

AQRP Monthly Technical Report

PROJECT TITLE	Characterization of Corpus Christi and San Antonio Air Quality During the 2020 Ozone Season	PROJECT #	20-003
PROJECT PARTICIPANTS	Robert Griffin, Rice James Flynn and Yuxuan Wang, UH Rebecca Sheesley and Sascha Usenko, Baylor	DATE SUBMITTED	10 March 2021
REPORTING PERIOD	From: 1 February 2021 To: 28 February 2021	REPORT #	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 15th of the month following the reporting period shown above.

Detailed Accomplishments by Task for reporting period

Work performed in this month was related to Task #1, campaign preparation. Expendable supply purchases continued, as did training of staff and graduate students on all instruments. The work for the reporting period also included on-going effort toward upgrading and modifying the Baylor trailer for deployment during the upcoming campaign. With respect to specific instrumentation, the electronic control box for the particle sizing region of the aerosol mass spectrometer was repaired, and this instrument was tested using laboratory air. Its calibrations are underway. Other preparations focused on the inlet for the sampling, including installation of an reactive nitrogen converter (including the heater and associated temperature controller), a pressure sensor, labjack, and valves; all relevant parameters for the inlet box were added to the data acquisition system (including an appropriate KVM switch). Meteorological measurements (wind direction/speed, relative humidity, radiometer) and a sky camera were added next to the inlet box. For other gas-phase instruments, work focused on testing with zero air and automating calibration sequences. Drive planning for week 3 (mobile measurements based in Corpus Christi after the initial 2-week stationary period) commenced; these drives will focus on characterization of both local emissions and downwind transformations.

Additional work was performed for Task #3, data analysis, which includes three-dimensional modeling. This includes continued implementation of larger-scale GEOS-Chem outputs as boundary conditions to drive the WRF-GC model and preparing emission files for the fine-resolution WRF-GC runs to be performed as part of this project. This work is a continuation of that reported last month. In addition, the team began testing WRF-GC v2.0 (released in February 2021, <https://github.com/jimmielin/wrf-gc-release>). New features of WRF-GC v2.0 that will benefit the project include its nested-domain functionality and its simulations of aerosol-radiation interactions and aerosol-cloud interactions.

Preliminary Analysis

None yet

Data Collected

None yet

Identify Any Problems or Issues Encountered and Proposed Solutions or Adjustments

As referenced in the first five monthly reports, delays in finalizing task orders and issues associated with the COVID pandemic have necessitated shifting the field work from fall 2020 to spring 2021. With approval from the AQRP, we have adjusted and added to the scientific questions to be addressed using our field data analysis and modeling. We currently are planning precautions needed to successfully perform this campaign during spring 2021, despite the continued pandemic. Note that a few individuals from the Baylor group were focused to quarantine due to potential exposure to COVID-19. This has resulted in some delays, but the group is working diligently to catch up. There also were delays caused by the winter storm that hit Texas in mid-February, preventing access to laboratories for essentially a week. The teams are working hard to make up for that lost time.

Goals and Anticipated Issues for the Succeeding Reporting Period

Model: Continue generation of appropriate input files for three-dimensional modeling efforts, continued training of researchers on use of the three-dimensional model

Field: Continue preparation of mobile air quality laboratory, continue assessment of equipment maintenance needs, and continue training of researchers on equipment usage. We plan to be ready for deployment as of April 1.

Detailed Analysis of the Progress of the Task Order to Date

Given the late start and the approved change in project field work, we believe that our progress on the project has been appropriate.

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

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

Yes No

See response above regarding problems encountered. This is more a shift in timing as it will not impact our ability to complete the project by the scheduled end date, assuming no further delays associated with COVID-19.

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

None not addressed previously.

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

Submitted to AQRP by Robert J. Griffin