

## AQRP Monthly Technical Report

<b>PROJECT TITLE</b>	Spatial Mapping of Ozone Formation near San Antonio	<b>PROJECT #</b>	17-032
<b>PROJECT PARTICIPANTS</b>	Ezra Wood	<b>DATE SUBMITTED</b>	7/10/2017
<b>REPORTING PERIOD</b>	<b>From:</b> 6/1/2017 <b>To:</b> 6/30/2017	<b>REPORT #</b>	7

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

Task #1 “Recruit Post-doc” has been accomplished. Additionally, Jessica Pavelec, a 4<sup>th</sup> year chemistry major at Drexel, started work on April 3 as a full-time “co-op” student. Both the post-doc and undergraduate participated in the May field deployment in the greater San Antonio area.

Task 2 “Laboratory preparation” has been completed. Both the ECHAMP peroxy radical sensor and TD-CAPS organic nitrate instrument were tested in the laboratory, prepared for field deployment, and integrated into the Aerodyne Mobile Laboratory (AML). The main obstacle encountered was electrical noise encountered in the CAPS systems initially at Aerodyne during the integration. This noise was resolved in San Antonio.

Task 3 “Field Deployment” was completed from May 8 – 31 in and around San Antonio. The Aerodyne mobile laboratory deployed to the following three sites: 1. University of Texas at San Antonio (Northwest of the city), 2. Floresville, and 3. Mathis (near Corpus Christi). The Drexel ECHAMP and TD-CAPS instrument

Task 4 “Follow-up laboratory work” has commenced. This work focused on performing both NO<sub>2</sub> calibrations and HO<sub>2</sub> calibrations over a wider range of relative humidities than performed in San Antonio during the May field measurements. A summary of laboratory HO<sub>2</sub> calibration factors “F” is displayed below in the “Data Collected” section

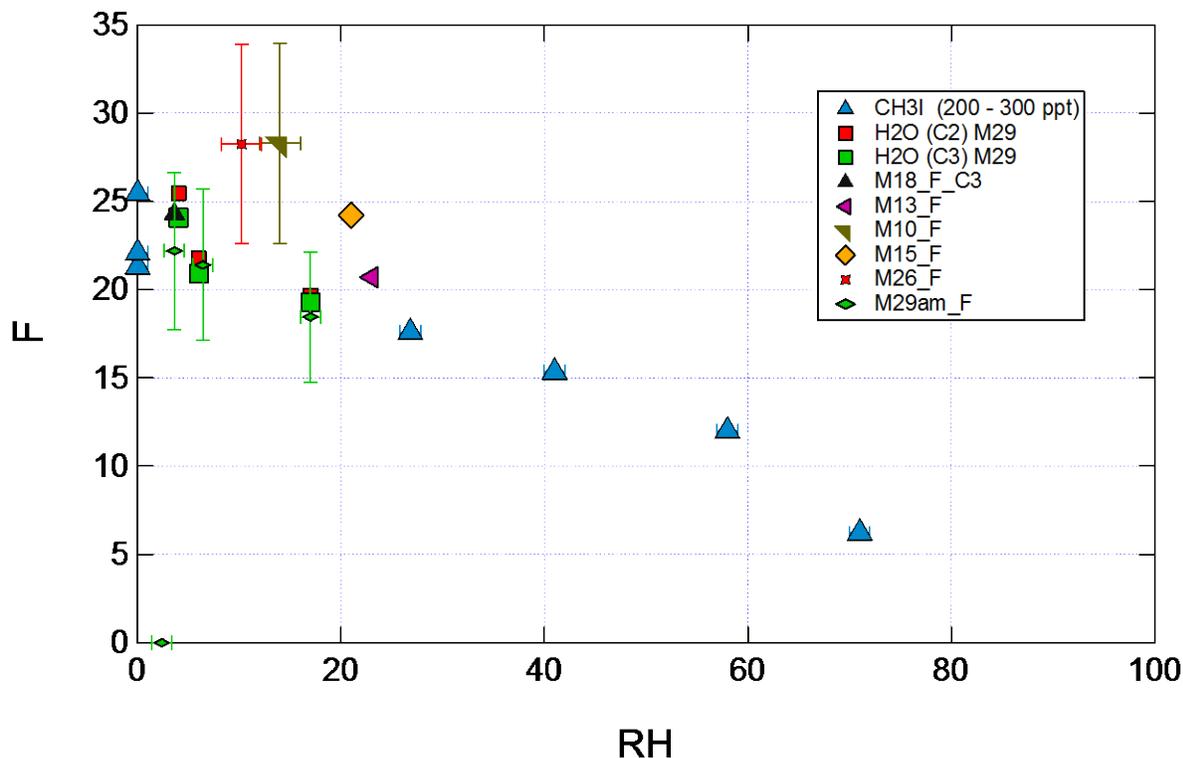
Task 5 “Data work-up and analysis” has commenced, and has focused on working up the calibration and ambient data collected during the field measurements. We anticipate having the dataset finalized by the end of July.

### Preliminary Analysis

No additional analysis has been conducted beyond that summarized in the last MTR (for May).

## Data Collected

The graph below summarizes the calibrations performed in the field during May 2017 as a function of relative humidity (RH). “F” is the amplification factor and one of the two main calibration factors required to derive  $\text{HO}_2 + \text{RO}_2$  concentrations from the raw data (the other is the CAPS  $\text{NO}_2$  calibration factor). The dependence on RH is consistent with prior laboratory data. The blue triangles are from the  $\text{CH}_3\text{I}$  photolysis calibration method and all other points are from the  $\text{H}_2\text{O}$  photolysis calibration method. Overall the agreement among the many calibrations (and two different calibration techniques) is acceptable, though ongoing laboratory work will provide additional points at a greater number of RH values.



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

No new problems have been encountered during the month of June.

## Goals and Anticipated Issues for the Succeeding Reporting Period

The follow-on calibrations will be finished during the months of July and August, with a goal to finalize the May dataset by August. Some of this work will continue during a separate field deployment to Indiana from mid-July to mid-August.

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

Task 1 “Recruit Post-doc”, Task 2 “Laboratory Preparation”, and Task 3 “Field Deployment” have been completed. Task 4 “Follow-up laboratory work” and Task 5 “Data work-up and

analysis” commenced in June. Task 6 “Project Reporting and Presentation” are partially complete but will continue until the end of the project.

**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

Tentatively we (Dan Anderson and Ezra Wood) would like to present a poster or oral talk at the American Geophysical Union in New Orleans, December 2017. The tentative title is “Ozone production rates in San Antonio”. We will submit the abstract to AQR in advance of submitting to the conference website.

**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

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Submitted to AQR by

Ezra Wood,  
Principal Investigator