

CITIZEN SCIENCE AIR MONITORING IN PUERTO RICO

Background

Growing numbers of communities and individuals are becoming more interested in collecting environmental data. The recent availability of new, lower-cost air monitoring devices is making it possible.

Many of these motivated citizen scientists, however, lack the resources necessary to identify and obtain suitable monitoring instruments, and the technical training to use them. Despite the availability of new, lower-cost air sensor technology, these limitations can thwart community-initiated environmental monitoring, and may produce data that is less than adequate for its intended purpose.

The Tallaboa/Encarnación community in Peñuelas, Puerto Rico is committed to improving air quality for the thousands of residents who suffer from the cumulative impacts of multiple pollution sources. Until now, this community has lacked the capacity to collect its own environmental data, relying instead on partnerships with local agencies and academic institutions to investigate the impact of local pollution sources.

A local community action group will work with the local citizens, collecting air quality data using EPA-loaned sensors, validating



The Tallaboa/Encarnación community in Peñuelas, Puerto Rico was selected for this project and has an interest in collecting environmental data to support environmental awareness.

collected data and summarizing environmental findings.

Approach

[EPA's Air Sensor Toolbox for Citizen Scientists](#) provides communities with the components needed to initiate and support a community-based, participatory environmental monitoring study.

EPA will provide:

- Several stationary air sensor monitors, built by EPA researchers for community volunteers, that will collect data on two common air pollutants: total volatile organic compounds (tVOC) and fine particle pollution (PM_{2.5});
- A day-long training on sensor design, use, and safety;

- Detailed guidance on instrument siting and operation;
- Software for data recovery, processing, visualization and interpretation, and;
- A template and guidance manual for developing a quality assurance plan to ensure that the data collected are meaningful and appropriate for their intended use.

Anticipated Results

EPA supports citizen participation in projects that promote environmental education, awareness, and stewardship and that incorporate advanced sensor technologies to provide better data on pollution in their neighborhoods.

The Tallaboa/Encarnación community and EPA will benefit from this collaborative

project. Tallaboa/Encarnación residents will be able to investigate pollutants of concern and learn about pollution sources. The project is also expected to increase community awareness about air quality issues and provide scientific information to help advocate for improved air quality.

The effort will further EPA's goal of building community capacity for environmental monitoring through the development of citizen science tools. These tools can then be shared with communities that have similar air quality concerns. The project will also serve as a model for other communities across the country to learn about using next generation air monitoring equipment and conducting citizen science projects.

After the tools are deployed within the Tallaboa/Encarnación community, EPA's Region 2 Office in New York, which serves Puerto Rico, plans to use these monitors and other components of the Toolbox to expand its existing Citizen Science Equipment Loan Program in the region. By creating a central equipment repository, Region 2 will increase access to these advanced technologies and improve the ability to compare data collected by different communities.

Visit EPA's Air Sensor Toolbox for Citizen Scientists at <https://www.epa.gov/air-research/air-sensor-toolbox-citizen-scientists>.

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