



New Orleans Chapter Newsletter

Society of Independent Professional Earth Scientists
February 2022

Akinbobola Akintomide

FAULT-INDUCED SUBSIDENCE IN THE TERREBONNE SALT WITHDRAWAL BASIN, SOUTHEASTERN LOUISIANA: EFFECT ON COASTAL WETLAND LOSS

Chairman's Column

We welcome Akinbobola Akintomide to speak at our February meeting. Hope to see everyone there!

Louis E. Lemarié



Tuesday, February, 15th

Andrea's - Metairie

Social 11:30 AM Lunch 12 Noon

Reservations and guests: Carol St. Germain - 504-267-3466

FAULT-INDUCED SUBSIDENCE IN THE TERREBONNE SALT WITHDRAWAL BASIN, SOUTHEASTERN LOUISIANA: EFFECT ON COASTAL WETLAND LOSS

Akinbobola Akintomide

New Orleans, Louisiana

ABSTRACT

Understanding fault activity in salt basins is important for reconstructing the history of salt expulsion, the formation, and the kinematics of concomitant geomorphic features within the basin. In the Terrebonne Salt Withdrawal Basin in the northern Gulf of Mexico, fault activity is presumed to have ceased, and the allochthonous Loann Salt canopy completely evacuated by the end of the Pliocene due to southward migration of the depocenter. However, geomorphic features such as sharp marsh-breaks along the northern margin of the basin, defined by the Golden Meadow fault zone, suggest that the faults are still active. Fault activity was examined using proprietary 3D seismic data from the Lapeyrouse-Chauvin in Terrebonne Parish, Louisiana, to map Miocene, Pliocene, and Quaternary stratal units based on biostratigraphic data, seismic reflector strength, and continuity. Fault history and throw patterns were interpreted from throw-distance plots, throw-depth plots, expansion indices, and throw maps generated from fault throw estimates extracted from the maps. Results show a complex fault pattern along the Golden Meadow Fault zone. Three large faults define the fault zone, a northwest striking Lake Boudreaux fault and two east-west striking faults, the Montegut and Isle de Jean Charles faults. These faults show two stages of fault activity, a Miocene and a Quaternary stage, separated by a Pliocene phase of relatively slower activity. Fault activity in both stages is coeval with sediment loading and salt evacuation. The displacement along the Isle de Jean Charles and Lake Boudreaux fault increase toward the Bully Camp and Lake Barre salt stocks, suggesting a coupling between fault movement and salt evacuation. The average Quaternary fault throw rate on these faults since the Middle Pleistocene range from 0.53 - 0.65 mm/yr, an order of magnitude larger than those of the Baton Rouge fault zone since the Late Pleistocene. Surface projection of the faults spatially correlates with the edge of the cypress swamp near Montegut, locations of wetland loss near Isle de Jean Charles, and the Madison Bay subsidence along the Lake Boudreaux fault, suggesting that faults played a role in the formation of these geomorphic features.



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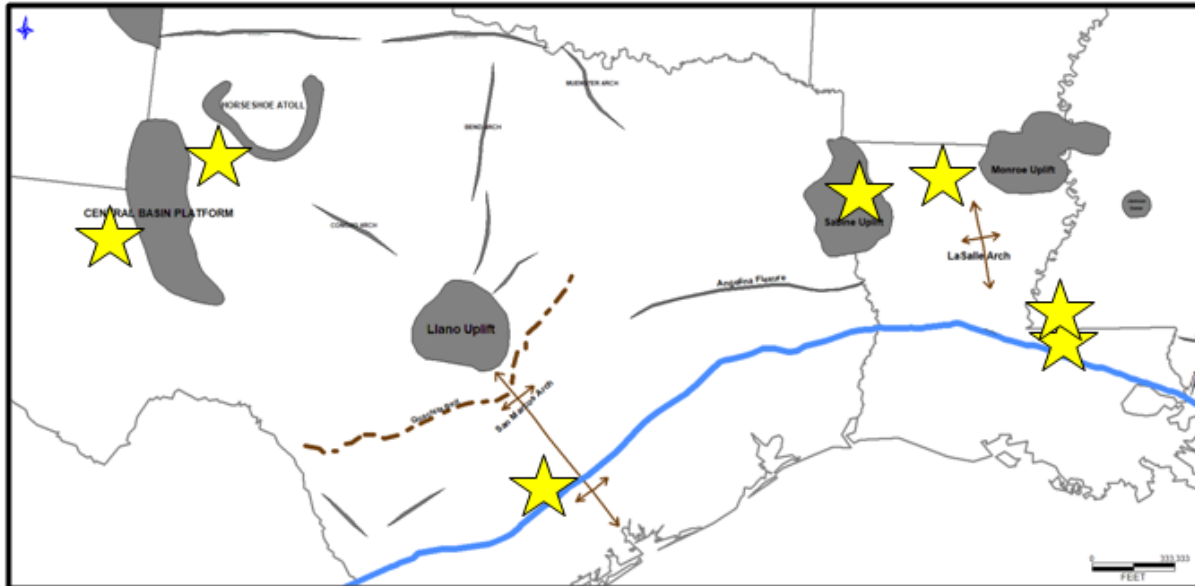
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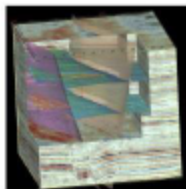
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