

AQRP Monthly Technical Report

PROJECT TITLE	Source-sector NO _x emissions analysis with sub-kilometer scale airborne observations in Houston during TRACER-AQ	PROJECT #	22-023
PROJECT PARTICIPANTS	George Washington University Ramboll	DATE SUBMITTED	2/11/2023
REPORTING PERIOD	From: January 1, 2023 To: January 31, 2023	REPORT #	6

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

Task 1: Simulate NO₂, HCHO, O₃ at 444 × 444 m² spatial resolution using WRF-CAMx

The emissions for the CAMx simulation have been fully processed, merged, and spot checked for completeness. The group also finalized which emission source sectors will be tagged in the CAMx simulation. The CAMx simulation will begin in early February 2023.

Task 2. Process the GCAS measurements

The native files of the GCAS data have been re-processed to better account for missing data. New files with very minor adjustments will be made available to the full team in early February 2023.

Task 3. Process the satellite NO₂ data

Waiting on model simulation (See Task 1) in order to re-process the satellite air mass factor.

Task 4. Calculating NO_x from NO₂ airshed measurements

Waiting on re-formatted GCAS data (See Task 2).

Task 5. Comparison of NO₂, HCHO, O₃ between model, aircraft, and satellite

Task 5 has not yet been initiated.

Task 6. Use of machine learning to estimate emission factors for individual sectors

Task 6 has not yet been initiated.

Preliminary Analysis

None.

Data Collected

None.

Identify Any Problems or Issues Encountered and Proposed Solutions or Adjustments

Project approvals occurred later than anticipated. Development of the WRF-CAMx simulation is delayed by approximately 6-weeks. Model simulation output now expected in mid February 2023 instead of the end of December 2022. Effort for Tasks 3 – 6 will be back-loaded, and we do not anticipate any end-of-project delays.

Goals and Anticipated Issues for the Succeeding Reporting Period

The first simulation of WRF-CAMx model output should be complete, and relevant output variables will be made available to the rest of the team.

Re-processing of the air mass factor (within the scope of Tasks 2 & 3) will commence when the model output is available in late February or early March.

Task 4 – deriving NO_x emissions from the aircraft data – will restart now that the updated GCAS is available.

We expect to engage in Tasks 5 & 6 in earnest starting in March 2023.

Detailed Analysis of the Progress of the Task Order to Date

None.

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

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

Submitted to AQRP by Daniel Goldberg

Principal Investigator Daniel Goldberg