Pollution From China And India Affecting World's Weather

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Severe pollution from the Far East is almost certainly affecting the weather near you, says a Texas A&M University researcher who has studied the problem and has published a landmark paper on the topic in the *Proceedings of the National Academy of Sciences*.

Renyi Zhang, professor of atmospheric sciences at Texas A&M and lead author of the paper, says the study is the first of its kind that provides indisputable evidence that man-made pollution is adversely affecting the storm track over the Pacific Ocean, a major weather event in the northern hemisphere during winter. The project was funded by the National Science Foundation and NASA.

Zhang says the culprit is easy to detect: pollution from industrial and power plants in China and India. Both countries have seen huge increases in their economies, which means more large factories and power plants to sustain such growth. All of these emit immense quantities of pollution – much of it soot and sulfate aerosols – into the atmosphere, which is carried by the prevailing winds over the Pacific Ocean and eventually worldwide.

Using satellite imagery and computer models, Zhang says that in roughly the last 20 years or so, the amount of deep convective clouds in this area increased from 20 to 50 percent, suggesting an intensified storm track in the Pacific.

"This pollution directly affects our weather," he explains.

“During the past few decades, there has been a dramatic increase in atmospheric aerosols – mostly sulfate and soot from coal burning – especially in China and India,” he explains.

“We compared these deep convective clouds from the 10-year period of 1984-1994 to the period from 1994-2005 and discovered these storms have risen anywhere from 20 to as high as 50 percent.”

“It is a direct link from large-scale storm systems to anthropogenic (human-made) pollution.”

Zhang says the problem is especially worse during the winter months.

Because of various climate conditions, the northern Pacific Ocean is more susceptible to the aerosol effect in winter. Aerosols can affect the droplets in clouds and can actually change the dynamics of the clouds themselves, Zhang adds.

The Pacific storm track carries these polluted particles to the west coasts of Canada and the United States, across America and eventually, most of the world, Zhang notes.

“The Pacific storm track can impact weather all over the globe,” he says. “The general air flow is from west to east, but there is also some serious concern that the polar regions could be affected by this pollution. That could have potentially catastrophic results.”

Soot, in the form of black carbon, can collect on ice packs and attract more heat from the sun, meaning a potential acceleration of melting of the polar ice caps, he believes.

“It possibly means the polar ice caps could melt quicker than we had believed, which of course, results in rising sea level rates,” he adds.

The pollution from the storm tracks could also signify wild weather changes, he believes.

“You might have more storms, and these storms might be more severe than usual,” he says.

“Or it could lead to the opposite – severe droughts in other areas. The Pacific storm track plays a crucial role in our weather, and there is no doubt at all that human activity is changing the world’s weather.”

Source: Texas A&M University