Gaping holes open up in the ozone depletion theory

by Rogelio Maduro

Despite the constant bombardment in the news media to the effect that chlorofluorocarbons are depleting the ozone layer and caused a gaping hole in the sky over Antarctica, large numbers of scientific papers have appeared recently debunking every tenet of the ozone depletion theory. The scientific evidence indicates: There has been no ozone depletion in the past decades; levels of ultraviolet radiation have decreased, not increased; the Antarctic ozone hole is not a new phenomenon, but existed in its full magnitude in 1958, and most likely has been there for millions of years; and CFCs are being broken up, not in the stratosphere, but down in the ground by dehalogenating bacteria.

It is only through a systematic policy by the news media to completely ignore any of the scientific evidence that has come out in scientific journals, that the public has remained in the dark about all this evidence. As with all other great scientific hoaxes this century, however, the ozone depletion hoax is rapidly coming apart. What the scientic evidence indicates is that if the sky is truly falling, it is falling only on the ozone hoaxsters.

While the media try to convey the impression that there is some sort of consensus among scientists that CFCs are depleting the ozone layer, quite the opposite is the truth. There is a state of war in the scientific community, on the part of the physical atmospheric scientists, against the so-called modelers, the scientist who spend their entire day in front of computers conjuring up scary scenarios about global doomsday, which beget very large research grants and instantaneous fame. The physical atmospheric scientists, in contrast, spend their time observing and measuring what actually goes on in the atmosphere, and they are pointing out the fact that all their observations contradict the ozone depletion theory.

The fraud begins to be exposed

One such fight erupted at the annual conference of the American Association for the Advancement of Science (AAAS) in Washington, D.C. in February of this year. The conference featured 26 panels on how man is destroying the Earth, with presentations given mostly by sociologists and anthropologists, and one panel on the need for science to be the basis of environmental policy. That one panel was the best attended.

Among those making presentations at the scientific panel was Pat Michaels of the University of Virginia, who demonstrated that the global warming theory is a hoax. S. Fred Singer, former chief scientist of the Department of Transportation, demonstrated that the ozone hoaxsters had attributed a decrease in ozone layer thickness to CFCs, when it is actually due to the solar cycle. James Mahoney, head of the National Acid Precipitation Assessment Program, proved that the ostensible threat from acid rain has been blown out of proportion. Others noted that the environmental hysteria had little to do with real science.

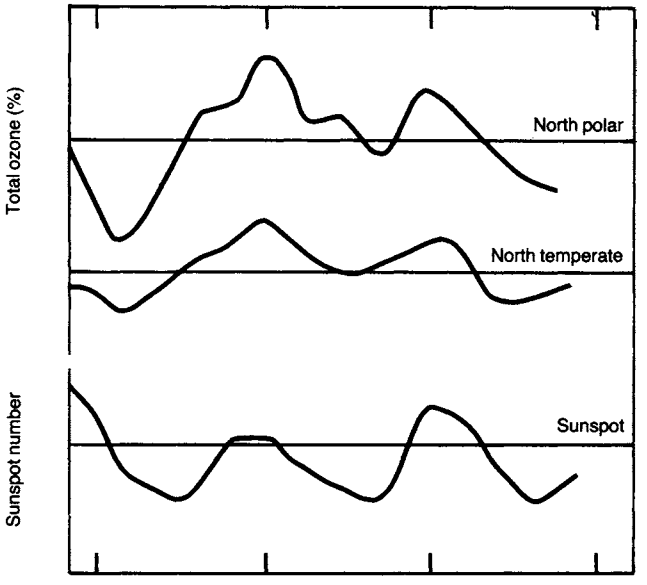
Singer, who invented the apparatus used in satellites to measure the thickness of the ozone layer, gave a presentation in which he challenged the conclusion that the ozone layer has been depleted by CFCs in the past two decades. In March 1988, the Ozone Trends Panel, a group that was set up to examine the evidence of ozone depletion, announced at a press conference that they had discovered a 3% depletion of the ozone layer. Despite the fact that the report which was supposed to be released by the Ozone Trends Panel at that conference was not released until December 1990, that announcement has become the basis for the radical policies upon which CFCs must be banned, by international accord, by the end of the decade.

In his presentation Singer pointed out that the Ozone Trends Panel has confused the influence of the solar cycle upon the ozone layer with an imaginary depletion caused by CFCs. The thickness of the ozone layer is not constant by any means. It can change as much as 50% from one day to the next, depending on meteorological conditions, and in the span of years and decades, it changes as a function of natural cycles. One of the most important cycles, Singer pointed out, is the 11-year solar cycle (**Figure 1**).

The Ozone Trends Panel examined the historical ozone data to determine whether the thickness of the ozone layer had changed over time. They chose a very peculiar time frame, however: The starting point was 1969—despite the

FIGURE 1

Total ozone change and sunspot number



Source: J.K. Angell, "One of the relations between the atmospheric ozone and sunspot number," *Journal of Climate* (1989).

Notice how close the correlation is between total ozone change and sunspot number. The Ozone Trends Panel picked up the top of the cycle, when ozone was most abundant (1969), and the bottom of the cycle, when ozone was least abundant (1986). Had the panel shown the data starting in 1962, there would have been an increase in ozone.

fact that there are ozone data going back to the 1930s—and the endpoint was 1986. The data cover 17 years, which corresponds to 1.5 solar cycles. Singer demonstrated that the entire depletion measured by the Ozone Trends Panel could be attributed to the influence of the solar cycle. The year 1970 was a solar activity maximum, which corresponds to an ozone maximum, and 1986 was a solar activity minimum, which corresponds to an ozone minimum. It is a natural cycle: The more intense the solar activity, the thicker the ozone layer.

Thus the Ozone Trends Panel's choice of starting date corresponds to a well-documented ozone maximum. Ground instruments indicated that 1970 was the thickest ozone layer on record. The panel's endpoint corresponds to the expected natural ozone minimum. Therefore, the Ozone Trends Panel deliberately chose data which would start at the peak of the natural ozone cycle and end at the bottom of the cycle, giving a misleading result.

Right after Singer gave his presentation, F. Sherwood Rowland, author of the ozone depletion theory, rose to challenge him. As noted by scientists present, if he had kept his mouth shut, he wouldn't have been demolished by Singer. If anything, this impromptu debate demonstrates a point made repeatedly by real scientists: Every time one of these hoaxsters agrees to a debate, the truth comes out. That is precisely the reason that there is no coverage in the media of any dissension in the scientific community.

What is the Ozone Trends Panel? Created supposedly to make an impartial and accurate assessment of global ozone data, the panel was anything but impartial. It was packed with proponents of the ozone depletion theory. Among the 21 members of the panel were Harold Johnston, inventor of the theory that nitrogen oxides from the Super-Sonic Transport were going to wipe out the ozone layer (1971); Richard Stolarski, who said that the chlorine from the Space Shuttle was going to deplete the ozone layer (1973); Richard Turco, one of the inventors of the "nuclear winter" theory (1983); and, of course, F. Sherwood Rowland, inventor of the CFCs depletion theory (1974). Many other cothinkers of Rowland, were either members of the panel or participants in the working groups created by the panel. The dissenters in the working groups were in the minority; their judgments were ignored and overruled by the panel itself.

Flagrant distortion of data

The debate at the AAAS conference is but the tip of the iceberg. Dozens of top scientists around the world have been challenging the conclusions of the Ozone Trends Panel from a different standpoint. These scientists, most of whom actually operate the instruments that measure the thickness of the ozone layer, are accusing the ozone hoaxsters of having distorted the actual data.

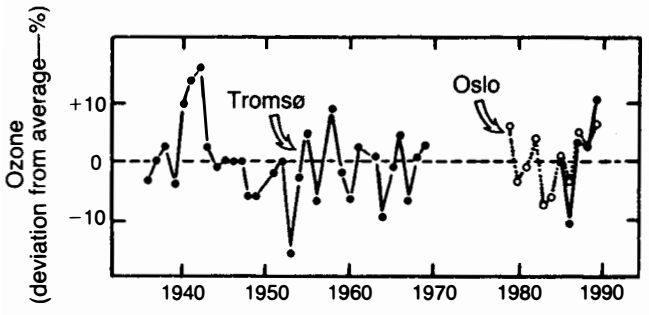
These scientists argue that the Ozone Trends Panel arrived at their results by "re-analyzing" and "correcting" the ozone data collected by scientists from around the world, with complex statistical mathematical models. Data from individual stations, which showed no ozone depletion, suddenly showed ozone depletion, after the statistical "re-analysis." No wonder the Ozone Trends Panel took almost three years to release its report! According to top European scientists, data from ozone-measuring stations in Belgium, England, Germany, India, Japan, Norway, and Switzerland show no ozone depletion over the past decades.

What do the real scientists say? In a Jan. 11 article published in *Nature* magazine, Norwegian scientists Søren Larsen and Thormod Henriksen analyze ozone layer data going back to 1935 and conclude, "The data from long-term ozone measurements reveal periods of several years with a negative trend [decrease] and other periods with a positive trend [increase]. *The combined results up to 1989 give no evidence for a long-term negative trend of the Arctic ozone layer*" (**Figure 2**).

They continue, "The data for Oslo and Tromso show that the ozone layer over Scandinavia has been above normal (or

FIGURE 2

Norwegian scientists find little long-term change in Arctic ozone



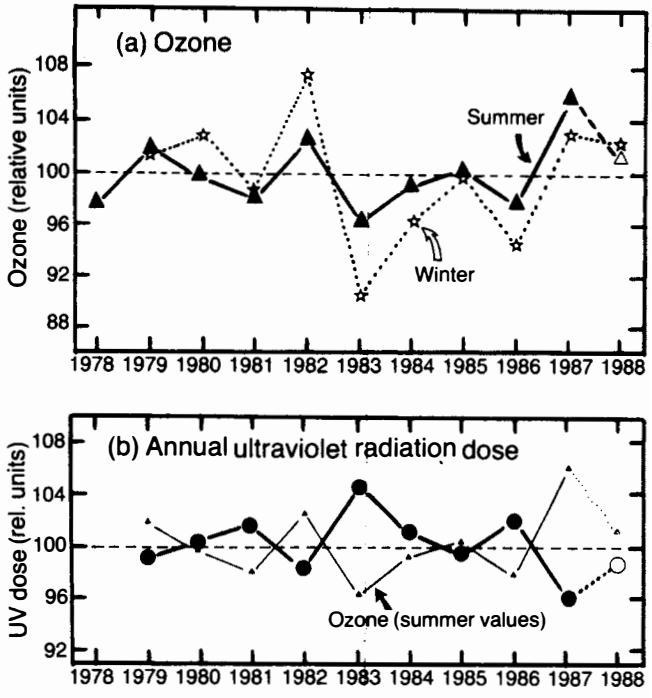
Source: *21st Century Science & Technology.* Adapted from Søren H. Larsen and Thormod Henriksen, "Persistent Arctic Ozone Layer," *Nature* (Jan. 11, 1990), 124.

Søren Larsen and Thormod Henriksen at the University of Oslo's Institute of Physics found that gases like CFCs have had a negligible effect on the Arctic ozone layer. "The general balance between formation and destruction of ozone," they write, "has not changed, at least not to an extent that is apparent in the long-term observations."

Shown here are spring values of ozone for the Norwegian stations at Tromsø at latitude 70° N (filled circles) and Oslo (open circles). The data are the average of measurements in February, March, and April and correspond to the season when ozone depletion occurs in Antarctica (August, September, and October). These long-term data show that the natural balance between formation and destruction of ozone has not changed in the Arctic.

FIGURE 3

No observable trend in ozone or ultraviolet radiation in past 12 years



Source: *21st Century Science & Technology.* Adapted from Arne Dahlback, Thormod Henriksen, Søren H. Larsen and Knut Stamnes, "Biological UV-Doses and the Effect of an Ozone Layer Depletion," *Photochemistry and Photobiology* **49**:621 (1989).

Norwegian measurements demonstrate that there is no observable trend, neither increase or decrease in ozone (a) or ultraviolet radiation (b) values for the past 12 years. If the ozone depletion theory were correct, ozone values should have gone down more than 3%, and UV radiation values should have therefore increased by more than 7%.

average) during the past three years. Because of the good correlations with the data from other stations, this conclusion may be valid for the whole Arctic region."

Larsen and Henriksen then make a critical point: "The figures show the importance of defining the starting point and endpoint when describing trends. The data indicate a positive trend for ozone (in all seasons) in the period 1983-89 (the past six years). On the other hand, no particular trend can be claimed for the past ten years." In other words, the thickness of the ozone layer has natural fluctuations of several percent per year. One can show an increase or decrease in the thickness, or a decrease, by which years are chosen as a starting and an ending point, but overall, there is no indication of any ozone depletion (**Figure 3**).

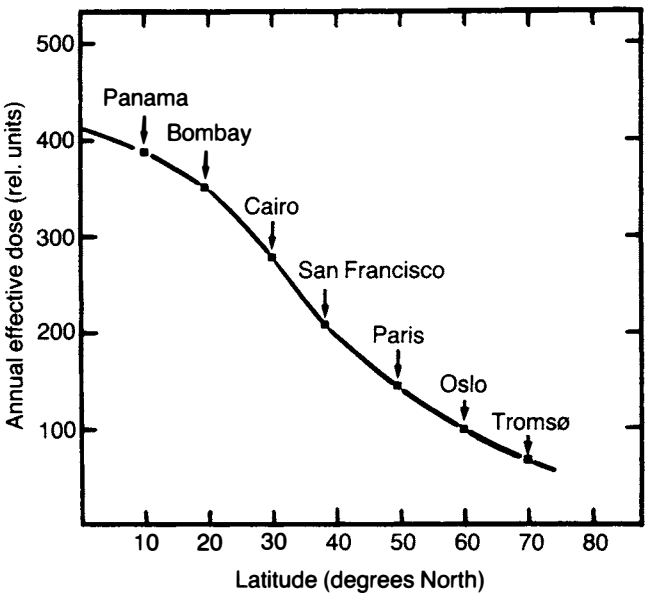
The Norwegian scientists conclude, "These data indicate that anthropogenic gases such as CFCs have, up to the summer of 1989, had a negligible influence on the Arctic ozone layer. The general balance between formation and destruction of ozone has not changed, at least not to an extent that is apparent in the long-term observations."

They don't stop there, however. In a paper published in the journal *Photochemistry and Photobiology,* Larsen and Henriksen, together with Arne Dahlback and Knut Stamnes, argue that "depletions of the ozone layer up to about 15 to 20% would have a rather small effect on the life on Earth." The Norwegian scientists very rigorously demonstrate the same point already made by U.S. researcher Hugh Ellsaesser of the Lawrence Livermore National Laboratory (*Executive Intelligence Review,* June 29 and July 6, 1990). A 1% increase in ultraviolet radiation is the equivalent of moving six miles south of an individual's present location. The ozone scaremongers are warning of a 10% increase in UV as a result of ozone depletion in the next hundred years, the equivalent of moving just 60 miles south.

Dahlbeck et al. take the worst-case scenario of an ozone hole identical to the Antarctic ozone hole. They state: "The so-called ozone hole in Antarctica is a transient springtime

FIGURE 4

Ultraviolet dose varies greatly by geographical latitude

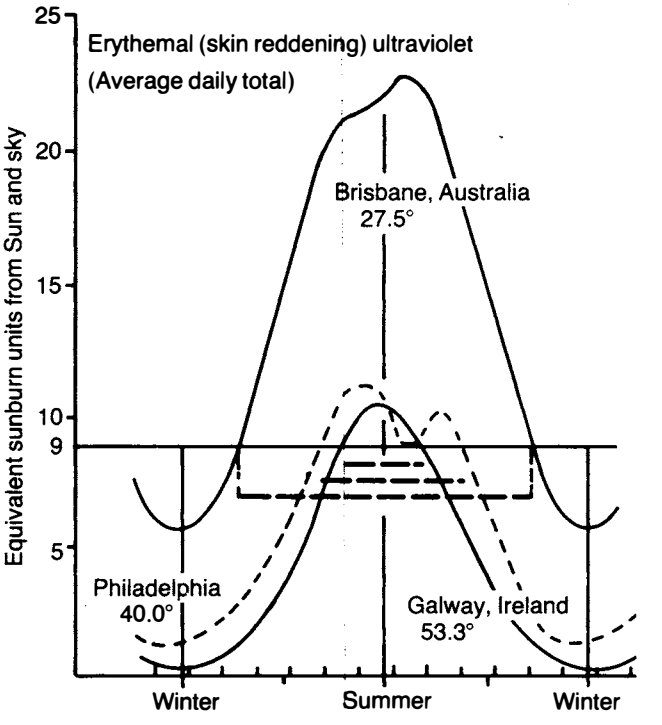


Source: *21st Century Science & Technology*. Adapted from Arne Dahlback, Thormod Henriksen, Søren H. Larsen and Knut Stamnes, "Biological UV-Doses and the Effect of An Ozone Layer Depletion," *Photochemistry and Photobiology* **49**:621 (1989).

Shown is the annual effective ultraviolet radiation dose for selected cities at different latitudes in the Northern Hemisphere. Under the worst-case scenario for ozone depletion, the increase in the amount of UV reaching the ground is expected to be 10%. Moving from Oslo to Panama represents an increase in UV-dose exposure of 300%, while a move from Oslo to balmy San Francisco is an increase of 100%. A 10% increase in so-called "harmful UV," considered a global disaster by the environmentalists, is the equivalent of moving a mere 60 miles closer to the Equator.

FIGURE 5

Ultraviolet radiation and skin cancer vary with latitude, season, and climate



Source: *21st Century Science & Technology*. Adapted from J.D. Everall, "Distribution and General Factors Causing Chronic Actinic Dermatosis," in: *Research In Photobiology*, Amleto Castellani, ed. (New York: Plenum, 1977).

Caucasians living in Australia have high rates of skin cancer, because levels of effective UV radiation in Australia are more than twice those in Philadelphia, or England. The environmentalists hysterically allege that "ozone depletion" is causing a skin cancer epidemic in Australia, but the fact is that white-skinned Europeans have settled a continent where the intensity of UV radiation is 200 to 300% greater than in their original lands. By comparison, the predicted 10% increase in ultraviolet due to ozone depletion is rather insignificant. Australian aborigines, meanwhile, do not suffer from skin cancer, because their dark skins, appropriate for the tropics, effectively filter the ultraviolet.

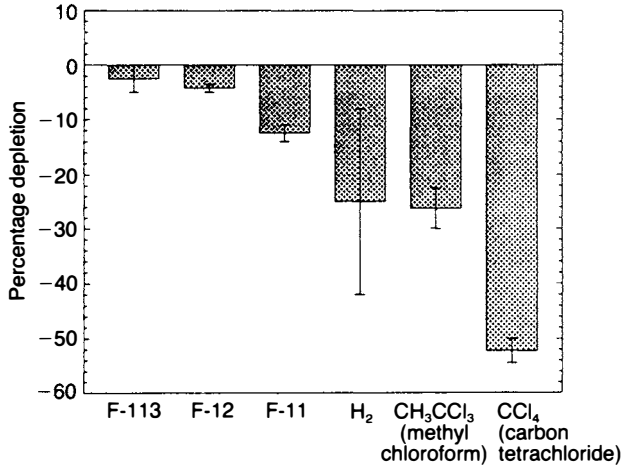
depletion of the ozone layer which is connected to the polar vortex. . . . If we assume a similar depletion over Scandinavia (for example, if we moved the ozone hole) the annual effective UV-dose would increase by approximately 22%." What would this worst-case scenario mean in the real world? "One would attain a similar increase in the annual UV-dose by moving approximately 50 to 60 miles towards lower latitudes; for example from Oslo to Northern Germany." In other words, a Norwegian moving from Oslo to Hamburg, in Germany, hardly a life-threatening move, would be exposing himself or herself to an 22% increase in ultraviolet radiation (**Figure 4**).

But there are all these cases of skin cancer in Australia and New Zealand due to the ozone hole, the pseudo-scientists argue. Again, they lie. UV radiation increases 5,000% from the Poles to the Equator. A move by white-skinned Anglo-Saxons to Australia and New Zealand means an increased UV exposure of between 250% and 500%. Under such an increased exposure, white-skinned people will suffer an increase in skin cancers. For the same reason, the ozone hoaxsters never mention that skin cancer is a nearly unknown disease in dark- and black-skinned individuals. They have adequate sun protection for the tropics (**Figure 5**).

The ozone hoaxsters are also being challenged on one of their most "solid" claims, that CFCs in the atmosphere can only be broken up by UV radiation in the stratosphere. Two of

FIGURE 6

Soils destroy significant amounts of CFCs



Source: *21st Century Science & Technology.* Adapted from M.A.K. Khalil and R.A. Rasmussen, "The Potential of Soils As a Sink of Chlorofluorocarbons and other Man-Made Chlorocarbons," *Geophysical Research Letters* **16**:679 (July 1989).

Significant depletion of CFCs—especially methyl chloroform and carbon tetrachloride—occurs a short distance below the soil surface, as this graph shows. As yet, the processes destroying the CFCs are unknown. For instance, the concentration of carbon tetrachloride just 25 centimeters below the surface of the soil is only 50% of that of the ambient air concentration. It is possible that certain types of soil have microorganisms that scavenge chlorine from CFCs to use metabolically. Several scientists interested in pursuing this discovery have had their requests for funding rejected.

the world's most distinguished atmospheric chemists, Aslam Khalil and Reinhold Rasmussen, discovered that there are processes occurring in soils in Australia and rice paddies in the people's republic of China which destroy CFCs and other chlorocarbons, as much as perhaps 20% of the CFCs released into the air (**Figure 6**).

More recently, Dean Hegg from the University of Washington in Seattle published a paper reviewing the results of a study on emissions of trace gases from biomass gases. To their surprise, the scientists discovered that large quantities of CFCs were being emitted in the smoke plumes of fires! Well, trees don't produce CFCs; where are they coming from?

Hegg et al. state, "The high emissions of NO_x [nitrogen oxides] and F12 [freon 12, a CFC], are due in whole or in part to the resuspension of previously deposited pollutants. Since this can be the only source of F12 in the smoke from fires, deposition may be a significant sink for F12." There is another possibility: CFCs are not very soluble in water, one of the reasons they are supposedly invulnerable. However, plant tissue is very rich in lipoproteins, which have a solubility 300 to 400 times greater than water. It is very likely that large quantities of CFCs have been absorbed into plant tissues, and are being released when the plants burn.

But then, why are CFCs being destroyed in soil? There are entire families of bacteria and microbes that break up chlorine atoms from halogenated compounds to use in their metabolism. Environmental microbiologists have been studying these de-halogenating bacteria for years, and have conducted full field tests at toxic waste sites, where large concentrations of carbon tetrachloride, a carcinogen, were completely consumed by these bacteria. Some of the leading environmental microbiologists in the United States have examined whether these bacteria can also destroy CFCs, and found out that indeed, bacteria in oxygen-poor soils, such as swamps, do seek out and destroy CFCs in the process of respiration.

Secrets of the Antarctic 'ozone hole'

That is not all, however. The Antarctic ozone hole, the big ace of the ozone hoaxsters, may turn out to be a joker after all.

It should be noted that Sherwood Rowland's ozone depletion theory never predicted the existence of the hole, nor can it account for it. Therefore, some complex chemistry was concocted after its discovery by Mario Molina to explain its existence. This new chemistry, the so-called dimer, or heterogeneous chemistry, is ripped to pieces in a recent scientific paper by Igor J. Eberstein of NASA's Goddard Space Flight Center. Eberstein demonstrates conclusively that the dimer chemistry concocted by Molina cannot work in the real world. So, the ozone hoaxsters are left with no mechanism by which CFCs can deplete ozone in Antarctica.

Furthermore, a recent scientific paper demonstrates that the ozone hole precedes the widespread use of CFCs. Writing in the November 1990 issue of *Annales Geophysicae,* the leading European scientific journal for the atmospheric sciences, two French scientists have demonstrated that the Antarctic "ozone hole" not only existed in 1958, but levels of ozone depletion were even greater then than now. The French scientists, P. Rigaud and B. Leroy, report ozone readings from the French Antarctic Observatory at Dumont d'Urville. The station, located several hundred miles away from Halley Bay in Antarctica, had been measuring ozone levels since 1958, and the data had been recorded and published in the scientific literature in the 1960s, but surprisingly, no one had looked back at these data recently. What Rigaud and Leroy discovered, is that in 1958, ozone levels took a precipitous decline in August and September, reaching values of as low as 110 dobson units, values lower than those being recorded today!

The French scientists state, "Ozone spectrographic measurements, using stars, moon or blue sky as light sources,

have been performed in 1958 at Dumont d'Urville (66°40'S). Reexamination of the data shows that a strong minimum of the total ozone content has been observed that year in the Southern spring time. This suggests a natural phenomenon to explain the Antarctic 'ozone hole.' "

They report that an "ozone hole" appeared in September and the beginning of October 1958, "before a spectacular recovery of the ozone concentration between Oct. 8 and 21. The polar vortex breakdown in 1958 occurred between Oct. 5 and 20."

What could explain this dramatic drop to 110 dobson units recorded at the Dumont d'Urville station, while at Halley Bay the readings were around 250 dobson units? The French scientists state that in 1958, "the center of the polar vortex [was] near Dumont d'Urville at the end of winter and far from Halley Bay. The situation is the opposite of the one observed in the recent years. Since the 'ozone hole' is observed in the polar vortex this could explain why this phenomenon was undetected in 1958 at Halley Bay." In other words, the polar vortex was in a completely different location in 1958 than it is today.

The French data show that while at Halley Bay the values of ozone were not that low, in another part of the vortex, closer to the center, the values of ozone dropped precipitously, to values as low, and in many cases lower, than those being recorded today. This was 33 years ago, when CFCs were barely in use.

The French scientists also have a very interesting hypothesis as to what causes the "ozone hole," having to do with the optical properties of light traveling through the atmosphere. "At Dumont d'Urville," they state, "atmospheric illumination is crepuscular for a long time. The Sun culminates at +5° of elevation on Aug. 1 and at +15° on Sept. 1. In this case the destruction cycles of the ozone are very important because of the successive arrival of the different wavelengths of the solar radiation."

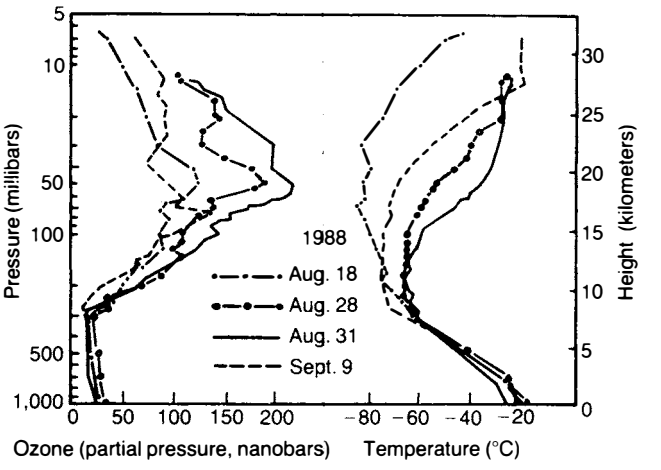
They continue, "As shown by Hoffmann and Rosen (1985), the major volcanic eruptions affect the Antarctic stratospheric aerosol layer. It is known that such large eruptions took place in recent years at Mt. St. Helens in 1980 and at El Chichón in 1982, but also at Bezymianny in 1956, two years before the measurements made at Dumont d'Urville. The perturbations of this aerosol layer could therefore partly explain the 'ozone hole' owing for example to an unknown heterogeneous chemistry or to a change in the illumination of the twilight and therefore to a change in the photodissociation rates of the species."

In other words, depletion of ozone could be due to changes in stratospheric chemistry brought on by large volcanic explosions, either through chemical changes in the vortex itself, or to changes in the wavelengths of light as they travel through the Earth's atmosphere at an oblique angle, before they strike Antarctica.

The conclusion of the French scientists is that "reexamination of the ozone spectrographic data obtained at Dumont d'Urville in 1958 shows that the 'ozone hole' was already present that year in September. Although chlorofluorocarbon production was already increasing in 1958, its abundance was far from the concentration today. Therefore, the existence of an Antarctic ozone depletion above Dumont d'Urville in September 1958, suggests the natural phenomena such as volcanic eruptions also contribute to ozone destruction."

FIGURE 7

Ozone abundance is directly related to temperature



Source: *21st Century Science & Technology*. Adapted from Hiroshi Kanzawa and Sadao Kawaguchi, "Large Stratospheric Sudden Warming in Antarctic Late Winter and Shallow Ozone Hole in 1988," *Geophysical Research Letters* **17:77** (Jan. 1990).

The so-called ozone hole appears when the stratosphere is cold, and disappears when it warms up. The abundance of ozone is directly related to the temperature of the stratosphere, as can be seen in these vertical profiles of ozone (in partial pressure) and temperature measured at Antarctica's Syowa Station in 1988. On days when the stratosphere's temperature was relatively warm—Aug. 28 and 21—ozone was very abundant. During the cold days that preceded and followed the warm spell—Aug. 18 and Sept. 9—the ozone layer thinned out.

Pioneer ozone researcher Gordon Dobson described the ozone thinning in the 1950s as largely a dynamic phenomenon with great dependence on stratospheric temperatures and planetary wave patterns.

International experts concur

It may be the Japanese who dealt the ozone hoaxsters the final blow. It was the leader of Japan's Polar Research Institute, Prof. Shigeru Chubachi, who discovered the increase in the Southern Anomaly—now called the ozone hole—in 1982. The ozone hole was originally discovered in 1956 by ozone pioneer researcher Gordon Dobson and his

students. Dobson discovered that a severe depletion of ozone occurs in Antarctica in the beginning of the spring season. The Japanese, in a paper published in 1983, and in international conferences afterwards, reported that the anomaly discovered by Dobson had increased. It was not until two years later, in May 1985, that Joseph Farman of the British Antarctic Survey, reported the same phenomenon, falsely claiming credit for the "discovery" of the "ozone hole."

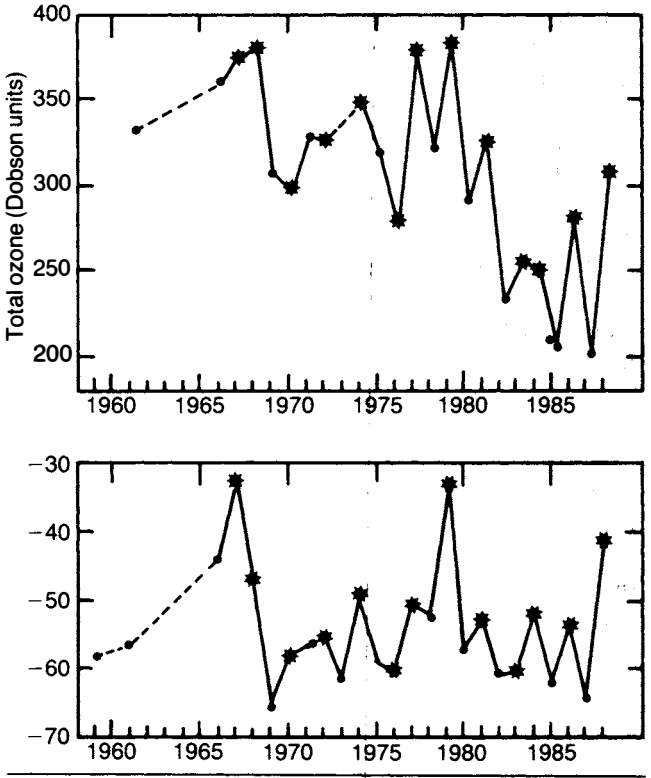
In contrast to their hysterical counterparts at NASA (the Ozone Club, as they are known), Japanese scientists maintain that the ozone hole is a perfectly natural phenomenon. A scientific paper by Hiroshi Kanzawa and Sadeo Kawaguchi demonstrates that the dynamics of the atmosphere plays a critical role in the formation, length, depth, and later breakup of the Antarctic ozone hole (**Figures 7** and **8**).

The *coup de grace* may have been administered by a group of Italian scientists. Mario Moreno from the Istituto di Fisica della Atmosfera (Institute of Atmospheric Physics) and his collaborators report that "while the current view accounts for the ozone depletion entirely in terms of chemical and dynamic processes occurring in the atmosphere, we show that the present experimental evidence relies favorably on the contribution of geomagnetic phenomena such as aurorae, induced by solar-related disturbances." What the ozone hoaxsters carefully kept from the public is that Earth's magnetic fields channel the most intense energy particles from the Sun and the rest of the galaxy to two spots, the North and South Poles. Thus, the incredibly complex atmospheric phenomena that occur at the poles are completely different from anything else on the face of the Earth, and very much related to solar and geomagnetic fluctuations.

In conclusion, with all the scientific evidence now available, it is clear that the sky may be falling on the ozone Chicken Littles, ending the reign of terror they created.

FIGURE 8

Tracking the ozone anomaly in Antarctica



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The ozone anomaly at the South Pole is explained by natural, dynamical causes, without resort to exotic chemistry concerning man-made CFCs. These data from Japan's Syowa station in Antarctica show that planetary wave activity is strong enough to penetrate the Antarctic vortex and, together with warm stratospheric temperatures, bring about high concentrations of ozone. Yearly variations in the monthly mean values of total ozone (top) and October monthly mean values of temperature (bottom) are plotted for 1960-85. (Broken lines indicate missing years.)

The asterisks and solid circles denote the easterly wind phase and the westerly wind phase, respectively, of the equatorial quasi-biennial oscillation (QBO), a phenomenon in which upper atmospheric planetary waves change direction every two years. During the westerly phase of the QBO, planetary wave activity is weak, which means the Antarctic vortex is much stronger. Together with colder temperatures in the stratosphere, this brings about a significant depletion of the ozone layer.

Note that ozone concentrations in 1988 were higher than those in 1975, and almost as high as those in 1960.

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