

Current Status of Geographical Data and Computational Tools for Determining Restoration Priorities in Mangrove Ecosystems

Ainur Smailova, Laura Valentina Sierra, Pablo Ramos-Henao, Saif Ur Rehman, Yan-Yu Lin

¹School of Chemistry, The University of Michigan

²Physics Department, The University of Wisconsin

³Biological Sciences Department, The University of Minnesota

Abstract

Hello! This is Pablo testing the abstract. zzzz

Introduction

Text in the introduction hehehe.

Aim

The aim of this paper is to assess the status of the technologies and analysis techniques used in determining the conservation status and restoration needs of mangrove forests; as well as identifying research gaps.

Objectives

The first objective is to review and assess the current completeness and robustness of various available datasets. Several factors can affect data access and analysis, such as cloud cover and shadows when comparing satellite data. These limitations can hinder the consistency of images required for continuous change monitoring. [1] Secondly, we aim to identify the technologies used for mangrove identification and conservation, as well as the computational modules used to analyse these datasets and gauge their performance. Additionally, we aim to outline the current challenges of measurement tools and computational analysis methods to elaborate on the main existing research gaps.[2]

Methodology

The aim of this paper

PRISMA Chart

In the first stage of our scoping review, we identified records from five major databases. The initial search produced a combined set of studies, with the number of records obtained from each source presented in Figure X. Twenty-nine records were removed during initial organisation upon determining that Nature, being a publisher rather than a database, produced duplicated entries across our other information sources.

During screening, we identified a number of non-English records and further duplicates. Because our institution offers full-text access to all searched databases, none of the records were excluded due to retrieval limitations.

The remaining studies were then divided among the research team, and each member screened titles and abstracts to assess their relevance to the research objectives. Studies were excluded if they did not involve geospatial data, if they relied solely on simple descriptive or statistical analyses, or if they did not use the modelling approaches central to our review, such as Random Forest or CNN-based methods, they fell outside the scope of this study.

Findings

This is the section for findings

Geological Survey Tools

This is the section for geological survey tools

Computational Analysis Techniques

This is the section for computational analysis techniques

Research Gaps

«add more here»>

Convolutional Neural Networks (CNNs) are the most widely used models in the field and are the foundation of most mangrove classification approaches. However, they struggle to detect small and fragmented mangroves resulting in incorrect classifications. [3]

Conclusion