



## **Paleo- and Rock Magnetic Study of the Stratigraphic Evolution of Brazos Trinity Basin #4, Gulf of Mexico**

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During the IODP Expedition 308, Brazos Trinity Basin #4 was drilled to study sedimentation, overpressure and fluid flow. The aim of our research within this project is to investigate the mass transport mechanism and stratigraphic evolution of this basin by applying paleomagnetic and rock magnetic methods. Because the sedimentation rate of the basin is very high, the cores do not reach beyond the late Pleistocene. Therefore a reversal magnetostratigraphy can not provide chronostratigraphic tie points. Multi-parameter correlation was used to establish a preliminary age model by correlating natural remanent magnetization (NRM) intensity and magnetic susceptibility ( $\kappa$ ) to the oxygen isotope record of and the magnetic susceptibility stack. For the sake of refining the preliminary age model, an AF demagnetization of discrete sample NRM was carried out. From the data, one can obviously see that a drilling induced remanence was removed after 20-30 mT AF demagnetization and the characteristic remanent magnetization (ChRM) can be resolved between 30-60mT. However a gyroremanent magnetization (GRM) was found after AF fields of 50-70 mT in some samples. The GRM might be attributed to the authigenic magnetic mineral greigite. The magnetic grain size distribution and the composition of magnetic components were analyzed by magnetic hysteresis, frequency dependent susceptibility and ARM measurements. Based on this magnetic data and scanning electron microscopy analysis, an extremely broad range of domain states was observed shifting from the ultra-fine single domain to the coarse pseudo-single-domain and multi-domain. Such a broad range of grain sizes could be due to the mass transport fractionation. All the information will be used to further investigate sediment mass transport, the origin of sediment source and the specific geochemical environments.