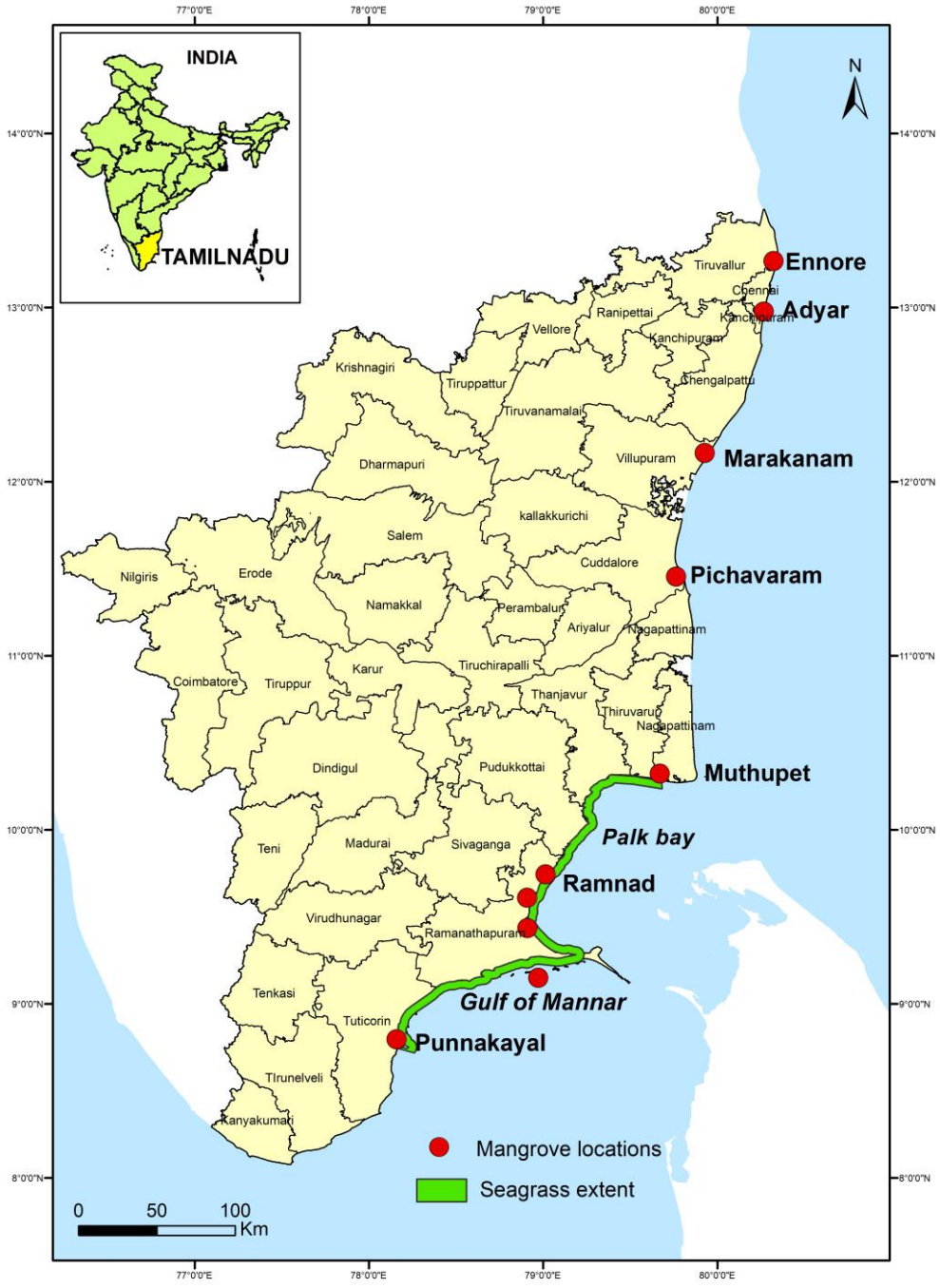
Study Area



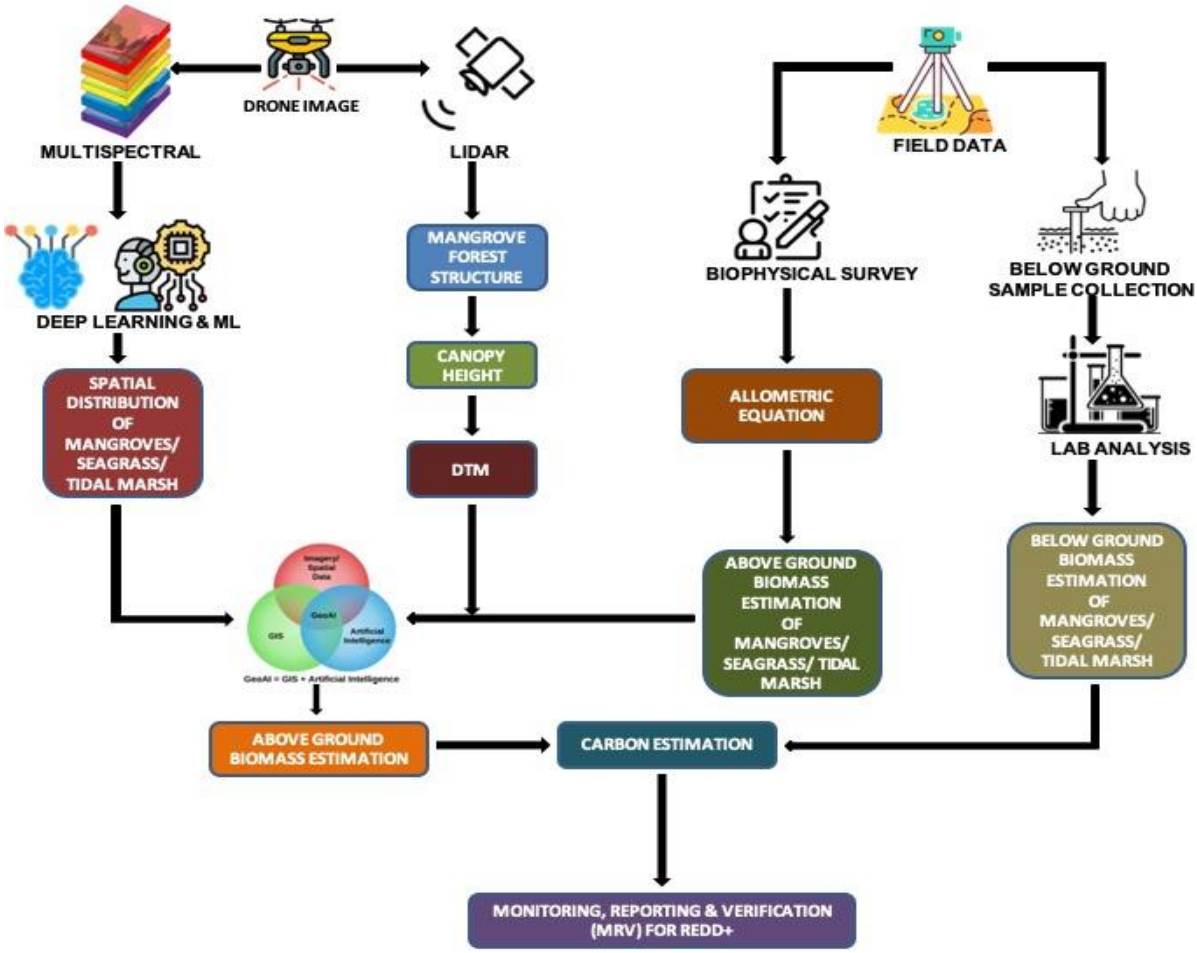
Project reach

56 sq.km of mangroves

800 sq.km of seagrass beds

64 sq.km of Tidal marsh

Methodology



Expected Outcomes

- A comprehensive, high-resolution spatial dataset of blue carbon ecosystems along the Tamil Nadu coast, including 800 sq.km of seagrass beds in the Gulf of Mannar and Palk Bay, 64 sq.km tidal marsh-lands, and 54sq.km of mangrove forests.
- High-resolution maps, carbon stock estimates, and other spatial data products for use by policymakers, resource managers, and stakeholders.
- Implementation in Tamil Nadu will serve as a transferable AI model for replication globally, showcasing the potential of combining drone technology, multispectral remote sensing, and GeoAI.
- The project outcomes will have implications for climate change mitigation and adaptation strategies, contributing to refined carbon budgets and supporting NDCs and IPCC goals.

- Scientific publications, technical reports, and policy briefs disseminating the project findings and methodologies.
- Awareness and training youth in GeoAI .
- High resolution Blue Carbon Digital Atlas for Tamil Nadu Coast.

Significance

- **Climate Mitigation**: Provides baseline data for national climate commitments and carbon accounting.
- **Conservation Planning**: Helps in prioritizing areas for mangrove restoration and coastal buffer zone development.
- **Disaster Risk Reduction**: By mapping natural buffers, supports cyclone and coastal erosion planning.
- **Community Engagement**: Offers tools to support eco-tourism, fisheries management, and local conservation.

Technical Partner

- National Centre for Coastal Research (NCCR)
- National Centre for Sustainable Coastal Management (NCSCM)
- Indian Institute of Technology - Madras (Responsive AI)
- Suganthi Devadason Marine Research Institute (SDMRI)
- Central Marine Fisheries Research Institute (CMFRI)
- Norwegian research council

Stake Holders

- Tamil Nadu Forest Department
- Tamil Nadu Wetland Authority
- Tamil Nadu Green Climate Company
- Gulf of Mannar Biosphere Reserve Trust (GOMBRT)
- Academic Institutions
- Coastal Community
- Students

Action Photos

A meeting was organized on 22nd January 2025,at 03:30 PM in the 7th Floor Conference Hall of Namakkal Kavingar Maaligai, Secretariat, Chennai, to and discuss the proposal "Quantifying Blue Carbon Assets through Drone-Based Imaging and GeoAI – Tamil Nadu Coast" submitted by MS Swaminathan Research Foundation (MSSRF).

The meeting was chaired by the Special Secretary (Environment & Climate Change), Department of Environment, Climate Change and Forests, Government of Tamil Nadu.

As part of the ongoing efforts to enhance research and innovation in blue carbon ecosystems, a visit to the Drone Facility at Vellore Institute of Technology (VIT) Chennai has been planned. The objective of this visit is to explore potential collaboration opportunities for integrating

drone-based remote sensing with GeoAI techniques to assess, monitor, and map blue carbon habitats effectively.

This short visit happened on 21st February,2025 (Friday). Dr. Sathiyan, Assistant Professor and faculty in charge of the Drone Facility and Autonomous Lab at VIT, provided us with insights into the available drone technology and its various applications.

Baseline Survey for the assessment of seagrass ecosystems in Mandapam, Palk Bay, Southeast coast of Tamil Nadu.

Project flyer link: https://www.mssrf.org/wp-content/uploads/2024/07/GeoAI-Blue-Carbon-Flyer.pdf