

## **Abstract**

This thesis explores the remote sensing of coral reefs and seagrasses, focusing on hyperspectral data from the Maldives and their classification. The initial section provides a description of coral reefs and seagrasses, followed by an explanation of the spectral curves of seabed features and their characteristics. Factors influencing these curves are also discussed. Additionally, the Maldives, along with the islands of Goidhoo and Fulhadhoo where the analysis of the studied ecosystems was conducted are introduced. In the practical section, the data collection and selection process is outlined, which included three areas (seagrass, coral reef, and coral garden) for classification. Prior to presenting the results, the methods for generating legends with endmembers for supervised classification are described. Subsequently, the spectral curves of the different classifications and classes appearing in multiple areas are compared. ENVI software was utilized for analyzing the classifications, employing spectral angle mapper and spectral information divergence methods for supervised classification, and the ISODATA method for unsupervised classification. Each classification was performed across all study sites, with two lines consistently selected for analysis. The supervised classifications consistently yielded more similar results compared to the unsupervised classifications. Nonetheless, differences in the determination of some classification classes are evident across all methods

**Key words:** Coral reef, seagrass, spectral curve, Spectral angle mapper, Spectral information divergence, ISODATA, Maldives