP, AAPG, IAS, SEG, AWG, AAAS, Sigma Xi, and NSGT.

Hannah received her BA degree, with distinction, in Geology from Carleton College (USA) in 2012. She is currently studying sedimentology, geochronology, and paleoseismicity under Dr. E. Roberts and Dr. P. Dirks. Her current research focuses on reconstructing the history of an important segment of the East African Rift System in Tanzania, through the development of a novel approach to basin analysis. Hannah has also worked on sedimentology research projects in Utah, Alaska, and South Africa. In addition to assisting the teaching of sedimentology classes, labs and fieldtrips, Hannah is a volunteer tutor for young aboriginal students, and has served as a Science Ambassador for the Queensland Division of the Academy of Technological Sciences and Engineering. She has recently received a grant from the AAPG to support her PhD research, and is an alumnus of the SEG/ ExxonMobil Student Education Program and the International University Consortium in Earth Science Summer School.

#### PALAIOS Co-Editor: Gabriela Mángano, gabriela.mangano@usask.ca, (306) 966-5725

Gabriela Mángano, a professor at the University of Saskatchewan, received her degree in Geology at the University of Buenos Aires (Argentina) and got her PhD at the same institution (1992). After finishing a degree in Philosophy, specializing in Philosophy of Sciences (University of Tucuman, Argentina, 1994), she went to the Kansas Geological Survey as a postdoctoral fellow (1994-1998). She returned to Argentina in 1998 to take a position as Researcher at the Argentinean Research Council until 2004 when she arrived at Saskatchewan. She has been part of the Editorial Board of PALAIOS since 2004, being also a member of the Editorial Board of other paleontological journals, such as Journal of Paleontology, Paleontologia Electronica, Ameghiniana and Revista Brasileira de Paleontologia. She has recently joined the Scientific Board of the UNESCO International Geoscience Program (IGCP). Gabriela has been involved in the organization of many scientific meetings, including the last International Palaeontological Congress that took place in Mendoza, Argentina earlier this year. She has supervised many postdoctoral PhD and MSc students. Gabriela looks forward to the opportunity of serving the paleontological community as Co-Editor of Palaios.

Note that only Full Members of SEPM are eligible to vote or hold office, so if you did not receive an email notice or printed ballot for the election, you may be an Associate Member or Student Member. Requirements to be a Full Member are at least 3 years of technical experience after a bachelor's degree (or equivalent) and the names and contact information of two professional references. If you want to consider becoming a Full (voting) member of the society please contact SEPM Headquarters (hharper@sepm.org).

## UPCOMING SEPM RESEARCH CONFERENCES

**Ist Eric Mountjoy Research Conference** focusing on Carbonate Reservoirs. August, 2015 in Banff, Alberta, Canada. A joint conference by SEPM and the Canadian Society of Petroleum Geologists (CSPG). Details at CSPG website (www.cspg.org)

**2nd International Congress on Stratigraphy – STRATI 2015**, July, 2015 in Graz, Austria. Co-sponsored by the International Commission on Stratigraphy, the University of Graz, Austria and SEPM Society for Sedimentary Geology. More at http://strati2015.uni-graz.at/

Gulf Coast Section of SEPM – Bob F. Perkins Conference on **Petroleum Systems in "Rift" Basins**. December 13-16. OMNI Houston Westside, Houston, Texas. http://www.gcssepm.org/

"Mudstone Diagenesis" Conference is in the final planning stages for October, 2016 in Santa Fe, NM. This conference focusing on fine grained rocks and their properties is being organized by SEPM and AAPG. Conveners: Wayne Camp, Neil Fishman, Paul Hackley, Kitty Milliken and Joe Macquaker.

"Multi-scale analysis of deep-water depositional systems; insights from bathymetric, shallow seismic and outcrop data" to be held in the Karoo Basin area of South Africa in September, 2016, scheduled near the International Geological Congress in Cape Town, SA. Conveners: Steve Flint, Steve Hubbard, Christopher Aiden-Lee Jackson, and Bradford Prather.

**"Oceanic Anoxic Events"** Conference is being planned for November, 2016 in Austin, TX. Conveners: Rob Forkner, Charles Kerans, Benjamin Gill and Gianluca Frijia.

If you are considering a research conference within the realm of sedimentary geology be sure to consider working or partnering with SEPM Society for Sedimentary Geology.



## SEPM EVENTS AT THE AAPG ACE & SEPM ANNUAL MEETING

#### (Register at http://ace.aapg.org/2015)

#### **SEPM Short Courses**

- SC 4 Sequence-Stratigraphic Analysis of Mudstones: Key to Paleoclimate Archives, Subsurface Fluid Flow, and Hydrocarbon Source. Date: Saturday, May 30
- SC 8 Sequence Stratigraphy for Graduate Students. Dates: Saturday and Sunday, May 30-31
- SC 14 Seismic Geomorphology and Seismic Stratigraphy: Extracting Geologic Insights from 3D Seismic. Data. Date: Sunday, May 31
- SC 15 Microbialites and Lacustrine Depositional Systems. Date: Sunday, May 31
- SC 18 Mudrock Petrology and Pore-Scale Imaging. Date: Thursday, June 4
- FT 2 Paleontology and Volcanic Setting of the Florissant Fossil Beds. Date: Saturday, May 30, 7:00 a.m. - 7:00 p.m.

#### **SEPM** Field Trips

- FT 6 Geology of Exposures along the Rocky Mountain Front Range, Morrison to Golden, Colorado, Including Stratigraphy, Environments of Deposition, Structure, Paleontology and Economic Geology. Date: Sunday, May 31, 8:00 a.m. – 5:00 p.m.
- FT 7 Reservoirs and Traps of the Laramide Rockies Petroleum System. AAPG Student Chapter/SEPM Student Field Trip. Dates: Wednesday, June, 3, 2:30 p.m. Friday, June 5, 8:00 p.m.
- FT 8 Wasatch-Green River Fluvial-Lacustrine Field Trip, Piceance and Uinta Basins, Colorado and Utah. Dates: Wednesday, June 3, 3:30 p.m. – Sunday, June 7, 3:30 p.m.
- FT 11 From Seaways to Gasways: The last 100 million years in the Denver Basin. Dates: Thursday, June 4, 8:00 a.m. 5:00 p.m.
- FT 14 Mechanisms of Petroleum Generation: Geochemical Field Trip & Lab Demonstration Focusing On the Green River Petroleum System, Uinta Basin, Utah. Dates: Thursday, 4 June, 8:00 a.m. – Sunday, June 7, 4:00 p.m.

#### SEPM Special Activities (in addition to the SEPM sponsored Technical Sessions)

- Sunday: Ice Breaker, 5:00 p.m. 7:30 p.m., SEPM Booth, Exhibit Hall
- Monday: SEPM Research Symposium Post Session (All day)
  - AAPG/SEPM Student Reception, 6:00 p.m. 8:00 p.m., Hyatt Regency
  - SEPM Research Groups, 7:00 p.m. 10:00 p.m., Grand Hyatt
- Tuesday: SEPM Research Symposium Oral Sessions (All Day)
  - SEPM Luncheon, 12:00 p.m. 1:00 p.m. Joe Macquaker –
     "Diagensis: The underappreciated factor controlling mudstone variability..."
  - SEPM President's Reception and Awards Ceremony, 7:00 p.m. 9:00 p.m., Grand Hyatt.