The Gulf Basin Depositional Synthesis Project (GBDS) is an industry-sponsored synthesis of the Cenozoic and Mesozoic depositional history of the Gulf of Mexico basin. The project provides members with data (well and UTIG seismic), databases and tools to help provide a basin scale context for exploration in the Gulf of Mexico. Our project has proven beneficial for many companies working in Gulf of Mexico oil and gas exploration onshore, near shore and in deep-water settings.

We are identifying and mapping successive Cenozoic and Mesozoic sedimentary supply and cross-slope transport axes to help guide petroleum reservoir prediction in onshore, slope, deep basin and subsalt exploration plays. Over the last 17+ years we have developed a GIS (geographic information system) and set of tools within ArcGIS for interactive interpretation of Cenozoic depositional systems in the Gulf of Mexico and are currently building a Mesozoic database. The project has identified and correlated eighteen Cenozoic and thirteen Mesozoic units that record major depositional episodes of the Gulf basin. For each of these units, quantitative, qualitative, map and interpretative data have been systematically compiled. Results of this synthesis are summarized in a series of digital interpretative maps showing the depositional system paleogeography for each of the key intervals throughout the Gulf of Mexico basin.
Scientific Goals

1. Create a dynamic GIS database containing information systematically extracted from well logs, 2-D seismic lines, and published maps, sections, papers, and other sources that can be regularly updated for participants.

2. Test and refine correlations between the continental margin genetic stratigraphic sequences and the deep basin seismic sequences.

3. Map progressive depositional systems associations for each of the major Cenozoic and Mesozoic depositional episodes of the northern Gulf basin. The resultant map suite delineates depocenters, basin entry points, sand deposition fairways and paleography for each sequence, demonstrating the extent and history of principal component depositional elements.

4. Document the temporal and spatial distribution of submarine canyons, inter-reef passages slump chutes, and structural conduits that commonly focus sand transport from shelf margin to slope and basin floor.

5. Identify and map successive Cenozoic and Mesozoic sedimentary supply and cross-slope sand transport axes to guide petroleum reservoir prediction in slope, deep basin and subsalt exploration plays.

Data Sources and Synthesis

Deposits of eighteen principal Cenozoic and thirteen Mesozoic units were initially selected and correlated throughout the basin margin using published well log cross sections, supplemented by continental slope wells. For each genetic sequence, data include thickness, lithofacies, and stratigraphic architecture. Depositional systems and facies associations, based both on original and published interpretations, were recorded for each genetic sequence. In addition, major stratigraphic features, including paleo-shelf margins, local depocenters, depositional system outlines, mapped submarine canyons, and continental-margin embayments have been compiled from published and unpublished sources and digitized. The GBDS-GIS consists of data from over 1260 key wells and data points from approximately 50,000 km of interpreted seismic data.

Deliverables

1. A reference atlas and digital GIS database updated with each phase of the project that includes the following data from wells and seismic lines used to generate maps for each of the Cenozoic and Mesozoic units:
   - Data (coordinates, tops, thicknesses, lithology/facies codes, etc.) for each of the data points used in mapping.
   - Digital coverages for each of the interpretive maps.

2. Digital bibliography of publications, theses, and dissertations used in the synthesis including pdf formatted files of all references.

3. A regional grid (approximately 22,000 km) of seismic lines available in digital format. These multifold seismic lines, which are owned by the University of Texas at Austin, provide a valuable base for regional studies of the Gulf of Mexico. The data is provided as a digital seismic project with our 18 basin-center seismic sequences interpreted. The data is made available in Geoquest™, Landmark™ and SEG Y. For these seismic data every 100 shot points are input to the GIS database as data points.

Phase 10 Participants


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GBDS
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