Opportunity Title: Remote Sensing of Meteorological Hazards and Disaster Impacts
Opportunity Reference Code: 0010-NPP-NOV23-MSFC-EarthSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0010-NPP-NOV23-MSFC-EarthSci

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

Description Marshall Space Flight Center (MSFC) collaborates with other NASA Centers and a broad range of local, state, federal, and international partners on research related to the remote sensing of natural hazards, and by extension, disasters, which impact human settlement and related activities. This includes collaboration with NASA's Earth Science Disasters Program, a directed effort to help engage the community around support to disaster-focused personnel for their use of NASA products in tools in addressing risk assessment, mitigation, response, and recovery. This includes contributions to competed research proposals exploring new and innovative approaches to the use of optical, infrared, passive microwave, and synthetic aperture radar remote sensing in identifying natural hazards or individual disaster events. Synthetic aperture radar applications are of high interest, as the team at Marshall is also supporting NASA's Surface Deformation and Change Study Team, a multi-Center and Agency effort to explore future synthetic aperture radar mission needs as a result of NASA's 2017 Decadal Survey. Further, a broad range of weather hazards are also routinely observed in remote sensing imagery, particularly visible, near-infrared, and thermal imaging made available from geostationary sensors such as NOAA's GOES-R Series, now in operations as GOES-East and GOES-West. Additional imaging bands, improved temporal and spatial resolution, and new imaging strategies increase the number of phenomena that can be rapidly monitored and incorporated into decision-making such as low-visibility driving or flying conditions during low clouds and fog, health and travel impacts from blowing dust, changes in water extent during heavy rains and floods, and other factors. Unique to the GOES-R Series, its Geostationary Lightning Mapper (GLM) provides optical-based imaging of lightning flashes within thunderstorms, information useful for assessing storm severity, potential for wildfires, public safety risks, and potential for additional severe weather.

Foundational science and new applications derived from these platforms lead to NPP opportunities in the following focus areas:

- Mapping of surface water extent and change via flooding through multi-polarization and multi-wavelength synthetic aperture radar missions, along with estimations of water depth and extension of depth to disaster impacts on human settlement
- Monitoring long-term changes in the Earth's surface deformation and change that may result from slow-moving landslides, sinkholes, coastal subsidence, or other factors contributing to a local risk for a natural disaster
- Observations of and changes in nighttime light emissions that result from disruptions to powered infrastructure as the result of severe weather, earthquakes, outages, and other events
- Rapid mapping of ongoing meteorological hazards such as blowing

NPP NASA Postdoctoral Program

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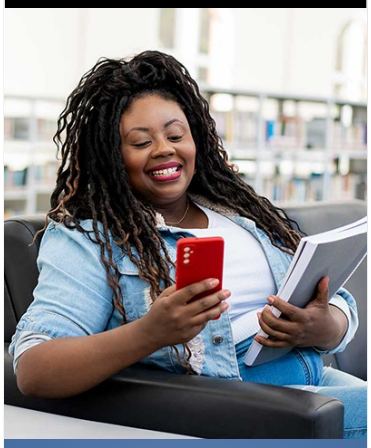

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dust, low clouds and fog, and other concerns of operational weather forecasting entities
- Identification of rapidly changing lightning flash rate and other parameters signaling an increase in lighting threat to the public and/or a greater short-term likelihood of severe weather

The prospective applicant should contact Dr. Andrew Molthan (andrew.molthan@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

Field of Science: Earth Science

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

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

Krishna Vadrevu
krishna.p.vadrevu@nasa.gov
256 961-7432

Lori Schultz
lori.a.scultz@nasa.gov
256 961-7898

Chris Schultz
christopher.j.schultz@nasa.gov
256 961-7856

Jordan Bell
jordan.r.bell@nasa.gov
256 961-7670

Chris Hain
christopher.hain@nasa.gov
256 961-7515

Emily Berndt
256-961-7510

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emily.b.berndt@nasa.gov

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.