

KECK Geology Consortium Guidelines for Submission of Project Proposals

2027-2031 Projects

The Keck Geology Consortium Programs described below reflect our most recent proposal to NSF for support of the Consortium through 2031. While retaining much of the historical structure of Keck projects, there are important differences (see underlined section below).

I. Background

The new annual research programs proposed for the 2027-2031 cycle focuses on Gateway projects for rising sophomores (~11 students per year, including one near-peer mentor). The Keck Consortium will continue to fund one ~5-6-student Gateway or Advanced project (for rising seniors) each year. Both programs include common components (research, analytical and professional development) but have differing goals and activities appropriate to students in each program. Keck REUs focus on supporting development of student's science identity and sense of belonging in research settings, and faculty proposing projects should be excited to create a program and implement activities that support this.

The **Gateway Program** for beginning students seeks to broaden participation and focuses on exploration of the discipline and its intersections with socially relevant issues. The research component of this program is designed intentionally to appeal to beginning students, and especially those from diverse backgrounds, to introduce them to the breadth and excitement of the discipline through authentic research experiences, to deepen their understanding of the nature of science, to further develop their research skills and science identity, and to socialize them into a research community of practice.

II. Research Project Details

Before you begin preparing a proposal to the Keck Geology Consortium REU, we encourage you to contact Karl or Kelly, especially if you are new to the program.

Gateway Projects: The ideal Gateway project is designed for 11 Gateway students (including one near-peer mentor - usually a rising junior/senior), and two faculty directors. We will also consider five-student projects with one faculty director. In addition to research, a typical Gateway project will involve a mix of hands-on activities and mini-lectures by project directors to help introduce students to the geosciences as well as to help develop some of the skills needed to be successful during the five-week research project.

- 5 weeks summer for rising sophomores
- Presentation at a fall meeting (typically GSA, AGU, or a regional meeting)
- Project Directors publish a 1-2 page short contribution in *Proceedings of the Keck Geology Consortium* that summarizes the results of the study
- *Due to tight NSF budgetary constraints we cannot guarantee funding for a near-peer mentor in the case of 5-student projects; we encourage those proposing a 5-student project to seek other funding to support a student in this pedagogically-effective role*

Advanced Research Projects: Advanced Research projects are designed for 5-6 students and one faculty director. These projects involve students in a common four-week summer field and/or laboratory experience, followed by supervised independent work at their home campuses during the following academic year.

- 4 weeks summer for rising juniors and seniors
- Supervised research at home institution through the following academic year
- Short contributions by Directors and students are published in the [*Proceedings*](#)

Both Gateway and Advanced projects include analytical and professional development components. The goals of the **Analytical Skills Component, which** support and supplement projects in both programs (Gateway and Advanced) are two-fold: 1) to train undergraduate students in cutting-edge analytical techniques and instrumentation, and 2) to enhance student research experiences and project science goals through the use of analytical data. The **Professional Development** component is designed to strengthen participants' professional knowledge and skills, promote the development of a science identity, and help clarify educational and career plans through participation in a professional meeting. Project directors and participants travel together to a regional or national conference, present their findings as appropriate, and participate in professional development opportunities at the meeting. Gateway participants report increased sense of belonging in STEM and interest in continuing on in STEM careers as a result of their experiences at a professional conference.

Important Changes to Keck REU Proposals and Projects

New policies and budgeting at NSF require us to implement a few new changes to Keck projects and proposals during this next round (2027-31):

- *We encourage you to write your proposal as if you are constructing a web page outlining your project (see categories below) for prospective REU students. While you are encouraged to include some scientific motivation and details in your proposal, keep in mind that faculty reviewing your proposal are from a broad range of earth sciences disciplines and details that you would expect to include in an NSF proposal (for example) are not needed here.*
- *As part of our NSF proposal, Kelly and Karl will be developing some new 'professional development' interventions for student participants (see table below). Note that as a Project Director you are NOT responsible for all of these activities (!!!), but as you write your proposal please consider how you might incorporate some of the research ("R") and professional development (PD) activities into your project.*
- *Budget requests as part of your proposal should follow the categories listed in the framework for funding document; the amount requested in each category is less important than the total amount requested, which should be as close to \$10,000 per student participant as possible (e.g., \$110,000 for a 10-student + near-peer mentor project).*
- *All projects need to have a plan for Data Management and Sharing that includes how data will be stored, secured, accessed, and shared (see [NSF](#) for guidance). This does not need to be an exhaustive section of the proposal, but you should indicate that you have thought about it and that you have a plan. We have taken a look at the [Open Science Framework](#) (OSF) and it seems to be a reasonable solution. Details of the plan will be made public as part of your online Short Contribution at the end of the project.*
- *Before the start of a project, Directors must complete an online form for a Plan for Safe and Inclusive Work Environments; you should note in your proposal that you are aware of the need to have a plan to ensure a safe and inclusive work environment during all phases of your project. Note that this is a project-specific plan (not Consortium-wide).*

III. Proposal Format and Content Checklist

- **Project Title:**
- **Project Directors:** name, institution, email for each
- **Tentative Project Dates**
- **Number of Students (and near-peer mentor if applicable)**

- **Total Budget Request**
- **Project Description:** brief introduction of project goals, significance, and geology
- **Student Learning Outcomes:** (including scientific, professional, and personal)
- **Potential student projects** (e.g. scientific questions and number of students on each)
- **Project Logistics:** number of students, approximate project dates and location(s) for fieldwork, lab work, and conference travel, safety issues, expectations for students (e.g. remote camping, food flexibility, gear, physical ability). Please give a brief description of the faculty (and/or other mentors and staff) committed to or interested in working on the project and areas of expertise.
- **Analytical Component:** Please include a statement of the type(s) of data you plan to collect, location and why it's important to the project.
- **Professional Development Component:** Please include a statement of the meeting that you plan to attend, its relevance to the project goals and student professional development, and the planned project activities at the meeting. The recent NSF proposal included additional pre- and post-project mentoring opportunities, many of which will be developed and available through the Keck Program Directors. However, please consider activities that you may already do or plan to that could support your cohort (e.g., Zoom conversations about conference attendance strategies, meeting up with REU alumni, help translating the research experience into a resume as they apply for an internship) and note those in your proposal.
- **Budget:** Use the guidelines below (Table 1) and the [Keck Project Budget Worksheet & Form](#), keeping an eye on the total dollar amount for the project size you propose. The participant support costs (travel to site, travel at site, room and board) may be reallocated among other participant costs as long as the final budget does not change from the maximum amount indicated. If you have matching funds available for projects that are more expensive than the budget limit, please indicate the source and use of those funds. Important to note: please try to fit your expenses into the pre-set categories, even if the costs aren't exactly aligned. You can use a budget explanation to describe how expenditures will be made.
- **Data Management and Sharing:** see [NSF requirements](#) for guidance on what (and how) your data must be shared. You should make it clear in your proposal that you understand the expectations and have a plan for how information will be made available. This will be part of your post-project *Short Contribution*, published on the Keck website.

Important Proposal Preparation Tip -- All successful project proposals will be converted into a web page for recruiting students in Nov/Dec. Since proposals are vetted by Keck Representatives and not external reviewers, ideally you will write your proposal as an applicant-friendly web page (with some sections - like budgeting - that will be edited/removed before being uploaded). This will save you time in November/December! See recent project web pages as examples: <https://keckgeology.org/2024/11/wisconsingateway2025/> and <https://keckgeology.org/2024/11/connecticutgateway2025/>

IV. Submitting a Proposal

Proposals are accepted at any time, however, we are especially interested in receiving proposals by October 10, before the annual GSA meeting (where proposals are discussed by

the Keck Representatives). Typical proposals are five to seven pages in length, including figures, tables, and references. Please attach a pdf of the budget (generated from the form linked above) to the end of the proposal narrative.

Please submit your proposal (PDF) to Kelly MacGregor (macgregor@macalester.edu) AND Karl Wirth (wirth@macalester.edu).

Program Activities & Events (current / planned)		WINTER			SPRING		SUMMER			FALL			WINTER		
		Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb
Pre-Project Programming	Keck REU Introduction Video	PO	PO												
	Application Q & A		PO												
	Application deadline via ETAP		PO												
	Selection completed & participants notified			PO											
	Participant Guide & Researcher Handbook			PD	PD										
	Director welcome letter				PD										
	Pre-Program Surveys				A										
	LinkedIn profile				PD	PD									
	Participant Learning, Health & Insurance				PD	PD									
	Meet w/ Project Director and NPM				R	R									
	Travel & gear planning				R	R									
	Responsible Conduct of Research (RCR)				PD	PD									
	Researcher Handbook Q & A				PD	PD	PD								
	Reading Like a Scientist Activity					R/PD	R/PD								
	REU Alumni Reflection Videos					PD	PD								
	Director & Near-Peer Mentor Workshop					PD	PD								
Research Projects	Identity activity					PD	PD								
	Ethics, harassment, and bias training					PD	PD	PD							
	Project background, methods & field safety					PD	PD	PD							
	Student-Faculty Research Projects					R/PD	R/PD	R/PD							
	Writing Abstracts & Blog Posts						R/PD	R/PD							
	Reflections on growth (for next year students)						PD	PD							
	Poster/Talk preparation						R/PD	R/PD							
Post-Project Programming	Post-Project assessment							A		A	A				
	Campus Mentor conversations									PD	PD				
	Conference FAQ sent to participants									PD	PD				
	Conference Q & A									PD	PD	PD			
	Conference Presentation										R/PD	R/PD	R/PD		
	REU Alumni Panel Discussion										PD	PD	PD		
	Post-Conference Reflection											A	A		
	Research to Resume													PD	PD
	Alumni Panel & Videos: Careers													PD	PD
	Next Steps Q & A													PD	PD
	Post-Program Surveys													A	A
	Alumni survey														A

Timeline activities and events as experienced by participants during the Pre-Project, Summer Project, and Post-Project phases of Gateway REU. New programming shown in gray italics.