**Analyzing Changes in Land Surface Temperature in Mumbai Suburban Area**

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**Abstract**

This study investigates the intricate dynamics of land surface temperature (LST) changes within Mumbai's suburban area, offering a comprehensive analysis of the interplay between rapid urbanization, environmental factors, and climate resilience. As one of India's largest and most populous cities, Mumbai grapples with the challenges arising from intense urban development, prompting a closer examination of the implications for local climate dynamics and sustainability. The research employs a multidisciplinary approach, integrating perspectives from climatology, urban planning, environmental science, and social geography. Utilizing advanced RS & GIS, the study scrutinizes spatiotemporal variations in LST, identifying hotspots of temperature anomalies and assessing the impact of urban morphology on climate conditions. The investigation is framed within the context of the urban heat island (UHI) effect, emphasizing its exacerbation of temperature extremes and its implications for public health, energy consumption, and overall urban livability. Apart from the climatic consideration this research high lights the socio-economic altered LST. The finding of the study help to understand the regional climatic dynamics, a deep insight idea about strategies for fostering resilient and sustainable urban development in Mumbai suburban area.

**Key words:** Mumbai Suburban Area,land surface temperature (LST), remote sensing techniques and geographic information systems (GIS), urban heat island (UHI)