

# **34th Annual GCSSEPM Foundation Perkins-Rosen Conference 2015**

Petroleum Systems in “Rift” Basins

Houston, Texas, USA  
13-16 December 2015

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# Petroleum Systems in “Rift” Basins

## 34th Annual Gulf Coast Section SEPM Foundation Perkins-Rosen Research Conference

2015

### Program

#### Sunday, December 13

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4:00–6:00 p.m. Registration and refreshments (by Texas Ballroom: Most activities, including all talks and poster sessions, will take place in the Texas Ballroom. Registration will be by the Ballroom entrance.)

#### Monday, December 14

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7:00 a.m. Continuous registration (coffee will be available)  
7:45 a.m. Welcome remarks, Tony D’Agostino (Chairman of the Board of Trustees, GCSSEPM Foundation)  
8:00 a.m. Introduction to the Conference, James Coleman (Conference Co-Convenor)

#### Session 1: Eastern United States Late Triassic–Early Jurassic Rift Basins

8:15 a.m. Introduction: Paul J. Post, James L. Coleman, Jr., Session Co-Chairs

8:20 a.m. *Mesozoic Rift Basins of the U.S. Central Atlantic Offshore: Comparisons with Onshore Basins, Analysis, and Potential Petroleum Prospectivity* ..... 1  
**Post, Paul J.; and Coleman, James L., Jr.**

9:05 a.m. *Assessment of the Oil and Natural Gas Potential of the East Coast Mesozoic Synrift Basins, Onshore and State Waters of the United States* ..... 69  
**Coleman, James L., Jr.; Milici, Robert C.; and Post, Paul J.**

9:35–10:05 a.m. Coffee Break

10:05 a.m. *Geology and Hydrocarbon Potential of the Hartford-Deerfield Basin, Connecticut and Massachusetts* ..... 132  
**Coleman, James L., Jr.**

10:35 a.m. *Triassic Taylorsville Basin, Virginia, USA: Comparative Thermal History and Organic Facies Within the Early Mesozoic Eastern North American Lacustrine Rift Basin System* ..... 147  
**Malinconico, MaryAnn Love**

11:05 a.m. *Geology and Hydrocarbon Potential of the Richmond Basin, Virginia* ..... 174  
**Milici, Robert C.; and Coleman, James L., Jr.**

**11:35 a.m.**     *Geology and Hydrocarbon Potential of the Taylorsville Basin, Virginia and Maryland* .....188  
                  **Milici, Robert C.; and Coleman, James L., Jr.**

12:15–1:35 p.m. Lunch

## **Session 2: Continuation of Eastern North American Mesozoic, Paleozoic, and Proterozoic Rifts**

1:25 p.m. Introduction: Tina Roberts-Ashby and David E. Brown, Session Co-Chairs

**1:30 p.m.**     *Mesozoic Rift Basins—Onshore North Carolina and South-Central Virginia, U.S.A.—Deep River and Dan River: Danville Total Petroleum Systems and Assessment Units for Continuous Gas Accumulation, and the Cumberland-Marlboro “Basin,” North Carolina* .....200  
                  **Reid, Jeffrey C.**

**2:00 p.m.**     *Lacustrine Source Rock Potential in the Middle Triassic–Early Jurassic Chignecto Subbasin, Fundy Basin, Offshore Eastern Canada* .....217  
                  **Brown, David E.**

**2:30 p.m.**     *Structural Evolution and Petroleum Potential of a Cambrian Intracratonic Rift System—Mississippi Valley Graben, Rough Creek Graben, and Rome Trough of Kentucky, USA* .....218  
                  **Hickman, John B.; and Harris, David C.**

3:00 p.m.       Coffee Break

## **Session 3: Continuation of Eastern North American Rifts and Global Rift Systems**

**3:30 p.m.**     *Examination of the Reelfoot Rift Petroleum System, South-Central United States, and the Elements that Remain for Potential Exploration and Development* .....243  
                  **Coleman, James L., Jr.; and Pratt, Thomas L.**

**4:00 p.m.**     *Regional Rift Structure of the Western Black Sea Basin: Map-View Kinematics* .....263  
                  **Tari, Gabor; Fallah, Mohammad; Kosi, Walter; Schleder, Zsolt; Turi, Valentin; and Krezsek, Csaba**

*Regional Structure of the Western Black Sea Basin: Constraints from Cross-Section Balancing* .287  
**Schleder, Zsolt; Krezsek, Csaba; Turi, Valentin; Tari, Gabor; Kosi, Walter; and Fallah, Mohammad**

(Both of the above papers will be presented by Paul Post.)

**4:30 p.m.**     *Sedimentologic Characterization of Postrift Depositional Systems (Tithonian to Albian) from DSDP Leg 41, Site 370 and DSDP Leg 50, Site 416, Deep Water Offshore Morocco* .....299  
                  **Zarra, Larry; Barrie, Gemma M.; and Oppert, Shauna K.**

5:15–8:00 p.m. Refreshments and poster sessions (meet the authors).

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7:15 a.m. Continuous registration (coffee will be available)

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8:00 a.m. Introduction: Harry Doust and Suzanne E. Beglinger, Session Co-Chairs

8:05 a.m. *Rift Basin Evolution and Petroleum System Development* .....337  
**Doust, Harry**

8:35 a.m. *Systematic Analog Comparison to Identify Potential New Exploration Opportunities in the Gabon Coastal Basin—4 Years Later* .....343  
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**Paton, Doug; Norcliffe, J.; Hodgson, N.; and Markwick, P.**

9:35–9:55 a.m. Coffee Break

## Session 5: Transform and Transtensional Rift Systems–1

10:00 a.m. Introduction: Michal Nemčok and Donald Gautier, Session Co-Chairs

10:05 a.m. *Lower Crust Ductility Patterns Associated with Transform Margins* .....360  
**Henk, Andreas; and Nemčok, Michal**

10:35 a.m. *Los Angeles Basin: A Tectonically Complex Rift with Exceptionally Rich Petroleum Concentrations* .....361  
**Gautier, Donald**

11:05 a.m. *Is the Black Sea Really a Back-Arc Basin?* .....376  
**Tari, Gabor**

(The above paper will be presented by Paul Post.)

11:35 a.m. *Geology and Hydrocarbon Potential of the Dead Sea Rift Basins of Israel and Jordan* .....385  
**Coleman, James L., Jr.; and ten Brink, Uri S.**

12:15–1:25 p.m. Lunch

## Session 6: Transform and Transtensional Rift Systems–2

1:25 p.m. Introduction: William Bosworth and Olu S. Adegoke, Session Co-Chairs

1:30 p.m. *Petroleum Systems Asymmetry Across the South Atlantic Equatorial Margins* .....409  
**Dickson, William; Schiefelbein, Craig; Odegard, Mark; and Zumberge, John**

2:00 p.m. *Transform Margin Rift Architecture: An Example from the Brazilian Equatorial Margin* .....425  
**Krueger, Ana; Casey, Katya; Burke, Kevin; Murphy, Mike; and de Matos, Renato Darros**

**2:30 p.m.**      *Jurassic and Cretaceous Tectonic Evolution of the Demerara Plateau—Implications for South Atlantic Opening* .....443  
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### **Session 7: Other African Rifts**

3:25 p.m.      Introduction: William Bosworth and Olu S. Adegoke, Session Co-Chairs

**3:30 p.m.**      *Jurassic Rift Initiation Source Rock in the Western Desert, Egypt—Relevance to Exploration in other Continental Rift Systems* .....454  
**Bosworth, William; Abrams, Michael; Drummond, Michael; and Thompson, Melissa**

**4:00 p.m.**      *Nigeria's Frontier Basins—Unrealized Rift System Hydrocarbon Potential* .....481  
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**4:30 p.m.**      *Searching High and Low: Correlating Shallow (Drift Phase) and Deep (Rift Phase) Structural Trends with Surface and Subsurface Geochemistry in the Niger Delta, West Africa* .....528  
**Dickson, William; and Schiefelbein, Craig**

5:15–8:00 p.m. Refreshments and poster sessions (meet the authors). Remove posters at 8:00 p.m.

## **Wednesday, December 16**

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**7:30 a.m.**      **Continuous registration (coffee will be available)**

### **Session 8: Arctic Rift Basins**

8:00 a.m.      Introduction: David Houseknecht and Brian Horn, Session Co-Chairs

**8:05 a.m.**      *Late Jurassic–Early Cretaceous Inversion of Rift Structures, and Linkage of Petroleum System Elements across Postrift Unconformity, U.S. Chukchi Shelf, Arctic Alaska* .....537  
**Houseknecht, David W.; and Connors, Christopher D.**

**8:35 a.m.**      *Petroleum Systems of Frontier Siberian Arctic Basins* .....552  
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**9:05 a.m.**      *Mississippian–Mesozoic Evolution of the Dinkum Graben System, Central and Eastern Beaufort Shelf of Alaska* .....553  
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9:35 a.m.      Coffee Break

## Session 9: South Atlantic Rift Basins–1

10:00 a.m.	Introduction: Webster U. Mohriak and Mark Rowan, Session Co-Chairs	
<b>10:05 a.m.</b>	<i>Seismic Volcano-Stratigraphy in the Basaltic Complexes on the Rifted Margin of Pelotas Basin, Southeast Brazil</i> .....554 <b>Gordon, Andres Cesar; and Mohriak, Webster U.</b>	
<b>10:35 a.m.</b>	<i>Continental Margin Formation and Creation of “Lateral Tectonic Accommodation Space” for Salt Deposition, Campos and Santos Basins, São Paulo Plateau, Brazil</i> .....584 <b>Pindell, James; Graham, Rod; Bellingham, Paul; McDermott, Ken; Kaminski, Marek; Horn, Brian W.; and Paton, Doug</b>	
<b>11:05 a.m.</b>	<i>Rift Basins in the Red Sea and Gulf of Aden: Analogies with the Southern South Atlantic</i> .....586 <b>Mohriak, Webster U.</b>	
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12:15–1:25 p.m. Lunch

## Session 10: South Atlantic Rift Basins–2

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<b>3:30 p.m.</b>	<i>Using Geochemical Data from Well Samples to Reconstruct Paleoenvironments of the Central Lake Albert Basin, Uganda</i> .....722 <b>Sserubiri, Tonny; and Scholz, A. Christopher</b>	

## Other Included Papers

As a result of changes in corporate policies, the authors of the following accepted papers were not granted permission to attend the conference. The papers are included in our Proceedings.

- Role of Climate and Active Rifting in Sedimentation on the Shore Lake Edward-George Basin, Albertine Graben, Uganda* .....737  
**Tumushabe, Wilson M.; Lukaye, Joshua; Sserubiri, Tonny; and Nicholas, Christopher J.**
- Developing a Coherent Stratigraphic Scheme of the Albertine Graben, East Africa* .....747  
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- Controls on the Stratigraphic Architecture of Fluvial Sandstone Reservoirs, Gulf of Thailand* ..757  
**Ahmad, Mirza Naseer; Lambiase, Joseph J.; Do, Toan Manh; and Tran, Oanh Thi**

## Posters Only

- Noble Gas Isotopes, Major Element Isotopes, and Gas Composition from the Cumnock Formation: Sanford Subbasin, Deep River Basin, Lee County, North Carolina, U.S.A.* .....763  
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## Standby Presentations

Because of the number of authors who have not been able to attend the conference, we have arranged for possible replacement talks. Abstracts of these potential presentations are listed below and included in our Proceedings.

- Airborne Gravity Gradiometer Surveying of Petroleum Systems under Lake Tanganyika, Tanzania* .....764  
**Roberts, Doug; Christensen, Asbjorn Norlund; Chowdhury, Priyanka Roy; Lowe, Sharon J.; and Schwartz, David**
- Reservoir Characterization and Distribution in Rift and Synrift Basin Fill—Examples from the Triassic Fundy Basin and Orpheus Graben of the Scotian Margin* .....765  
**O'Connor, Darragh; and Wach, Grant**

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