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Mescalero Apache High School

Mescalero, NM

Mescalero Apache School Air Quality Warning System
NASA GLOBE
IVSS

Mescalero Apache School Air Quality Warning System

The Story

Concern is growing regarding air quality. We always get global information on the environment from our government but little on the average values of a city/area. It doesn't necessarily reflect the situation nearby accurately.

Currently here on Mescalero Apache Reservation, we use a lot of wood burning heaters to keep our houses warm throughout the year. There is no method use to monitor the air quality on the reservation. And this has a direct effect on our elder and people who has health issues that involved their airway.

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Plans

- I want to design a DIY-device that monitors the air quality condition in specific homes to keep track of indoor air quality.

- Placed 2 sensors (PurpleAir) around the community to detect air quality outside.

- These devices can detect the concentration of the following ingredients of air in the room/outdoor:

- Dust

- Coal gas

- Formal gas

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Sensor Monitoring Interface (Indoors)

PurpleAir PA-II (Outdoors)

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- Chronic obstructive pulmonary disease (COPD) is a preventable and treatable respiratory disorder largely caused by smoking. Air pollution is one of environmental issues that cannot be ignored. Inhaling pollutants for a long time causes the treatment of COPD patient lung is slow or to face damage. My project is to develop a instrument that focus on monitoring air quality, dust density (PM 2.5), temperature and humidity. The COPD is treatable disease; therefore, air quality is very important to me and my community. The main objective of this project is to create the air quality monitoring system that inform the community about the air quality and raise the awareness. This device will determine the exposure and assess the effects of bad quality air on COPD patient and other with chronic disease..

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PurpleAir sensors use an ESP8266 chip to talk to the particle counter and provide all functionality, including connecting to a WiFi network and uploading data to the cloud. This ESP8266 chip runs code developed using Arduino. PurpleAir firmware has remote update features, meaning I can modify the software and the Arduino air quality sensor device will download the new version and update itself. Each device checks for updates from time to time.

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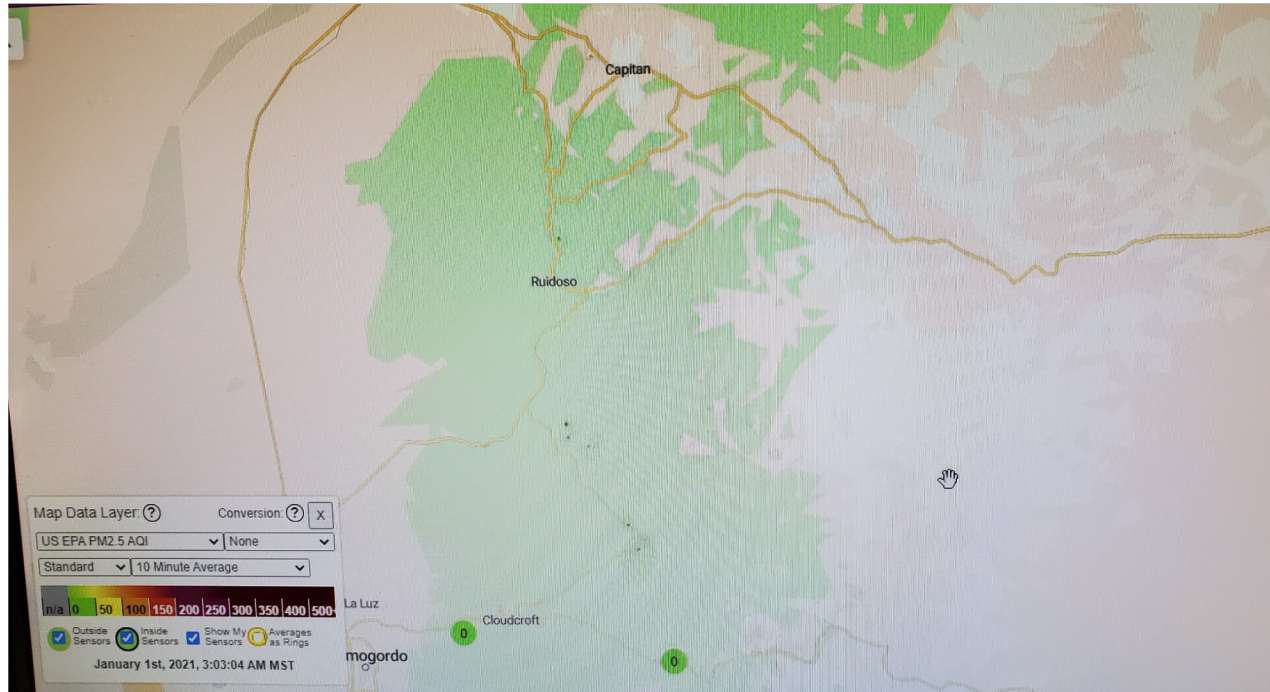
Map detailing located of PA II air sensors. And as you can see there isn't sensors
 located on the reservation.
The closes one is located in Roswell, NM 80-90 miles east of the reservation.