

Air pollution is reducing the amount of rain in China

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Air pollution in eastern China during the last 50 years has led to a reduction in the amount of light rainfall of almost a quarter. This is revealed by an international study conducted with support from the University of Gothenburg, Sweden. There is a risk that the consequences will be increased drought, reduced harvests and poorer public health.

China's dramatic growth has also brought about an increase in environmental problems. At the same time as the population has more than doubled during the last century, emissions into the atmosphere have increased by 800 percent. The [environmental impact](#) has been particularly pronounced in eastern [China](#), where most of the people live and where the emissions are greatest: it does not rain in the same way as it did before.

In some parts of eastern China the number of days with rain has diminished by 23 percent in 50 years. The consequences are increased drought and poorer harvests. A team of climate researchers from the USA, China and Sweden - including Deliang Chen, Professor of Physical Meteorology in the Department of Earth Sciences, University of Gothenburg - has now studied the problem and demonstrated that the reduced amounts of rainfall have a direct connection with high concentrations of air pollution.

According to the researchers, the failure of rain to appear has a direct link to the concentrations of [aerosol](#) in the atmosphere. Researchers have long been aware that aerosol, which consists of small particles

surrounded by gas and water, has the capacity to "gather" raindrops around it in clouds. However, in the current study the researchers discovered that where there was a high aerosol content, the raindrops were considerably smaller - in some cases only half the normal size. As it is more difficult for smaller raindrops to coalesce into rain clouds that can release rain, the [air pollution](#) thus leads to the reduction in light [rainfall](#) (under 10 millimetres).

The study, which is based on data from 162 weather stations, is published in the *Journal of Geophysical Research*.

More information: Qian, Y., D. Gong, J. Fan, L. R. Leung, R. Bennartz, D. Chen, and W. Wang (2009), Heavy pollution suppresses light [rain](#) in China: Observations and modeling, *J. Geophys. Res.*, 114, D00K02, [doi:10.1029/2008JD011575](https://doi.org/10.1029/2008JD011575)

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