Abstract: This study aimed to investigate the spatiotemporal variations in the surface urban heat island (SUHI) in the fast-growing urbanized city of Guinea (Conakry) and its surrounding rural area in order to characterize its effects on urban microclimate. The daytime and nighttime SUHI during the summer season (December to April) of the year 2018 was investigated based on the high temporal resolution of the Moderate Resolution Imaging Spectroradiometer (MODIS), product (MOD11A2) collectionV6. The analysis of the remote sensing data has revealed important urban and rural temperature differences. The daytime SUHI was most pronounced than the nighttime. During the daytime, the mean temperature difference between the most densely urbanized area and mixed vegetated rural area could have reached up to 6^{o} C and that of the nighttime to 4^{o} C respectively. Furthermore, this study has discussed that the diurnal variations of the SUHI were found to be different based on the land cover type, meteorological conditions and the geographical location of the city in relation to the sea, as land-see breeze circulations significantly affect the spatiotemporal variations of the SUHI especially at nighttime with the coastal area much warmer than the inland one. The results of this study will provide relevant information to urban planners and environmental managers for assessing and monitoring urban thermal environment, which is rapidly being altered by natural and anthropogenic influences.

Keywords: Surface Urban Heat Island (SUHI); Conakry; Guinea; GIS and Remote Sensing