Opportunity Title: Airborne High Spectral Resolution LIDAR
Opportunity Reference Code: 0009-NPP-JUL24-LRC-EarthSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0009-NPP-JUL24-LRC-EarthSci

Application Deadline 7/1/2024 6:00:59 PM Eastern Time Zone

Description

NASA Langley Research Center (LaRC) operates four facility-class airborne high-spectral-resolution lidars (HSRLs). These lidars have deployed on over 40 field experiments focused on a wide range of objectives in atmospheric and ocean remote sensing, including process science, satellite validation, and remote sensing algorithm studies. The HSRL technique enables unambiguous and independent measurements of particulate backscatter and extinction. All four of LaRCs HSRL-class instruments implement the HSRL technique at 532 nm and the elastic backscatter lidar technique at 1064 nm and are polarization sensitive at both wavelengths. One of the lidars also provides HSRL measurements and polarization sensitivity at 355 nm. Two of the lidars feature ozone-profiling capability via the differential absorption technique (DIAL). One of the lidars features water vapor profiling and methane column capabilities via DIAL and integrated path DIAL, respectively (the NPP opportunity for this water vapor/ methane /HSRL instrument is in a companion announcement “Airborne Lidar Measurements of Atmospheric Trace Gases, Aerosols, and Clouds: Instrument and algorithm development“). Two of the lidars feature HSRL ocean-profiling capability: one at 532 nm and the other at 532 and 355 nm. This latter instrument also provides measurements of chlorophyll fluorescence and colored dissolved organic matter (CDOM). Several of the lidars have flown on research missions for which a wide variety of coincident or near-coincident measurements are available from other sensors, including in situ sensors of aerosols and trace gases, in situ sensors of ocean optical and ecosystem properties, and remote sensing measurements of various kinds. In particular, many of the campaigns were flown with the NASA GISS Research Scanning Polarimeter deployed from the same aircraft. The data sets acquired offer extensive and unique opportunities to study the distribution and optical properties of aerosols and clouds in the atmosphere and plankton in the ocean. They also provide opportunities to combined active-passive retrievals of aerosol and ocean optical and microphysical properties and composition/type.

An opportunity exists for qualified candidates to participate in the airborne HSRL activities that include evaluating instrument performance and data quality, developing new algorithms or approaches to derive atmospheric and ocean data products, and scientific analyses of data sets from the lidars alone or in conjunction with other field data or coincident satellite remote sensing data. Candidates may work with past data sets or deploy with the LaRC team on future field campaigns to participate in real-time data acquisition, post flight data analyses, and scientific studies with participating instrument and modeling teams. In addition, candidates may focus specifically on instrument development efforts in, e.g., lasers, detectors, and advanced instrumentation techniques. Candidates with prior experience in lidar data analysis and system design/operation are preferred.

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Location:
Langley Research Center
Hampton, Virginia

Field of Science: Earth Science

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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.