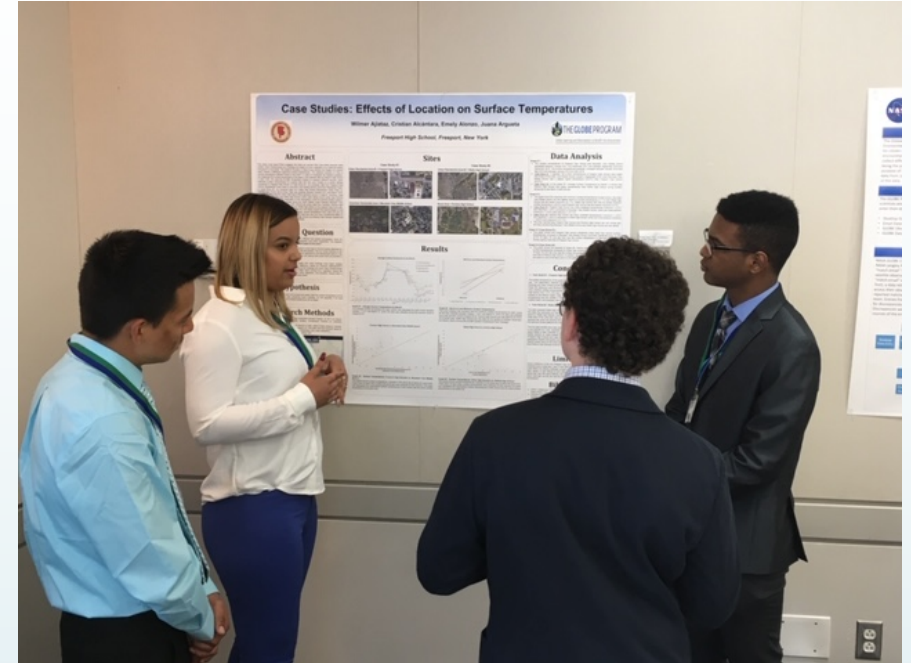


# GLOBE TEACHER WATERCOOLER: SRS EXPERIENCE

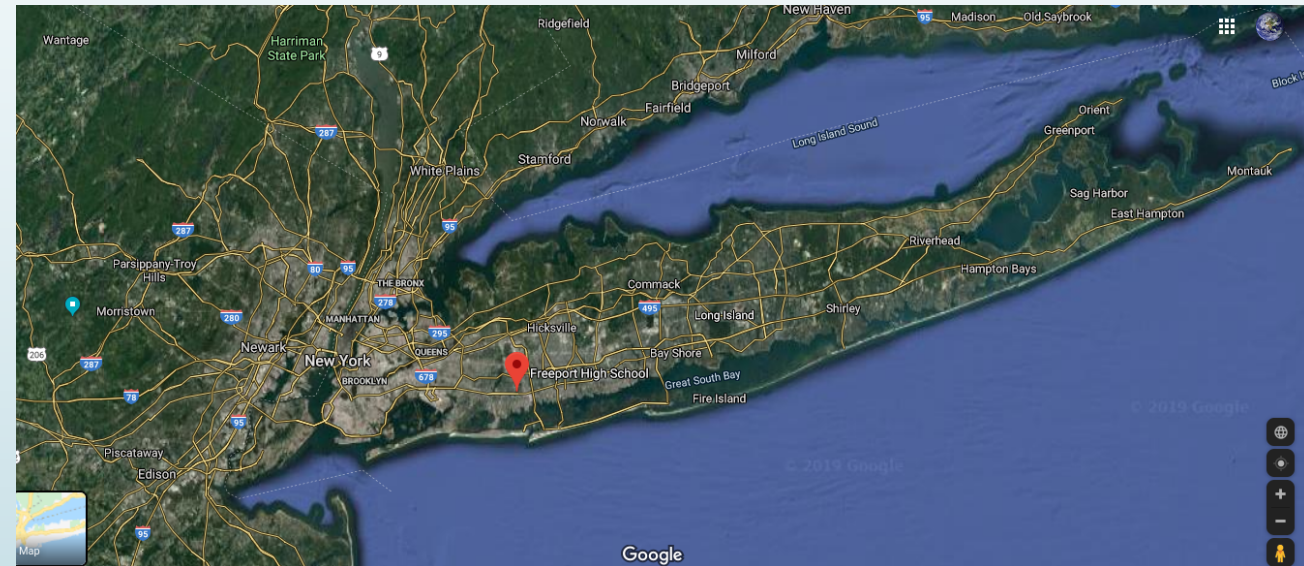


Elodie Bourbon

Freeport High School, New York, Northeastern Region

# School Demographics

- Freeport High School is in a suburban residential area on Long Island, New York.
- School population:
  - About 2,200 students (9-12)
  - High need school
  - 65% Hispanic
  - 30% African American
- I teach ENL Science for newcomers and ENL Earth Science



# Preparing Students

## ► 2018 Data Collection (Surface Temperature Protocol):

- I received the Freeport Education Foundation (FEF) grant to buy infrared thermometers to participate in the GLOBE Surface Temperature Field Campaign.
- Peter Schmidt of Queens College helped me set up the investigation sites and provided the equipment to start the investigation.
- **During class:**
  - Collected data as part of a lab experiment in three Earth Science classes.
  - Analyzed data in class.
- **After school:** Multiple students collected data after school and uploaded the data to the GLOBE website.



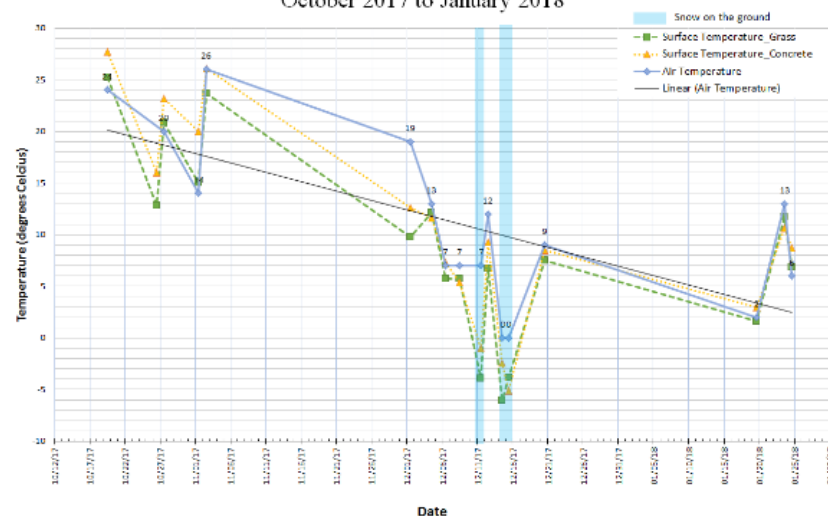


# Analyzing Data (Lab Activity)

Name: \_\_\_\_\_ Date: \_\_\_\_\_  
Period: \_\_\_\_\_

The graph below shows the data that we collected between 11 a.m. and 3 p.m. from October to January.

**Freeport High School**  
Air and Surface Temperatures  
October 2017 to January 2018

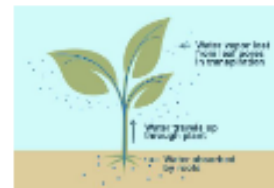


## Data Analysis:

- 1) What is the relationship between air temperature and time (October to January)? Explain what it means.
- 2) What is surface temperature?
- 3) Is there a correlation between air temperature and surface temperature?

An **urban heat island** occurs when a city experiences much warmer temperatures than nearby rural areas. Why does this happen?

An urban area is a city. A rural area is out in the country. The sun's heat and light reach the city and the country in the same way. The difference in temperature between urban and less-developed rural areas has to do with how well the surfaces in each environment absorb and hold heat. If you travel to a rural area, you'll probably find that most of the region is covered with plants. Plants take up water from the ground through their roots. Then, they store the water in their stems and leaves. The water eventually travels to small holes on the underside of leaves. There, the liquid water turns into water vapor and is released into the air. This process is called transpiration. It acts as nature's air conditioner.



An illustration of the process of transpiration. Image credit: NASA/JPL-Caltech

Website: <https://climate.nasa.gov/heat-islands/>

- 4) Based on the graph, which surface (concrete or grass) is generally warmer? \_\_\_\_\_
- 5) How does the cover of a surface affect the temperatures of a city made mostly of concrete compared to the temperatures of a rural area with mostly vegetation?
  - City (urban area) = \_\_\_\_\_
  - Rural area = \_\_\_\_\_
- 6) How would you lower the temperatures in cities?
  - \_\_\_\_\_
  - \_\_\_\_\_
- 7) Use the table titled "Specific Heat" on page #1 of your ESRT to answer the following questions:

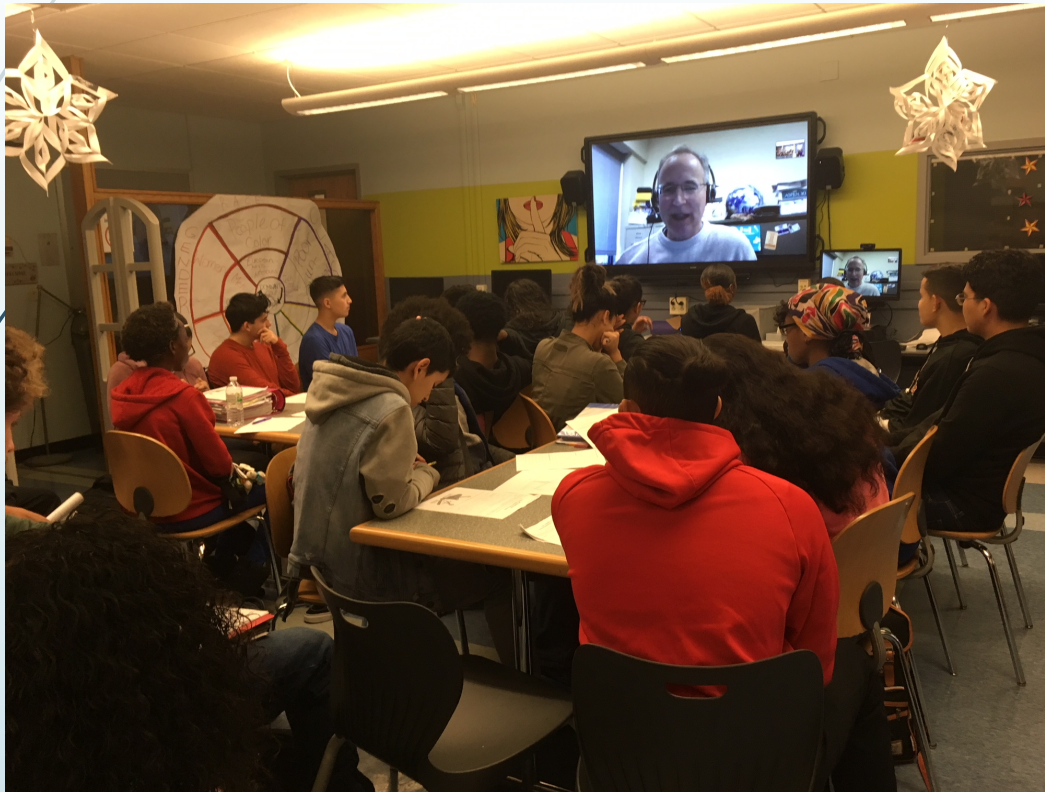
Specific Heats of Common Materials

MATERIAL	SPECIFIC HEAT (Joules/gram • °C)
Liquid water	4.18
Solid water (ice)	2.11
Water vapor	2.00
Dry air	1.01
Basalt	0.84
Granite	0.79
Iron	0.45
Copper	0.38
Lead	0.13

Using the NYS Earth Science Reference Tables (ESRT) to explain the data.



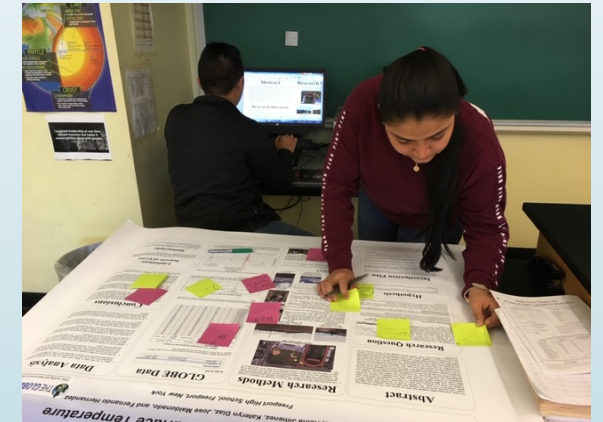
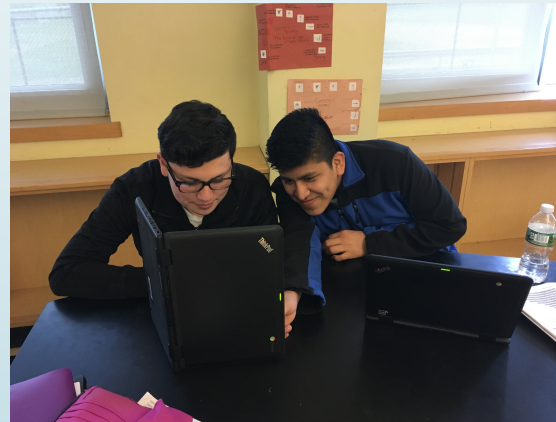
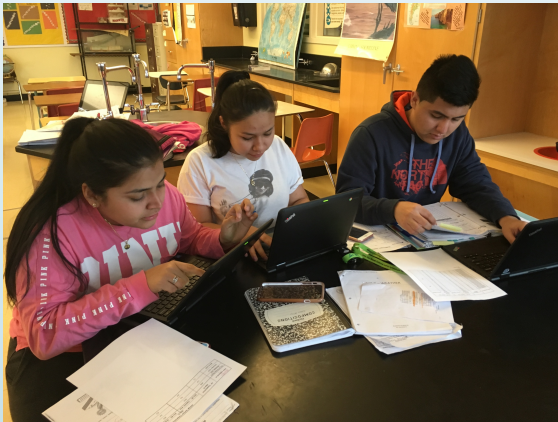
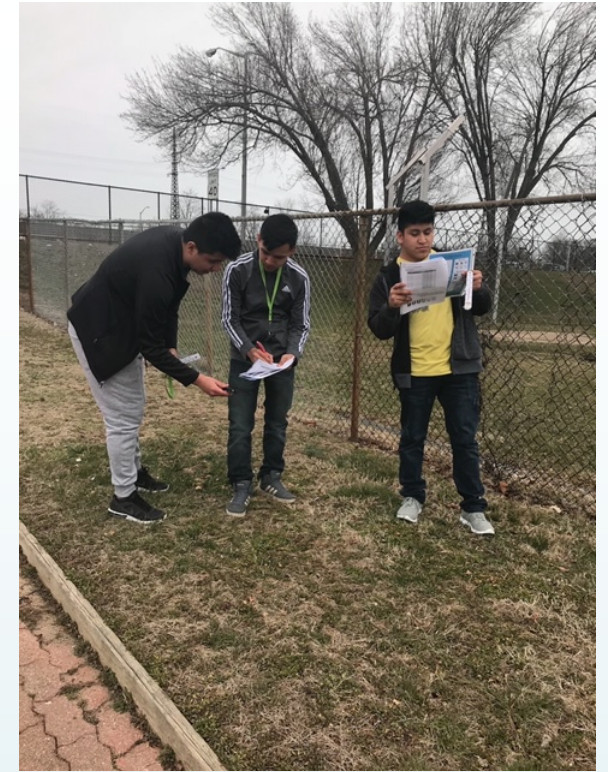
# Videoconference with Dr. Czajkowski from the University of Toledo January 2018





# Choosing an SRS Team

- After the video conference, I applied for the SRS travel/logging funding support and received it.
- I asked students who helped collect data after school to prepared a poster and come to the SRS.
- Five of them prepared the poster and three of them came to the SRS in Buffalo, NY.
- We used the GLOBE resources and tips on how to creating and printing posters:
  - <https://www.globe.gov/web/united-states-of-america/home/student-research-symposia/student-resources>



# Preparing Students

- **2019 Data Collection** (Surface Temperature Protocol):
  - **After school:**
    - Three students volunteered to collect data after school twice a week.
    - They uploaded the data to the GLOBE website.
    - They prepared the poster (two case studies using data from other schools).
    - Video conference with Dr. Czajkowski to discuss the data/results.





# Preparing Students

- **2020 Data Collection:**
  - **During class:**
    - ENL science classes
    - The students collected data for about 10 days as part of a GLOBE cloud/surface temperature investigation.
  - **After school:**
    - Three Earth Science students volunteered to collect data after school twice a week.
    - They are uploading the data to the GLOBE website.

## NASA GLOBE Atmosphere Investigation

### Student Science Research Journal

Student Name: \_\_\_\_\_  
Date: \_\_\_\_\_



# Challenges and Solutions

- Preparing all the school overnight field trip request forms to obtain permission from the Board of Education:
  - Overnight out of Long Island field trip request form
  - Medical forms
  - Parent permission forms
  - Teachers permission forms
  - Translate all the forms to be given to the parents in Spanish
- GLOBE Forms:
  - NASA Media Release
  - GLOBE parent passive consent form
- Parent meeting:
  - Itinerary
  - Go over all the forms they signed
  - Field trip rules



August 29, 2006

**Freeport Public Schools**  
***FINAL Field Trip Request Form***  
***For Overnight off Long Island Domestic and Overseas Field Trips***

Name of the school <b>Freeport High School</b>	Name of the class or organization <b>Earth Science Class</b>
Name of the sponsoring Teacher <b>Elodie Bourbon</b>	Number of students participating <b>3</b>

# Challenges and Solutions

## 2018 SRS in Buffalo, NY

- Coordinating the transportation from the school to the airport (~30-minute drive).
  - Airport Super Shuttle
  - Parent drop-off at the airport
  - Uber





# 2018 SRS Highlights - Buffalo, NY



Baseball Game



Poster Presentation



Niagara Falls



Proud Students



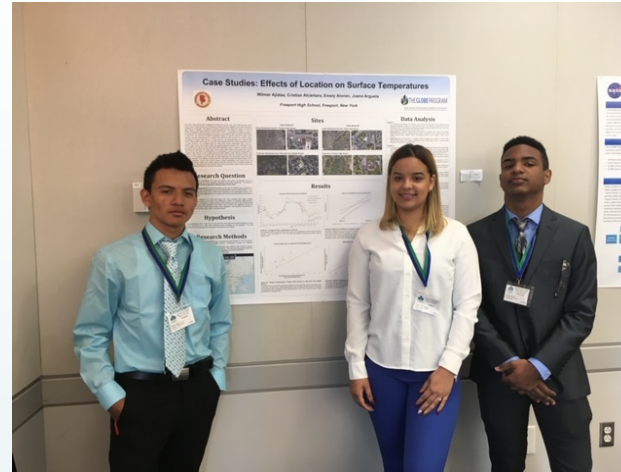
Visiting Buffalo



# 2019 SRS Highlights - Boston, MA



Building & Flying Kites



Poster Presentation



Tour of Fenway Park



Award Ceremony



Visiting Boston

# QUESTIONS?



- Resources:

- Funding Application:

- [https://docs.google.com/forms/d/e/1FAIpQLSdlWU6w5yuuihTxoqo\\_AotdvCkcKUO-zxW7DFhkZpyclUR\\_Jw/viewform](https://docs.google.com/forms/d/e/1FAIpQLSdlWU6w5yuuihTxoqo_AotdvCkcKUO-zxW7DFhkZpyclUR_Jw/viewform)

- US Regional Symposia- Student Resources:

- <https://www.globe.gov/web/united-states-of-america/home/student-research-symposia/student-resources>