CUNY CREST
SCIENCE & TECHNOLOGY TO SUSTAIN THE EARTH

CLIMATES

City Landscape Impact Models Analyzing Trends in Environmental Systems

NOAA-CESSRST
CENTER FOR EARTH SYSTEM SCIENCES
AND REMOTE SENSING TECHNOLOGIES

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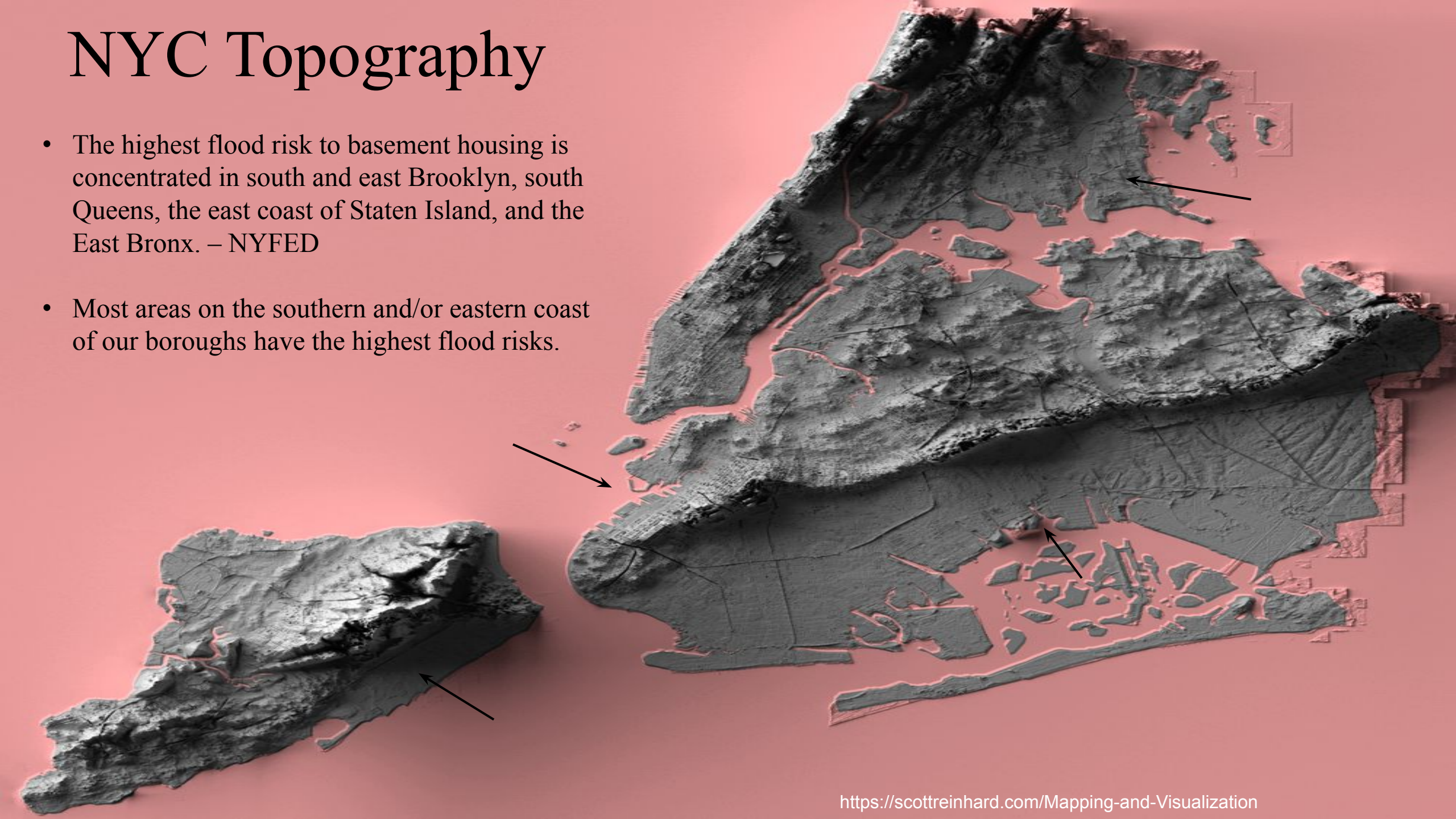
NYC Topography

- The highest flood risk to basement housing is concentrated in south and east Brooklyn, south Queens, the east coast of Staten Island, and the East Bronx. – NYFED

- Most areas on the southern and/or eastern coast of our boroughs have the highest flood risks.



https://scottreinhard.com/Mapping-and-Visualization

Creator: PaulleeWR via Twitter

AP Photo/Richard Drew, File

Facts and Research Questions

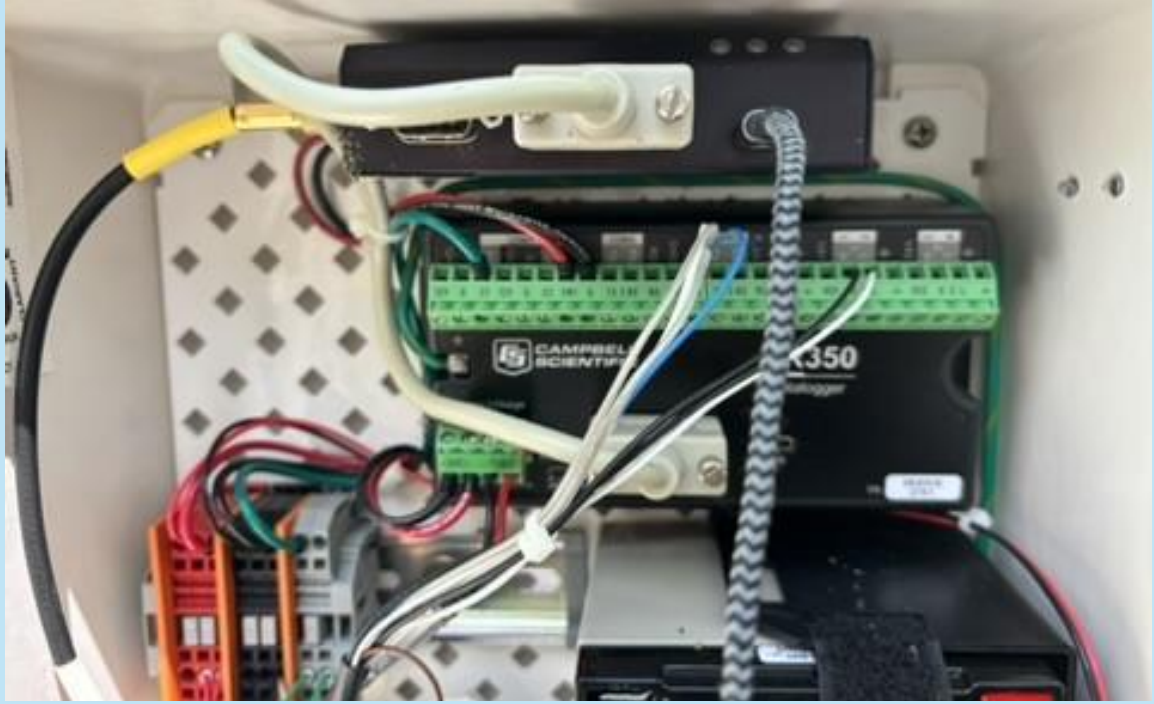
- Currently, over 1 million NYC residents live in a floodplain.
- More than 50% of low-income people live in these floodplains.
- Can we develop a plan for those impacted by extreme weather events such as flooding or heat waves?
- How is the weather measured? Are temperature and rainfall different at various locations in NYC?
- How can we educate and alert fellow New Yorkers who are impacted by extreme weather?
- How can we collaborate with local emergency management agencies to demonstrate the role of weather station data in emergency preparedness and response?

GOALS

- Understand the what are important weather parameters affecting the populations.
- Understand the how weather parameters are measured using weather station?
- Upgrade weather stations to improve data collection from the 5 boroughs.
- Develop a model using data collected from weather stations and community surveys.
- Improving education by engaging students in weather data projects.
- Strengthen community partnerships and engagement in scientific research.
- Become a citizen scientist and connect weather data and community insights.

Troubleshoot, Maintenance and Relocations of Weather Stations (WS) in NYC

- Troubleshoot and update Modems & Data Loggers on Weather Stations
- Reach out to schools to host weather stations, identify points of contact, and discuss collaborative opportunities to enhance students meteorological understanding.
- Collect data and compare to other data collected from various sources.



BASE School, Brooklyn

Ronald Edmonds Learning Center (MS113)

New York Harbor School, Governors Island

Susan Wagner High School

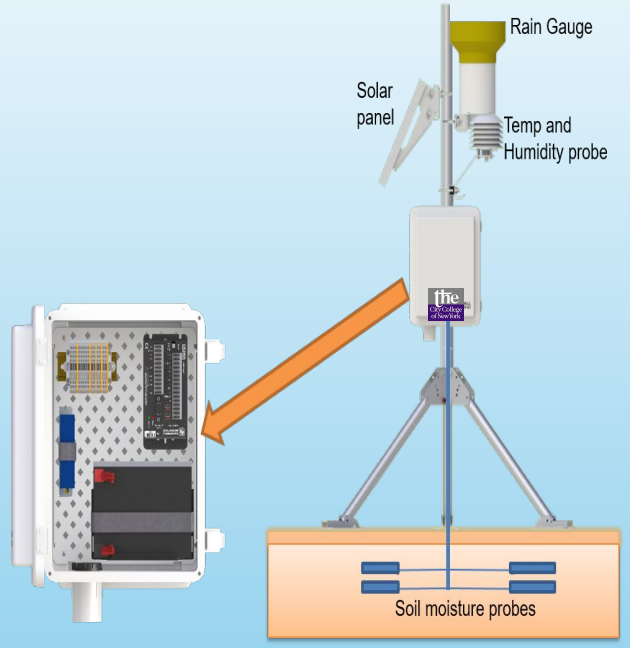
Teachers Training at CCNY

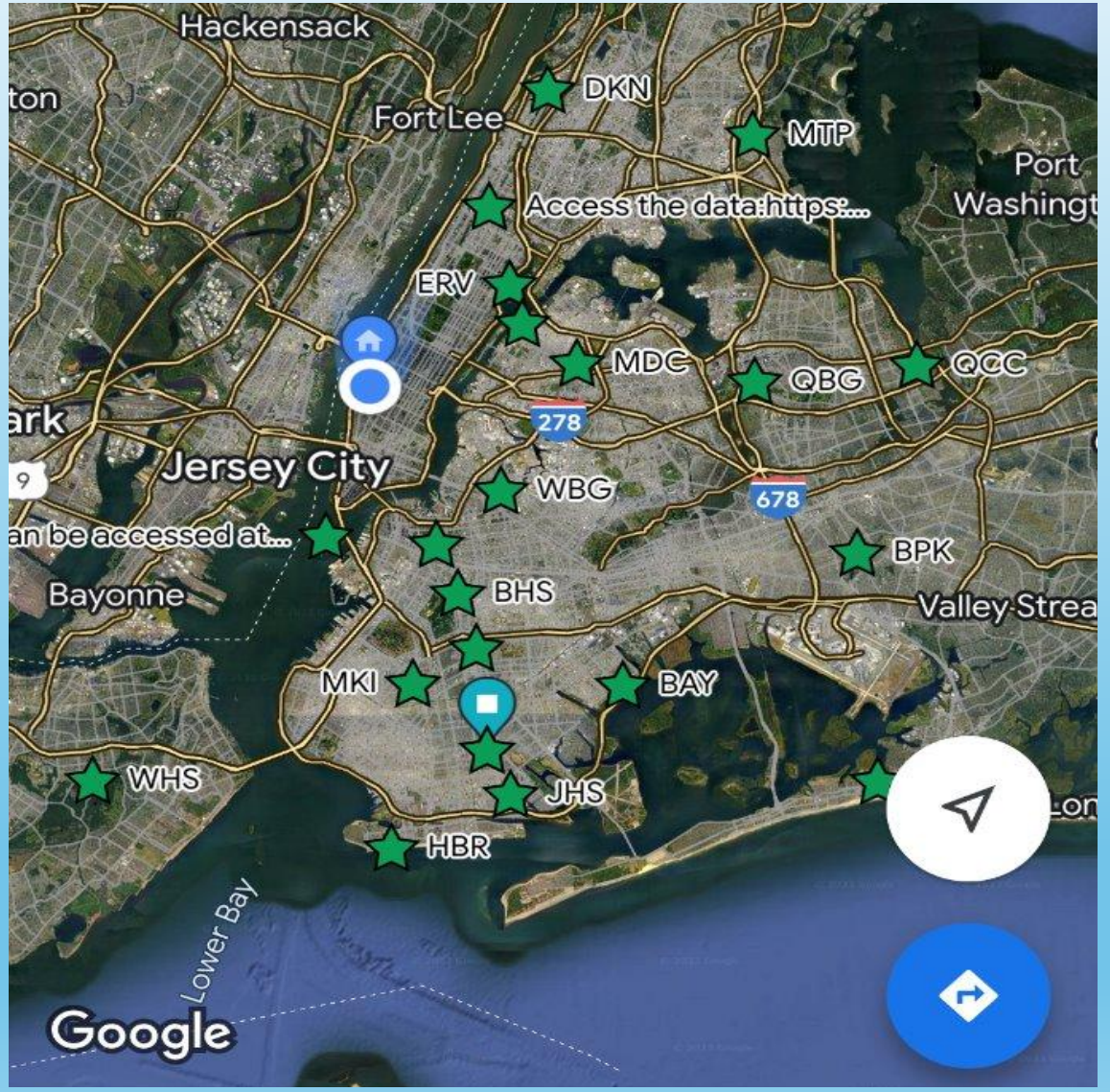
NYCHA Property, Brooklyn

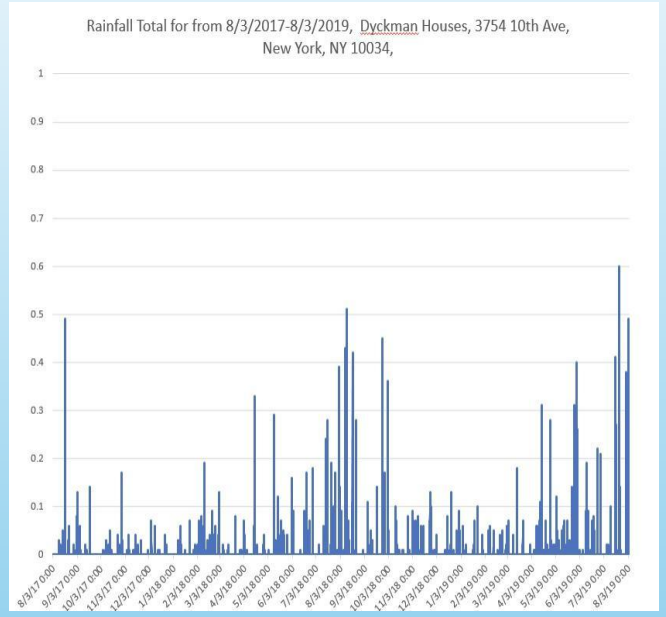
J.H.S. 223 The Montauk

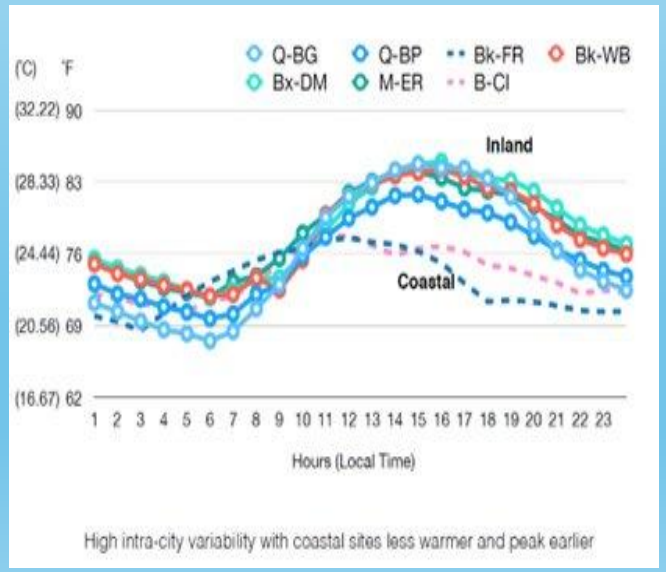
Walt Whitman Middle School

James Madison High School, Brooklyn


Rain Gauge
Solar panel
Temp and Humidity probe
Soil moisture probes


Hackensack
Fort Lee
DKN
MTP
Port Washingt
Access the data:https:...
ERV
MDC
QBG
QCC
278
Jersey City
WBG
678
BPK
BHS
Bayonne
Valley Strea
MKI
BAY
WHS
JHS
HBR
Lower Bay
Google


Rainfall Total for from 8/3/2017-8/3/2019, Dyckman Houses, 3754 10th Ave, New York, NY 10034,
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0


Q-BG
Q-BP
Bk-FR
Bk-WB
Bx-DM
M-ER
B-Cl
(C) °F
(32.22) 90
(28.33) 83
(24.44) 76
(20.56) 69
(16.67) 62
Inland
Coastal
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hours (Local Time)
High intra-city variability with coastal sites less warmer and peak earlier

Community Engagement

- Provide comprehensive climatic data, including landscape topography and its influence on local weather patterns.
- Share historical weather trends and predictive models to illustrate future climatic scenarios.
- Administer structured surveys to capture community perceptions, concerns, and adaptation strategies.
- Analyze survey results to identify common themes and community needs.

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Incorporating Equity and Justice into NWS Products and Services

1. This research project has been reviewed and approved by the Institutional Review Board of Mississippi State University and granted Exemption Determination IRB-22-444. The study is funded by a grant from the National Oceanic and Atmospheric Administration (NOAA) to Farshid Vahedifard, Reza Khanbilvardi, and Saeed Rokooei. If you have any questions, please feel free to contact Dr. Rokooei, Mississippi State University (srokooei@caad.msstate.edu).

2. Gender:

○ Male ○ Female

3. Race:

○ American Indian/Native ○ Asian ○ Black or African American ○ Hispanic or Latino ○ White

4. Education:

○ Less than High School ○ High School Graduate ○ Some College/Associate Degree ○ Bachelor's Degree ○ Advanced Degree

5. Your age:

○ 18-24 years old ○ 25-34 years old ○ 35-44 years old ○ 45-54 years old ○ 55-64 years old ○ 65 years old or higher

6. What was your total HOUSEHOLD income in the past 12 months before taxes?

○ $0 – $19,999 ○ $20,000 – $39,999 ○ $40,000 – $59,999 ○ $60,000 – $79,000 ○ $80,000 or more

7. Zip Code of your residence (only Zip Code, no need for your home address information):

8. Please indicate if you have experienced / had exposure to any of the following natural hazards in the past 10 years:

	Yes	No
Drought	○	○
Flooding	○	○
Freeze	○	○
Severe Weather (including Tornadoes)	○	○
Tropical Cyclone	○	○
Wildfire	○	○
Winter Storm	○	○
Heat Wave	○	○

9. To what extent, are you familiar with National Weather Service forecasting and warning systems?

○ Very Low ○ Low ○ Moderate ○ High ○ Very High

10. Please indicate to what extent you have received information from any of these sources about natural hazards:

	1: Very Low	2: Low	3: Moderate	4: High	5: Very High
TV/Radio	○	○	○	○	○
Word of mouth/Friends	○	○	○	○	○
Facebook	○	○	○	○	○
Text alarm	○	○	○	○	○
Twitter	○	○	○	○	○
Local announcements	○	○	○	○	○
Other social media	○	○	○	○	○

Site Visits

- Community Gardens
  - Visit garden and look at ways to help preserve this garden that has been part of east Harlem for over 30 years.
  - Learn how gardens such as Maggie's Garden benefit NYC as well as learn of the various plant species in her garden.
  - Help her establish contacts that can help her save her garden and perhaps make it a NYC Landmark.
- Weather Stations
  - Understand the live weather stations
  - Troubleshoot/maintenance of weather stations
  - Survey on Climate Impact and Environmental Justice