

Geohazards Map of South Padre Island, Texas

James Gibeaut, Diana Del Angel, Eleonor Barraza,
William Nichols, Anthony Reisinger, Brett Rinne
Harte Research Institute, Texas A&M University - Corpus Christi



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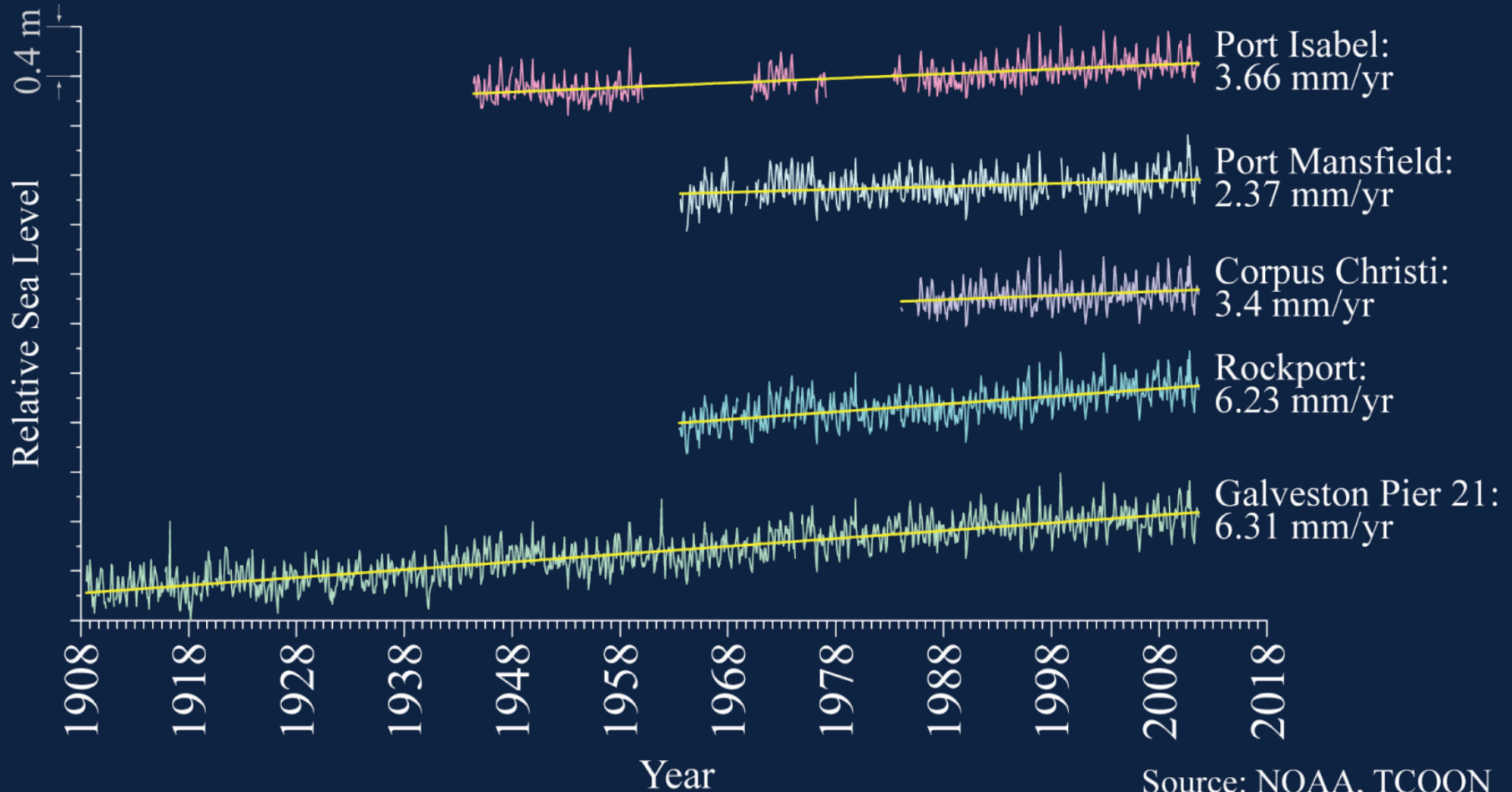
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What is a Geohazards map?

The Geohazards map shows areas that vary in susceptibility to, and function for, mitigating the effects of coastal geological processes, such as:

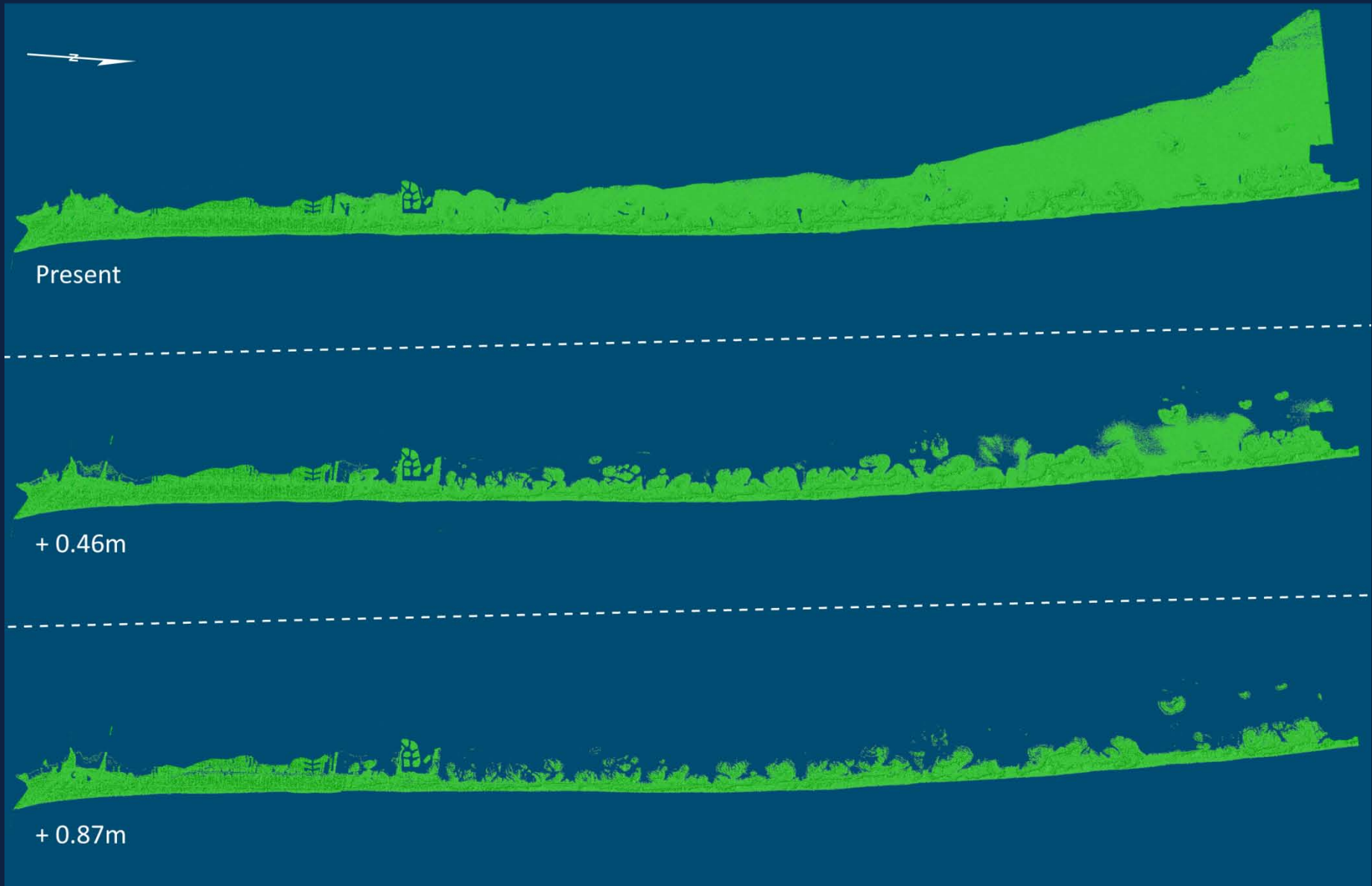
- Relative sea-level rise (includes land subsidence)
- Erosion
- Storm-surge flooding and washover
- Present and future location of critical environments

Relative Sea-level Rise



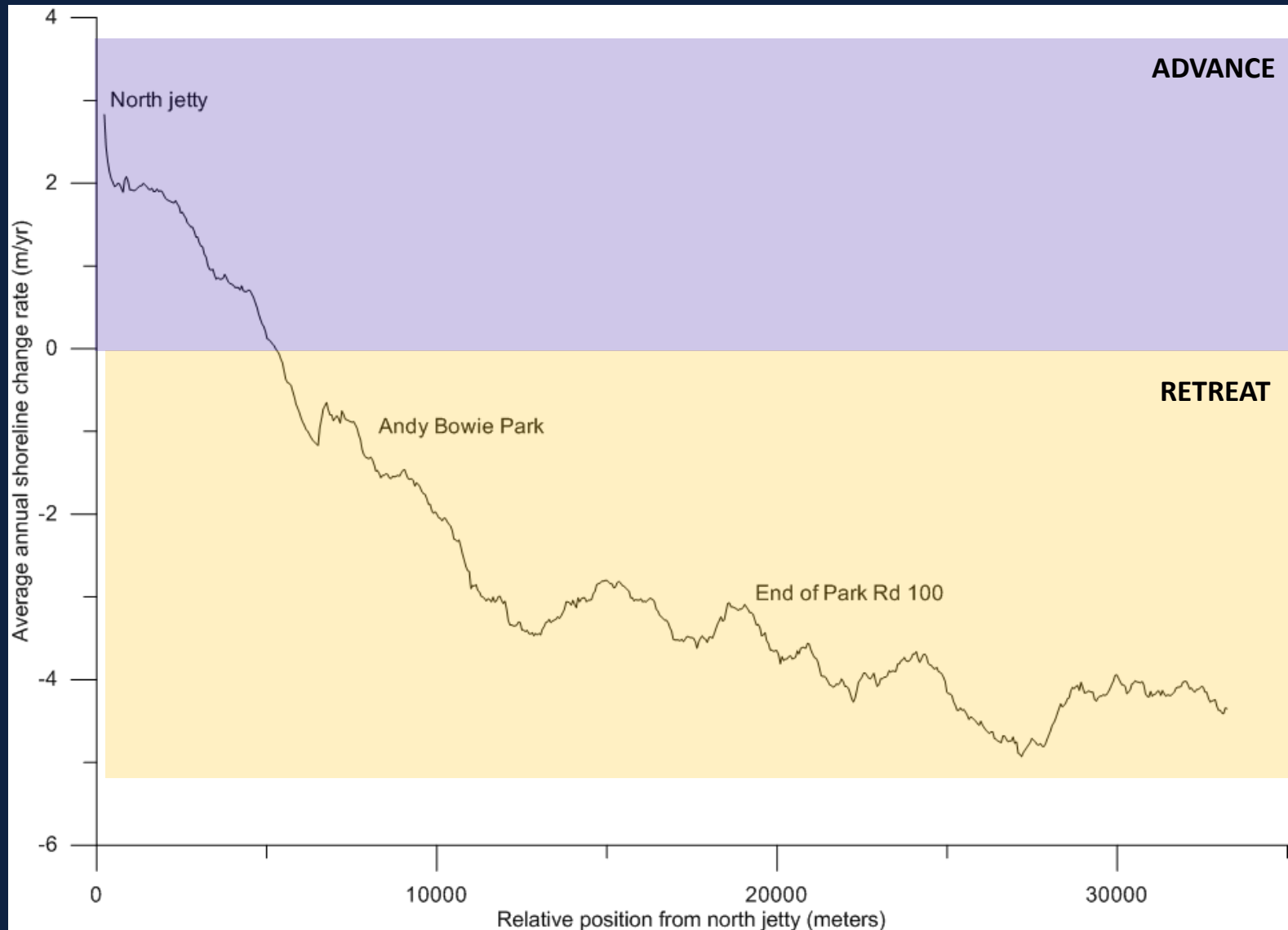
Source: NOAA, TCOON

Relative sea-level rise scenarios



Gulf shoreline change rates

linear regression of 9-10 shorelines from 1934 to 2011



Susceptibility to storm-surge flooding and washover



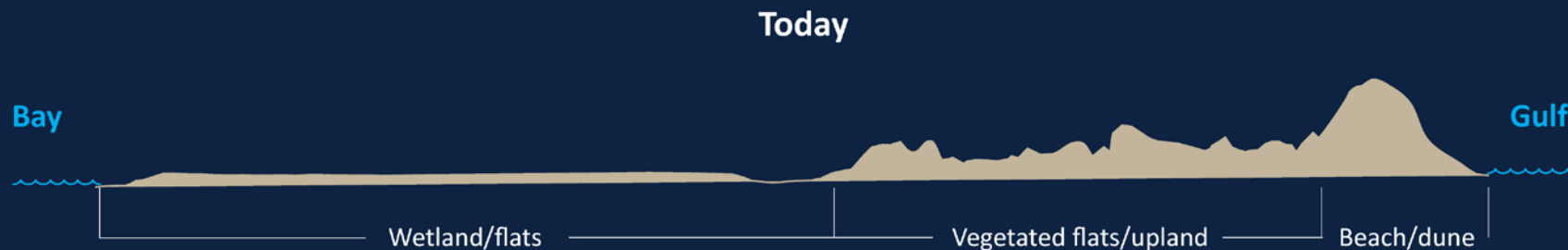
Padre Island National Seashore, Brett 1999



NOAA NWS KBRO, Ike 2008



Location of critical environments on a barrier island



After 60 years of sea-level rise and erosion



Geohazard Map units



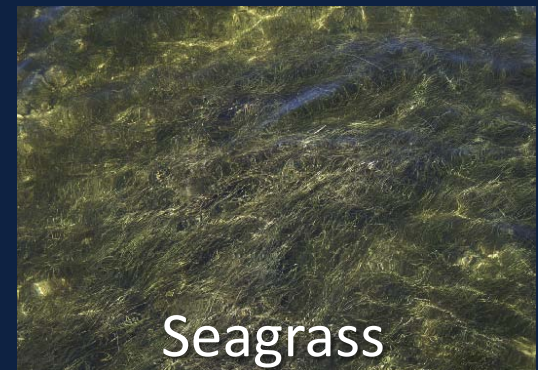
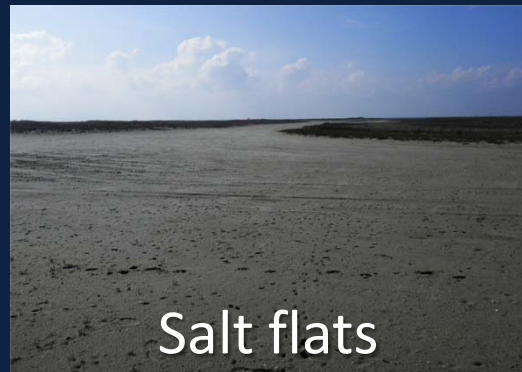
- Extreme geohazard potential**
Storm washover channels
- Imminent geohazard potential**
Today's critical environments: wetlands, beaches, and dunes
- High geohazard potential**
Future critical environments: Areas expected to become critical environments in 60 years' time
- Moderate geohazard potential**
Low upland areas (elevation < 1.5m) not expected to become critical environments but are inundated by low-intensity storms
- Low geohazard potential**
Interior upland locations with an elevation of 1.5 m or more above sea level
- Open Water**



Mapping geoenvironment and geohazard units

- Geoenvironment mapping based on 2002 spatial data from *Status and Trends of Wetland and Aquatic Habitats on Barrier Islands, Freeport to East Matagorda Bay, and South Padre Island* (White et al., 2005).
- White et al. (2005) map updated, revised, and upland classification added
- 2009, 0.5-m-resolution ortho-rectified NAIP aerial photography
- Historical rectified aerial photography for shoreline change analysis
- Historical lidar-derived digital elevation models
- 1-m digital elevation models derived from lidar acquired in 2009
- Field verifications

Geoenvironment units



Summary

South Padre Island Geohazards map

- Science-based product for developing and applying policy
- Shows current and potential future environmental conditions
- Human time scale projections
- Used historical sea-level and shoreline change to project changes
- Need training of local staff

Web mapping application

Please visit:

<http://geohazards.tamucc.edu/Southpadre/>

Direct access to geohazards, geoenvironments, elevation, and parcel spatial information.