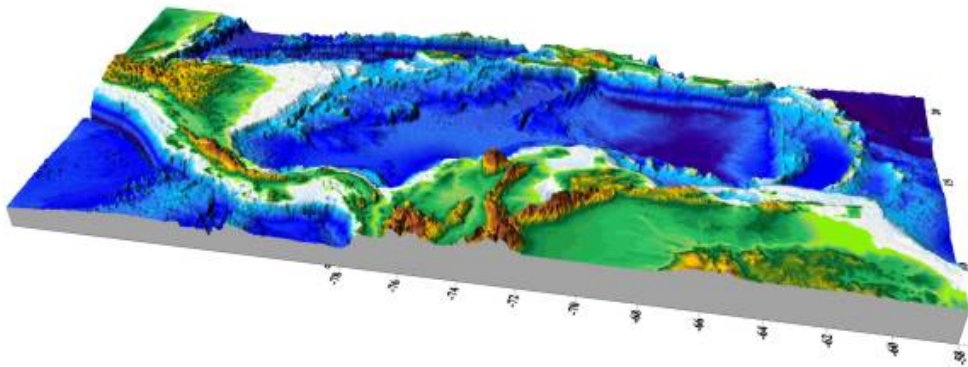


*Proposal from the
Institute for Geophysics, Jackson School of Geosciences, The University of Texas at Austin
(UTIG)*

**Caribbean Basins, Tectonics, and Hydrocarbons (CBTH):
Industry Consortium for Regional Study of Depositional Systems,
Basinal Structure, and Hydrocarbon Potential in the Caribbean Region
(Phase II)**

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



Submitted by:

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Project goals. The main goal of the CBTH proposal (Phase II – September, 2008 – August, 2011) is to expand the CBTH Phase I study area of northern South America (September, 2005 – August, 2008) in order to provide the sponsors with an integrated, digital synthesis of the entire Caribbean region, which includes 31 different countries and their maritime zones (Figure 1). Additional areas to study will include Central America, the northern Caribbean, southern Mexico and the southern Gulf of Mexico. The database and research results from Phase I will be integrated into the Phase II results. We will continue to be active in the Phase I area including database development and research projects including subsurface mapping, sandstone provenance study, and basin modeling.

Project management of CBTH Phase II. CBTH Phase II will be run from two separate universities: The University of Texas at Austin (P. Mann, co-PI) and as a subcontractor the International Research Institute of Stavanger, Norway (A. Escalona, co-PI). A. Escalona is a co-PI of Phase I and has been a major contributor to the sponsor products of Phase I. He will continue in his co-PI role for Phase II in his new position as a professor at the International Research Institute of Stavanger. As at the University of Texas, the Norway group will use CBTH sponsor funds to employ scientists, post-doctoral researchers, graduate students, and undergraduate students to accomplish the goals of the study.

Data sources and products for CBTH Phase II. As for Phase I, data sources for Phase II include 2D seismic data transects acquired by UTIG, previous publications on the region, and data donated by the sponsoring companies. The study will use seismic interpretation and well correlation over the entire region to produce a series of structural, isopach and paleogeographic maps. Deliverables will include a series of structural and stratigraphic maps ranging from the top of acoustic basement to key tectonosequences bounded by regional unconformities, and uninterpreted and interpreted paper and digital seismic data owned by UTIG. All results will be integrated into a user-friendly GIS-HTML database and as a large format hardcopy atlas.

Deliverables for CBTH Phase II. The deliverables for each year of the project from 2008 to 2011 include the following:

Year One (2008-2009): Basemaps displaying all available seismic and well data. Regional structural maps of the main tectonosequences in the region and interpreted UTIG,

GULFREX and other types of available seismic lines. Integration of new subsurface data into existing maps. Compilation of necessary data and preparation of key 2D sections for basin modeling. Preliminary results on the sandstone provenance study and gravity modeling. Complete digital GIS database of all previously published onland and subsurface data and bibliographic database for the region. Year-end research seminar for sponsors held at UT in September, 2009.

Year Two (2009-2010): Construction of cross sections and maps showing the main depositional settings and structural controls for the different tectonosequences. A special report on the integration of basin modeling results and the regional database will be provided to sponsors. A preliminary written and digital atlas and report will be provided and a sponsor's meeting will be organized in September, 2010, to discuss results and to seek feed back from sponsors for the coming year.

Year Three (2010-2011): Synthesis of all data used in the project, compilation into the database and construction of the final atlas-report that summarizes all the information. One of the main goals is to validate a consistent plate tectonic model, paleogeographic evolution and petroleum systems of the region. This report will include new constraints from the basin modeling studies. A final project meeting held at UT in September, 2011, will convey research results to sponsors.

Special projects for CBTH Phase II. Our work is largely driven by the data that is made available to us through the efforts, generosity, and specific needs of our sponsors. We currently have several companies interested in the Trinidad and Tobago region of the southeastern Caribbean but we are also anticipating more sponsors to join the project with interests in the northern Lesser Antilles, Central America, the Greater Antilles, the southern Gulf of Mexico, and Mexico. Given the large interest group in the southeastern Caribbean region, we propose the following thematic studies in this area (pending availability of data from the sponsors):

- 1) ***Northern South America sandstone provenance study:*** We are beginning a multi-year study of the quality and provenance of reservoir rocks along the South American margin from western Venezuela to Trinidad and Barbados. While this project is starting in Year 3 of Phase I, it will continue for all three years of Phase II. We are currently collecting sample material in the field and from our sponsors (Figure 2).

2) ***Incorporating new deep-penetration seismic reflection images:*** We are currently seeking access to new seismic data that will be collected by the Norwegian company Wavefield Inseis in the Trinidad and Barbados areas in 2008. The preliminary locations of the proposed lines are shown in Figure 3 (pending financial commitments from interested companies). We cannot provide the original and intellectual property from the data will be provided only to those companies that supported the acquisition program of Wavefield. However, the new data will be available for future purchase by those sponsors that did not participate in the original Wavefield program. Further information needs to be obtained directly from Wavefield.

3) ***Tectonics and sedimentation in the Gulf of Paria and onland Trinidad.*** We are seeking to acquire deep penetration seismic data and well data from the Gulf of Paria from our sponsors to update our older study of the area (Babb and Mann, 1999). We also seek onland seismic data from Trinidad to better integrate the offshore and onshore geology. A particular focus is to improve imaging and interpretation of the geology beneath the middle Miocene unconformity.

4) ***Structure and stratigraphy of the Tobago-Barbados ridge.*** The recent oil discovery on Barbados, with compositions similar to the Late Cretaceous La Luna Formation of mainland South America 400 km to the south, has raised the question of possible continuous stratigraphic links between the two widely separated and tectonically distinct areas. We have used satellite gravity and older seismic data to better map the Tobago-Barbados ridge (TBR). We have also incorporated the results of several previous studies that had access to more extensive industry seismic data sets tied to well data. We are in the process of correlating all the wells we have available to the existing seismic data. We are planning to integrate gravity modeling to better understand the basement and will attempt to incorporate more recent, higher resolution seismic data from the sponsors.

5) ***Basin modeling of deep basins around Trinidad.*** We seek deep penetration seismic and well data from the deep water areas of Trinidad to be used in a pilot basin modeling study using the International Research Institute of Stavanger BMT basin modeling software. The majority of this study will take place at the International Research Institute of Stavanger. Over the past two years we have improved our mapping of the Phase I area and are ready to embark in modeling of basin subsidence, deformation, heat flow, and sediment

maturity. These data would be useful for evaluating the deeper water offshore potential of the region.

Cost of CBTH Phase II for existing sponsors of Phase I. Due to the greatly enlarged study area and increase in products provided to the sponsors, the cost of CBTH Phase II will be \$60,000 US per year per sponsor for three years (\$180,000) based on our present sponsorship of 10 companies. As was for Phase I, a three year financial commitment is needed from all sponsors with annual, \$60,000 US payments due by August 15 for each year starting with year one in September, 2008. If payments are not received by August 31, 2008, we will consider these companies “late buy-ins” who will be charged 150% of the annual \$60,000 US rate.

Cost of CBTH Phase II for companies who were not sponsors of Phase I. Companies interested in Phase II but who did not participate in Phase I would be charged \$360,000 (\$120,000 for Phase I plus \$60,000 in late fees plus \$180,000 for Phase II). In exchange for these higher fees, late buy-ins will receive all materials given to Phase I participants, including the hard copy atlases and access to the database developed during this three year period.

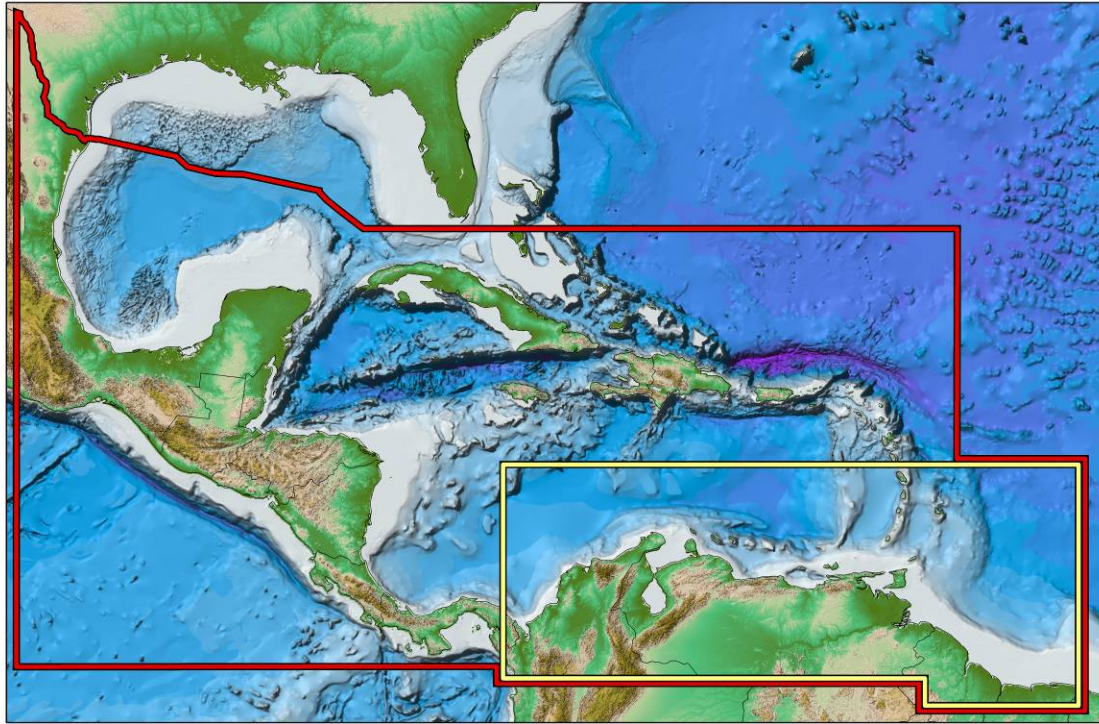


Figure 1. Phase I area shown outlined in yellow. Phase II area shown outlined in red, includes the Phase I area.

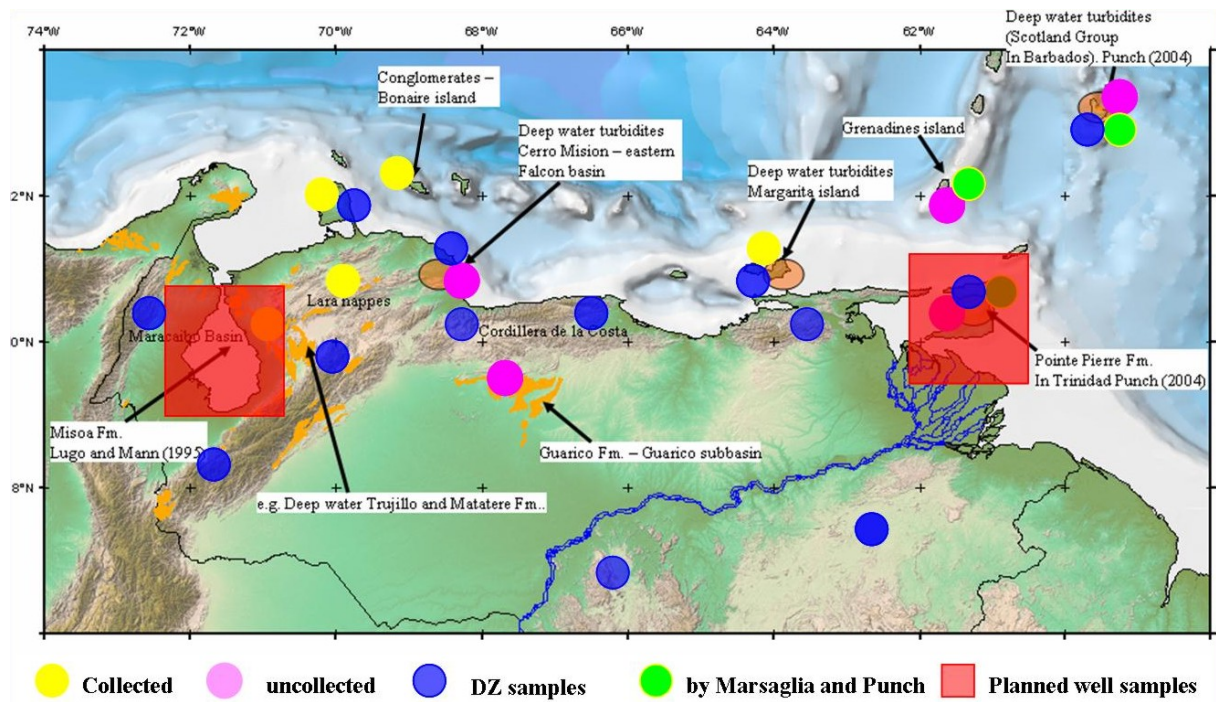


Figure 2. Location of major onland outcrops of Paleogene fluvial and deltaic sandstones.

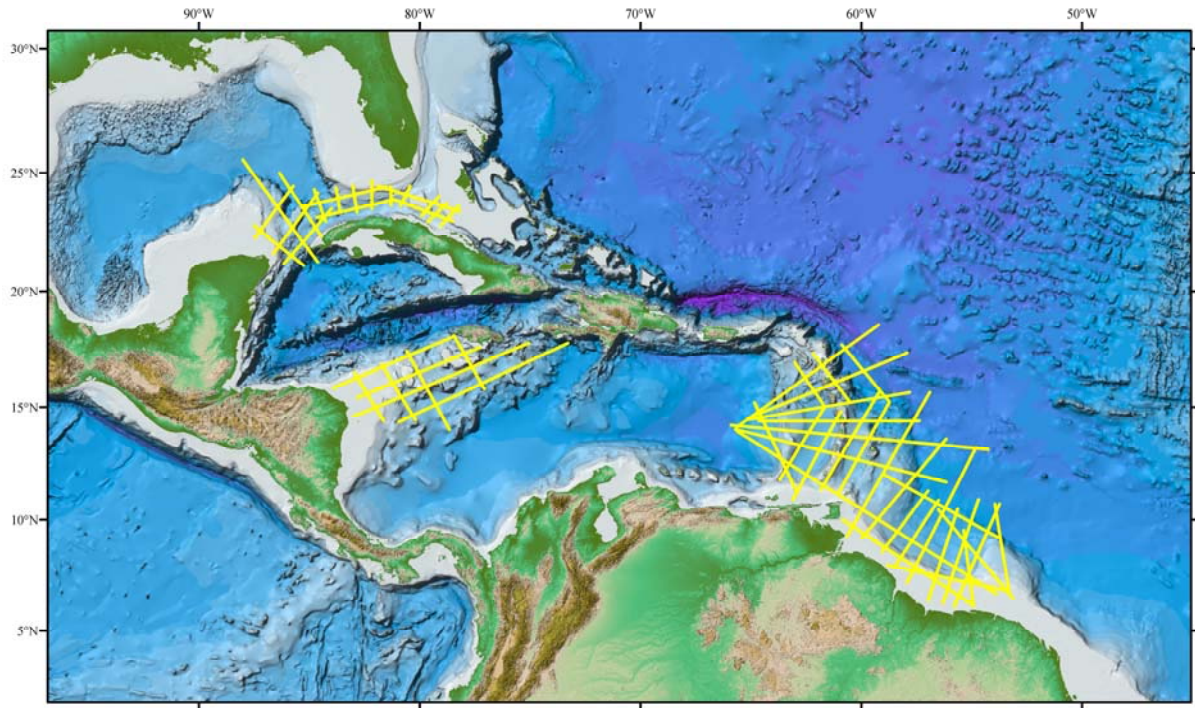


Figure 3. Proposed seismic tracks for acquisition by Wavefield Inseis.