



GEOSCIENTISTS-IN-THE-PARKS Internship Program

2019 – PROJECT DESCRIPTION FALL/WINTER SEASON

NPS UNIT: ALASKA REGIONAL OFFICE		PD #: 2019401
<p>Position Title: GIS Assistant (1) Position Type: Guest Scientist Primary natural resource discipline: Multidisciplinary Project keywords: Structure from Motion, SfM, Remote Sensing, Geology, Geomorphology, Glaciers, Landslides, Outburst Floods, Vegetation Classification, Landcover Change, Air Photos, GIS, 3D modeling. Location: Anchorage, Alaska</p>		
PROJECT DESCRIPTION AND WORK PRODUCTS		
<p>Position Description: The Alaska National Park Service manages large protected areas, but has poor resolution topographic information that is useful for modeling environmental and geomorphic responses to potential impacts. The participant will assist with various fix-wing mounted structure from motion (SfM) photogrammetry projects. This consists of collecting imagery in standard color (RGB) and near-infrared (that is used to generate detailed digital elevation models (DEM) and analyzed for landcover classifications. The participant will help process, analyze, and collect these datasets and integrate them with other datasets. We desire a candidate with remote-sensing experience, especially with imagery analysis and landcover classification; OR a background conducting SfM or analyzing LiDAR/TLS point clouds.</p> <p>In the last couple years, the Alaska Region has deployed a revolutionary SfM system mounted in fix-wing aircraft. SfM use is commonly deployed using unmanned aircraft, but the areas are much larger in Alaska needing high-resolution and accurate imagery and DEMs. The manned system relies on a survey-grade GNSS unit in the plane, as a base station, and measuring ground control points. These data are necessary for understanding geomorphic and landcover changes. This manned SfM system has been deployed to monitor landslides, map intertidal elevations, map and monitor coastal geomorphology and erosion, classify salt marsh vegetation, respond to glacier outburst floods, and monitor glacier recession.</p> <p>The participant will work with a diverse team of natural resources scientists to apply these SfM capabilities to a wide-range of natural resources management issues. The participant will also work with partners from other agencies and university collaborators to further develop tools for processing the SfM data accurately and efficiently.</p> <p>The results of this work is used by park managers to identify geologic hazards to protect visitors, monitor coastal erosion to prioritize archaeological studies of threatened resources, measure rates of glacier retreat due to climate change, map coastal habitats sensitive to oil spills, monitor landcover changes due to climate change, and provide stunning visualizations that are used to interpret these changes. The NPS Alaska Region manages greater than 60% of the NPS land area nation-wide so this cost-effective tool is useful for a wide-range of projects across the spectrum of disciplines.</p> <p>This position is offered through the National Park Service's Geoscientists-in-the-Parks (GIP) Internship Program in partnership with Stewards Individual Placement Program (Stewards) and The Geological Society of America (GSA).</p>		

Work Products: Digital elevation (DEM) maps and difference analysis, orthorectified photos, and landcover classification; metadata; workflows/manuals; project reports.

QUALIFICATIONS

- Applicants must have completed an undergraduate degree in the geosciences by the start of the appointment. Graduate level preferred.
- Coursework required: Remote Sensing and GIS (or demonstrated proficiency).
- Surveying or mapping grade GNSS skills desired.
- Electronics, photographic, and computer expertise and ingenuitive problem solving are necessary.
- These datasets will be very large and time-consuming to process, so the ability to efficiently work with large datasets is a necessity.
- Documentation: Transcripts (unofficial is acceptable), and two support letters from professors or geoscience employers.

The applicant must be a U.S. citizen or U.S. permanent legal resident ("green-card-holder") between the ages of 18 and 35 years old. Prior to starting this position a government security background clearance will be required.

VEHICLE/DRIVER LICENSE REQUIREMENTS

Applicant must have a valid driver license and a good driving record. The participant will be driving a government vehicle long distances to reach parks along the road system.


A personal vehicle is RECOMMENDED but not required for this position. Housing within walking distance of the regional office is available, but more housing is available within driving distance. There are many recreational opportunities around Anchorage that can only be reached by car.

If the GIP is required to drive a park vehicle for their position, Stewards will perform a driving records search, and the GIP's ability to drive a park vehicle during work hours will be contingent upon the results. GIPs will have to have had their license for 3 years or be over the age of 21 to be insured as drivers under Stewards insurance policy. Examples of things that will preclude a GIP from driving a park vehicle include: GIP under the age of 21 years old that has been licensed less than three years, DUIs, multiple moving vehicle violations, suspended or revoked license, or three or more accidents (regardless of fault) in the last 3 years. If the driver's search is favorable, Stewards will provide driver's liability insurance while the intern is driving a NPS vehicle for their GIP position. If the GIP is denied coverage by Stewards, they will not be permitted to drive during work hours.

HOUSING

Park housing is NOT available and the intern will be responsible for finding housing in the nearby area. The participant will most likely have to find a place to rent in Anchorage, which has a tight rental market. Assistance can be provided for examining housing to secure a place to rent before arriving. Craigslist is the best source for looking for rentals in Anchorage. Rooms in shared houses start at around \$600/mo.

INTERNSHIP START/END DATES

Start Date: 9/16/2019 Number of weeks: 52 weeks Flexibility of dates: Yes	
LIVING ALLOWANCE	
52 weeks (\$525/week = \$27,300)	
RELOCATION ALLOWANCE	
\$1,000 (AK and HI)	
AMERICORPS PROGRAM	
	<p>AmeriCorps is a program that engages individuals in intensive community service work with the goal of “helping others and meeting critical needs in the community”. The GIP Program is supported through AmeriCorps by providing a Segal Education Award in addition to the GIP’s living stipend and relocation allowance.</p> <p>Upon successful completion of the GIP position, the GIPs (AmeriCorps members) are eligible for a \$1,612 - \$6,095 pre-tax education award that can be used for paying back student loans or for continuing their education. The amount of the education award is based on the length of the position.</p> <p>AmeriCorps limits the number of terms an individual can serve to 4 terms. If an applicant has previously completed 4 GIP or other AmeriCorps positions, they will not be eligible to apply for an additional GIP position.</p>
NATURAL & PHYSICAL WORK ENVIRONMENT	
<p>Natural Environment: The work will be based out of the Alaska Regional Office, which is located in downtown Anchorage. Anchorage is similar to any small city in the US, with malls, grocery stores, and other typical amenities. The city has great trails for running, road biking, and mountain biking. There are many parks within the city and just outside the city for hiking and backcountry camping (moose, bears, and sheep are common). Sea Kayaking is available out of nearby towns of Whittier, Seward and Homer. Canoeing, kayaking and rafting is available on lakes and rivers within an hour drive from town.</p> <p>The weather is sub-arctic maritime, so it is typically cloudy and light rain is common. However, there is 24 hours of light during the summertime, and with so many easily recreational activities available, it is difficult to find time to sleep. Wintertime is dark and cold (typically around 10-20 degrees, but with colder and warmer periods). There are ample outdoor snow and ice activities available. Anchorage has over a hundred miles of groomed ski trail, many of which are lighted for night skiing. Off-trail cross-country skiing, hiking, and fat tire biking trails thread through the forest and reach the mountain tops. The Alyeska ski resort is less than an hour out of town. Backcountry skiing opportunities are abundant. Three lakes in town are plowed for ice skating and wilderness ice skating can be enjoyed throughout the season. Typical summertime temperatures range from approximately 55 to 78 degrees. There are numerous paved and single-track bike trails throughout the city and parks.</p> <p>Physical Work Environment: Work will primarily be in a typical office environment. Long hours will be spent working on a computer processing data, making maps, organizing data, and writing reports. Fieldwork will be from May through September and will be conducted in remote areas across the state flying in small aircraft. The flying is challenging in that you are in the air for up to 5 hours monitoring equipment and troubleshooting. Motion sickness is common, so it either requires a strong stomach or medicine. Field housing will be in park housing, park cabins, hotels, and in some places a tent. Fieldwork will consist of long days and due to weather or tidal constraints the fieldwork scheduling is irregular, so the participant must be flexible. There likely will be fieldwork opportunities requiring travel in bear country, riding in boats in the ocean or in large lakes, carrying a heavy pack, and working in inclement weather.</p>	
MENTORING AND LEARNING GOALS	

Mentoring: There are two primary scientists in the Alaska Regional Office involved with the SfM project, the Regional Geologist and the Coastal and Oceans Coordinator. However, the participant will be working on projects with a broad range of natural resources scientists. Training and mentoring for SfM, GNSS, and GIS will be provided. The participant will receive direction and assistance with analyzing data, prioritizing work, and writing reports.

Learning Goals: The participant will learn about the natural resources of the Alaska parks and their importance to managers. They will become familiar with the ecology and geology of large parts of Alaska. They will learn how to conduct fieldwork in remote environments. They will learn technical skills related to structure from motion (SfM) photogrammetry, which will include photography, data management, GNSS, and GIS. And how these data are applied to natural resource management issues.

SUPERVISORS

Primary Supervisor:

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