- to empower & equip the next generation of change-makers

- to enhance Georgia Tech’s capacity to tackle global change challenges through education & research

- to serve communities across Georgia through public and private partnerships

- to position Georgia Tech as an international leader in global change solutions
GEORGIA SMART COMMUNITIES CHALLENGE

Smart Sea Level Sensor Project Team

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Office of Resilience
Tom McDonald
David Donnelly

Dr. Kim Cobb
Dr. Russ Clark*
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Georgia Tech

CREATING THE NEXT®
Application Targets:

1) emergency planning & response

2) short- and long-term risk assessment & resilience planning

3) communication & building awareness

4) educational resources

CEMA, 2010
Georgia Smart partners
Background – Single Vantage Point

Matthew 2016

Irma 2017

NOAA Tide Gauge
Fort Pulaski

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USGS Flood Survey Data

- Deployed temporary sensors for both storm events
- Inspiration for our project
Not Just Hurricanes

Super Moon!

Popup Thunderstorms!

- highly localized
- need to send response assets to the right place

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Low Powered Wireless

LoRaWAN - Long Range Wide Area Network

• Longer range than WiFi
• Low power - 3-5 years battery life
• Low data rate

Low Cost

• < $2000 per gateway
  • 10-12 units to cover Chatham
• < $250 per sensor location

http://www.semtech.com/wireless-rf/lora-geolocation

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Gateway Deployment

4 Gateways Deployed in Chatham
- Whitemarsh Island
- Wilmington Island
- Tybee Island
- GT Savannah Campus
Gateway Coverage Testing

Drive Around Testing
• Where can we get a signal
• Which antennas work best

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Pretty good results

- Excellent across open water
- Tree canopy is a challenge
- Height of the gateway is most important factor
3 Sensors Deployed in Chatham

- Oatland Island Road
- Catalina Drive
- Walthour Road
  - Betz Creek
Sensor Results

Very good data from initial week of testing

- Confirmed behavior of ultrasonic over water
- Initial wave height calibration
- Good data on power consumption
Local Peak Times

King Tide Times
16 views
All changes saved in Drive

Sensor Locations
- Individual styles
- Tybee Island, Catalina Bridge
- Wilmington Island, Betz Cre...
- Fort Pulaski NOAA Buoy

Base map
Local Peak Times

King Tide on August 10, 2018

Water Level (mm)

Time (ET)

-500
0
500
1000
1500
2000

3:36:00 PM
4:48:00 PM
6:00:00 PM
7:12:00 PM
8:24:00 PM
9:36:00 PM
10:48:00 PM
12:00:00 AM
1:12:00 AM

Tybee Island
Wilmington Island, Betz Creek Bridge (#5)
Fort Pulaski (NOAA buoy)

8/10/18 8:06 PM, 1548
8/10/18 9:00 PM, 1585
8/10/18 8:14 PM, 1355

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Next Steps

Sensor Deployments
• Identify and prioritize 20 locations
• Complete testing and development
• Deploy over next 8-10 weeks

Gateway Deployments
• Identify and prioritize 6-8 locations

Work on applications to facilitate:
• Deployment, Monitoring, Reporting, Management, Crowd sourcing

Identify priority needs from the community!

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