HUBUNGAN TUTUPAN LAHAN DAN SUHU PERMUKAAN TANAH DI KAWASAN STRATEGIS NASIONAL KEDUNGSEPUR TAHUN 2002 – 2024

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INTISARI

Perubahan tutupan lahan akibat pertumbuhan penduduk dan urbanisasi di Kawasan Strategis Nasional (KSN) Kedungsepur berdampak pada meningkatnya suhu permukaan tanah yang mempengaruhi kualitas lingkungan. Penelitian ini difokuskan memetakan suhu permukaan tanah dan tutupan lahan dengan memanfaatkan *platform Google Earth Engine*, kemudian mengidentifikasi hubungan keduanya pada periode rentang tahun 2002, 2013, dan 2024.

Penelitian ini menggunakan citra Landsat yang diolah melalui *platform Google Earth Engine*. Klasifikasi tutupan lahan dilakukan dengan algoritma *random forest*. Sementara itu, perhitungan suhu permukaan tanah memanfaatkan band termal dari citra Landsat. Hubungan tutupan lahan dan suhu permukaan tanah akan diidentifikasi memanfaatkan uji korelasi *Pearson* (nilai NDVI dan nilai suhu permukaan tanah) dan uji korelasi *point biserial* (tutupan lahan kategorikal dan nilai suhu permukaan tanah).

Hasil penelitian menunjukkan adanya peningkatan lahan terbangun dan penurunan vegetasi yang signifikan disertai dengan kenaikan suhu permukaan tanah di KSN Kedungsepur. Persebaran suhu permukaan tanah semakin meluas terutama di wilayah perkotaan. Hasil uji korelasi menunjukkan hubungan negatif yang kuat antara NDVI dan suhu permukaan tanah (r = -0,53 hingga -0,65) serta uji korelasi *point biserial* yang menunjukan hubungan yang sedang hingga kuat (r_pb = -0,83 hingga -0,89). Hasil uji korelasi tersebut membuktikan bahwa jenis tutupan lahan berpengaruh terhadap suhu permukaan tanah.

Kata Kunci: korelasi, *point biserial*, NDVI, suhu permukaan tanah, tutupan lahan

RELATIONSHIP BETWEEN LAND COVER AND LAND SURFACE TEMPERATURE IN THE NATIONAL STRATEGIC AREA OF KEDUNGSEPUR FROM 2002 TO 2024

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ABSTRACT

Land cover changes driven by population growth and urbanization in the National Strategic Area of Kedungsepur have contributed to the increase in land surface temperature, which in turn affects environmental quality. This study aims to map the spatial distribution and dynamics of land cover and land surface temperature, as well as analyze their relationship, during the years 2002, 2013, and 2024 by utilizing the Google Earth Engine Platform.

Landsat imagery was processed through Google Earth Engine, with land cover classification performed using random forest algorithm. Land surface temeprature was estimated using thermal bands from landsat imagery. The relationship between land cover and land surface temperature was examined through two approaches: Pearson's correlation (between NDVI and land surface temperature) and point – biserial correlation (between categorical land cover classes and land surface temperature).

The results show a significant increase in built – up areas and a decline in vegetation cover, accompanied by a rise in land surface temperature across the Kedungsepur region. The distribution of higher land surface temperatures expanded notably in urban areas. Correlation analysis revealed a strong negative relationship between NDVI and land surface temperature (r=-0,53 until -0,65) as well as a moderate to strong negative relationship based on the point biserial test (r_pb= -0,83 until -0,89). These findings confirm that the reduction of vegetation cover and the expansion of built up land sifnificantly contribute to the increase in land surface temperature.

Keywords: *correlation, point biserial, NDVI, land surface temperature, land cover*