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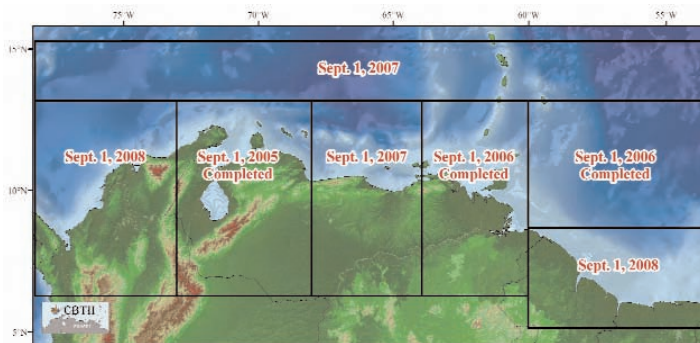
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GREETING

In this fifth CBTH Newsletter, we provide updates on the project’s completed activities from October 2006 and an overview of planned activities in the coming months of Year Two of the study. We hope you have become ever more acquainted with the GIS database and website, and that it is assisting you in your exploration efforts in the Phase I study area. We are very happy to learn that many of you use the GIS and access and download data from the website. Keep those questions coming in!

If you are not a member and are interested in participating in the CBTH consortium, we encourage you to take a minute to review our website (www.ig.utexas.edu/research/projects/cbth) where you may download our project proposal. Please feel free to contact us at cbth@ig.utexas.edu

On the business side: Year Three payments are due by wire transfer or mail on August 15, 2007. We appreciate the extra efforts of the representatives of all companies that sent or wired payments for Years One and Two before the deadline. We will initiate the billing process May 1, 2007, to allow you time to arrange payment for the third year of the study by August 15, 2007. Late fees in the amount of \$20,000 are charged when a payment is received after September 1. When your payment is received you will receive your new password to access the data downloads on the website for Fall 2007. Payment instructions will be provided on the invoices that you will receive in May. It’s important to follow these instructions carefully as there are many industry-sponsored projects here at UT and payments can be confused if they are not properly identified and routed.



Phase I Release Schedule

UTIG moved in late December-early January to a new building next to the Bureau of Economic Geology at the J.J. Pickle Research Campus in north Austin. In September, we will have our year-end meeting for Year Two in this building.

Our new mailing address is:

University of Texas Institute for Geophysics
J. J. Pickle Research Campus
10100 Burnet Rd, Bldg. 196, Mail Code R2200
Austin, TX 78758-4430

ADDITIONS TO THE CBTH RESEARCH TEAM

Thanks to the funding support of our sponsors, the CBTH research team is growing.

We have added one undergraduate student, Will King. Will is working on a Bachelor’s of Science in Geology and will graduate in May 2008. Will is a diligent worker who takes a lot of initiative and we are very excited to have him as a part of the CBTH team. Will is currently entering data into the GIS database and keeping our project bibliography current.

To learn more about Will or any other researcher on the project, visit: http://www.ig.utexas.edu/research/projects/cbth/proj_res.htm

We are in the process of interviewing undergraduate students for a second undergraduate research assistant. We hope to add one more undergraduate student to help us and to help with the many tasks needed for the database. We would also like to involve both Will and this student in an original research study using some part of the data set.

Since we are part of a major university, among the largest research “products” that are ‘purchased’ with annual fees are trained geoscientists at levels ranging from undergraduate through post-doctoral. Please let

us know if you would like to support any of our personnel as summer interns or permanent employees at your company.

MEET OUR COMPANY CONTACTS

The following people have volunteered to serve as our main contacts for CBTH. All data generated by CBTH is provided to the sponsoring companies through these individuals. Please let us know if your company representative changes over the three-year course of this study. In order to avoid any confusion, in the case that the contact was to change during the course of the study, we send an invoice with all data shipments. The contact signs and returns the invoice to us by fax or mail. That way we have documentation of the person and time that the data was received at the company. The contact person also disseminates our products to other people in their respective companies along with representing the company at our annual meetings. We are also looking for data from critical areas in the Phase II study areas and will channel our requests through the company contact person. We greatly appreciate the extra efforts of the contacts for the project!

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CBTH SOFTWARE SUPPORT

Landmark Graphics (software support)

Connie Johnson
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Landmark Graphics kindly provides our interpretative software. We've just completed our second three-year software agreement with them.

IVS3D (software support)

Bill McKernan
bmkernan@ivs3d.com



We are also using an exciting visualization package called Fledermaus from IVS3D. We use Fledermaus to create interactive "flyovers" that combine topography,

bathymetry, surface geology, and seismic reflection profiles.

Zetaware Genesis

Zhiyong He

zhe@zetaware.com



ZetaWare, Inc.

Interactive Petroleum System Tools

Zetaware has generously provided CBTH with two copies of Genesis—their basin modeling package. We have been experimenting with its many uses and display options. We plan to show some of its capabilities for well subsidence histories and displaying regional surfaces on the posters to be presented at the Long Beach AAPG meeting in April and again at the GSTT meeting in Trinidad in June. If you would like to find out more about how you can obtain this software, please contact Zhiyong He at zhe@zetaware.com.

PAST MEETINGS AND EVENTS

Venezuela Geophysical Society Meeting

October 22-25, 2006

Caracas, Venezuela

Alejandro Escalona participated in this activity in several ways

- Taught a two-day shortcourse on the subsurface geology of northern South America
- Co-convenor with Victor Ramos and Miguel Bosch for “Symposium on the Tectonics of the Northern Andes and Adjacent Regions”
- Chaired of two sessions
- Invited keynote speaker on regional subsurface geology of the northern South America Caribbean margin
- Their webpage is: <http://www.sovg-ve.org/>

Field trip to Falcon basin, northwestern Venezuela

October 29-November 4, 2006

Western Venezuela

Paul Mann, Alejandro Escalona, and Peter Bartok (consultant based in Houston, Texas) co-led a trip to western Venezuela on Oct 29-Nov 4, 2006. We had 25 participants from PDVSA—a CBTH sponsor. We thank PDVSA for helping to arrange the logistics of the trip and subsidizing many of its costs. The trip made a tectonic-basinal transect connecting the oil-rich Maracaibo basin in the south with the less-explored Falcon basin and Paraguana Peninsula in the north. We

visited a variety of rock types and structures ranging from Precambrian rocks on the South American continent, to the deformed foreland basin rocks near the Caribbean suture, to exotic Caribbean arc and ophiolitic rocks. Where possible, we illustrated the regional structure of each area using wells and seismic data from our database. The field trip guide is available to our sponsors at the web site.

http://www.ig.utexas.edu/research/projects/cbth/SponsorsOnly/thes_diss.htm

We are in the process of making a complete photographic record of the trip in order to make a web-based “virtual field trip” for our sponsors who were unable to attend. We are also in the process of making a 3D virtual field trip using Fledermaus which will be presented at our annual meeting in September 2007.

Field work on the ABC Islands

November, 2006

Aruba, Bonaire and Curacao Islands, Dutch Antilles

Paul Mann and Jean-Claude Hippolyte (University of Savoie, France) conducted structural field work on these islands during November 2006. This work is related to a larger study that they have conducted for the past several years on striated faults in the circum-Caribbean area:

http://www.ig.utexas.edu/research/projects/carib_faults/index.htm and to the BOLIVAR study that collected deep penetration seismic data adjacent to these islands (http://www.ig.utexas.edu/research/projects/venez_margin). The study will be useful for understanding the complex timing of fault events in the ABC islands and Bonaire basin that was discussed in detail in the Gorney *et al.* paper derived from the 2005 MS work by Gorney and is now in press for *AAPG Bulletin*. We are integrating the three main fault phases we identified onland with an offshore mapping of basins surrounding Aruba.

American Geophysical Union Annual Meeting

December 11-15, 2006

San Francisco, California

Paul Mann and Greg Beroza of Stanford University co-convened a session called: “Global strike-slip fault systems: Oblique divergence, oblique convergence, and true transform faults”. Part of our motivation was to highlight some of the BOLIVAR work on strike-slip faults of the Venezuelan margin:

- Clark *et al.*—Tearing the lithosphere: Diachronous slab detachment along the Venezuelan margin from BOLIVAR seismic data.

Other BOLIVAR-related work presented at other AGU sessions included:

- Guedez *et al.*—Bolivar: Crustal Structure of the Caribbean-South America plate boundary at 70W.
- Beardsley *et al.*—Oblique Collision of the Leeward Antilles, Offshore Venezuela: Linking Onshore and Offshore Data from BOLIVAR.
- Levander *et al.*—BOLIVAR & GEODINOS: Investigations of the Southern Caribbean Plate Boundary.
- Arogunmati *et al.*—BOLIVAR: 3-D Seismic Structure of the Leeward Antilles Arc From Seismic Refraction and Reflection Tomography
- Magnani *et al.*—Exhumation of High-pressure Metamorphic Rocks along the Coast of Venezuela: Insights from BOLIVAR Seismic Reflection and Refraction Data

Geological Winter Conference

January 8-10

Department of Petroleum Engineering, University of Stavanger, Stavanger, Norway

Alejandro Escalona gave a talk on the regional Cenozoic tectonic evolution of the Northern South America-Caribbean margin.

Statoil Meeting

January 17

Stavanger, Norway

Alejandro Escalona visited Statoil in Stavanger, Norway to discuss CBTH activities. Statoil is currently drilling in the Plataforma Deltana, eastern Venezuela and also participates in the extraction and upgrading of heavy oil in the Venezuela Orinoco Heavy Oil belt. They're also active in the Gulf of Mexico.

PROGRESS AND UPCOMING INFORMATION

Paul Mann (principal investigator) is working on interpreting data from the Aruba area, the Bonaire basin, and the Trinidad region which is the focus of our atlas to be delivered for the Year Two meeting in September, 2007. Part of this study will integrate the onland structural data from Aruba, Bonaire, and Curacao that he collect-

ed with J. Hippolyte in November 2006. He is also interpreting data from the Grenada basin and Trinidad region in an attempt to refine our model for the opening of the Paleogene Grenada basin, now containing up to 10 km of clastic sediments. Along with A. Escalona and H. El-Mowafy, he supervises three graduate student projects: Eleine Vence's study of the Colombian margin, David Contreras' study of the northern Maracaibo basin, and Margaret Kroehler's study of the Venezuelan basin.

Alejandro Escalona (co-principal investigator) is now working as associate professor at the Department of Petroleum Engineering at the University of Stavanger in Norway where he is planning to expand a petroleum geology program with the support of Statoil and other oil companies working in Norway. In this new job, he will continue to work as a co-principal investigator for CBTH and is currently working on a model for the structural evolution of the entire northern South America-Caribbean margin, refining paleogeographic maps based on recent work, and a regional integration of wells and their subsidence history. Much of this information will be displayed on his poster for the Long Beach meeting that we will make available to the sponsors.

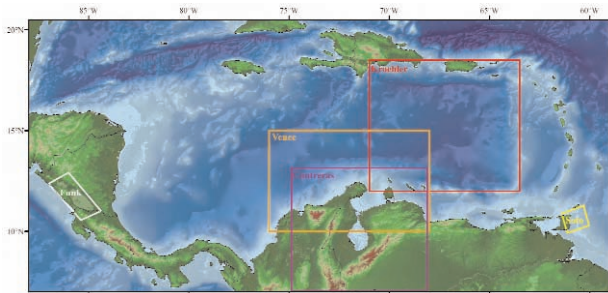
Post-doctoral researcher Hamed El-Mowafy is completing a regional study of faulting and sequences in the Aruba-Bonaire basin. This work includes a detailed map of the rift-related faults affecting the Paleogene level of the basin along with localized inversion structures affecting Miocene and younger intervals. He is also developing a new sequence stratigraphic model for the Aruba-Bonaire basin and is updating the atlas maps delivered in Year One with these new interpretations. He will present this work at the AAPG meeting in Long Beach and the poster will be made available to sponsors.

Lisa Bingham—project manager and GIS specialist—is integrating new seismic, well, and stratigraphic data into the database, in addition to updating the topography, gravity, and other data. She is also making the transition of the database from Arc version 9.0 to 9.2. Several CBTH sponsors have indicated that they plan to make this change over the next year. Lisa is also working with ArcIMS to add an interactive ArcGIS map to our website to improve its ease of use.

UT Graduate Research Assistants. Between May and August, three of our students will be graduating.

Justin Funk, who is working on an MS study (area shown in white) of the shallow stratigraphy and structure of Lakes Nicaragua and Managua (<http://www.ig.utexas.edu/research/projects/NicLakes/>), graduates by

the end of the summer to begin a job as a geoscientist with Devon Energy in Houston. His thesis is titled *Distinguishing tectonic mechanisms of extension and forearc translation near the Central American Volcanic Arc by high resolution seismic profiling in Lakes Nicaragua and Managua.*



David Soto is studying offshore eastern Trinidad (area shown in yellow). He graduates in May and has already started as a geoscientist with Marathon in Houston. David's thesis is titled *Structural architecture and neotectonics of the eastern offshore area of Trinidad based on an integration of 2D and 3D seismic data.*

Margaret Kroehler will also be finishing in August and will start an internship with Noble Energy in Houston. Her MS thesis (area shown in red), titled *Tectonics and seismic stratigraphy of the Venezuelan basin and South Caribbean deformed belt, Caribbean Sea*, will cover the deep part of the Venezuelan basin and includes mapping of the organic rich carbonate unit present in some of the DSDP sites.

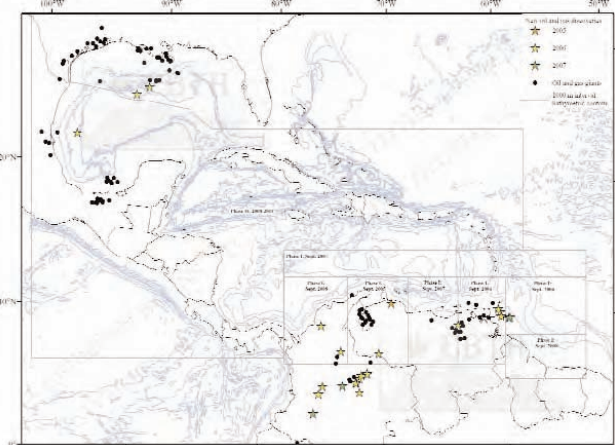
Elaine Vence will intern with Occidental in Houston over the summer but will spend half her time there working on her study of the offshore Colombian area (area shown in orange). She will return to UT in the fall and finish her degree in May 2008.

David Contreras (area shown in purple) will work part of the summer here on his thesis but return to PDVSA for two weeks in the summer to obtain additional data and report on his progress.

Upon completion of these theses, we will make them available to our sponsors through the website.

DATA DISTRIBUTION

Oil and gas discoveries in the Phase I and II study area. We have added a map on our homepage showing oil and gas discoveries for the Gulf of Mexico-Caribbean region for 2005, as well as the oil and gas giants of the region. Note the many exciting new discoveries in the



Phase 2 area. You can also download the GIS shapefile of the new oil and gas discoveries from our website.

<http://www.ig.utexas.edu/research/projects/cbth/SponsorsOnly/VenmarHtml/GIS/>

The Fall 2006 *JOI News* published a report on the IODP meeting "Tectonics, Circulation and Climate in the Caribbean Gateways." A paper on the Falcon basin by Gorney *et al.* is in press at the *AAPG Bulletin*. You can download the IODP report and a preprint copy of the Gorney *et al.* paper at:

http://www.ig.utexas.edu/research/projects/cbth/SponsorsOnly/thes_diss.htm

GULFEX and BOLIVAR seismic data. Because we have received several questions regarding downloading the GULFEX and BOLIVAR data, we posted two README files that answer the frequently asked questions. Also, some navigation files were missing from the GULFEX 2005 data. These files are now posted online.

http://www.ig.utexas.edu/research/projects/cbth/SponsorsOnly/SEGY_Gulfrex/

Venmar GIS. We have updated the shapefiles for the wells, stratigraphic columns and seismic lines for the 2006 delivery. Please go to our website and update your files.

<http://www.ig.utexas.edu/research/projects/cbth/SponsorsOnly/VenmarHtml/GIS/2006/>

USGS data on Venezuela. We have added links to download a GIS database of Venezuela from the USGS Open-File Report 2005-1038.

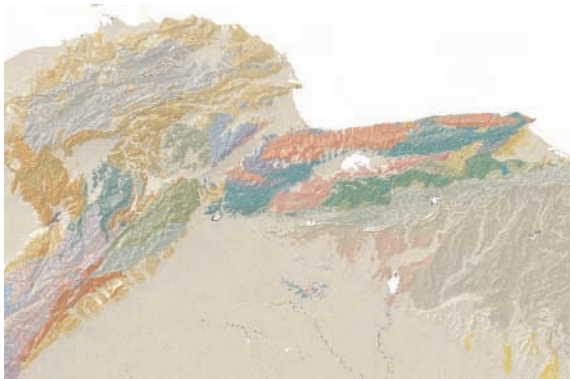
<http://pubs.usgs.gov/ds/2006/199/>

You can also download the PDF of this database on a shaded relief map at:

<http://pubs.usgs.gov/of/2005/1038/>

SRTM Topography. CIAT has released their third version of SRTM. We have downloaded all of the 5x5 degree squares of data and created one large raster for viewing in GIS. From this data, we also created shaded relief. Once you download this data, you can overlay the USGS geology from the Open-File Report 2005-1038 and add transparency and create your own shaded relief map.

<http://www.ig.utexas.edu/research/projects/cbth/SponsorsOnly/VenmarHtml/GIS/>



Sample area of USGS geologic units over SRTM shade file of western Venezuela.

UPCOMING MEETINGS

Keep an eye on our website for updates and more information for these upcoming events.

www.ig.utexas.edu/research/projects/cbth/links.htm

Northern South America Shortcourse

This course will be taught by Paul Mann at the Geological Society of Trinidad and Tobago meeting in June and at the XI Colombian Geological Conference in August. If you are interested in attending this shortcourse, please register for it at either of these meetings. We are also available to present this shortcourse at your company if you cannot attend either meeting. If you have new hires or transfers with the group, these courses provide a quick way to get them up to speed. View the course outline at:

http://www.ig.utexas.edu/research/projects/cbth/documents/Venezuela_course_outline.pdf

American Association of Petroleum Geologists Annual Meeting

April 1-4, 2007

Long Beach, California

We have submitted a total of six abstracts to this meeting that will all be presented on Monday, April 2. We are willing to meet with any representatives who will be attending the meeting. Since many of you have indicated that you will not be attending, we are not planning a formal luncheon as we did for the 2006 AAPG meeting in Houston. We will post our presentations online after the meeting. To read the abstracts please visit: <http://www.ig.utexas.edu/research/projects/cbth/SponsorsOnly/POSTERS/AAPG/2007AAPGAbstracts.htm>

- Bingham *et al.*—Building an Integrated, Digital Database Using HTML and GIS Tools: A Case Study for the Northern South American Petroleum Province.
- Contreras *et al.*—Structure, stratigraphy, and gas potential of the northwestern extension of the Maracaibo foreland basin, western Venezuela.
- El-Mowafy *et al.*—Hydrocarbon potential of the Aruba and western Curaçao basins, offshore Venezuela.
- Escalona *et al.*—Kinematic Model Linking Basin Subsidence and Fault Evolution Along the Obliquely Convergent South America-Caribbean Plate Boundary Zone.
- Vence *et al.*—Along-strike Continuity of Caribbean Tectonic Terranes and their Controls on Source and Reservoir Rocks Offshore Colombia and Venezuela.
- Mann *et al.*—Emerging Trends from 69 Giant Oil and Gas Fields Discovered from 2000-2006.

PDFs of the above posters and talks will be available to sponsors after the meeting.

GSTT Meeting

June 17-22, 2007

Port-of-Spain, Trinidad

We will be attending this meeting to present talks on CBTH-related work in the Trinidad-Barbados data release area for 2006-07. In addition, we have been invited by the GSTT meeting organizers to present our two-day shortcourse on the geology of northern South America.

PDFs of CBTH posters and talks will be available to sponsors after the meeting.

XI Colombian Geological Conference

August 2007
Bucaramanga, Colombia

We have been invited to present the two-day short-course on the geology of northern South America. We'll present some of the thesis work of Eleine Vence in the offshore Guajira region.

PDFs of CBTH posters and talks will be available to sponsors after the meeting.

CBTH Year Two Year-End Meeting

Tentatively set for September 14, 2007
Please let us know if you cannot attend on this date.
Austin, Texas

We hope you will be able to attend our second year-end meeting. This year, we'll be showing off our new building on the J. J. Pickle Research Campus. Because we believe the year-end meeting is highly beneficial to you and to us, we especially encourage you and any new employees to attend. At this time we will release segy data for the Central Venezuela and deep offshore Venezuela blocks along with handing out our Year Two atlases. This will update the information on the Year One atlas along with adding information from the Eastern Venezuela and Trinidad and Tobago areas.

CBTH Trinidad-Tobago-Barbados southeastern Caribbean transect

October 22-29, 2007
Please let us know if you cannot attend during this time.
Trinidad, Tobago and Barbados

This five-day trip in late October/early November will conclude our efforts on this data release area as we did with the yearend trip to western Venezuela in November, 2006. The theme of the trip will be to make a 400-km-long onland geologic transect from the Caribbean arc (island of Tobago) through the Trinidad fold-thrust belt, to the Barbados accretionary prism as exposed on Barbados. As on the 2006 Venezuela trip, the theme of the trip will be to relate the outcrop geology to the offshore seismic and well data. Please mark your calendars for this unique, integrated view of southeastern Caribbean geology! If you're interested in attending the field trip but October is does not work for you, please let us

know when is a better time. We would like to try to schedule this event so that as many as our sponsors as possible can attend.

Day 1–October 22: Fly to Barbados, Barbados.

Day 2–October 23: Barbados Scotland district; discussion of offshore data of Barbados prism.

Day 3–October 24: Barbados Scotland district. Depart to Tobago in the late afternoon.

Day 4–October 25: Tobago geology; discussion of Caribbean arc, and Grenada and Tobago basins.

Day 5–October 26: Depart to Port-of-Spain in the morning. Northern Range and, Naparima Hill; discussion of data from Gulf of Paria.

Day 6–October 27: Trinidad Central Range outcrops and the southeast coast; discussion of data from eastern shelf of Columbian basin.

Day 7–October 28: Depart from Port-of-Spain in the morning

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