Gulf Basin Depositional Synthesis Synthesis Addemic Gulf of Mexico-wide The only academic Gulf of Mexico-wide regional research program

Introduction

The Gulf Basin Depositional Synthesis Project (GBDS) is an industry-sponsored consortium studying and mapping the depositional history of the Gulf of Mexico of post Paleozoic to the Pleistocene. Our goal is to guide and predict reservoir distribution and characteristics by providing our sponsors detailed, quick, and easy to access regional Gulf of Mexico maps and data.



Example paleogeographic map

Students

In it's 26 year history GBDS has supported over 100 graduate and undergraduate students in preparation for careers in industry and academia.

For more info visit: https://ig.utexas.edu/energy/gbds/

Gulf Basin Depositional Synthesis

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Delivered interpreted wells and 2D seismic

Project Deliverables

The GBDS GIS database is a compilation of well logs, seismic, and published literature from public and partner sources. All this is packaged with an intuitive custom set of GIS tools and delivered to project sponsors.

Deliverables include:

- ArcGIS GBDS database and tools
- 35 depositional units mapped Gulf-wide
- Over 316 preconstructed maps
- Over 2,811 detailed interpreted wells
- Over 2,658 publications in our library
- 1,389 digitized LAS files
- UT's Gulf-Wide 2D seismic (14,000 km)
- Source rock studies, onshore and offshore
- Key Gulf of Mexico papers by Galloway, Snedden, Fulthorpe, Sweet and students

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Gulf Basin Depositional **Synthesis** Continued Focus on Mexico

Publications

Since the opening of Mexico to international exploration in 2015 GBDS has supported three masters' theses with a focus on Mexico and published several papers. All of these are added to comprehensive reference library for sponsor use.

Data Mining in Mexico

GBDS employs students who are fluent in Spanish to help search and mine data and from publications focusing on Mexico, for example, UNAM theses and dissertations, theses from non-Mexican university like Aberdeen Imperial, and any open access publications released by Pemex. GBDS has also made trips to Mexico to view and gather samples from cores. UT is also one of the first universities to be granted access to well packages for student use. All of this is incorporated into our mapping.



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Southern Gulf of Mexico Wilcox source to sink: Investigating and predicting Paleogene Wilcox reservoirs in eastern Mexico deep-water areas

John W. Snedden, Luciana D. Tinker, and Jon Virdell

ABSTRACT

ABSTRACT Source-to-Wilox Group aliciclastic deep-water systems are liaked to transport of sediments from the Lammide tectonic bek into the deep basin. Less is known, however, abott southern COM sed-mentation. New defiling and discoverise in the Medican deep vater have generated considerable interest since the opening of Mesico to international exploration. To investigate Paleogene deposition in Mesico is offshore areas, a three-phased approach was employed (1) sistinic mapping of deep-water depoceaters, and (2) regional transports, has also in documents of the Wilcox depoenters we dwalable well and weime data. While the basin entry points were deduced between fluvial and deep vatational declaration of submarine-final dimensions using empiri-cul calling relationships. Incohere and survicuant mapping of the Wilcox depoenters were dwalable well and weimet data. Wilcox fluvial-declaration systems and tectories devine data and deep vatationships provide fluvia between fluvial and deep vatationships provide tention between fluvial and deep vatationships provide fluvia context and the was new COM

dimensions. Pakogene Wilcox source-to-sink systems of the greater GOM basin change north to south as a function of varied tectonics and sedimentary accommodation. The United States sector was a passive margin: continental-scale drainage systems fed a broad, greatly appropriatell. By contrast, the southers GOM basin was a tectonically active margin: smaller-scale flurial systems sourced from the Hidagian uplands flowed directly into foreland basins located on the slope. Results presented here indicate that several systems rimming the southers GOM were able to effectively transfer sediment from the mountain belt into the basin.

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LUCIANA D. TINKER - Institute fe Geophysics, The University of Texe 10100 Burnet Road, R2200, Aust 78758; luciana.tinker7@gmail.co 78/38; lucana.thte?riggmati.com Luciana D. Tinker obtained her B.S. in geocianas from Trinky University and her M.S. in geology from The University of Teosa Austin, Her M.S. thesis was sponsored by th Gulf Basin Depositional Synthesis and focus on southern Gulf of Macico deep water schlarabet (University in unreflecting).

JON VIRDELL - Institute for Geophy

the Institute for Geophysics at The Universit of Toxas at Austin. He is part of the GuT Basin Depositional Synthesis research team, normbuding his experience in geographic information systems and geophysical data. He holds an A.S. in environmental science a echnology from Austin Community College and a B.A. in biology from The University o low at Austin.

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Mexico Database Metrics

- Over 333 interpreted wells in Mexico
- Over 384 references focusing on Mexico
- Over 27 thousand miles of seismic coverage in the southern Gulf of Mexico that underlies our mapping
- Expansion of all GBDS map units and types into the southern Gulf of Mexico

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Gulf Basin Depositional Synthesis ccs and Pressure Seal in the Gulf

GBDS Pressure and Seal Analysis

GBDS has acquired from BOEM pressure data on 1177 wells in the Gulf of Mexico including key explorations such as Tiber, Ballymore, Kaskida, Appomattox, and Great White. Integrating these data with well logs, 3D seismic, and biostratigraphy and placing them in a structural/stratigraphic context and will lead to insights into key aspect of the GOM petroleum system including: regional and local seals, regional pressure trends, reservoir compartments, OEP/GEP for estimating seal quality, pressure & mobility vs depth, from Jurassic to Pleistocene



Wells log and pressure data from a deep Norphlet well illustrating how pressure data can be used to evaluate regional top seal quality via analysis of Oil Entry Pressure (OEP)

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Carbon Storage Initiative

GBDS has begun evaluating the potential of storing carbon in abandoned oil and gas fields in the Federal waters of offshore Texas and Louisiana. The Texas and Louisiana Gulf Coast is particularly important for carbon storage for several reasons. First, there is a large source of anthropogenic carbon from chemical plants, oil refineries and other industrial facilities that were sited in the Gulf Coast to be near the oil and gas fields that were discovered onshore and in State and Federal waters. Second many of these fields are abandoned or nearing the end of their productive lives so they could be reused for carbon storage. Our pressure and seal analysis is highly applicable.



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