Biogeochemistry Research Assistant in Support of GSFC's Ocean Ecology Lab

Job Description:

Science Systems and Applications, Inc. (SSAI) is seeking a Biogeochemistry Research Assistant to support the Ocean Ecology Laboratory (OEL) at NASA Goddard Space Flight Center in the quality assurance and quality control of oceanographic biogeochemical and optical measurements including the collection, laboratory analysis, processing, and evaluation of biogeochemical and inherent optical properties.

The Ocean Ecology Laboratory (OEL) performs the core functions to ensure the quality of ocean color satellite data products. Ensuring the quality of NASA’s multi-mission ocean color satellite data products and developing, refining, and evaluating the associated algorithms requires a substantial volume of high-quality field data. The SeaWiFS Bio-optical Archive and Storage System (SeaBASS; http://seabass.gsfc.nasa.gov) currently provides the community-standard repository for these field measurements. With the upcoming Plankton, Aerosol, Cloud, ocean Ecosystem mission (PACE) launching in 2023, NASA will embark upon a new era of unprecedented global ocean and atmospheric satellite data products. PACE will be capable of performing radiometric and polarimetric ocean and atmosphere surveys, returning a range of biogeoophysical data from which properties of the ocean and atmosphere can be produced to add to other critical climate and Earth system variables. With advanced global remote sensing capabilities, PACE’s high-quality observations will enable advanced understanding of delicate ocean ecosystems, understanding of vulnerable coastal regions, quantification of the ocean carbon cycling, unparalleled characterization of ecosystem change and function, improved characterization of clouds, aerosol properties, air and water quality, and cross-disciplinary studies of atmospheric, terrestrial, and aquatic processes and interactions.

SSAI is an Equal Employment Opportunity and Affirmative Action Employer. EEO/AA-Minorities/Females/Veterans/Individuals with Disabilities

Duties:

- Perform SeaBASS field data quality screening and data re-processing including quality assurance and quality control on biogeochemical properties (particulate and dissolved organic carbon [POC, DOC], suspended sediments, nutrients) and on absorption coefficients of particles and chromophoric dissolved organic matter (CDOM).
- Participate in coastal Arctic research involving the collection, analysis, and processing of aquatic measurements including POC, DOC, inorganic carbon pools (DIC, PIC, pCO2), and inherent optical properties (backscatter, volume scattering function, absorption, attenuation, particle size distribution) and aquatic radiometry.
- Perform laboratory safety and instrument maintenance and organization.
- Develop in-house capabilities and expertise in biogeochemical and optical instrumentation and field data collections and analysis to support multi-mission science data product validation.
- Organize instruments, sampling gear, and logistics for, and participate in, shore-based and oceanographic fieldwork throughout the world to collect high-quality measurements of biogeochemical and optical properties.
- Deploy (potentially) on multiple coastal or open ocean research cruises per year (10- to 35-day duration each).
- Perform data processing from raw optical measurements to final data products (e.g., absorption coefficients) along with quantification of measurement uncertainties.
- Prepare and organize biogeochemical and optical measurements and associated metadata into data files for submission to SeaBASS.
- Refine and validate of biogeochemical ocean color satellite algorithms.
Participate in data reduction and provide support for preparation of reports and publication of results in peer-reviewed journals.
Contribute to systematic development, revision, testing, and dissemination of field measurement collection protocols in collaboration with experts in academia and other federal agencies.
Develop and document software tools required to accomplish duties.
Prepare reports and technical documentation on work performed.
Participate in scientific meetings and workshops.

The position will involve extensive interaction with OEL scientific staff and managers as well as scientists from a variety of government agencies, research institutions, and other organizations.

Required Qualifications:

- BA or BS in natural sciences, chemistry, biology, oceanography or closely related science discipline.
- Strong computer programming skills, including Python, MATLAB, and other programming languages and software.
- Experience with, and knowledge of, chemical laboratory processes and safety protocols.
- Proficiency in analytical chemistry for bulk and molecular characterization of organic matter.
- Experience with UV-Vis spectrophotometers, elemental analyzers (CHN and TOC), and underway air-sea CO$_2$ instruments.
- Experience with optical instrumentation, especially those used to collect absorption measurements.
- Good problem-solving skills; attention to detail; ability to learn quickly, to work efficiently and independently, and to engage in sea-going research.
- Previous experience working on oceanographic research cruises.
- Competence in data extraction, reduction and processing from specialized research instrumentation.
- Effective oral and written communication skills.

Applicants must be able to meet quickly the requirements to obtain a badge and IT credentials at NASA GSFC.

Desired Qualifications:

- MS in marine sciences, oceanography, chemistry or closely related discipline.
- Proficiency in multiple computer programming languages.
- Expertise in UV-Vis spectrophotometry, high-temperature combustion elemental analysis instruments (CHN and TOC), and underway air-sea CO$_2$ instruments.
- Knowledge of high-performance liquid chromatography (HPLC) and/or gas chromatography-mass spectrometry (GC-MS).
- Expertise with optical instruments used to collect measurements of aquatic radiometry and inherent optical properties and processing data collected by those instruments.
- Experience processing oceanographic data.
- Proficiency with instrument to computer communication.
- Willingness to stay abreast of advances in a range of disciplines related to aquatic biogeochemistry.
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