

# AQRP Monthly Technical Report

<b>PROJECT TITLE</b>	<b>Hydrogen Cyanide for Improved Identification of Fire Plumes in the (BC)<sup>2</sup> Network</b>	<b>PROJECT #</b>	22-006
<b>PROJECT PARTICIPANTS</b>	<b>Dr. Tara I. Yacovitch, PI Dr. Rebecca Sheesley and Dr. Sascha Usenko, Co-PIs</b>	<b>DATE SUBMITTED</b>	5/10/2023
<b>REPORTING PERIOD</b>	<b>From:</b> 4/1/2023 <b>To:</b> 4/30/2023	<b>REPORT #</b>	9

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.

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## Detailed Accomplishments by Task for reporting period

The project team continues to hold update meetings on a weekly basis via telecon.

On April 6<sup>th</sup>, the HCN TILDAS was integrated into the (BC)<sup>2</sup> network trailer located at Mechem International Airport. After several days of thermal equilibration, the instrument exhibited similar noise to laboratory testing back at Aerodyne (< 70 ppt in 1 s). On April 14<sup>th</sup>, gas cylinders were delivered to enable regular background zeroing procedures. A calibration was performed on April 22<sup>nd</sup> by Aerodyne personnel using a standard previously used for calibrations at Baylor in November 2022.

On April 10<sup>th</sup>, the Aerodyne Mobile Laboratory (AML) arrived at Mechem International Airport to conduct measurements as part of a concurrent field campaign (AQRP 22-010). While parked stationary at night between April 10<sup>th</sup> and April 23<sup>rd</sup>, the AML gathered data that could help inform data analysis for this project (species such as CO, HCN, and various VOCs). A measurement of CO will be available from the trailer, but the instrument has yet to be calibrated or operated at this point.

Stationary sampling will continue until at least mid-June to fulfill the 66-day measurement period.

## Preliminary Analysis

No preliminary analysis has been done in this reporting period.

## Data Collected

Ambient data at Baylor University was collected. This data is not part of the project deliverables but was used to identify an instrument issue.

Ambient data is currently being collected at Meacham International Airport from the sample inlet at the (BC)<sup>2</sup> network trailer. Auxiliary data collected by the AML in this area as part of a separate project (AQRP 22-010) could supplement interpretation of this dataset.

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

Previous delays with site electrical upgrades, combined with the instrument issues identified in November have caused the measurement days from the anticipated fall campaign to be moved to the spring campaign (currently underway).

The original project design included a 45-day deployment in the fall, (Sept – Oct); and a 21-day deployment in the spring (to coincide with Aerodyne mobile lab project AQRP 22-010). The full 66 HCN measurement days have now been allocated to this spring measurement period.

Accomplishing the science goals of this project depends on measuring biomass burning emissions in the DFW area. We still believe an extended spring campaign gives us the greatest likelihood of capturing such emissions from a variety of sources.

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

Coordination of consumables at the site (ultra zero air) might prove challenging and will depend on the support from Baylor University co-PIs (and associated colleagues). Given the slow consumption of zero air gas by the HCN instrument, this should be a rather periodic need that ought to be manageable. Additional support with respect to data backup will be required.

Recent site conditions have enabled successful measurements (stable power, reliable internet, consumable availability), but we continue to monitor the instrument via daily remote log-ins.

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

Measurement days originally assigned to the fall campaign have been added to the spring campaign. As of April 6<sup>th</sup>, measurements towards the spring campaign have commenced.

**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 (i.e.: 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

As described in the Workplan documents, and discussed directly with AQRP project management, Dr. Yacovitch will be on family leave beginning mid-December for approximately 4 months, with Conner Daube handling project management and reporting during her absence.

Dr. Yacovitch returned from family leave during this reporting period and will resume project management and reporting duties in the coming months.

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

Yes       No

Given the previous delays with the electrical work at the sampling sites in the DFW, measurement days were added to the spring campaign from the fall campaign.

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

See above sections describing the ongoing issues and project changes.

**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,

Conner Daube