Antarctic ozone - not a hole lot worse or better

November 10 2005

The Antarctic ozone hole this year was the fourth largest to be recorded since measurements of ozone depletion began in 1979.
CSIRO Marine and Atmospheric Research's expert in ozone depletion, Dr Paul Fraser, says while the size of the ozone hole was large, it was more or less as expected.

“Its size is not a surprise because, other than year-to-year variability that mirrors temperature changes, Antarctic ozone depletion has remained at an approximately constant level for the past nine years,” Dr Fraser says.

The 2005 ozone hole area reached 26.4 million km^2 – about 3.5 times the area of Australia. It is the fourth largest hole after, in order, 2003, 2000 and 1998. However, ozone depletion in 2005 is third greatest in terms of depth, after 2003 and 1998.

The analysis is based on constant monitoring of ozone levels by NASA. From August to December each year, about 2.5 trillion kilograms of ozone is broken down in the stratosphere above the Antarctic, with losses peaking in late September or early October. Ozone depletion is caused by the effects of chlorine and bromine, which are released in summer when sunlight acts on CFCs, solvents, HCFCs, halons and methyl bromide, all of which are or were emitted from human activities. Ozone depletion is especially severe over the Antarctic in spring.

Ozone depletion is showing a pattern of recovery similar to 2000, which implies an end to this year's hole by the end of November.

Dr Fraser says that, despite a decrease in the chemicals that deplete ozone, the 2005 Antarctic ozone hole was larger than that of 2004 because of lower temperatures in the stratosphere. While not significantly larger or deeper in comparison to those of the past decade, the Antarctic ozone hole is not showing any signs of a recovery either.

“Due to their long lifetime, ozone depleting gases remain in the Earth's upper atmosphere for about 50 years,” Dr Fraser says.

“Ozone depletion, and the resultant human health and environmental problems from exposure to increased UV levels, will therefore be an issue of concern for several decades to come.

“Half a century or more may pass before the Antarctic ozone hole is repaired and the first clear signs of recovery may not be apparent for 5-10 years,” Dr Fraser says.

Source: CSIRO