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Comparison of Latest Quaternary Depositional Processes of the Texas-Louisiana Intraslope-Basin Province and the Deep GOM Basin Floor Seaward of the Sigsbee Escarpment

Interpretation and mapping of high-resolution seismic facies (3.5 kHz echo character) reveal differences in the geometry, scales, architecture and depositional processes of Late Quaternary deep-water deposits between the GOM intraslope-basin province and the deep abyssal seafloor seaward of the Sigsbee Escarpment. Sediment facies observed in piston cores "ground truth" the seismic facies interpretations. Biostratigraphic analyses of cores reveal that glacio-eustatic sea-level fluctuations control downslope transport of sediments with most transport occurring during glacial lowerings. Localized mass-transport processes are ubiquitous throughout the intraslope basins and consist of a wide spectrum of slumps, slides, and debris flows, including some very sandy debris flows. Channel-levee systems characteristic of small deep-sea fans, are less common, but do feed ponded lobes in some intraslope basins through complex fill and spill histories (e.g. Trinity/Brazos). A highly channelized (braided?) area of sandy deposits occurs on the continental rise seaward of the Rio Grande River. A few large turbidite pathways extend completely through the intraslope-basin province (e.g. Bryant Canyon) and feed extremely large channel-levee systems and fans (e.g. Bryant and Alaminos fans) that extend 100’s of km seaward across the basin floor from the Sigsbee Escarpment. These large fans have stacked channel-levee systems and lobes that probably contain thick sand deposits with much greater lateral extent than those in intraslope basins. In addition, extensive fields of migrating sediment waves south and east of the Sigsbee Escarpment indicate that strong, regional bottom-currents have redistributed sediments throughout large areas of these deep-sea fans and on the adjacent Sigsbee Abyssal Plain.