



## 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)**

**Source: IE**

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