

# Caribbean Basins, Tectonics, and Hydrocarbons Phase III

Principal Investigators:  
Paul Mann, University of Houston, USA & Alejandro Escalona, University of Stavanger, Norway  
<http://cbth.uh.edu>

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## What's New



*Congratulations Bryan Ott, Luis Carlos Carvajal, and Lucia Torrado!*

### CBTH students take 1st, 2nd, & 3rd places in AAPG Student Poster Competition

CBTH Graduate Students Bryan Ott (PhD), Luis Carlos Carvajal (MS), and Lucia Torrado (MS) swept the AAPG Student Poster Competition this year, placing 1st, 2nd, and 3rd Place, respectively. A MS student from the University of Manchester (UK) took fourth place. Out of 122 applications, AAPG selected only 15 student posters for the poster presentation competition. Posters submitted by four UH students were chosen for the competition. All students who were part of the competition received prize money.

**First place:** Bryan Ott, Ph.D. Student, \$2,000 cash prize, \$1,000 for UH AAPG Student Chapter  
Poster Title: "Crustal Provinces of the Nicaraguan Rise as a Control on Source Rock Distribution and Maturity"

**Second place:** Luis Carlos Carvajal Arenas, Master's Student, \$1,500 cash prize, \$750 for UH AAPG Student Chapter  
Poster Title: "Petroleum Prospectivity of the Southwestern Nicaraguan Rise (Colombian Caribbean) Based on Regional Integration of Seismic and Well Data"

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## What's New

### CBTH students take 1st, 2nd, & 3rd places in AAPG Student Poster Competition (cont.)

Third place: Lucia Torrado, Master's Student, \$1,000 cash prize, \$500 for UH AAPG Student Chapter Poster  
Title: "Fluvial Geomorphology Changes Linked to Tectonic Effects during the Late Eocene -Oligocene in the Northern Llanos Foreland Basin of Colombia"

A list of CBTH abstracts presented this year is available on our website at <http://cbth.uh.edu/AAPG2013.php> CBTH sponsors can download this year's poster presentations on the "Sponsors Only" section of our website. A list of all CBTH awards since the beginning of the project is listed at <http://cbth.uh.edu/awards.php>

### CBTH students working on industry internships, summer 2013

Below you'll find a list of CBTH students interning with industry sponsors this summer. "Targeted" means that the student is working on the same research topic for their internships as they are for their MS or PhD study.

#### UH Group

- o Rocio Bernal (PhD) - ConocoPhillips, Houston (for fall 2013)
- o Luis Carlos Carvajal (MS) - Chevron, Houston (Latin American group) (targeted)
- o Karilys Castillo (MS) - ConocoPhillips, Houston (West Africa - Sierra Leone group)
- o Orietta Mata (MS) - Shell, Houston (Gulf of Mexico offshore group)
- o Johnathon Osmond (BS) - Mertz Energy, Houston (begins MS study at UT Austin in fall 2013)
- o Bryan Ott (PhD) - Hess, Houston (Brazil offshore group)
- o Luis Pachon (MS) - Halliburton, Houston
- o Kyle Reuber (PhD) - ION Geophysical, Houston (Guyana basin / Brazil group) (targeted)
- o Javier Sanchez (PhD) - Shell, Houston (Colombia offshore group) (targeted)
- o Lucia Torrado (MS) - Talisman, Houston (Colombia group)

#### UiS Group

- o Bereke Kairanov (MS) - Shell (Norway)
- o Rizky Syahrul (MS) - Statoil (Norway)

### CBTH students win top prizes at 2013 UH Research Day

Congratulations to PhD Candidates Rocio Bernal and Bryan Ott, who placed 1st and 2nd, respectively, in the poster competition at the 2013 UH Research Day.

### Sponsor payment deadline for 2013-2014

As a reminder to our sponsors and any potential sponsors, the deadline for payment is **August 15, 2013**. Invoices for Phase III, year 3 payments were sent to current CBTH sponsors in early April. Please contact us if you have any questions regarding sponsorship of the CBTH Project.

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## Graduating CBTH Students at the University of Stavanger



Luisa Campiño  
Restrepo

Luisa graduated from UiS with an MSc in June 2013, and will begin working at Statoil in Stavanger in September. Her thesis title is "2D Seismic Interpretation of the Tumaco on- and offshore basin, SW Colombia: Implications for tectono-stratigraphic evolution and hydrocarbon exploration" which she presented as a poster at the AAPG meeting in May.

Elisabeth graduated from UiS with an MSc in June 2013 and will continue working at UiS for CBTH as a research assistant. Her thesis title is "3D Flexural Modeling through Time in the Northern South America," which she presented at the EAGE meeting this spring. During the summer, she will be working at Postdam Research Institute in Germany in analogue modeling in order to understand the evolution of the Sinu accretionary prism together with Dr. Karen Leever.



Elisabeth Johansen



Bereke Kairanov

Bereke graduated from UiS with an MSc in June 2013, and is currently working at Shell in Stavanger as a summer intern. This fall, he will work for CBTH Stavanger as a research assistant.



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## Graduating CBTH Students at the University of Houston



Tricia Alvarez

Tricia will complete her PhD research at the University of Texas this September. Her study is titled "From the lithosphere to stratigraphic sequences, from the shelf to the deep-marine basin: A study of the influence of plate boundary conditions on basin evolution in the southeast Caribbean subduction to strike-slip transition zone" and will be available to sponsors as a part of our annual release. She will begin working for ConocoPhillips in Houston this fall.

Alex will complete his MS from UH in August 2013. His thesis is entitled "Crustal type, tectonic origin, and petroleum potential of the Bahamas carbonate platform" will be posted on our website in August. Alex will start a job with Samson Resources in Tulsa, Oklahoma, starting this fall.



Alex Dale



Luis Pachon Parra

Luis will graduate from UH in August 2013. His thesis is titled "Sub-surface mapping and 3D flexural modeling of the Putumayo foreland basin, Colombia." This summer, Luis has an internship with Halliburton in Houston and would like to start a permanent job here in Houston in the fall.

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## New CBTH Students at the University of Stavanger



Sayyid "Suhail"  
Ahmad

Suhail is an MSc student at UiS and he will be working as a summer student for the CBTH project this summer on the Landmark database organizing seismic, horizons and faults. He will also be doing his thesis in the CBTH region and will focus on building the paleogeography of the northern Caribbean from Late Cretaceous to Recent.

Wening is an MSc student at UiS. She will be working to import the vast collection of seismic and well images from literature that CBTH compiled from Phases I and II into Landmark for future interpretation.



Ambarwati  
"Wening" Lestari



Zhi Chao Li

Zhi Chao is an MSc student at UiS. He will be working with Wening to import vertical images into the Landmark database. The images that Wening and Zhi Chao import to Landmark will be made available to sponsors.

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## New CBTH Students at the University of Houston



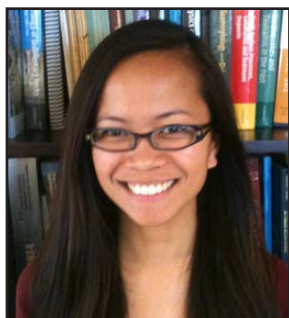
Ian Ambrosius

Ian is an undergraduate student from Alaska and is completing his BS in geology at UH after serving two tours of active duty with the US Marine Corps. He current interests include tectonics and hydrology and he is defining a topic for a UH senior thesis study.

Dane is an undergraduate senior completing his BS in geology at UH. Dane works with GIS software to update the CBTH database and he is currently defining a topic for a UH senior thesis study.



Dane Brodsgaard



Marie de los Santos

Marie is an undergraduate geology student and joined the CBTH project in summer 2013. She is currently working with ArcGIS to update the CBTH database and is defining a topic for a senior thesis study.

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## CBTH Year-end Meeting, Friday, September 20, 2013

The CBTH Project invites all sponsors to attend our annual geared meeting on Friday, September 20, 2013, at Cemo Hall on the campus of the University of Houston.

### Meeting Agenda

7:30 - 8:00 am: Continental breakfast

8:00 - 8:20 am: Paul Mann, Welcome, overview of project, and introductions

### Part I: Regional-scale studies of the CBTH study area

8:20 - 8:40 am: Alejandro Escalona and Ian Norton: Plate reconstructions of the Caribbean updated

8:40 - 9:00 am: Sayyid Suhail Ahmad and Alejandro Escalona: Paleogeography of the northern Caribbean

9:00 - 9:20 am: Elisabeth Johansen, Alejandro Escalona, and Nestor Cardozo: 3D flexural modeling of northern South America

9:20 - 9:40 am: Kherlen Batbayar: Integrating stress data from Cretaceous-Recent faults with PaleoGIS Caribbean plate reconstructions

9:40 - 10:00 am: Lisa Bingham and Derek Karssenberg: Monte Carlo simulation of fuzzy logic multi-criteria evaluation for petroleum exploration

10:00 - 10:20 am: Naila Dowla: Predictions for giant oil and gas field discoveries in the CBTH study area and worldwide in the coming decade

10:20-10:35 am: *Coffee Break*

### Part II: Gulf of Mexico basin

10:35 - 10:55 am: Murad Hasan: Rifting of the eastern Gulf of Mexico basin during the Jurassic and early Cretaceous and implications for petroleum exploration



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## CBTH Year-end Meeting, Friday, September 20, 2013

### Meeting Agenda

#### Part III: Basins from Western Venezuela to Northern Brazil

10:55 - 11:15 am: Joan Blanco: Structural styles and hydrocarbon potential of the Falcón Basin and adjacent offshore areas in western Venezuela

11:15 - 11:35 am: Karilys Castillo: Structural and stratigraphic evolution of the easternmost Venezuelan foreland basin: Implications for petroleum potential

11:35 - 11:55 am: Tricia Alvarez: From the lithosphere to stratigraphic sequences, from the shelf to the deep-marine basin: A study of the influence of plate boundary conditions on basin evolution in the south-east Caribbean subduction to strike-slip transition zone

11:55 am - 12:15 pm: Kyle Reuber: Using better defined continent-ocean boundaries in northern Brazil and western Africa to improve Paleogeographic plate reconstructions, Equatorial Atlantic

*12:15 - 1:00 pm: Box lunches provided in the conference area*

#### Part IV: Nicaraguan Rise and Colombian basins

1:00 - 1:20 pm: Bryan Ott: An integrated tectonic evolution of the Nicaraguan Rise using data from the Jamaican, Honduran and Colombian offshore sectors

1:20 - 1:40 pm: Luis Carlos Carvajal: Petroleum prospectivity of the Nicaraguan Rise in Colombia and Nicaragua

1:40 - 2:00 pm: Rocio Bernal: Regional effects of Cenozoic subduction on sedimentation, structure, and hydrocarbon prospectivity of the Lower Magdalena basin and offshore area of northern Colombia

2:00 - 2:20 pm: Elisabeth Johansen, Karen Leever, Alejandro Escalona, and Onno Oncke: Analogue modeling of the effect of sedimentation rates on accretionary wedge dynamics - the Magdalena fan case, Colombia

2:20 - 2:40 pm: Orietta Mata: Structural history, subsidence mechanisms, and petroleum potential of the Plato sub-basin of northern Colombia



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## CBTH Year-end Meeting, Friday, September 20, 2013

### Schedule of Events

#### Part IV: Nicaraguan Rise and Colombian basins (cont.)

2:40 - 3:00 pm: Carolina Mejia: Defining reservoirs in the fold-thrust belt of the Cordillera Oriental of Colombia using structural restorations combined with fission track thermochronology

3:00 - 3:15 pm: *Coffee break*

3:15 - 3:35 pm: Lucia Torrado: Sequence stratigraphic criteria for distinguishing non-productive, mud-filled channels from productive, sand-filled channels in the Llanos foreland basin, Colombia

3:35 - 3:55 pm: Luisa Campino Restrepo and Alejandro Escalona: Tectonostratigraphic evolution of the Tumaco basin, offshore western Colombia

3:55 - 4:15 pm: Luis Pachon: 3D flexural model of the Putamayo foreland basin: Implications for the presence of a forebulge and influence on the petroleum system

4:15 - 5:00 pm: Paul Mann and Alejandro Escalona: Presentation of major goals for CBTH study in coming year and input from sponsors

5:00 pm: *Meeting adjourned; happy hour at local restaurant*

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## Recent & Upcoming Meetings

### GSA South-Central Section Meeting

The Geological Society of America hosted its South-Central Section meeting on April 4-5 in Austin, Texas. CBTH students and research staff, including undergraduates Kherlen Batbayar, Naila Dowla, Luan Nguyen, graduate students Kyle Reuber and Alex Dale, former graduate student Zachary Wolfe, and CBTH researchers Paul Mann and Murad Hasan, will be presenting 6 presentations at the meeting. For a complete list of presentations and times, visit <http://eas.uh.edu/news-events/assoc-meetings/SouthCentral-2013/index.php>



### EuroGeo 2013 meeting

Lisa Bingham attended the EuroGeo 2013 meeting in Bruges, Belgium from May 9-11 where she presented recent findings, "Error Propagation of a Fuzzy Logic Multi-criteria Evaluation for Petroleum Exploration". The presentation is available to our sponsors online.

### AAPG Spring 2013 Meeting

The American Association of Petroleum Geologists hosted the 2013 AAPG Annual Convention in Pittsburgh, Pennsylvania on May 19-22. CBTH Graduate Students Bryan Ott, Luis Carlos Carvajal, and Lucia Torrado swept the Student Poster Competition this year, placing 1st, 2nd, and 3rd Place, respectively. A list of abstracts being presented by CBTH researchers this year is available on our website at <http://cbth.uh.edu/AAPG2013.php>



### EAGE Summer 2013 Meeting

The European Association of Geoscientists and Engineers held its annual convention this summer, June 10-13, in London, England. CBTH graduate student at UiS Elizabeth Johansen presented her MSc thesis research on 2D and 3D flexural modelling of the southern Caribbean and northern South America.



### AAPG ICE September 2013 Meeting

CBTH researchers at this year's meeting in Cartagena, Colombia will include several presentations including Rocio Bernal, Karilys Castillo, Lucia Torrado and Luis Carlos Carvajal. We hope to see you there!

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## Recent Publications

Escalona, A. and W. Yang, 2013, Impact of low-angle subduction in petroleum systems along the Leeward Antilles island arc emergent gas trend, northern South America: First Break. , v. 31, p. 55-65.

Escalona, A. and W. Yang, 2013, Subsidence controls on foreland basin development of northwestern offshore Cuba, southeastern Gulf of Mexico: AAPG Bulletin, January 2013, v. 97, p. 1-25, doi:10.1306/06111212002.

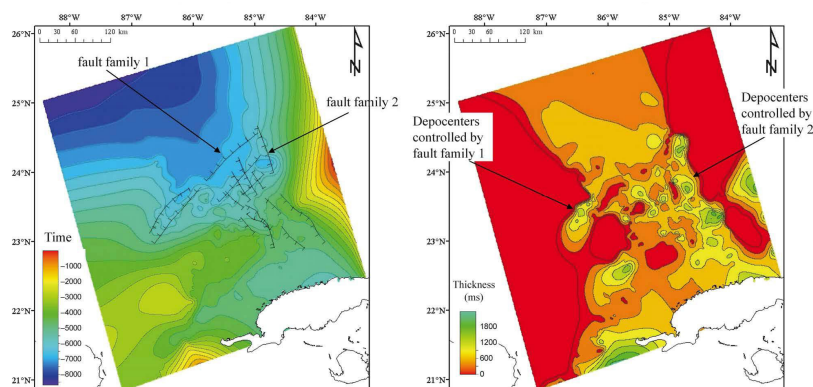
Koehler, R., Mann, P., Prentice, C., Brown, L., Benford, B., and Grandison-Wiggins, M., 2013, Enriquillo-Plantain Garden fault zone in Jamaica: Paleoseismology and seismic hazard: Bulletin of the Seismological Society of America, v. 103, no. 2A, p. 971-983, April, 2013, doi: 10.1785/0120120215.

Mann, P., 2013, Comparison of structural styles and giant hydrocarbon occurrences within four active strike-slip regions: California, Southern Caribbean, Sumatra, and East China, in D. Gao, ed., Tectonics and sedimentation: Implications for petroleum systems: AAPG Memoir 100, p. 43-93.

Prentice, C., Mann, P. and Pena, L., 2013, Comment on: Historical perspective on seismic hazard to Hispaniola and the northeast Caribbean region: Journal of Geophysical Research, Solid Earth, v. 118, 1-4, doi:10.1002/jgrb.50170.2013.

Vargas, C., and Mann, P., 2013, Tearing and breaking off of subducted slabs as the result of collision of the Panama arc-indenter with northwestern South America: Bulletin of the Seismological Society of America, Vol. 103, No. 3, p. 2025-2046, June, 2013, doi: 10.1785/0120120328.

Note: All Mann's publications can be downloaded as pdfs including those above can be downloaded from this Research Gate link: [http://www.researchgate.net/profile/Paul\\_Mann3/](http://www.researchgate.net/profile/Paul_Mann3/)



*Time structural map and time thickness map from Escalona and Yang's paper in AAPG bulletin*



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## Thanks to our current sponsors!

As we continue into Phase III of the CBTH project, we would like to thank our company sponsors for their ongoing 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.

