

Record cold winter may increase ozone hole over North Europe

January 31 2005

European scientists confirmed that Arctic high atmosphere is reaching the lowest ever temperatures this winter, warning that destruction of the protective [ozone layer](#) is substantially increased under very cold conditions. First signs of ozone loss have already been detected. The ozone layer is located in the so called stratosphere, the lowest layer of the atmosphere, at an altitude of about 8 km in the Poles, and its function is to protect the earth's surface from harmful solar UV radiation. More than 170 countries have ratified the Montreal Protocol, an environmental treaty established in 1987 to protect the ozone layer.

Should further cooling of the Arctic stratosphere occur, increasing ozone losses can be expected for the next couple of decades. A hole in the ozone layer can lead to intensified UV harmful radiation affecting inhabited Polar regions and Scandinavia, possibly down to central Europe. This could have consequences for human health (increased cases of skin cancer) as well as for biodiversity.

“The Arctic has experienced an extremely harsh winter. The first signs of ozone loss have now been observed, and large ozone losses are expected to occur if the cold conditions persist”, says European Commissioner for Science and Research Janez Potonik.

European scientists observe changes in the thickness of the ozone layer in the Arctic on a daily basis, as part of the European research initiative SCOUT-03, a very useful tool to predict future development of the ozone layer in global climate models, involving 59 institutions and over

200 scientists from 19 countries.

Measurements from the ground-based network of atmospheric observing stations and from satellites are being combined to investigate the ozone loss in the coming weeks. The extremely cold conditions are of concern and scientists will be addressing a number of questions: How large will the ozone loss be? What will be the increase in UV radiation and in which countries will they occur? Why has the Arctic stratosphere cooled in December over the past 50 years? Are the conditions more favourable for large ozone losses than before?

Overall, a decrease in total ozone in the Arctic region has been observed since 1980, although there is considerable year-to-year variation in the observed values. This variability in the ozone loss is to be contrasted with the Antarctic, where nearly complete ozone loss has taken place in almost all winters since the late 1980s. This difference is linked to the Arctic warmer winter conditions. The concern is that the Arctic appears to be moving into Antarctic-like conditions which will result in an increase in UV radiation levels that will have consequences on human health in northern hemisphere countries. The Parties to the Montreal Protocol meet annually to decide on further improvements to reduce and eventually phase out ozone-depleting substances, thereby encouraging faster recovery of the ozone layer.

Source: European Commission, Research Directorate

Citation: Record cold winter may increase ozone hole over North Europe (2005, January 31) retrieved 25 April 2024 from <https://phys.org/news/2005-01-cold-winter-ozone-hole-north.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is

provided for information purposes only.