

CBTH PHASE IV

Caribbean Basins, Tectonics, & Hydrocarbons

NEWSLETTER FEBRUARY 2016 VOL.11 NO.1

In this issue...

What's New.....	1
Graduating & New Students.....	3
Recent & Upcoming Meetings.....	6
Recent & Upcoming Publications.....	11
Awards.....	14
Sponsors.....	15

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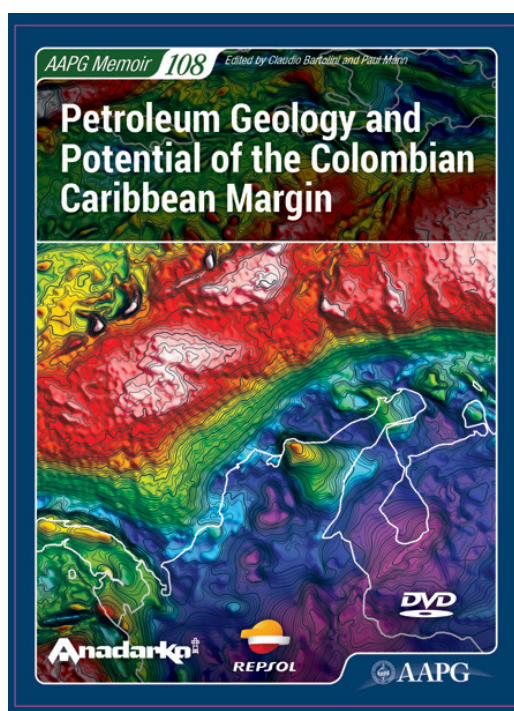
What's New with the CBTH Project in Houston, Texas and Stavanger, Norway

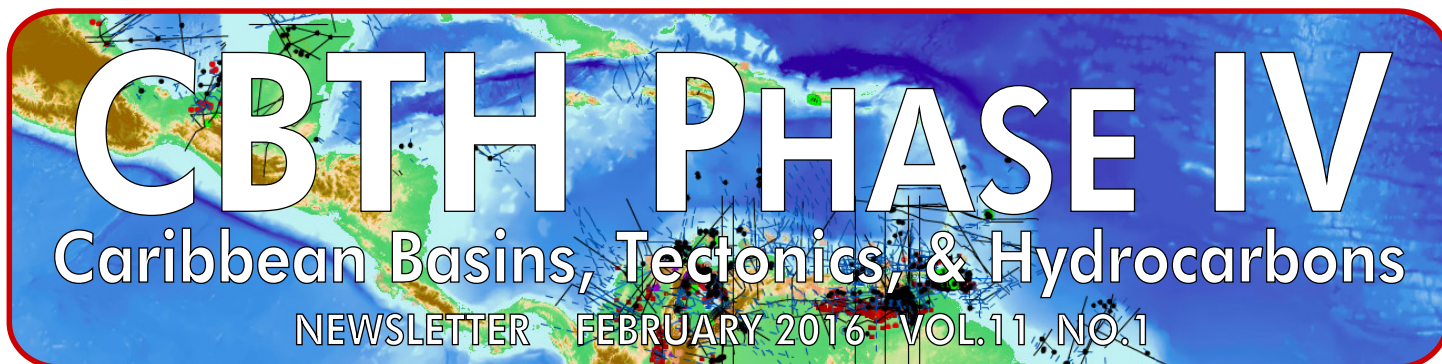
Upcoming Sponsor Web & GIS Updates

On February 15, we will be re-launching our GeoMapper application for project sponsors, which will include all data from Phase I to present. This new application uses the latest version ArcGIS Online to present CBTH data in a user-friendly web-based mapping interface. On February 29, we will provide an updated GIS database for on- and offshore Mexico, as well as a compilation map of continent-ocean boundaries in the CBTH study area. Our database now extends from the Gulf of Mexico to the East Africa margin.

AAPG Memoir 108 Now Available

AAPG Memoir 108: Petroleum Geology and Potential of the Colombian Caribbean Margin, co-edited by Dr. Paul Mann, can now be ordered at the AAPG Books website. 9 of the 27 chapters were completed by CBTH-supported researchers. # for more details.





What's New

Nine CBTH Publications on Nicaraguan Rise to be submitted to AAPG Bulletin

On March 1, all papers from the AAPG Bulletin special issue titled "Geologic and geophysical synthesis of the Nicaraguan Rise and western Caribbean: A framework for understanding its petroleum potential" (editor: P. Mann) will be submitted for review and available for sponsors following the review process. Seven of the nine papers are from CBTH-supported research and include studies of gravity and magnetic data, interpretations of seismic data tied to wells, and integration with tectonic models. The last regional synthesis of the Nicaraguan Rise was completed in 1975.

CBTH Personnel Available for Office Visits

Students and researchers at the CBTH Project are available for office visits in the greater Houston area to current and prospective sponsors in order to present recent and upcoming research. For sponsors located in areas outside of Houston we can arrange video conferences. Please contact Dr. Paul Mann if you are interested in scheduling a presentation time.

Business Announcements

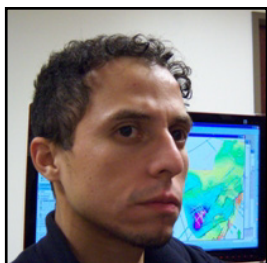
Invoices for the forthcoming year of the CBTH Project (beginning September 1, 2016) will be mailed to company representatives in late March. The 2016 CBTH year-end meeting will be held on Friday, September 30, at the University of Houston campus. Please check our website for more details as they become available.

CBTH PHASE IV

Caribbean Basins, Tectonics, & Hydrocarbons

NEWSLETTER FEBRUARY 2016 VOL.11 NO.1

Graduating Students



JAVIER SANCHEZ completed his PhD from the University of Houston in August 2015 after previously completing his MS at the University of Texas in August 2011. His research covered the complex tectonics and basin history of the Santa Marta massif, Cesar-Rancheria basin, Sierra Perija and Maracaibo basin. His study links the geology of Colombia and western Venezuela that have previously been poorly integrated. Javier had an internship with the Shell offshore Colombia group in the summers of 2012 and 2013 and with Repsol's Latin American group in summer 2014.

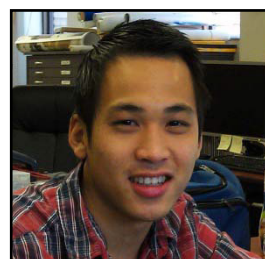
A paper on the Cesar-Rancheria basin and its petroleum systems has appeared in AAPG Memoir 108. A paper on his work on the northern Nicaraguan Rise on offshore Honduras has appeared in special volume of the Geological Society of London on transtension. He is currently working as a Post-Doctoral Researcher for the CBTH Project at UH. His current projects include completion of work on basin modeling in northern Colombia and the active tectonics of the Santa Marta massif and its bounding, active strike-slip fault zones.

CAROLINA MEJIA-HERNANDEZ started her MS Study in the foothills of the Eastern Cordillera, Colombia in the spring 2013 after receiving a B.S. in geology from Universidad Nacional de Colombia. For her MS study, she analyzed the tectonic evolution of the Mirador Formation using 3D seismic interpretation, well log correlations, balancing of structural cross sections, and thermochronology studies like apatite fission-track and vitrinite. The goals of the study were to understand the structural complexity in order to clarify the deformation-exhumation story in the region which is one of the most complex structural areas in Colombia. She graduated in August 2015.



DEREK SCOTT worked as an undergraduate research assistant on updating the CBTH GIS database and literature compilation. He joined the CBTH Project in summer 2014 and completed a senior honors thesis on the Gabon-Congo passive margin fold belt. He graduated with honors in August 2015 and currently works in the Houston-area petrochemical industry prior to entering grad school in the fall of 2016.

LUAN NGUYEN completed his MS on gravity and magnetic modeling of the East Africa-Antarctic margin in May 2015. Since that time he has been employed by CBTH to work on potential fields data from the Gulf of Mexico that led to a February 2016, publication in the special issue of Interpretation on the Gulf of Mexico. He is currently continuing his work with CBTH on a 3D gravity inversion for the Gulf of Mexico.

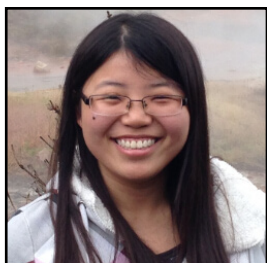


CBTH PHASE IV

Caribbean Basins, Tectonics, & Hydrocarbons

NEWSLETTER FEBRUARY 2016 VOL.11 NO.1

New Students



PIN LIN is a PhD student who joined CBTH in August 2015. She received a MS in Geology and Geophysics from Missouri University of Science and Technology in May 2015, after graduating with her MS in Geological Engineering from China University of Petroleum in May 2013. Her master's thesis focussed on seismic facies interpretation from a gas field in the Bahai Basin of China. Her PhD study with CBTH is using well, seismic reflection and gravity data to examine the V-shaped area of Jurassic oceanic crust in the southeastern Gulf of Mexico and the rifted continental area surrounding the area of oceanic crust.

ANDREW STEIER is a post-baccalaureate geology student who previously graduated with honors from Notre Dame University. . He began as a research assistant with CBTH in August 2015, assisting with literature compilation and maintaining the GIS database. Andrew is also compiling information on circum-Atlantic continent-ocean boundaries and comparing previous Atlantic opening models using G-plates. He won an outstanding research award for his work on South Atlantic opening models at the UH undergraduate research poster session in November 2015.



MATTHEW COPLEY is a post-baccalaureate geology major at UH who assists the CBTH Project with maintaining the GIS database. He began working for the project in January 2016. He is working on an undergraduate research project on the continent-ocean boundaries along the East African margin using seismic reflection and gravity data. He will graduate from UH in August 2016, and hopes to attend graduate school in geophysics in the fall of 2016.

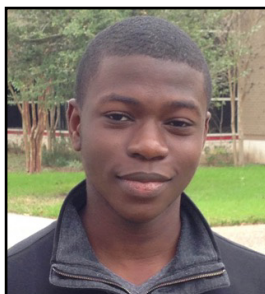
CBTH PHASE IV

Caribbean Basins, Tectonics, & Hydrocarbons

NEWSLETTER FEBRUARY 2016 VOL.11 NO.1

New Students

MARIE KOUASSI is an undergraduate geophysics and geology student at the University of Houston. She will assist with maintaining the GIS database starting February 2016. She would like to initiate a senior thesis study of her native country, Ivory Coast, west Africa.



RASHEED AJALA is an undergraduate geophysics and geology student at the University of Houston. He will assist with maintaining the GIS database starting February 2016. He would like to initiate a senior thesis study of his native country, Nigeria, west Africa.

MUDUSSAR AHMED is a Master's student in geology at the University of Stavanger. He is using seismic data to study the tectonostratigraphic evolution of the Tobago Basin and the Barbados Accretionary Prism. He is also assisting the CBTH project by compiling GIS data.



CBTH PHASE IV

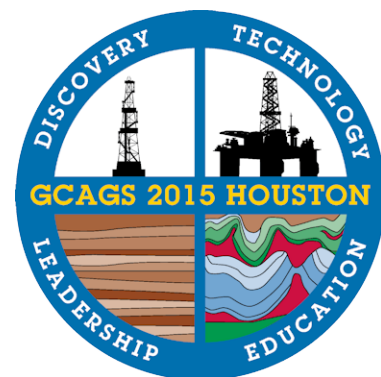
Caribbean Basins, Tectonics, & Hydrocarbons

NEWSLETTER FEBRUARY 2016 VOL.11 NO.1


Recent Meetings

Gulf Coast Association of Geoscientists (GCAGS) Annual Meeting

The Gulf Coast Association of Geoscientists (GCAGS) hosted its annual meeting on September 20-22, 2015. CBTH PhD candidate Luis Carlos Carvajal tied for third place in the student competition. Below is a list of CBTH presentations from the meeting, which are available to project sponsors on our website and in our upcoming 2016 data release:



Bernal-Olaya, R., Mann, P., Escalona, A., 2015, Tectonostratigraphic Evolution of the Lower Magdalena Basin, Colombia: An Example of an Underfilled to Overfilled Forearc Basin, Gulf Coast Association of Geological Societies Annual Convention, Houston, TX, Sept. 20-22, 2015.

 Carvajal, L.C., 2015, Western Caribbean Structural Provinces Based on 2D Kinematic Restorations of the Lower Nicaraguan Rise and Colombia Basin, Gulf Coast Association of Geological Societies Annual Convention, Houston, TX, Sept. 20-22, 2015.

Cheney, A., 2015, Foreland Deformation Related to Precambrian Features of the Permian Basin of West Texas and New Mexico, Gulf Coast Association of Geological Societies Annual Convention, Houston, TX, Sept. 20-22, 2015.

Gomez, S., Mann, P., Ott, B., 2015, Tectonic Evolution and Hydrocarbon Prospectivity of the Tobago Forearc Basin, Barbados Ridge, and Barbados Accretionary Prism, Gulf Coast Association of Geological Societies Annual Convention, Houston, TX, Sept. 20-22, 2015.

Lankford-Bravo, D., 2015, Influence of Basement Dip on Morphological and Structural Characteristics of the Perdido-Port Isabel and Northern and Southern Mexican Ridges, Western Gulf of Mexico, Gulf Coast Association of Geological Societies Annual Convention, Houston, TX, Sept. 20-22, 2015.

Leslie, S., and Mann, P., 2015, Petroleum Systems of the Tayrona-Rancheria Basin, Offshore Guajira Peninsula, Colombia, Gulf Coast Association of Geological Societies Annual Convention, Houston, TX, Sept. 20-22, 2015.

Loureiro, P., Tillman, T., Mann, P., 2015, Hydrocarbon Potential of Hispaniola and Puerto Rico Based on Combining Depth to Basement and Maturity Information from Previous Wells, Gulf Coast Association of Geological Societies Annual Convention, Houston, TX, Sept. 20-22, 2015.

Mann, P., 2015, New Insights into the Mesozoic Evolution of the Gulf of Mexico Basin from Gravity and Deep-Penetration Seismic Reflection Data, Gulf Coast Association of Geological Societies Annual Convention, Houston, TX, Sept. 20-22, 2015.

Ott, B. and Mann, P., 2015, What Lies beneath the Tip of the Iceberg? Late Cretaceous to Recent Tectonic Evolution of Jamaica and the Nicaraguan Rise with Implications for a Widespread Eocene Petroleum System, Gulf Coast Association of Geological Societies Annual Convention, Houston, TX, Sept. 20-22, 2015.

Sanchez, C.J., Mann, P., Bernal, R., 2015, Cenozoic Structural, Deformational, and Erosional Events Observed Along a 400-km Long, Onshore-to-Offshore Regional Transect Across Northwestern South America, Gulf Coast Association of Geological Societies Annual Convention, Houston, TX, Sept. 20-22, 2015.

CBTH PHASE IV

Caribbean Basins, Tectonics, & Hydrocarbons


NEWSLETTER FEBRUARY 2016 VOL.11 NO.1

Recent Meetings

University of Houston-Houston Geological Society Robert E. Sheriff Lecture

CBTH students presented in the EAS student poster competition at the UH-HGS annual Robert E. Sheriff lecture on Monday, November 16, 2015. CBTH students were recognized with two of the three first place awards: Callum Byers (Undergrad category) and Zach Martindale (Beginning PhD category). Below is a list of CBTH presentations from the meeting, which will be available to project sponsors in our upcoming 2016 data release:

Blanco, J.M., 2015, Fault systems deforming Oligocene-Miocene reservoirs of La Vela Bay, Western Venezuela, mapped using 3D seismic data, University of Houston - Houston Geological Society Robert E. Sheriff Lecture, Houston, TX, Nov. 16, 2015.

 Byers, C. and Mann, P., 2015, Tectonic geomorphology of large normal faults bounding the Cusco rift basin within the southern Peruvian Andes, University of Houston - Houston Geological Society Robert E. Sheriff Lecture, Houston, TX, Nov. 16, 2015.

Carvajal, L.C. and Mann, P., 2015, San Andres Rift, Nicaraguan Shelf: a 346-km-long, north-south rift zone actively extending the interior of the "stable" Caribbean plate, University of Houston - Houston Geological Society Robert E. Sheriff Lecture, Houston, TX, Nov. 16, 2015.


Dowla, N., 2015, Compilation of the deep crustal structure of the central Atlantic conjugate margins to test pure shear versus simple shear rifting mechanisms, University of Houston - Houston Geological Society Robert E. Sheriff Lecture, Houston, TX, Nov. 16, 2015.

Gomez, S., 2015, Using 2D gravity modeling to characterize the structure and lithologic composition of the Tobago-Barbados Ridge, Lesser Antilles subduction margin, University of Houston - Houston Geological Society Robert E. Sheriff Lecture, Houston, TX, Nov. 16, 2015.

Lankford-Bravo, D., 2015, Understanding basement structure from the Perdido to the Mexican Ridges, University of Houston - Houston Geological Society Robert E. Sheriff Lecture, Houston, TX, Nov. 16, 2015.

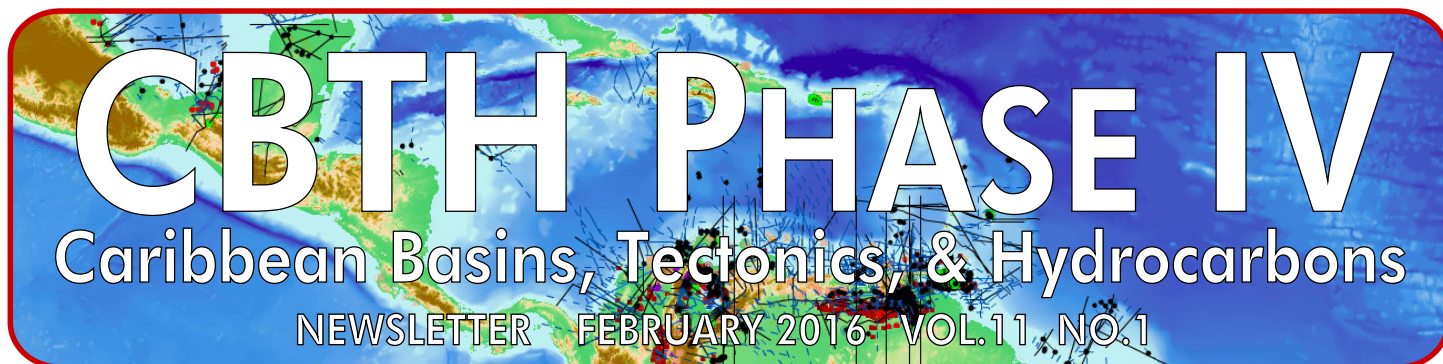
Lin, P., 2015, Predicted fault kinematics of Jurassic faults related to the opening of the southeastern Gulf of Mexico, University of Houston - Houston Geological Society Robert E. Sheriff Lecture, Houston, TX, Nov. 16, 2015.

Loureiro, P. and Mann, P., 2015, Controls of asymmetrical opening on sag basins of South Atlantic conjugate margins: Margin characterization from gravity transects and mapping using grids of seismic reflection data, University of Houston - Houston Geological Society Robert E. Sheriff Lecture, Houston, TX, Nov. 16, 2015.

 Martindale, Z., 2015, Comparison of rift and passive margins stages of the East Africa-Madagascar conjugate margins and their impact on heat flow and source rock maturation, University of Houston - Houston Geological Society Robert E. Sheriff Lecture, Houston, TX, Nov. 16, 2015.

Martinez, S., 2015, Effect of sea level change on the extent of the shorelines of the Caribbean up to and during the height of the Last Glacial Maximum (26.5 Ka), University of Houston - Houston Geological Society Robert E. Sheriff Lecture, Houston, TX, Nov. 16, 2015.

Milano-Rodriguez, L., 2015, Tectonic and geological history of the Espino rift in Central Venezuela, University of Houston - Houston Geological Society Robert E. Sheriff Lecture, Houston, TX, Nov. 16, 2015.



Recent Meetings

University of Houston-Houston Geological Society Robert E. Sheriff Lecture (continued)

- Scott, D., 2015, Characterization of the South Gabon Basin passive-margin fold and thrust belt from 2D seismic interpretation, University of Houston - Houston Geological Society Robert E. Sheriff Lecture, Houston, TX, Nov. 16, 2015.
- Steier, A., 2015, Evaluation of Previously Published Kinematic Plate Models for the Opening of the South Atlantic Ocean using a GIS Compilation of Geologic and Geophysical Information, University of Houston - Houston Geological Society Robert E. Sheriff Lecture, Houston, TX, Nov. 16, 2015.
- Torrado, L., 2015, Late Cretaceous to Recent Paleogeography and Sequence Stratigraphy of the Nicaraguan Rise tied to Plate Reconstructions, University of Houston - Houston Geological Society Robert E. Sheriff Lecture, Houston, TX, Nov. 16, 2015.



American Geophysical Union (AGU) Annual Convention 2015

CBTH students and recent graduates presented at the 2015 AGU Annual Convention in San Francisco on December 14-18, 2015. These presentations will be available to sponsors in the 2016 data release and are currently featured on website.

- Blanco, J. and Mann, P., 2015, Structure of the La Vela offshore basin, western Venezuela: an obliquely-opening rift basin within the South America-Caribbean strike-slip plate boundary, American Geophysical Union (AGU) Annual Meeting, San Francisco, California, Dec. 14-18, 2015.
- Byers, C. and Mann, P., 2015, Tectonic geomorphology of large normal faults bounding the Cuzco rift basin within the southern Peruvian Andes, American Geophysical Union (AGU) Annual Meeting, San Francisco, California, Dec. 14-18, 2015.
- Carvajal, L.C. and Mann, P., 2015, San Andres Rift, Nicaraguan Shelf: A 346-Km-Long, North-South Rift Zone Actively Extending the Interior of the "Stable" Caribbean Plate, American Geophysical Union (AGU) Annual Meeting, San Francisco, California, Dec. 14-18, 2015.
- Leslie, S. and Mann, P., 2015, Size Constraints on Late Miocene to Pliocene Submarine Slope Failures along the Colombian Caribbean Subduction Margin as a Basis for Assessing Circum-Caribbean Impact of Future Tsunami Events, American Geophysical Union (AGU) Annual Meeting, San Francisco, California, Dec. 14-18, 2015.
- Loureiro, P. and Mann, P., 2015, Controls of asymmetrical opening on rift and sag basins of South Atlantic conjugate margins: Insights from gravity transects and mapping using grids of seismic reflection data, American Geophysical Union (AGU) Annual Meeting, San Francisco, California, Dec. 14-18, 2015.

CBTH PHASE IV

Caribbean Basins, Tectonics, & Hydrocarbons

NEWSLETTER FEBRUARY 2016 VOL.11 NO.1

Recent Meetings

American Geophysical Union (AGU) Annual Convention 2015 (continued)

Mann, P., 2015, Areas of Unsolved Problems in Caribbean Active Tectonics (Invited Talk), American Geophysical Union (AGU) Annual Meeting, San Francisco, California, Dec. 14-18, 2015.

Ott, B. and Mann, P., 2015, Identifying active interplate and intraplate fault zones in the western Caribbean plate from seismic reflection data and the significance of the Pedro Bank fault zone in the tectonic history of the Nicaraguan Rise, American Geophysical Union (AGU) Annual Meeting, San Francisco, California, Dec. 14-18, 2015.

Sanchez, J. and Mann, P., 2015, Late Cretaceous-recent tectonic assembly of diverse crustal blocks in Central America, the Nicaraguan Rise, the Colombian Basin and northern South America as seen on a 1600-km-long, geologic and structural transect, American Geophysical Union (AGU) Annual Meeting, San Francisco, California, Dec. 14-18, 2015.

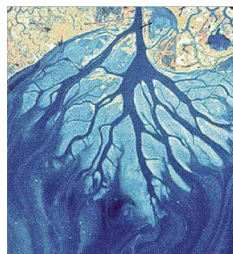
Upcoming Meetings

IRESS Meeting on Continental Margin Evolution

The Industry-Rice Earth Science Symposia (IRESS) meeting will be held on February 26-27, 2016 on the Rice University campus. This years symposium will focus on continental margin evolution in the Atlantic and Gulf of Mexico. Paul Mann will produce a progress report on CBTH work in the GOM and Atlantic margins. # for more information.

IRESS2016

Industry-Rice Earth Science Symposia



CBTH PHASE IV

Caribbean Basins, Tectonics, & Hydrocarbons

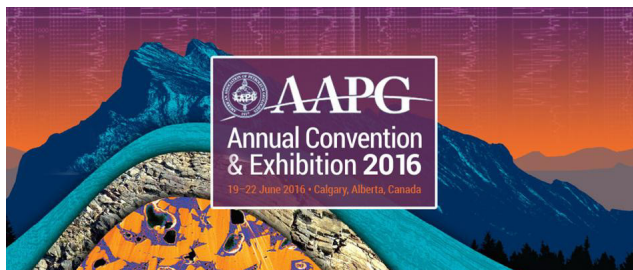
NEWSLETTER FEBRUARY 2016 VOL.11 NO.1

Upcoming Meetings

American Association of Petroleum Geologists Annual Convention

CBTH students and researchers will be presenting at upcoming AAPG Annual Convention in Calgary on June 19-22, 2016. PhD candidates Naila Dowla, Lucia Torrado, and Luis Carlos Carvajal will be presenting as part of the annual student poster competition. A full list of CBTH presentations at AAPG is available below. # to view the technical program.

- L. Carvajal-Arenas, L. Torrado, P. Mann** - Integrated Basin and Play Assessment of Undiscovered Oil and Gas Resources in the Miskito Platform, Verolania Basin and Los Cayos Basin — Western Caribbean Sea
- N. Dowla, P. Mann, D. Bird** - Gravity and Magnetic Investigation of the South-Central Atlantic Margin of the USA (Offshore Florida to South Carolina) and its West African Conjugate Margins (The Gambia to Mauritania)
- S. Gomez, P. Mann, D. Bird** - Deep Crustal Structure and Tectonostratigraphy at the Leading Edge of the Caribbean in Basins Offshore Barbados and Tobago: New Insights From 2-D Gravity Modeling and 2-D Seismic Data
- P. Loureiro, P. Mann** - How Well Do Asymmetrical Rift Models for the Conjugate Margins of Brazil and Angola Compare to Deep-Penetration Seismic Reflection Data?
- P. Mann, R. Padilla** - Geologic and Geophysical Evidence for a Pacific Origin for Seawater Filling the Callovian Gulf of Mexico Evaporite Basin
- C. J. Sanchez, P. Mann, R. Bernal-Olaya** - Unconventional Resource Potential of Cretaceous Source Rocks in the Onshore Cesar-Rancheria Basin, Northern Colombia
- L. Torrado, P. Mann** - Seismic Characterization of Early Cretaceous Fluvial-Deltaic Sandstones, Middle to Late Cretaceous Turbidites and Late Cretaceous Channelized Features in the Foz do Amazonas Basin, Northern Brazil

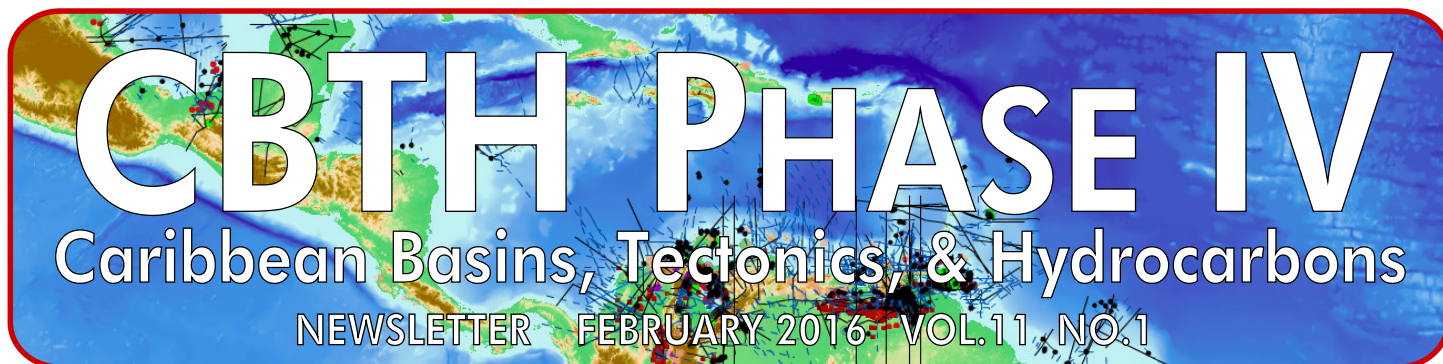


15th Houston Geological Society (HGS) - Petroleum Exploration Society of Great Britain (PESGB) Conference on African E&P

The 15th HGS/PESGB Conference on African Exploration & Production will be held on September 12-14, 2015 at The Westin Houston, Memorial City, Houston, Texas. CBTH student Patrick Loureiro is one of the meeting organizers. # for more details.

2016 Gulf Coast Association of Geological Societies (GCAGS) Annual Convention

The 2016 GCAGS Annual Convention will take place on September 18-20 in Corpus Christi, Texas. CBTH researchers working on the GOM will present at this meeting. # for more information.



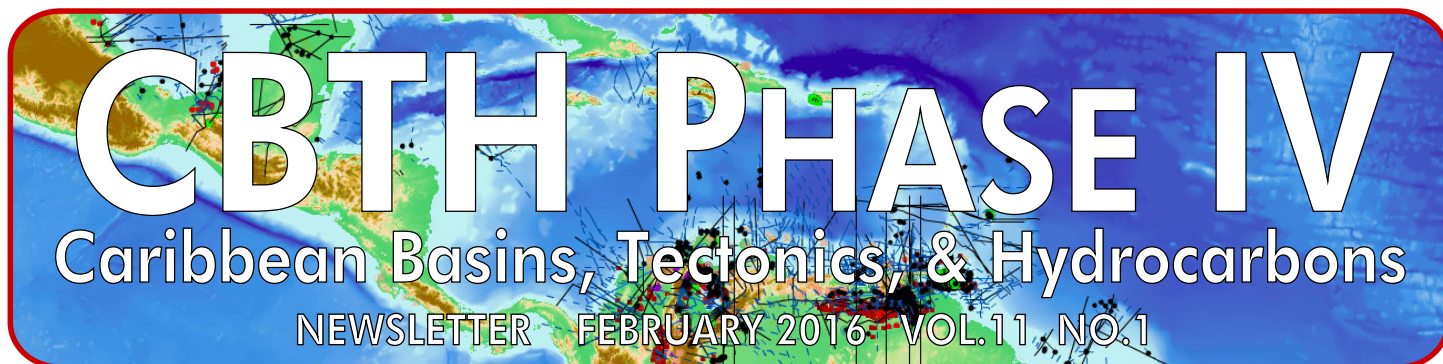
Recent Publications

Theses & Dissertations

- Mejia-Hernandez, M.C., 2015, Sequence of folding and thrusting of the Piedemonte oil and gas field, eastern foothills of the Colombian Cordillera Oriental: constraints from integration of balanced cross sections and thermal maturation data: MSc thesis, University of Houston, 73 p.
- Ott, B., 2015 Cretaceous-Cenozoic tectonostratigraphic evolution of the Nicaraguan Rise based on seismic reflection, wells, and potential fields data: PhD Dissertation, University of Houston, 262 p.
- Sanchez, C.J., 2015, Comparison of Late Cretaceous-Cenozoic deformation and basin formation along the northwestern Caribbean plate boundary on the Honduran borderlands-Nicaraguan Rise and southeastern Caribbean plate boundary in Colombia: PhD Dissertation, University of Houston, 229 p.
- Scott, D., 2015, Characterization of the South Gabon Basin passive-margin fold and thrust belt from 2D seismic interpretation: BSc thesis, University of Houston, 38 p.
- Tillman, T., 2015, Hydrocarbon potential of the northeastern Caribbean based on integration of sediment thickness and source rock maturity data: MSc thesis, University of Houston, 90 p.

Publications in peer-reviewed journals and volumes

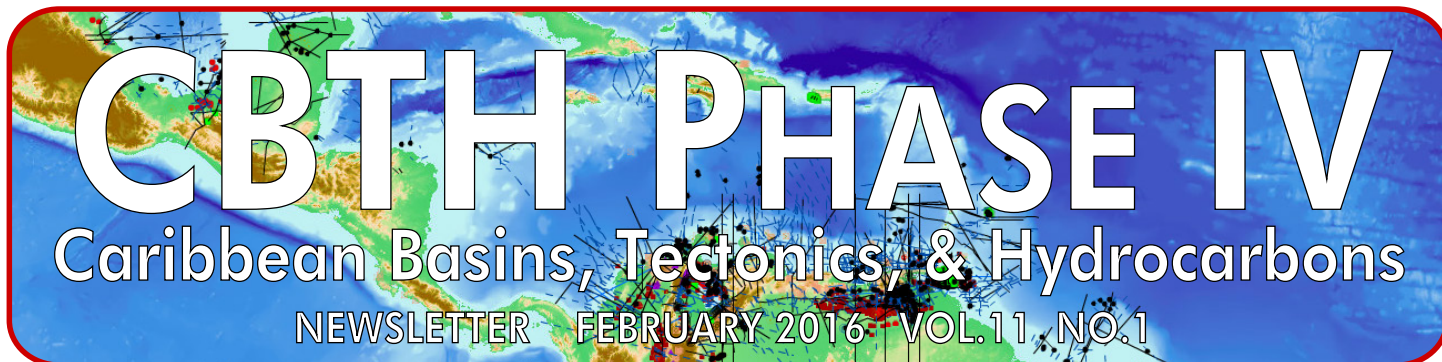
- Bartok, P., Mejía-Hernández, M. C., Ismael, M., 2015, Paleogeographic constraints on Middle to Late Jurassic tectonic reconstruction of the Maya block of southern Mexico and equivalent strata of northwestern South America, in C. Bartolini and P. Mann, eds., Petroleum Geology and potential of the Colombian Caribbean Margin: AAPG Memoir 108, p. 201–216.
- Bernal-Olaya, R., Mann, P., and Escalona, A., 2015, Cenozoic tectonostratigraphic evolution of the Lower Magdalena Basin, Colombia: An example of an underfilled to overfilled, forearc basin, in C. Bartolini and P. Mann, eds., Petroleum geology and potential of the Colombian Caribbean Margin: AAPG Memoir 108, p. 345–398.
- Bernal-Olaya, R., Mann, P., and Vargas, C. A., 2015, Earthquake tomography, seismic reflection, and gravity evidence for a shallowly-dipping subduction zone beneath the Caribbean margin of Colombia, in C. Bartolini and P. Mann, eds., Petroleum geology and potential of the Colombian Caribbean Margin: AAPG Memoir 108, p. 247–270.
- Bernal-Olaya, R., Sanchez, J., Mann, P., and Murphy, M., 2015, Along-strike crustal thickness variations of the subducting Caribbean plate produces two distinctive styles of thrusting in the offshore South Caribbean deformed belt, Colombia, in C. Bartolini and P. Mann, eds., Petroleum Geology and Potential of the Colombian Caribbean Margin: AAPG Memoir 108, p. 295–322.
- Blanco, J. M., Mann, P., and Nguyen, L., 2015, Location of the suture zone separating the Great Arc of the Caribbean from continental crust of northwestern South America inferred from regional gravity and magnetic data, in C. Bartolini and P. Mann, eds., Petroleum geology and potential of the Colombian Caribbean Margin: AAPG Memoir 108, p. 161–178.
- Campos, H. and Mann, P., 2015, Tectonostratigraphic evolution of the northern Llanos foreland basin of Colombia and implications for its hydrocarbon potential, in C. Bartolini and P. Mann, eds., Petroleum geology and potential of the Colombian Caribbean Margin: AAPG Memoir 108, p. 517–546.



Recent Publications

Publications (continued)

- Carvajal-Arenas, L.C., Torrado, L., Mann, P., 2015, Early and Late Eocene/Oligo-Miocene (!) petroleum system on the Nicaraguan Rise: Insights from basin and three-dimensional petroleum system modeling, in C. Bartolini and P. Mann, eds., *Petroleum geology and potential of the Colombian Caribbean Margin: AAPG Memoir 108*, p. 615–646.
- Mann, Paul, 2015, Passive Plate Margin, in Harff, J., Meschede, M., Petersen, S., Thiede, J., editors, *Encyclopedia of Marine Geosciences*, Springer Netherlands, doi:10.1007/978-94-007-6644-0_100-2
- Mann, Paul, 2015, Marine Sedimentary Basins, in Harff, J., Meschede, M., Petersen, S., Thiede, J., editors, *Encyclopedia of Marine Geosciences*, Springer Netherlands, doi:10.1007/978-94-007-6644-0_99-2
- Moreno-Lopez, M.C. and Escalona, A., 2015, Precambrian-Pleistocene tectono-stratigraphic evolution of the southern Llanos basin, Colombia, in eds. A. Mora, D. Garcia, M.A. Guzman, and P. Mann, *Petroleum Systems of the Eastern Cordillera, Foothill Basins and Associated Llanos Basin*, AAPG Bulletin, August 2015, Vol. 99, No. 8, p. 1473-1502.
- Nguyen, L. and P. Mann, 2016, Gravity and magnetic constraints on the Jurassic opening of the oceanic Gulf of Mexico and the location and tectonic history of the Western Main transform fault along the eastern continental margin of Mexico, *Interpretation*, 4(1), SC23-SC33.
- Ott, B. and Mann, P., 2015, Late Miocene to Recent formation of the Aure-Moresby fold-thrust belt and foreland basin as a consequence of Woodlark microplate rotation, Papua New Guinea, *Geochem. Geophys. Geosyst.*, 16, 1988–2004, doi:10.1002/2014GC005668.
- Sanchez, J. and Mann, P., 2015, Structure and basin analysis of the Cesar-Rancheria basin, northwestern South America: Implications for tectonic events and petroleum systems, in C. Bartolini and P. Mann, eds., *Petroleum geology and potential of the Colombian Caribbean Margin: AAPG Memoir 108*, p. 431–470.
- Sanchez, J., Mann, P., Emmet, P.A., 2015, Late Cretaceous-Cenozoic tectonic transition from collision to transtension, Honduran Borderlands and Nicaraguan Rise, NW Caribbean Plate boundary, in From: Nemcok, M., Rybar, S., Sinha, S. T., Hermeston, S. A. & Ledvenyiova, L. (eds) *Transform Margins: Development, Controls and Petroleum Systems*. Geological Society, London Special Publications, 431, Geological Society, London, Special Publications, v. 431, <http://doi.org/10.1144/SP431.3>
- Wright, V.D., Hornbach, M.J., Mchugh, C., Mann, P., 2015, Factors contributing to the 2005-present rapid rise in lake levels, Dominican Republic and Haiti (Hispaniola): *Natural Resources*, v. 6, n. 8, p. 465-481.
- Zuluaga, C., Pinilla, A. and Mann, P., 2015, Jurassic silicic volcanism and associated continental-arc basin in northwestern Colombia (southern boundary of the Caribbean plate), in C. Bartolini and P. Mann, eds., *Petroleum geology and potential of the Colombian Caribbean Margin: AAPG Memoir 108*, p. 137–160.



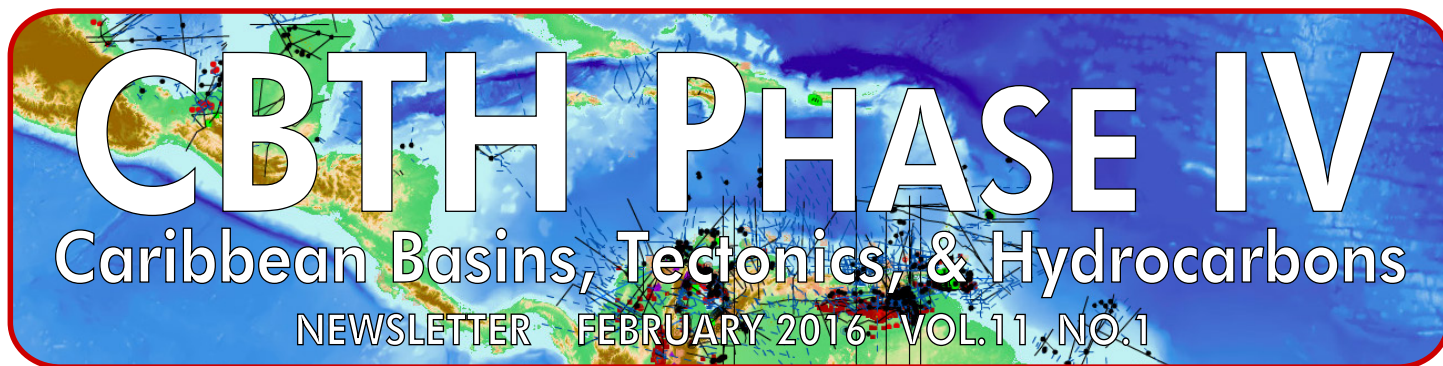
CBTH PHASE IV

Caribbean Basins, Tectonics, & Hydrocarbons

NEWSLETTER FEBRUARY 2016 VOL.11 NO.1

Upcoming Publications

- Bingham, L. and Karssenber, D., 2016, Error propagation in a fuzzy logic spatial multi-criteria evaluation, *International Journal of Geographical Information Science*, in press.
- Carvajal, L.C. and Mann, P., 2016 Western Caribbean intraplate deformation, 2: Defining a continuous and active microplate boundary along the San Andres rift and Hess escarpment, in P. Mann, ed., *Geologic and geophysical synthesis of the Nicaraguan Rise and western Caribbean: A framework for understanding its petroleum potential: AAPG Bulletin Special Issue*, in preparation.
- Kocel, E., Stewart, R., Mann, P., and Chang, L., 2016, Near-surface geophysical investigation of coseismic folding and uplift of the Leogane fan-delta during the 2010 M7 Haiti earthquake, *Interpretation*, in press.
- Leslie, S. and Mann, P., 2016, Giant submarine landslides on the Colombian margin and tsunami risk in the Caribbean Sea, paper submitted to *EPSL*
- Mann, P., and Roberson, R., 2016, Historical perspective after one century of petroleum exploration in the western Caribbean and Central America, in P. Mann, ed., *Geologic and geophysical synthesis of the Nicaraguan Rise and western Caribbean: A framework for understanding its petroleum potential: AAPG Bulletin Special Issue*, in preparation.
- Ott, B. and Mann, P., 2016, Tectonostratigraphic and petroleum evolution of Jamaica and the offshore Walton basin based on integration of seismic reflection and well data, in P. Mann, ed., *Geologic and geophysical synthesis of the Nicaraguan Rise and western Caribbean: A framework for understanding its petroleum potential: AAPG Bulletin Special Issue*, in preparation.
- Ott, B., Mann, P., Carvajal, L.C., 2016, Western Caribbean intraplate deformation, 1: Defining a continuous and active microplate boundary near Jamaica and across the Upper Nicaraguan Rise, in P. Mann, ed., *Geologic and geophysical synthesis of the Nicaraguan Rise and western Caribbean: A framework for understanding its petroleum potential: AAPG Bulletin Special Issue*, in preparation.
- Ott, B., Mann, P., Sanchez, J., Carvajal, L.C., 2016, Crustal provinces and tectonic history of the Nicaraguan Rise, Caribbean Sea, based on integration of gravity, refraction, seismic reflection, and well data, in P. Mann, ed., *Geologic and geophysical synthesis of the Nicaraguan Rise and western Caribbean: A framework for understanding its petroleum potential: AAPG Bulletin Special Issue*, in preparation.
- Sanchez, J., Mann, P., Carvajal, L.C., Bernal, R., 2016, A 1600-km-long structural-geophysical transect across the western Caribbean to illustrate its structural styles, fault kinematics, plate tectonic history, and petroleum potential, in P. Mann, ed., *Geologic and geophysical synthesis of the Nicaraguan Rise and western Caribbean: A framework for understanding its petroleum potential: AAPG Bulletin Special Issue*, in preparation.
- Torrado, L., Carvajal, L.C., Sanchez, J., Mann, P., 2016, Cretaceous-Cenozoic paleogeographic controls on major source rocks, reservoirs, seals, and traps of the western Nicaraguan Rise (offshore Honduras and Nicaragua), in P. Mann, ed., *Geologic and geophysical synthesis of the Nicaraguan Rise and western Caribbean: A framework for understanding its petroleum potential: AAPG Bulletin Special Issue*, in preparation.



Awards

Below is a list of recent awards for CBTH research. For a full list, please visit <http://cbth.uh.edu/awards.php>

- 2015 - Sabrina Martinez, undergrad, selected for ExxonMobil Guadalupe Mountains Field Course, April 2016
- 2015 - Derek Scott, undergrad, undergraduate thesis approved and graduated with honors, December 2015
- 2015 - Sabrina Martinez, undergrad, UH Summer Undergraduate Research Fellowship (SURF)
- 2015 – Luis Carlos Carvajal, PhD candidate, 1st place, Best oral presentation, fall tectonics seminar
- 2015 – Callum Byers, undergraduate, 1st place, Tier 1 category (undergraduates), Houston Geological Society and University of Houston Robert E. Sheriff lecture series and student poster competition
- 2015 – Zachary Martindale, PhD student, 1st place, Tier 2 category (advanced MS/beginning PhD), Houston Geological Society and University of Houston Robert E. Sheriff lecture series and student poster competition
- 2015 - Andrew Steier BS Candidate: Outstanding Poster Award, Student Poster Competition, UH Undergraduate Research Day
- 2015 - Luis Carlos Carvajal, PhD Candidate: 3rd Place (tie), Annual Gulf Coast Assoc. Geological Societies, Student Poster Competition
- 2015 - Steve Leslie, PhD Candidate: 2nd Place, AAPG 2015 Annual Meeting Student Poster Competition
- 2015 - Joan Blanco, PhD candidate, BP Scholar for Outstanding Graduate Work in Geosciences 1st place, Sheriff student poster competition (undergrads and first year MS category)
- 2015 - David Lankford-Bravo, undergrad, UH Geology Field Camp Scholarship
- 2015 - Sarah Daily, undergrad, UH Geology Field Camp Scholarship
- 2015 - Derek Scott, undergrad, UH Geology Field Camp Scholarship
- 2015 - Sabrina Martinez, undergrad, UH Academic Excellence Scholarship in Geoscience
- 2015 - Derek Scott, First place, UH Research Day, Undergraduate Student Poster Presentation
- 2015 - Sarah Dailey, Second place, UH Research Day, Undergraduate Student Poster Presentation
- 2015 - David Lankford-Bravo, Honorable mention, UH Research Day, Undergraduate Student Poster Presentation
- 2015 - Lucia Torrado, Honorable mention (tie), UH Research Day, Beginning Graduate Student Poster Presentation
- 2015 - Patrick Loureiro, Honorable mention (tie), UH Research Day, Beginning Graduate Student Poster Presentation
- 2015 – Derek Scott, undergrad, 1st place, Best oral presentation, spring tectonics seminar
- 2015 – Lucia Torrado, PhD candidate, 3rd place, Best oral presentation, spring tectonics seminar

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NEWSLETTER FEBRUARY 2016 VOL.11 NO.1

Thanks to our sponsors!

As we continue with Phase IV of the CBTH project, we would like to thank our active and inactive company sponsors for their support in providing data, software, funding, and knowledge to further student research in Caribbean geology. Your support has provided many opportunities for CBTH students to pursue research projects in the region and your efforts are truly appreciated.

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