

## **GULFNET a High Precision GPS Network to Measuring Horizontal and Vertical Deformation Across the Gulf Coast**

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The Gulf Coast of North America is described commonly as a passive plate margin based on the lack of tectonism, earthquakes and dynamic topography. Such a characterization of the region is inadequate because it does not account for the present-day geologic and geodetic evidence of lateral and vertical deformation. Attendant subsidence and coastal land loss, that reaches maximum rates in Louisiana of 25-27 square miles a year, has major economic and environmental consequences for the citizens of the Gulf states. Society's ability to cope with the coming changes in the coastal zone is greatly hampered by a lack of reliable data on the location, distribution and rates of subsidence and strain.

Recent improvements in satellite constellation, receiver technology and global tracking networks of the Global Positioning System (GPS) now permit position locations with millimeter accuracy

in both horizontal and vertical directions. We have established a multi-functional GPS network, GULFNET, to investigate both horizontal and vertical movement along the Gulf Coast. Our network consists of 15 continuously operating stations and 25 episodic stations that are monitored once a year. The network extends from east Texas across to Alabama and up into northern Louisiana. The network allows us to investigate the following processes: What are present-day strain rates and how is strain partitioned across this actively extending region? How much subsidence and associated crustal uparching is occurring? Is wetland loss and gain related to either of the aforementioned processes?