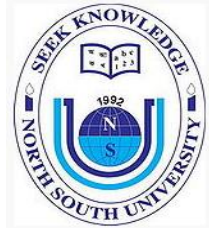


Senior Design Project Report

CSE 499B

Change Detection Analysis and Characterization of Land Components in Sylhet Division Using Remote Sensing



NORTH SOUTH UNIVERSITY

Department of Electrical & Computer Engineering

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Agreement Form

We take great pleasure in submitting our senior design project report on “Change Detection Analysis and Characterization of Land Components in Sylhet Division Using Remote Sensing”. This report is prepared as a requirement of the Capstone Design Project CSE/EEE/ETE 499 A & B which is a two semester long senior design course. This course involves multidisciplinary teams of students who build and test custom designed systems, components or engineering processes. We would like to request you to accept this report as a partial fulfillment of Bachelor of Science degree under Electrical and Computer Engineering Department of North South University.

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Change Detection Analysis and Characterization of Land Components in Sylhet Division Using Remote Sensing

1 Abstract

This paper illustrates the result of changing in different types of land cover of Sylhet Division of Bangladesh using Remote Sensing techniques and multispectral satellite image data from 1990 to 2020. Unsupervised classification is used to analyze the trend of changes of the components of land cover over the past decadal years and changing variation in different months (January, February & March). The spectral and spatial analysis are being done to characterize the land cover components in different months. The maps are created by using high resolution images such as LANDSAT 5 and LANDSAT 8. The overall analysis is indicating that different components of land covers in Sylhet division is decreasing over the past decadal years due to loss of natural soil nutrients, loss of natural water reservoirs and of their resultant benefits, increase in the occurrence of flooding and degeneration of wetland-based ecosystems, occupations, socio-economic institutions and cultures. Increased population in Sylhet division is another reason for the awful situation of land cover areas within the four decadal years.

2 Introduction

Bangladesh is situated in the largest delta, which is exceptionally permeable to many disasters for its geographical location. The country is facing many environmental changes for as much as its higher population density, extreme poverty level, lack of education, and low-lying landscape. Two-thirds of the landmass is filled with many rivers, haor, lake, wetland, and jheel. Most of the lowland, such as wetlands, haor, is located in the northeastern Sylhet division of Bangladesh. It makes a massive impact on the people of this area because people are highly dependent on the wetland, river, and haor in this area for growing seasonal crops. These areas are known as transition zones between terrestrial and aquatic environments and are valuable as sources, sinks, and transformers of numerous chemicals, biological, and genetic materials. It plays a vital role in Bangladesh on the aspects of the economic and ecological role that gives sustainable life and livings for many people. Indirect impacts result from disturbances in areas outside of the wetland, such as dry lands, other wetlands, or lowlands. Common indirect impacts include the inflow of surface water and sediments, fragmentation of a wetland from an adjacent wetland intricate, loss of recharge area, and