



USGS NSF GRIP, GSP Opportunity

● Point of Contact Name:	Janice Gordon
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● USGS Center:	Core Science Analytics, Synthesis, and Libraries
● Project Title:	High Performance Computing for the Advancement of Earth Science
● Summary:	Work with USGS scientists to apply high performance computing principles and techniques to solve national and international earth science challenges.
● Project Hypothesis or Objectives:	Today's societal challenges compel scientists to approach problems using more realistic representations at increasingly larger scales. Traditional computers are often not powerful enough to handle large data-intensive computational problems in reasonable amounts of time, pushing scientists to navigate advanced computing paradigms without any traditional computer science training. The Core Science Systems' Core Science Analytics, Synthesis, and Libraries Advanced Research Computing (ARC) group's mission is to provide advanced computing capabilities and expertise to USGS scientists for the acceleration and expansion of scientific discovery. USGS is seeking highly qualified candidates who can apply their computer science skills to real-world earth science problems.
● Duration:	Up to 12 months
● Internship Location:	Denver, CO
● Field(s) of Study:	Geoscience, Computer Science
● Applicable NSF Division:	EAR Earth Sciences, ACI Advanced Cyberinfrastructure, HPC High Performance Computing
● Intern Type Preference:	Either Type of Intern
● Keywords:	HPC, High Performance Computing, Computer Science, Earth Science, Information Science, Scientific Computing, Algorithms, Parallel Programming

- **Expected Outcome:** This research and intended results will have a direct impact on a number of USGS research projects trying to implement improved computational capabilities via emerging high performance computing capabilities in USGS. Resources are needed to address the growing demand for support and continued implementation of these advanced computing methods, techniques, tools, cyberinfrastructure, and capabilities in support of USGS science.
 - **Special skills/training Required:** Completion of a bachelor's or master's degree in computer science, earth sciences related discipline (geology, biology, hydrology, etc), applied mathematics, or related field. Applicant must be proficient in computer programming and have the ability to program in Python, R, MATLAB, Fortran and or C/C++, have expertise with parallel processing tools, computational clusters, and proficiency with the Linux operating system.
 - **Duties/Responsibilities:** The intern will provide support and education to USGS scientists and data managers related to HPC tools, techniques, methodologies and capabilities. Projects may include the optimization of computational models, transformation and preparation of scientific data, performance tuning of algorithms, application of parallel programming methods, and exploration of advanced concepts of automation and information processing for efficient use on High Performance Computing (HPC) systems.
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