Team Members



Katherine Kivimaki Project Lead

Partner Wetlands Watch Mitchell Johnson

on Brooklyn Appling

ing

Sean Asbrand

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National Aeronautics and Space Administration





Mapping Wetland Change Across the Coastal Regions of Virginia to Identify Areas Most Susceptible to Wetland Loss and Most in Need of Wetland Protection Advocacy



Coastal Virginia Ecological Conservation





Project Purpose

Wetlands provide multifaceted benefits to coastal regions, such as water quality improvement, carbon sequestration, and flood control. However, sea-level rise poses a threat to wetlands and coastal communities. Our study used NASA earth observations to **determine the vulnerability of wetlands and predict migration patterns**, informing conservation efforts. We **identified minimally urbanized and agricultural lands suitable for being re-naturalized** to facilitate wetland migration. We hope to contribute to strategies that can help safeguard these invaluable ecosystems and the numerous benefits they provide to the environment and coastal communities.



Wetlands may respond to sea-level rise in two ways:

1. Accrete vertically

2. Migrate horizontally

The maximum accretion rate of wetlands (5mm/yr) is slower than the projected rate of sealevel rise. Therefore, wetlands will be forced to migrate inland.



Conclusions

If no action is taken, wetlands will decline by 385 square kilometers (78%) by 2100. This loss will cost coastal Virginia **\$319 million** in flood mitigation value for **every tropical storm**. NOAA predicts tropical storms to impact Virginia **yearly**.

By 2100, 43 square kilometers of land suitable for re-naturalization will overlap with where tidal wetlands can migrate. Since only 106 square kilometers of wetlands are estimated to exist by the end of the century, **efforts to convert these land uses could increase future wetlands extent by up to 41%**.