

## Introduction and Background

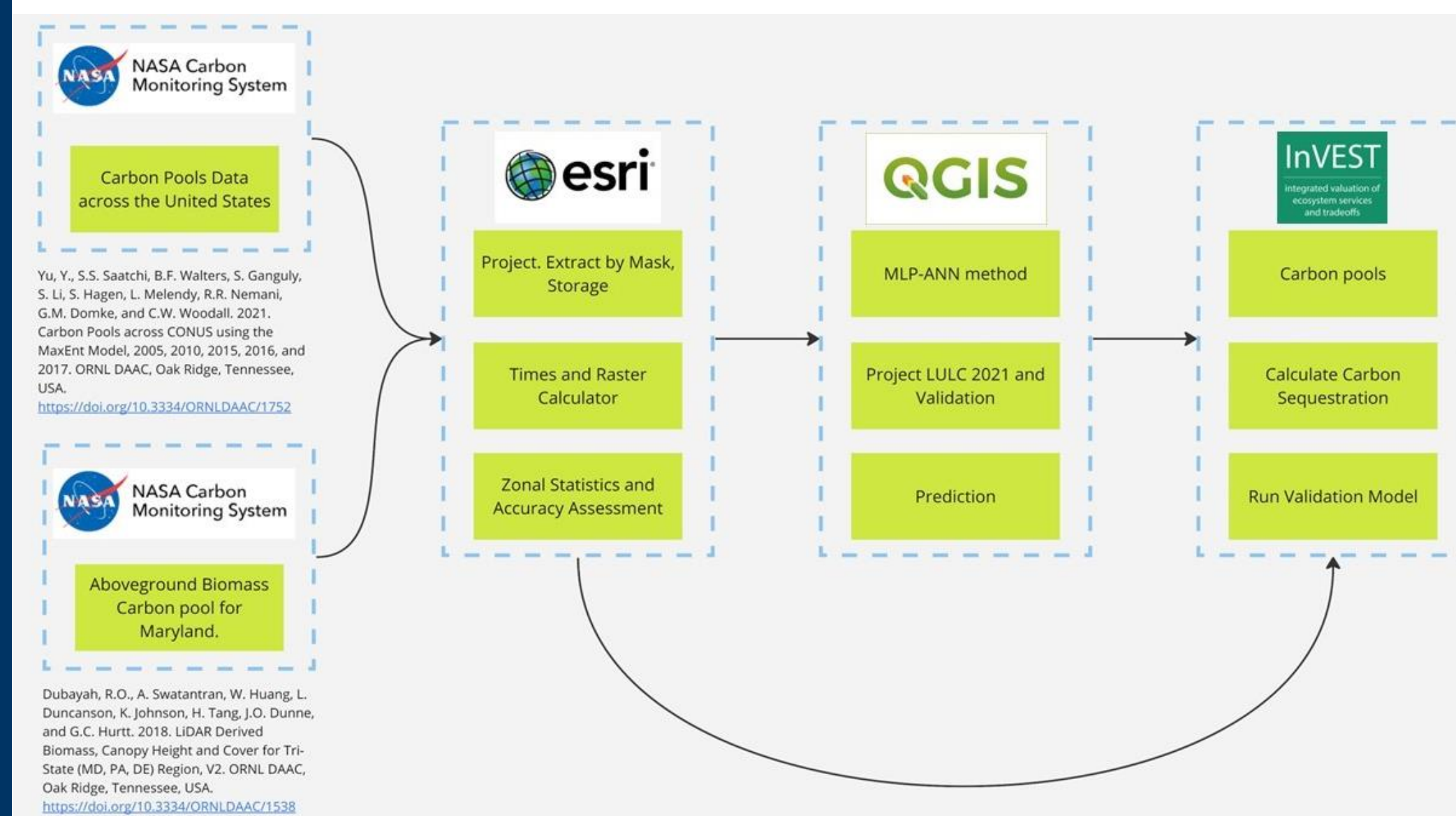
- Land cover (LC) patterns have undergone significant changes over recent decades, particularly in coastal regions, due to human activities and natural processes.
- Urban expansion, deforestation, and climate change are key drivers of LC change.
- These shifts have led to the degradation of coastal ecosystems, which are vital for carbon sequestration.
- Disruptions in coastal ecosystems have elevated carbon emissions, contributing to rising atmospheric CO<sub>2</sub> levels.
- Environmental organizations, government agencies, and research institutions are actively working to preserve and restore these crucial ecosystems.

## Planning and Process

- This project is part of a five-year, U.S. Department of Defense-funded initiative focusing on nature-based solutions, particularly living shorelines, to boost coastal resilience.
- Now in its third year, the project aims to build living shorelines, address land use and land cover changes, and quantify ecosystem services related to carbon storage and sequestration amid climate change.
- The planning phase involved a detailed assessment of vulnerable coastal areas, supported by a multidisciplinary team of engineers, climate scientists, and landscape architects.
- This multidisciplinary approach enables integrated solutions that meet both environmental goals and military priorities.
- Community engagement has been a core element, involving local stakeholders in planning workshops and feedback sessions to ensure solutions meet scientific and community needs.
- Military representatives and local government officials contribute to balancing ecological restoration with defense infrastructure requirements.

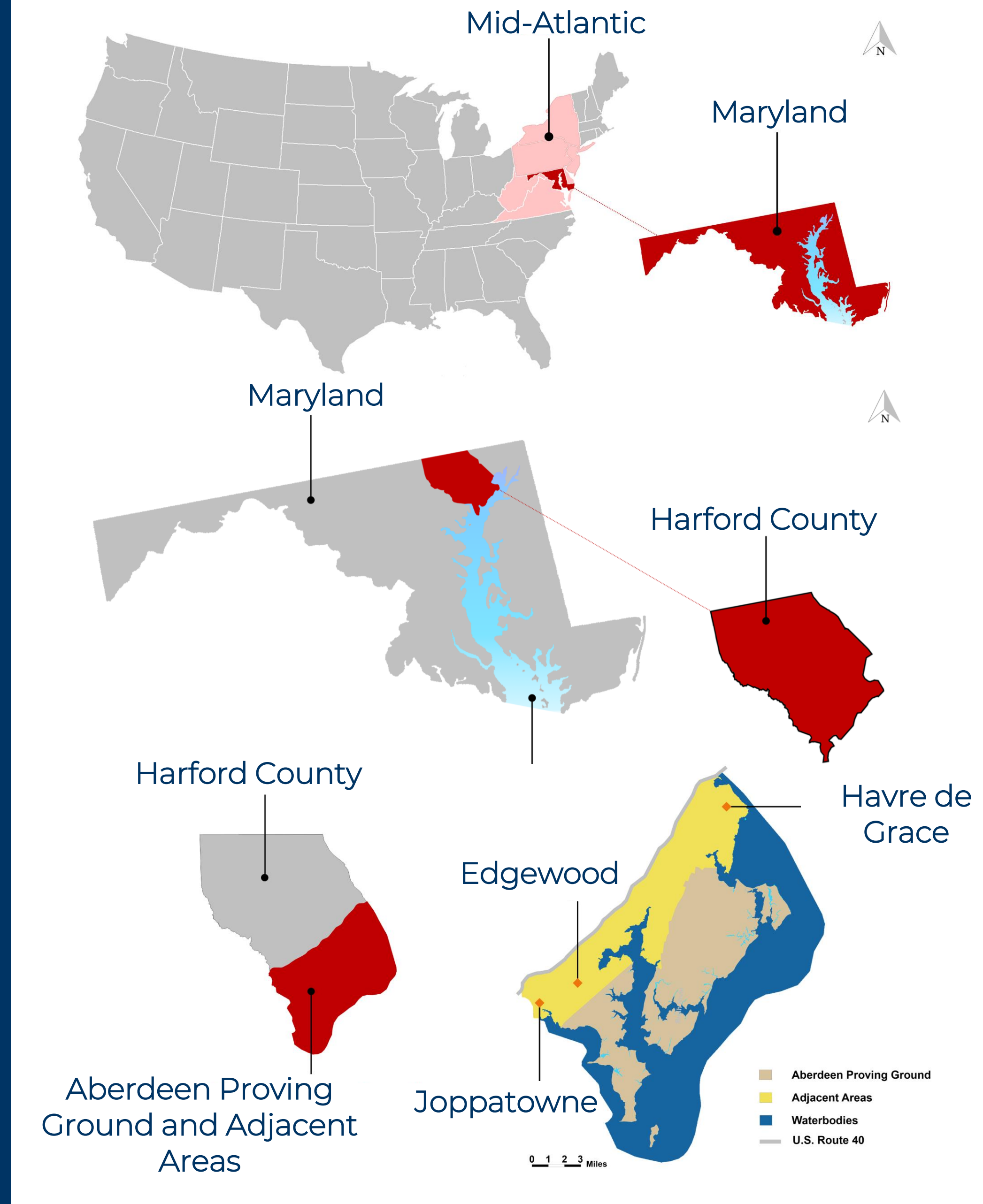
## Research Question:

- How can future land cover changes be predicted to estimate carbon storage and sequestration potential under varying scenarios at a Mid-Atlantic military testing installation?

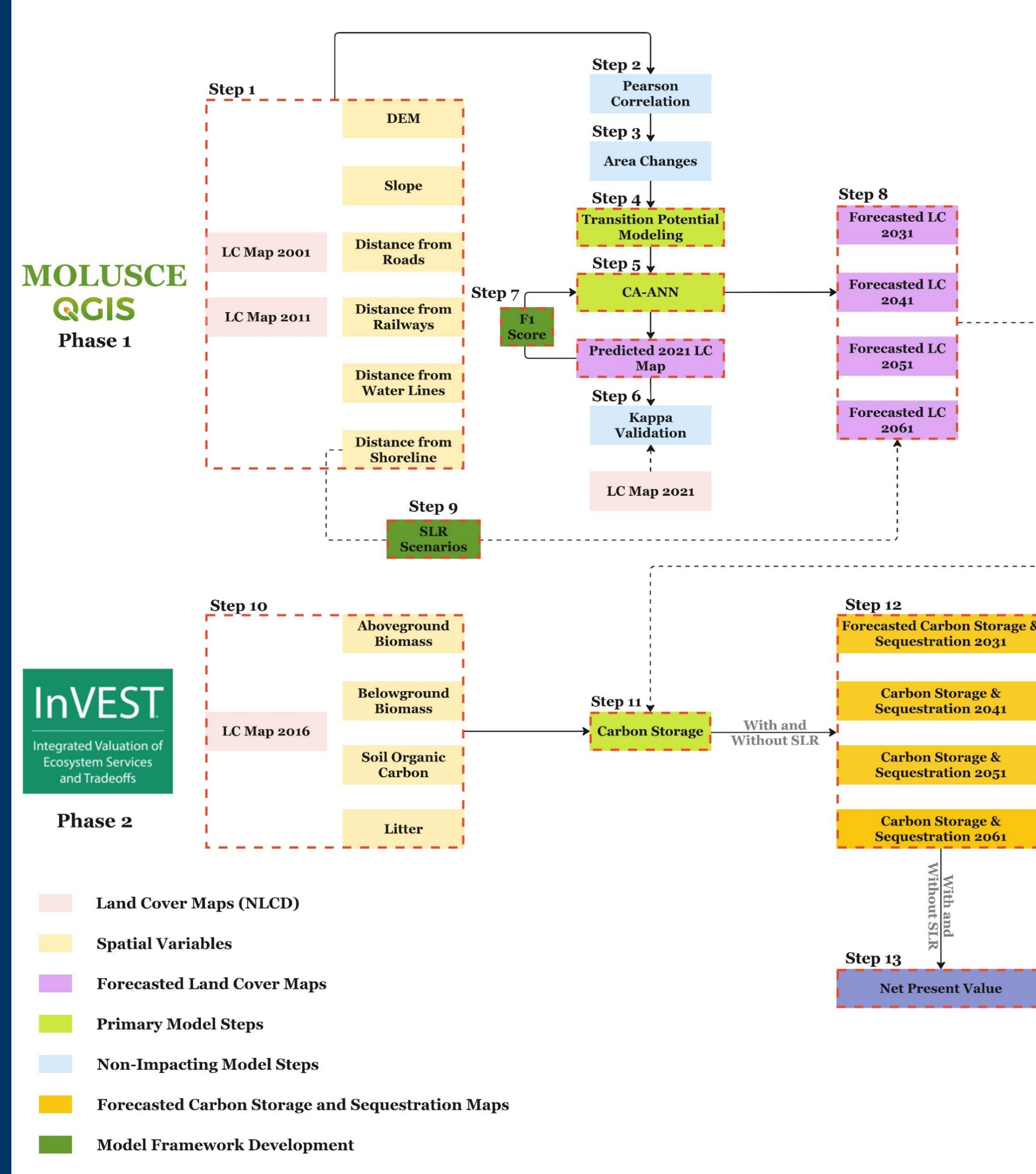


## Study Area

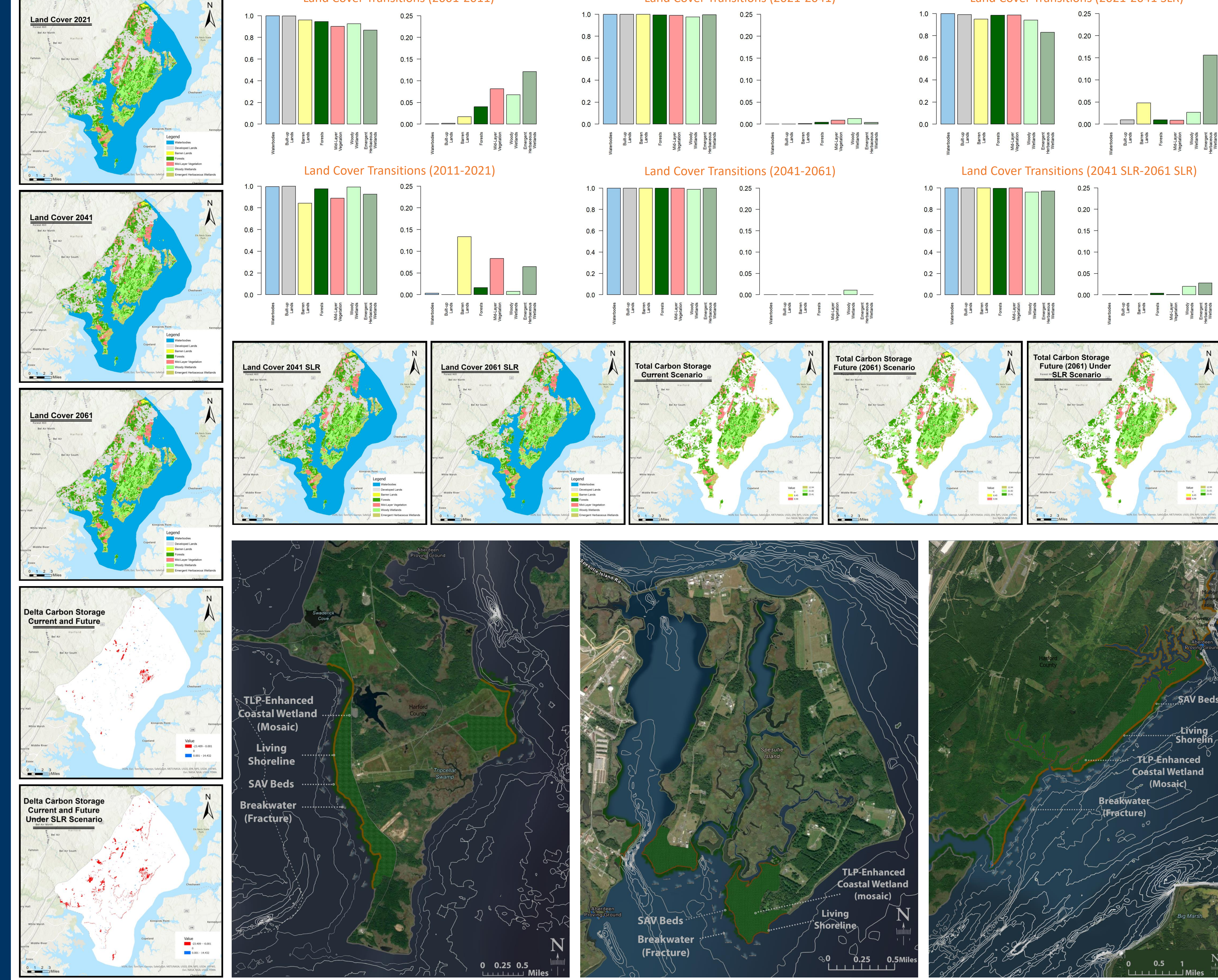
- The research focuses on Aberdeen Proving Ground (APG) and surrounding areas located in the Northern Chesapeake Bay region within Harford County, Maryland
- The study area extends beyond APG proper into the surrounding communities, reaching the borders of Joppatowne, Havre de Grace, and U.S. Route 40.



## Methodology



## Results and Solutions



## Discussion Points

