Source : www.thehindu.com Date : 2023-11-26

ANTARCTICA’S OZONE HOLE EXPANDS MID-SPRING SINCE 2001

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

November 25, 2023 09:10 pm | Updated 09:10 pm IST

The core (middle stratospheric layer) of the Antarctic ozone in mid-spring (October) has experienced a 26% reduction since 2004, contrary to previously reported recovery trends in total ozone, according to a study published recently in the journal *Nature Communications*. However, recovery trends remain in early spring (September). The findings highlight the importance of continuous monitoring and evaluation of the state of the ozone layer with the changing dynamical state of Earth’s climate.

The Montreal Protocol designated a list of controlled ozone depleting substances that were banned from future production in 1987 and is widely considered to have been successful for ozone recovery. However, the past three years (2020-2022) have witnessed the re-emergence of large and long-lived ozone holes over Antarctica in mid spring, while early spring still shows a slight ozone increase (or a slight recovery of the ozone hole). Understanding ozone variability remains of high importance, due to the major role Antarctic stratospheric ozone plays in climate variability across the Southern Hemisphere.

To assess recent changes in the Antarctic ozone hole, including during the 2022 season, Annika Seppälä from the University of Otago, Dunedin, New Zealand and others analysed monthly and daily ozone changes between 2001-2022. Data from 2002 and 2019 were excluded as sudden stratospheric warming broke up the ozone hole anomalously early in these years. They looked at different stratospheric layers throughout the key austral springtime months of September to November.

When satellite data from 2022 is considered, they found that previously reported recovery trends in Antarctic spring total column ozone (the total ozone above a given point on Earth across all atmospheric layers) from 2001 onward disappear. The middle stratosphere has been dominated by continued, significant ozone reduction since 2004, amounting to 26% loss in the core of the ozone hole. This reduction is potentially driven by dynamical changes in the mesosphere (the atmospheric layer above the stratosphere and the ozone layer).

The findings suggest that changes in the Southern Hemisphere atmosphere are contributing to a persistent Antarctic ozone hole.

SHARE

BACK TO TOP

Comments have to be in English, and in full sentences. They cannot be abusive or personal. Please abide by our community guidelines for posting your comments.

We have migrated to a new commenting platform. If you are already a registered user of The Hindu and logged in, you may continue to engage with our articles. If you do not have an account please register and login to post comments. Users can access their older comments by logging into their accounts on Vuukle.

END