



ISEE CHANGE

THRIVING EARTH EXCHANGE
National Weather Service Lower Mississippi River Forecast Center

THE TRUST FOR PUBLIC LAND
Climate Smart Cities Tool

Residents Tackle Flood Risks

How much rain will flood city streets?
How do nuisance floods impact daily life?
How long does it take to drain?

The problem

As the city designs new stormwater management in the Gentilly Resilience District, designers and modelers are working with data that could be outdated or lack crucial details. ISeeChange worked with residents and the American Geophysical Union to ground truth data and study the impacts of neighborhood flooding in a level of detail remote sensing and models cannot convey.

"Our data doesn't tell you how severe the flooding is or where the water is going to go."

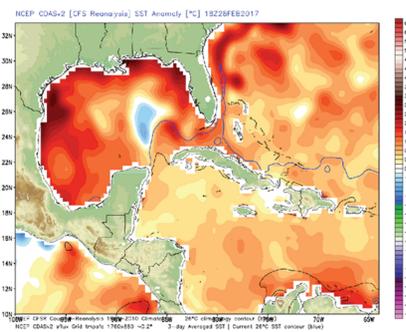
W. Scott Lincoln
National Weather Service Lower Mississippi River Forecast Center

"We want to know where there is a flooding hot spot so we can focus our efforts. We can help solve the problem. You can help define the problem."

Modeler from GEA Engineering Consultants, LLC

Wettest Summer On Record Keeps Citizens Under Water

SEA SURFACE TEMPERATURE ANOMALY IN THE GULF OF MEXICO JANUARY - FEBRUARY 2017



Source - NOAA OISSTV2

For the first time on record, daily temperatures in the Gulf never dipped below 73°F in 2017. As temperatures in the Gulf of Mexico warm, the increased frequency and intensity of rain storms are straining the city's stormwater and drainage infrastructure.

New Orleans is already among America's rainiest cities, and the summer of 2017 was the rainiest on record for the Gulf city. Flash flooding from routine afternoon storms flooded streets, cars, homes, and local businesses.

Details of how specific locations react to extreme rain events is needed by the city and designers to locate, design, and evaluate green infrastructure solutions. Current flood maps lack the desired granularity and community context.

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Identifying trouble spots

Gentilly is a historic New Orleans district built on what was once the flood plains of Lake Ponchartrain. Most of Gentilly is below sea level with some areas as low as six feet below sea level.

The city is planning green infrastructure projects to alleviate flooding, but if the models show whole neighborhoods under water, where should they start?



Source - The Trust for Public Land Climate Smart Cities Tool

Planners often try to design infrastructure to handle a "10 year flood" which theoretically has a 10% chance of happening each year.

As early as May on the ISeeChange platform, residents were reporting that streets were flooding more than usual. That's two and a half months ahead of catastrophic floods in July and August.

ISeeChange also set up 15 flood survey boxes to reach residents in the most flood prone neighborhoods. Within two weeks, the community reported over 158 trouble spots including areas that were not on our radar.



Flooding on May 12 at a community identified trouble spot.



Collection box in a local restaurant in Gentilly.



"Our neighborhood has flooded 2-3 times this year. This was the highest of them all."

Scott Mohrman
July 22, 2017



"I noticed the water was not going down. Within 10 minutes, I see the water is RISING OUT of the drains."

Connie Rodriguez,
October 2, 2017

Digging deeper

After residents identified hotspots, we wanted to measure what kinds of storms caused what degree of flooding and compare it to the city's modeled data. One corner was identified early on by several ISeeChange community members. We knocked on the door of a nearby resident, Destiney, and recruited her to document flooding outside her home.

We used a manual rain gauge and a timelapse camera to document rain events and drainage. We also asked Destiney to regularly update us on how these rain events affected her household.

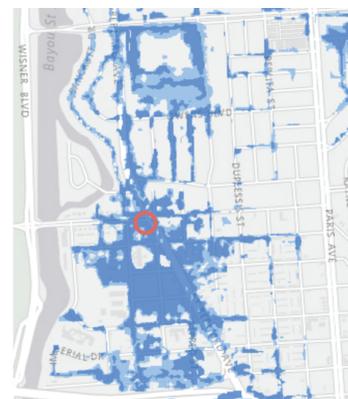


7:19 PM—
30 minutes causes major flooding.

7:59 PM—
Rain event ends.

9:25 PM—
first signs of drainage which takes 5 hours total.

The modeled flood data doesn't include the severity of the impacts at Destiney's corner. Nor does it show how much traffic the intersection gets. On August 5, this intersection proved to be as problematic as flooded underpasses with over 30 cars stranded in the neutral ground.



Source - The Trust for Public Land Climate Smart Cities Tool



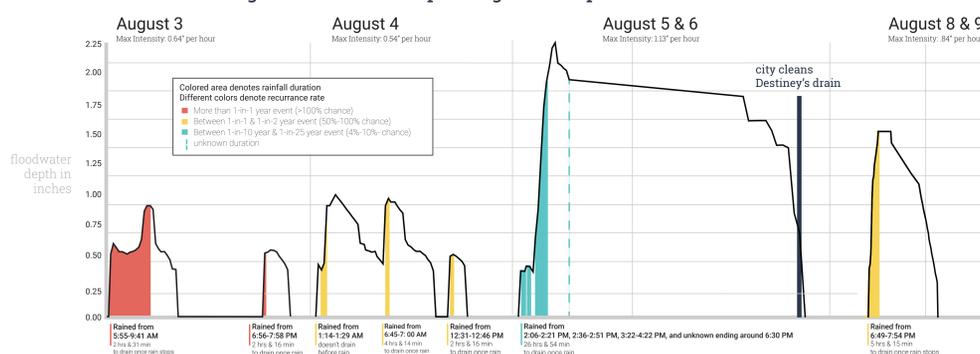
Destiney outside of her house on August 5, 2017.

"It was really bad yesterday...My roommate couldn't get out of the driveway, and she has an SUV. It was more than halfway up into my yard, and my backyard was a little flooded as well, so the baby and I have just had to stay inside."

Destiney Bell, July 28, 2017

What we learned

Remote Modeling Data was not Capturing Real Impact



The Takeaways

- Gentilly residents experience flooding during most storms events, with streets like Destiney's taking minutes to flood and hours to drain.
- Residents can help ground truth flood maps with granularity that is valuable to modelers, designers, the City, and the National Weather Service.
- Residents can provide details of the lived experience that are missing from remote sensing data.
- Residents like Destiney become more informed about flood risk while documenting storms, which was evident in her language and data references on ISeeChange posts.
- With more detailed information, green infrastructure designers working on projects in Gentilly can better target solutions as well as evaluate the impacts of stormwater projects.