Record South Pole Ozone Hole Predicted

by Dennis T. Avery

A Canadian scientist says the largest known hole in the ozone will occur over the South Pole in the next week. If that happens, it will help us understand global warming.

Dr. Qing-Bin Lu, of Canada's University of Waterloo, says NASA satellites and laboratory measurements show cosmic rays are the real cause of the seasonal hole in the earth's ozone layer over the Antarctic. Cosmic rays are tiny, invisible, high-energy particles from exploding stars which constantly strike the earth—and people. Cosmic rays probably cause some of our cancers, by altering the DNA inside our bodies.

However, if Dr. Qing-Bin Lu and others are correct, they also are connected to climate change. The number of cosmic rays hitting the earth varies sharply based on the activity level of the sun and the size of the magnetic wind it projects out into space. A weak sun means a weak magnetic wind and more cosmic rays striking earth. Britain's BBC recently reported that the solar wind is now blowing at the weakest rate in more than 50 years, and is also 13 percent cooler than it was 15 years ago.

The ozone layer is important because it absorbs most of the sun's high-frequency ultraviolet light, protecting us from skin cancers and cataracts. In the 1980s, eco-activists told us the hole in the Antarctic ozone had been caused by man-made chemicals released from the chlorofluorocarbons once used in our refrigerators and air conditioners.

Fear of losing the ozone layer's health protection led to the Montreal Protocol, which has banned CFCs since 1989. But the ban failed to change behavior of the ozone layer over the Antarctic.

Dr. Lu says that NASA satellites demonstrate that cosmic rays cause drastic reactions in chlorine compounds inside clouds over the Polar Regions. The satellite data now cover two full 11-year solar cycles, from 1980–2007.

"This finding, combined with laboratory measurements, provides strong evidence of the role of cosmic-ray-driven reactions in causing the ozone hole, and resolves the mystery of why a large discrepancy between the sunlight-related photochemical model and the observed ozone depletion exists," says Lu.

Cosmic rays are also connected to climate change. In 1998, Henrik Svensmark of the Danish Space Research Institute filled a reaction chamber with the earth's mix of atmospheric gases, and turned on a UV light to mimic the sun. He was amazed as the cosmic rays coming through the building's walls quickly filled the chamber with huge numbers of microscopic, electrically charged droplets of water and sulfuric acid—the "cloud seeds" that help create low, wet, cooling clouds in the earth's atmosphere. Since such clouds often cover 30 percent of the earth's surface, they can play a crucial role in the planet's warming or cooling.

Currently, the World Meteorological Organization uses the photochemical model to predict that the Antarctic springtime ozone hole will increase by another 5–10 percent by 2020. In sharp contrast, Dr. LU says the severest ozone loss will occur over the South Pole this month—with another large ozone-triggered hole occurring around 2019.

If the South Pole gets an ozone-hole maximum in the coming weeks, it will strengthen the case for cosmic rays, and endorse a Modern Warming driven by solar variations rather than human-emitted CO_2. The solar model is already endorsed by oxygen isotopes in ice cores from both Greenland and the Antarctic, by microfossils in the sediments of nine oceans and hundreds of lakes worldwide, and by cave stalagmites from every continent plus New Zealand.

The case for a solar-driven climate is also strengthened by a drop in global temperatures over the past 18 months: The temperature decline had been forecast by the sunspot index since 2000, but was not predicted by the global climate models.

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