

Coastal Karnataka Shoreline Dynamics

Ideally, the shoreline is characterised as the interface between land and sea. Shoreline transition is known to be one of the most complex mechanisms in the coastal region. The evolution of coastal environments is influenced by different factors such as the geography and geology of the catchment area, the extent of the catchment area, the structure of the sedimentation basin, the atmosphere contributing to runoff and river drainage in the coastal region, the inflow of freshwater and coastal hydrodynamics – waves, tides and currents. Wind, waves and tides are normal moving forces that transfer quickly unconsolidated sand and soils in the coastal region, resulting in dramatic changes in the location of the shoreline. Coastal systems have also been impacted by a range of construction practises, such as ports, industries, aquaculture and other human activity in the form of coastal defences. The coastal Karnataka is an area of roughly 4,000 square miles (10,000 square kilometers), it is bounded to the north by the Konkan, to the east by the Western Ghats, to the south by the Kerala Plains and to the west by the Arabian Sea.

The generated map focuses on the evaluation of coastal vulnerability along the coastal part of the Karnataka. Various data sets like thematic maps, toposheets and satellite remote sensing data have been used to identify the shoreline dynamics. The shoreline of 1920 was generated using historical toposheet and IRS P6 LISS4 data has been used to generate the shoreline of 2020. The scenario of Inundation and Deposition also mapped. Both shorelines are compared, drastic changes are identified over river estuarine regions. More erosions observed at the northern part of the coast and deposition is commonly observed at the southern part of the coast.

Methodology:

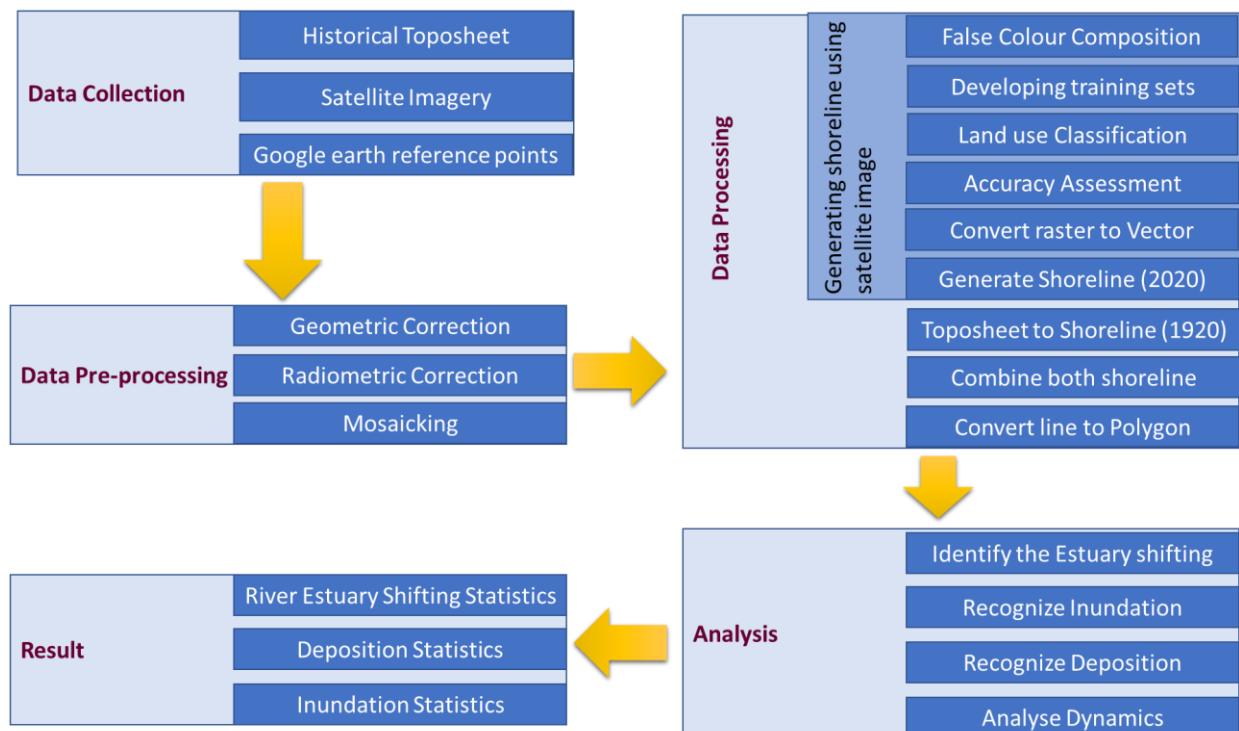


Figure 1: Method involved

Figure 1 shows how exactly the maps are generated using various data and processing methods. In this method, 1:250000 scale toposheet has been used to generate the shoreline for the year 1920. The toposheet was downloaded from the University of Texas Libraries. IRS P6 LISS4 data has been classified using GIS platform and generated the shoreline of 2020. Both the shorelines are compared and identified the interesting statistics on river shifting, inundation and deposition. The results are shown in the below map.

Result:

The below figure 2 shows the resulting map.

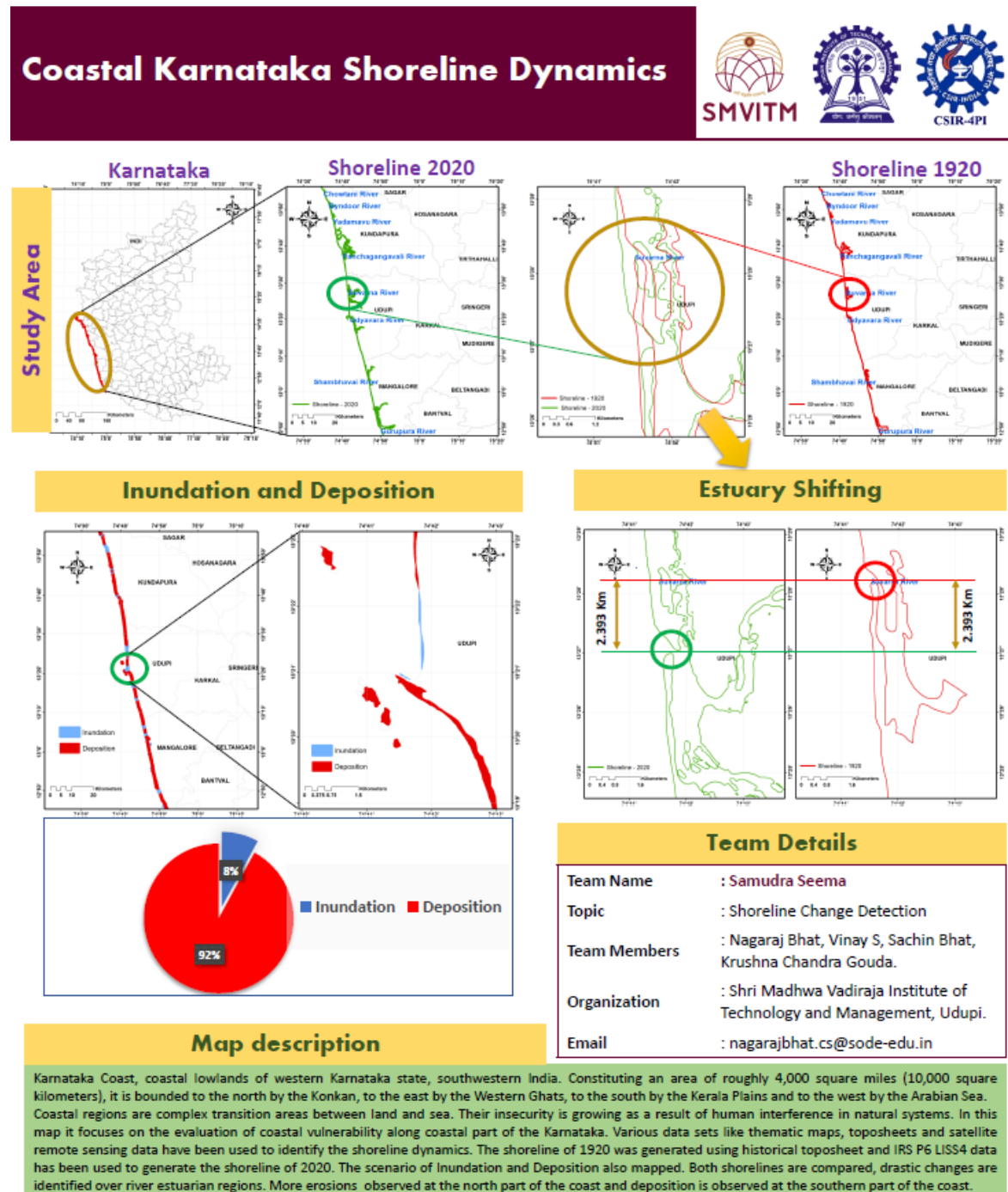


Figure 2: Results