

# CBTH PHASE IV

## Caribbean Basins, Tectonics, & Hydrocarbons

NEWSLETTER FEBRUARY 2017 VOL.12, NO.1

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

### PhD student Shenelle Gomez receives internship at Shell

Congrats to PhD student Shenelle Gomez for receiving an internship with Shell this summer. Shenelle will also be presenting at the Houston Geological Society International Dinner at the Westchase Hilton on Monday, February 20, 2017, on the topic of "Tectonostratigraphic evolution of the Barbados accretionary prism and its controls on hydrocarbon prospectivity in offshore Barbados."

### PhD student Joan Blanco places 3rd at SEG Challenge Bowl World Finals

Congrats to Joan Blanco (PhD student, CBTH project) and Alexandre Silva (PhD student, EAS) for placing 3rd place in the SEG Challenge Bowl World Finals at the SEG meeting in Dallas in October. The 1st place team was from Brigham Young University and the second place team was from the University of Calgary. Click here to read more.

### Annual Sponsors Meeting and End of Phase IV

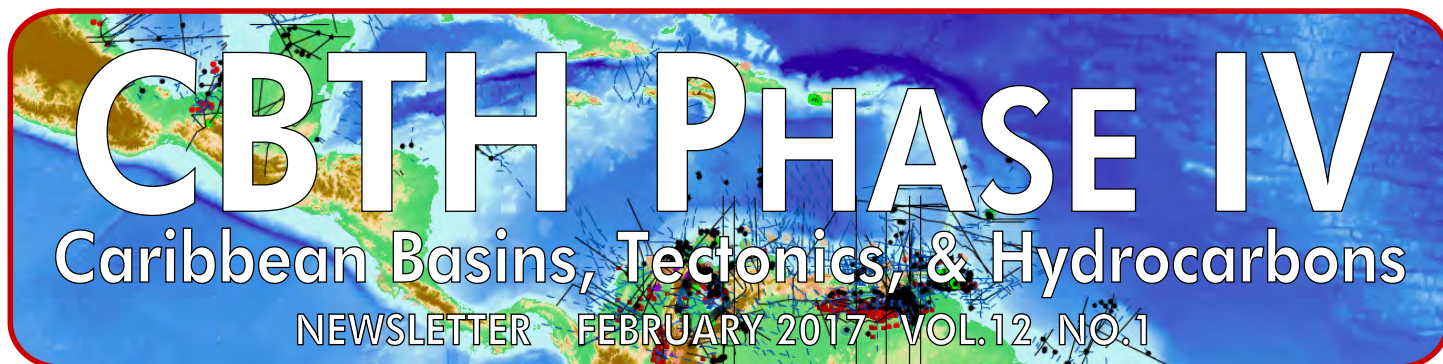
The CBTH Annual Sponsors Meeting for 2017 will be held on September 15, 2017. As Phase IV comes to an end, we will be providing sponsors with a large-format atlas this year, which will contain a wide array of updated data including synoptic maps of the Gulf of Mexico, Caribbean, and Atlantic margins.

### CBTH PhD students pass dissertation proposals

Congratulations to CBTH PhD students Patrick Loureiro and Shenelle Gomez for passing their dissertation proposal meetings in October 2016.

### Barbados and Llanos Basin Sampling

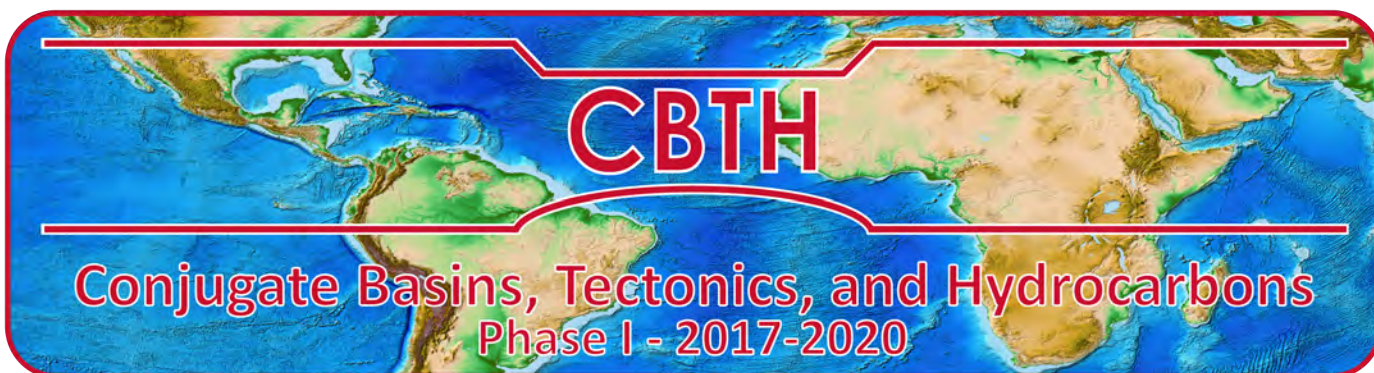
CBTH researchers led by Alejandro Escalona at UiS have recently sampled outcrops and wells in Barbados and will begin geochemical analysis soon at UiS. Outcrop samples of possible Paleozoic source rocks in the southern Llanos basin has also been performed and analysis will begin soon at UiS.



## What's New

### Redefining the scope of the CBTH project and its name and logo change

As discussed at our sponsor's meeting in September 2016, the current phase IV of CBTH will terminate the study called "Caribbean Basins, Tectonics, and Hydrocarbons" which began back in 2005 at the University of Texas at Austin. This CBTH project evolved from: 1) a pre-2005, UT-based consortium "DM2") led by Lesli Wood and myself that focused on the offshore Trinidad area; 2) an expansion of studies in offshore Trinidad and onland basins in Venezuela (Phase I); 3) an expansion of the project into onland and offshore basins in Colombia and the Nicaraguan Rise (Phases II, III); 4) an expansion of the project into Mexico, the Gulf of Mexico, the Nicaraguan Rise, and the Greater Antilles (Phase III), and, finally, 5) continuation of the studies in these areas and expansion of the study into Brazil, Guyana, northwest Africa, and west Africa (Phase IV). While we continue studies in all of the above areas as more data comes available, our plan for the coming phase starting on September 1, 2017, is to increase emphasis on conjugate margin studies of the Gulf of Mexico and Central and South Atlantic. For this reason, the project name will change from "Caribbean Basins, Tectonics, and Hydrocarbons" to "Conjugate Basins, Tectonics, and Hydrocarbons"; the acronym will remain the same: "CBTH". The newly named CBTH project will be reset to Phase I.



### Project Invoices

In late March, invoices will be sent out to current project sponsor representatives to renew their membership for CBTH Phase I (2017-2020). Please let us know of any updates to the current sponsor representatives at your company. A proposal for CBTH Phase I will be sent with the invoice. We would be happy to visit with any of the Houston based sponsors during the project evaluation period (payment deadline for the invoices is August 15, 2017).



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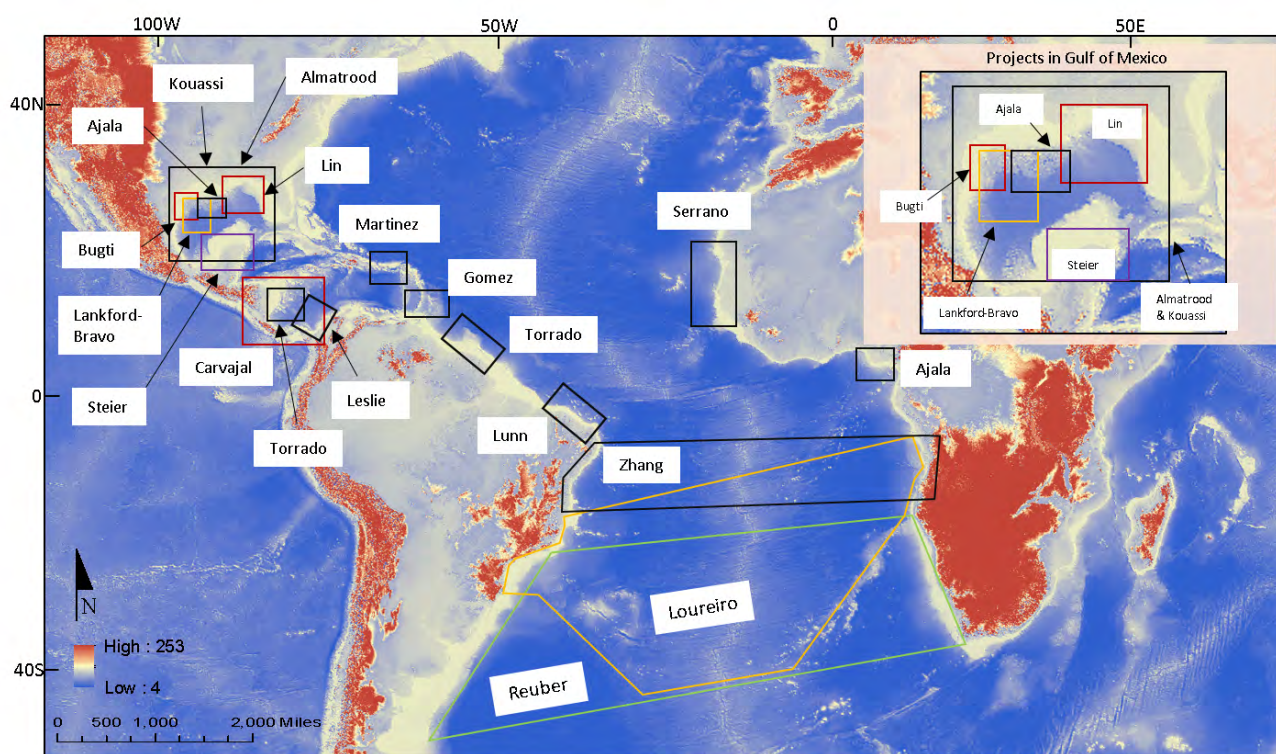
## Caribbean Basins, Tectonics, & Hydrocarbons

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### What's New

#### Status of the CBTH Database

As we finish Phase IV, we have focused additional resources on updating our GIS database for all the regions mentioned above and now have a total of nine University of Houston undergrads and one University of Stavanger undergraduate working on adding additional georeferenced data to the database. The grad students and principal investigators provide them with key, selected information from the various study areas shown on the map of all the study areas. Categories of data additions that focus on offshore areas include: maps, cross sections, stratigraphic columns, wells, and cores. We are also adding: radiometric ages, detrital zircon ages, and fission track ages for the entire region both in map and table form.



#### Atlas delivery for end of CBTH Phase IV

As this is the third and final year of Phase IV, we will deliver an atlas with synoptic maps for the entire Caribbean-GOM-Atlantic region by August 31, 2017. Synoptic maps will include: 1) summary maps from online resources including plate reconstructions, bathymetry, gravity, magnetics, modern stress, active faults, earthquakes, oil seeps, source rocks including oceanic anoxic intervals; 2) key surfaces and fault maps from out studies areas in the Caribbean, GOM, and Atlantic margins; and 3) compilation maps including upper and lower plate maps for conjugate margins and extent of volcanic margins.

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## Caribbean Basins, Tectonics, & Hydrocarbons

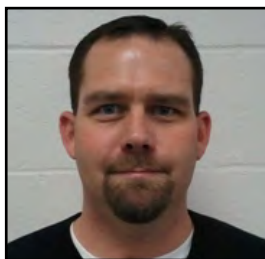
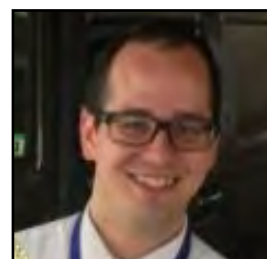
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### Graduating Students - MS and PhD



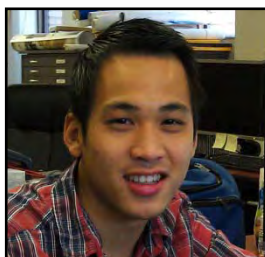
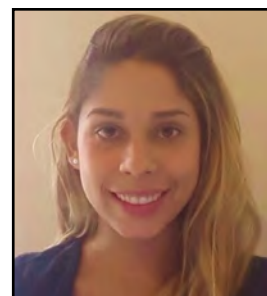
**LUIS CARLOS CARVAJAL** has been with the CBTH project as a PhD student since 2012 and has worked on the crustal structure, seismic stratigraphy, and petroleum potential. He completed a summer internship with Statoil in Stavanger, Norway, in the summer of 2016 and is scheduled to graduate in May 2017.

**PATRICK LOUREIRO** joined the CBTH project in 2014 as an MS student working on the topic of the tectonic origin of the Virgin Islands basin, northeast Caribbean. He completed the MS study in 2014 and started working on his PhD topic on deep structure beneath the Campos-Santos basin of Brazil and implications for pre-rift reconstructions. He was a member of the 2013 UH AAPG Imperial Barrel Award Team. He is scheduled to graduate in spring 2017, and has accepted a full-time position with Hess Corporation in Houston to start in summer 2017.



**KYLE REUBER** has been with the CBTH project as a PhD student since 2012 and has concurrently worked as a full-time seismic interpreter at ION. His topic is rift processes in volcanic margins of the Equatorial and South Atlantic. He is scheduled to graduate in May 2017, and plans to continue his job with ION following graduation.

**LOURDES RODRIGUEZ-MILANO** completed her MS thesis on the crustal structure of the Espino rift of Venezuela in August 2016, while working part-time at Sanchez Energy in Houston. She is now employed fulltime at Sanchez as a geophysicist. Her internship experience with Sanchez Energy is profiled on the company's website: <http://www.sanchezenergycorp.com/careers/life-sn/>



**LUAN NGUYEN** completed 1.5 years at CBTH as a researcher and is now a first year PhD student in geophysics at Rice University working on a 3D seismic dataset from the Iberian Peninsula with Dr. Dale Sawyer.



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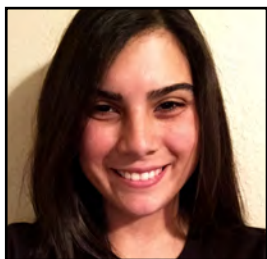
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### Graduating Students - Senior Undergraduates



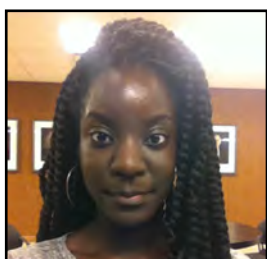
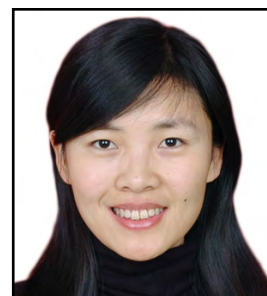
**MATT COPLEY** completed his BS at UH in geophysics in May 2015, worked with CBTH over the summer on the Mozambique basin, and is now a first-year MS student working with the Reservoir Characterization Project at Colorado School of Mines.

**DAVID LANKFORD** is a UH undergraduate research assistant working on maintaining the CBTH references and literature compilation database who joined the project in 2014. He is working on a senior honors thesis on passive margin fold belts of the deepwater area of Mexico in the Perdido and Mexican border region. He is scheduled to graduate in May 2017.



**SABRINA MARTINEZ** is a UH undergrad geology major who joined the project in 2015 and assists with the GIS database. She is working on a research project on using tectonic geomorphology to constrain the uplift mechanism of the island of Puerto Rico. She is scheduled to graduate in May 2017.

**LILI ZHANG** is a post-baccalaureate geology major at the University of Houston who joined the project in 2016. She is working on a senior honors thesis on using a regional compilation of thermochronological and well subsidence data to constrain the exhumation history of the Brazilian margin adjacent to the offshore Campos and Santos basins.



**MARIE KOUASSI** is a senior geology major who joined the project in 2016. She has compiled all detrital zircon data from the GOM, Caribbean, and Atlantic margins and for her senior report is using software developed by EAS professor Joel Saylor to statistically link source areas.

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### New Students



**ROCIO NAVAS RAMIREZ** started her MS at UH in summer 2016. Her project is focused on the tectonostratigraphic evolution of the Gulf of Venezuela, using PDVSA data. The Gulf of Venezuela is the area of the Las Perlas giant gas discovery.

**PRESLY CARR** is a post-baccalaureate geology undergraduate at the University of Houston who joined the project in 2017. She is working on the GIS database and conducting research on the topic: Compilation of source rock intervals on conjugate margins of the Gulf of Mexico, Central, and South Atlantic controlled by oceanic anoxic events.



**EMILY STIBBE** is an undergraduate geophysics and geology student at the University of Houston. She joined the CBTH research team in January 2017 and will assist in maintaining the GIS database and researching the topic of: Compilation map of upper plate-lower plate and volcanic conjugate margins of the Gulf of Mexico, Central and South Atlantic Oceans.

**OMAR ZAVALA** is an undergraduate geophysics and math minor at the University of Houston who has joined the CBTH project as of this Spring 2017 semester. He is working on the CBTH GIS database and is researching the topic: Compilation of subsidence histories of wells from Central Atlantic conjugate margins of the South Atlantic Ocean.





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### Recent Meetings

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

Congratulations to CBTH students Andrew Steier, Rasheed Ajala, and Kyle Reuber, who won 1st, 2nd, and 3rd place, respectively at the conference on September 13-14, 2016. CBTH PhD student Patrick Loureiro was on the meeting organizing committee and co-chaired the student poster session. A full list of CBTH Presentations at this meeting is available below:



##### Student posters:

- o Ajala, R. - Gravity modeling of the flexural response of loading of the Niger and Amazon deltas onto their underlying thinned continental and oceanic crust
- o Copley, M. - Crustal structure and subsidence history of the East-Africa-Madagascar conjugate margins: Implications for source rock maturity in underexplored offshore basins
- o Dowla, N. - Width of the rifted zones of the northwest Africa-southeast USA conjugate margins as a constraint on an Africa-North America closed fit reconstruction
- o Reuber, K. - South Atlantic conjugate margins: The significance of pre-rift western Gondwanan orogenic domains on syn-rift infill
- o Steier, A. - Fine tuning quantitative, plate-tectonic reconstructions of South Atlantic conjugate margins using a GIS compilation of geologic and geophysical information

##### Talk:

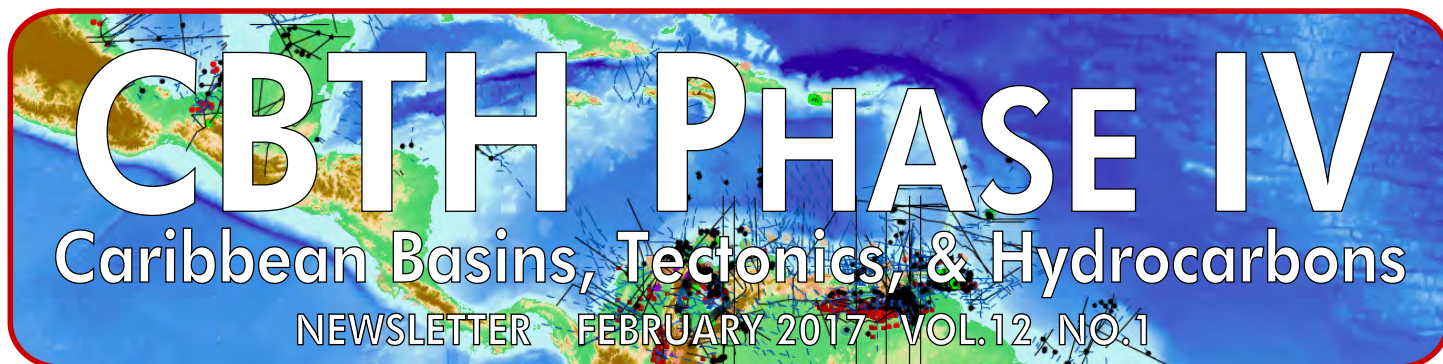
- o Nguyen, L. - Full-fit reconstruction of the East Africa and Antarctica Continental Margins

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

CBTH students and researchers presented at the Gulf Coast Association of Geological Societies Annual Convention in Corpus Christi on September 18-20, 2016. Presenters and talk titles are listed below.

- o P. Mann and A. Steier., 2016, Tweaking Pangea's breakup: Triassic to present plate tectonic reconstructions integrating recent geologic, geophysical, and hydrocarbon data from the Atlantic and Gulf of Mexico conjugate margins
- o D. Lankford-Bravo, et al - Documentation of isolated lenses of high velocity, Eocene to Miocene limestone within clastic rocks above and below allochthonous salt bodies, northcentral Gulf of Mexico
- o M. Nawaz Bugti and P. Mann - What is the limiting factor for hydrocarbon prospects of the Port Isabel Passive Margin Foldbelt, Northwest Gulf of Mexico?
- o D. Lankford-Bravo and P. Mann - Improved mapping of the sub-salt, continent-ocean boundary in the US Gulf of Mexico and implications for the structural relief for overlying folds of the passive margin fold-thrust belt

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## Recent Meetings

### 2016 GCAGS Annual Convention (continued)

- o P. Lin and P. Mann - Kinematics of Jurassic rifting and oceanic spreading between the continental blocks of western Florida and the Yucatan peninsula
- o L. Nguyen and P. Mann - Mesozoic stretching amounts of the continental margins of the Gulf of Mexico basin derived from 3D gravity inversion and depth to basement mapping
- o S. Cornelius and P. Emmet - A geological 3D velocity model in Keathley Canyon and Walker Ridge, Gulf of Mexico

### EAS Student Poster Session held at 2016 Robert E. Sheriff Lecture

CBTH students and staff presented their research on Monday, November 7 at the 2016 Robert E. Sheriff Lecture sponsored by the University of Houston and the Houston Geological Society. See below for a full list of presentations.

- o Ajala, R. - Predicted versus observed topographic features related to loading of the Niger and Amazon deltas based on gravity and flexural modeling.
- o Almatrood, M. - Mesozoic to Recent regional controls on subsidence patterns in the Gulf of Mexico basin.
- o Carvajal-Arenas, L., C. - Insights of seaward-dipping reflectors and its implications for the deposition of Cretaceous rocks in the Western Caribbean Sea.
- o Kouassi, M. - Regional comparison of detrital zircon ages from carboniferous and Jurassic strata from the Gulf of Mexico and northern Colombia.
- o Lankford-Bravo, D. - Location of the continent-ocean boundary "step-up fault" and its influence on passive margin fold belts of the western Gulf of Mexico.
- o Lin, P. - Along-strike, structural-volcanic variations of fossil, late Jurassic, southeastern Gulf of Mexico spreading ridge explained by plate reconstruction of Florida and Yucatan continental blocks.
- o Lunn, E. - Barreirinhas and Ceara Basins of Northern Equatorial Brazil: Upper and lower plate transition theory over the Romanche Fracture Zone - A seismic study to determine structure, stratigraphy, and petroleum potential.
- o Martinez, S. - Calculation of regional geomorphic indices to constrain the mechanisms of tectonic uplift and active deformation of the island of Puerto Rico.
- o Nawaz Bugti, M. - Mechanism of salt deformation in Port Isabel fold-thrust belt, northwest Gulf of Mexico.
- o Serrano-Suárez, B.E. - Seismic facies of three major, Triassic?-recent tectonostratigraphic sequences of the Casamance sub-basin, Senegal basin, offshore Guinea-Bissau, northwest Africa.
- o Steier, A. - Characterization of the Oxfordian sandstone of the Northern Yucatan and its relation to the Norphlet sandstone of the northeastern Gulf of Mexico through seismic mapping.

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### Recent Meetings

#### EAS Student Poster Session held at 2016 Robert E. Sheriff Lecture (continued)

- o Torrado, L. - Seismic characterization of Cretaceous to Recent mass transport complexes in the Foz do Amazonas Basin, Northern Brazil: Implications for future hydrocarbon exploration.
- o Zhang, L. - Using contrasting well subsidence histories from conjugate margins of Brazil and Angola as a test of symmetrical vs. asymmetrical rifting, upper and lower plate margins, and later basin inversion events.

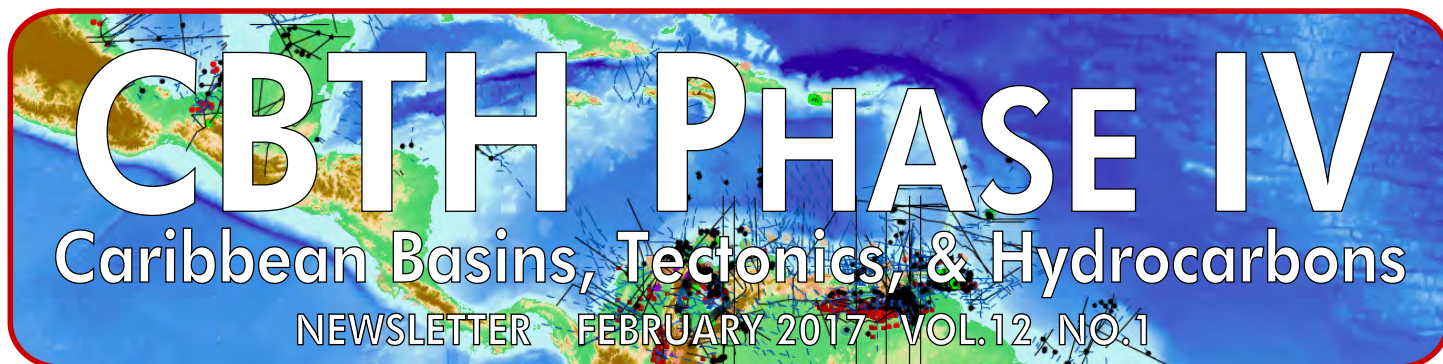


#### 2016 American Geophysical Union (AGU) Annual Meeting

CBTH students and researchers presented at the 2016 American Geophysical Union (AGU) Annual Meeting in San Francisco on December 12-16, 2016. Presenters and talk titles are listed below. All presentations below with the exception of those by Gomez and Martinez were presented in a special oral and poster session (T41C) convened by Paul Mann and Gyorgy Marton entitled: Mesozoic to Recent tectonic evolution of the Gulf of Mexico basin from integrated geologic and geophysical data sets

- o Ajala, R. and P. Mann - Gravity-based model for regional flexure induced by crustal loading by the 14-km-thick Mississippi delta.
- o Almatrood, M., P. Mann, and M. Nawaz Bugti - Mesozoic to Recent, regional tectonic controls on subsidence patterns in the Gulf of Mexico basin.
- o Cassidy, M. - The early Gulf of Mexico as a subaerial basin below sea level (SABSEL) basin, evidence from stratigraphy and facies of Louann Salt, Norphlet Sandstone, and Smackover Brown dense formations.
- o Cornelius, S. and J. Castagna - Salt interval velocities versus latitude in the deepwater Gulf of Mexico: Keathley Canyon and Walker Ridge areas.
- o Cornelius, S. and P. Emmet - Geological 3D velocity model in Keathley Canyon and Walker Ridge, deepwater Gulf of Mexico.
- o Fick, C.A., and P. Mann - Mexican Ridges passive margin foldbelt of western Gulf of Mexico detached below an extensive Oligocene mass transport complex.
- o Gomez, S. and P. Mann - Structural domains of the Barbados accretionary prism defined by regional grid of 2D seismic lines.
- o Kouassi, M. - Regional comparison of detrital zircon populations in pre-rift Paleozoic and syn-rift Mesozoic rocks from the Gulf of Mexico to northern South America.

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## Recent Meetings

### 2016 American Geophysical Union (AGU) Annual Meeting (continued)

- o Lankford-Bravo, D. and P. Mann - Delineation of the Mesozoic "step-up fault" at the continent-ocean boundary in the US Gulf of Mexico and its Cenozoic role as a thrust-ramp for passive margin fold-belts.
- o Lin, P. and P. Mann - Jurassic, slow-spreading ridge in the southeast Gulf of Mexico and its along-strike, morpho-volcanic expression explained by a two-phase opening model.
- o Martinez, S. - Calculation of regional geomorphic indices to constrain the mechanisms of tectonic uplift and active deformation of the island of Puerto Rico.
- o Nawaz Bugti, M. and P. Mann - Distinctive styles of salt deformation formed by radial, convergent gliding into the sharp corners of the northeastern and northwestern Gulf of Mexico.

### Presentations made by UH CBTH group to Houston-based companies or to companies visiting UH, January-December 2016

- o January 26, 2016: Premier-UK
- o March 6, 2016: Shell, Houston
- o April 19, 2016: Spectrum, Houston
- o April 26, 2016: Murphy Oil, Houston
- o May 12, 2016: ExxonMobil, Spring
- o May 19, 2016: Chevron, Houston
- o May 24, 2016: Hess, Houston
- o May 24, 2016: Repsol, Houston
- o May 25, 2016: ENI, Houston
- o June 20, 2016: CBTH sponsors luncheon and progress report at AAPG meeting, Calgary
- o June 28, 2016: Ecopetrol America, Houston
- o June 30, 2016: Anadarko, Woodlands
- o July 5, 2016: Tullow-UK (conference call)
- o July 6, 2016: Nexen, Houston
- o July 13, 2016: Halliburton, Houston (conference call)
- o July 20, 2016: ENI-Milan (webinar)
- o September 15, 2016: Spectrum, Houston
- o September 19, 2016: Spectrum, Houston
- o September 30, 2016: CBTH yearend meeting for sponsors, Houston
- o November 30, 2016: Spectrum, Houston

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### Upcoming Meetings

#### HGS International Dinner on February 20th

CBTH PhD student Shenelle Gomez will be presenting at the Houston Geological Society International Dinner at the Westchase Hilton on Monday, February 20, 2017, on her CBTH-supported dissertation topic of "Tectonostratigraphic evolution of the Barbados accretionary prism and its controls on hydrocarbon prospectivity in offshore Barbados." To register for the event, visit <https://www.hgs.org/civicrm/event/info?id=1726>

#### 51st Annual Geological Society of America (GSA) South-Central Section

CBTH undergraduate students David Lankford-Bravo and Sabrina Martinez will present at the upcoming GSA South-Central Meeting in San Antonio on March 13-14, 2017. They will both present at the undergraduate research poster session held on Monday, March 13 in the Grand Ballroom CDE at the Omni Colonnade San Antonio. For more information, visit the following website: <https://www.geosociety.org/GSA/Sections/sc/2017mtg/Home.aspx>

- o Lankford-Bravo, D. and P. Mann – Detailed mapping of the junction of the late Jurassic "step-up" continent-ocean boundary of the northern U.S. GOM within the continent-ocean transform along the east coast of Mexico
- o Martinez, S. – Active tectonics within Puerto Rico: Identifying areas of active uplift using regional geomorphic indices

#### AAPG Annual Convention & Exhibition 2017

The American Association of Petroleum Geologists will hold its annual convention and exhibition at the George R. Brown Convention Center in Houston, Texas on April 2-5, 2017. Below, you will find a list of CBTH presentations and talks at the meeting. For more information, visit <http://ace.aapg.org/2017>.



#### Monday Morning Poster Session (AAPG student poster competition)

- o Bugti, M. N. and P. Mann - Effects of convergent, radial-gliding "corner" geometry on petroleum charge, Port Isabel passive-margin foldbelt, northwestern Gulf of Mexico.
- o Torrado, L., and P. Mann - Similarities and differences between the Late Cretaceous fan complex and the overlying Neogene Amazon cone in the Foz do Amazonas basin, northern Brazil – Implications for future hydrocarbon exploration.

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### Upcoming Meetings

#### AAPG Annual Convention & Exhibition 2017 (continued)

##### Tuesday Afternoon Poster Session

- o Nguyen,, L.C. and P. Mann - Two-phase, full-fit, Triassic-Mesozoic reconstruction of the Gulf of Mexico basin, its continental margins and twin salt basins.
- o Saunders, M., L. Geiger, and A. Steier – Mapping the Jurassic Norphlet sandstone along the northern margin of the Yucatan Peninsula

##### Wednesday Oral Presentations

- o 9:05 a.m. – Reuber, K., P. Mann, and J. Pindell - Asymmetrical conjugate margins of the South Atlantic: Effects of variable basement architecture and magmatic additions on the continental rifting process and petroleum systems
- o 1:20 p.m. – Mann, P., L. Nguyen, M. Kouassi, and M. Almatrood - Early Paleozoic to Recent plate animation of Gulf of Mexico evolution as a framework for understanding its diverse hydrocarbon resources.

#### CBTH Luncheon at AAPG Annual Convention & Exhibition on April 3, 2017

During this year's AAPG convention in Houston, the CBTH Project will host its annual sponsors luncheon on Monday, April 3rd at a location to be determined beginning at 12 noon. Sponsor representatives will receive an official invite in the forthcoming weeks. Stay tuned for more details

#### University of Houston Earth and Atmospheric Sciences Student Research Day and Industry/Alumni Open House

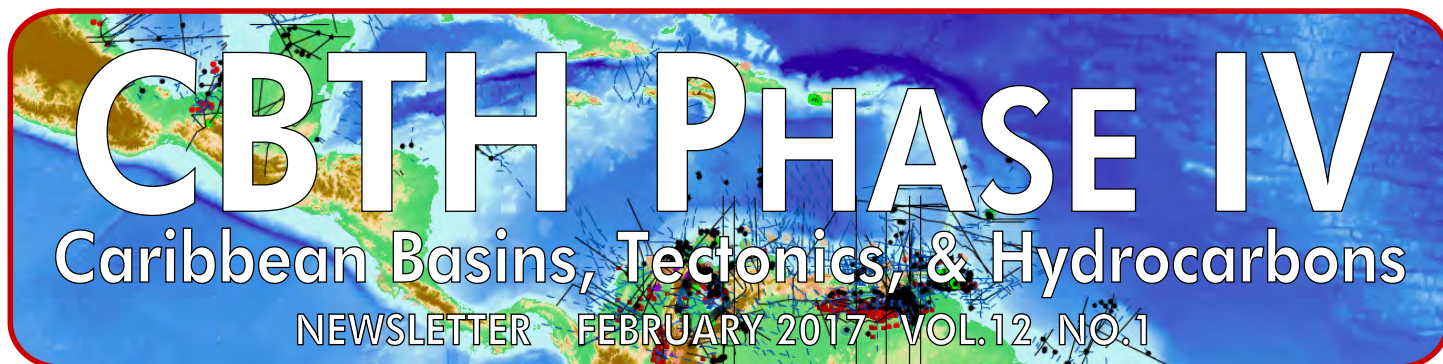
CBTH students and researchers will be presenting at the UH EAS Student Research Day / Industry Alumni Open House from 9 am to 5 pm on Friday, April 28, 2017. Starting at 5 pm, there will be a student, faculty, and alumni gathering at the McGonigle's Mucky Duck, 2425 Norfolk, Houston, 77098. For more information, visit <http://www.uh.edu/nsm/earth-atmospheric/news-events/research-day/>

#### 6th Geological Conference of the Geological Society of Trinidad and Tobago

The Geological Society of Trinidad and Tobago (GSTT) will host its 6th Geological Conference in Port-of-Spain, Trinidad on May 21-24, 2017. See below for a list of CBTH presentations at the meeting.



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## Upcoming Meetings

### **6th Geological Conference of the Geological Society of Trinidad and Tobago (continued)**

- o Gomez, S. – Three structural trends within the Barbados accretionary prism and their tectonic significance
- o Alvarez, T. (now Asst. Professor, Dept. of Petroleum Engineering, University of Trinidad and Tobago) - Lithospheric Flexure at the Southeastern Caribbean Transitional Tectonic Margin; Implications for Source Rock Burial and Maturity
- o One day, pre-conference short course on Sunday, May 21, hosted by Tricia Alvarez, Dept. of Petroleum Engineering, UTT, and Paul Mann, UH - Recent developments in understanding the regional tectonics and petroleum potential of offshore Trinidad, Tobago Basin, Grenada Basin, Barbados Ridge and Orinoco Delta

### **79th EAGE Conference & Exhibition**

The European Association of Geoscientists and Engineers (EAGE) will host its annual meeting on June 12-15, 2017 in Porte de Versailles, Paris, France. Visit <https://www.eage.org/event/?eventid=1490> for more details.

### **16th African E&P Conference hosted by PESGB**

The Petroleum Exploration Society of Great Britain (PESGB) will host its annual conference on August 31-September 1, 2017 in London. For more information, visit <http://www.pesgb.org.uk/events/event-338/>

### **CBTH Annual Sponsors Meeting**

The CBTH annual sponsors meeting is scheduled for September 15, 2017. Visit our website for more details as they become available.

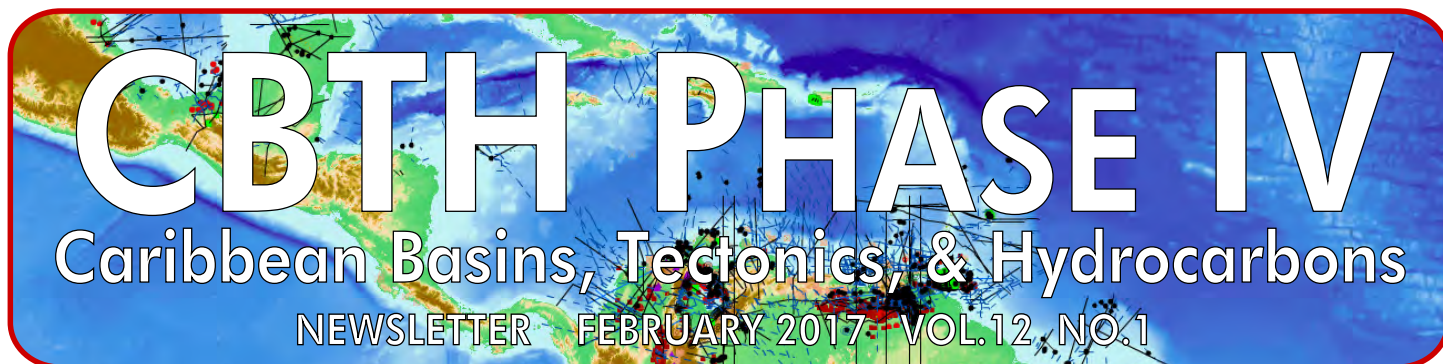
### **3P Arctic 2017 Conference and Exhibition**

The European Association of Geoscientists and Engineers (EAGE) will host its annual meeting on June 12-15, 2017 in Porte de Versailles, Paris, France. Visit <https://www.eage.org/event/?eventid=1490> for more details.

### **GCAGS 2017**

The Gulf Coast Association of Geological Societies will hold its annual meeting on November 1-3, 2017 in San Antonio, Texas. For more information, visit <http://www.gcags2017.org/>





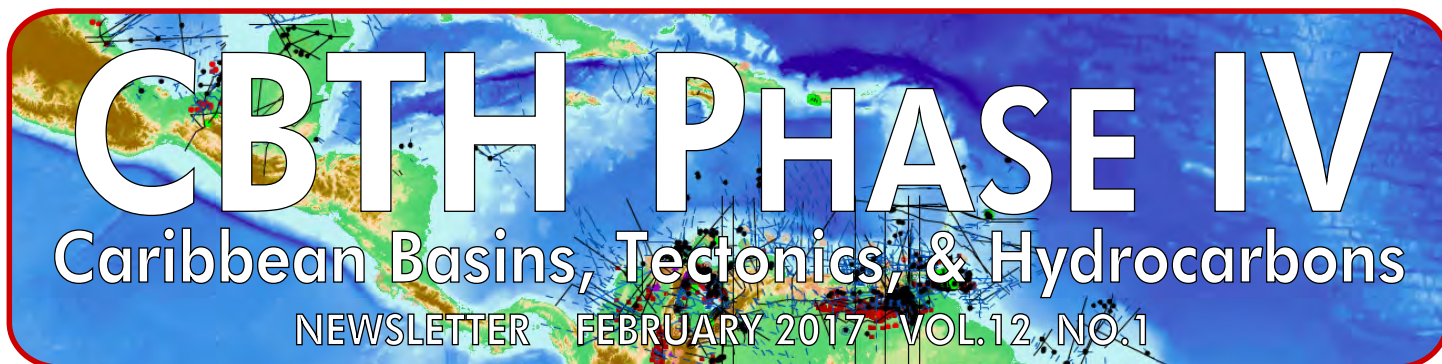
## **Recent Publications**

### **2016 student thesis studies supported by the CBTH project (3)**

- Ahmed, M., 2016, Tectonostraphic evolution of the Barbados Accretionary prism and the Tobago basin using MCG data: MSc thesis, University of Stavanger.
- Dieset, J., 2016, Eocene reservoir rocks from Jamaica: A provenance study: BS thesis, University of Stavanger, 48 p.
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### **2016 Publications (6)**

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- Bingham, L. and Karssenberg, D., 2016, Error propagation in a fuzzy logic spatial multi-criteria evaluation, International Journal of Geographical Information Science, v. 20, n. 8., p. 1552-1578.
- Kocel, E., Stewart, R., Mann, P., and Chang, L., 2015, Near-surface geophysical investigation of coseismic folding and uplift of the Leogane fan-delta during the 2010 M7 Haiti earthquake, Interpretation, v. 4, n.1, p. T49-T61.
- Leslie, S. and Mann, P., 2016, Giant submarine landslides on the Colombian margin and tsunami risk in the Caribbean Sea: Earth and Planetary Science Letters, v.449, p. 382-394.
- Nguyen, L., and 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, v. 4, n. 1, p. SC23-SC33.
- Reuber, K., Pindell, J., Horn, B.W., 2016, Demerara Rise, offshore Suriname: Magma-rich segment of the Central Atlantic Ocean, and conjugate to the Bahamas hot spot: Interpretation, v. 4, n. 2, p.T31-T45.



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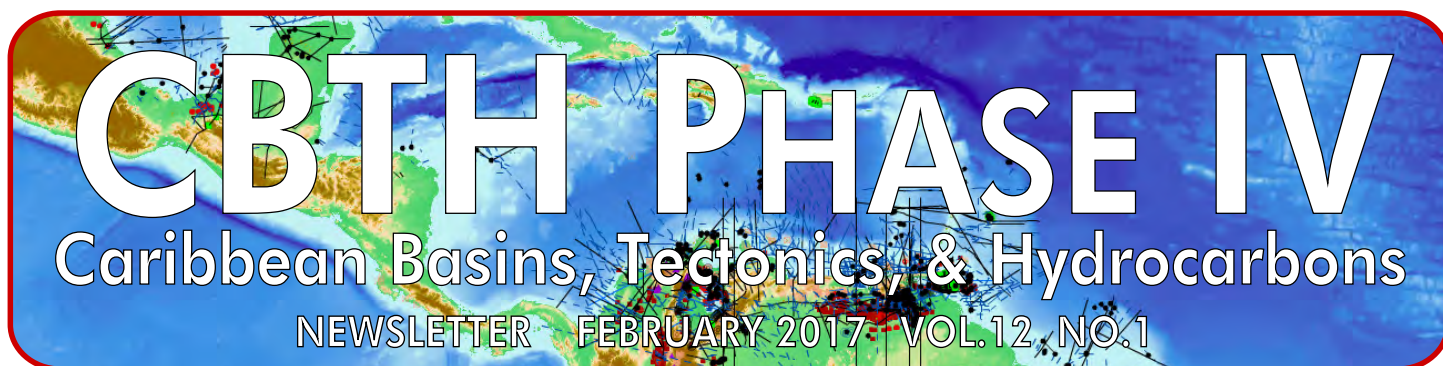
## Caribbean Basins, Tectonics, & Hydrocarbons

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### Upcoming Publications

- Carvajal, L.C. and Mann, P., 2017, 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.
- Gomez, S., Mann, P., and Bird, D., 2017, Deep crustal structure and tectonic origin of the Tobago-Barbados ridge, Lesser Antilles arc, submitted to *Interpretation*. Mann, P., and Roberson, R., 2017, 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., 2017, Tectonostratigraphic evolution and hydrocarbon prospectivity of Jamaica and its offshore basins from regional integration of potential field, seismic reflection, well, and outcrop data: *AAPG Bulletin Special Issue*, in preparation.
- Ott, B., Mann, P., Carvajal, L.C., 2017, Identifying active inter- and intraplate fault zones in the western Caribbean Plate from seismic reflection data and the significance of the intraplate Pedro Bank fault zone in the tectonic history of the 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., 2017, Crustal provinces 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., 2017, 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., 2017, 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.





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### Awards

- 2016 - Andrew Steier, MS student, selected for ExxonMobil Bighorn Basin Field Course, July, 2017
- 2016 – Shenelle Gomez, undergraduate, Best oral presentation, Tier 1 category (Advanced PhD), Tectonics seminar, spring semester, 2016
- 2016 – Andrew Steier, MS student, Best oral presentation, Tier 2 category (Advanced MS, beginning PhD), Tectonics seminar, spring semester, 2016
- 2016 – Sabrina Martinez, undergraduate, Best oral presentation, Tier 3 category (Undergraduate), Tectonics seminar, spring semester, 2016.
- 2016 - Joan Blanco (PhD candidate), Third place (with UH team member Alexandre Silva), SEG Challenge Bowl World Finals, SEG annual meeting, Dallas, October 17, 2016
- 2016 - Andrew Steier, MS candidate, 1st place student poster competition, 15th Houston Geological Society/Petroleum Exploration Society of Great Britain, Africa 2016 Conference
- 2016 - Rasheed Ajala, undergraduate, 2nd place student poster competition, 15th Houston Geological Society/Petroleum Exploration Society of Great Britain, Africa 2016 Conference
- 2016 - Kyle Reuber, PhD candidate, 3rd place student poster competition, 15th Houston Geological Society/Petroleum Exploration Society of Great Britain, Africa 2016 Conference
- 2016 - Rasheed Ajala, Undergrad, Tectonophysics travel grant, American Geophysical Union, Fall meeting
- 2016 - Eric Lunn, PhD candidate, Houston Endowment Recruitment Fellowship
- 2016 - Rasheed Ajala, Undergrad: Mack Gipson Scholarship Award, National Association of Black Geologists
- 2016 - Shenelle Gomez, PhD Candidate: 2nd Place, AAPG 2016 Annual Meeting Student Poster Competition
- 2016 - Luis Carlos Carvajal, PhD Candidate: 3rd Place, AAPG 2016 Annual Meeting Student Poster Competition
- 2016 - Rasheed Ajala, Undergrad, Anadarko/SEG Scholarship, Fall 2016-Spring 2017
- 2016 - Sabrina Martinez, Undergrad, Marathon Oil Geosciences Scholarship, Fall 2016-Spring 2017
- 2016 - Rasheed Ajala, Undergrad, UH Provost's Undergraduate Research Scholarship (PURS) for fall semester
- 2016 - Pin Lin, PhD Candidate: AAPG Foundation 2016 Grant-In-Aid
- 2016 - Pin Lin, Marathon Scholarship for Outstanding Graduate Work in Geology
- 2016 - Lucia Torrado, Marathon Scholarship for Outstanding Graduate Work in Geology
- 2016 - Sabrina Martinez, undergrad, UH Geology Field Camp Scholarship (Shell)
- 2016 - Callum Byers, Undergrad, UH Geology Field Camp Scholarship (Shell)
- 2016 - Rasheed Ajala, Undergrad, UH Geophysics Field Camp Scholarship (Leslie and Alan Wong)
- 2016 - Andrew Steier, Undergrad, John O'Leary Outstanding Junior (Chevron)
- 2016 - Matthew Copley, Undergrad, Honorable Mention Undergraduate Category, UH Student Research Day
- 2016 - Andrew Steier, Undergrad, Honorable Mention Undergraduate Category, UH Student Research Day
- 2016 - David Lankford-Bravo, Undergrad, Honorable Mention, Undergraduate Category, UH Student Research Day
- 2016 - Pin Lin, 2nd Place Poster Presentation, MS/PhD First Year Category, UH Student Research Day
- 2016 - Kyle Reuber, 3rd Place Poster Presentation, PhD Advanced Category, UH Student Research Day
- 2016 - Shenelle Gomez, PhD candidate and Team Captain, UH Imperial Barrel Award Team (team co-advisor: Paul Mann): 2nd Place; Gulf Coast Imperial Barrel Award Regional Competition

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### 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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