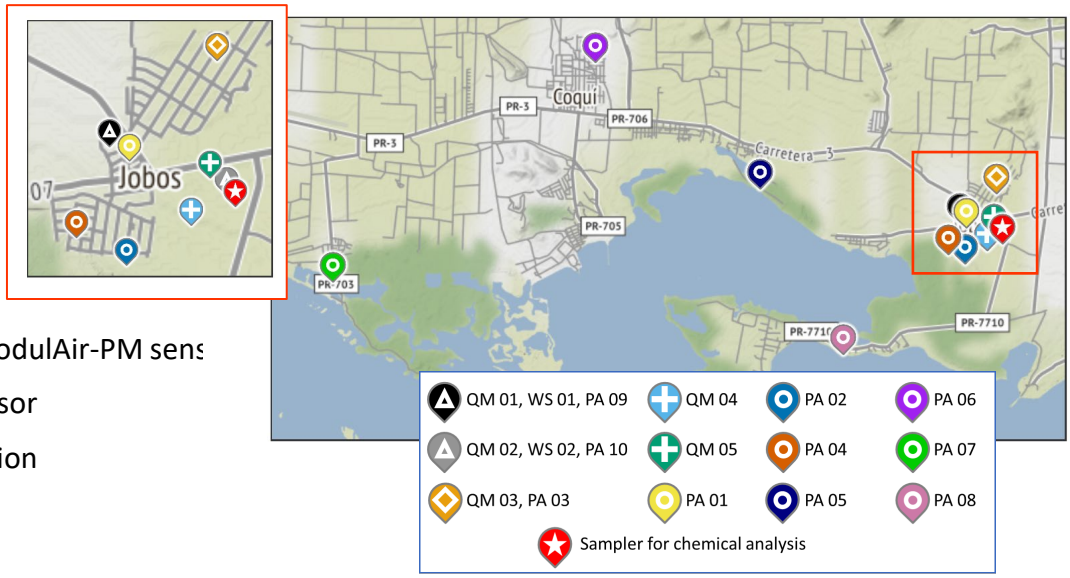
Particulate Matter Research Study in the Guayama and Salinas area of Puerto Rico: Research Project Updates for September, 2023

What is this study about and what does this summary include?

- Community members shared concerns with EPA about particulate matter (PM) in their community and whether the regulatory air monitoring site represents the community's exposure.
- With community member input and technical support from the Puerto Rico Department of Natural and Environmental Resources (DNER), EPA scientists installed 15 air sensors measuring $PM_{2.5}$ and PM_{10} and sited a sampler to collect air filters for laboratory analysis of PM_{10} chemical components. The combination of sensors, sample analysis, and weather data will provide information on PM occurrence in the area. For information about PM_{10} and $PM_{2.5}$, see: https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#PM
- After the field study concludes in the winter and laboratory analysis of samples is complete, a final summary will be developed by the study team. This monthly newsletter includes data available at the time of the summary. For the data shown here, initial quality checks have been conducted but the data are not final and further quality checks may occur.

Field Study Monitoring Sites

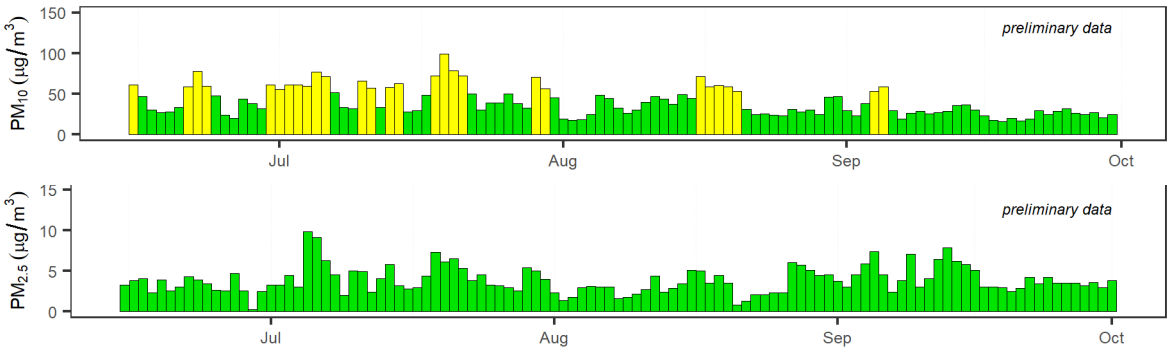


QM = QuantAQ ModulAir-PM sens

PA = PurpleAir sensor

WS = weather station

$PM_{2.5}$ and PM_{10} Daily Averages Across Sites – Full Study Timeline:



Air Quality Index (AQI) Categories

- Good
- Moderate
- Unhealthy for sensitive groups
- Unhealthy
- Very unhealthy
- Hazardous

Note: The daily averages above include data available at the time of the analysis from all PA sensors for $PM_{2.5}$ and all QM sensors for PM_{10}.

For questions about this research project, please reach out to EPA Region 2 contacts: Gavin Lau (lau.gavin@epa.gov) and Sarah Pender (pender.sarah@epa.gov)

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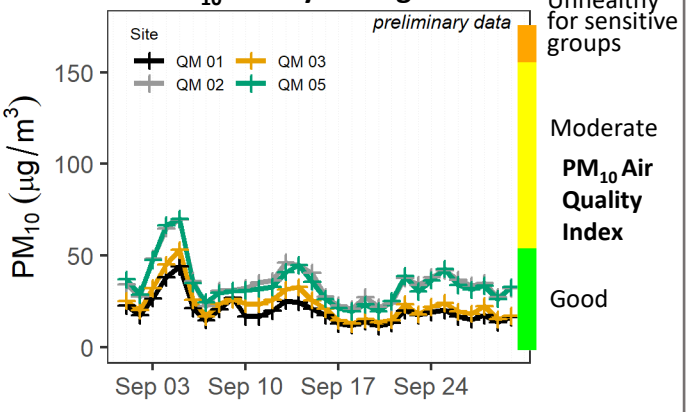
Field Study Updates:

- Field data collection continues, including daily PM_{10} filter sample collection at the sampler located at the school site.
- In September, the EPA research team visited the sites to download data and check on sensor function.
- The team added a secondary sensor to compare to the following sensors: PA06, PA02, QM02, and QM04. In addition, one sensor (PA03) that was malfunctioning was replaced with a new sensor (PA09).

Photo credit: Gavin Lau

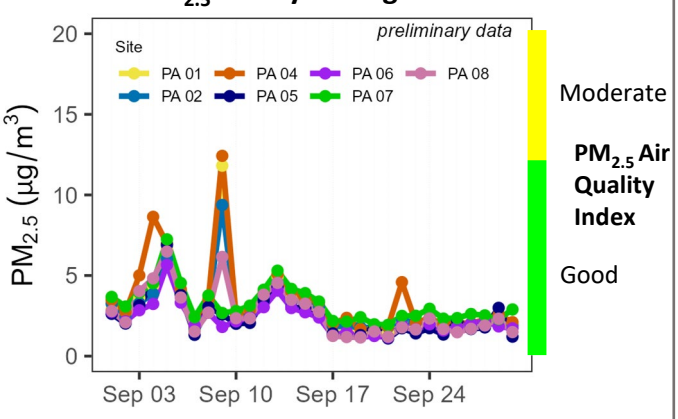
Summary of data from online sites for September, 2023

PM_{10} – daily averages



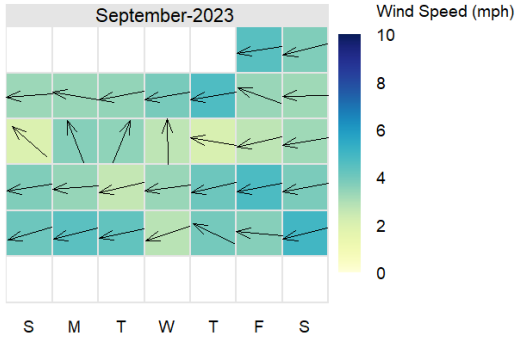
Interpreting the data: PM_{10} trends were similar throughout the community. Similar to last month, QM02 and QM05 locations reported higher values compared to other parts of the community. During September there were two days (Sep 5th and Sep 6th) when the air quality at one site was **Moderate**, due to elevated PM_{10}, but most days were **Good**.

$PM_{2.5}$ – daily averages



Interpreting the data: One site was **Moderate** on Sept 9th due to elevated $PM_{2.5}$, but most days were **Good** throughout the community.

Daily average wind speed (color) and wind direction (arrow)



Inter

light breeze from the east or south.

For more information about the Air Quality Index: Daily average plots of $PM_{2.5}$ and PM_{10} show the Air Quality Index (AQI) on the righthand side of the graphs above. Lower AQI values indicate cleaner air quality, while higher values correspond to poorer air quality. More information on the AQI is available at https://www.airnow.gov/aqi/aqi-basics/.