



Department of  
Environmental  
Conservation

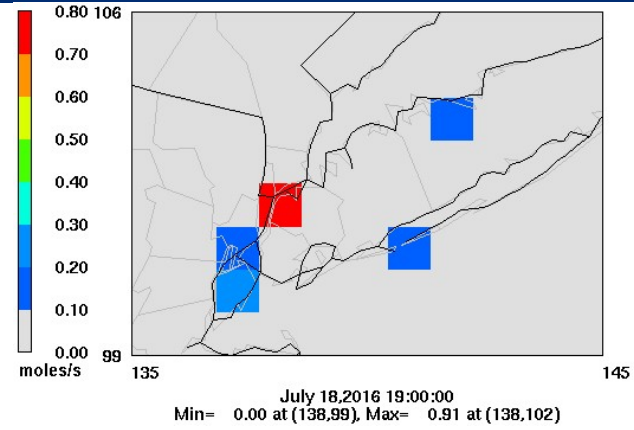
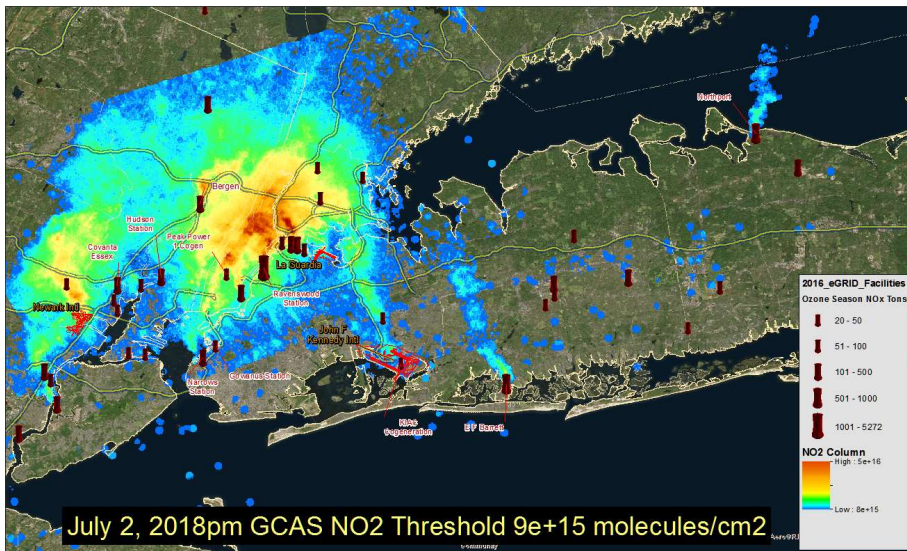
# Connecting Measurements to Air Quality Modeling – NYS DEC

LISTOS Meeting

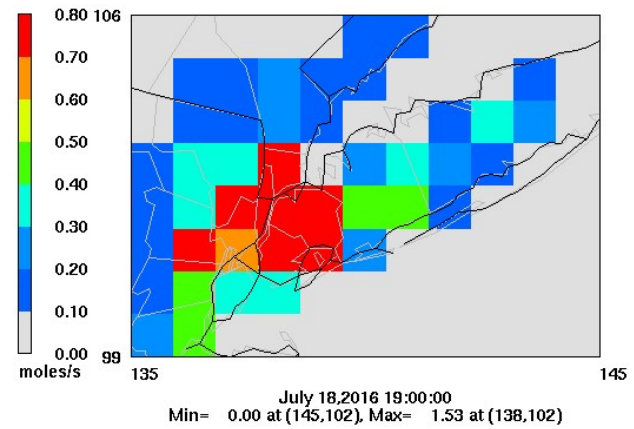
April 11, 2019

# Emissions

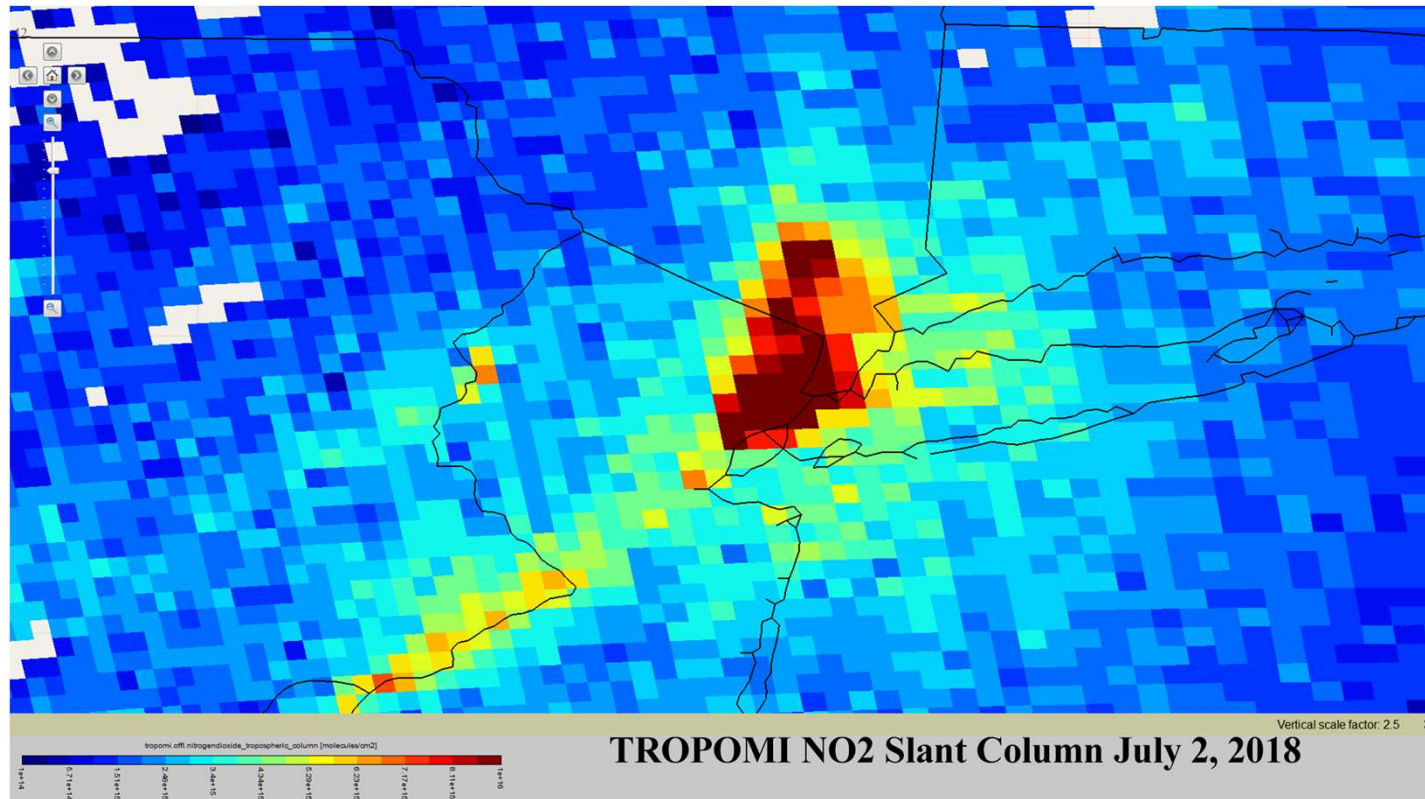
# NO<sub>2</sub> Emissions from GCAS



NO<sub>2</sub> from PTEGU and PTNONIPM Sectors



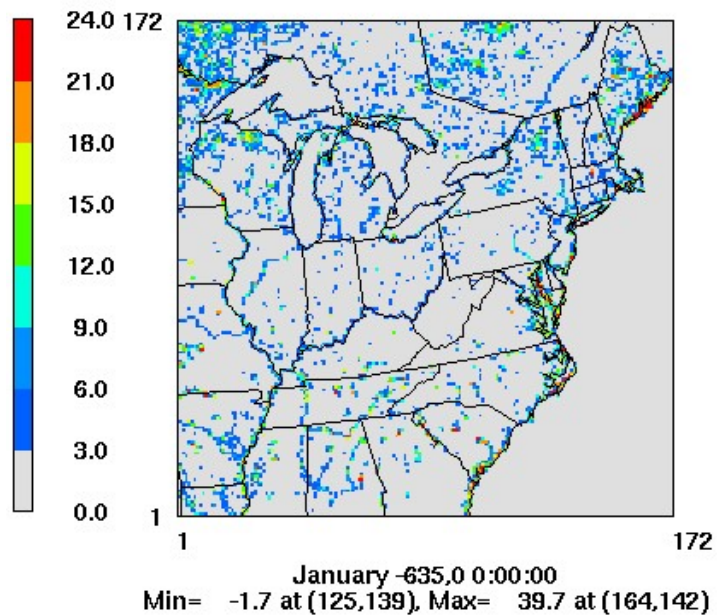
NO<sub>2</sub> from Ground Level Sectors



# Model Performance – Biogenic Emission Land Use Database

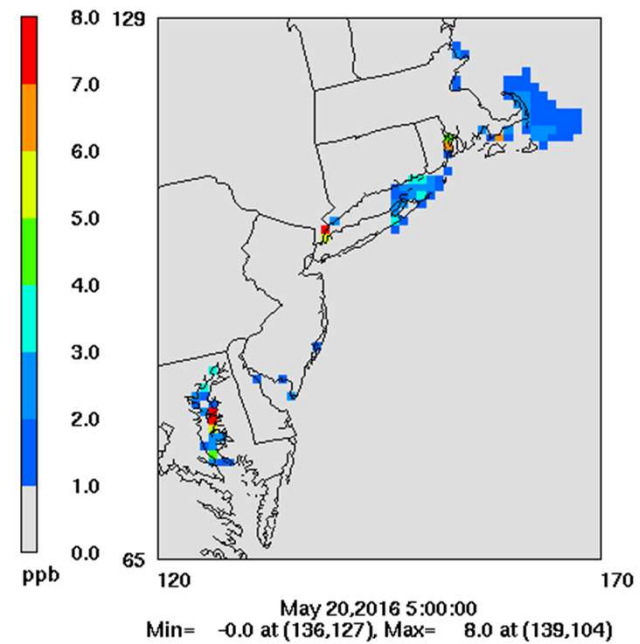
## Percent Difference of Water

WRF/MCIP (LUFRAC\_17\*100) minus BELD4 (MODIS\_0)



## Diff of Daily 8hr Ozone Max

a=chain.beld.dm, b=chain.beldfix.dm



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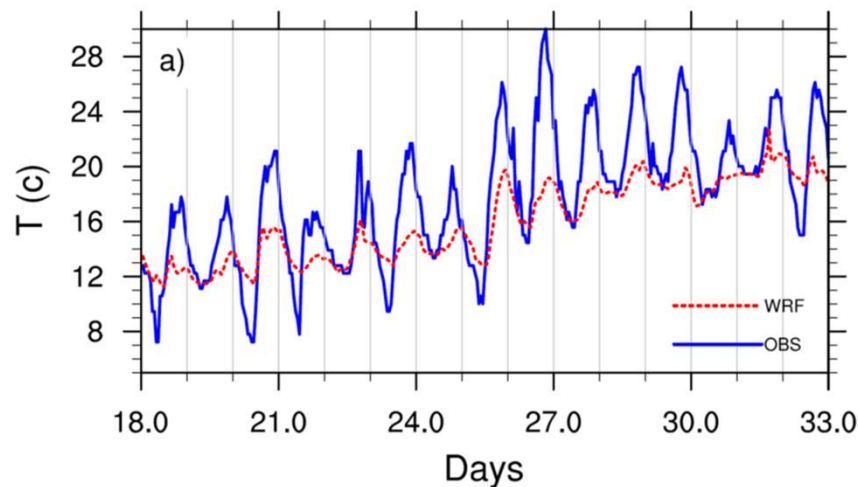
# Model Performance - WRF

# Regional Modeling

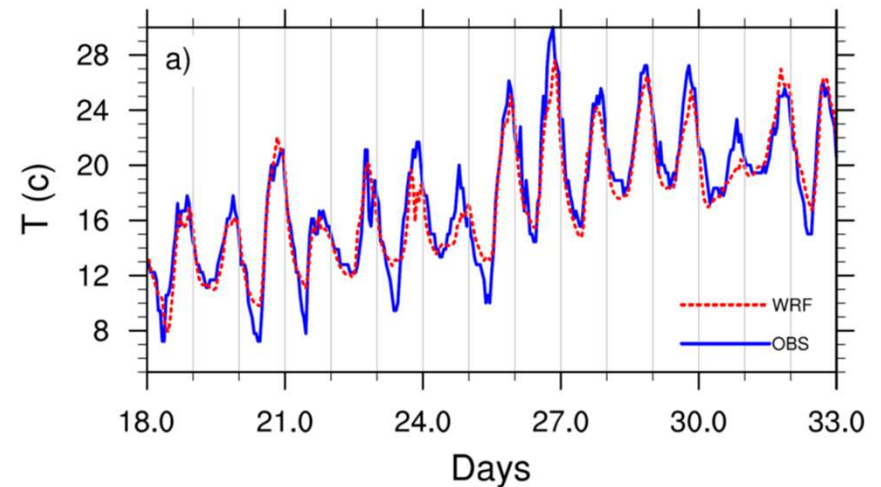
## Model Performance Evaluation

- Higher horizontal resolution to help validate model results at land/sea interface.

KHVN -- May (EPA 12KM)



KHVN -- May (NYSDEC 4KM)

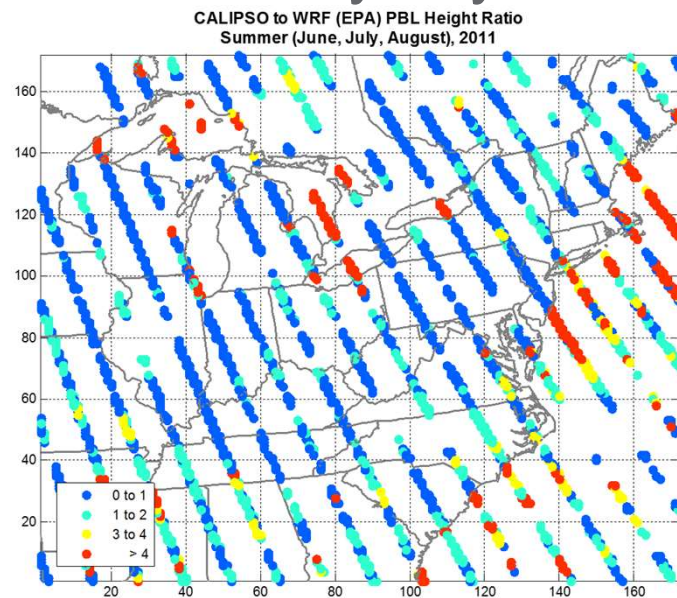




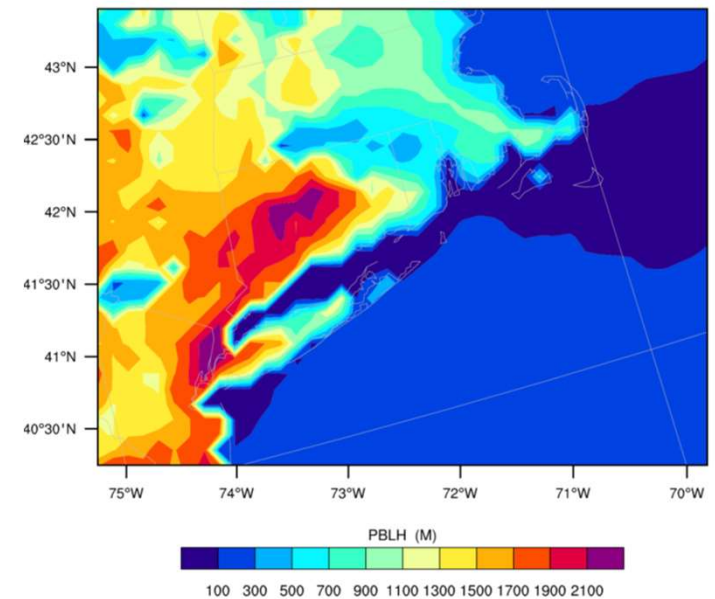
# Regional Modeling

## Model Performance Evaluation

- Better spatial and temporal resolution needed to help define the Boundary Layer

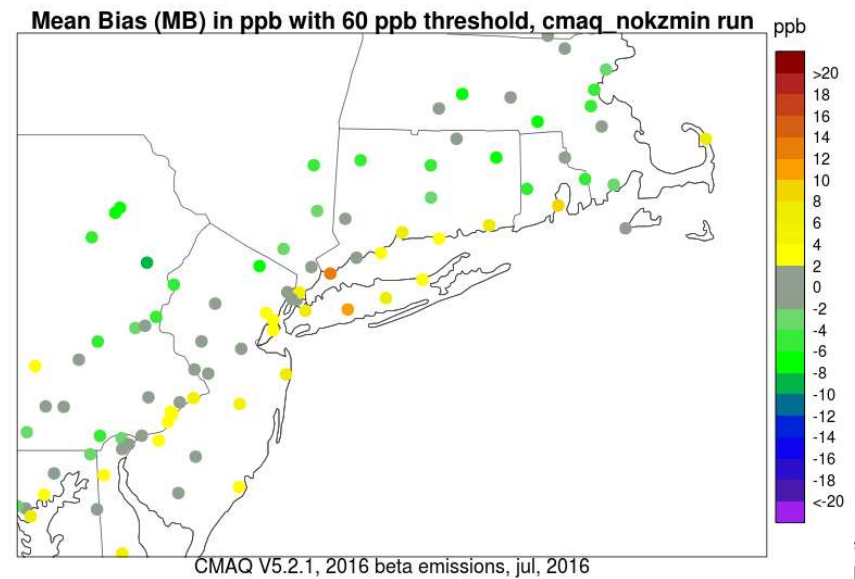
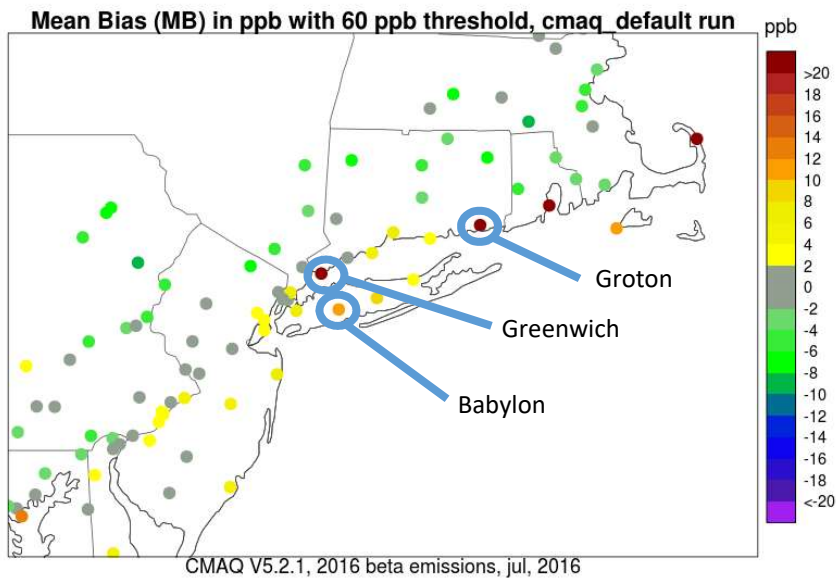


WRF(EPA) PBL Height August 13, 2016 at 14ETC



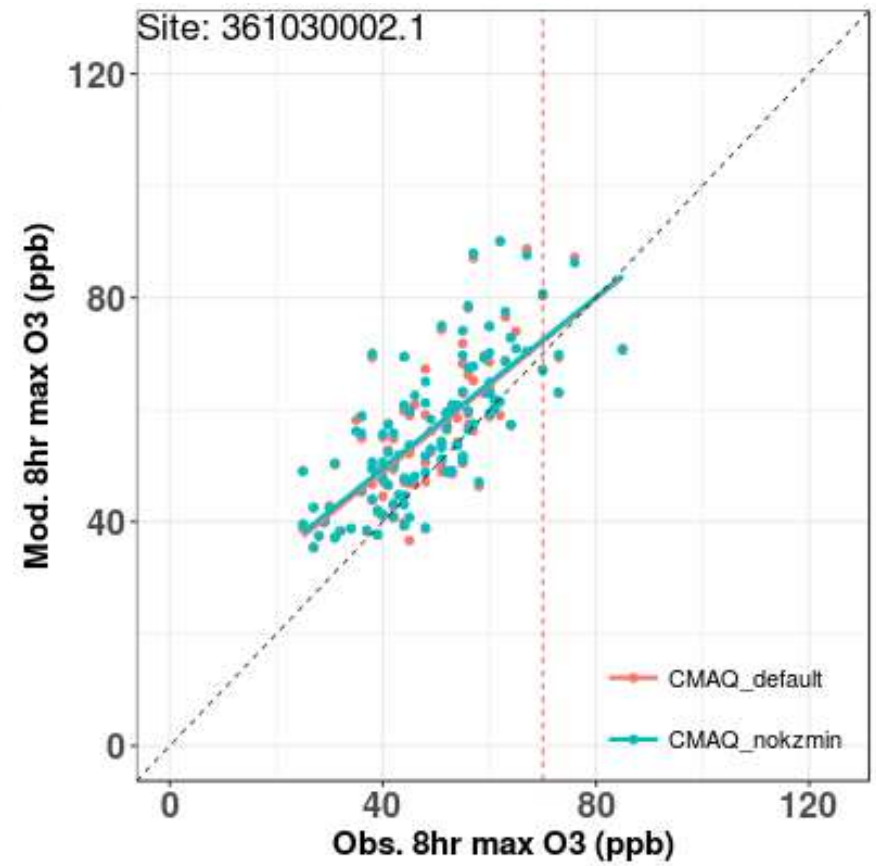
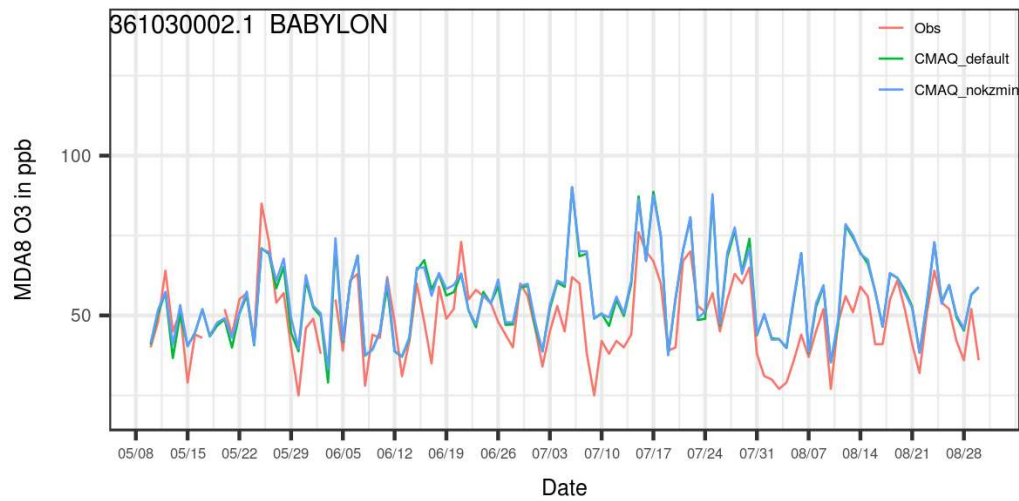
# Model Performance - CMAQ

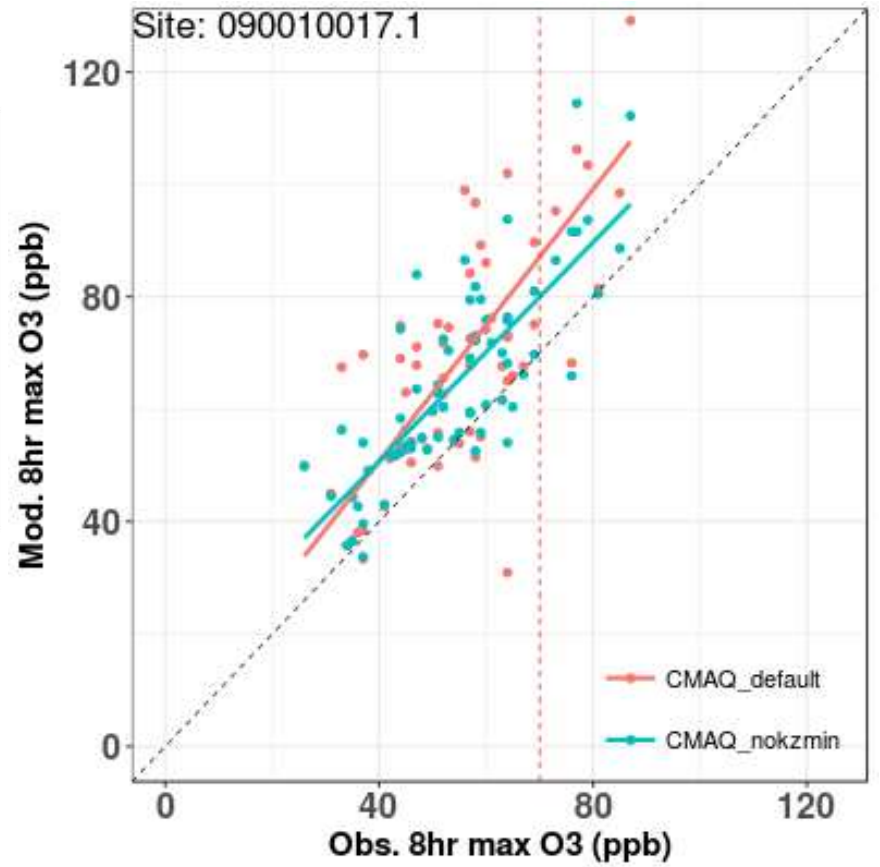
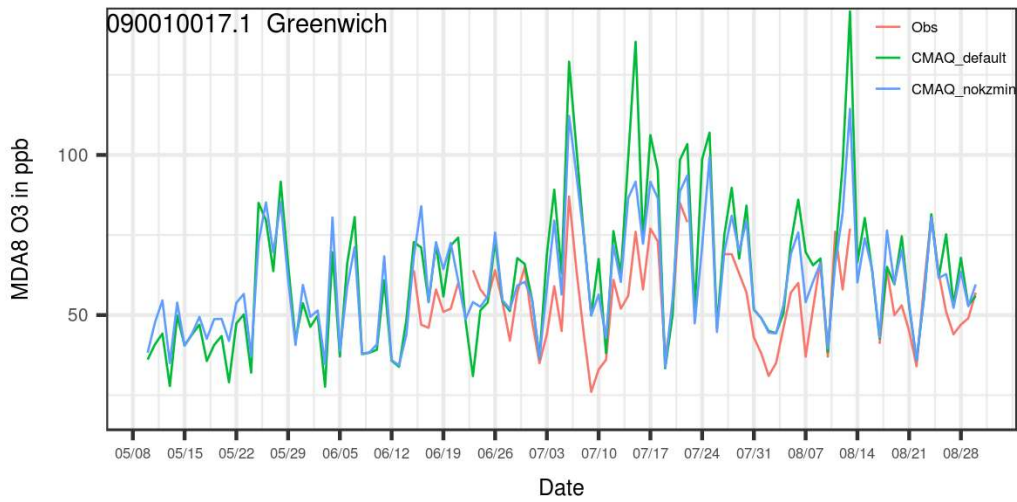
# Ozone model performance from CMAQ with two different kzmin settings in the Long Island Sound area using 2016 beta emissions platform

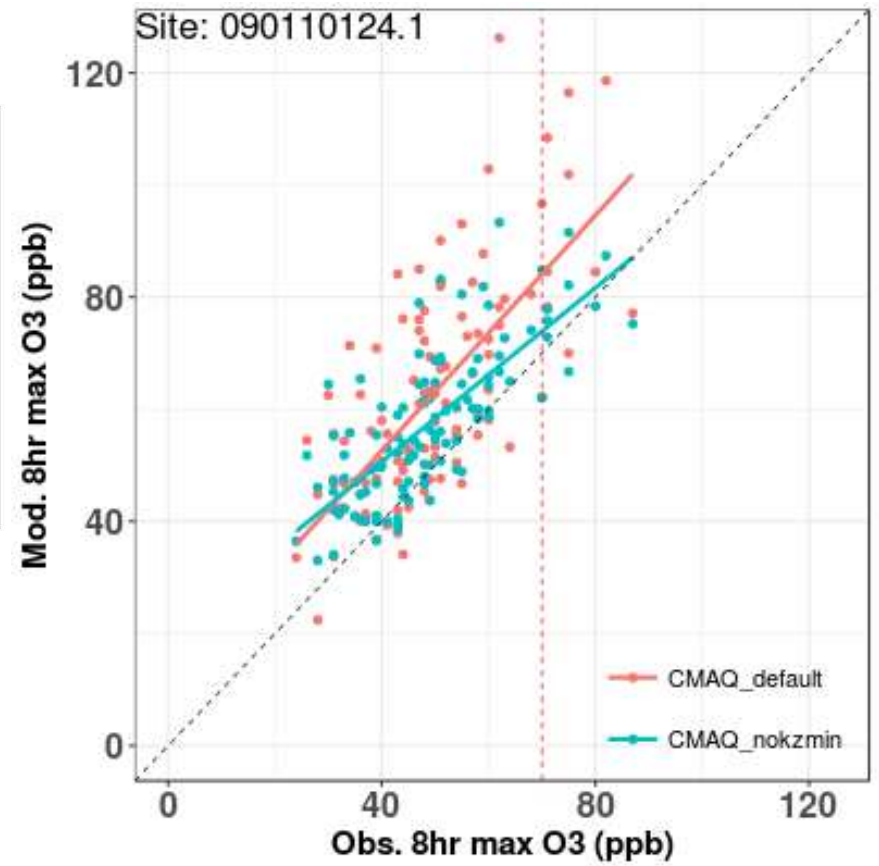
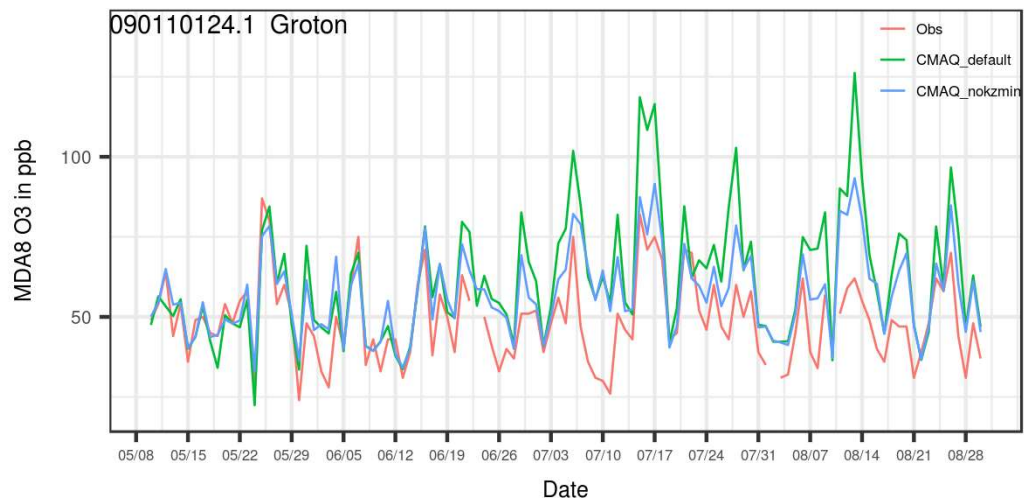


## From CMAQ user guide

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 m<sup>2</sup>/s and non-urban cells use a value of 0.01 m<sup>2</sup>/s. If this variable is set to N, the PURB variable will not be used and a uniform KZMIN value of 1.0 m<sup>2</sup>/s will be used throughout the modeling domain.







## Thank You

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