

MODIS에서 추출한 지표면 온도 자료를 이용한 서울 및 경기 지역 지표 도시 열섬의 평가

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Assessment of Surface Urban Heat Islands over Seoul and Gyeonggi Region using Land Surface Temperature Data Retrieved from MODIS

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The transition from natural environment to urban city causes the temperature to increase in comparison with the surrounding due to the urban structure, known as urban heat island (UHI). This phenomenon is a common environmental problem in urban landscapes which affects both climatic and ecological processes. Here we examined the diurnal and seasonal characteristics of the Surface UHI in one of the fastest growing city, Seoul and its periphery (Gyeonggi region), South Korea from 2003 to 2018. The surface temperature retrieved daily (day and night) from MODIS LST from summer (July and August) season were analyzed. The results showed that the LST over Seoul was always higher than that in the surrounding rural areas regardless of the year. The summer averaged maximum UHI intensity tends to increase with time, but its increase rate differs. Over the 16 year, on a spatial scale, areas with a maximum UHI intensity of 1.3-7.3 °C (day time) and 0.2-3.3 °C (night time) increased with a linear trend of $R^2= 0.29$ and $R^2= 0.25$ at day and night respectively. Meanwhile, on the temporal scale, an overall positive significant trend is seen for both day and night. This suggests that the UHI intensity will increase in the coming years if adequate mitigation strategies are not implemented through new policies.

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