



## **Student and Community Engagement in Earth, Space, and Environmental Sciences Through Experiential Learning and Citizen Science as Part of Research Broader Impact**

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Fulfilling the broader impact of a research project in Earth and environmental sciences is an excellent opportunity for educational and outreach activities that connect scientists and society and enhance students and community engagement in STEM fields in general and in Earth, space, and environmental sciences in particular. Here we present the experience developed in this endeavor as part of our Partnerships for Enhanced Engagement in Research (PEER) project sponsored by USAID/NSF/NAS. The project introduced educational and outreach activities that included core curriculum course development for university students from all majors, community-based learning projects, citizen science and outreach programs to school students and community members. Through these activities, students worked with the project scientists on a variety of activities that ranged from citizen science and undergraduate research to run mass experiments that measure the quality of air, drinking water, and ultraviolet level in greater Cairo, Egypt, to community awareness campaigns through the production of short documentaries and communicating them with stakeholders and target groups, including schools and TV stations. The activities enhanced students learning and the public awareness on climate change and the underlying role of human activities. It also connected effectively the project scientists with college and university students as well as the wider segments of the society, which resulted in a host of benefits including better scientific literacy and appreciation to the role of scientists, promoting scientists as role models, sharing the values of science, and motivating future generations to pursue a career in science.

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Project Link (at National Academies website): [http://sites.nationalacademies.org/PGA/dsc/peerscience/PGA\\_084046.htm](http://sites.nationalacademies.org/PGA/dsc/peerscience/PGA_084046.htm)  
website: <http://CleanAirEgypt.org>

Links to cited work:

Core Curriculum Course: <http://bit.ly/FutureLife>

Citizen Science Project: Quality of Air, Drinking Water, and U.V. Level in Greater Cairo:

Map 1: <http://bit.ly/AirWaterLightMap1>

Map 2: <http://bit.ly/AirWaterLightMap2>

Short Documentaries

Student Projects: <https://vimeo.com/science2society/videos>

Project video: <https://vimeo.com/100427525>