Tropical ozone hole

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In news– A recent study has claimed that a new ozone hole has been detected over the tropics, at latitudes of 30 degrees South to 30 degrees North.

What does the study say?

- As per the new study, **the ozone hole is located at altitudes of 10-25 km over the tropics**.
- It has stated that the **tropical ozone hole is about seven times larger than Antarctica.**
- It also **appears across all seasons, unlike that of Antarctica,** which is visible only in the spring.
- **The hole has become significant since the 1980s. But it was not discovered until this study**.
- The hole, **which makes up 50 percent of Earth's surface, could cause a global concern** due to the risks associated with it.
- **It is likely to cause skin cancer, cataracts and other negative effects on the health and ecosystems** in tropical regions.
- The earlier studies suggested another mechanism of ozone depletion in the Antarctic: Cosmic rays.
- According to studies, **chlorofluorocarbon's (CFC) role in depleting the ozone layer is well-documented**.
- It also noted that the **tropical stratosphere recorded a low temperature of 190-200 Kelvin (K). This can explain why the tropical ozone hole is constantly formed over the seasons**.
- Taking these factors into account, the team hypothesised that an ozone hole could have formed over the tropics.
- They used a different definition of the ozone hole in this study. They defined it as an area with ozone loss larger than 25 per cent compared to the normal ozone value.
- The **reason for the changed definition was that the**

tropical ozone hole is essentially unchanged across seasons and is therefore invisible in original observed data. This absence is partially due to the conventional definition of ozone.

- Other experts not involved in the study have raised doubts about the study's claims.
- One of the issues is that the **mechanism of ozone loss proposed by this study has been discredited and** this **study used the 1960s dataset on ozone changes**.
- The trouble is that there were very few observations in the 1960s & they were based on model reconstructions, which were poor.
- It is also being argued that a large proportion of the decrease in tropical ozone is probably just a change in stratospheric winds that bring up ozone-poor tropical air.

What is Ozone?

- Ozone is a **gas made up of O3, or oxygen atoms bound together in groups of three** – forms in Earth's upper atmosphere.
- According to NASA, **an ozone hole is an area where ozone levels drop below the historical threshold of 220 Dobson Units** (DU is the measure of ozone concentrations).
- **Most ozone sits in the stratosphere, the atmospheric layer that lies** 10 to 50 kilometres above the planet's surface.
- There, the gas acts as a kind of sunscreen, shielding Earth from the sun's powerful ultraviolet (UV) rays.