FloodNet

Hyperlocal, Street-level Flood Monitoring in New York City

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Town + Gown NYC Water In and Water Innovative Water Research, *02/16/2024*

NYU
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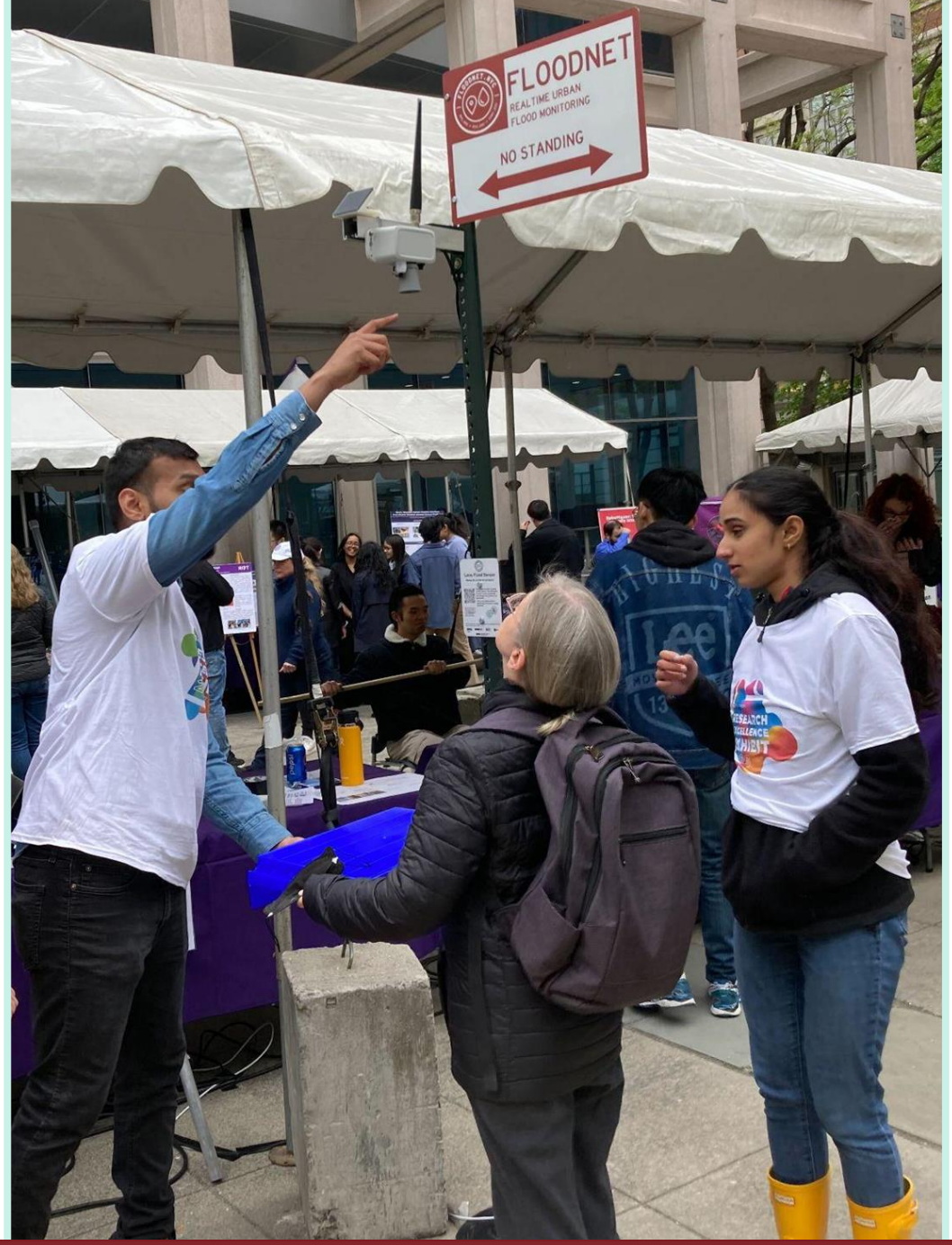
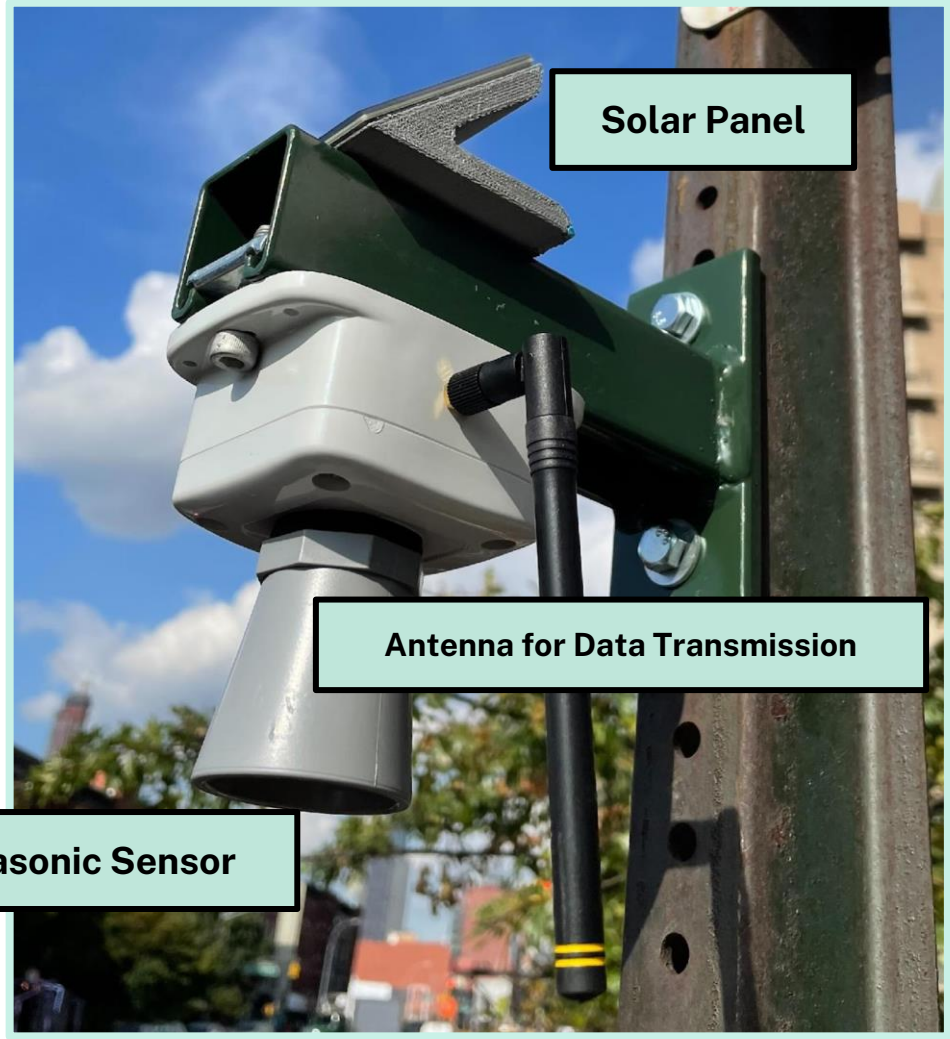
NYC Mayor's Office of Climate & Environmental Justice
NYC OTI Office of Technology & Innovation
NYC Environmental Protection
NEW YORK CITY DOT

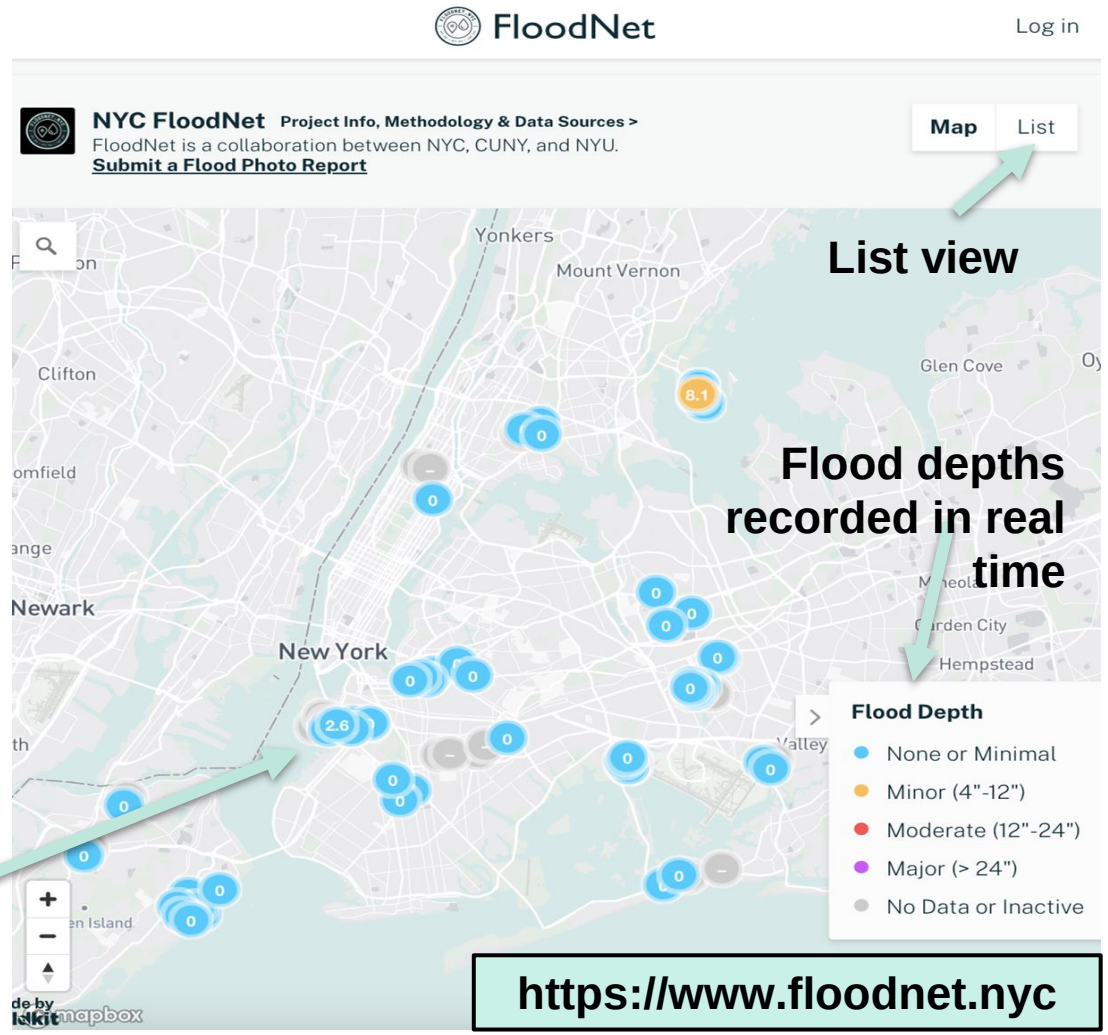


Presentation Outline

1. Overview of the FloodNet NYC Project
2. Data Tools + Community Connection
3. Community Engagement: Approach
4. Community Engagement: In Practice
5. Upcoming CE Opportunities

FloodNet NYC: Project Overview





FloodNet NYC: Project Overview

Input	Outcome	Impact
Flood sensors installed in flood-prone neighborhoods automate data collection for flood events. This includes the occurrence, location, and severity of flood events over time.	Access to our openly available flood sensor data can be useful to not only city agencies and researchers, but also community residents, organizations, and coalitions in understanding how flooding impacts their neighborhood, exploring how flooding is connected to other relevant community issues.	Increased understanding facilitates communities' ability to create action strategies and sustainable practices leading toward greater flood resilience.

FloodNet NYC: Project Overview

Guiding Principles

Project principles ground the connection between the tools we develop, the community engagement practice we engage, and the partnerships we cultivate.

1. Equity + Accountability
2. Openness + Transparency
3. Accessibility + Usefulness
4. Collaboration + Community
5. Relevance + Credibility
6. Sustainability + Integrity


Friday
11:30am - 1pm


FLOODNET.NYC
Local Flood Sensor
Sensor de Inundación de Barrio
This sensor monitors flooding at this location. The information is used to better understand the problem and identify potential solutions.
No identifying information is being collected.
Two city agencies and two academic institutions are responsible for this device, and the data it collects.
NYC
NYC CTO
NYU
To learn more, visit floodnet.nyc or email info@floodnet.nyc


Monday
Thursday
Midnight - 3am

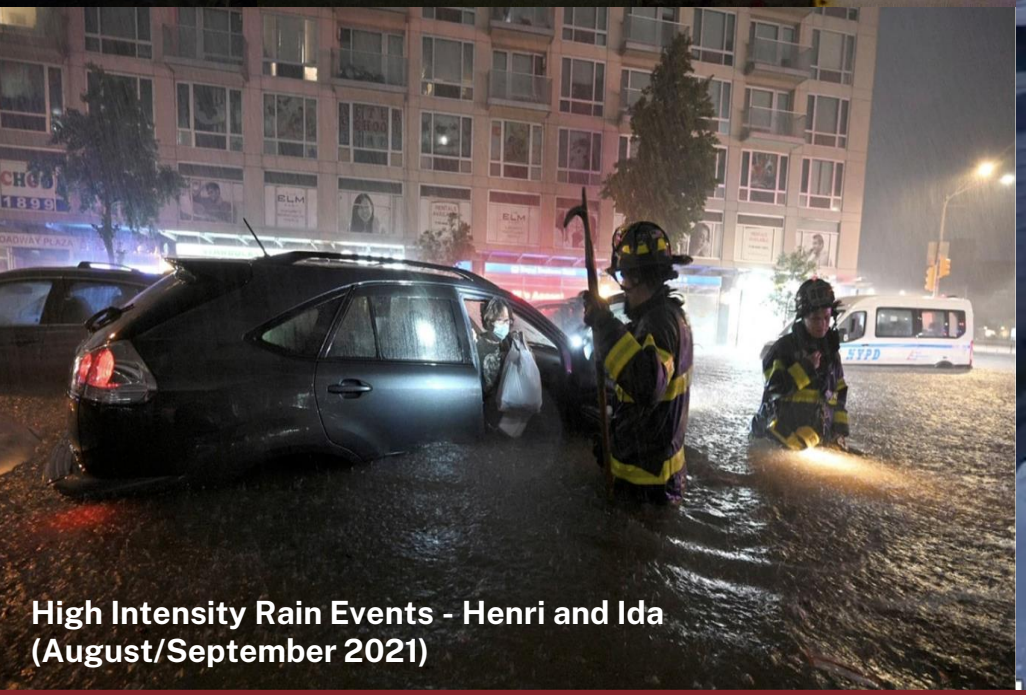
Tools as Touchpoints for Community Connections

Our key goal is to measure street flooding in real time!

- The Sensor Network
  - real-time information about presence, frequency, and depth of hyperlocal street-level flood events
  - information collected by the sensors can help make critical decisions
  - locations informed by community feedback, City partners, & ongoing research into flood exposure and vulnerability across the City

- The Data Dashboard
  - Public facing tool for data dissemination and outreach
  - Sensor outputs become tools for community members to advocate for solutions
  - Shaped by ongoing feedback from community partners and other key stakeholders

Storm Surge – Hurricane Sandy (October 2012)



High Intensity Rain Events - Henri and Ida (August/September 2021)

Frequent coastal flooding caused by high tides during new/full moons

Community Engagement (CE)

Informed by community-based participation research methodology and implementation frameworks, **our CE strategy has three prongs - community outreach, community education, and community action** - and leverages a public health lens to ground our approach in both theory and practice.

Community Engagement Goals

Community Outreach

- Raise awareness of project goals and current initiatives
- Facilitate direct information sharing of real-time data with key community stakeholders

Community Education

- Develop internal team knowledge about flood-prone neighborhoods and potential uses for FloodNet data.
- Cultivate and sustain collaborative practices of information sharing and action

Community Action

- Contribute our data, learnings, and evidence-based practices to various flood-related efforts and climate justice initiatives around the City
  - *including through collaboration with partner like the Community Flood Watch project.*

Community Engagement (CE): Outreach

CE engages outreach to connect with stakeholders to learn about their experience with flooding, identify areas prone to flooding, encourage feedback to inform sensor deployment, and build relationships.

- *occurs with communities across the city through presentations, community meetings, workshops, community walkthroughs, 1:1 community conversation and feedback sessions, as well as other community-building efforts.*

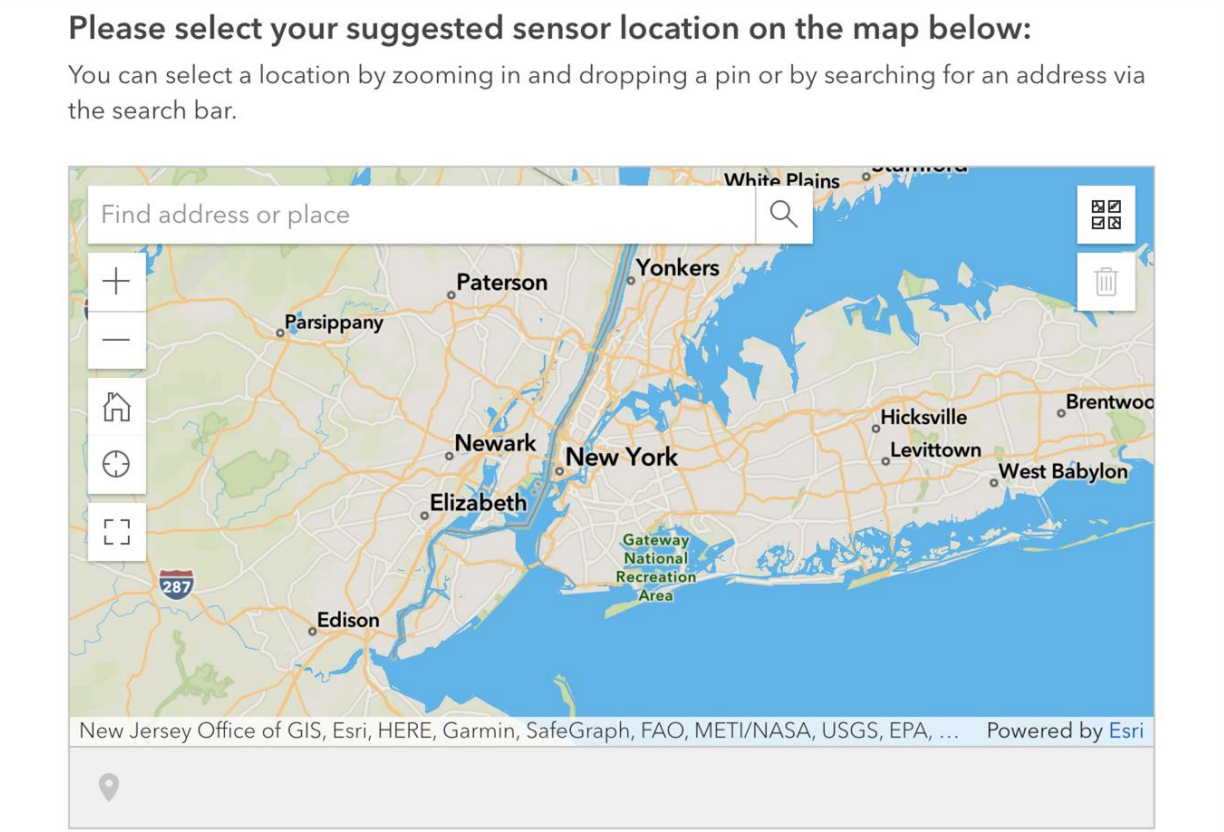
Community Engagement (CE): Outreach

Key dissemination materials for speakers of other languages translated in top ten NYC languages: Arabic, Bengali, Chinese, French, Haitian Creole, Korean, Polish, Spanish, Russian, and Urdu.

Potential Partners Contacted: 459
Potential Partners Connected: 32
Partners Confirmed: 35
Press mentions: 42

*since April 2023

Community Engagement (CE): Outreach

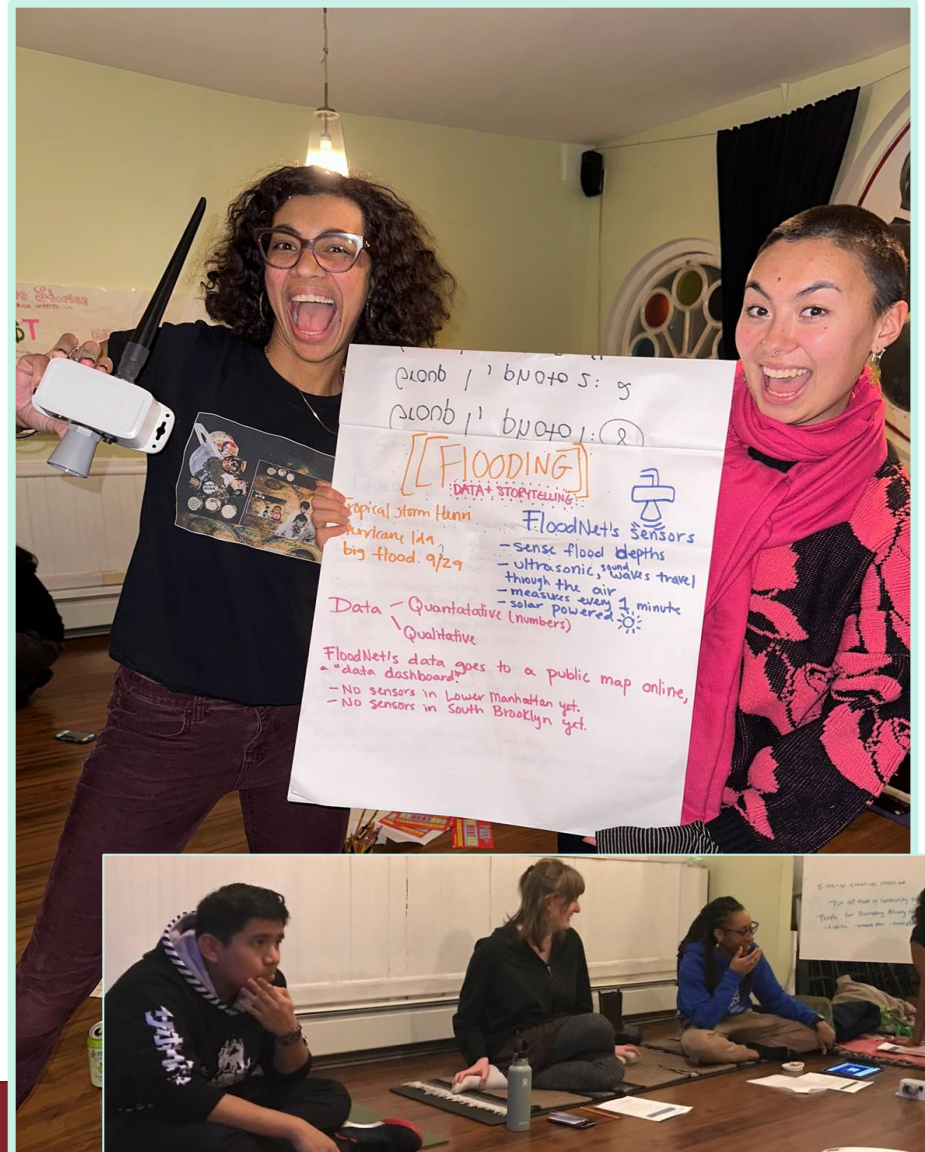


QR code to suggest sensors

FloodNet has a mandate from NYC DEP to install 500 sensors over the next few year.

Sensor placement is informed by requests we collect from NYC residents, city government, and researchers. We analyze these requests alongside predicted flood maps and other indicators of flood risk and vulnerability.

Community Engagement (CE): Education



CE education seeks to engage partners and other stakeholders interested in participating in hands-on learning opportunities, offering regular feedback, and collaborating on educational programming and materials.

- *developed the FloodNet Community Workshop Series which offers three distinct learning modules n sensor technology, FloodNet data access and interpretation, methods of data collection, and dialogue about community priorities related to flood resilience*

Community Engagement (CE): Education

3 Modules Available

- Community Voice Module:
  - *participants introduced to PhotoVoice training to expand community-led documentation, conversation, and qualitative data collection on flooding and flood impacts in their neighborhoods*
- Data & Storytelling:
  - *participants are led through learning activities that facilitate their ability to interpret flood sensor data and communicate their findings through creative storytelling.*
- Sensors & Sensing:
  - *participants with the flood sensor technology and encourage participant reflection on how flooding impacts their neighborhoods*

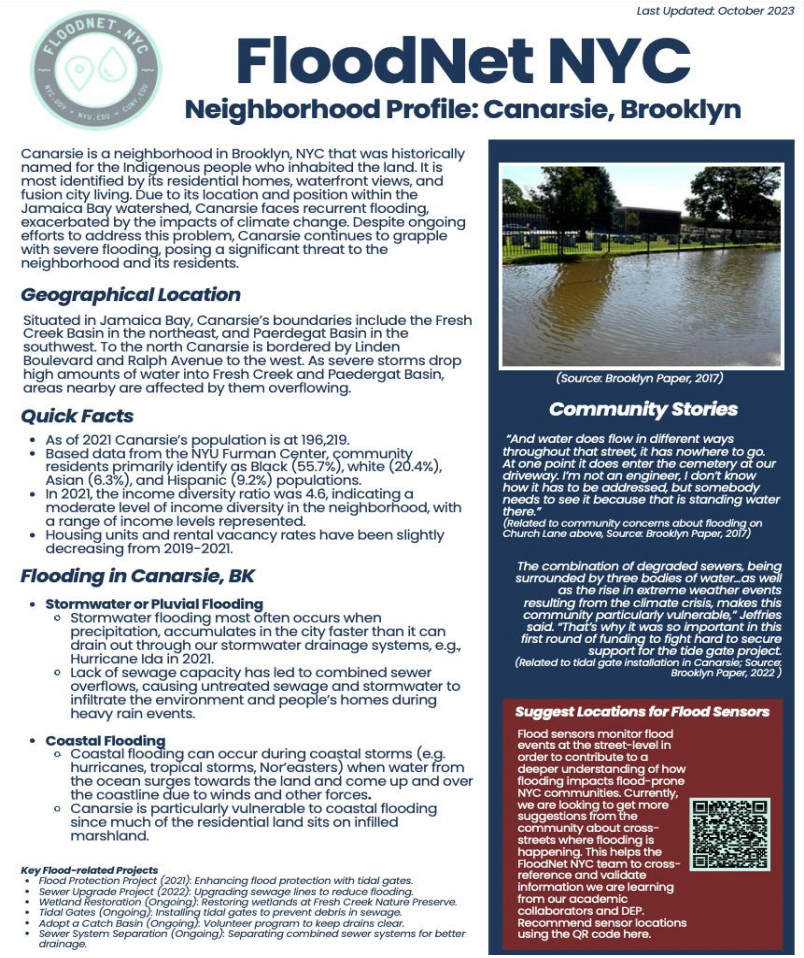
Upcoming Events & Workshops
Intended support outreach and community feedback for acceleration of sensor deployment across NYC.

Flatbush/Prospect Park South, Brooklyn
Jamaica/South Jamaica, Queens
Harlem/East Harlem, Manhattan

Community Engagement (CE): Education

Educational materials offer residents accessible and relevant information in multiple languages to keep them informed about FloodNet.

Community outreach events foster direct interactions, build relationships, and address local concerns and needs.



Community profiles provide a concise and accessible resource for information sharing and collaboration.

Community Engagement (CE): Action

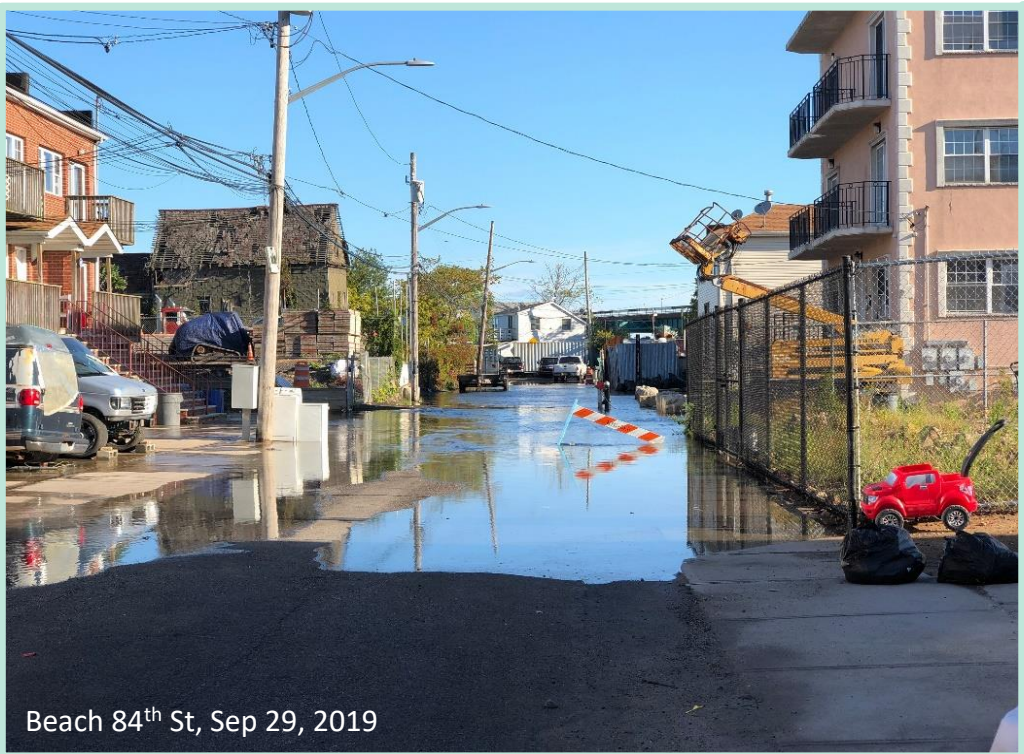
CE efforts toward community action primarily to encourage and create opportunities for collaboration with partners to continue conversations about flood data and support community-building efforts.

Community Engagement (CE): Action

Documenting local flooding since 2018:

Jamaica Bay Community Flood Watch Project

Beach 78th St, Oct 2
2018

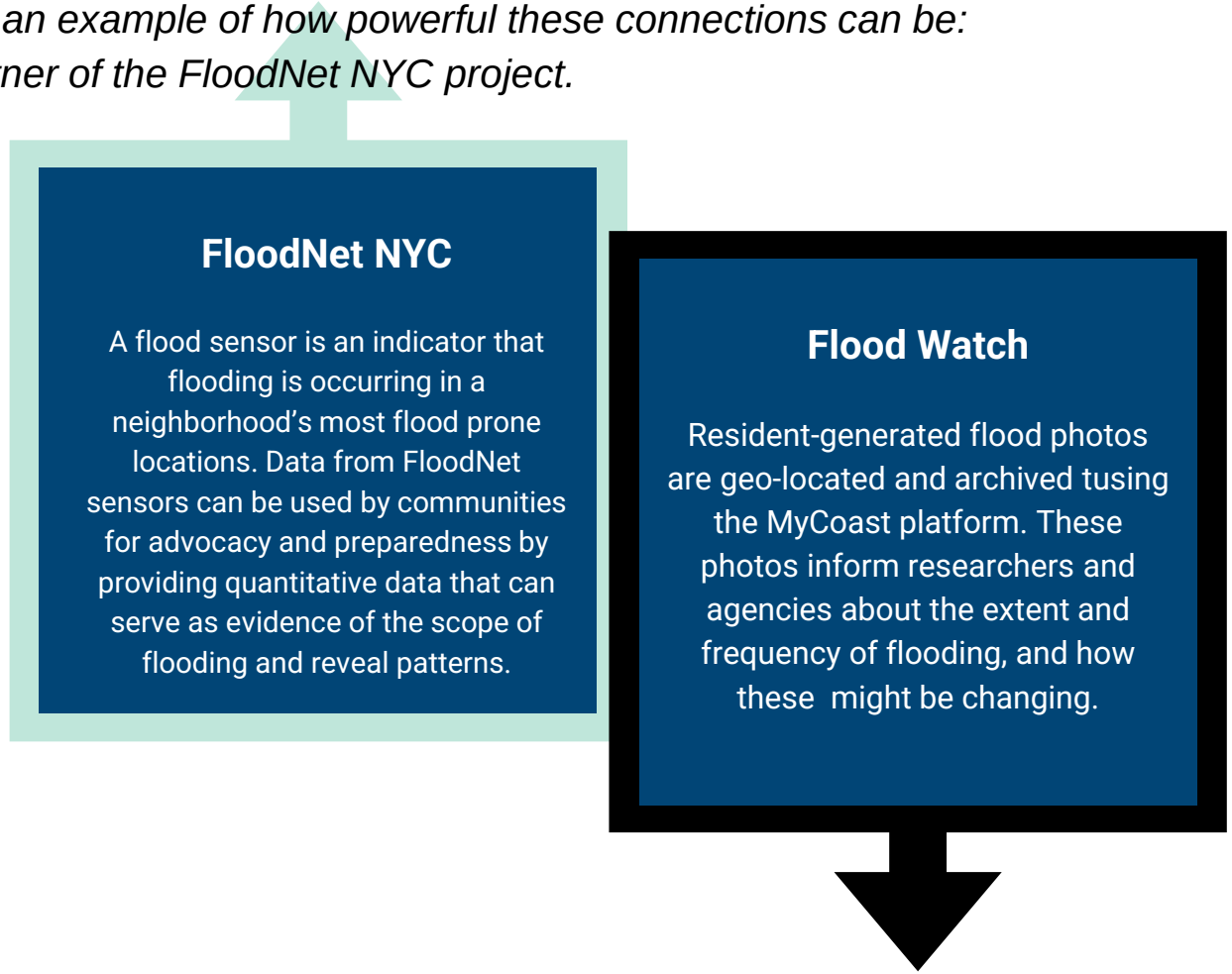

Beach 84th St, Sep 29, 2019


Davenport Court, Sept 10th, 2018


Neptune Ave, Sept 2, 2019

Community Engagement (CE): Action

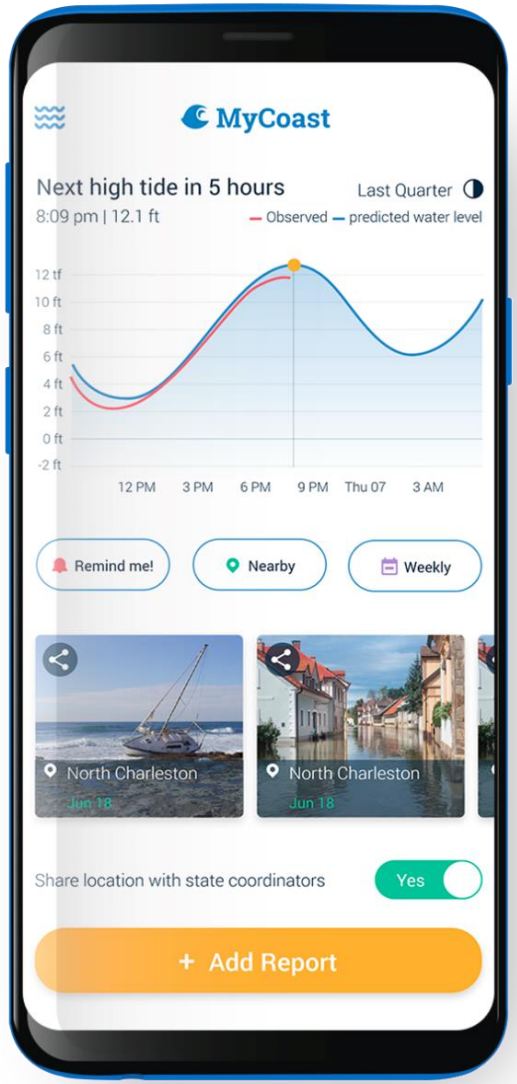
The partnership with FloodNet is an example of how powerful these connections can be: Flood Watch was a founding partner of the FloodNet NYC project.



Sensors cannot show every area where flooding occurs; they monitor the places directly below them. Photos illustrate what it means for a community when flooding occurs: where it happens—beyond the sensor—how it's changing, and what it looks like.

Community Engagement (CE)

Volunteers submit photos of flooding to provide better understanding of the problem:
www.mycoast.org/ny/flood-watch



Upcoming Community Meet

FloodNet Community Partner Monthly Meet | CE Office Hours
Friday, February 23rd, 12:30pm EST | Location: Zoom

FloodNet's Community Engagement Team invites its core community resident and organizational partners to a virtual public monthly meeting to discuss partner updates, neighborhood happenings, project feedback, sensor locations, FloodNet CE efforts, and co-produced community-focused educational materials.

> *This standing meeting will be held as an office hour, allowing partners to join and leave the meeting as their schedules permit. We look forward to connecting and building together!*

Email info@floodnet.nyc for more info.

Upcoming Community Meet

FloodNet Community Sessions + Data & Storytelling Workshop
Friday, 3/15, 6:00-9:00 pm EST | Location: Flatbush Central Marketplace

Join us to meet the FloodNet team and learn about our efforts across NYC! Connect with community members, learn to to read our flood sensor data and communicate findings through creative storytelling.

> *FloodNet's Data & Storytelling Module engages community participants in a co-learning experience that supports community-led data analysis. Community participants are led through learning activities that facilitate their ability to interpret flood sensor data and communicate their findings through creative storytelling. The stories both highlight participants' lived experiences with flooding in their area and offer qualitative information to contextualize flood sensor data.*

RSVP not required but welcomed! https://floodnet-formnyc.eventbrite.com

Funding Sources:

New York University
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CUNY Advanced Science Research Center
Ricardo Toledo-Crow, Praneeth sai venkat Challagonda, Kendra Krueger

Science and Resilience Institute at Jamaica Bay (Brooklyn College) + New York Sea Grant
Brett Branco, Véronëque Ignace, Hannah Eisler Burnett, Polly Pierone

NYC Mayor's Office of Climate & Environmental Justice
Hayley Elszasz

NYC Office Technology & Innovation
Paul Rothman, Briana Garcia

+ student researchers at NYU and CUNY

Thank you to community group partners, including:

Citizens Committee of New York City
Sixth Street Community Center
Little Haiti BK
Little Caribbean (CaribBEING)
Brooklyn Movement Center
Brinkerhoff Action Association
The Campaign Against Hunger
El Puente Bushwick Leadership Center
Canarsie Community Development Inc.
Wyckoff Farmhouse Museum
City Island Rising
Pleasant Village Community Garden
Edgemere Community Civic Association
Far Rockaway Arverne Nonprofit Coalition
Cunningham Park Farmers Market (Down to Earth)
Gowanus Canal Conservancy
Meyers Emergency Management Group
Hamilton Beach Civic Association
Red Hook Initiative
Pioneer Works
Rockaway Initiative for Sustainability and Equity (RISE)
Bronx River Alliance
South Beach Civic Association
Nonprofit Staten Island (SI COAD)
Community Emergency Response Team
Queens Memory Project
Queens Library at East Elmhurst
Waterfront Alliance (Rise to Resilience)
Van Cortlandt Park Alliance
Together We Can Community Resource Center

https://www.floodnet.nyc/