'Ozone hole vigilance still required'

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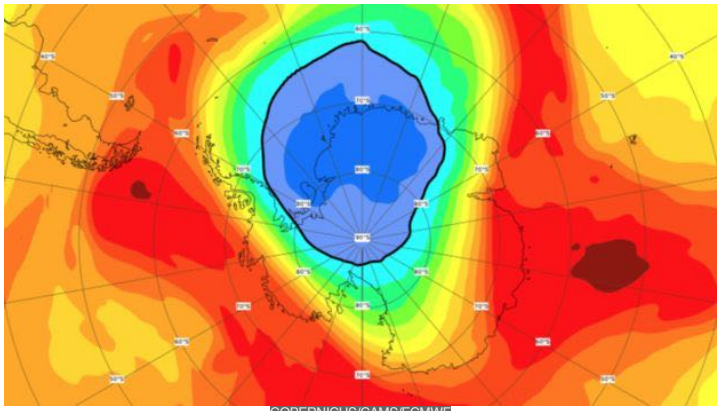
Climate change

Jonathan Shanklin: "Natural phenomena are responsible for this year's small hole"

The recovery of the ozone layer over Antarctica cannot be taken for granted and requires constant vigilance.
That's the message from Dr Jonathan Shanklin, one of the scientists who first documented the annual thinning of the protective gas in the 1980s.
This year's "hole" in the stratosphere high above the White Continent is the **smallest in three decades**.
It's welcome, says Dr Shanklin, but we should really only view it as an anomaly.
The **better than expected levels of ozone** have been attributed to a sudden warming at high altitudes, which can occasionally happen.
This has worked to stymie the chemical reactions that usually destroy ozone 15-30km above the planet.
"To see whether international treaties are working or not, you need to look at the long term," Dr Shanklin told BBC News.
"A quick glance this year might lead you to think we've fixed the ozone hole. We haven't. And although things are improving, there are still **some countries out there who are manufacturing chlorofluorocarbons (CFCs)**, the chemicals that have been responsible for the problem. We cannot be complacent."



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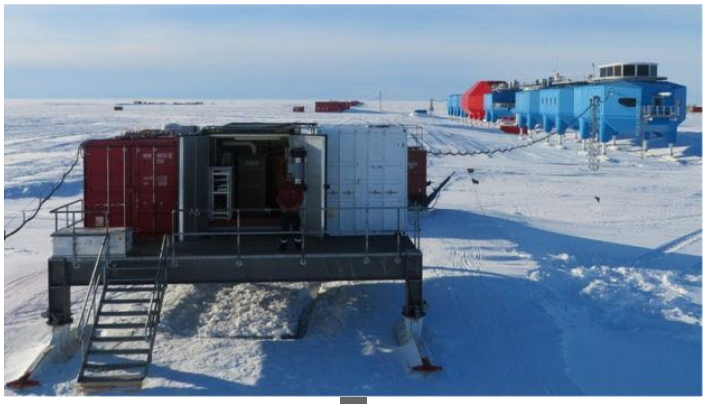
The ozone hole (dark blue) will close completely in the coming weeks

Dr Shanklin, along with Joe Farman and Brian Gardiner, first alerted the world in 1985 that a deep thinning was occurring in the ozone layer above Antarctica each spring.
Ozone filters out harmful ultraviolet radiation from the Sun.
The team's discovery, confirming the theoretical predictions of others, led to the Montreal Protocol.
This international treaty phased out most of the chlorine- and bromine-containing chemicals involved in ozone depletion.
At the time, these substances were being used widely as refrigerants, cleaning agents, and as the propellants in aerosol cans.



BAS

Halley's experiments are powered by a micro-turbine through the winter

Dr Shanklin and his colleagues at the British Antarctic Survey made their seminal observations at the Halley research station on the Brunt Ice Shelf. They used a Dobson photospectrometer - an instrument that is traditionally operated manually.

This became a major issue three years ago when BAS was forced to pull all winter staff out of Halley because of the uncertainty over the stability of nearby ice. It meant ozone measurements couldn't take place in those critical weeks when the hole begins to open.

With summer-only staffing set to continue for the foreseeable future, the situation has forced BAS to introduce an automated solution.

The survey is now running a mini-jet engine non-stop at Halley, which is providing the electricity for a host of computer-controlled experiments, including the Dobson photospectrometer.

It's delivering ozone measurements direct to Dr Shanklin's computer back in the UK via satellite.

"It's very clear that the ozone data coming back from Halley is different to previous years; we haven't seen that rapid decline. As time progresses, probably later in October, we'll see the final demise of this year's ozone hole as warm air sweeps across the continent."

Dr Thomas Barningham, who's implemented the novel Halley set-up, added: "Resuming springtime stratospheric ozone observations with the automated Dobson, for the first time since the winter closure of the station, is what the project is all about - maintaining long-term monitoring datasets that are of global significance.

"We're very pleased to have reached this milestone. The next will be in 40 days' time, when the first personnel arrive back on station to begin our summer season."

SF6 is used in electrical gear to prevent arcing

Dr Shanklin is now an emeritus fellow at BAS. He goes into its Cambridge HQ twice a week to advise and help interpret the Dobson data. And, of course, he's still very plugged in to the politics of ozone and other atmospheric issues.

One topic that's caught his eye recently is **sulphur hexafluoride, or SF6**.

This substance is used in the electrical industry to prevent short circuits and accidents. It's an extremely potent greenhouse gas, and although emissions to the atmosphere are relatively small at the moment, they are increasing.

Dr Shanklin worries that SF6 is being treated in the same way that CFCs were treated when they were first introduced in the 1930s. There was an assumption they would do no harm.

He told BBC News: "I think we're treating SF6 in the same way. We think it possibly won't have a problem, although we know it's a greenhouse gas. And therefore we're using it perhaps not as wisely as we might do. And that's why we need the various monitoring sensors around the globe so we can... say to the scientific community that something's increasing, so they can do the modelling and find out what the likely consequences are."