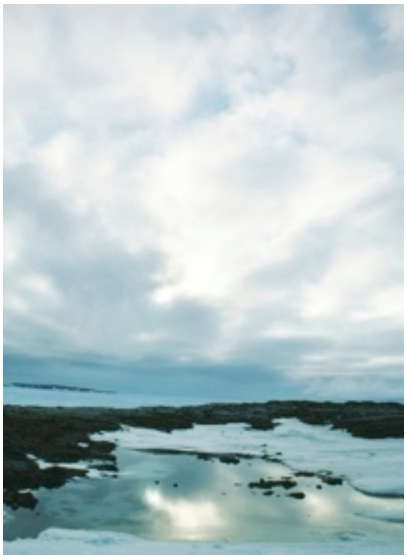
Written by **Rebecca Terrell** on October 4, 2011

Huge Arctic Ozone Hole Leaves Scientists Gaping



The science journal Nature is making headlines this week with news of the largest hole in the ozone layer over the North Pole in history, rivaling the size of its well known Antarctic cousin. Researchers credit this "unprecedented Arctic ozone loss" to "unusually long-lasting cold conditions" in the stratosphere at a time when their colleagues are in turmoil over melting Arctic sea ice a few miles below, supposedly caused by man-made global warming. Of course, humans are also responsible for the chilly stratosphere, they say. With sky-is-falling overtones the article's authors warn, "We cannot at present predict when such severe Arctic ozone depletion may be matched or exceeded."

Nor do they know when such levels have been matched or exceeded in the past. The NASA satellite record goes back only to 1979, according to meteorologist and weather technology expert Anthony Watts. That amounts to little more than 30 years of data, which can hardly be considered a baseline for making doomsday predictions and framing public policy.

Yet that is exactly what has happened since 1985 when scientists first spied a hole in the ozone layer over Antarctica and immediately blamed humans and their aerosol cans. S. Fred Singer, professor of environmental science at the University of Virginia, recounts the U.S. Environmental Protection Agency's (EPA) knee-jerk hysteria. Despite a complete dearth of evidence, through the late 1980s and early 1990s EPA predicted millions of extra skin cancer deaths, blinded farm animals, dispossessed Antarctic whales, and entire populations of frogs and toads driven to extinction by extra solar ultraviolet radiation seeping through the gap and poisoning the lower atmosphere. Years later, humans, cows, whales, and frogs are doing quite well. But what started as a molehill hypothesis has evolved into a mountain of crippling federal regulations and sovereignty-eroding international agreements. At its apex is The Montreal Protocol, which went into force in all UN-recognized nations in 1989 and bans emissions of so-called ozone-depleting substances.

Sadly, it seems, that was still too late for the fragile ozone layer, though not one of EPA's dire predictions has come true and the ozone layer has since faded from the media spotlight. The *Nature* article claims man-made chlorinated fluorocarbons (CFCs) emitted prior to The Montreal Protocol have been percolating up in the stratosphere for years and are only now coming out of hibernation. The newly activated chlorine destroys ozone, a process exacerbated by "unusually long-lasting cold conditions in the Arctic lower stratosphere." The researchers also wonder how these extreme cold conditions might be related to unprecedented warming in lower levels of the atmosphere, suggesting a causal link.

Their findings and suggestions fly in the face of research published earlier this year in the journal

Geophysical Research Letters. Scientists at Freie Universität in Berlin reported unusual 21st century stratospheric *warming*, not cooling, and said it was driven by the interaction of oceanic heat flux with the troposphere (making up the first 6 miles above sea level) and stratosphere (an altitude between 6 and 30 miles above sea level). They have recorded nine sudden stratospheric warming (SSW) periods so far this millennium, whereas only one occurred each decade in the 1980s and 1990s. Moreover, they found conditions in polar stratosphere to be warmer than any other around the globe during these spikes in temperature. The resulting stratospheric warmth, they say, determines whether winters are mild or severe by affecting pressure differences between the poles and the equator. They cite the Northern Hemisphere's severe winter of 2009/2010 is an example of these effects.

However, data from the U.S. National Oceanic and Atmospheric Administration (NOAA) support the contention of a recent trend in overall lower stratospheric temperatures. NOAA's data provoke slightly less excitement, since they show fluctuations in a range of roughly -0.7° C to 0.8° C from a baseline only averaged since 1981. A graph of these variations shows significant spikes only in years when there were massive volcanic eruptions: El Chichón in Mexico in 1982 and the Philippines' Mt. Pinatubo in 1991. (According to Singer, volcanoes are known to spew four to five times more chlorine into the atmosphere than man-made sources do.) Stratospheric temperatures dipped following each of these large eruptions, and NOAA attributes the lower-than-average readings to dissipation of their warming effects.