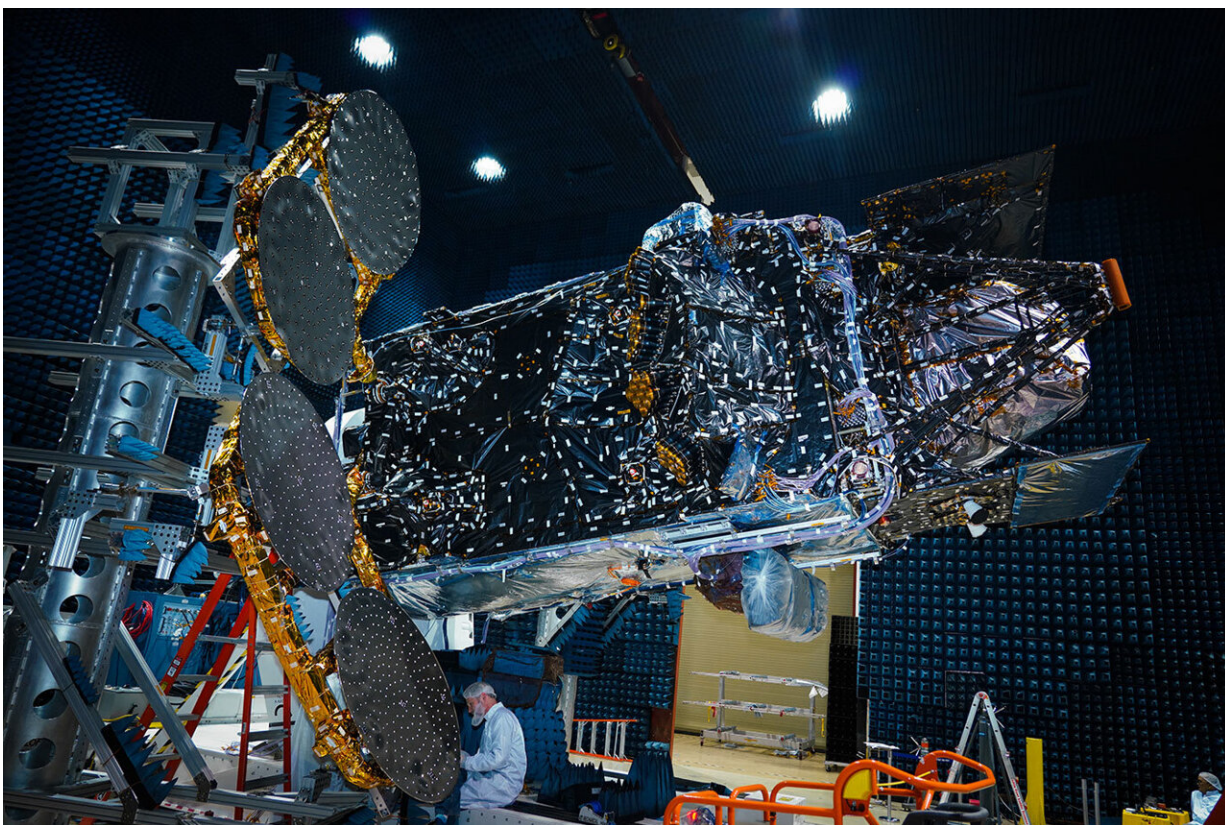


Air pollution sensor integrated and tested with commercial satellite host

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The TEMPO air pollution sensor is hosted on Intelsat 40e, seen here at the Maxar Technologies facility in Palo Alto, California, where it was built. The instrument and the entire spacecraft recently passed pre-launch testing at the facility. Credit: Maxar

Air pollution is an existential threat to millions of Americans with

asthma and other health issues. In response to that threat, NASA and the Smithsonian Astrophysical Observatory are innovating to improve observations of air quality in North America.

Tropospheric Emissions: Monitoring of Pollution (TEMPO) is a UV-visible spectrometer that will be hosted on Intelsat 40e, a commercial satellite built by Maxar Technologies. TEMPO's sensors will measure [sunlight](#) reflected and scattered back from Earth's surface and atmosphere, allowing it to "see" a range of [air pollutants](#), including [ozone](#) and nitrogen dioxide.

On February 27, 2023, the instrument and the entire spacecraft successfully passed pre-launch testing at Maxar's facility in Palo Alto, California. TEMPO underwent thermal vacuum, dynamics, and end-to-end and capability testing to ensure it will withstand launch conditions and the harsh environment of space. Tests have also ensured that commanding, telemetry, and mission data are flowing accurately.

Scheduled to launch in April 2023 from Cape Canaveral aboard a SpaceX Falcon 9 rocket, TEMPO will be the first instrument to observe air pollution hourly during daytime over North America. It will make measurements across an area that extends from Puerto Rico to northern Canada and from the Atlantic Ocean to the Pacific, encompassing the entire continental United States.

TEMPO data will play an important role in scientific studies of phenomena such as rush-hour pollution and the movement of [emissions](#) from [forest fires](#) and volcanoes. Scientists could eventually apply TEMPO observations to air quality alerts for people in pollution hot spots and those living with health issues.

TEMPO will also form part of a virtual constellation of air pollution monitors that will give global scientists a big-picture view of air quality

around the Northern Hemisphere.

Provided by Harvard-Smithsonian Center for Astrophysics

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