International Association of Meteorology and Atmospheric Sciences (IAMAS)

# International Ozone Commission ($IO_3C$)

President
Professor _var Isaksen
Tel: +47 22 855822
Fax: +47 22 855269
e-mail: i.s.a.isaksen@geo.uio.no

Secretary
Professor Christos Zerefos
Tel: +30 10 7274133
Fax: +30 10 7274157
e-mail: zerefos@geol.uoa.gr

Vice President
Dr. Sophie Godin- Beekmann
Tel: + 33 1 44 27 47 67
Fax: :+ 33 1 44 27 37 76
e-mail: : sophie.godin@aero.jussieu.fr

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# Press Release

## More than two decades since the appearance of the springtime Antarctic ozone hole, ozone remains depleted

The United Nations declared the 16th of September as the International Day for the Protection of the Ozone Layer to commemorate the 16th of September 1987, the date when the Montreal Protocol was first signed. The Protocol controls the production and use of ozone depleting substances, which since the early 1970s have destroyed about 5% of the earth's ozone shield which protects life from the harmful solar ultraviolet radiation. The Protocol is an example of a successful cooperation between scientists and industry as well as between developed and developing countries and provides an excellent paradigm to the international community for cooperation on complex environmental issues of global importance.

The theme of the International Day for the Preservation of the Ozone Layer on **16 September 2005 is: "Act Ozone Friendly - Stay Sun Safe"**.

Please visit the web site of the Ozone Secretariat for the Vienna Convention at the following specific address where you will find suggestions for several activities on the 2005 International Ozone Day.

http:// www.unep.org/ozone

Springtime Antarctic Ozone depletion due to man-made halogen compounds, known as "the ozone hole" has been large and occurred repeatedly for more than two decades. The size, depth and persistence of the ozone hole are expected to vary substantially from year to year and are strongly influenced not only by ozone depleting substances but by meteorological variations and changes as well. Models predict that the Antarctic ozone levels will start recovering by 2010 due to projected decreases of halogens in the stratosphere, but it is not expected to reach pre-1980 levels before the middle of this century. This year's Antarctic ozone hole started developing after the middle of August and has reached today the size of about 25 million $km^2$, which is larger than the 1995-2003 average for that time of the season, and is similar to the size observed during the most extreme years. It is, however, too early to make a statement on the maximum ozone hole size expected this year.

Over the Arctic, the ozone loss during winter/spring of 2005 was similar in magnitude to the observed record loss during winter/spring 1999/2000. More than 50% of the ozone was destroyed at altitudes around 18 km. The resulting total ozone deficiency however for the whole winter-spring of 2005 was one third less of the extreme 1993 and 1995 cases and similar in magnitude with 2000 and 2002. During the next few

decades, the fate of the Arctic ozone layer will depend on the evolution of atmospheric temperatures at the altitudes of the ozone layer. Over the past forty years the Arctic lower stratosphere has become significantly colder. Last winter overall temperatures in the ozone layer over the Arctic were the lowest in 50 years with consistently low temperatures over a period of 3 months.

At middle latitudes in both hemispheres, ozone remains depleted. At Northern Hemisphere mid-latitudes, the largest long-term ozone decreases in the past two decades are observed during winter and spring. Relative to the pre-ozone-hole abundances, the losses in total column ozone amounts are:

- 3-4% at northern mid-latitudes during winter/spring and
- about 6% at southern mid-latitudes on a year-round basis.

Measurements continue to confirm that decreases of ozone column amounts lead to increases in the biologically active part of UV radiation. UV radiation has increased since the early 80's by 6-14% over the middle and high latitudes of both hemispheres. During late March this year, Arctic ozone polar air masses drifted over central Europe and contributed to individual days of significantly increased UV-B radiation and sunburn risk in parts of Europe. The affected region reached as far south as northern Italy.

During the last years, emphasis has been given to issues of interconnections between ozone depletion and climate change. New research focuses on the coupling between climate change and the recovery of the ozone layer. Water vapour, carbon dioxide, methane and other greenhouse gases all influence ozone depletion and their increase has a negative impact on the recovery of the ozone layer. In turn, ozone depletion through its modification of UV-B radiation influences the chemical composition of the atmosphere.

During the next few decades, the fate of the Arctic ozone layer will depend partly as in Antarctica, on the evolution of atmospheric temperatures at the altitudes of the ozone layer. Also, it has to be emphasized that failure to comply with the Montreal Protocol would delay or could even prevent the recovery of the ozone layer. For example, continued constant production of ozone depleting substances at the 1999 level would likely extend the expected recovery of the ozone layer well past the year 2050.

The International Ozone Commission ($IO_3C$) of IAMAS-IUGG **urges all national and international Agencies**, which support scientific research and monitoring of ozone and related parameters to continue supporting these activities. The members of the $IO_3C$ have made significant contributions demonstrated in the Ozone Assessments during the past decades and are ready for further collaboration in advancing the ozone studies.

***This text has been reviewed by the $IO_3C$ members last on September 12, 2005***

*For more information: Professor Christos Zerefos, Secretary of the International Ozone Commission, University of Athens, Faculty of Geology & Geoenvironment, Laboratory of Climatology and Atmospheric Environment, 15784, Athens, Greece, Tel.: +30 210 7274133, Fax: +30 210 7274157, mobile: +30 6944 570099, e-mail: zerefos@geol.uoa.gr,*
*IO3C: http://ioc.atmos.uiuc.edu,*
*WMO Northern Hemisphere Ozone Mapping Center: http//lap.physics.auth.gr/ozonemaps,*
*WMO Antarctic Ozone Bulletin: http://www.wmo.ch/web/arep/ozone.html,*
*European Ozone Coordinating Unit: http://www.ozone-sec.ch.cam.ac.uk/,*
*World Ozone and Ultraviolet Data Center: http://www.woudc.org*