
Interview: Prof. Giovanni Moreno, Dr. Bianca Melchiorri Olivo

The ozone hole could be caused by solar wind, not by human activity

The ozone hole was first discovered in 1956 by Gordon Dobson, who considered it a natural phenomenon whose density had a certain variation over time. Today we hear that the only explanation of this hole is human activity through, to a great extent, the production of chlorofluorocarbons (CFCs). According to a group of scientists at La Sapienza University in Rome, Italy, it is scarcely credible that this variation in the density of atmospheric ozone could be exclusively due to human activity, which, compared to natural events, has so little impact.

Their research shows the possibility of explaining this "hole" as an effect derived from the solar wind and its interaction with the Earth's magnetic fields at the poles.

Our correspondent Evanthia Frangou interviewed Prof. Giovanni Moreno and Dr. Bianca Melchiorri Olivo at the Physics Department of La Sapienza, who have worked on this research together with M. De Petris, M. Gervasi, S. Masi, M. Storini, and P. Calisse.

EIR: What was the conclusion of your research?

Moreno: We must stress that the present experimental tests do not corroborate the prevailing opinion, which tends to explain the reduction of ozone exclusively in terms of atmosphere processes. Our investigation shows that we would have to consider much more seriously, geomagnetic phenomena such as the auroras caused by the solar wind.

EIR: What led you into this research?

Moreno: In the scientific literature, very little attention has been devoted to the possibility that solar activity may influence atmospheric ozone. The principal argument used to exclude such a hypothesis has been the fact that the variations of ozone do not have a seasonal pattern similar to that of the 11-year cycle of the sunspots. We thought this conclusion was, if anything, hasty.

In fact, it is well known that there exist solar structures which are different from sunspots (for example "coronal holes") which, through the emission of bands of magnetized plasma, exert a considerable influence on the Earth's envi-

ronment.

We then looked at the pattern of the "indices" which described the activity of the Earth's magnetic field, and we immediately noticed that this had been, on average, more intense in the period in which the drop in ozone had been noted, than in the previous period. Pursuing this analysis further, we reached the conclusion that there is a statistically meaningful correlation between the parameters that characterize the regime of solar wind, geomagnetic activity, and the quantity of ozone present in the Antarctic atmosphere.

EIR: This explains better why the so-called hole appears at the poles and not, shall we say, where there is more concentrated human activity.

Olivo: In fact, we wanted to check, given that the effect appears more in evidence at the poles, whether a "peculiar" cause might exist, i.e., a phenomenon which primarily has to do with the poles.

EIR: Can you explain how the bands of plasma that are emitted by the Sun can change the equilibrium of atmospheric ozone?

Moreno: The charged particles of solar wind penetrate into the magnetosphere (diagram on page 24), generating intense electrical fields. These accelerate the electrons, causing them to precipitate, along the force lines of the magnetic field, onto the polar regions. There they interact with atmospheric gases, and create those famous luminous phenomena known as auroras. The auroras do not merely consist of emission of visible light: There is also very intense ultraviolet radiation, which can contribute to separating the ozone (O₃) and turning it into oxygen (O₂).

EIR: But ultraviolet radiation is also capable of creating ozone. How does it, in this case, destroy it?

Moreno: The ultraviolet radiation emitted in the auroras has a very broad spectrum. Some of the frequencies of the dominant bands of this spectrum are absorbed very little by oxygen and much more efficiently by ozone, which causes

Mount Erebus source of chlorine in Antarctica

The ozone depletion theory suffered one more serious scientific challenge, as the respected *Geophysical Research Letters* journal published in its November 1990 issue a devastating study of the chlorine emissions from Mount Erebus, an active volcano in Antarctica. The last remaining claim of the ozone depletion priesthood that has not been thoroughly refuted in the scientific community is that excess chlorine found in Antarctica comes from chlorofluorocarbons (CFCs). This is the underlying basis of the theory, since it is chlorine from the CFCs that is allegedly depleting the ozone layer in Antarctica, creating the so-called ozone hole.

Proponents of the ozone depletion theory argue that there are no other sources of chlorine in Antarctica. Philip Kyle, of the New Mexico Institute of Mining and Technology, demonstrates in detail the role of Mount Erebus in pumping enormous quantities of chlorine into the Antarctic atmosphere. He further states that all the excess chlorine found in Antarctica may indeed come solely from the active volcano, which would preclude the claim that it is from CFCs.

In his paper, "Emissions Rates of Sulfur Dioxide, Trace Gases and Metals from Mount Erebus, Antarctica" (co-authored by Kimberley Meeker and David Finnegan), Kyle examines all the available scientific data on the volcanic emissions between 1972 and 1987, and concludes

that in 1983, when accurate measurements of the volcanic gases were taken, the hydrogen chloride (HCl) and hydrogen fluoride (HF) emissions of Mount Erebus were 1,230 tons per day and 480 tons per day, respectively. Kyle says that these emissions "are extremely high and comparable to the lower limits of total global volcanic emissions." Examining the transport of the chlorine emissions from Mount Erebus throughout Antarctica, Kyle concludes, "Mount Erebus must be recognized as an important potential and possibly past source of aerosols and could be responsible for inorganic chlorine found in snow and ice from central Antarctica."

Although Kyle is very careful not to directly attack the ozone depletion hoax, any competent scientist reading his study would see the beginning of the end of the hoax. The total annual emissions of chlorine from Mount Erebus would amount to 450,000 tons a year, which is more than half the total amount of chlorine contained in CFCs produced worldwide (750,000 tons per year). Since most CFCs don't break up for decades, Mount Erebus, all by itself, contributes more chlorine to the atmosphere than all CFCs combined.

Furthermore, the scientific station in Antarctica where most atmospheric gas measurements are taken is located at McMurdo Bay, which is less than 10 kilometers downwind from Mount Erebus! All of the hysterical stories about excess chlorine in Antarctica are coming from readings of either ground stations or balloon-borne instruments that cross the volcanic cloud from Mount Erebus! Yet none of the scientific hoaxsters peddling ozone depletion ever mentions the existence of this active volcano. All the chlorine in the air is attributed to CFCs.

—Rogelio A. Maduro

its separation. A simple calculation, which takes into account the irradiated energy of the auroras at those frequencies, shows that in one year about 2×10^{18} ozone molecules can be destroyed, for every square centimeter of surface, over an overall area of 10^{13} meters (in the order, that is of the "polar vortex" upon which the "ozone hole" is observed). There is certainly a relevant quantity: It is difficult, at the moment, to evaluate how much it can effectively contribute to the drop in ozone which has been observed.

EIR: What does Dr. Olivo think about the campaign against CFCs?

Olivo: I think we cannot yet conclude for sure that everything is solely due to human activity, as in the contemporary literature.

EIR: Last June in London, 93 countries subscribed to the

complete abolition of the use of CFCs by the year 2000, because of the effect on the environment. What do you think of that?

Olivo: I think that there were many unscientific motivations.

EIR: There is certainly panic going around.

Olivo: There are so many reasons for panic, but it seems to me that there are many others which are more real and near at hand.

I am amazed this panic is unleashed on such a huge level for something where there is so little proof. The CFCs have not diminished and meanwhile there are changes in the ozone hole—it is not continuously spreading. The ozone is not continuing to disappear in such a dramatic manner, as it should be if it were only due to CFCs. Personally I would prefer to see something done to lessen the carbon monoxide we are forced to breathe every day in our cities.