Arctic's Ozone Hole Closes

Why in news?

The European Union's Copernicus Atmosphere Monitoring Service (CAMS) announced that the Arctic's biggest ozone hole has closed.

How did it close?

- The closing of the ozone hole was because of a phenomenon called the **Polar Vortex**.
- [Polar vortex - A circling whirlpool of stratospheric winds]
- The Polar Vortex split allowed the ozone-rich air into the Arctic.
- The report also said that the closing is **not because of reduced pollution levels** due to Covid-19 lockdowns around the world.
- The hole in the North Pole's ozone layer was detected in February, 2020.
- It had since reached a maximum extension of around 1 million sq km.

What is Ozone layer?

- Chemically, ozone is a molecule of three oxygen atoms.
- It is found mainly in the stratosphere, which is between 10 and 50 km from the earth's surface.
- Though it is talked of as a layer, ozone is present in the atmosphere in rather low concentrations.
- Even at places where this layer is thickest, there are not more than a few molecules of ozone for every million air molecules.

What is the importance of the ozone layer?

- They perform a significant function of absorbing the harmful ultraviolet (UV) radiations from the sun.
- By absorbing UV radiation, the ozone molecules eliminate a big threat to life forms on earth.
- UV rays can cause skin cancer and other diseases and deformities in plants and animals.

What are ozone holes?

- 'Ozone hole' refers to a region in the stratosphere where the concentration

of ozone becomes extremely low in certain months.

- **South Pole** - Ozone holes are most commonly found over Antarctic region than that of the Arctic region.
- They form in the months of September, October and November.
- They are formed due to a set of special meteorological and chemical conditions that arise at the South Pole.
- Here, it can reach sizes of around 20 to 25 million sq km.
- **North Pole** - Ozone holes over the North Pole are much smaller in size than the South Pole.
- This is due to the warmer temperatures in the North Pole.
- Before this year, the last sizable Arctic ozone hole was reported in 2011.

Why this year's Arctic ozone hole was massive?

- The unusual atmospheric conditions, including freezing temperatures in the stratosphere, were responsible for its depletion.
- Cold temperatures (below -80°C), sunlight, wind fields and substances such as chlorofluorocarbons (CFCs) were also responsible.
- Arctic temperatures do not usually fall as low as in Antarctica.
- However, this year, powerful winds flowing around the North Pole trapped cold air within the polar vortex.
- By the end of the polar winter, the first sunlight over the North Pole initiated this unusually strong ozone depletion.
- This caused the ozone hole to form.

What is the rate of ozone recovery?

- As per the Scientific Assessment of Ozone Depletion data (2018), ozone layer in parts of the stratosphere has recovered at a rate of 1-3% per decade since 2000.
- At these projected rates, the Northern Hemisphere and mid-latitude ozone is predicted to recover by around 2030.
- The Southern Hemisphere ozone will recover by around 2050, and polar region ozone by 2060.

Source: The Indian Express