



## Engaging Local Communities in Geoscience Pathways

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### Our Shared Vision

To develop a diverse geoscience workforce, the EarthConnections collective impact alliance is developing regionally focused, Earth education pathways. These pathways support and guide students from engagement in relevant, Earth-related science at an early age through the many steps and transitions to geoscience-related careers. Rooted in existing regional activities, pathways are developed using a process that engages regional stakeholders and community members with EarthConnections partners. Together they connect, sequence, and create multiple learning opportunities that link geoscience education and community service to address one or more local geoscience issues. By intertwining Earth education with local community service we aspire to increase the resilience of communities in the face of environmental hazards and limited Earth resources.

### Challenge and Scope:

At the same time communities all over the US are struggling to deal with climate change, resilience, and environmental justice, the nation faces a shortage of geoscientists who can work on these issues. This shortage is especially acute for marginalized and underserved communities, many of which face significant geologic hazards or resource issues. Gaps in the pathways to careers in geoscience begin as early as middle school—the last time many students encounter Earth science content in the classroom. To address these challenges, this project will create opportunities for students in three diverse communities (Atlanta, GA; San Bernardino, CA; and Oklahoma) to develop their scientific skills and knowledge while working on authentic, local problems as they progress from middle school to college and beyond, into the workforce. The EarthConnections Alliance brings together partners who have led successful national efforts addressing components of these challenges with partners in three regions to create pathways in three diverse US communities. The project will develop a scalable process for regional pathway development.

### How We Will Work Together:

- We share a strong belief that the power of this alliance lies in the ability to learn from one another and share resources. We will structure this learning and sharing into our activities, management and evaluation
- Our operational model is one of shared vision, values, and processes that allow members of the alliance to operate independently with confidence that we are collectively moving together.
- Our communications structure will allow all to be informed and find the information they need at the time they need without becoming a burden to our members. We will use a combination of synchronous and asynchronous strategies and that allows individuals and subgroups to report in ways that move information across the alliance. To begin:
  - 1) use SERckit as much as possible in planning and running activities with a minimum expectation that all meetings will have an agenda and a report with photos
  - 2) use list-servs for all communications so that the information is archived and available to appropriate others
  - 3) provide regular updates to the leadership team using email list and
  - 4) post news on the project website newsfeed.
- We identified maps and mapping as both an important metaphor for our work in creating and describing pathways and as an essential tool for mapping our EarthConnections assets as well as the initial regional alliance and pathway development.

## EarthConnections Alliance

### Project Partners

**UNAVCO**, the NSF Geodetic Facility supporting over 210 US university and international consortium members.

**Lawrence Hall of Science**, University of California, Berkeley. Science Education for Public Understanding Program materials integrate disciplinary concepts with science and engineering practices in the context of personal and social issues.

**American Geophysical Union**. The Thriving Earth Exchange (TEX) helps communities leverage relevant science and work with scientists to advance their priorities and address their challenges related to climate change, natural hazards, and resources.

**Incorporated Research Institutions for Seismology (IRIS)** the NSF seismology facility, IRIS supports research and education in a seismology consortium of over 120 university members and 20 educational affiliates.

**InTeGrate**, the NSF STEP Center in the Geosciences supports learning about the Earth in the context of societal issues across the undergraduate curriculum. InTeGrate is housed at the **Science Education Resource Center (SERC)**, Carleton College which serves as the backbone for the EarthConnections alliance.

### San Bernardino Alliance

This is a fast-growing region that faces some of the highest possible shaking hazards from earthquakes on the San Andreas and other faults in the region. In addition, the region is facing severe drought, locally suffers from ground water pollution, and is home to a number of Superfund sites. **Founding Partners:** **California State University, San Bernardino**, where active earthquake research engages K-12 teachers and undergraduate students extending into the local community. **Southern California Earthquake Center (SCEC)**, University of Southern California whose programming includes the [Great California ShakeOut](#), educator professional development, curricular resources, Quake Catcher Network sensors in schools and museums, and undergraduate intern programs.

### Oklahoma Tribal Nations Alliance

Understanding the relationship of recent earthquakes to energy industry practices, and the resulting implications for energy production and energy-related jobs in Oklahoma, is an important issue for all Oklahoma residents, but especially American Indians in the region, given their close association with the land and their sovereign control of natural resources and land use within their reservation boundaries. **Founding Partners:** **American Indian Institute (All)**, University of Oklahoma, a nonprofit American Indian training, research, and service organization whose goals include promotion and support of Indian education and tribal leadership and organizational development. **Jackson School of Geosciences**, University of Texas, Austin, brings experience with statewide K-12 curriculum development and teacher professional development activities including the Oklahoma-based South Central Climate Science Center.

### Atlanta Alliance

This densely populated, diverse region faces some of the highest possible shortage of available fresh water. Access to groundwater is negligible, with the region relying on small rivers and streams for water supply, and rainfall-charged reservoirs to provide relief in times of drought. In addition, the statewide economy is largely dependent on agriculture and has faced severe drought in the past. **Founding partners:** **Building Green Initiative (BGI)** at Clark Atlanta University is leading the multi-faceted campus-wide sustainability efforts at Historically Black Colleges and Universities. **Center for Sustainable Communities** based in the Atlanta region is working extensively with many stakeholders including government agencies, universities and colleges, local agencies, professional associations, and national laboratories to launch the Advanced Atmospheric Research and Monitoring Station (AARMS) project.