

More pollution, less rain

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Emissions from Asian slums could be a contributory factor in changing weather patterns, according to work published in the *International Journal of Environment and Pollution*, perhaps leading to worsening windspeeds, but less rainfall.

Sat Ghosh and Aditi Palsapure of VIT University, in Vellore, Tamil Nadu, India, Alan Gadian and Steve Dobbie of the Institute for Climate and Atmospheric Science, in the School of Earth and Environment, at the University of Leeds, UK, Arkayan Samaddar of the Department of Meteorology and Atmospheric Science, at Penn State College of Earth and Mineral Sciences, in Pennsylvania, U.S., Anuj Sharma of the Department of Mechanical Engineering at Cranfield University, Bedford, UK, and Pranav Chandramouli of Fluminance at the Universitaire de Beaulieu, in Rennes, France, provide the details.

The team explains that [climate models](#) have already hinted that local emissions could be affecting the formation and progress of cyclonic storms. They point out that the eastern coast of India, home to several mega cities, is routinely battered by such storms from October to December. These cities, the team explains, house

millions of slum dwellers who cook their meals over unseasoned wood fires, which generates vast quantities of airborne biomass particles, which chemically age within the polluted air mass above the cities making them active as cloud condensation nuclei.

The team has taken as a case study Hurricane Thane, which seems to have been modulated by such transient emissions, leading to devastation of the coast of Tamil Nadu on the 30th December 2011. The team's calculations show that the conversion rate of cloud water to rain was altered by up to 12% with an increase of 20.5% in the amount of water held in clouds rather than falling as rain when pollution effects were present. This could be an ongoing problem for water-scarce region of Southern India.

More information: Sat Ghosh et al. A meteorological discourse on extreme storm events driven by Asian slum emissions, *International Journal of Environment and Pollution* (2019). DOI: [10.1504/IJEP.2019.103743](https://doi.org/10.1504/IJEP.2019.103743)

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