**ASSESSING THE VULNERABILITY OF TEXAS COASTAL WATERSHEDS TO CLIMATE CHANGE AND HUMAN INTERVENTIONS**

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The effects of climate change and human interventions on the Baffin Bay watershed in southeast Texas was investigated in this study. For the human interventions, the Soil and Water Assessment Tool (SWAT) model was developed and used to quantify the surface water inflow, sediment yield, and nutrient yield into the Baffin Bay and to investigate the factors controlling their spatial and temporal variabilities. For the natural interventions, remote sensing data and techniques were used to map flooded areas after the major hurricane Hanna in the same watershed. The results of the SWAT model indicated that the watershed's average annual precipitation, surface runoff, evapotranspiration, and total water yield were estimated to be 689.7 mm, 19.3 mm, 596.7 mm, and 131.0 mm, respectively. The average annual total sediment loading, organic nitrogen, and organic phosphorus were estimated at 0.7 Ton/hectare, 1.3 kg/hectare, and 0.164 kg/hectare, respectively. A strong correlation was observed between the spatial distribution of surface runoff, nutrient yield, and sediment yield and land use/land cover in the Baffin Bay watershed. Specifically, in the northeastern region where the watershed was found to be covered by crop lands compared to the western and central regions that were primarily covered by shrubland, grasslands, and urban areas. Higher nutrient concentration in the northeastern region is mainly attributed to agricultural management practices. During Hurricane Hanna, rainfall rates were found to be consistent across the affected area, ranging from 165 mm to 311 mm. The estimated area affected by flooding following hurricane Hanna is 2,225 km2, with the majority of the flooded areas being cultivated cropland. This is likely due to the fact that urban areas typically have better drainage solutions in place. The approach used in this study could be applied to similar coastal watersheds worldwide, providing valuable insights into the impacts of climate change and human activities on these ecosystems.