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State warmer by 0.9°C in 10 years: IIT study

'Twin Cities Saw Nearly 50% Rise In Temperature'

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Bhubaneswar: Odisha has become warmer by about 0.9 degrees Celsius during 2001 to 2010 owing to changes in land use and land cover, revealed a study conducted by IIT Bhubaneswar and published in the June edition of science journal 'Nature'.

The study titled, Land Use and Land Cover Change Effect on Surface Temperature over Eastern India, published in the scientific reports section of the journal, was carried out by assistant professor of the School of Earth Sciences and Climate Change, V Vinoj, along with PhD researcher Partha Pratim Gogoi with co-authors D Swain, G Roberts, J Dash and S Tripathy.

The study revealed that the surface temperature, which was decreasing by about 0.7 degrees Celsius during 1981 to 1990, has seen a rise of 0.1 degrees Celsius during 1991 to 2000 and 0.9 degrees Celsius during 2001 to 2010. In the decades between 1991 and 2010, the minimum temperature increased by 1.2 degrees Celsius, the study found.

"In order to characterize the change in temperature, we have used measurements of daily mean, maximum and minimum temperature at 29 stations. We have also used daily gridded datasets from IMD and University of Delaware to ex-



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plore the spatial patterns of temperature changes," said Vinoj.

The study further showed that urban centres like Bhubaneswar and Cuttack have experienced a rise in temperature by 40 and 50 per cent, respectively, during 2001 and 2010 followed by other towns like Angul, Dhenkanal and Jajpur. In the urban centres, the study cited rapid change in infrastructure leading to land use pattern has contributed to the warming.

Moreover, it was also found that between 1991 and 2000, there was an increasing trend of rising temperature in the western region of the state, but there was a shift in the trend to the eastern region between 2001 and 2010. The highest increasing trend of 0.04 degree Celsius was found in the cities of Bhubaneswar and Cuttack in the period.

The researchers maintained in the study that Bhubanes-

war is among the fastest growing tier 2 cities in India and suggests that the trend of rising temperature in the city is due to the impact of land use and land cover and rapid urbanization. The study was carried out here using the observation minus re-analysis technique.

The study, which focuses on attributing the change in surface temperature to change in land use and land cover found that there is a decrease in green vegetation in the state. While the Rabi cultivation done between October to March has increased during 2004 to 2010, the Kharif cultivation done between July to October was decreased.

The study concludes that the overall land use and land cover induced warming is a result of changing vegetation cover. "The changing cropping pattern (decreased Kharif and increased Rabi crops) appears to be the leading cause for these land use and land cover changes which exacerbates the warming trend," it maintained.

Environmentalist Sailabala Padhi said that there is always a care about increasing the green cover by planting trees, but this study has come up with a different reason for warming. "The deforestation is also leading to change in the land use pattern. It is high time that the policymakers think of proper planning of the urban centres," said Padhi.