

Mapping of Coastal Wetlands and Volumetric Change Analysis in the West Coast in Sri Lanka Using Remote Sensing and GIS

*SUMUDU DARSHANA ATHUKORALA ARACHCHIGE¹

1. Division of Spatial Information Science, Graduate School of Life and Environmental Sciences, University of Tsukuba.

The environment of urban wetlands is affected by both human activities and climate changes. The spatio-temporal transformation and seasonal inundation determine the structure and functions of tropical wetland ecosystems. Information on the spatial and temporal changeability of inundation is necessary to understand and manage these ecosystems. The western region of Sri Lanka represents one of the most emerging growth centers in the country and there is an extreme pressure on the natural environment and wetland ecosystems. A combination of methods of environmental history, urban ecology and wetland science based on geographical information system (GIS) and remote sensing (RS) have been applied to the research. Moreover, this research focuses on understanding and assessing the current potential spatial stress on a regional wetland ecosystem due to human interference. This study uses remote sensing images of two time periods (during 2001-2016) to interpret the chronological spatial data of the wetland landscape changes over the 215 years time span. The result shows that the wetland system in this study area presents a trend of widely extent urban-rural situation with rapid land use changes, urban expansion, wetland degradation, and rapid urban built-up land. The different driving forces make complicated patterns of this wetland ecosystem.

Keywords: Coastal Wetlands, Urban Ecology , Remote Sensing, GIS, Environmental History