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Impacts of Land Use/Land Cover on Surface Temperature and Soil Moisture in the Region of Nagavali Basin

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***Abstract*:** The land use/land cover (LULC) has the major impact on various hydro-meteorological parameters. The present study focuses on the influence of LULC changes on surface temperature and soil moisture for the Nagavali basin, India. In the present study, LULC was prepared from Landsat series of data with maximum likelihood image classification algorithm. The land surface temperature (LST) estimated from the thermal infrared band of Landsat data using radiative transfer equation. The soil moisture index estimated from the scatter data feature space of normalized difference vegetation index (NDVI) and surface temperature. The result of the study confirms the LULC has the significant impact on surface temperature and soil moisture. Land surface temperature drastically increased from the year 1990 to the year 2017. Soil moisture content calculated for each class of LULC and the results showed that the hilly and vegetative terrain has higher moisture content than low lying region.

***Keywords*:** Nagavali basin, Land use/land cover, Land surface temperature, Soil moisture index, Temperature vegetation dryness index