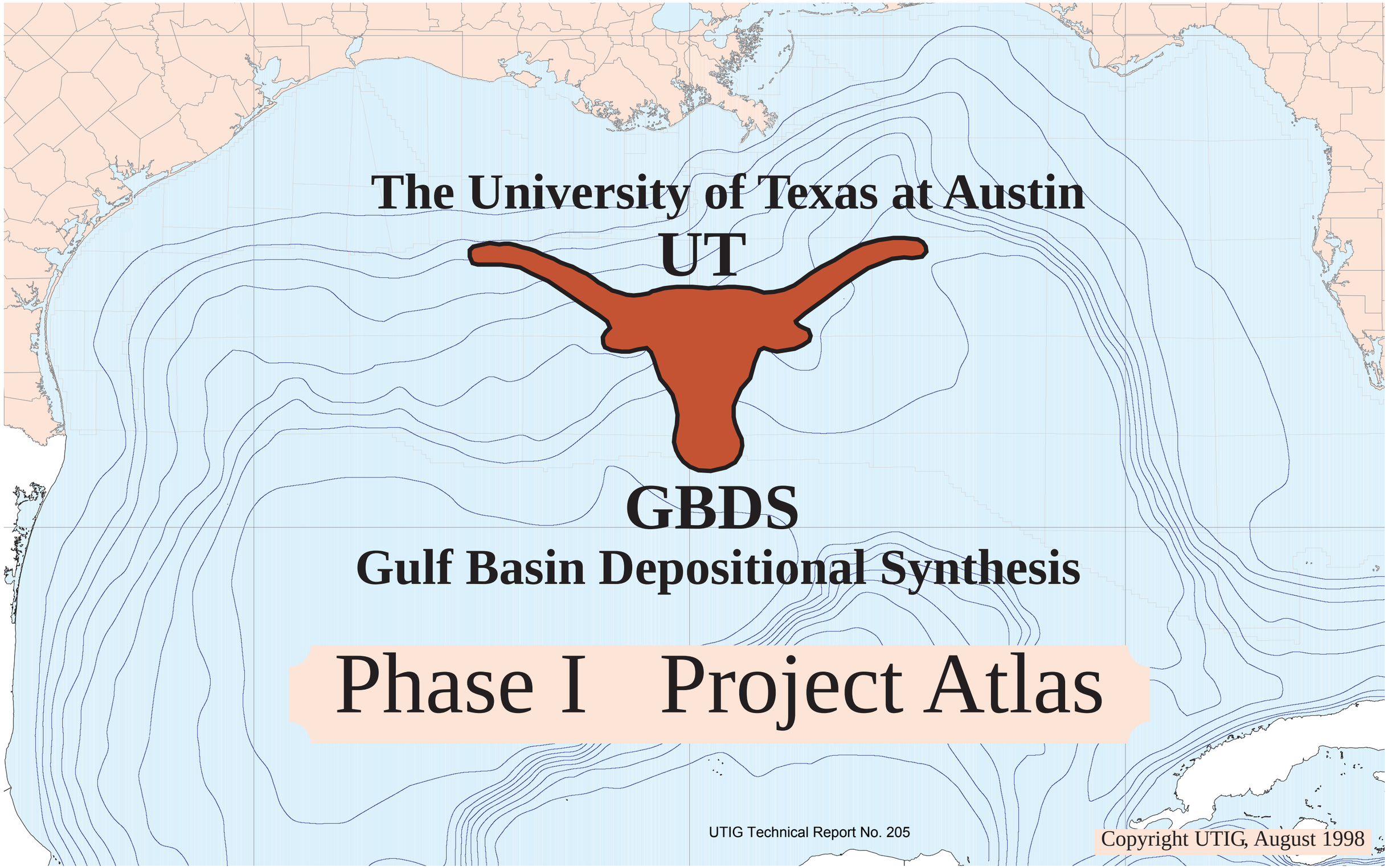

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GBDS

Gulf Basin Depositional Synthesis

Phase I Project Atlas

UTIG Technical Report No. 205

GBDS Phase I Project Atlas

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Gulf of Mexico Basin Depositional Synthesis Project: Summary Report and Description of Database

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The Gulf of Mexico Basin Depositional Synthesis (GBDS) is a comprehensive program of interpretation and description of the Cenozoic depositional history of the Gulf of Mexico basin that integrates well data from the onshore, shelf and upper slope areas with Feng's 1995 (GBDS #179) seismic stratigraphic interpretation of the deep basin. The overall goals of this project are five-fold:

1. Create a digital GIS (Geographic Information System) database containing information systematically compiled from well logs, 2D seismic lines, published maps, cross section folios, and papers, and unpublished theses and dissertations.

2. Test and refine sequence correlations of genetic stratigraphic stratigraphic units between the continental margin (primarily well log database) and the deep basin (primarily seismic database).

3. Identify and map Cenozoic sedimentary supply and cross-slope transport axes to guide petroleum reservoir prediction in slope, deep basin, and sub-salt exploration plays.

4. Document the temporal and spatial distribution of submarine canyons, slump chutes, and structural conduits that have focused sand transport from the shelf margin to the slope and basin floor.

5. By regional mapping of basin paleogeographic evolution, expand understanding of slope depositional processes, facies associations, and paleogeographic evolution of the Gulf Cenozoic basin.

Principal products of the study include a (1) digital GIS (ArcInfo™) database including all well and select seismic data points, representative well and seismic traverses, and maps, (2) a user's manual for the database and customized ArcView™ tools developed in this project, (3) a bibliography of all sources used in data synthesis, and (4) a folio of maps, cross sections, and seismic lines illustrating the information within the database and presenting our interpretation of the spatial and temporal distribution of genetic sequences, sediment dispersal pathways, and depositional systems that filled the Cenozoic Gulf basin.

Sequence Definition and Correlation

The creation of the stratigraphic framework for this database relied primarily on use of a suite of previously published cross section sets (Dodge and Posey, 1981, GBDS #141; Bebout and Gutierrez, 1982, 1983, GBDS #s 147 and 148; Morton et al., 1985, GBDS #140; Shideler, 1986, GBDS #473; Davis, 1987, GBDS #152; Reed et al., 1987, GBDS #133; Mink, 1988, GBDS #135; Morton and Jirik, 1989, GBDS #134; Stoudt et al., 1990, GBDS # 256; Morton et al., 1991, GBDS #282; Cruz, 1992, GBDS #211; Morton and Ayers, 1992, GBDS #132; Galloway et al, 1994, GBDS #258) to define and correlate a suite of genetic stratigraphic units throughout the Gulf Basin. Both data availability and focus of primary interest determined that the northern and northwestern Gulf Margin succession would be used to define stratigraphic units to be correlated.

In all, twenty Cenozoic genetic stratigraphic sequences, defined by regional transgressive flooding of the northern and/or northwestern Gulf margin, were identified. The units selected, their interpreted ages, principal bounding marine shale strata or paleontologic markers, and relative volumetric importance in basin filling are shown on Figure 1.

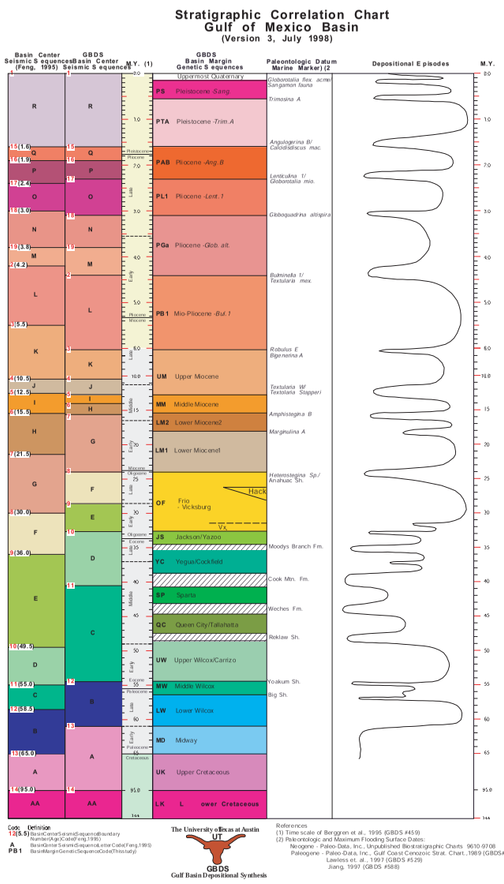

Figure 1. Stratigraphic Correlation Chart

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Selection of specific units and stratigraphic surfaces or horizons for correlation was constrained by both practical realities and scientific objectives.

1. Units and/or bounding tops must be widely used and appear on the majority of published correlation cross sections and in the supporting literature.

2. Units should provide a reasonable number of regionally mappable, genetically related strata.

3. The number and age spans reflected by the units should approximate those of the basin-center seismic sequences of Feng (1995, GBDS #179).

4. Units must be correlative across a depositional systems tract that extends from basin floor to lower coastal plain.

5. Units should be well dated so that interregional correlations can utilize common paleontologic markers.

Genetic sequences, bounded by marine flooding horizons along the basin margin and their correlative condensed beds in the deep basin, best fulfill these objectives. Feng notes that his seismic sequences are bounded by regionally extensive, high-amplitude reflection doublets that represent condensed intervals consisting mainly of hemipelagic and pelagic clay and biogenic ooze.

These sequences record the major depositional episodes of sediment infill (abbreviated as "depisodes") the Gulf of Mexico basin (Figure 1) (Galloway, 1989, GBDS #314; Galloway and Hobday, 1996, GBDS #590). Commonly, substantial changes in sediment transport and depositional axes and paleogeography occur across depisode boundaries.

Correlation of Basin Margin and Basin Center Sequences

Feng (1995, GBDS #179) correlated his basin center seismic sequences to the Cenozoic genetic sequences of the Northern Gulf margin as shown in the left column of Figure 1. This more complete mapping and synthesis of the Gulf margins suggests modifications of the margin-to-basin correlations as shown in the second column of the chart. We have re-correlated seismic sequences C through H with younger depisodes than suggested by Feng. Two basin sequences are combined within the PAB, PGa, UM, MM, LM2, and OF sequences. In contrast, the low-resolution of the deeper sequences and the minor sediment volumes associated with the QC, SP and JS depisodes support merging of two or more early Paleogene margin sequences into a single seismic sequence. The lower Wilcox (LW), Upper Wilcox (UW), and Yegua/Cockfield (YC) depisodes dominate Gulf margin offlap. Each is similarly inferred to dominate basin floor deposition of sequences B, C, and D, respectively.

Correlations of basin sequences to the margin depisode framework is constrained or guided in several ways.

1. DSDP wells 90 and 91 provide paleontologic information for sequences L through I.

2. Recently released MMS paleontology for Shell Atwater Valley 471 ties the tops of the PS and PAB sequences and constrains Miocene sequence tops.

3. Seismic correlations from the shelf margin in the structurally simple De Soto canyon area tie late independently dated Miocene through early Pliocene seismic sequences of the margin with those of the deep basin.

4. Some basinal sequences contain distinctive attributes that logically correlate to features seen along the basin margin or to regional history of the basin margin. Such correlation "touchstones" include:

a. The fan-shaped seismic facies patterns and depocenters encompassed in sequence R correspond to the Pleistocene Mississippi and Bryant fans.

b. The thick mass transport complex within sequence N correlates closely in time and space with the megaslide within the PGa sequence described by Morton (1993, GBDS #516).

c. The very low rate of sediment supply during the PGa depisode correlates well with the thin composite thickness of sequences M and N.

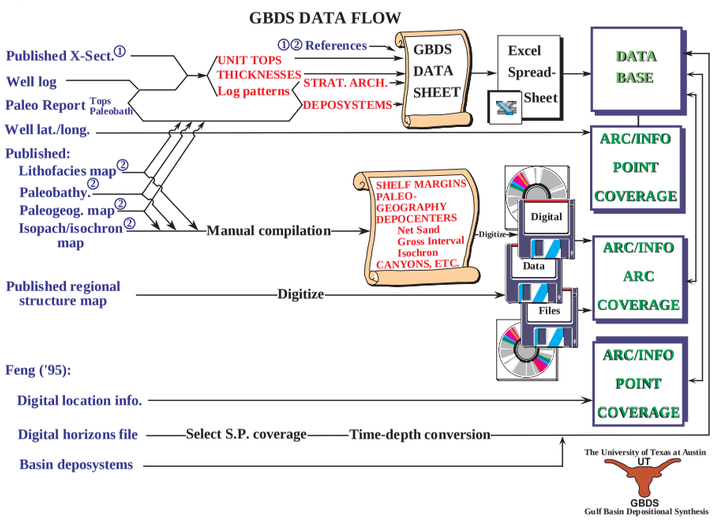
d. The shift from west-dominant sediment supply to the Gulf basin during the Paleogene to the central and east-dominated input of the early Miocene is reflected in the depocenter shift between basin sequences F and G.

e. The similar depocenters and seismic facies patterns, concentrated along the west Gulf floor in front of the marginal Veracruz, Tampico-Misantla, and Burgos-Rio Grande basins, of sequences E and F suggest their formation during the early Oligocene surge of volcanism and rapid uplift (of several km) of the Mexican interior (Yurewicz et al., 1997, GBDS #581). The mass transport complex at the base of sequence E records initial instability and margin failure associated with the rapid onset of uplift and attendant seismicity.

Sequence Chronology

Genetic sequence boundaries are dated by correlation of key Gulf Basin benthonic and planktonic Foramifera and calcareous nannoplankton datums to the Berggren (1995, GBDS #459) time scale. Oligocene and Neogene paleontologic correlations are based on Paleo-Data's "Biostratigraphic Chart, Gulf of Mexico" versions 9610, 9703, and 9708. Paleogene correlations are based on syntheses by Lawless et al. (1997, GBDS #529) and Jiang (1997, GBDS #588).

Figure 2. Flow chart for creation of the database.



GBDS database Sources

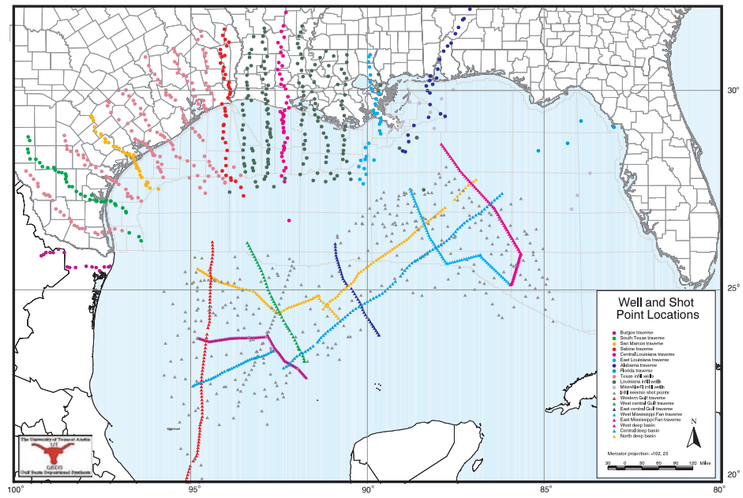
This project data primarily compiled and synthesized information from existing sources (Figure 2). Primary sources include published cross section folios that contain traced logs and base maps, published maps, papers, and monographs, and theses and dissertations (including those of the Texas A&M GMS3 and University of Colorado industry consortia programs). Sources for interpretations were complied and are included as a GBDS bibliography, and well data tabulations include a list of references used for correlation and environmental interpretation. Additional data sources include original well logs for the outer shelf and slope, where published data are scarce, paleontologic reports provided by Paleo-Data, and digital off-shore well location file provided by Exxon.

A GBDS well data sheet was compiled for each well. Data were then encoded onto an Excel™ spread sheet. The spreadsheet data were then transferred to ArcInfo™, creating a suite of point coverages. Figure 3 shows locations of all wells included in the database. Latitude and longitude for wells from published cross sections and other sources were calculated by digitizing plotted locations on the base maps included in the folios. Locations for original offshore wells were taken from the digital file provided by Exxon.

Basin center seismic sequence correlations and interpretations were transferred from original maps and seismic lines of Feng (1995, GBDS #179) onto select UTIG lines to create a network of interpreted seismic traverses (Figure 3) using Schlumberger GeoQuest IESX™ software. Original maps were used to generate sequence time-depth, time-thickness, and seismic facies files at a network of select shot points on the complete seismic grid (Figure 3). A regional time-depth curve was then applied to convert two-way travel time (twt) to depth and thickness (ft). The shot point data matrix creates a second suite of point coverages. Shot point locations were calculated from original seismic navigation files.

Geographic feature and depositional system locations create a family of arc and polygon coverages. Features were digitized where large, cartographically accurate maps were the source. However, most features were compiled from illustrations that provide no information regarding map projection. For these, variable xerography was used to bring all figures to a common scale, and they were traced by hand onto a base map, which was then digitized.

Figure 3. Datapoint locations



GBDS database Contents

The GBDS database consists of two basic types of information. GIS layers consist of geographically defined data. A supporting database contains tables, text, and a bibliography. Information can be accessed independently or may be attached to a geographic feature found in the GIS layers. GIS layers consist of points, lines (called arcs), and enclosed areas (called polygons). A well or shot point location defines a point. Mapped features such as a shelf margin define a line. Paleogeographic features, such as a depositional system, define an area, or polygon.

The GBDS project used ArcInfo™. Here, Arc is used to manipulate the GIS layers, and Info is used to manipulate the database. Information of a particular type is called a coverage. Thus, the GIS database consists of a suite of coverages that may be individually selected and grouped for display on a geographic plan.

The GIS contains the following coverages:

1. Political and geographic base maps.
   - national boundaries and coastlines
   - states
   - counties
   - MMS areas and tracts
   - bathymetry
   - topography
2. Stratigraphic information at well control points for each penetrated genetic sequence.
   - well latitude and longitude
   - sequence top (depth subsea)
   - sequence thickness
   - thickness of sand-bearing interval (gross sand)
   - thickness of carbonate-bearing interval
   - sequence bedding architecture(s)
   - interpreted depositional facies association(s)
   - list of pertinent references
3. Stratigraphic information at selected basin-floor seismic shot points for each defined seismic sequence.
   - shot point latitude and longitude
   - sequence top (twt)
   - sequence thickness (twt)
   - sequence top (ft)
   - sequence thickness (ft)
   - seismic reflection facies
4. Bounding shelf margin position and type.
   - shelf margin position and type at the beginning of depositional episode
   - shelf margin position and type at the end of depositional episode
5. Depositional and structural features.
   - submarine canyons, megaslumps and slides
   - slope embayments created by outer shelf and slope subsidence or collapse
   - mapped sand depocenter
   - mapped interval depocenter (ft)
   - mapped interval depocenter (twt)
   - onlap, erosional, and non-depositional edges
   - carbonate reefs
   - submarine scarps
   - major structural features that effect regional depositional patterns
   - depositional system outlines

Some of these coverages warrant further description.

Thickness of sand-bearing interval (gross sand): Use of published well logs, which are commonly highly reduced, precluded net sand calculation. Instead, a general measurement (rounded to tens of feet) that sums all intervals containing sand beds or bodies was calculate and tabulated (see Figure 4). Carbonate-bearing intervals were tabulated similarly.

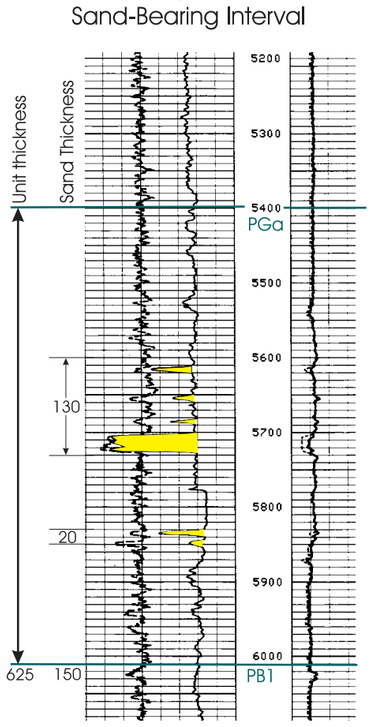


Figure 4. Sand Count

Sequence bedding architecture(s): Well log patterns are used to define progradational (upward-coarsening), aggradational, and retrogradational facies successions or parasequence stacking patterns (see Seni et al., 1995, GBDS #66, for discussion). In general, fluvial and slope systems are characterized by aggradational architecture, delta systems by progradational architecture, and shore-zone and shelf systems by mixed aggradational and progradational architectures. Retrogradational architectures characterize tops of genetic sequences where declining sediment supply or long-term relative sea-level rise leads to progressive transgression and facies/parasequence backstepping.

Interpreted depositional facies association(s): Basin margin sequences are subdivided into 13 facies associations. Figure 5 illustrates the classification, typical attributes, and criteria used for identification. Fluvial facies are further subdivided into bed-load, mixed-load, and suspended-load associations. Platform and shelf-margin delta successions are distinguished in both wave and fluvial-dominated delta systems.

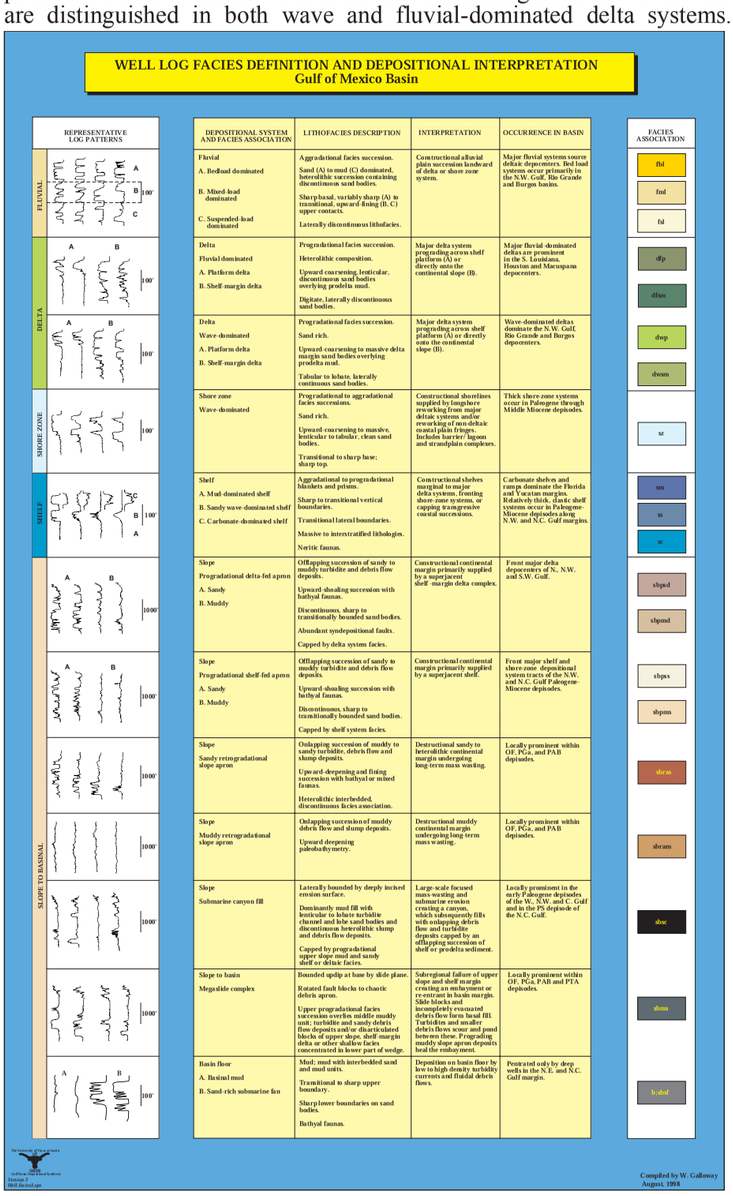


Figure 5. Well Log Chart

Muddy, sandy, and carbonate-dominated shelf associations are distinguished. Slope systems are subdivided into progradational and retrogradational facies successions (see Galloway and Hobday, 1995, GBDS #590, and Galloway, 1998, GBDS #591, for slope system classification) and described as either sandy or muddy. Where possible, associations were assigned based on published interpretations and paleogeographic reconstructions. Where no other information was available, log pattern, location within the larger facies tract, and relationship of the facies association to surrounding deposits of the sequence were used.

Facies association data are tabulated using a nemonic code (Figure 5, right column). Within each genetic sequence, one to three facies associations are recorded. Where two or three associations are interpreted, the youngest facies association is listed first (on the left); the oldest last.

List of pertinent references: References used in both sequence correlation and interpretation are listed by a unique GBDS number. The GBDS bibliography exists as an EndNote™ file that is part of the database.

Seismic reflection facies: Seismic reflection facies (Figure 6)

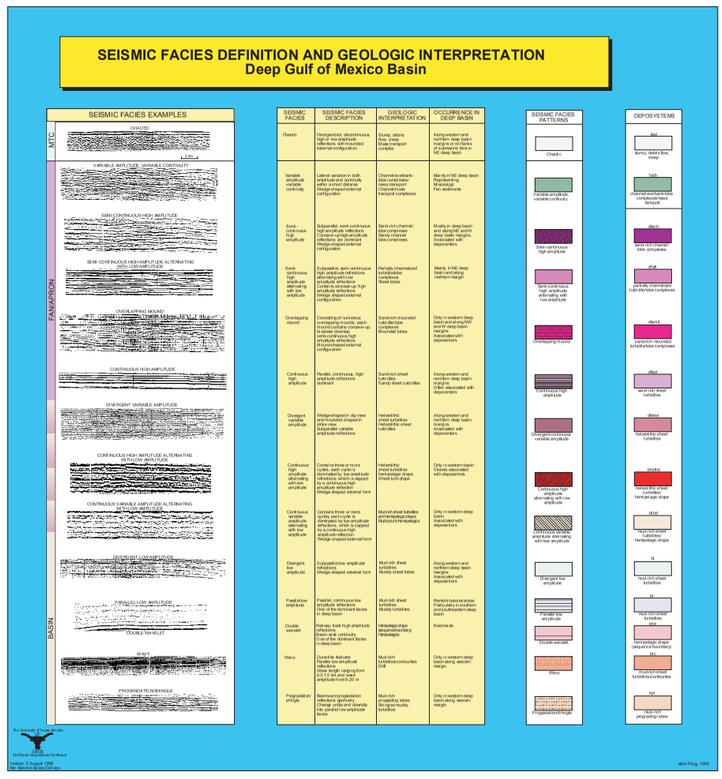


Figure 6. Seismic Facies Chart

remain as mapped by Feng (1995). Geologic interpretation has been slightly modified for consistency to reflect the GBDS facies association and depositional system classification scheme. Also, the divergent low amplitude and parallel low amplitude facies have been combined. Thus, twelve seismic facies are tabulated and mapped using nemonic codes shown in the right column of Figure 6.

Shelf margin position and type at the beginning of depositional episode: This margin reflects the basinward extent of the depositional platform as inherited at the beginning of the new depisode. It may be the shelf margin created by the previous depisode or a relict of an earlier episode.

Shelf margin position and type at the end of depositional episode: This shows the position of the shelf margin at maximum offlap of the depisode. Additionally, erosional and bed rock margins are distinguished. The Lower Cretaceous margin forms a persistent bathymetric scarp around much of the eastern and southern Gulf and is shown on many maps.

Submarine canyons, megaslumps and slides: Large canyons, slump complexes, and slide scars have been mapped by several authors around the basin margin. Outlines of these features, which may collect and transport sand basinward are grouped as a separate coverage.

Slope embayments: Sub-regional retreat of the depositional shelf margin reflect areas of sub-regional excavation and/or salt withdrawal. Several, including the Hackberry and Planulina embayments are well mapped. Others are suggested by individual authors or the GBDS synthesis. Updip outlines of such embayments are combined into a coverage.

Mapped sand and interval depocenters (ft): Outlines of net sand depocenters and total thickness depocenters were compiled from published isolith and isopach maps where available. Depocenter thickness varies from depisode to depisode; the outline simply defines the area of thickest sand or sediment accumulation for that unit.

Mapped interval depocenters (twt): Time-thickness-defined depocenters were also compiled from numerous published and unpublished sources. Depocenter thickness varies from depisode to depisode; the outline simply defines the area of thickest sand accumulation for that unit.

Onlap, erosional, and non-depositional edges: A few maps located areas where entire sequences terminate. These are included as a separate coverage.

Submarine scarps: Steep, largely non-depositional scarps form

the lower slope of Florida and Yucatan. The digital locus of these scarps is taken from Winker (1998, personal communication). The surrounding nondepositional halo is taken from Buffler et al., (1984; GBDS #589).

Major structural features: Select structural features or axes have been extracted from published maps. These include the trace of the Sigsbee salt overthrust front, the Vicksburg fault, axial traces of the base-of-slope fold belts and thrust faults, and general axial positions of broad margin swells and troughs. These features were compiled from published maps, including GBDS #524, #525, and #332.

Depositional system outlines: Synthesis of information derived from published maps and interpretations and from our interpretation of individual logs, seismic facies, and lithofacies maps creates a composite paleogeography for each sequence. Mapped outlines reflect depositional system distribution at maximum progradation and basinward displacement. Where two seismic sequences with significantly different facies patterns correspond to a single basin margin sequence, the lower unit map emphasizes paleogeography of the early depisode and the upper unit map reflects maximum progradation.

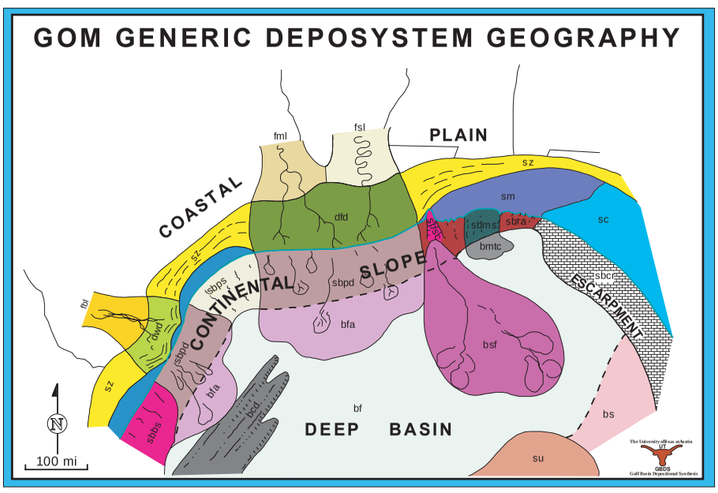


Figure 7. GBDS Deposystems

Thirty-one depositional systems categories are differentiated within the database (Figures 7 and 8). Some systems correspond to a single facies association of similar name and nemonic code (for example, fluvial, shore-zone, and contourite drift systems). Others consist of two or more well log or seismic facies associations (for example, fluvial-dominated delta, shelf, and basin floor apron systems). The system classification, terminology, and attributes follow the descriptions found in Galloway and Hobday (1996, GBDS 590) and Galloway (1998, GBDS #591). The system categories include types we have found to be common in the Gulf Cenozoic basin, a representative small divergent-margin ocean basin. The "undifferentiated" categories are used when data are too limited for more specific interpretation.

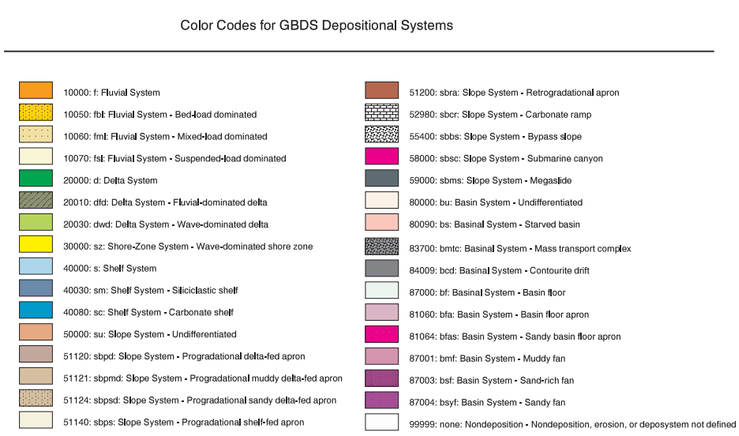


Figure 8. Depositional System Code Chart

The depositional systems and, where applicable, their component facies associations are:

Depositional System	Facies Associations
Fluvial system	
undifferentiated	f f
bed-load dominated	fbl
mixed-load dominated	fml
suspended load dominated	fsl
Delta system	
undifferentiated	d
fluvial-dominated	dfd
wave-dominated	dwd
Shore-zone system	
wave-dominated	sz
Shelf system	
undifferentiated	s
siliciclastic shelf	sm
carbonate shelf	sc
Slope system	
undifferentiated	sb
progradational delta-fed apron	sbpd
progradational sandy delta-fed apron	sbpsd, sbpmd
progradational muddy delta-fed apron	sbpmd, sbpsd
progradational shelf-fed apron	sbpss, sbpms
retrogradational apron	sbras, sbram
carbonate ramp	sbcr
bypass slope	sbbs
submarine canyon	sbsc
megaslide	sbms, fasl
Basin system	
undifferentiated	bhd, bt
starved basin	bhd
basin floor apron	sbsf,bhsthd, bthd
sandy basin floor apron	sbsf, bfast, dfach, dfast, dfamtl
mass transport complex	fasl
contourite drift	btc
basin floor	bt, bpl, dfahst, bthd
muddy fan	dfatl, bhsthd
sandy fan	dfamtl, dfast, fach
sand-rich fan	dfast, dfach, dfatl, dfamtl

GBDS Well Traverses

The database includes well data aligned along seven pre-constructed traverses (Figure 3):

Burgos traverse
South Texas traverse
San Marcos traverse
Central Louisiana traverse
East Louisiana traverse
Alabama traverse
Florida traverse

In addition, the suite of infill wells, which lie between the traverses, are grouped as Texas infill, Louisiana infill, and Mississippi-Alabama-Florida infill (Figure 3). Data from these wells may be viewed individually, or they may be used to create custom traverses.

This folio contains four cross sections drawn along all but the Florida traverse. The first cross section shows the distribution of sequences (Figure 9). The second shows the facies association(s) for each sequence. The third shows the percentage of sand-bearing section within each sequence. The fourth shows the sequence bedding architecture(s) within each sequence. Note that the thickness of each facies association or stratigraphic architecture is proportionalized within sequences containing two or more types.

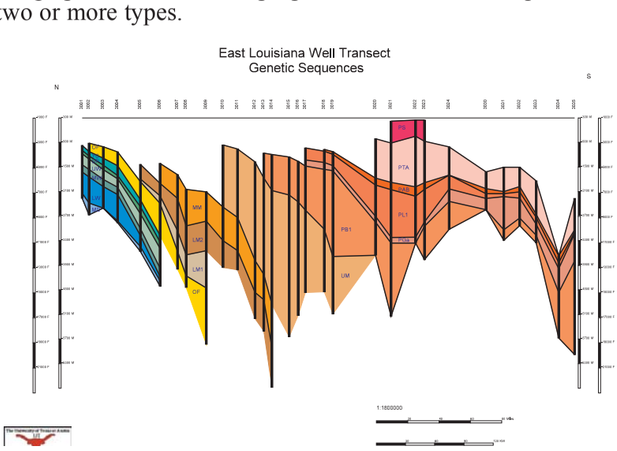


Figure 9. Well transect sequences

GBDS Seismic Traverses

The database includes seismic reflection profiles (GeoQuest™) aligned along eight pre-constructed traverses (Figure 3):

Western Gulf
West-central Gulf

East-central Gulf

West Mississippi Fan

East Mississippi Fan

North deep basin

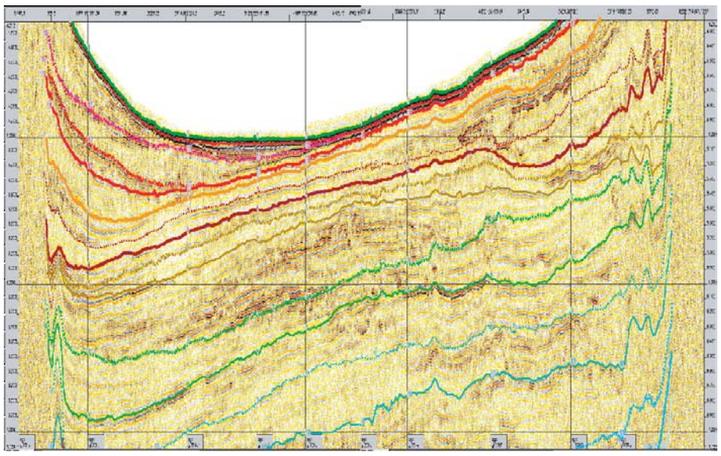
West deep basin

Central deep basin

In addition, the suite of infill seismic shot points, which lie along seismic profiles located between the traverses, may be viewed individually, or they may be used to create custom traverses.

This folio contains two graphic cross sections drawn along each of the seismic traverses and a highly compressed presentation of the seismic profile with superimposed seismic sequence boundaries (figure 10). The first cross section shows the distribution of sequences. The second shows the seismic facies association(s) for each sequence.

Figure 10. Western Gulf compressed seismic section



Depisode Maps

A suite of four maps was constructed for each depisode genetic sequence using combined well, seismic, and feature coverages to illustrate the contents of the database and to visually summarize our current interpretation of depositional system paleogeography. The maps and the coverages included in each are:

1. Depositional framework (Figure 11)

facies associations in all wells penetrating the sequence

seismic facies associations in all tabulated shot points

shelf margin positions and types at the begin and end of the depisode

submarine canyons, megaslumps and slides

slope embayments

mapped sand and interval (ft, twt) depocenters

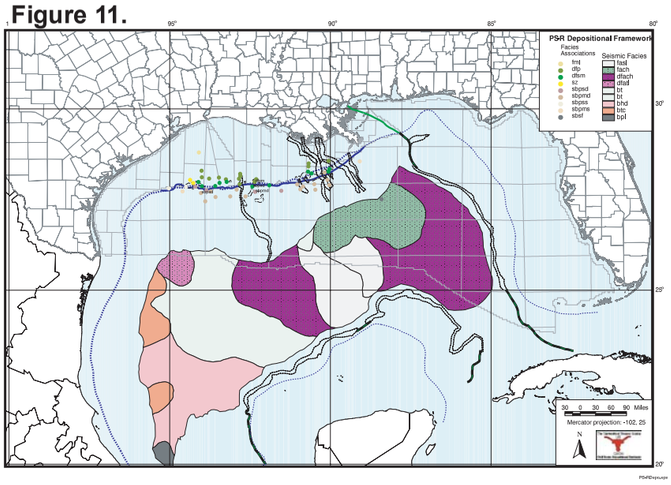
onlap, erosional, and non-depositional edges

carbonate reefs

submarine scarps

select structural features that effect regional depositional patterns

Figure 11.



2. Sequence isopach (Figure 12)

digitized contours based on thickness data from all wells and shot points

shelf margin positions and types at the begin and end of the depisode

submarine canyons, megaslumps and slides

slope embayments

mapped sand and interval (ft, twt) depocenters

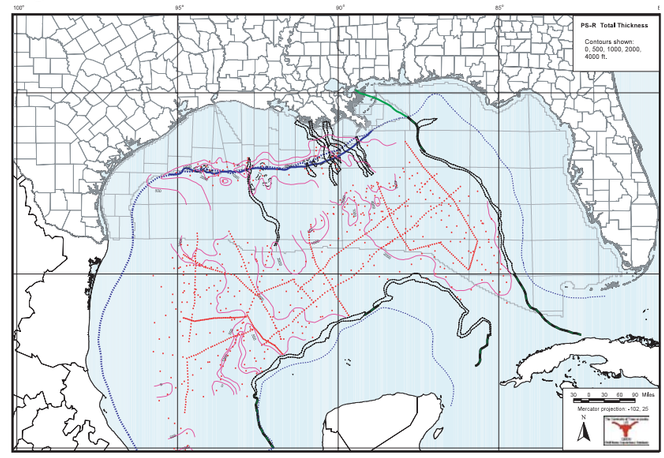
onlap, erosional, and non-depositional edges

carbonate reefs

submarine scarps

select structural features that effect regional depositional patterns

Figure 12.



3. Net thickness of sand-bearing intervals within the sequence (Figure 13)

digitized contours based on thickness sand-bearing interval from all wells

distribution of seismic facies associations dfach, dfatl, dfamtl, dfast, fach, and dfahst (which are interpreted to contain potential reservoir sand bodies)

shelf margin positions and types at the begin and end of the depisode

submarine canyons, megaslumps and slides

slope embayments

mapped sand and interval (ft, twt) depocenters

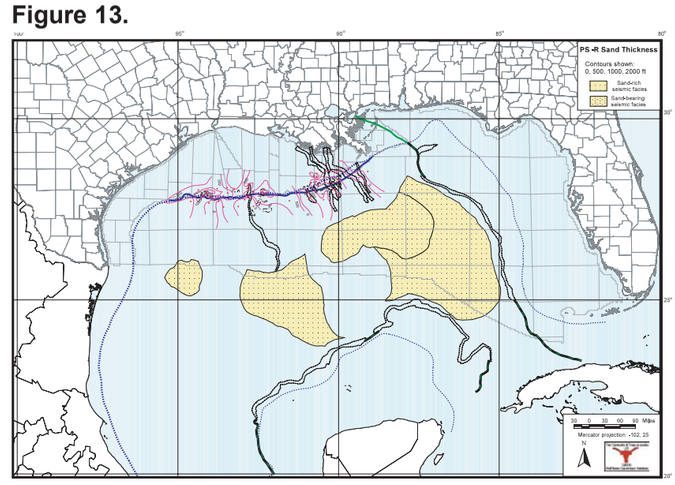
onlap, erosional, and non-depositional edges

carbonate reefs

submarine scarps

select structural features that effect regional depositional patterns

Figure 13.



4. Depositional systems (Figure 14)

depositional system outlines

seismic facies association outlines

shelf margin positions and types at the begin and end of the depisode

submarine canyons, megaslumps and slides

slope embayments

mapped sand and interval (ft, twt) depocenters

onlap, erosional, and non-depositional edges

carbonate reefs

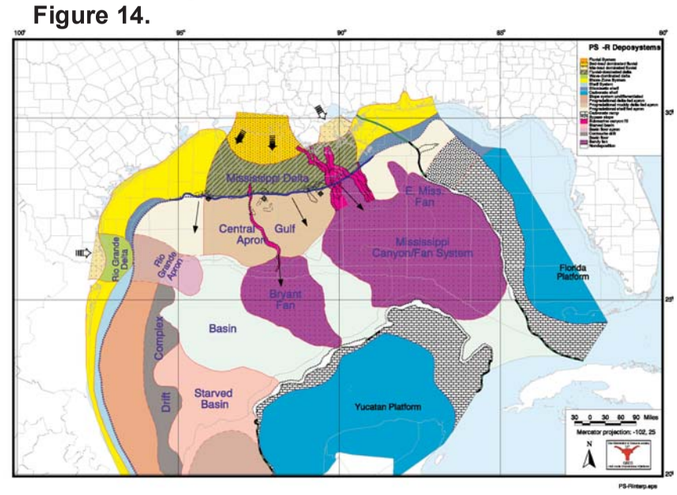
submarine scarps

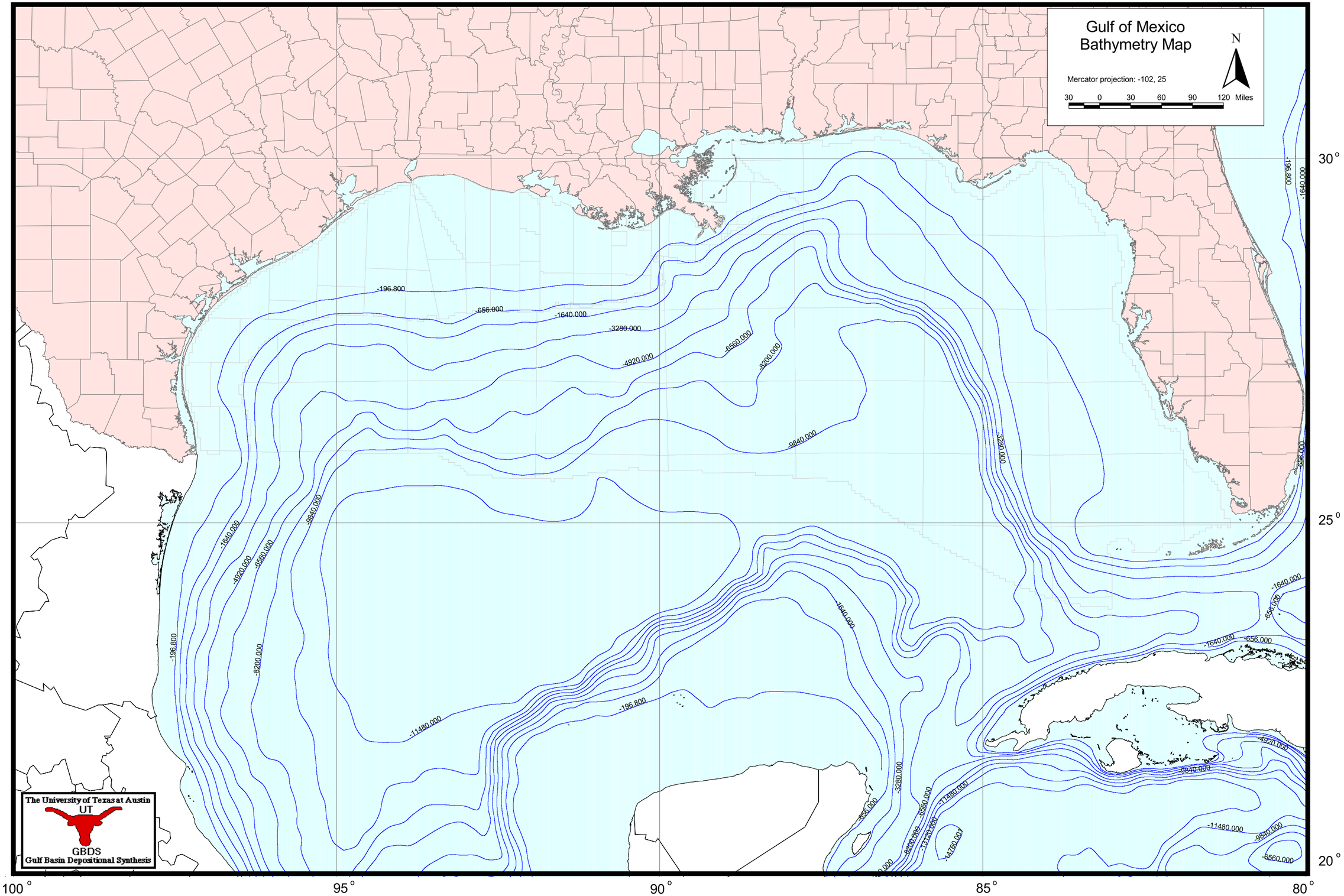
select structural features that effect regional depositional patterns

schematic depocenter and depoaxis locations

schematic sand transport axes

Figure 14.




Gulf of Mexico
Bathymetry Map
N
Mercator projection: -102, 25
30 0 30 60 90 120 Miles
30°
25°
20°
100°
95°
90°
85°
80°
-196.800
-656.000
-1640.000
-3280.000
-4920.000
-6560.000
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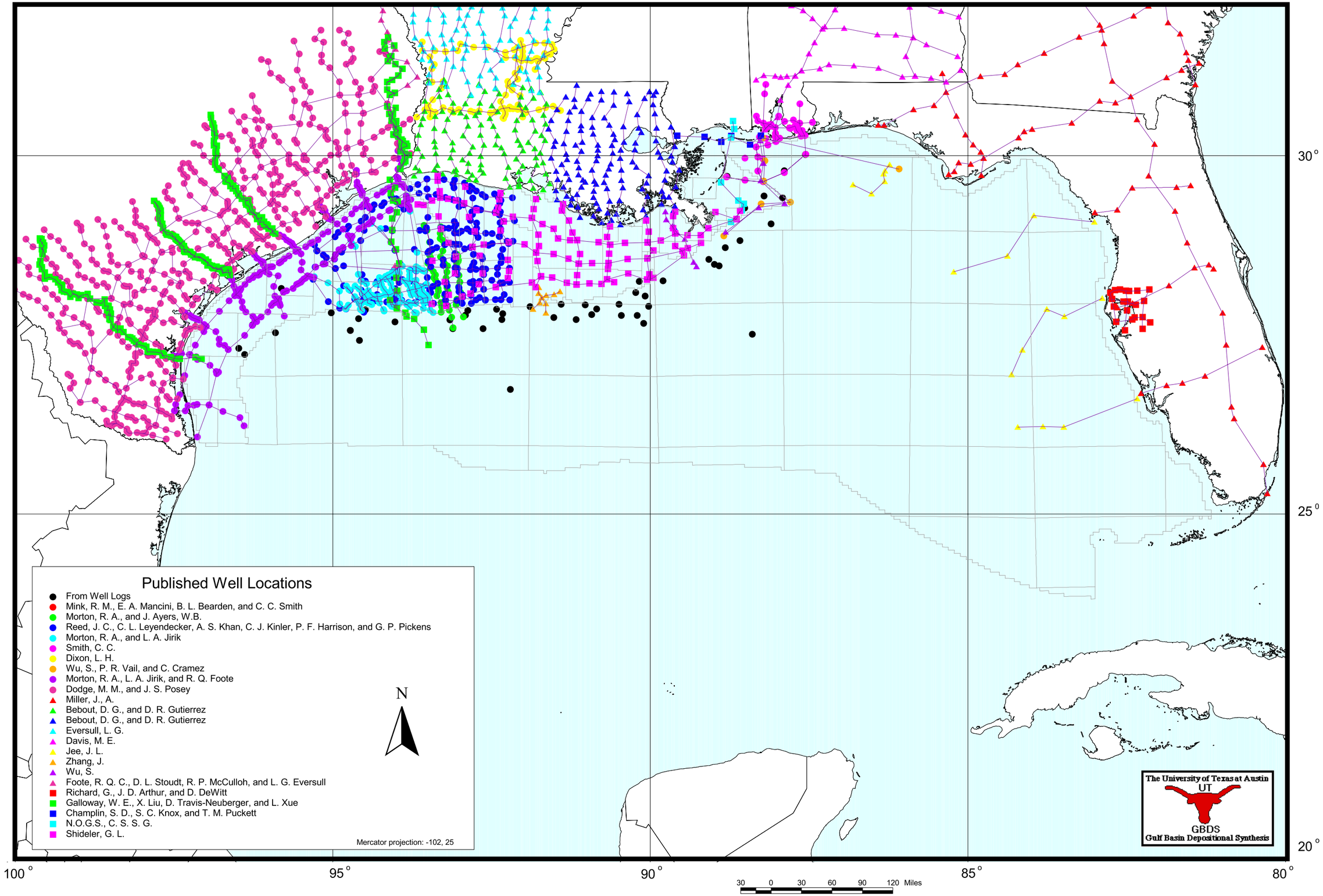
Published Well Locations
From Well Logs
Mink, R. M., E. A. Mancini, B. L. Bearden, and C. C. Smith
Morton, R. A., and J. Ayers, W.B.
Reed, J. C., C. L. Leyendecker, A. S. Khan, C. J. Kinler, P. F. Harrison, and G. P. Pickens
Morton, R. A., and L. A. Jirik
Smith, C. C.
Dixon, L. H.
Wu, S., P. R. Vail, and C. Cramez
Morton, R. A., L. A. Jirik, and R. Q. Foote
Dodge, M. M., and J. S. Posey
Miller, J., A.
Bebout, D. G., and D. R. Gutierrez
Bebout, D. G., and D. R. Gutierrez
Eversull, L. G.
Davis, M. E.
Jee, J. L.
Zhang, J.
Wu, S.
Foote, R. Q. C., D. L. Stoudt, R. P. McCulloh, and L. G. Eversull
Richard, G., J. D. Arthur, and D. DeWitt
Galloway, W. E., X. Liu, D. Travis-Neuberger, and L. Xue
Champlin, S. D., S. C. Knox, and T. M. Puckett
N.O.G.S., C. S. S. G.
Shideler, G. L.
Mercator projection: -102, 25
N
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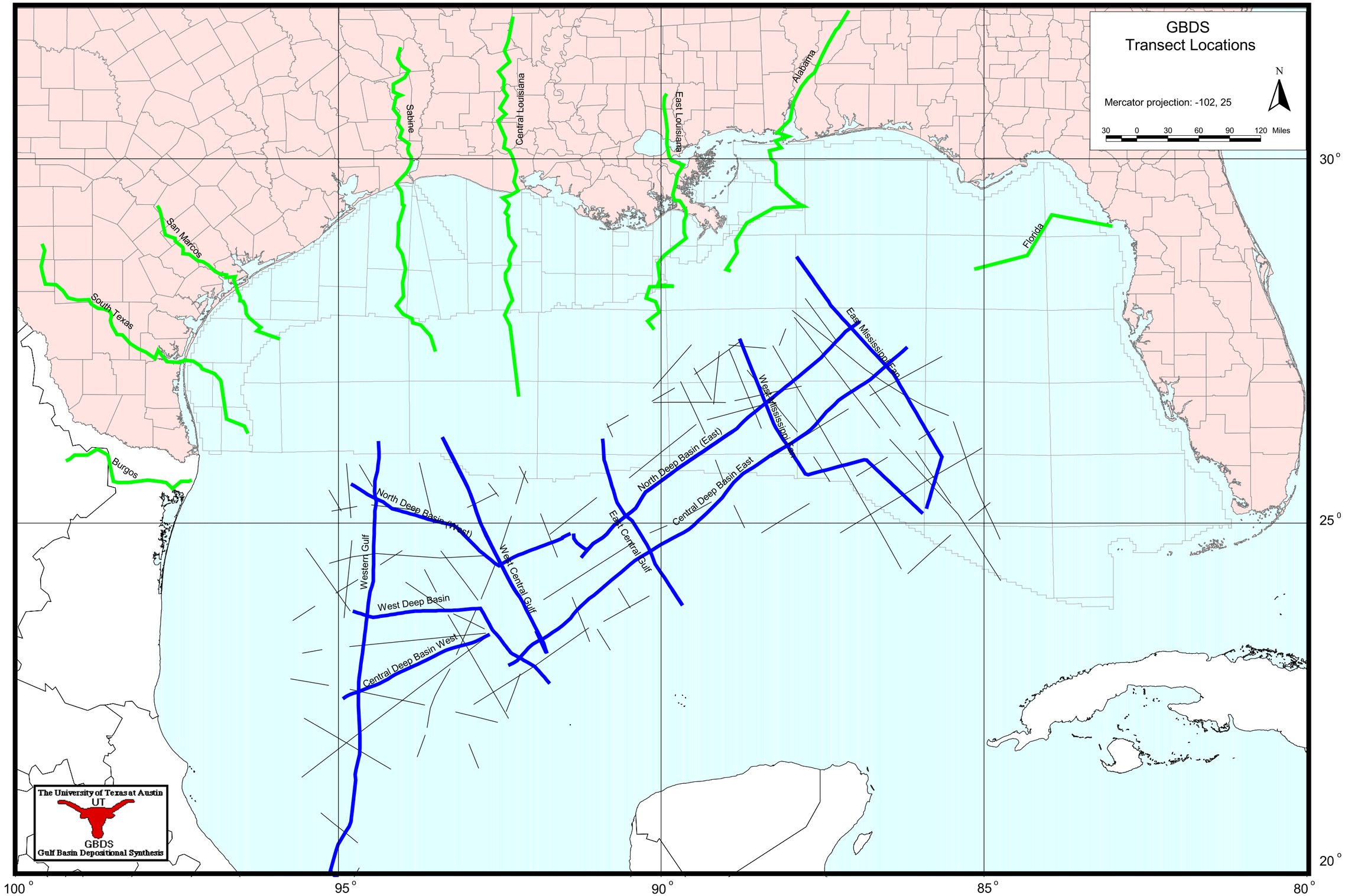
UT
GBDS
Gulf Basin Depositional Synthesis
30°
25°
20°
100°
95°
90°
85°
80°
30 0 30 60 90 120 Miles


GBDS
Transect Locations
Mercator projection: -102, 25
N
30 0 30 60 90 120 Miles
Sabine
Central Louisiana
East Louisiana
Alabama
Florida
San Marcos
South Texas
Burgos
East Mississippi Fan
West Mississippi Fan
North Deep Basin (East)
Central Deep Basin East
North Deep Basin (West)
Western Gulf
West Central Gulf
East Central Gulf
West Deep Basin
Central Deep Basin West
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GBDS
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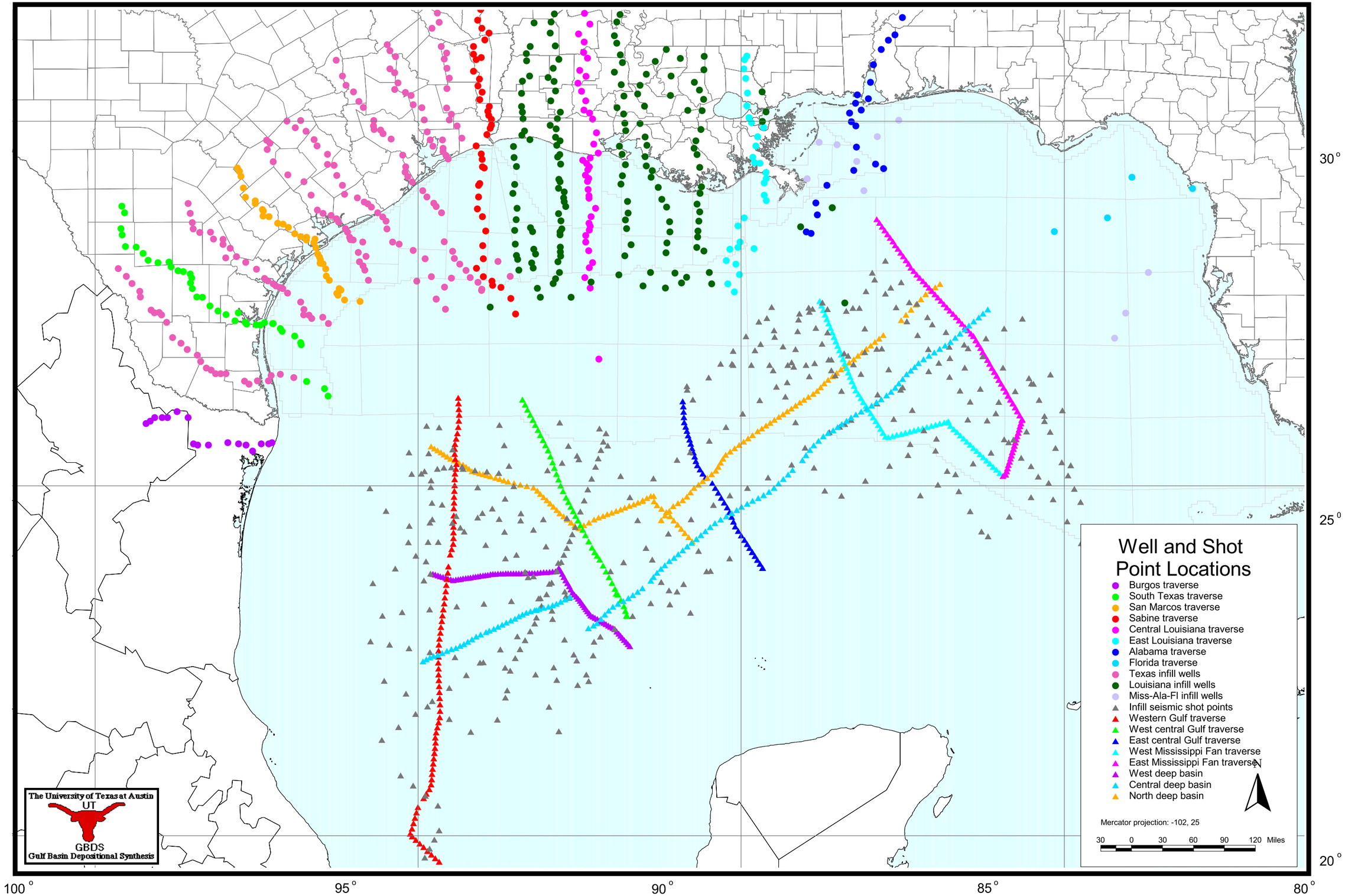
30°
25°
20°
100°
95°
90°
85°
80°


Well and Shot Point Locations
Burgos traverse
South Texas traverse
San Marcos traverse
Sabine traverse
Central Louisiana traverse
East Louisiana traverse
Alabama traverse
Florida traverse
Texas infill wells
Louisiana infill wells
Miss-Ala-Fl infill wells
Infill seismic shot points
Western Gulf traverse
West central Gulf traverse
East central Gulf traverse
West Mississippi Fan traverse
East Mississippi Fan traverse
West deep basin
Central deep basin
North deep basin
N
Mercator projection: -102, 25
30 0 30 60 90 120 Miles
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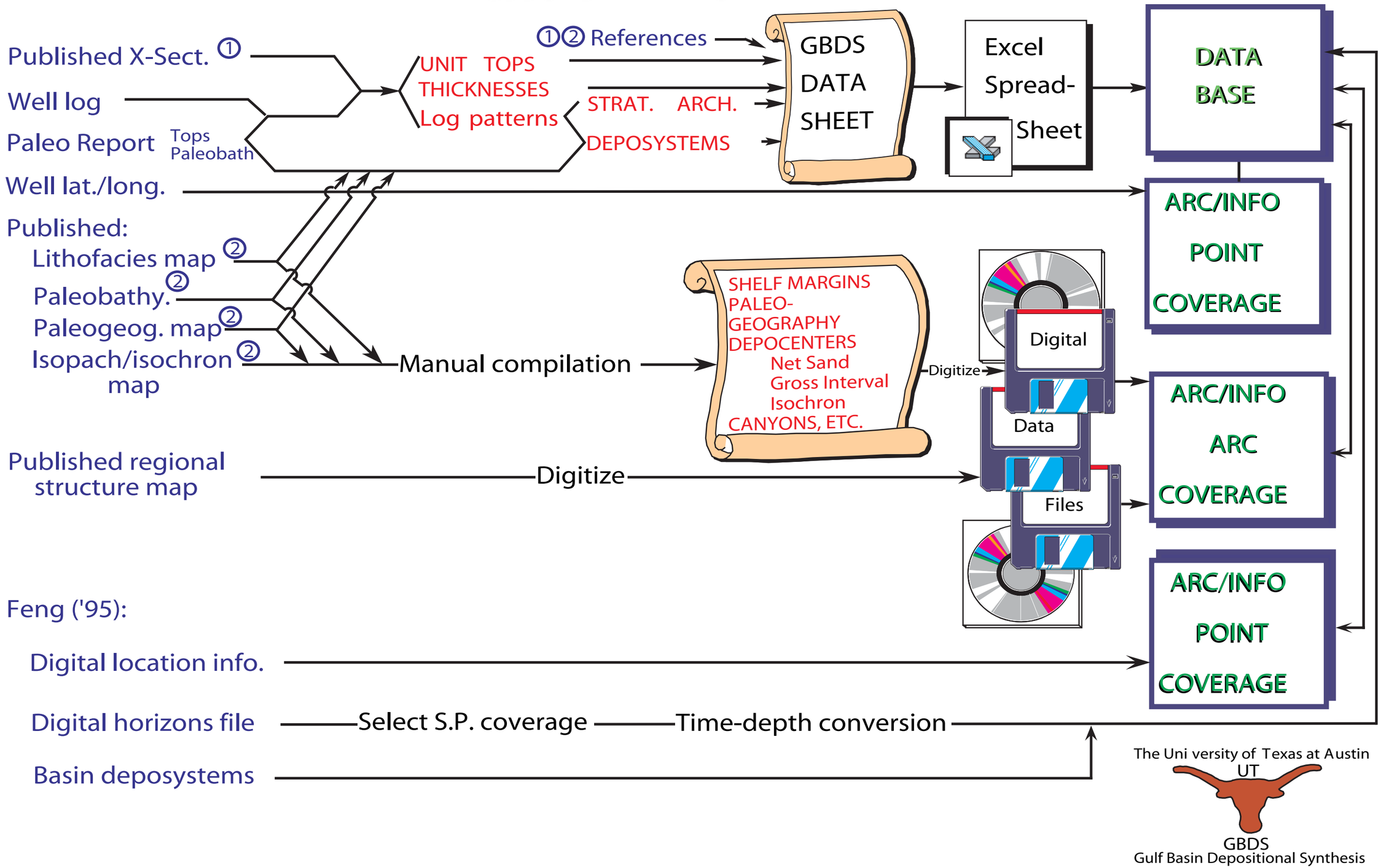
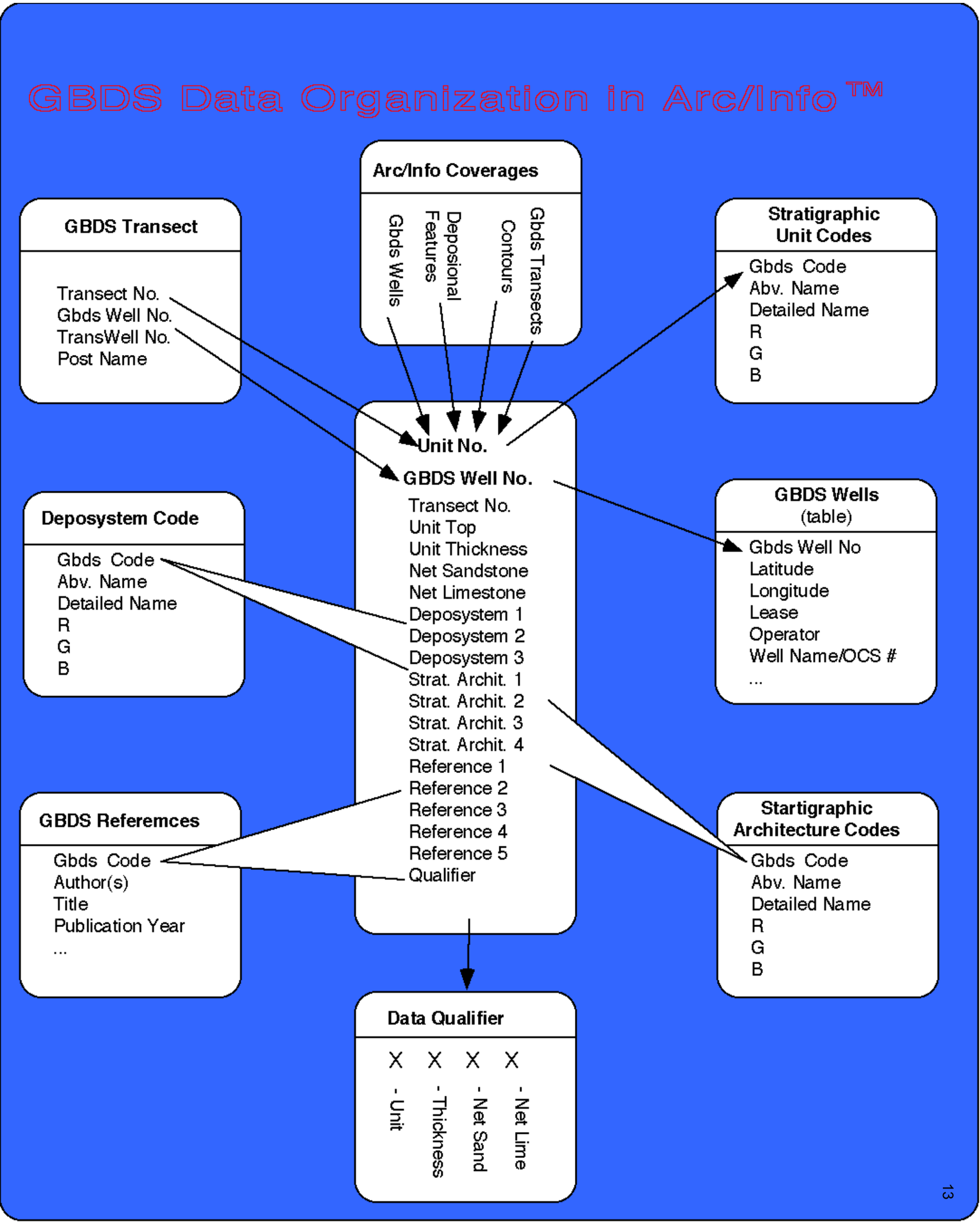
GBDS
Gulf Basin Depositional Synthesis
30°
25°
20°
100°
95°
90°
85°
80°

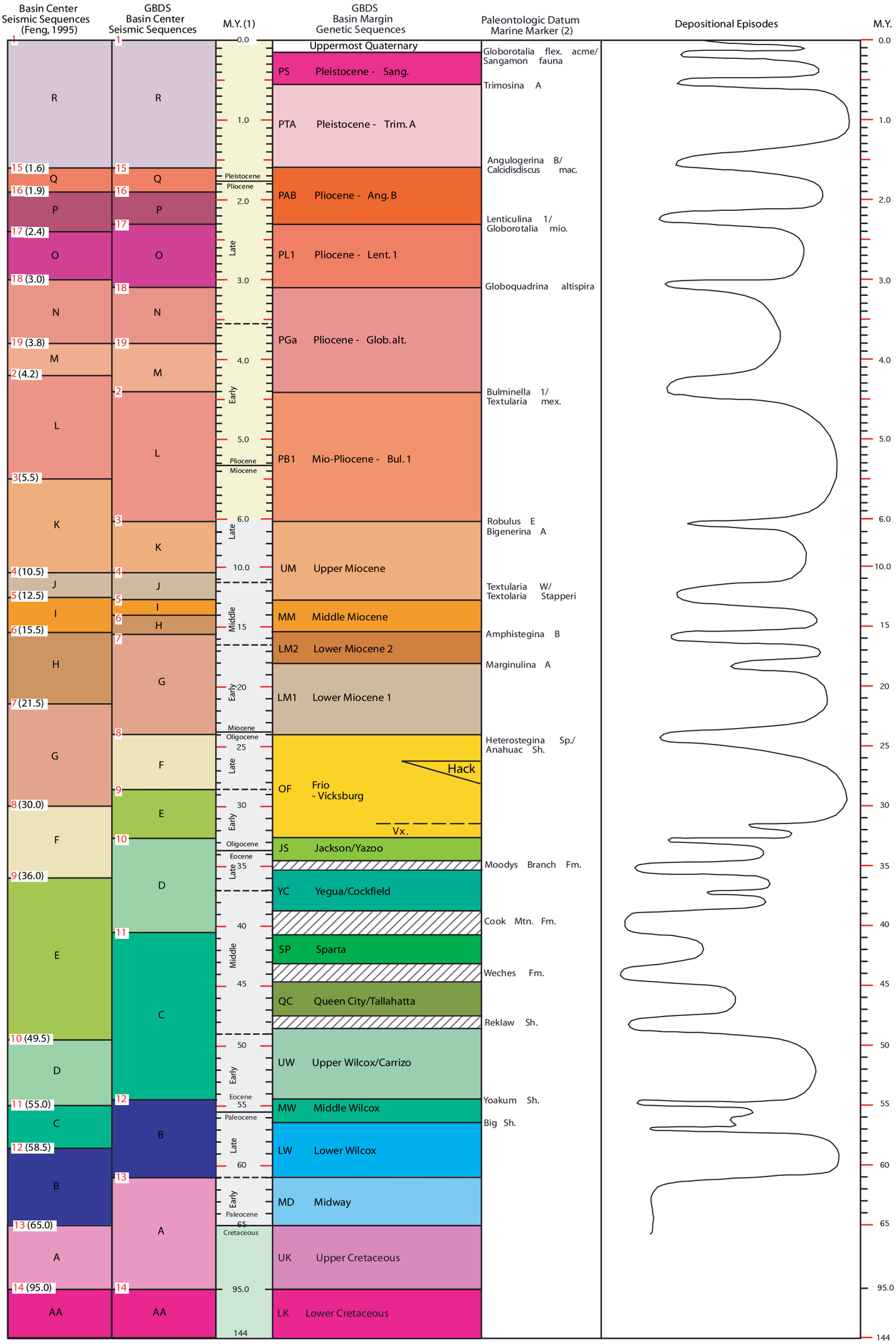
GBDS DATA FLOW



GBDS Data Organization in Arc/Info ™



Stratigraphic Correlation Chart
Gulf of Mexico Basin
(Version 3, July 1998)



Code	Definition
12(5.5)	Basin Center Seismic Sequence Boundary Number (Age) Code (Feng, 1995)
A	Basin Center Seismic Sequence Letter Code (Feng, 1995)
PB1	Basin Margin Genetic Sequence Code (This study)

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References
(1) Time scale of Berggren et al., 1995 (GBDS #459)
(2) Paleontologic and Maximum Flooding Surface Dates:
Neogene - Paleo-Data, Inc., Unpublished Biostratigraphic Charts 9610-9708
Paleogene - Paleo-Data, Inc., Gulf Coast Cenozoic Strat. Chart., 1989 (GBDS#420)
Lawless et. al., 1997 (GBDS #529)
Jiang, 1997 (GBDS #588)

File: strat.corr._Phase 1

Color Codes for GBDS Stratigraphic Units

Basin Center Seismic Sequences of Feng (1995)

- 1: Sequence R
- 15: Sequence Q
- 16: Sequence P
- 17: Sequence O
- 18: Sequence N
- 19: Sequence M
- 2: Sequence L
- 3: Sequence K
- 4: Sequence J
- 5: Sequence I
- 6: Sequence H
- 7: Sequence G
- 8: Sequence F
- 9: Sequence E
- 10: Sequence D
- 11: Sequence C
- 12: Sequence B
- 13: Sequence A
- 14: AA: Early Cretaceous

GBDS Basin Margin Genetic Sequences

- 100: PP: Plio-Pleistocene
- 101: QU: Quaternary - Uppermost undifferentiated
- 102: PS: Pleistocene - Sang. fauna
- 103: PTA: Pleistocene - Trim. A.
- 104: PAB: Pleistocene - Angulogerina B
- 105: PL1: Pliocene - Lent. 1
- 106: PGa: Pliocene - Glob. alt.
- 107: PB1: Pliocene - Bul. 1
- 200: MI: Miocene
- 201: UM: Upper Miocene
- 202: MM: Middle Miocene
- 203: LM2: Lower Miocene 2
- 204: LM1: Lower Miocene 1
- 300: OL: Oligocene
- 310: OF: Frio - Vicksburg
- 311: OFu: Upper Frio *
- 312: HB: Hackberry *
- 313: OFl: Lower Frio - Vicksburg *
- 400: EO: Eocene
- 401: JS: Jackson
- 402: YC: Yegua/Cockfield
- 403: SP: Sparta
- 404: QC: Queen City
- 405: UW: Upper Wilcox
- 406: MW: Middle Wilcox
- 500: PA: Paleocene
- 501: LW: Lower Wilcox
- 502: MD: Midway
- 600: UK: Upper Cretaceous
- 601: UK3: Upper Cretaceous 3
- 602: UK2: Upper Cretaceous 2
- 603: UK1: Upper Cretaceous 1
- 604: LK: Lower Cretaceous

* not used in current database

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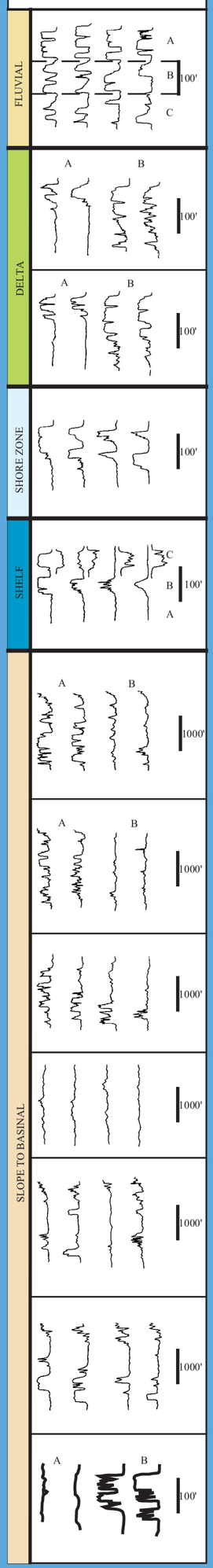
StratColorCode.eps

WELL LOG FACIES DEFINITION AND DEPOSITIONAL INTERPRETATION
Gulf of Mexico Basin

REPRESENTATIVE LOG PATTERNS



DEPOSITIONAL SYSTEM AND FACIES ASSOCIATION	LITHOFACIES DESCRIPTION	INTERPRETATION	OCCURRENCE IN BASIN	FACIES ASSOCIATION
Fluvial A. Bedload dominated B. Mixed-load dominated C. Suspended-load dominated	Aggradational facies succession. Sand (A) to mud (C) dominated, heterolithic succession containing discontinuous sand bodies. Sharp basal, variably sharp (A) to transitional, upward-fining (B, C) upper contacts. Laterally discontinuous lithofacies.	Constructional alluvial plain succession landward of delta or shore zone system.	Major fluvial systems source deltaic depocenters. Bed load systems occur primarily in the N.W. Gulf, Rio Grande and Burgos basins.	fbl fml fsl
Delta Fluvial dominated A. Platform delta B. Shelf-margin delta	Progradational facies succession. Heterolithic composition. Upward coarsening, lenticular, discontinuous sand bodies overlying prodelta mud. Digitate, laterally discontinuous sand bodies.	Major delta system prograding across shelf platform (A) or directly onto the continental slope (B).	Major fluvial-dominated deltas are prominent in the S. Louisiana, Houston and Macuspana depocenters.	dfp dfsm
Delta Wave-dominated A. Platform delta B. Shelf-margin delta	Progradational facies succession. Sand rich. Upward-coarsening to massive delta margin sand bodies overlying prodelta mud. Tabular to lobate, laterally continuous sand bodies.	Major delta system prograding across shelf platform (A) or directly onto the continental slope (B).	Wave-dominated deltas dominate the N.W. Gulf, Rio Grande and Burgos depocenters.	dwp dwsm
Shore zone Wave-dominated	Progradational to aggradational facies successions. Sand rich. Upward-coarsening to massive, lenticular to tabular, clean sand bodies. Transitional to sharp base; sharp top.	Constructional shorelines supplied by longshore reworking from major deltaic systems and/or reworking of non-deltaic coastal plain fringes. Includes barrier/ lagoon and strandplain complexes.	Thick shore-zone systems occur in Paleogene through Middle Miocene depisodes.	sz
Shelf A. Mud-dominated shelf B. Sandy wave-dominated shelf C. Carbonate-dominated shelf	Aggradational to progradational blankets and prisms. Sharp to transitional vertical boundaries. Transitional lateral boundaries. Massive to interstratified lithologies. Neritic faunas.	Constructional shelves marginal to major delta systems, fronting shore-zone systems, or capping transgressive coastal successions.	Carbonate shelves and ramps dominate the Florida and Yucatan margins. Relatively thick, clastic shelf systems occur in Paleogene-Miocene depisodes along N.W. and N.C. Gulf margins.	sm ss sc
Slope Progradational delta-fed apron A. Sandy B. Muddy	Offlapping succession of sandy to muddy turbidite and debris flow deposits. Upward-shoaling succession with bathyal faunas. Discontinuous, sharp to transitionally bounded sand bodies. Abundant syndepositional faults. Capped by delta system facies.	Constructional continental margin primarily supplied by a superjacent shelf -margin delta complex.	Front major delta depocenters of N., N.W. and S.W. Gulf.	sbpsd sbpmd
Slope Progradational shelf-fed apron A. Sandy B. Muddy	Offlapping succession of sandy to muddy turbidite and debris flow deposits. Upward-shoaling succession with bathyal faunas. Discontinuous, sharp to transitionally bounded sand bodies. Capped by shelf system facies.	Constructional continental margin primarily supplied by a superjacent shelf.	Front major shelf and shore-zone depositional system tracts of the N.W. and N.C. Gulf Paleogene-Miocene depisodes.	sbpss sbpms
Slope Sandy retrogradational slope apron	Onlapping succession of muddy to sandy turbidite, debris flow and slump deposits. Upward-deepening and fining succession with bathyal or mixed faunas. Heterolithic interbedded, discontinuous facies association.	Destructional sandy to heterolithic continental margin undergoing long-term mass wasting.	Locally prominent within OF, PGa, and PAB depisodes.	sbras
Slope Muddy retrogradational slope apron	Onlapping succession of muddy debris flow and slump deposits. Upward deepening paleobathymetry.	Destructional muddy continental margin undergoing long-term mass wasting.	Locally prominent within OF, PGa, and PAB depisodes.	sbram
Slope Submarine canyon fill	Laterally bounded by deeply incised erosion surface. Dominantly mud fill with lenticular to lobate turbidite channel and lobe sand bodies and discontinuous heterolithic slump and debris flow deposits. Capped by progradational upper slope mud and sandy shelf or deltaic facies.	Large-scale focused mass-wasting and submarine erosion creating a canyon, which subsequently fills with onlapping debris flow and turbidite deposits capped by an offlapping succession of shelf or prodelta sediment.	Locally prominent in the early Paleogene depisodes of the W., N.W. and C. Gulf and in the PS depisode of the N.C. Gulf.	sbsc
Slope to basin Megaslide complex	Bounded updip at base by slide plane. Rotated fault blocks to chaotic debris apron. Upper progradational facies succession overlies middle muddy unit; turbidite and sandy debris flow deposits and/or disarticulated blocks of upper slope, shelf-margin delta or other shallow facies concentrated in lower part of wedge.	Subregional failure of upper slope and shelf margin creating an embayment or re-entrant in basin margin. Slide blocks and incompletely evacuated debris flow form basal fill. Turbidites and smaller debris flows scour and pond between these. Prograding muddy slope apron deposits heal the embayment.	Locally prominent within OF, PGa, PAB and PTA depisodes.	sbms
Basin floor A. Basinal mud B. Sand-rich submarine fan	Mud; mud with interbedded sand and mud units. Transitional to sharp upper boundary. Sharp lower boundaries on sand bodies. Bathyal faunas.	Deposition on basin floor by low to high density turbidity currents and fluidal debris flows.	Pentrated only by deep wells in the N.E. and N.C. Gulf margin.	b;sbsf

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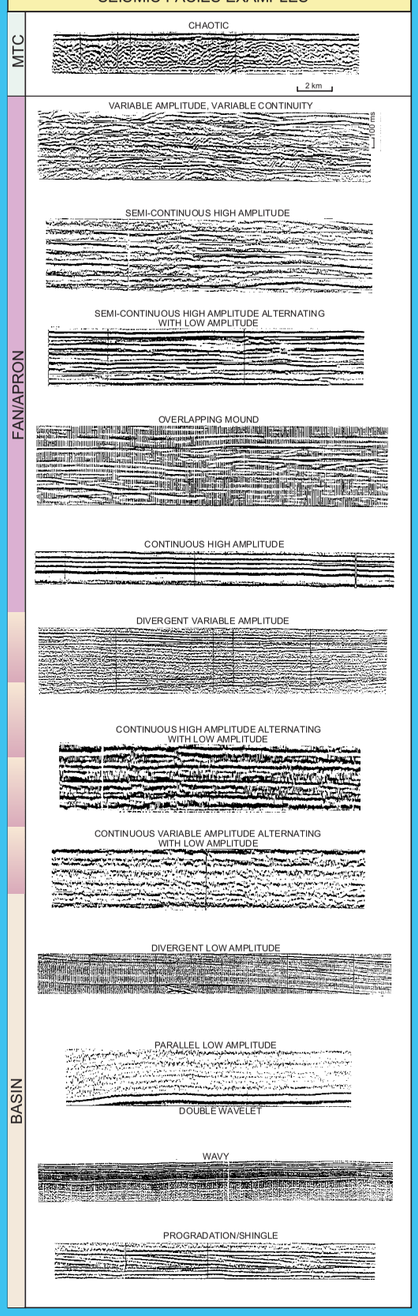
Version 3
Well.facies3.eps

Compiled by W. Galloway
August, 1998

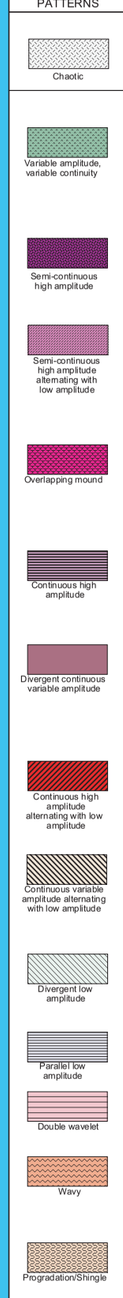
SEISMIC FACIES DEFINITION AND GEOLOGIC INTERPRETATION
Deep Gulf of Mexico Basin

SEISMIC FACIES EXAMPLES

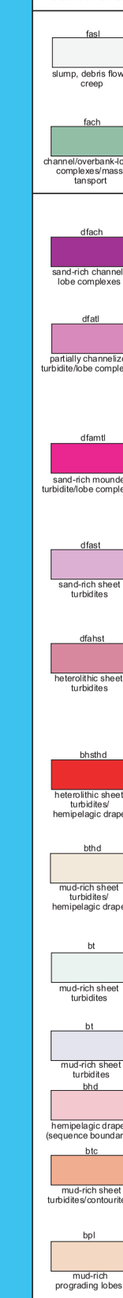


SEISMIC FACIES	SEISMIC FACIES DESCRIPTION	GEOLOGIC INTERPRETATION	OCCURRENCE IN DEEP BASIN
Chaotic	Disorganized, discontinuous, high or low amplitude reflections with mounded external configuration	Slump, debris flow, creep Mass transport complex	Along western and northern deep basin margins or on flanks of submarine fans in NE deep basin
Variable amplitude variable continuity	Lateral variation in both amplitude and continuity within a short distance Wedge shaped external configuration	Channel/overbank-lobe complexes/ mass transport Channel/mass transport complexes	Mainly in NE deep basin Representing Mississippi Fan sediments
Semi-continuous high amplitude	Subparallel, semi-continuous high amplitude reflections Concave-up high amplitude reflections are dominant Wedge shaped external configuration	Sand-rich channel/ lobe complexes Sandy channel lobe complexes	Mostly in deep basin and along NE and N deep basin margins. Associated with depocenters
Semi-continuous high amplitude alternating with low amplitude	Subparallel, semi-continuous high amplitude reflections alternating with low amplitude reflections Contains concave-up high amplitude reflections Wedge shaped external configuration	Partially channelized turbidite/lobe complexes Sheet lobes	Mainly in NE deep basin and along northern margin
Overlapping mound	Consisting of numerous overlapping mounds, each mound contains concave-up, bi-lateral downlap semi-continuous high amplitude reflections Mound-shaped external configuration	Sand-rich mounded turbidite/lobe complexes Mounded lobes	Only in western deep basin and along NW and W deep basin margins Associated with depocenters
Continuous high amplitude	Parallel, continuous, high amplitude reflections dominant	Sand-rich sheet turbidites Sandy sheet turbidites	Along western and northern deep basin margins Often associated with depocenters
Divergent variable amplitude	Wedge-shaped in dip view and mounded-shaped in strike view Subparallel variable amplitude reflections	Heterolithic sheet turbidites Heterolithic sheet turbidites	Along western and northern deep basin margins Associated with depocenters
Continuous high amplitude alternating with low amplitude	Contains three or more cycles, each cycle is dominated by low amplitude reflections, which is capped by a continuous high amplitude reflection Wedge-shaped external form	Heterolithic sheet turbidites hemipelagic drape Sheet turb-drape	Only in western basin Closely associated with depocenters
Continuous variable amplitude alternating with low amplitude	Contains three or more cycles, each cycle is dominated by low amplitude reflections, which is capped by a continuous high amplitude reflection Wedge-shaped external form	Mud-rich sheet turbidites and hemipelagic drape Muddy turb-hemipelagics	Only in western deep basin Associated with depocenters
Divergent low amplitude	Subparallel low amplitude reflections Wedge-shaped external form	Mud-rich sheet turbidites Muddy sheet lobes	Along western and northern deep basin margins Associated with depocenters
Parallel low amplitude	Parallel, continuous low amplitude reflections One of the dominant facies in deep basin	Mud-rich sheet turbidites Muddy turbidites	Remote basinal areas Particularly in southern and southeastern deep basin
Double wavelet	Railway track high amplitude reflections Basin-wide continuity One of the dominant facies in deep basin	Hemipelagic drape (sequence bounday) Hemipelagics	Basinwide
Wavy	Dune-like features Parallel low amplitude reflections Wave length ranging from 0.3-1.5 km and wave amplitude from 5-20 m	Mud-rich turbidites/contourites Drift	Only in western deep basin along western margin
Progradation/ shingle	Basinward progradation reflections geometry Change undip and downdip into parallel low amplitude facies	Mud-rich prograding lobes Shingled muddy turbidites	Only in western deep basin along western margin

SEISMIC FACIES PATTERNS



DEPOSYSTEMS



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Version 3, August 1998
file: Seismic.facies.Def.eps

after Feng, 1995

Depositional Framework Explanation

BASIN MARGIN FACIES ASSOCIATIONS

- 10: f: Fluvial System
- 11: fbl: Fluvial System - Bed-load dominated
- 12: fml: Fluvial System - Mixed-load dominated
- 13: fsl: Fluvial System - Suspended-load dominated
- 20: d: Delta System
- 21: dfp: Delta System - Fluvial-dominated platform
- 22: dfsm: Delta System - Fluvial-dominated shelf margin
- 23: dwp: Delta System - Wave-dominated platform
- 24: dwsm: Delta System - Wave-dominated shelf margin
- 30: sz: Shore-Zone System - Wave-dominated shore zone
- 40: s: Shelf System
- 41: sm: Shelf System - Mud-dominated
- 42: ss: Shelf System - Sandy wave-dominated
- 43: sc: Shelf System - Carbonate-dominated
- 49: sbcr: Slope to Basin System - Carbonate ramp
- 50: sb: Slope to Basinal System
- 51: sbpsd: Slope to Basinal System - Progradational apron sandy delta-fed
- 52: sbpmd: Slope to Basinal System - Progradational apron muddy delta-fed
- 53: sbpss: Slope to Basinal System - Progradational apron sandy shelf-fed
- 54: sbpms: Slope to Basinal System - Progradational apron muddy shelf-fed
- 55: sbras: Slope to Basinal System - Retrogradational apron sandy
- 56: sbram: Slope to Basinal System - Retrogradational apron muddy
- 57: sbsc: Slope to Basinal System - Submarine canyon fill
- 58: sbms: Slope to Basinal System - Megaslide complex
- 59: sbsf: Slope to Basinal System - Sand-rich fan

BASIN CENTER FACIES ASSOCIATIONS

- 60: fa: Fan/Apron
- 61: fasl: Fan/Apron - Slump/debris flow/creep
- 62: fach: Fan/Apron - Channel/overbank-lobe/complexes
- 70: dfa: Distal Fan/Apron
- 71: dfach: Distal Fan/Apron - Sand-rich channel/lobe complexes
- 72: dfatl: Distal Fan/Apron - Partially channelized turbidite/lobe complexes
- 73: dfamtl: Distal Fan/Apron - Sand-rich mounded turbidite/lobe complexes
- 74: dfast: Distal Fan/Apron - Sand-rich sheet turbidites
- 75: dfahst: Distal Fan/Apron - Heterolithic sheet turbidites
- 80: b: Basin
- 81: bhsthd: Basin - Heterolithic sheet turbidites/hemipelagic drape
- 82: bthd: Basin - Mud-rich sheet turbidites/hemipelagic drape
- 83: bt: Basin - Varibly thick mud-rich sheet turbidites
- 84: bt: Basin - Mud-rich sheet turbidites
- 85: bhd: Basin - Hemipelagic drape (sequence boundary)
- 86: btc: Basin - Mud-rich turbidites/contourites
- 87: bpl: Basin - Mud-rich prograding lobes

FEATURES

- Relict shelf margin of underlying depisode
- Other relict shelf margin
- Shelf margin at maximum progradation
- Relict L-M Cretaceous shelf margin
- Relict U. Cretaceous shelf margin
- Erosional margin
- Bedrock margin
- Escarpment
- Mapped sand depocenter
- Mapped interval depocenter (time)
- Mapped interval depocenter (ft)
- Outline of submarine canyons, megaslides and embayments
- Pinchout or truncation
- Onlap or other depositional limit
- Carbonate reef
- Deposystem outline
- Schematic deposystem outline
- Salt overthrusts
- Thrust faults
- Vicksburg fault zone
- Regional structural axes
- Tuxpan platform
- Seismic facies boundary or limit of data
- Primary deposystem
- sm — Topmost and underlying deposystem(s)

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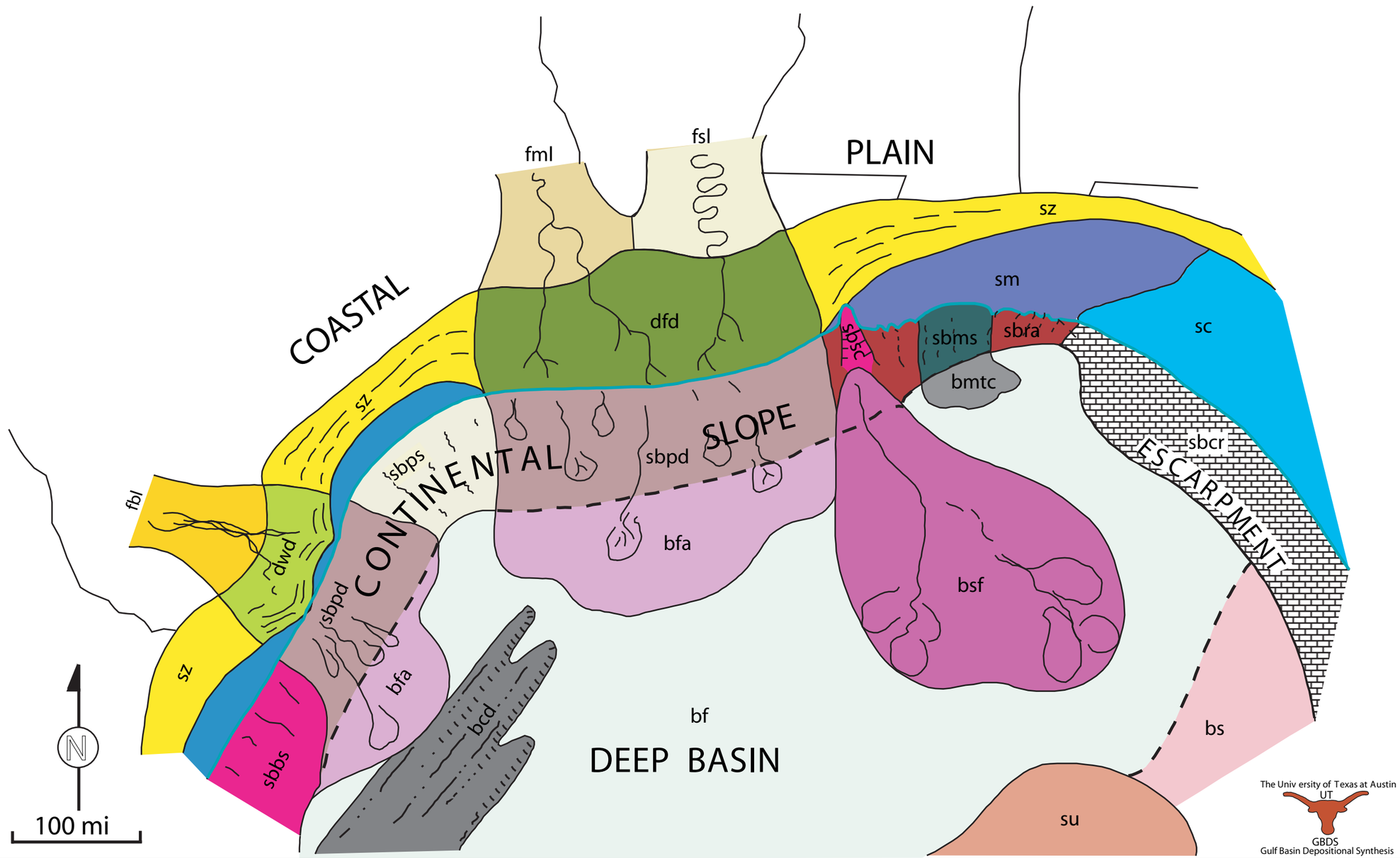
GBDSLegend.eps

GOM GENERIC DEPOSYSTEM GEOGRAPHY



Color Codes and Symbols for GBDS Depositional Systems

- 10000: f: Fluvial System
- 10050: fbl: Fluvial System - Bed-load dominated
- 10060: fml: Fluvial System - Mixed-load dominated
- 10070: fsl: Fluvial System - Suspended-load dominated
- 20000: d: Delta System
- 20010: dfd: Delta System - Fluvial-dominated delta
- 20030: dwd: Delta System - Wave-dominated delta
- 30000: sz: Shore-Zone System - Wave-dominated shore zone
- 40000: s: Shelf System
- 40030: sm: Shelf System - Siliciclastic shelf
- 40080: sc: Shelf System - Carbonate shelf
- 50000: su: Slope System - Undifferentiated
- 51120: sbpd: Slope System - Progradational delta-fed apron
- 51121: sbpmd: Slope System - Progradational muddy delta-fed apron
- 51124: sbpsd: Slope System - Progradational sandy delta-fed apron
- 51140: sbps: Slope System - Progradational shelf-fed apron
- 51200: sbra: Slope System - Retrogradational apron
- 52980: sbcr: Slope System - Carbonate ramp
- 55400: sbbs: Slope System - Bypass slope
- 58000: sbsc: Slope System - Submarine canyon
- 59000: sbms: Slope System - Megaslide
- 80000: bu: Basin System - Undifferentiated
- 80090: bs: Basinal System - Starved basin
- 83700: bmtc: Basinal System - Mass transport complex
- 84009: bcd: Basinal System - Contourite drift
- 87000: bf: Basinal System - Basin floor
- 81060: bfa: Basin System - Basin floor apron
- 81064: bfas: Basin System - Sandy basin floor apron
- 87001: bmf: Basin System - Muddy fan
- 87003: bsf: Basin System - Sand-rich fan
- 87004: bsyf: Basin System - Sandy fan
- 99999: none: Nondeposition - Nondeposition, erosion, or deposystem not defined

Depocenter Pincipal fluvial input axis Secondary fluvial input axis

Depoaxis Slope/Shelf transport axis

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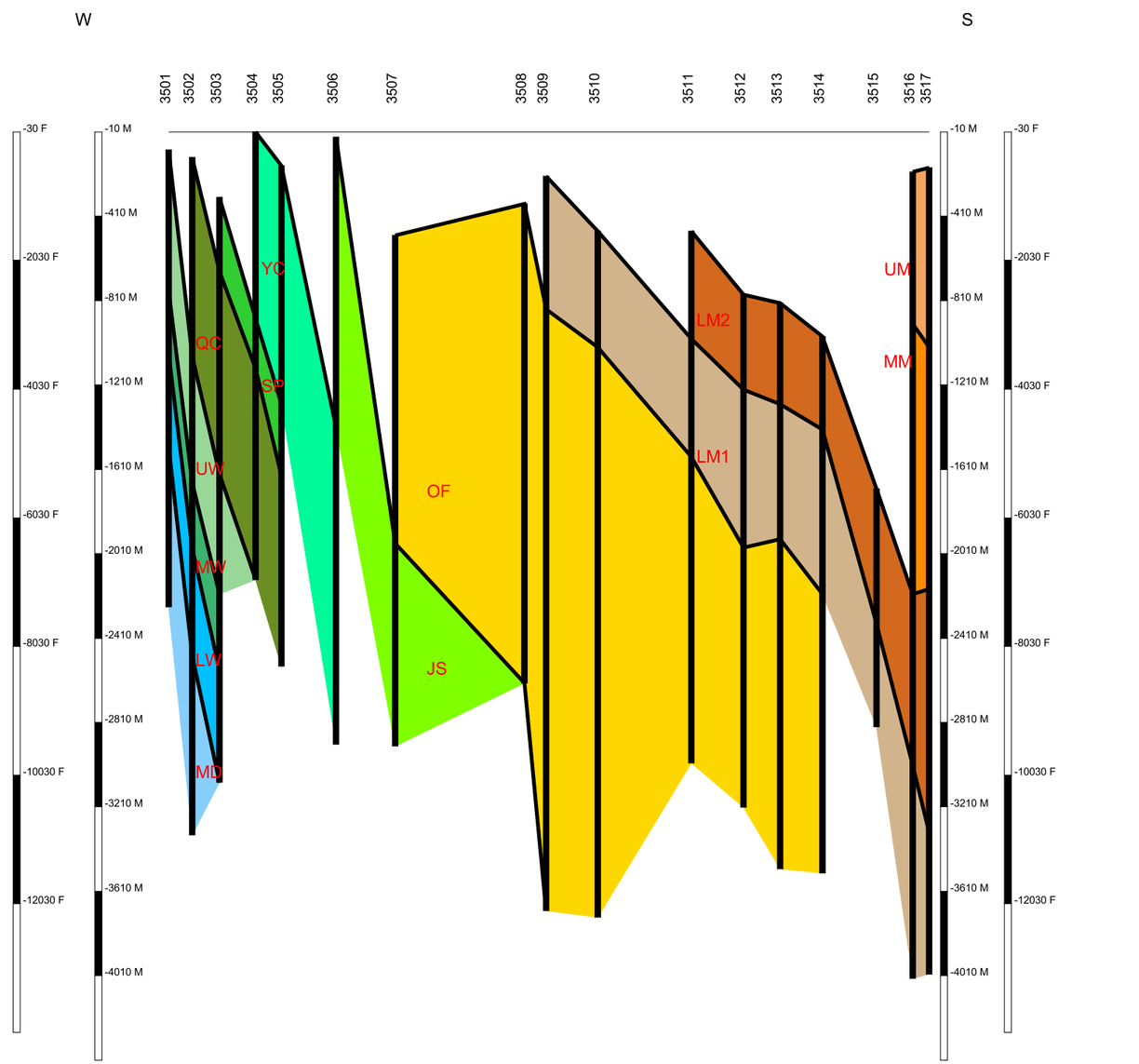
Gulf Basin Depositional Synthesis

DepoColorCode.eps

Burgos Well Transect
Genetic Sequences



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20 40 60 80 Miles

30 60 90 120 KM

The University of Texas at Austin
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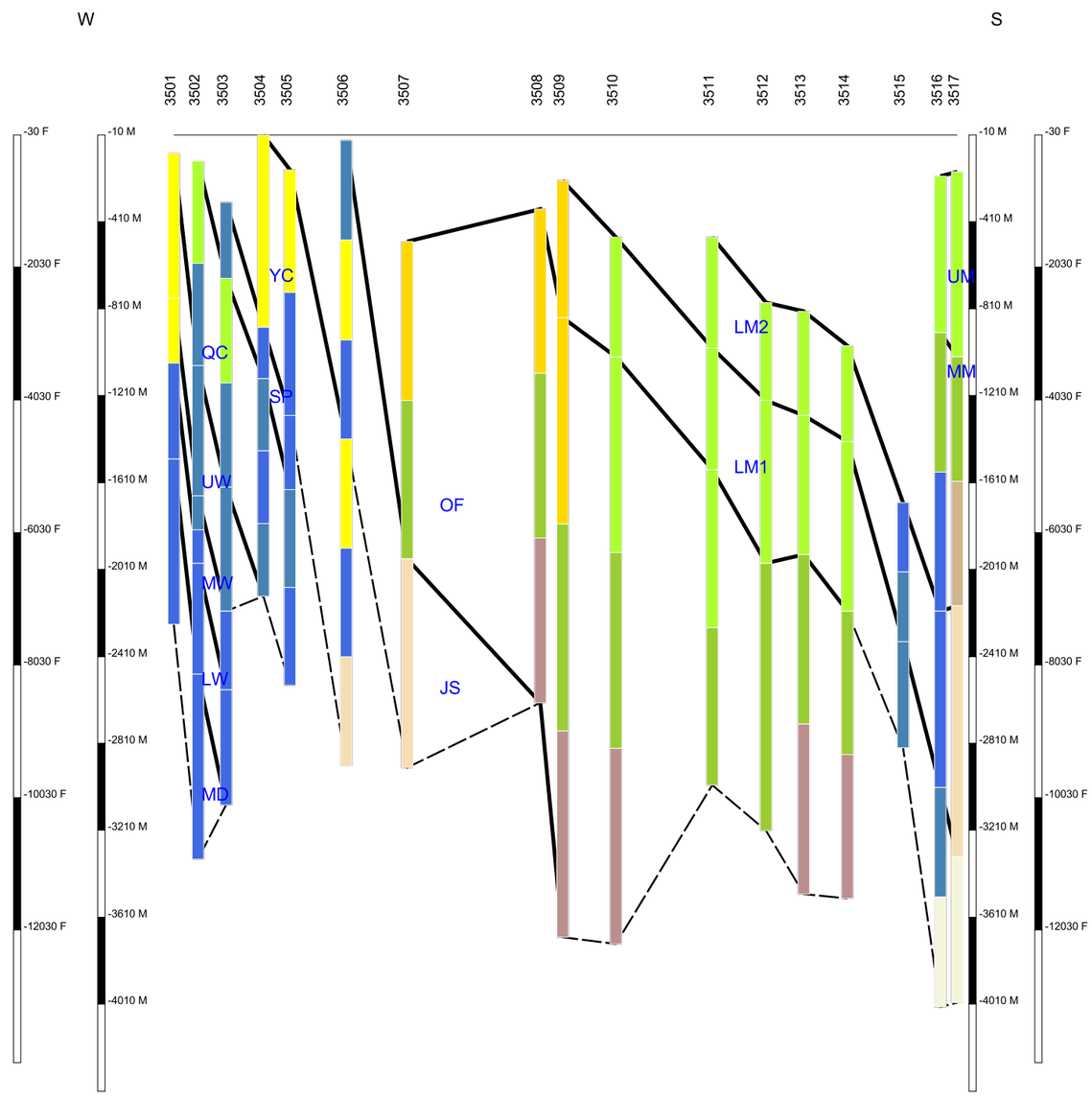
Burgos Well Transect
Facies Associations



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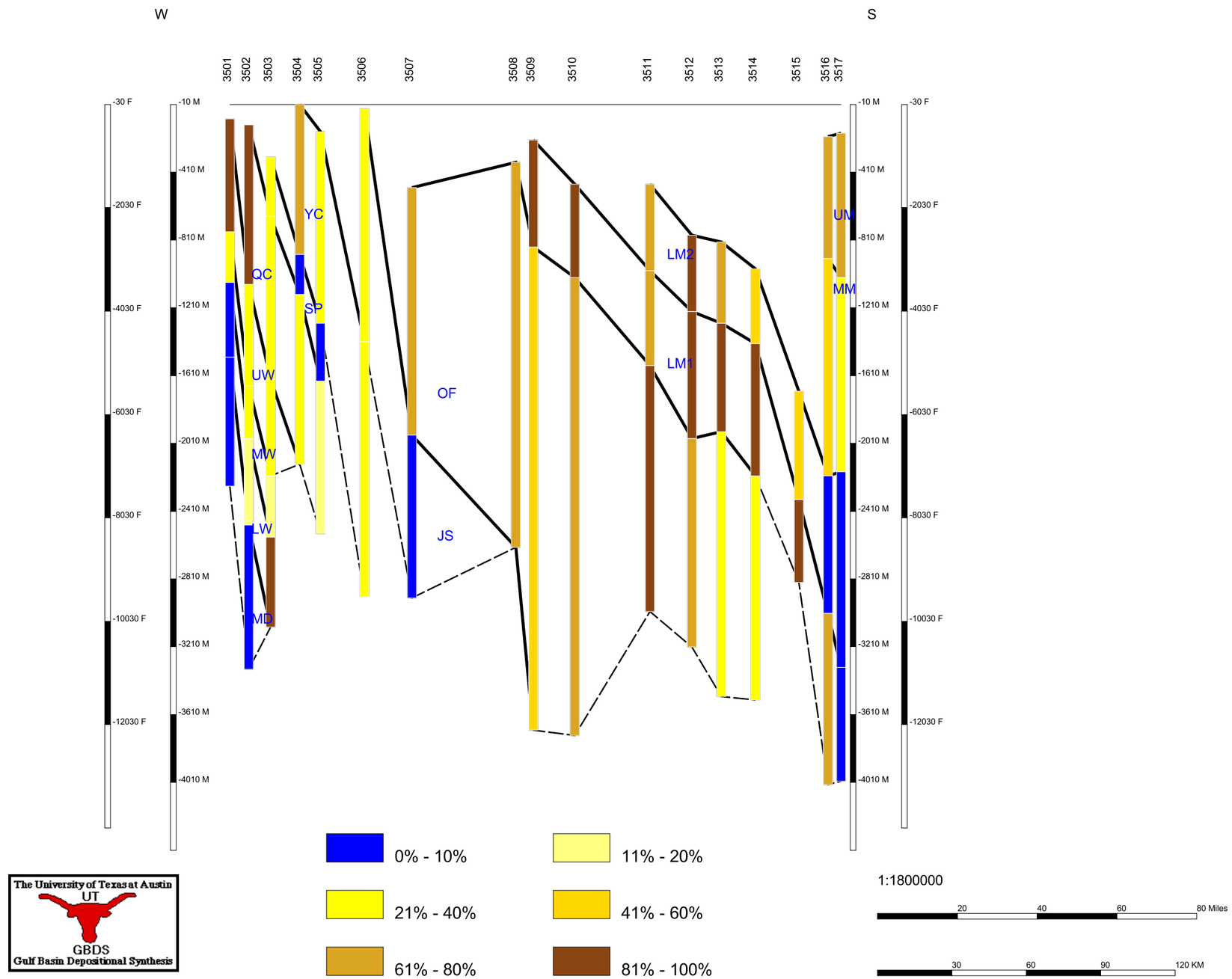
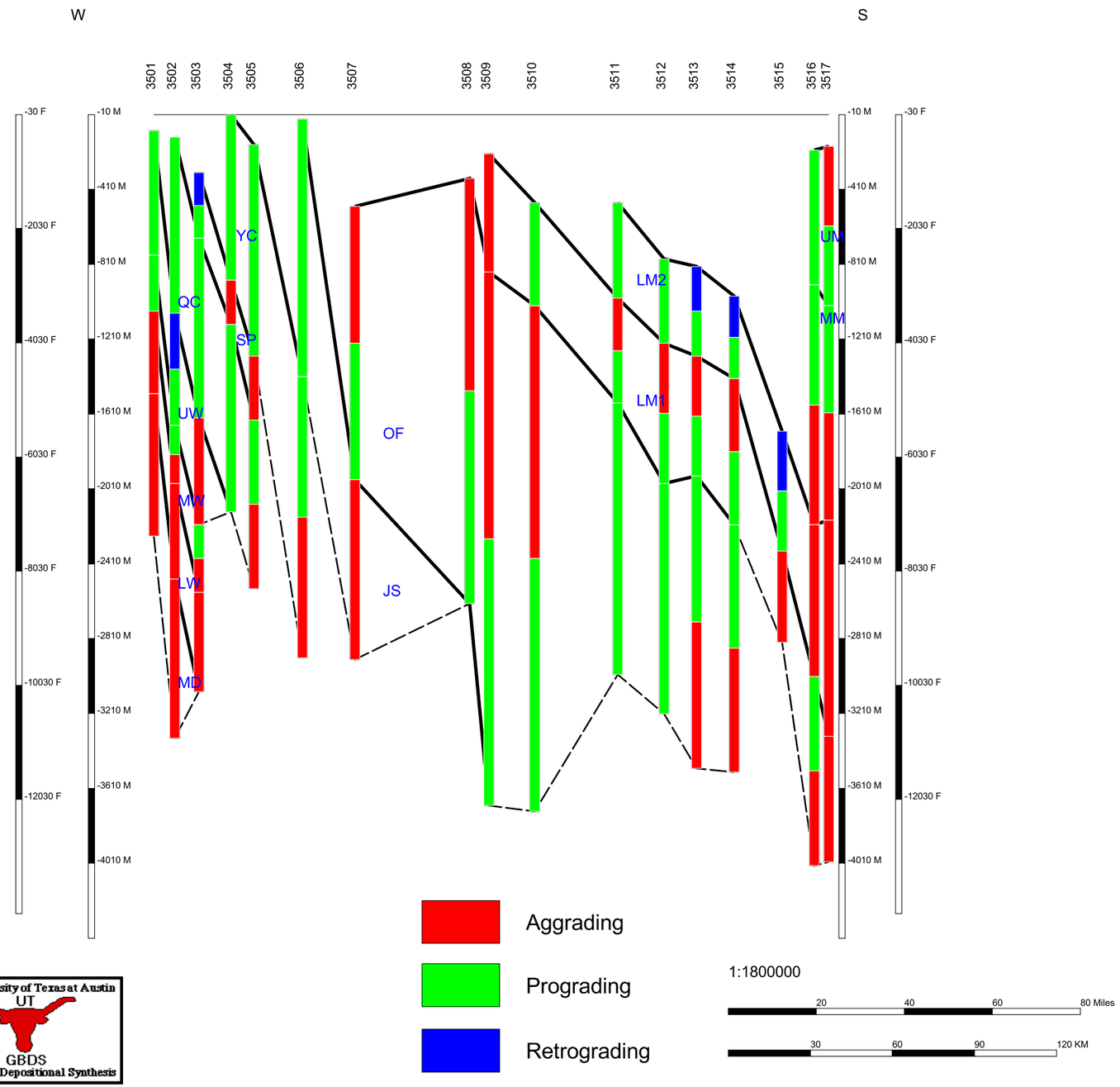
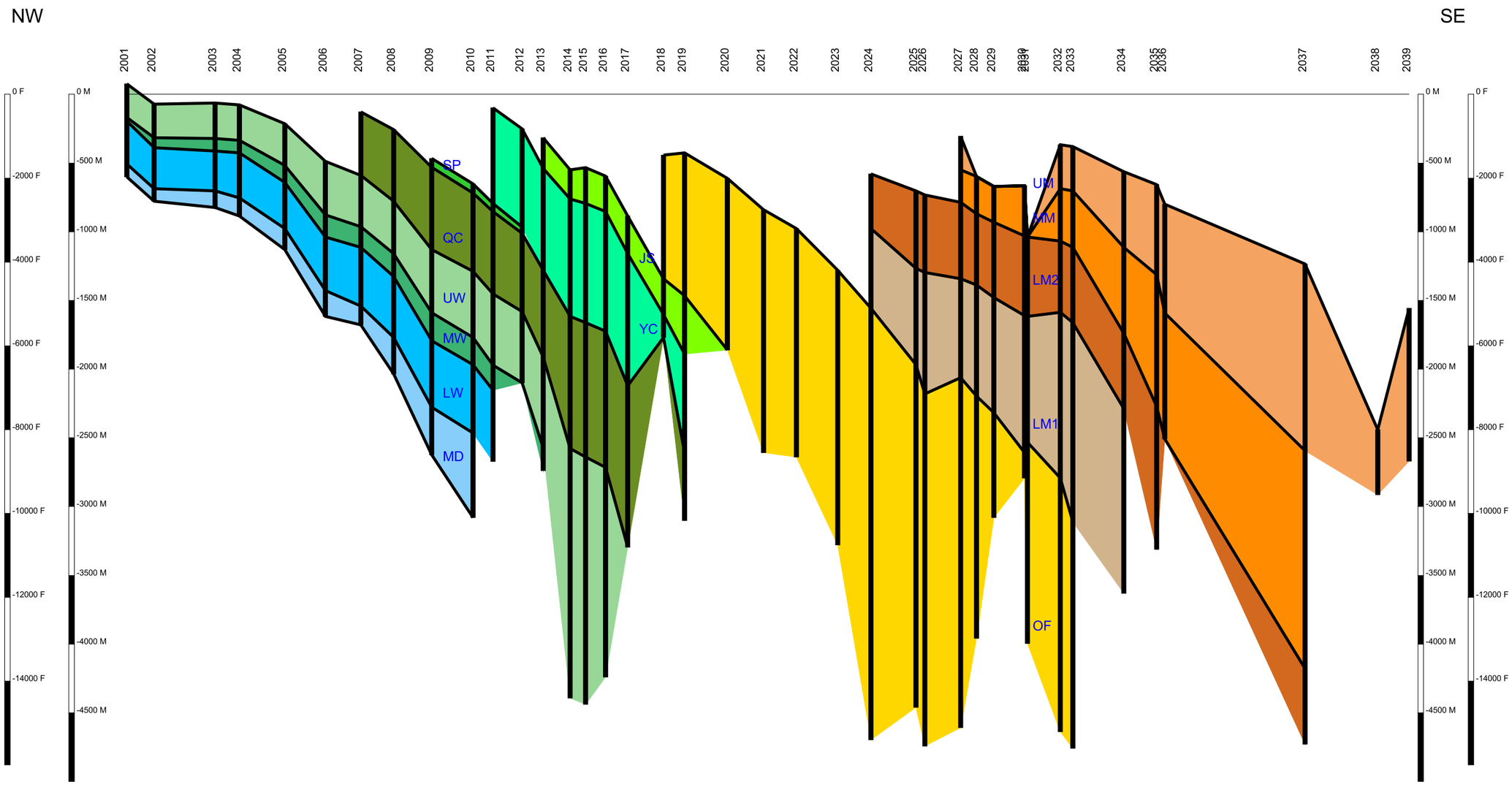
Burgos Well Transect
Lithofacies



Burgos Well Transect Architecture



South Texas Well Transect
Genetic Sequences



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The University of Texas at Austin
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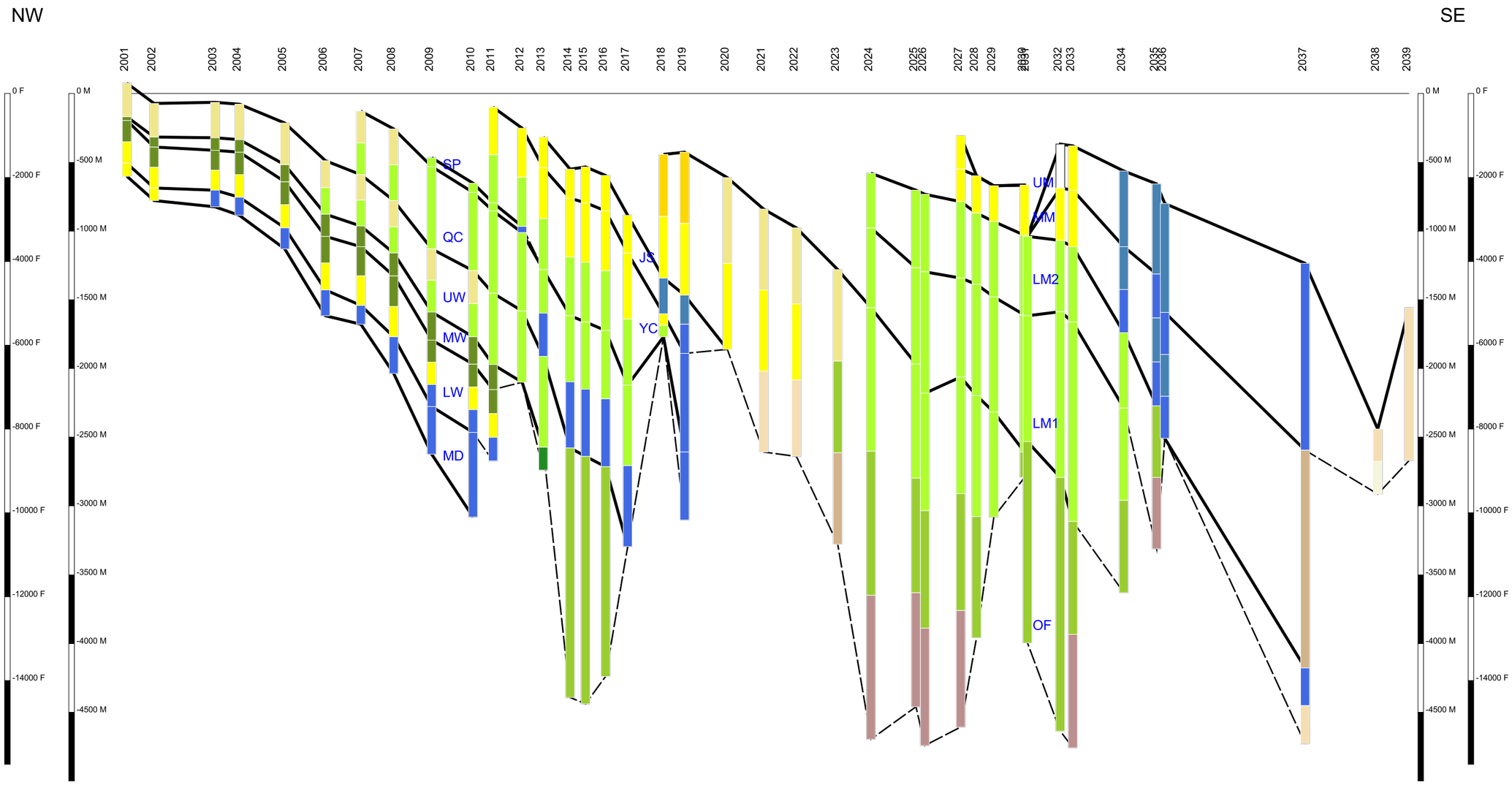
GBDS
Gulf Basin Depositional Synthesis

South Texas Well Transect
Facies Associations



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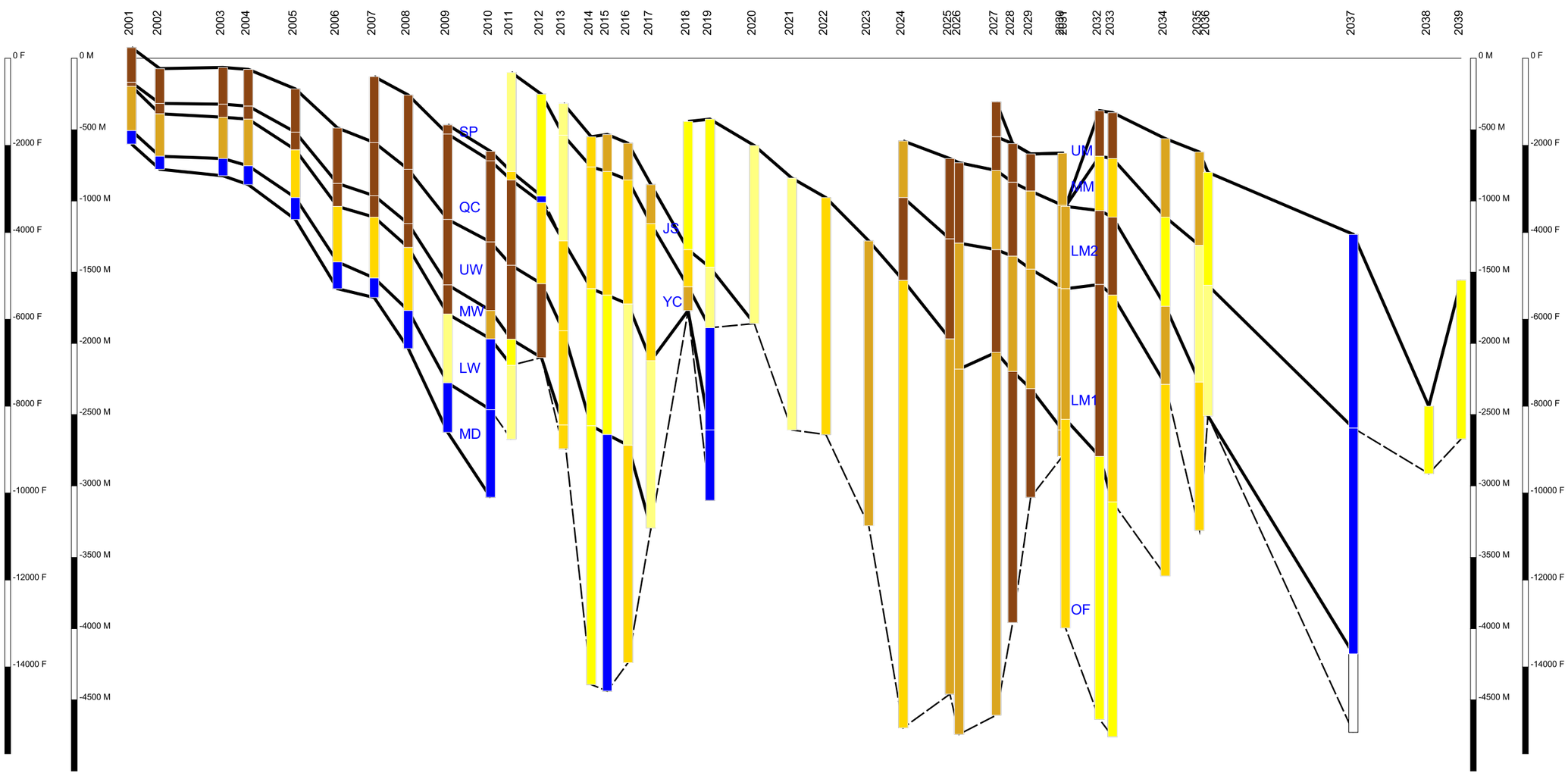
South Texas Well Transect
Lithofacies



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20 40 60 80 Miles

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The University of Texas at Austin
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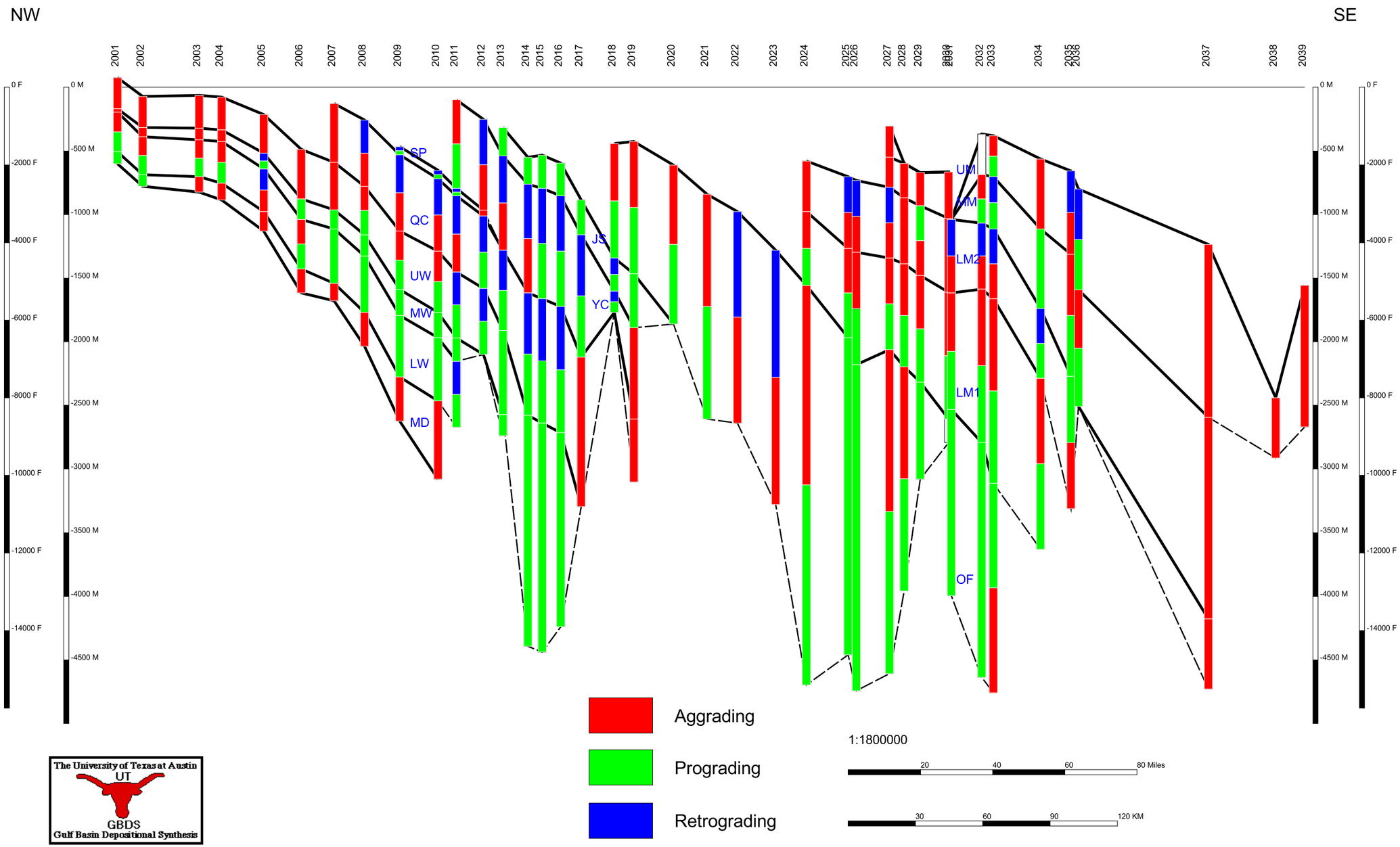
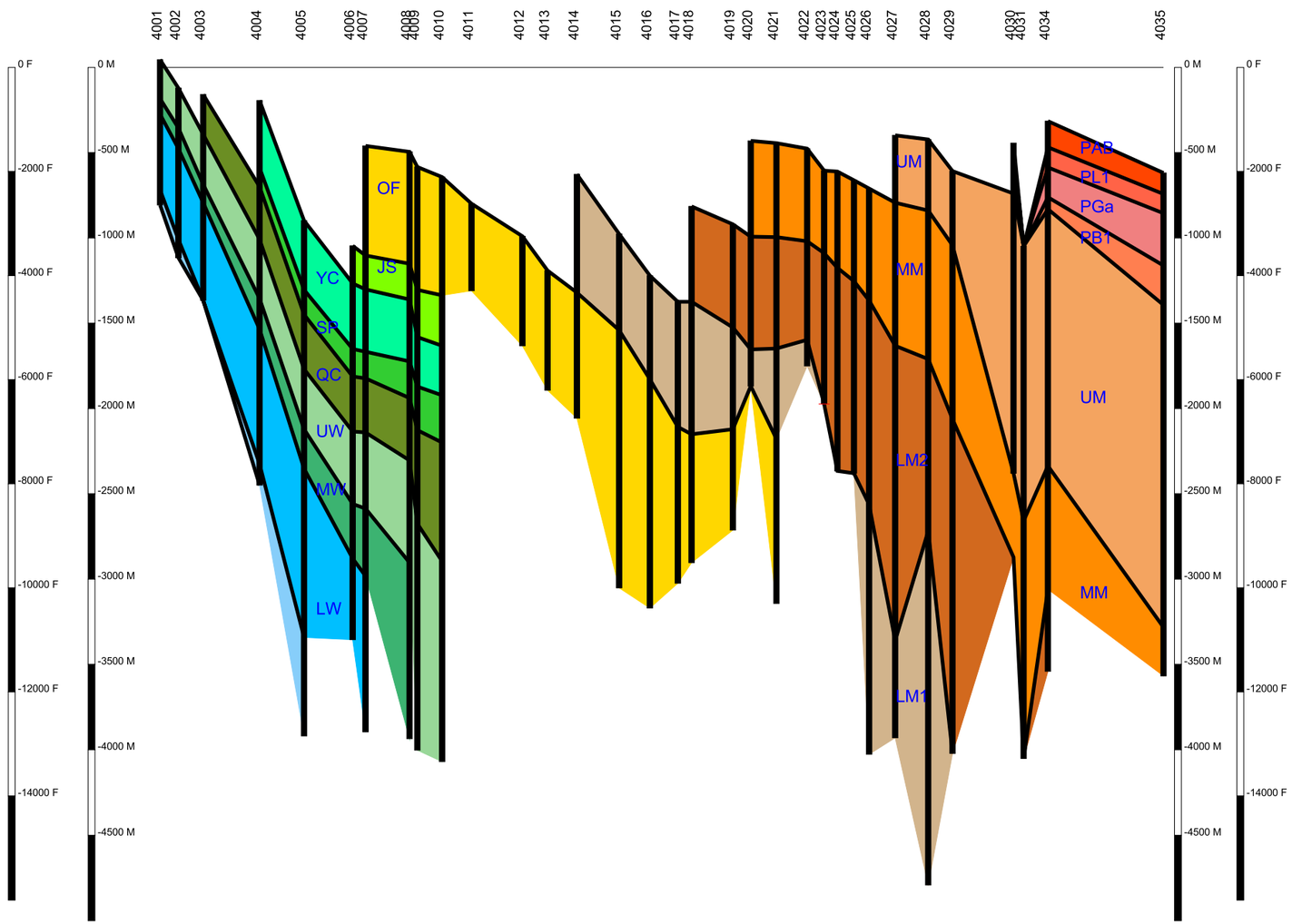
South Texas Well Transect Architecture



San Marcos Well Transect
Genetic Sequences



The University of Texas at Austin
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GBDS
Gulf Basin Depositional Synthesis

1:1800000

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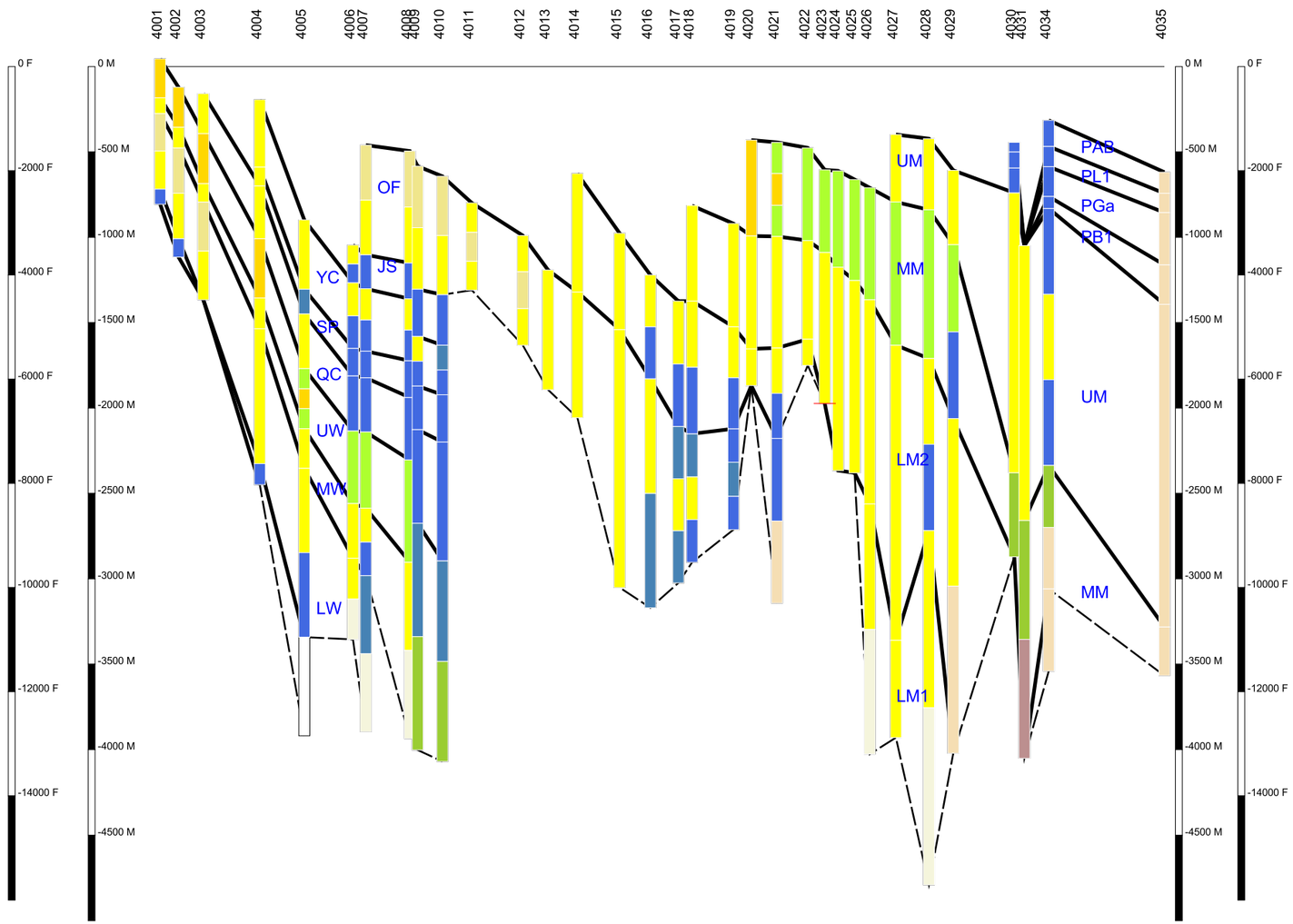
San Marcos Well Transect
Facies Associations



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The University of Texas at Austin
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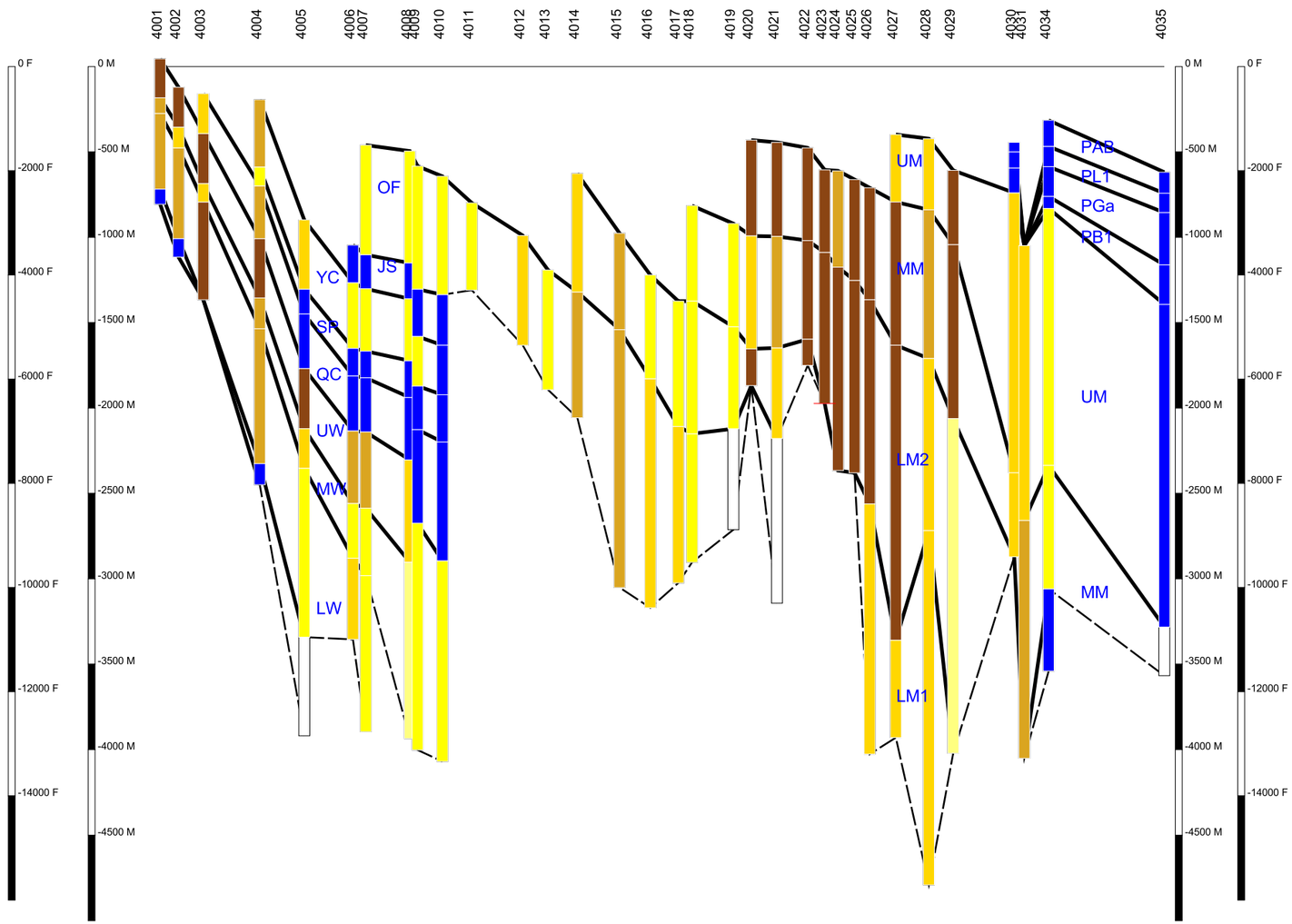
San Marcos Well Transect
Lithofacies



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Gulf Basin Depositional Synthesis

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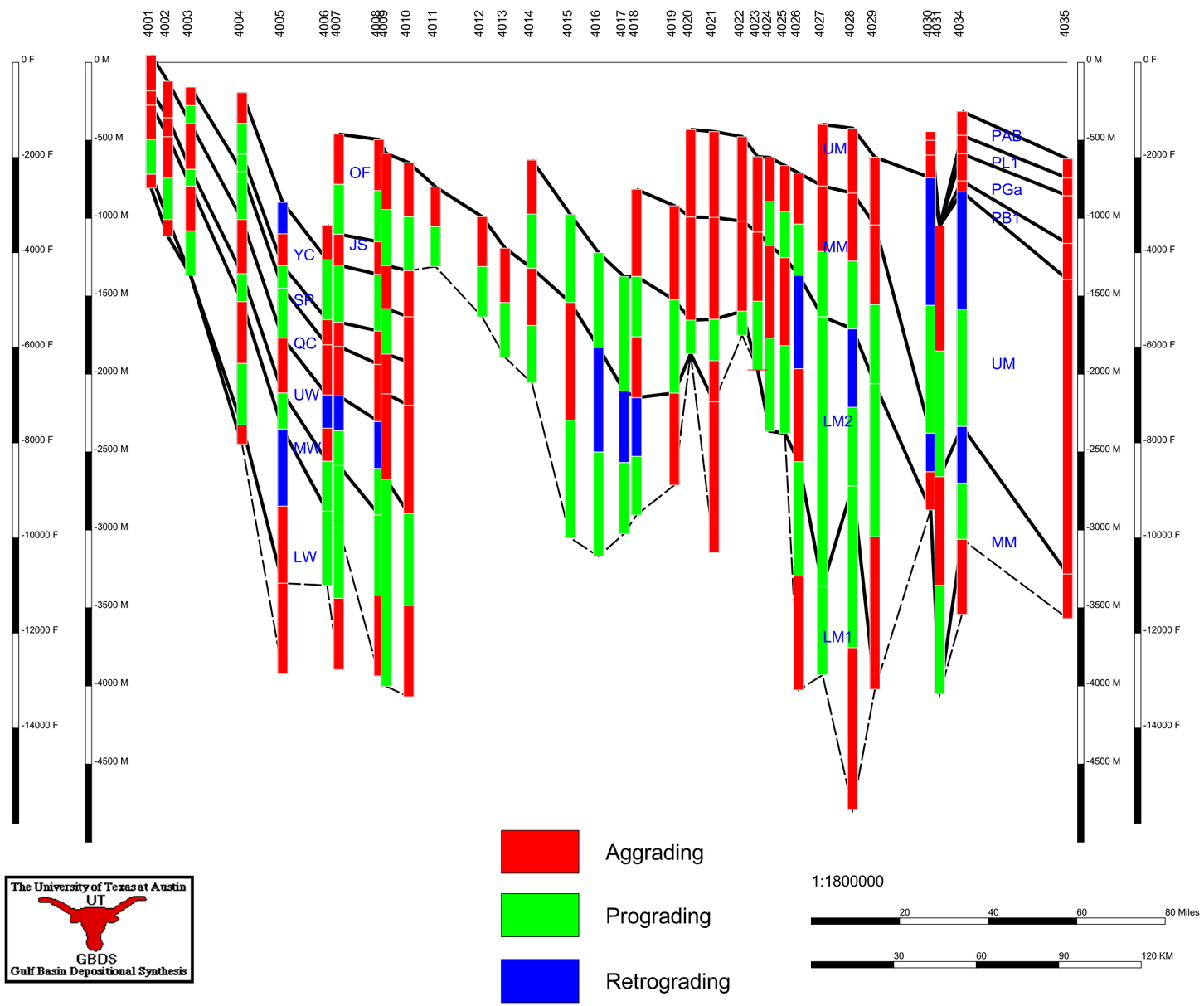
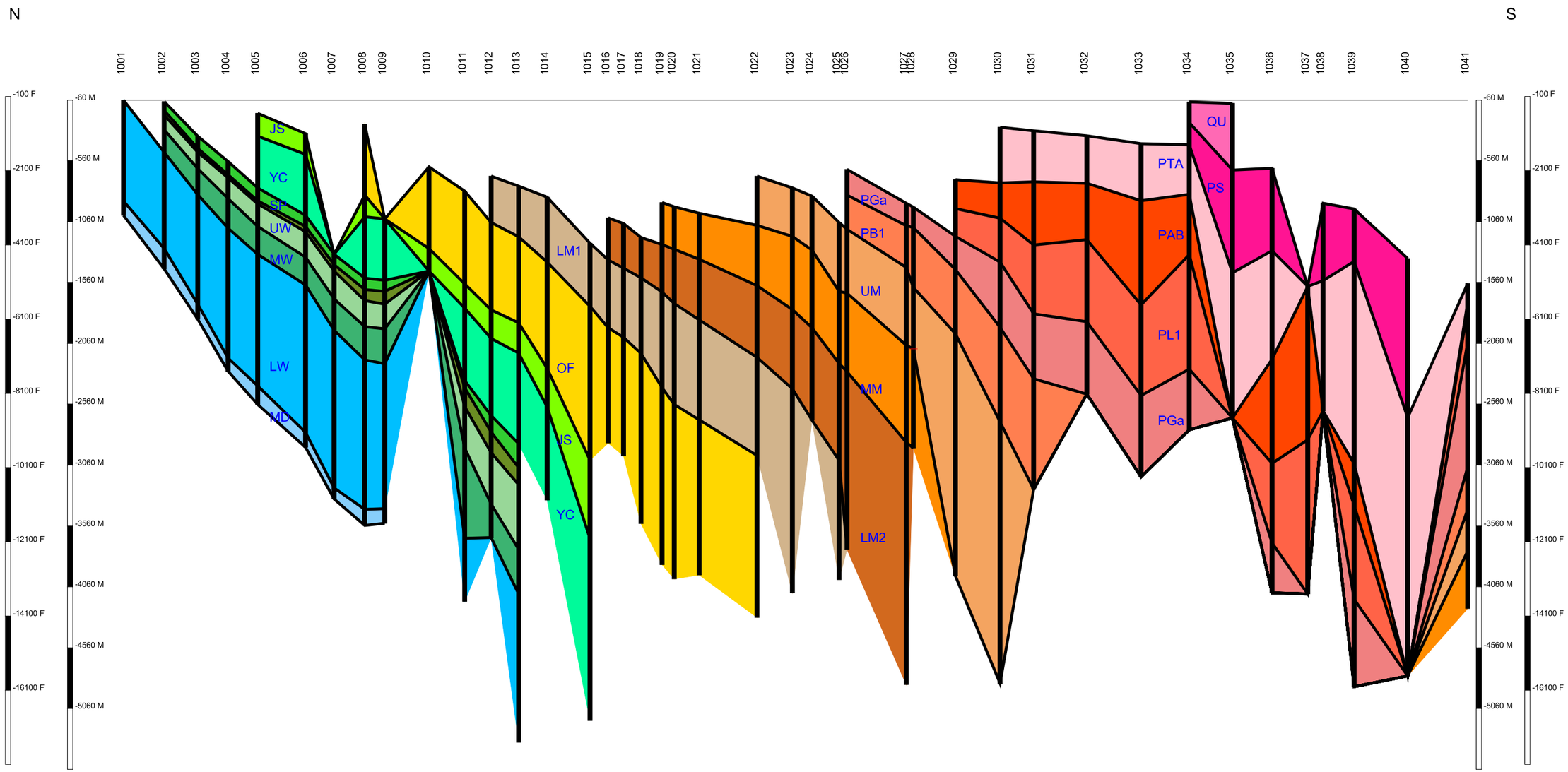
20 40 60 80 Miles

30 60 90 120 KM

San Marcos Well Transect Architecture



Sabine Well Transect
Genetic Sequences



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The University of Texas at Austin
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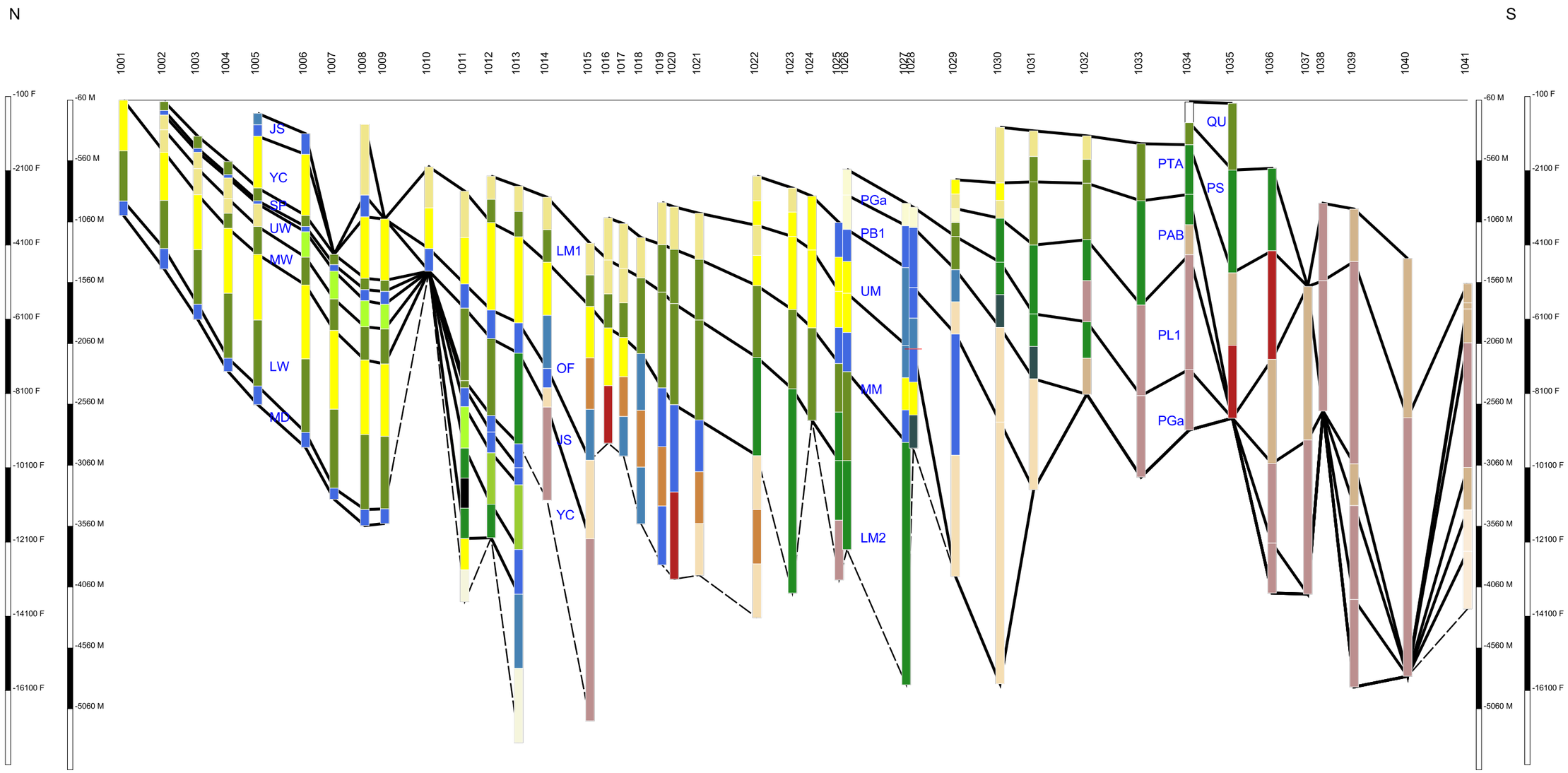
GBDS
Gulf Basin Depositional Synthesis

Sabine Well Transect
Facies Associations



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The University of Texas at Austin
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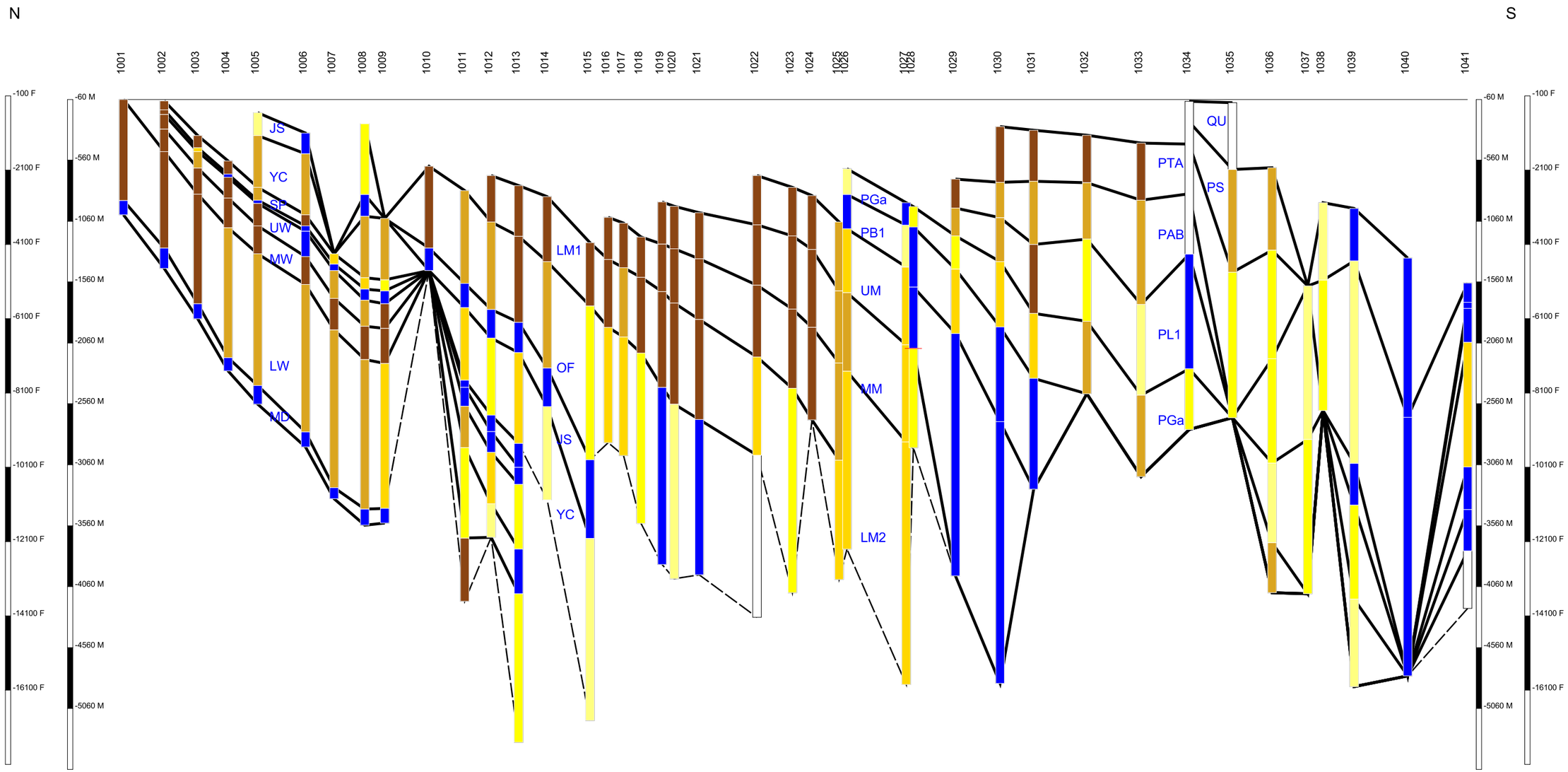
Sabine Well Transect
Lithofacies



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81% - 100%

1:1800000

20 40 60 80 Miles

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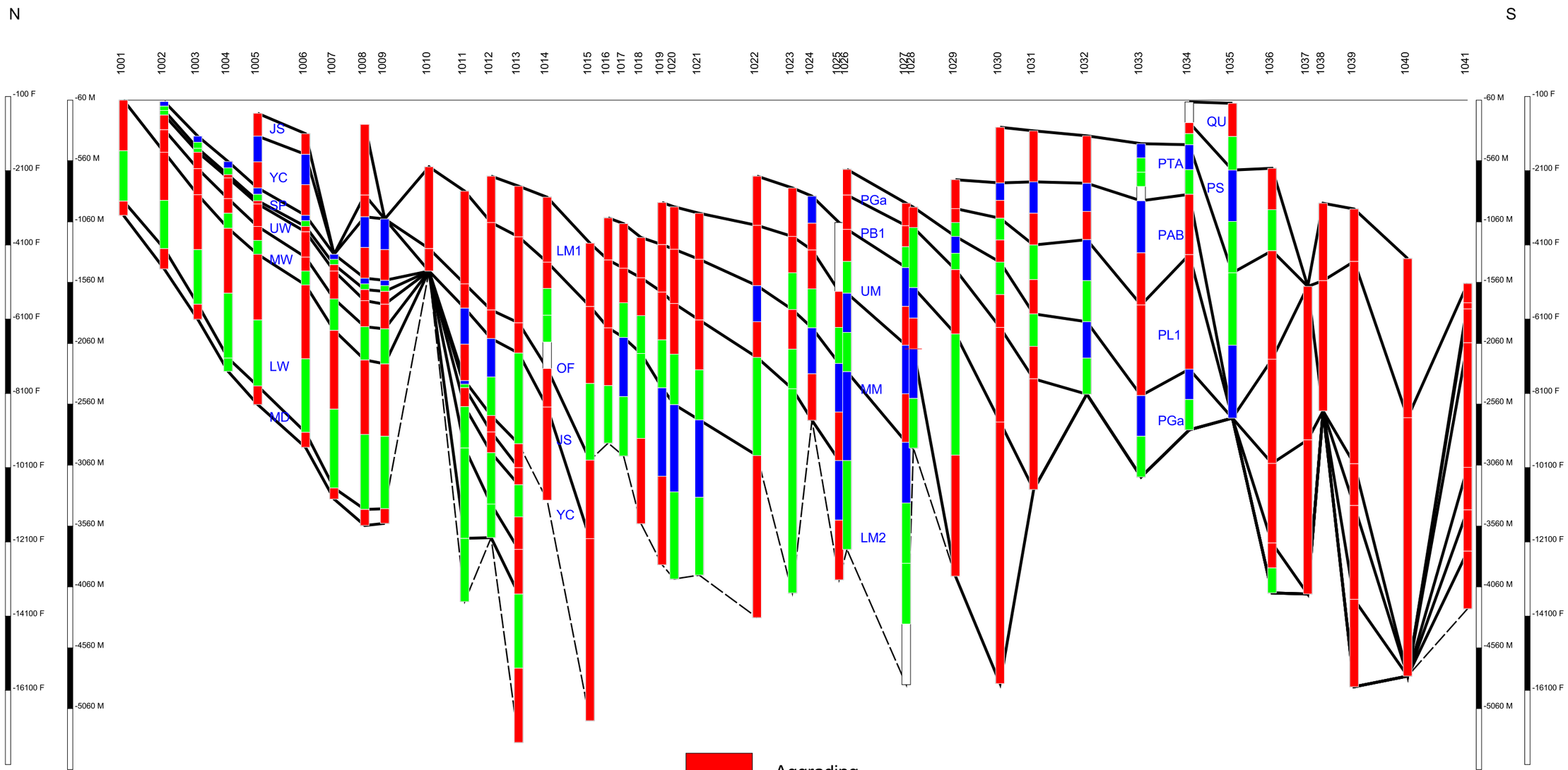
Sabine Well Transect Architecture



Aggrading

Prograding

Retrograding

1:1800000

20 40 60 80 Miles

30 60 90 120 KM

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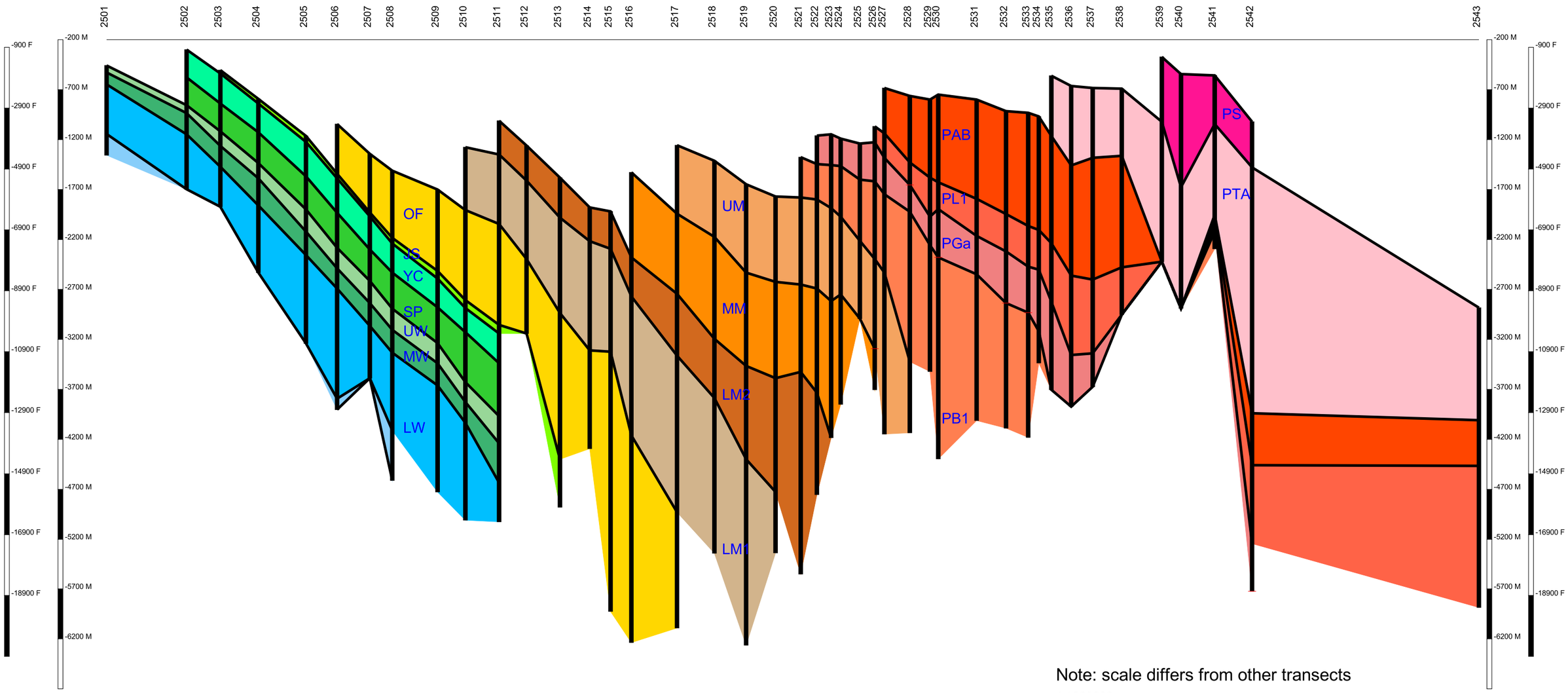
Central Louisiana Well Transect
Genetic Sequences

N S



Note: scale differs from other transects

1:1920000

20 40 60 80 Miles

30 60 90 120 KM

The University of Texas at Austin
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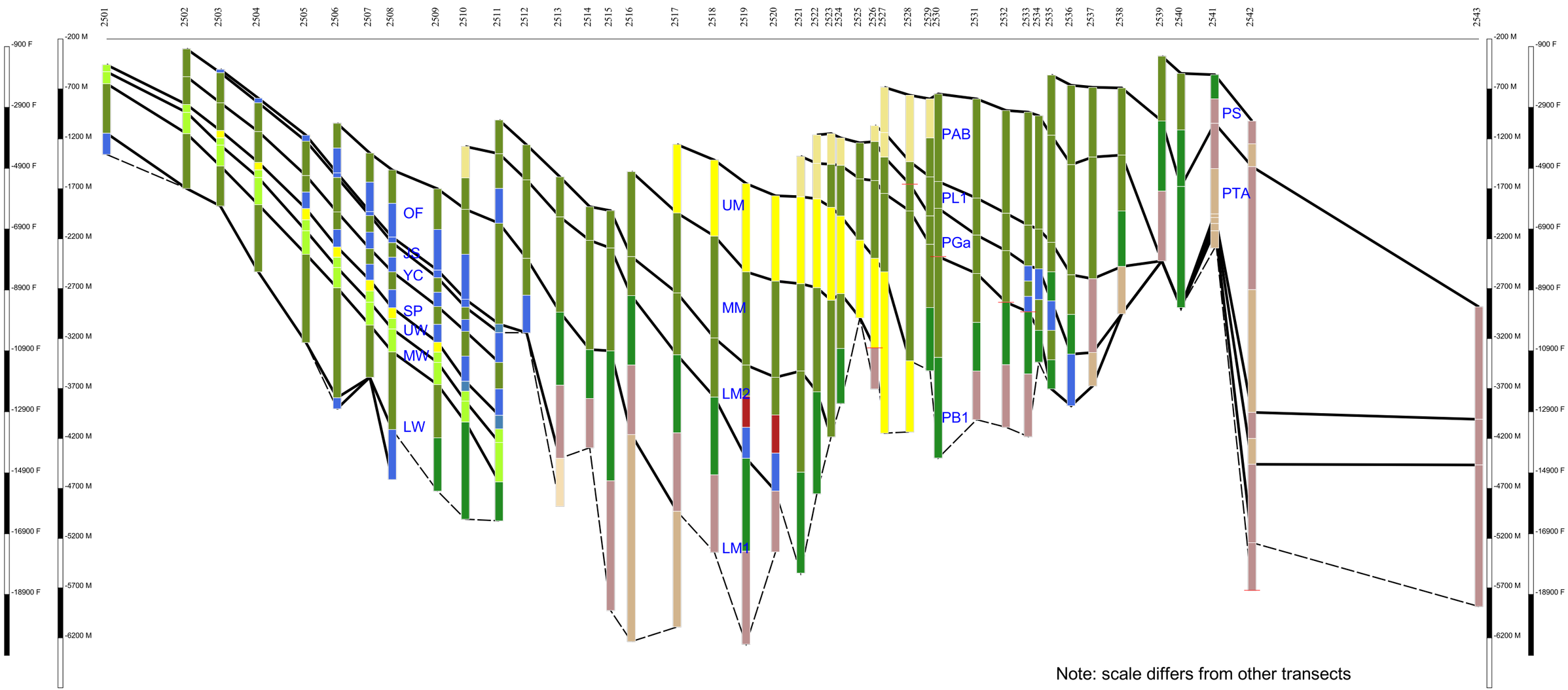
Central Louisiana Well Transect
Facies Associations

N S



Note: scale differs from other transects

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20 40 60 80 Miles

30 60 90 120 KM

The University of Texas at Austin
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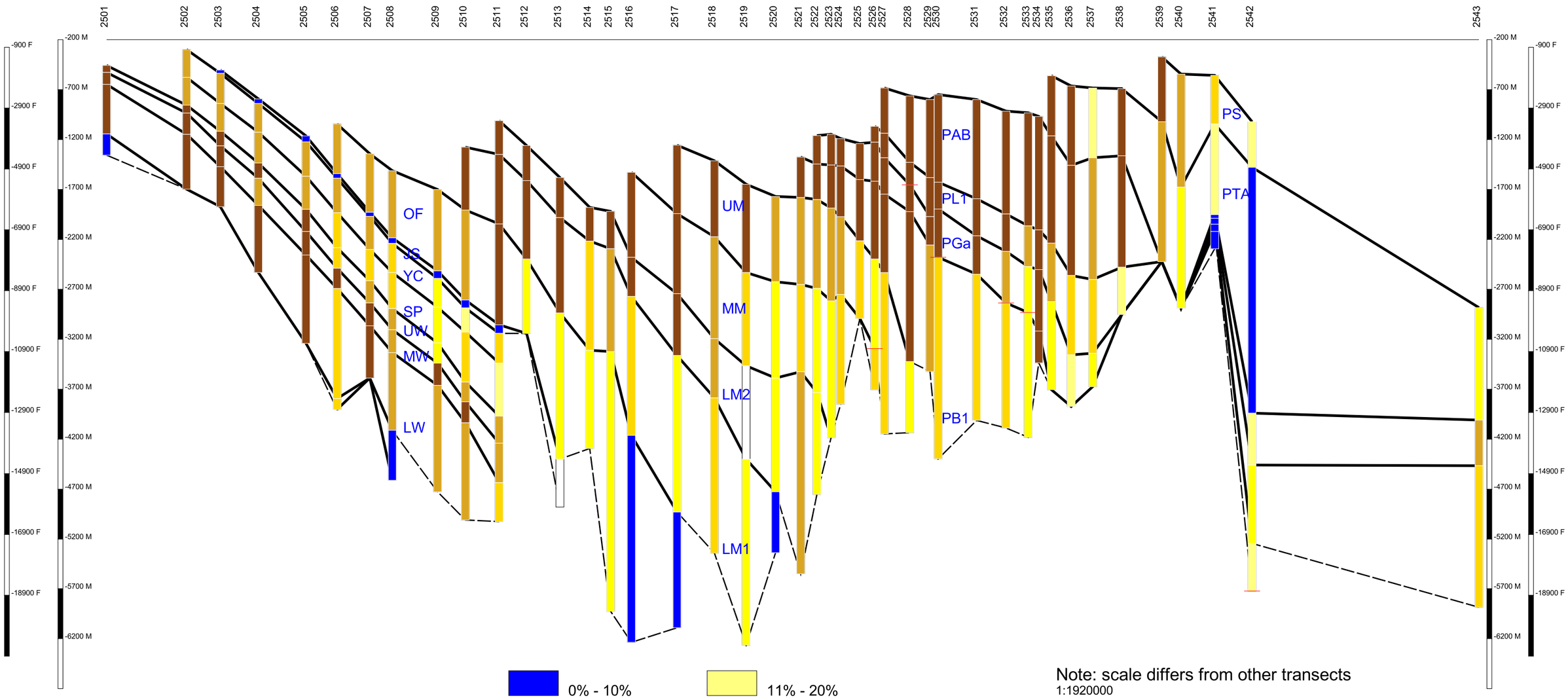
Gulf Basin Depositional Synthesis

Central Louisiana Well Transect
Lithofacies



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Note: scale differs from other transects
1:1920000

20 40 60 80 Miles

30 60 90 120 KM

The University of Texas at Austin
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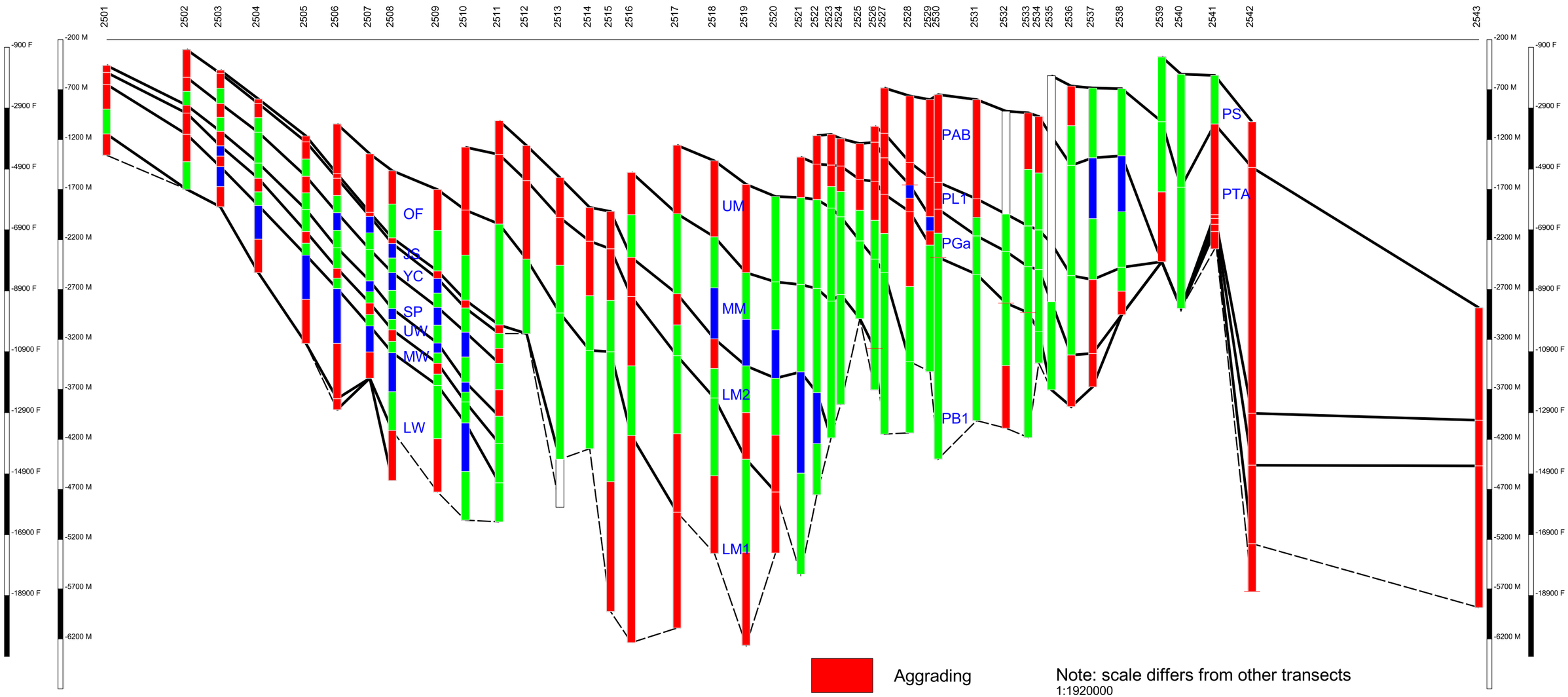
Gulf Basin Depositional Synthesis

Central Louisiana Well Transect Architecture



Aggrading

Prograding

Retrograding

Note: scale differs from other transects
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20 40 60 80 Miles

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The University of Texas at Austin
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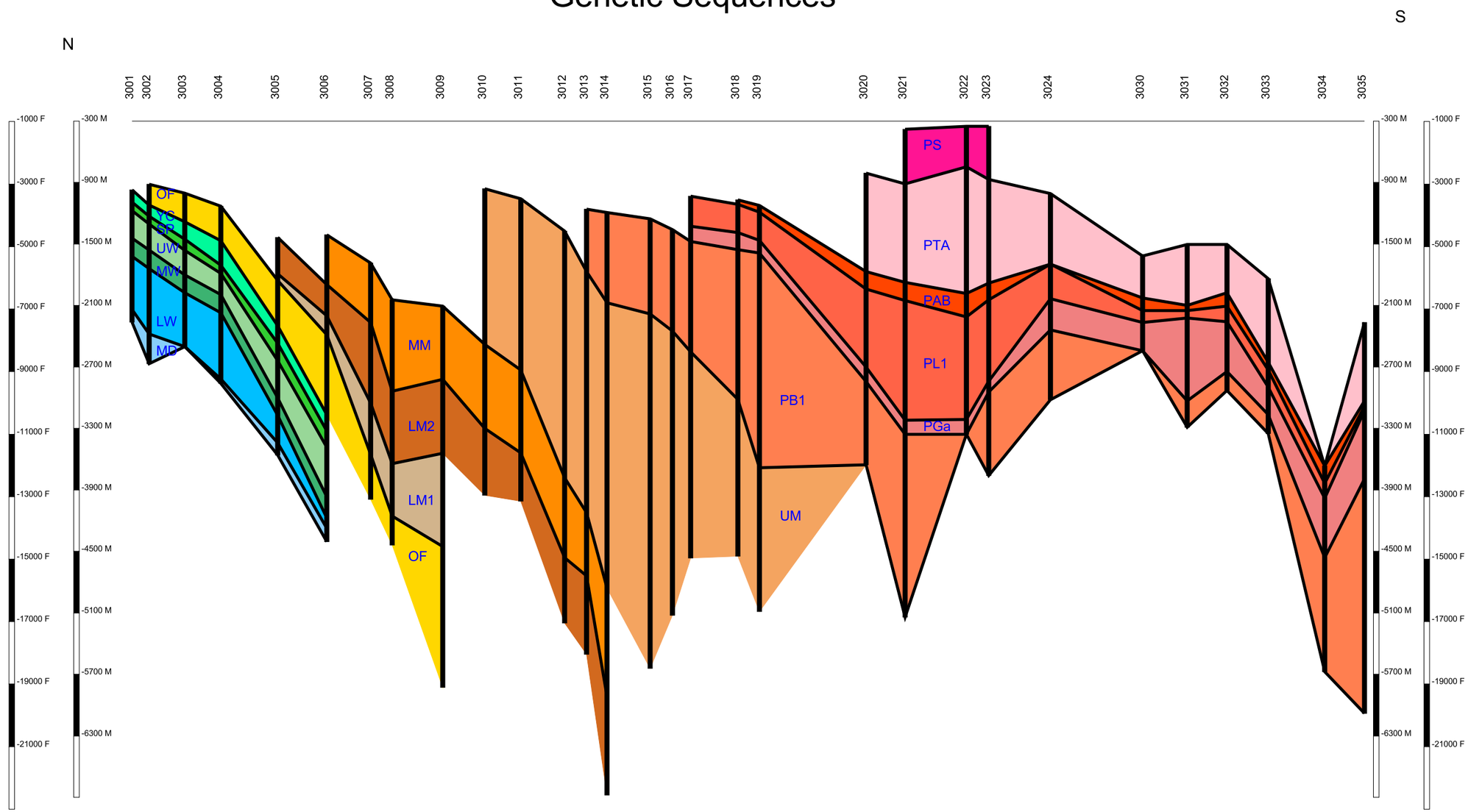
Gulf Basin Depositional Synthesis

East Louisiana Well Transect
Genetic Sequences



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The University of Texas at Austin
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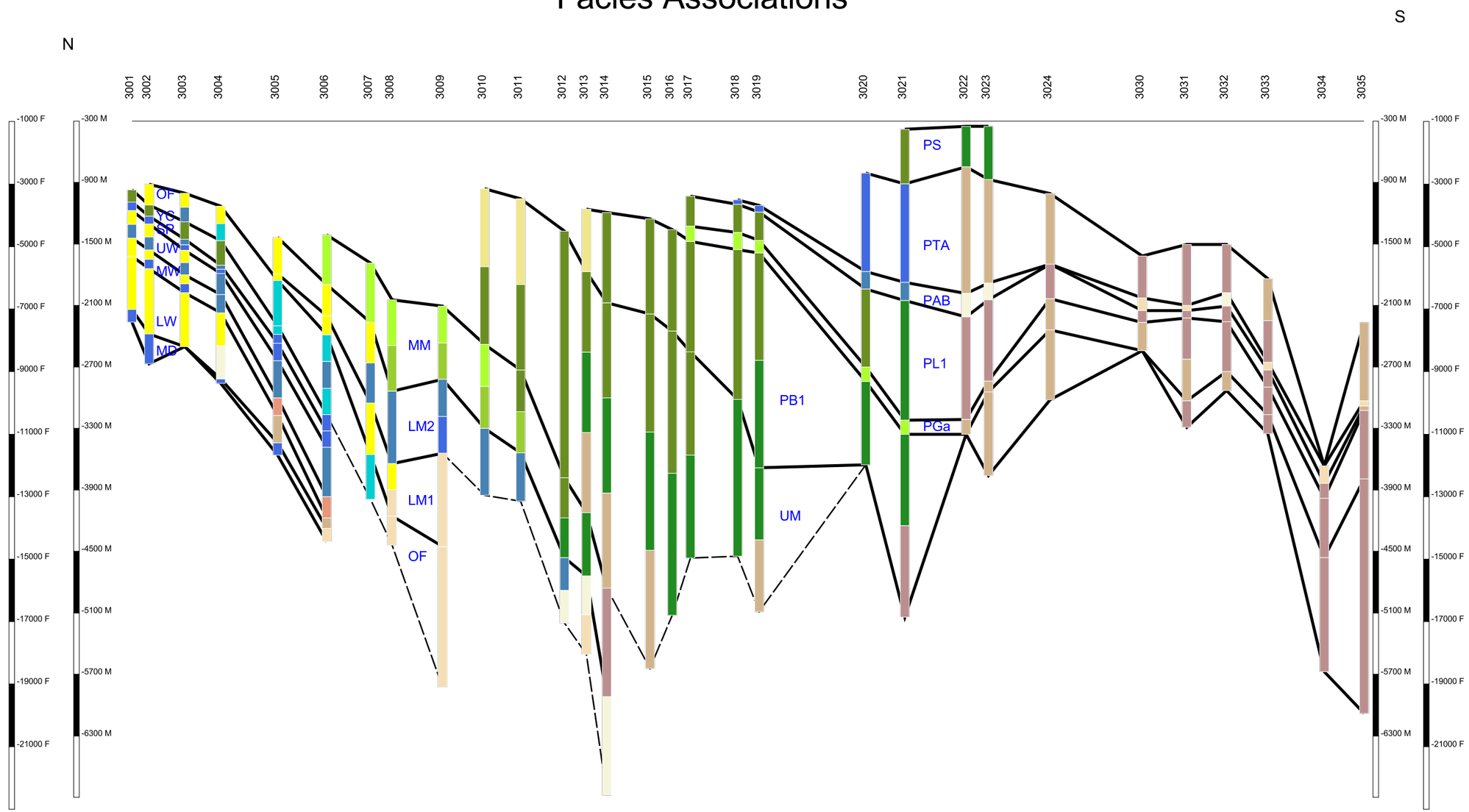
Gulf Basin Depositional Synthesis

East Louisiana Well Transect
Facies Associations



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The University of Texas at Austin
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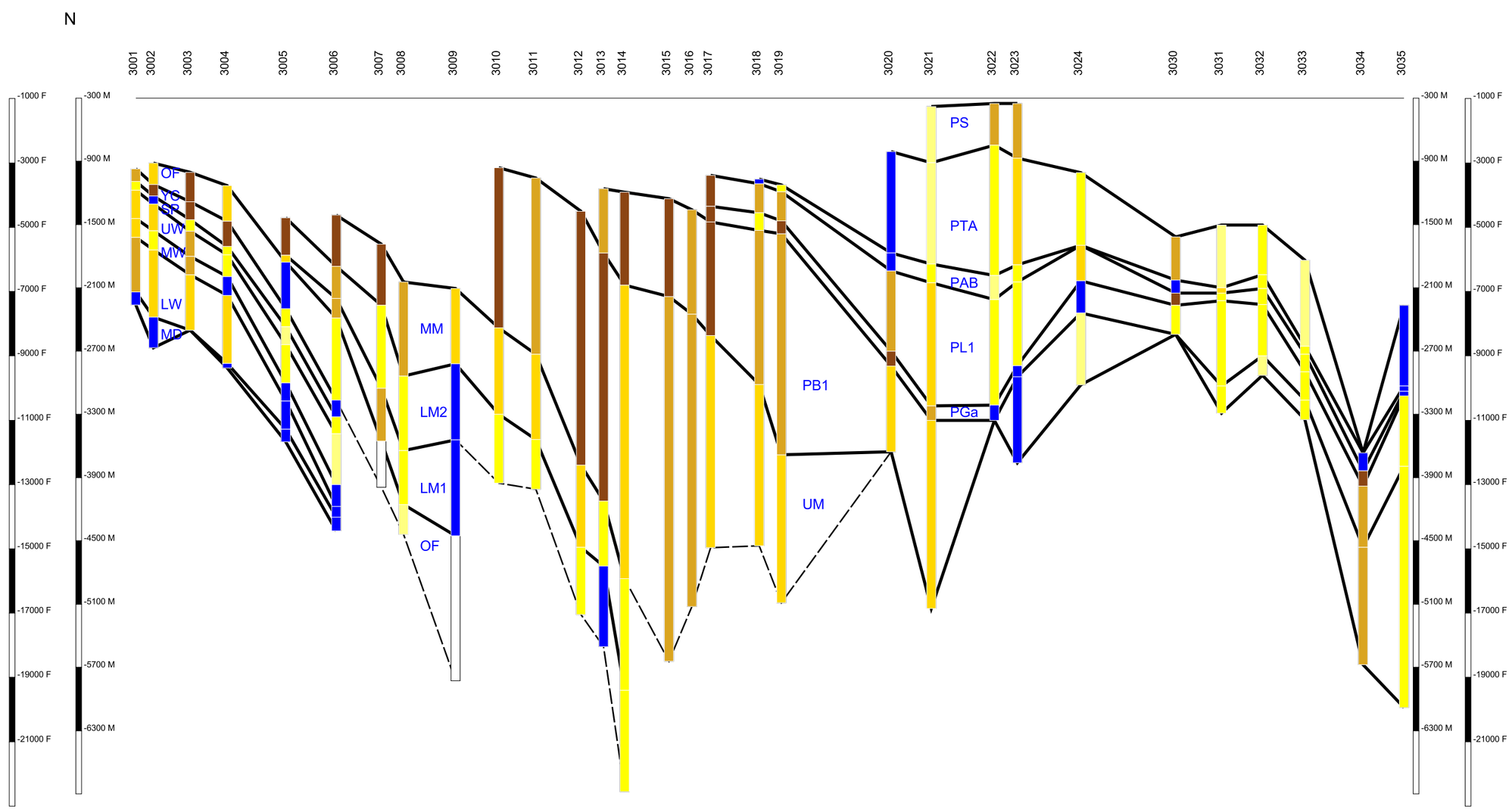
GBDS
Gulf Basin Depositional Synthesis

East Louisiana Well Transect
Lithofacies



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20 40 60 80 Miles

30 60 90 120 KM

The University of Texas at Austin
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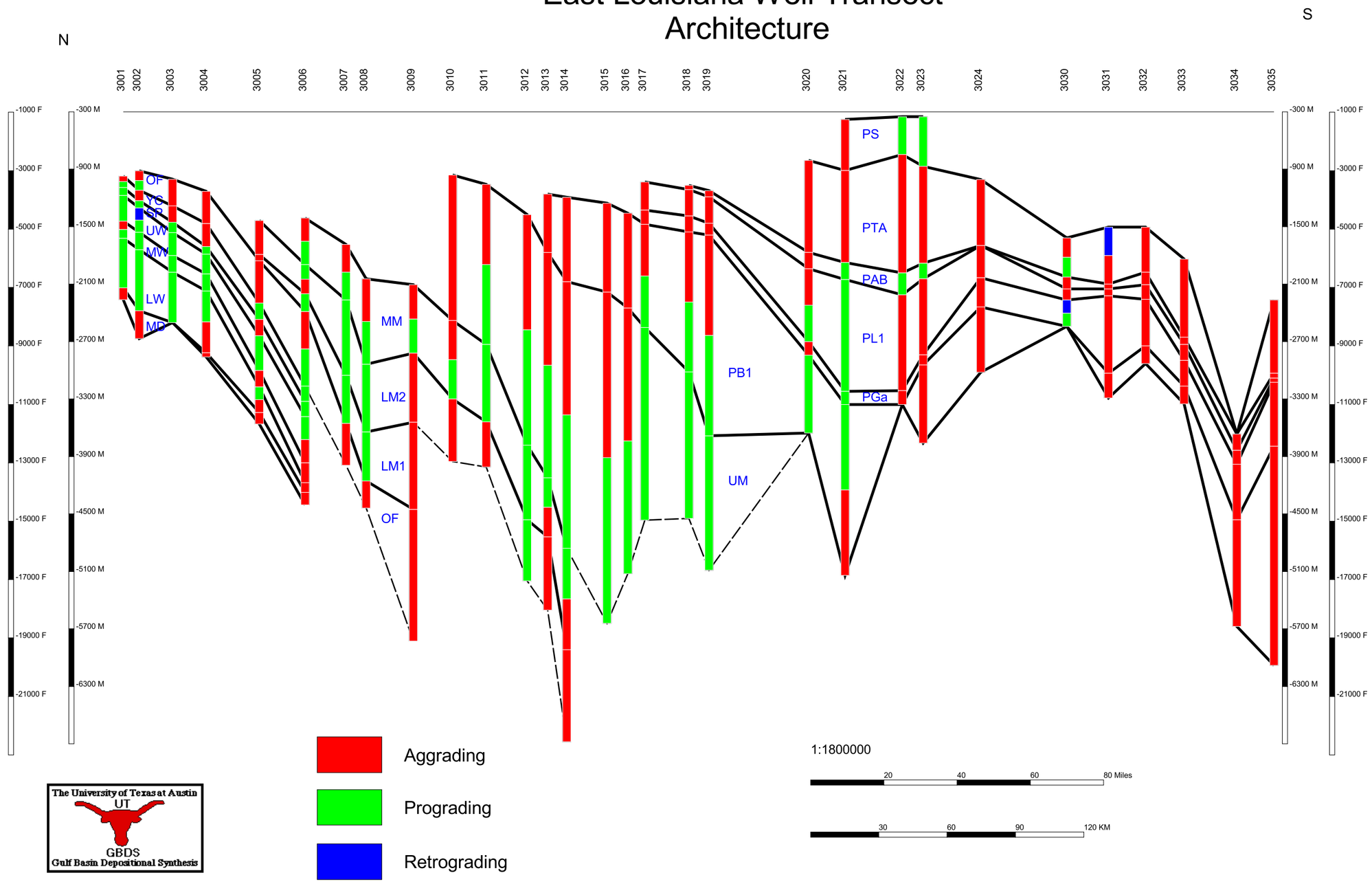
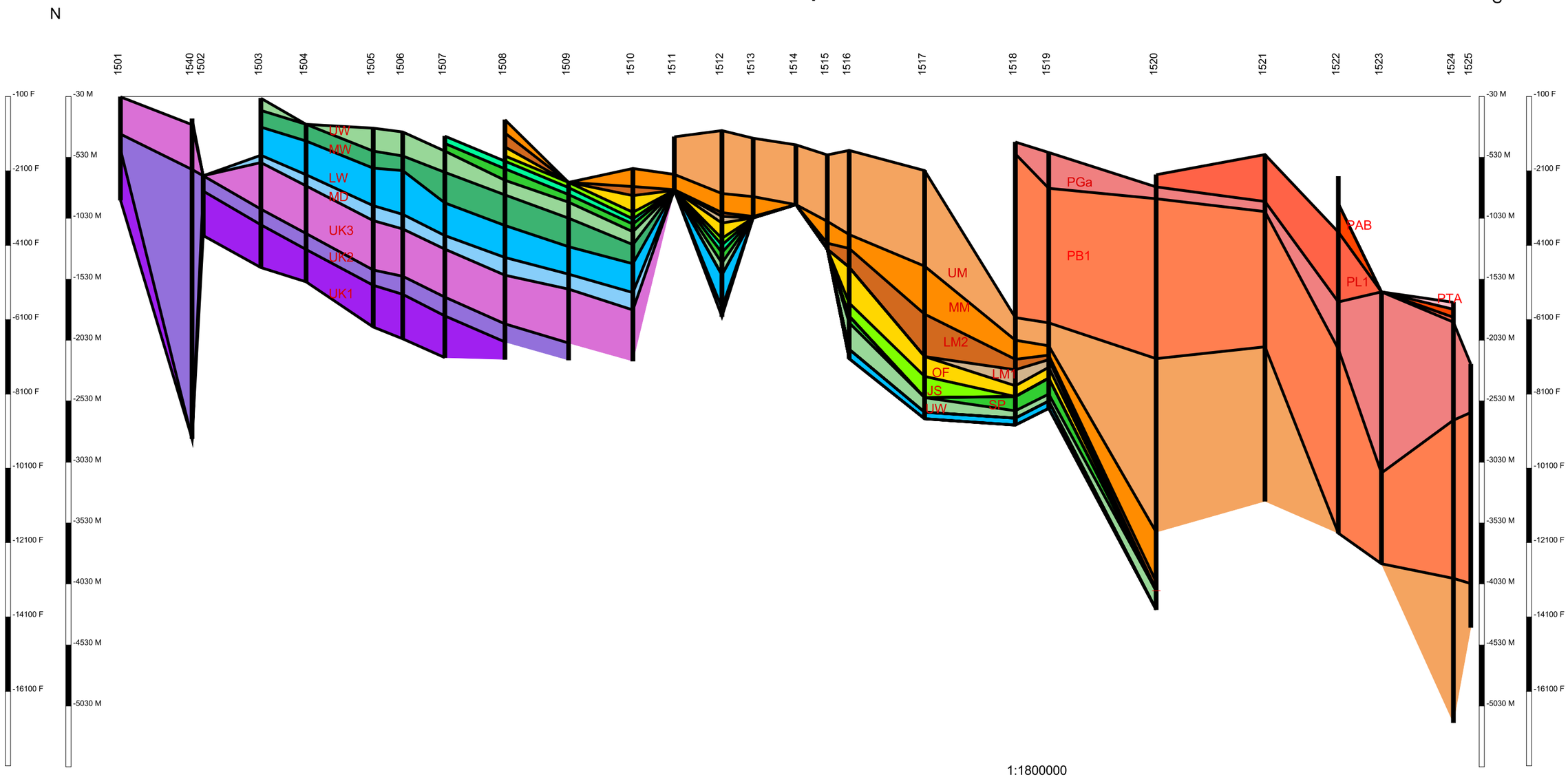
GBDS
Gulf Basin Depositional Synthesis

East Louisiana Well Transect Architecture



Alabama Well Transect
Genetic Sequences



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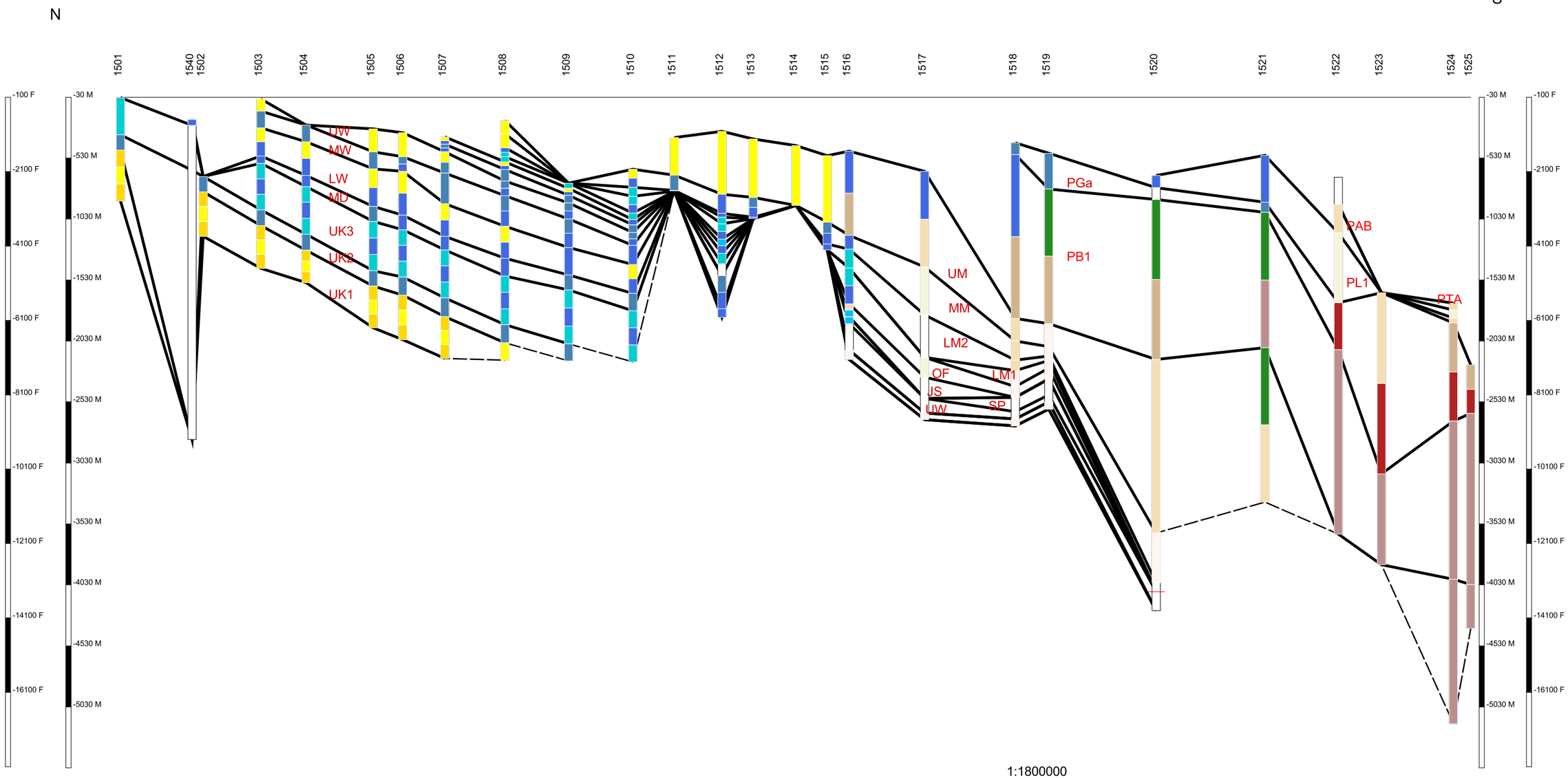
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

Alabama Well Transect
Facies Associations



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The University of Texas at Austin
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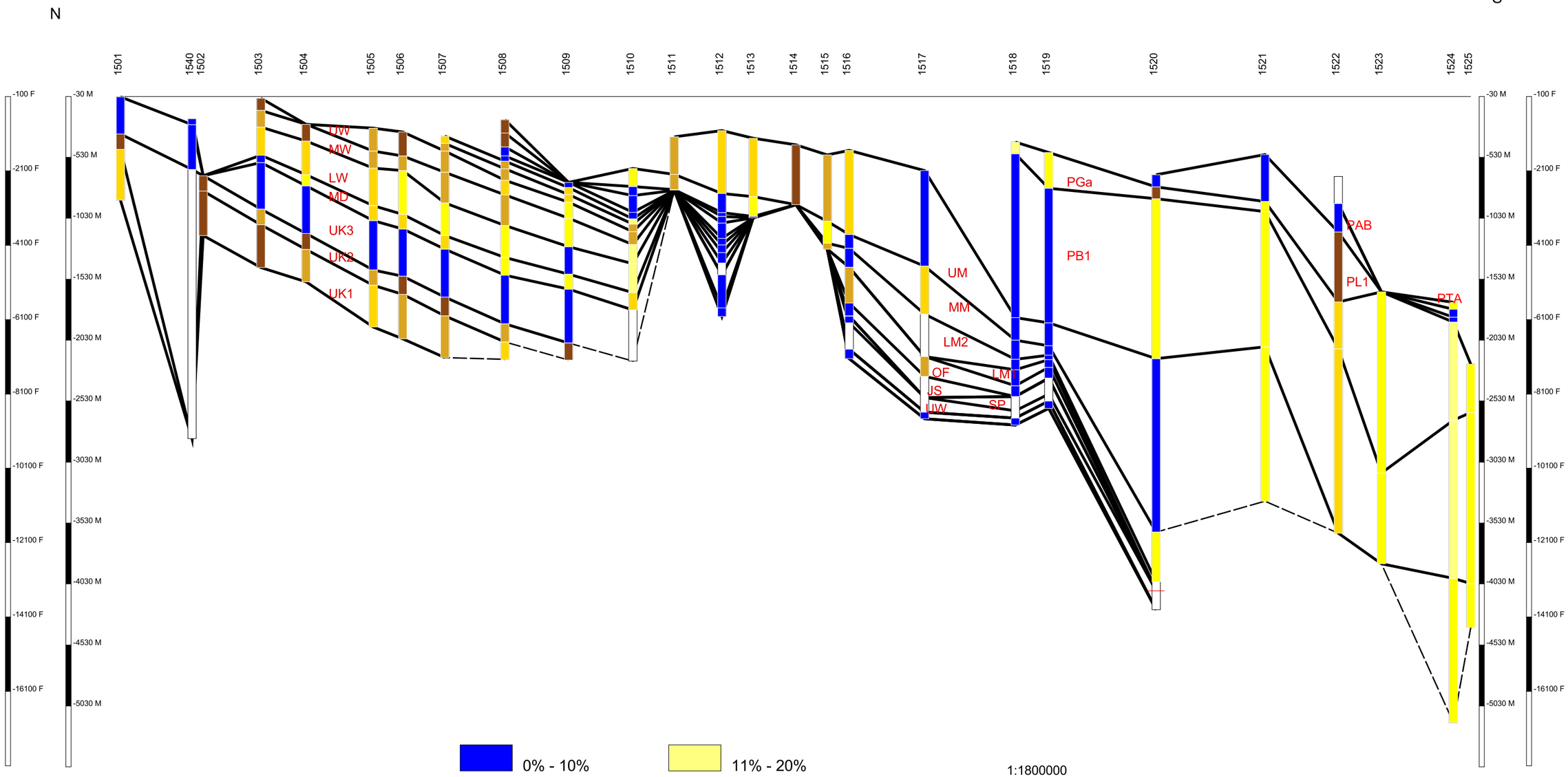
GBDS
Gulf Basin Depositional Synthesis

Alabama Well Transect
Lithofacies



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20 40 60 80 Miles

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The University of Texas at Austin
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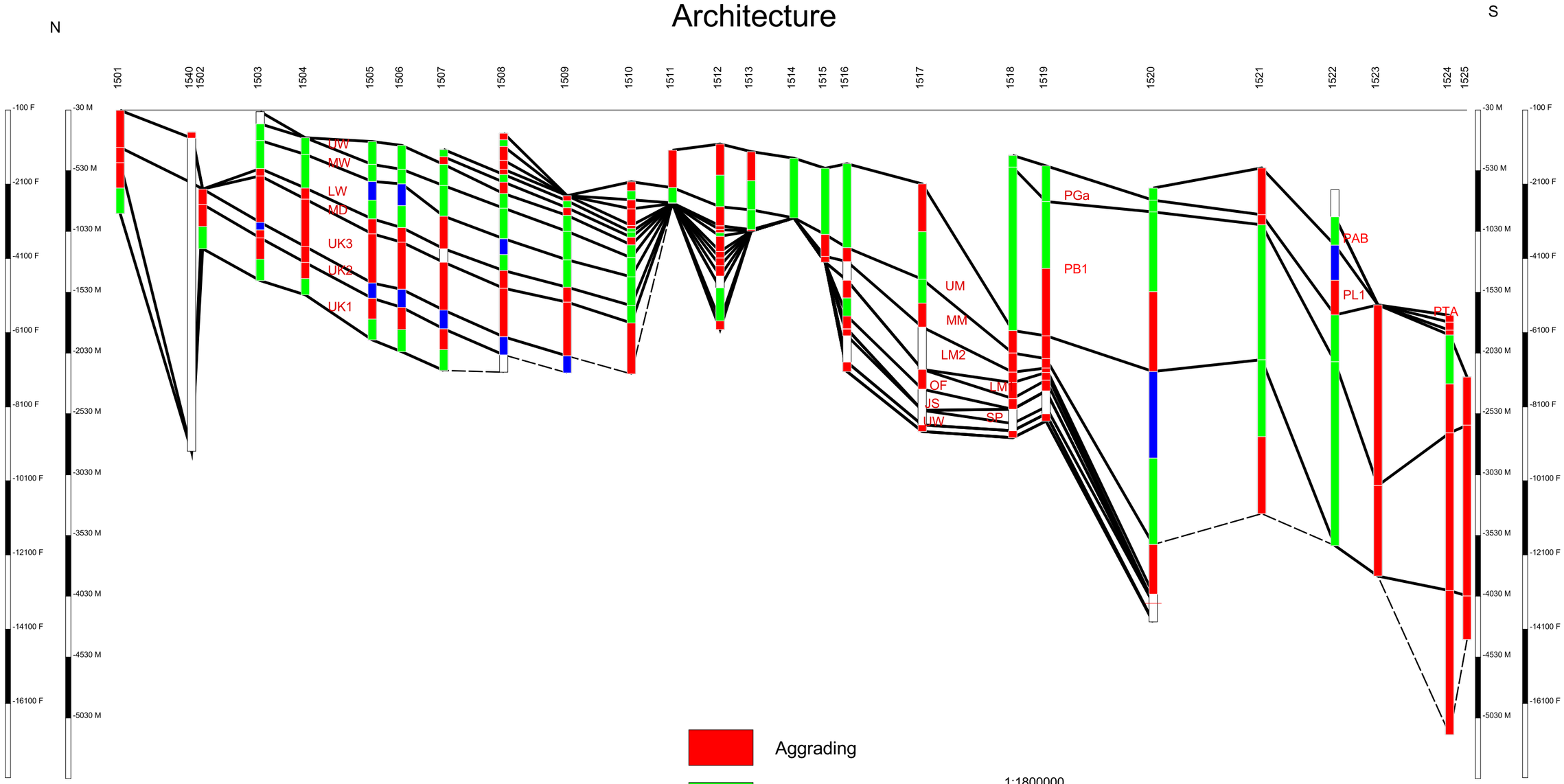
GBDS
Gulf Basin Depositional Synthesis

Alabama Well Transect Architecture



The University of Texas at Austin
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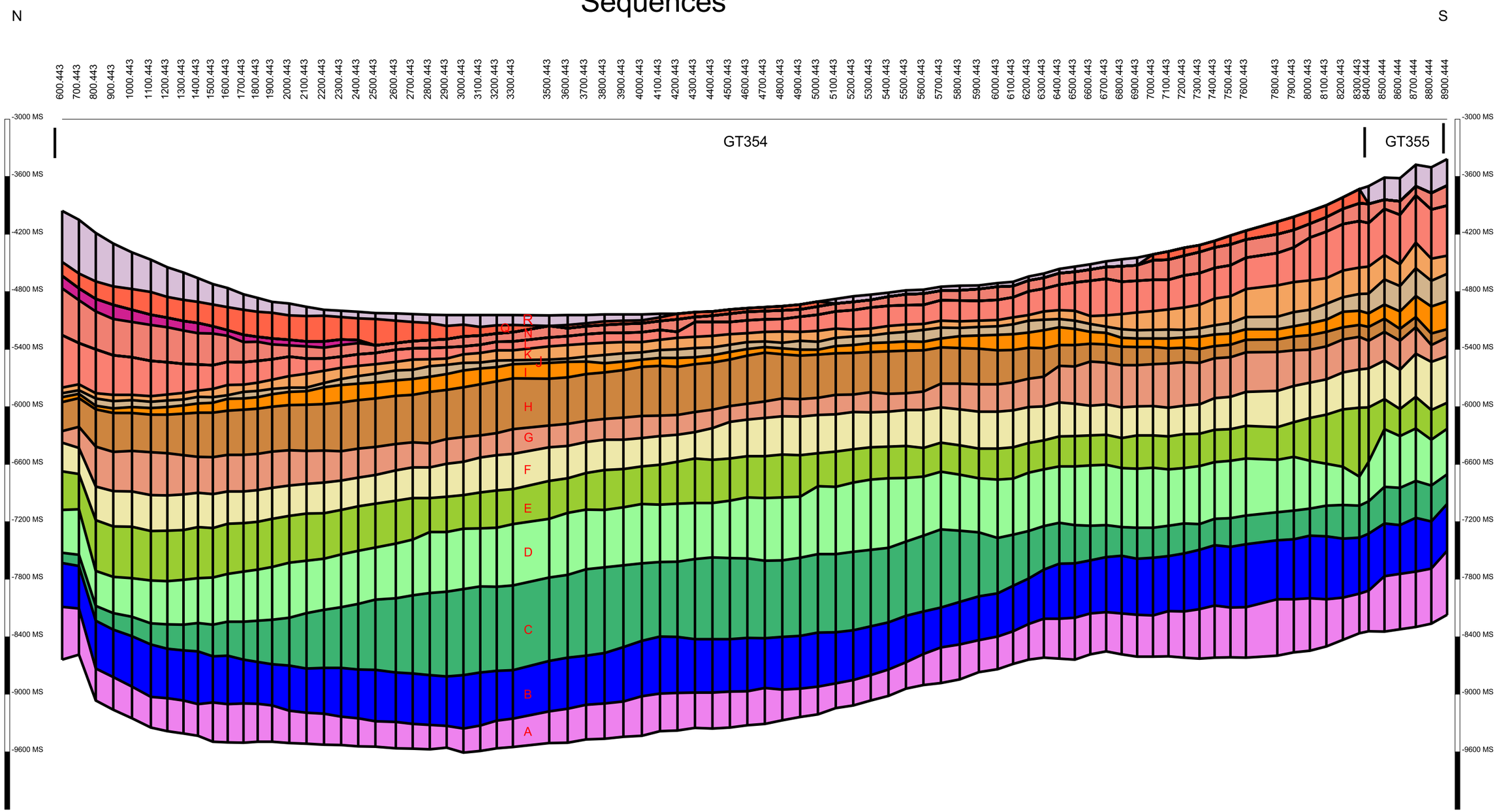
GBDS
Gulf Basin Depositional Synthesis

Western Gulf (Seismic) Sequences



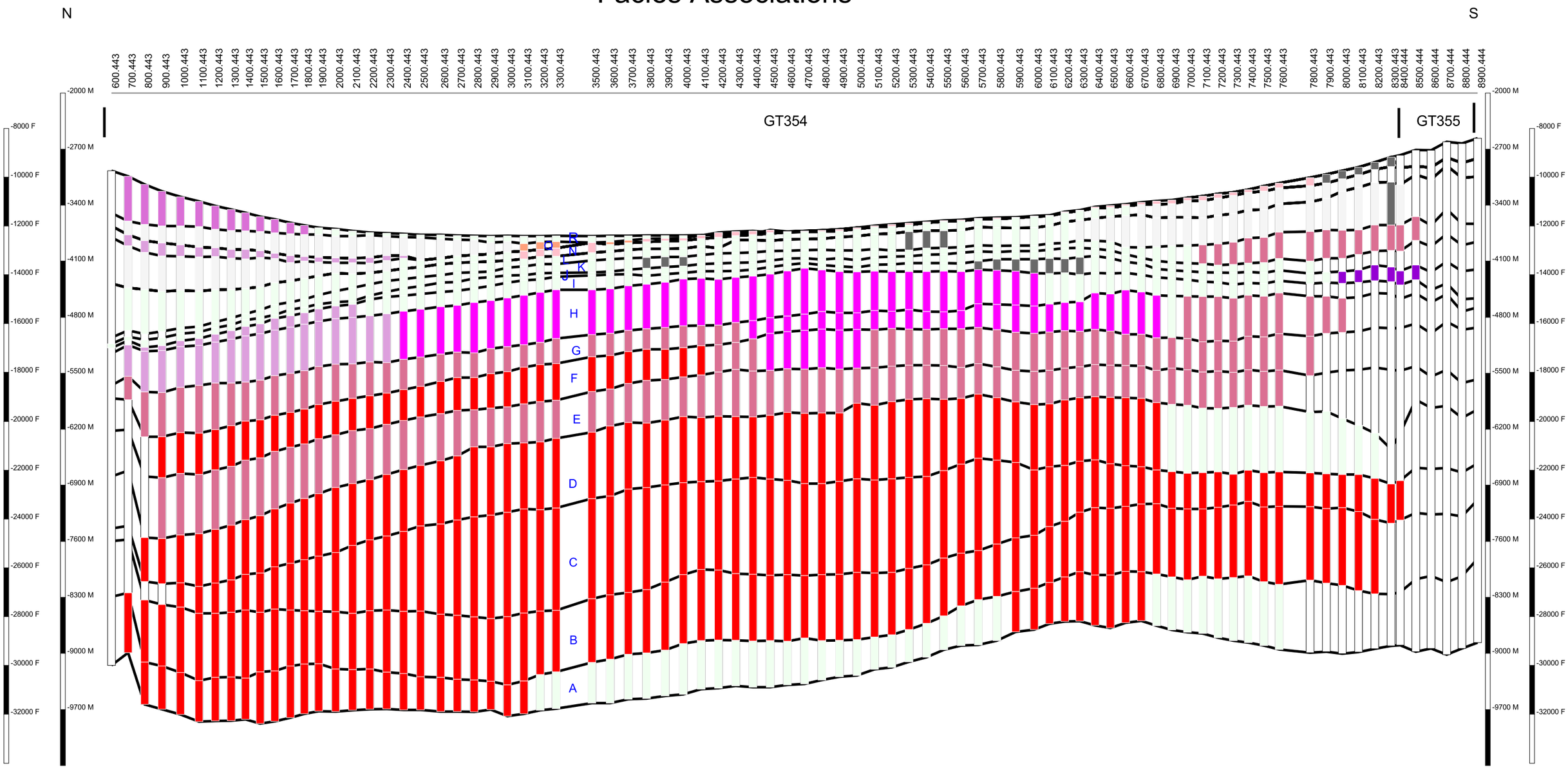
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

20 40 60 80 Miles

30 60 90 120 KM

WGseq.eps

Western Gulf (Seismic)
Facies Associations



The University of Texas at Austin
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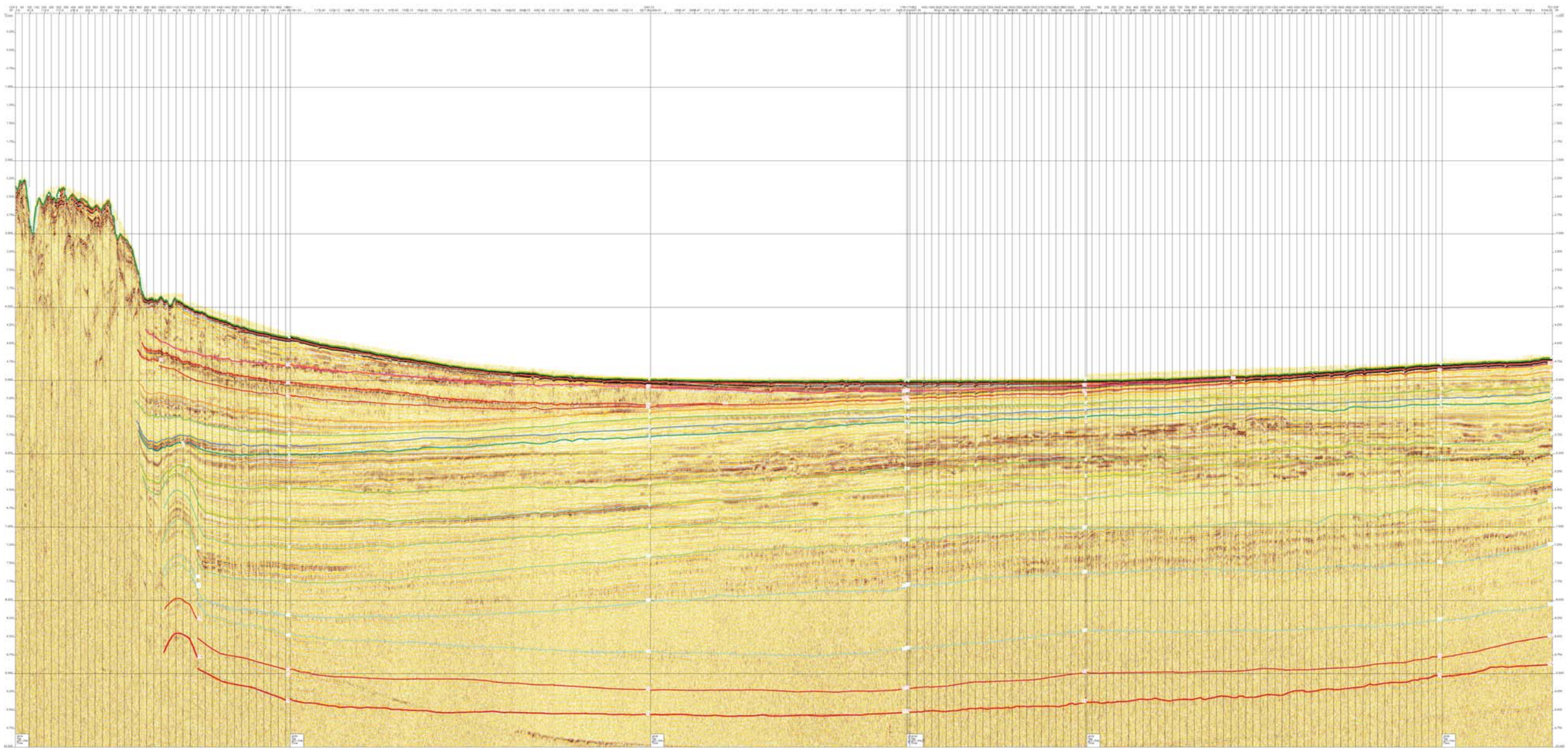
GBDS
Gulf Basin Depositional Synthesis

20 40 60 80 Miles

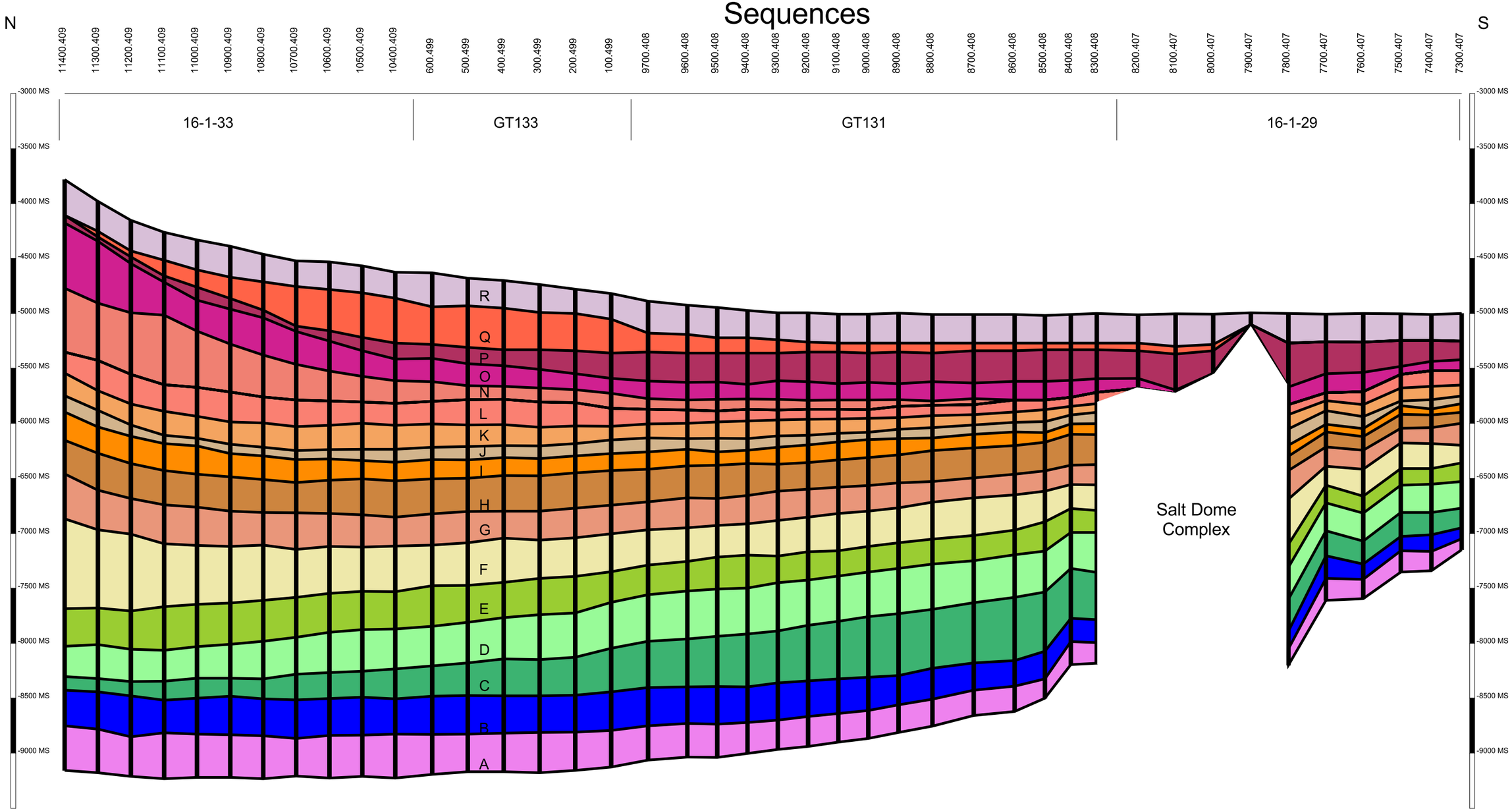
30 60 90 120 KM

WGdepo.eps

GBDS Phase 1
Western Gulf
GT3-54a-f, GT3-55a



West Central Gulf (Seismic) Sequences



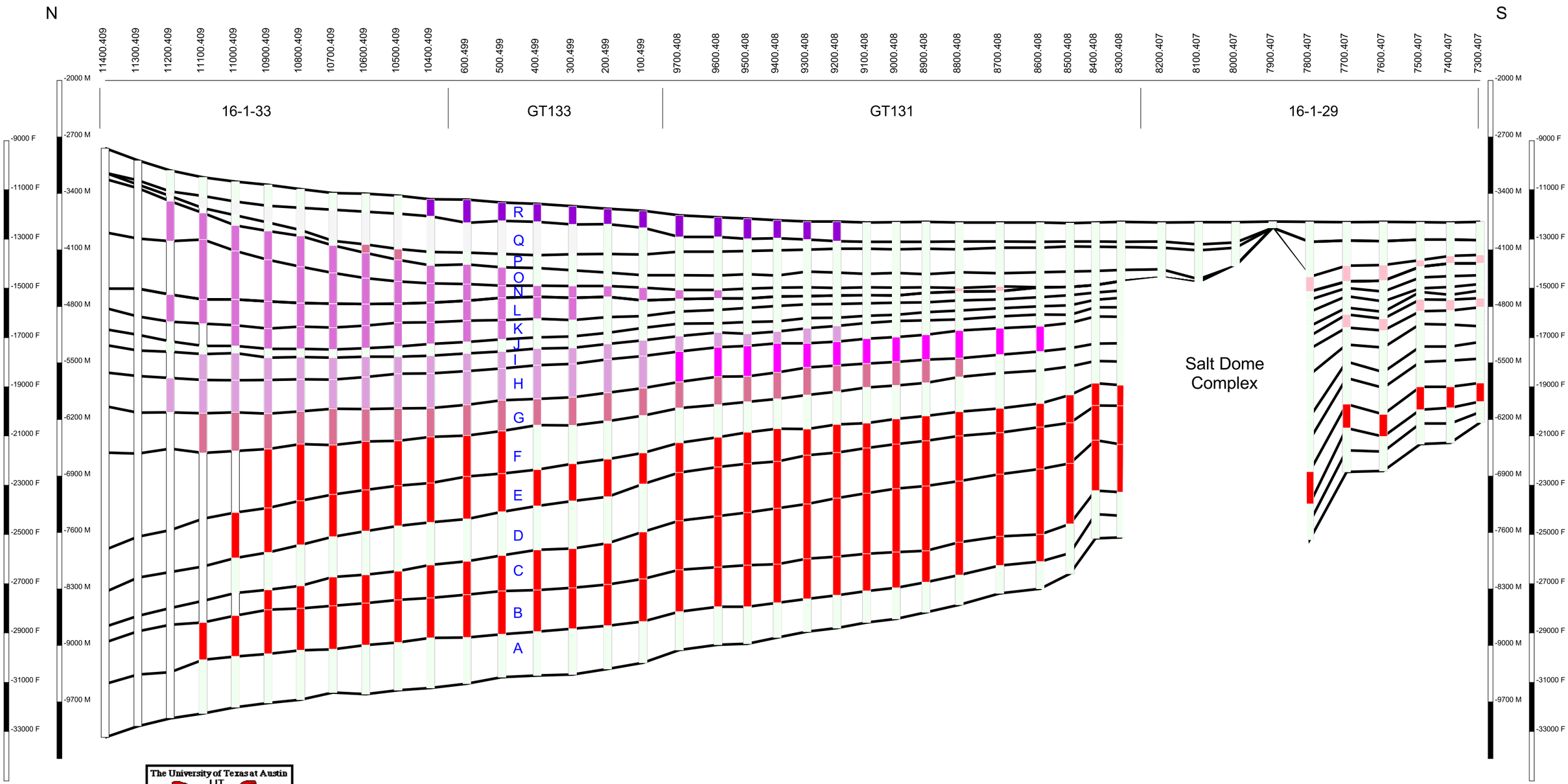
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

9 18 27 36 Miles

20 40 60 80 KM

WCGseq.eps

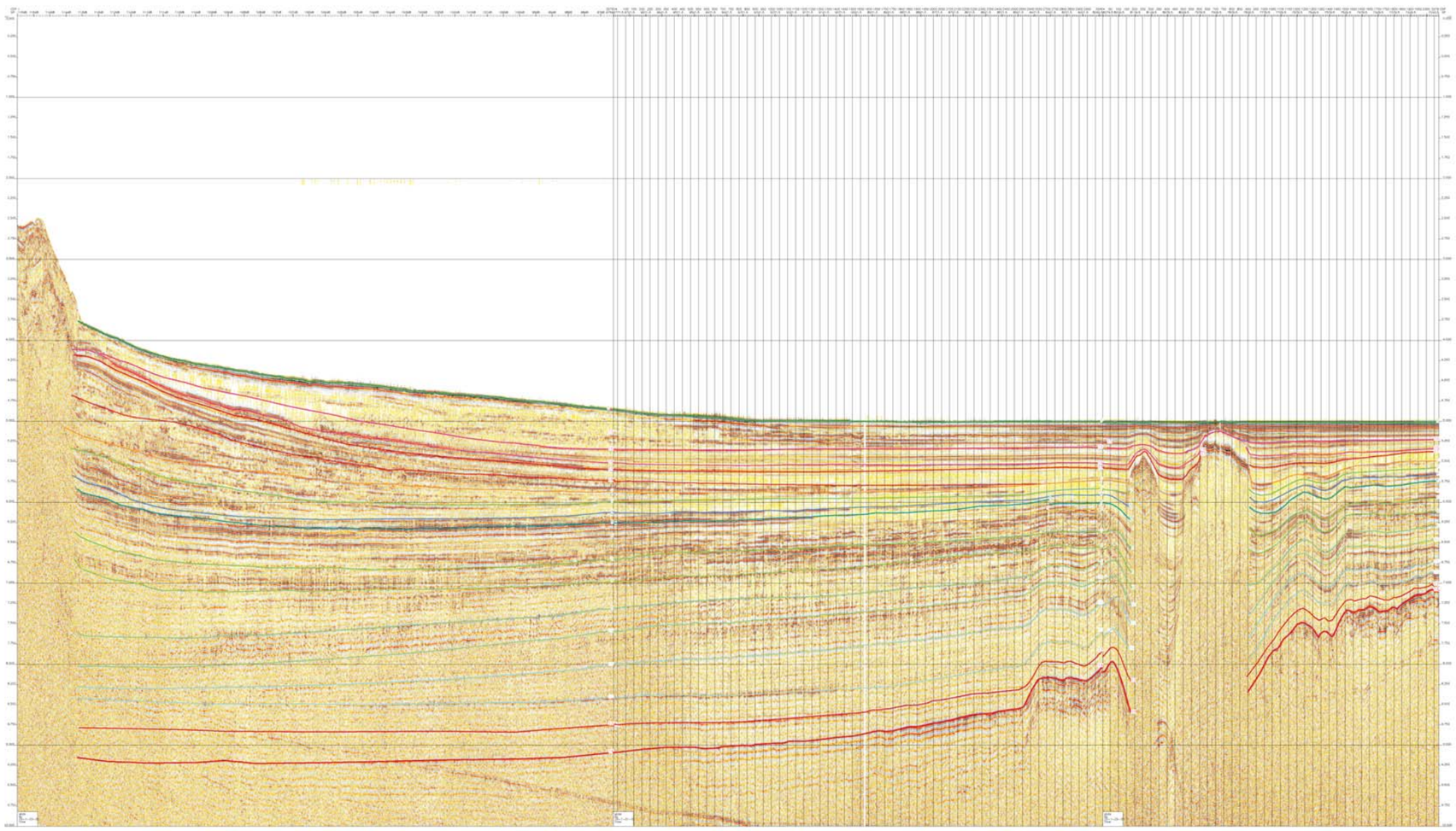
West Central Gulf (Seismic)
Facies Associations



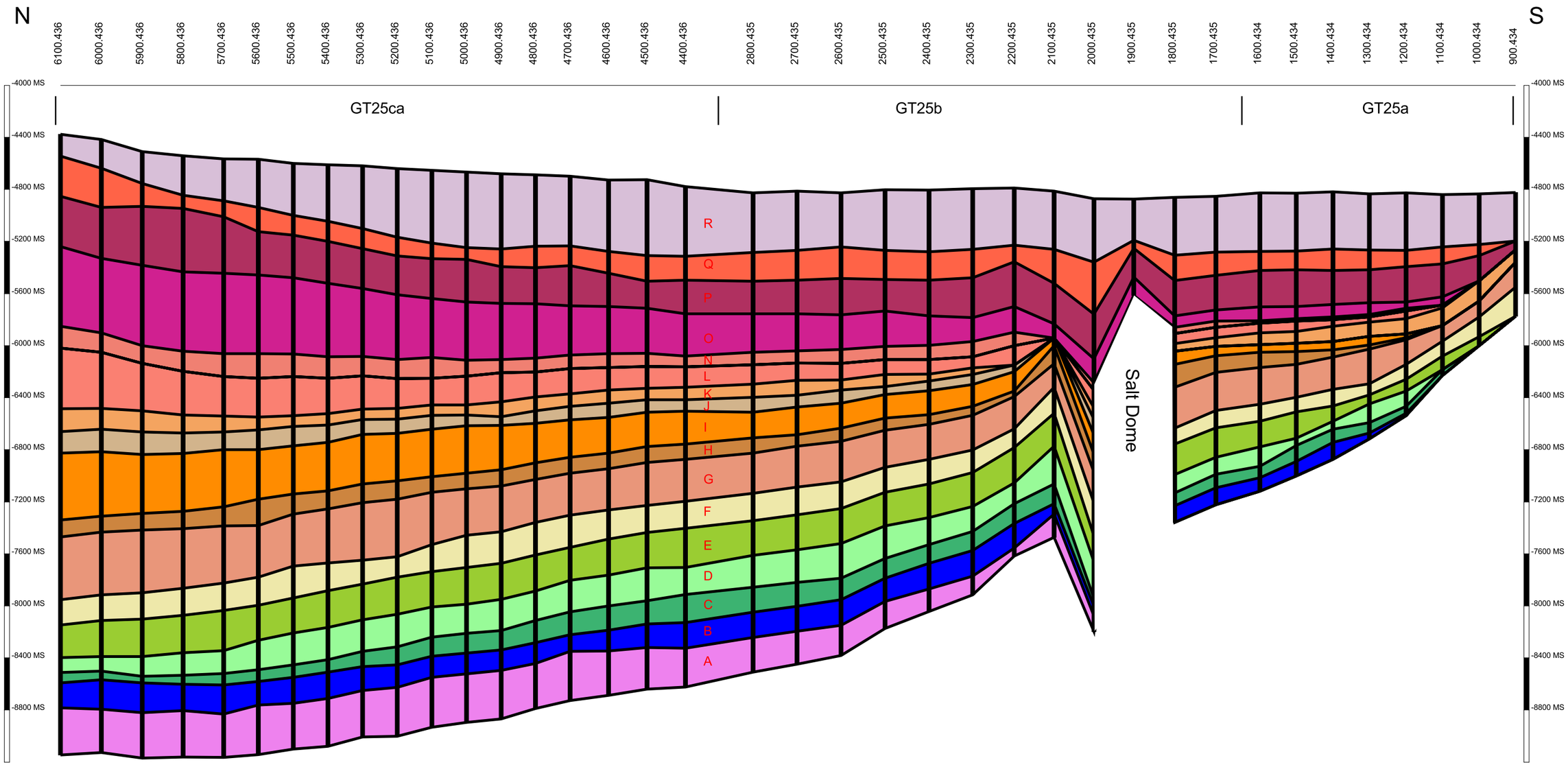
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

WCGdepo.eps

GBDS Phase 1
West Central Gulf
16-1-29 - 16-1-35



East Central Gulf (Seismic) Sequences



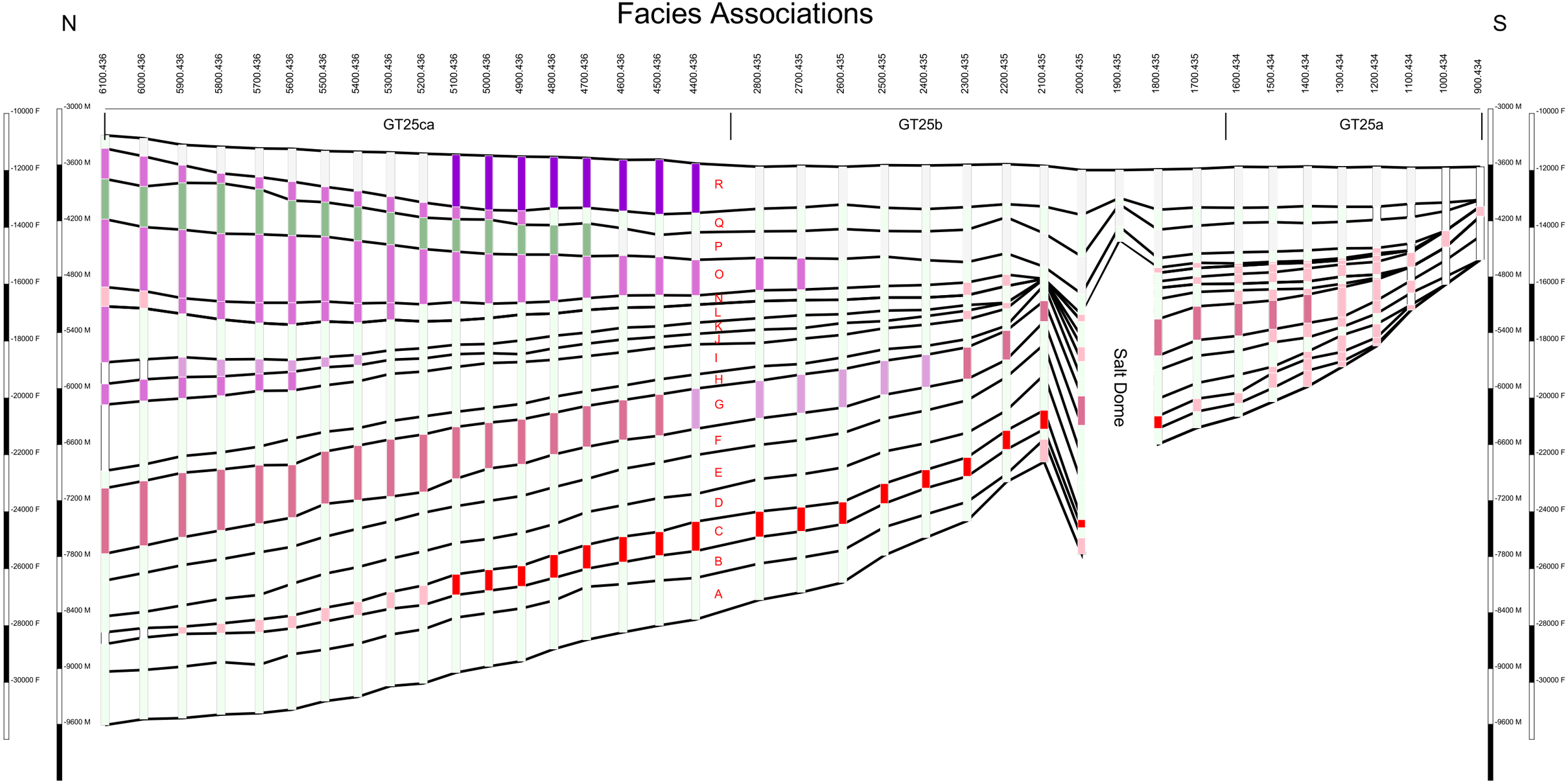
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

7 14 21 28 Miles

20 40 60 80 KM

ECseq.eps

East Central Gulf (Seismic)
Facies Associations



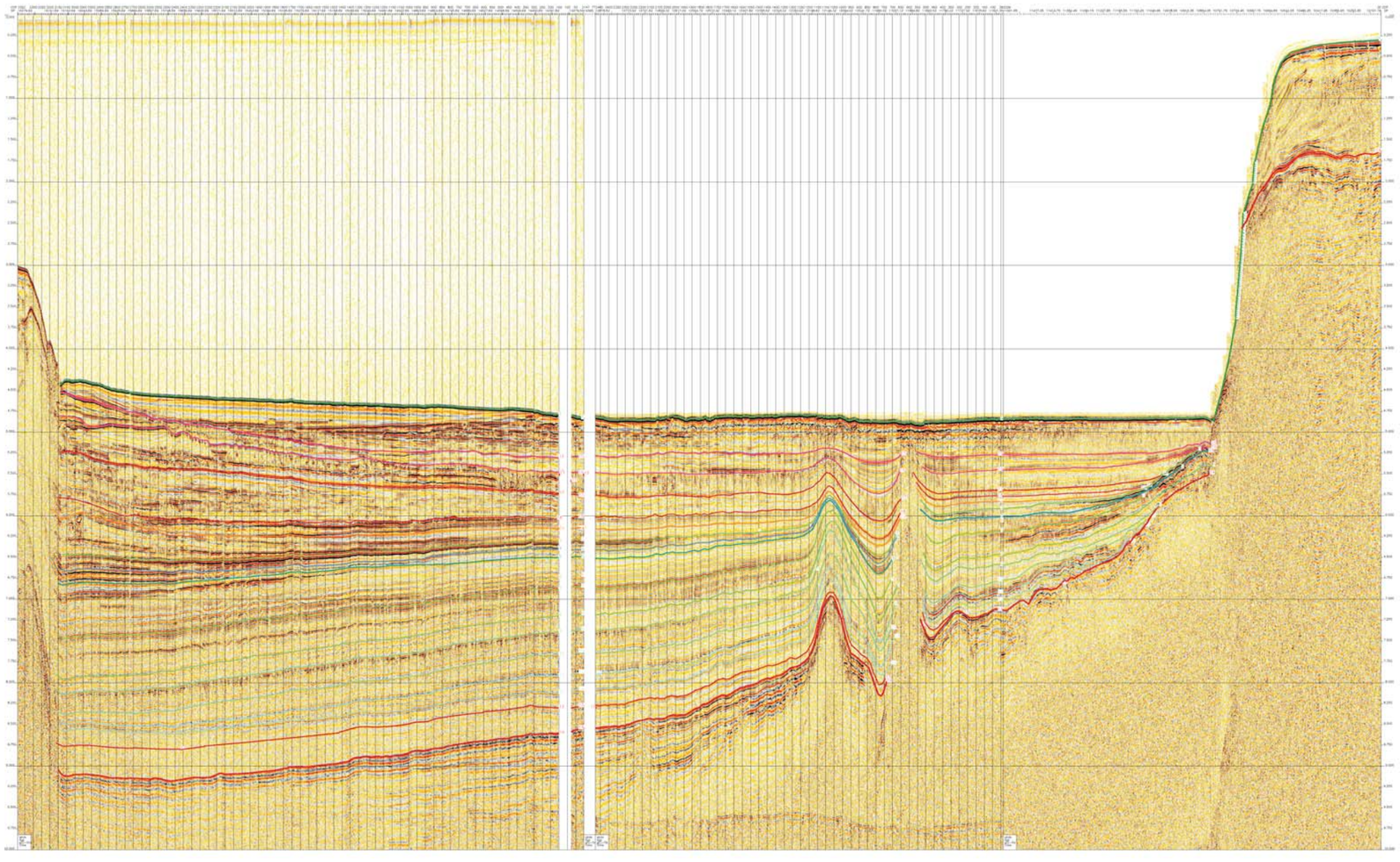
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

7 14 21 28 Miles

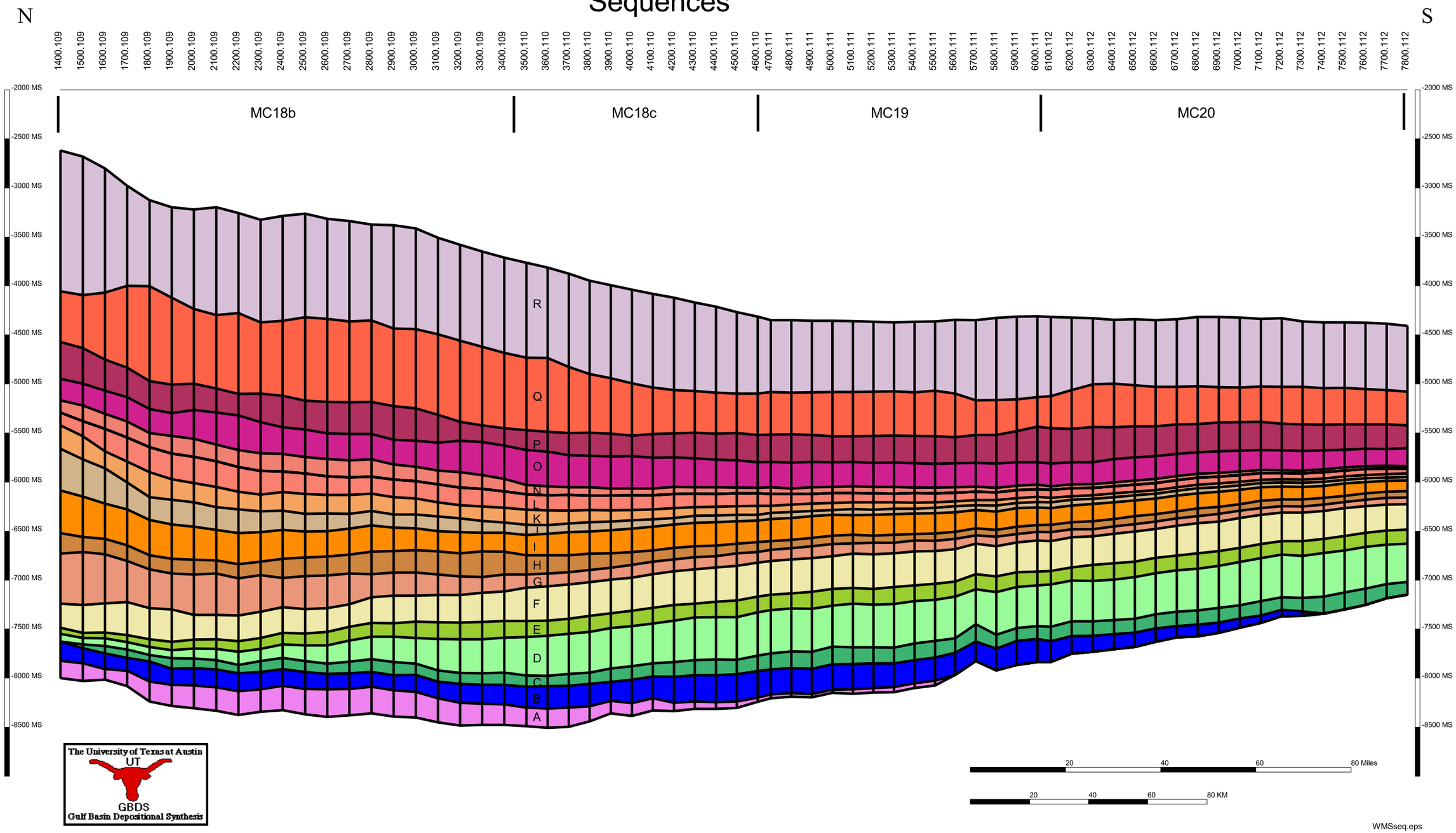
20 40 60 80 KM

ECDepo.eps

GBDS Phase 1
East Central Gulf
GT2-5a,b,c



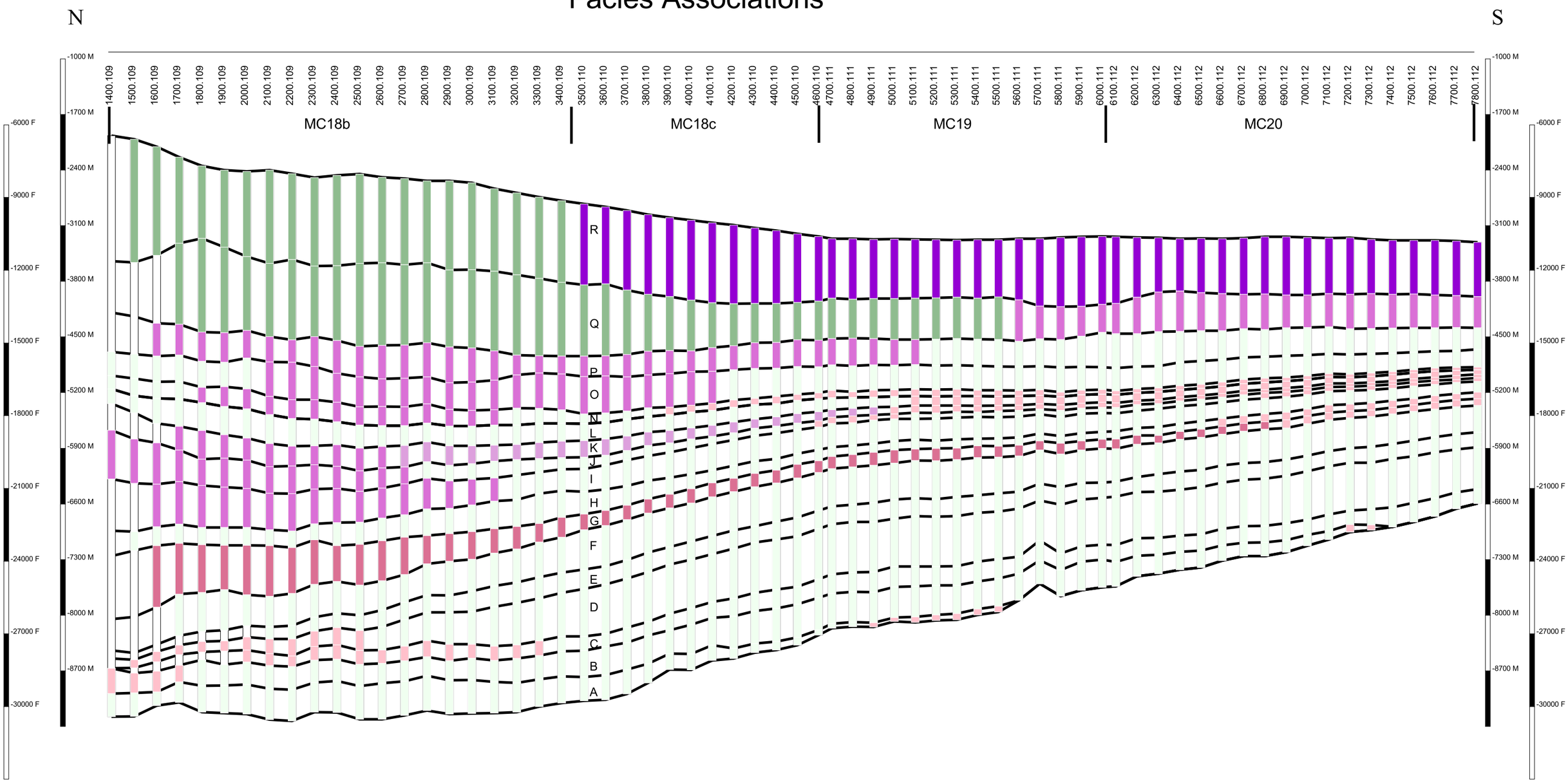
West Mississippi Fan (Seismic) Sequences



The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

WMSseq.eps

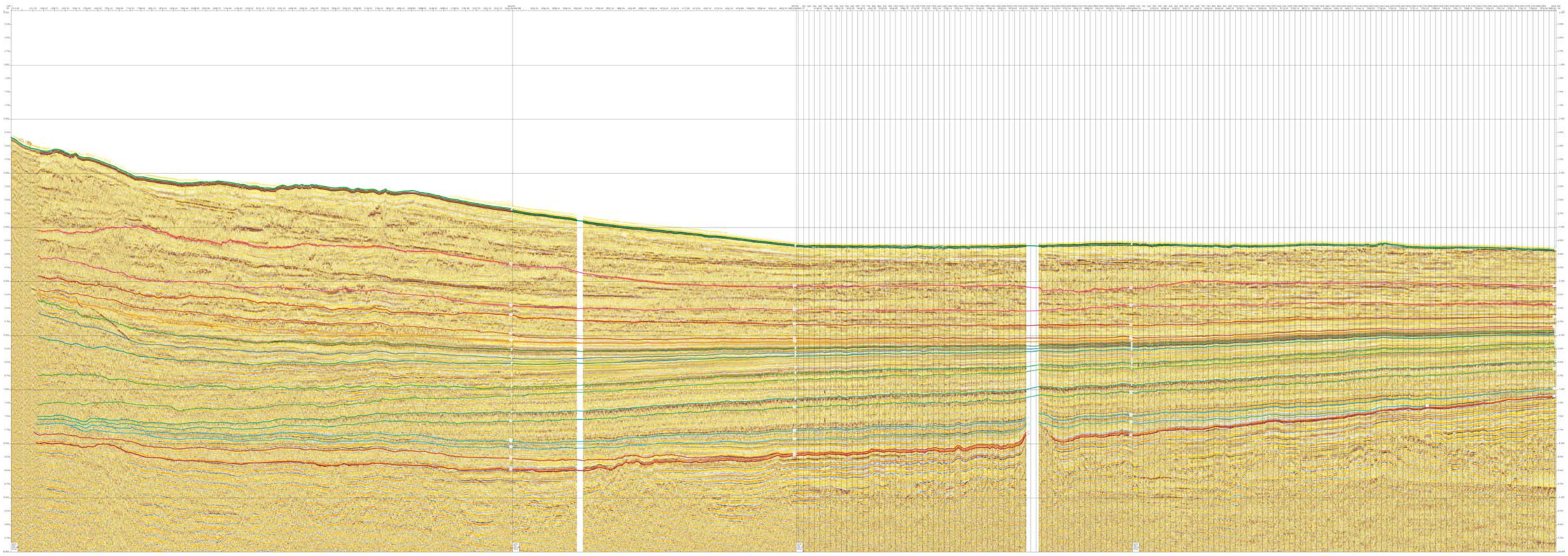
West Mississippi Fan (Seismic)
Facies Associations



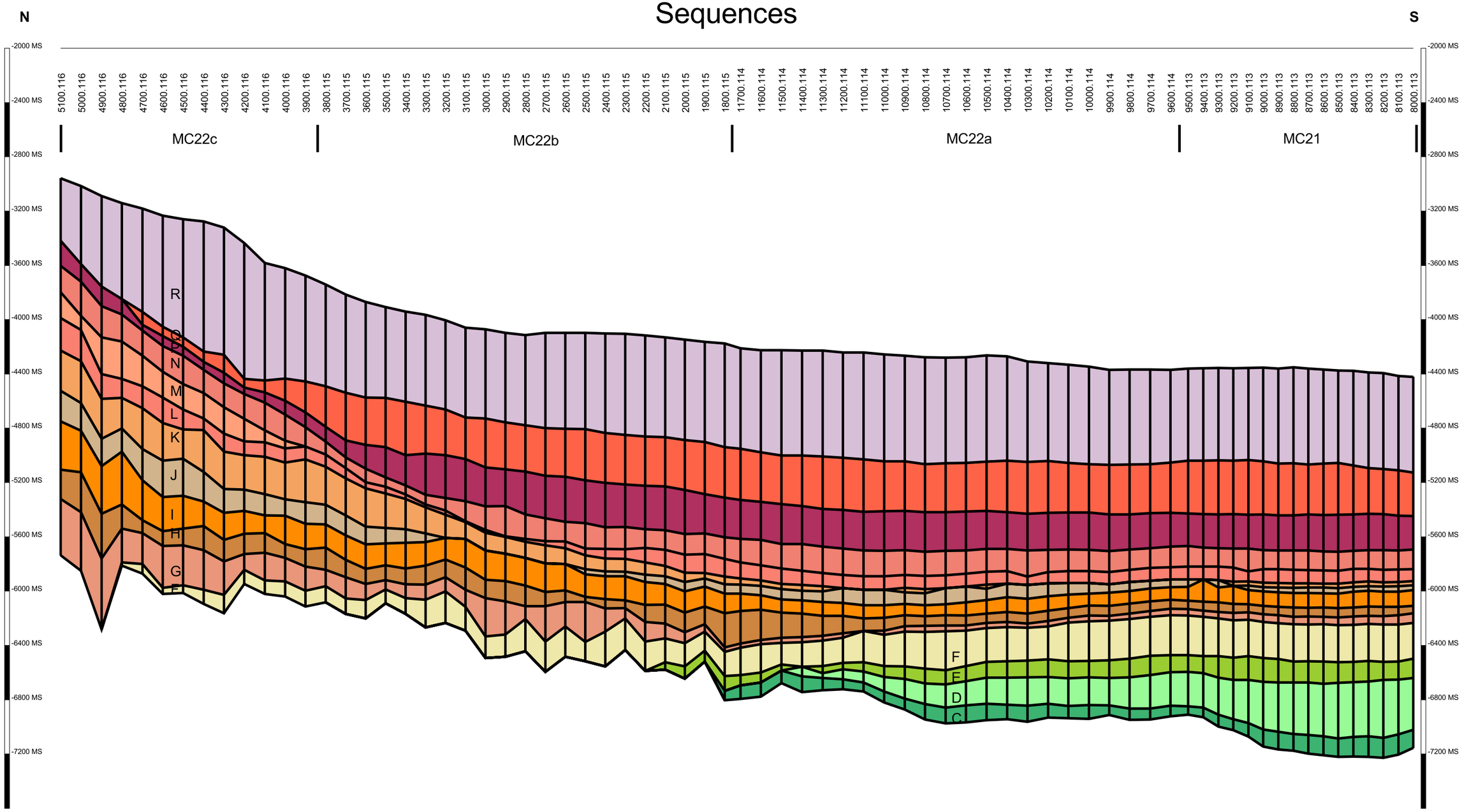
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

WMSdepo.eps

GBDS Phase I
West Mississippi Fan



East Mississippi Fan (Seismic) Sequences



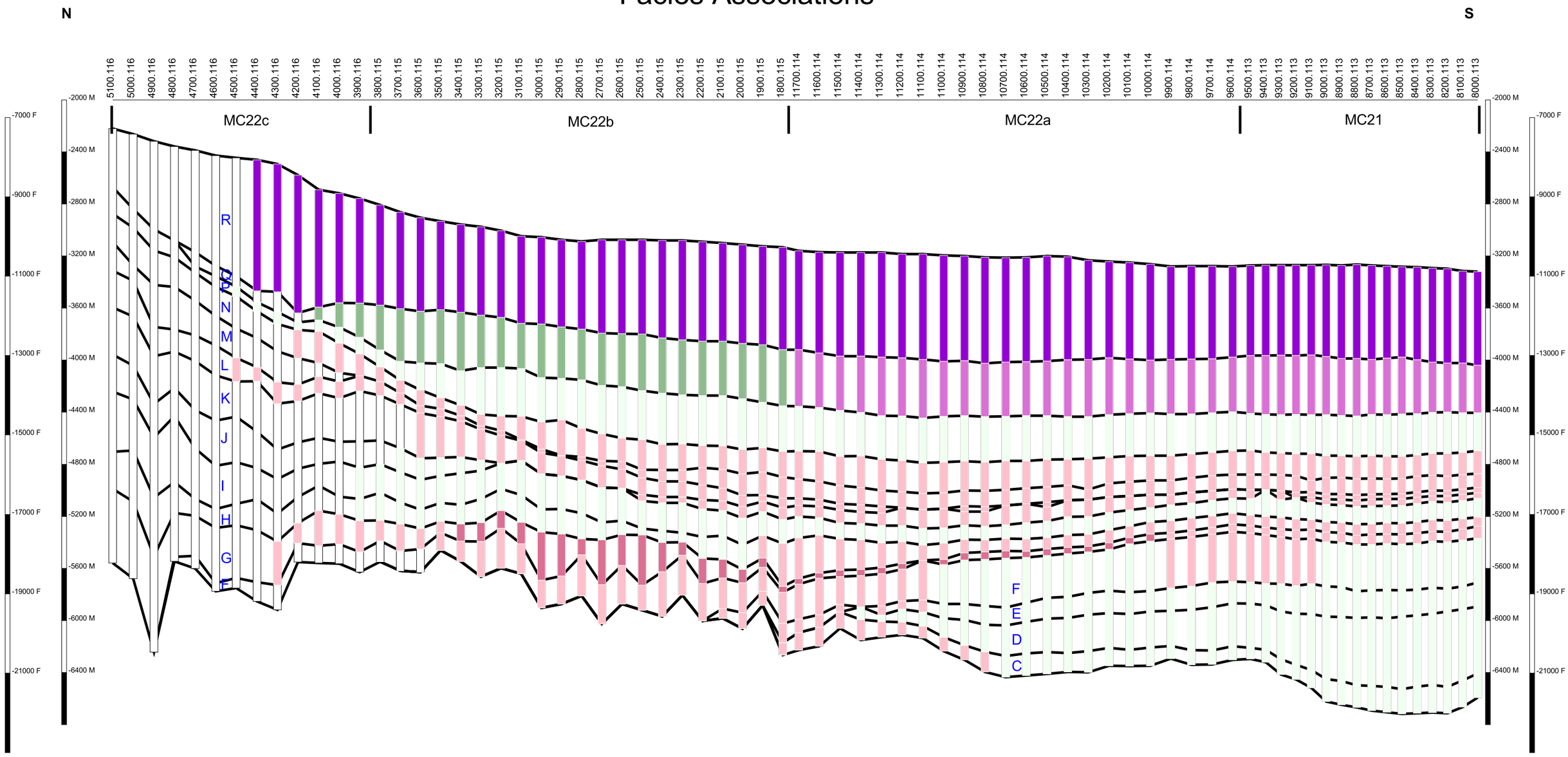
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

20 40 60 80 Miles

20 40 60 80 KM

EMSseq.eps

East Mississippi Fan (Seismic)
Facies Associations



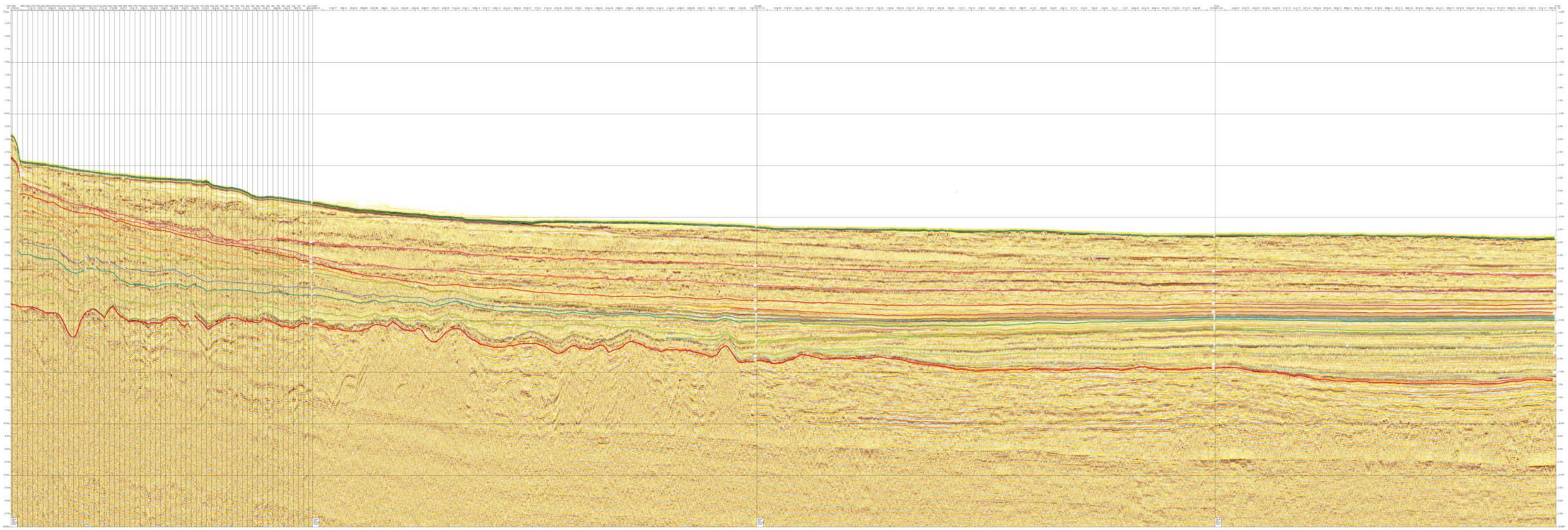
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

20 40 60 80 Miles

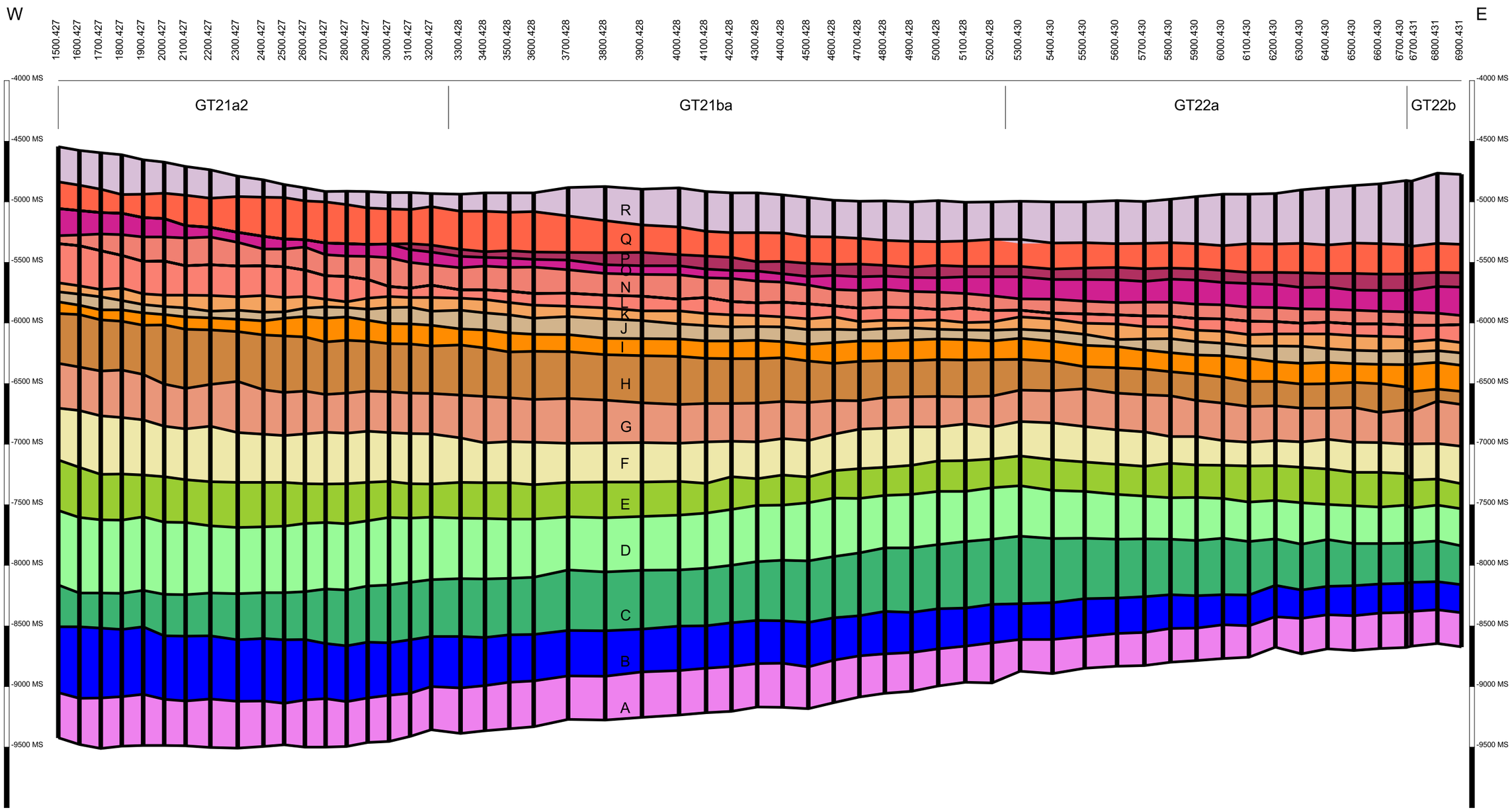
20 40 60 80 KM

EMSdepo.eps

GBDS Phase 1
East Mississippi Fan
Mc21 - Mc22



North Deep Basin (West) (Seismic) Sequences



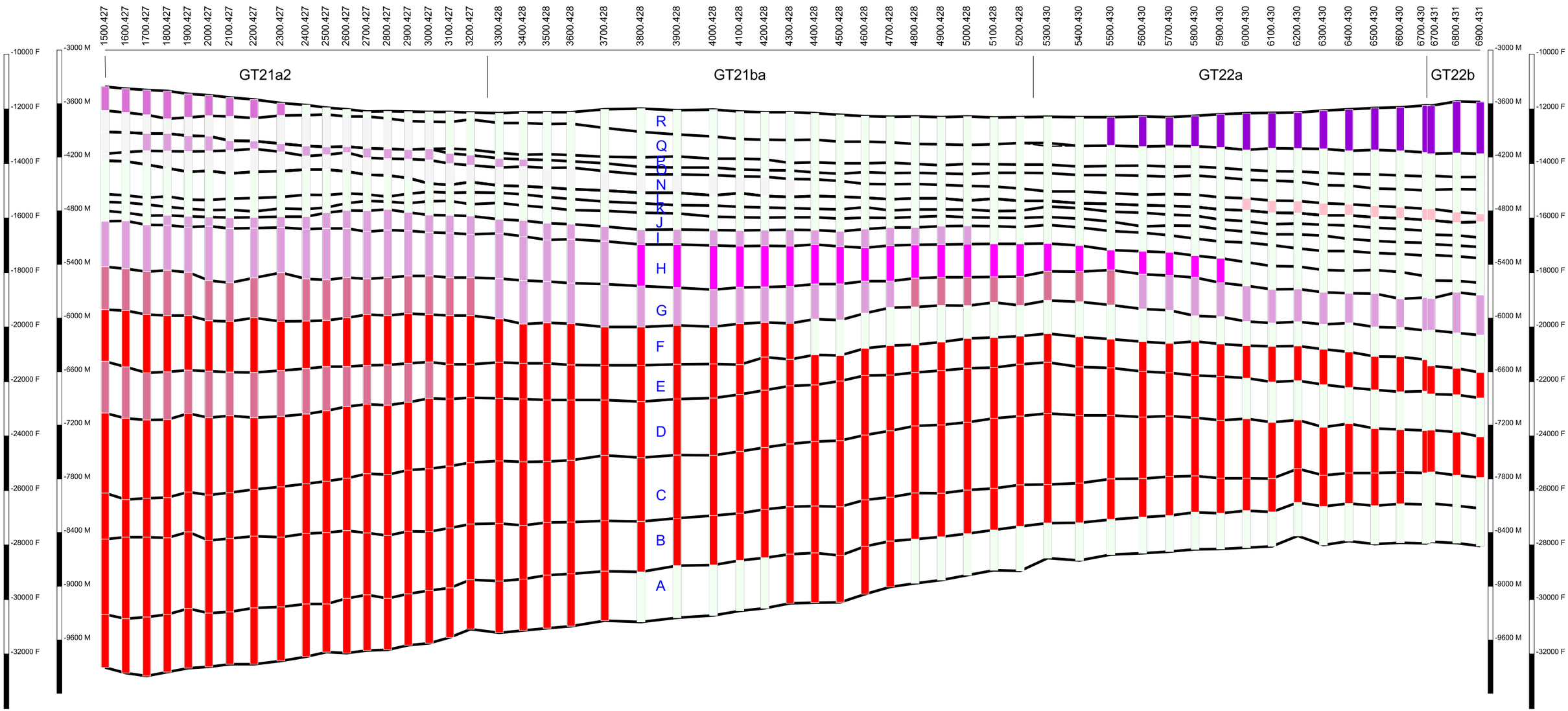
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

9 18 27 36 Miles

20 40 60 80 KM

NDeepWseq.eps

North Deep Basin (West) (Seismic)
Facies Associations



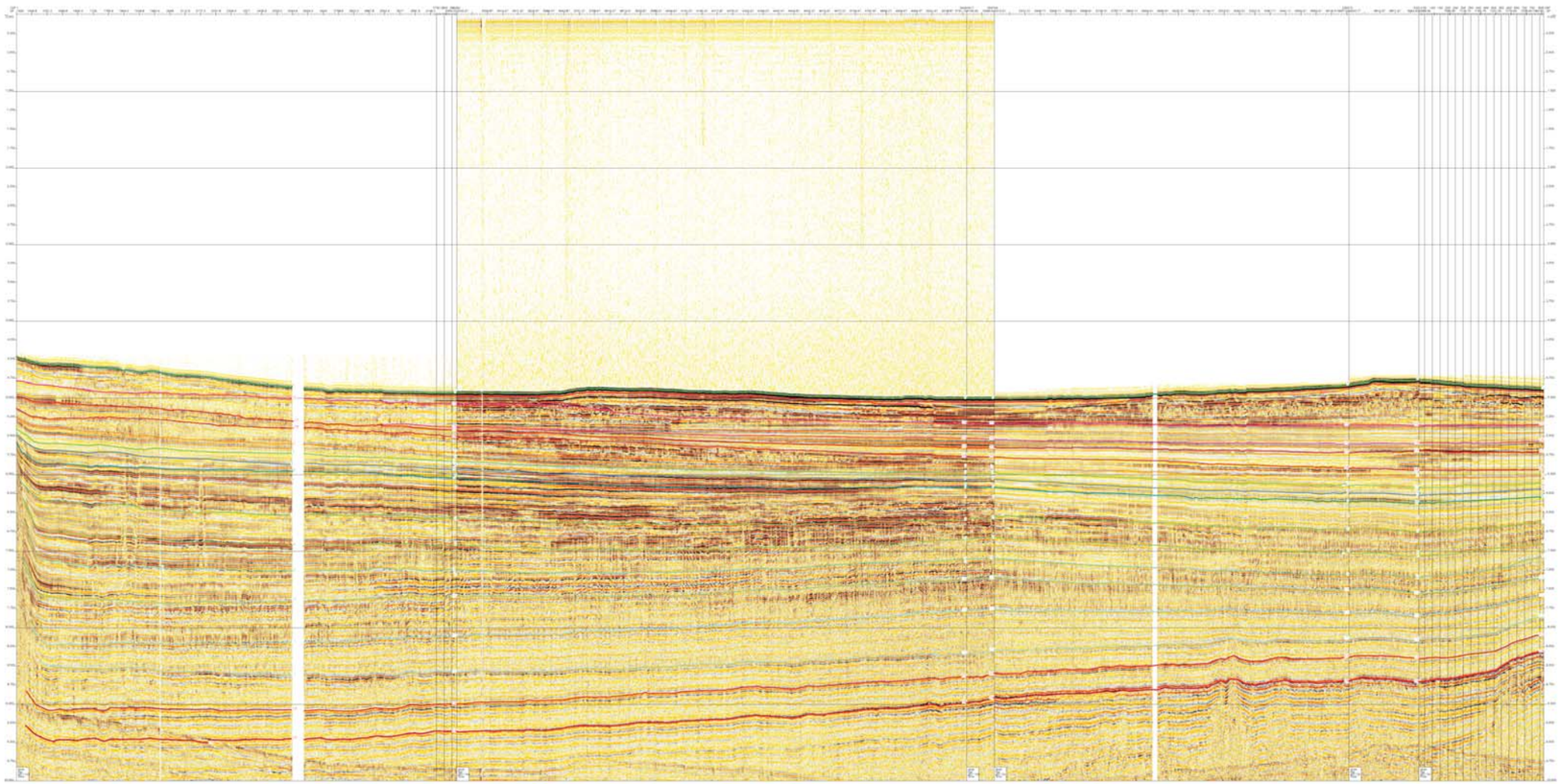
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

9 18 27 36 Miles

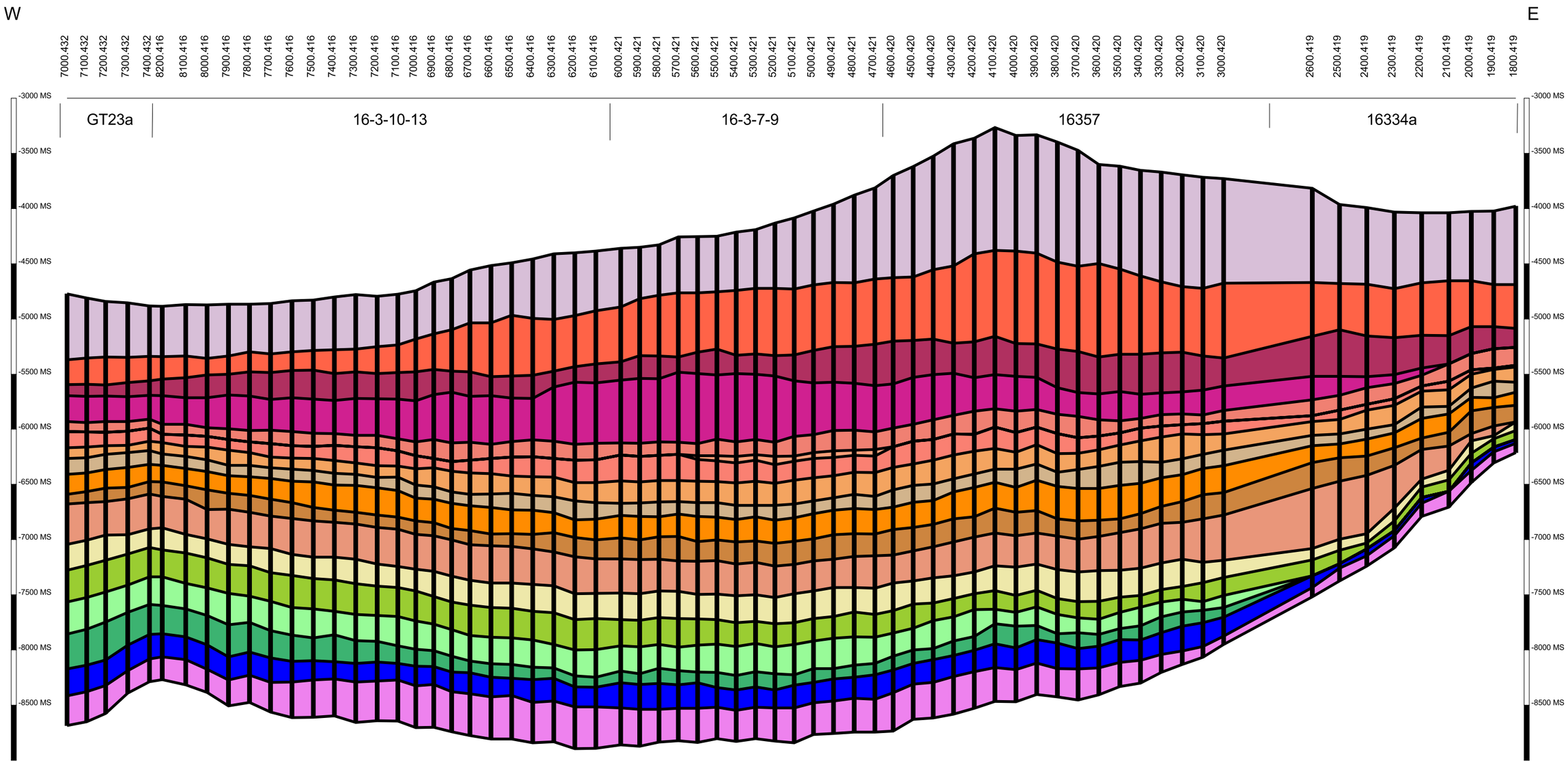
20 40 60 80 KM

NDeepWdepo.eps

GBDS Phase 1
North Deep Basin West
GT2-1 - GT2-3



North Deep Basin (East) (Seismic) Sequences



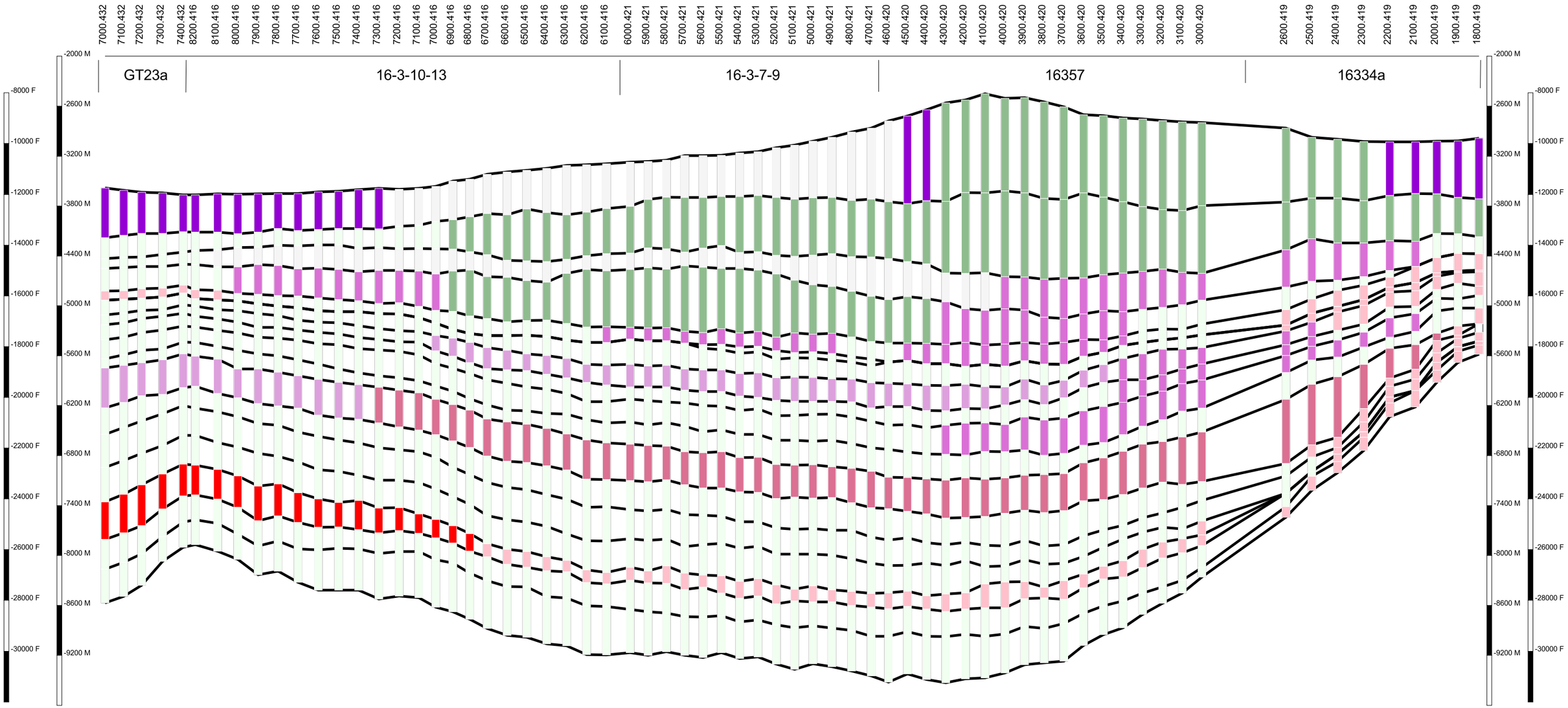
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

20 40 60 80 Miles

30 60 90 120 KM

NDeepEseq.eps

North Deep Basin (East) (Seismic)
Deposystems



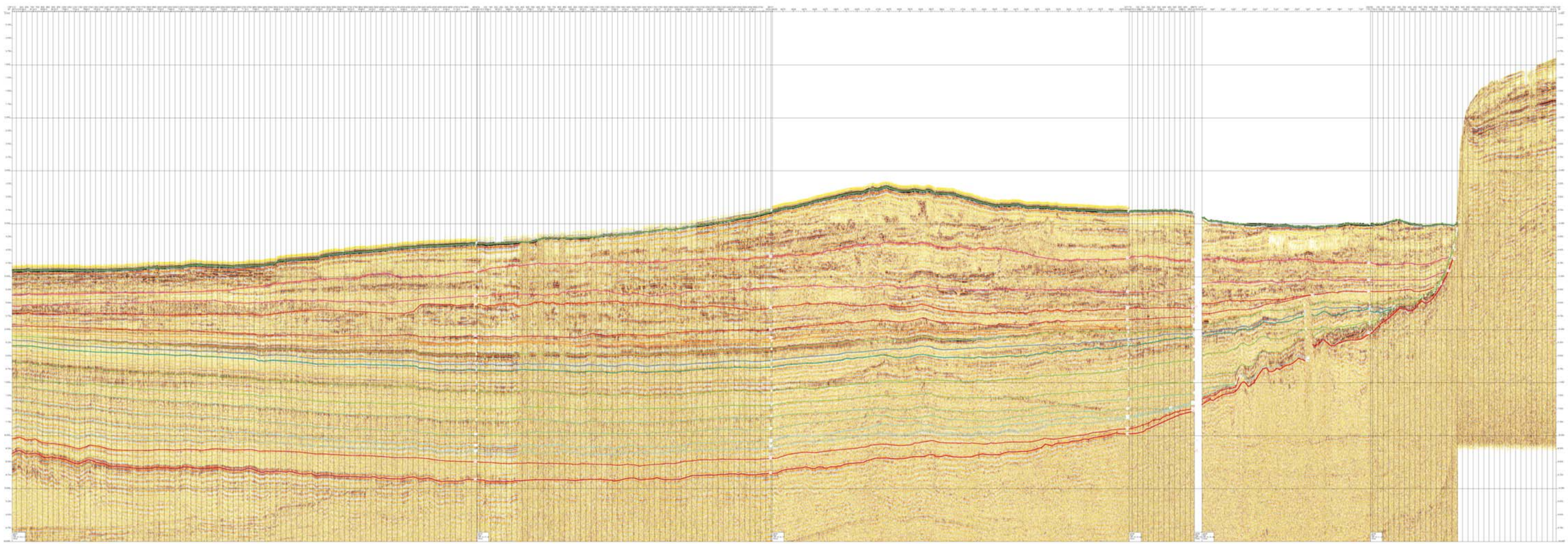
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

20 40 60 80 Miles

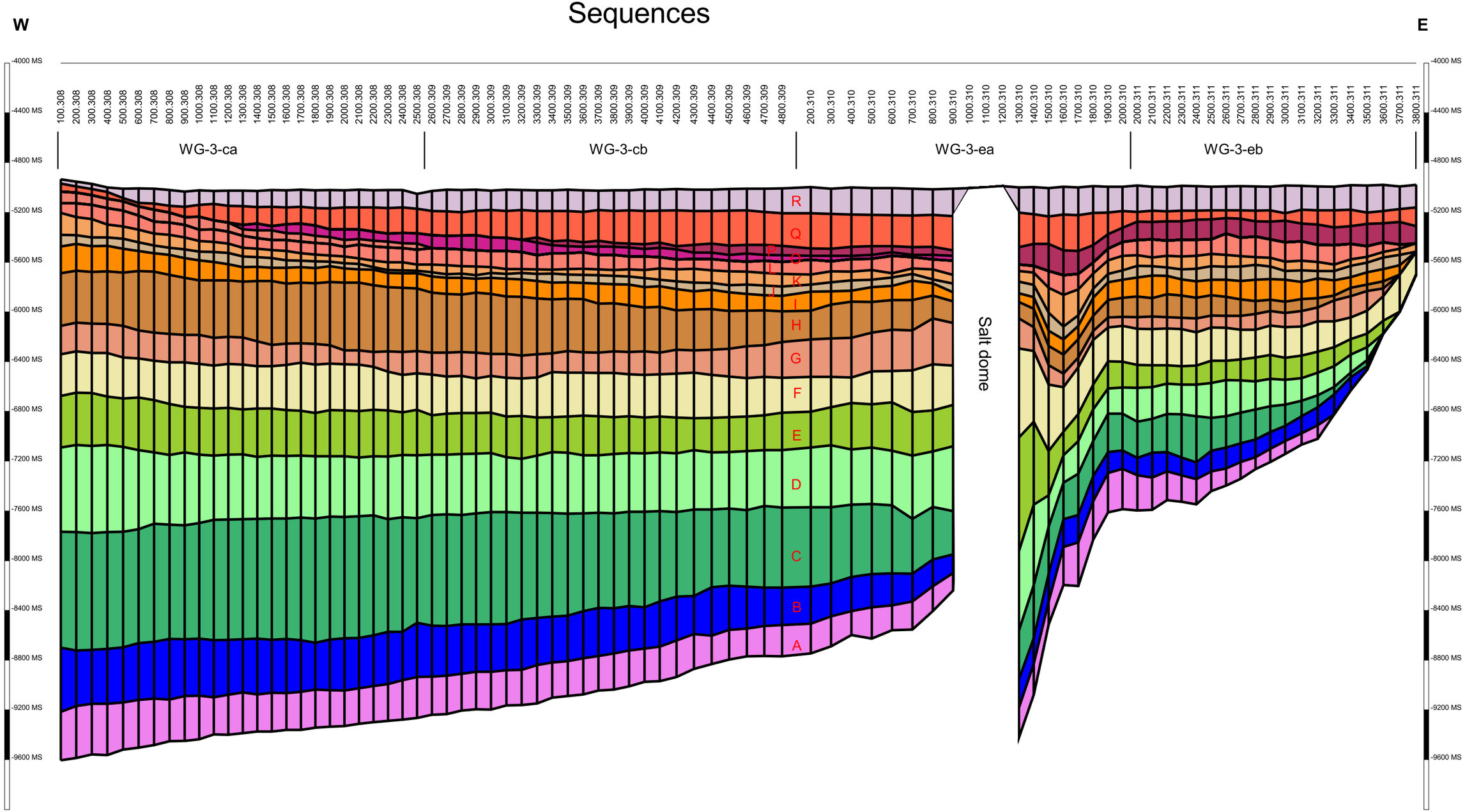
30 60 90 120 KM

NDeepEdepo.eps

GBDS Phase 1
North Deep Basin East
16-3-1 – 16-3-13



West Deep Basin (Seismic) Sequences



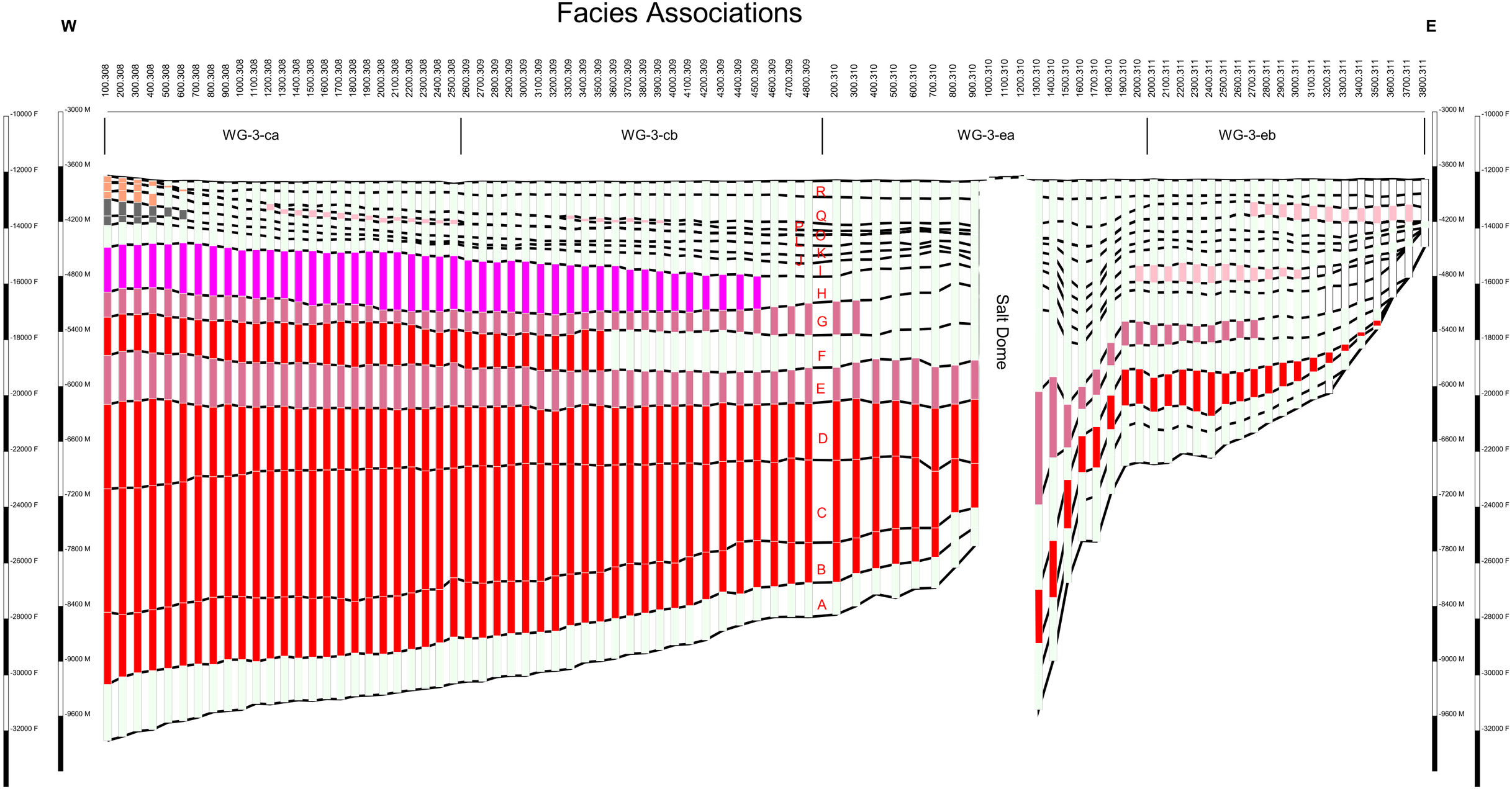
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

9 18 27 36 Miles

20 40 60 80 KM

WDeepseq.eps

West Deep Basin (Seismic)
Facies Associations



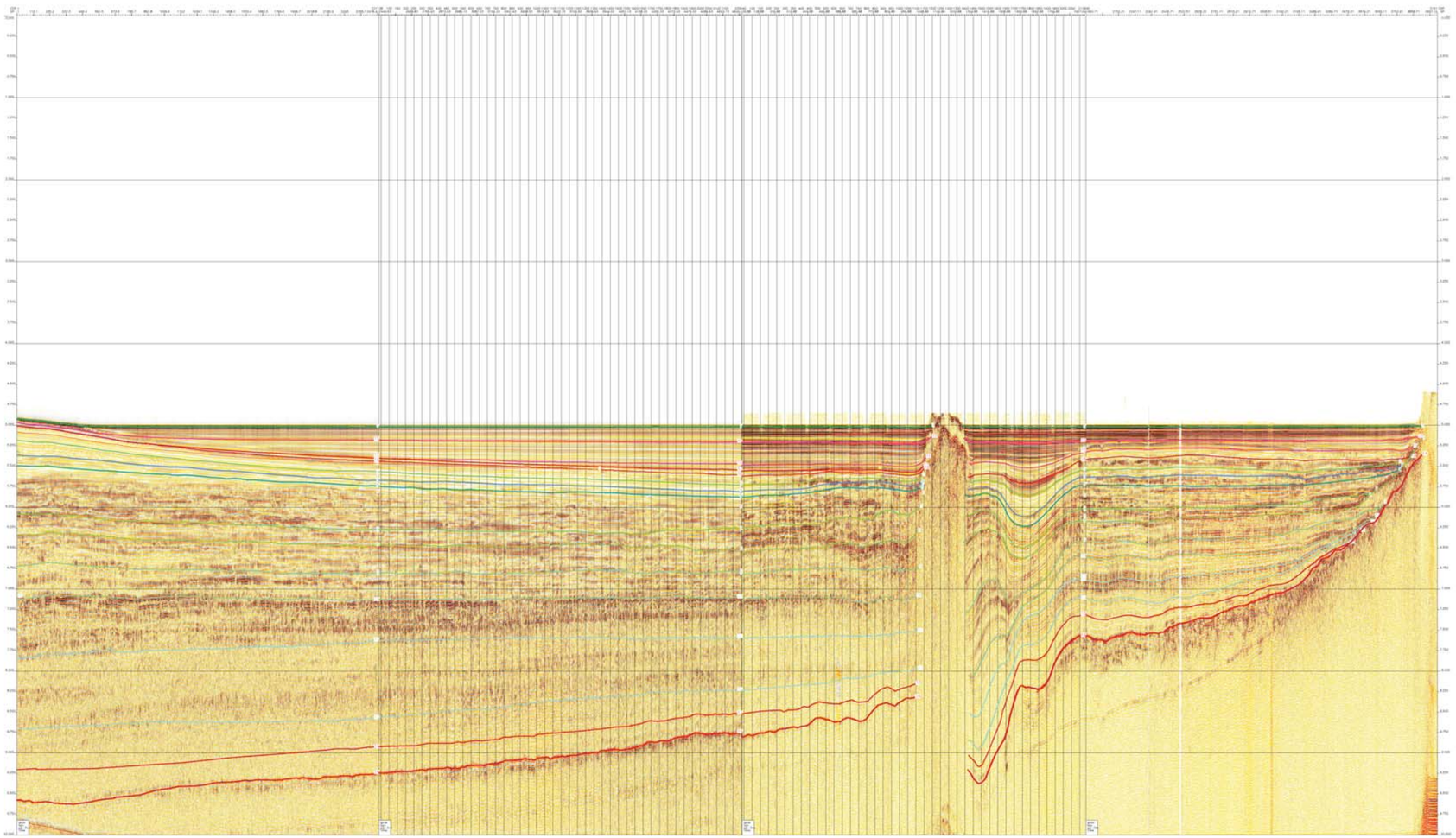
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

9 18 27 36 Miles

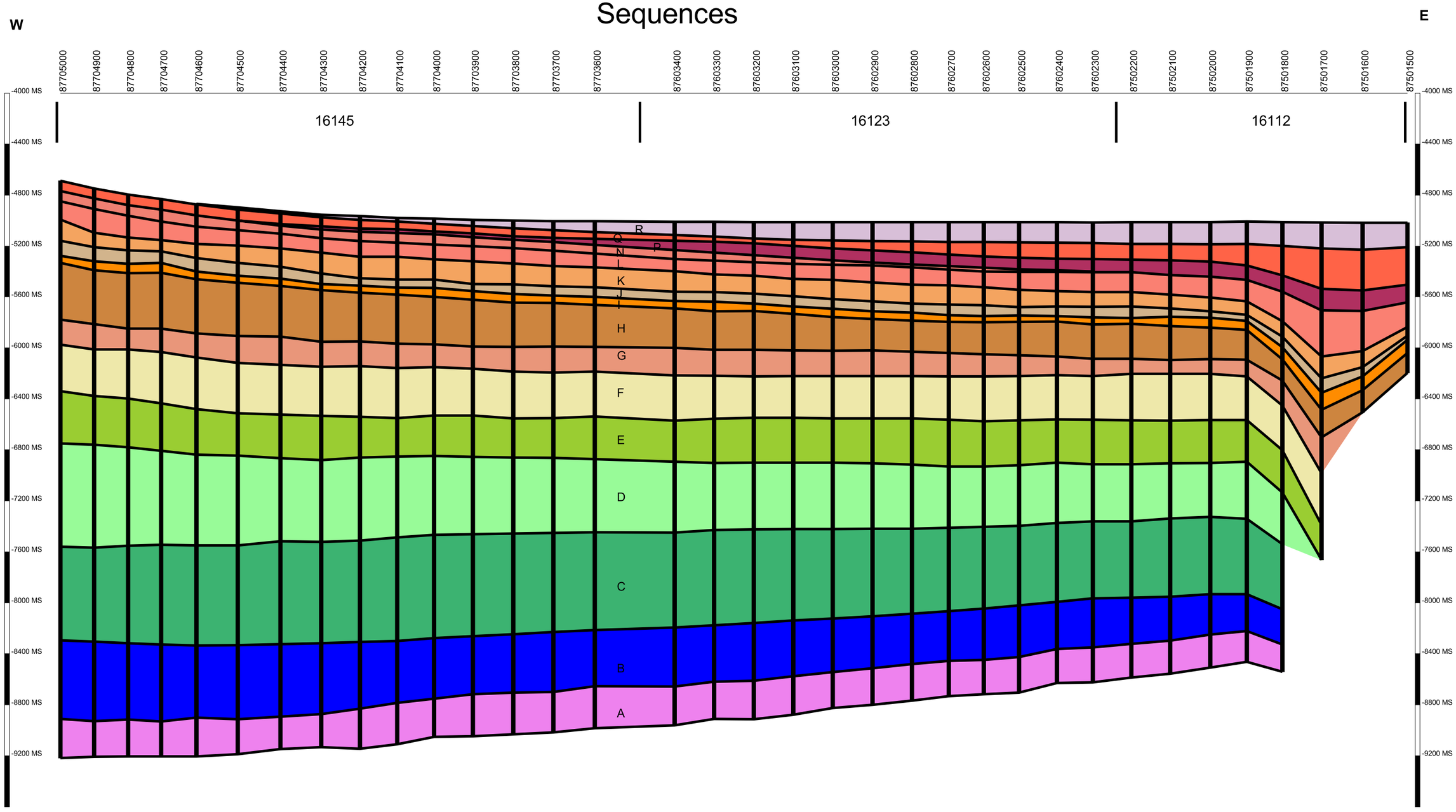
20 40 60 80 KM

WDeepdepo.eps

GBDS Phase 1
West Deep Basin
WG-3



Central Deep Basin West (Seismic) Sequences



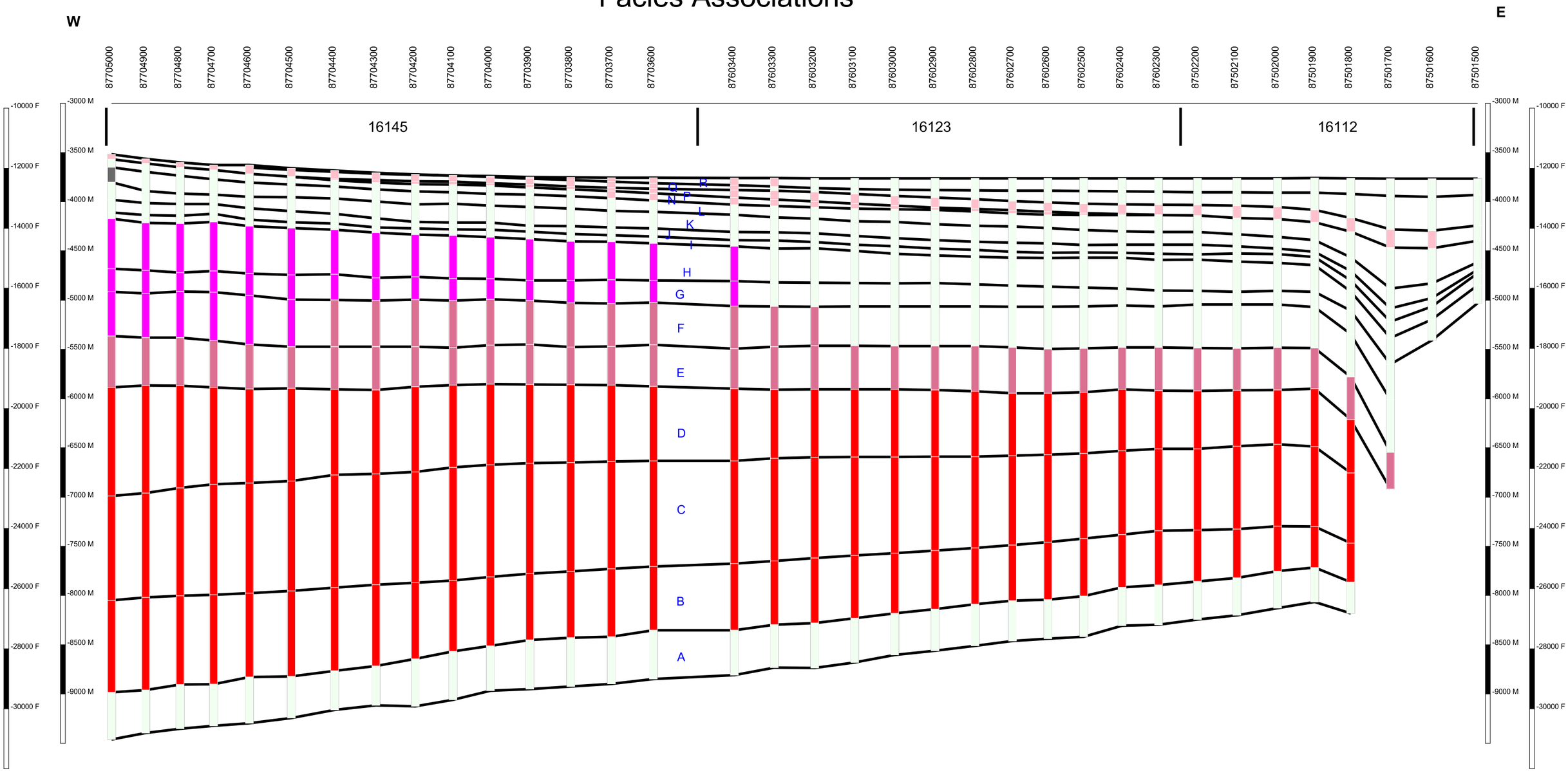
6 12 18 24 Miles

9 18 27 36 KM

The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

CDeepWSeq.eps

Central Deep Basin West (Seismic)
Facies Associations



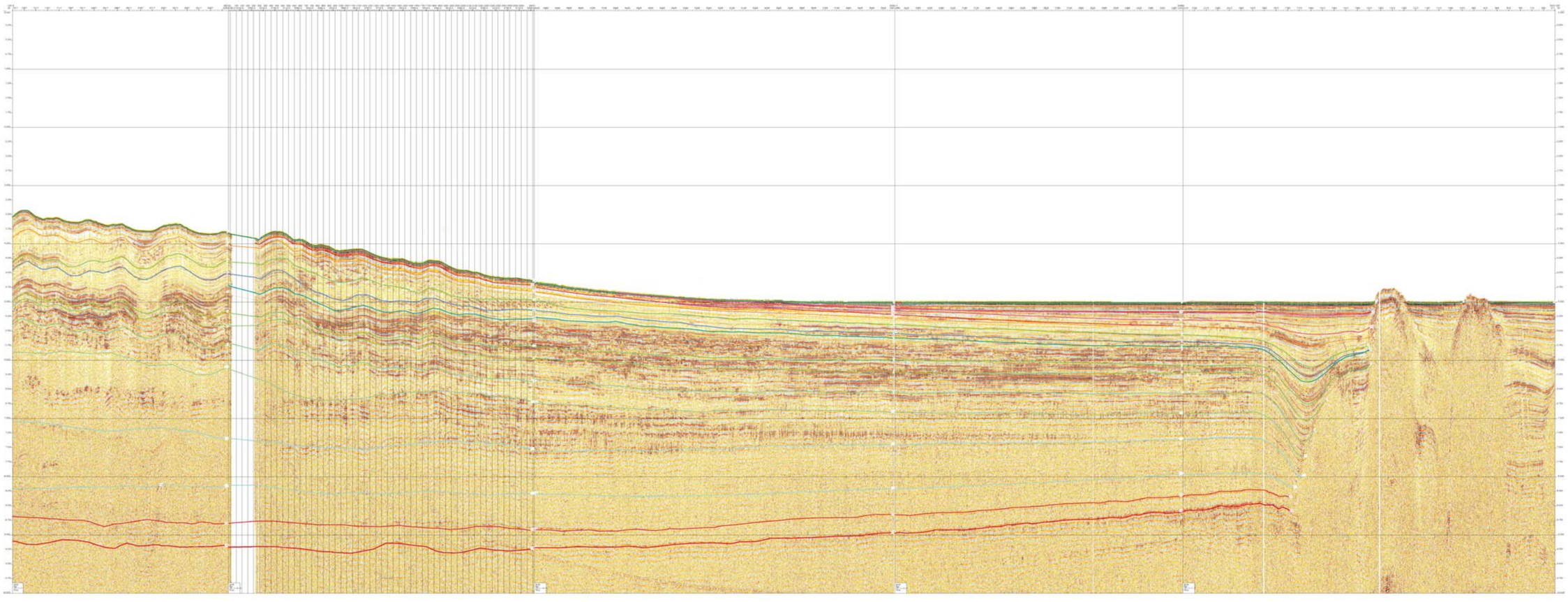
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

6 12 18 24 Miles

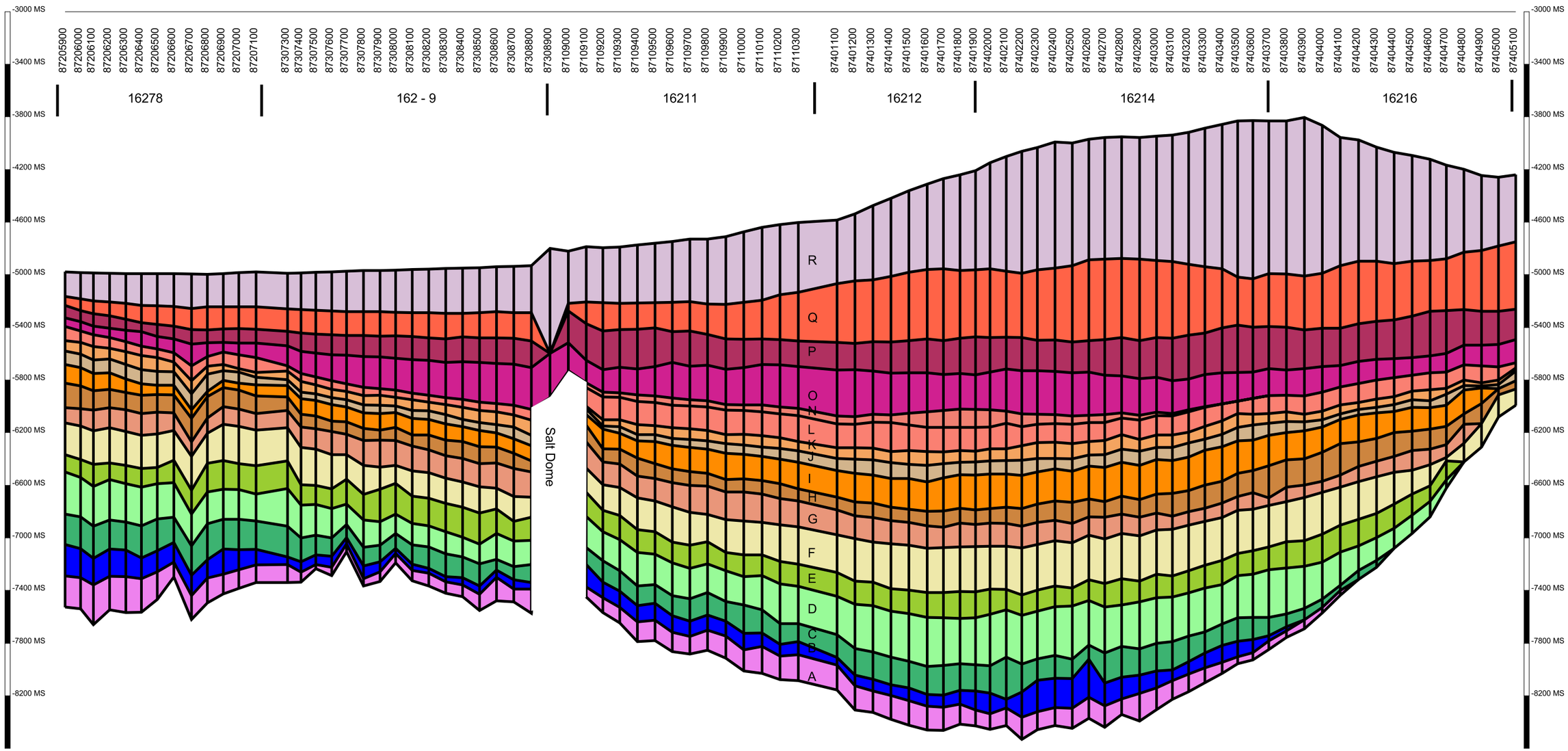
9 18 27 36 KM

CDeepWDepo.eps

GBDS Phase 1
Central Deep Basin West
16-1-1 - 16-1-7



Central Deep Basin East (Seismic) Sequences



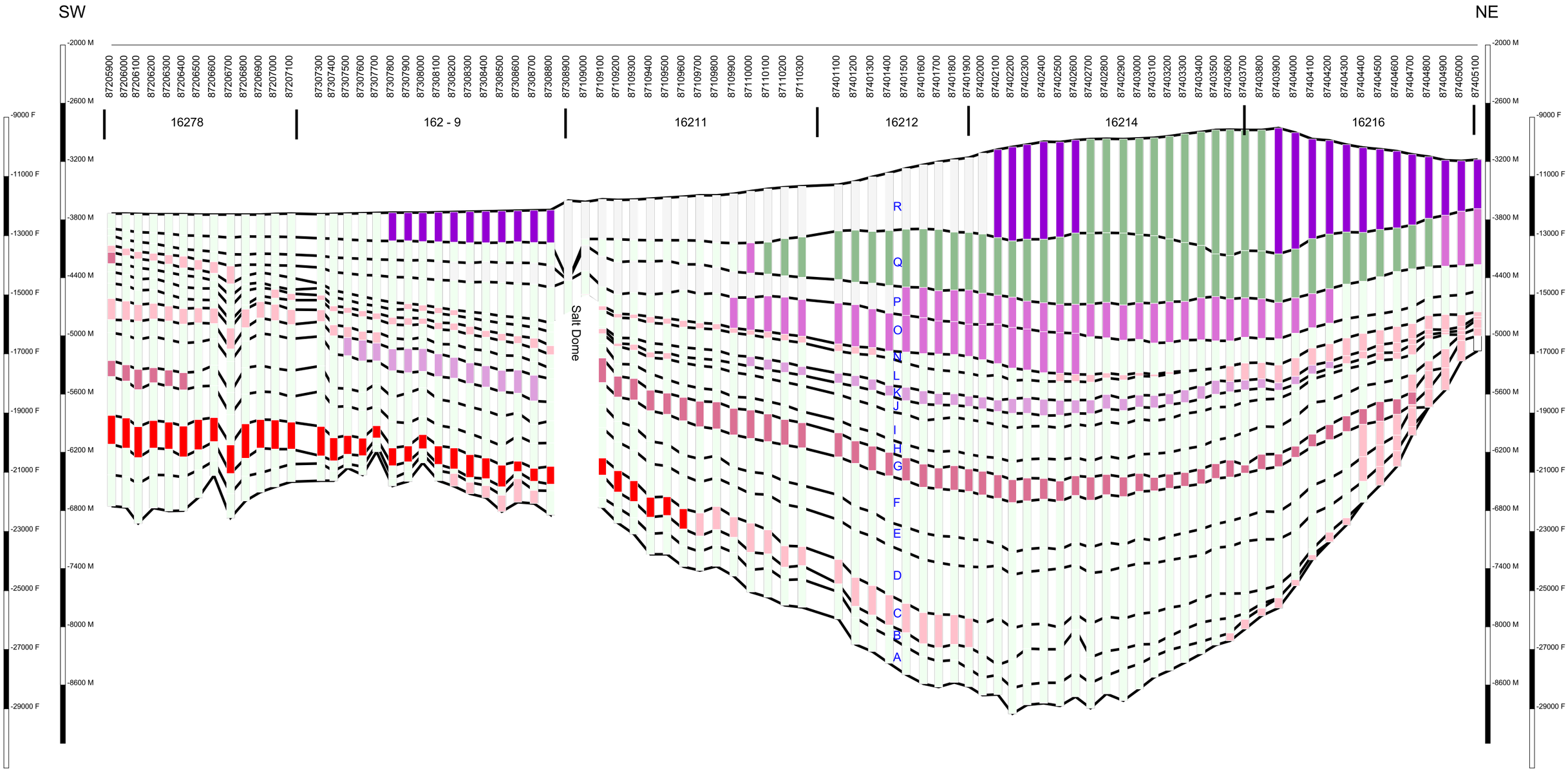
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

20 40 60 80 Miles

30 60 90 120 KM

CDeepESeq.eps

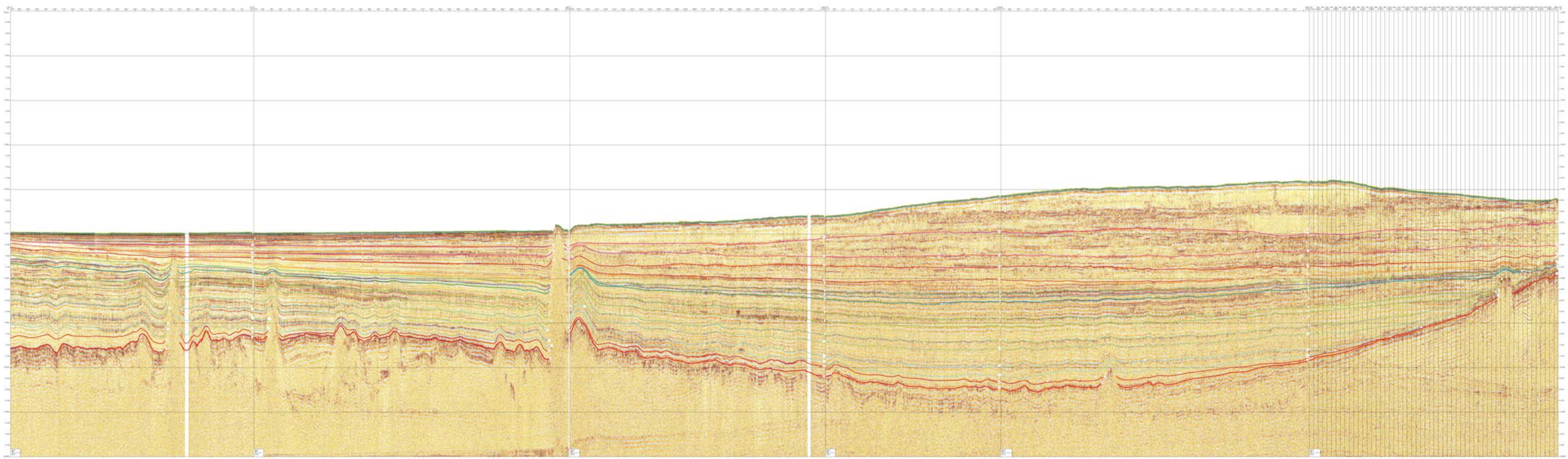
Central Deep Basin East (Seismic)
Facies Associations

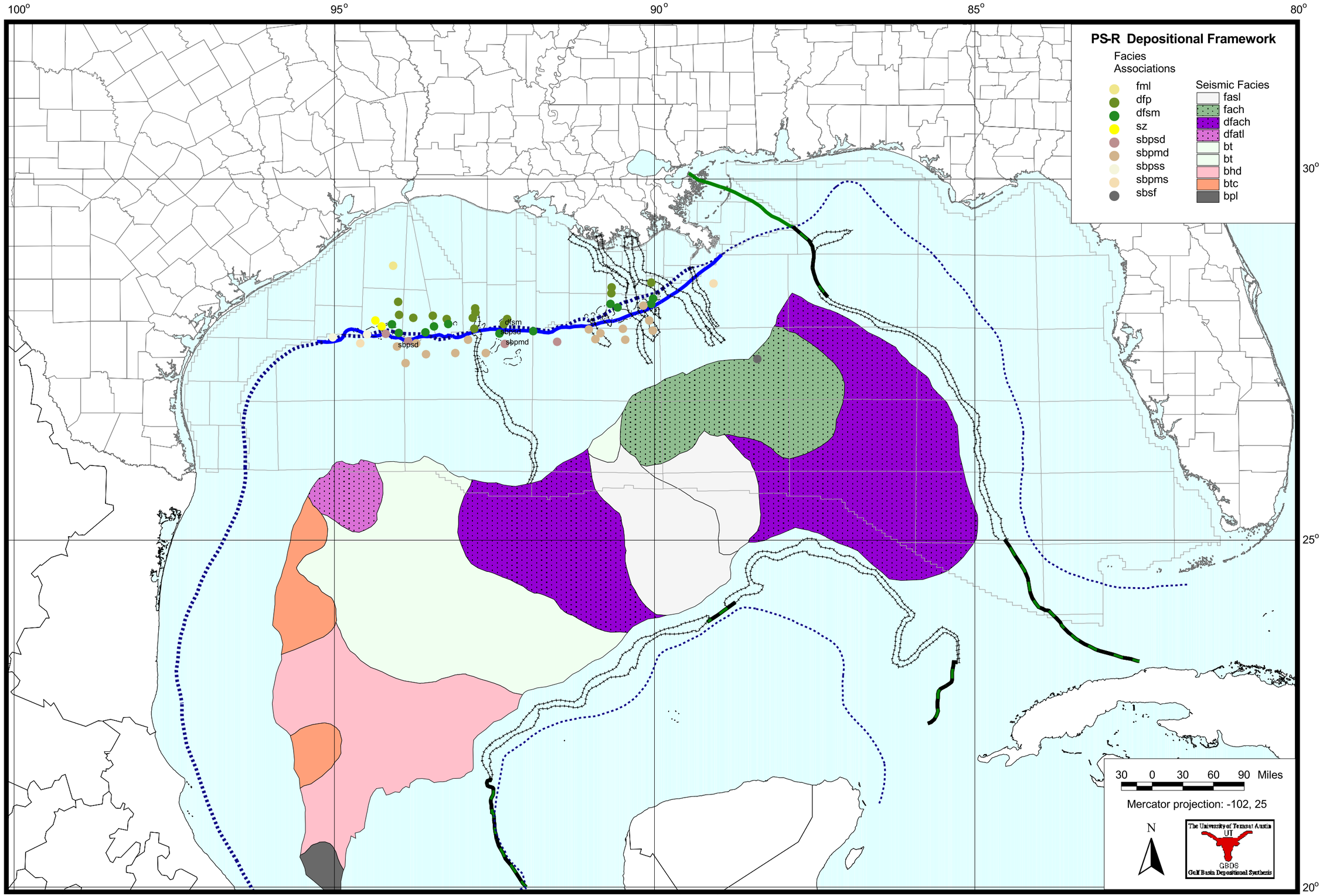


The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

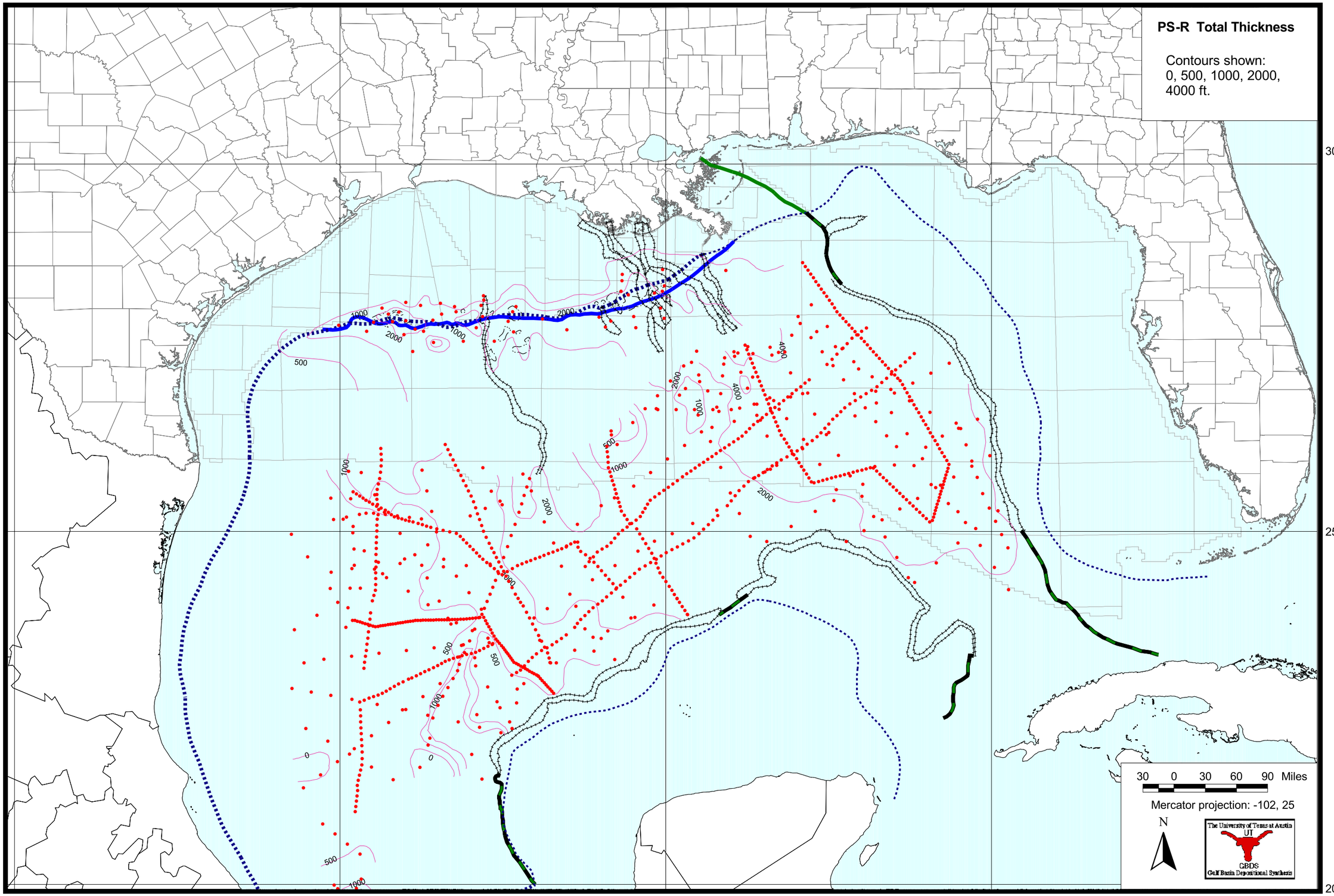
CDeepEDepo.eps

GBDS Phase 1
Central Deep Basin East
16-2-7 - 16-2-16

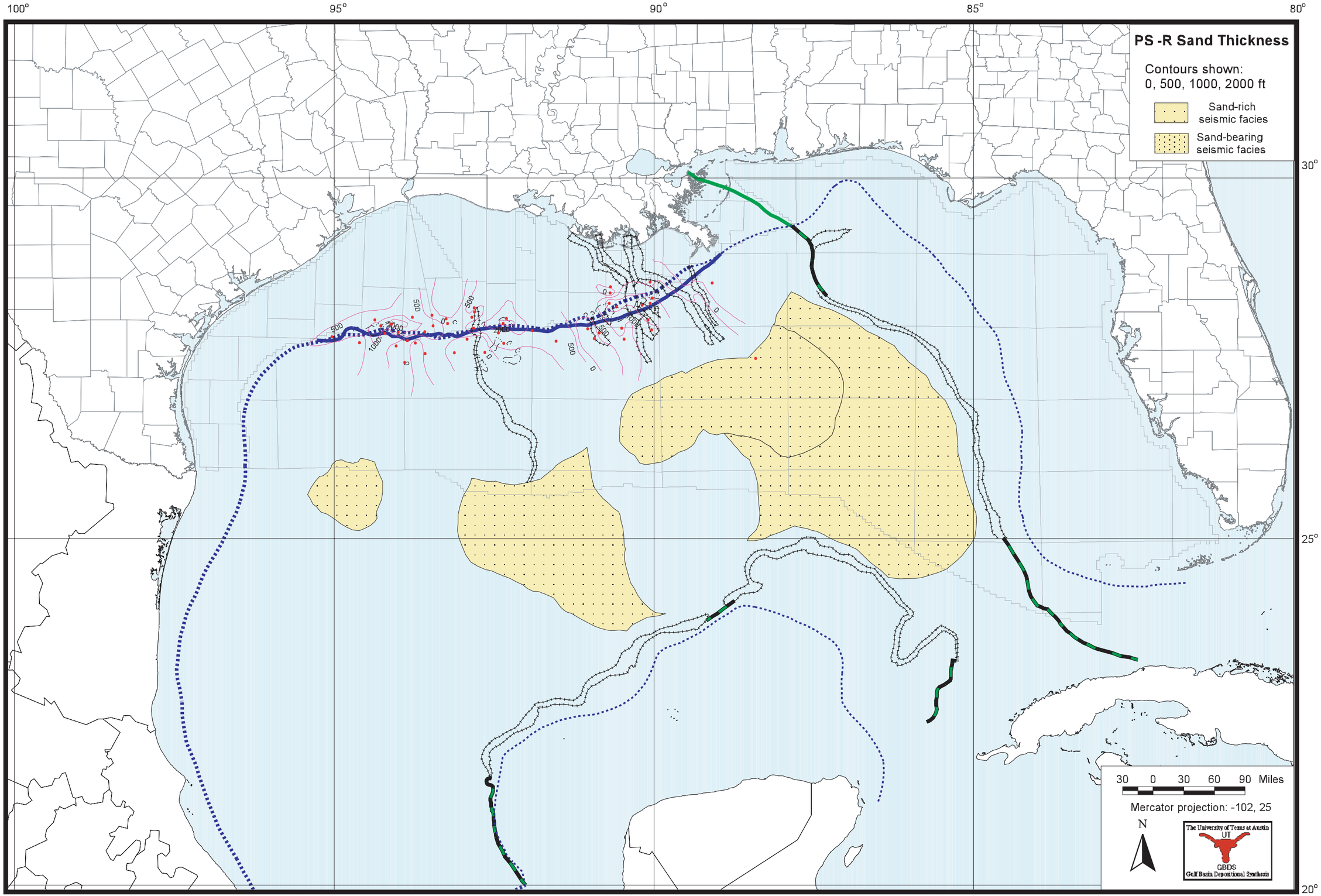



100°
95°
90°
85°
80°
30°
25°
20°
PS-R Depositional Framework
Facies Associations
fml
dfp
dfsm
sz
sbpsd
sbpmd
sbpss
sbpms
sbsf
Seismic Facies
fasl
fach
dfach
dfatl
bt
bt
bhd
btc
bpl
dfsm
sbpsd
sbpmd
sbpsd
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

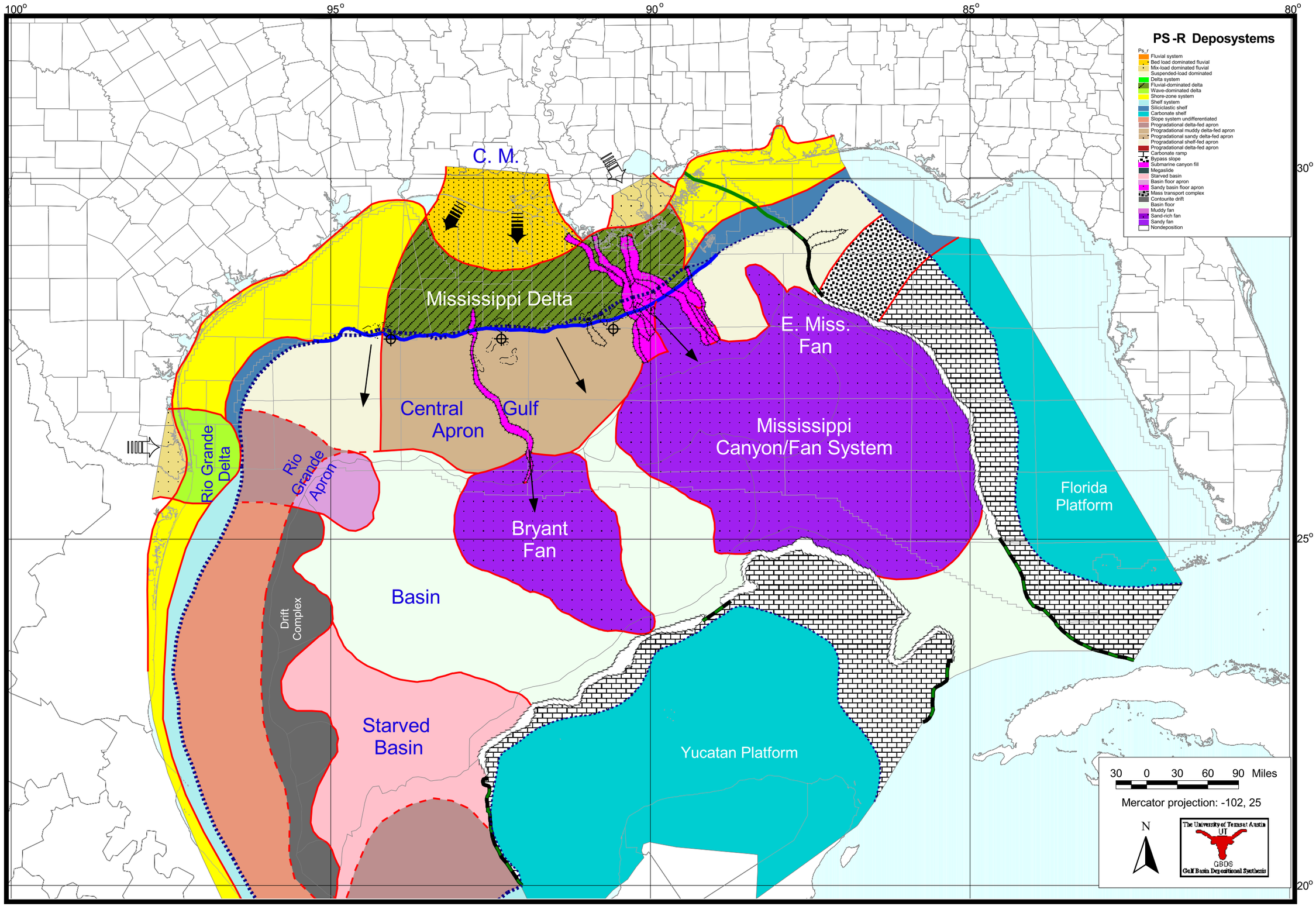
PS-RDepo.eps

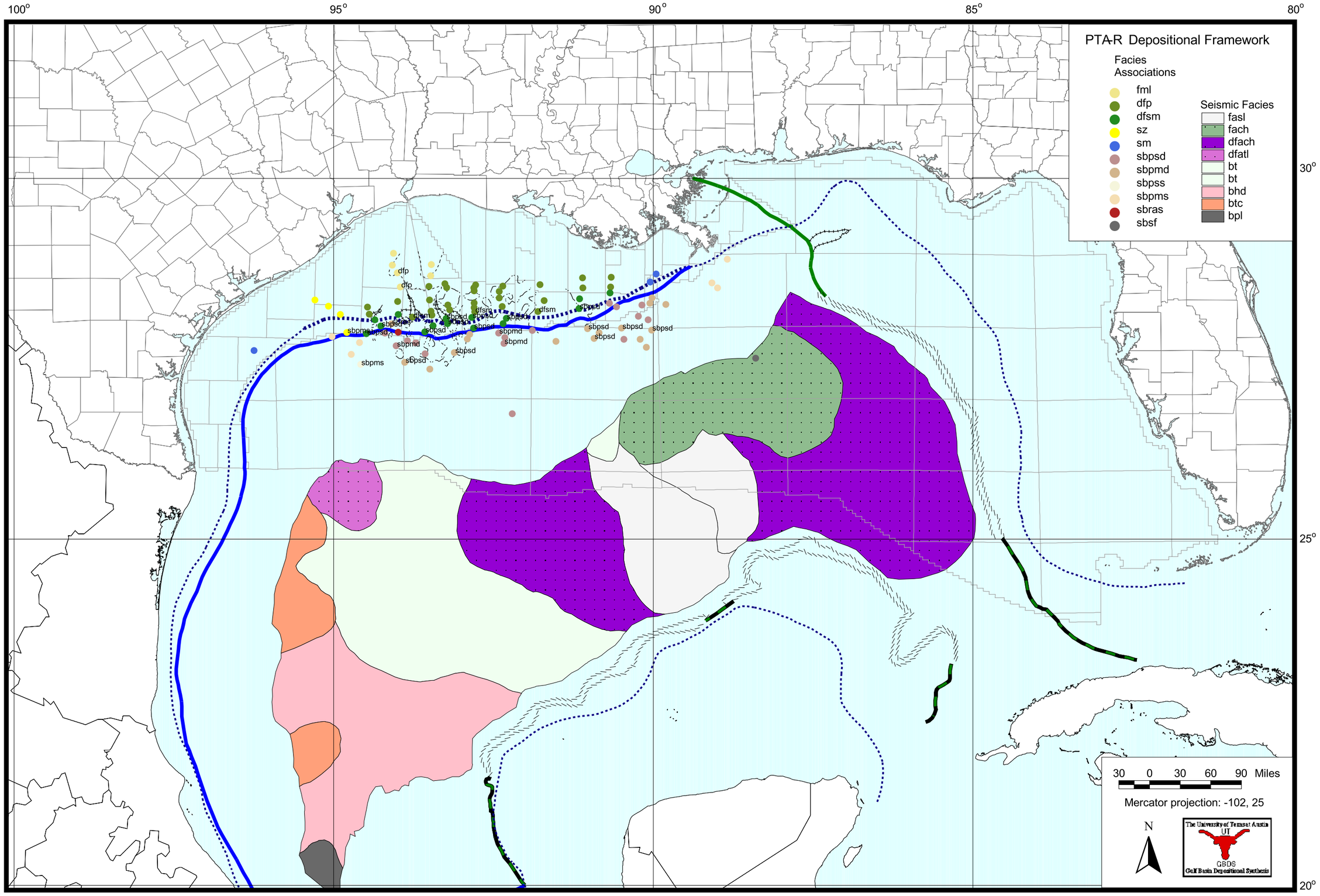

PS-R Total Thickness
Contours shown:
0, 500, 1000, 2000,
4000 ft.
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

PS-RUThk.eps

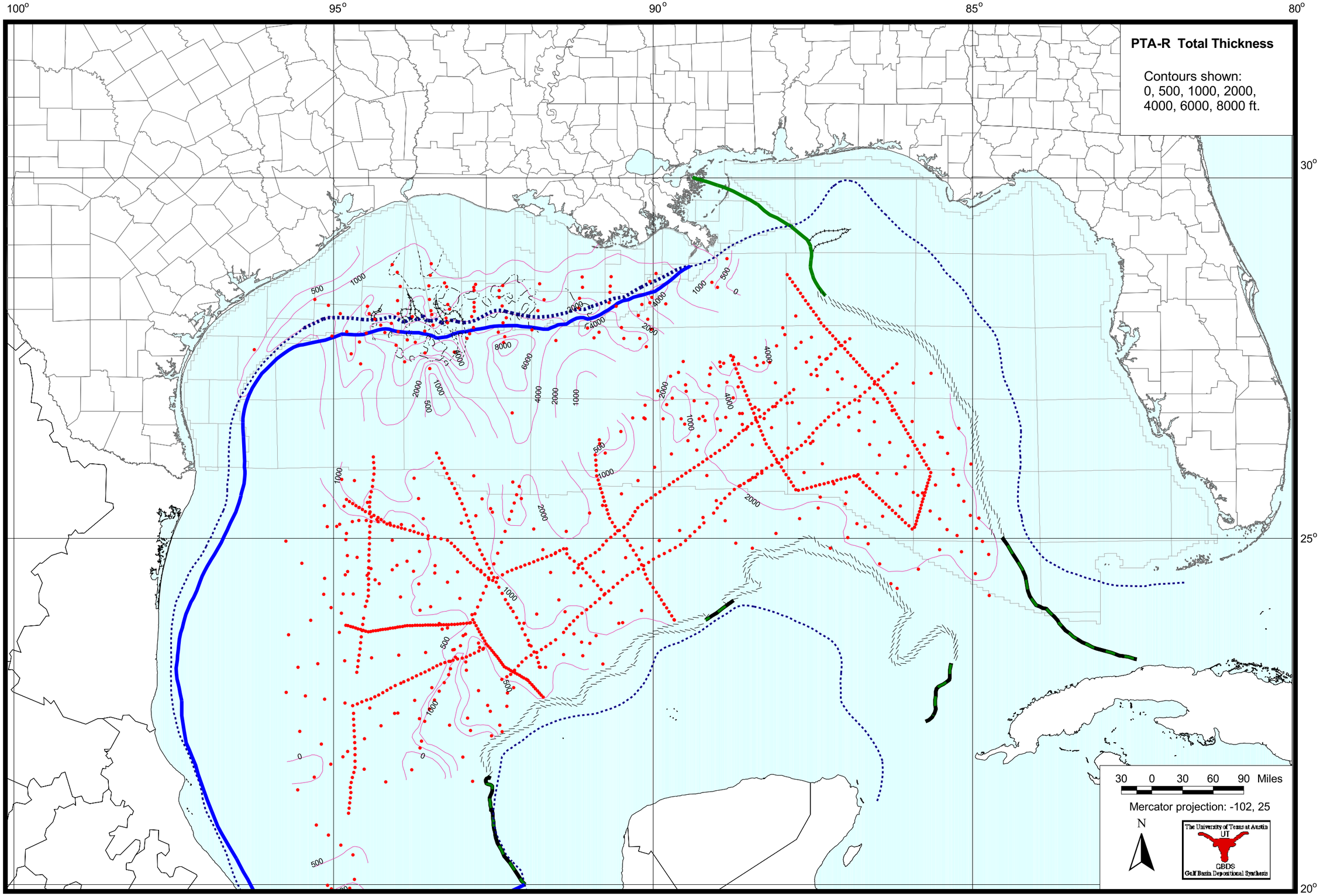


PS-RNSand.eps

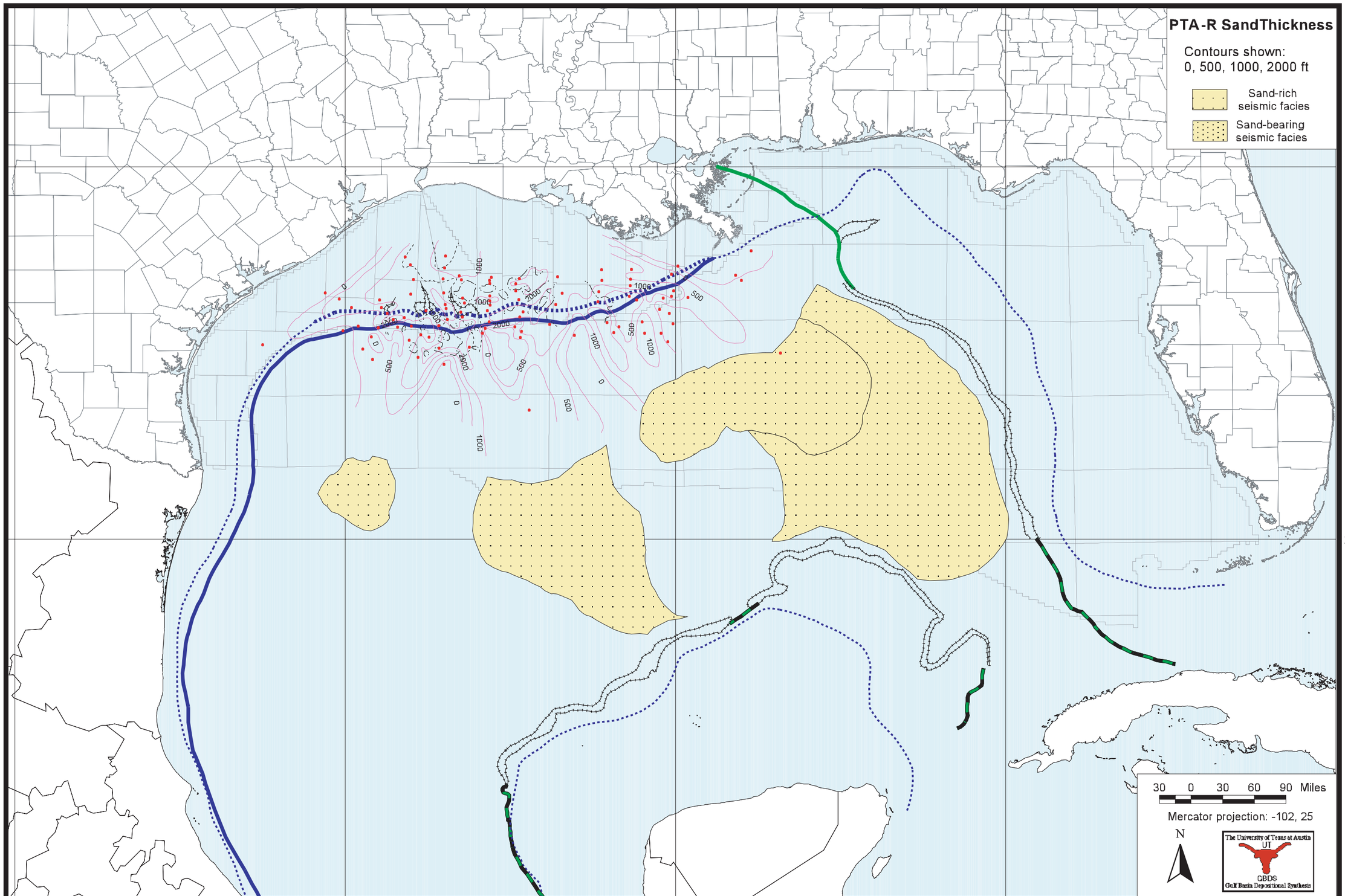

100°
95°
90°
85°
80°
30°
25°
20°
PS -R Deposystems
Ps_r
Fluvial system
Bed load dominated fluvial
Mix-load dominated fluvial
Suspended-load dominated
Delta system
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Shelf system
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Progradational delta-fed apron
Progradational muddy delta-fed apron
Progradational sandy delta-fed apron
Progradational shelf-fed apron
Progradational delta-fed apron
Carbonate ramp
Bypass slope
Submarine canyon fill
Megaslide
Starved basin
Basin floor apron
Sandy basin floor apron
Mass transport complex
Contourite drift
Basin floor
Muddy fan
Sand-rich fan
Sandy fan
Nondeposition
C. M.
Mississippi Delta
E. Miss. Fan
Central Gulf Apron
Mississippi Canyon/Fan System
Rio Grande Delta
Rio Grande Apron
Bryant Fan
Florida Platform
Drift Complex
Basin
Starved Basin
Yucatan Platform
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis



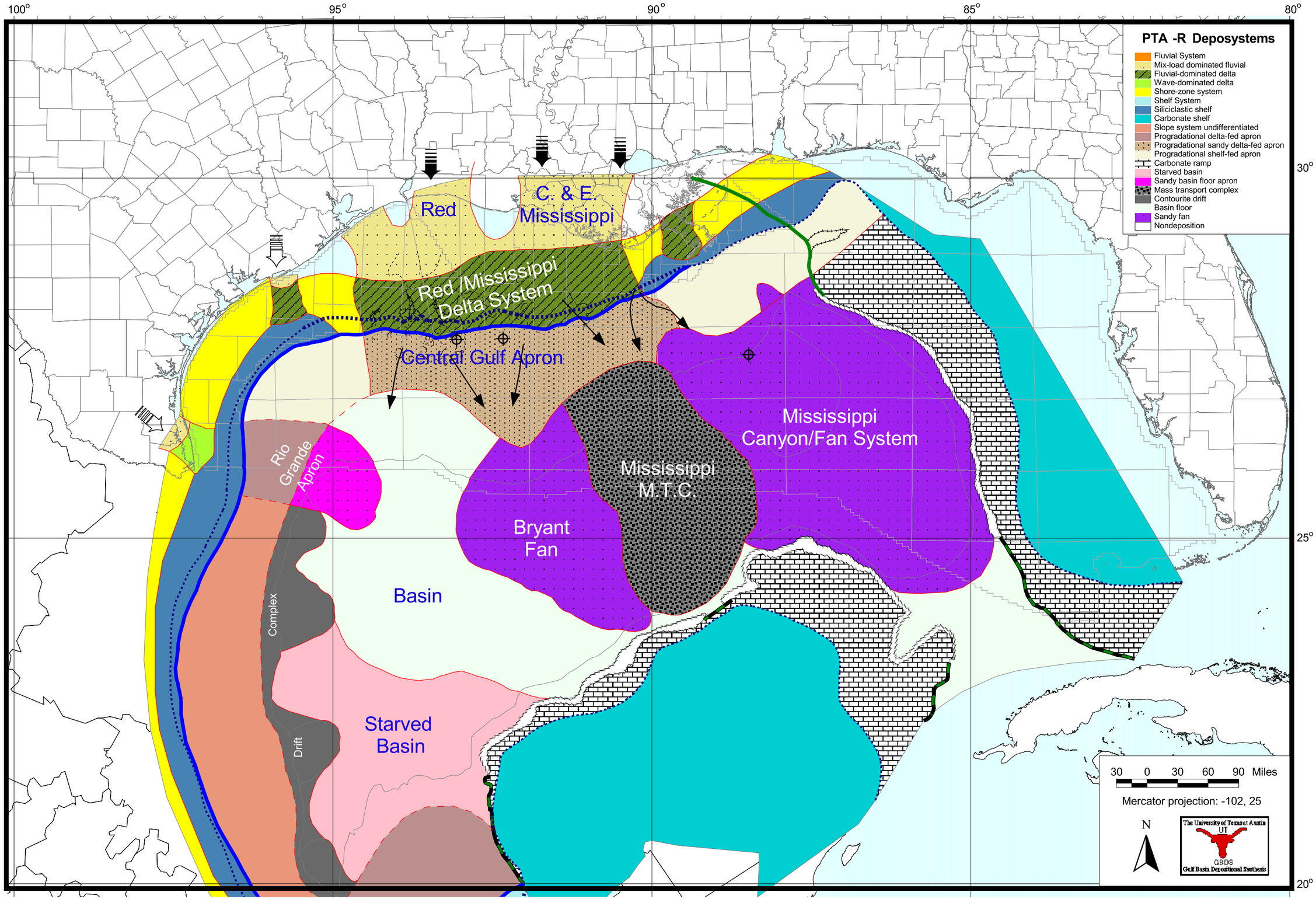
PTA-RDepo.eps

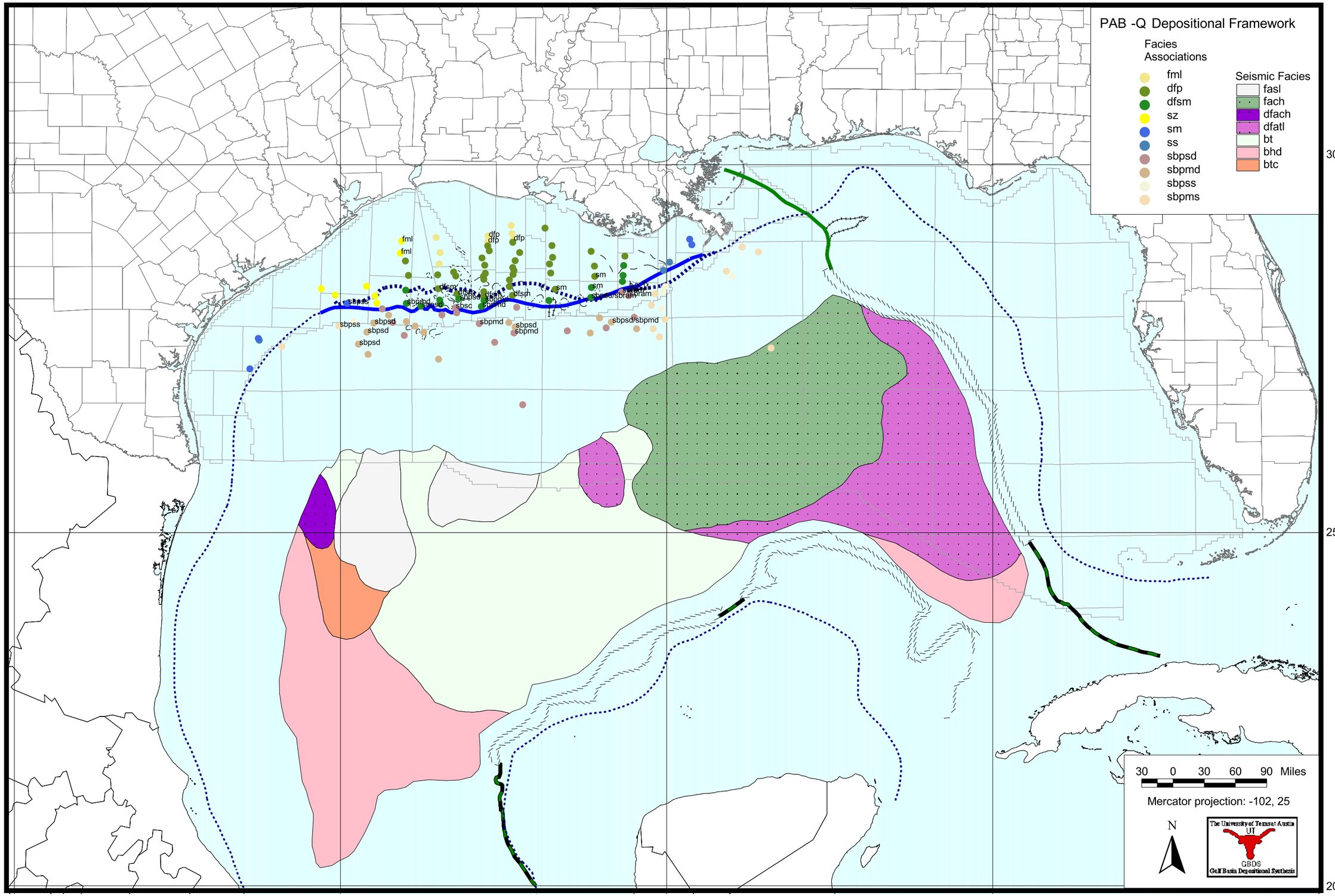


PTA-RUThk.eps

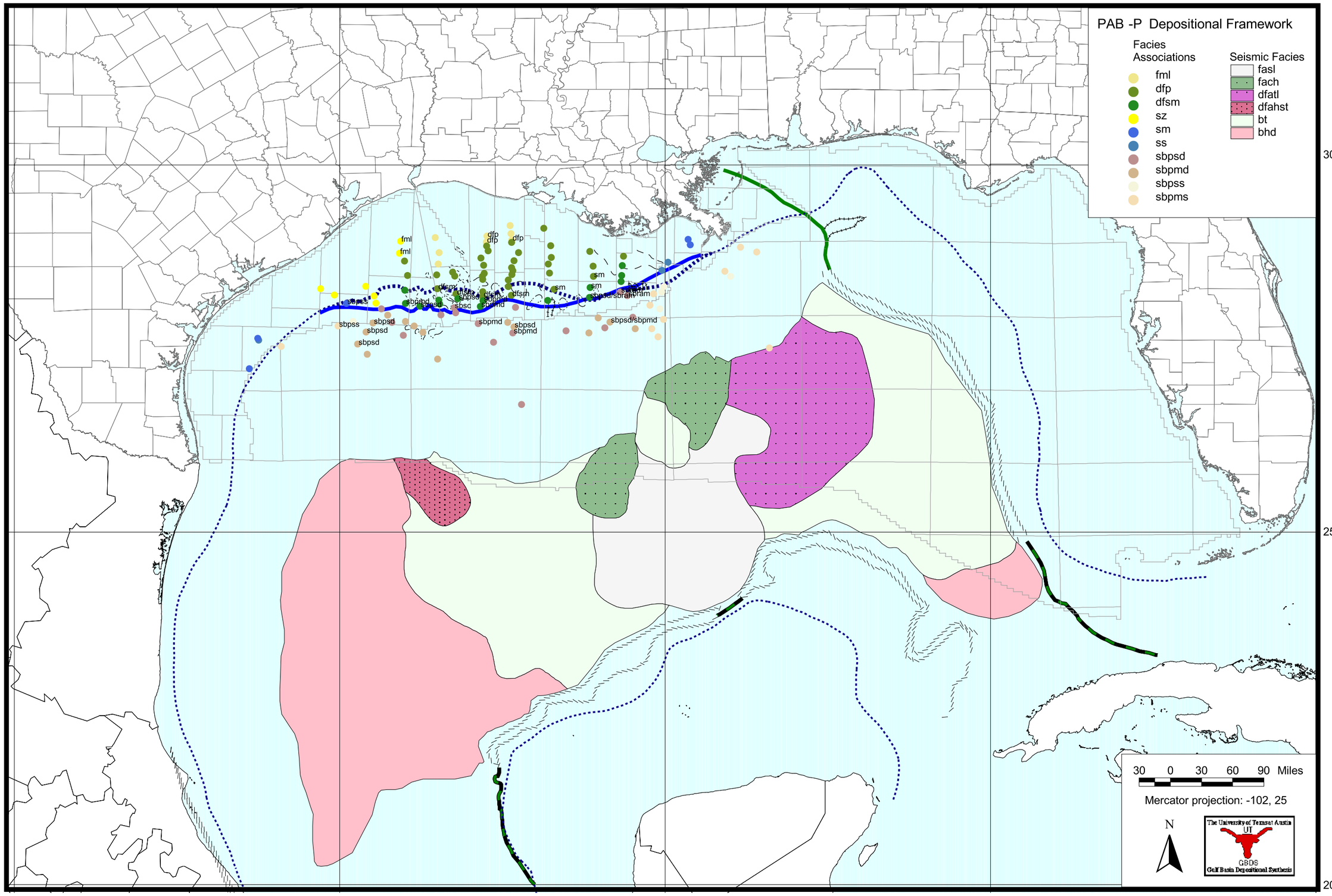


PTA-RNSand.eps

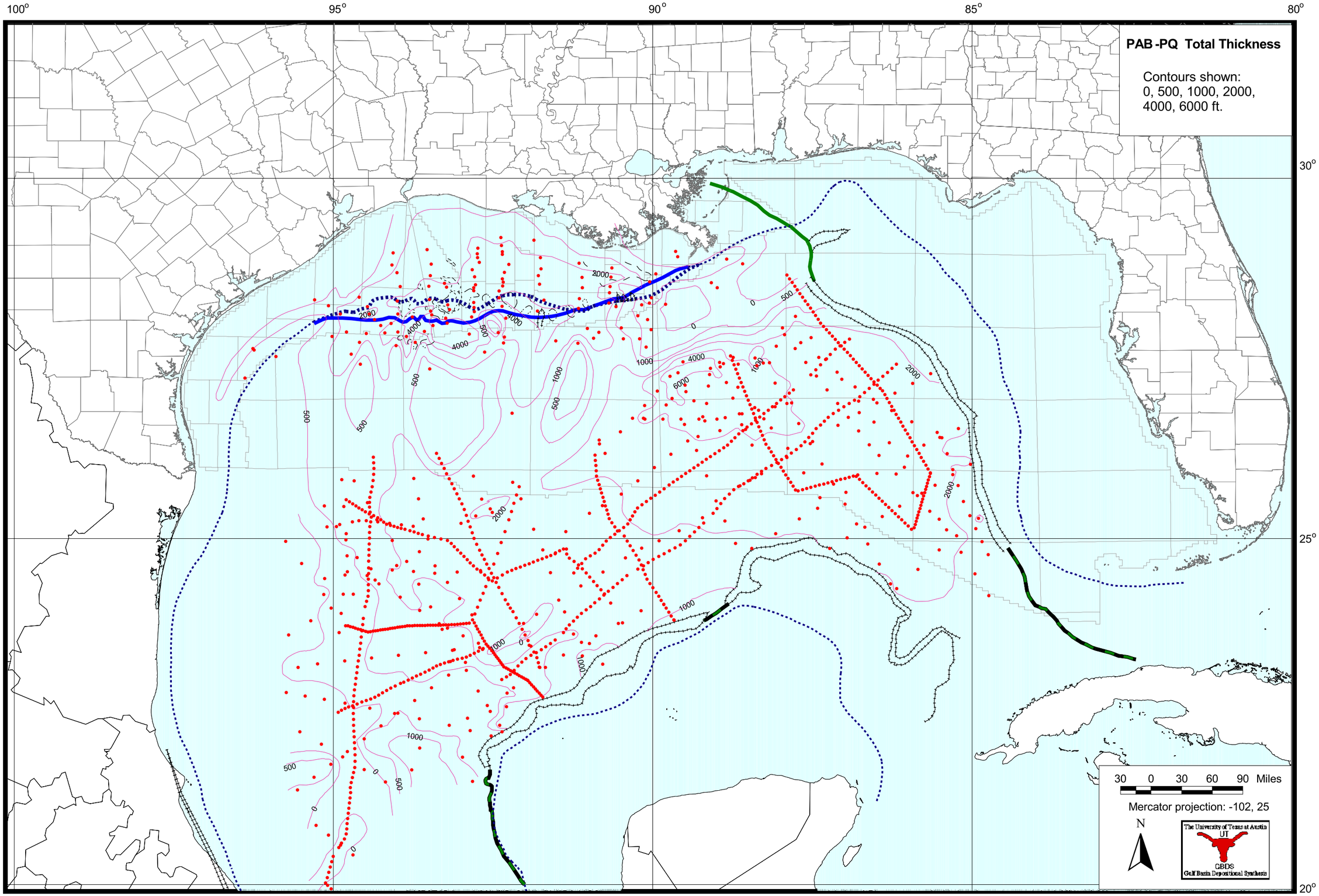

100°
95°
90°
85°
80°
30°
25°
20°
PTA -R Deposystems
Fluvial System
Mix-load dominated fluvial
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Shelf System
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Progradational delta-fed apron
Progradational sandy delta-fed apron
Progradational shelf-fed apron
Carbonate ramp
Starved basin
Sandy basin floor apron
Mass transport complex
Contourite drift
Basin floor
Sandy fan
Nondeposition
Red
C. & E. Mississippi
Red /Mississippi Delta System
Central Gulf Apron
Rio Grande Apron
Complex
Drift
Basin
Starved Basin
Bryant Fan
Mississippi M.T.C.
Mississippi Canyon/Fan System
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis



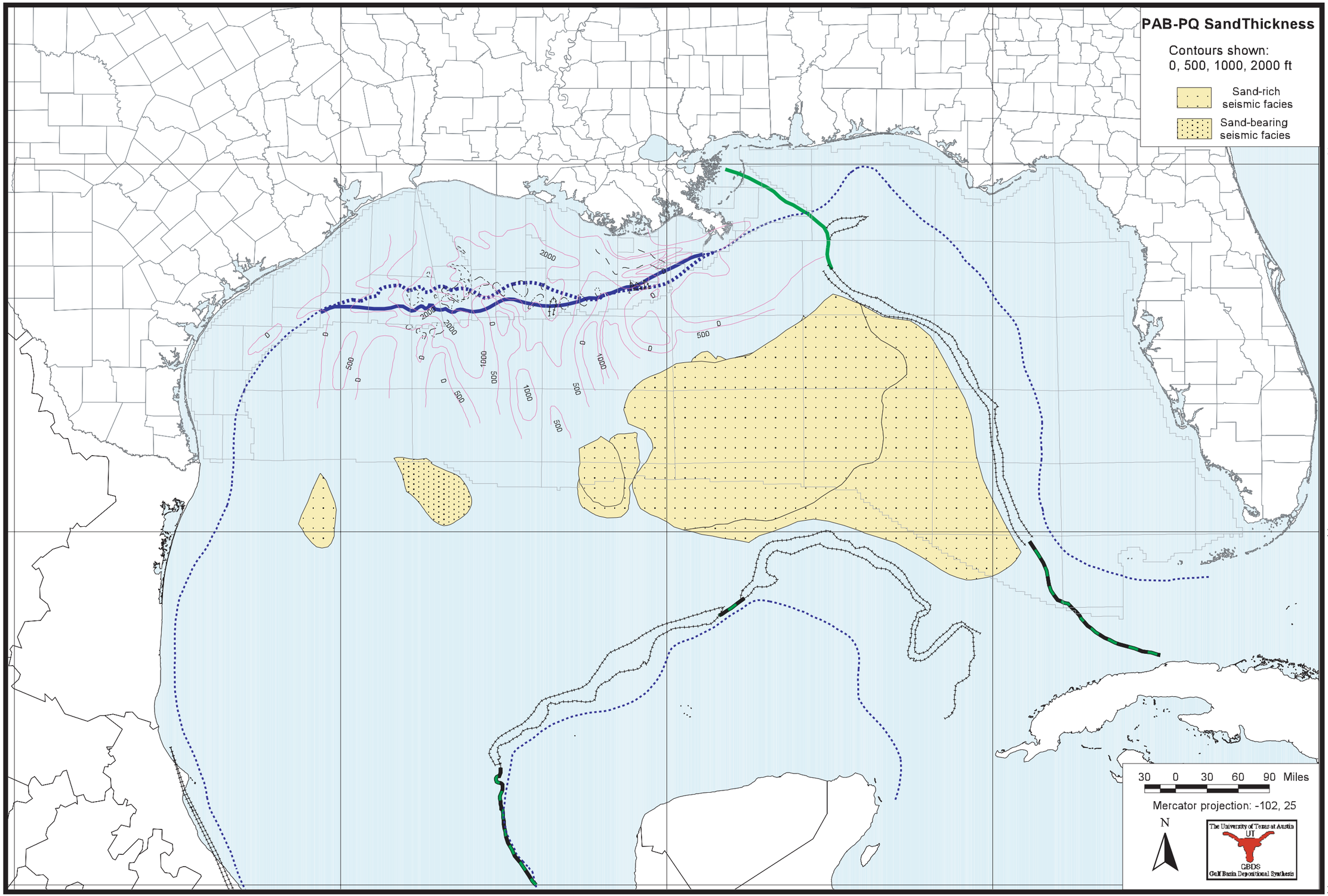
PAB-QDepo.eps



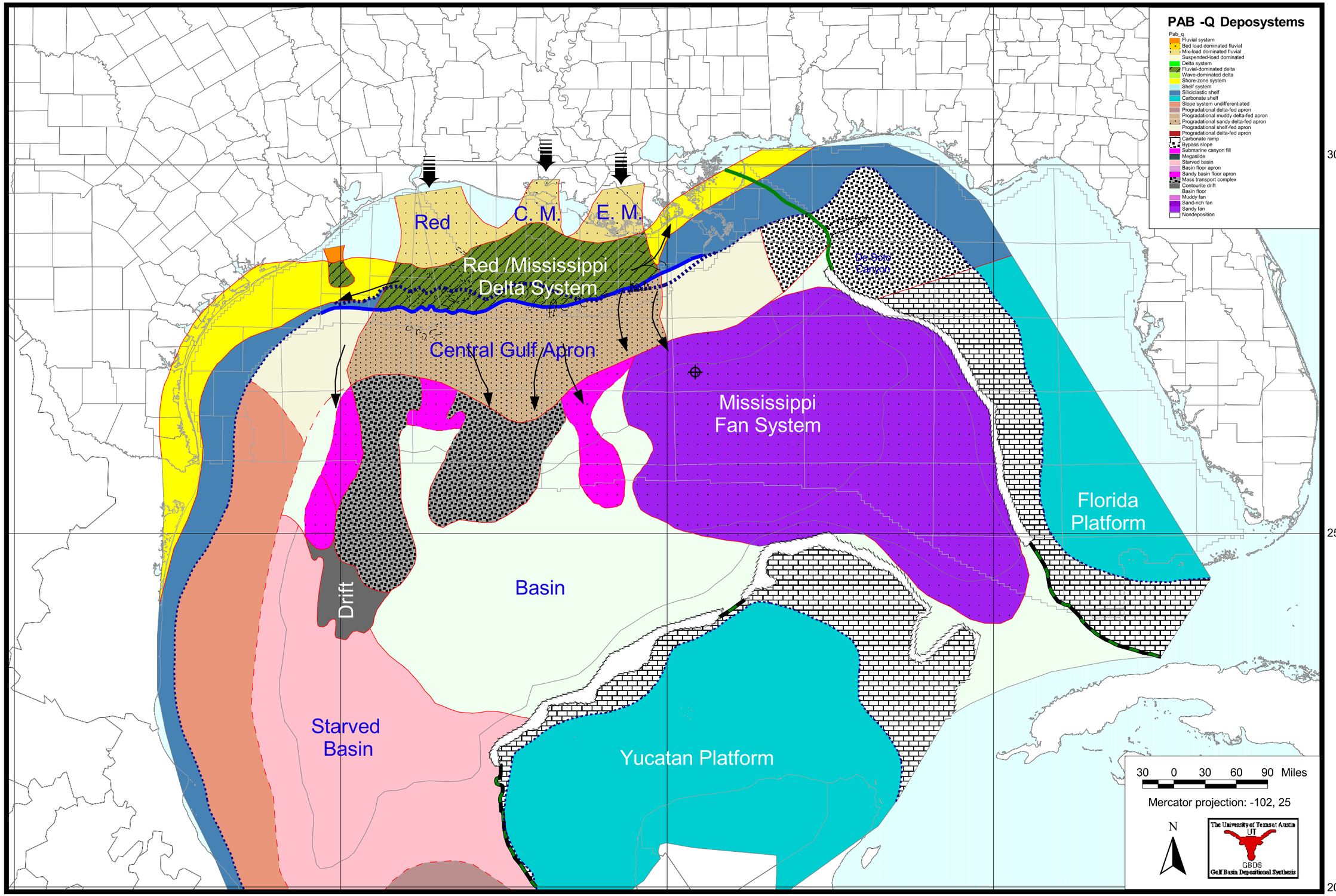
PAB-PDepo.eps

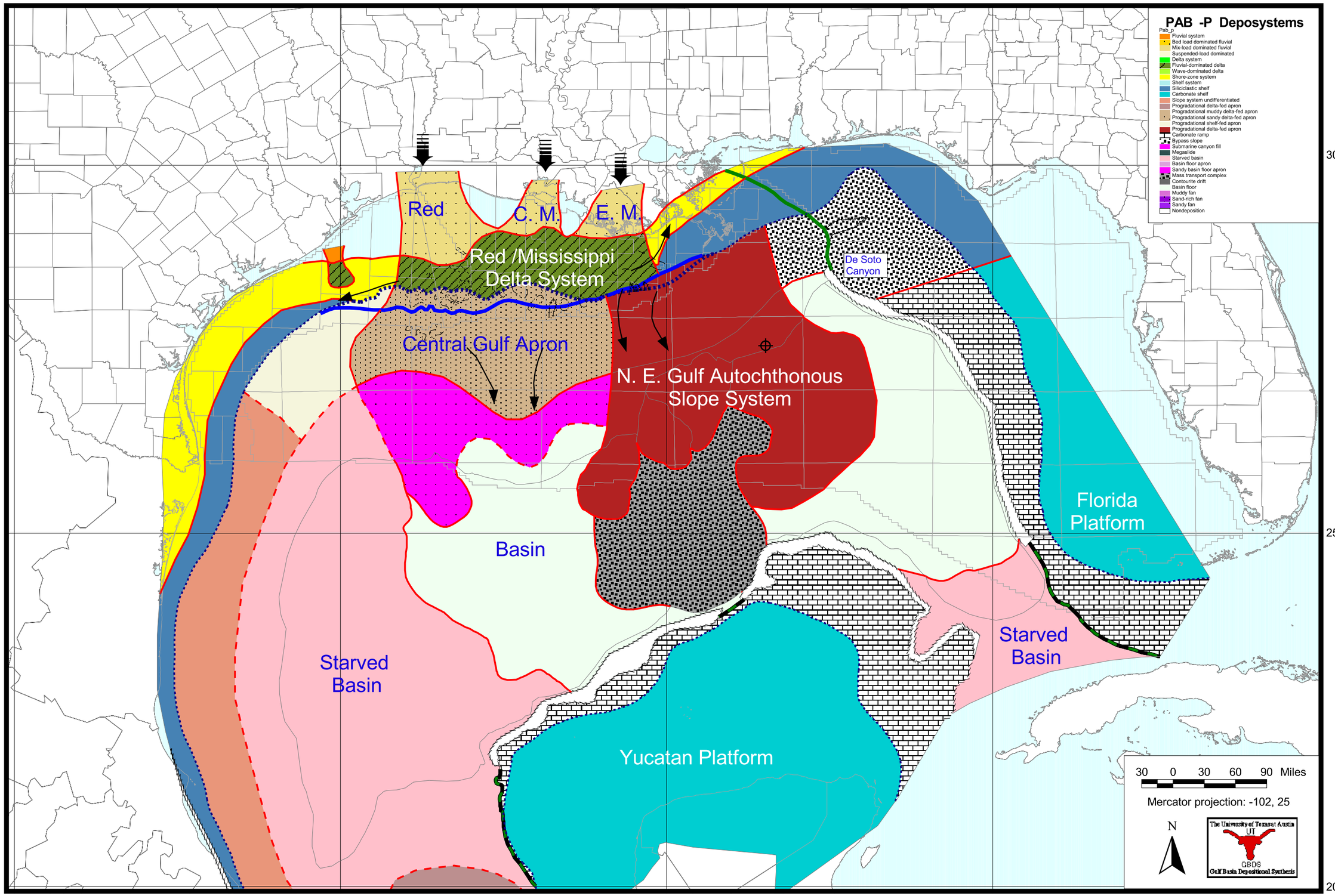


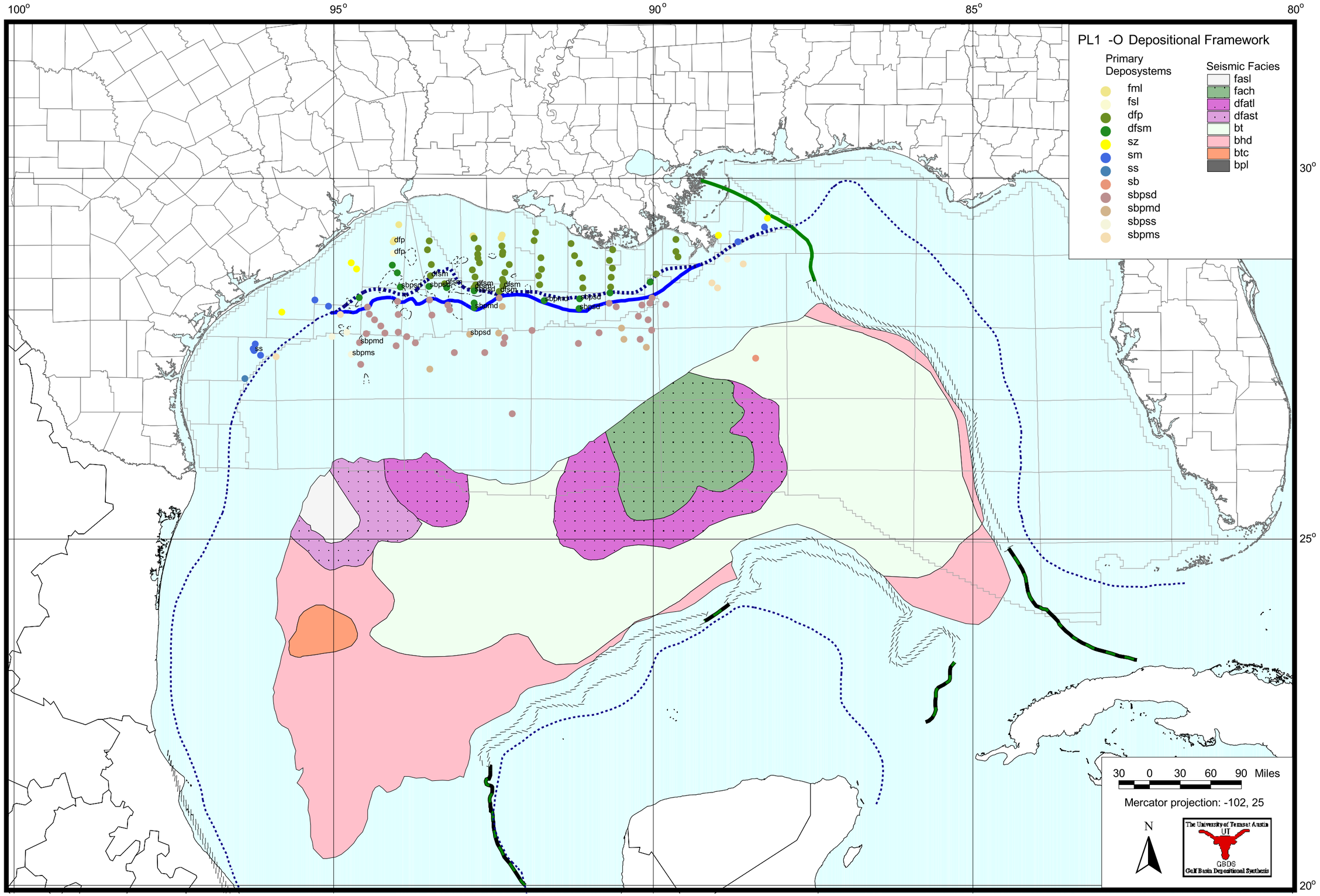
PAB-PQUThk.eps



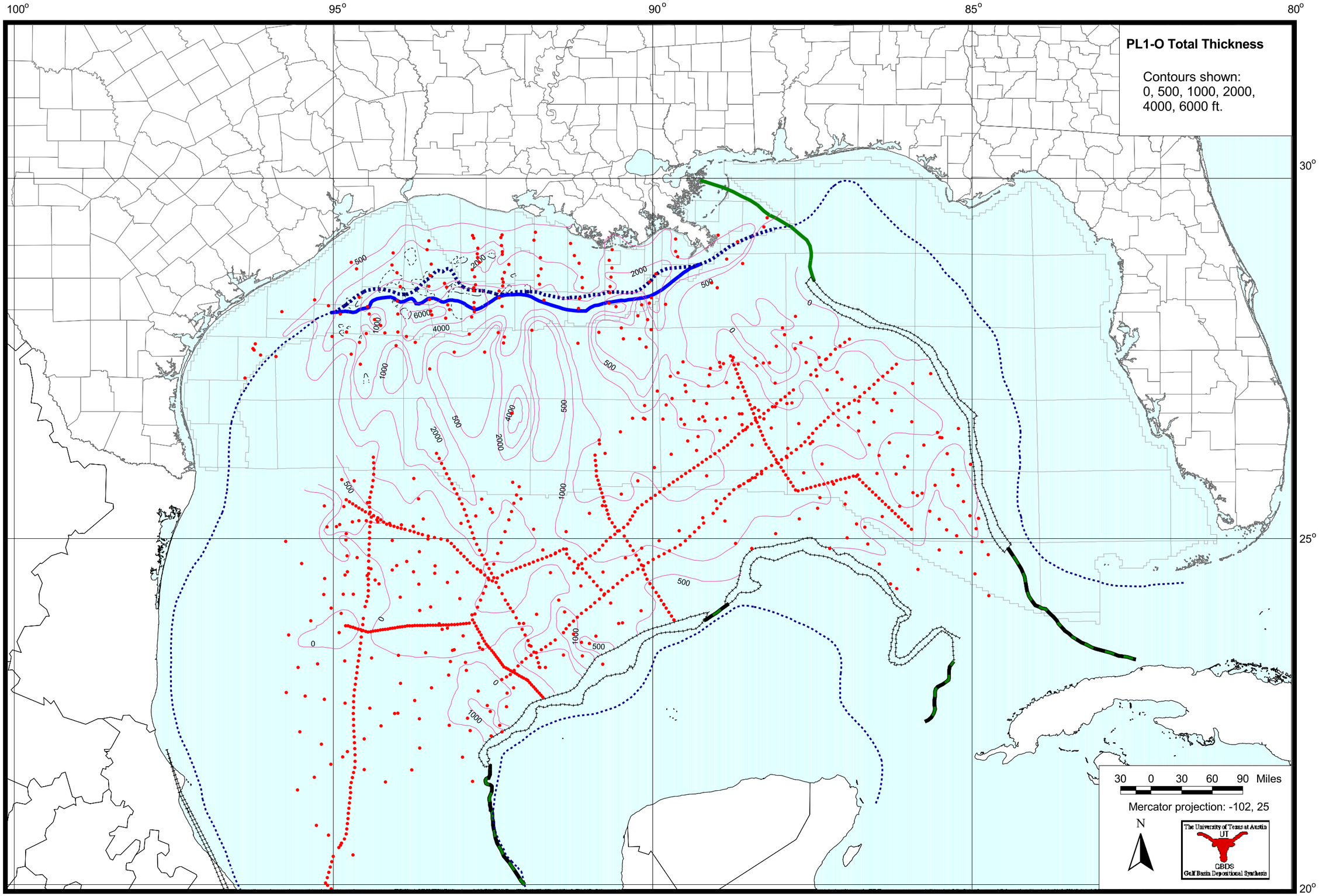
PAB-PQNSand.eps


100°
95°
90°
85°
80°
30°
25°
20°
PAB -Q Deposystems
Pab_q
Fluvial system
Bed load dominated fluvial
Mix-load dominated fluvial
Suspended-load dominated
Delta system
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Shelf system
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Progradational delta-fed apron
Progradational muddy delta-fed apron
Progradational sandy delta-fed apron
Progradational shelf-fed apron
Progradational delta-fed apron
Carbonate ramp
Bypass slope
Submarine canyon fill
Megaslide
Starved basin
Basin floor apron
Sandy basin floor apron
Mass transport complex
Contourite drift
Basin floor
Muddy fan
Sand-rich fan
Sandy fan
Nondeposition
Red
C. M.
E. M.
Red /Mississippi
Delta System
De Soto
Canyon
Central Gulf Apron
Mississippi
Fan System
Florida
Platform
Drift
Basin
Starved
Basin
Yucatan Platform
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

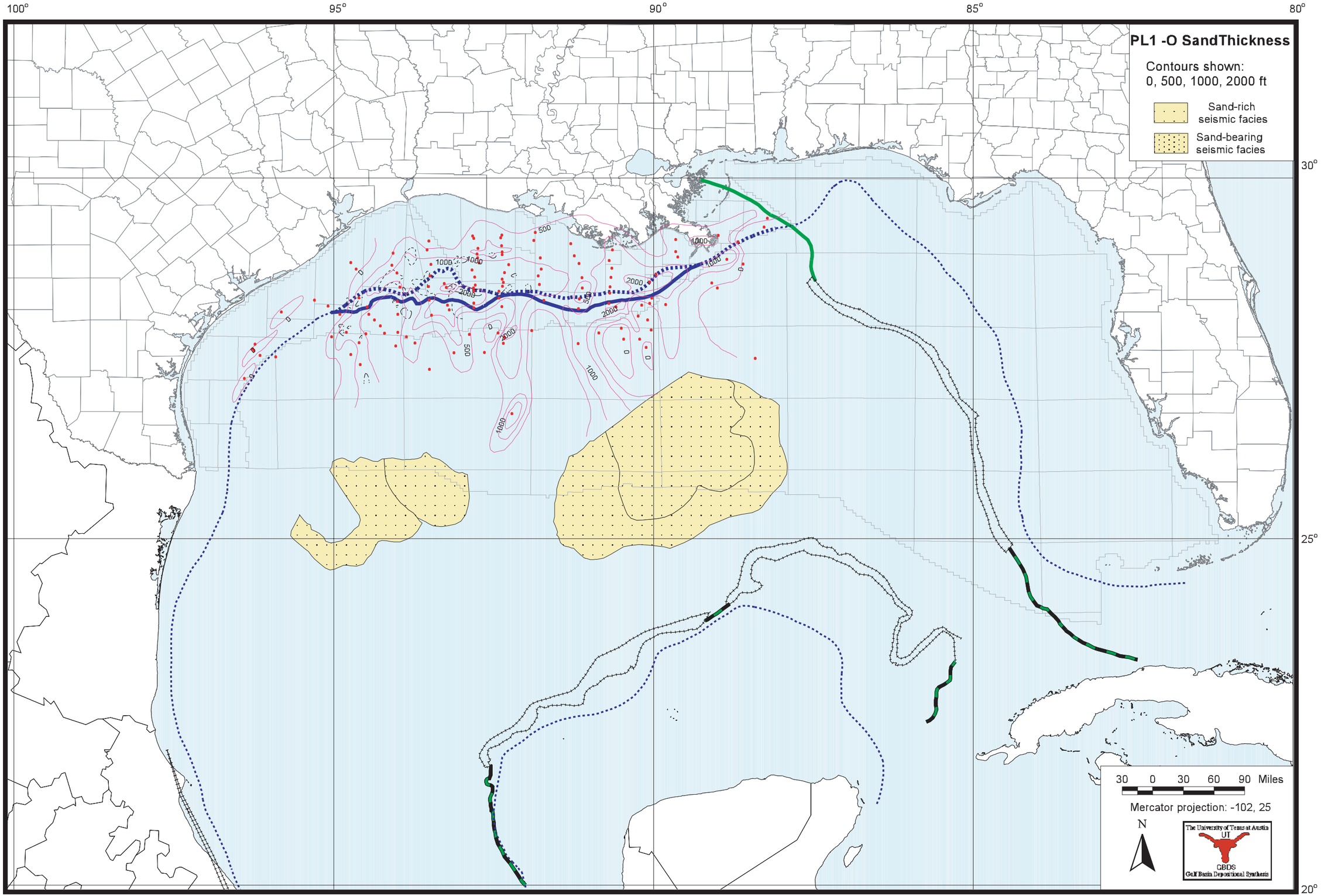

100°
95°
90°
85°
80°
30°
25°
20°
PAB -P Deposystems
Pab_p
Fluvial system
Bed load dominated fluvial
Mix-load dominated fluvial
Suspended-load dominated
Delta system
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Shelf system
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Progradational delta-fed apron
Progradational muddy delta-fed apron
Progradational sandy delta-fed apron
Progradational shelf-fed apron
Progradational delta-fed apron
Carbonate ramp
Bypass slope
Submarine canyon fill
Megaslide
Starved basin
Basin floor apron
Sandy basin floor apron
Mass transport complex
Contourite drift
Basin floor
Muddy fan
Sand-rich fan
Sandy fan
Nondeposition
Red
C. M.
E. M.
Red /Mississippi
Delta System
De Soto
Canyon
Central Gulf Apron
N. E. Gulf Autochthonous
Slope System
Florida
Platform
Basin
Starved
Basin
Starved
Basin
Yucatan Platform
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis



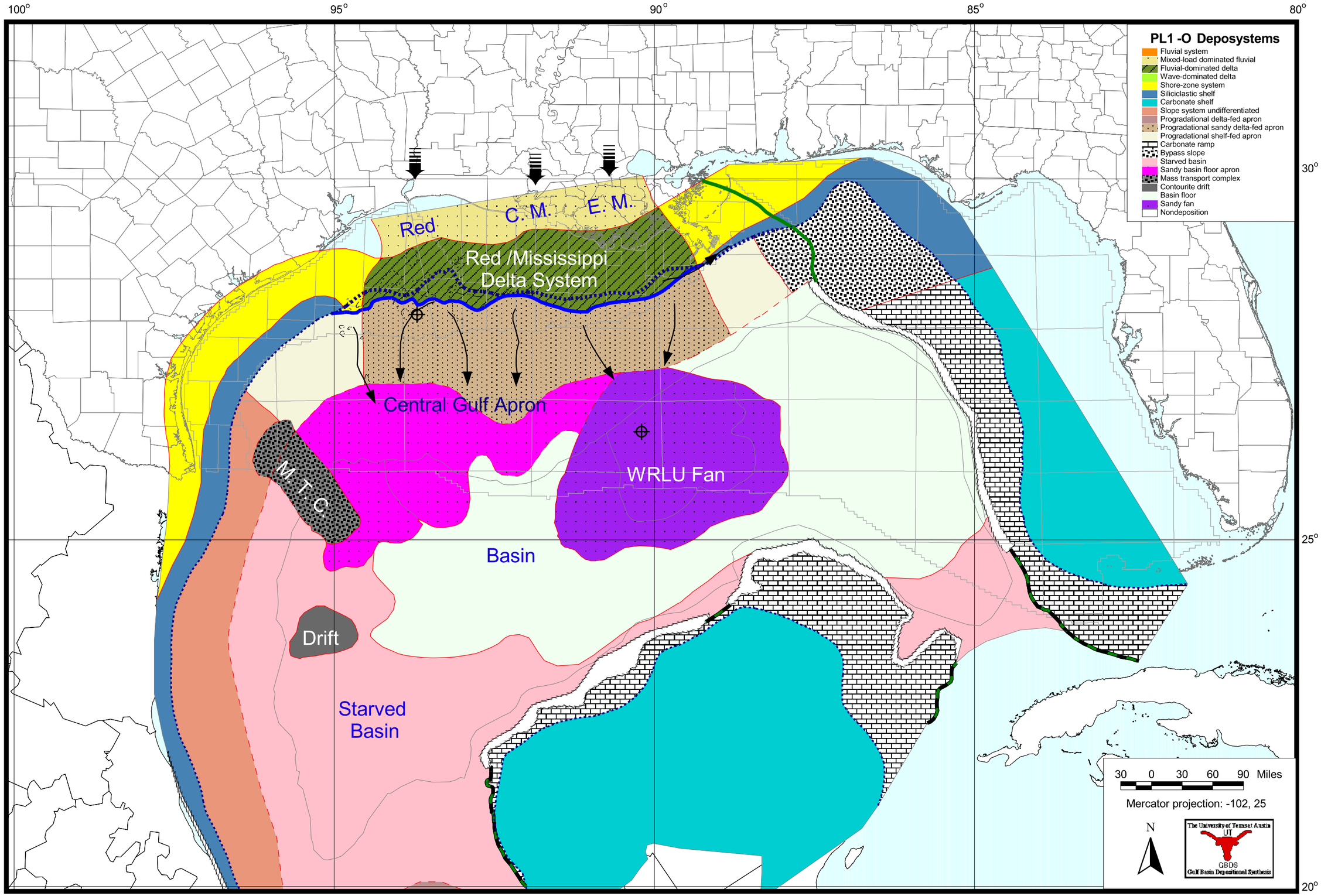
PL1-ODepo.eps



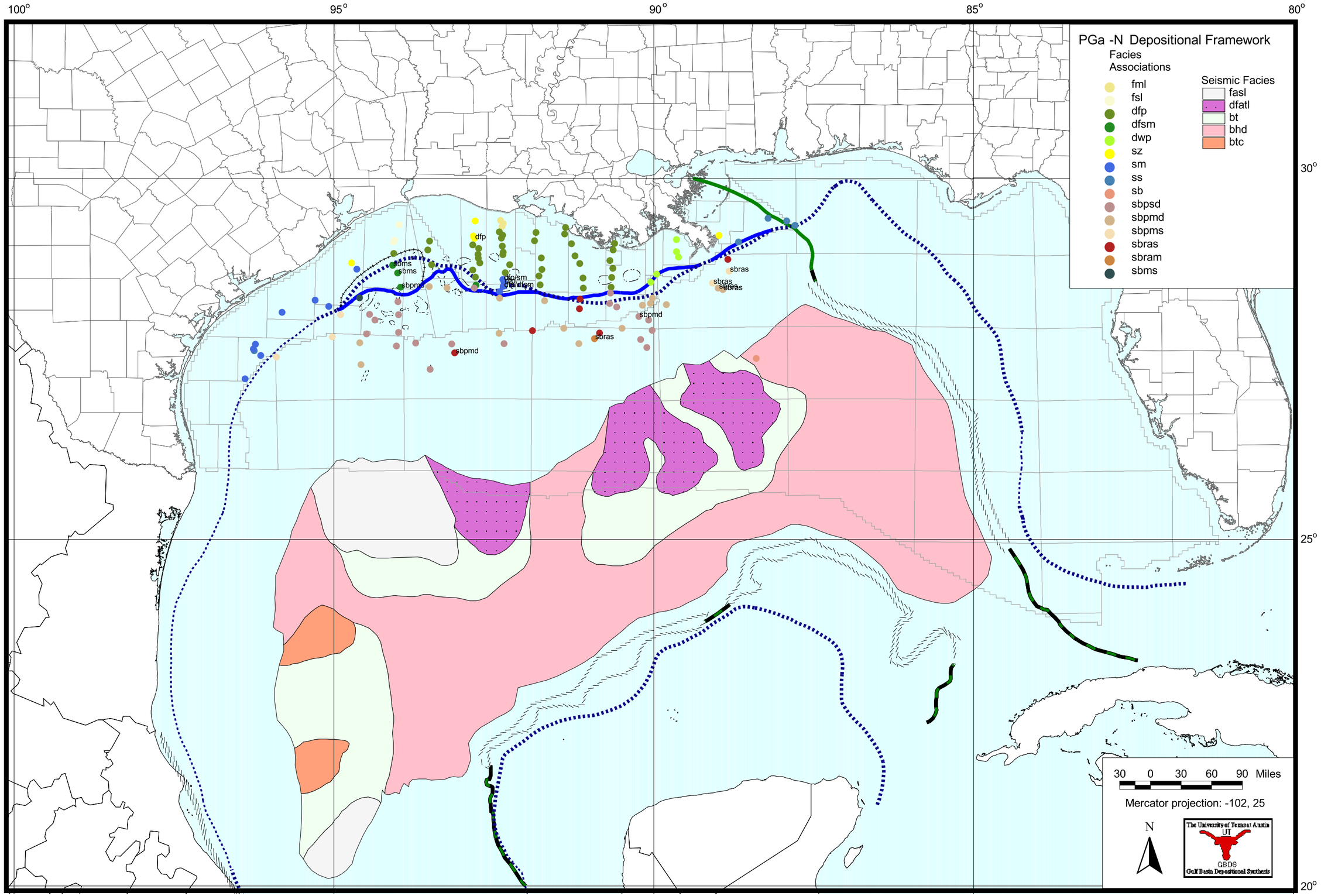
PL1-OUThk.eps



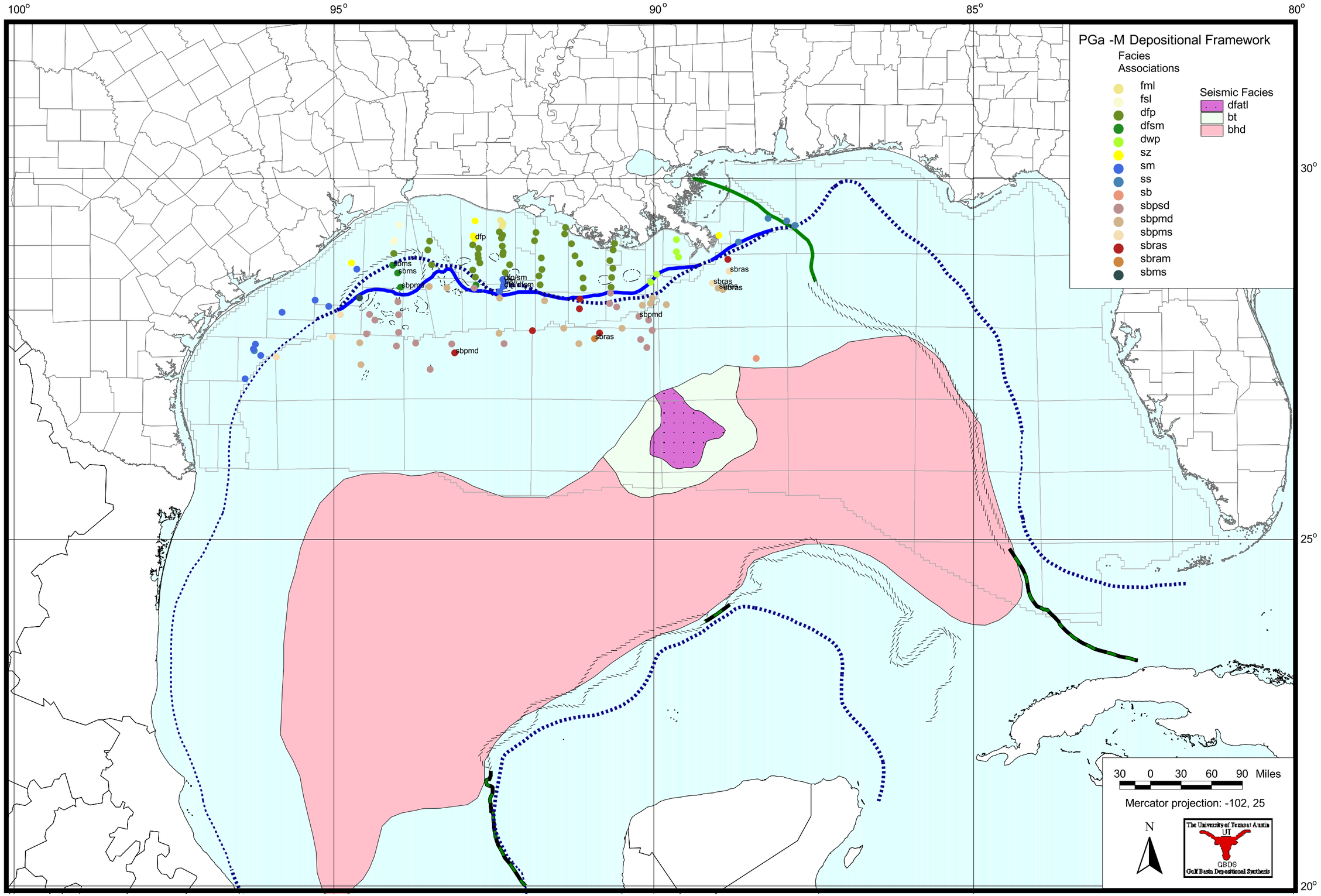
PL1-ONSand.eps



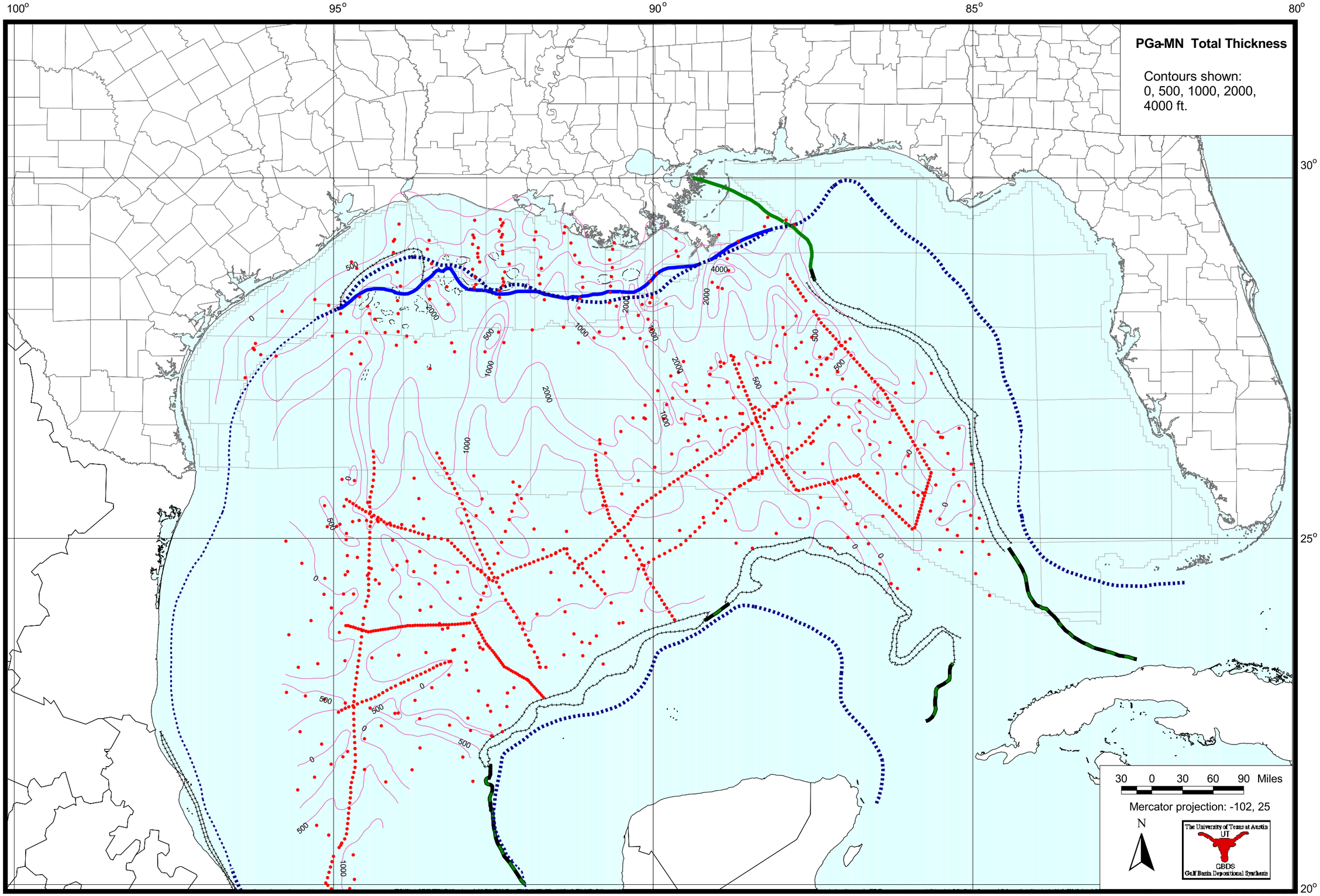
42. Deposystems, features, and paleogeography of the Lenticulina 1 (PL1-O) depisode.



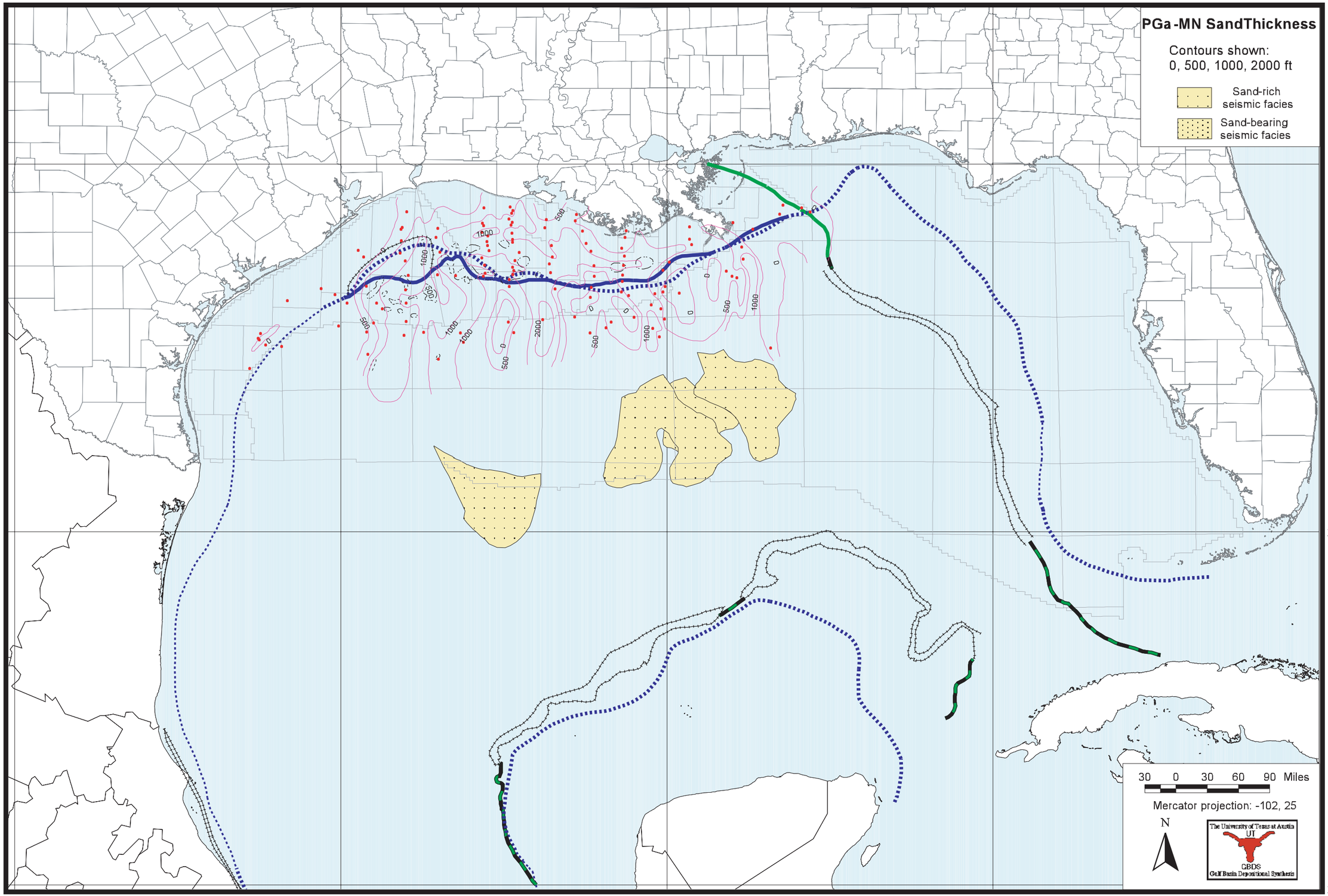
PGa-NDepo.eps



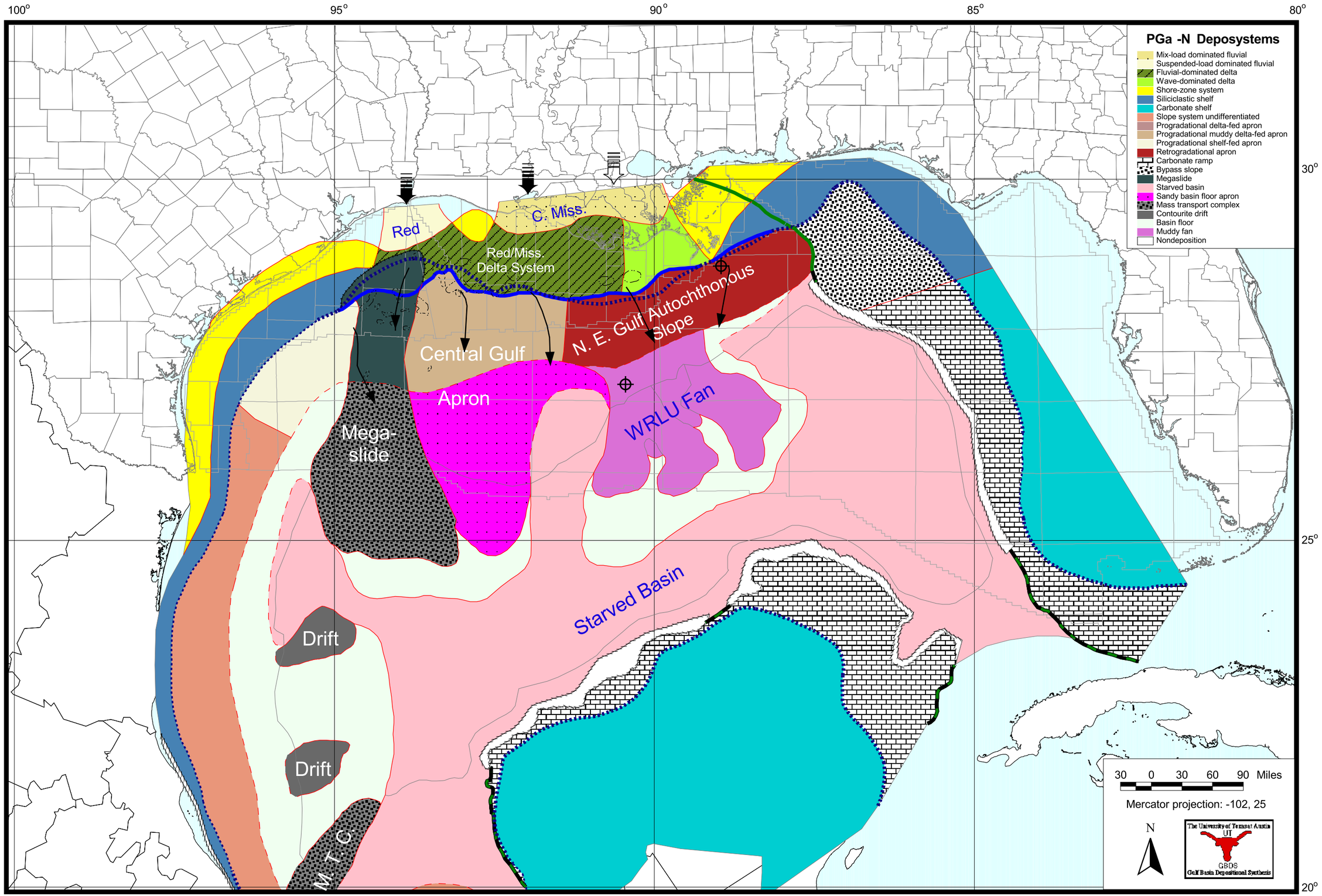
PGa-MDepo.eps



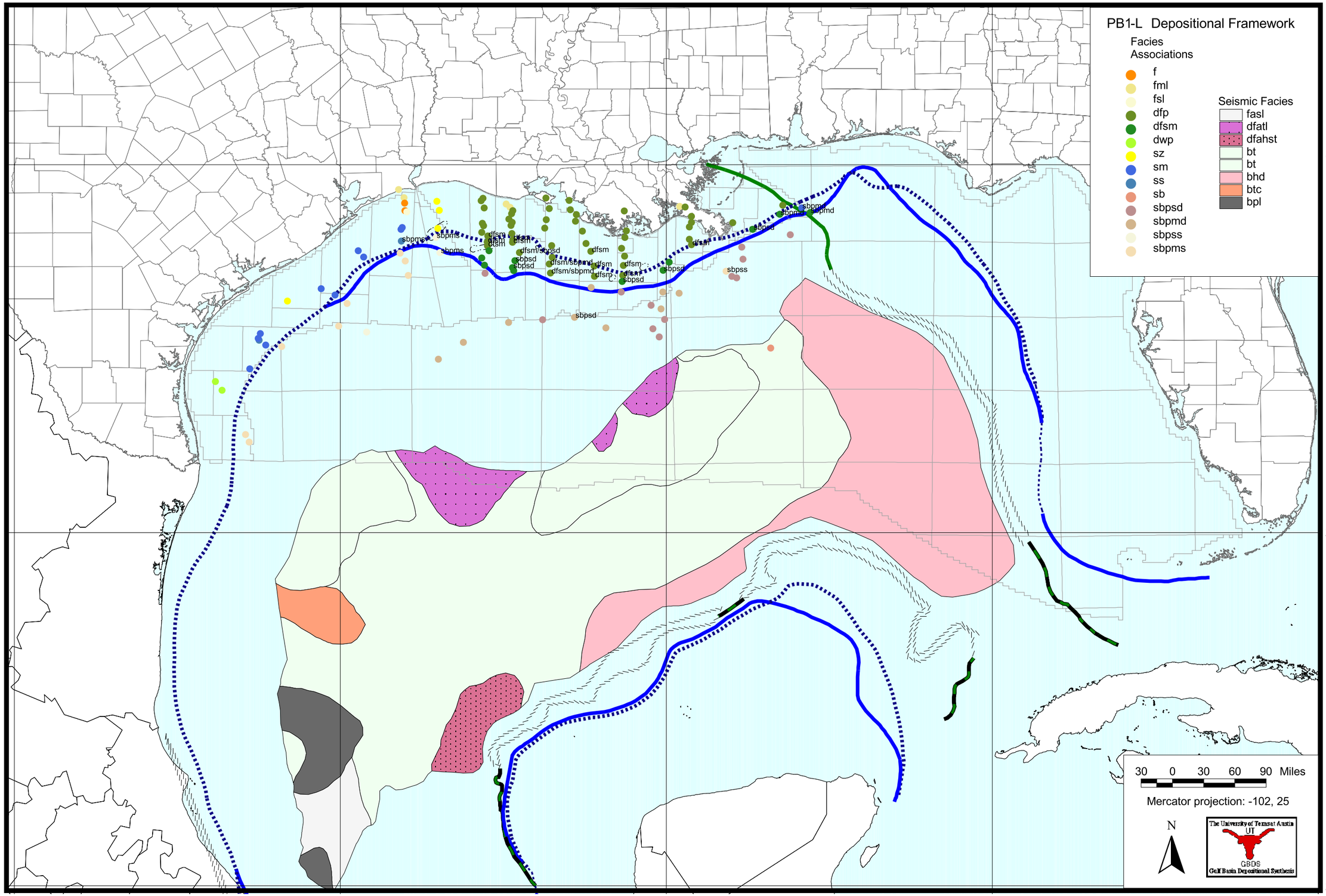
PGA-MNUThk.eps



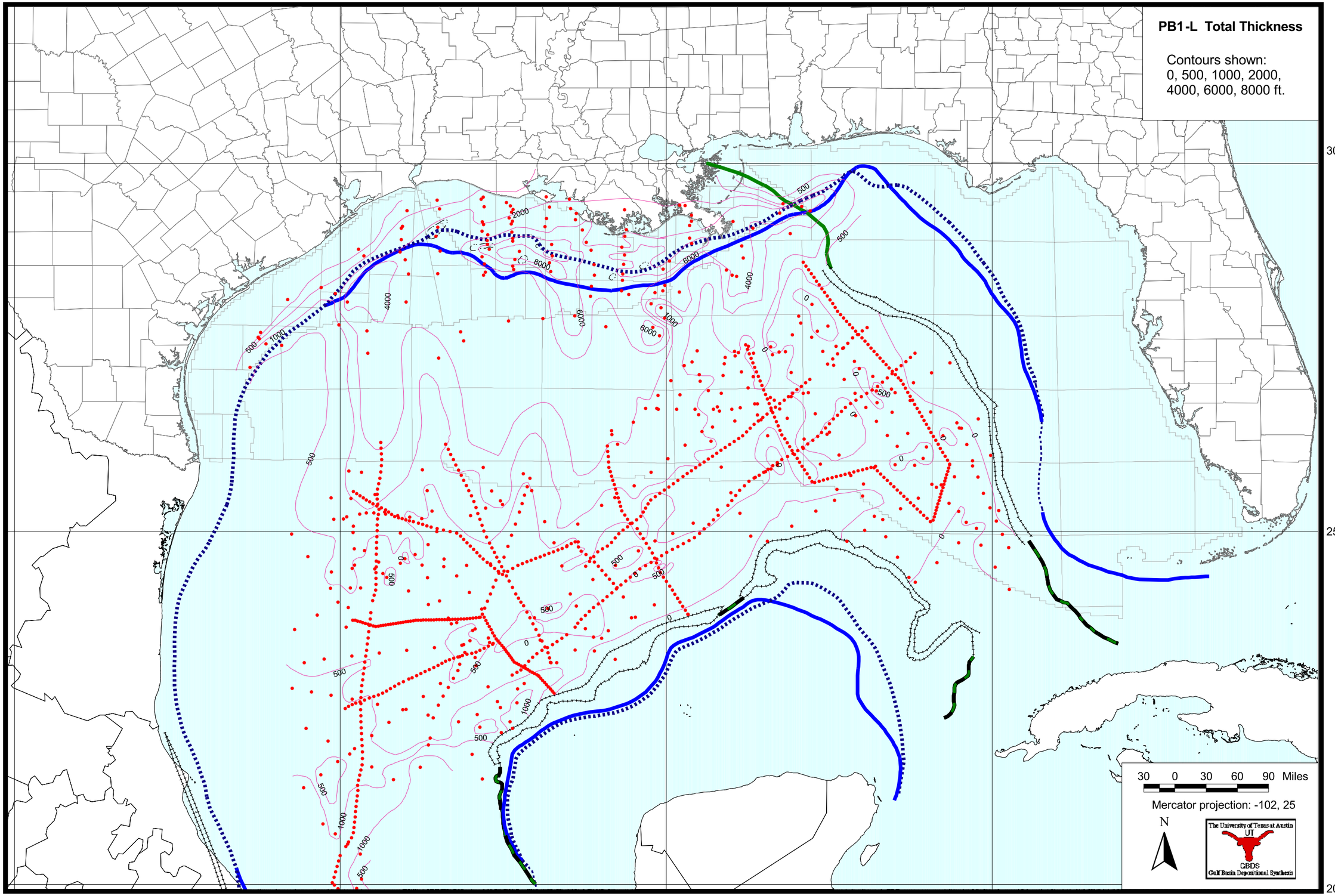
PGa-MNNSand.eps



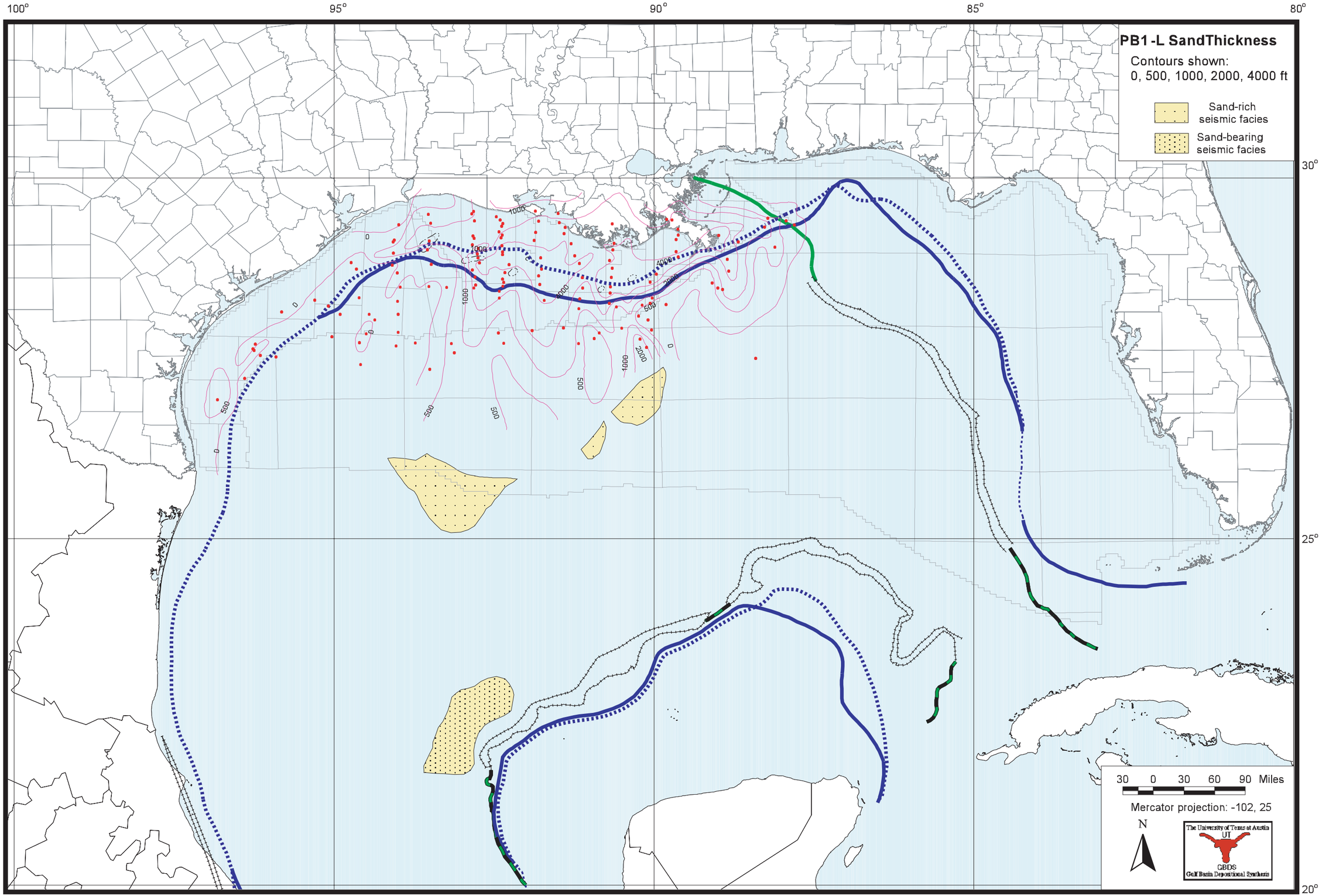
39. Deposystems, features, and paleogeography of the Globoquadrina altispira (PGa-N) depisode.



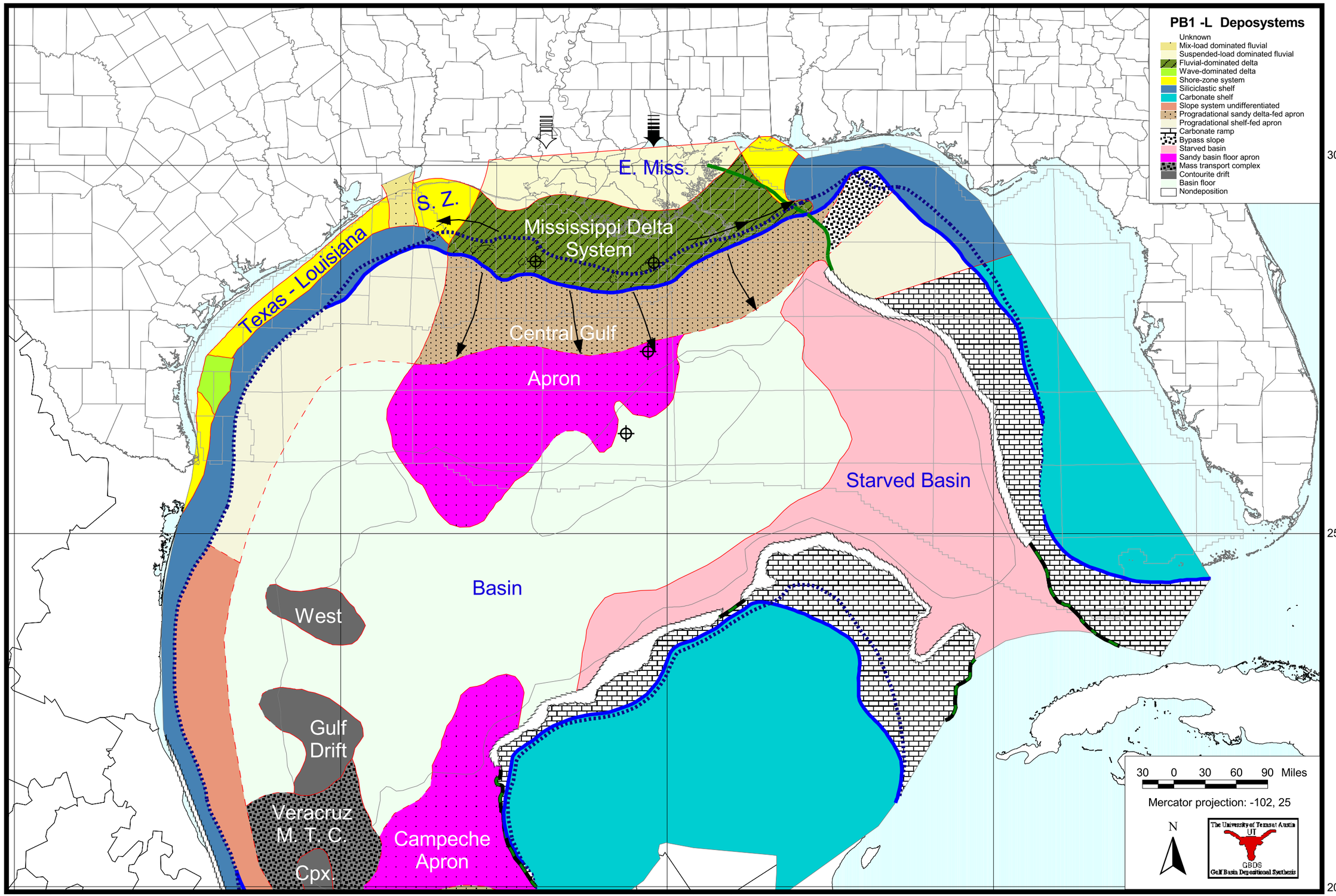
PB1-LDepo.eps

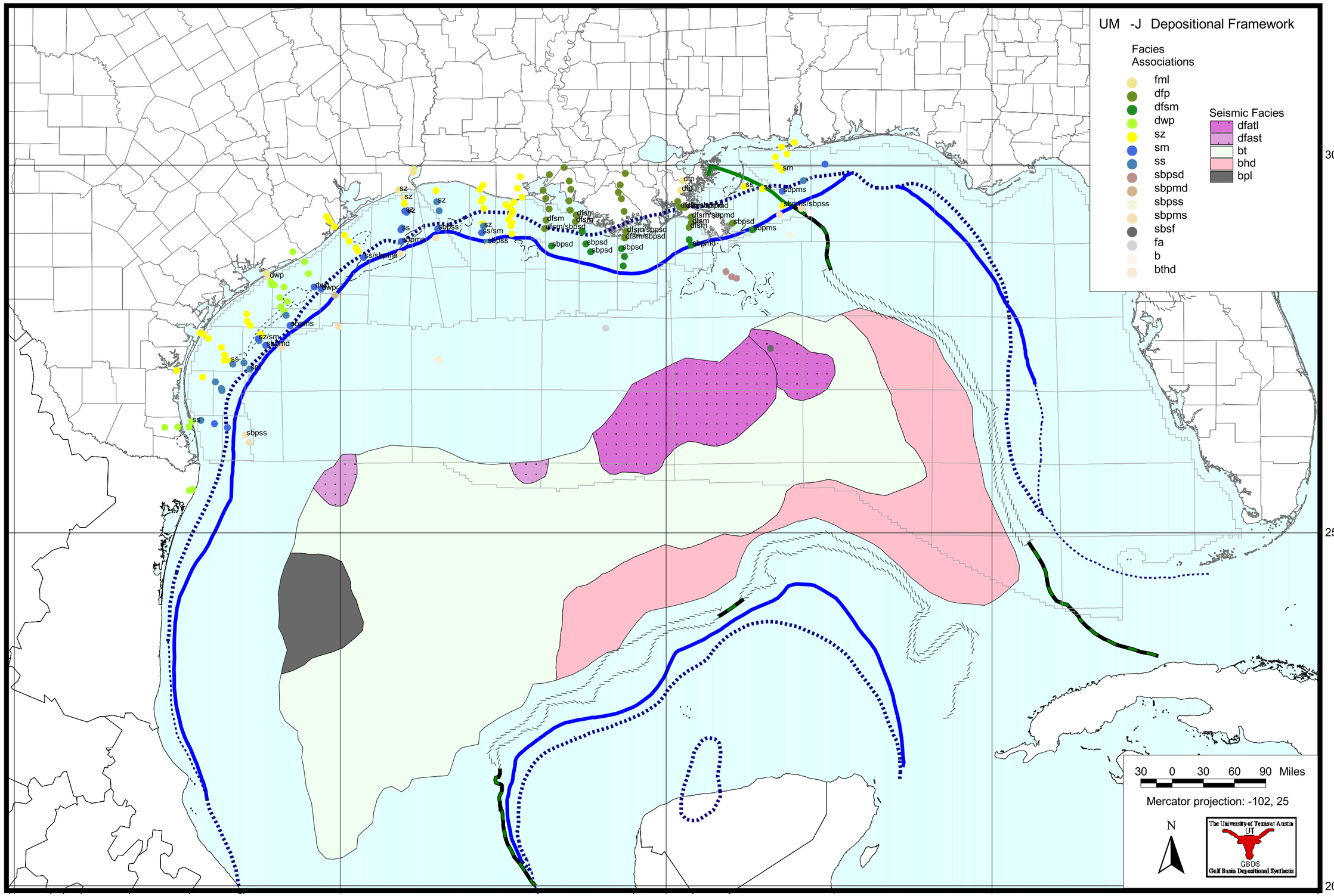


PB1-LUThk.eps

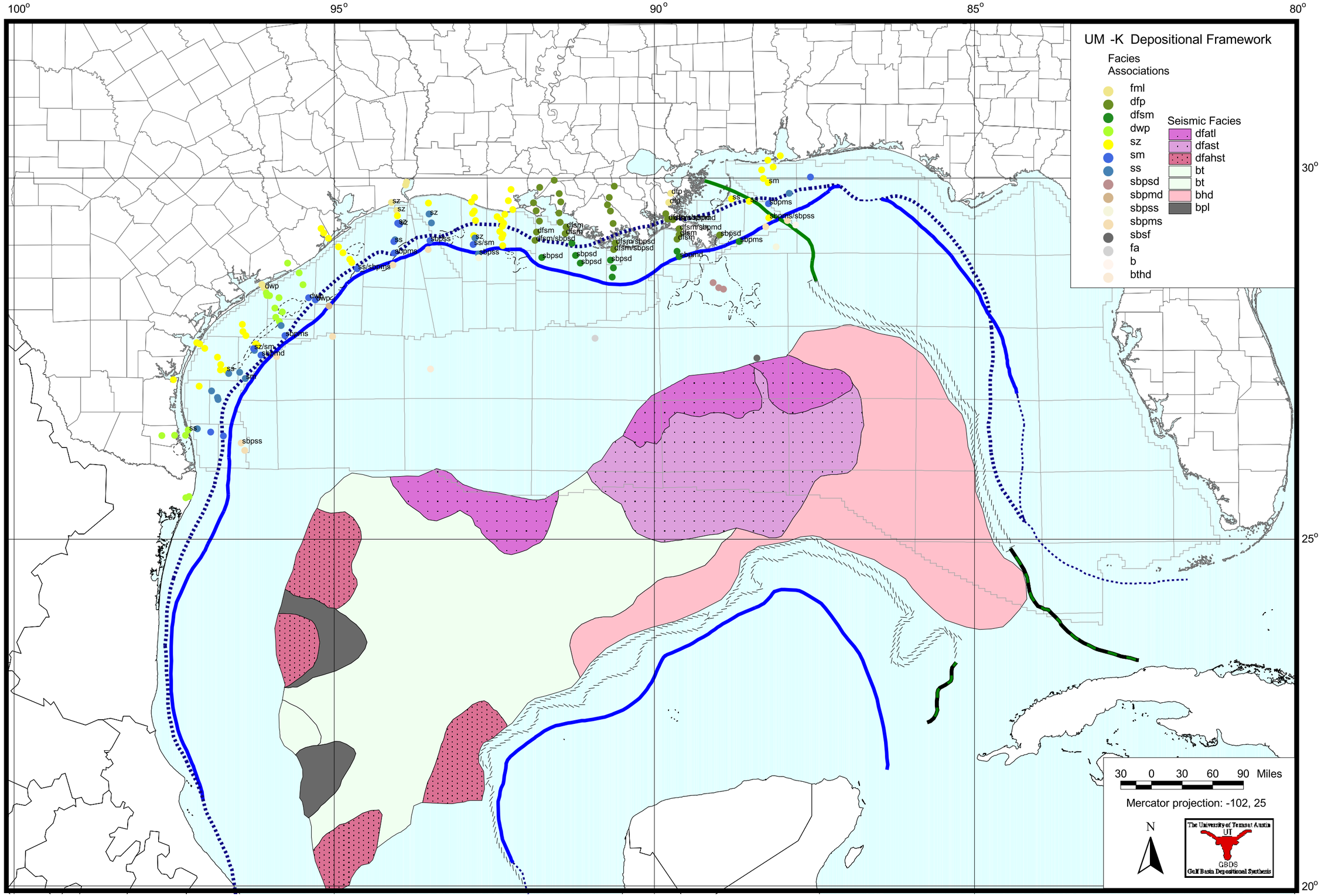


PB1-LNSand.eps

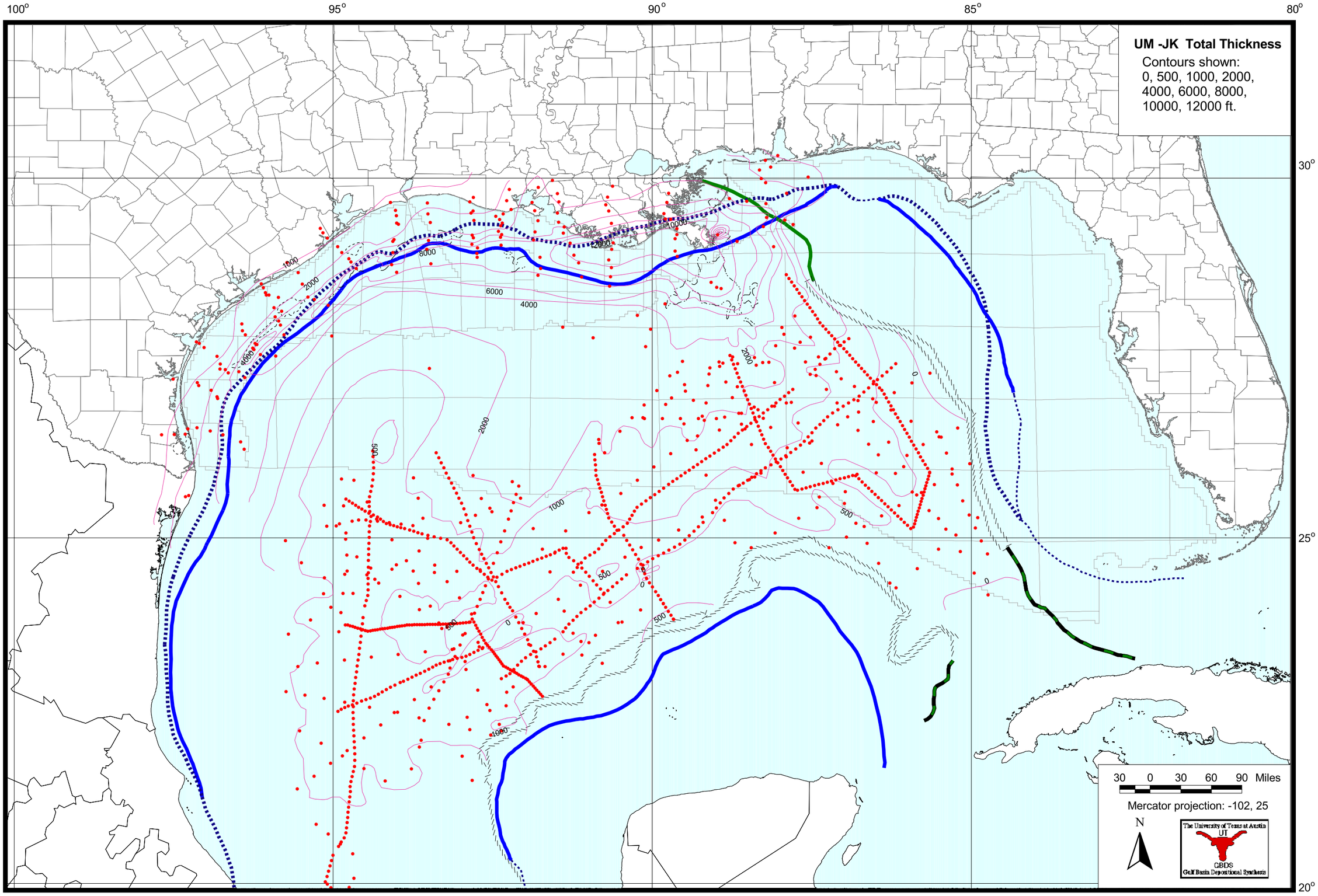

PB1 -L Deposystems
Unknown
Mix-load dominated fluvial
Suspended-load dominated fluvial
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Progradational sandy delta-fed apron
Progradational shelf-fed apron
Carbonate ramp
Bypass slope
Starved basin
Sandy basin floor apron
Mass transport complex
Contourite drift
Basin floor
Nondeposition
100°
95°
90°
85°
80°
30°
25°
20°
E. Miss.
S. Z.
Mississippi Delta System
Texas - Louisiana
Central Gulf
Apron
Starved Basin
Basin
West
Gulf Drift
Veracruz M. T. C.
Cpx
Campeche Apron
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin UT
GBDS
Gulf Basin Depositional Synthesis


UM -J Depositional Framework
Facies Associations
fml
dfp
dfsm
dwp
sz
sm
ss
sbpsd
sbpmd
sbpss
sbpms
sbsf
fa
b
bthd
Seismic Facies
dfatl
dfast
bt
bhd
bpl
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

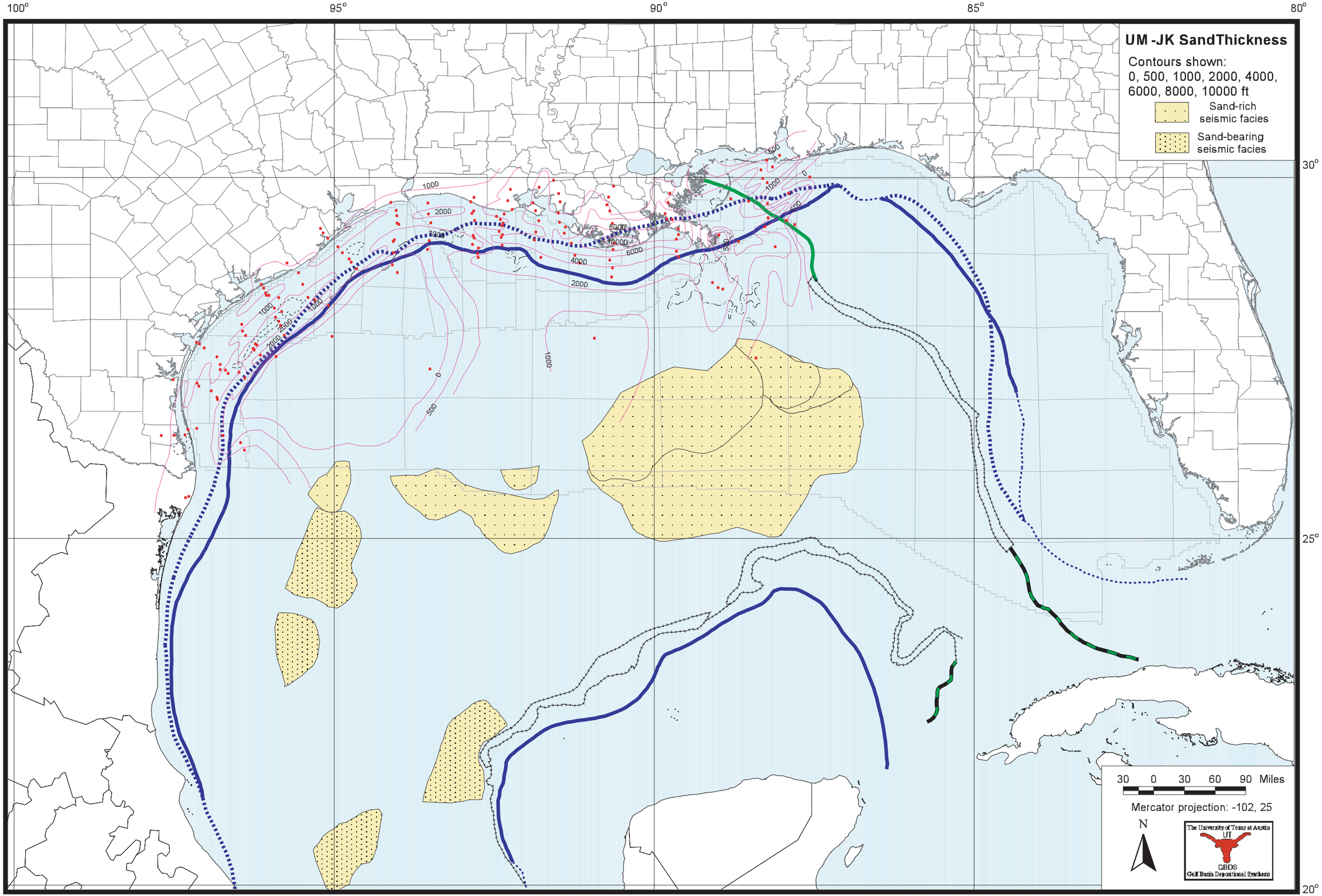
UM-JDepo.eps


UM -K Depositional Framework
Facies Associations
fml
dfp
dfsm
dwp
sz
sm
ss
sbpsd
sbpmd
sbpss
sbpms
sbsf
fa
b
bthd
Seismic Facies
dfatl
dfast
dfahst
bt
bt
bhd
bpl
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

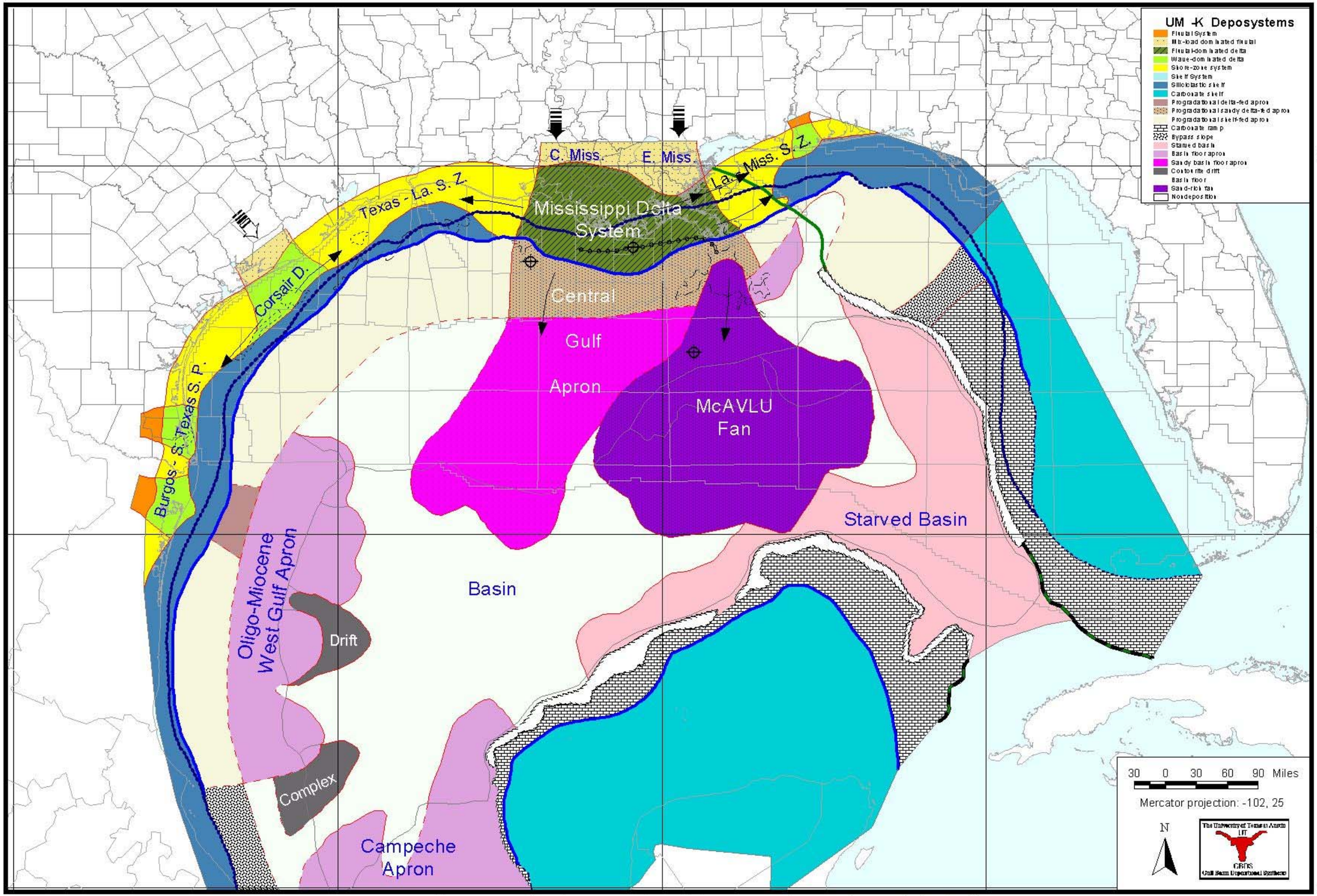
UM-KDepo.eps



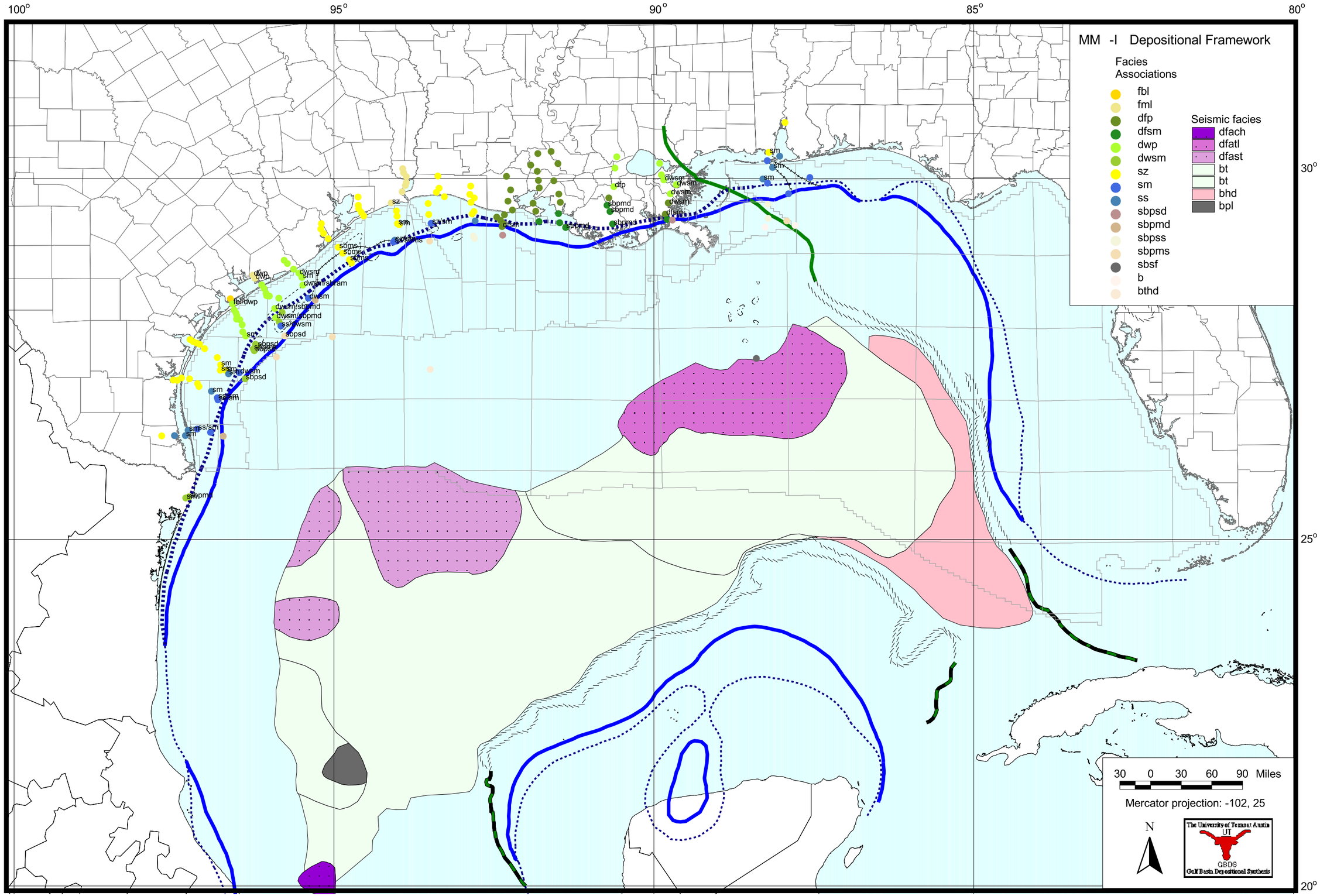
UM-JKUThk.eps



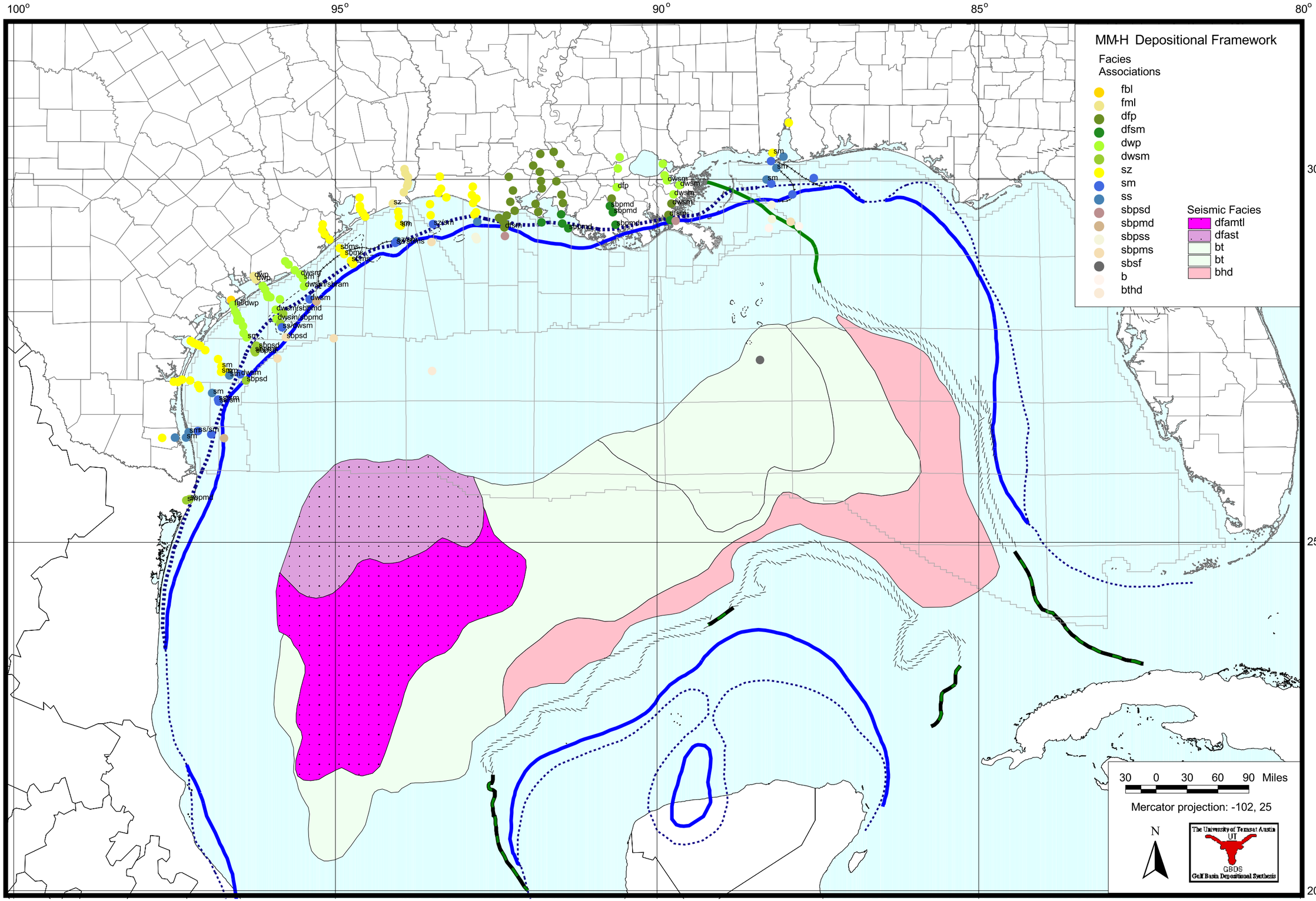
UM-JKNSand.eps



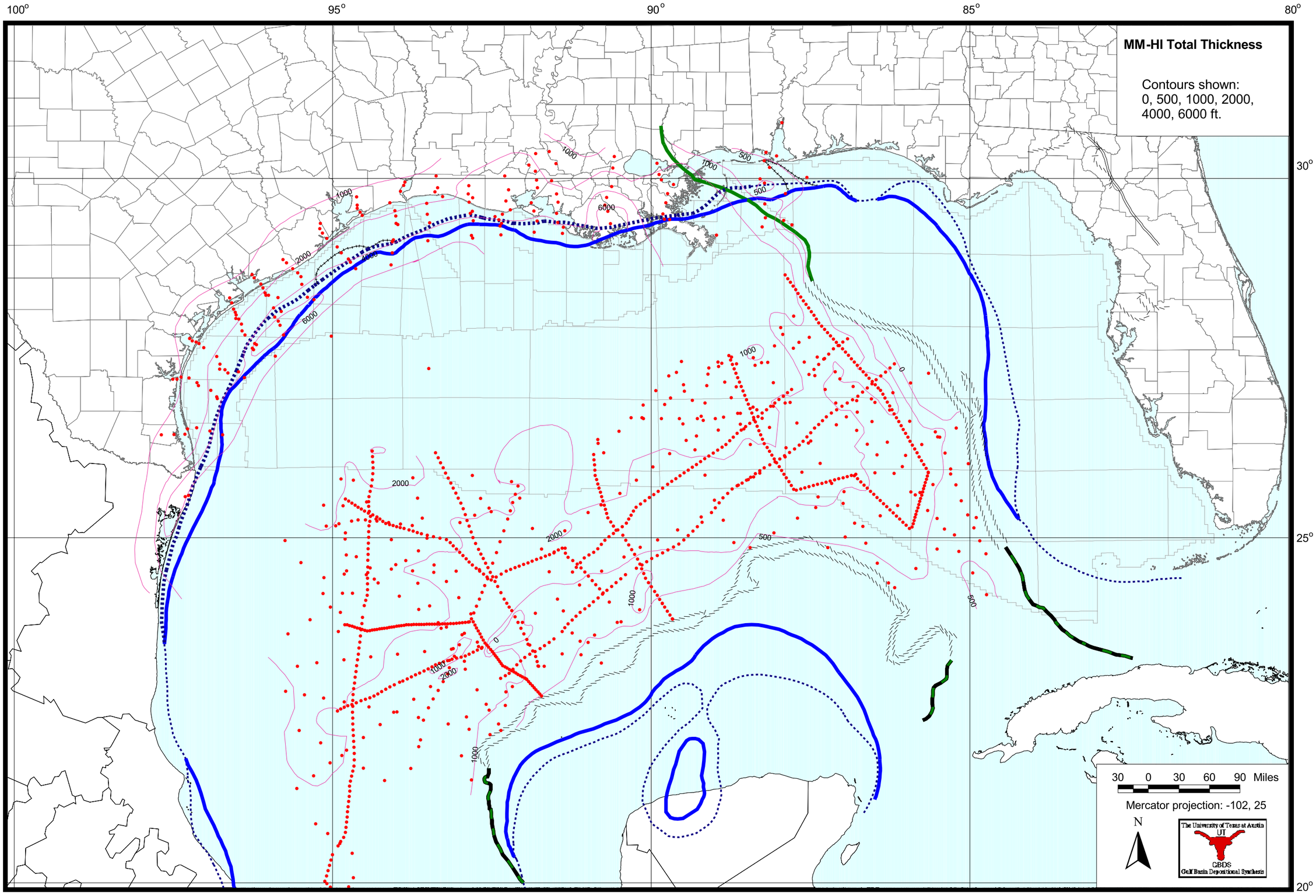
33. Deposystems, features, and paleogeography of the upper Miocene (UM-K) depisode.


MM -I Depositional Framework
Facies Associations
fbl
fml
dfp
dfsm
dwp
dwsm
sz
sm
ss
sbpsd
sbpmd
sbpss
sbpms
sbsf
b
bthd
Seismic facies
dfach
dfatl
dfast
bt
bt
bhd
bpl
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

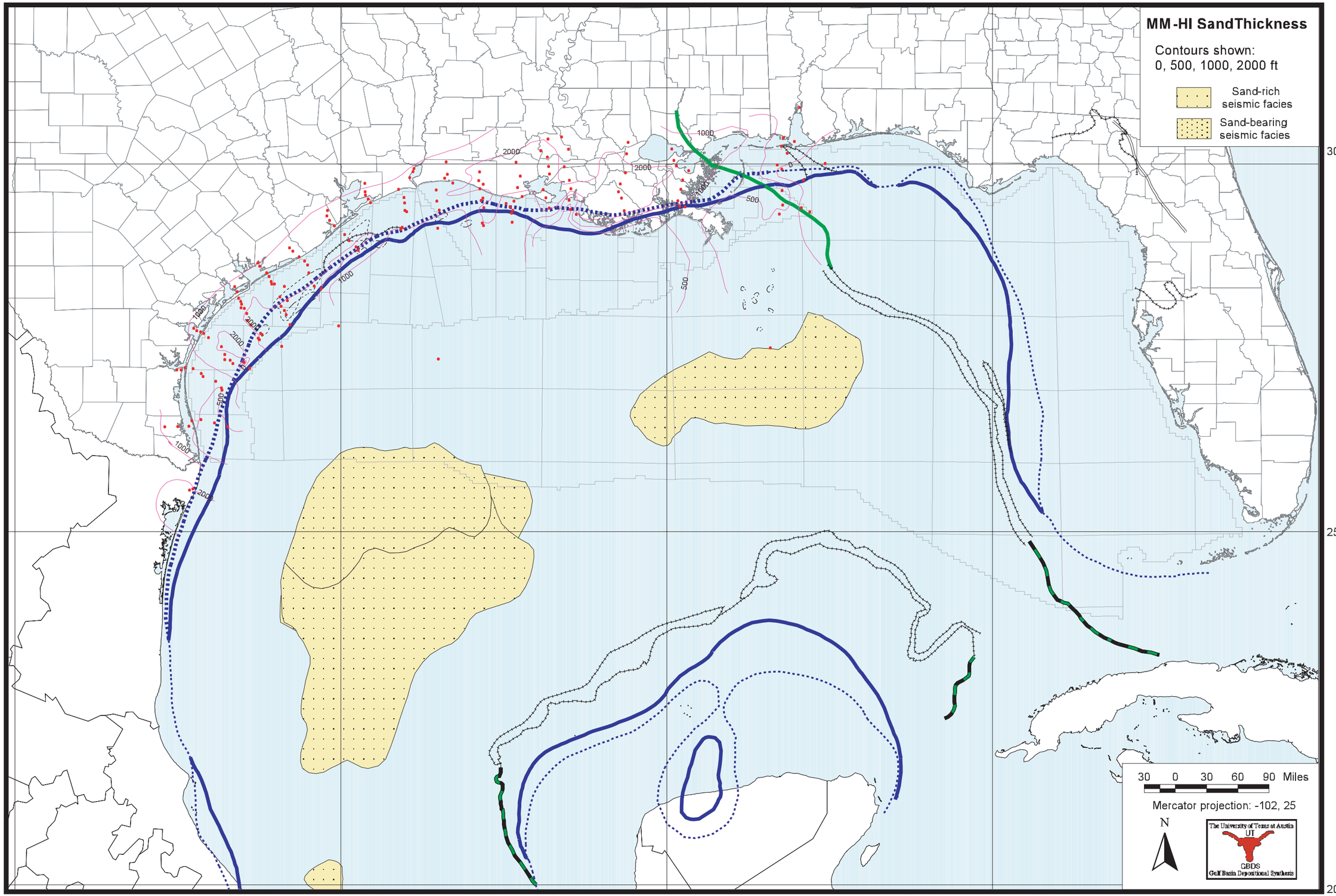
MM-IDepo.eps


MM-H Depositional Framework
Facies Associations
fbl
fml
dfp
dfsm
dwp
dwsm
sz
sm
ss
sbpsd
sbpmd
sbpss
sbpms
sbsf
b
bthd
Seismic Facies
dfamtl
dfast
bt
bt
bhd
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

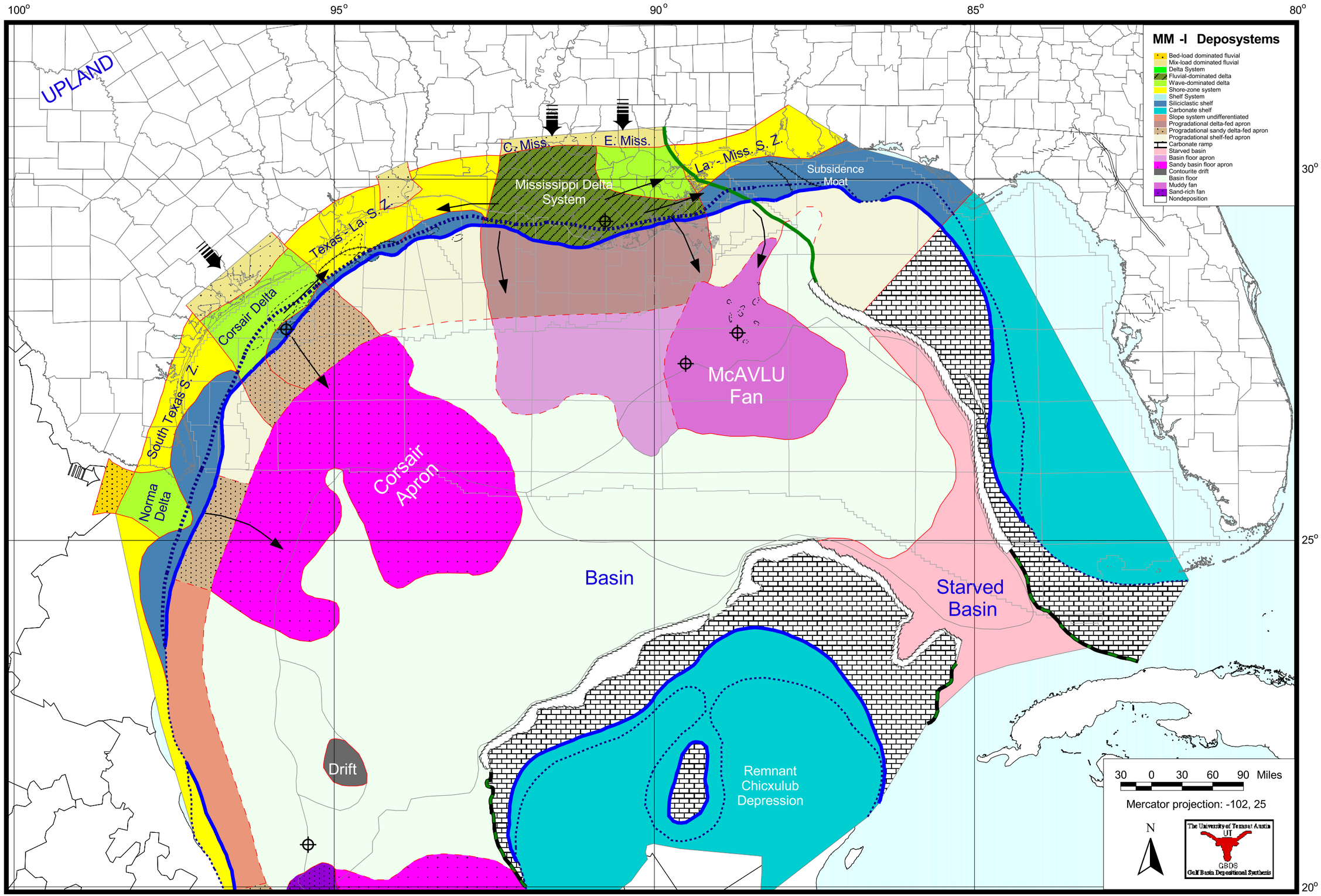
MM-HDepo.eps

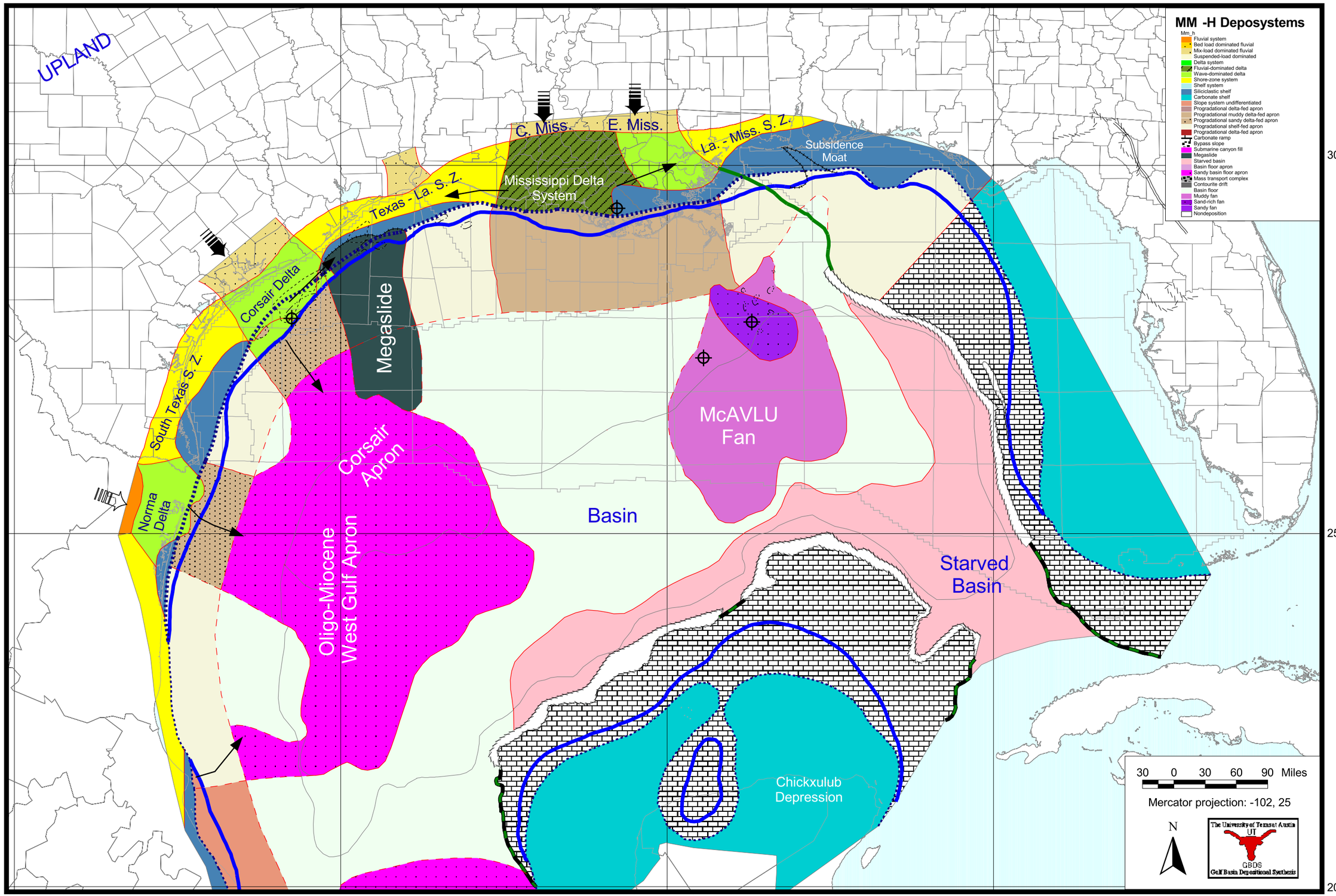


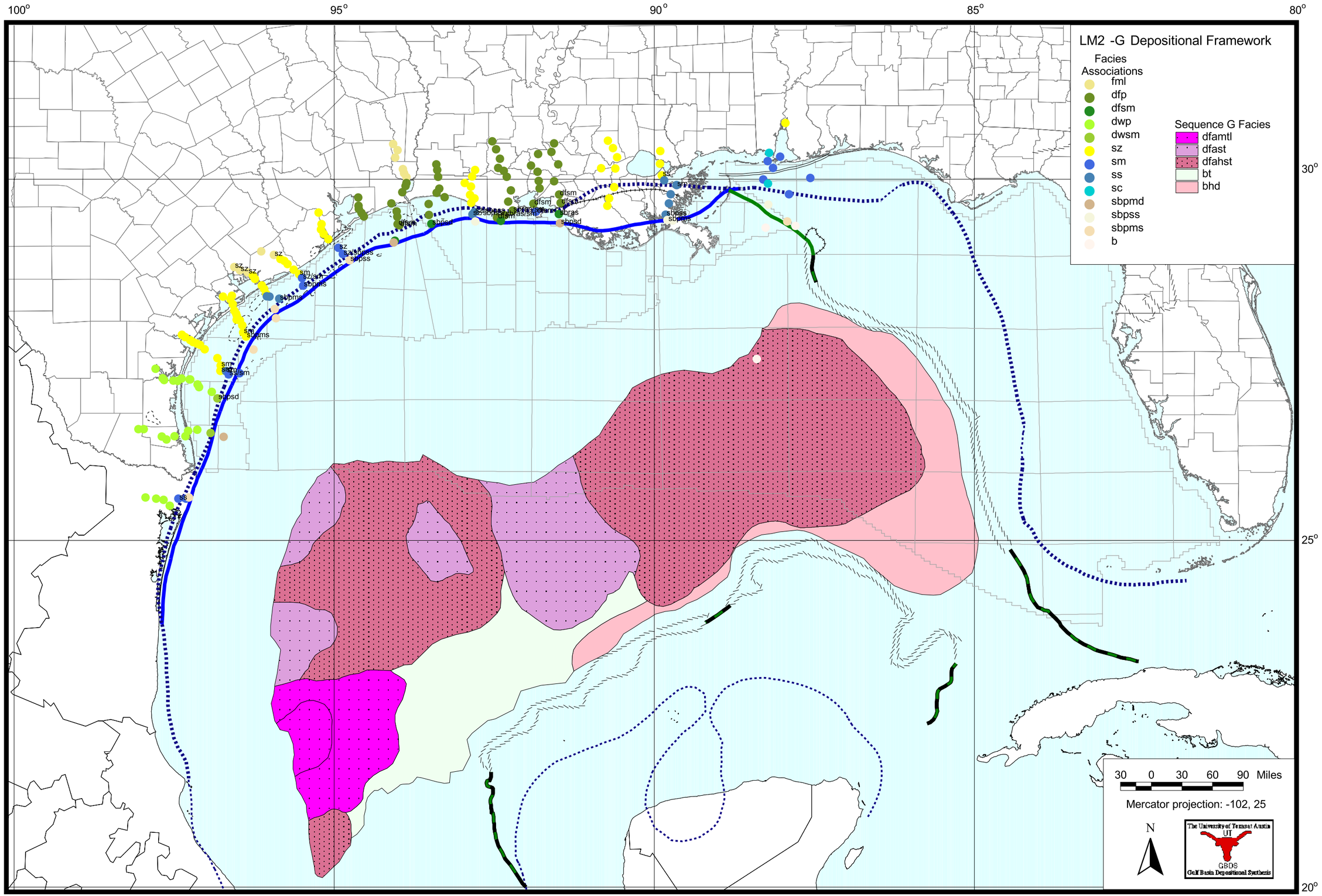
MM-HIUThk.eps



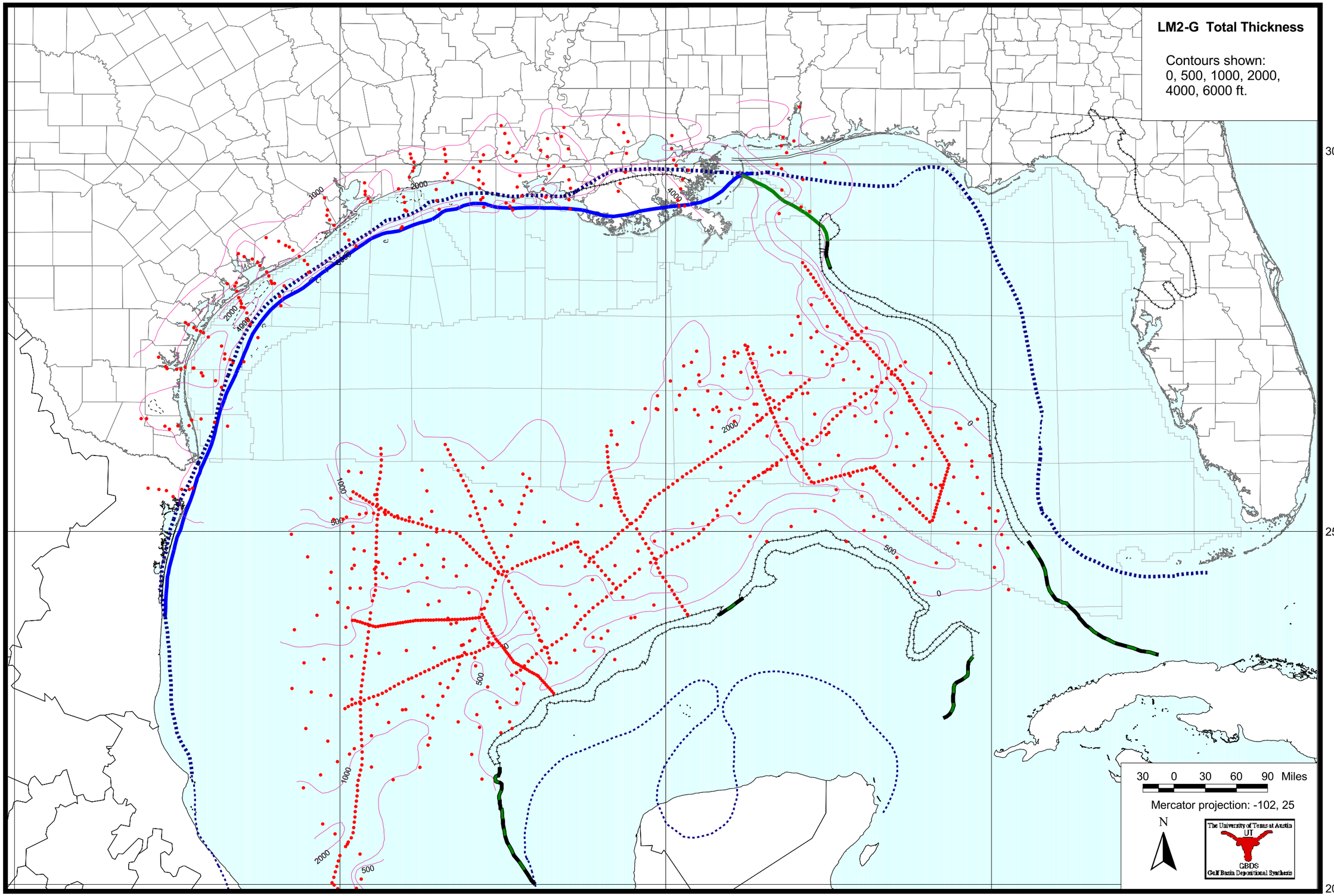
UM-HINSand.eps


100°
95°
90°
85°
80°
30°
25°
20°
MM -I Deposystems
Bed-load dominated fluvial
Mix-load dominated fluvial
Delta System
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Shelf System
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Progradational delta-fed apron
Progradational sandy delta-fed apron
Progradational shelf-fed apron
Carbonate ramp
Starved basin
Basin floor apron
Sandy basin floor apron
Contourite drift
Basin floor
Muddy fan
Sand-rich fan
Nondeposition
UPLAND
C. Miss.
E. Miss.
La. - Miss. S. Z.
Subsidence Moat
Mississippi Delta System
Texas - La. S. Z.
Corsair Delta
South Texas S. Z.
Norma Delta
Corsair Apron
McAVLU Fan
Basin
Starved Basin
Drift
Remnant Chicxulub Depression
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

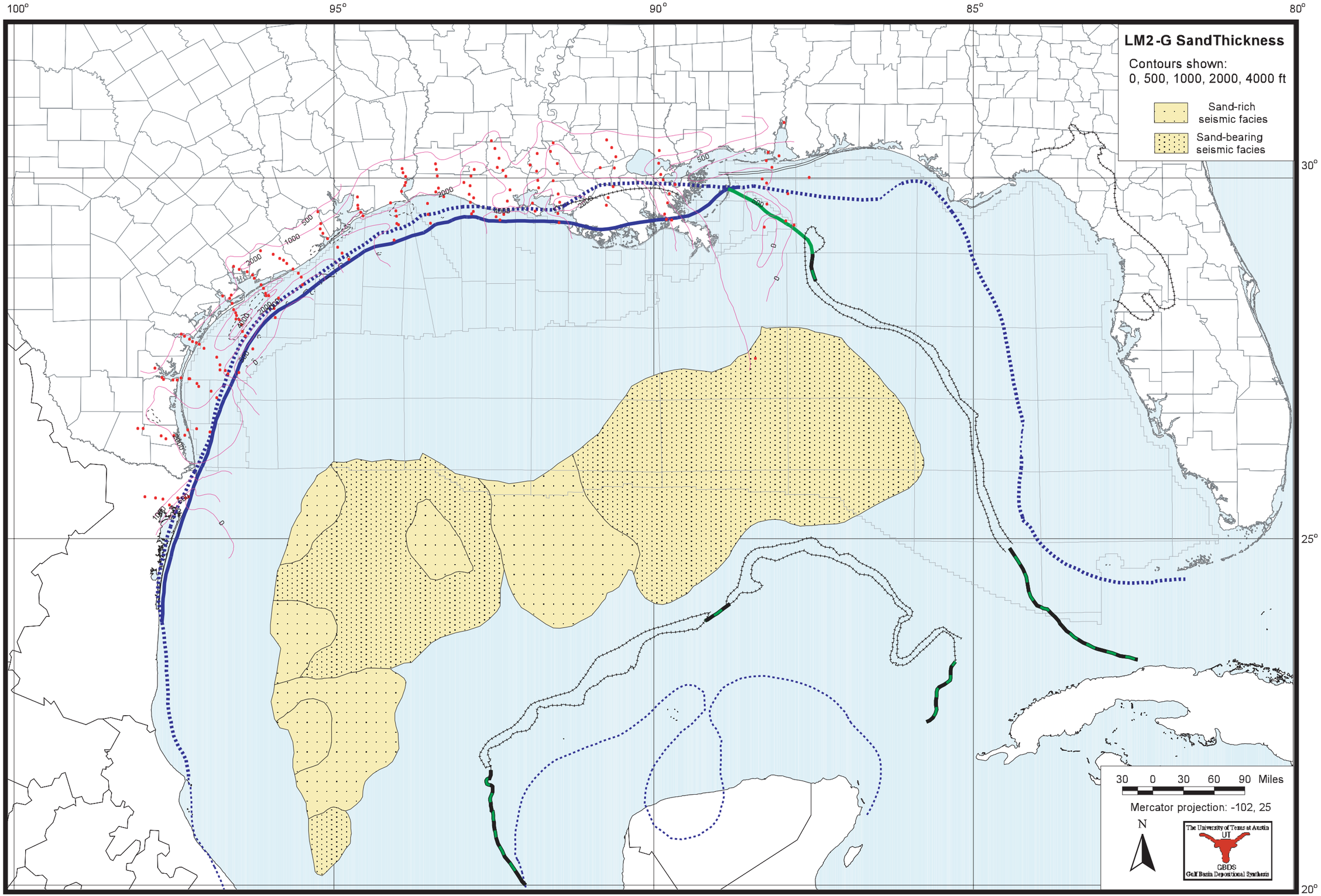

100°
95°
90°
85°
80°
30°
25°
20°
MM -H Deposystems
Mm_h
Fluvial system
Bed load dominated fluvial
Mix-load dominated fluvial
Suspended-load dominated
Delta system
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Shelf system
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Progradational delta-fed apron
Progradational muddy delta-fed apron
Progradational sandy delta-fed apron
Progradational shelf-fed apron
Progradational delta-fed apron
Carbonate ramp
Bypass slope
Submarine canyon fill
Megaslide
Starved basin
Basin floor apron
Sandy basin floor apron
Mass transport complex
Contourite drift
Basin floor
Muddy fan
Sand-rich fan
Sandy fan
Nondeposition
UPLAND
C. Miss.
E. Miss.
La. - Miss. S. Z.
Subsidence Moat
Mississippi Delta System
Texas - La. S. Z.
Corsair Delta
Megaslide
South Texas S. Z.
Norma Delta
Corsair Apron
Oligo-Miocene West Gulf Apron
McAVLU Fan
Basin
Starved Basin
Chickxulub Depression
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis



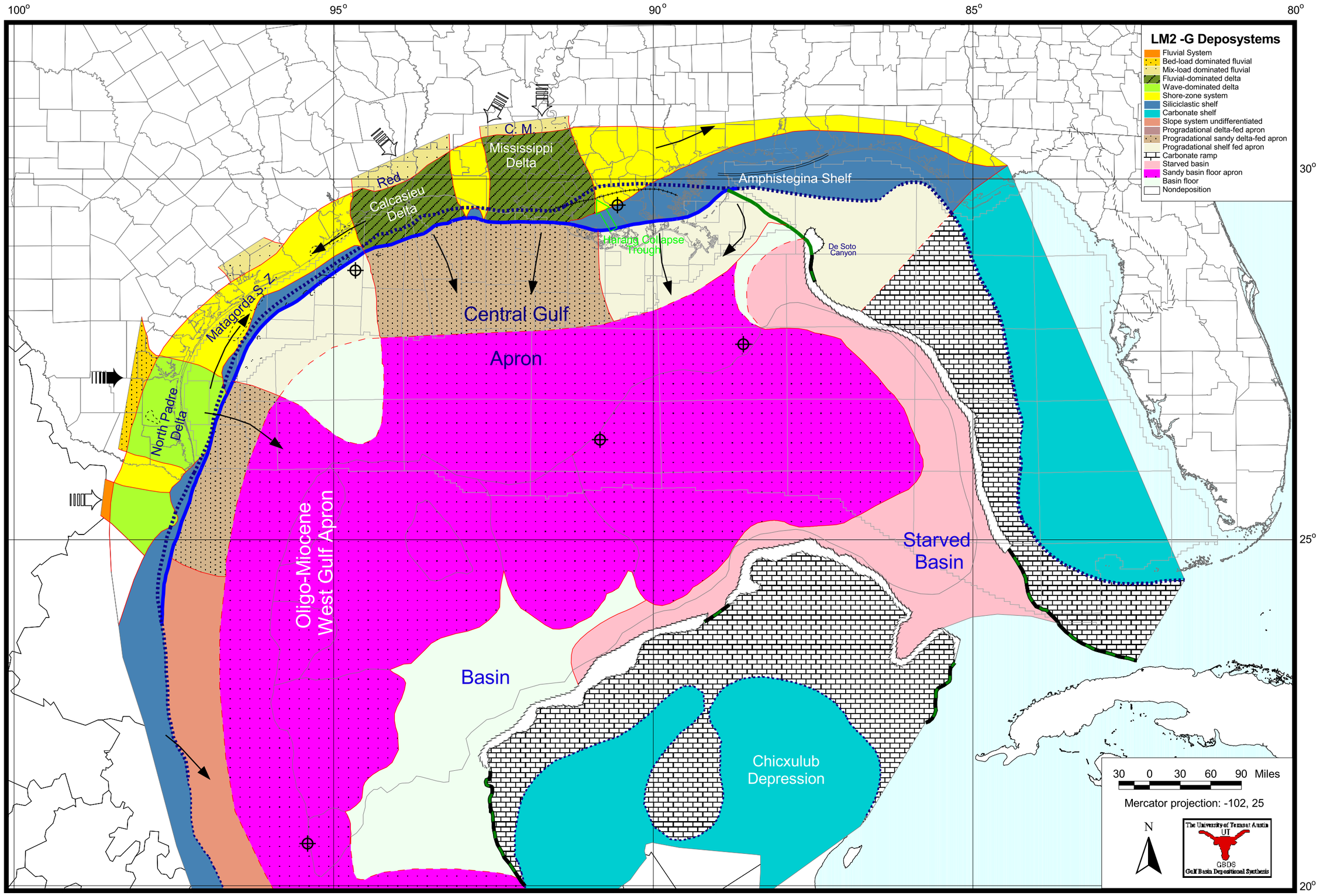
LM2-GDepo.eps

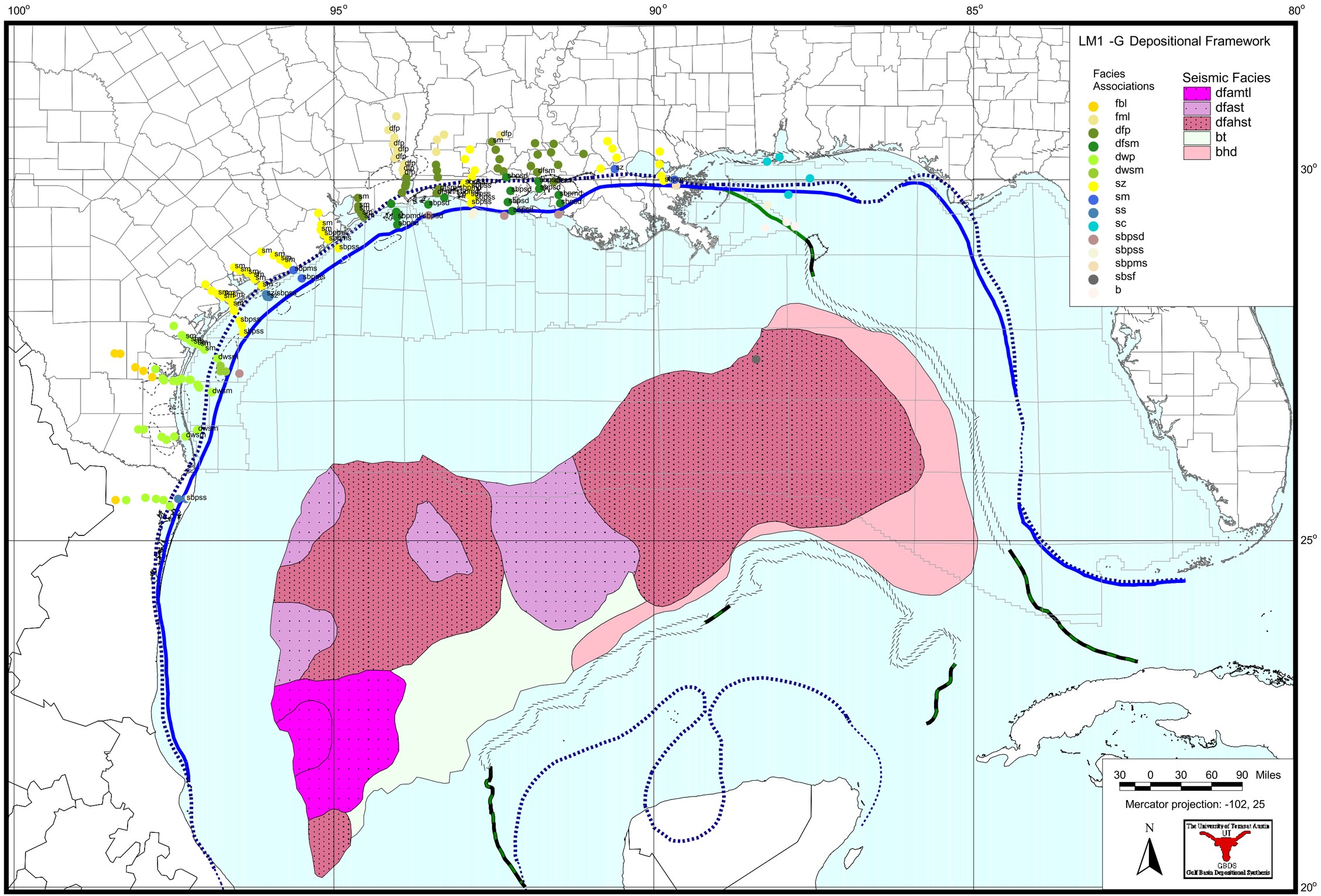


LM2-GUThk.eps

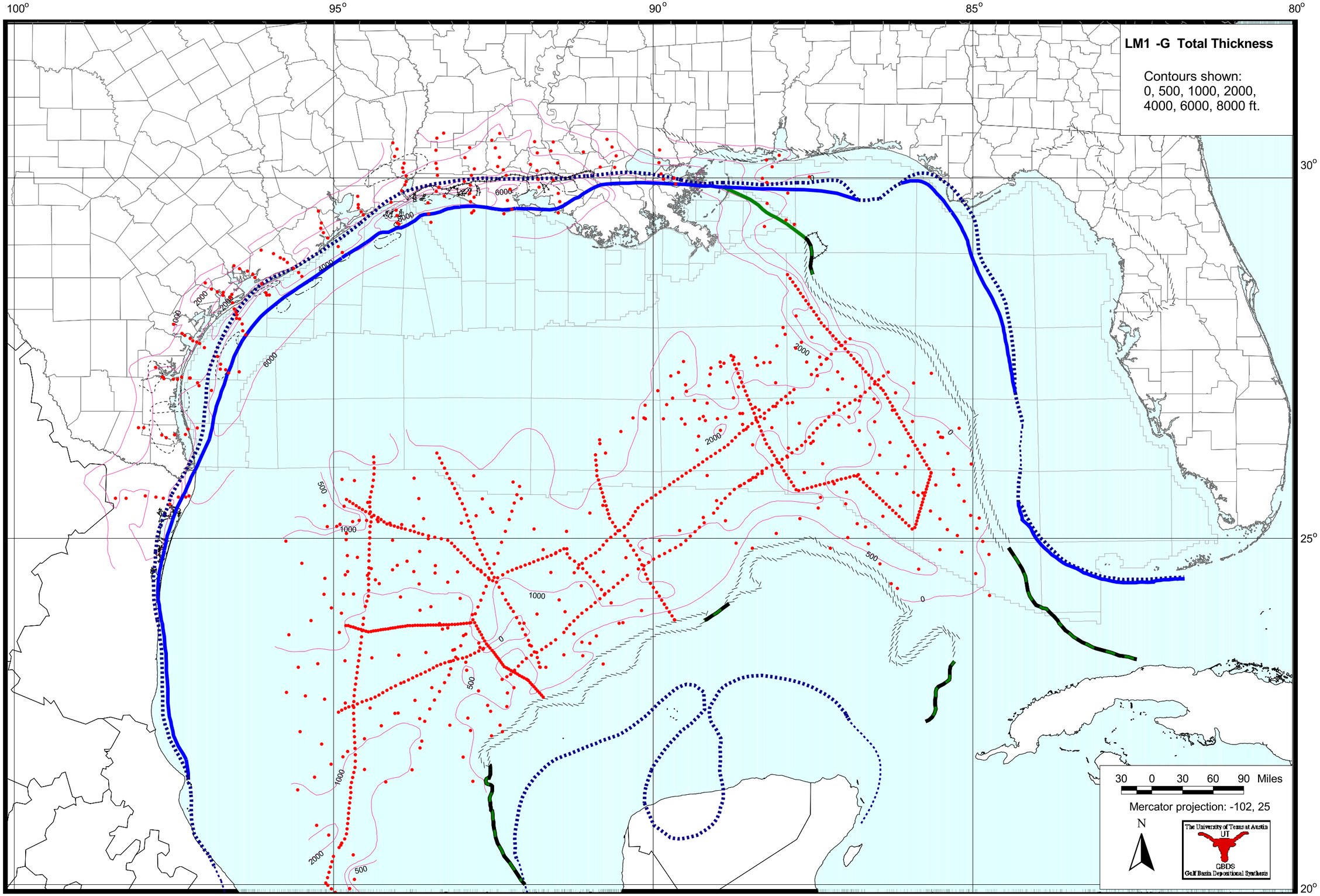


LM2-GNSand.eps

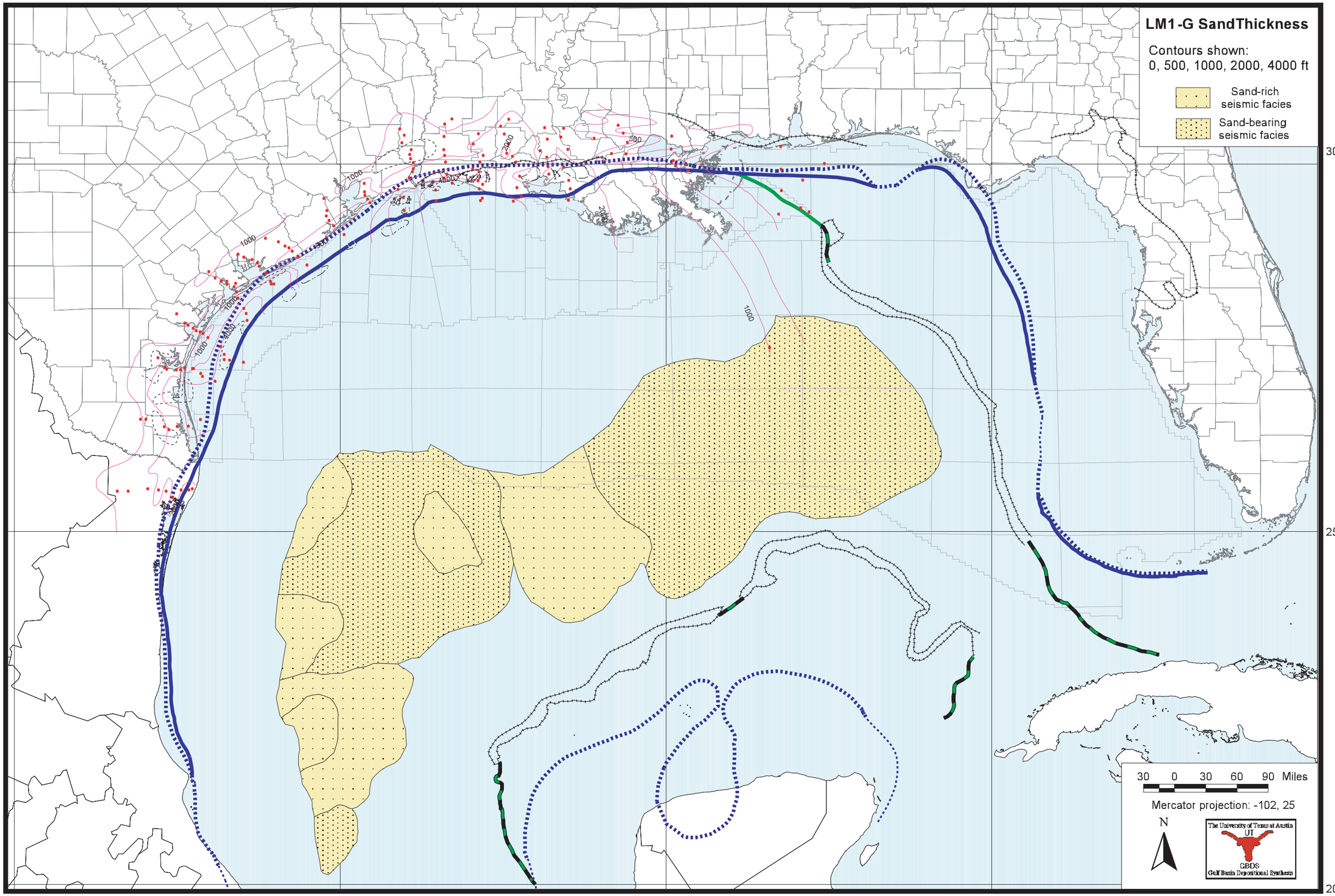

100°
95°
90°
85°
80°
30°
25°
20°
LM2 -G Deposystems
Fluvial System
Bed-load dominated fluvial
Mix-load dominated fluvial
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Progradational delta-fed apron
Progradational sandy delta-fed apron
Progradational shelf fed apron
Carbonate ramp
Starved basin
Sandy basin floor apron
Basin floor
Nondeposition
C. M.
Mississippi
Delta
Red
Calcasieu
Delta
Amphistegina Shelf
Harang Collapse
Trough
De Soto
Canyon
Matagorda S. Z.
Central Gulf
Apron
North Padre
Delta
Oligo-Miocene
West Gulf Apron
Starved
Basin
Basin
Chicxulub
Depression
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis



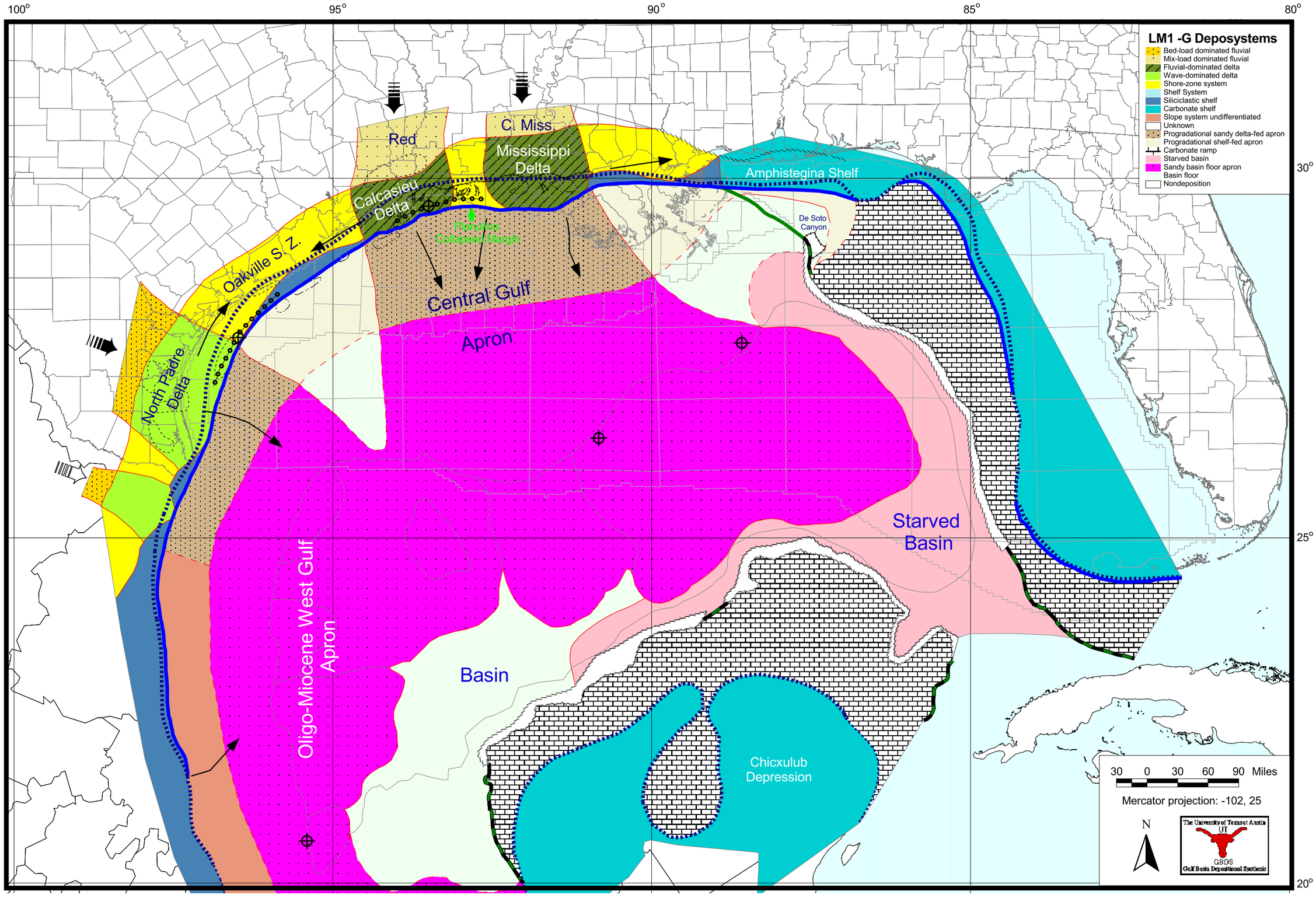
LM1-GDepo.eps

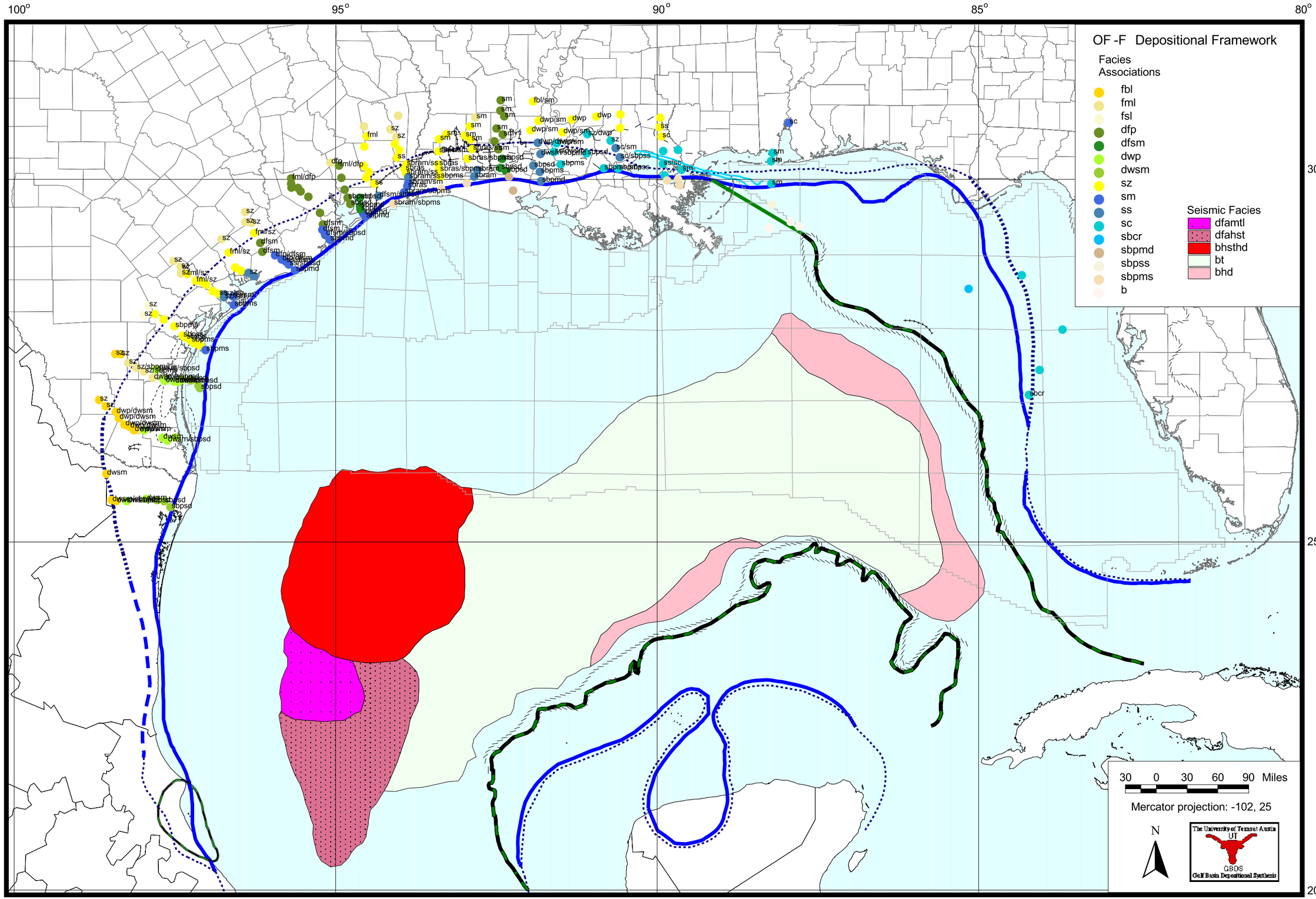


LM1-GUThk.eps

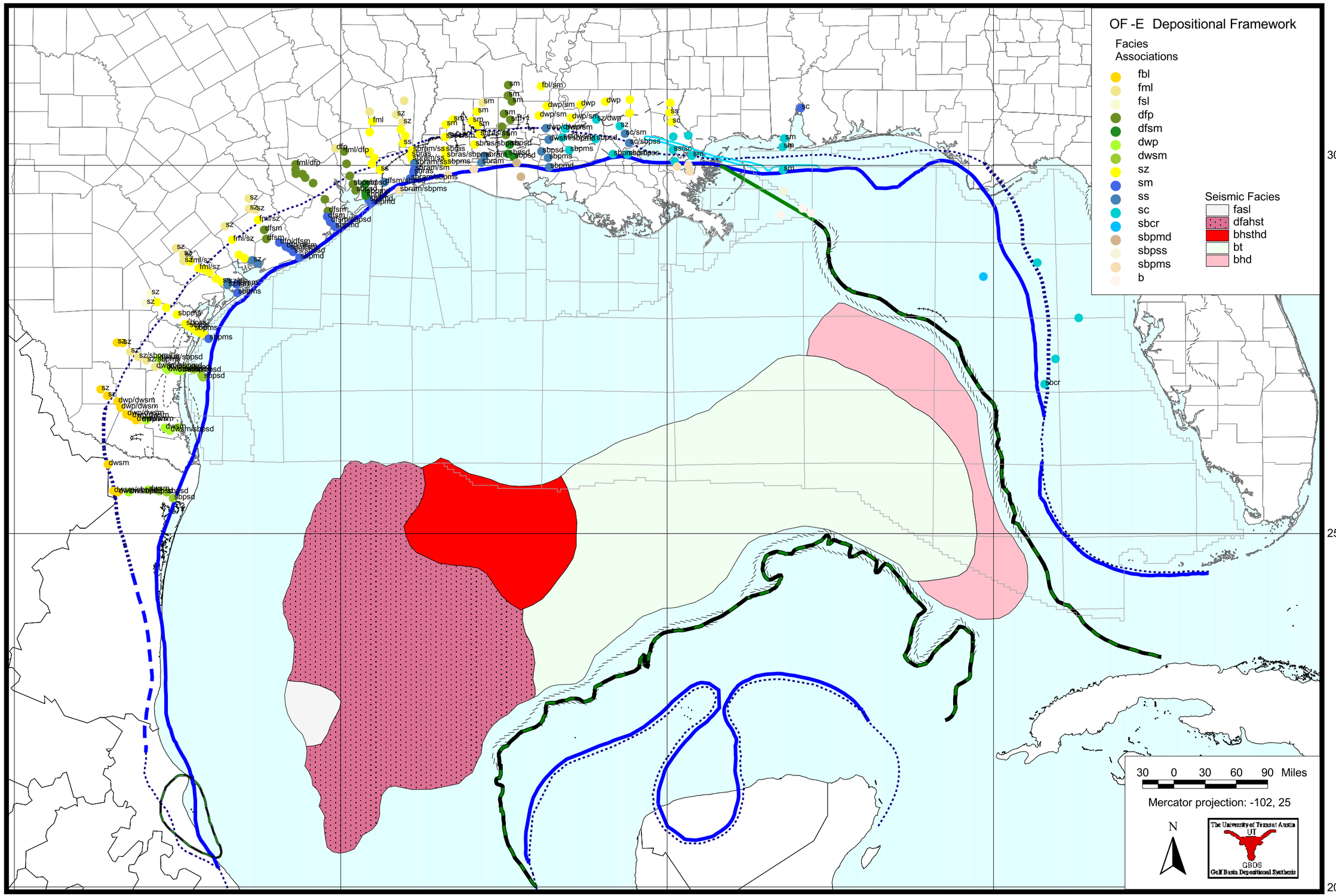


LM1-GNSand.eps

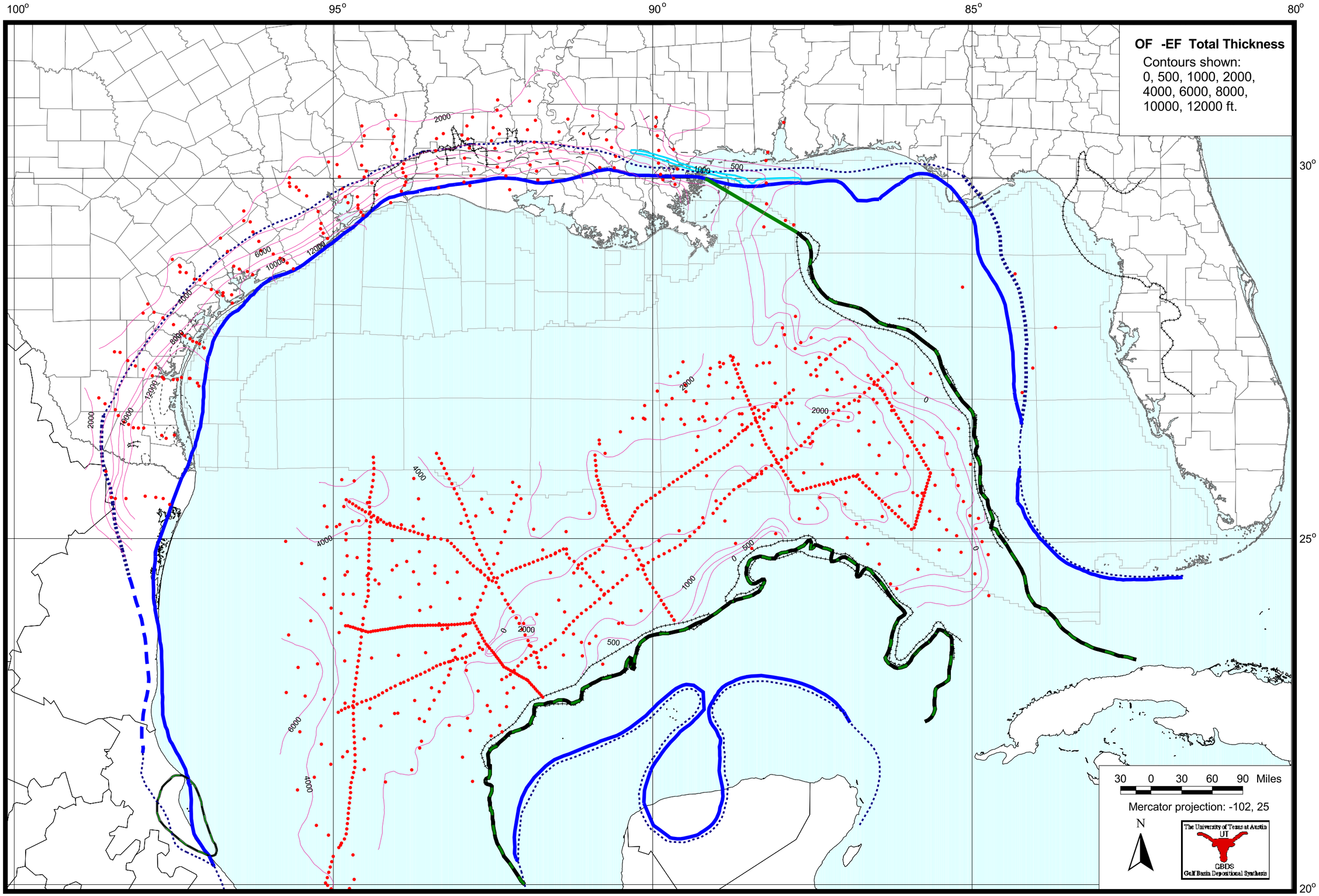

100°
95°
90°
85°
80°
30°
25°
20°
LM1 -G Deposystems
Bed-load dominated fluvial
Mix-load dominated fluvial
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Shelf System
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Unknown
Progradational sandy delta-fed apron
Progradational shelf-fed apron
Carbonate ramp
Starved basin
Sandy basin floor apron
Basin floor
Nondeposition
Red
C. Miss.
Mississippi Delta
Calcasieu Delta
Pleistocene Collapsed Margin
Amphistegina Shelf
De Soto Canyon
Oakville S.Z.
Central Gulf
Apron
North Padre Delta
Starved Basin
Oligo-Miocene West Gulf Apron
Basin
Chicxulub Depression
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis


OF -F Depositional Framework
Facies Associations
fbl
fml
fsl
dfp
dfsm
dwp
dwsm
sz
sm
ss
sc
sbcr
sbpmd
sbpss
sbpms
b
Seismic Facies
dfamtl
dfahst
bhsthd
bt
bhd
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

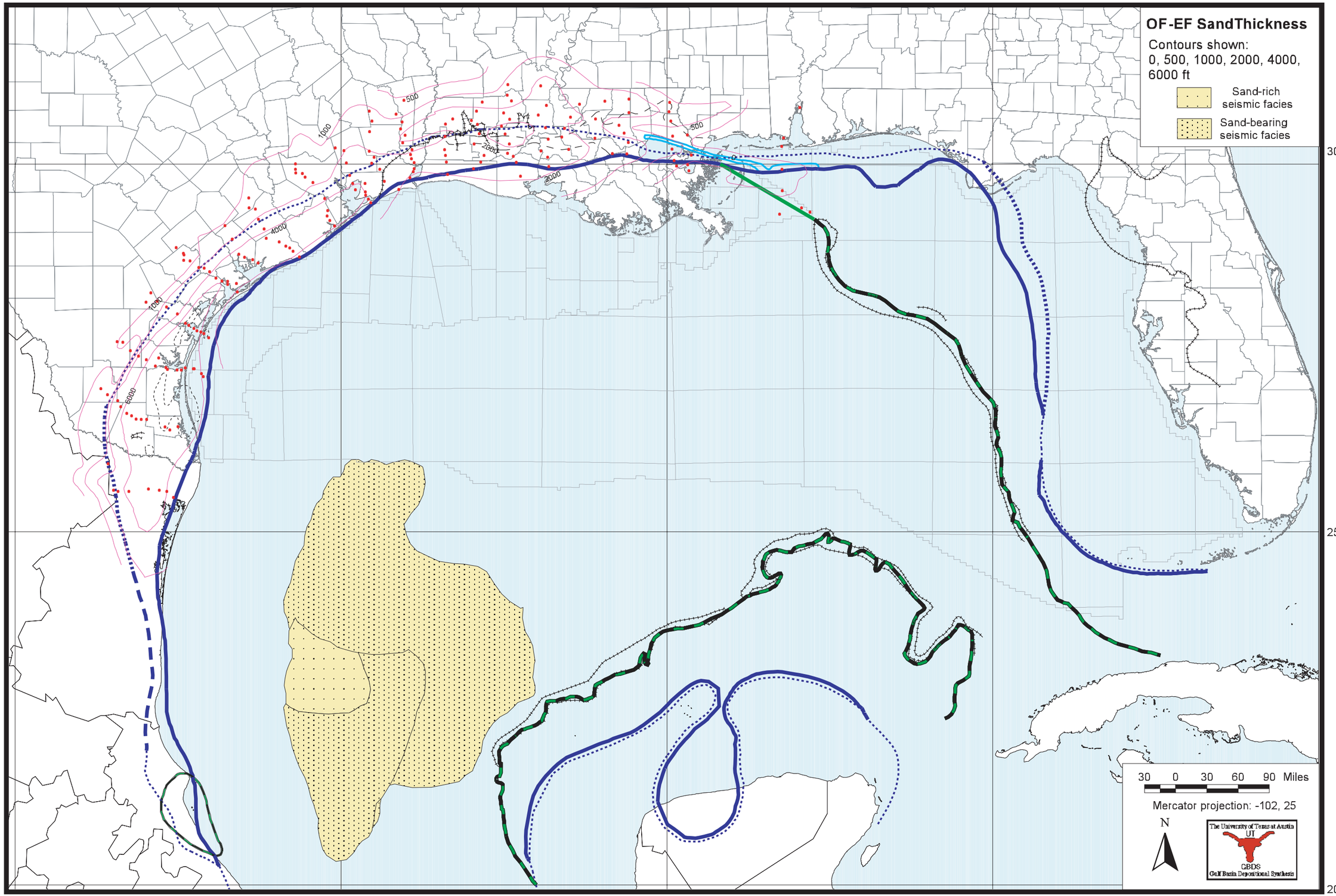
OF-FDepo.eps


OF -E Depositional Framework
Facies Associations
fbl
fml
fsl
dfp
dfsm
dwp
dwsm
sz
sm
ss
sc
sbcr
sbpmd
sbpss
sbpms
b
Seismic Facies
fasl
dfahst
bhsthd
bt
bhd
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

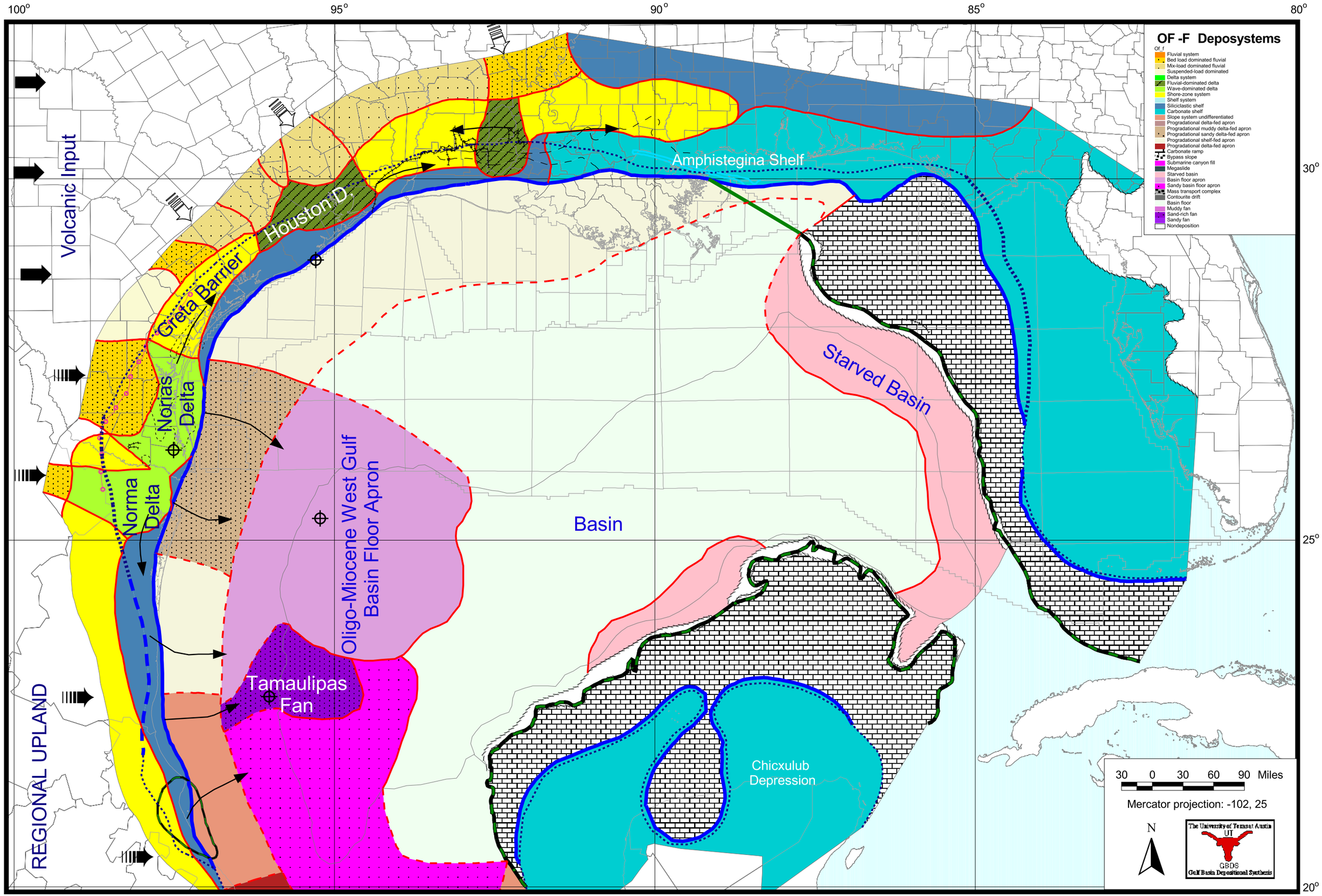
OF-EDepo.eps

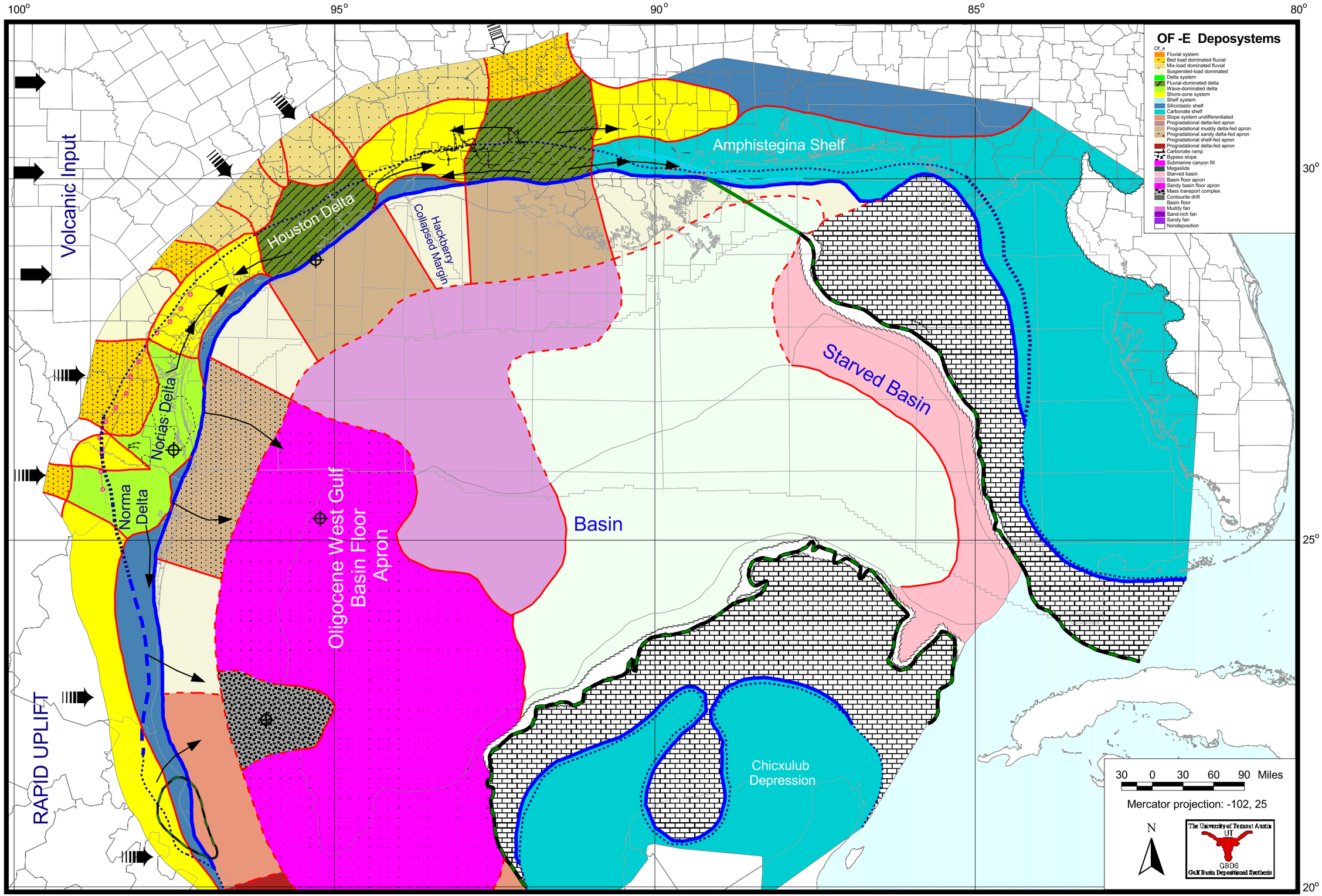


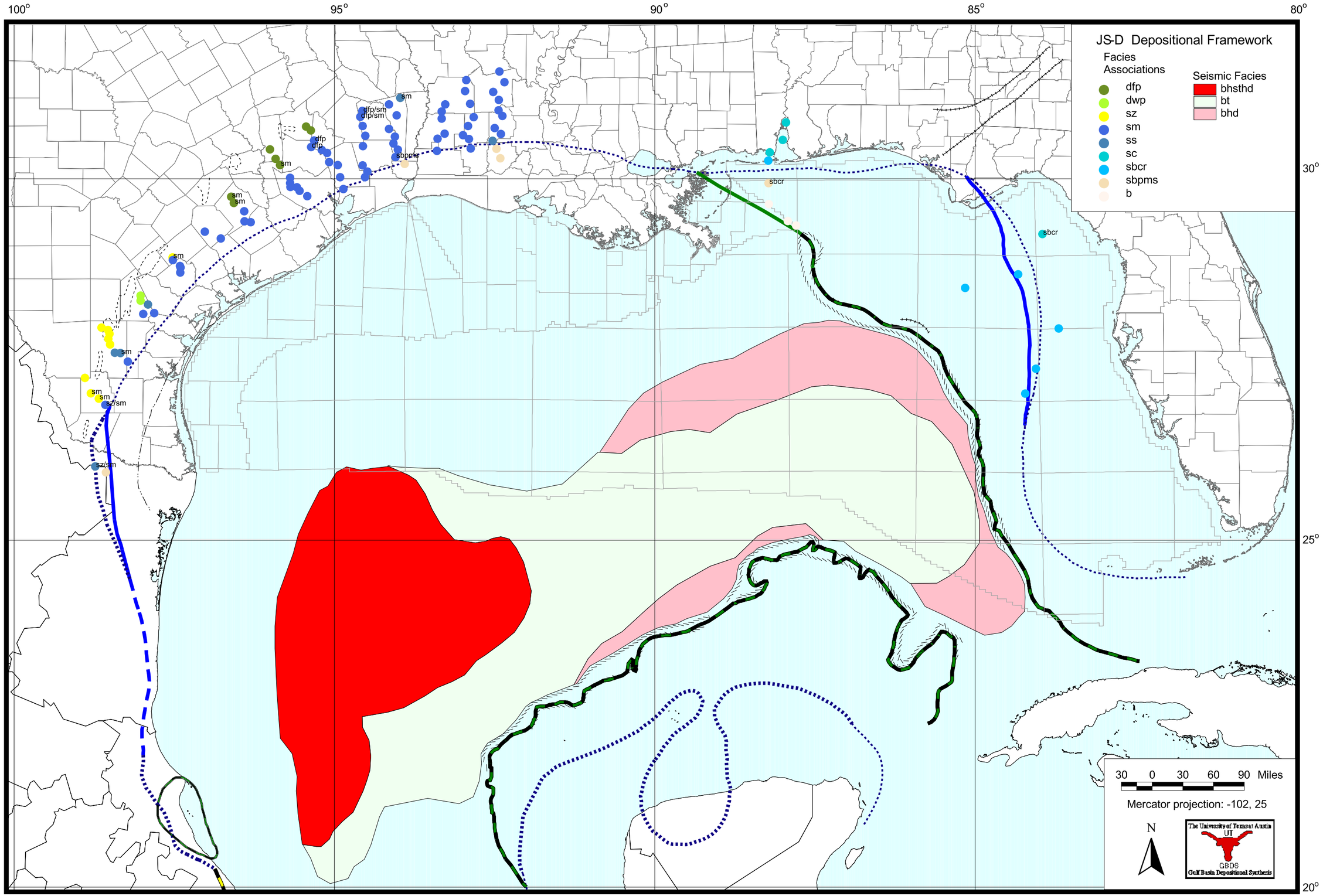
OF-EFUThk.eps



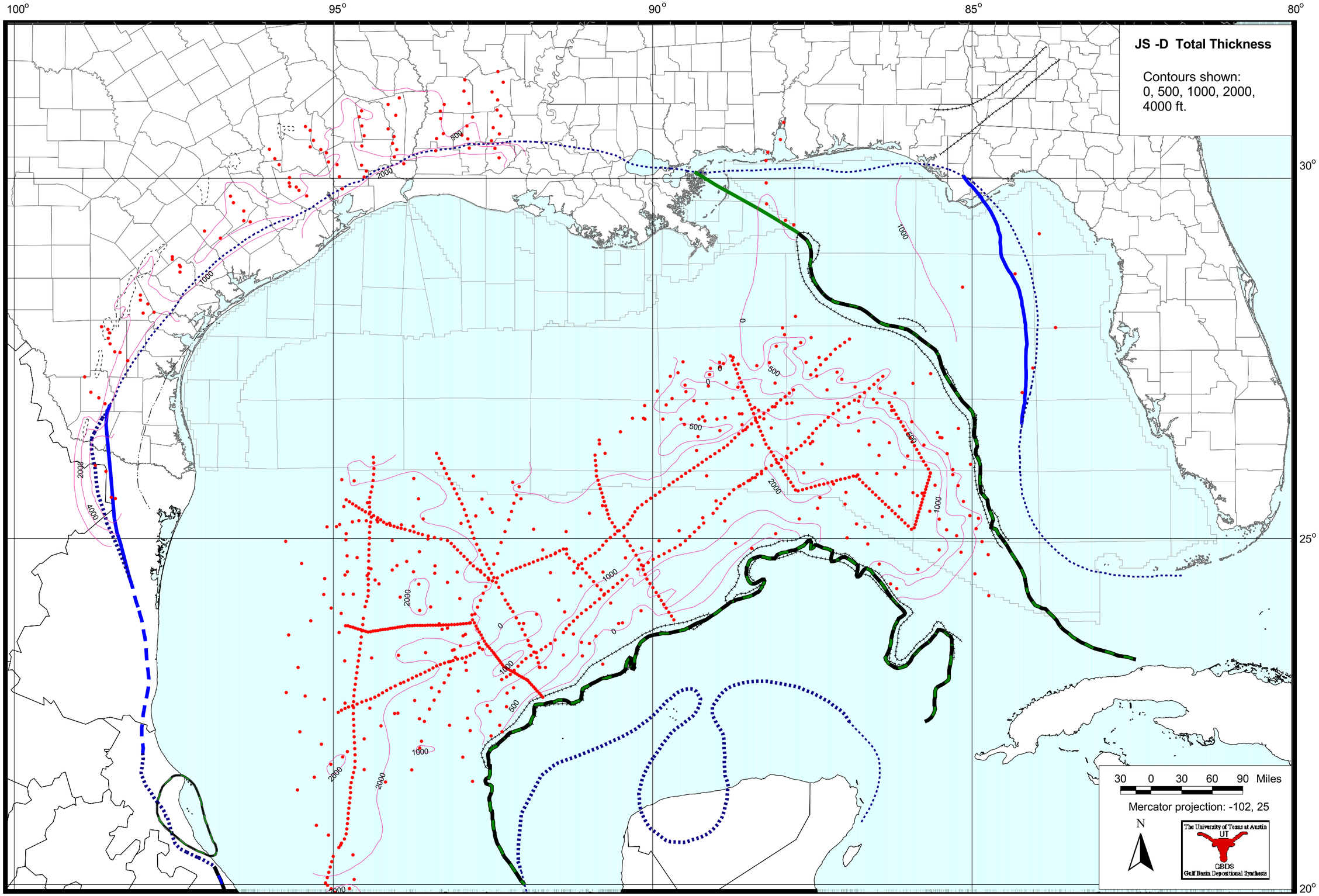
OF-EFNSand.eps


100°
95°
90°
85°
80°
30°
25°
20°
OF -F Deposystems
Of_f
Fluvial system
Bed load dominated fluvial
Mix-load dominated fluvial
Suspended-load dominated
Delta system
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Shelf system
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Progradational delta-fed apron
Progradational muddy delta-fed apron
Progradational sandy delta-fed apron
Progradational shelf-fed apron
Progradational delta-fed apron
Carbonate ramp
Bypass slope
Submarine canyon fill
Megaslide
Starved basin
Basin floor apron
Sandy basin floor apron
Mass transport complex
Contourite drift
Basin floor
Muddy fan
Sand-rich fan
Sandy fan
Nondeposition
Volcanic Input
Amphistegina Shelf
Houston D.
Greta Barrier
Norias Delta
Norma Delta
Starved Basin
Basin
Oligo-Miocene West Gulf Basin Floor Apron
Tamaulipas Fan
Chicxulub Depression
REGIONAL UPLAND
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

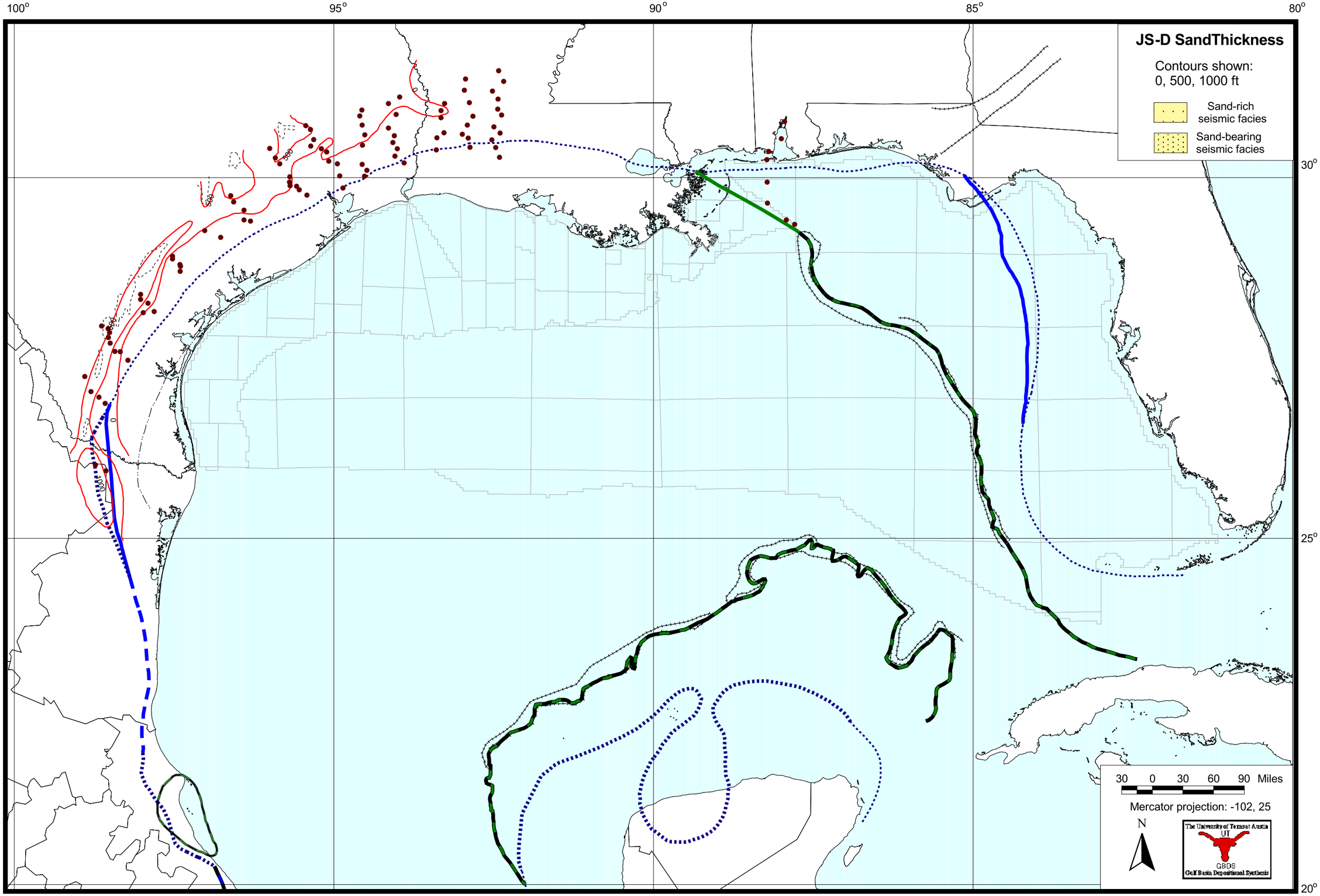

OF -E Deposystems
Of_e
Fluvial system
Bed load dominated fluvial
Mix-load dominated fluvial
Suspended-load dominated
Delta system
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Shelf system
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Progradational delta-fed apron
Progradational muddy delta-fed apron
Progradational sandy delta-fed apron
Progradational shelf-fed apron
Progradational delta-fed apron
Carbonate ramp
Bypass slope
Submarine canyon fill
Megaslide
Starved basin
Basin floor apron
Sandy basin floor apron
Mass transport complex
Contourite drift
Basin floor
Muddy fan
Sand-rich fan
Sandy fan
Nondeposition
100°
95°
90°
85°
80°
30°
25°
20°
Volcanic Input
RAPID UPLIFT
Amphistegina Shelf
Houston Delta
Hackberry Collapsed Margin
Norias Delta
Norma Delta
Oligocene West Gulf Basin Floor Apron
Basin
Starved Basin
Chicxulub Depression
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis


JS-D Depositional Framework
Facies Associations
dfp
dwp
sz
sm
ss
sc
sbcr
sbpms
b
Seismic Facies
bhsthd
bt
bhd
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

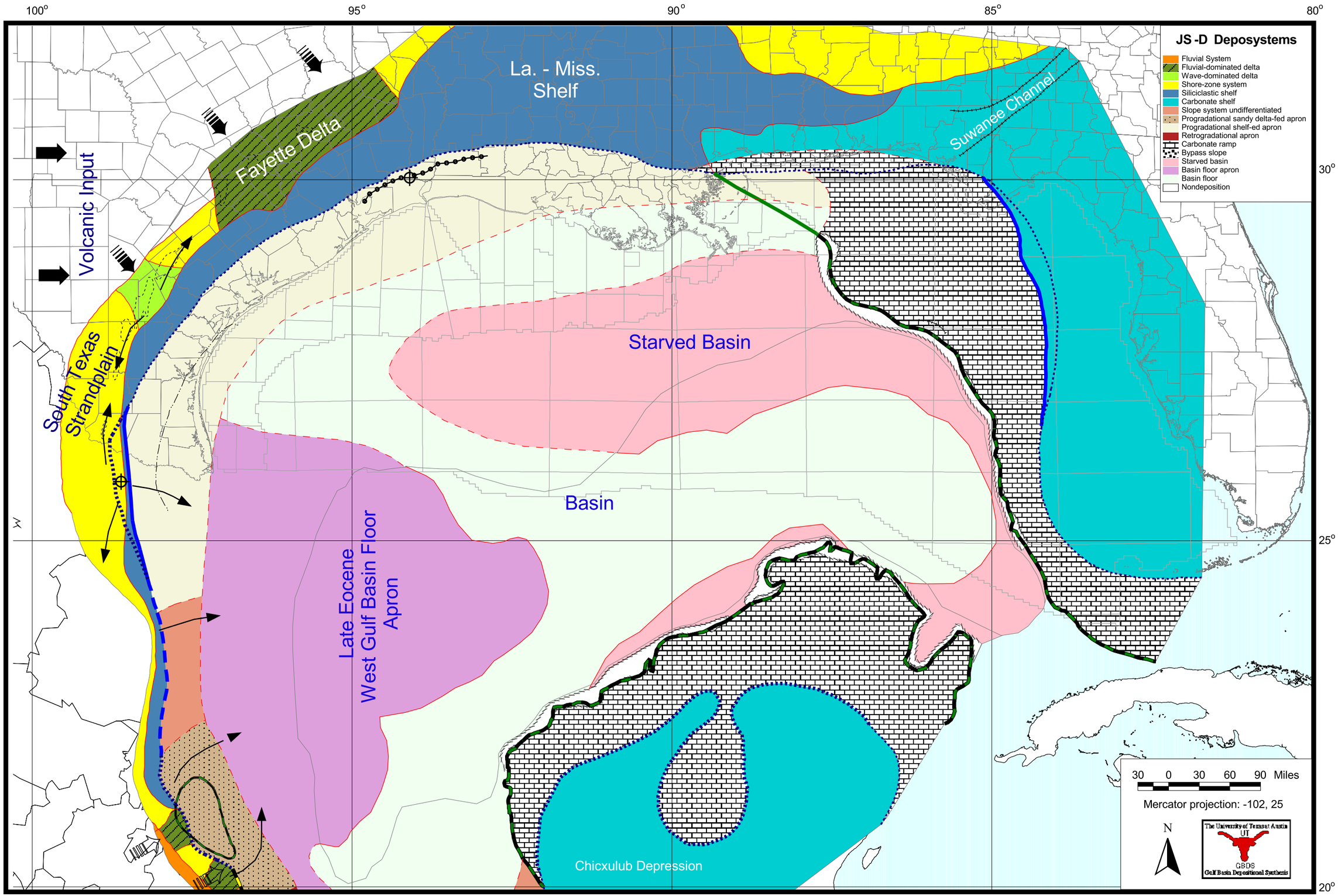
JS-DDepo.eps

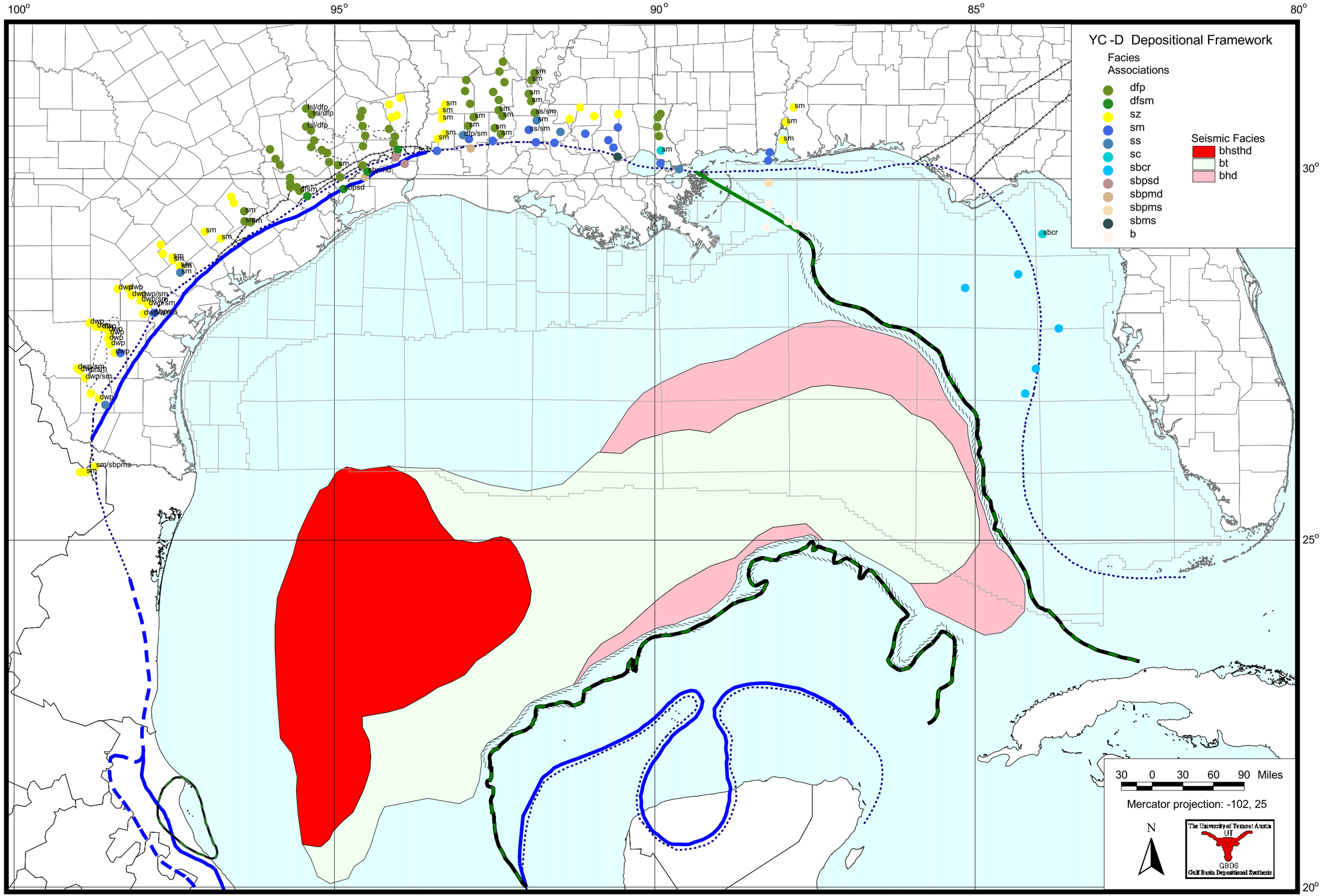

JS -D Total Thickness
Contours shown:
0, 500, 1000, 2000,
4000 ft.
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

JS-DUThk.eps

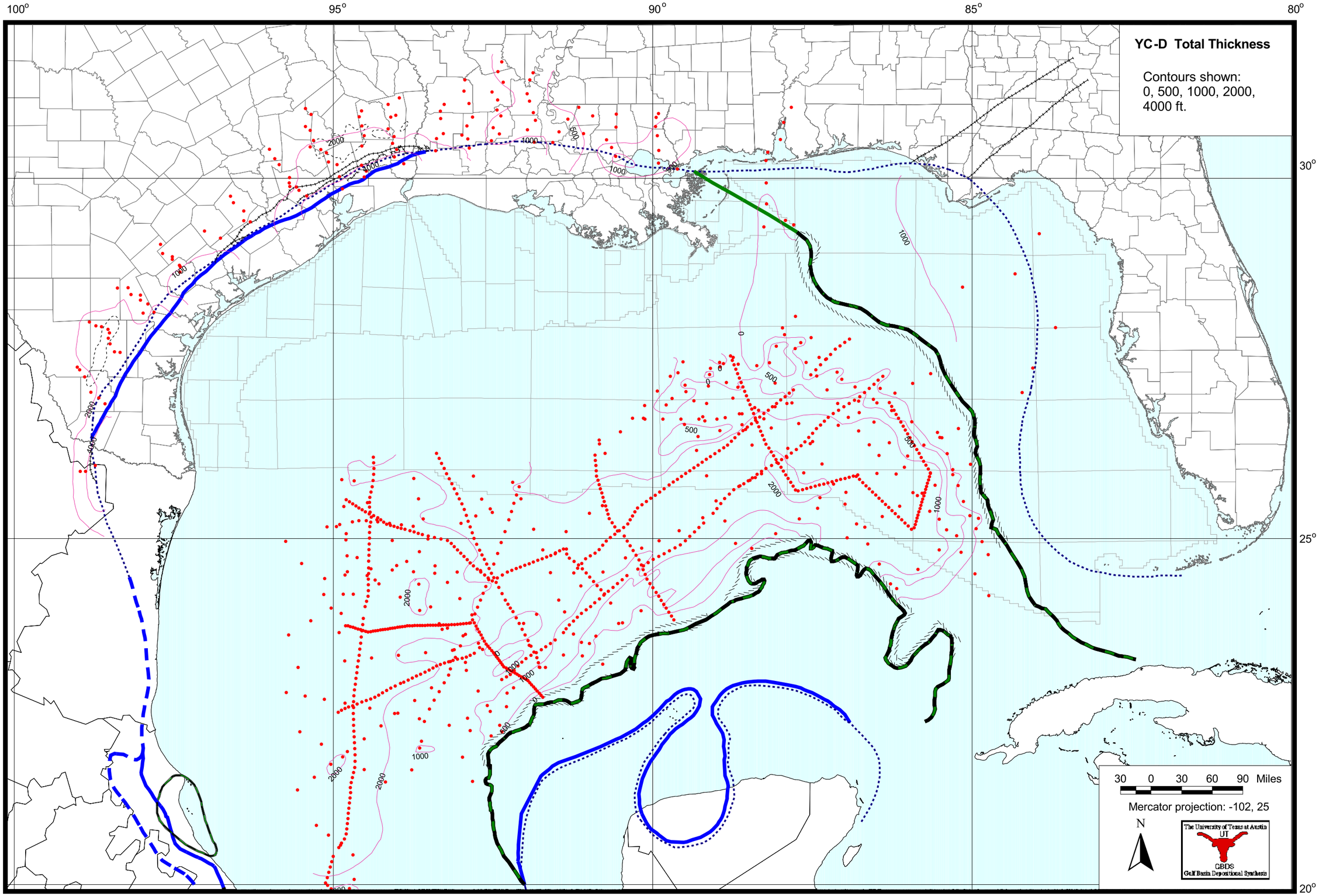


JS-DNSand.eps

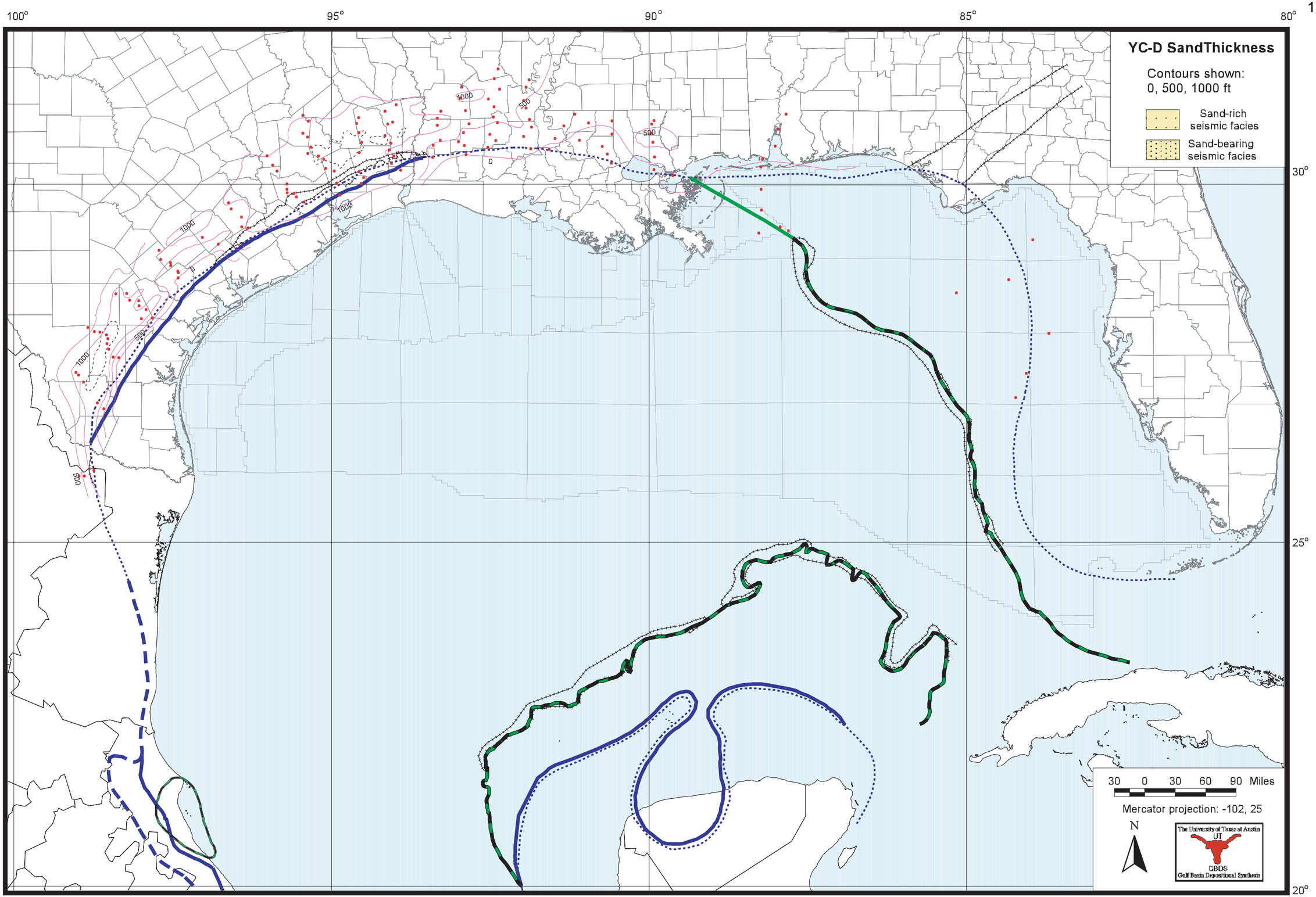

100°
95°
90°
85°
80°
30°
25°
20°
JS -D Deposystems
Fluvial System
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Progradational sandy delta-fed apron
Progradational shelf-ed apron
Retrogradational apron
Carbonate ramp
Bypass slope
Starved basin
Basin floor apron
Basin floor
Nondeposition
La. - Miss.
Shelf
Fayette Delta
Suwanee Channel
Volcanic Input
South Texas
Strandplain
Starved Basin
Basin
Late Eocene
West Gulf Basin Floor
Apron
Chicxulub Depression
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis



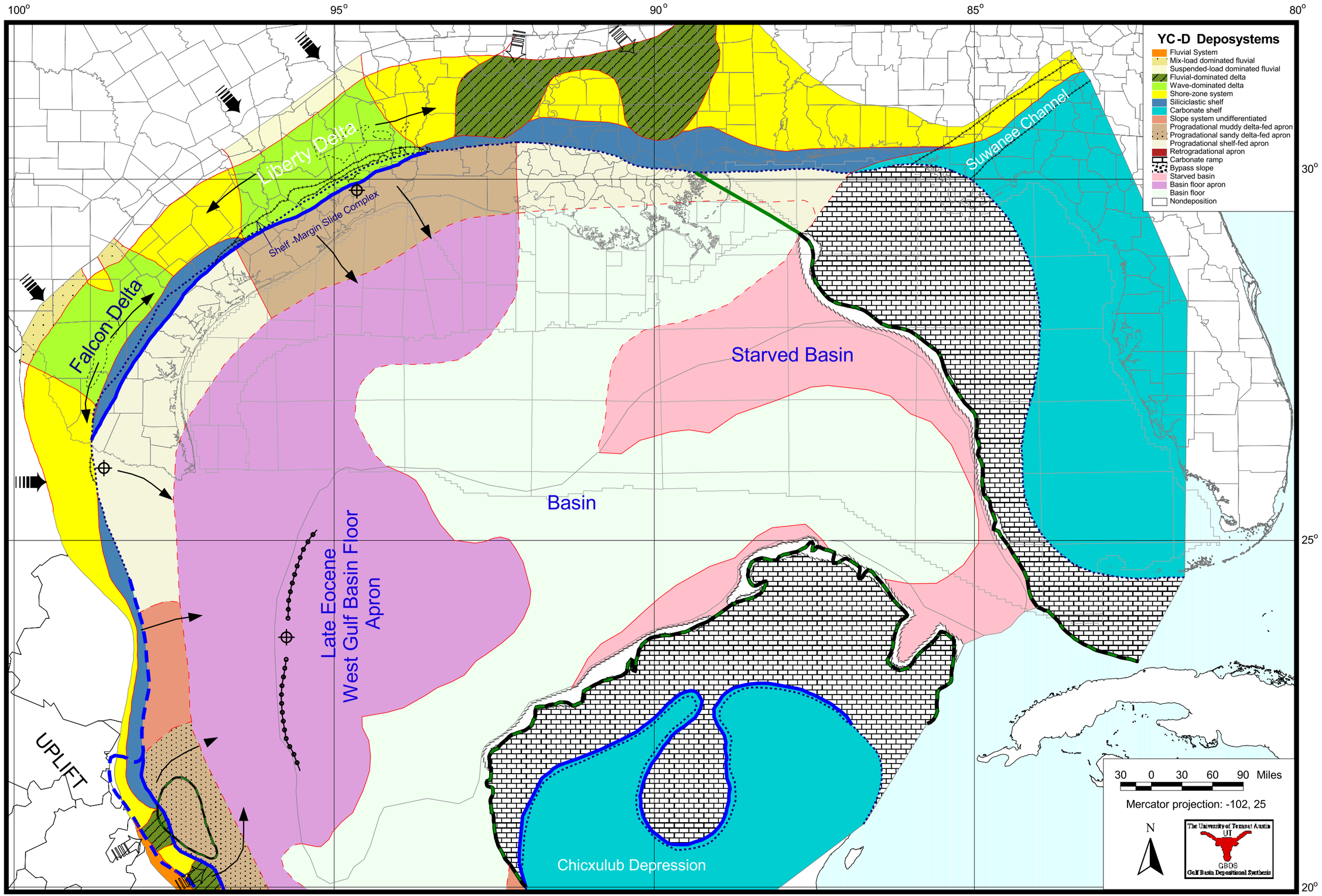
YC-DDepeo.eps

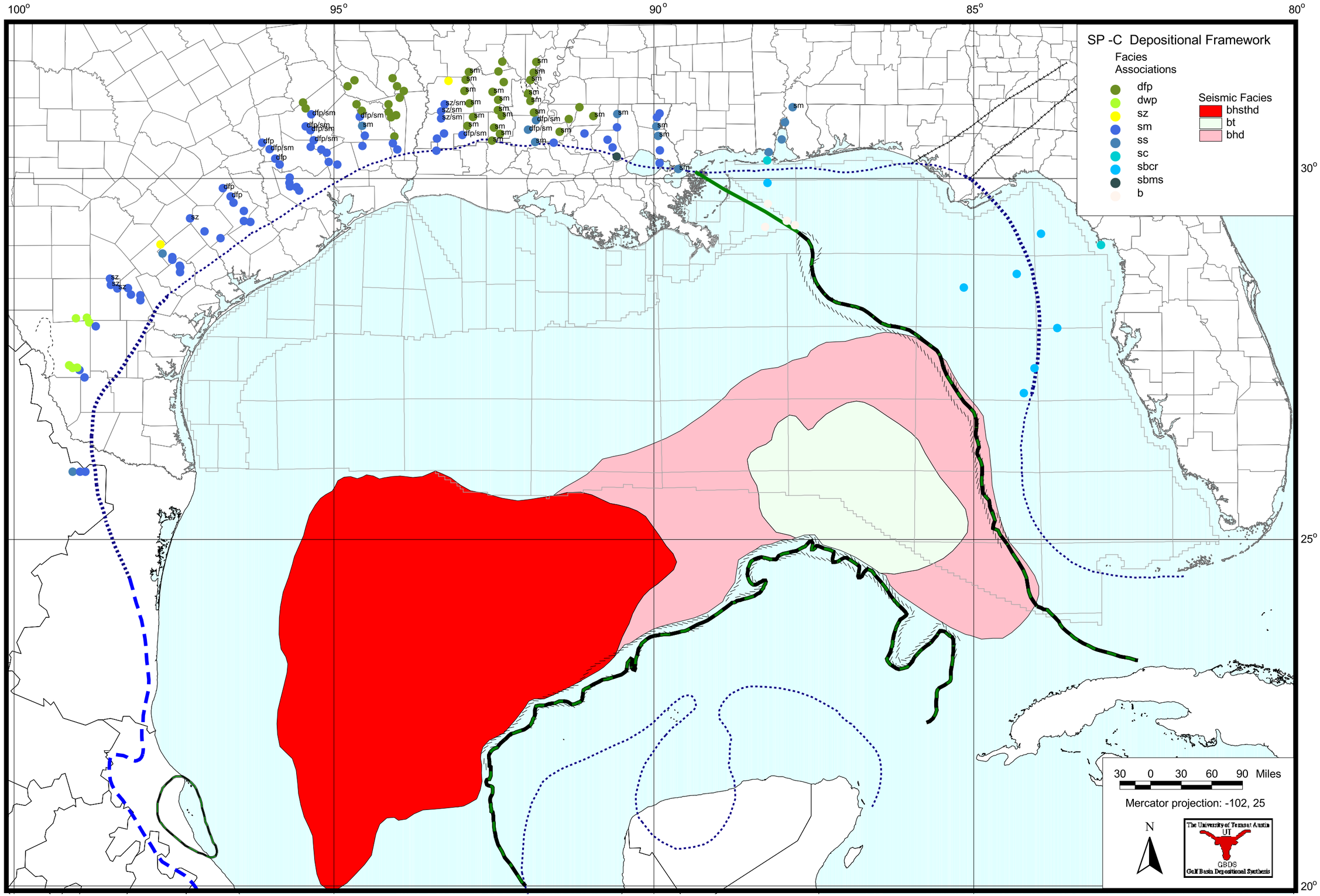

YC-D Total Thickness
Contours shown:
0, 500, 1000, 2000,
4000 ft.
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

YC-DUThk.eps



YC-DNSand.eps


100°
95°
90°
85°
80°
30°
25°
20°
YC-D Deposystems
Fluvial System
Mix-load dominated fluvial
Suspended-load dominated fluvial
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Progradational muddy delta-fed apron
Progradational sandy delta-fed apron
Progradational shelf-fed apron
Retrogradational apron
Carbonate ramp
Bypass slope
Starved basin
Basin floor apron
Basin floor
Nondeposition
Liberty Delta
Falcon Delta
Shelf-Margin Slide Complex
Suwanee Channel
Starved Basin
Basin
Late Eocene
West Gulf Basin Floor
Apron
UPLIFT
Chicxulub Depression
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis


SP -C Depositional Framework
Facies Associations
dfp
dwp
sz
sm
ss
sc
sbcr
sbms
b
Seismic Facies
bhsthd
bt
bhd
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
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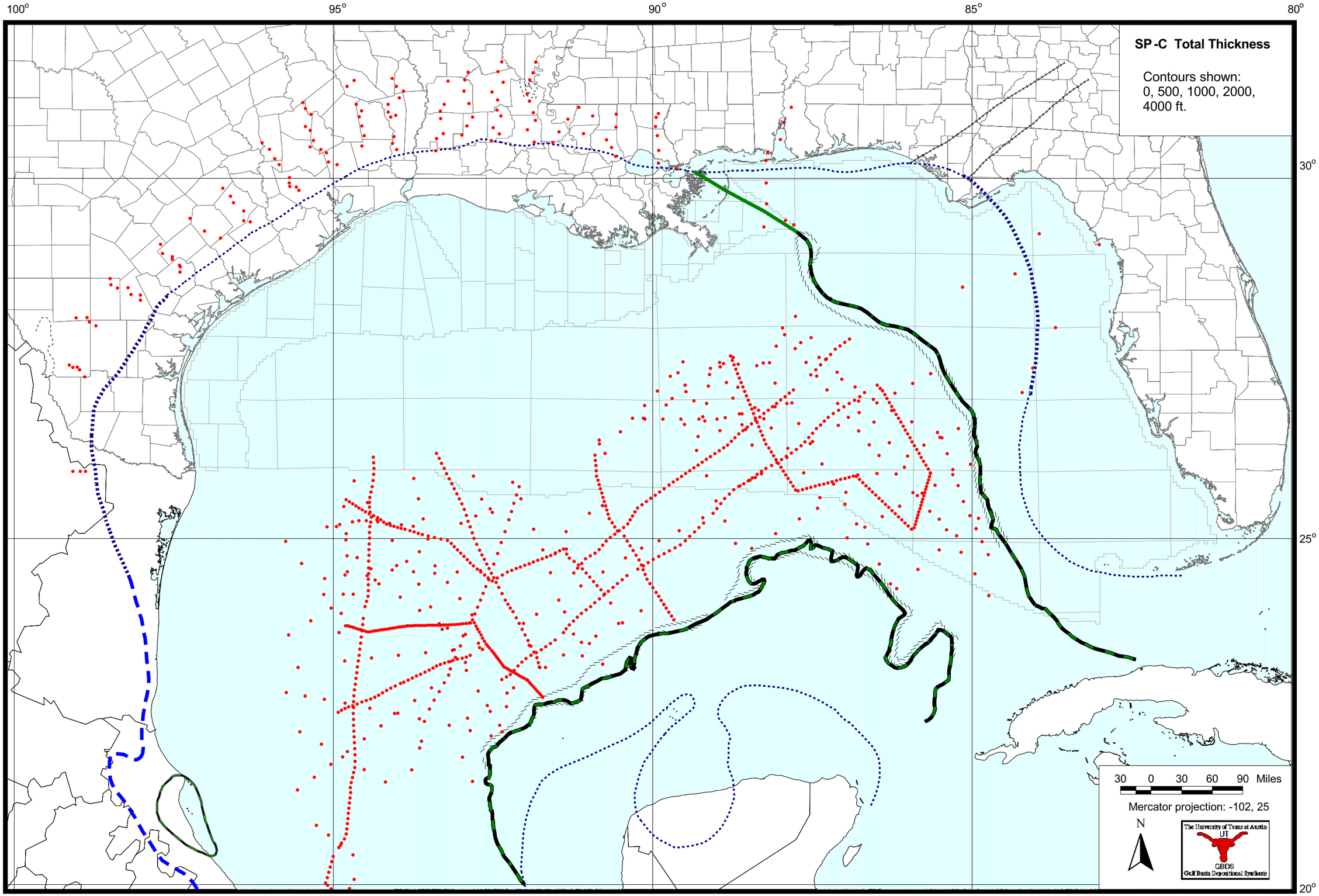
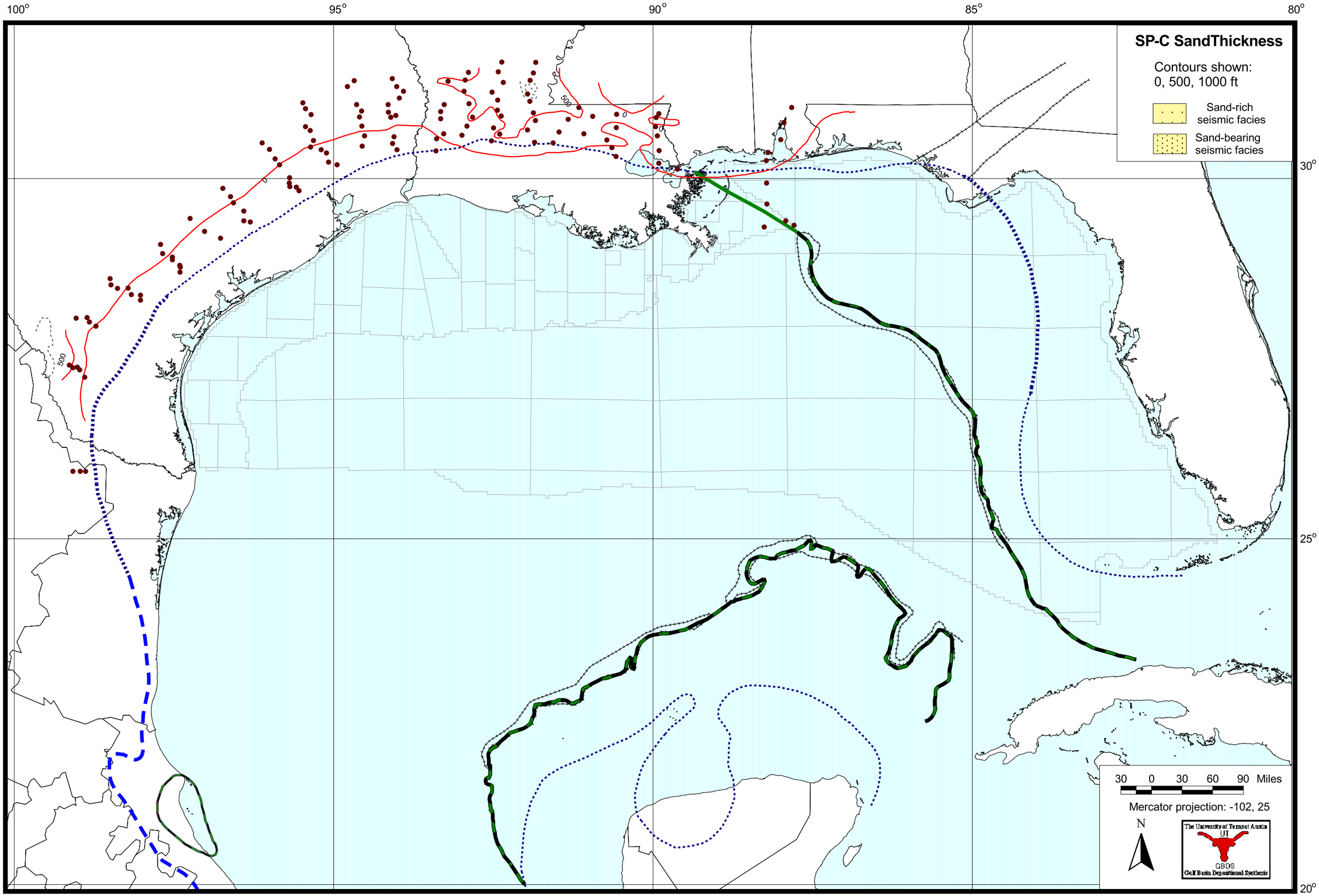
GBDS
Gulf Basin Depositional Synthesis

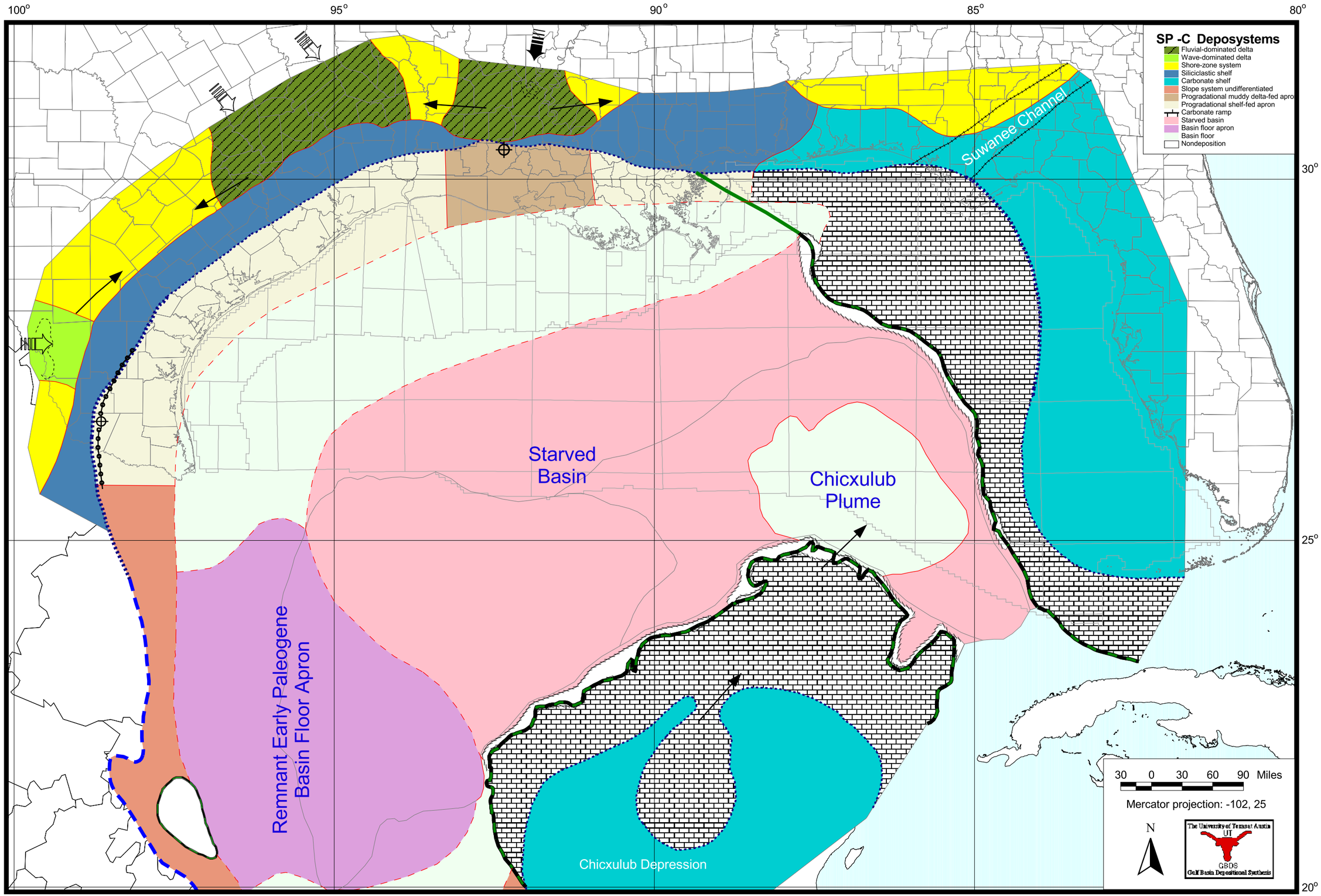
SP-CDepo.eps

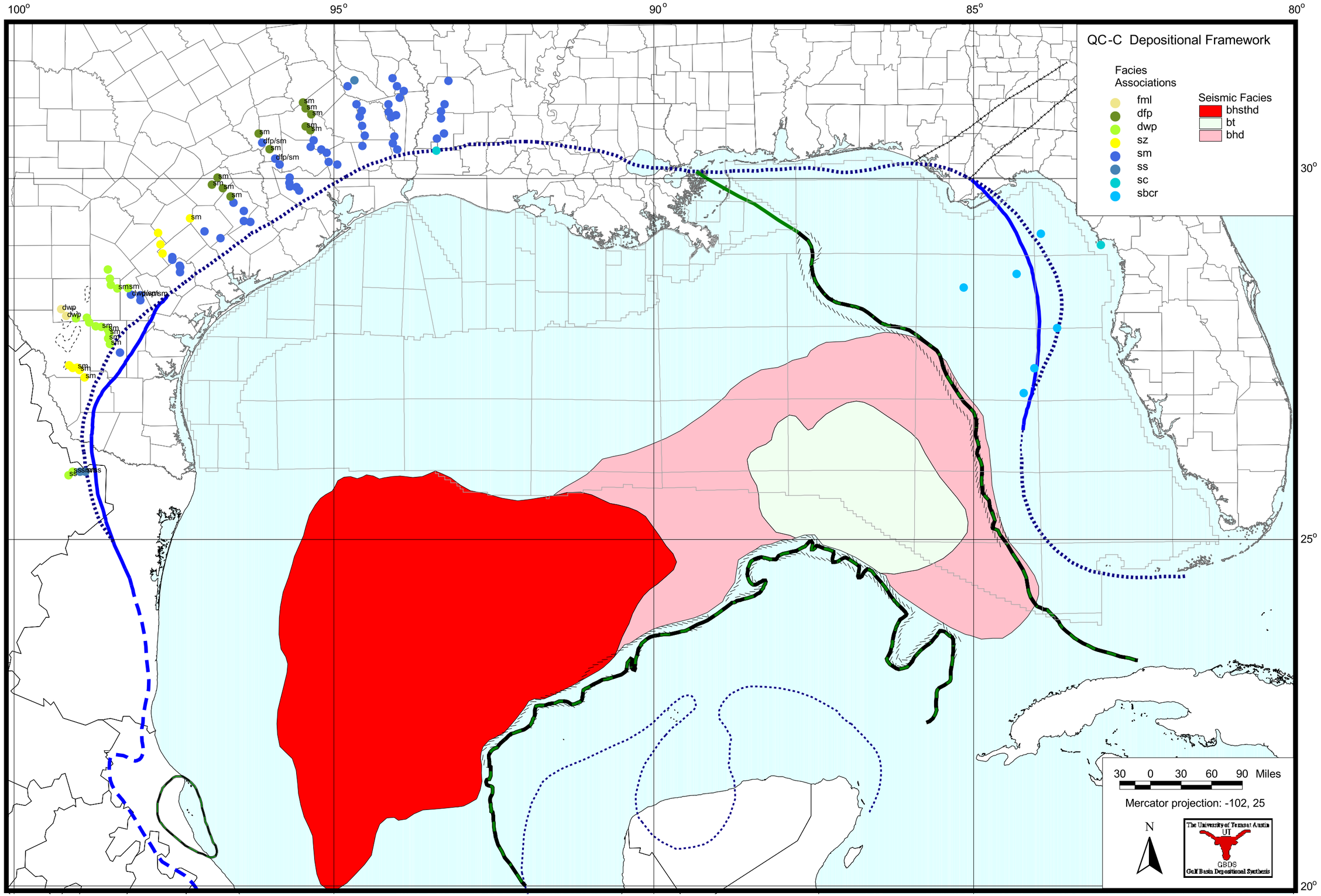

100°
95°
90°
85°
80°
30°
25°
20°
SP-C Total Thickness
Contours shown:
0, 500, 1000, 2000,
4000 ft.
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

SP-CUThk.eps

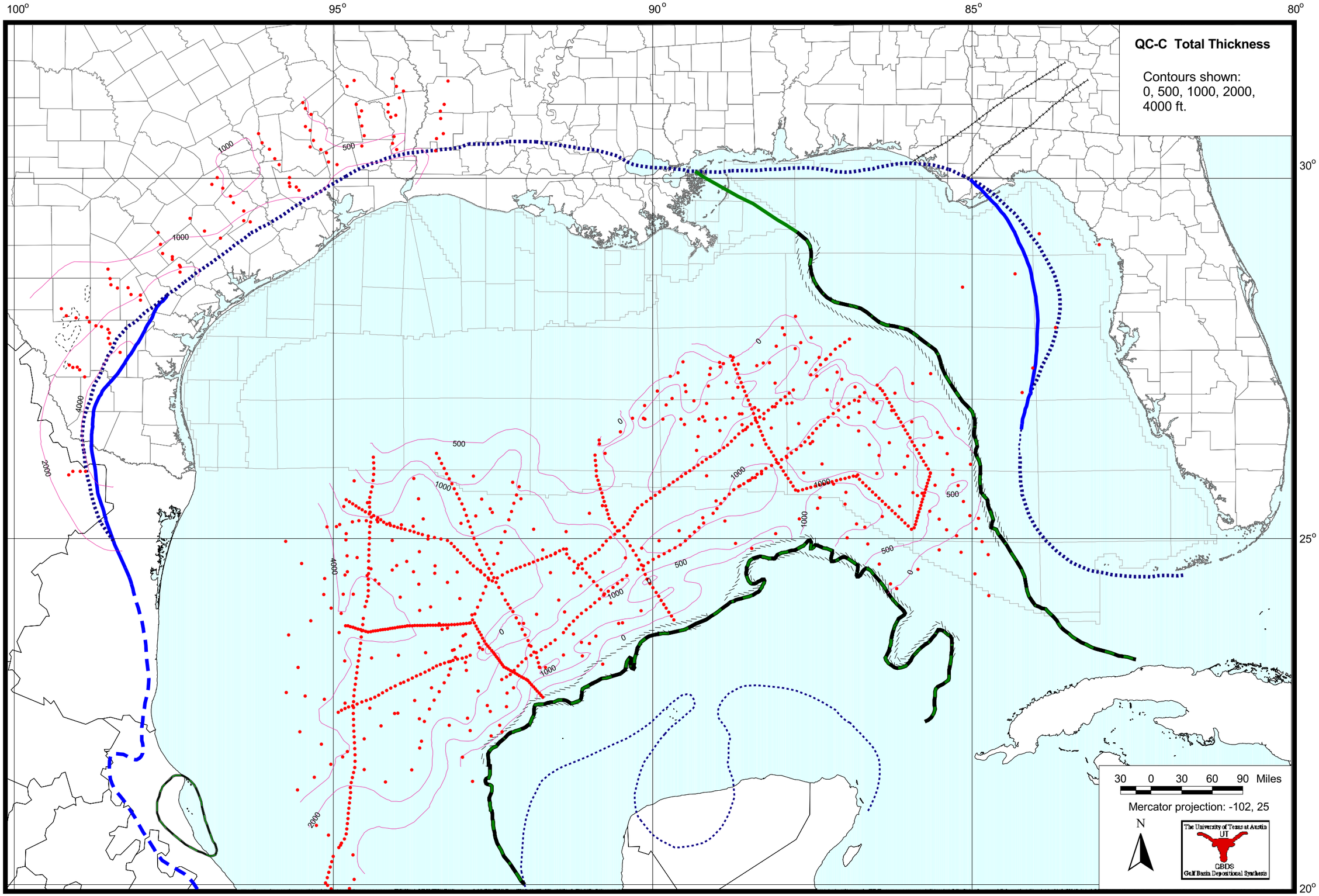


SP-CNSand.eps

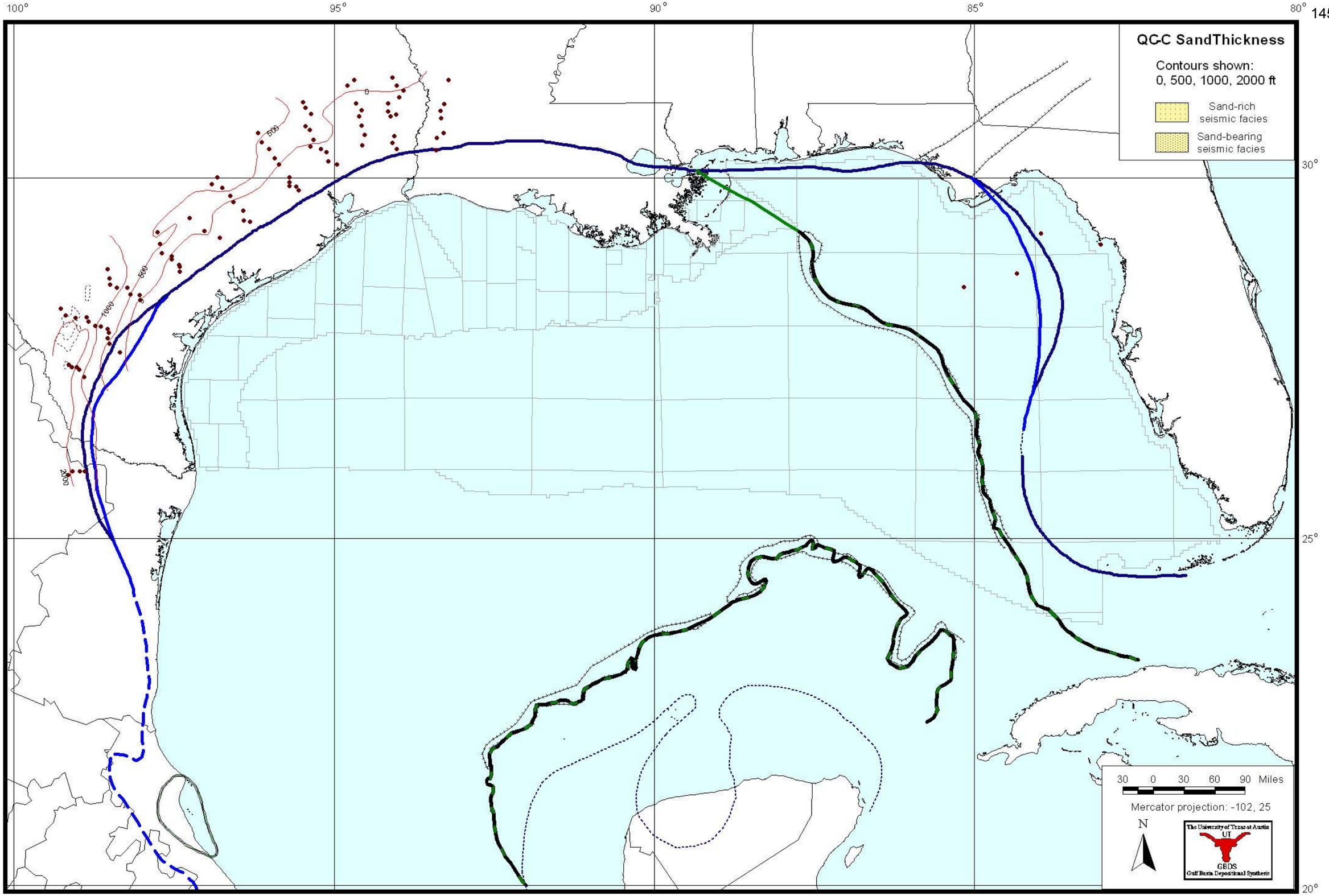

100°
95°
90°
85°
80°
30°
25°
20°
SP -C Deposystems
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Progradational muddy delta-fed apro
Progradational shelf-fed apron
Carbonate ramp
Starved basin
Basin floor apron
Basin floor
Nondeposition
Suwanee Channel
Starved Basin
Chicxulub Plume
Remnant Early Paleogene Basin Floor Apron
Chicxulub Depression
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis


QC-C Depositional Framework
Facies Associations
fml
dfp
dwp
sz
sm
ss
sc
sbcr
Seismic Facies
bhsthd
bt
bhd
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

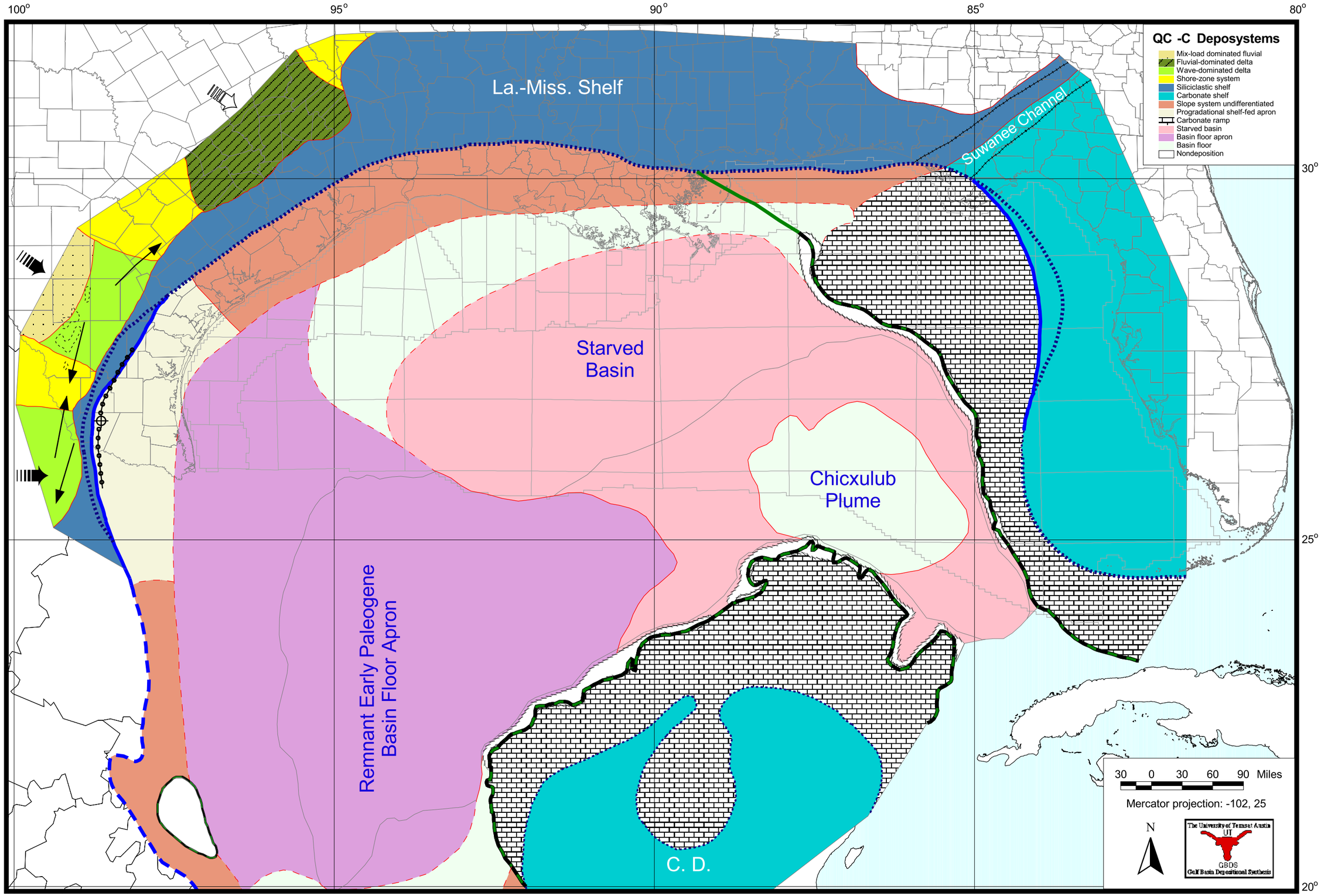
QC-CDepo.eps

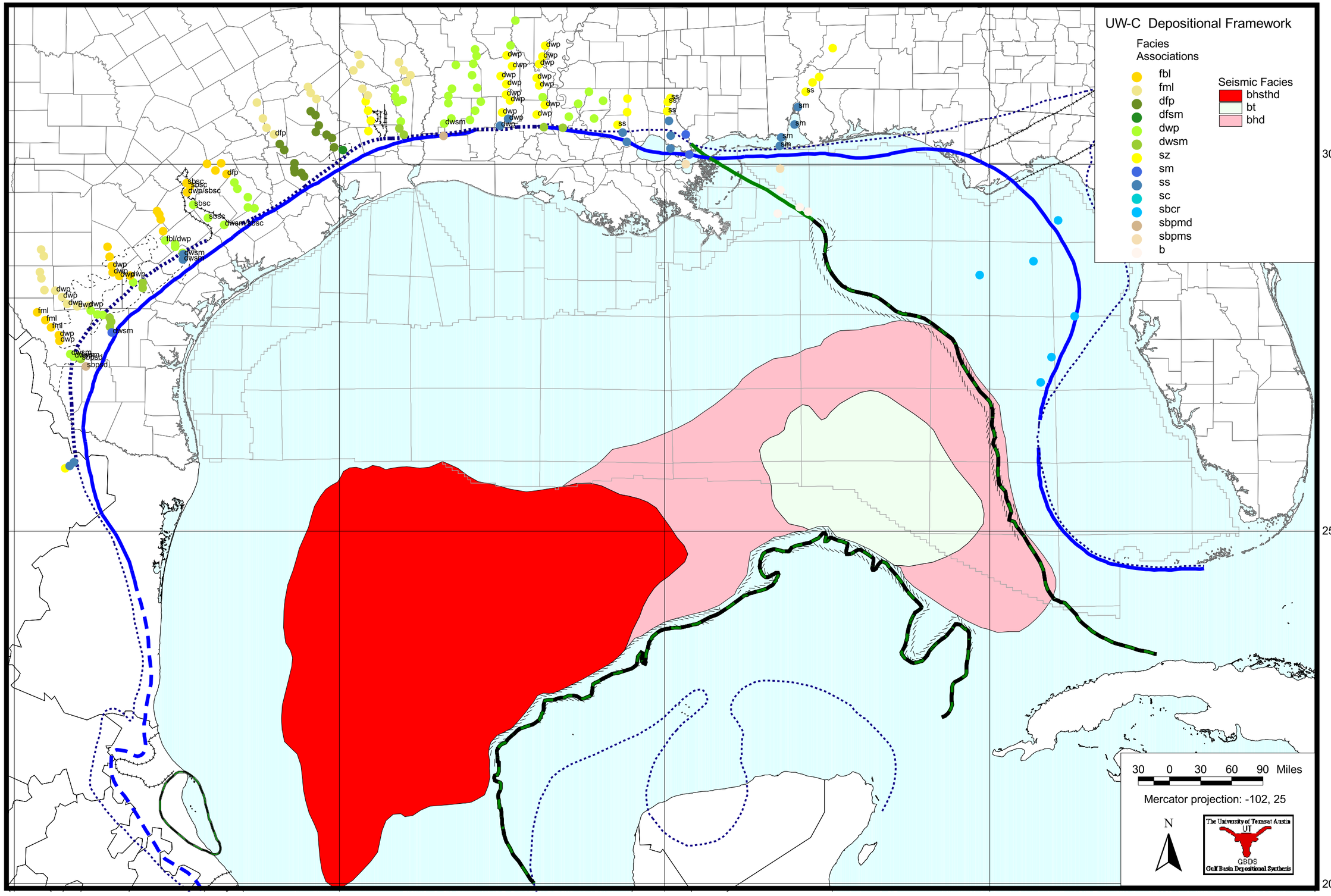

QC-C Total Thickness
Contours shown:
0, 500, 1000, 2000,
4000 ft.
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

QC-CUThk.eps

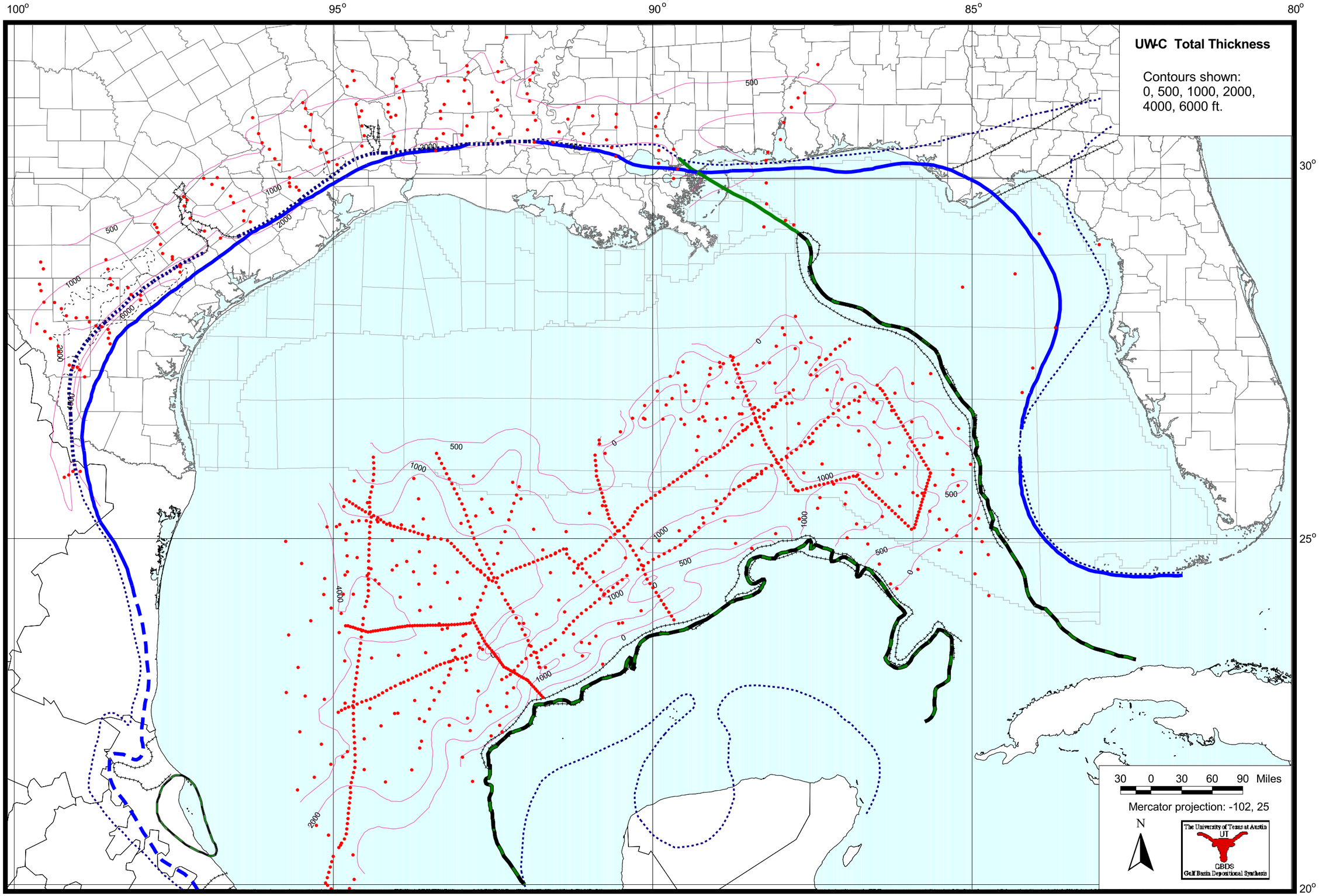


QC-CNSand.eps

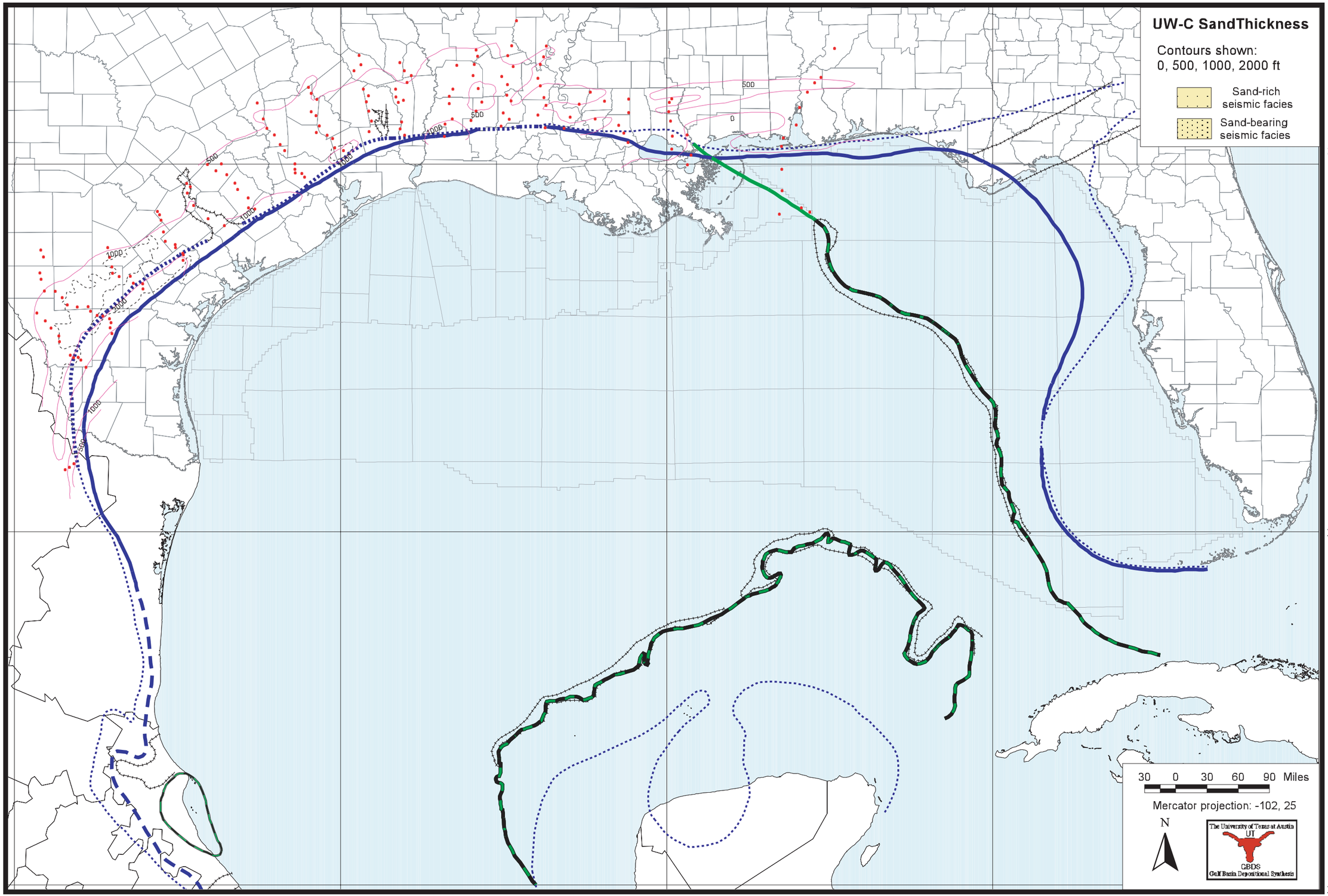

100°
95°
90°
85°
80°
30°
25°
20°
QC -C Deposystems
Mix-load dominated fluvial
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Progradational shelf-fed apron
Carbonate ramp
Starved basin
Basin floor apron
Basin floor
Nondeposition
La.-Miss. Shelf
Suwanee Channel
Starved Basin
Chicxulub Plume
Remnant Early Paleogene Basin Floor Apron
C. D.
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis


UW-C Depositional Framework
Facies Associations
fbl
fml
dfp
dfsm
dwp
dwsm
sz
sm
ss
sc
sbcr
sbpmd
sbpms
b
Seismic Facies
bhsthd
bt
bhd
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

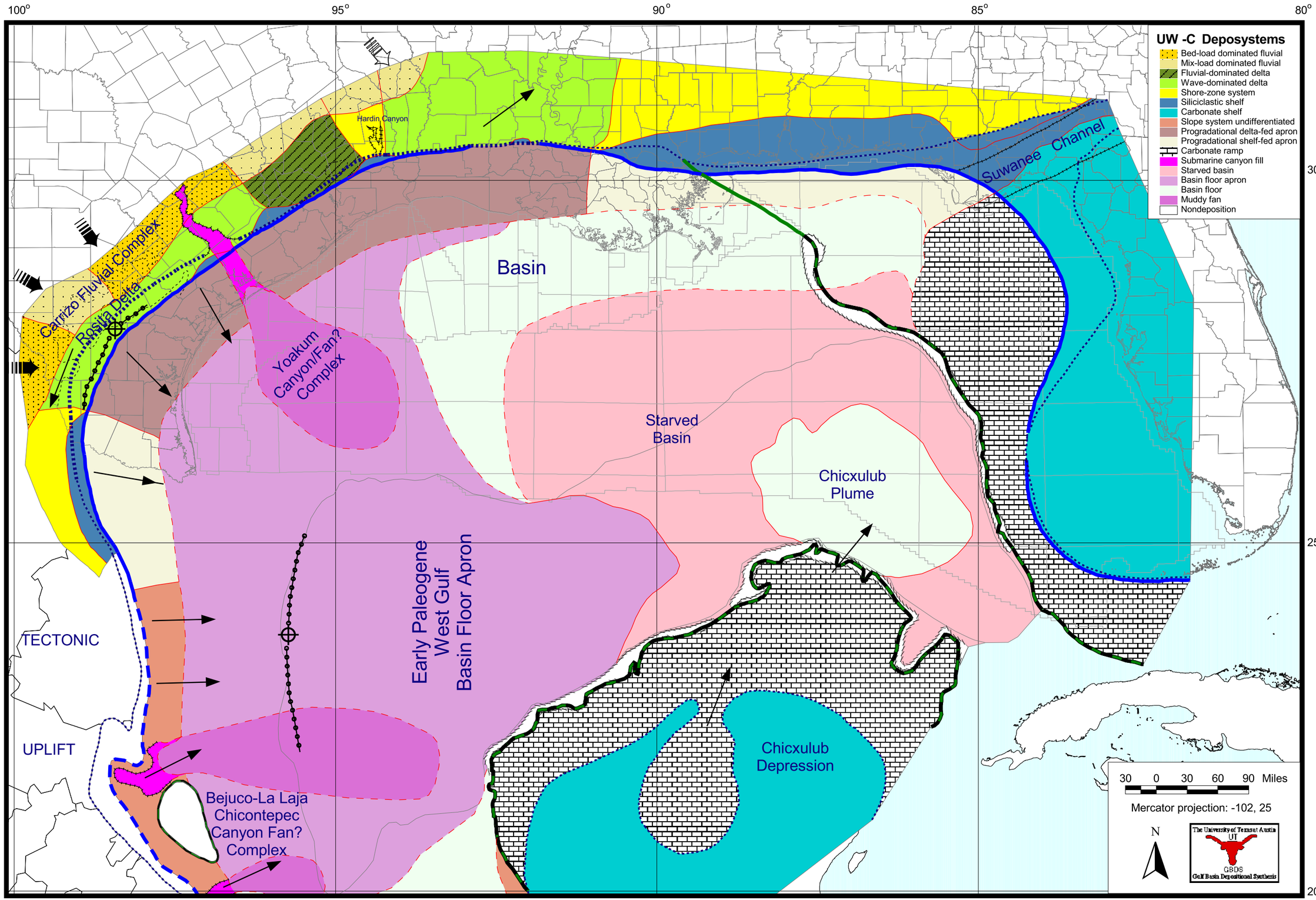
UW-CDepo.eps


UW-C Total Thickness
Contours shown:
0, 500, 1000, 2000,
4000, 6000 ft.
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
The University of Texas at Austin
UT
GBDS
Gulf Basin Depositional Synthesis

UW-CUThk.eps



UW-CNSand.eps


100°
95°
90°
85°
80°
30°
25°
20°
UW -C Deposystems
Bed-load dominated fluvial
Mix-load dominated fluvial
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Progradational delta-fed apron
Progradational shelf-fed apron
Carbonate ramp
Submarine canyon fill
Starved basin
Basin floor apron
Basin floor
Muddy fan
Nondeposition
Hardin Canyon
Suwanee Channel
Carrizo Fluvial Complex
Rosita Delta
Basin
Yoakum Canyon/Fan? Complex
Starved Basin
Chicxulub Plume
Early Paleogene West Gulf Basin Floor Apron
TECTONIC
UPLIFT
Bejuco-La Laja Chicontepec Canyon Fan? Complex
Chicxulub Depression
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
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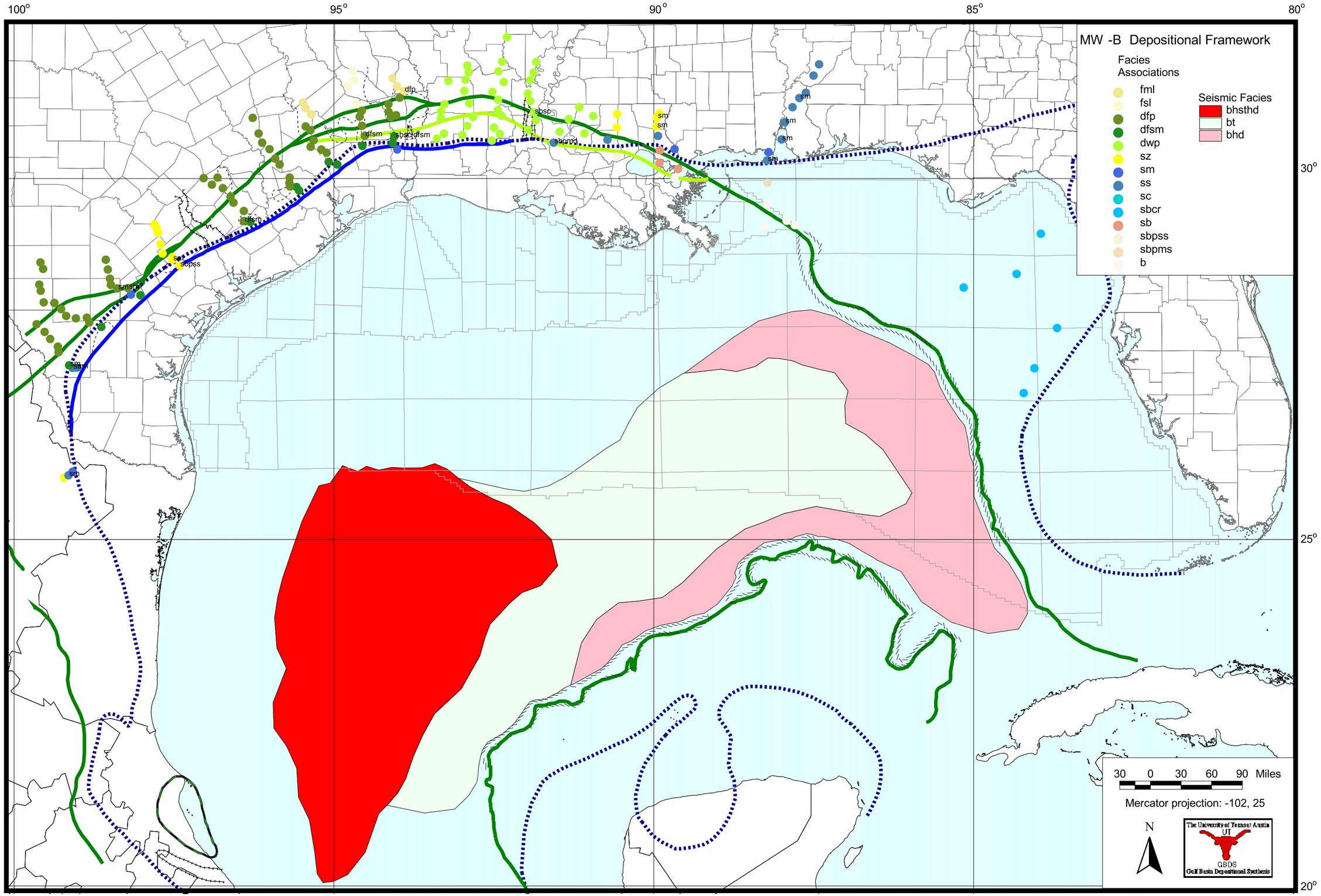
Gulf Basin Depositional Synthesis


MW -B Depositional Framework
Facies Associations
fml
fsl
dfp
dfsm
dwp
sz
sm
ss
sc
sbcr
sb
sbpss
sbpms
b
Seismic Facies
bhsthd
bt
bhd
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
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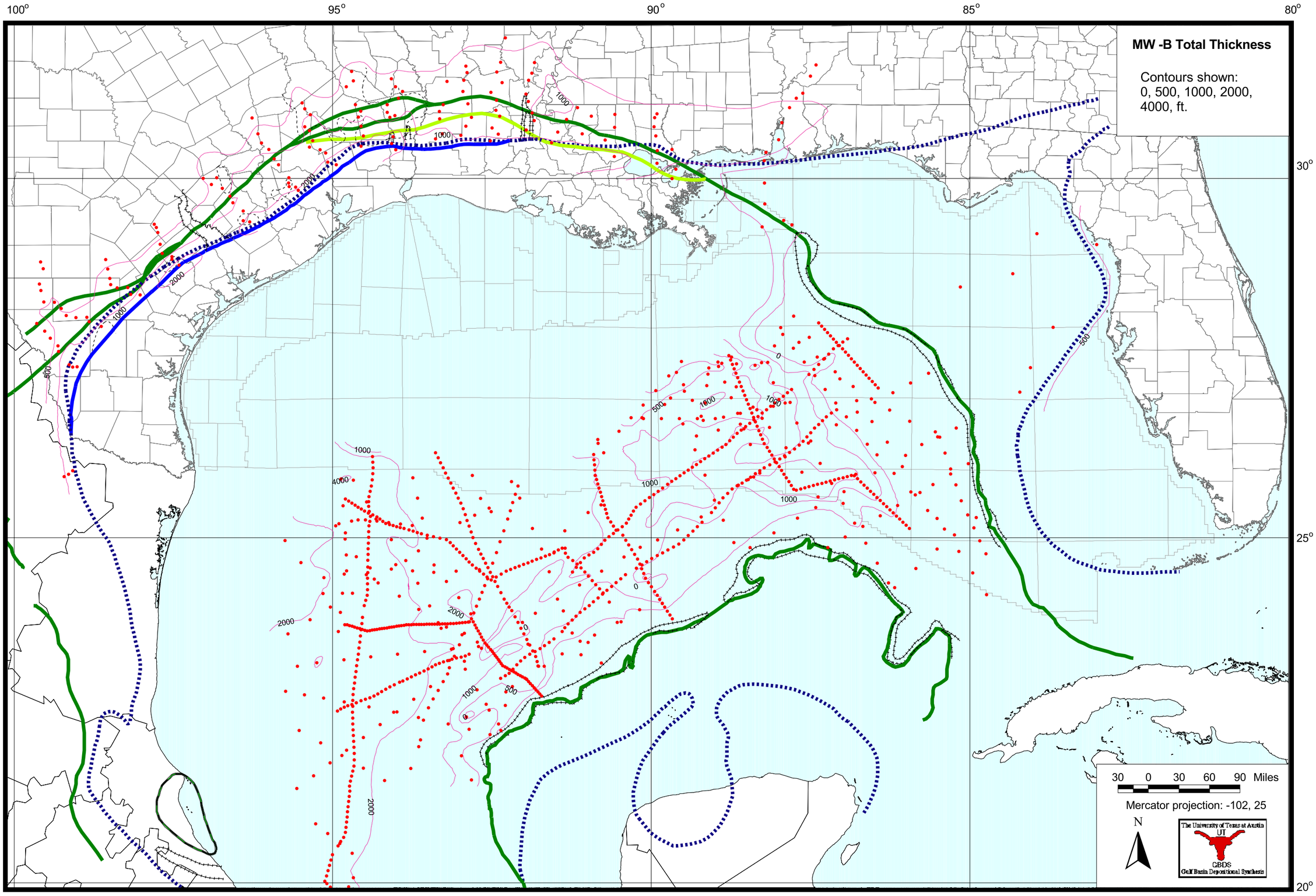
MW-BDepo.eps


MW -B Total Thickness
Contours shown:
0, 500, 1000, 2000,
4000, ft.
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
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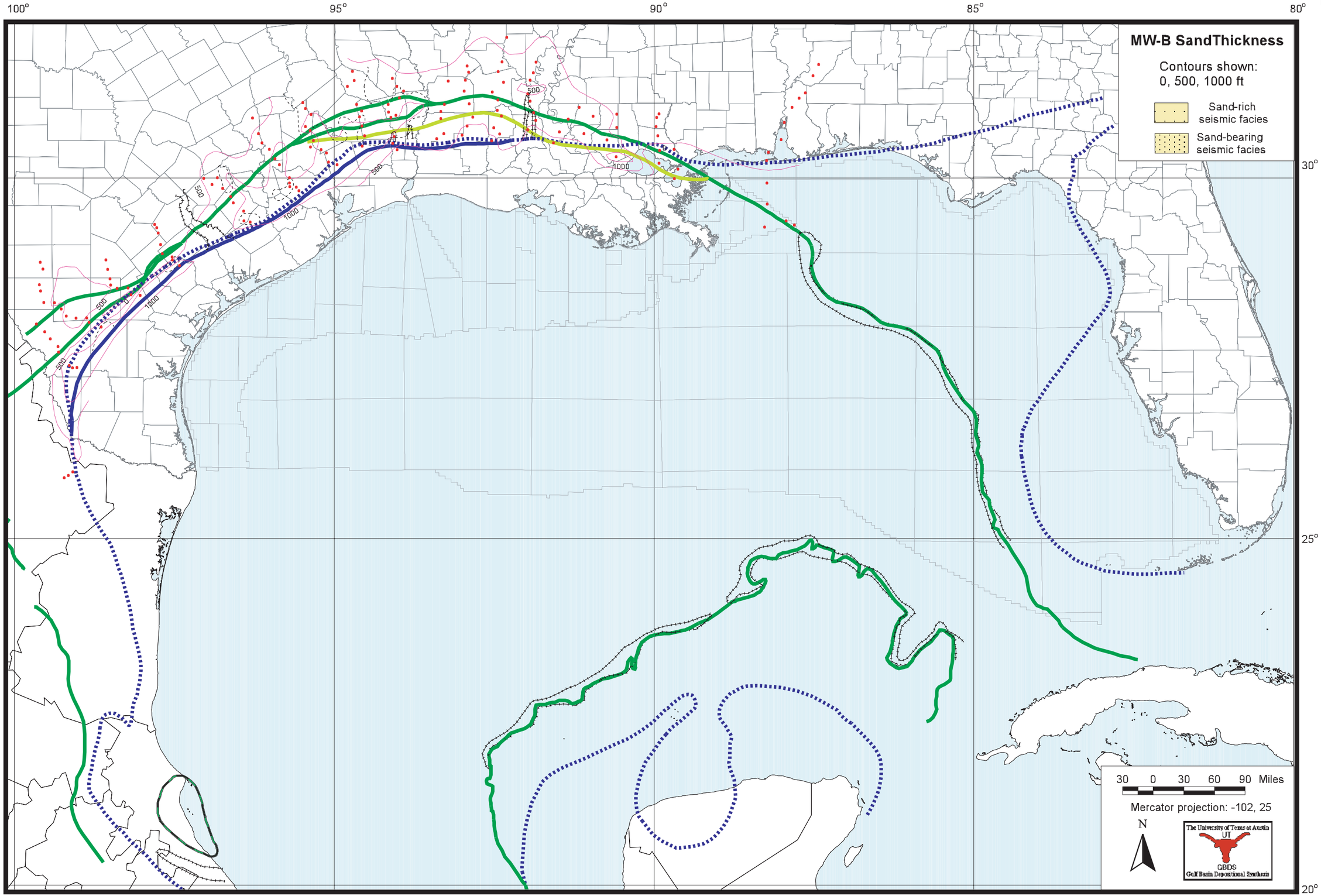
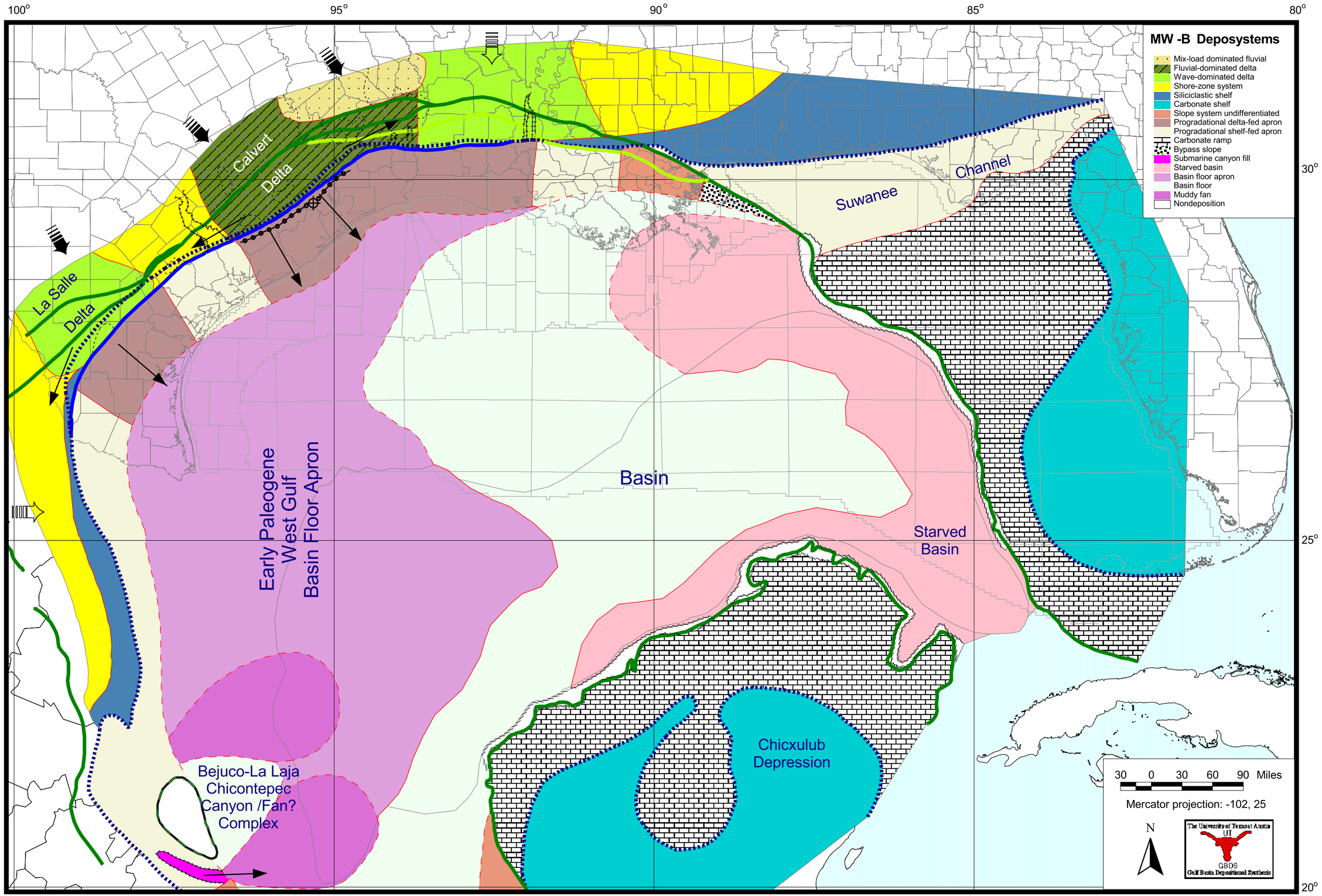
MW-BUThk.eps



MW-BNSand.eps


100°
95°
90°
85°
80°
30°
25°
20°
MW -B Deposystems
Mix-load dominated fluvial
Fluvial-dominated delta
Wave-dominated delta
Shore-zone system
Siliciclastic shelf
Carbonate shelf
Slope system undifferentiated
Progradational delta-fed apron
Progradational shelf-fed apron
Carbonate ramp
Bypass slope
Submarine canyon fill
Starved basin
Basin floor apron
Basin floor
Muddy fan
Nondeposition
Calvert Delta
La Salle Delta
Suwanee Channel
Early Paleogene West Gulf Basin Floor Apron
Basin
Starved Basin
Chicxulub Depression
Bejuco-La Laja Chicontepec Canyon /Fan? Complex
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
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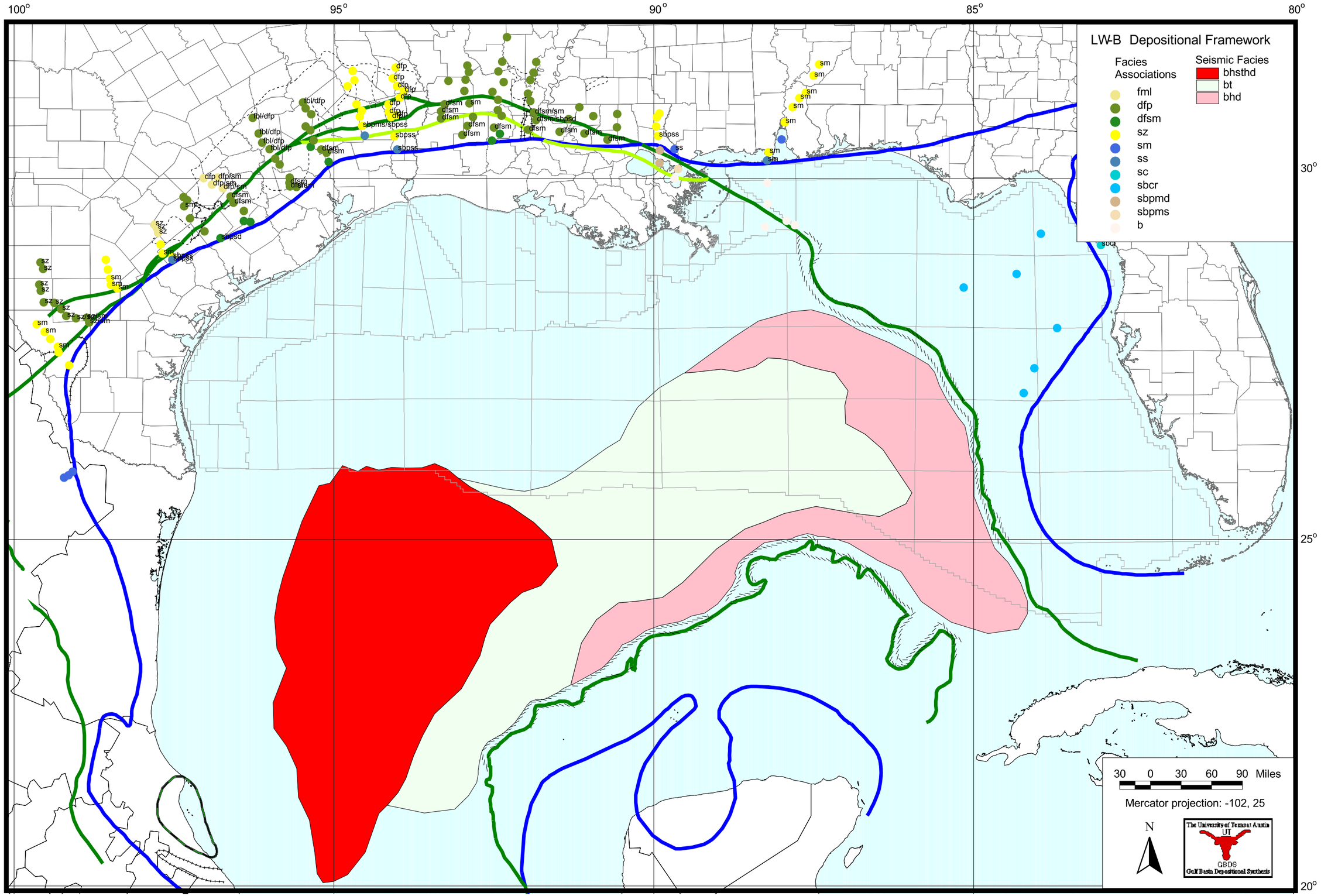
LW-B Depositional Framework
Facies Associations
fml
dfp
dfsm
sz
sm
ss
sc
sbcr
sbpmd
sbpms
b
Seismic Facies
bhsthd
bt
bhd
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
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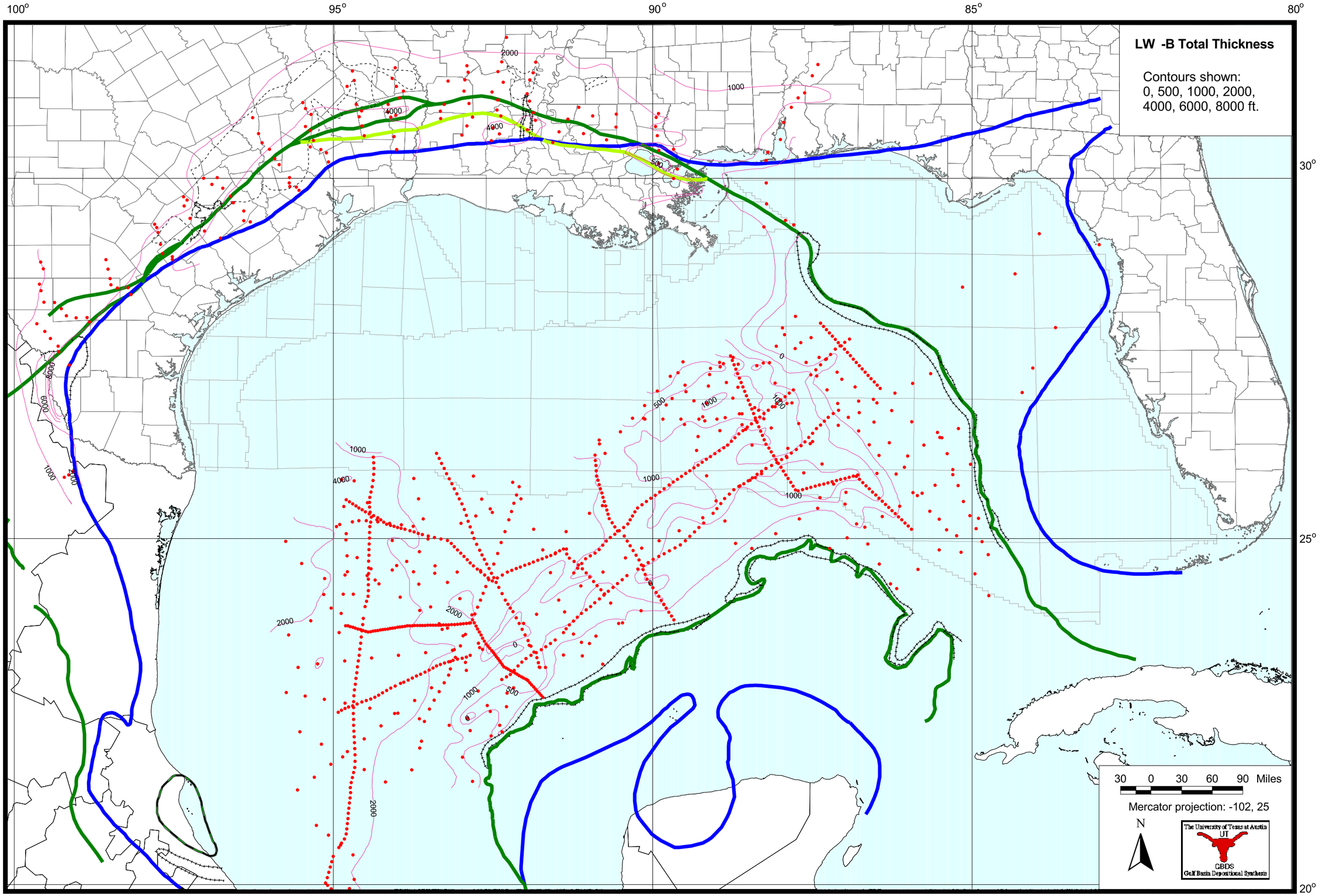
LW-BDepo.eps


LW -B Total Thickness
Contours shown:
0, 500, 1000, 2000,
4000, 6000, 8000 ft.
100°
95°
90°
85°
80°
30°
25°
20°
30 0 30 60 90 Miles
Mercator projection: -102, 25
N
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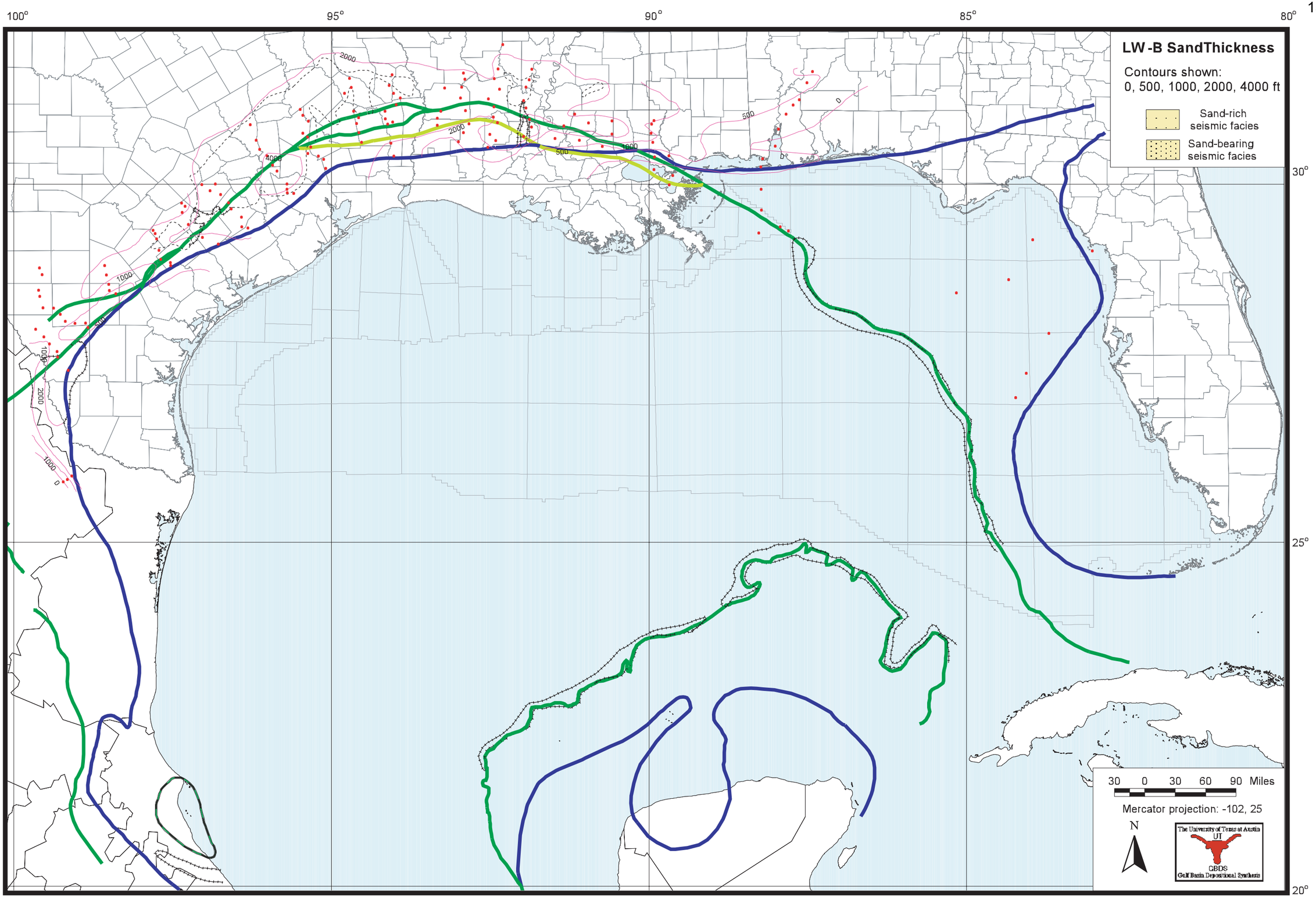
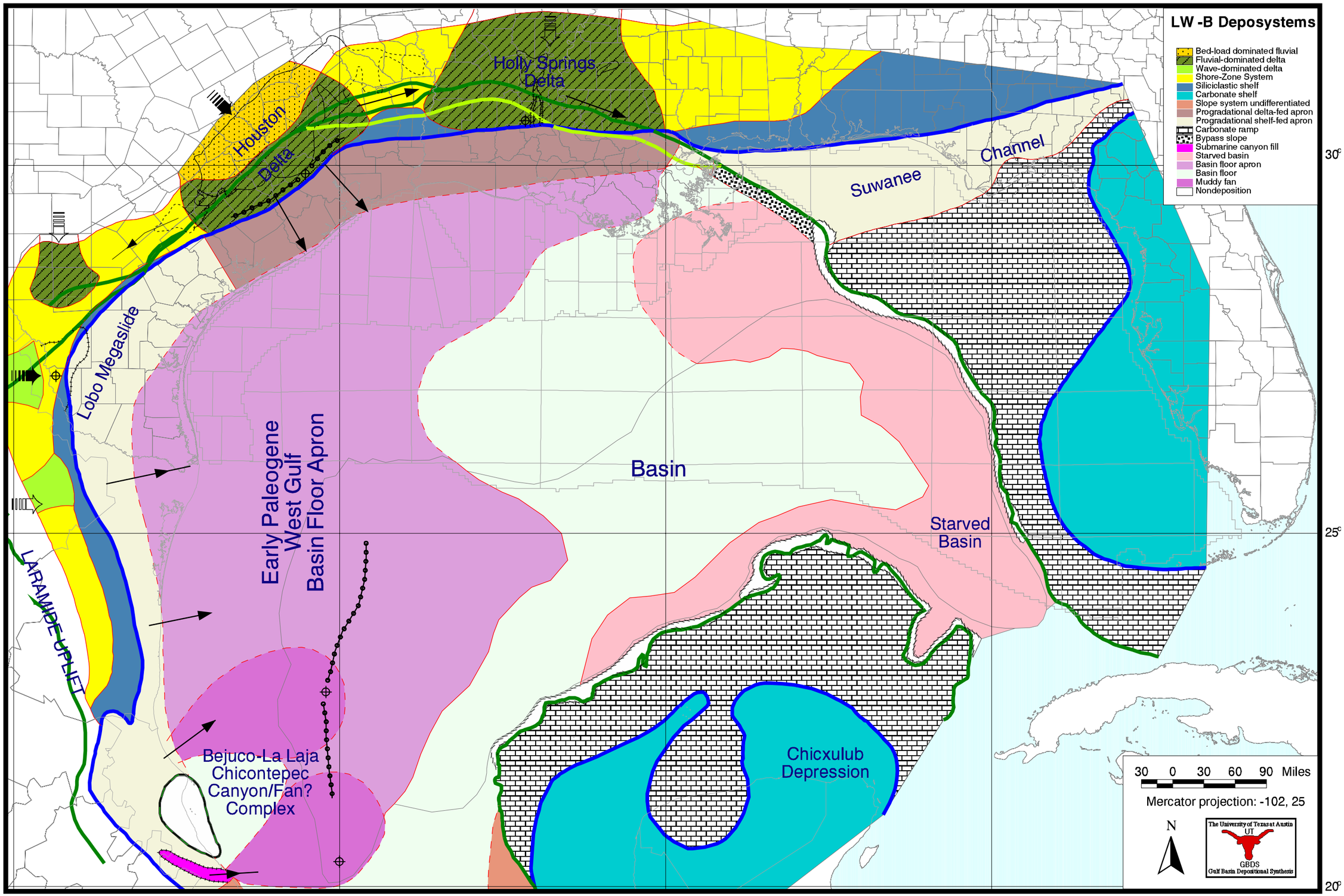
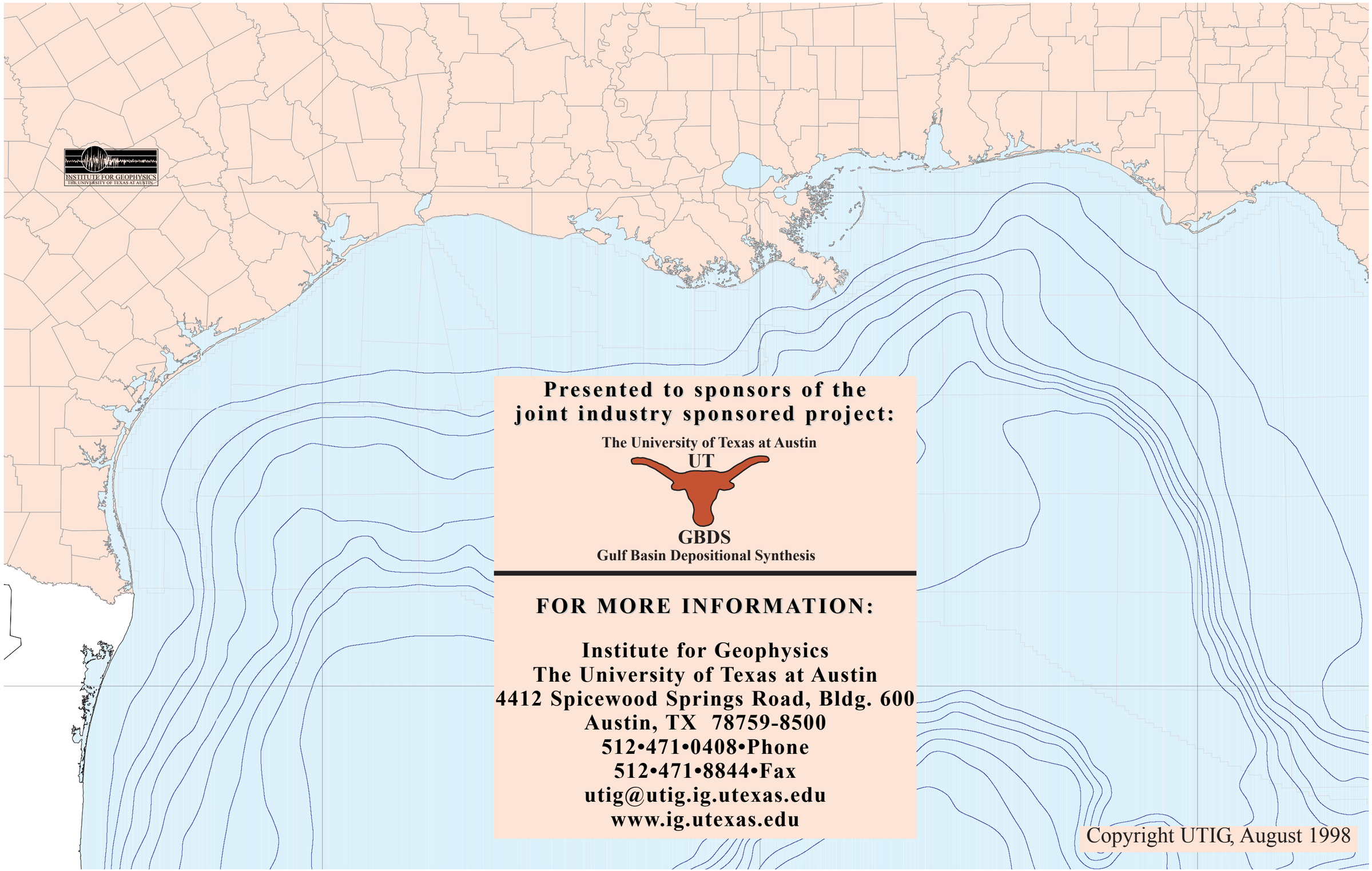
LW-BUThk.eps



LW-BNSand.eps



LW-BInterp.eps



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The University of Texas at Austin

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FOR MORE INFORMATION:

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www.ig.utexas.edu