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OCTOBER 19, 2009

## Arctic CO2 Sink could become a Source

The Arctic has been a carbon sink since the end of the last ice age, but that could change, according to David McGuire of the U.S. Geological Survey and the University of Alaska at Fairbanks and his colleagues.

On average, the Arctic accounts for 10-15 percent of the Earth's carbon sink, but it can vary between 0 and 25 percent, according to the [USGS release](#).

According to the researchers, climate change could alter the amount of CO2 that the Arctic traps.

Climate change is occurring at about twice the rate as that in the lower latitudes, and this more rapid change could end up eliminating the sink, or even turn the Arctic into a carbon source.

Warmer temperatures can accelerate the rate of surface organic matter decomposition, releasing more carbon dioxide into the atmosphere. Of greater concern, says McGuire, is that the permafrost has begun to thaw, exposing previously frozen soil to decomposition and erosion. These changes could reverse the historical role of the Arctic as a sink for carbon dioxide.

The thawing permafrost could also result in a more waterlogged Arctic, says McGuire, a situation that could encourage the activity of methane-producing organisms. Methane is a very potent greenhouse gas.

On the flip side, global warming may produce longer growing seasons that promote plant photosynthesis, which removes carbon dioxide from the atmosphere. Also, the expansion of shrubs in tundra and the movement of treeline northward could sequester more carbon in vegetation. So there is still some uncertainty here in regards to the results of this study.

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### Brett Anderson

Senior meteorologist with 20 years of experience at AccuWeather.

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Headline: Earth™: Katie Fehlinger hosts [Headline: Earth](#), which takes an unbiased look at all sides of the global warming debate. The weekly show features the latest headlines related to global warming, along with interviews of prominent and newsworthy guests, including global warming legislation advocate and chairman of the Environment and Public Works Committee (EPW), [Senator \(D\) Barbara Boxer of California](#) and global warming skeptic and former

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EPW chairman, [Senator \(R\) James Inhofe of Oklahoma](#). Visit [Headline: Earth's video page](#) to see any or all of Katie's videos.

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We'd like to hear your questions on global warming! You can [send your questions here](#) via email.



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