AQRP Monthly Technical Report

PROJECT TITLE	Next steps for improving Texas biogenic VOC and NO emission estimates	**PROJECT #**	18-005
PROJECT PARTICIPANTS	UCI Ramboll	**DATE SUBMITTED**	5/31/2019
REPORTING PERIOD	**From:** 5/1/2019 **To:** 5/31/2019	**REPORT #**	8

A Financial Status Report (FSR) and Invoice will be submitted separately from each of the Project Participants reflecting charges for this Reporting Period. We 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

Task 1. Measure Texas BVOC emission factors and their variability
A May 1-3 site visit was conducted to prepare for the June field campaign. Suitable sites were located in urban (e.g., UH and Rice campuses) and rural (e.g., Jones State Forest, UH coastal research site). Continued measurements using GC and PTRMS on the UC Irvine campus obtained additional emissions data on trees and crops including *Quercus virginiana* (eastern live oak), *Liquidambar styraciflua* (sweetgum), *Arachis hypogaea* (peanuts), *Cynodon dactylon* (coastal bermuda grass), *Glycine max* (soybeans), *Medicago sativa* (alfalfa), *sorghum bicolor* (sorghum), *Triticum aestivum* (wheat), *Zea mays* (corn).

Task 2. MEGAN model improvements
Updates were made to the MEGAN-EFP python code and BVOC emission inputs including values for regions outside of the US (e.g., regions in Mexico that border the TCEQ domain).

Task 3. MEGAN3.1 sensitivity analysis of Texas biogenic emissions
Not yet initiated. The work on this task will start in May 2019.

Preliminary Analysis
All plant species studied emitted some BVOC but the total emission factors ranged from >30 to <0.3 nmolm/s. Light oxygenated VOC (e.g., acetaldehyde, methanol, acetone) dominated emissions of most crops but the amounts and types of compounds varies. Corn had high emissions of DMS while peanuts emitted a large range of compounds that are not typically observed from other plants.

Data Collected
Measurements (BVOC emission, photosynthesis, transpiration, environmental conditions) of *Quercus virginiana* (eastern live oak), *Liquidambar styraciflua* (sweetgum), *Arachis hypogaea* (peanuts), *Cynodon dactylon* (coastal bermuda grass), *Glycine max* (soybeans), *Medicago sativa* (alfalfa), *sorghum bicolor* (sorghum), *Triticum aestivum* (wheat), *Zea mays* (corn).

Identify Problems or Issues Encountered and Proposed Solutions or Adjustments
None.

Goals and Anticipated Issues for the Succeeding Reporting Period
UCI will conduct emission measurements in Houston. UCI and Ramboll will implement the new MEGAN soil NO emission approach and continue updating the MEGAN-EFP BVOC emission data.

Detailed Analysis of the Progress of the Task Order to Date
The project is proceeding as planned.

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 __X_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 _X No

Do you have any bibliographic publications 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 __X_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 __X_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 _X No

Submitted to AQRP by

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