

Climate Corps: RebuildNYC

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Project Description

- ❖ NYC speaks **over 800** languages
- ❖ Many unaware of alert system or unable to access – Hurricane Ida, 2021
- ❖ Rebuild by Design aims to understand impact of heavy rain on communities
- ❖ Focus on improving communication efforts

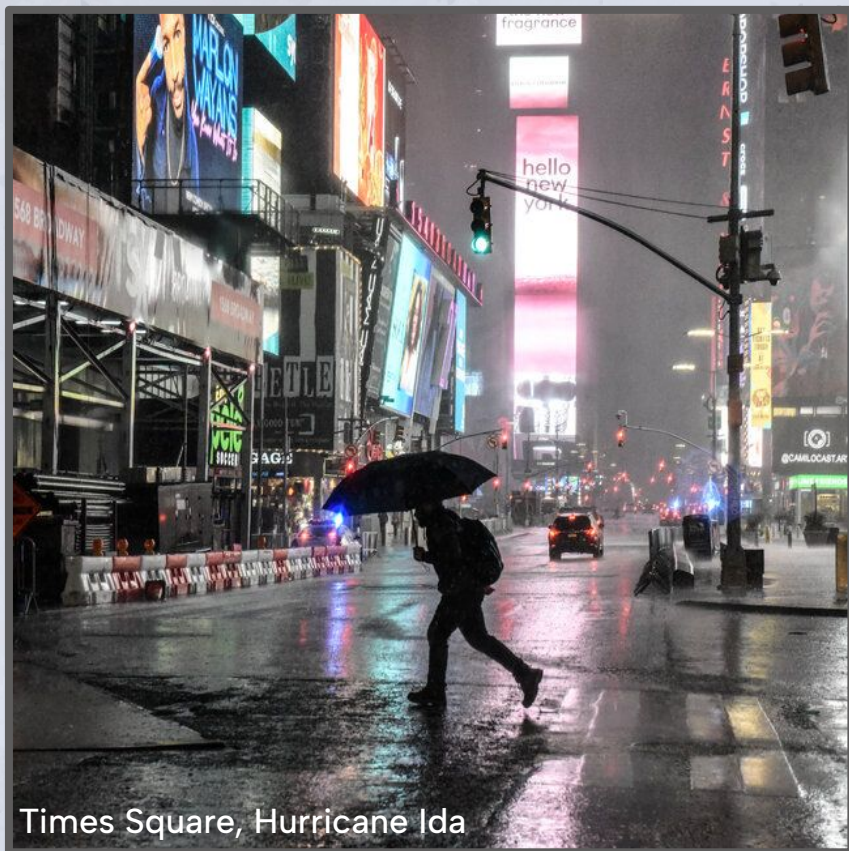
**REBUILD
BY
DESIGN**

Our Initial Expectations (and how they held up)

- Real-world issue (social, climatic impacts)
- Looming, immediate threat to city
- Many languages to narrow down
- Straightforward issue
- Many sources of data readily available



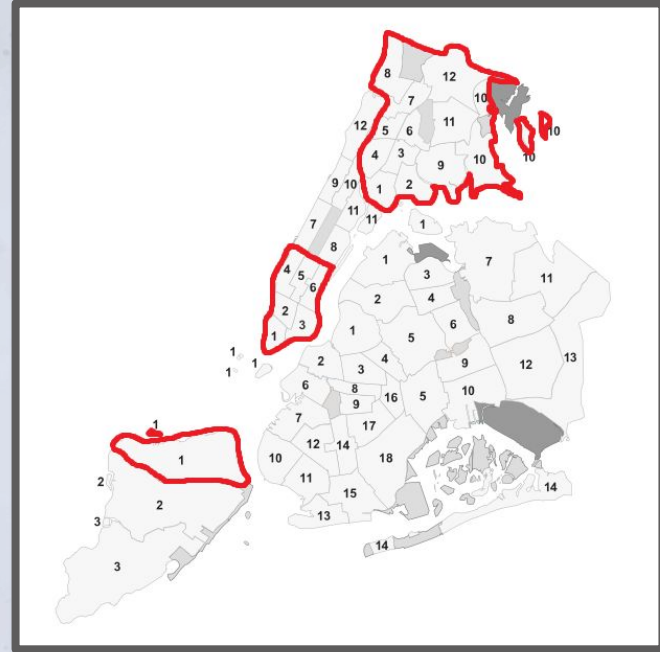
Personal findings



Times Square, Hurricane Ida

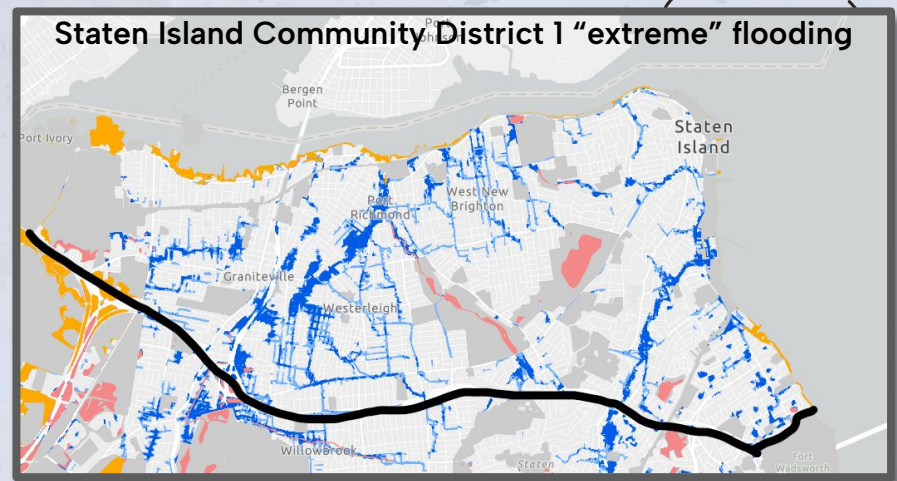
Bronx, Manhattan 1-6, Staten Island 1

- Communities: Bronx 1-12, Manhattan 1-6, Staten Island 1
- Flood risk – New York City stormwater flood maps
 - Moderate and severe
- Languages – Endangered Language Alliance languages of NYC map
 - Community board sites, NotifyNYC
- Demographics – Department of City Planning community profiles
 - Population density, percent not proficient in English



Priority level

- Low
 - Bronx 3, 6, 8, 11, 12
 - Manhattan 1, 2, 4, 5, 6
- Medium
 - Bronx 1, 2, 5, 7, 10
 - Manhattan 3
- High
 - Bronx 4, 9
 - Staten Island 1



Manhattan & Queens

Key findings:

- ❖ Half of the communities have all six NYC evacuation zones
- ❖ Influenced by coastal areas, low elevation, impermeable infrastructure
 - **Manhattan:** 63% impervious, 14% pervious
 - **Queens:** 57% impervious, 27% pervious

Risk:

- **Low:** Manhattan 7/9; Queens 5, 6, 8, 9, 11, 12
- **Medium:** Manhattan 10/12; Queens 3, 4, 13
- **High:** Manhattan 8/11; Queens 1, 2, 7, 10,
- **Extreme:** 14 (underwater during future high tides)



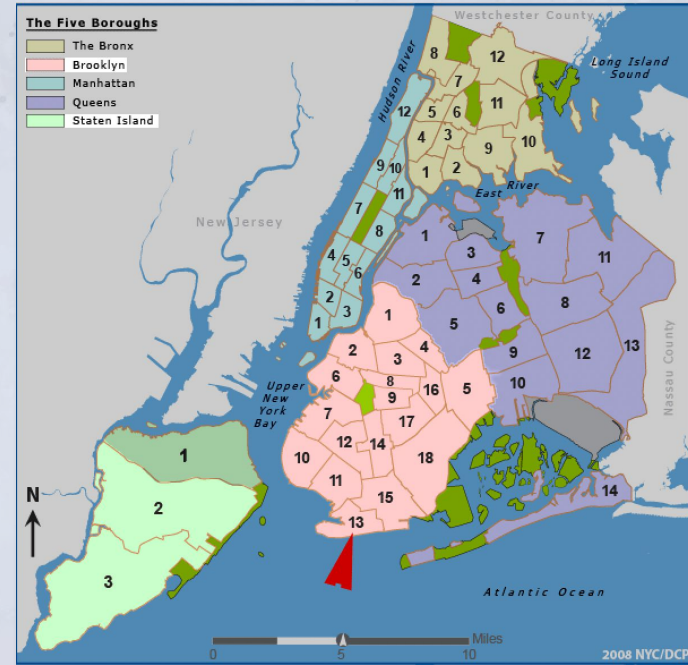
Brooklyn/Staten Island

- **Brooklyn 1-18**

- Half of Brooklyn communities contain all 6 evacuation zones
- Brooklyn English non-proficiency ranged; 6.3% (Brooklyn 6) to 47.3 (Brooklyn 11)

- **Staten Island 2-3**

- Lower non-proficient English (13.8 and 7%)
- All 6 evacuation zones present in both
- Language data indicates fewer languages spoken here than in Brooklyn



Brooklyn/Staten Is.

- Priority ranking



- Extremely High

- Brooklyn: 11, 13, and 15



- High

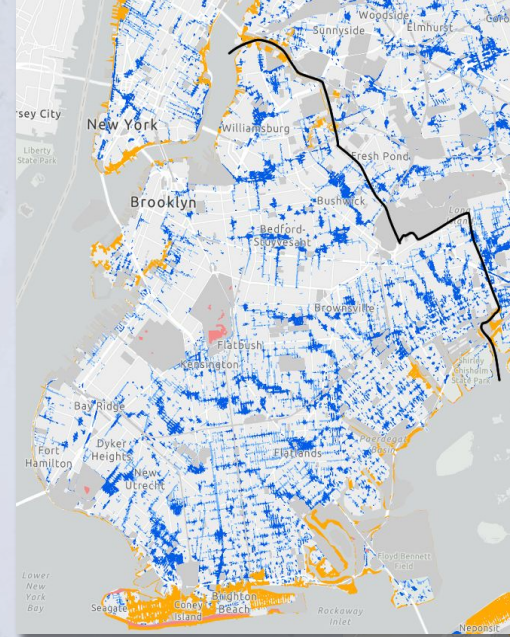
- Brooklyn: 4, 5, 14, and 18

- Medium

- Staten Island: 2; Brooklyn: 1, 7, 10, and 12

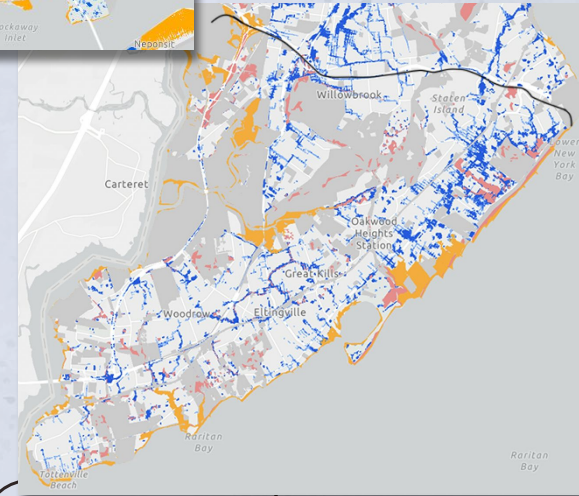
- Low

- Staten Island 3; Brooklyn 2, 3, and 8
- Brooklyn 6, 9, 16, and 17



< Brooklyn Community Districts Stormwater flooding map, 2080 'extreme'

Staten Island Communities 2 and 3 stormwater flooding map, 2080 "extreme"
v



Notify NYC findings

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NYC

NotifyNYC

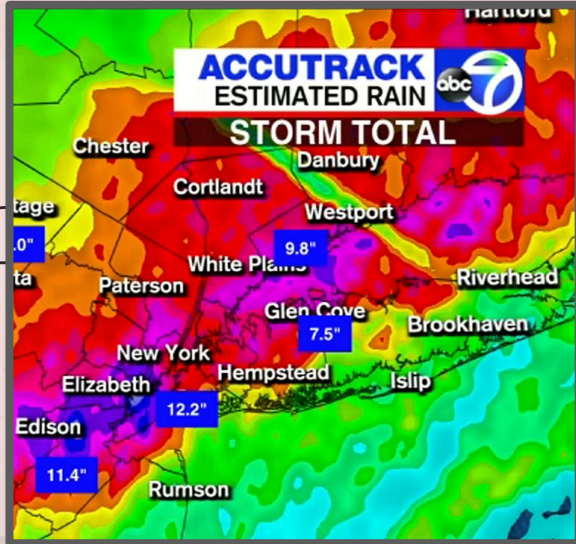
- Language coverage
 - Notifications – app, calls, email
 - Arabic, Bengali, Chinese, English, French, Haitian Creole, Italian, Korean, Polish, Russian, Spanish, Urdu, and Yiddish
 - Wireless Emergency Alerts by FEMA – only **English and Spanish**



- Ready New York
- Forecasting
 - National Weather Service
- Barriers
 - Funding – FEMA Urban Areas Security Initiative grants
 - Staffing – more meteorologists, volunteers
 - Technology – resolution, predictability



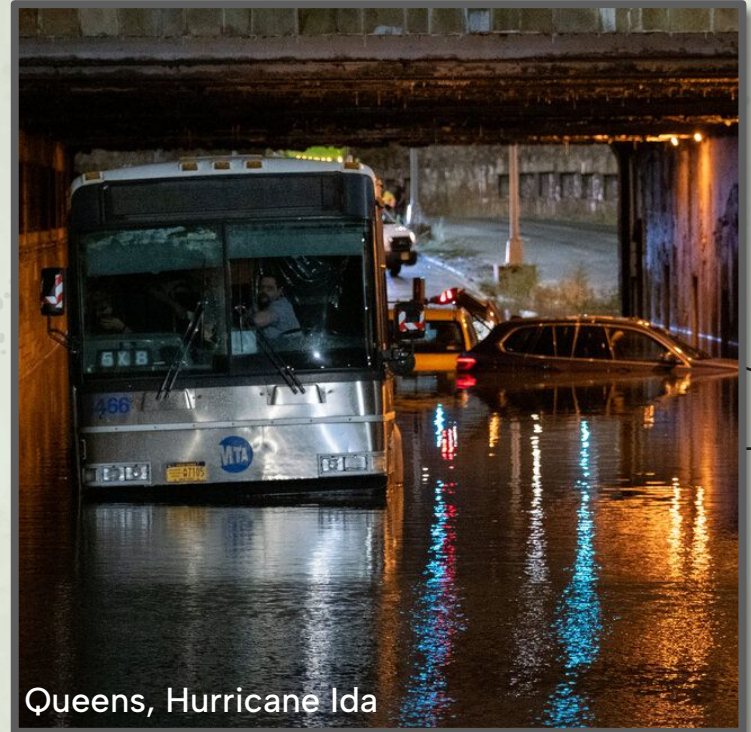
Forecasting



Hurricane Ida

- ❖ National Weather Service uses numerical weather prediction models
- ❖ Ensemble forecasting techniques for accuracy
 - Analyze multiple models
 - Weigh influencing factors
 - Topography & Urban heat island effects
- ❖ Technical limitations affect prediction accuracy
 - Hyperlocal alerts **require** satellite technology
- ❖ Improved technology can **build trust and promote alert usage**

Suggestions & Recommendations



Queens, Hurricane Ida

Translation Widget

NYC Bronx 1
Community Board

한국어 ▶ Translate ▼ Text-Size

›Croatian	›French	›Hebrew	›Javanese	›Lao	›Malayalam	›Oromo	›Scots Gaelic	›Sundanese	›Tamil
›Czech	›Frisian	›Hindi	›Kannada	›Latin	›Maltese	›Pashto	›Sepedi	›Swahili	›Tswana
›Danish	›Galician	›Hmong	›Kazakh	›Latvian	›Maori	›Persian	›Serbian	›Swedish	›Urdu
›Dhivehi	›Georgian	›Hungarian	›Khmer	›Lingala	›Marathi	›Polish	›Sesotho	›Tajik	›Uyghur
›Dogri	›German	›Icelandic	›Kinyarwanda	›Lithuanian	›Meiteilon (Manipuri)	›Portuguese	›Shona	›Tamil	›Urdu
›Dutch	›Greek	›Igbo	›Konkani	›Luganda	›Mizo	›Punjabi	›Sindhi	›Tatar	›Uyghur
›Esperanto	›Guarani	›Ilocano	›Korean	›Luxembourgish	›Mongolian	›Quechua	›Sinhala	›Telugu	›Vietnamese
›Estonian	›Gujarati	›Indonesian	›Krio	›Macedonian	›Myanmar (Burmese)	›Romanian	›Slovak	›Thai	›Wolof
›Ewe	›Haitian Creole	›Irish	›Kurdish (Kurmanji)	›Maithili	›Nepali	›Russian	›Slovenian	›Tigrinya	›Xhosa
›Filipino	›Hausa	›Italian	›Kurdish (Sorani)	›Malagasy	›Norwegian	›Samoan	›Somali	›Tsonga	›Yoruba
›Finnish	›Hawaiian	›Japanese	›Kyrgyz	›Malay	›Odia (Oriya)	›Sanskrit	›Spanish	›Turkish	›Yoruba



MORE ▶

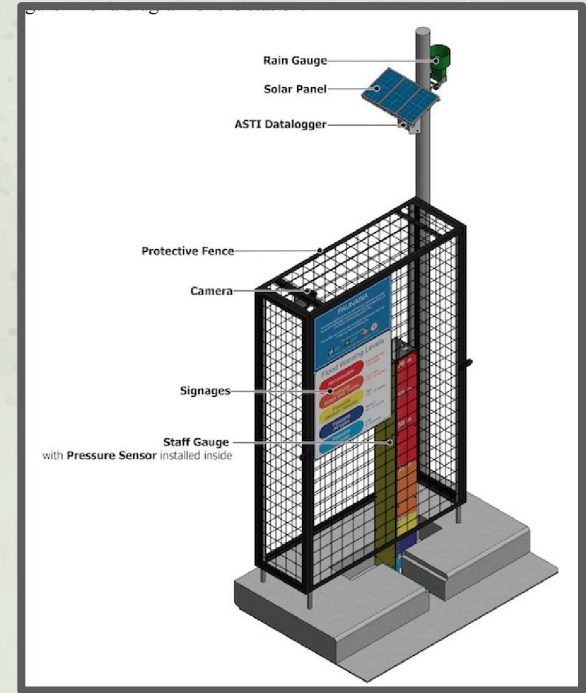


matters relating to their communities' welfare. Bronx Community Board 1 is here to improve the quality of life for anyone who lives, works or visits our Bronx Communities.

- NY State Language Access Law
 - Top 12 languages: Spanish, Chinese, Russian, Yiddish, Bengali, Korean, Haitian Creole, Italian, Arabic, Polish, French, and Urdu
 - Several communities do not translate into all of these
- Promote standardization of translation widget used in many community board sites (great language coverage)

Warning strategies

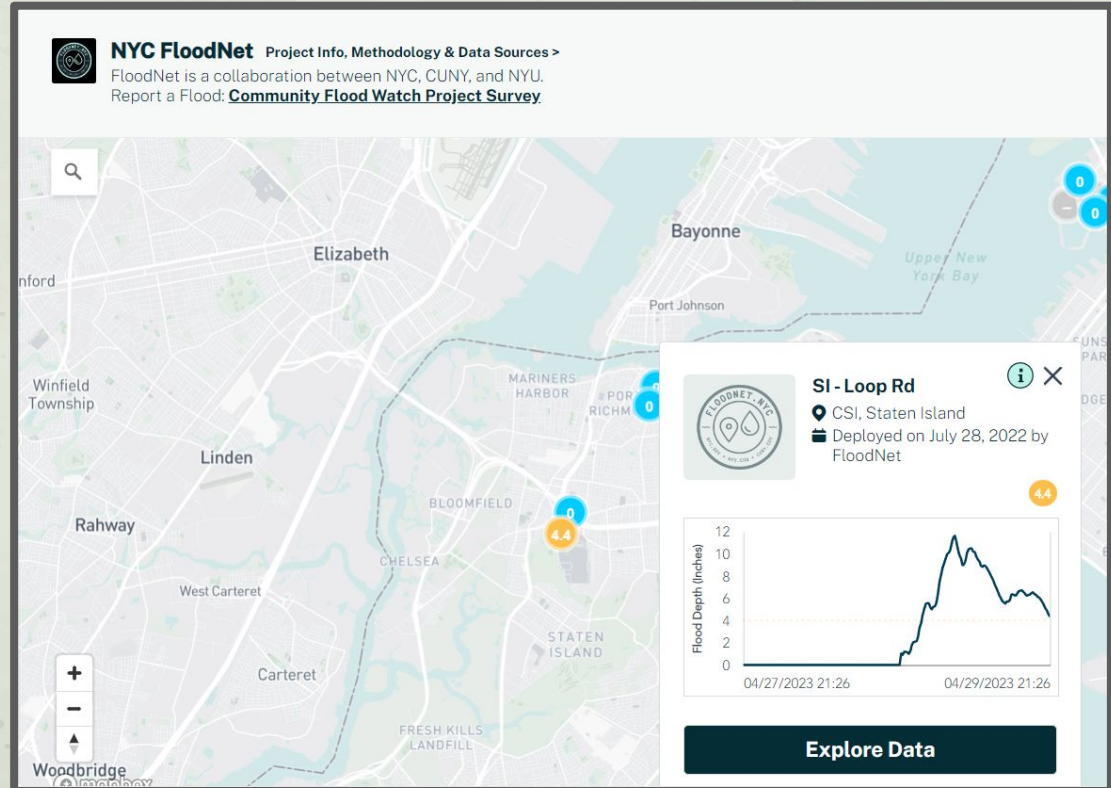
- Monitoring sensors – flash flood warning, developing more accurate prediction models
 - Amsterdam, Copenhagen
 - NYC FloodNet

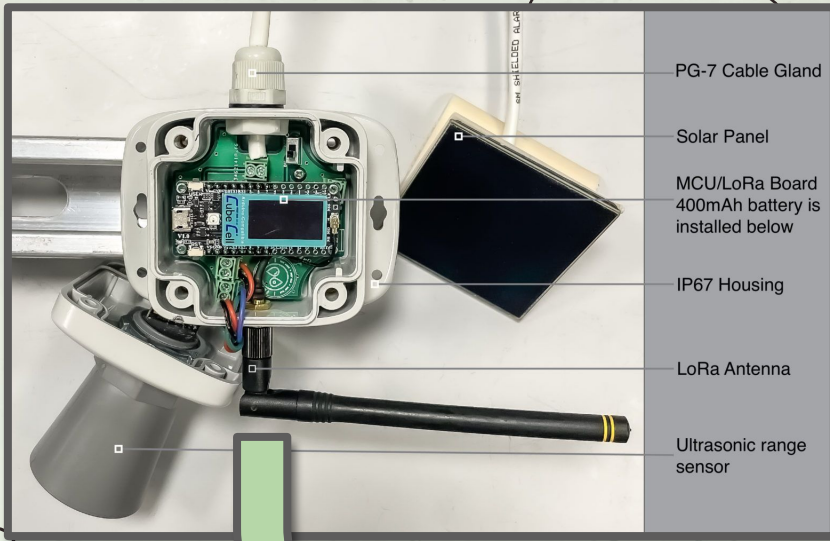


- Rain gauges – data collection, models and scenarios
- Demarcation of flood zones

NYC FloodNet

- NYC, CUNY, NYU collaboration
- Limited flooding sensors
- Accurate, effective data
- Opportunity for learning (models, scenarios), warning, green infrastructure implementation





- LoRa Antenna - advanced signal processing, long-range
- Ultrasonic range sensor - calculates distance using ultrasonic waves
 - Distance with no flooding - distance
 - with flooding = flood depth

Future - Collaboration is Key

- NotifyNYC
 - Ready New York
 - Meteorologists
- FloodNet
- FEMA
- National Weather Service
- Other cities



Amsterdam Rainproof



FEMA





Thank you!
Questions?

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