

## AQRP Monthly Technical Report

<b>PROJECT TITLE</b>	A Next Generation Modelling System for Estimating Texas Biogenic VOC Emissions	<b>PROJECT #</b>	16-011
<b>PROJECT PARTICIPANTS</b>	Ramboll Environ Alex Guenther	<b>DATE SUBMITTED</b>	07/11/2017
<b>REPORTING PERIOD</b>	<b>From:</b> June 1, 2017 <b>To:</b> June 30, 2017	<b>REPORT #</b>	8

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.

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### Detailed Accomplishments by Task

#### *Task 1: Development and Application of a Transparent Approach for Estimating BVOC Emission Factor Distributions*

Ramboll Environ incorporated the latest emissions input data from Dr. Guenther into the EF processor and evaluated results from the EF processor. Ramboll Environ assisted Dr. Guenther assessing gaps in the EF output and made minor updates to the EF processor source code.

#### *Task 2: Emission Factor Development*

No work was performed on Task 2 during June, 2017.

#### *Task 3: Development of MEGAN3*

Dr. Guenther and Ramboll Environ continued evaluation and assessment of the MEGAN code and continued writing documentation for code and inputs. We implemented an improved mapping of MEGAN compounds to chemical mechanism model species supplied by Dr. Greg Yarwood so that MEGAN3 can support the following chemical mechanisms: CB6, CB05, CBMZ, S07, RACM, and CRIv2-R5. We implemented a user option that allows inclusion of stress-induced factors in the calculation of MEGAN3 emissions and performed a test run of the new MEGAN3 code.

#### *Task 4: MEGAN Evaluation and Sensitivity Study*

Ramboll Environ continued evaluation of MEGAN3 emissions against aircraft flux data from the 2013 Southeast Atmosphere Study (SAS) and comparison with two other MEGAN emission inventories: (1) MEGAN v2.1 using the default landcover database and emission factors, and (2) MEGAN v2.1 updated high-resolution landcover database and emission factors from AQRP Project 14-016. Emissions sensitivity tests were carried out with MEGAN3 to evaluate changes in emissions due to use of different J-rating criteria and a plant stress metric. Ramboll Environ completed base case photochemical modeling of the June 1-July 15, 2013 period that encompassed all of the SAS C-130 and P-3 aircraft flights using MEGAN v2.1 biogenic

emissions and using the most recent versions of the CAMx model and CB6r4 chemical mechanism. Model performance evaluation against surface data and SAS aircraft data was completed.

*Task 5: Project Management and Reporting*

This task is ongoing. Dr. Guenther drafted sections of the final report.

**Preliminary Analysis**

None.

**Data Collected**

None.

**Identify Problems or Issues Encountered and Proposed Solutions or Adjustments**

None.

**Goals and Anticipated Issues for the Succeeding Reporting Period**

Complete MEGAN3 sensitivity testing under Task 4. Complete draft report. Prepare PowerPoint presentation summarizing project results for the AQRP Meeting in August.

**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 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

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Submitted to AQRP by  
Principal Investigator

Sue Kemball-Cook  
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