

Anthropogenic aerosols increasing over India

November 5 2013

Aerosol particles in the Earth's atmosphere scatter and absorb light differently at different wavelengths, thereby affecting the amount of incoming sunlight that reaches the planet's surface and the amount of heat that escapes, potentially altering the planet's climate. Most recent regional studies of aerosol trends have used satellite data to examine aerosol levels over ocean regions; fewer regional studies have measured aerosol over land.

A network of [aerosol](#) observatories known as ARFINET was set up in the mid-1980s to measure aerosols over the Indian subcontinent. Babu et al. analyzed the data from ARFINET observations to look at the long-term trends in aerosol optical depth, a measure of the concentration of aerosols in the atmosphere. They find statistically significant increases in aerosol optical depth at most stations over the past 2 decades. In fact, they report that "a phenomenal increase in aerosol loading has taken place."

Aerosol levels and the rate of increase varied seasonally, the authors find. The rate of increase was high during the dry months of December through March, but there was no strong trend during the premonsoon (April to May) and summer monsoon periods (June through September).

The authors also used simulations to determine the contributions of different aerosol chemicals to the total aerosol optical depth. They find that contributions to total aerosol from dust have decreased, but the contributions from anthropogenic emissions have increased over the past 2 decades.

More information: Trends in Aerosol Optical Depth over Indian region: Potential causes and impact indicators, *Journal of Geophysical Research-Atmospheres*, [DOI: 10.1002/2013JD020507](https://doi.org/10.1002/2013JD020507) , 2013
<http://onlinelibrary.wiley.com/doi/10.1002/2013JD020507/abstract>

Provided by American Geophysical Union

Citation: Anthropogenic aerosols increasing over India (2013, November 5) retrieved 16 June 2024 from <https://phys.org/news/2013-11-anthropogenic-aerosols-india.html>

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