

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	2/2/2021
REPORTING PERIOD	From: January 1, 2021 To: January 31, 2021	REPORT #	7

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

This task was completed in September 2020.

Task 2: Review Alternative Methods and Datasets

Task 2.1 was completed in November 2020.

Work continued on Task 2.2 to identify and review publicly available US and Texas agricultural activity datasets from which to improve seasonal and spatial characterization of emissive agricultural lands.

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

Continued to apply CAMx with the 2016 EPA Modeling Platform to assess alternative windblown dust estimates from previous and updated (from Task 2.1) versions of the WBDUST model. We expect to report initial results to the AQRP and TCEQ in February.

Task 4: Project Reporting and Presentation

Developed December MTR and FSR and submitted to AQRP on January 5 and 14, respectively.

Preliminary Analysis

Ramboll reviewed available Texas and US vegetative and cropland activity datasets as viable sources of information that can be used to further improve the spatial and temporal characterization of WBD from the agricultural lands. Agricultural tilling exposes land tracts to seasonal wind erosion. WBDUST does not specifically resolve this type of dust source temporally and spatially. Therefore, high-resolution crop activity information provides a way of characterizing sub-grid patterns of emissive lands.

We have chosen a US database called “CropScape”, derived from the National Agricultural Statistics Service (NASS). CropScape provides detailed vegetative coverage of hundreds of crop types and other non-agricultural landcover types at 30 meter resolution over the 48 conterminous

States. Additionally, from our review under Task 2.1, we found a State-level “crop calendar” that EPA employs in the in-line WBD emissions module within the Community Multiscale Air Quality (CMAQ) model. The crop calendar provides tilling, seeding, and harvesting dates for 18 major crop types. We are developing a methodology to use the CropScape and calendar datasets in WBDUST to improve the characterization of agricultural land cover types and particularly the specific areas and times that croplands are exposed to wind erosion.

Data Collected

We downloaded the 2016 30-m CropScape dataset (14 Gb) from NASS.

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 Task 2.2 technical memorandum documenting our choice for alternative landcover and agricultural datasets for use in the WBDUST model. Continue model testing of WBDUST updates using the CAMx model. Model results using original and alternative windblown dust estimates will be evaluated against those same ambient measurements. 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. The delivery of the Task 2.2 technical memorandum is delayed until mid to late February. All other tasks remain on schedule and all tasks remain on budget 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