

1. Description of Opportunities

The USGS Pacific Coastal and Marine Science Center has identified a need for two student services contractors to develop data and techniques for Machine Learning applications with remotely sensed data and GIS. The positions are open to recent BA/BS graduates and current or recent MA/MS students and will consist of 400-800 paid hours of work through Sept. 30, 2021. There is potential to continue these opportunities beyond the contracted dates, if project funding can be sustained.

First Opportunity

The first contractor will focus on dataset creation and curation for use in Machine Learning applications with coastal imagery. The prospective contractor will work with the newly developed USGS Coast Train project, an initiative for generating labeled datasets for training Machine Learning models. The project involves dataset creation and curation, interacting with a team of scientists from USGS and its partner agencies, citizen science, and rudimentary applications of Machine Learning models written in python software. The outputs of this project will be used to train models that can extract information to assess coastal change, from the monitoring important physical attributes such as shoreline or cliff-line position, evidence of hazards, and coastal habitats.

The data and metadata generated will necessitate the following skills and interests:

- Good communication and organization skills
- GIS (Arc or Q) for I/O, including a good working knowledge data formats
- Running python programs from command line

In addition, python programming skills, web applications, and machine learning expertise in any context would be considered desirable in the potential candidate, as would expertise in coastal environments and processes.

Second Opportunity

The second contractor will focus on dataset creation and curation for a new project funded by the Office of Naval Research to improve hurricane forecasts and hindcasts. The contractor will be tasked with generating a large GIS database consisting of a collation of numerous primary and secondary data sources that relate to coastal sediments, structures and infrastructure. This position would suit a candidate with good geospatial skills who wishes to use their skills in an applied context for coastal zone management and basic research.

The data and metadata products we will generate necessitate the following skills and interests:

- Good communication and organization skills
- Proficient in GIS (Arc or Q) with good working knowledge of projections, geodesy, and GIS data formats

In addition, experience with databases (SQL, mongoDB or similar), python programming skills, web applications, and machine learning expertise in any context would be considered desirable in the potential candidate, as would expertise in coastal environments and processes.

2. Types of Services Required

Services may include one or more of the following activities: use of python programs from the command line; database development and metadata management; geologic, ecological and oceanographic data compilation; data visualization; periodic meetings (online or in-person) and emailing; and report generation.

3. Required Expertise/ Skills

Completion of an undergraduate degree in computer science, engineering, geology, earth sciences, geophysics, or environmental studies including oceanography, geology, math, and physics. Experience working with and interpreting geologic, geophysical, and/or environmental data and integrating data using GIS software packages. Experience in preparation of data reports and knowledge of basic computer operations. Experience with PC (and/or Linux) systems. Experience with database management, integrating multiple data types and producing mapping products and/or data visualization tools.

4. Description of Working Conditions

Work will be performed on a personal computer and/or at a USGS workstation with appropriate software and training. Work may be performed off-site on the student's personal machine or a USGS workstation will be provided if telework is required due to ongoing COVID19 related restrictions.

5. Compensation

Compensation is commensurate with the level of education and experience, as follows:

\$24.95 per hour for a student who has BA/BS or 4 years of post-high school experience and 1 year of post-college experience (GS-07-1) or \$29.91 per hour for a student who has MA/MS (GS-09-1)

Student is responsible for all costs of transportation to and from the USGS. The government does not provide housing, meals, or other living expenses while working at the principle duty station. Travel away from the station is not expected for the period of this agreement.

6. Principle Duty Station

USGS Pacific Coastal and Marine Science Center
2885 Mission St.
Santa Cruz, CA 95060