

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 May 2021
REPORTING PERIOD	From: 1 April 2021 To: 30 April 2021	REPORT #	9

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 #2, campaign performance. The Mobile Air Quality Laboratory 2 (MAQL2) was deployed to a coastal area near Corpus Christi on April 1, 2021. Stationary ambient sampling for all instruments was initiated by April 2, 2021. This stationary sampling continued through April 14, 2021. For the next seven-day period (April 15-21, 2021), mobile sampling was performed downwind of Corpus Christi (toward San Antonio), except on days when it rained sufficiently hard to make it less safe and less fruitful to drive. Mobile sampling (avoiding freeways to the extent possible) occurred during the day, and the MAQL2 returned to the stationary location overnight. On April 22, the MAQL2 transitioned to San Antonio. From April 23-28, 2021, the MAQL2 sampled upwind of San Antonio (toward Corpus Christi). On April 29 and 30, 2021, the MAQL2 sampled in stationary mode near San Antonio. During this period, all instruments were maintained, zeroed, and calibrated as appropriate and as needed.

Additional work was performed for Task #3, data analysis. These analyses were focused on generation of first-pass time series to check instrumentation operation and perform initial comparison between observations. These data have not undergone rigorous QA/QC.

Task #3 also 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.

Preliminary Analysis

Data collected have undergone ‘field-level’ analysis, which is aimed at ensuring appropriate operation of the instrumentation and enabling near real-time comparisons between instruments.

Preliminary findings indicate that off-shore activities including shipping and biomass burning in Central America impact the air quality being transported into the Texas coast at Corpus Christi. Local emissions in Corpus Christi and chemical processing appear to affect strongly the air that is transported toward San Antonio.

Data Collected

One month's worth of preliminary air quality measurements including particle size, composition and concentration; volatile organic compound composition and concentration; trace gas concentration; and meteorological parameters has been collected.

Identify Any Problems or Issues Encountered and Proposed Solutions or Adjustments

As referenced in the first several 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. Note that a few individuals from the Baylor group were forced to quarantine due to potential exposure to COVID-19. This has resulted in some delays, but the group worked 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 again worked hard to make up for that lost time. Baylor also experienced delays in receiving equipment and supplies: the most noticeable was the tower (3 weeks delay), TAPs (2 weeks delay), and PTR-MS heated sampling line (3 weeks delay). These delays were a result of COVID-related logistical hurdles (personnel communication with vendors). The team members worked extremely hard to be ready to deploy to the field as of April 1, which was done successfully.

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, initial modeling runs on April and May 2021 time periods.

Field: Finish field deployment and collection of data as of May 19, including post-campaign calibrations as needed. Begin more in-depth data analysis (QA/QC, initial time series, etc.).

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