

## AQRP Monthly Technical Report

<b>PROJECT TITLE</b>	Analysis of Ozone Production Data from the San Antonio Field Study	<b>PROJECT #</b>	19-040
<b>PROJECT PARTICIPANTS</b>	Ezra Wood, Shannon Capps, Daniel Anderson	<b>DATE SUBMITTED</b>	11/9/2018
<b>REPORTING PERIOD</b>	<b>From:</b> 9/18/2018 <b>To:</b> 10/31/2018	<b>REPORT #</b>	1

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

The goal of Task #1 is to quantify the dependence of the ozone production rate on the concentrations of NO<sub>x</sub>, VOCs, and other measurements at the three SAFS sites where peroxy radical concentrations were measured. Some of the preliminary aspects of this work have been collected into a paper which has been submitted to the journal *Atmospheric Chemistry and Physics* and is currently under review. The paper and open review process can be accessed at <https://www.atmos-chem-phys-discuss.net/acp-2018-1083/>. Additional work will continue on this task in the next few months.

Task #2 consists of conducting 0-D photochemical modeling constrained by the Aerodyne/Drexel and Rice/U. Houston measurements with several model chemical mechanisms for four SAFS measurement sites, spanning a large range of NO<sub>x</sub> values. In order to fulfill this task, data from the downtown Traveler's World site collected by University of Houston and Rice University have been obtained and are being processed for use in the FOAM box model.

The goal of Task #3 is to apportion ozone concentrations to location-specific emission sources using 3-D air quality modeling with the instrumented Community Multiscale Air Quality model (CMAQ). In pursuit of that goal, CMAQ version 5.2.1 has been installed on the Drexel high performance computing cluster. Compiling issues with the MCIP module are currently being resolved. In addition, ozonesonde and ceilometer data obtained during the SAFS campaign have been acquired to be used in model evaluation.

### Preliminary Analysis

No preliminary analysis has been conducted beyond that summarized in the paper submitted to the journal *Atmospheric Chemistry and Physics*.

## Data Collected

No additional data have been collected.

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

No problem have been identified.

## Goals and Anticipated Issues for the Succeeding Reporting Period

Daniel Anderson (postdoc), with guidance from Dr. Wood and Dr. Capps, will continue to implement the CMAQ model, to input the Traveler's World data into the F0AM 0-D photochemical model, and to segregate the SAFS2017 data by VOC reactivity and air mass origin.

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

Tasks 1, 2, and 3 have all started. Task 1 has been a continuation of work started shortly after SAFS1 and is well underway overall.

**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

The title is "Characterization of Ozone Production in San Antonio, Texas Using Observations of Total Peroxy Radicals", submitted to *Atmospheric Chemistry and Physics*, accessible at <https://www.atmos-chem-phys-discuss.net/acp-2018-1083/>. This manuscript was sent to Gary McGaughey (Project Manager for project 17-032, during which most of the analysis was conducted) and Mark Estes (TCEQ) prior to submission.

**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 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

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Submitted to AQRP by

Ezra Wood,  
Principal Investigator