

# AQRP Monthly Technical Report

<b>PROJECT TITLE</b>	<i>Evaluating the Ability of Statistical and Photochemical Models to Capture the Impacts of Biomass Burning Smoke on Urban Air Quality in Texas</i>	<b>PROJECT #</b>	22-003
<b>PROJECT PARTICIPANTS</b>	Matthew Alvarado, Jen Hegarty, Rick Pernak, Mike Iacono, John Henderson	<b>DATE SUBMITTED</b>	07-10-2023
<b>REPORTING PERIOD</b>	<b>From:</b> June 1, 2023 <b>To:</b> June 30, 2023	<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.

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## Detailed Accomplishments by Task for reporting period

We performed a statistical analysis using generalized additive models (GAMs) to see if the CAMx predictions were consistent with the impact of fires on background and maximum concentrations of O<sub>3</sub> in Houston and El Paso (Deliverable 3). For El Paso, our analysis suggested that there were statistically significant differences between CAMx and the ambient data, but further analysis showed that the predicted impacts of fires in both cases were very similar. For Houston, however, the differences between CAMx and the ambient data fits were not statistically significant for maximum O<sub>3</sub>, but the CAMx data strongly overestimates the background O<sub>3</sub> for Houston on both smoky and non-smoky days. We also continued developing STILT footprints for use in the GAMS.

## Data Collected

None to date.

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

None.

## Goals and Anticipated Issues for the Succeeding Reporting Period

During the next reporting period we will complete work to include FINN NO<sub>x</sub>, VOC, and PM<sub>2.5</sub> emissions multiplied by the daily surface “footprints” to the GAM input datasets. We will also submit a preliminary CAMx analysis report to TCEQ.

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

Completed initial drafts of Work Plan and QAPP. Held project kickoff. Started work on STILT analyses and gathering data for GAMM studies. Wrote and tested code to determine whether

smoke occurred at a monitor location on a given day from the HMS smoke polygons. Performed initial GAM analysis and wrote report. Calculated MDA8 O3 values from TCEQ CAMx output.

**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

Due to limits on Dr. Hegarty's availability for the next few months, we are having Dr. Mike Iacono step in to complete the initial GAMM analysis. Dr. Hegarty trained Dr. Iacono on the necessary scripts and steps in this reporting period. Mr. Henderson has also been assisting Dr. Hegarty with the development of STILT footprints.

**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.**

None

**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  
Matthew J. Alvarado