

# Air Quality / Oil & Gas Update

Environmental Services

Public Works and Natural Resources

Dr. Jane Turner

Air Quality / Oil and Gas Coordinator

Tuesday, August 3, 2021





## Oil and Gas

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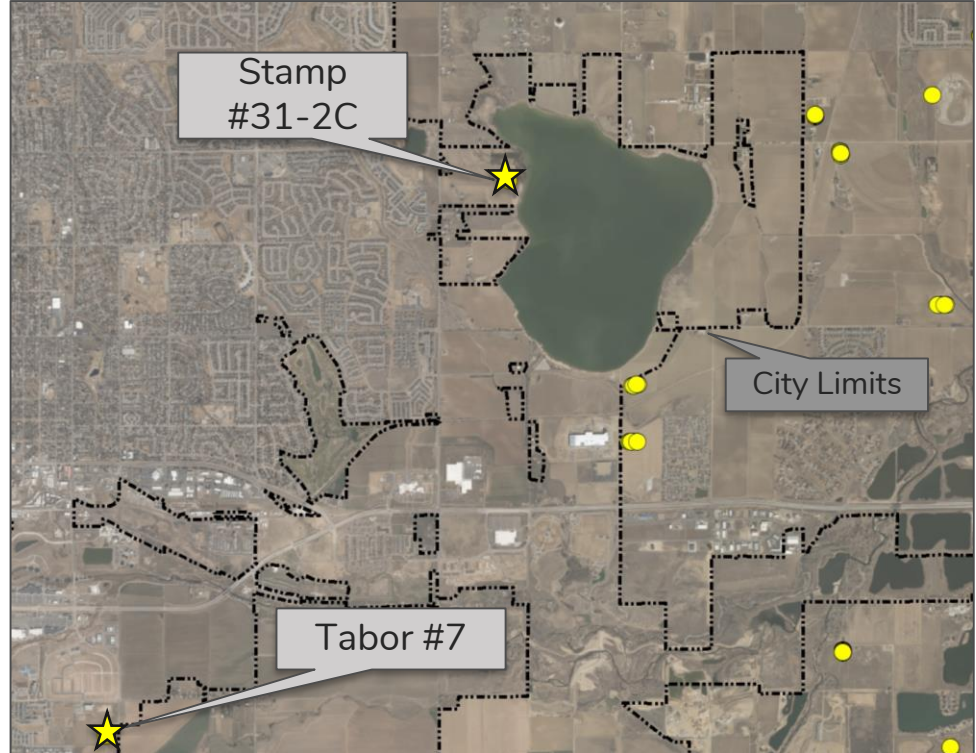
## State Level

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- **AQCC** – O&G emission rulemaking (Dec. 2021)
  - Reduce GHG emissions by 60% by 2030
  - CC4CA, Staff participation
- **COGCC** - Financial assurances rulemaking (early 2022)
  - Ensure operators stay financially responsible
  - CC4CA, Staff participation
- **CDPHE** – aerial oil and gas surveys of air impacts
  - Boulder, Weld, and Laramie Counties

# Longmont Oil & Gas - Closures

- The last 2 active oil and gas wells are now plugged
  - Stamp Well #31-2C
    - Plugged July 2021
  - Tabor #7 Well
    - Plugged June 2021
- Operators working to remove remaining infrastructure









● Active well surface locations outside city

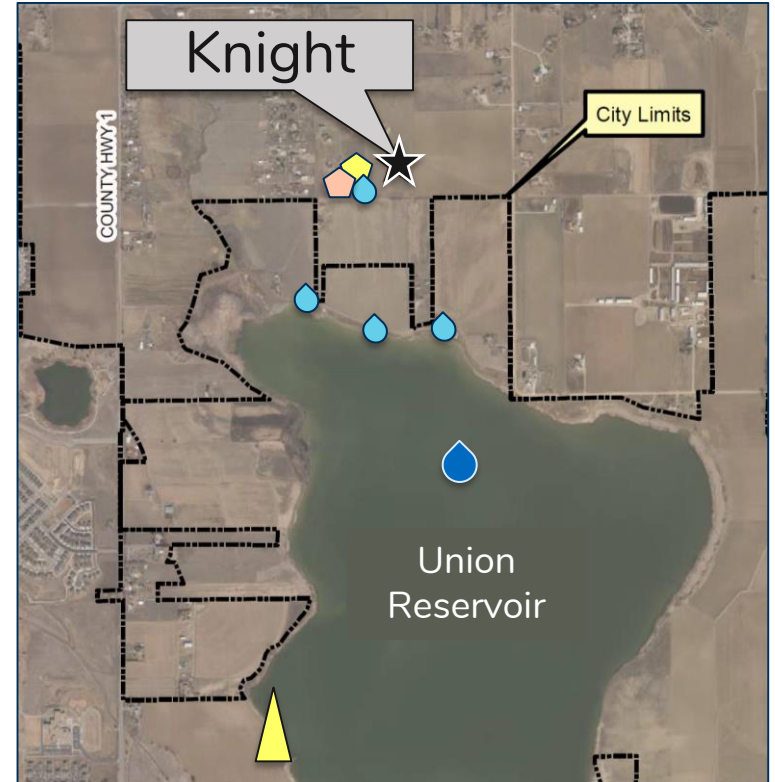
# Knight Wells Update

- Knight Wells - Cub Creek Energy
  - 12 wells drilled
    - February - June 2021
  - Hydraulic fracturing
    - Started August 1, 2021
    - 8-10 weeks of work






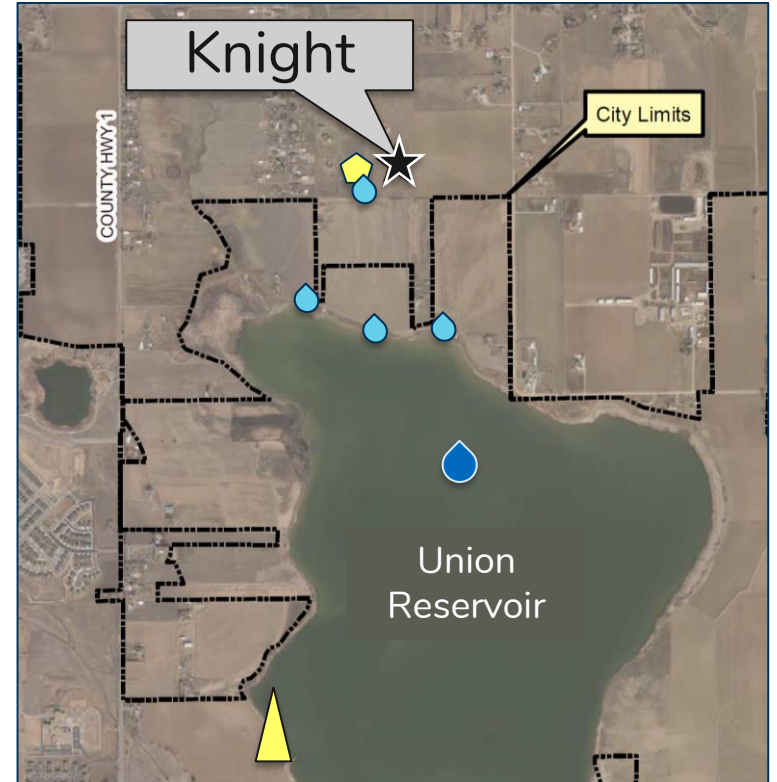
# Oil & Gas Monitoring near Knight Wells

- Adjacent to the Knight well pad
  - Groundwater monitoring 
  - Air Quality monitoring sensors  
- North shore of Union Reservoir
  - 3 groundwater monitoring wells 
- Union Reservoir
  - Surface water sampling 
  - Air quality monitoring station 
    - Research grade
    - 25+ compounds measured



# Oil & Gas Monitoring - Results

- Adjacent to the Knight well pad
  - Groundwater monitoring 
    - **No pollutants detected**
- North shore of Union Reservoir
  - 3 groundwater monitoring wells 
    - **No pollutants detected**
- Union Reservoir
  - Surface water sampling 
    - **June 2021 sample clean**
    - Awaiting results for July sample



# Air Quality Station West - Relocation

- New hangars expected to impact data
  - Construction in October 2021
- Airport air quality station components
  - 30 ft. steel tower for instruments
  - Small trailer for computers



# Air Quality Station West - Relocation





# Lykins Gulch proposed location view south from bike path



# Presentation by Dr. Detlev Helmig Boulder AIR



West: Vance Brand Airport



## Air Quality Study Update



East: Union Reservoir



## Longmont Air Quality Study

August 3, 2021, Update


Detlev Helmig

Boulder A.I.R.

*Please note that all data and interpretations are preliminary.*



## Presentation Topics April 6

1. General trend in oil and gas high concentration spikes
  2. Exceptional, extremely high concentration oil and gas plumes in early 2021
  3. Photochemical smog event in March 2021
  4. Ozone control recommendations
- 



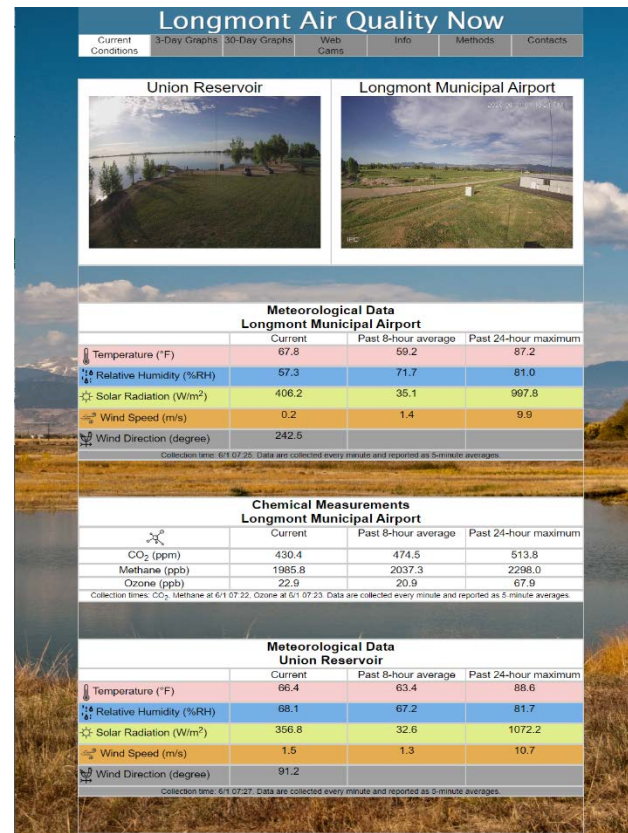
## Presentation Topics August 3

1. New network site
2. Updates on exceptional, extremely high concentration oil and gas plumes seen in early 2021
3. Summer 2021 air quality
4. CO<sub>2</sub> occurrences at Longmont Municipal Airport
5. Outlook Q3 2021

## Longmont Municipal Airport (LMA)



- Operating since September 2019
- 1.75 Years of data
- > 99 % Data coverage
- Meteorology
- Ozone
- Methane
- CO<sub>2</sub>
- Webcam



- Since March 2020
- 1.5 Years of operation
- > 99 % Uptime
- > 17,000 Site visits total

**New: - 1672 Website visits in Q2**  
**- Improved mobile device functionality**  
**- Implemented wind alerts for park staff**

## Longmont Union Reservoir (LUR)



- Operating since December 2019
- 1.6 Years of data
- > 99 % Data coverage

- Meteorology
- Ozone
- Methane
- CO<sub>2</sub>
- Nitrogen Oxides (NO, NO<sub>2</sub>, NO<sub>x</sub>)
- Volatile Organic Compounds (20 species)
- Particulate Matter (PM2.5, PM10)
- Webcam

# LUR Wind Alert

From alert.bouldair@gmail.com ★

↩ Reply   ↶ Reply All   → Forward   📁 Archive   🗑️ Junk   🗑️ Delete   More ▾

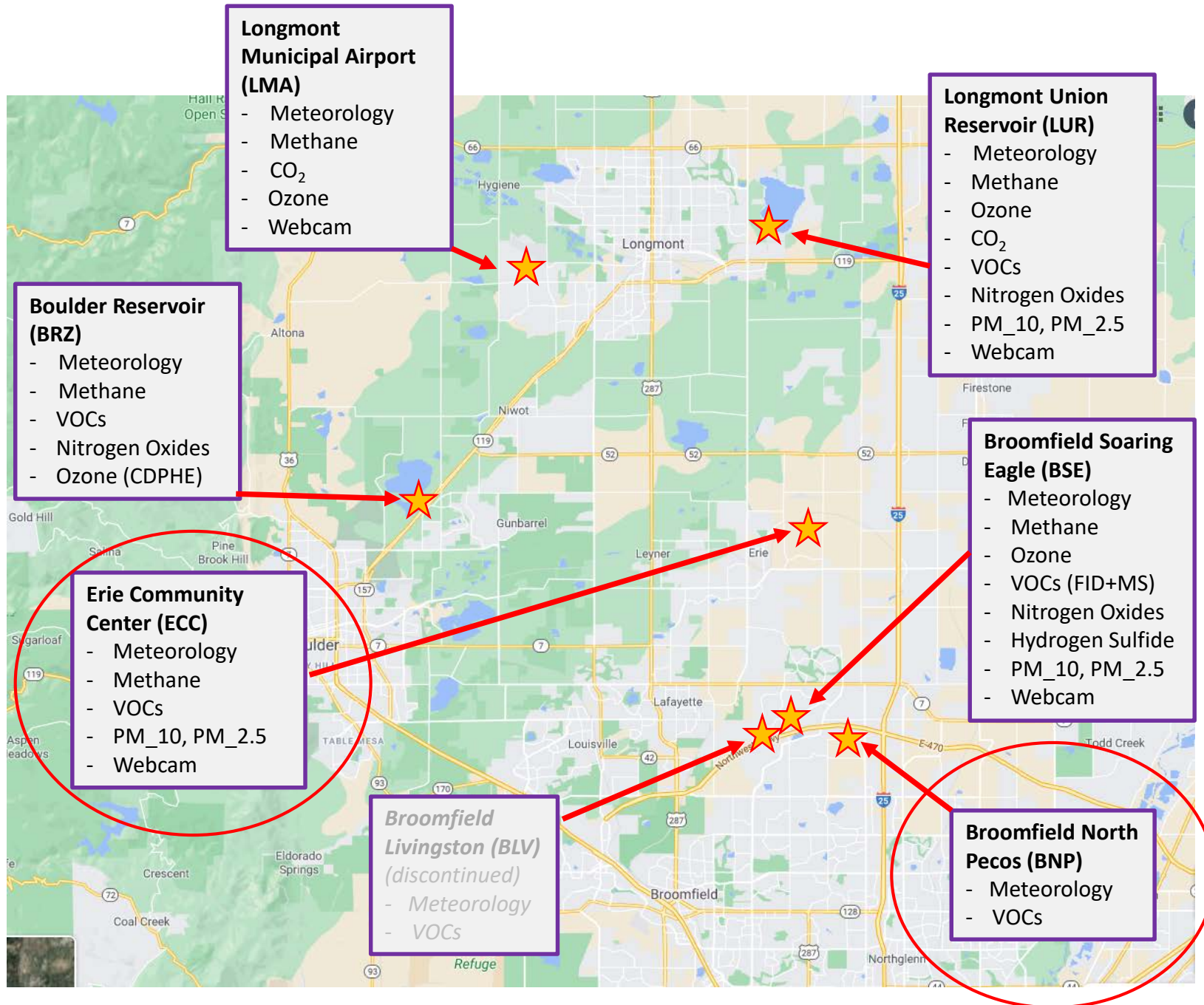
Subject **\*\* AIRLive ALERT \*\* High Wind Speeds from the West-NorthWest at Longmont Union Reservoir**

11:55 AM

To jane.turner@longmontcolorado.gov ★, Jeff.Friesner@longmontcolorado.gov ☆, Derek.barrett@longmontcolorado.gov ★, Jason.Stolz@longmontcolorado.gov ☆, Quinn.Kirner@longr **9 more**

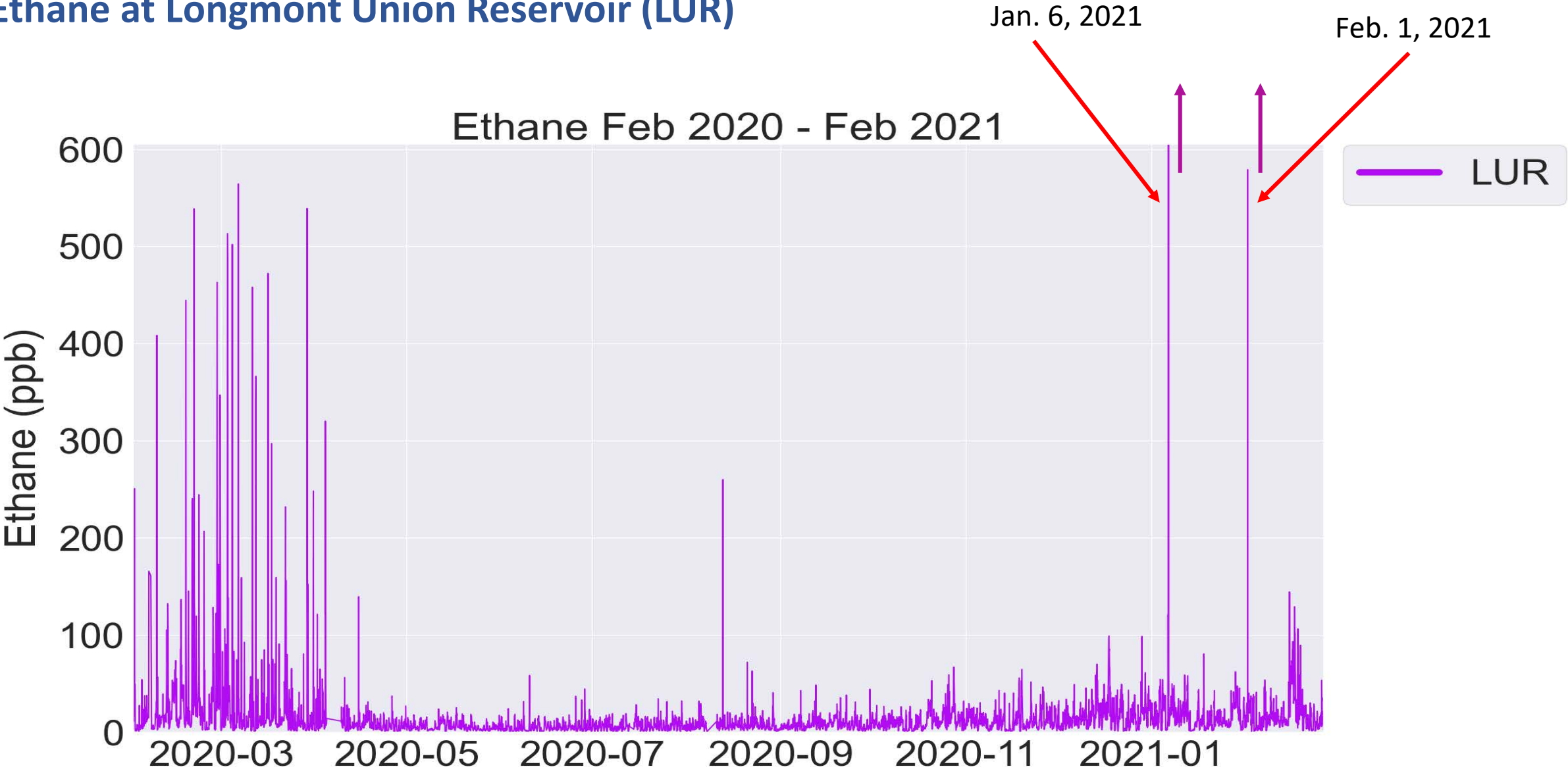
At 11:50 MDT on 08/03/2021, a 5-minute averaged Wind Speed value of 13 mph (6 m/s) was recorded at LUR. This value exceeded the alert threshold of 12 mph.  
Alerts will be emailed every hour until measurements fall below the threshold value.

Northern  
Colorado  
Front Range  
Air Quality  
Monitoring  
Sites  
operated by  
Boulder AIR

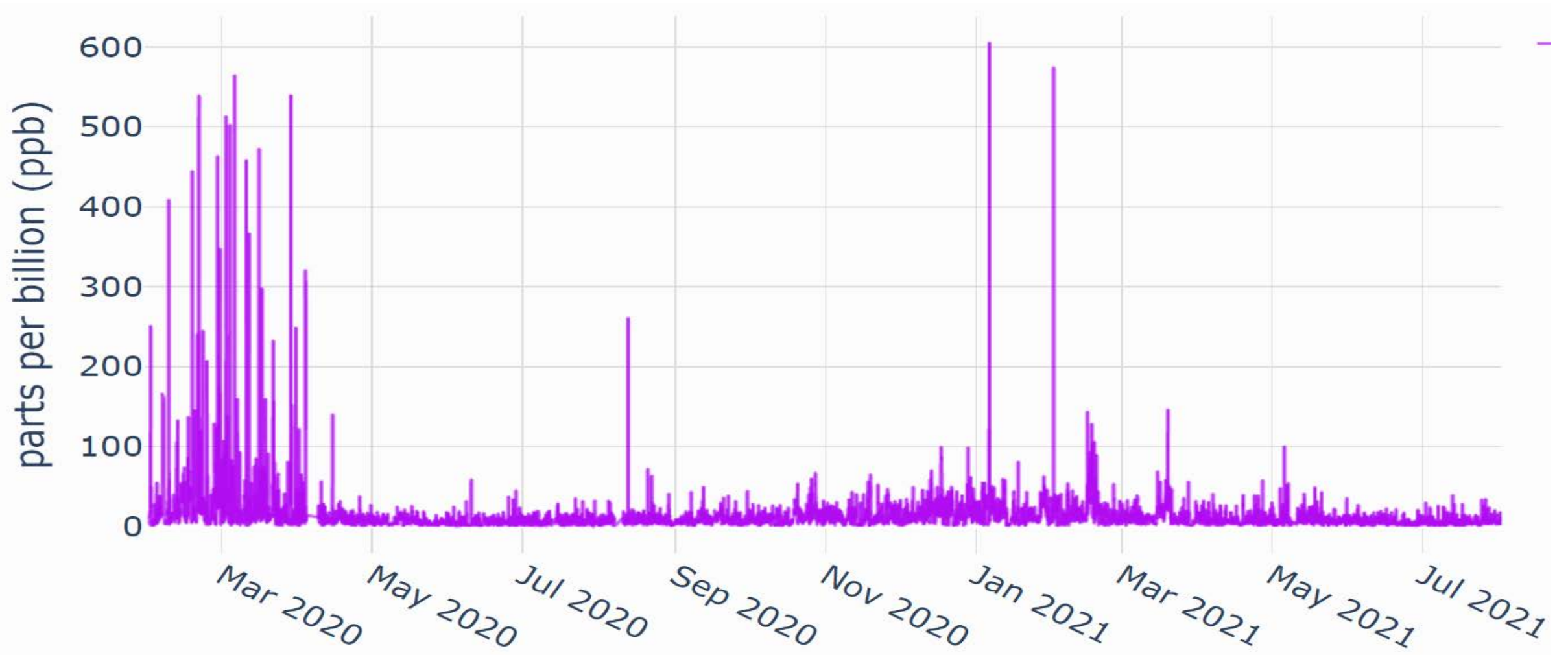




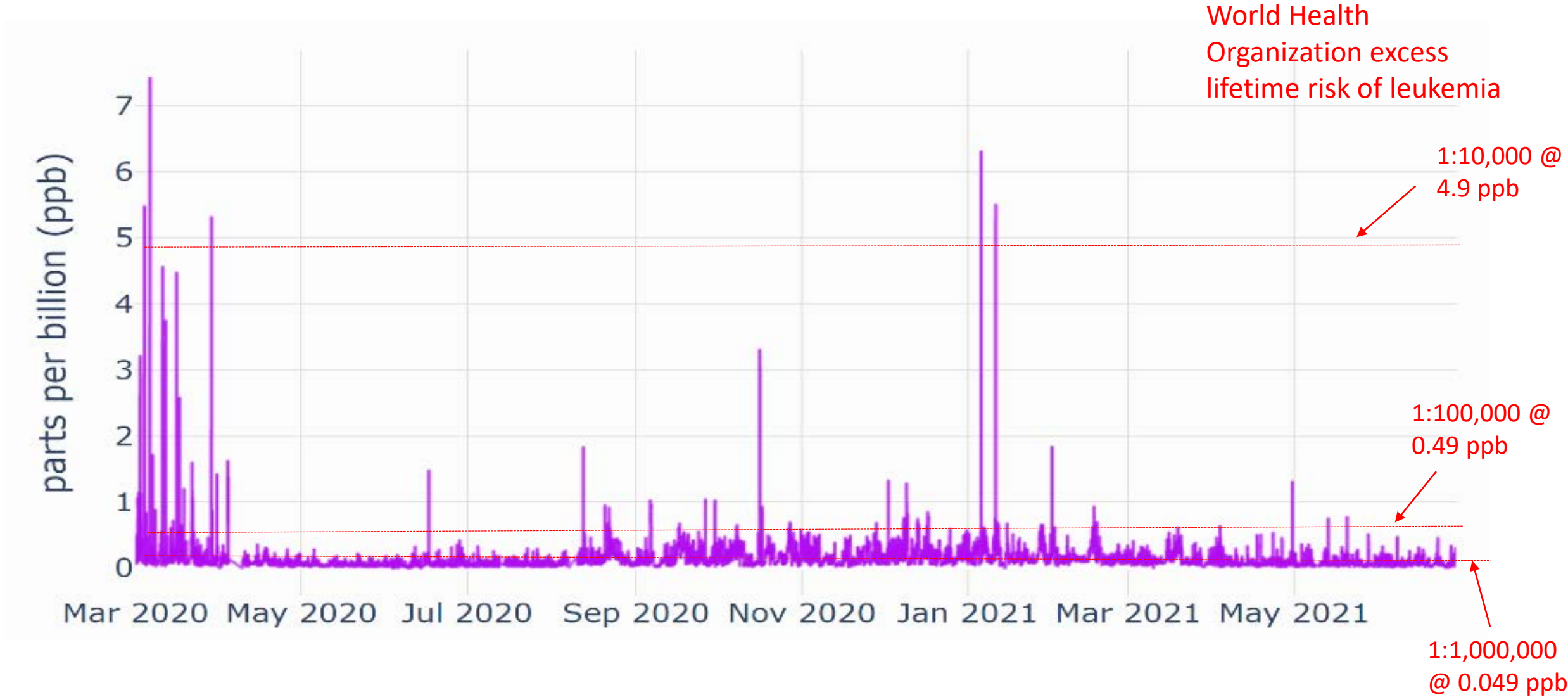
# Ethane at Longmont Union Reservoir (LUR)



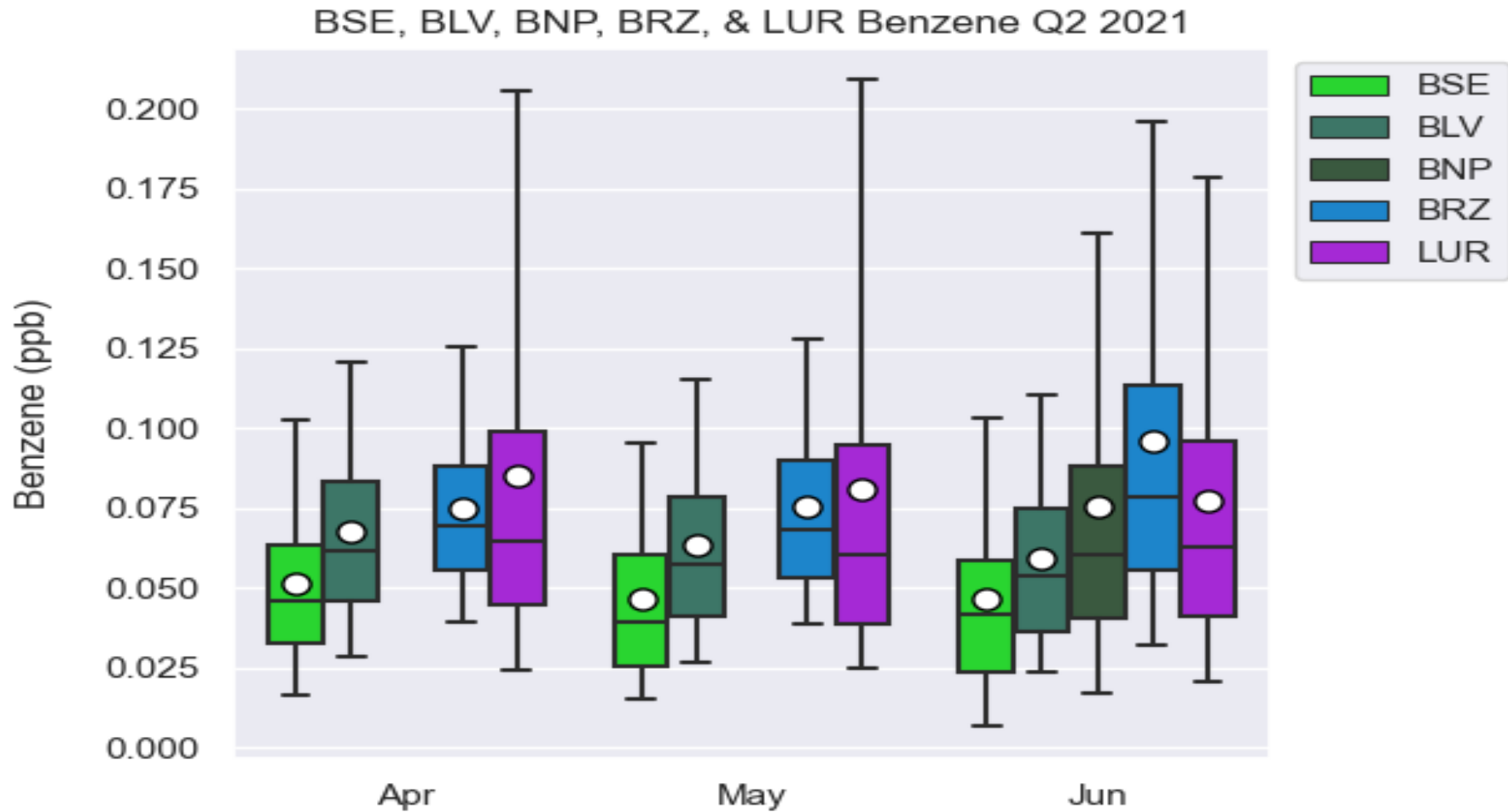
# Ethane at Longmont Union Reservoir (LUR) – updated to August 2021



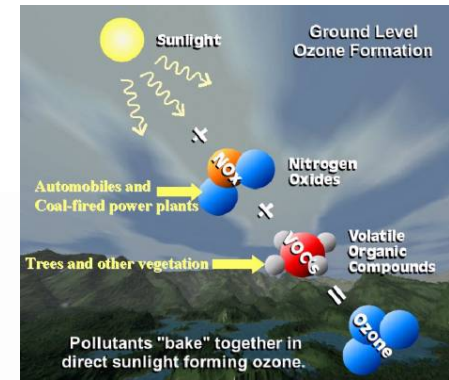
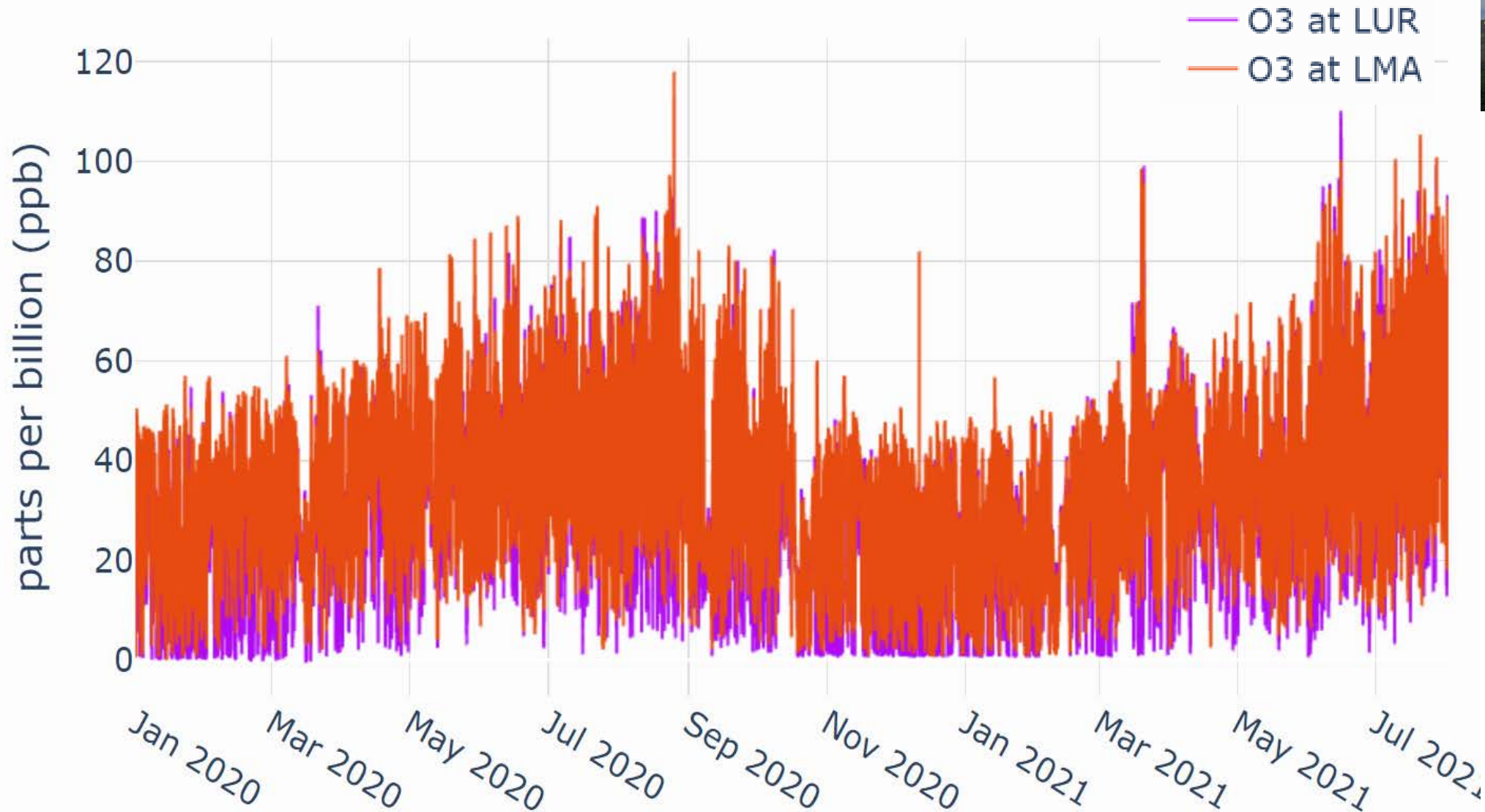
# Benzene at Longmont Union Reservoir (LUR) – updated to August 2021



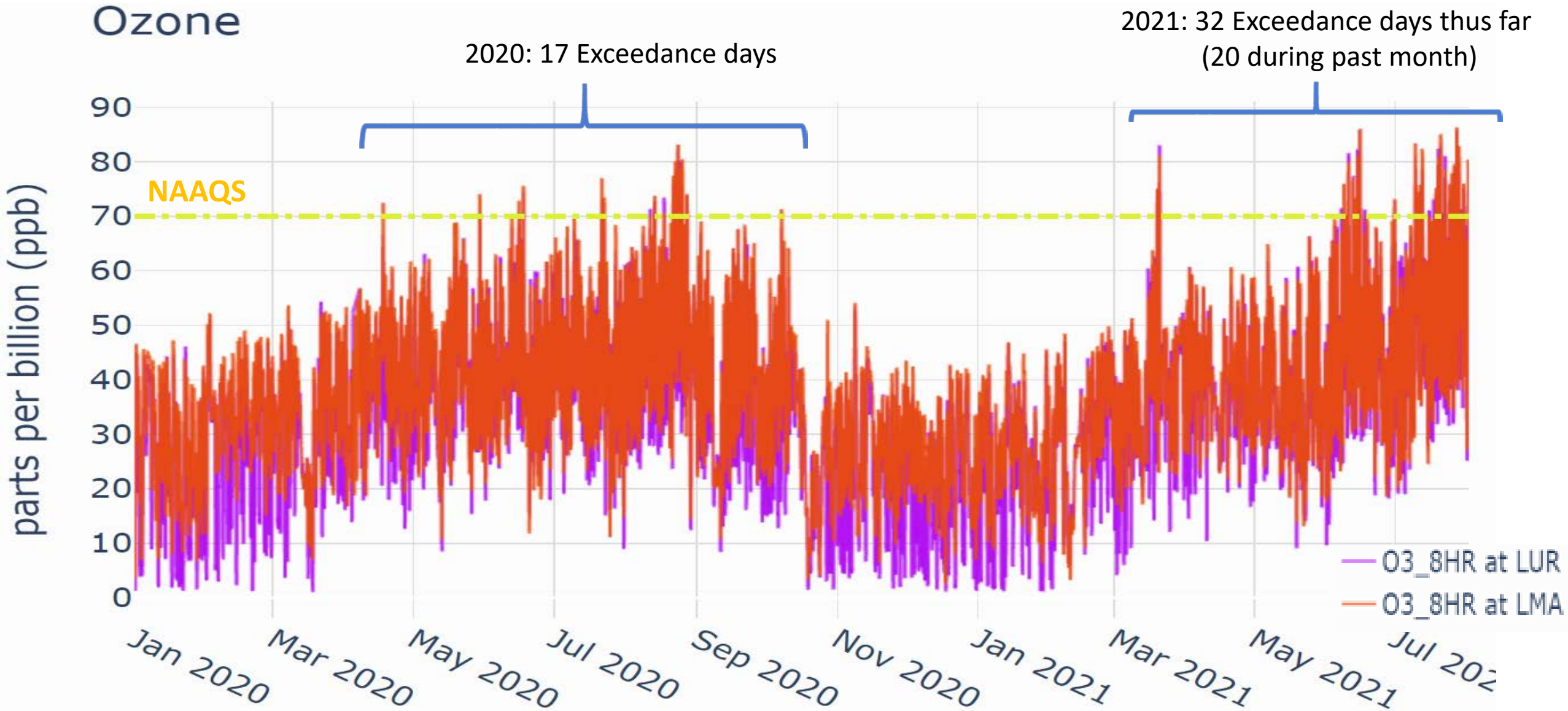
# Comparison Benzene at Longmont Union Reservoir (LUR) with other network sites



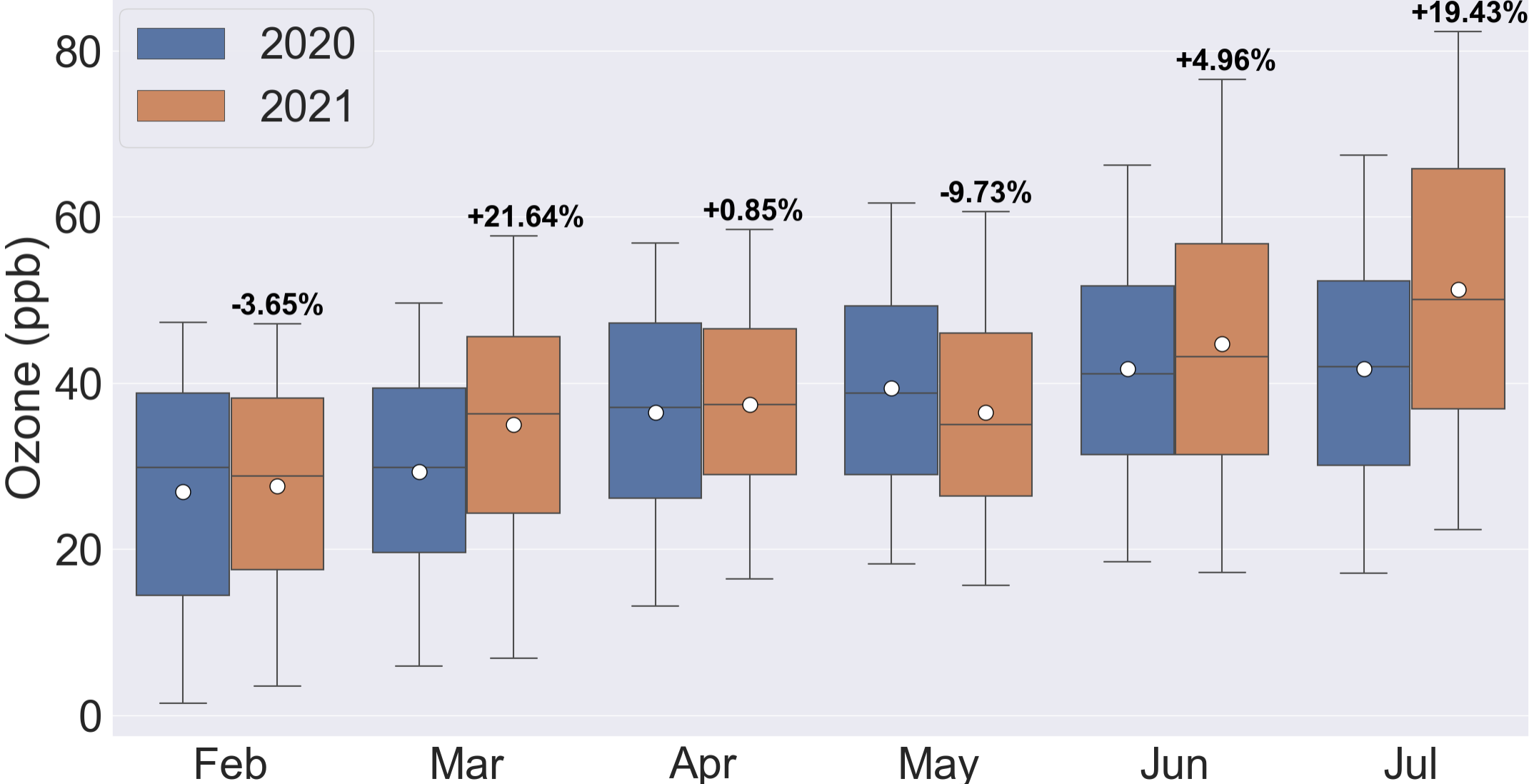
# Ozone at LUR and LMA 2020 - 2021



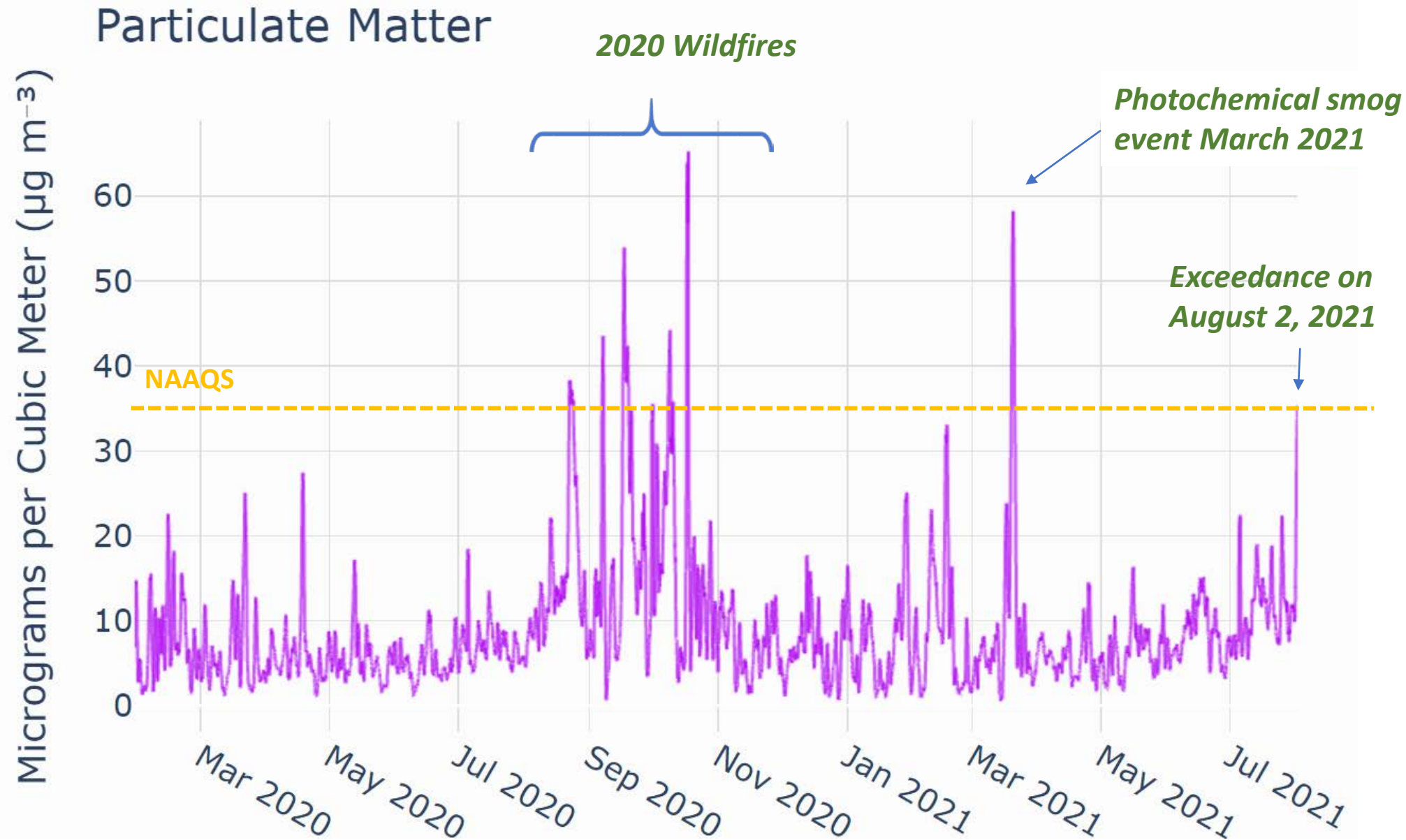
# 8-hour Ozone (regulatory standard) at LUR and LMA 2020 - 2021



# LUR Ozone

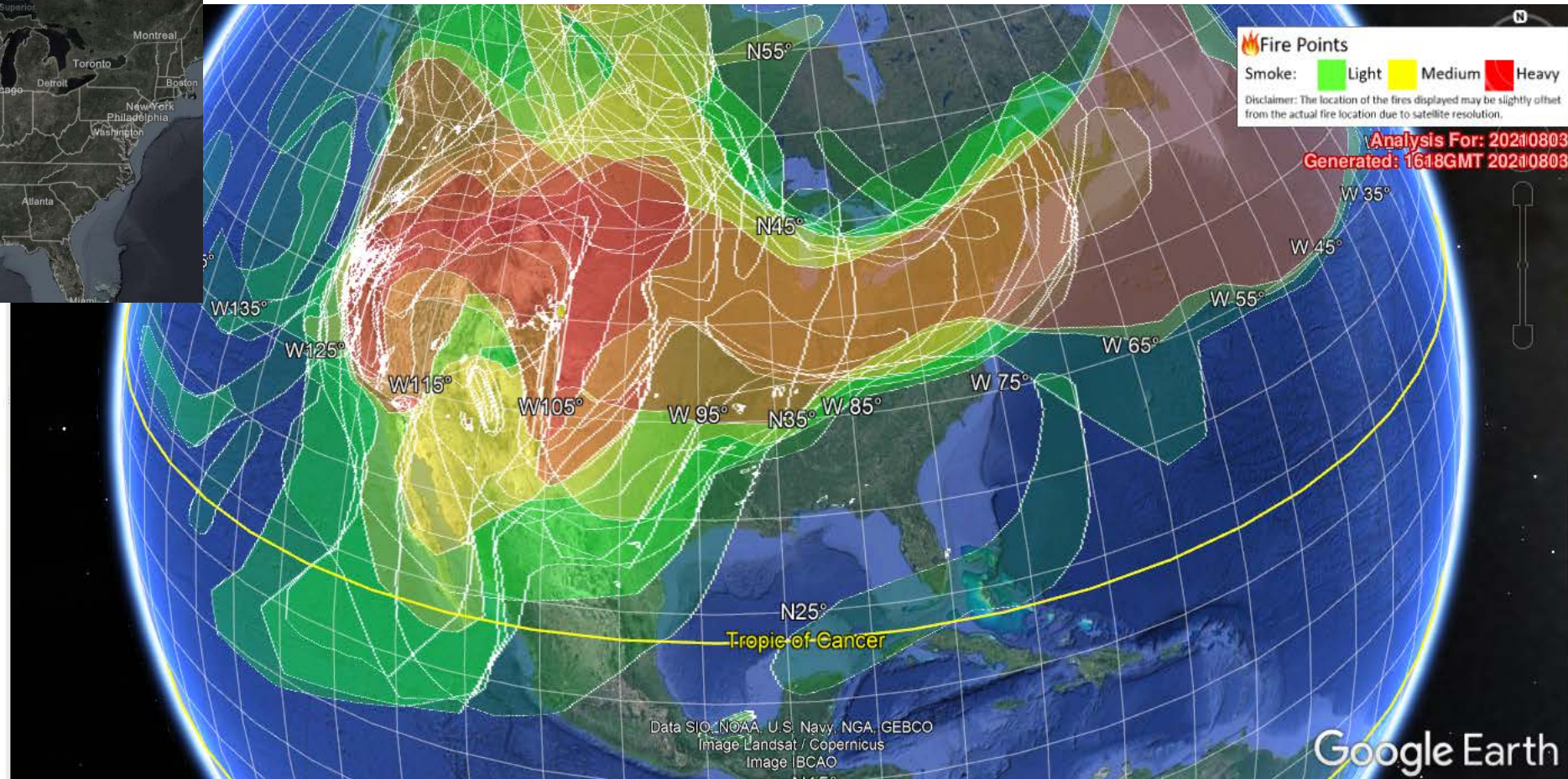
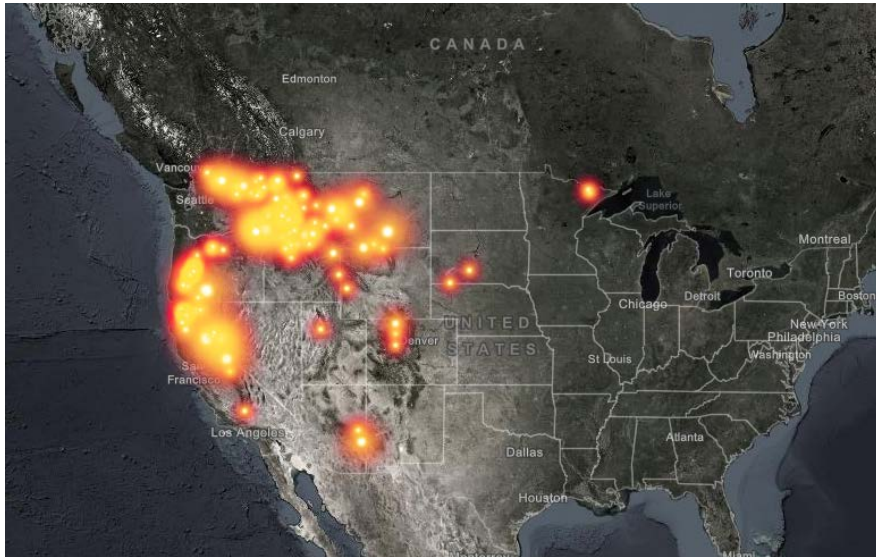


# Particulate Matter PM<sub>2.5</sub> (24-hour) at LUR 2020 - 2021

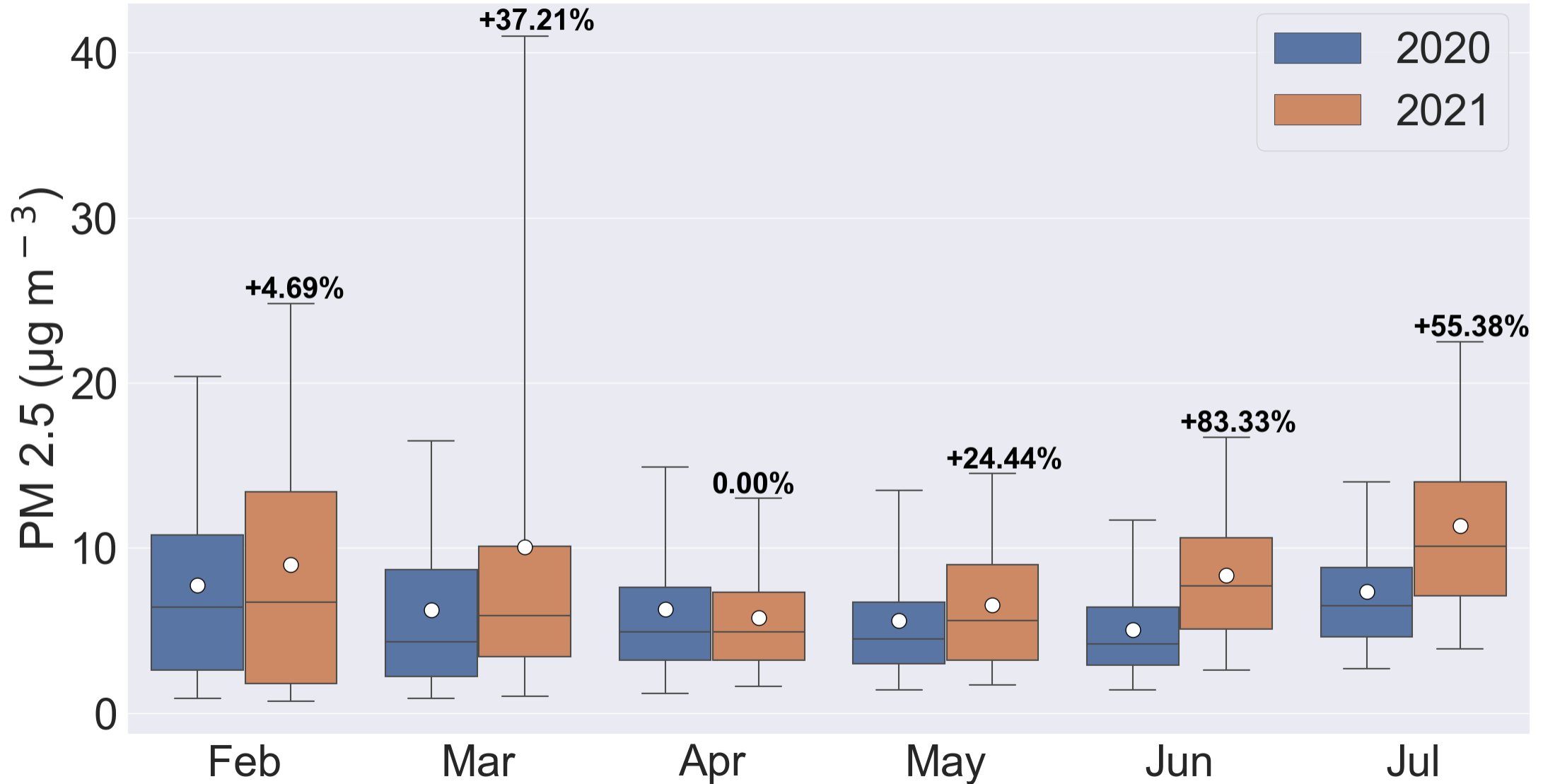




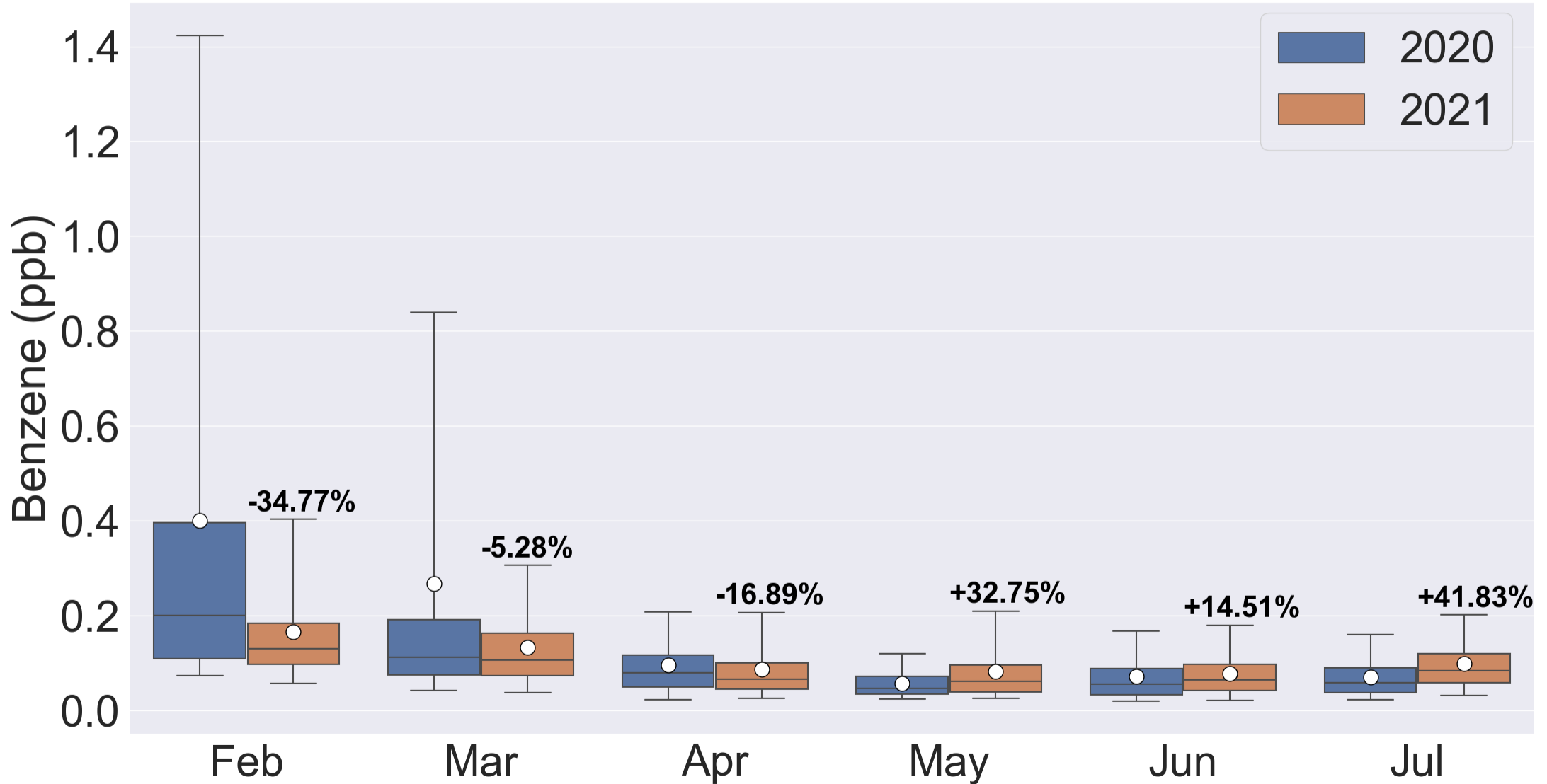
# Current Fires and NOAA Hazard Mapping Fire and Smoke Product – August 3, 2021



# LUR PM 2.5

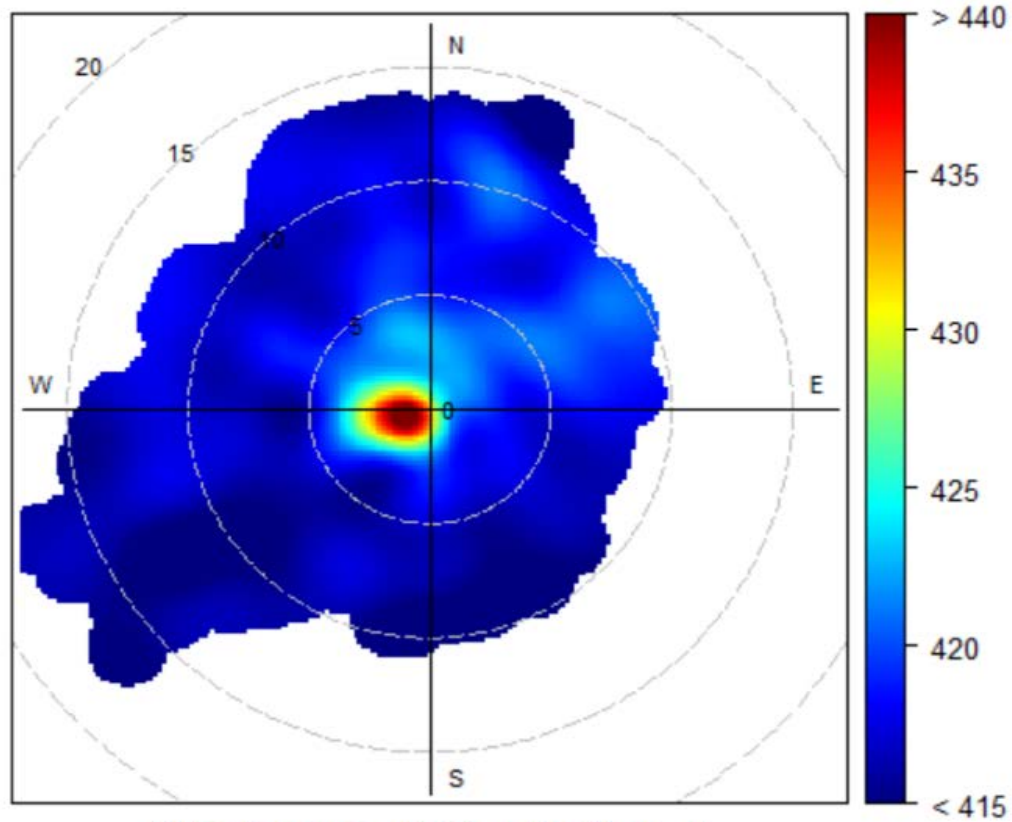


# LUR Benzene



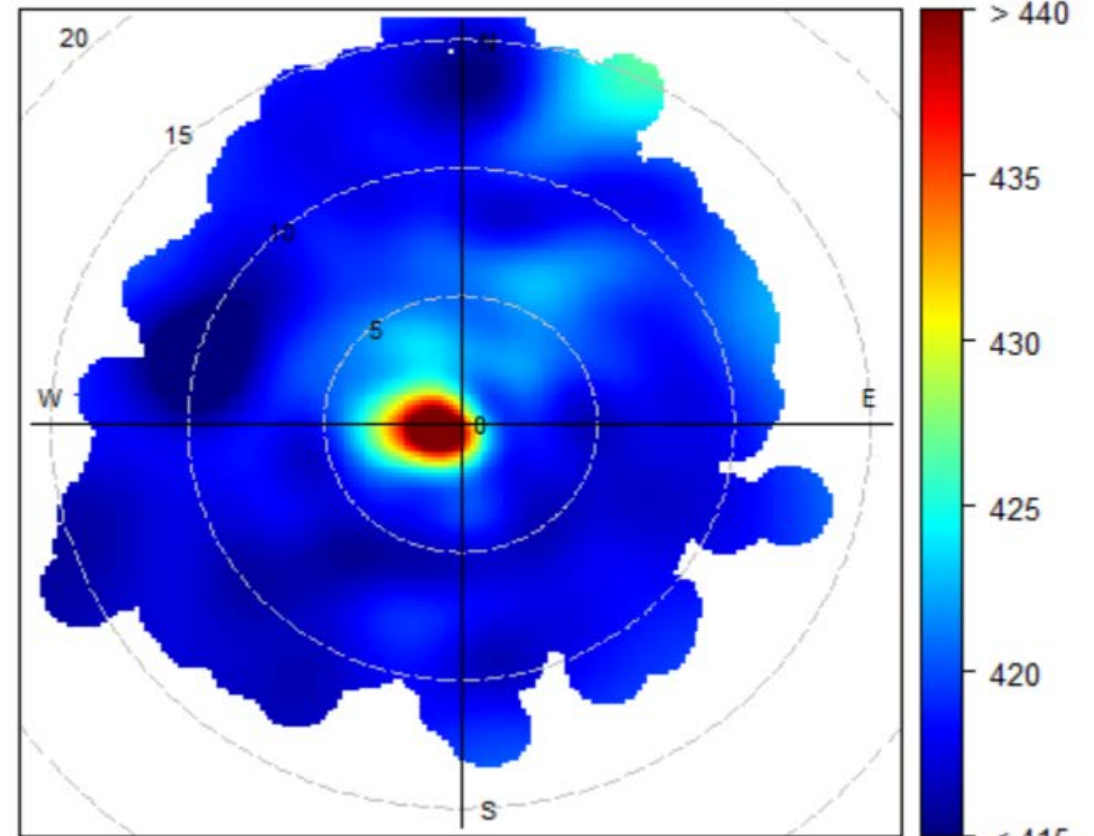
# CO<sub>2</sub> Dependence on Winds – LMA and LUR

LMA, CO<sub>2</sub> (ppm), Q2 2021



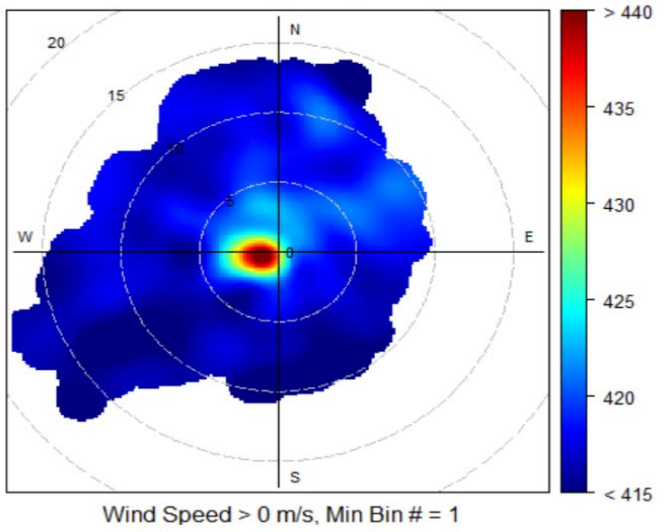
Wind Speed > 0 m/s, Min Bin # = 1

LUR, CO<sub>2</sub> (ppm), Q2 2021

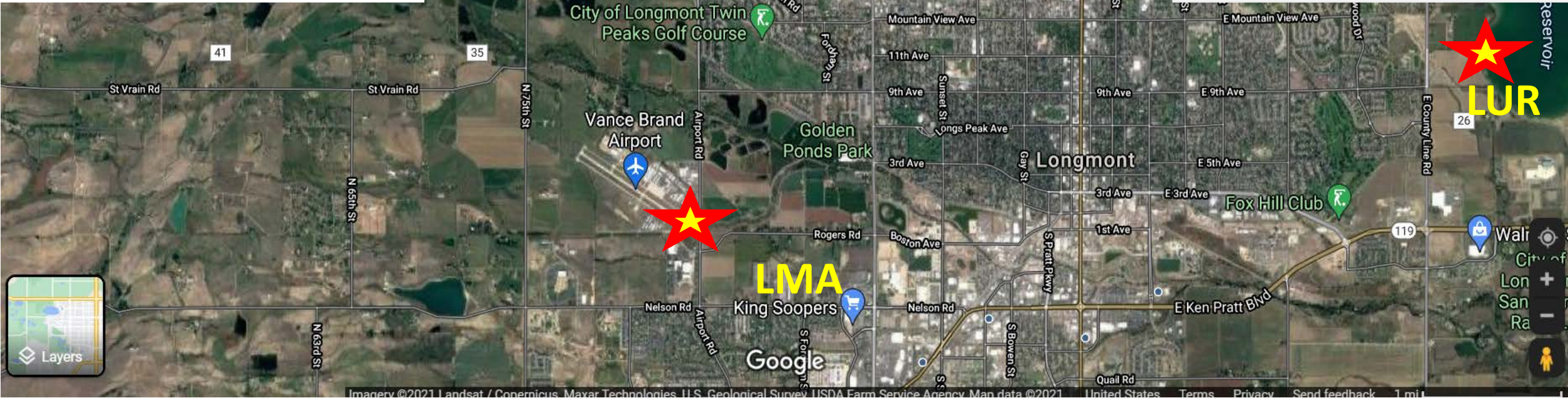
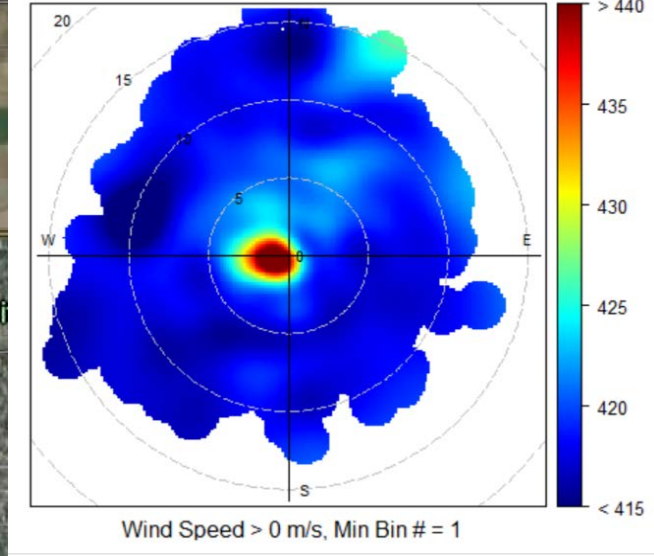


Wind Speed > 0 m/s, Min Bin # = 1

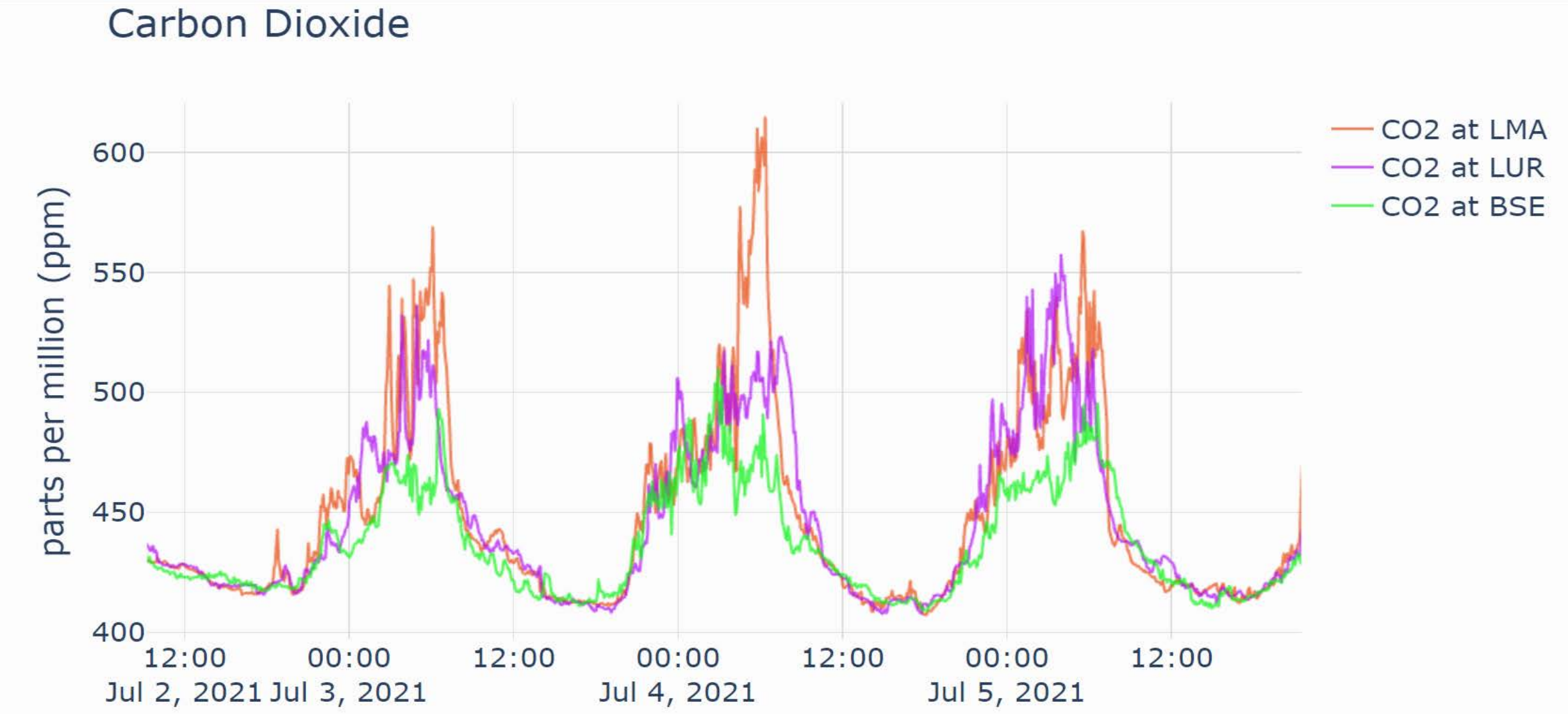
LMA, CO<sub>2</sub> (ppm), Q2 2021



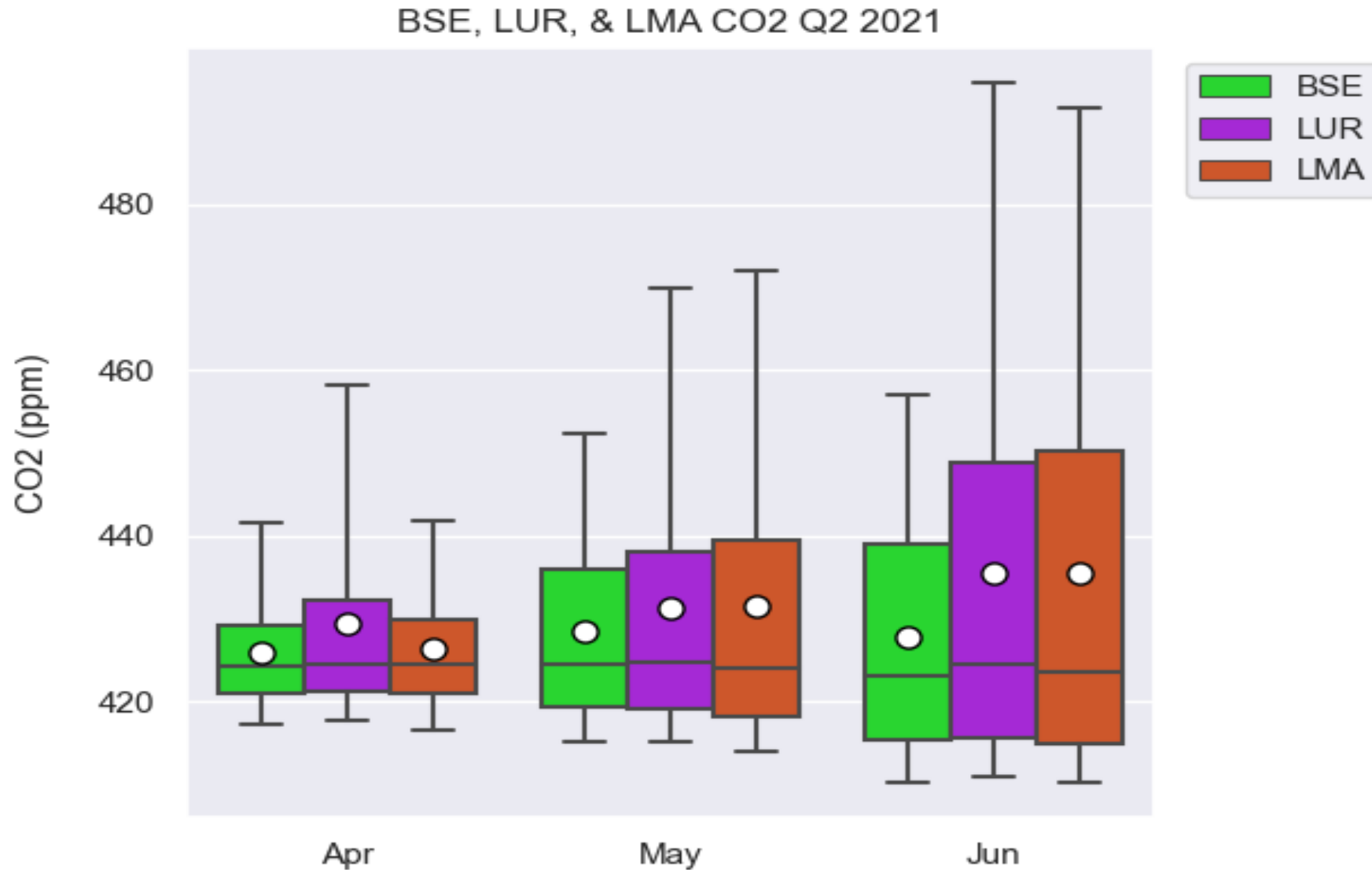
LUR, CO<sub>2</sub> (ppm), Q2 2021



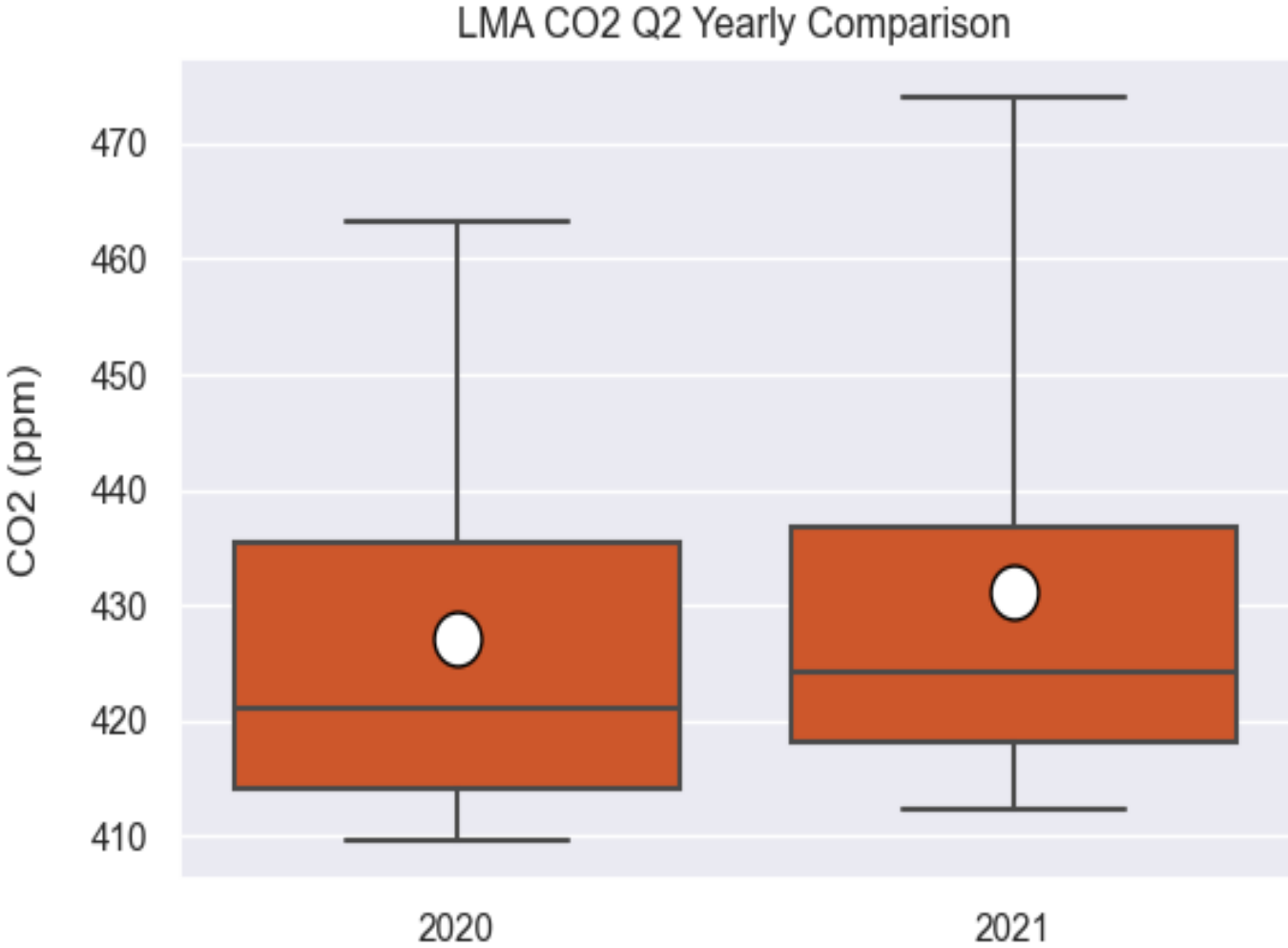
# Three days of CO<sub>2</sub> at LMA, LUR, and BSE



# 2021 Quarter 2 CO<sub>2</sub> comparison LMA, LUR, and BSE



# LMA Quarter 2 CO<sub>2</sub> 2021 vs 2020 comparison

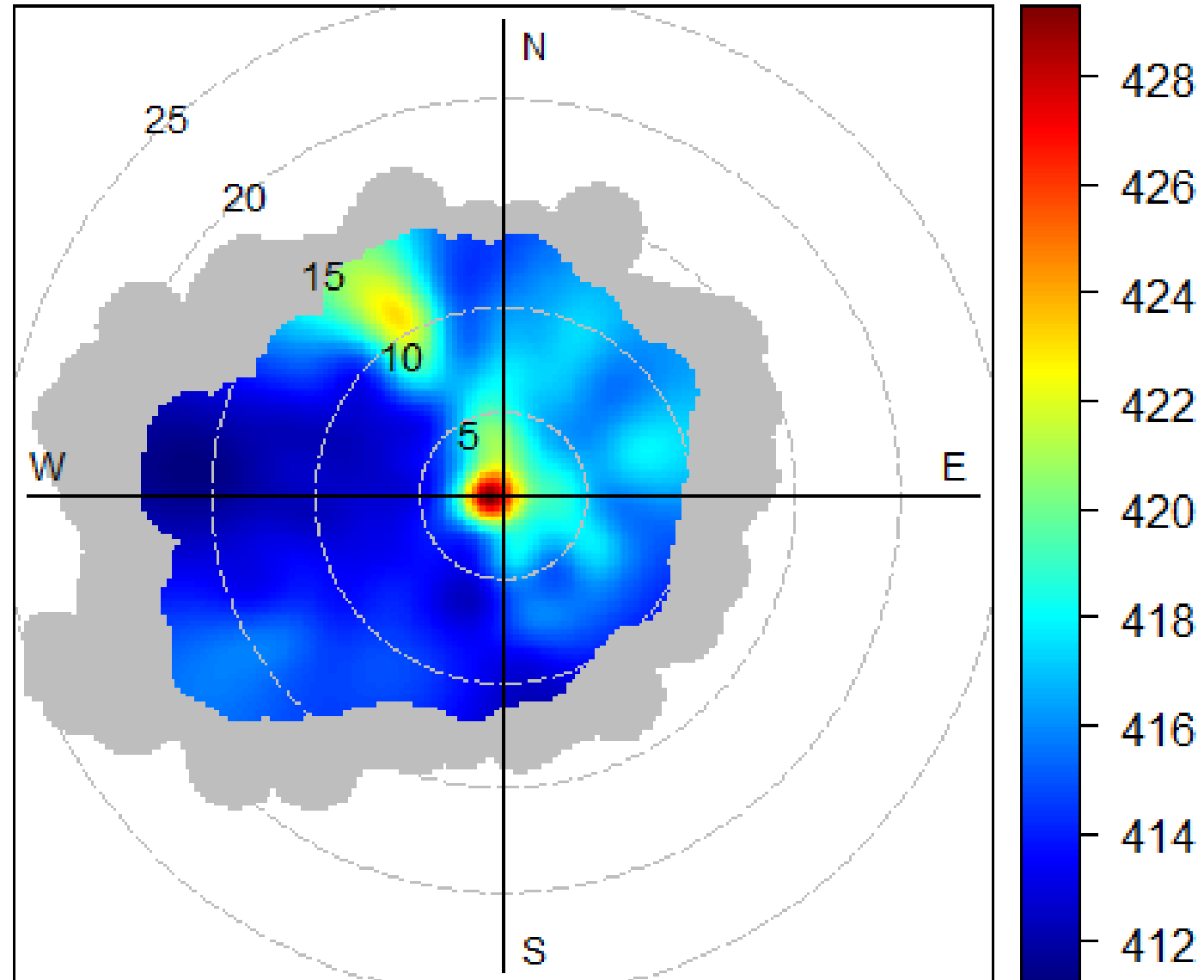


Global CO<sub>2</sub> Increase 2020 to 2021:  
+ 2.1 ppm

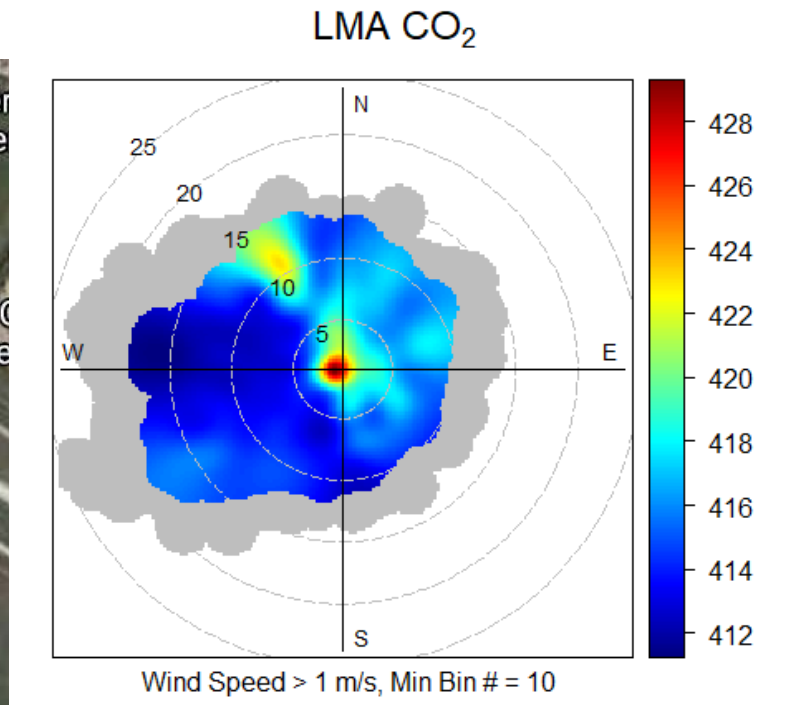
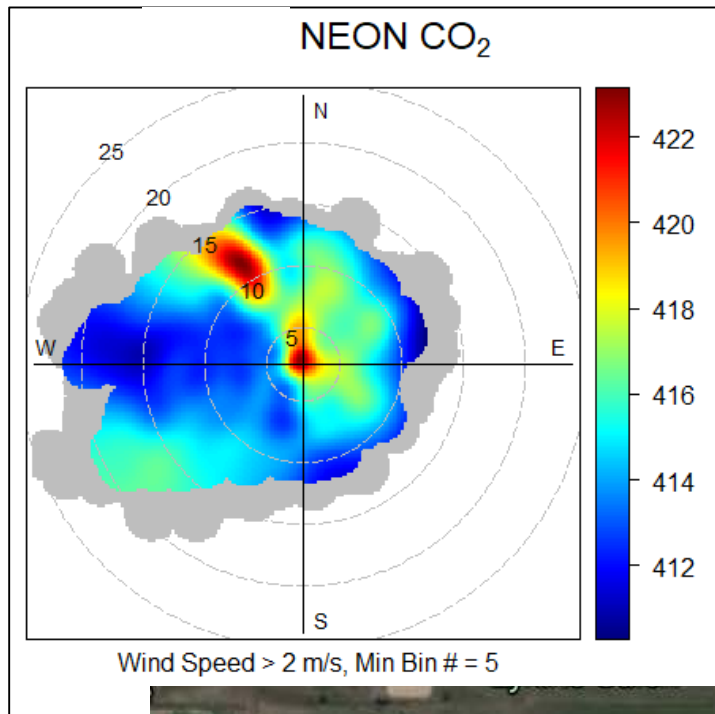
Mean: + 4.0 ppm  
Mean: + 3.3 ppm

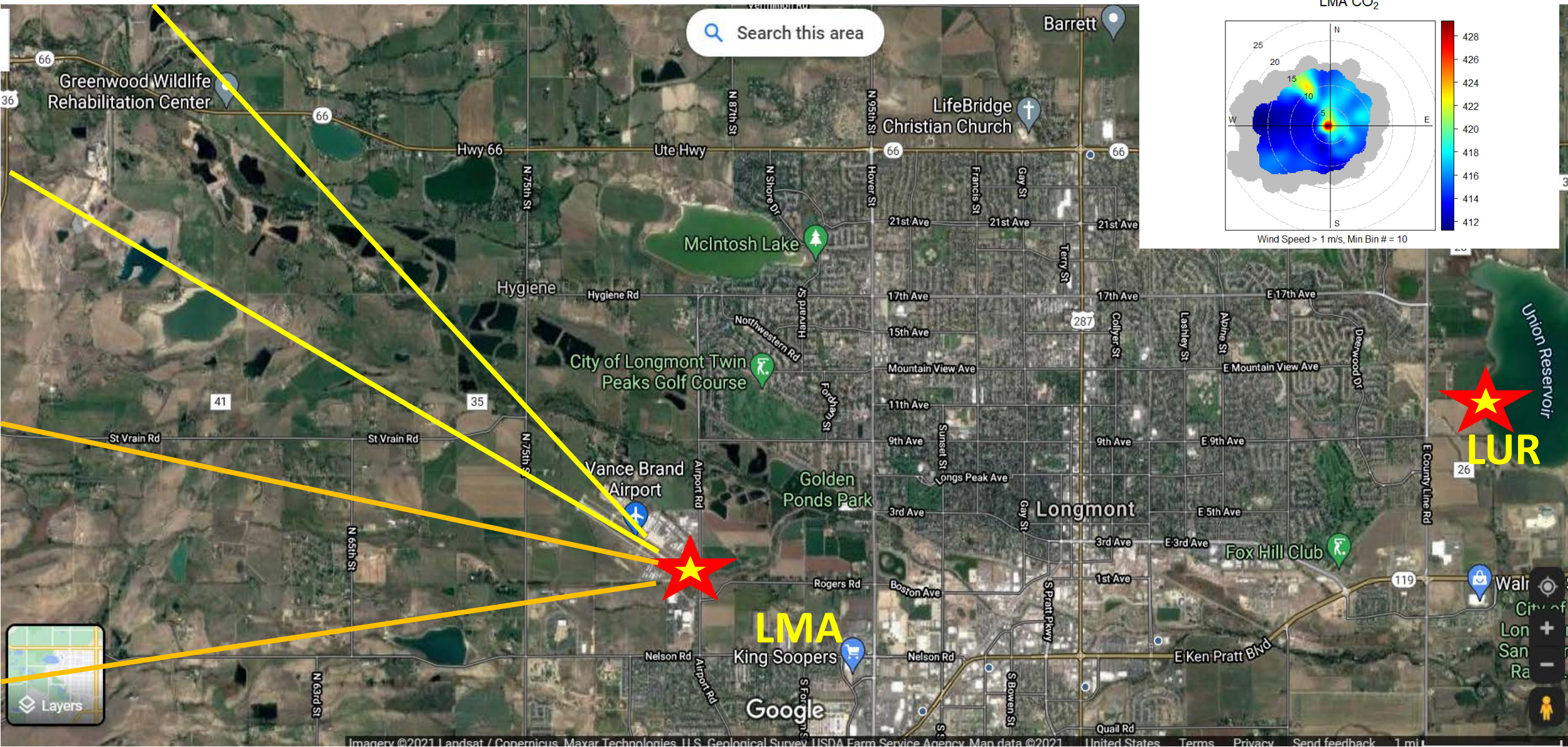


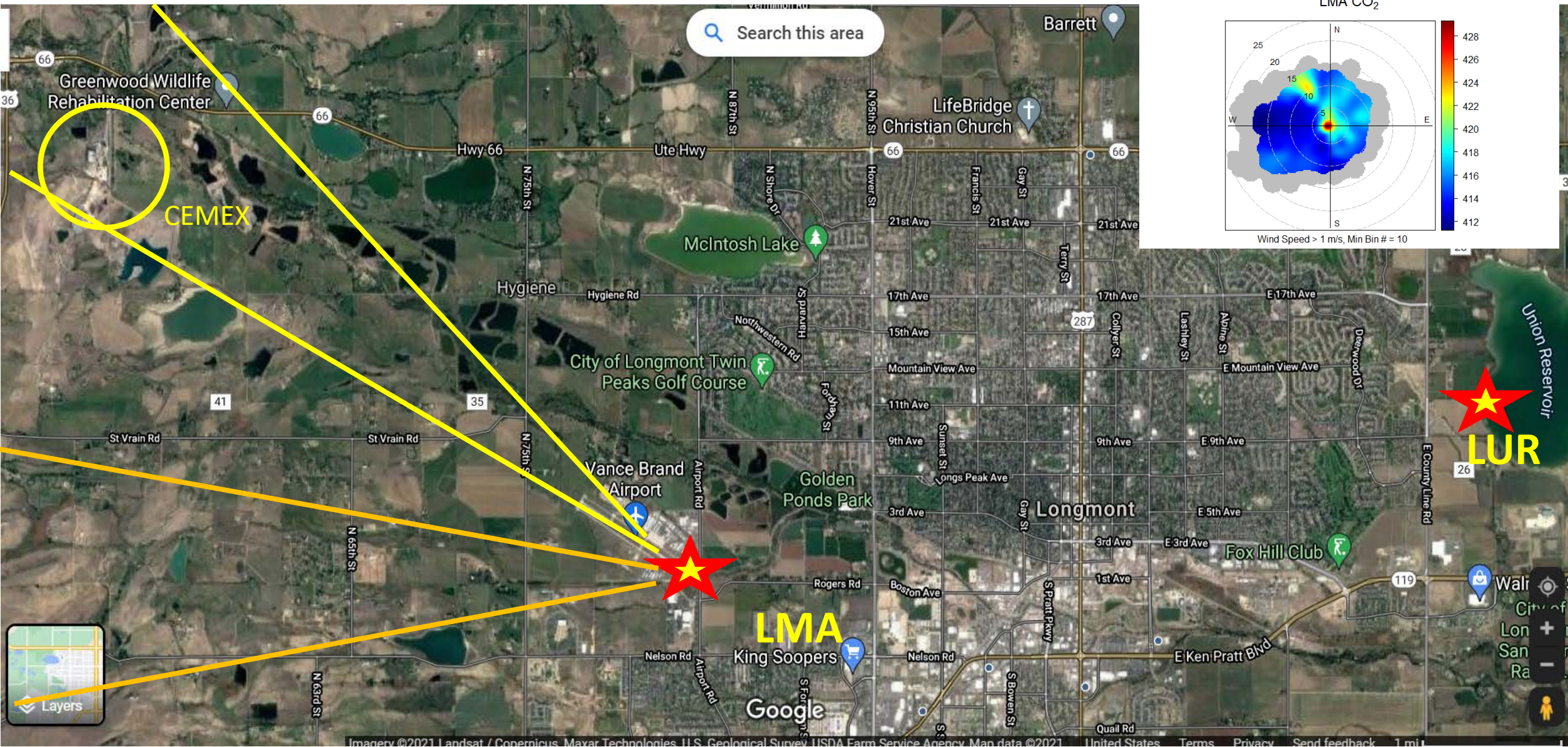
# LMA CO<sub>2</sub>



Wind Speed > 1 m/s, Min Bin # = 10







# CEMEX 2020 Greenhouse Gas Summary Report

7/20/2021

GHG Summary Report

**Facility Name:**CEMEX CONSTRUCTION MATERIALS SOUTH LLC

**Facility Identifier:**

**Facility Reporting Year:**2020

**Facility Location:**

Address: 5134 UTE HIGHWAY

City: LYONS

State: CO

Postal Code: 80540

## **Facility Site Details:**

**CO2 equivalent emissions from facility subparts C-II, SS, and TT (metric tons):**357,100.7

**CO2 equivalent emissions from supplier subparts LL-QQ (metric tons):**

**Biogenic CO2 emissions from facility subparts C-II, SS, and TT (metric tons):**0

**Cogeneration Unit Emissions Indicator:**N

**GHG Report Start Date:**2020-01-01

**GHG Report End Date:**2020-12-31



LYONS, CO – OCTOBER 2: The CEMEX Lyons Plant is seen on Oct. 2, 2019. (Photo by Matthew Jonas/Staff Photographer)



LYONS, CO – OCTOBER 2: The CEMEX Lyons Plant is seen on Oct. 2, 2019. (Photo by Matthew Jonas, Staff Photographer)

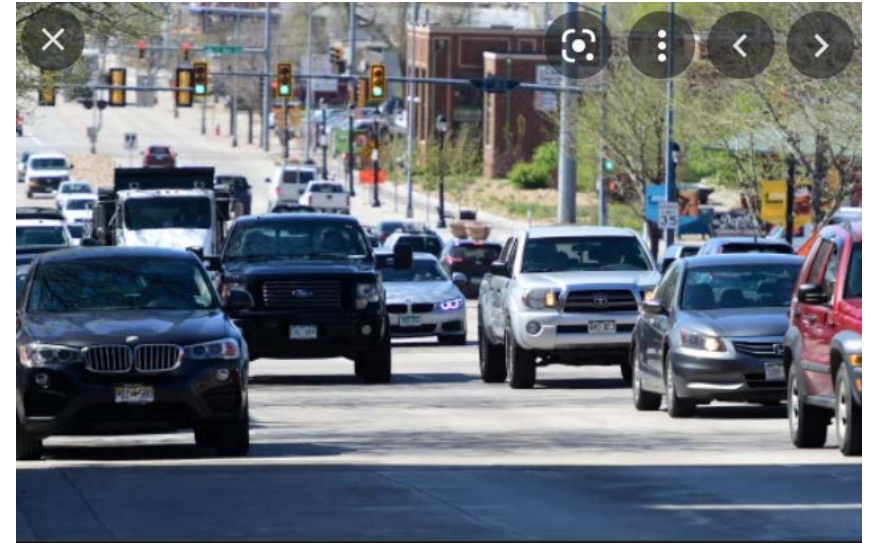
**CEMEX**

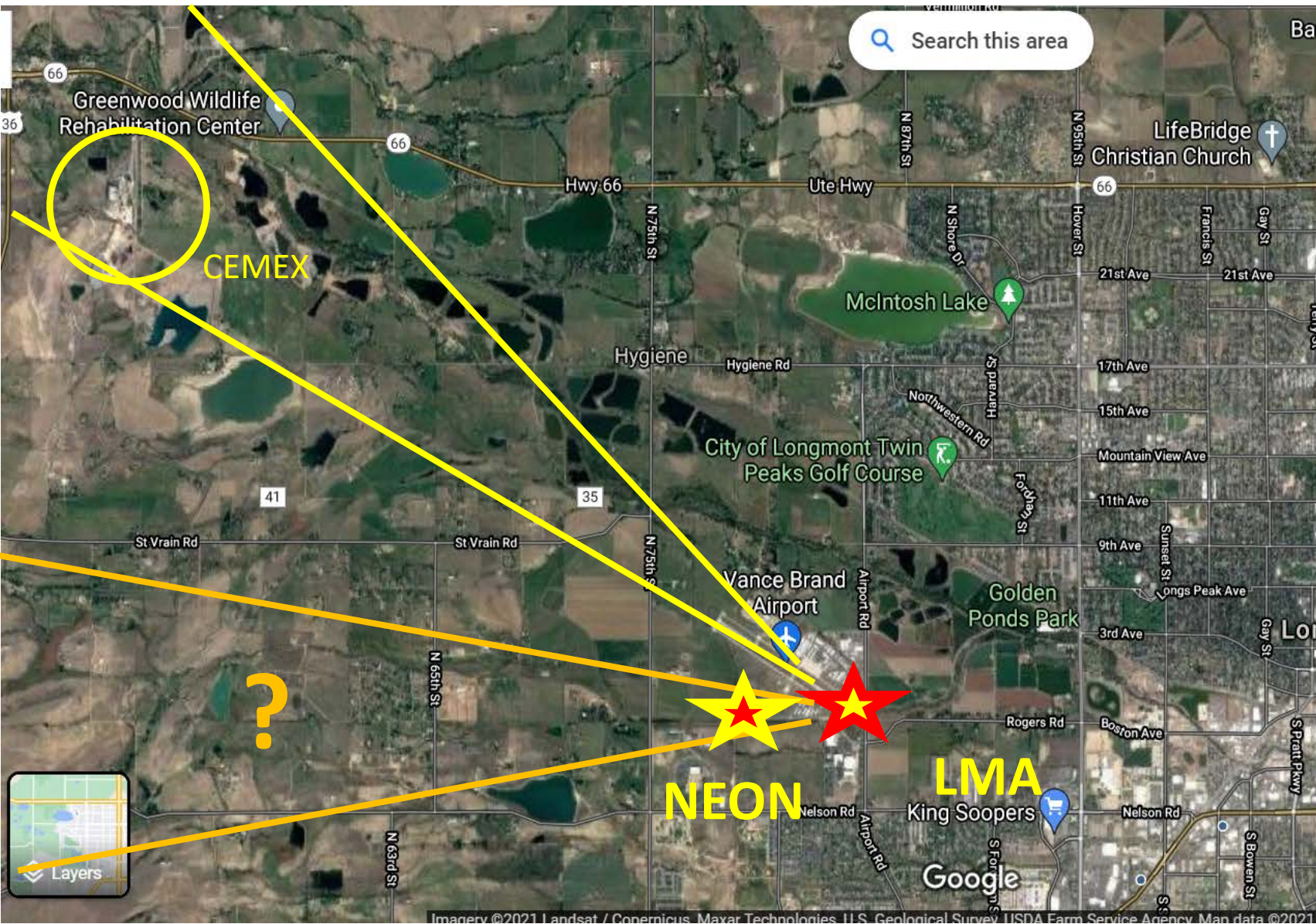
**CEMEX annual CO<sub>2</sub> emissions** **357,101 metric tons per year**

**Longmont CO<sub>2</sub> annual emissions from cars**

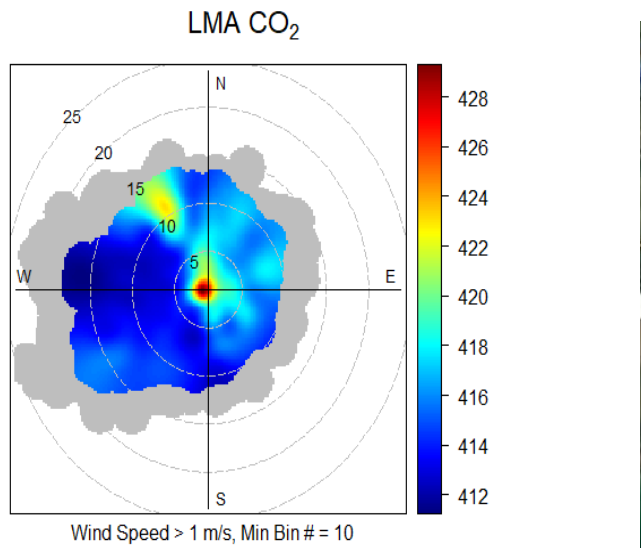
Longmont Population	100,000
Longmont Drivers	75,000
Longmont Cars	60,000
Tank fills/month/citizen	2
Gasoline gallons/month/citizen	40
Longmont gallons/year	28,800,000
Longmont liters/year	103,680,000
Longmont kg/year	77,760,000
Longmont gasoline tons/year	77,760
<b>Longmont CO<sub>2</sub> tons/year</b>	<b>213,840 metric tons per year</b>

Very rough order of magnitude comparison of CO<sub>2</sub> emissions from CEMEX versus all Longmont cars





Search this area

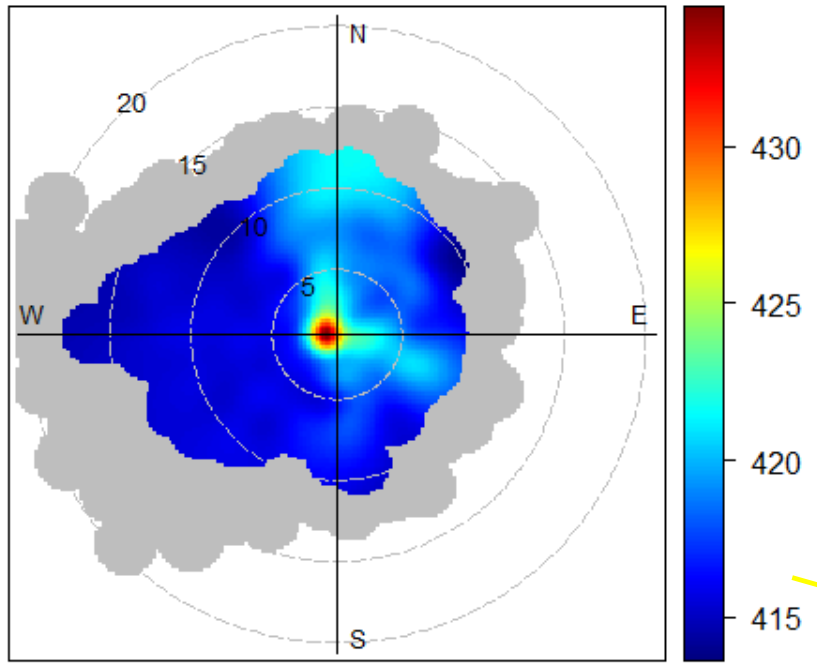


LUR

NEON

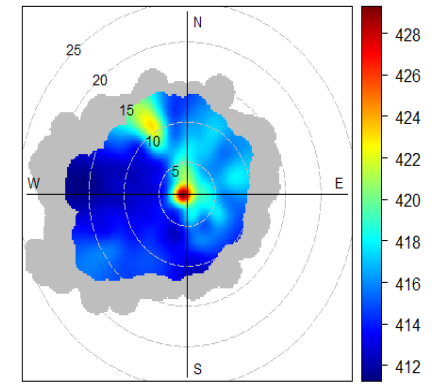
LMA

# NEON CO<sub>2</sub>

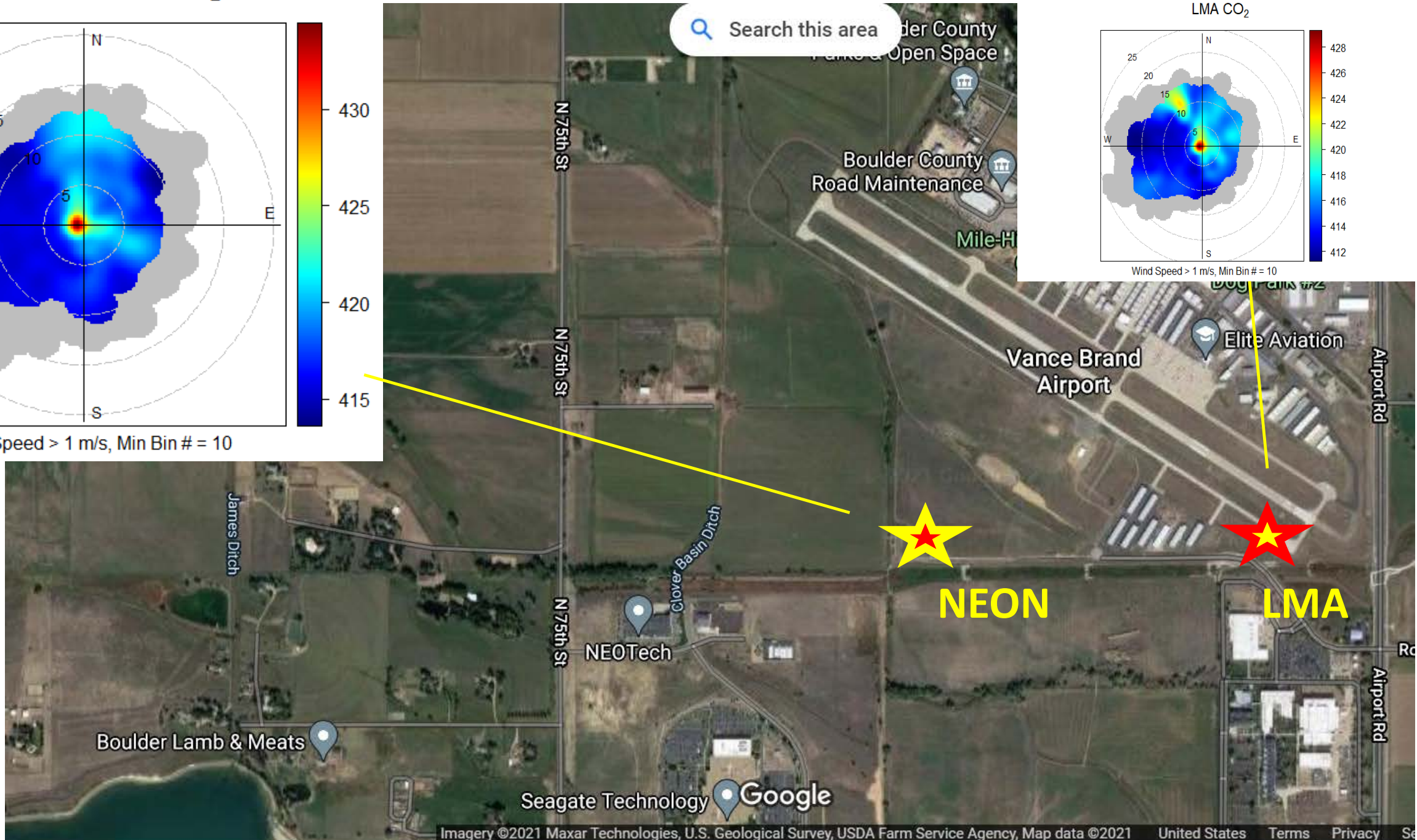


Wind Speed > 1 m/s, Min Bin # = 10

# LMA CO<sub>2</sub>

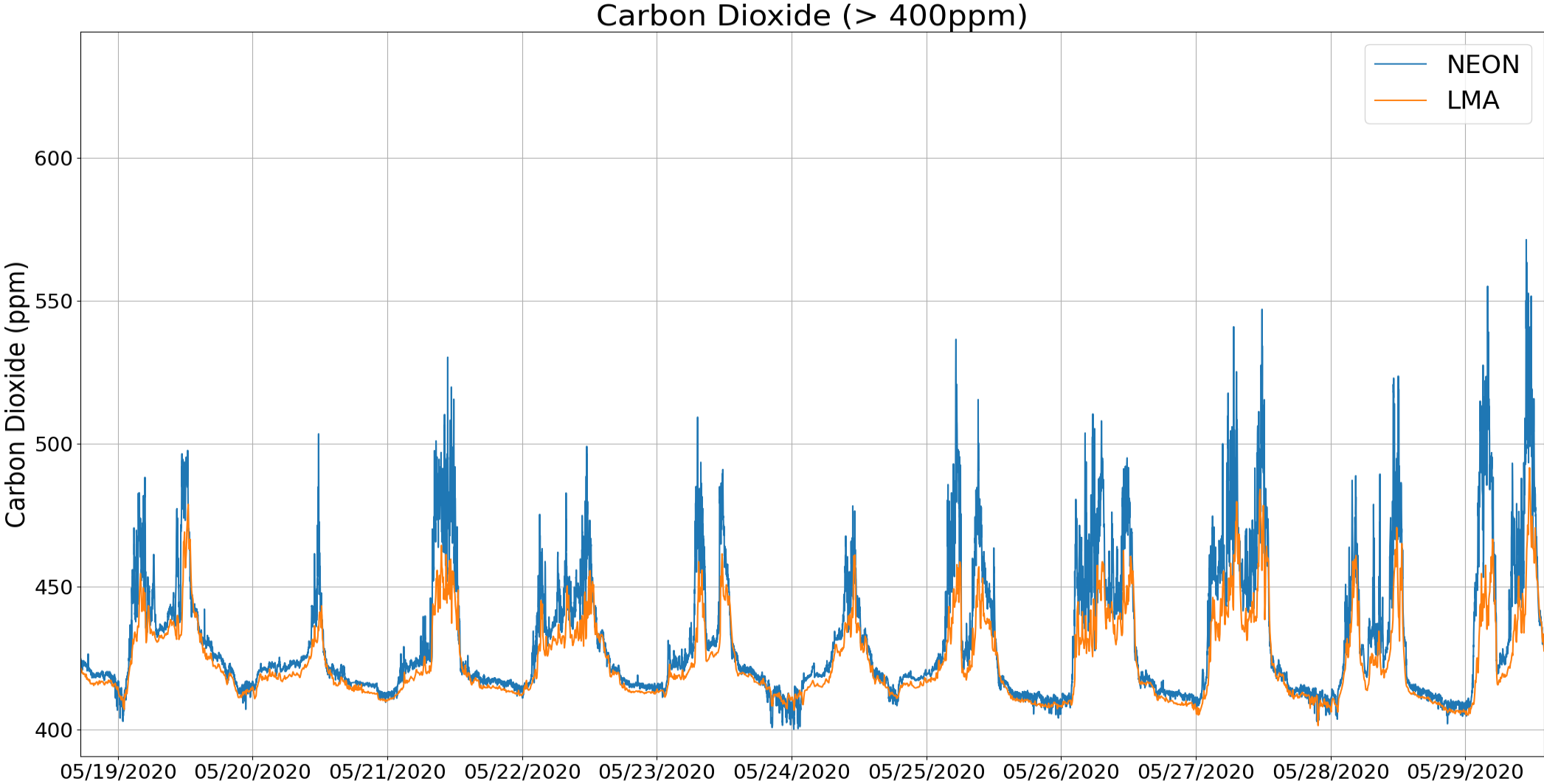


Wind Speed > 1 m/s, Min Bin # = 10





# NEON site versus LMA CO<sub>2</sub> comparison



Search this area



NEOTech

Clover Basin Ditch

Kennedy Dr

Kennedy Dr

Kennedy Dr

Kennedy Dr

Disc Dr

Clover Basin Ditch

Google

## Quarter 3 Outlook

- New network site addition: Erie (ozone, PM2.5, methane, VOCs)
- Peak of ozone season
- More fires?
- Move LMA to new location
- Open House?

