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BOARD ON EARTH SCIENCES AND RESOURCES

**Service-Learning in Undergraduate Geosciences: A Public Workshop**

The National Academies of Sciences, Engineering, and Medicine will be convening a workshop on Service-Learning in the Undergraduate Geosciences in the winter of 2016. For the purposes of this project we are thinking of service learning as an instructional approach that combines community service and academic instruction with a focus on critical, reflective thinking and civic responsibility. A service-learning curriculum in the geosciences can engage students in projects within their community. For example, students might conduct a greenhouse gas emissions inventory for the college campus where they analyze the data and make presentations to the college or university community; investigate contaminant transport in a local watershed and identify potential risks to the local population; or examine the impact of geologic hazards on the human population and design appropriate responses ([seeserc.carleton.edu/introgeo/service/examples.html](http://seeserc.carleton.edu/introgeo/service/examples.html) for more examples). While service learning is emerging as one way to give undergraduate students hands-on opportunities, there have been few systematic efforts to examine how service-learning is being used in the geosciences and whether it has a positive impact on students. In addition, it is unclear how well research on service learning programs in other disciplines has been leveraged to inform the design of geoscience service learning programs.

The workshop will consider the following questions:

- 1) How does the geosciences community define and implement service learning? What types of service learning activities are currently being implemented within the geosciences community? How is service learning being used in other science disciplines?
- 2) What are the learning goals of service-learning experiences and what student outcomes are measured? How consistent are the goals and outcomes across programs? What is the evidence that these goals and outcomes are being achieved?
- 3) What is known about best or effective-practices in geoscience service learning programming (e.g., identify design principles, describe what students benefit the most, and explore the influence of handbooks and toolkits)?
- 4) Is there evidence that these types of experiences lead to increased engagement/attainment in geoscience? Is there evidence about the impact on attracting underrepresented minority students to the geosciences? Do we know at what point in a student's educational path these kinds of experiences have the most impact?
- 5) How does service learning fit within the preparation of future geoscientists? Would such an activity be perceived positively by future employers?
- 6) What are the challenges/obstacles to implementing these programs and expanding access to successful programs/approaches to programming?
- 7) What key research questions need to be addressed to better understand the potential contribution of service learning in the geosciences?