

AQRP Monthly Technical Report

PROJECT TITLE	New Satellite Tools to Evaluate Emission Inventories: Is a 3-D Model Necessary?	PROJECT #	20-020
PROJECT PARTICIPANTS	University of Wisconsin – Madison Ramboll	DATE SUBMITTED	4/9/2021
REPORTING PERIOD	From: March 1, 2020 To: March 31, 2020	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

During this reporting period, work was carried out on Task 2.

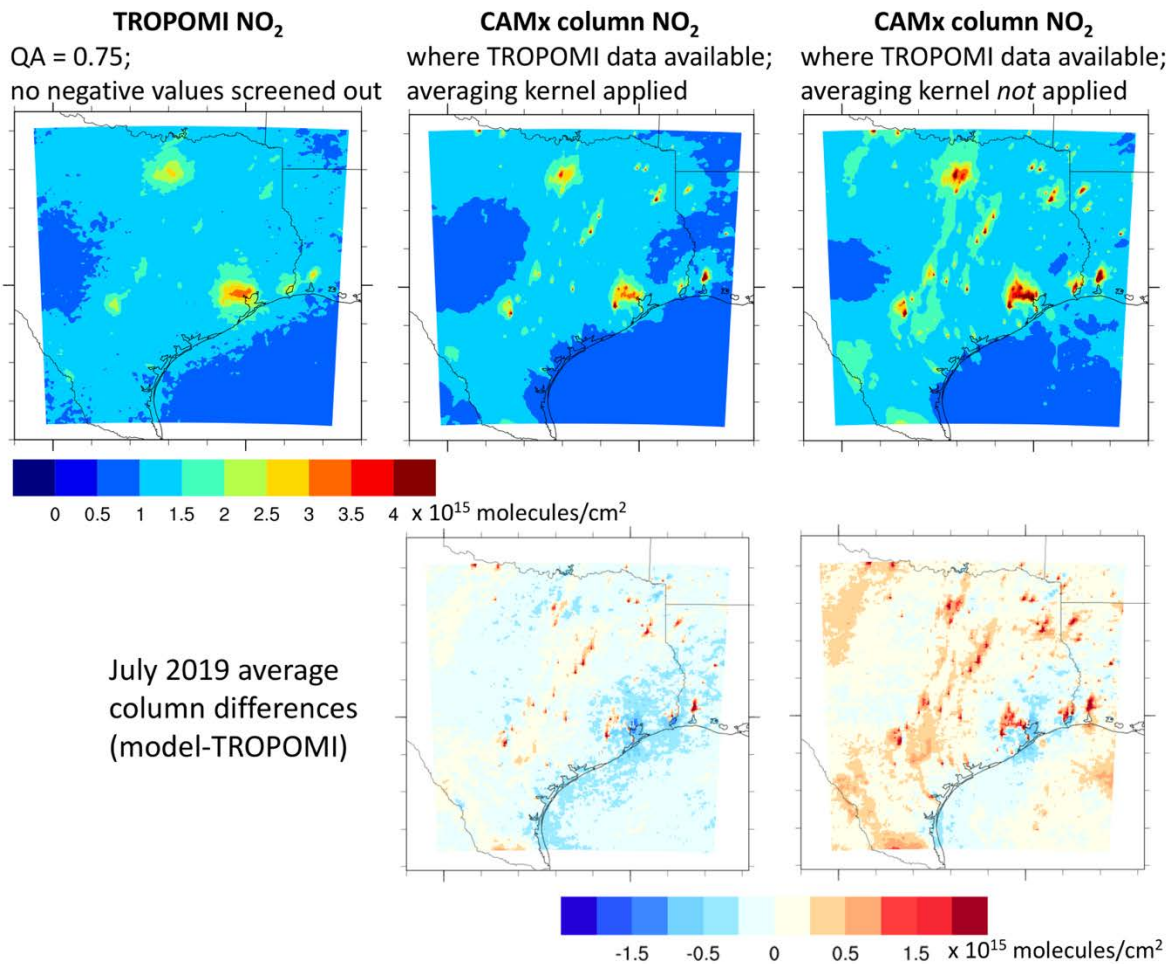
Task 2. Compare model simulations with TROPOMI and near-surface observations

At our most recent monthly project meeting, the Ramboll modeling team suggested that the UW-Madison team compare WRF-CAMx column NO₂ to OMI NO₂, as a cross-check between differing satellite instruments and retrievals. The UW-Madison team has downloaded the NASA OMI NO₂ standard product for gridding via WHIPS. The recent update to WHIPS introduced a bug in the processing of this OMI product, this is being addressed.

The UW-Madison team has been in regular contact with project collaborator Dr. Dan Goldberg to assure methodological consistency in calculating model column amounts for comparison with satellite observations.

Preliminary Analysis

To investigate methodological differences in calculating model column amounts, the UW-Madison team has calculated CAMx column NO₂ amounts in two different ways for comparison with TROPOMI NO₂ –both with and without the TROPOMI NO₂ averaging kernel. Below, we show these results for July 2019 on the 4km x 4km grid, along with their differences with TROPOMI NO₂.



July 2019 average TROPOMI NO₂, top left, with CAMx column amounts calculated with and without the TROPOMI averaging kernel (top center and top right, respectively), and differences between TROPOMI and model column amounts (bottom row).

Data Collected

None.

Identify Any Problems or Issues Encountered and Proposed Solutions or Adjustments

None.

Goals and Anticipated Issues for the Succeeding Reporting Period

UW-Madison will continue work on the analyses of column NO₂ for the 5 cities and 5 power plants of focus.

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 Tracey Holloway

Principal Investigator Tracey Holloway