

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	11/9/2020
REPORTING PERIOD	From: October 1, 2020 To: October 31, 2020	REPORT #	4

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 1, Task 2, and Task 3.

Task 1: Simulate NO₂ and SO₂ amounts with the high-resolution WRF-CAMx model

The **Ramboll** modeling team completed generating all model-ready inputs for the 2019 WRF-CAMx modeling platform and started the CAMx modeling. They provided sample 3-D CAMx outputs to the UW-Madison team for testing/validation purposes.

The **UW-Madison** team has made plans for data transfer and storage for these model output files and other project files.

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

The **Ramboll** modeling team started evaluation of WRF-CAMx results against TCEQ observations.

The **UW-Madison** team has added capability for TROPOMI NO₂ in the WHIPS software and has completed testing. They are now running WHIPS on the 12km domain. The UW-Madison team is finishing up a second update to WHIPS to work with TROPOMI SO₂.

Task 3. Compare satellite data and emissions for power plants and urban areas

The **Ramboll** modeling team provided consultant Dan Goldberg with WRF wind speed/direction to support the rotation of TROPOMI daily plumes based on wind direction.

Task 4. Evaluate mobile emissions assessments performed with and without model

Task 4 has not yet been initiated.

I acknowledge the updated Quarterly Report schedule to reflect that the last Quarterly Report for this project, covering May-July 2021, will be due on July 30, 2021.

Preliminary Analysis

None.

Data Collected

None.

Identify Any Problems or Issues Encountered and Proposed Solutions or Adjustments

In the September monthly technical report, we specified that the end of the modeling period would be truncated to October 12, 2019 due to missing WRF outputs. Recently, the modeling team at Ramboll discovered the missing WRF outputs and we are therefore extending the end of the modeling period to the original date specified in the Scope of Work – October 15, 2019.

Goals and Anticipated Issues for the Succeeding Reporting Period

Ramboll will complete the CAMx simulations for the March 15 – October 15, 2019 period, evaluate model performance and provide UW-Madison with CEM data for NO_x and SO₂ for selected power plants.

UW-Madison will continue gridding TROPOMI NO₂ to the 12km model domain via WHIPS and commence gridding TROPOMI NO₂ to the 4km model domain. The UW-Madison team will work to get WHIPS installed on an additional computer to speed up this satellite data processing. As model data from Ramboll and gridded TROPOMI are available, the UW-Madison team will begin comparison of model and satellite column NO₂.

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