

AQRP Monthly Technical Report

PROJECT TITLE	Spatial Mapping of Ozone Formation near San Antonio	PROJECT #	17-032
PROJECT PARTICIPANTS	Ezra Wood	DATE SUBMITTED	5/5/2017
REPORTING PERIOD	From: 4/1/2017 To: 4/30/2017	REPORT #	5

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 15th of the month following the reporting period shown above.

Detailed Accomplishments by Task

Task #1 “Recruit Post-doc” has been accomplished. Additionally, Jessica Pavelec, a 4th year chemistry major at Drexel, started work in on April 3 and has been learning about the two instruments and assisting both the post-doc and PI in laboratory activities. She has been involved mainly with the thermal-dissociation CAPS instrument (for quantifying organic nitrates), and will travel to San Antonio for the last 10 days of the deployment.

For task 2 “Laboratory preparation”, the following activities have been executed:

-The TD-CAPS instrument has been successfully tested by sampling indoor air. Earlier problems in which some NO₂ was destroyed on the hot quartz tubes have been rectified. The instrument has been rack-mounted for easy integration into the Aerodyne mobile laboratory.

-due to problems with the optical alignment, the low-volume cell that was installed earlier into the CAPS system was replaced with the regular optical cell. To minimize chemical interferences, we have successfully operated the CAPS at reduced pressure which will serve the same purpose as using the low-volume cell. Detailed interference tests have not been conducted yet but will be done after the field deployment (e.g., quantifying the effect of ambient NO and NO₂ concentrations on the retrieved concentrations of organic nitrates).

- The PI (Ezra Wood) and postdoc (Daniel Anderson) traveled to Aerodyne during the week of April 24, 2017 in order to integrate the ECHAMP peroxy radical sensor into the mobile laboratory. The internal plumbing and the instrument were installed. Infrequent periods of excessive noise in the CAPS sensors were observed, however, and have not been fully diagnosed. Electrically isolating the CAPS and use of recently ordered optical isolators for the RS232 data cables is predicted to ameliorate this problem. The advance trip to Aerodyne was thus extremely useful.

Preliminary Analysis

No preliminary analysis has been conducted

Data Collected

NA

Identify Problems or Issues Encountered and Proposed Solutions or Adjustments

As discussed above, an infrequent noise source in the CAPS appeared when installed in the mobile laboratory. We are confident that careful attention to the electrical grounding protocols will fix this, along with the use of optical isolation of the RS232 data cables.

Goals and Anticipated Issues for the Succeeding Reporting Period

The instruments are currently en route to San Antonio and the field measurements will commence next week. The next reporting period will describe the overall operational success of the instruments during the field deployment.

Detailed Analysis of the Progress of the Task Order to Date

Task 1 "Recruit Post-doc" has been completed. Task 2 "Laboratory Preparation" has started and is mostly complete, though a few follow-up activities in the laboratory will be conducted after the May field deployment, in June.

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 AQR Project Manager and your TCEQ Liaison?

Yes No

Do you have any bibliographic publications 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 AQR 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

Submitted to AQRP by

Ezra Wood,
Principal Investigator