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DIRTY SNOW WARMS ARCTIC MORE THAN GREENHOUSE GASES: STUDY

Dirty snow may heat up the Arctic at least as much as greenhouse gases, U.S. researchers say.

Filthy flakes can account for at least one third of the Arctic warming currently blamed on greenhouse gases, scientists at the University of California in Irvine, Calif., reported Wednesday in a study in the scientific publication Journal of Geophysical Research.

Soot from vehicles, smokestacks and forest fires enters the atmosphere and falls to the ground in the form of dirty snow, which is darker than snow devoid of soot particles, the scientists said. Dark surfaces absorb sunlight and therefore heat, while bright surfaces reflect it away.

"When we inject dirty particles into the atmosphere and they fall onto snow, the net effect is we warm the polar latitudes," study co-author Charlie Zender said in a written statement. "Dark soot can heat up quickly. It's like placing tiny toaster ovens into the snow pack."

Zender and his team found that dirty snow has warmed the planet as much as 0.15 C in the last 200

years, during which the overall temperature rise has been 0.8 degrees. The snow accounts for about 19 per cent of the increase, according to the researchers.

Over the same period, the Arctic's temperature has increased by about 1.6 degrees, with dirty snow accounting for as much as 1.5 degrees or 94 per cent of the change, they said.

Meanwhile, greenhouse gases have increased by about one-third due to human activity over the last two centuries, the scientists said.

"A one-third change in concentration is huge, yet the Earth has only warmed about 0.8 degrees because the effect is distributed globally," Zender said. "A small amount of snow impurities in the Arctic have caused a significant temperature response there."

One way to help reduce the prevalence of dirty snow would be to switch to cleaner-burning fuels to reduce the amount of soot in the atmosphere. That would have a much faster effect on reducing global warming than cutting greenhouse gases because carbon

dioxide lingers in the atmosphere
for a century, Zender said.