

AQRP Monthly Technical Report

PROJECT TITLE	Refining ammonia emissions using inverse modeling and satellite observations over Texas and the Gulf of Mexico and investigating its effect on fine particulate matter	PROJECT #	22-019
PROJECT PARTICIPANTS	University of Houston	DATE SUBMITTED	5/10/23
REPORTING PERIOD	From: April 01, 2023 To: April 30, 2023	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 the reporting period

Task1: Preparation of comprehensive satellite, in situ, and modeling data for the iterative Finite Difference Mass Balance (iFDMB) method:

No activities during the reporting period.

Task2: Development of the Reduced-Complexity CMAQ Model (RCCM) for NH₃ and refinement of NH₃ emissions using iFDMB with the combination of CMAQ model and CrIS satellite observations:

Due to the missing Cross-track Infrared Sounder (CrIS) data, the UH-AQF modeling team downloaded the remote sensing data from the Infrared Atmospheric Sounding Interferometer (IASI) NH₃ data for March through August 2019. Currently, the team is developing an observation operator to utilize the IASI data for a data assimilation application.

Task3: Investigation of PM_{2.5} concentrations using the updated emission inventory:

The UH-AQF modeling team has performed an extensive literature review on inorganic PM_{2.5} chemistry and its emission inventory over Texas.

Preliminary Analysis

None during the reporting period.

Data Collected

The UH-AQF modeling team obtained the IASI NH₃ data for March through August 2019.

Identify Any Problems or Issues Encountered and Proposed Solutions or Adjustments

None during the reporting period.

Goals and Anticipated Issues for the Succeeding Reporting Period

The UH-AQF team will continue to develop observation operators to utilize the IASI data for the data assimilation application.

Detailed Analysis of the Progress of the Task Order to Date

None during the reporting period.

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 AQR 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 AQR 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 AQR should be made aware of.

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
Yunsoo Choi