

ED53B-07 Impacts of a Geoscience Research Experience for Undergraduates Program on Broadening Participation in Scientific Research and Increasing Retention in STEM.



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N426c (North, Level 4, McCormick Place)

Abstract

Recent reviews of science, technology, engineering, and mathematics (STEM) education conclude that engagement of undergraduate students in research generally broadens future participation in research and increased retention in STEM. Towards the goal of investing in a sustained and diverse atmospheric science research community, the Center for Climate and Aerosol Research (CCAR) at Portland State University (PSU) introduced a Research Experience for Undergraduates (REU) program in 2014 with the objective of providing atmospheric science summer research experiences to promising students in STEM disciplines from rural Northwest and Native American communities who would be unlikely to be otherwise exposed to such opportunities at their home institution. The PSU CCAR REU site is focused on student research in areas of atmospheric chemistry, physics, air quality, meteorology and climate change. For 10 weeks, students conduct research with an expert faculty mentor and participate in activities including: short courses, laboratory trainings, faculty research seminars, and hands-on group workshops; academic professional and career development workshops; journal club activities; opportunities for travel for student presentations at scientific conferences; and social activities. The program ends with a paper based on their summer research, which is presented via poster and oral presentations during our concluding CCAR symposium.

Evaluation data from seven cohorts (2014-2021) of the CCAR REU (N = 70) was used to explore how science identity had changed over the course of the program,

as well as what predicted positive increases in science identity. Change was assessed using paired-sample t-tests. To explore the predictors of change, we ran an exploratory stepwise regression where the difference score in science identity items from pre- to post-program was predicted by similar changes in knowledge, intrinsic motivation, extrinsic motivation, and career aspirations, demographic characteristics (e.g., age, gender), and mid-program satisfaction and met expectations. In this presentation, we present these findings along with supportive qualitative analyses and discuss their implications for undergraduate research programs in geoscience fields.

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