

AQRP Monthly Technical Report

PROJECT TITLE	Improving Estimates of Wind-Blown Dust from Natural and Agricultural Sources	PROJECT #	20-011
PROJECT PARTICIPANTS	Chris Emery, Tejas Shah, Uarporn Nopmongcol, Greg Yarwood (Ramboll)	DATE SUBMITTED	9/4/2020
REPORTING PERIOD	From: August 1, 2020 To: August 31, 2020	REPORT #	2

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

Task 1: Review Current CAMx WBDUST Estimates

Started review of WBDUST emission estimates and resulting CAMx concentrations for PM_{2.5} soil components and coarse PM mass against IMPROVE data. Comparisons were previously conducted for 3 projects: two using the 2016 EPA Modeling Platform and one using the 2014 WRAP Visibility Platform.

Task 2: Review Alternative Methods and Datasets

Completed detail review of several peer-reviewed journal articles describing wind-blown dust schemes employed in other models: WRF (AFWA), WRF (UoC), and CMAQ. Developed a spreadsheet to facilitate comparisons among WBDUST and these other component formulations, and carefully considered best approaches for WBDUST revisions. Began implementing certain algorithm updates with initial process testing to understand dust emission sensitivity.

Task 3: Update the WBDUST Model and Evaluate Impacts in CAMx MP

No activities during the reporting period.

Task 4: Project Reporting and Presentation

Prepared for and conducted a project kickoff meeting with AQRP Project Manager and TCEQ Liaisons on August 21. Introduced personnel, presented scope of work and schedule. Developed July MTR and FSR and submitted to AQRP on August 10 and 19, respectively.

Preliminary Analysis

From our Task 1 review, all modeling results resulted in very similar large dust under predictions at monitoring sites throughout the western US. From our Task 2 review and initial process sensitivity testing, we see promising improvements in using certain algorithm formulations from the CMAQ approach, both in space and time. The CMAQ approach offers an intriguing balance between formulation complexity and external data requirements, whereas the WRF approaches tend to be more complex and require soil characterization data that are highly uncertain and not clearly available in all cases.

Data Collected

None collected 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

Complete our Task 1 review of WBDUST/CAMx results from past modeling results and document in a task report. Continue Task 2 testing of various formulation updates to WBDUST. No anticipated issues for the succeeding reporting period.

Detailed Analysis of the Progress of the Task Order to Date

This project initiated on July 28 with the execution of the AQRP Task Order. All tasks remain on budget and on schedule for completion according to our work plan.

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
Chris Emery, Ramboll