

Opportunity Title: Earth Science: Analysis and Interpretation of Ground, Airborne and Satellite-based observations in support of the verification of the NASA Pandora Project

Opportunity Reference Code: 0189-NPP-NOV23-GSFC-EarthSci

Organization: National Aeronautics and Space Administration (NASA)

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Application Deadline: 11/1/2023 6:00:59 PM Eastern Time Zone

Description: For more than a decade, NASA Earth Sciences has committed to the development and operationalization of the Pandora Spectrometer System, a ground-based/ship-based instrument here at NASA GSFC in the Laboratory for Atmospheric Chemistry and Dynamics. The instrument system retrieves total column trace gas densities utilizing sun/lunar-viewing and sky-scanning techniques. Validated, near real time data products include total column O₃ and NO₂. Other, currently experimental data products include near surface O₃ and total column CH₂O and SO₂, with continued development of retrieval algorithms for their verification.

The addition of these products will greatly widen the use-case of Pandora and benefit its user community for continued monitoring of air quality and atmospheric composition. Further, current and future deployments of Pandora are focused on long-term observations in support of validation for emission and air quality monitoring satellite platforms such as the Aura-based Ozone Monitoring Instrument, (OMI), the Sentinel-5 Precursor TROPOMI instrument, the upcoming TEMPO and GEMS geostationary satellites and the air quality/atmospheric composition satellite MAIA.

Projects currently under way include (1) evaluation and analysis of the combined observational platforms related to improving the verification and development of the Pandora Spectrometer System retrieval algorithms and contextualization of the interpretation of Pandora air quality and atmospheric composition products, both operational and developmental. Sources of observations are derived mostly from intensive field campaigns (e.g. 2017's SARP, LMOS and OWLETS; 2018 OWLETS-2, LISTOS and CAMPEX and the 2019 SCOAPE campaign); (2) development and refinement of improved profile algorithms for retrieval of O₃, NO₂, HCHO and SO₂; (3) planning and design for the current and future field and satellite cal/val/verification campaigns; (4) Harmonization and expansion of the NASA Pandora Project and its other ground-based networks (e.g. TOLNET, AERONET, MPLNET) and the ESA Pandonia project and its networks to develop the Pandora Global Network (PGN); (5) development and planning related to the deployment of long-term fixed sites in support of current and future satellite missions in conjunction with governmental agencies such as EPA and NOAA and with international partners such as ESA, EUMETSAT and KIER.

Location:

Goddard Space Flight Center
Greenbelt, Maryland

Field of Science:Earth Science



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Applications with citizens from Designated Countries will not be accepted at this time, unless they are Legal Permanent Residents of the United States. A complete list of Designated Countries can be found at: <https://www.nasa.gov/oiir/export-control>.

Eligibility is currently open to:

- U.S. Citizens;
- U.S. Lawful Permanent Residents (LPR);
- Foreign Nationals eligible for an Exchange Visitor J-1 visa status; and,
- Applicants for LPR, asylees, or refugees in the U.S. at the time of application with 1) a valid EAD card and 2) I-485 or I-589 forms in pending status

Eligibility Requirements • **Degree:** Doctoral Degree.