

## AQRP Monthly Technical Report

<b>PROJECT TITLE</b>	Texarkana Intensive Campaign	<b>PROJECT #</b>	24-007
<b>PROJECT PARTICIPANTS</b>	University of Houston, Baylor University, Aerodyne Research	<b>DATE SUBMITTED</b>	07/10/2025
<b>REPORTING PERIOD</b>	<b>From:</b> 06/01/2025 <b>To:</b> 06/30/2025	<b>REPORT #</b>	11

A Financial Status Report (FSR) and Invoice will be submitted separately from each of the Project Participants reflecting charges for this Reporting Period. I understand that the FSR and Invoice are due to the AQRP by the 15<sup>th</sup> of the month following the reporting period shown above.

### Detailed Accomplishments by Task for reporting period

- Identified case days for more detailed analysis and communicated initial analysis strategies with the group.
- Began analyzing February 14 Mobile Air Quality Laboratory – 3 (MAQL3) data where the mobile labs made six passes in front of the Graphics Packaging International (GPI) paper mill to examine variability in the plume intersected.
- With the miniature Aerodyne Mobile Lab (minAML) mapped plumes are clearly depicted by elevated m/z 137 (pinene) signal for the entire campaign. Determined that on February 19, a pinene can be tracked from the source area immediately downwind of the Domtar Paper Mill in Ashdown, Arkansas, through a number of plume crossing transects to the area of the Texarkana CAMS1031 monitoring site.
- Bivariate Polar Plots and pollution rose plots were used to analyze and compare particulate matter data from the Texas Commission on Environmental Quality (TCEQ) monitor in Texarkana, Texas, and the MAQL3 measurements.
- Began analysis of MAQL3 and minAML stationary data from February 22, 27, 28, and March 1, when overnight particulate matter measurements showed the highest levels.
- Developed a template for the Draft Final Report.
- Began working on the Draft Final Report.

### Preliminary Analysis

- Data summary plots of University of Houston (UH) data were created. Figure 1 displays stacked timeseries of several measurements, averaged to 10 seconds for the entire field campaign. Similar plots were created for each day individually and added to the report appendix so that greater detail can be seen. These plots were used to identify periods of high background levels of pollutants.
- Figure 2 is an example of the daily driving route plots that were created. Spatial plots were used as an aid to examine pass-to-pass variability of plumes, plume dispersion, and

upwind and downwind comparisons as the mobile labs sampled around industrial facilities.

- Figure 3 depicts the route driven by the minAML colored by m/z 137 (pinene) concentrations on September 19. The MAQL3 also drove many parts of this route and comparisons of data are currently underway.

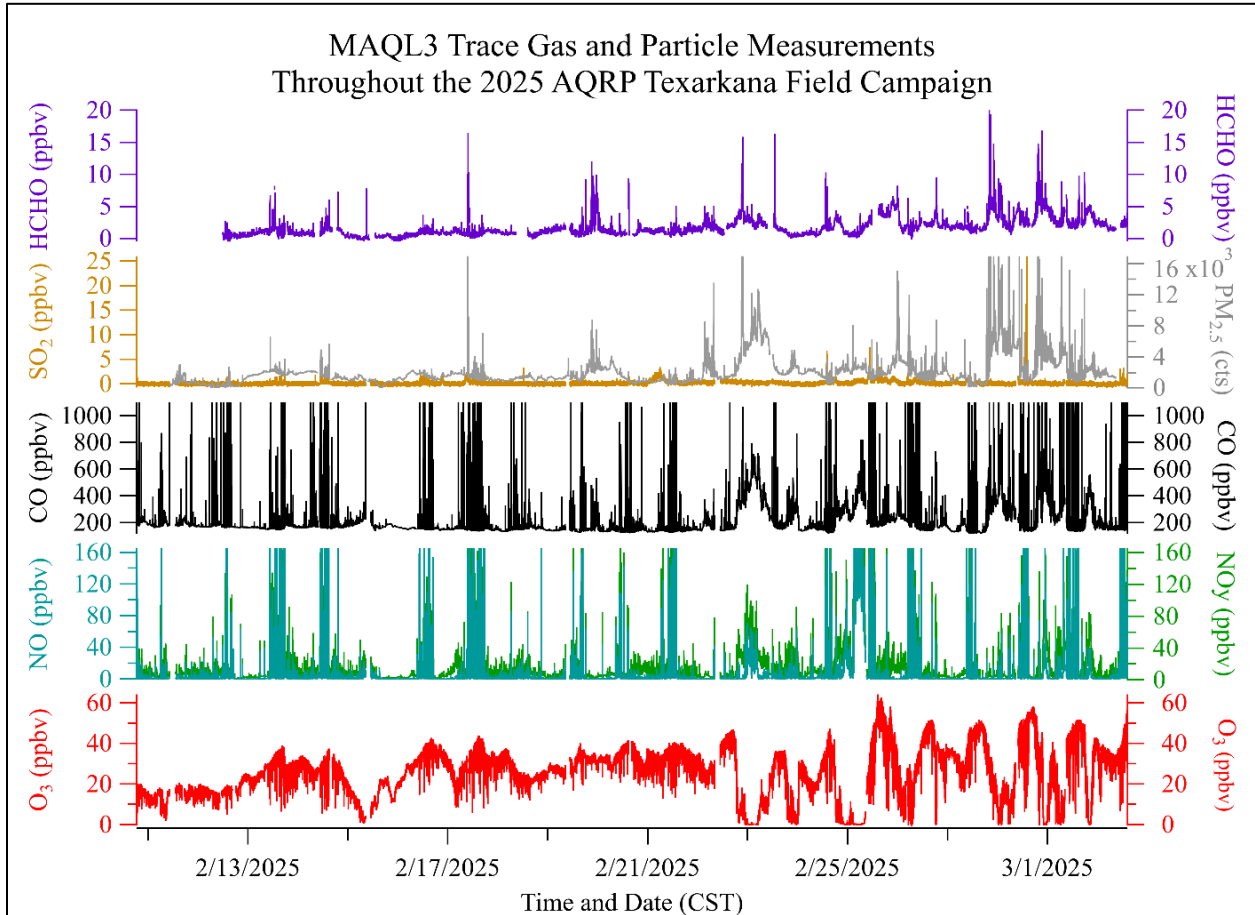


Figure 1 Data summary of several of the MAQL3 UH measurements made during the AQR Texarkana campaign. Ten-second averages for O<sub>3</sub>, NO, NO<sub>y</sub>, SO<sub>2</sub>, CO, HCHO, and the calculated PM<sub>2.5</sub> from the POPS instrument are plotted against Central Standard Time.

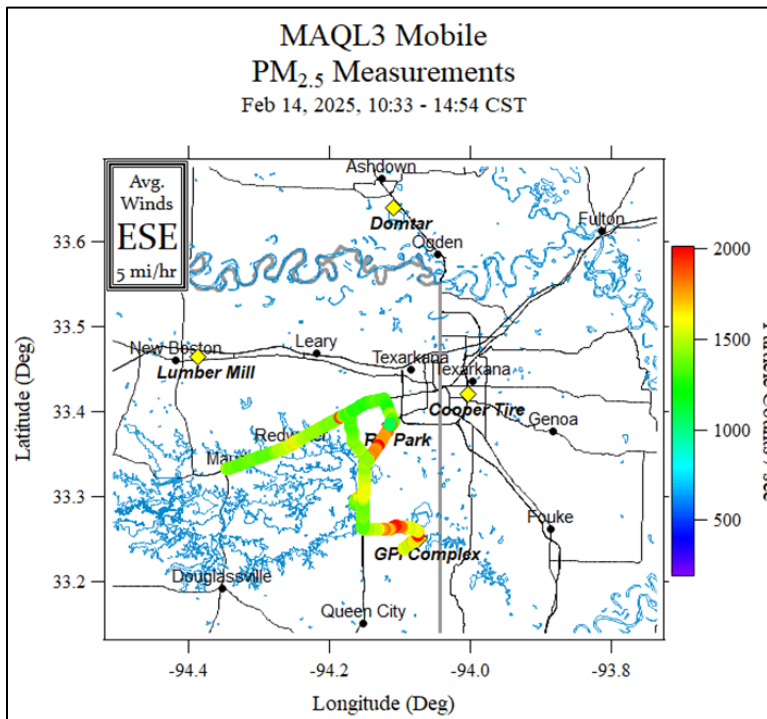


Figure 2 The UH mobile lab sampling route for February 14, 2025, colored by PM<sub>2.5</sub> particle count per second measured by the MAQL3 POPS instrument. Average wind conditions (upper left), as reported by CAMS 1031, were calculated for the mobile sampling period (top of graph). The most recent tracks overlay older ones.

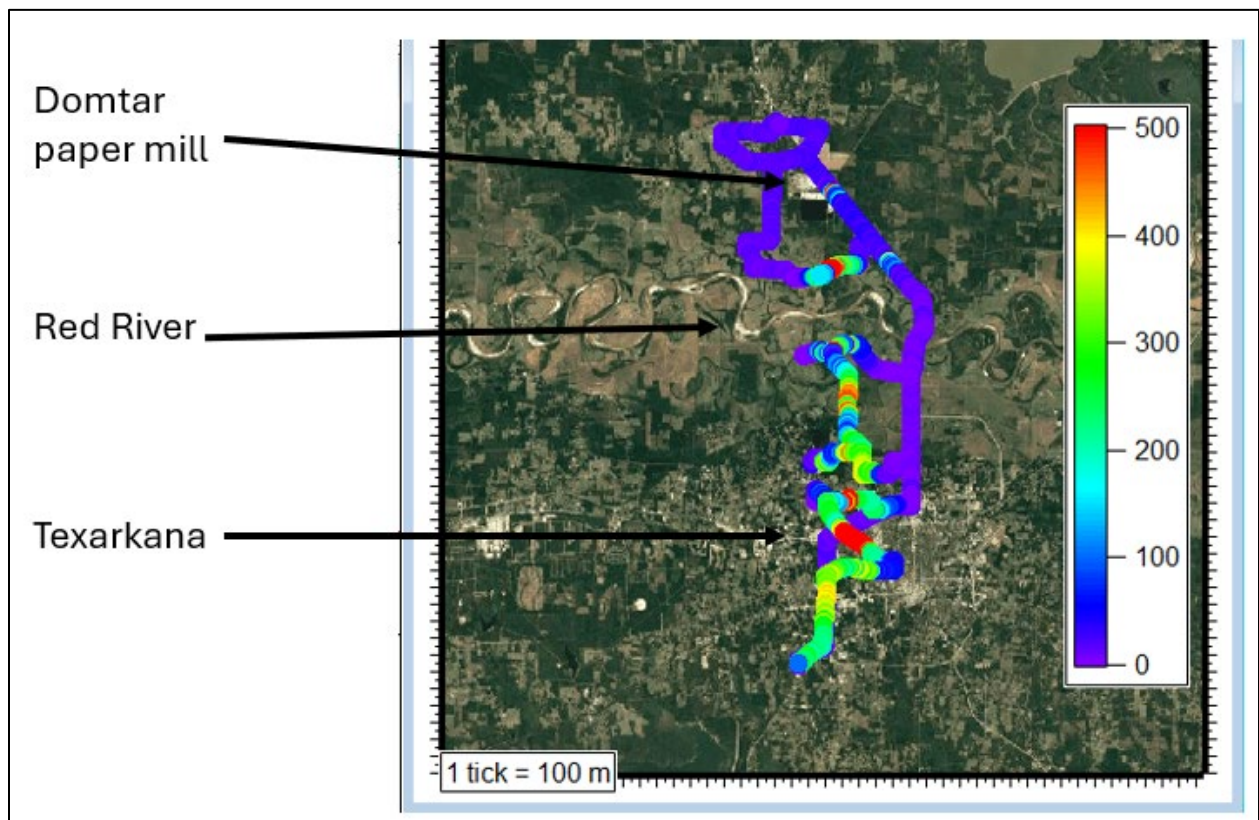


Figure 3. The minAML route on February 19 is depicted colored by ion counts of m/z 137 (pinene). The count scale is capped at 500 in order to more clearly depict plume boundaries. Winds were out of the North

### **Data Collected**

- Final trace gas and meteorological data was delivered to the field team on May 28, 2025, to begin analysis tasks.

### **Identify Any Problems or Issues Encountered and Proposed Solutions or Adjustments**

No major problems.

### **Goals and Anticipated Issues for the Succeeding Reporting Period**

- Complete analysis to identify the most likely sources of particulate matter pollution causing high readings at the TCEQ monitor.
- Complete integration of the traces from the different mobile laboratories to better facilitate comparisons.
- Complete the Draft Final Report.

### **Detailed Analysis of the Progress of the Task Order to Date**

None

**Do you have any publications related to this project currently under development? If so, please provide a working title, and the journals you plan to submit to.**

Yes       No

**Do you have any publications related to this project currently under review by a journal? If so, what is the working title and the journal name? Have you sent a copy of the article to your AQRP Project Manager and your TCEQ Liaison?**

Yes       No

**Do you have any bibliographic publications (ie: publications that cite the project) related to this project that have been published? If so, please list the reference information. List all items for the lifetime of the project.**

Yes       No

**Do you have any presentations related to this project currently under development? If so, please provide working title, and the conference you plan to present it (this does not include presentations for the AQRP Workshop).**

Yes       No

**Do you have any presentations related to this project that have been published? If so, please list reference information. List all items for the lifetime of the project.**

Yes       No

**Have any personnel changes occurred that were not listed in the original proposal? If so, please include a detailed description of the personnel change(s) below.**

Yes       No

**Are any delays expected in the progress of the research? If so, please include a detailed description of the potential delay below.**

Yes       No

**Describe any possible concerns/issues (technical or non-technical) that AQRP should be made aware of.**

N/A

**Are you anticipating using all the available funds allocated to this project by the end date? If not, why and approximately what is the amount to be returned?**

Yes       No

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Submitted to AQRP by  
James Flynn