NASA's TEMPO device

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In news– A SpaceX Falcon 9 rocket successfully launched from Florida recently, carrying a new NASA device that can track air pollution over North America.

About the device-

- **The Tropospheric Emissions Monitoring of Pollution (TEMPO) instrument** will allow scientists to **monitor air pollutants and their emission sources from space more comprehensively than ever before, d**own to the neighborhood level.
- It will **measure pollution and air quality across greater North America on an hourly basis** during the daytime, all the way from Puerto Rico up to the tar sands of Canada.
- **The data will be used by the US Environmental Protection Agency (EPA)**, the National Oceanic and Atmospheric Administration (NOAA) and other agencies responsible for tackling atmospheric pollution.
- **A unique feature of TEMPO**, which is about the **size of a washing machine** and has been described as a c**hemistry laboratory in space,** is that it will be **hosted on an Intelsat communications satellite in geostationary orbit.**
- **Existing pollution-monitoring satellites are in low Earth orbit,** which means they can only provide observations once a day at a fixed time.
- TEMPO will be able to measure atmospheric pollution down to **a spatial resolution of 4 square miles (10 square kilometers), or neighborhood level.**
- Geostationary orbit is a common orbit for weather satellites and communications satellites, but an air quality instrument measuring gases hadn't been there yet.
- In a geostationary orbit 22,236 miles (35,786

kilometers) above the equator, **TEMPO will match the rotation of the Earth, meaning it will stay over the same location North America at all times.**

- TEMPO will have **multiple applications from measuring levels of various pollutants to providing air quality forecasts** and helping the development of emission-control strategies.
- **Among the pollutants tracked by TEMPO will be nitrogen dioxide,** produced from the combustion of fossil fuels, formaldehyde and ozone.
- The data will be made available online for members of the public to monitor air quality information in their local area.