



The San Luis Pass Flood Tidal Delta: Impact of Storms on the Texas Coast

Carolina Ramon-Duenas and Julia S. Wellner

Department of Earth and Atmospheric Sciences, University of Houston, Science and Research Bldg. 1,
3507 Cullen Blvd., Rm. 312, Houston, Texas 77204

EXTENDED ABSTRACT

San Luis Pass (SLP) is a tidal inlet located on the Texas Gulf Coast, approximately 80 km south of Houston, Texas, and 32 km southwest of the city of Galveston. The SLP inlet separates Galveston and Follets islands (Fig. 1). It is, in general, shallow with water depths varying from 0.5 to 4 m. The Texas coast is characterized by diurnal tides ranging from 45 to 60 cm (Morton and McGowen, 1980; Israel et al., 1987; Siringan and Anderson, 1993), which are classified as microtidal. Tidal inlets are highly dynamic systems, in which longshore currents, wave action, and tidal energy are juxtaposed, allowing the formation of flood and ebb deltas. The size of the flood tidal deltas is mainly controlled by the amount of open water area in the back barrier and the available sediment (FitzGerald et al., 2012). The SLP flood tidal delta is the main sink for the sediments eroded up-drift and transported by the longshore current with dominant direction to the west (Fig. 1) (Morton et al., 1995). During the last 4000 yr, the eastern Texas coast has retreated due to an increase in the rate of sea-level rise, varying between 0.4 to 0.6 mm/yr, which is related both to global eustatic sea-level rise and subsidence of the basin (0.05 mm/yr) (Paine, 1993; Siringan and Anderson, 1993). The modern SLP flood tidal delta is formed by multiple channels and sand bars (Israel et al., 1987; Wallace and Anderson, 2013) that unconformably overlay delta plain deposits of a paleo-Brazos river delta lobe (Israel et al., 1987).

...