

## **Abstract**

Understanding how human needs and innovations affect the environment plays a fundamental role in ensuring the longevity of our earth's natural features. While expansion and urbanization help to enlarge human influence, and allow for the growing human population, special care must be taken to maintain a mutually beneficial relationship with earth systems and physical phenomena. This relationship between growing population and environment can be seen as more and more people make their way to the coastlines of the world to support livelihood as well as recreation. However, living along the coast sometimes requires modifications to ensure the protection of those deciding to live there. This study examines the management of one such relationship between the everchanging coastline of Galveston Island and the Galveston Seawall set as the first line of defense against storm surges and rising tides. While seawalls are meant to protect coastal populations from extreme flooding events and hurricanes, the long-term result of a seawall is often the erosion of the natural beaches which those living along the coast have come to enjoy. Galveston Island represents a city whose seawall has stood for over a hundred years, built just after the Great Storm of 1901. This spatial study analyzes the coastal conservation and protection provided by the Galveston Seawall and Groins. Using sediment supply, beach area, landuse and coastal velocities, a site suitability analysis was generated showing locations prone to sediment deposition and creating a model for how these features interact with the gulf shoreline. From the results, it is recommended that local geography and earth systems be analyzed prior to the construction of coastal structures to avoid costly unforeseen coastal changes in the future.