

City University of New York (CUNY)

CUNY Academic Works

Publications and Research

York College

2021

LEVERAGING THE POPULARITY OF VIRTUAL CONFERENCING DUE TO THE COVID-19 PANDEMIC TO CREATE NEW OPPORTUNITIES FOR STEM EDUCATION

Andrew Singh
CUNY York College

Nazrul I. Khandaker
CUNY York College

Violeta Escandon Correa
Georgia Institute of Technology

Omadevi Singh
CUNY York College

Ariel Skobelsky
Francis Lewis High School

See next page for additional authors

[How does access to this work benefit you? Let us know!](#)

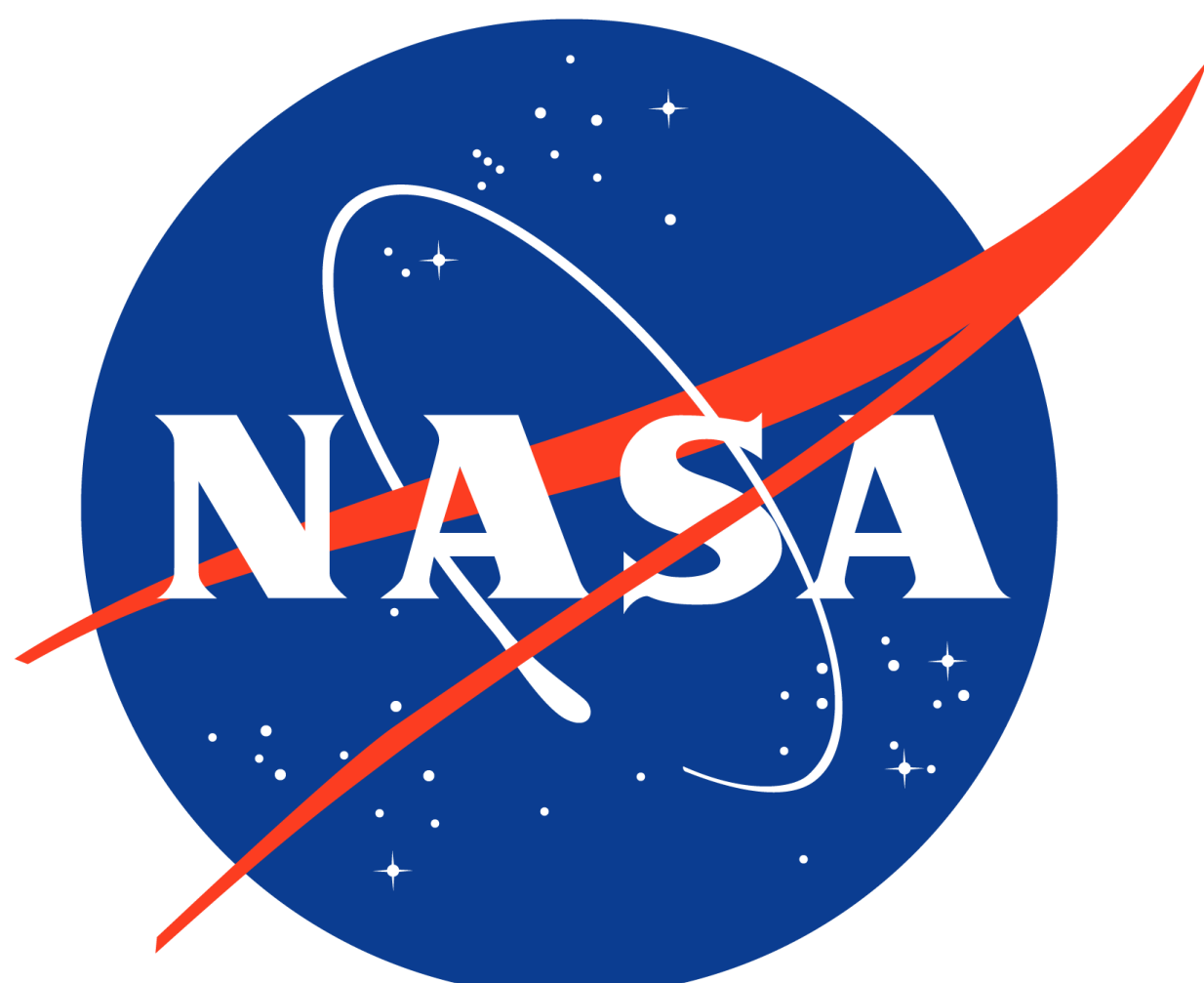
More information about this work at: https://academicworks.cuny.edu/yc_pubs/300

Discover additional works at: <https://academicworks.cuny.edu>

This work is made publicly available by the City University of New York (CUNY).
Contact: AcademicWorks@cuny.edu

Authors

Andrew Singh, Nazrul I. Khandaker, Violeta Escandon Correa, Omadevi Singh, Ariel Skobelsky, Farhan Tanvir, Brian Sukhnandan, Matthew Khargie, Elton Selby, and Masud Ahmed



LEVERAGING THE POPULARITY OF VIRTUAL CONFERENCING DUE TO THE COVID-19 PANDEMIC TO CREATE NEW OPPORTUNITIES FOR STEM EDUCATION



SINGH, Andrew, Earth and Physical Sciences, York College of CUNY, 9420 Guy R Brewer Blvd, AC-2F09, Jamaica, NY 11451-0001, **KHANDAKER, Nazrul**, York College of CUNY, 9420 Guy R Brewer Blvd, AC-2F09, Jamaica, NY 11451-0001, **CORREA, Violeta Escandon**, Georgia Institute of Technology, North Ave NW,, Atlanta, GA 30332, **SINGH, Omadevi**, NASA MUREP AEROSPACE ACADEMY, York College - City University of New York, 94-20 Guy R. Brewer Blvd., Jamaica, NY 11451, **SKOBELSKY, Ariel**, Francis Lewis High School, 58-20 Utopia Pkwy,, Queens, NY 11365, **TANVIR, Farhan**, Bronx High School for the Sciences, 75 W 205th St., Bronx, NY 10468, **SUKHNANDAN, Brian**, Queens College, 65-30 Kissena Blvd., Flushing, NY 11367, **KHARGIE, Matthew**, CoEnterprise, 45 West, 36TH Street, New York City, NY 10018, **SELBY, Elton**, SUNY Buffalo State College, 1300 Elmwood Avenue, Buffalo, NY 14222 and **AHMED, Masud**, New York City Department of Environmental Protection, Geotechnical Section, NYCDEP, 59-17, Junction Blvd, Queens, New York, NY 11373



INTRODUCTION

Due to the COVID-19 pandemic, virtual learning has become a necessity for K9-16 education. Virtual classwork has been administered through platforms such as Google Classroom, Clever, and iReady. During the summer of 2021, the City University of New York (C.U.N.Y) York College campus hosted its NASA MAA MUREP (Minority University Research and Education Project Aerospace Academy) program virtually using a combination of Zoom, Google Docs, and even Canva, which some students requested as a more intuitive alternative to Microsoft PowerPoint.

PEER MENTORING INITIATIVES

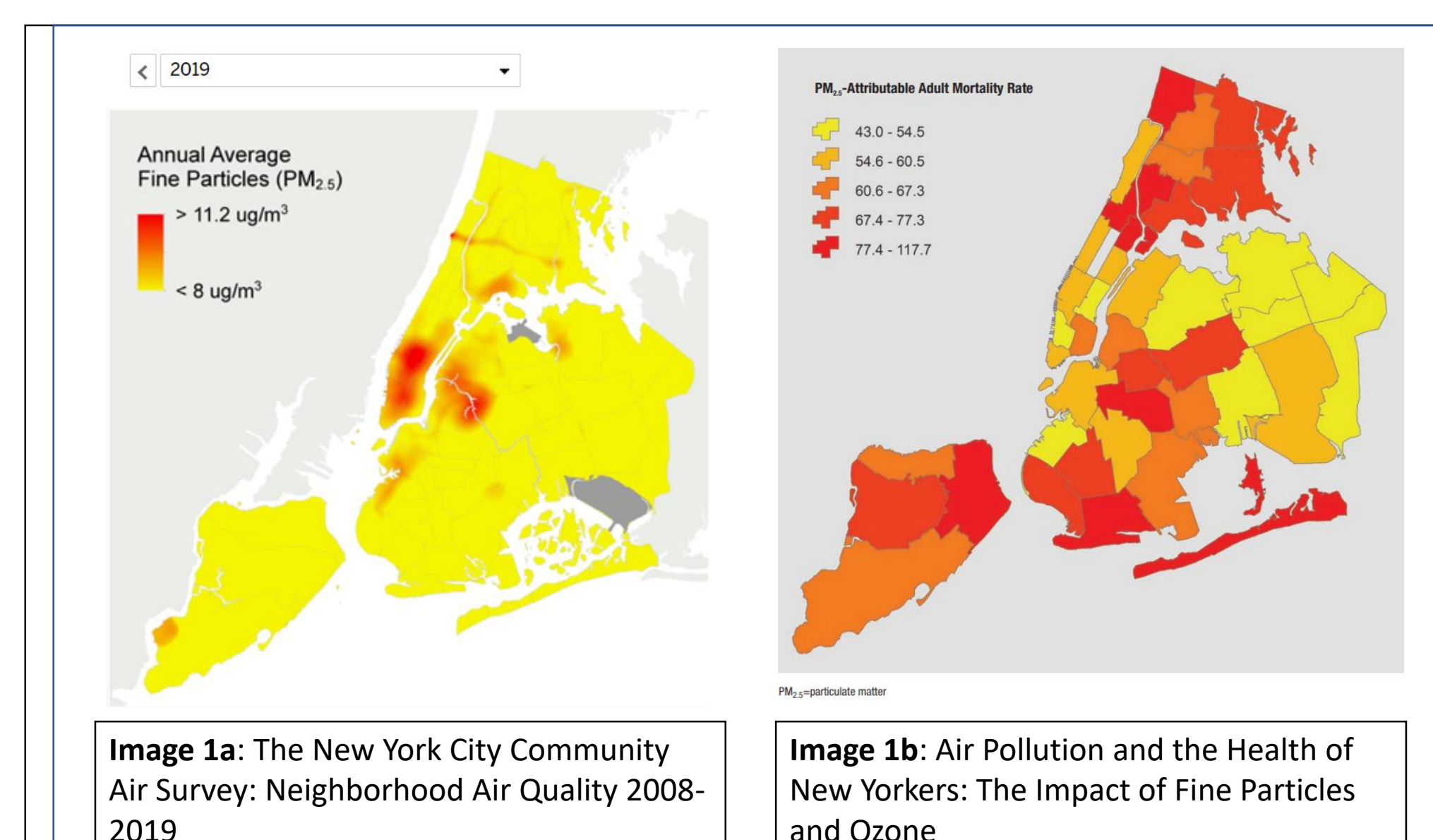
Students were mentored to use the scientific method to explore their interests in the STEM field, with a geoscience or environmental science focus where possible. Students were trained to:

- 1) obtain peer reviewed articles from reputable sources such as Nature Geoscience, GSA Today, as well as databases such as Springer and Google Scholar
- 2) locate reputable raw datasets from sources such as the EPA, NASA, NOAA, NIH, AMS, USGS, census.gov and many others
- 3) analyze and discuss such data with a hypothesis in mind and represent the data in graphical form using Microsoft Excel and PowerPoint
- 4) ultimately form a conclusion based on the hypothesis.

DATA RETRIEVAL TRAINING

Since many government bodies and reputable scientific teams worldwide conduct extensive sampling and data collection (while making this data publicly available), this virtual education approach allows the exploration of STEM topics without necessitating field or laboratory sampling.

Availability of open access information pertaining to benchmark publications through the internet, it has opened a plethora of opportunities for more scientific research.



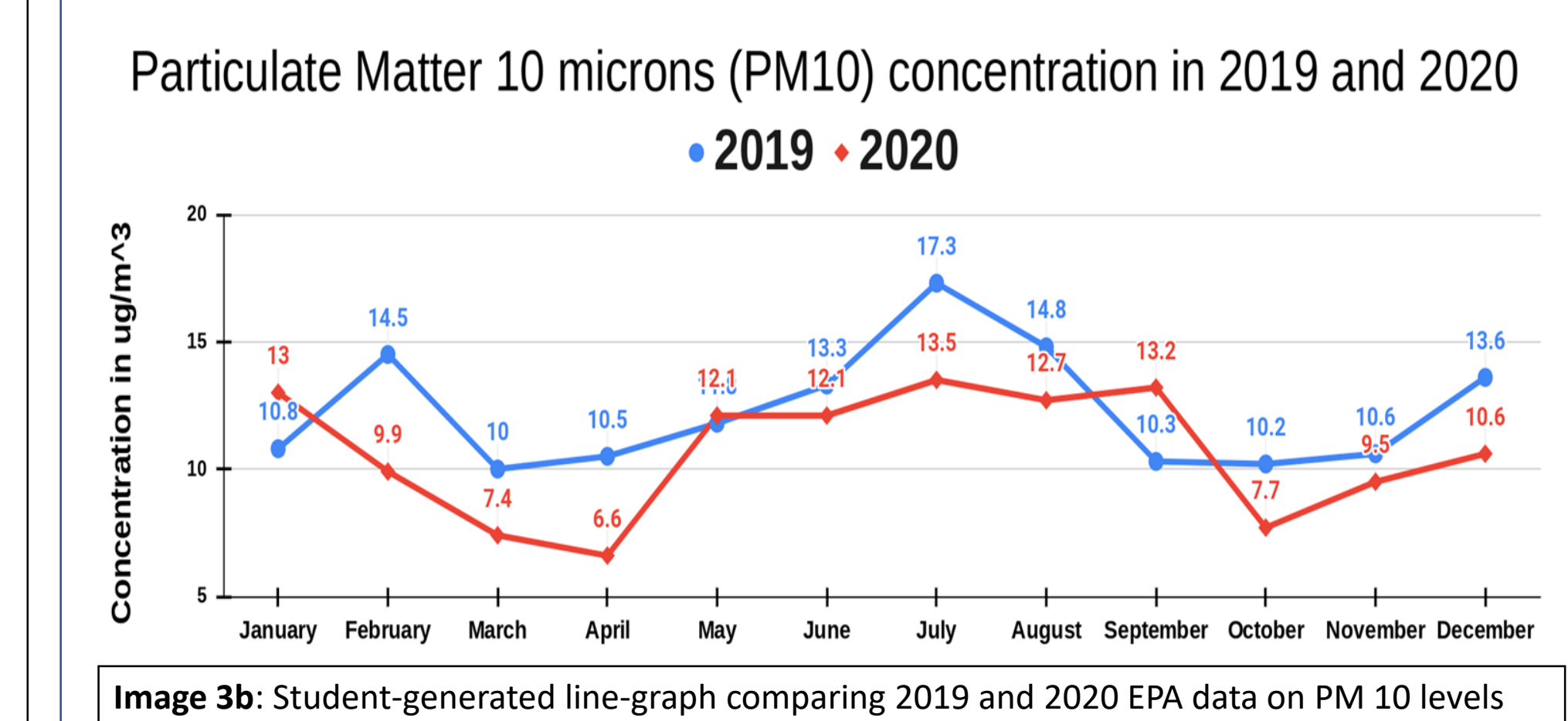
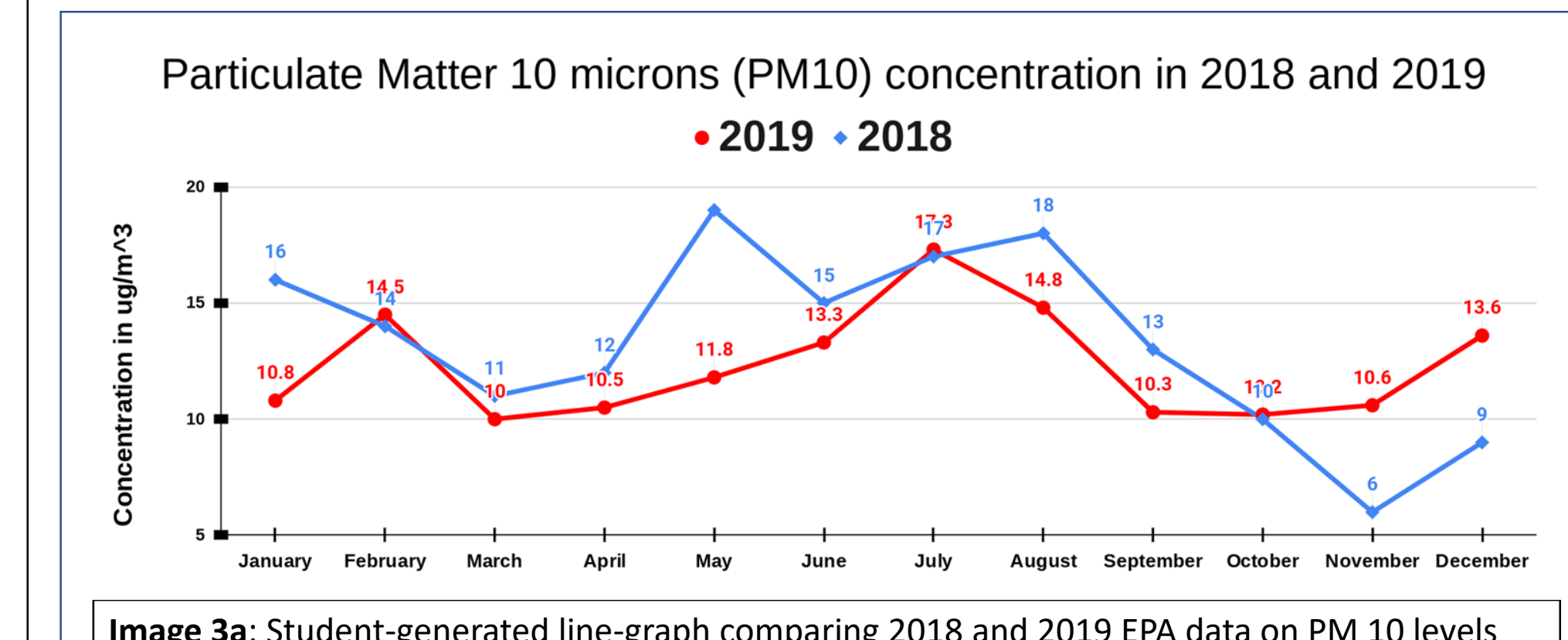
Outdoor Air Quality Data

Download Daily Data

This tool queries daily air quality summary statistics for the criteria pollutants by monitor. You can get data for specific monitors or all monitors in a city, county, or state.

1. Pollutant: PM10
2. Year: 2020
3. Geographic Area: New York
4. Monitor Site: 360810124

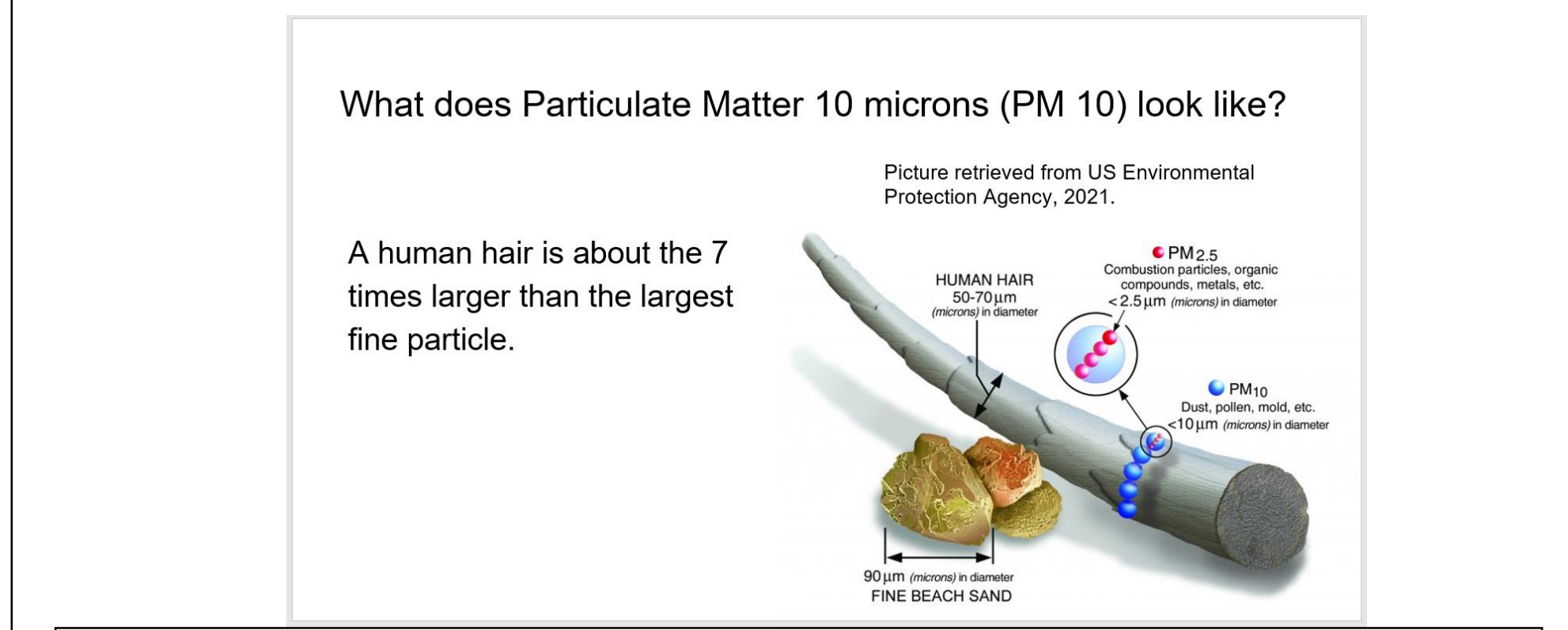
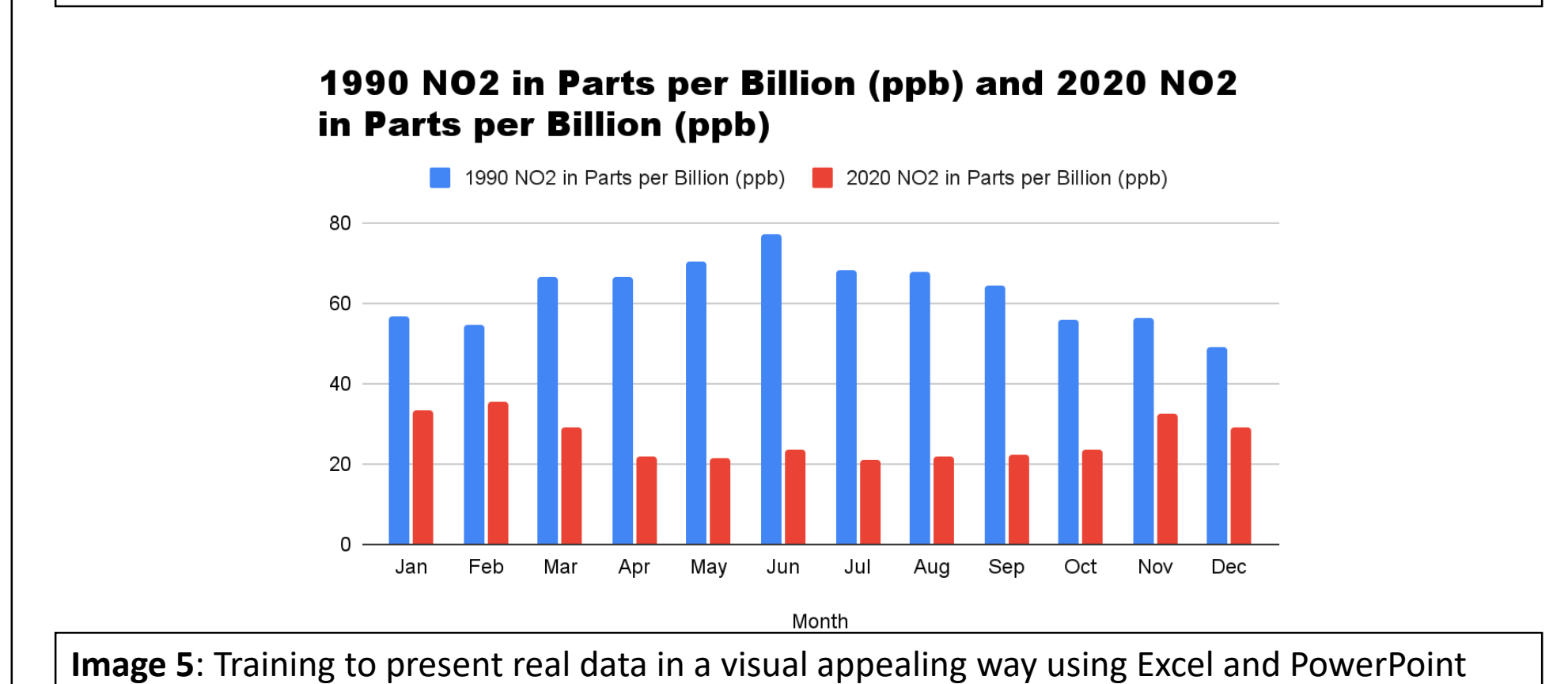
Image 2: Data retrieval from EPA (Environmental Protection Agency) website



Works Cited

- US EPA. 2021. *Particulate Matter (PM) Basics* | US EPA. [online] Available at: <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#PM> [Accessed 26 May 2021].
- Ww2.arb.ca.gov. 2021. *Inhalable Particulate Matter and Health (PM2.5 and PM10)* | California Air Resources Board. [online] Available at: <https://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health> [Accessed 4 August 2021].
- Mackenzie, J. and Turrentine, J., 2021. *Air Pollution: Everything You Need to Know*. [online] NRDC. Available at: <https://www.nrdc.org/stories/air-pollution-everything-you-need-to-know> [Accessed 22 July 2021].
- National Institute of Environmental Health Sciences. 2021. *Air Pollution and Your Health*. [online] Available at: <https://www.niehs.nih.gov/health/topics/agents/air-pollution/index.cfm> [Accessed 2 August 2021].
- Mousazadeh, M., Pailal, B., Naghdali, Z., Mortezaian, Z., Hashemi, M., Karamati Niaragh, E., Aghababaei, M., Ghorbani, M., Lichtfouse, E., Sillanpää, M., Hashim, K. S., & Emamjomeh, M. M. (2021). Positive environmental effects of the coronavirus 2020 episode: a review. *Environment, development and sustainability*, 1-23. Advance online publication. <https://doi.org/10.1007/s10668-021-01240-3>

Image 4: Diverse references from reputable sources such as: EPA.gov, CA.gov, NIH.gov, etc.



Date	Source	Site ID	POC	Daily M	UNITS	DATE	Site	DAILY	C	PERCENT	AGS	PA	AGS	PA	CBSA	C	CBSA	N	STATE	COUNTY	SITE	LA	LONGITUDE
2	01/04/2020			13	ug/m3 SC																		
3	01/05/2020			17	ug/m3 SC																		
4	01/06/2020			23	ug/m3 SC																		
5	01/07/2020			3	ug/m3 SC																		
6	01/08/2020			16	ug/m3 SC																		
7	01/09/2020			13	ug/m3 SC																		
8	01/10/2020			9	ug/m3 SC																		
9	01/11/2020			7	ug/m3 SC																		
10	01/12/2020			12	ug/m3 SC																		
11	01/13/2020			13	ug/m3 SC																		
12	01/14/2020			15	ug/m3 SC																		
13	01/15/2020			13	ug/m3 SC																		
14	01/16/2020			14	ug/m3 SC																		
15	01/17/2020			18	ug/m3 SC																		
16	01/18/2020			12	ug/m3 SC																		
17	01/19/2020			11	ug/m3 SC																		
18	01/20/2020			31	ug/m3 SC																		
19	01/21/2020			7	ug/m3 SC																		
20	01/22/2020			4	ug/m3 SC																		
21	01/23/2020			14	ug/m3 SC																		

Image 6: Training in identifying relevant information from complex datasets

TOPIC SELECTIONS AND STUDENTS CENTERED RESEARCH

The innovative combination of virtual learning tools along with email communications, allowed students to meet for 2 hours sessions multiple times a week and receive individualized attention and mentorship to generate final E-posters to present their work.

Topics included: the effects of air pollution on respiratory health, acid rain in the northeastern United States, and particulate matter (10 microns) pollution in New York state in 2019 and 2020.

POSITIVE OUTCOME DUE TO MULTIPLE CUMMUNICATION APPROACHES

The virtual platforms also enabled students to share their work-in-progress for feedback from peers, as well as allowed the students to use other forms of communication such as chat instead of only voice-communication or only face-to-face interaction.

This flexibility gave an additional level of confidence to the participating students.

ACKNOWLEDGEMENTS

The authors greatly acknowledges the research opportunity provided by The City University of New York (CUNY) - York College & NASA MAA MUREP (Minority University Research and Education Project Aerospace Academy) 2021 Program. Funding from AT&T and ConEdison greatly helped to support high school students peer mentoring and research experience during the global COVID-19 pandemic.

ABSTRACT

Geological Society of America Abstracts with Programs. Vol 53, No. 6, 2021. doi: 10.1130/abs/2021AM-367187