

WAQS Clean Simulation Specification Sheet

Clean Simulation – United States Background (USB)

February 4, 2016

Purpose: To determine conditions under no U.S. anthropogenic emissions (USB) for ozone, particulate matter, visibility and deposition.

Scenario Names: Three Clean CAMx annual 2011b 36 km simulations using three different sets of Boundary Conditions (BCs): MOZART (MZ) with dust cap; GEOS-Chem (GC) and AM3 (AM). Also conduct CAMx 2011b 36 km Base Case (all emissions) and Clean CAMx 36/12 km run using MZBC.

- Clean_MZBC_36
- Clean_GCBC_36
- Clean_AMBC_36
- Base_MZBC_36
- Clean_MZBC_3612

Date Last Updated: February 4, 2016

Time Window for Modeling/Analysis: February 4-22, 2016. Need to have Clean_BC_36 results for discussion with Tom and Zac February 17.

Description:

- The three Clean_BC_36 runs will be 2011 annual runs using just the 36 km CONUS domain. The runs will invoke OSAT source apportionment (not APCA) with the following five Source Categories:
 - Mexico, Canada and Offshore Shipping (MCO) anthropogenic emissions.
 - Natural emissions (Biogenic, LNOx, SS and WBD)
 - Open Land Fires (combined WF, Rx and Ag fires).
 - Initial Concentrations (IC)
 - Boundary Conditions (BC)
- The Base_MZBC_36 run (no OSAT) will be performed so we can run MATS with the Clean_MZBC_36 run.
- The Clean_MZBC_3612 run (No OSAT) will be run after the 36 km runs so we can determine the importance of the 12 km WESTUS domain for Clean simulations.

Input Data

Emissions:

- 2011b 36 km Emissions (same as 2011a except for fires)
 - MEGAN Biogenic
 - Lightning NOx (LNOx)
 - Sea Salt (SS)
 - Windblown Dust (WBD)
 - PMDETAIL 2011b Wildfires (WF)
 - PMDETAIL 2011b Prescribed Burns (Rx)
 - PMDETAIL 2011b Agricultural Burning (Ag)
 - Canada anthropogenic
 - Mexico anthropogenic
 - Offshore Shipping

Emissions Processing Approach

- Have to merge above unmerged files to generate MCO, Natural and Fire emissions source category inputs.

Other Ancillary Inputs and Model Settings

- CAMx v6.2 (released April 2015).
- WAQS 2011b 36 km modeling database.
- The Carbon Bond 6 Revision 2 (CB6r2) chemistry mechanism.
- The met/ozone column/photolysis rate inputs from the 2011 WAQS base case 36 km 2011b.

Post-Processing

- Spatial maps of highest and fourth highest maximum daily average 8-hour (MDA8) ozone concentrations for WESTUS and CONUS domain and CleanMZBC_36, Clean_GCBC_36 and Clean-AMBC_36 runs (12 maps). (key monitoring sites in BCKMAP).
- Same as above for Clean_MZBC_3612 (3 maps).
- MATS DVF analysis at monitoring sites with some Unmonitored Area Analysis (UAA):
 - Base_MZBC_36 and Clean_MZBC_36 (w/ UAA)
 - CAMx_2011b_3612 and Clean_MZBC_3612 (w/ UAA)
 - Base_MZBC_36 and Clean_MZBC_36 subtracting SA separate contributions for:
 - MCO
 - Natural
 - Fires
 - BC
- Extract daily OSAT SA results at CASTNet and AQS monitoring sites
- Other TBD