Practical Applications of a Participatory Science Project Evaluation Tool:

Perspectives from Across Earth and Space Science

Supplemental File 2: Project Background Information

Table 1: Project information.

Project	Science Focus	Volunteer Activities	Est. Date	Evaluation type
Aurorasaurus aurorasaurus.org	Global aurora science, space weather	Gathering and reporting citizen science data, verifying data, science communication, research	2014	Internal evaluation data collected by Project Manager (non-professional evaluator) and Principal Investigatory (discipline scientist)
NESEC/ GLOBE Observer (GO) observer.globe.gov	Earth science, biology, geophysics, environment	Observational data gathering with multiple citizen science protocols	GLOBE 1995, GO 2016	External evaluation by NESEC professional evaluation team working closely with members of GLOBE teams
Smithsonian Environmental	22 projects ranging	Varies by project, includes data	2014	Evaluation by hosting organization SERC, led by a

Research Center (SERC) serc.si.edu	across geophysics, biology, environment	gathering, data analysis, and sample processing		scientist with non-professional evaluator Citizen Science Program staff, working closely with project teams

Project Summaries

Aurorasaurus is an award-winning 2nd generation citizen science project that uses crowdsourced and citizen science data to create the first real-time, global aurora map (MacDonald et al. 2015). In addition to discoveries, including publishing the first scientific paper on the subauroral phenomenon STEVE (Strong Thermal Emission Velocity Enhancement), Aurorasaurus conducts outreach and education across the globe, often through partnerships with local groups of enthusiasts (MacDonald et al. 2018).

NESEC includes aspects of the Global Learning and Observation to Benefit the Environment (GLOBE) program and the corresponding citizen science mobile application, GLOBE Observer (GO). The GO is a tool that allows volunteers, called "observers," to make earth science observations such as clouds, mosquito habitat, land cover, or tree height. Via data challenges and the efforts of over 175,000 observers worldwide, GLOBE amasses thousands of data points daily through GO. Observational data gathered from each protocol are then used by researchers and students to

ground-truth remotely-sensed data, monitor large-scale environmental changes, and research local community environmental issues. Participation in the GLOBE program and use of the GLOBE Observer (GO) mobile app are promoted by data collection challenges (such as seasonal cloud challenges and the 2017 eclipse event), social media advertising campaigns, and partnerships with organizations like the National Park Service, Girl Scouts, and the American Camps Association.

The Smithsonian Environmental Research Center (SERC), located in Anne Arundel County, Maryland, is a research unit of the Smithsonian Institution with a focus on environmental science research in coastal and nearshore ecosystems. SERC has 17 research labs, whose foci range from environmental archaeology to watershed flow dynamics to fisheries conservation. The SERC Citizen Science Program began in 2014 to support citizen science efforts across all labs. SERC currently runs 22 citizen science projects. Most are place-based and occur on the SERC campus or at nearby field sites, but there is also an online project, as well as a project based in Washington, DC, middle schools. The SERC Citizen Science Program engages over 3,000 volunteers each year, who contribute over 18,000 hours in effort to research projects.