

# AQRP Monthly Technical Report

<b>PROJECT TITLE</b>	Refining ammonia emissions using inverse modeling and satellite observations over Texas and the Gulf of Mexico and investigating its effect on fine particulate matter	<b>PROJECT #</b>	22-019
<b>PROJECT PARTICIPANTS</b>	University of Houston	<b>DATE SUBMITTED</b>	6/10/23
<b>REPORTING PERIOD</b>	<b>From:</b> May 01, 2023 <b>To:</b> May 31, 2023	<b>REPORT #</b>	10

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 15<sup>th</sup> 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 NH<sub>3</sub> and refinement of NH<sub>3</sub> emissions using iFDMB with the combination of CMAQ model and CrIS satellite observations:

The UH-AQF modeling team has finished developing an observation operator to utilize the Infrared Atmospheric Sounding Interferometer (IASI) data for a inverse modeling application. The evaluation of IASI observation operator has been performed. The framework has been updated to use IASI observation operator. The team is running the framework for producing updated emissions.

**Task3:** Investigation of PM<sub>2.5</sub> concentrations using the updated emission inventory:

The UH-AQF team is working on interpreting sulfate, nitrate, ammonium, and ammonia results based on updated and prior emissions. The team has also started preparing the final report.

### Preliminary Analysis

None during the reporting period.

### Data Collected

None during the reporting period.

### 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 run the framework and investigate updated emissions. The team will continue working on preparing the final report.

**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 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.**

**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