

- Introduction
- The Rio Grande Valley (RGV) of South Texas is a low-resourced, Hispanic/Latino majority region with a population of 1.37 million.
 - This region on the US-Mexico border is a major hub of sugarcane cultivation.
 - Sugarcane stubble burning leads to episodic events of high air pollution in the area.

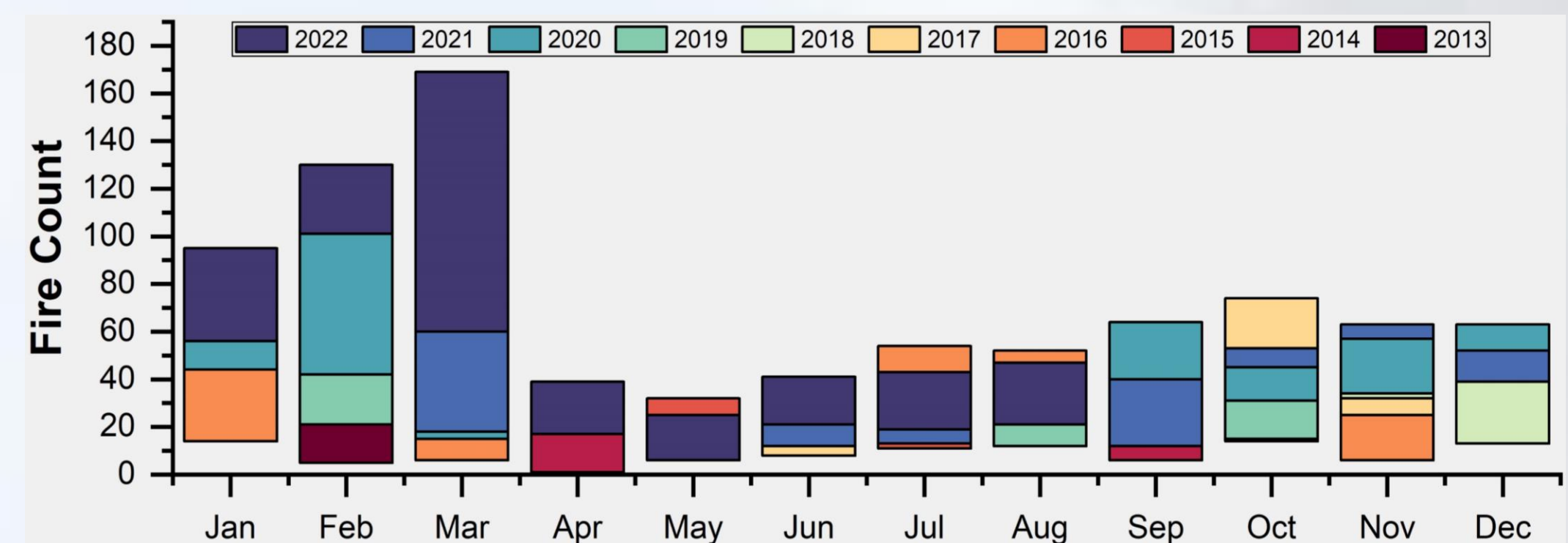


Fig 1. Fire Counts detected by VIIRS S-NPP in RGV

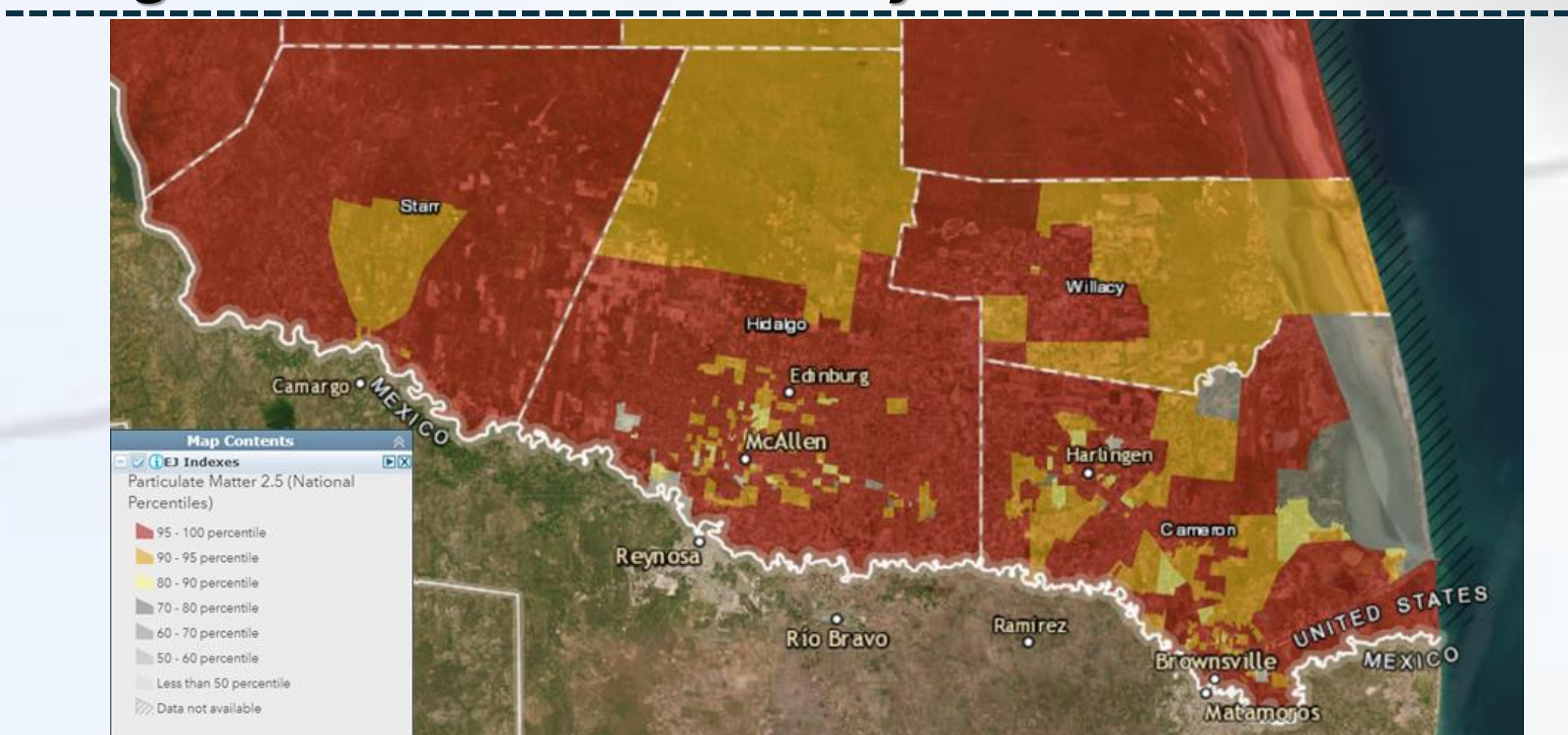


Fig 2. Environmental Justice (EJ) Index for PM_{2.5}

- Citizen Science Approach
- Deployment of 20 Purple Air sensors and 5 Aeroqual instruments from 09/01/23 – 04/15/2024.
 - Strategical placement to capture spatial and temporal trends of PM_{2.5}, NO₂ and O₃.

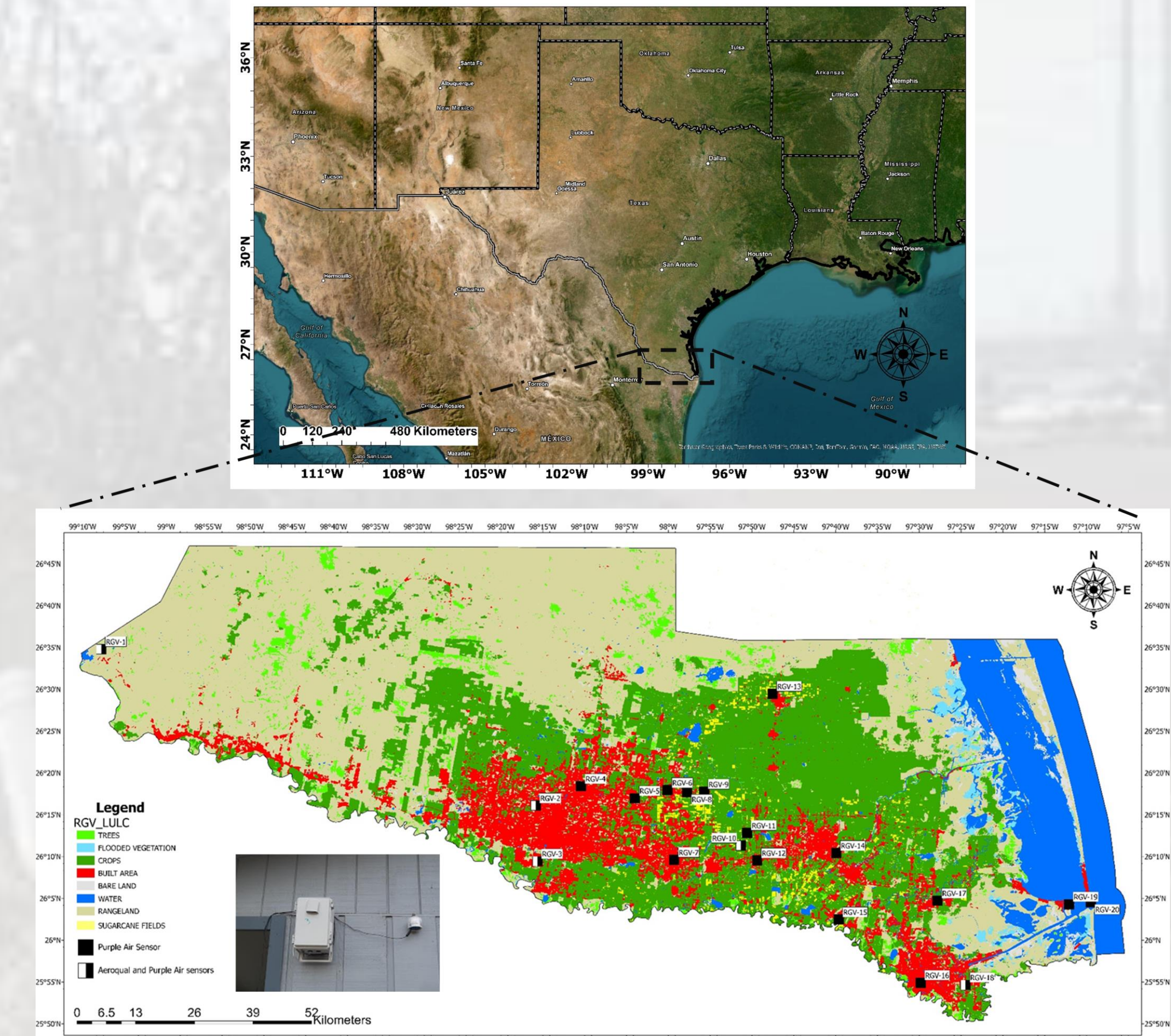


Fig 3. Map & pictures of deployed sensors

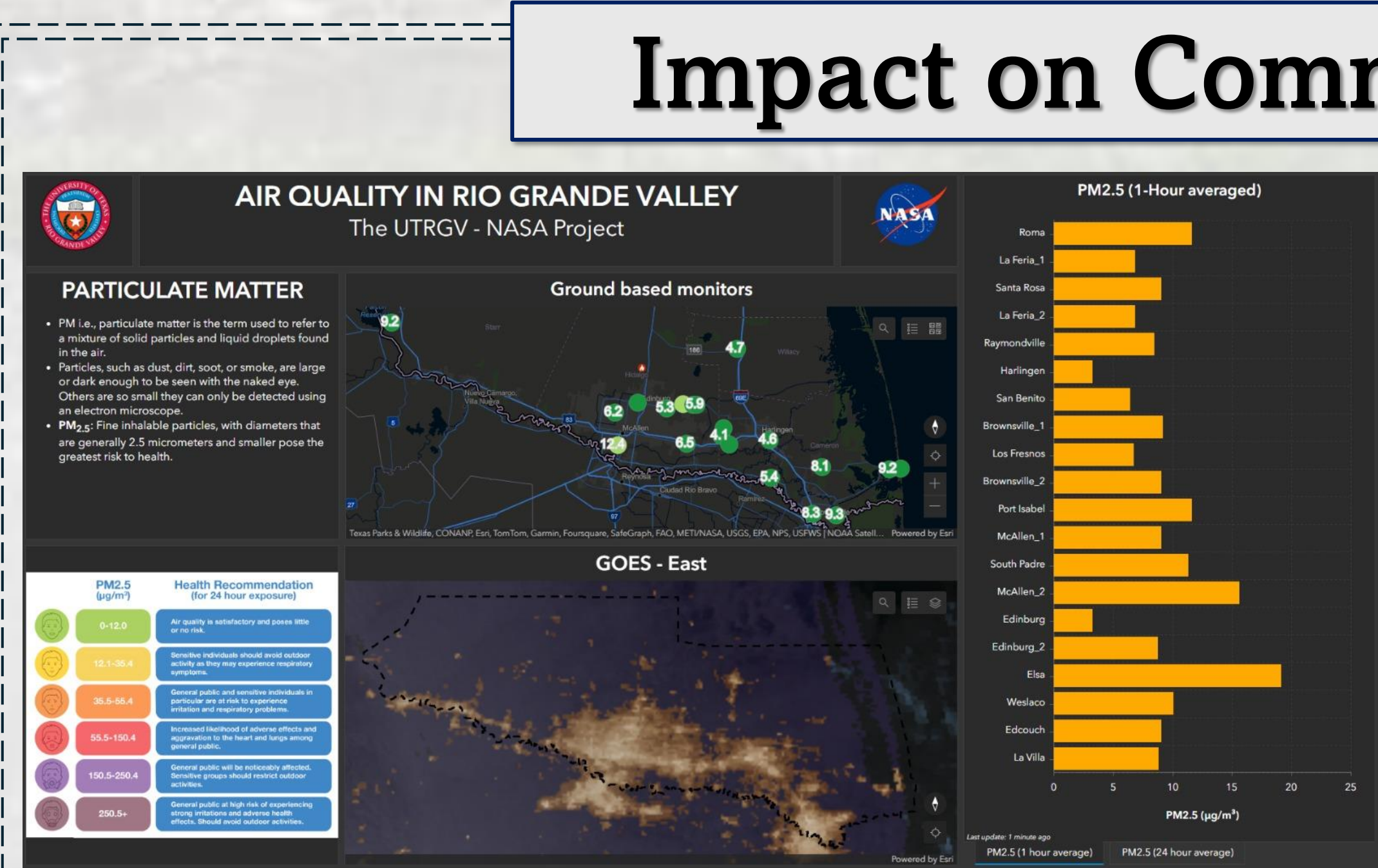
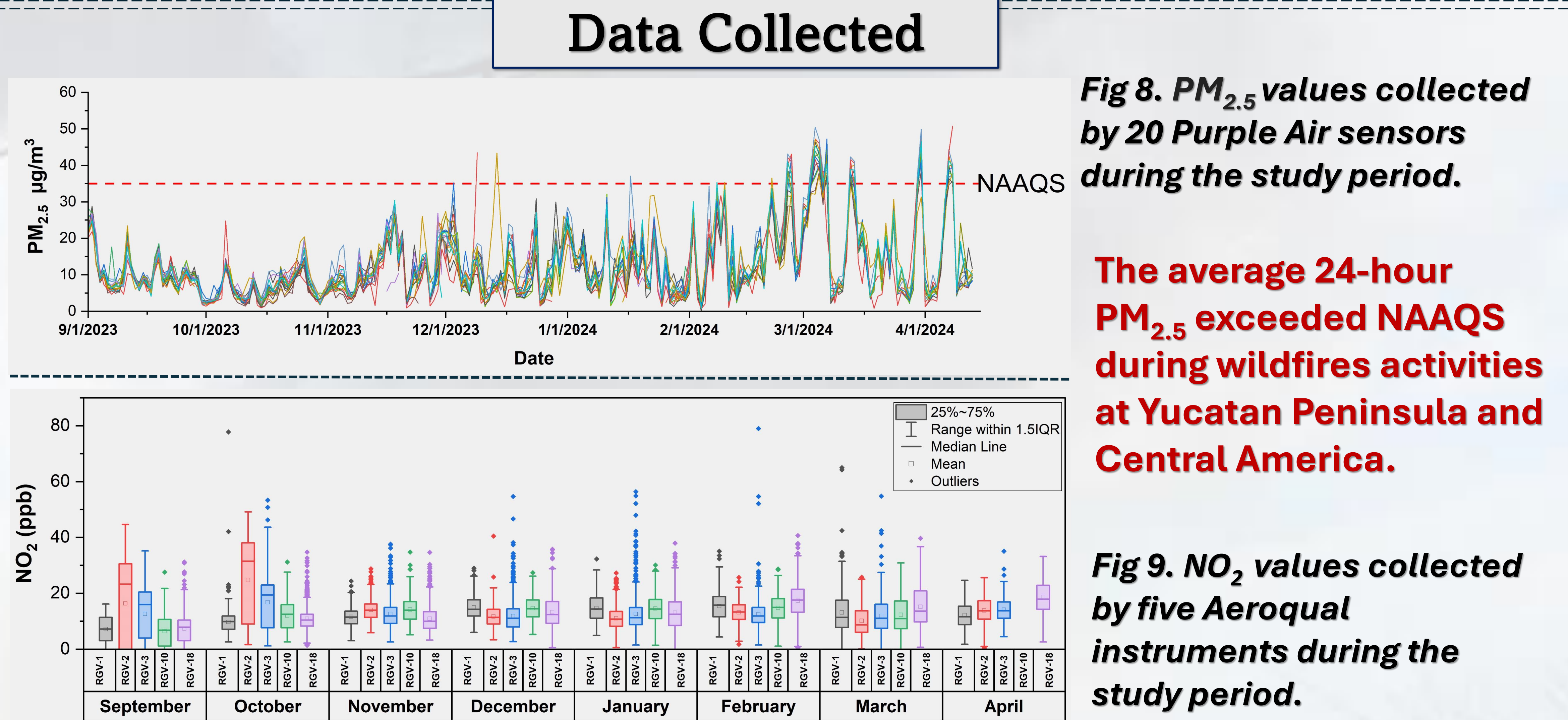
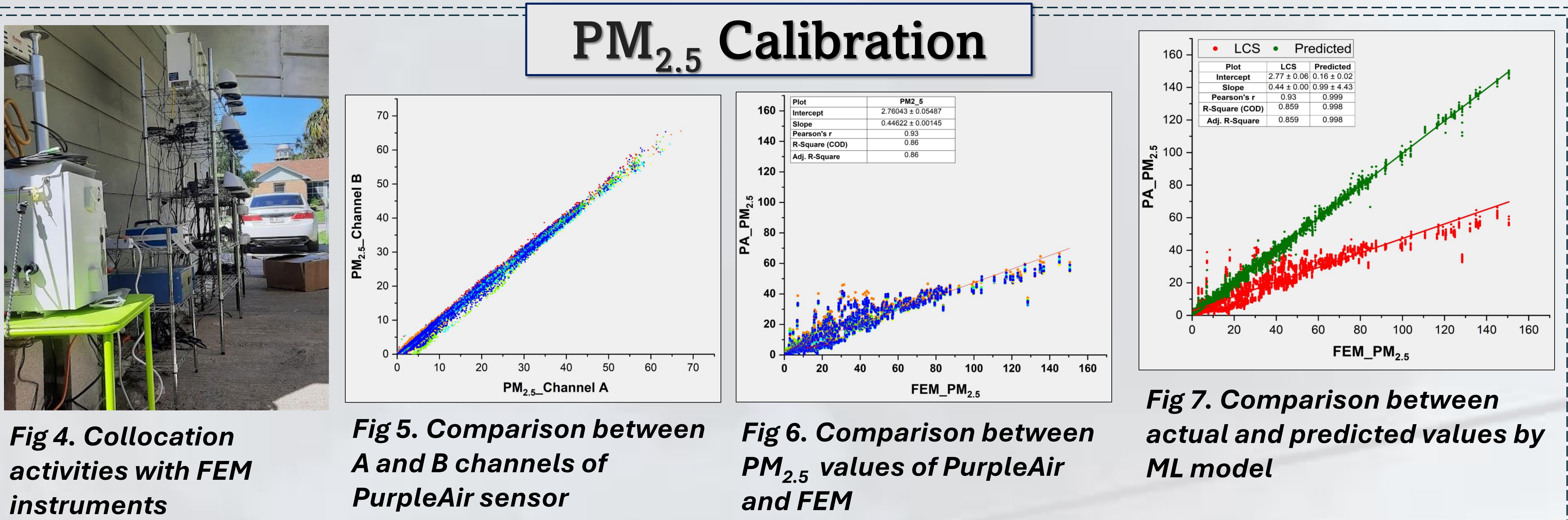


Fig 12. Desktop and mobile view of dashboard.



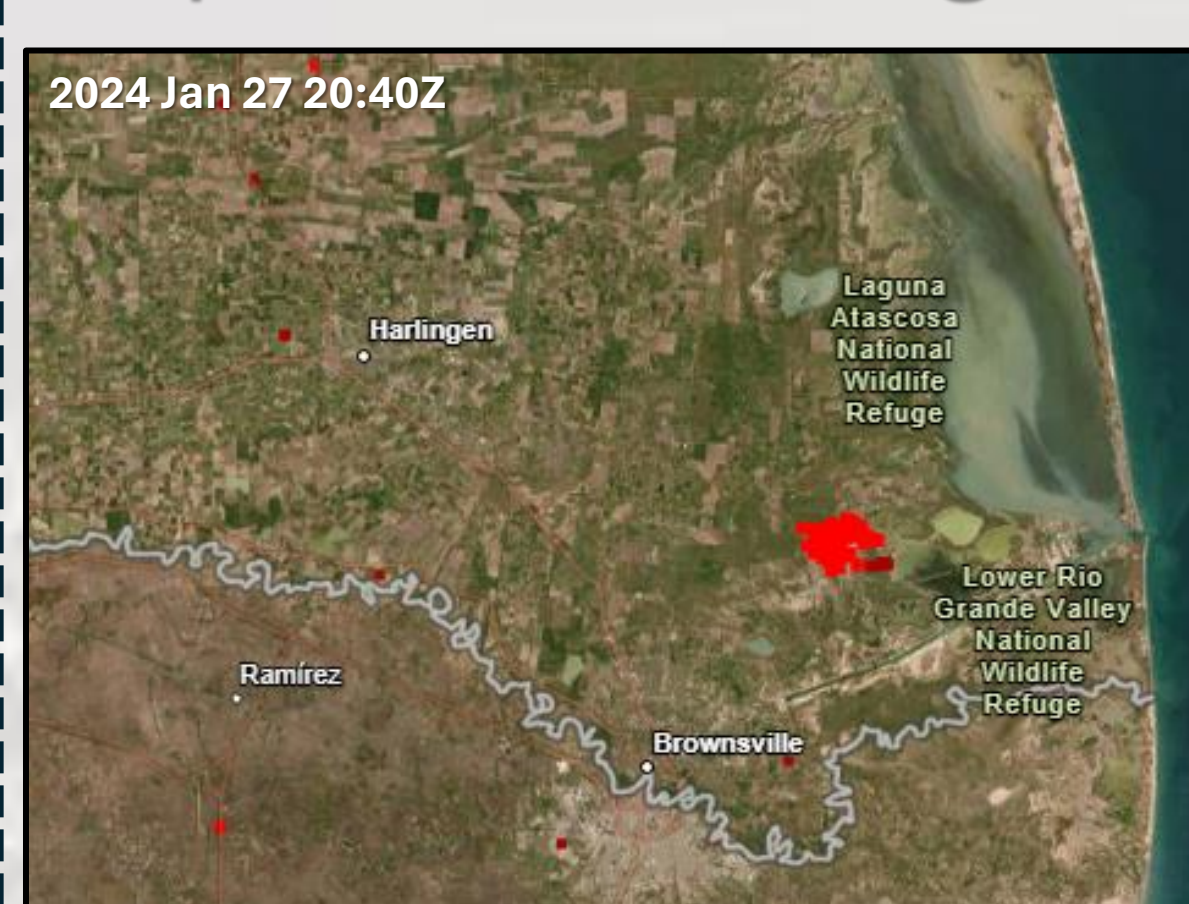
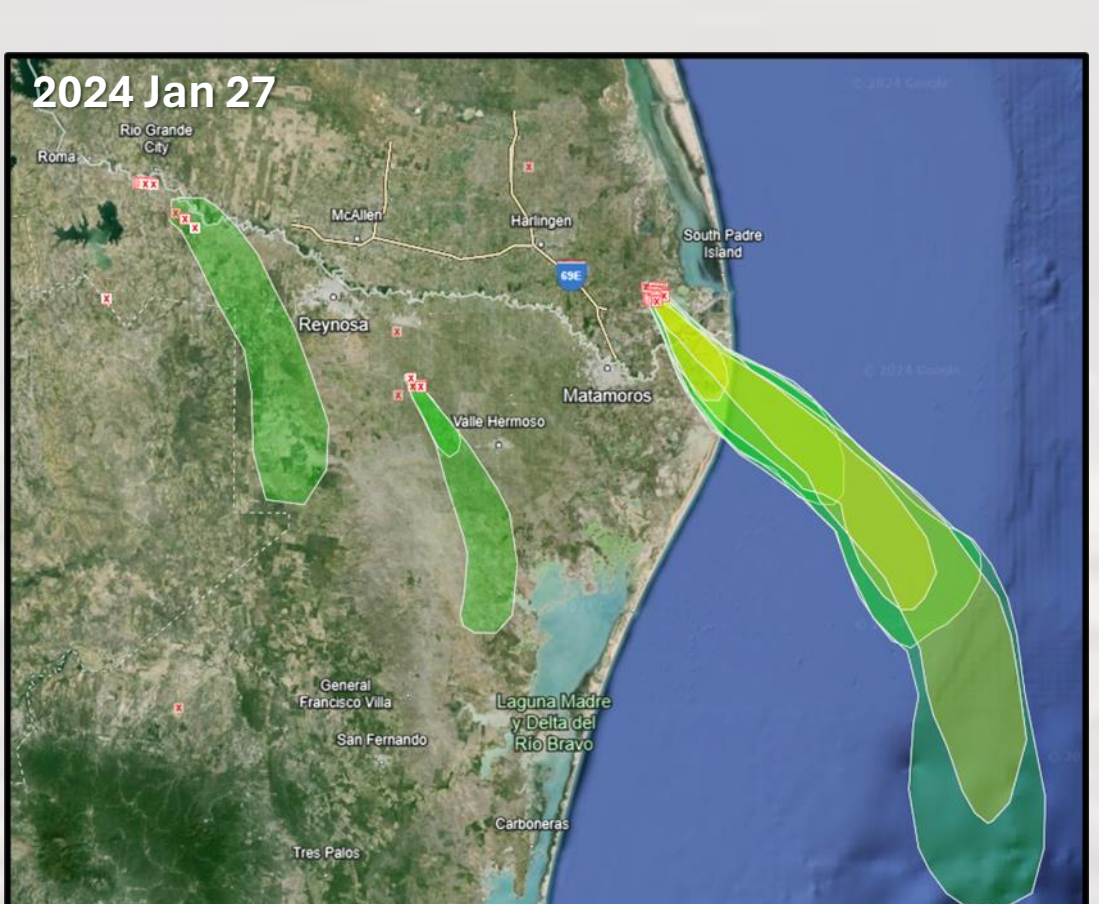
- Satellite Data
- Visible Infrared Imaging Radiometer Suite (VIIRS) and NOAA's Hazard Mapping system (HMS) were used to detect the fire and smoke plumes during the burning period in the region.
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- Fig 10. Fire activity in RGV detected by VIIRS

Fig 11. Smoke plume by NOAA's HMS
- Next Steps
- Integrate GOES and TEMPO data with ground-based monitoring data.
 - Collect data for an additional year (July 2024 – June 2025) to assess the air quality in the region without stubble burning as **sugarcane cultivation has come to an end in the region.**
 - Rio Grande Valley Sugar Growers, Inc. - **the last remaining sugar operation in TX**, shut down operation in March 2024 due to the **abrogation** of **1944 Water Treaty** by Mexico, and future uncertainty regarding water for irrigation purposes.

- Impact on Community
- Acknowledgements
- This project is being funded by the National Aeronautics and Space Administration (*Project # 21-EEJ21-0061*) under Research Opportunities in Space and Earth Science (ROSES-2021) - A.49: Equity and Environmental Justice.
 - The School of Earth, Environmental and Marine Sciences, for all their support to the UTRGV Air Quality Laboratory.
- Dashboards with the following data was made available to public:**

 - Ground based **Purple air data**
 - Real time imagery of GOES – East from NASA's **Global Imagery Browse Services (GIBS)**
 - NOAA's HMS Fire detection and smoke detection layers**, which are a blended product composed of fire detection data from GOES/ABI, the JPSS/VIIRS and EOS/MODIS.