



NASA's TEMPO Mission

Why in the News?

Recently, a [SpaceX Falcon 9](#) rocket launched the **Tropospheric Emissions Monitoring of Pollution (TEMPO) instrument** from Florida.

What is TEMPO?

- **About:**
 - **TEMPO is a NASA device** that can **track air pollution over North America** from space. It will allow scientists to **monitor air pollutants and their emission sources** down to the neighbourhood level.
 - The TEMPO instrument is a grating spectrometer, **sensitive to visible and ultraviolet wavelengths of light.**
- **Features:**
 - TEMPO is hosted on an **Intelsat communications satellite** in geostationary orbit.
 - It will be able **to measure atmospheric pollution** down to a spatial resolution of **4 square miles or neighbourhood level.**
- **Applications and Importance:**
 - TEMPO will have multiple applications from **measuring levels of various pollutants to providing air quality forecasts** and helping the development of emission-control strategies
 - More than **40% of the US population live in places with unhealthy levels of particle pollution or ozone**, and air pollution is blamed for some 60,000 premature deaths a year.

What is a Geostationary Orbit?

- **Geostationary orbit** is an orbit around the Earth where a **satellite's orbital period matches the Earth's rotation**, allowing the satellite to stay in a fixed position over the same point on the Earth's surface.
- The height of a geostationary orbit is approximately 35,786 kilometers (22,236 miles) above the Earth's equator.
- Satellites in geostationary orbit are typically used for **communication and weather observation purposes**, as they can provide constant coverage of a specific region without the need for frequent repositioning.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Q. Satellites used for telecommunication relay are kept in a geostationary orbit. A satellite is said to be in such an orbit when: (2011)

1. The orbit is geosynchronous.
2. The orbit is circular.

3. The orbit lies in the plane of the Earth's equator.
4. The orbit is at an altitude of 22,236 km.

Select the correct answer using the codes given below:

- (a) 1, 2 and 3 only
- (b) 1, 3 and 4 only
- (c) 2 and 4 only
- (d) 1, 2, 3 and 4

Ans: (a)

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