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News: Antarctic Ozone hole

- According to a recent study, published in Nature Communications, stated that the **Antarctic Ozone Hole has been massive in the last four years.**

Key Highlights of the Study

Ozone Depletion

- The Antarctic ozone hole **has been consistently large and has shown thinning over recent years**, contrary to the expected recovery trend observed since the 2000s.
- The **concentration of ozone at the center of the hole has notably reduced, indicating significant thinning of the ozone layer.**
- The **concentration of ozone at the core of the ozone hole has decreased by 26% from 2004 to 2022, despite the efforts outlined in the Montreal Protocol**, which aimed to reduce human-generated chemicals that deplete the ozone layer.

Polar Vortex Influence

- The **Antarctic ozone hole exists within the polar vortex, a circular wind pattern in the stratosphere that forms during winter and is maintained until late spring.**

- Within this vortex, the Antarctic air from the mesosphere (the atmospheric layer above the stratosphere) falls into the stratosphere. This intrusion of air brings natural chemicals (nitrogen dioxide, for example) which impact ozone chemistry in October.

Factors Affecting Ozone Depletion

- The role of meteorological conditions, such as temperature, wind patterns, aerosols from wildfires and volcanic eruptions, and changes in the solar cycle, influenced the size and behavior of the Antarctic ozone hole.

Recommendations

- There's a need for further research to understand the descent of air from the mesosphere and its specific impacts on ozone chemistry.
- Investigating these mechanisms will likely shed light on the future behavior of the Antarctic ozone hole.