

Ball Aerospace's Pollution Monitoring Instrument Achieves First Light

BROOMFIELD, Colo., Aug. 24, 2023 /PRNewswire/ -- Ball Aerospace is celebrating alongside its mission partners today as the Tropospheric Emissions: Monitoring of Pollution (TEMPO) instrument releases its first images of Earth, the next step in its mission to improve air quality monitoring across greater North America.

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TEMPO launched on April 7, 2023, from Cape Canaveral Space Force Station as part of NASA's Earth Venture Instrument program and led by Principal Investigator Kelly Chance of the Center for Astrophysics | Harvard & Smithsonian (CfA). Following a monthslong commissioning process, the Ball-built instrument opened its aperture for the first time to perform solar calibration and make its inaugural scan across the continent. The instrument is performing as expected in its initial tests.

"Achieving first light from TEMPO is a major milestone in our goal to provide a complete picture of air quality issues across the United States and beyond," said Dr. Alberto Conti, vice president and general manager, Civil Space, Ball Aerospace. "This mission will fundamentally transform the way we measure pollutants in our air, providing new insights for public health officials, atmospheric researchers and members of the public looking to protect themselves from dangerous conditions."

TEMPO uses a geostationary ultraviolet/visible spectrometer to scan across the continent hourly — over the continental United States in addition to most of Mexico and Canada — capturing daytime measurements of major air pollutants like ozone, nitrogen dioxide, sulfur dioxide and formaldehyde. The high-resolution and frequency of images will provide precise data on the origin, concentration and movement of pollution over time, far exceeding the capabilities of current ground-based monitoring systems.

Now that the instrument is active, the TEMPO team will spend the coming months validating spatial, spectral and radiometric performance, as well as the science data processing chain. Once that process is complete, members of the public and the scientific community will have access to near real-time data packaged by the CfA and distributed by NASA.

TEMPO was developed alongside the Geostationary Environment Monitoring Spectrometer (GEMS), another Ball Aerospace-built instrument that launched in 2020 as part of an air quality monitoring mission for the South Korean National Institute of Environmental Research.

The TEMPO mission is a collaboration between NASA's Langley Research Center and the Center for Astrophysics | Harvard & Smithsonian. The instrument is integrated and hosted on Intelsat's IS-40e satellite built by Maxar.

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