

AQRP Monthly Technical Report

PROJECT TITLE	Modeling analysis of TRACER-AQ and over-water measurements to improve prediction of on-land and offshore ozone	PROJECT #	22-008
PROJECT PARTICIPANTS	Yuxuan Wang, James Flynn, Paul Walter, Xueying Liu	DATE SUBMITTED	10/10/2022
REPORTING PERIOD	From: 09/01/2022 To: 09/30/2022	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

For Task 3 (Meteorological model evaluation and improvement), we have conducted new WRF simulations

- 1) using the 3 km High-Resolution Rapid Refresh (HRRR) as boundary conditions (simulation #1 in Table 1),
- 2) using synchronized datasets from TCEQ CAMS, boat, and NCEP surface and upper air to conduct nudging (simulation #2 in Table 1).

Table 1. Proposed WRF simulations.

	Simulations	BC Meteorology	Nudging	Reinitializing
1	[HRRR]	HRRR	No	No
2	[Nudged v2]	NCEP FNL	Yes	No
3	[Reinit]	NCEP FNL	No	Yes

Preliminary Analysis

None.

Data Collected

We have collected NCEP surface (ds461.0) and upper air (ds351.0), the two recommended nudging datasets from WRF user guide, together with CAMS and boat to conduct nudging.

Identify Any Problems or Issues Encountered and Proposed Solutions or Adjustments

None.

Goals and Anticipated Issues for the Succeeding Reporting Period

We will conduct new WRF simulations using daily re-initialization (simulation #3 in Table 1) in the succeeding report period. The model simulation will be broken into many 30-hour

segments. The first 6 hours of each segment, that is 18:00-23:00 UTC of a previous day, will be discarded to permit spin-up. The subsequent 24 hours, that is 0:00-23:00 UTC of the following day, will be used for analysis and as input for air quality models.

Detailed Analysis of the Progress of the Task Order to Date

N/A.

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
Yuxuan Wang