Project Update

As we begin a new semester and have completed 8 months of GBDS Phase 10, we provide news, plans and progress from the project staff and students. We must first ask that you save the date for our next GBDS annual meeting to be held at Anadarko in The Woodlands, Jan. 14-15, 2015. As usual, we will have a half-day GBDSGIS workshop and a full day of staff and student presentations.

Beginning with the new semester we have three graduate research assistants and up to seven undergraduate students working with us. The undergraduate students are busy locating references and wells, digitizing wells from raster to LAS and georeferencing maps for inclusion in the GBDSGIS database. Many of the students worked for the GBDS project in the summer months.

As part of the implementation of the Mexican energy reform, the Mexican government released an approximation of the lease blocks/areas in which private companies may participate in the exploration and production of oil and gas in the very near future. Round Zero and Round One blocks have been digitized and a shape file of the information is available on our data site and publically as an ESRI webmap. The illustration below shows the location of the blocks in relation to the UTIG multichannel (2D) seismic data provided as part of GBDS participation as processed stack data.

This summer we hosted an internship with José Antonio Castillo García, a current student at National Autonomous University of Mexico (UNAM) in Mexico City. Antonio was a member of the first place team, representing UNAM in the Latin American Region AAPG Imperial Barrel Award competition. Here working with GBDS, he was tasked with scouring Spanish language websites helping us find literature, well information, seismic images and other information, to add to our southern Gulf of Mexico (GOM) material and interpretation.
He was helpful in compiling information for a poster illustrating the stratigraphy of Mexico’s major petroleum provinces. Check our secure data site for a digital file of this poster. As we translate important literature from Spanish, we will add these to the site as well.

We have worked on a project these past two years with ION Geophysical Corp. providing original field data, navigation and associated data for reprocessing with modern techniques. ION is marketing these data as the YucatanSPAN data set. The University does receive a royalty on the sale of these derivative products. ION has provided the reprocessed YucatanSPAN time data for our use as well as the FloridaSPAN dataset. We appreciate all that ION has provided to support the GBDS project.

We have requested the use of these royalty funds to establish a two-year post-doctoral fellowship within the Institute for Geophysics for the purpose of honoring Dr. Richard (Dick) T. Buffler, whose scientific research into the GOM geology underpins our current rich understanding of this prolific hydrocarbon basin and the unique confluence of structural and stratigraphic processes related to its formation and fill. Dick along with Bill Galloway were the original principal investigators and directors of the GBDS project when established in 1995. The fellowship is currently being advertised. We include a copy of the add with this newsletter. We are pleased to honor Dr. Buffler as we reach 20 years of continuous GOM research with the support of the oil and gas industry in fall 2015.

We are happy to report the loan of the Mississippi Canyon Revival Data Set from TGS for use in our work, especially for Caroline Bovay’s mapping in the eastern GOM. This should help her interpret the Hosston (Valanginian) unit for her thesis. Our staff and students have been very busy this year, as we have expanded our project to include the whole GOM and the entire Mesozoic as well. We have added over 100 new wells to the Mesozoic dataset including over 50 Smackover/Norphlet wells. Also, John Snedden is progressing construction of a Norphlet cross-section across the Mississippi Canyon and Desoto Canyon area.

We are also fortunate to have been awarded Neuralog software, licensing and training. This gift valued at over $300,000, will be provided to the Jackson School, UT Austin, specifically to UTIG and BEG. We are excited because we need more Neuralog licenses for our GBDS student interns to digitize our raster logs and convert to LAS. Files.

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GBDS Staff Research Update

John Snedden  
**GBDS Director**

John has been working on the Norphlet and Smackover intervals and creating new maps and cross-sections incorporating new released wells (e.g. Raptor). Rafting calculations are key to the new restorations. In addition, over 100 new wells have been added to the overall Mesozoic dataset. John will be the speaker for the GCAGS All-Convention Luncheon, Sponsored by Stone Energy. His talk is titled, “Mesozoic of the Gulf Mexico Revisited: New Data, New Concepts, and New Plays in the Onshore and Offshore Gulf of Mexico.” In addition, he continues to map Jurassic reflections on 2D and 3D datasets in the GOM. He has five papers in press or submission regarding Gulf of Mexico and other areas. John is frequently contacted by news media regarding Gulf of Mexico exploration, being quoted by Upstream, FuelFIX and the Houston Chronicle.

William (Bill) Galloway  
**Senior Research Scientist**

Results published in recent tectonic syntheses and crustal modeling studies of the continental interior of North America have been incorporated into the fluvial drainage basin maps compiled by Bill G. a few years ago. These modify drainage basin outlines for several of the large fluvial systems that emptied into the GOM and better delimit source terrains. Similarly, new studies of detrital zircon distribution in Gulf sediments, including work supported by GBDS, continue to refine our source area delineations.

We are using the evolving well log and biostratigraphy data base for the deep central to eastern GOM to prepare several cross sections focused on Miocene deposodes. The sections incorporate digital log profiles and GBDS unit tops as a working base onto which biostrat tops, gamma log facies, and other interpretive data are plotted. The goal is a better delineation of the origin, facies architecture, and temporal evolution of the McAVLU fan system and its adjacent sandy slope apron across Mississippi Canyon, Atwater, and Walker Ridge protraction areas. Of particular interest is the role of well-developed sand-rich shelf and shore-zone systems, which extend tens of miles eastward along strike from the main Mississippi/Tennessee deltaic depocenter, as conduits for sand transport to the apex of the fan system. Additionally, the sections will highlight vertical and lateral distribution of turbidite channel fills across along the approximate locus of the Miocene slope-to-basin transition. Final versions of one or more Miocene sections will be archived in the GBDS data base.

Craig Fulthorpe  
**Senior Research Scientist**

Craig has been interpreting new Cenozoic wells for addition to the project in order to keep the Cenozoic maps up to date. He has also assisted graduate student Jie Xu in the field with sampling for his zircon analyses. He will be presenting a talk at GCAGS on recent insights into Cenozoic depositional systems in the GOM and will be expanding on this topic at the January meeting.

Current Wells in new Miocene cross-section.
Hilary Clement Olson  
Research Associate

Hilary has continued to make additions to the Mesozoic Biostratigraphy Table she has been constructing for GBDS over the last several years. These refinements have been incorporated into the Mesozoic Stratigraphy Chart constructed by John Snedden and Hilary. GBDS work on a Mesozoic chronostratigraphic framework has been submitted to Interpretation for the special issue on chronostratigraphy: "Development and application of a robust chronostratigraphic framework in Gulf of Mexico Mesozoic exploration" by Hilary Olson, John Snedden and Robert Cunningham.

Tim Whiteaker  
Research Scientist

Inspired by IA member requests, GBDS has published an ArcGIS map service depicting GBDS well locations, sandstone bearing interval thickness contours, and paleogeography. These map layers can be incorporated into Web applications or viewed in ArcGIS Online maps without requiring a local copy of the data and without requiring GIS software to be installed. Use your company’s GBDS username and password to access this map service at https://liappsyr.ig.utexas.edu:6443/arcgis/rest/services/gbds/GBDS/MapServer. Feedback and case studies are welcome as we experiment with this new method of providing access to GBDS maps.

Patricia Ganey-Curry  
Project Manager

Patty continues to manage the GBDS Project as it approaches its 20th anniversary. In the past year we have added participation from GulfSlope Energy, Murphy Exploration and Production Co. and Chesapeake Energy Corp. and are visiting with several more interested new participants. Of interest to new participants is the work we are doing gathering information related to the geology and stratigraphy of the oil and gas provinces in Mexico. We are finishing a poster of a compilation of stratigraphic charts of the oil and gas provinces of Mexico and have compiled set of useful references to help with the plans for Mexico’s Round One leasing preparations.

Sarah Peters  
Research Scientist Associate II

Sarah has been working on adding new references, finding new Mesozoic wells, making new cross sections, and entering new wells and corrections into the database. Unfortunately she has accepted a job with DrillingInfo and will be leaving us soon.

Ian Norton  
Senior Research Fellow

Ian Norton has been working on crustal structure restorations with an emphasis on the development and subsequent Jurassic-Cretaceous evolution of the salt. This has resulted in development of a new model for how the salt was deposited and what the basin looked like during early salt motion. This model will be presented at the January meeting.

Robert Cunningham  
Source Mapping Project

Although log geochemistry work using the Delta Log R method (Passey et al, 1990) will continue in the deepwater Mesozoic and Cenozoic GOM with new well acquisitions in the US and now in Mexican waters, most source mapping work will transition to the onshore. A regional grid of wells has been established in the Eagle Ford,
The Gulf Basin Depositional Synthesis Project

September 2014

Eaglebine, and Tuscaloosa Marine Shale play areas (see figure) to investigate the depositional environment and paleoceanographic controls on source properties. Linkages to the deepwater source distribution established (GBDS Phase IX) for the Eagle Ford – Tuscaloosa (EFT) GBDS stratigraphic unit will be used to unravel the temporal and areal patterns of oceanic anoxia along the outer shelf to basin floor transition which existed during Cenomanian-Turonian Oceanic Anoxic Event II. This work will enhance the understanding of source distribution and quality and oil quality in deepwater to onshore conventional and unconventional plays.

GBDS Eagle Ford – Tuscaloosa (EFT) paleoenvironmental map showing the distribution of Delta Log R wells and strike and dip correlation lines established in the Eagle Ford, Eaglebine, and Tuscaloosa Marine Shale play areas to investigate source distribution related to Oceanic Anoxic Event II.

Graduate Research Assistants

Caroline Bovay, M.S. Candidate

Caroline Bovay is a M.S. candidate at the Jackson School of Geosciences. Her main tasks this fall include interpreting the Hosston on new datasets provided by TGS. Caroline is also building several log cross-sections across the eastern GOM to illuminate trends in sand delivery during the Valanginian-Hauterivian. She plans to complete her degree in May 2015, and has accepted a job with Chevron in Covington, LA.

Luciana de la Rocha, M.S. Candidate

Luciana de la Rocha grew up at fourteen thousand feet above sea level in La Paz, Bolivia, surrounded by the Andes Mountains. She attended Trinity University in San Antonio where she received her BS in Geosciences. After graduation she spent a year working as a Research Assistant at the Bureau of Economic Geology. Luciana began her studies her at the Jackson School this fall and will be working with the GBDS project on the southern Gulf of Mexico Paleogene stratigraphy and depositional systems. She will be using recently reprocessed seismic data and other available geological and geophysical information to evaluate the extent of deep water Paleogene Wilcox strata. After finishing in the spring of 2016, Luciana plans to work in the oil and gas industry.

Jason C. Sanford, M.S. Candidate

Jason Sanford, John Snedden, and Sean Gulick are currently preparing their manuscript on the GOM basin's response to the Chicxulub impact for submission to the Journal of Geophysical Research: Solid Earth. The paper builds off of Jason's regional mapping project of the Cretaceous-Paleogene boundary deposit in the GOM for GBDS as a component of his M.S. degree. Jason plans to complete his degree in December 2014 and has accepted a job with Chevron in Houston, TX.
Jie Xu, PhD Candidate

Jie is working on provenance analysis for the Lower Miocene interval of Gulf of Mexico basin by using detrital zircon U-Pb and U-Th/He double dating on sediments collected along Gulf coast outcrops and offshore core samples. Samples from different major fluvial channel axes onshore and deltaic depocenters offshore yield a distinct combination of U-Pb ages, which is a useful provenance indicator for deep water sediments source analysis. He will present our understanding of sediments input pathways for the Lower Miocene interval of the GOM Basin and its implication for deepwater reservoir exploration at our January meeting. After finishing in 2016, Jie plans to work in the oil and gas industry.

Awards:

Congratulations to GBDS graduate student assistant Jie Xu for receiving a graduate student fellowship. The Institute for Geophysics fellowship committee selected Jie Xu from other continuing graduate students for one of two Ewing/Worzel and Gale White Fellowships for the fall 2014 semester. UTIG Fellowships recognize students with exceptional merit, progress towards degree, strong research potential, and service to UTIG. These fellowships provide a stipend of $3000/month, tuition and fees, and health benefits.

Presentations and Papers:

Caroline Bovay, John W. Snedden, Ronald J. Steel, and Patricia E. Ganey-Curry, 2014, New models of Valanginian source-to-sink pathways in the eastern Gulf of Mexico, GCAGS annual meeting, Lafayette, LA (October 2014)


Craig S. Fulthorpe, William E. Galloway, John W. Snedden, Patricia E. Ganey-Curry, and Timothy L. Whiteaker, 2014, New insights into Cenozoic depositional systems of the Gulf of Mexico basin, GCAGS annual meeting, Lafayette, LA (October 2014)

Scott Hamlin and Luciana De la Rocha, 2014, Using electric logs to estimate salinity and map resources of fresh and brackish groundwater, GSA annual meeting, Vancouver, British Columbia, Canada (October 2014)

John W. Snedden, Gail Christeson, Drew Eddy, Patricia Ganey-Curry, Ian Norton, Hilary Olson, and Harm van Avendonk, 2013, A new temporal model for Eastern Gulf of Mexico Mesozoic deposition, GCAGS annual meeting, New Orleans, LA (Oct 2013)


John W. Snedden, Ian O. Norton, Gail L. Christeson, and Jason C. Sanford, 2014, Interaction of deepwater deposition and a midocean spreading center, eastern Gulf of Mexico basin, USA, GCAGS annual meeting, Lafayette, LA (Oct. 2014)
The Gulf Basin Depositional Synthesis Project


Jie Xu, John W. Snedden, Craig S. Fulthorpe, 2013, Provenance and depositional system reconstruction in the Lower Miocene of the Gulf of Mexico: GCAGS Transactions, v. 63, p. 633–635

Jie Xu, John W. Snedden, Craig S. Fulthorpe and Daniel F. Stockli, 2014, Detrital zircon U-Pb and U-Th/He double dating of lower Miocene samples from the Gulf of Mexico margin: insights into sediment provenance and depositional history, GCSSEPM conference, Houston, TX (Jan 2014)

Jie Xu, John W. Snedden, Daniel F. Stockli, and Craig S. Fulthorpe, 2014, A continental provenance shift of Lower Miocene formation in the Gulf of Mexico Basin: insight from detrital zircon geochronology, GSA annual meeting, Vancouver, BC, Canada (Oct. 2014)

Jie Xu, John W. Snedden, Craig S. Fulthorpe and Daniel F. Stockli, 2014, Sediment input pathways from North American highlands to the Gulf of Mexico based on detrital zircon U-Pb and U-Th/He dating, AGU annual meeting, San Francisco, CA, (Dec. 2014)

Thank you to our GBDS Participants

And to our Data and Software Partners

The GBDS project information and data is available online from our password protected site accessible from the member link on our web page: www.ig.utexas.edu/research/projects/gbds/
The University of Texas at Austin  
Institute for Geophysics  
Richard T. Buffler  
Post-Doctoral Fellowship

A post-doctoral fellowship is being established within The Institute for Geophysics (UTIG), Jackson School of Geosciences (JSQ), The University of Texas at Austin for the purpose of honoring Dr. Richard (Dick) T. Buffler, whose scientific research into the geology of the Gulf of Mexico (GOM) underpins our current rich understanding of this prolific hydrocarbon basin and the unique confluence of structural and stratigraphic processes related to its formation and fill.

Dick worked at UTIG from 1975 until his retirement in 2002, collecting and interpreting new seismic data from the Gulf basin. He participated in 12 GOM cruises (including co-chief scientist of DSDP Leg 77), and he authored or coauthored over 83 publications related to the Gulf. He also mentored 73 students many of whom produced Masters or PhD theses related to the Gulf (33), and he helped lead a major UTIG research effort in the GOM, the Gulf Basin Depositional Synthesis (GBDS) project, which has enjoyed 19 years of continuous industry support under Dr. William E. Galloway and now its current director, Dr. John W. Snedden.

The successful applicant for this new position should have the following skills:

- Demonstrated research interest in basin-scale depositional systems, ranging from alluvial to deep-water, siliciclastics and carbonates, Pleistocene to base Mesozoic
- Competence in seismic interpretation, including experience with 2D or 3D seismic workstation software
- Competence in geological interpretation of well logs
- Knowledge of biostratigraphy and use of fossil datums for correlation
- Excellent oral presentation and writing skills
- Experience with ArcGIS and other computer software (Word, Excel, Powerpoint, etc.)

Essential job Functions:

- Identify and lead new research avenues in Gulf of Mexico depositional systems that support existing and future exploration efforts of the GBDS Industrial Associates
- Generate scientific publications that enhance the technical reputation of UTIG, JSQ, and The University of Texas at Austin
- Conduct and present research to industrial associates with clarity and a deep understanding of their oil and gas industry challenges
- Collaborate with UTIG and JSQ researchers and faculty, where appropriate
- Mentor undergraduate and graduate students as appropriate
- Domestic travel as needed

The position will have two years of initial support and will be based in Austin, Texas. Interested persons should submit a detailed Curriculum Vitae (CV) that includes academic and professional experience, statement of research interests, and names and contact information of three references to PostDocUTIG@ig.utexas.edu.