

PREFACE

Coastal wetlands in tropical and subtropical regions around the world are dominated by mangrove ecosystems. For coastal environment mangroves are utmost important bio-resources. It provides services in aspect of economic and ecological, such as preventing coastal erosion, providing habitat for fish and shrimp breeding, supplying building materials and medicinal ingredients, and attracting tourists. At the same time, for the purpose of agriculture, aquaculture, tourism, urban development etc. they are getting exploited which result in their decline. Over the past century, India's mangrove area decreased at an alarming rate. Therefore, it is crucial to evaluate the situation and trends of mangroves in India.

Remote sensing is a tool that can provide spatio-temporal information on mangrove ecosystem distribution, species differentiation, health status, and ongoing changes in mangrove populations in order to analyse the mangrove. To assess the mangrove of Sudarban deltaic region in between 2001 and 2021 we have used the Landsat 5 and Landsat 8 data which offered 30m resolution. The trends of change in mangrove area are analysed by generating Land Use Land Cover map in the region during 2001, 2011 and 2021 and found that the area of mangrove forest has decreased about 6.5% in last twenty years. Fragmentation analysis has taken place to check the spatial heterogeneity within the region, which shows the increase of NP, PD, TE, and ED in between 2001 to 2011 as well as 2011 to 2021, implies that the amount of disturbance over the landscape increased through the period of time. Vegetation Health Index is calculated to check the health condition of the vegetation cover by combining NDVI, TNDVI, GCI, CVI, SAVI and ARVI indices which shows that the areas with healthy vegetation decreased 5.19 percent in 2011 and 9.92 percent in 2021. The moderate vegetation increased about 2.91 percent of the total area from 2001-2021. The areas with stressed vegetation significantly increased in 2021 which is about 6.4 percent of total area from due to repetitive occurrence natural hazards and increasing human habitation. The findings of this study could be beneficial to the ecological and scientific communities. The new maps presented in this study will serve as a good resource and guide for the organisation in charge of coastal management.