GEORGIA SMART FALL WORKSHOP – CHATHAM COUNTY TEAM

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GEORGIA POWER CHAIR
EARTH & ATMOSPHERIC SCIENCES

SEPTEMBER 6, 2018

GEORGIA **SMART**
COMMUNITIES CHALLENGE

CREATING THE NEXT®

Georgia Tech Global Change Program

Kim Cobb, Director

Wayne Clough, Honorary Chair

- 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 Tech

GEORGIA **SMART** COMMUNITIES CHALLENGE

http://smartcities.gatech.edu/georgia-smart

Georgia Tech Global Change Program

http://globalchange.gatech.edu

Smart Sea Level Sensor Project

http://bit.ly/sealevelsensors

GEORGIA **SMART**
COMMUNITIES CHALLENGE

Smart Sea Level Sensor Project Team

SAVANNAH
savannahga.gov

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Office of Resilience
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David Donnelly

Georgia Tech

Dr. Kim Cobb
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Lalith Polepeddi
Jayma Koval
*Tim Cone**
Andrea Rodgers

**at GT-Savannah*

Georgia Tech

EMERGENCY MANAGEMENT
CHATHAM COUNTY

Randall Mathews
Dennis Jones
Kirk McElveen

the creative coast

Clinton Edminster
Coco Papy
Jennifer Bonnett

GEORGIA **SMART** COMMUNITIES CHALLENGE

Georgia Tech

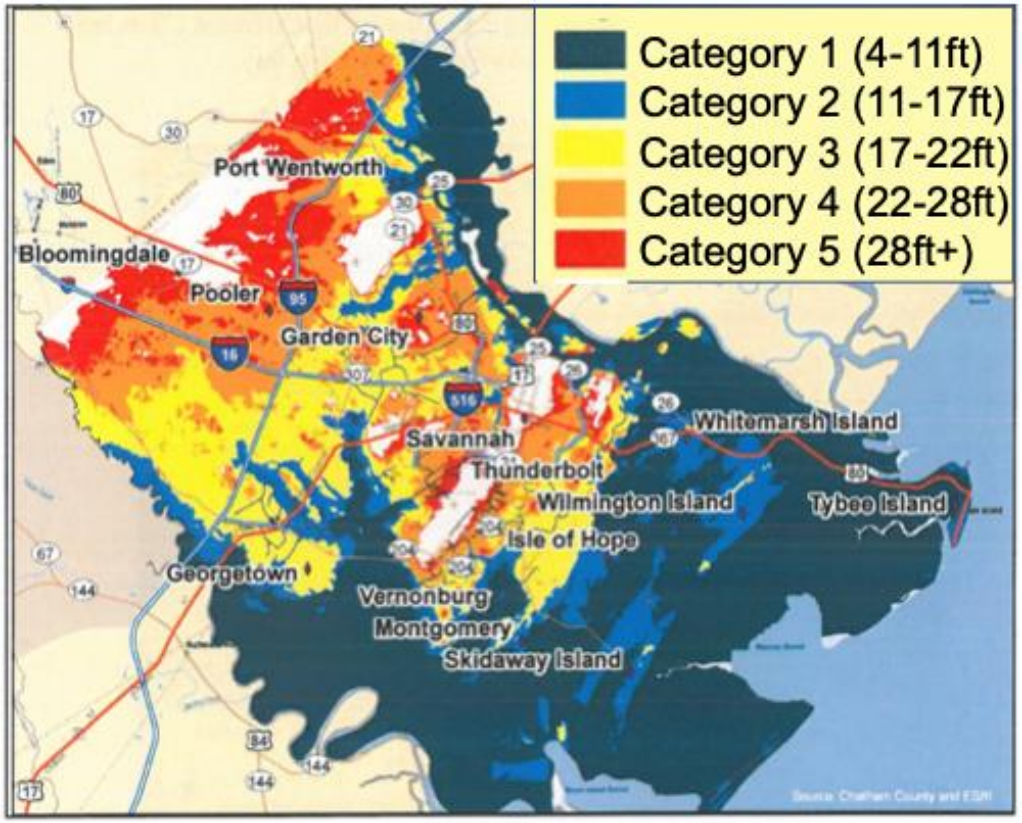
Application Targets:

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

Georgia Power

ARC
Atlanta Regional Commission

ACCG
Advancing Georgia's Counties.

Georgia® USA

GEORGIACHAMBER

Georgia® Department of Community Affairs

GEORGIA MUNICIPAL ASSOCIATION

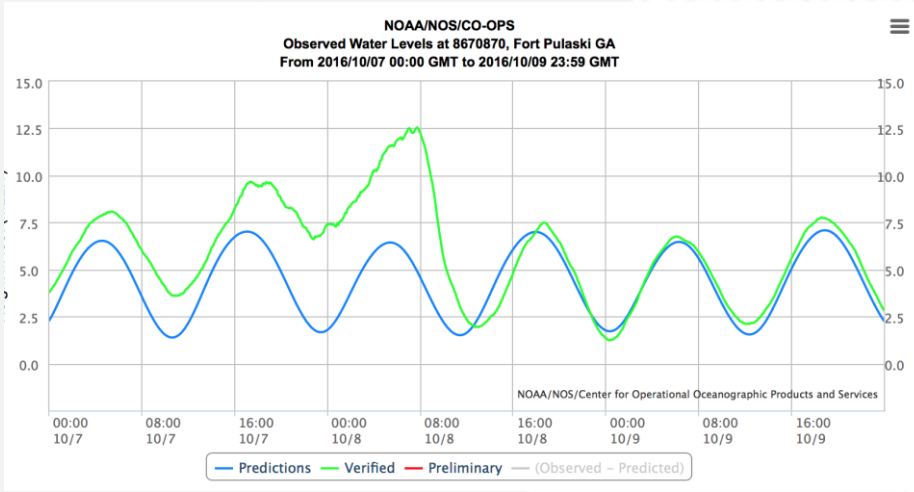
TAG
Technology Association of Georgia

METRO ATLANTA CHAMBER

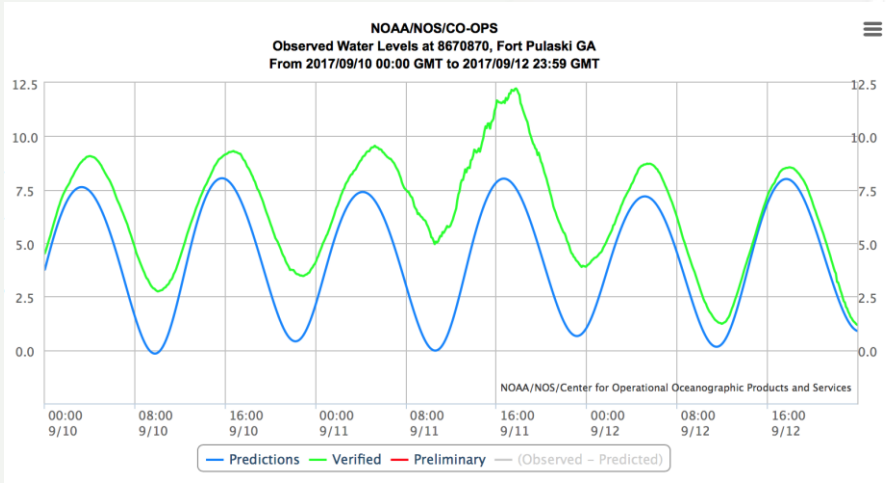
GLOBAL CITY TEAMS CHALLENGE

Background – Single Vantage Point

Matthew 2016



Irma 2017



NOAA Tide Gauge
Fort Pulaski

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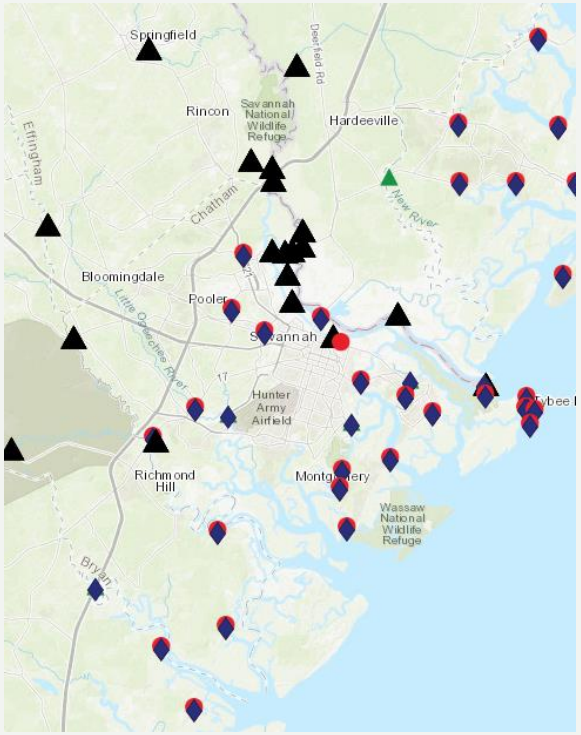
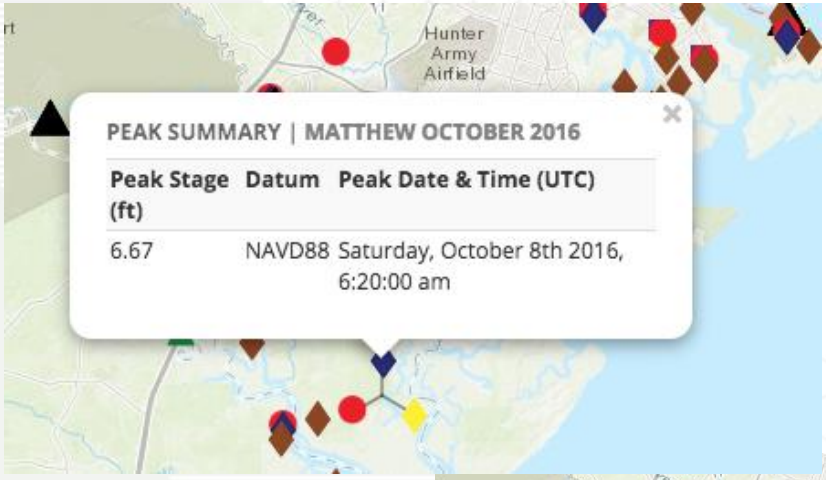
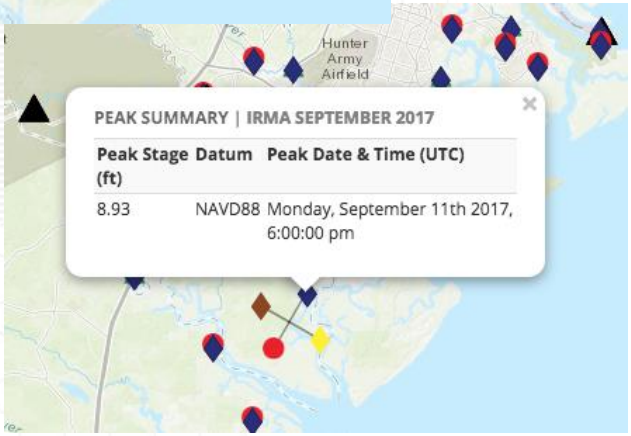
USGS Flood Survey Data

USGS Flood Event Viewer







- Deployed temporary sensors for both storm events
- Inspiration for our project

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Not Just Hurricanes

Super Moon!

Popup Thunderstorms!

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

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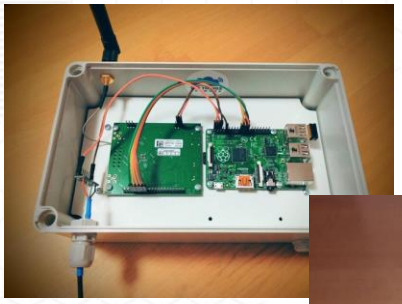
Low Powered Wireless

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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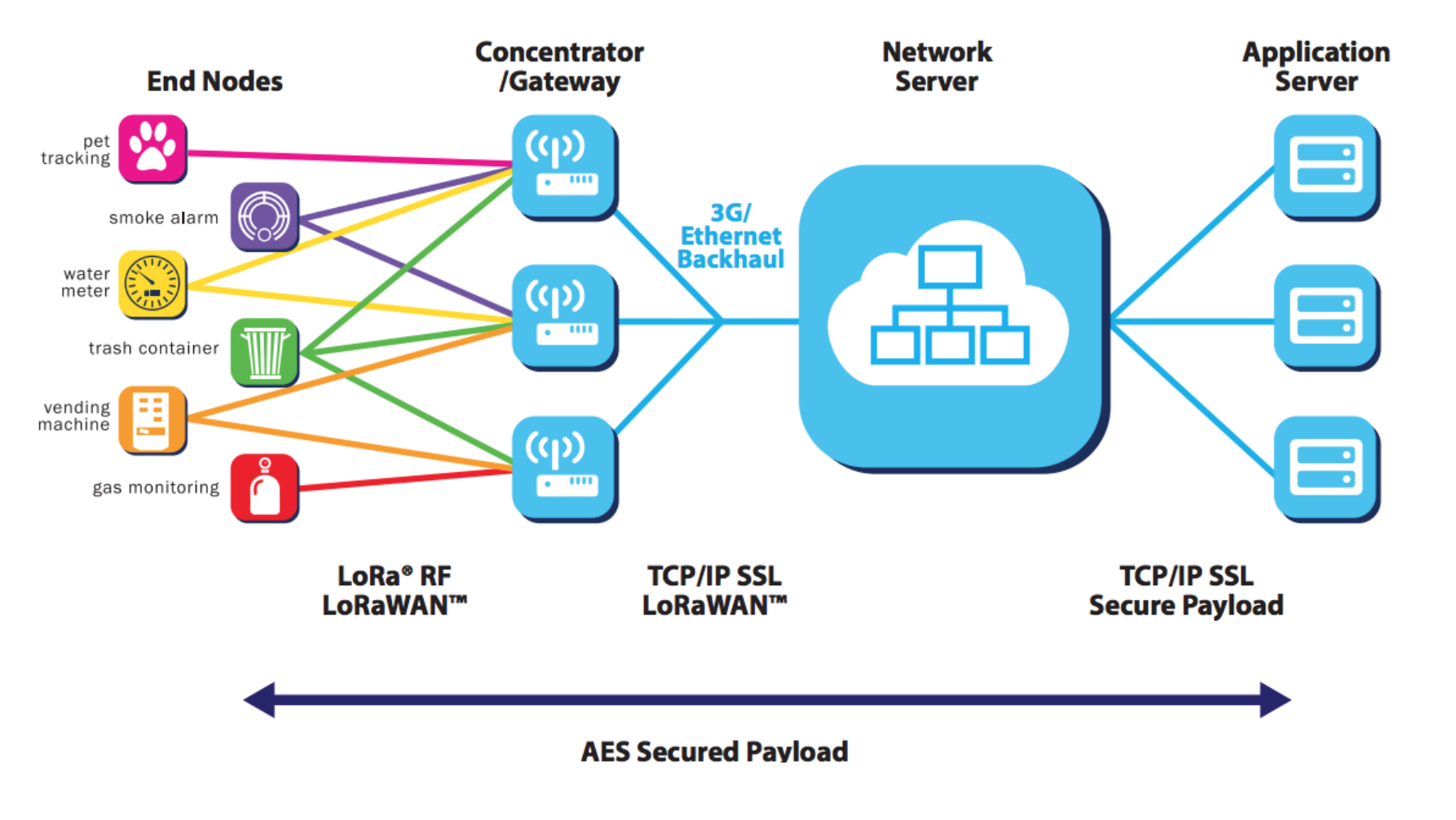
LoRaWAN Architecture



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Gateway Deployment

4 Gateways Deployed in Chatham

- Whitemarsh Island
- Wilmington Island
- Tybee Island
- GT Savannah Campus

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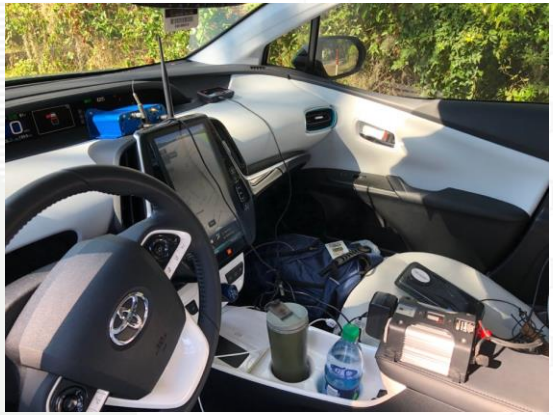
Gateway Coverage Testing



Drive Around Testing

- Where can we get a signal
- Which antennas work best

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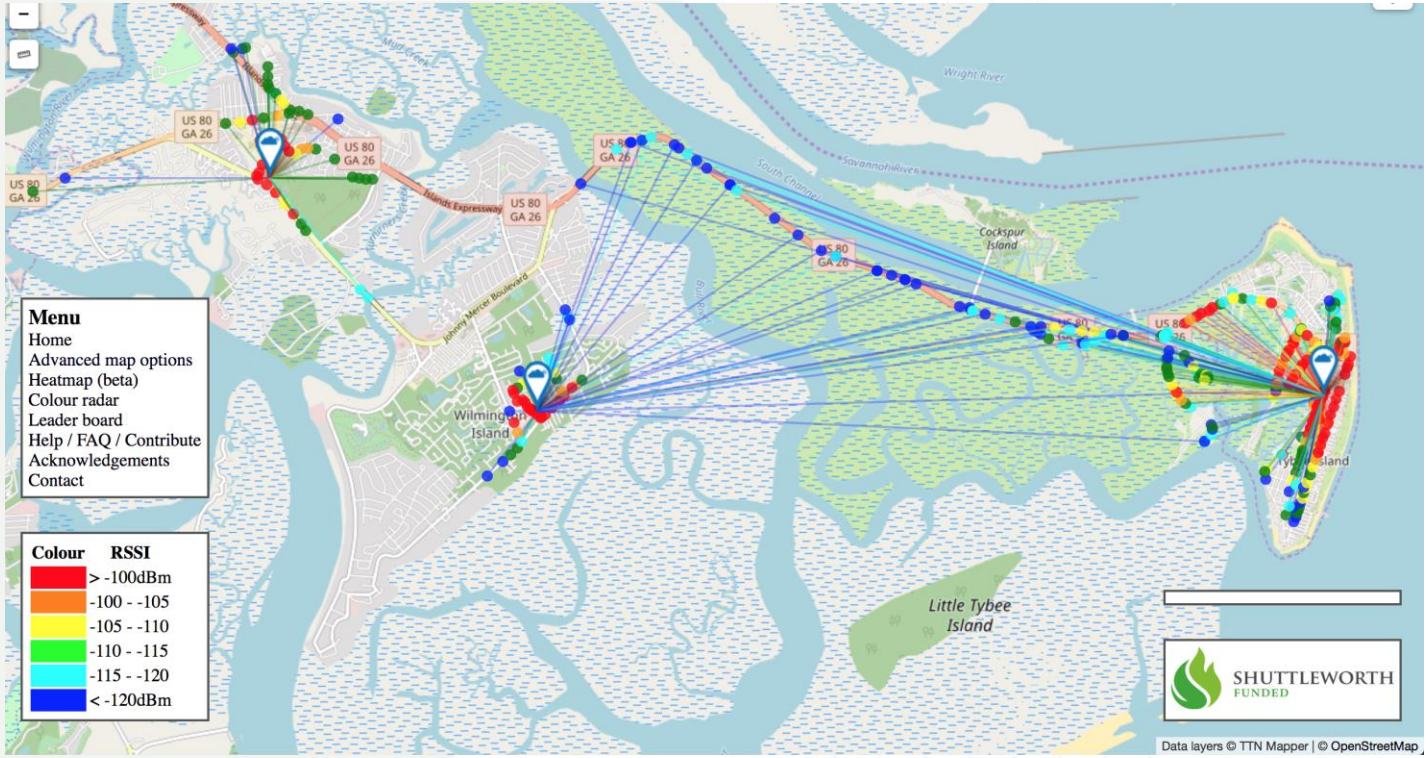
Gateway Coverage Testing



Pretty good results

- Excellent across open water
- Tree canopy is a challenge
- Height of the gateway is most important factor

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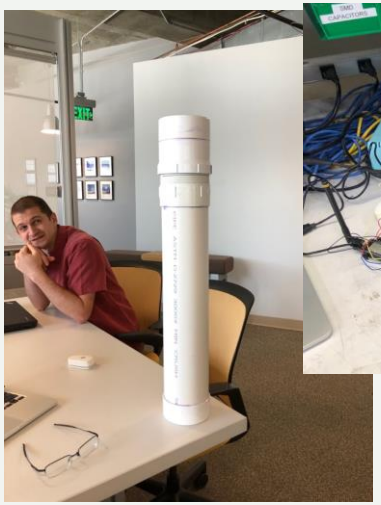
Sensor Deployment

3 Sensors Deployed in Chatham

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



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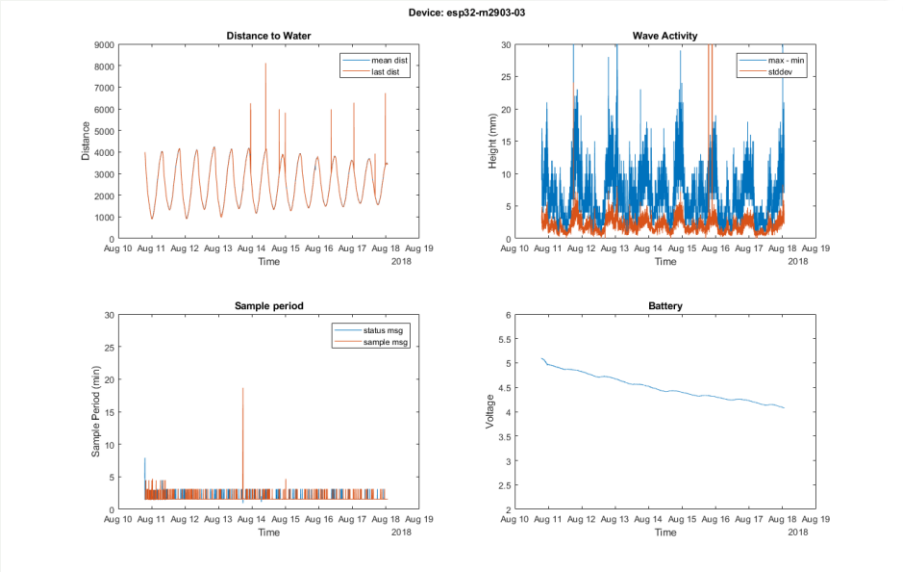
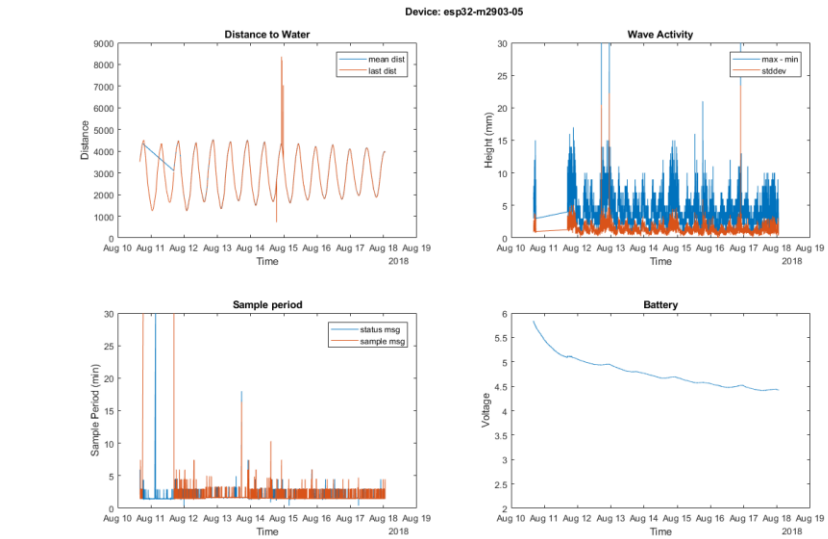
Sensor Results





Very good data from initial week of testing

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

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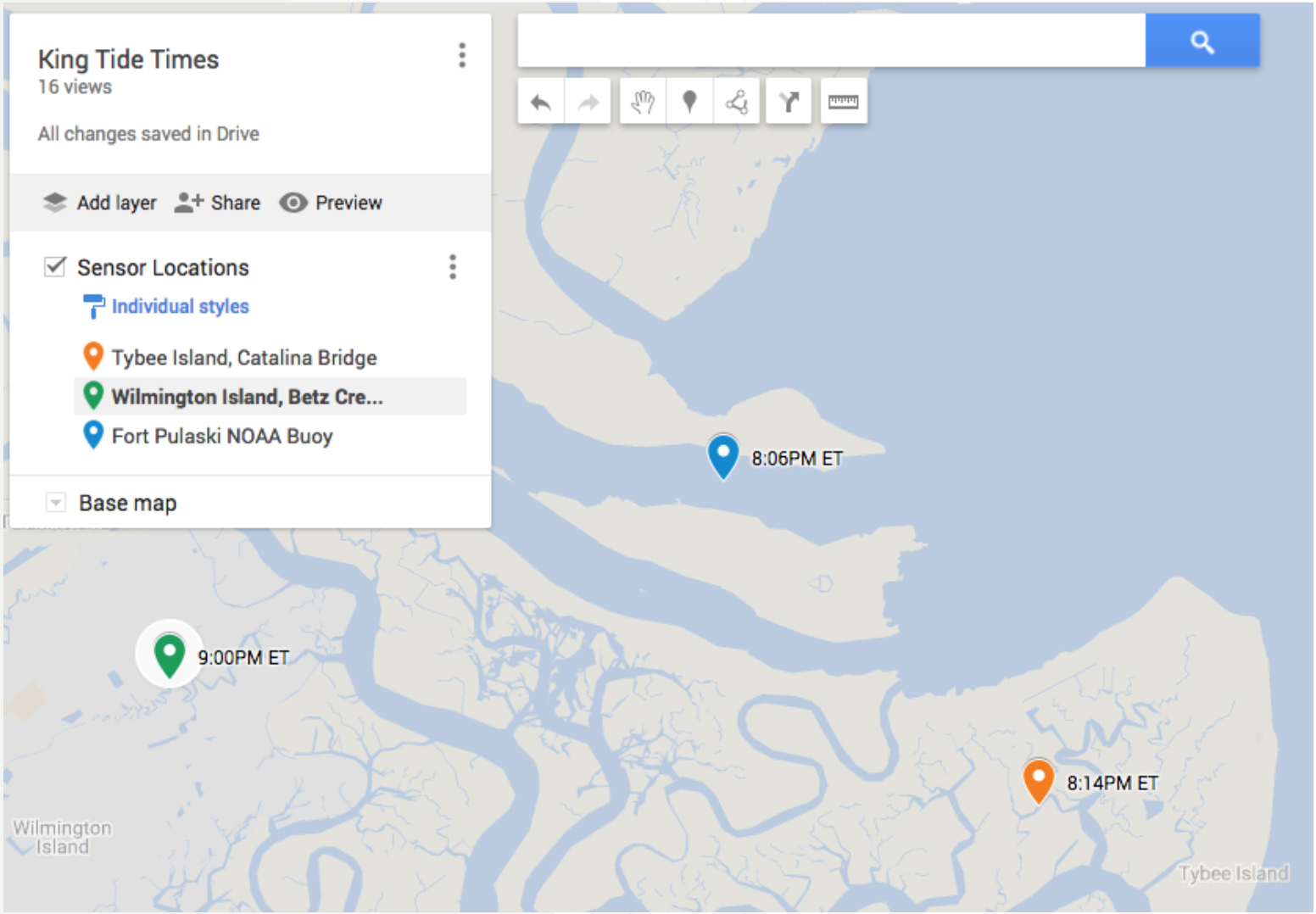
Local Peak Times



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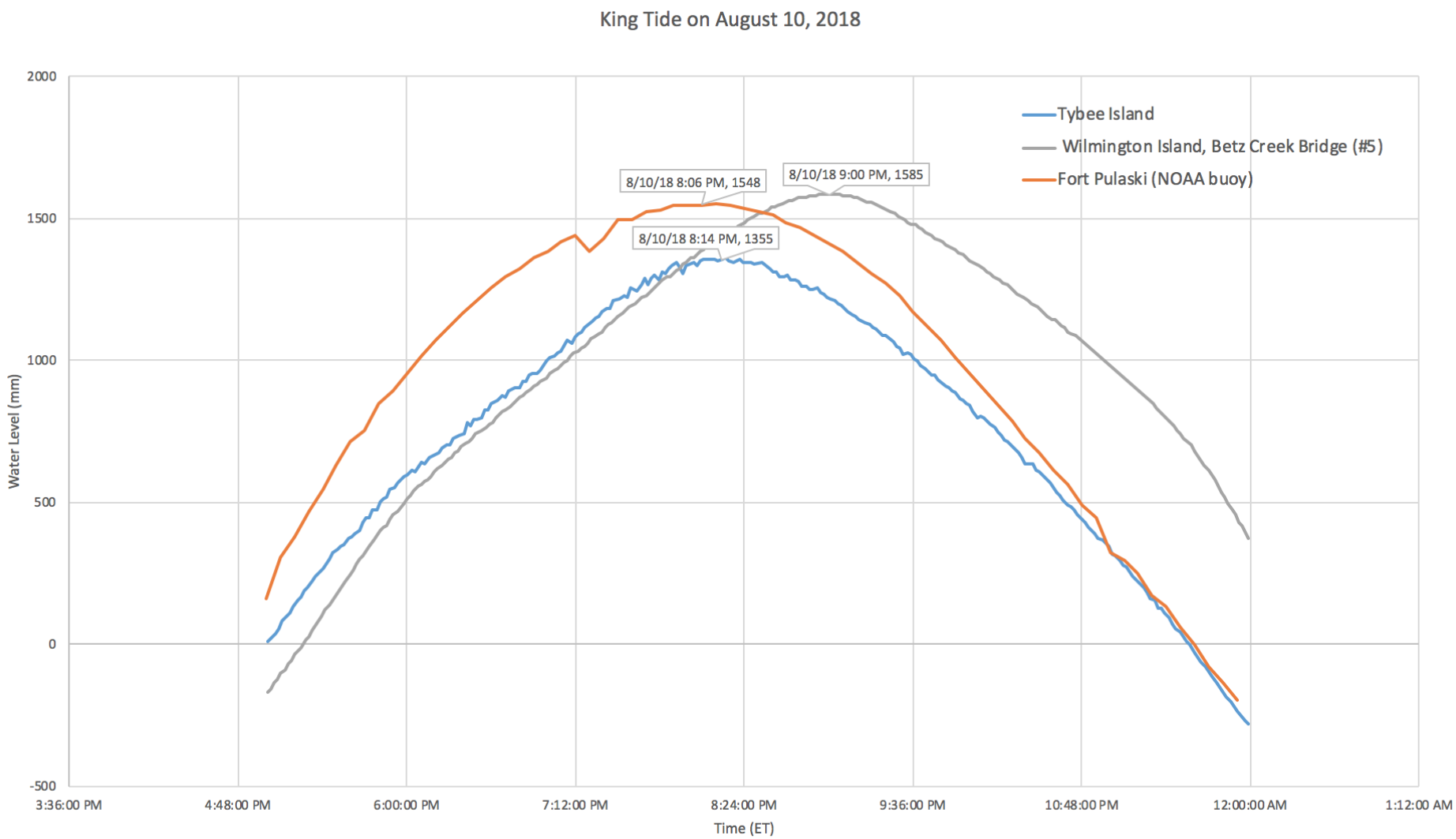
Local Peak Times



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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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