Introduction

• CVIs analyze stressors affecting the coastal zone, zone sensitivity to stressors, and zonal adaptive capacity (Santos et al., 2013).
• Theiler and Hammer-Klose’s CVI identifies vulnerable coastal areas based on physical parameters (Gorokhovich et al., 2013).
• Physical CVIs can be combined with social indices to include socioeconomic parameters providing a more inclusive view of the coastal zone and coastal communities (Thatcher et al., 2013).
• The purpose of this assessment was to generate a CVI as a resource for county and local governments, coastal zone managers, and policy makers, within the study area. The CVI will allow stakeholders to identify areas and communities most at risk and will facilitate threat mitigation and preventative planning.
• Suffolk County was chosen as the study area as it has an expansive coastline, low elevation, and high population.

Methods

• Parameters were selected to provide a generalized view of vulnerability based on known coastal sensitivity, elevation, and proximity of social and economic resources to the coastal zone.
• Physical parameter attribute values were ranked on a 1 – 4 scale of increasing risk. Rank values were based on rank proposals by (Gorokhovich et al., 2013).
• Social parameter manipulations were based on methods used by (Thatcher et al., 2013). Social rankings were assigned based on numerical scaling of data.

Results

• Suffolk County’s south shore and western areas are the most vulnerable areas in each analysis. These regions experience the highest coastal vulnerability when all index parameters have the same weight.
• Equally weighting all parameters provides the best outlook for Suffolk County. This weighting system, though it exhibits the highest polarization of vulnerability ranks, has the largest expanse of low vulnerability areas out of the three analyses.
• When physical parameters are given priority weighting, the majority of the County receives an index ranking of “Medium Vulnerability”. This is likely due to the overall low elevation within Suffolk County. The highest elevation within Suffolk County is only 401 feet (122 m) above sea level (Suffolk County Government, 2013).
• When social parameters are given priority weighting, the western portion of the County receives a higher vulnerability ranking than the eastern end of the County. This is due to higher population densities within the western expanse of Suffolk County.

Conclusions

• CVI analysis is highly customizable and has a wide range of use for coastal zone planning and threat mitigation. Methodology should be matched to selected parameters.
• The methodology used in this analysis produced results consistent with anticipated outcomes that reflect known patterns of coastal damage from previous coastal storm events.
• Further analysis of the coastal vulnerability of Suffolk County, NY is needed to ensure a comprehensive understanding of the county’s coastal zone.

Recommendations

• To ensure that the vulnerability of the county’s coastal zone is adequately understood future studies should incorporate additional physical, socioeconomic and demographic parameters.
• Up-to-date databases which include recent changes due to coastal storms need to be created and made available to stakeholders.
• It is necessary to consider availability of data for the selected analysis area. Lack of data may necessitate expansion of the study area to ensure accuracy given dataset resolution.

References