Connecting Measurements to Air Quality Modeling – NYS DEC

LISTOS Meeting

April 11, 2019
Emissions
NO$_2$ Emissions from GCAS

NO$_2$ from PTEGU and PTNONIPM Sectors

NO$_2$ from Ground Level Sectors
Model Performance – Biogenic Emission Land Use Database
Percent Difference of Water
WRF/MCIP (LURFRAC_17*100) minus BELD4 (MODIS_0)

Min = -1.7 at (125,139), Max = 39.7 at (164,142)

Diff of Daily 8hr Ozone Max
a=chain.beld.dm, b=chain.beldfix.dm

Min = -0.0 at (136,127), Max = 8.0 at (138,104)
Model Performance - WRF
Regional Modeling
Model Performance Evaluation
• Higher horizontal resolution to help validate model results at land/sea interface.
Regional Modeling
Model Performance Evaluation

• Better spatial and temporal resolution needed to help define the Boundary Layer
Model Performance - CMAQ
Ozone model performance from CMAQ with two different kzmin settings in the Long Island Sound area using 2016 beta emissions platform.
From CMAQ user guide

If KZMIN is set to Y, CCTM will read the urban land use fraction variable (PURB) from the GRID_CRO_2D meteorology file and use this information to determine the minimum eddy diffusivity in each grid cell. In CMAQv5, grid cells that are predominantly urban use a KZMIN value of 1.0 m²/s and non-urban cells use a value of 0.01 m²/s. If this variable is set to N, the PURB variable will not be used and a uniform KZMIN value of 1.0 m²/s will be used throughout the modeling domain.
Thank You

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