

# Research Horizons Day & Research Week March 16-20, 2020



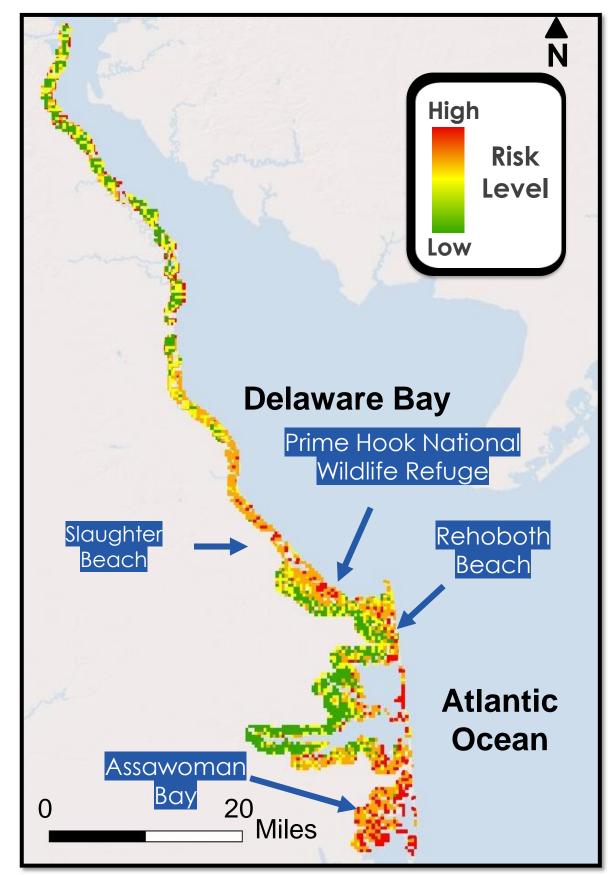
# Utilizing NASA Earth Observations to Assess Coastline Replenishment Initiatives and Shoreline Risk Along Delaware's Coasts

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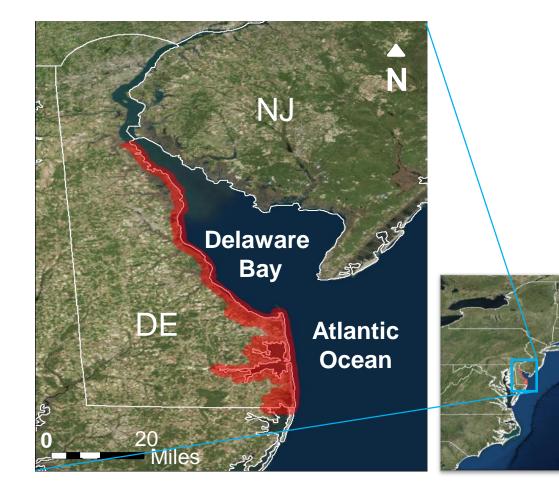
#### Overview

Delaware's coastline is a vibrant tourist destination and unique habitat for many vulnerable species. Yet, with **the lowest mean elevation of any state**, this stretch of land is threatened by geological and climatic forces, including **coastal erosion**, **sea level rise**, **storm surge**, and **subsidence**. The state's Department of Natural Resources and Environmental Control (DNREC) has served as a diligent combatant of coastal land loss since the 1950s. In partnership with the DNREC, this team utilized several NASA Earth Observations in combination with ancillary datasets to create a suite of **time-series maps** that identified shoreline extent changes in response to management projects and to generate a **coastal land loss susceptibility map**. Analyses of coastline change across time were performed using quantifiable measures derived from the time-series maps.

## **Key Findings**



#### **Study Area**



#### Methodology

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Data	1	Data	Data	End
Acquisi	tion	Processing	Analysis	Products

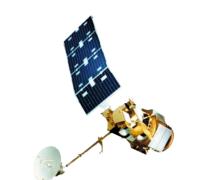
Landsat 8 OLI

Terra ASTER

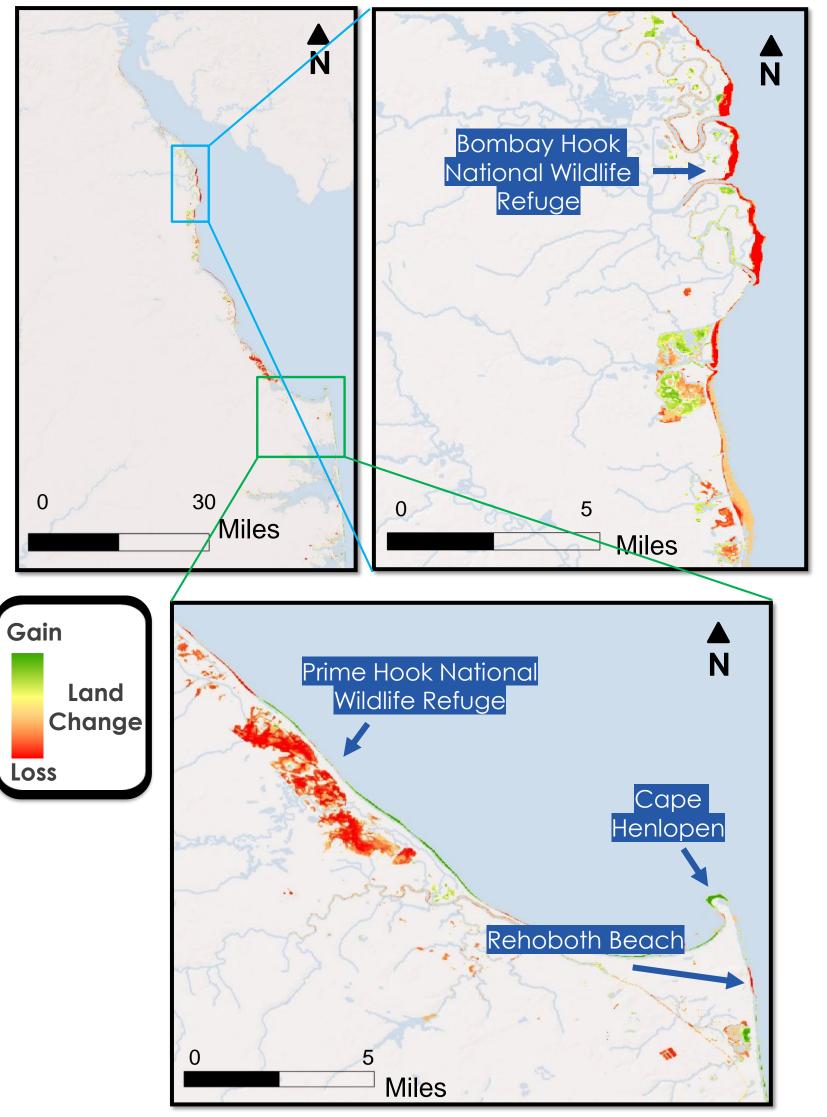
#### **Earth Observations**

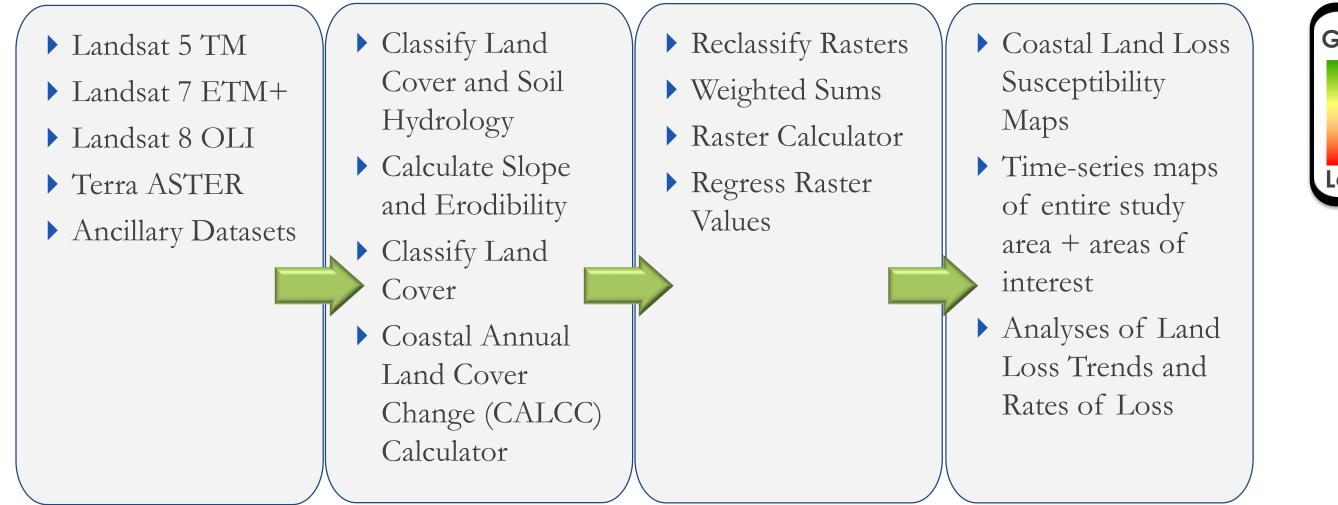


Landsat 7 ETM+



Landsat 5 TM





## Conclusions

- According to NASA Earth observations, Delaware's coast has experienced land loss since 1988; however, there was no detected trend in the rate of land change.
- Prime Hook National Wildlife Refuge, Slaughter Beach, Rehoboth Beach, and Assawoman Bay are the most susceptible areas to land loss.
- Prime Hook and Bombay Hook National Wildlife Refuges experienced the greatest amount of land loss from 1988 – 2018.

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