# NATIONAL SCALE SEAGRASS MAPPING IN VIETNAM FROM 1985 TO 2019 USING LANDSAT IMAGES

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Despite their ecological importance, seagrass beds in Vietnam have been subject to rapid decline due to coastal development. While there have been attempts to monitor seagrass beds at individual sites in Vietnam in the past, these studies have been limited in their ability to provide a comprehensive, spatially explicit, and temporally consistent understanding of the extent and distribution of these habitats across the entire nation. To address this issue, the research utilized Landsat imagery spanning a period of over 30 years to provide a spatially explicit and continuous inventory of seagrass beds and quantify land cover changes that have led to seagrass loss. The methodology of the study involved several steps. Firstly, Landsat images over the coastline of Vietnam between 1985 and 2019 were filtered to minimize cloud contamination. Secondly, the selected images were preprocessed to reduce the effects of the water column using Hedley's sunglint correction and Matsunaga's Bottom Index. These preprocessed images were then classified on a scene-by-scene basis using the Random Forest classifier and composited over each five-year period to produce distribution maps. Finally, the distribution maps over time were compared to reveal changes in seagrass distribution. The results of the study indicate that a total of 36,185 ha of seagrass beds in Vietnam were mapped before 1990, but only 17,081 ha remained after 2015. Most meadows lost 40-85% of their area, mainly due to land reclamation. The overall accuracies ranged from 75.8% to 90.4%, while producer's and consumer's accuracy for seagrass ranged from 40.8% to 77.9% and 37.1% to 73.4%, respectively.

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