

## IAF EARTH OBSERVATION SYMPOSIUM (B1)

50 years of Earth observation: The contribution to sustainable development goals and plans for the future  
(6)

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SPATIO-TEMPORAL EVALUATION OF SURFACE URBAN HEAT ISLAND INTENSITY AND LAND  
USE DYNAMICS ACROSS HIGHLY DENSE CITIES IN NIGERIA: TOWARDS SUSTAINABLE  
URBAN PLANNING IN LAGOS, KANO AND IBADAN CITIES.

**Abstract**

The rate of urbanization in developing nations has greatly intensified rapid change in the climate of urban environment. Over the years, Nigeria as a developing country has experienced tremendous population growth and rural-urban migration, which has led to significant changes in land use and urban morphology. This paper evaluates the spatiotemporal variation in the Surface Urban Heat Island (SUHI) intensities and the dynamics of land use changes in three of the most densely populated cities in Nigeria (Lagos, Kano and Ibadan). The Thermal Infrared Sensors from Landsat 7-ETM and Landsat 8- OLI/TIRS were used to extract the Urban Heat Island maps from 2000-2018, while Land use maps were also generated to access the rate of urbanization in relation to the land cover characteristics of these cities. In addition, the 3 cities are located in distinct ecological zones (mangrove, rainforest and sahel grassland), hence, the World Urban Database and Access Portal Tools(WUDAPT) was used to create the local climate zone classification in order to get an holistic view of the urban morphology of the cities.

Satellite technology is an important tool that must be leveraged upon, if the global community is determined to achieve the Sustainable Development Goals (SDG) on time. Specifically, the vantage point position which remote sensing offers is a great tool that provides a holistic view of how cities are changing, and thus can be used to achieve the Goal 11 of the SDG which is towards achieving Sustainable cities and communities. Urbanization is not uniform on diurnal, seasonal, or annual scales, and the spatiotemporal patterns of surface urban heat islands (SUHI) similarly vary between cities across countries, it is important to study how SUHI changes, since it is one of the climate phenomena most influenced by human actions.