

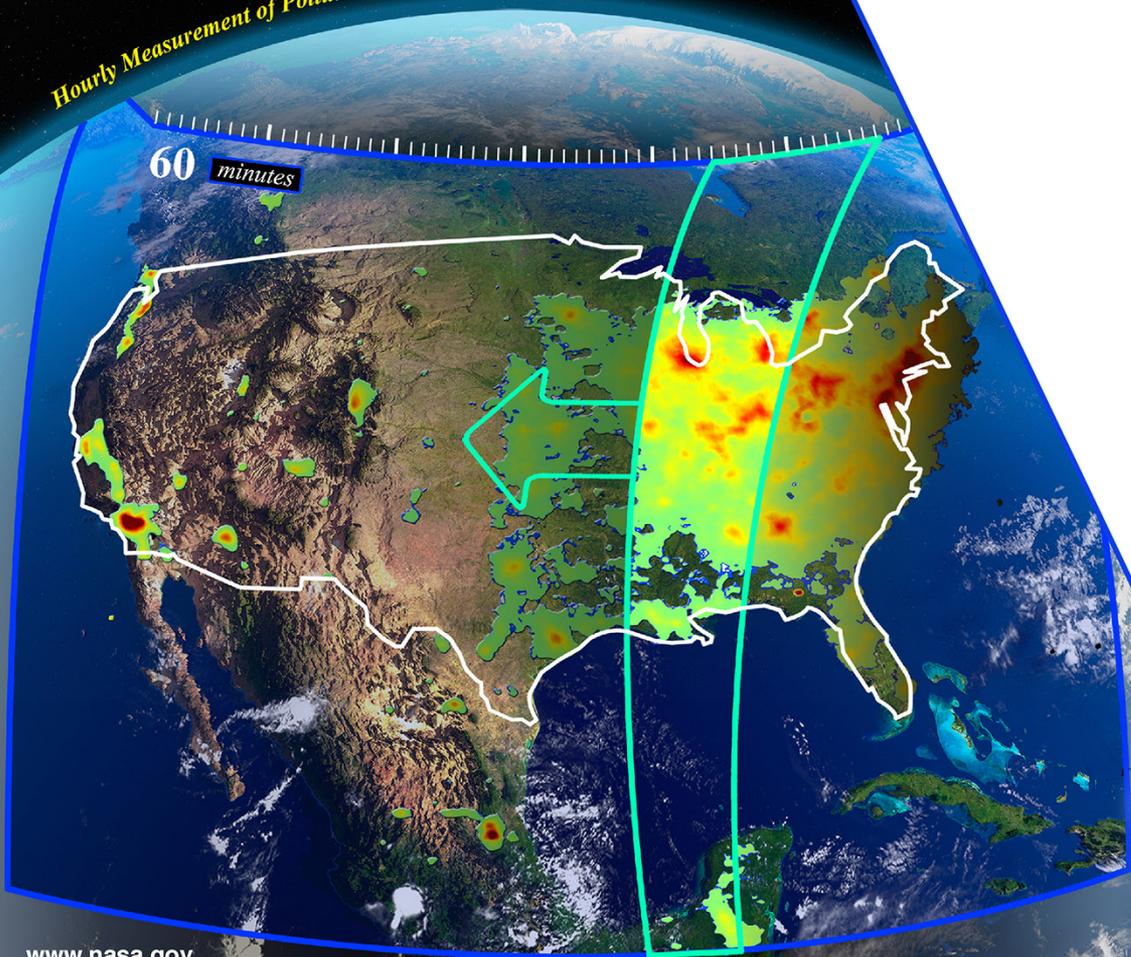


Tropospheric Emissions:  
Monitoring of Pollution



Hourly Measurement of Pollution

60 minutes



# TEMPO Instrument and Mission Update

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CEOS AC-VC-15  
Nakano Sunplaza, Japan  
June 10-12, 2019  
[tempo.si.edu](http://tempo.si.edu)



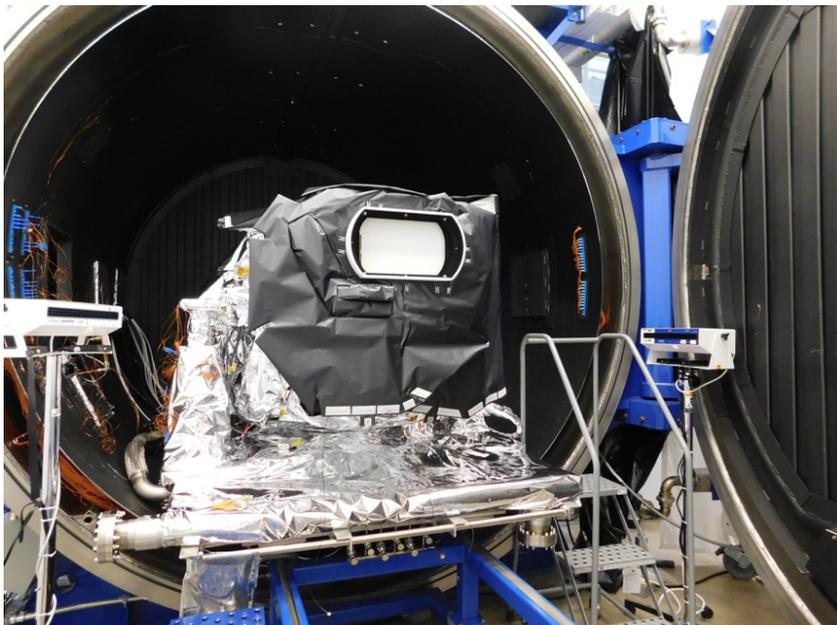
## TEMPO instrument characteristics

Wavelength range	290-490 + 540-740 nm
Spectral resolution	0.6 nm FWHM
Spectral sampling	0.2 nm
Maximum S/N	2700 @ 330-340 nm, EOL
Spatial resolution	2.1×4.5 km @ 36.5N, 100W
Spectra per hour	2000 N/S × 1250 E/W

Species/Products	Required Precision	Temporal Revisit
0-2 km O <sub>3</sub> (Selected Scenes)	10 ppbv	2 hour
Tropospheric O <sub>3</sub>	10 ppbv	1 hour
Total O <sub>3</sub>	3%	1 hour
Tropospheric NO <sub>2</sub>	$1.0 \times 10^{15}$ molecules cm <sup>-2</sup>	1 hour
Tropospheric H <sub>2</sub> CO	$1.0 \times 10^{16}$ molecules cm <sup>-2</sup>	3 hour
Tropospheric SO <sub>2</sub>	$1.0 \times 10^{16}$ molecules cm <sup>-2</sup>	3 hour
Tropospheric C <sub>2</sub> H <sub>2</sub> O <sub>2</sub>	$4.0 \times 10^{14}$ molecules cm <sup>-2</sup>	3 hour
Aerosol Optical Depth	0.10	1 hour

- **Across Greater North America (GNA): 18°N to 58°N near 100°W, 67°W to 125°W near 42°N**
- **Up to 25% special observations, with 10 minute or better resolution**
- **Geolocation uncertainty of less than 4 km**
- **Mission duration, subject to instrument availability**
  - **Baseline 20 months**
  - **Threshold 12 months**
  - **Extendable in 2-year increments**

- The TEMPO instrument successfully completed all environmental testing, was accepted by NASA & SAO November 2018, and was safely placed into storage.
- Performance meets or exceeds data product requirements.



Instrument thermal vacuum testing complete

*Photo courtesy of Ball Aerospace*



Instrument vibration testing complete

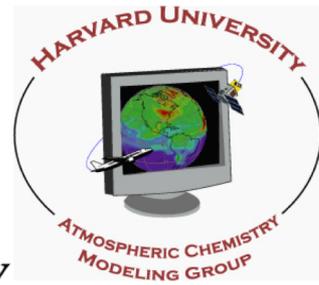
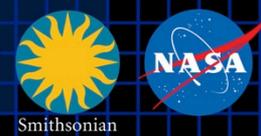
*Photo courtesy of Ball Aerospace*

- NASA, in coordination with the USAF's Space and Missile Systems Center (SMC), released the TEMPO Hosting Services Request for Proposal (RFP) on March 13, 2019.
- The RFP solicited bids to be delivered by April 29, 2019 for a TEMPO Delivery Order under the Hosted Payloads Solutions (HoPS).
- Responses are currently being evaluated by the NASA/USAF team.
- Contract award is planned for approximately July 2019.

- The green paper will be presented at an SPIE meeting in September. It will then become an SPIE publication.
- Please feel free to suggest additions and corrections through at least July. New authors welcome.

# The end!

Thanks to NASA, ESA, Ball Aerospace & Technologies Corp.



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