Tracking the Trace and Kinematics of the Houston Long Point Fault with LiDAR and GPS Data

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The Houston metropolitan area, and more broadly the Gulf Coast in general, have numerous normal faults that result in damage to engineering structures on, near or just above the surface of the Earth. Many faults in the Houston Metropolitan area are moving at rates of 0.5 to 3 cm per year. These faults involve soft sediments, and as a result very little seismic energy is accumulated to produce destructive earthquakes. However, creeping along these faults causes moderate to severe damage to hundreds of residential, commercial, and industrial structures and infrastructure in the Houston area, requiring constant repairs that burden private citizens, businesses, and government agencies. The Long Point Fault, a creeping surface fault that spans much of the northwest and west part of the Houston metropolitan area will be mapped in fine detail using LiDAR data from the 2001 Tropical Storm Allison Recovery Project. The kinematics of the creeping fault will be derived from continuous GPS data of four stations located in the middle segment of this fault.

Back to Table of Contents