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Identification of Thermally Critical Zones Based on Inter Seasonal Variation in Temperature

Authors : Sakti Mandal

Abstract : Varying distribution of land surface temperature in an urbanized environment is a globally addressed phenomenon. Usually has been noticed that criticality of surface temperature increases from the periphery to the urban centre. As the centre experiences maximum severity of heat throughout the year, it also represents most critical zone in terms of thermal condition. In this present study, an attempt has been taken to propose a quantitative approach of thermal critical zonation (TCZ) on the basis of seasonal temperature variation. Here the zonation is done by calculating thermal critical value (TCV). From the Landsat 8 thermal digital data of summer and winter seasons for the year 2014, the land surface temperature maps and thermally critical zonation has been prepared, and corresponding dataset has been computed to conduct the overall study of that particular study area. It is shown that TCZ can be clearly identified and analyzed by the help of inter-seasonal temperature range. The results of this study can be utilized effectively in future urban development and planning projects as well as a framework for implementing rules and regulations by the authorities for a sustainable urban development through an environmentally affable approach.

Keywords : thermal critical values (TCV), thermally critical zonation (TCZ), land surface temperature (LST), Landsat 8, Kolkata Municipal Corporation (KMC)
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