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The Ozone Hole Is Mending. Now for the ‘But.’

By SINDYA N. BHANOO

That the hole in Earth’s ozone layer is slowly mending is considered a big victory for environmental policy makers. But in a new report, scientists say there is a downside: its repair may contribute to [global warming](#).

It turns out that the hole led to the formation of moist, brighter-than-usual clouds that shielded the Antarctic region from the warming induced by greenhouse gas emissions over the last two decades, scientists write in Wednesday’s issue of Geophysical Research Letters.

“The recovery of the hole will reverse that,” said [Ken Carslaw](#), a professor of atmospheric science at the University of Leeds and a co-author of the paper. “Essentially, it will accelerate warming in certain parts of the Southern Hemisphere.”

The hole in the layer, discovered above [Antarctica](#) in the mid-1980s, caused wide alarm because ozone plays a crucial role in protecting life on Earth from harmful ultraviolet radiation.

The hole was largely attributed to the human use of chlorofluorocarbons, chemical compounds found in refrigerants and aerosol cans that dissipate ozone. Under an international protocol adopted in 1987, many countries phased out the compounds, helping the ozone to start reconstituting itself over the Antarctic.

For their research, the authors of the new study relied on meteorological data recorded between 1980 and 2000, including global wind speeds recorded by the [European Center for Medium-Range Weather Forecasts](#).

The data show that the hole in the ozone layer generated high-speed winds that caused sea salt to be swept up into the atmosphere to form moist clouds. The clouds reflect more of the sun’s powerful rays and help fend off warming in the Antarctic atmosphere, the scientists write.

The sea spray influx resulted in an increase in cloud droplet concentration of about 46 percent in some regions of the Southern Hemisphere, Dr. Carslaw said.

But Judith Perlwitz, a [University of Colorado](#) professor and a research scientist at the National Oceanic and Atmospheric Administration, said that although the paper’s data were sound, she questioned the conclusions.

Even as the ozone layer recovers, greenhouse gas emissions are expected to expand, she said. She predicted that the rise in temperatures would cause wind speeds to increase over time and have the same cloud-forming effect that the ozone hole now has.

“The question is whether the wind is really going to slow down, and that I doubt,” she said.

“The future is not just determined by the recovery of the ozone hole,” she said. “We’re also increasing our use of greenhouse gases, which increases the speed of the winds all year long.”

Dr. Perlwitz also pointed out that the ozone hole was not expected to fully recover to pre-1980 levels until at least 2060, according to the World Meteorological Organization’s most recent [report](#) on the issue.

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