

School of Mines Field Session, Fall 2024 Project

July 2024

Proposal Title: Tracking Snow Water Equivalent with Radar

Company Background:

Our mission is to reimagine and reshape the future of climate adaptation with research and analytical tools that transform complex data into actionable information. Applied Research Team, Inc. is a Colorado company, established in January of 2022. The firm has successfully been awarded grants from the NSF Small Business Innovative Research program, the US Bureau of Reclamation, and the Conejos Water Conservancy District.

The leadership team at ARTi is composed of Jean Vieux, President/CEO (Environmental Scientist) and Dr. Baxter Vieux, Chief Scientist and Principal Engineer (Hydrologist). Both have decades of experience in the application of remote sensing and applications of information to protect the environment, improve water quality and promote human safety.

Introduction: Water stored as snowpack high in the mountains where it naturally accumulates in winter and melts in spring and summer, provides water supply for agriculture, municipalities, and hydroelectric facilities. Avalanche risk assessment, flood avoidance, and drought management are other possible applications. SnowQ™, patent pending, is our method that uses remotely sensed along with in-situ data to extrapolate how much SWE has fallen to the ground and where.



Work Description: Create an end-to-end system that uses a database to intake remotely sensed data of hourly snowfall rates and generate maps of SWE accumulation. The interface should allow the user to interact by selecting the dates and generate an interactive map at the end date that allows the user to click on the map to obtain SWE values mapped over the landscape. Data will be provided as well as the needs for the final display.

Desired Skill Set:

Django, HTML4, JavaScript, Python, Folium, Xarray, GeoPandas, SciKit, GDAL libraries, and Source Control (Github)

Team Size: 4

Work Location: Remote.

Internship Possibilities: Yes. Depending on the situation at the time of desired internship.

NDA: We will require an NDA for this project.

Intellectual Property: Applied Research Team, Inc. will retain ownership of all code developed.