NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Methane Monitoring: Bronx, Buffalo, Stony Brook, Staten Island

G2307 (HCHO) and G2204 (H2S)

Dirk Felton
Peter Furdyna

NACAA MSC Meeting
November 29-30, 2021

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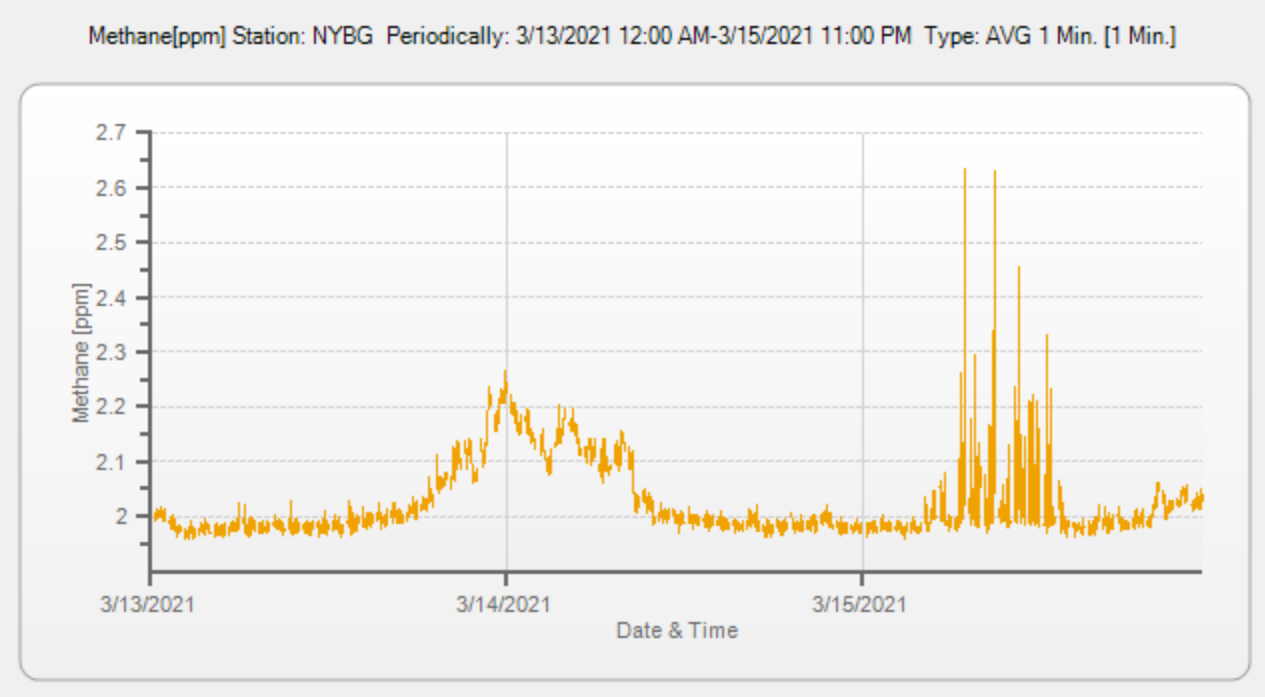
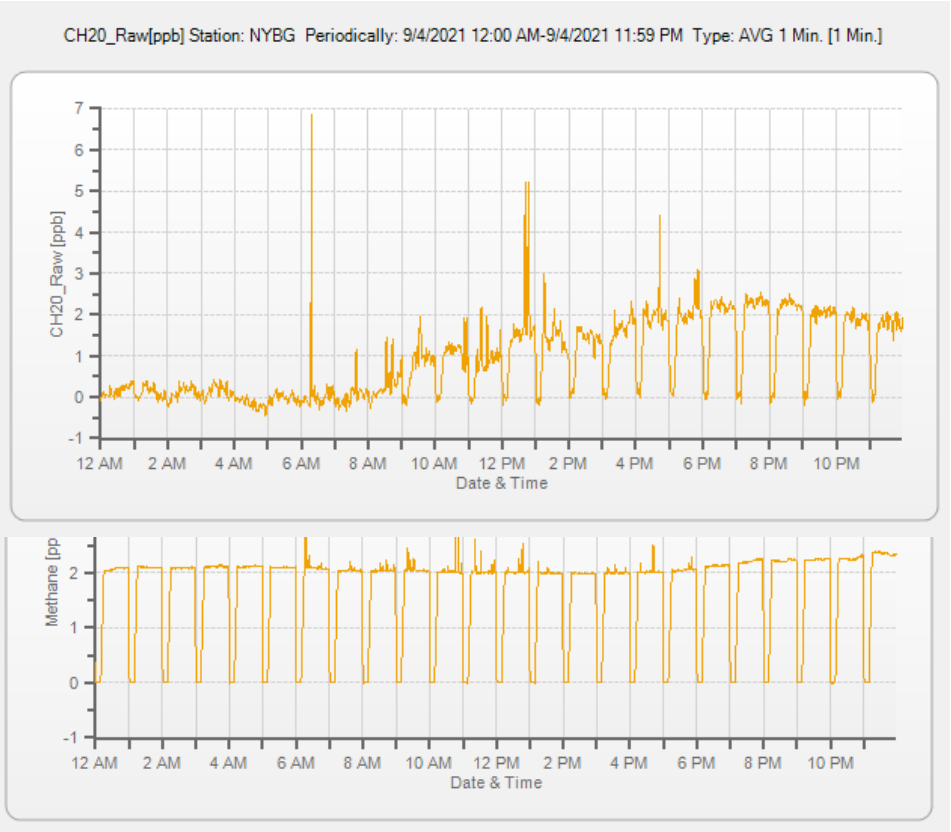
Regional vs Local

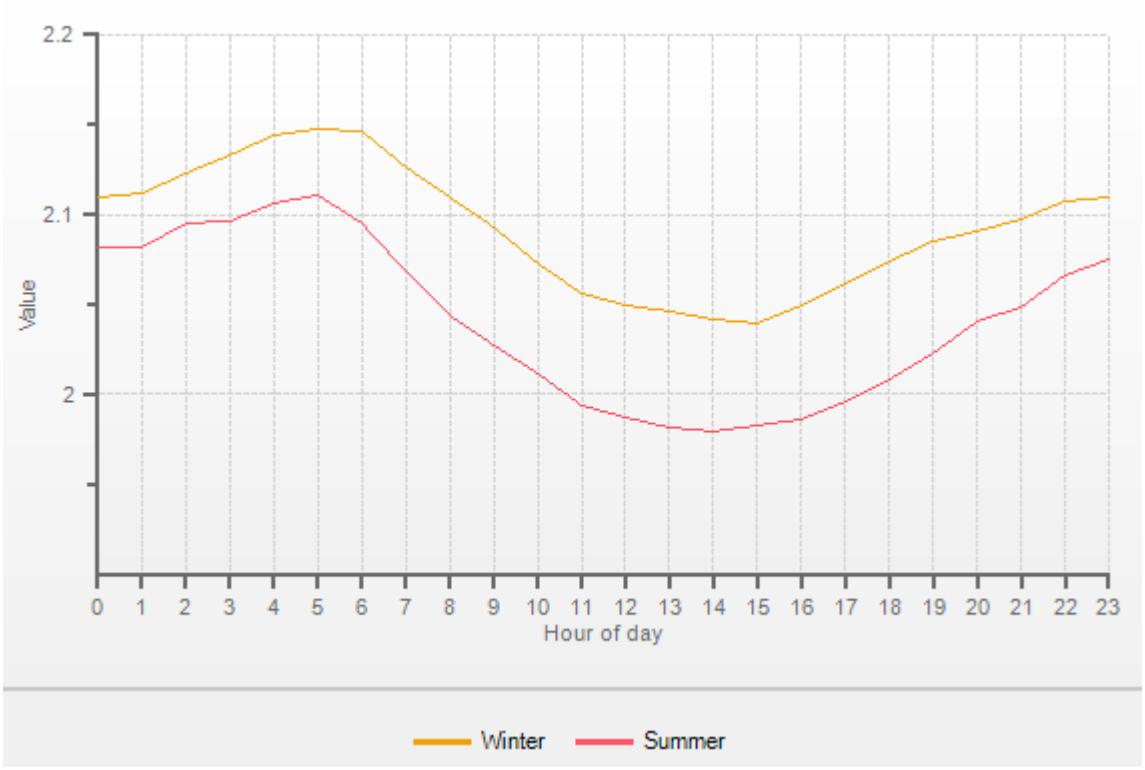


What causes 1-5 min spikes?

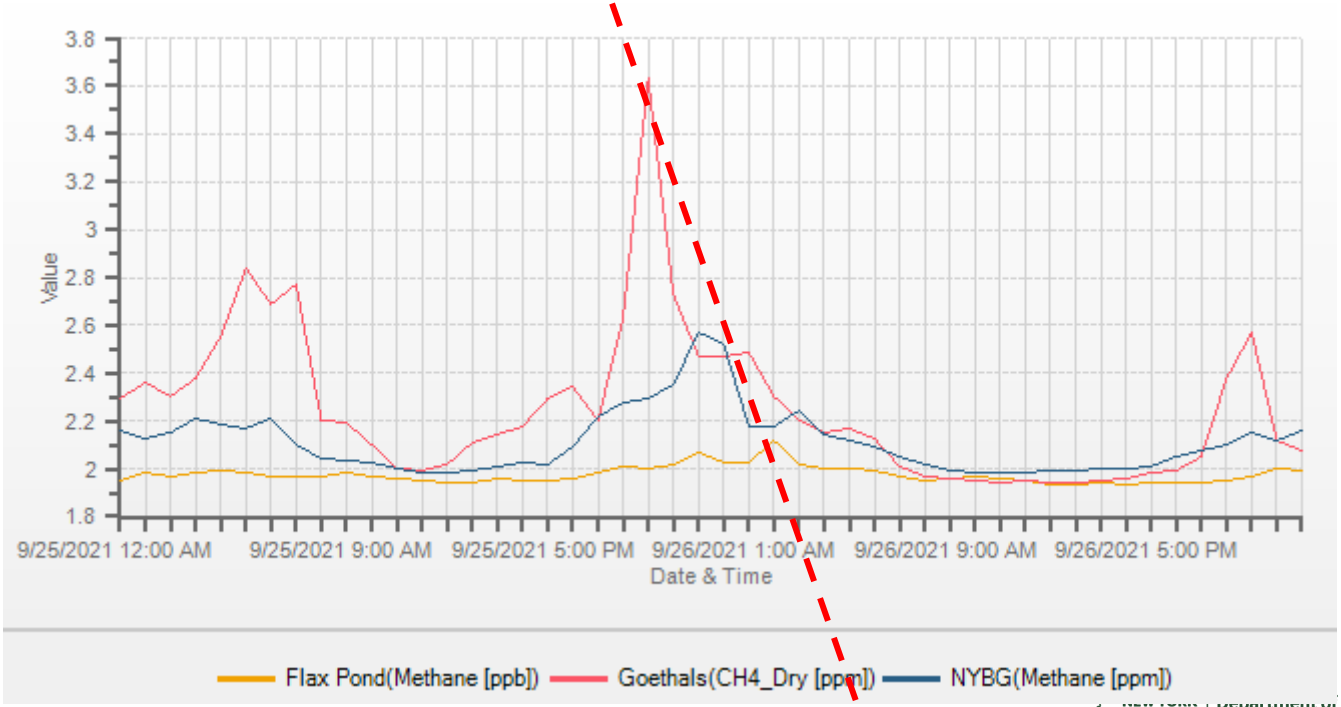


Propane powered golf carts, generators

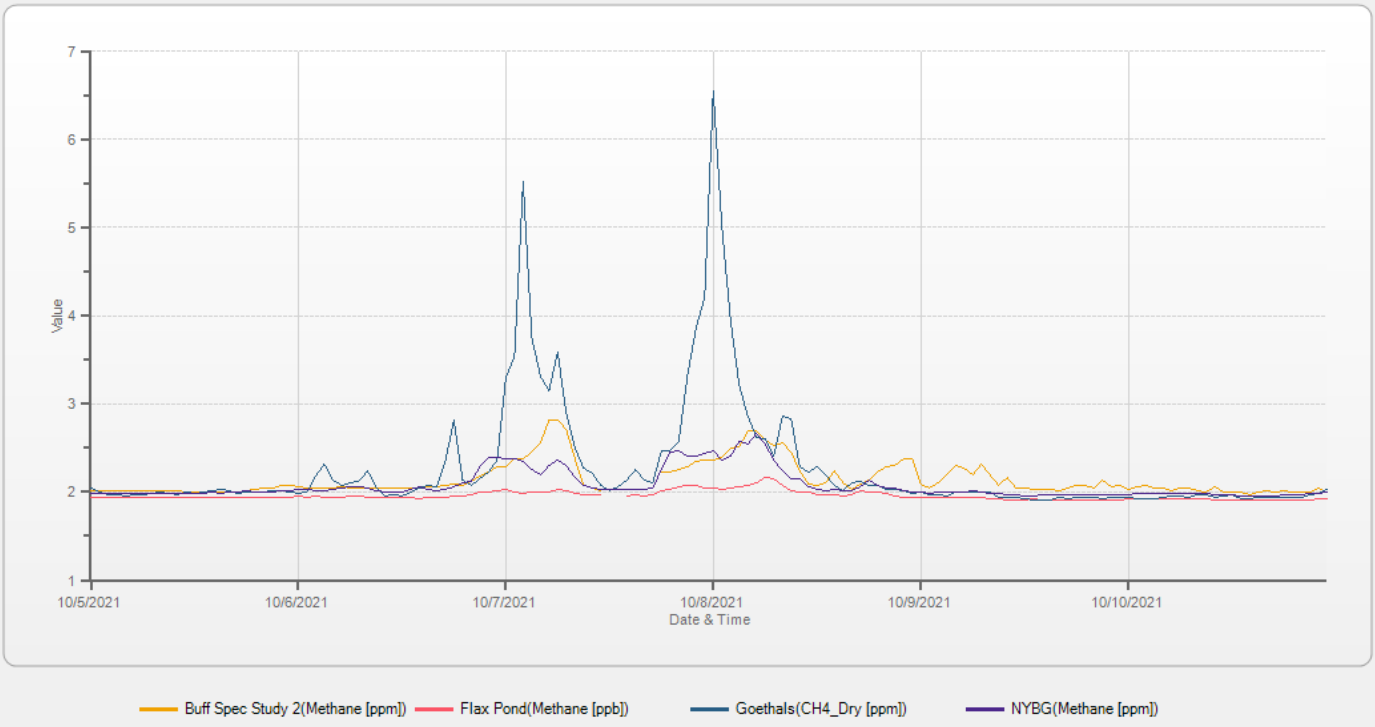
Diurnal Seasonal Methane



Methane Time Series: 2 Days

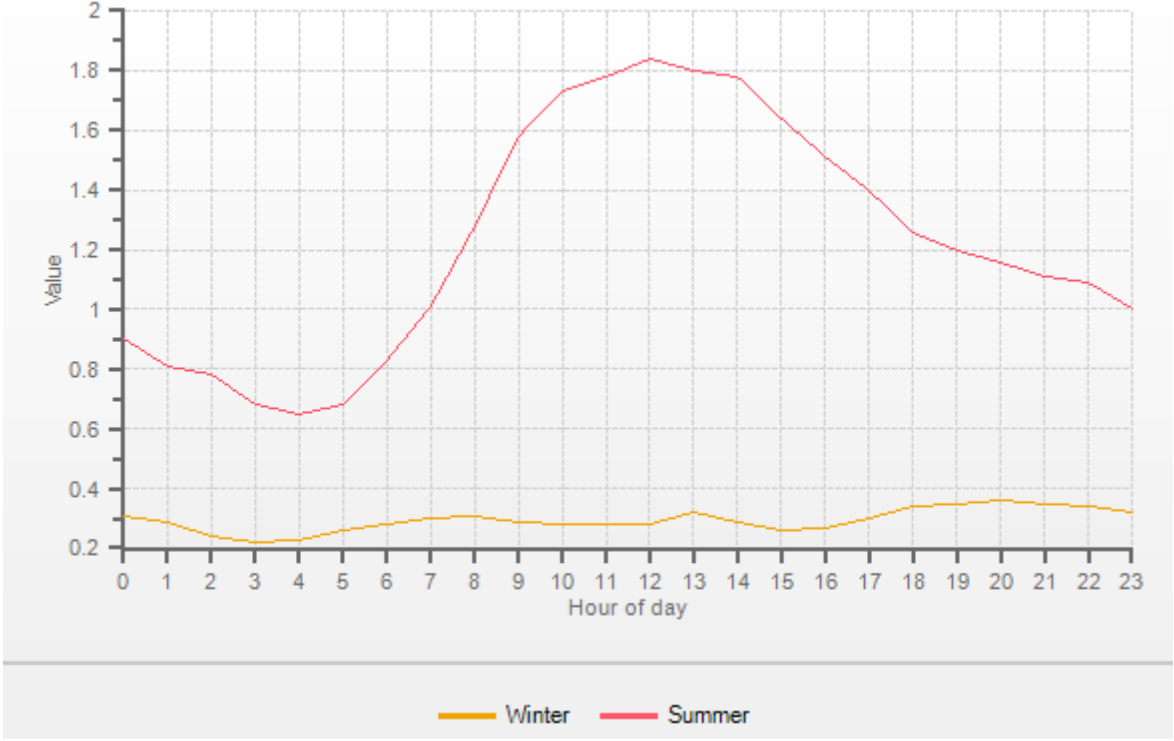


Methane Time Series: 6 Days

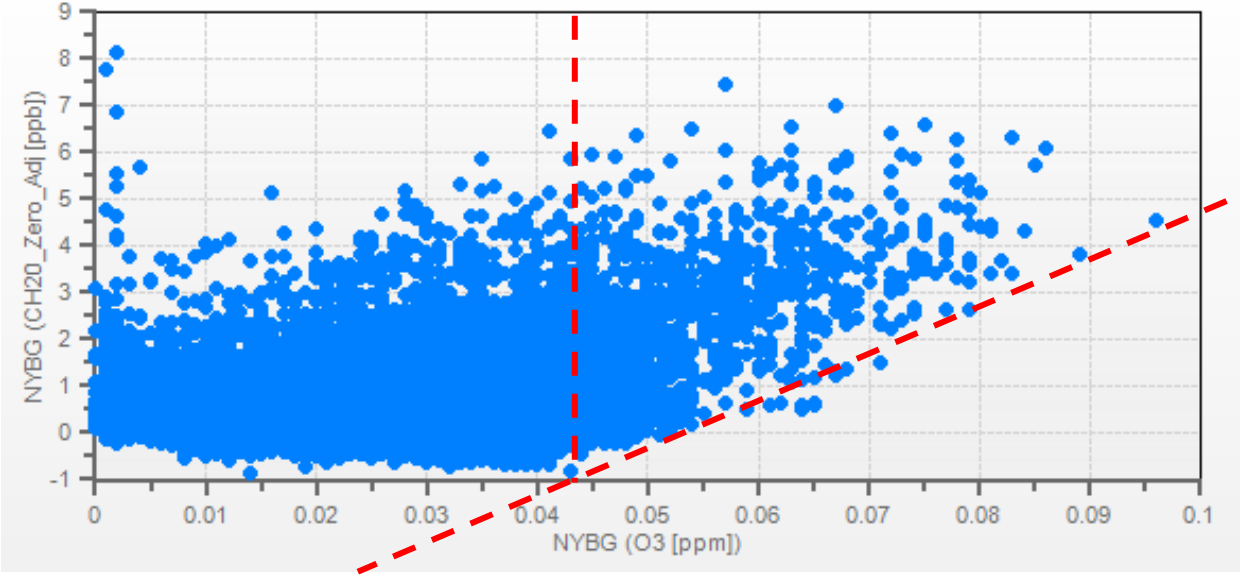


The wind was out of the East

Diurnal Seasonal HCHO



You can have Ozone without HCHO but you can't have a lot of Ozone without HCHO



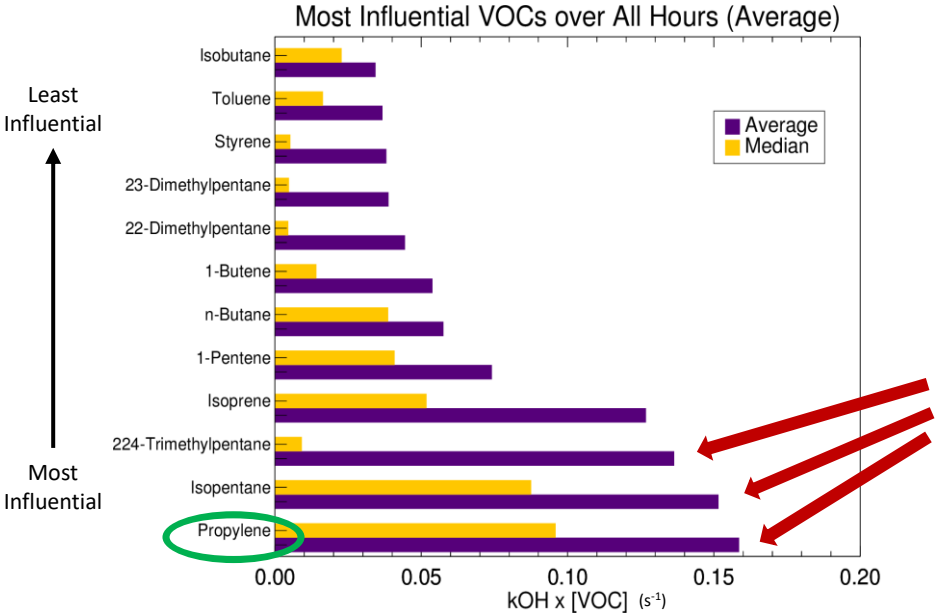
NYBG 1-Hr Data 6/1/20 – 9/27/21

NESCAUM - NYSERDA Project: LISTOS-EMP

- Establish a sampling site on Staten Island to measure ambient VOCs and met to investigate the contribution of upwind sources including the petrochemical industry and I-95 transportation corridor sources.

- VOC measurements from this new site and from sites in the Bronx and Rutgers will be analyzed using sector analysis and / or source apportionment techniques and compared to the EPA emissions inventory to better understand the sources of ozone precursors in the NYC region.

VOCs Measured May 17 and 18, 2017
Ranked by Reactivity with OH (UMD Flight Canister Data)



Ranked by *Average* of All VOC Canister Data (Purple)

Need to address Ozone precursors

Where is the Propylene coming from?

Isoprene is not dominant – Why?

Based on the 50 VOCs measured – does not include oxygenates, consumer products

From A. Ring, UMD, et al., in prep.; VOC can analysis by ME DEP

Staten Island VOC Monitoring Site: 3.4 km from Bayway Refinery

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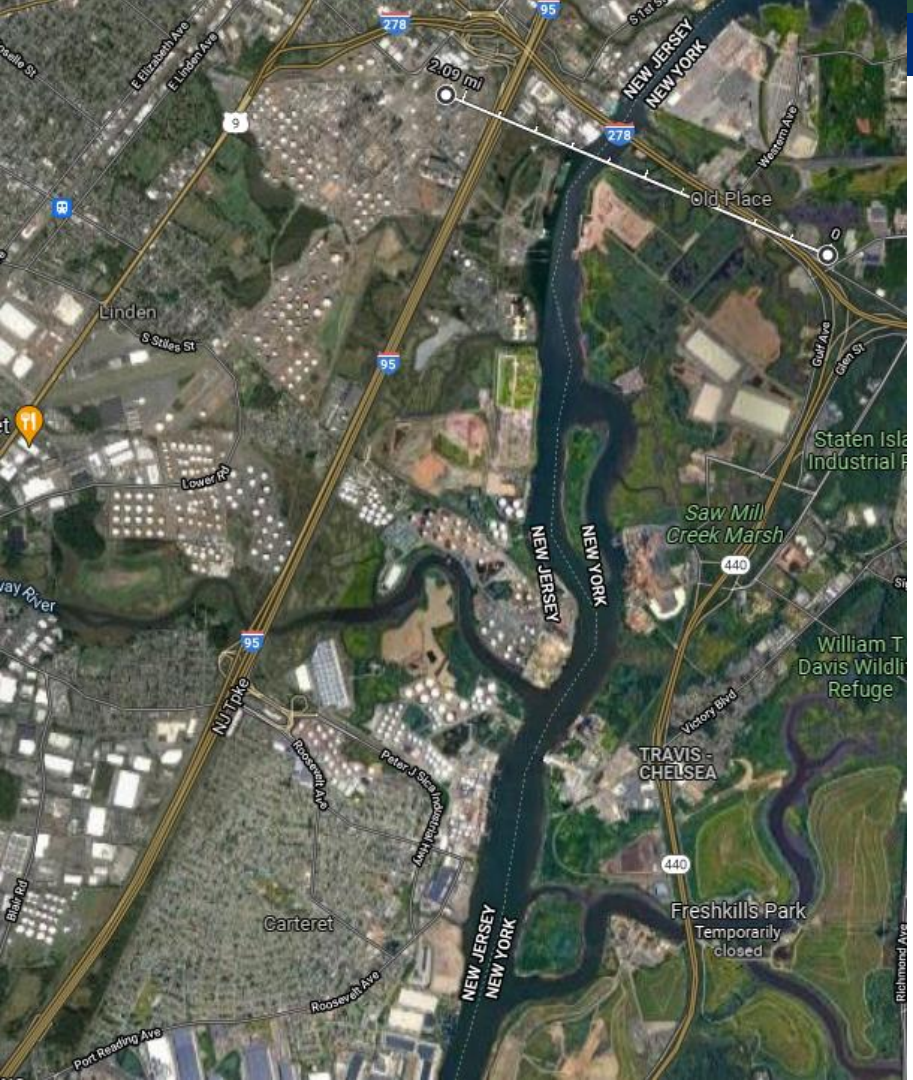
Zooming Out



The monitoring site is downwind of multiple petroleum storage and distribution facilities.

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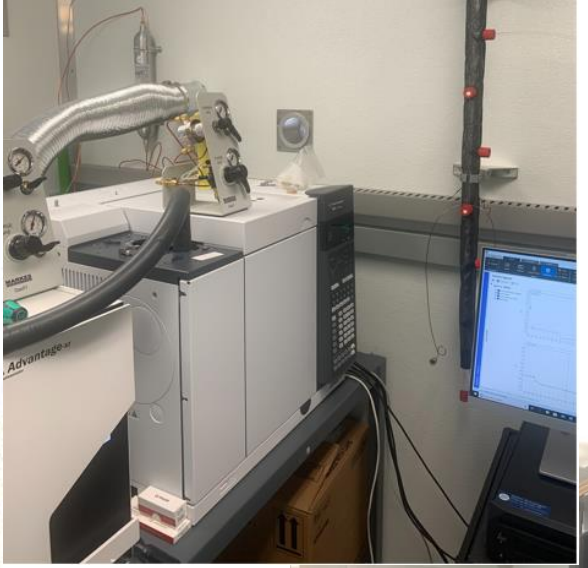
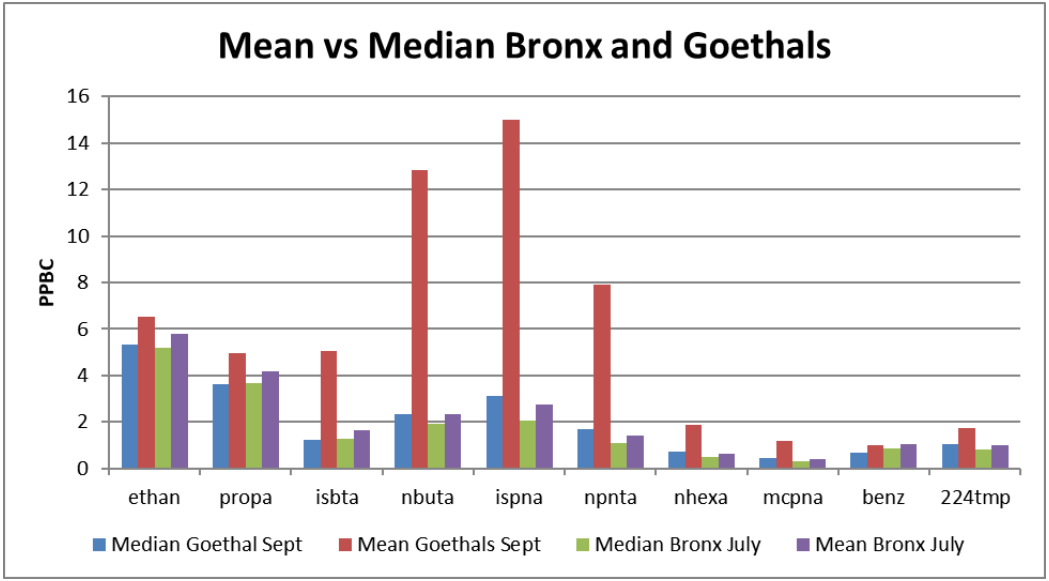

Advantage


PICARRO

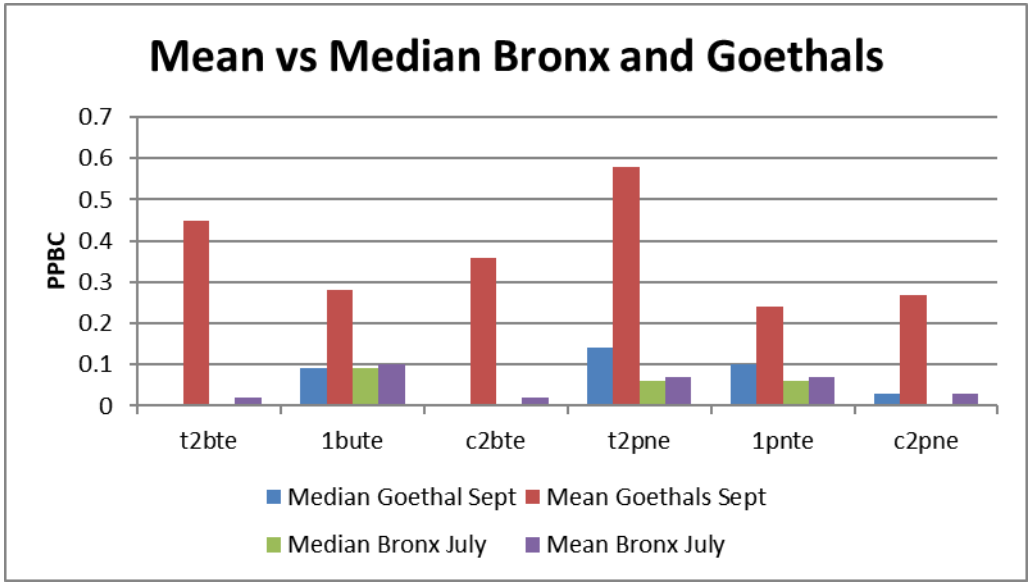
Goethals Preliminary September Data compared to the Bronx PAMS July Data



Bronx PAMS site: the Mean and Median are similar

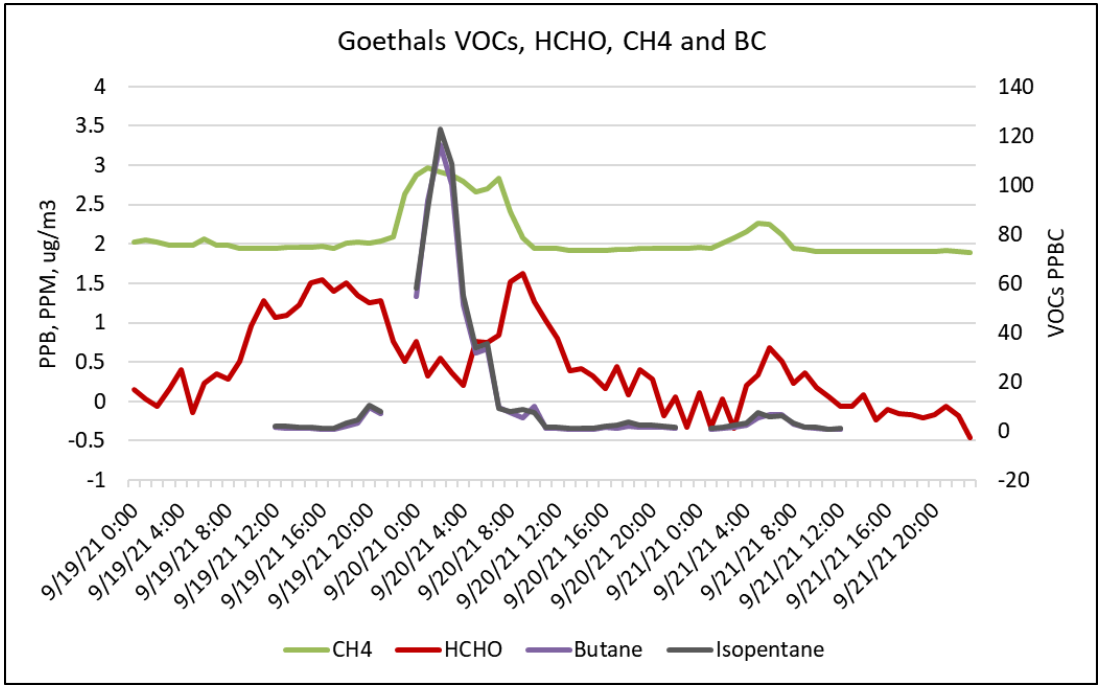
Goethals: The Mean is much higher for VOCs related to gasoline production

Goethals Preliminary September Data compared to the Bronx PAMS July Data



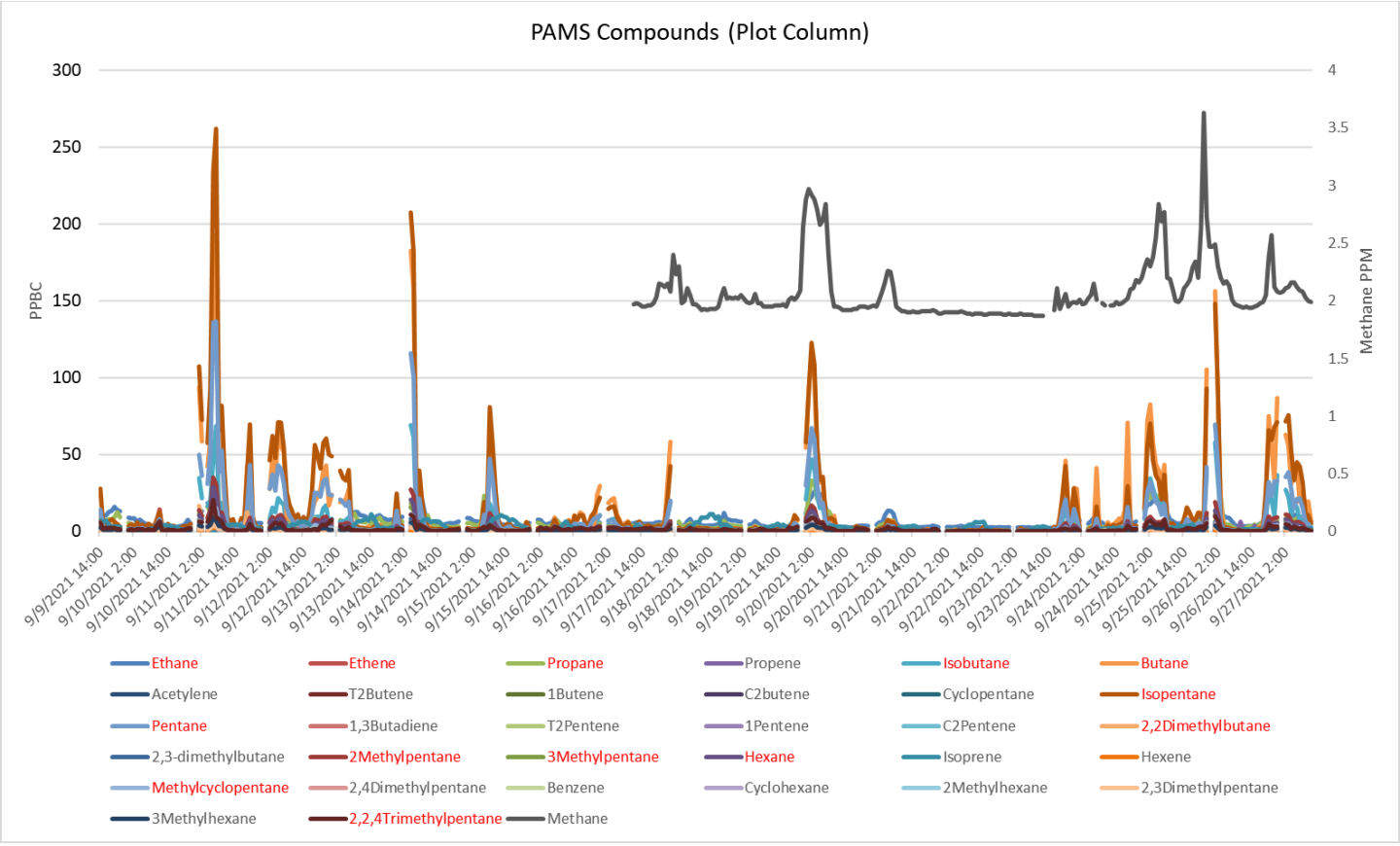
The reactive alkenes at Goethals have Means that are 3 to 4 times higher than the Medians

Goethals Preliminary VOC 1-Hr Data



Methane increases with other VOCs

Goethals Preliminary VOC 1-Hr Data

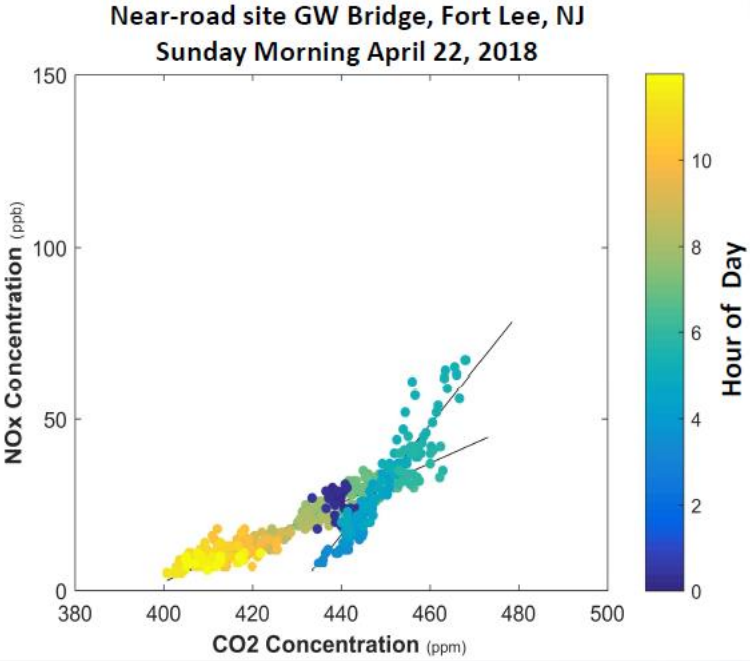


CO_2 Monitoring

EPA

CO_2: An Important Measurement in unraveling Combustion Emission Source Signals

Six BEACO2N nodes integrated into NYC DEC and NJ DEP sites to provide high time resolution, high precision CO_2 measurement to complement existing FRM/FEM measurements. Continue to work with LISTOS participants to expand measurements to large domain



Lamont-Doherty Earth Observatory
Columbia University | Earth Institute

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Thank You

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