ANSTAT Teaching Day

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Educational Goals

1. Scientific and Engineering Practices
   - Analyze and Interpret Data
   - Obtaining, Evaluating, and Communicating information
2. Crosscutting Concepts
   - Cause and Effect
3. Disciplinary Core Ideas
   - *Earth and Space Sciences*
     - Earth's systems
     - Earth and Human Activity

Ohio Standard

ENV.ES.5: Movement of matter and energy through the hydrosphere, lithosphere, atmosphere and biosphere

- Energy transformation on global, regional and local scales
- Biogeochemical cycles
- Ecosystems
- Weather
- Climate

Preparation

Materials:

- Worksheet to record data (for each station, Macie)
- 5-6x Infrared Thermometer
- Cloud window(Kenzie will bring)
- Air thermometer
- Phones/Computers
- Ruler (if snow cover)
- kahoot

Activities:

- Taking surface temperature of grass and concrete
- Using cloud windows to determine cloud types
- Take air temperature using thermometer
- Presentation on GLOBE
- Log data into the GLOBE database
- Kahoot

GLOBE Observation Sheet- Surface Temperature

Overall Surface Condition (circle one)- WET DRY SNOW

If there is snow, how many cm? _____

Air Temperature- _____

Pavement

Sample #	Temperature (degrees celsius)
1	
2	
3	
4	
5	
6	
7	
8	
9	

Grass

Sample #	Temperature (degrees celsius)
1	
2	
3	
4	
5	
6	
7	
8	
9	

Presentation

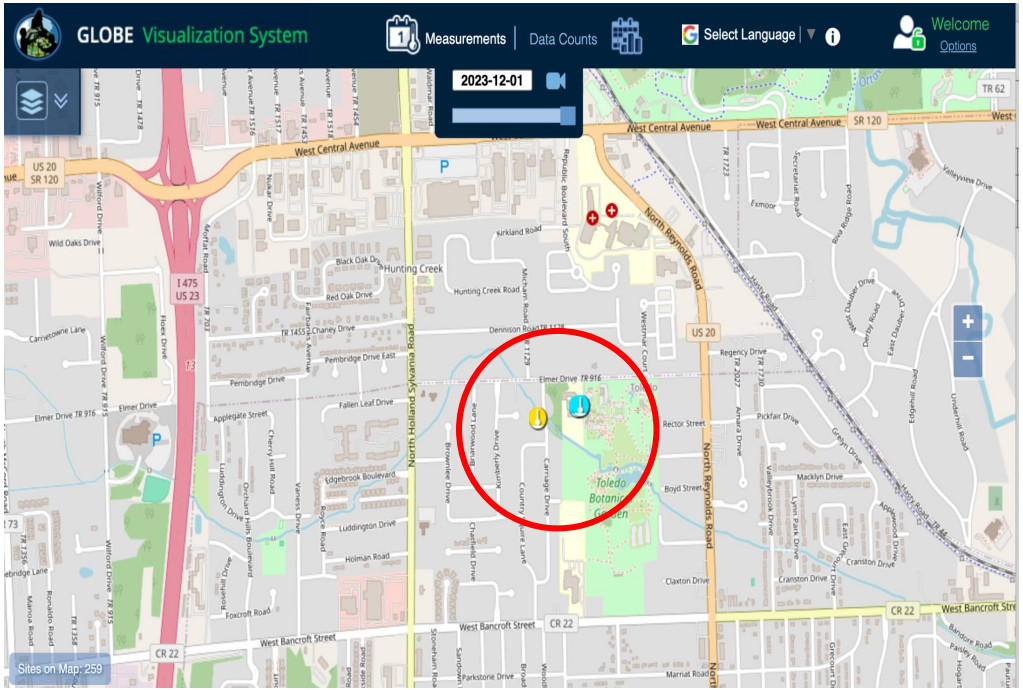
- Gave a presentation about what Urban Heat Island is and how it affects our cities
- Explained what GLOBE is and how the data we took would be used
- Explained surface temperature and air temperature
- Taught them cloud types then did a mini quiz
- Supplied them with a cloud window

Activity (adjusted due to rain)

- 2 groups, one went to the greenhouse and took temperatures, the other went outside and took temperatures of the grass and parking lot
- Worksheet to record their data
- Activity we have done in class multiple times
- Compared the temperature in the greenhouse and outside
- Took air temperature outside as well

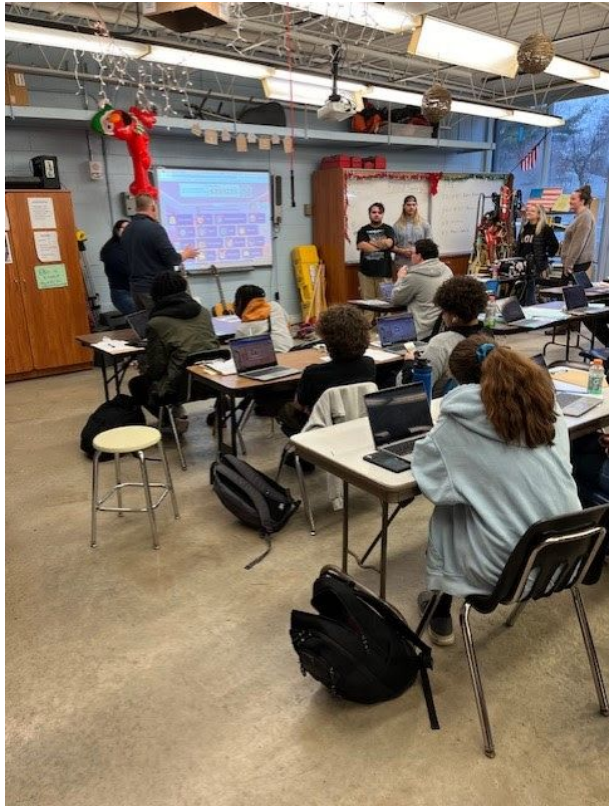
Data

- Dr. C helped us create a GLOBE account for the students and show them how to input their data.
- Explained how Nasa uses GLOBE to cross check their data



Game/Reflection

- Played a game of Kahoot with the students
- Students shared their data from the activity and compared what they found



Student Outcomes

- Students were able to identify different types of clouds
- Students were able to take temperature of different ground covers using an infrared thermometer
- Students were able to take the air temperature using a thermometer
- Students were able to log their data into the GLOBE database

Results

- Students found the ground and air temperature of the greenhouse was warmer than outside (representing the dome around urban areas). They also determined the parking lot was warmer than grass even in the rain.
- It was overcast outside but they were able to identify the clouds they were asked about on the slideshow using their cloud windows.