

**Opportunity Title:** Groundbreaking Lightning and Atmospheric Electricity Research

**Opportunity Reference Code:** 0008-NPP-NOV23-MSFC-EarthSci

**Organization** National Aeronautics and Space Administration (NASA)

**Reference Code** 0008-NPP-NOV23-MSFC-EarthSci

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

**Description** Marshall Space Flight Center (MSFC) is a world leader in atmospheric electricity research, with a multi-decade history of developing and deploying a variety of ground-based, airborne, and spaceborne atmospheric electricity instruments, such as the Lightning Imaging Sensor (LIS). MSFC also has performed groundbreaking research on many topics, including but not limited to thunderstorm electrification and lightning within severe weather, lightning's impact on atmospheric composition, variability of the global electric circuit, the production of transient luminous events (TLEs) in the upper atmosphere, physical relationships between optical and radio-frequency (RF) emissions by lightning, and calibration/validation of the Geostationary Lightning Mapper (GLM).

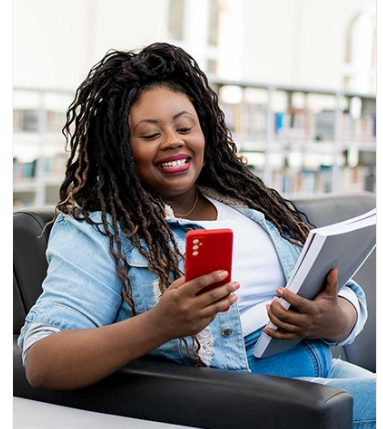
Available NPP opportunities within the MSFC lightning group include:

- Development of next-generation lightning detection techniques and instruments aimed at fundamental improvements in global and/or regional mapping of lightning
- Using ground- and space-based TLE and lightning detection systems to study the physical coupling of tropospheric thunderstorms to electrodynamic phenomena in the upper atmosphere
- Using microwave remote sensing, lightning observations, and/or numerical modeling to study the evolution and climatology of severe thunderstorms, as well as relationships to the rapid intensification and diurnal cycle of tropical cyclones
- Development and evaluation of cutting-edge parameterizations of thunderstorm electrification and lightning within cloud-resolving numerical models, including forward modeling of subsequent light scattering within the cloud and cloud-top optical output
- Improving understanding of the production of nitrogen oxides (NO<sub>x</sub>) by lightning, and thereby probing the importance of lightning in assessing climate, air quality, and weather - especially in relation to the National Climate Assessment (NCA).

The prospective applicant should contact Dr. Timothy Lang ([timothy.j.lang@nasa.gov](mailto:timothy.j.lang@nasa.gov)) well in advance of developing the proposal to ensure alignment of the idea with opportunity objectives. Please include a Curriculum Vitae (CV) and a brief statement of interest that identifies the primary topic of interest from those listed above. Other related topics will also be considered. The candidate will then be put in touch with the appropriate research mentor who will coordinate with the candidate on the proposal concept.

**Location:**

Marshall Space Flight Center  
Huntsville, Alabama



Whether you are just starting your career or already at a senior level, ORAU offers internships, fellowships, research opportunities, and contract positions that can provide you with invaluable experience. Download the ORAU Pathfinder mobile app and find the right opportunity to propel you along your career path!

Visit ORAU Pathfinder [↗](#)



**Opportunity Title:** Groundbreaking Lightning and Atmospheric Electricity Research

**Opportunity Reference Code:** 0008-NPP-NOV23-MSFC-EarthSci

**Field of Science:** Earth Science

**Advisors:**

Timothy Lang  
timothy.j.lang@nasa.gov  
256-961-7861

Gary J. Jedlovec  
gary.jedlovec@nasa.gov  
256-961-7966

Andrew L Molthan  
andrew.molthan@nasa.gov  
256-961-7474

Bill Koshak  
william.koshak@nasa.gov  
256 961-7963

Mason Quick,  
mason.quick@nasa.gov  
256 961-7584

Patrick Gatlin  
patrick.gatlin@nasa.gov  
256 961-7910

Patrick Duran  
patrick.t.duran@nasa.gov  
256-961-7527

**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/oiiir/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.