

Opportunity Title: AN INNOVATIVE IN SITU SENSOR FOR ACCURATE MEASUREMENTS OF EXTINCTION COEFFICIENTS AND LIDAR RATIOS OF AEROSOLS AND CLOUDS

Opportunity Reference Code: 0132-NPP-NOV24-ARC-EarthSci

Organization: National Aeronautics and Space Administration (NASA)

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How to Apply: All applications must be submitted in [Zintellect](#)

Please visit the NASA Postdoctoral Program website for application instructions and requirements: [How to Apply | NASA Postdoctoral Program \(orau.org\)](#).

A complete application to the NASA Postdoctoral Program includes:

1. Research proposal
2. Three letters of recommendation
3. Official doctoral transcript documents

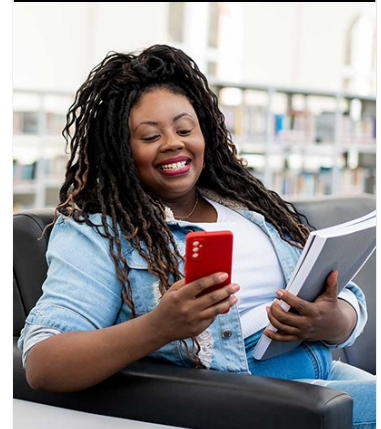
Application Deadline: 11/1/2024 6:00:59 PM Eastern Time Zone

Description: About the [NASA Postdoctoral Program](#)

The [NASA Postdoctoral Program \(NPP\)](#) offers unique research opportunities to highly-talented U.S. and non-U.S. scientists to engage in ongoing NASA research projects at a NASA Center, NASA Headquarters, or at a NASA-affiliated research institute. These one- to three-year fellowships are competitive and are designed to advance NASA's missions in space science, Earth science, aeronautics, space operations, exploration systems, and astrobiology.

Description:

We seek candidates that will characterize a new in situ instrument that was developed to demonstrate accurate measurements of extinction coefficients and lidar ratios of tiny particles known as "aerosols," and clouds for the first time. The new instrument takes advantage of most up-to-date optical instrumentations developed in the quantum optics community to provide the most accurate in situ measurements of optical properties (extinction coefficient and backscatter coefficient) of clouds and aerosols. The spectral lidar ratios can provide important physical properties of clouds and aerosols, such as size, shape and chemical compositions and are needed for interpretation of the space-based lidar measurements such as the Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations (CALIPSO) and the Ice, Cloud and land Elevation Satellite-2 (ICESat-2) missions. We encourage projects focusing on the use of the new instrument to investigate the lidar ratios of different aerosol types in an environmental chamber. Current projects in our lab range from theoretical and experimental atmospheric science into radiative transfer, climate dynamics, remote sensing of the land surface, aerosols, clouds, and climate change. In-house capabilities include design and development of novel airborne instruments for aerosol, cloud and trace gases systems. For this year, we hosted a community meeting on quantum sensing to share ideas on quantum technologies and identify important Earth science remote sensing requirements that are difficult to accomplish using the current remote sensing concepts.



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Field of Science: Earth Science

Advisors:

Charles Gatebe
charles.k.gatebe@nasa.gov
(650) 604-5533

Zhaoyan Liu
zhaoyan.liu@nasa.gov
(757) 256-5706

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/oior/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

Questions about this opportunity? Please email npp@orau.org

Qualifications PhD in the physical sciences, preferably Physics, Chemistry, or Atmospheric, or a relevant Engineering discipline.

Previous laboratory and/or field experience.

Experience working with analytical instrumentation for atmospheric measurements.

Experience combining multiple data sources into scientific analyses

Ability to work as a member of a team on various projects.

Good written and verbal communication skills.

Occasional deployment travel may be necessary.

Additional Desired Qualifications:

Experience with a variety of data analysis software packages

Demonstrated success in collaborative environments

Expertise in aerosol measurement

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