

MONITOR FLOODING

Real Time, All the Time



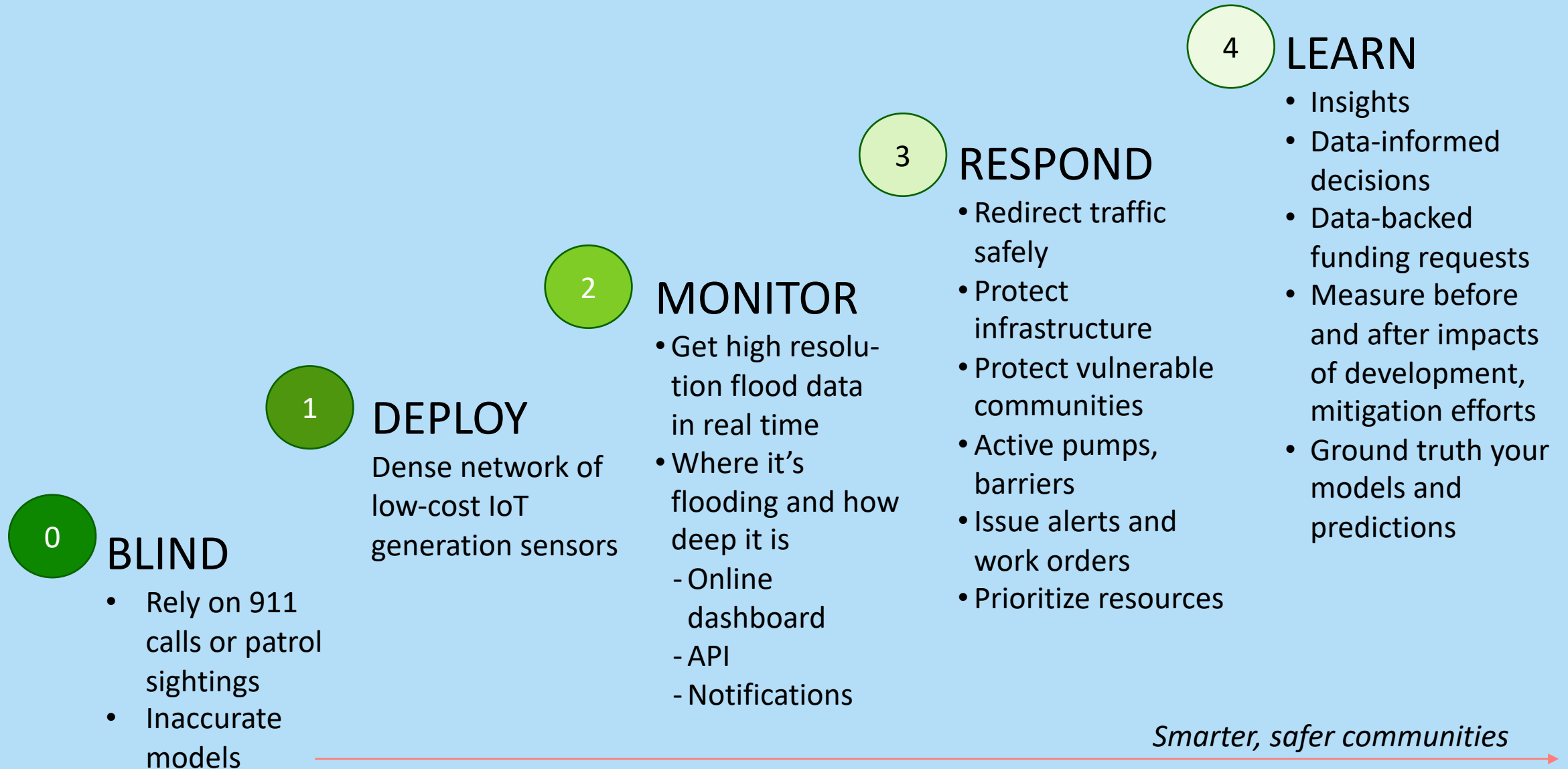
Easy and Affordable

MORE DATA FOR YOUR DOLLAR

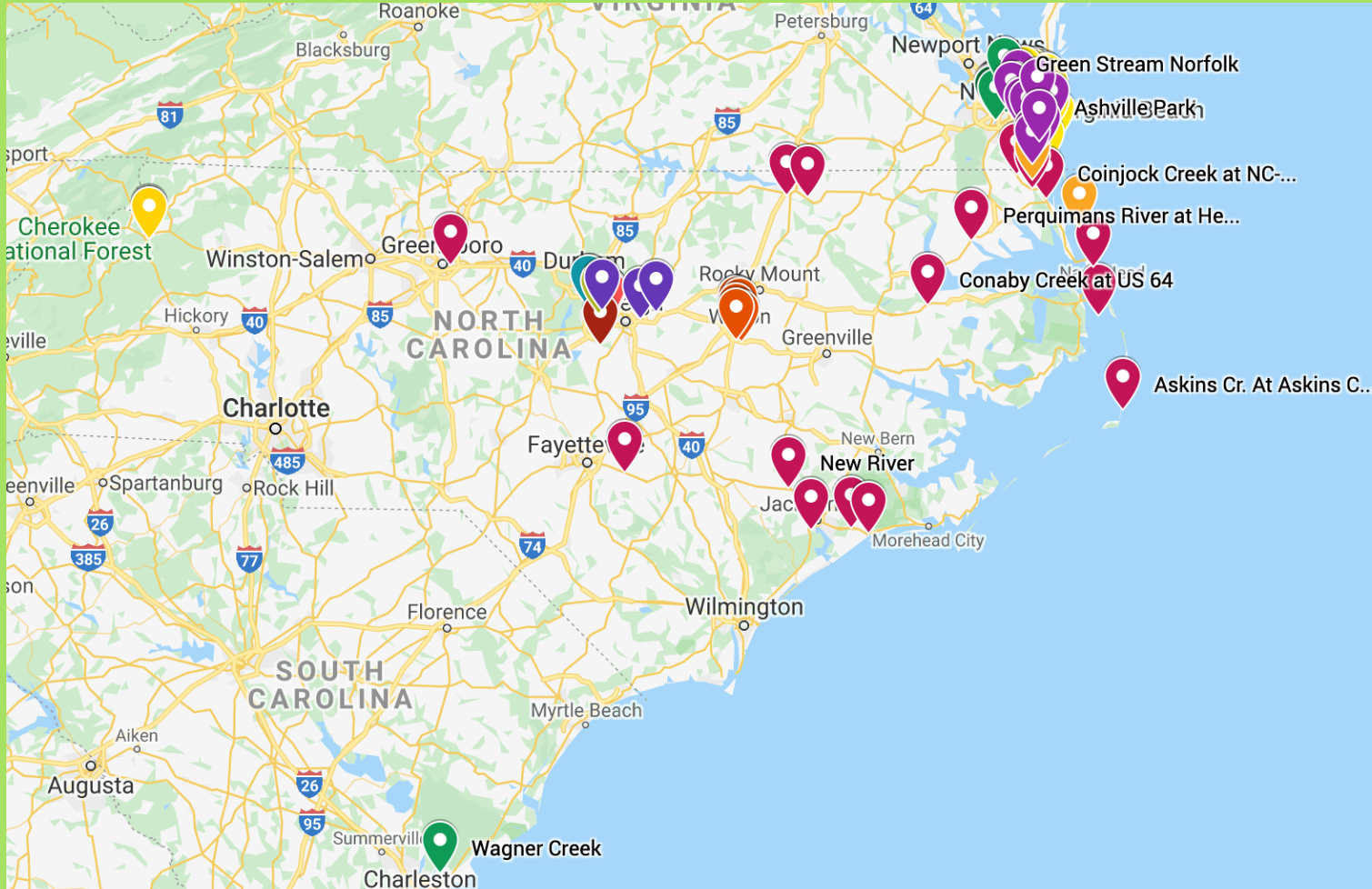
20x coverage vs traditional methods



Journey to Flood Resilience



Real-Time Flood Sensing Network



- ✓ Water Level
- ✓ Rainfall
- ✓ Temperature

Monitor over water
or pavement

Urban, suburban,
rural and remote

- ✓ Self-powered
- ✓ Wireless
- ✓ Rugged
- ✓ Low footprint
- ✓ Easy install

City of Virginia Beach • City of Portsmouth • North Carolina Emergency Management • Currituck County • Wake County • City of Wilson
Town of Cary • Town of Holly Springs • Town of Morrisville • Town of Boone • Atkins Global • Dewberry • ESP • Washington DC

Dams and creeks



Roadways



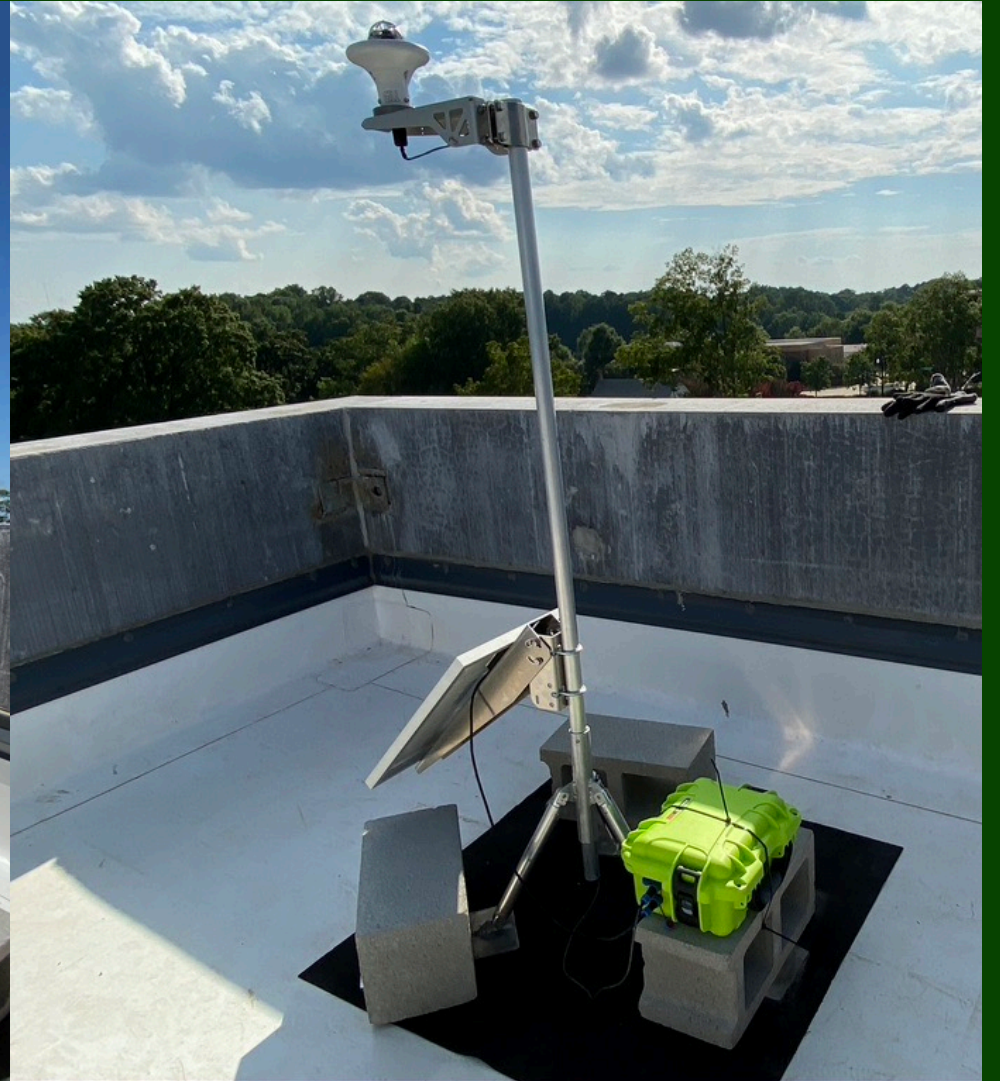
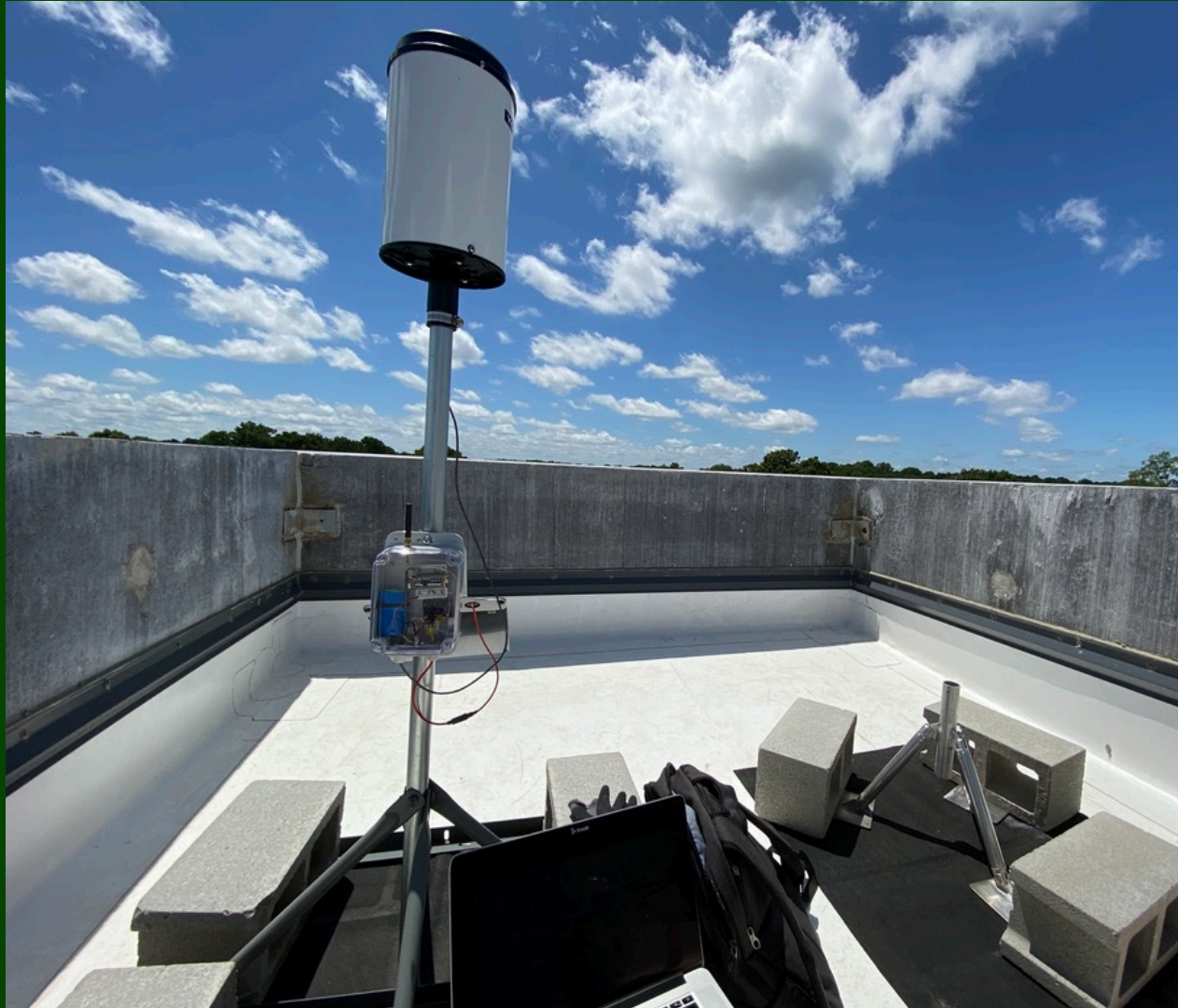
Tidal waterways



Ponds and Swamps



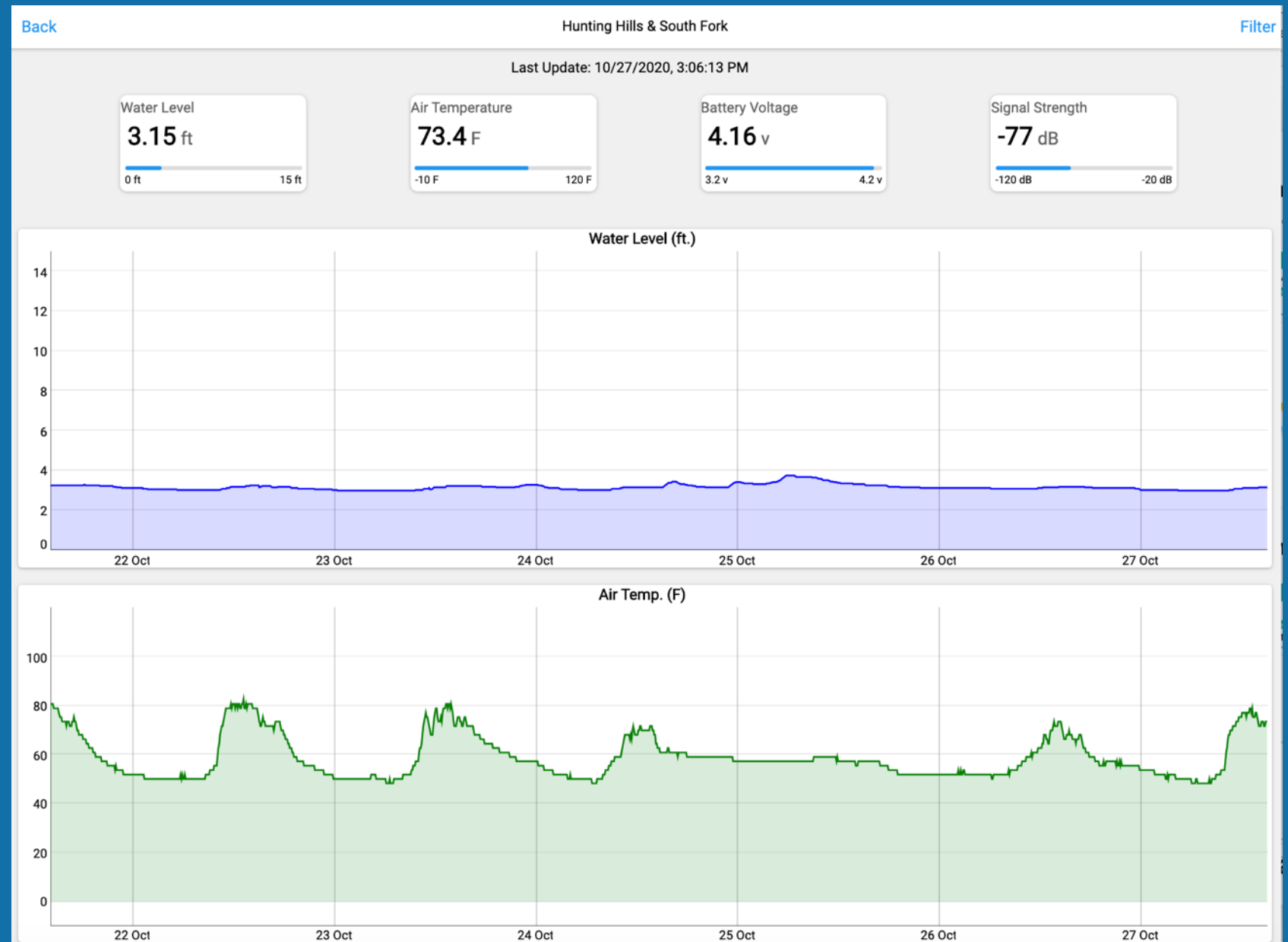
Rain gauges



DASHBOARD ENVIRONMENTAL DATA

greenstream.io is your easy to use dashboard for viewing flood data in real time, 24/7

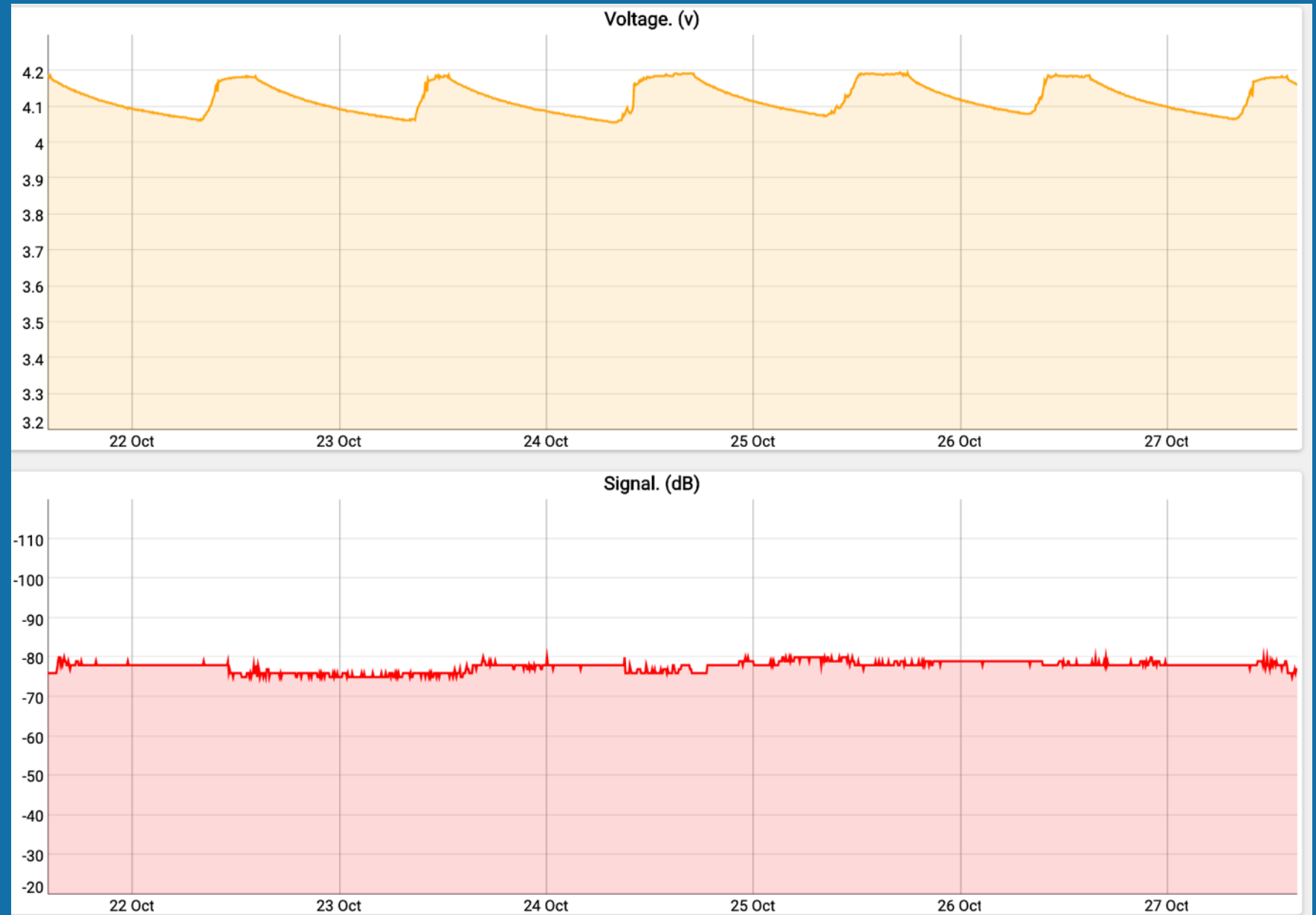
- OTA updates
- User-defined report intervals
- Sentry vs Alert mode
- Notifications
- Data storage
- Data management
- Data history
- API to pull data into your systems



DASHBOARD DEVICE HEALTH

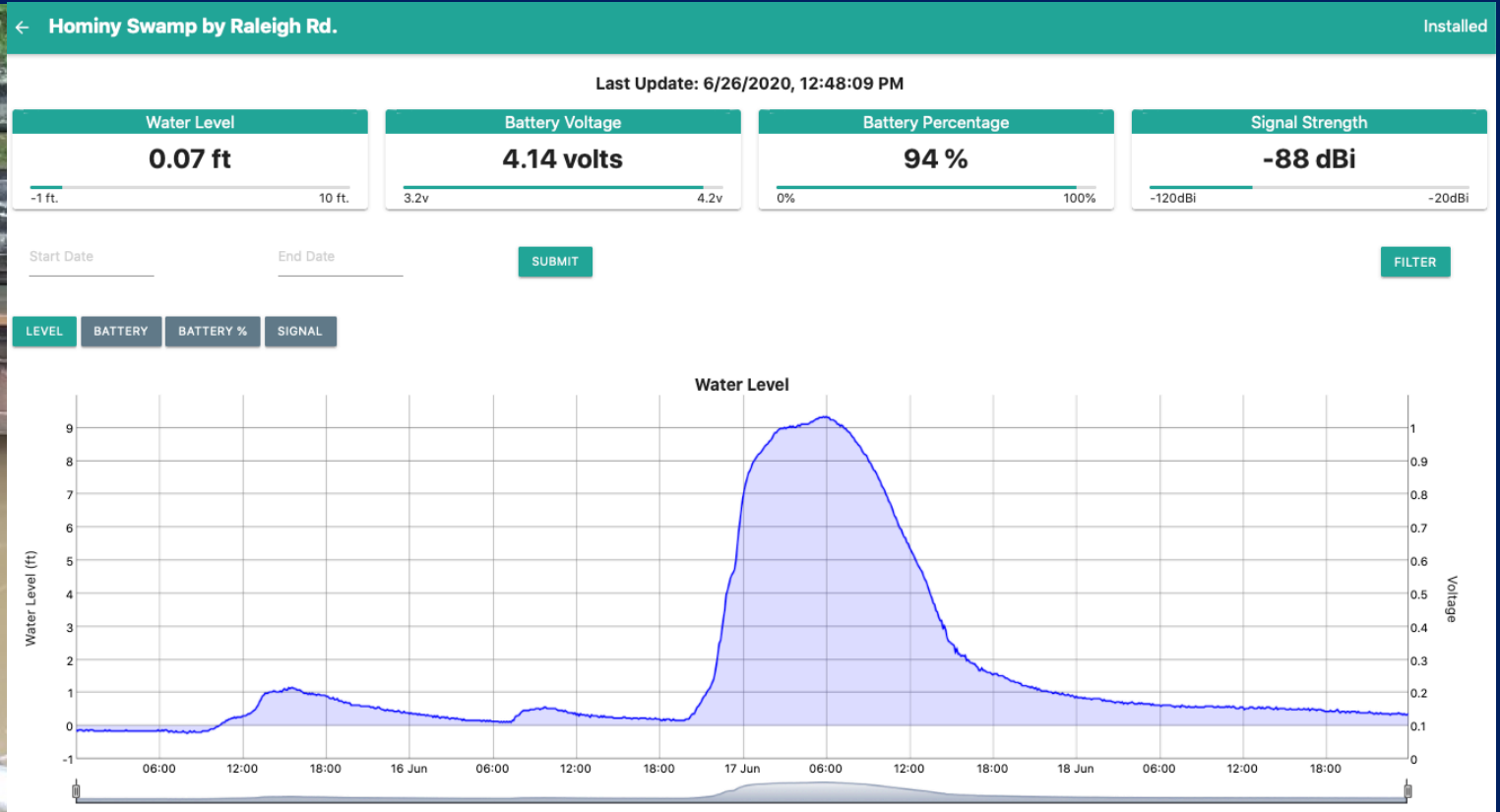
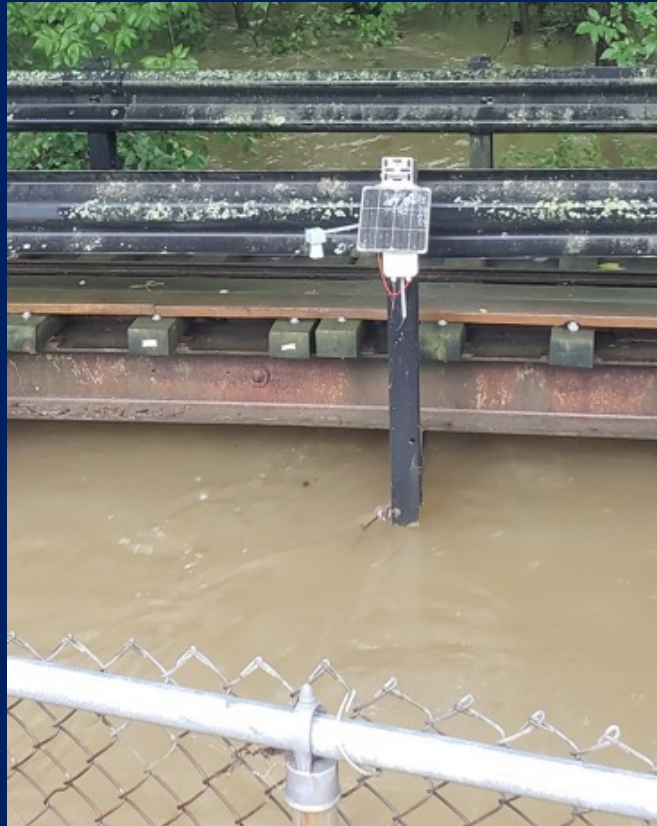
greenstream.io provides
visibility into device
health and performance:

- Battery voltage and
solar charging
- Signal strength

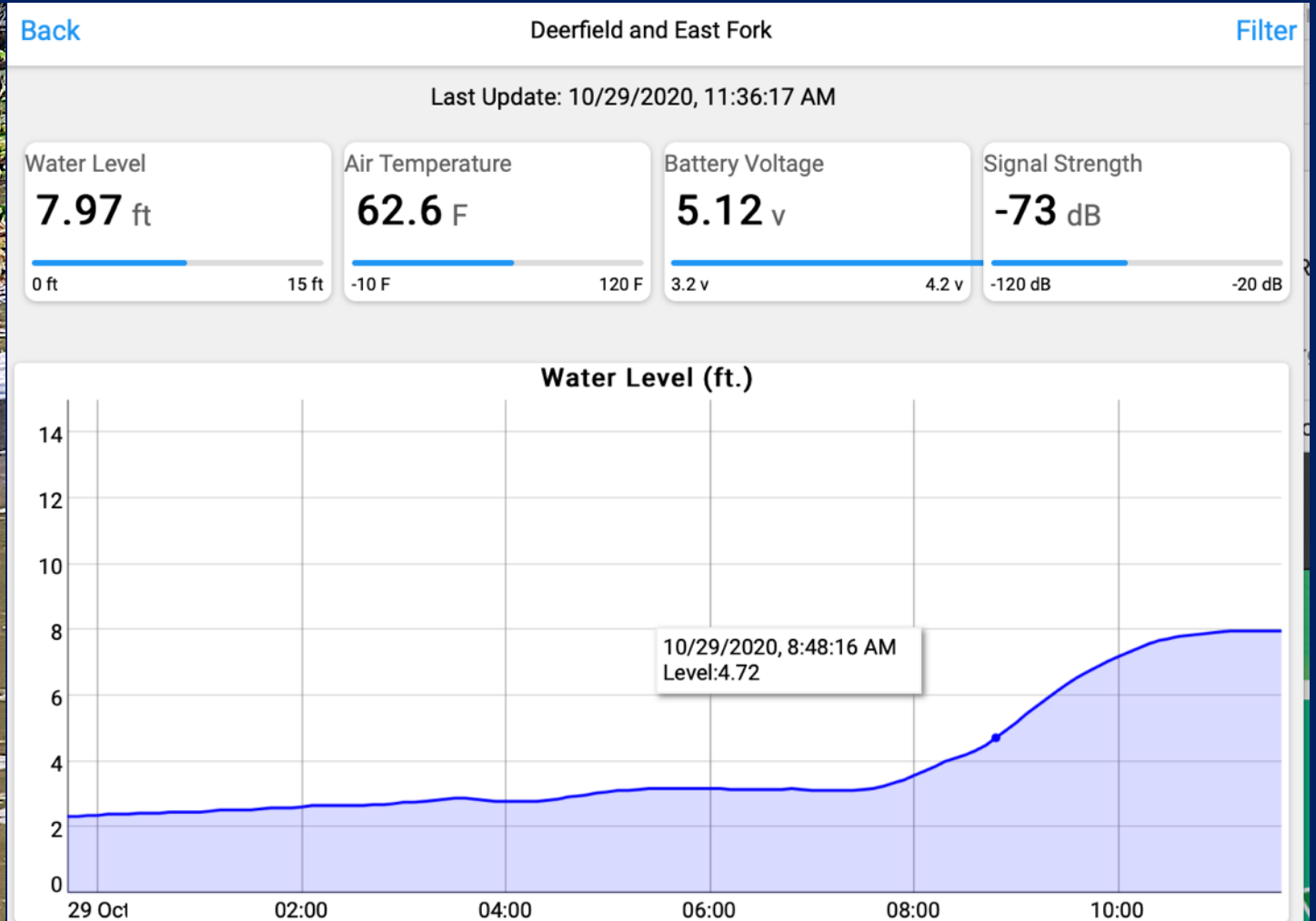


RAIN event in Wilson NC

June 26, 2020



Tropical Storm Zeta in Boone NC October 29, 2020



Cloud Services

We provide Cloud and edge computing services dedicated to real-time environmental monitoring and data storage and retrieval

Real-time

- Stream Processing
- Analytics

Reporting Frequency

- 24/7
- User-defined intervals
- Default every 6 minutes

Threshold Reporting

- Sentry Mode
- Alert Mode

Data queuing

- In event connection is lost, data is stored in the transceiver and reported once connection is restored

Device Recovery

- Device re-sets itself in case of a malfunction or loss of power

Security

- Encryption and decryption
- Device authentication and authorization
- Over-the-air updates

Notifications

- Sensor health
- Threshold events

ALERT2 compliant

- application layer protocol for hydrological and meteorological reporting to support flood preparedness and public safety decision-making

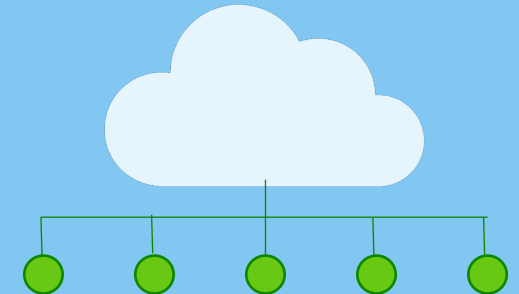


RESTful APIs

- Pull data into your own systems
- Connect to third party applications
- Open data

Data storage

- Storage
- Query capability



Support Services: DIY or Let us help

Requirement
Study

Installation

Elevation
Survey

Maintenance

Hardware
Customization

Software
Customization

Systems
integration

Permitting,
Insurance,
Admin



Water Level Sensor Kit (Cell)

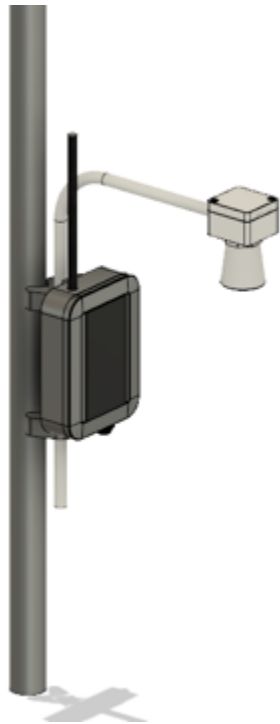
Low footprint
Low power
Low cost of ownership
Ruggedized IP67



Sensor Module		Transceiver Module		Power Supply	
Ultra-sonic level sensor + Temperature sensor + arm, housing, cables		Wireless 2-way communications Powers itself and the sensor Electronics, housing, cables, mount brackets		6W 6V Solar Panel + cable + mount charges internal batteries	
Sensor type	Ultrasonic, non-contact	LTE-CAT-1 cellular transmission		Batteries last 2 weeks without charge	
Sensor range	8 inches - 22 feet (20-700cm)	Real time transmission		Charges even on cloudy days	
Accuracy	Within 1 cm	Over-the-Air updates		Orients separately toward sun	
MBTF	15 years	Est. MBTF	5 years	MBTF	10 years
Size	14" high x 12" wide (35.6cm x 30.5cm)	Size	6" high x 4.3" wide x 1.6" deep (15cm x 11 cm x 4 cm).	Size	8.7" high x 6.9" wide x 0.2" deep.
Weight	0.5 lbs (226 grams)	Weight	1 lb (550 grams)	Weight	9 oz. (255 grams)

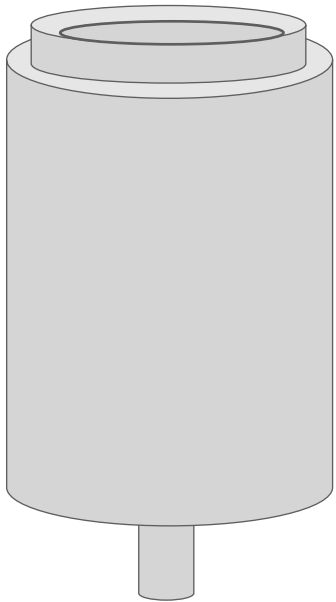
Water Level Sensor Kit (LoRaWAN)

Low footprint
Low power
Low cost of ownership
Ruggedized IP67



Sensor Module		Transceiver Module	
Ultra-sonic level sensor + Temperature sensor + arm, housing, cables		Wireless 2-way communications Powers itself and the sensor Electronics, housing, cables, mount brackets	
Sensor type	Ultrasonic, non-contact	LoRaWAN transmission	
Sensor range	8 inches - 22 feet (20-700cm)	Real time transmission	
Accuracy	Within 1 cm	Built-in solar charger	
MBTF	15 years	Est. MBTF	5 years
Size	14" high x 12" wide (35.6cm x 30.5cm)	Size	6" high x 4.3" wide x 1.6" deep (15cm x 11 cm x 4 cm).
Weight	0.5 lbs (226 grams)	Weight	1.1 lb (570 grams)

Tipping Bucket Rain Gauge



Requires level surface
And protection from wind

The tipping bucket rain gauge measures rainfall by volume of water that accumulates in a pair of inner cups which alternately fill and drain. Algorithms calculate rain in inches based on number of times the cups were filled and drained.

The tipping bucket rain gauge package includes:

- Tipping bucket rain gauge
- Cables

Size: 7" diameter x 11.8" high + 3.5" mounting base
(18 cm x 30 cm + 9 cm)

Catchment : 31 in² (200 cm²)

Resolution: 0.1 mm per tip

Accuracy: 2% up to 0.9"/hr (25 mm/hr), 3% up to 1.8"/hr (50 mm/hr)

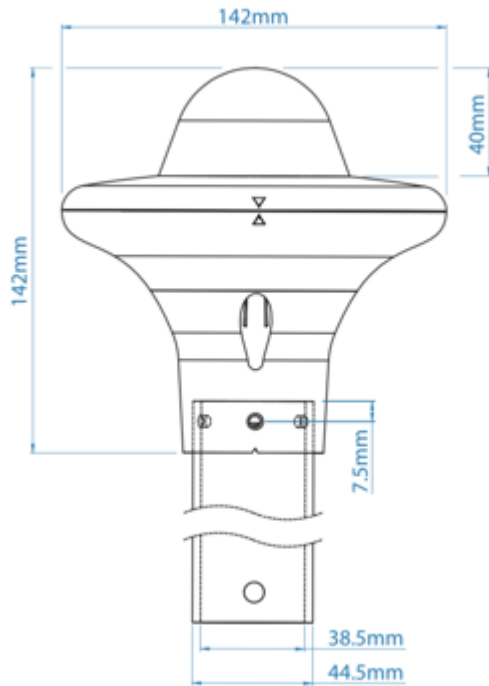
Output: Magnetic reed switch (N.O.), rating 24VAC/DC 500mA

Mounting: Clamp for 1" (1.34" dia.) iron pipe or 3 bolts on 160mm dia. circle

Includes: levelling adjustment and debris screen

n.b. supplied by a third party US-based manufacturer

Optical Rain Gauge



Optical Rain Gauge

The optical rain gauge senses water hitting its outside surface and provides measurements based on the size and number of drops. Algorithms interpret this data and simulate the output of a tipping bucket rain gauge in a serial format. The optical rain gauge has no moving parts associated with tipping bucket gauges.

The optical rain gauge package includes:

- Solar and battery power package
- Wireless transceiver device
- Optical rain gauge
- Cables and mounts

Weight: 0.66 lbs (0.3 kg)

Range: 0 > 11.8" / hr (300 mm/hr)

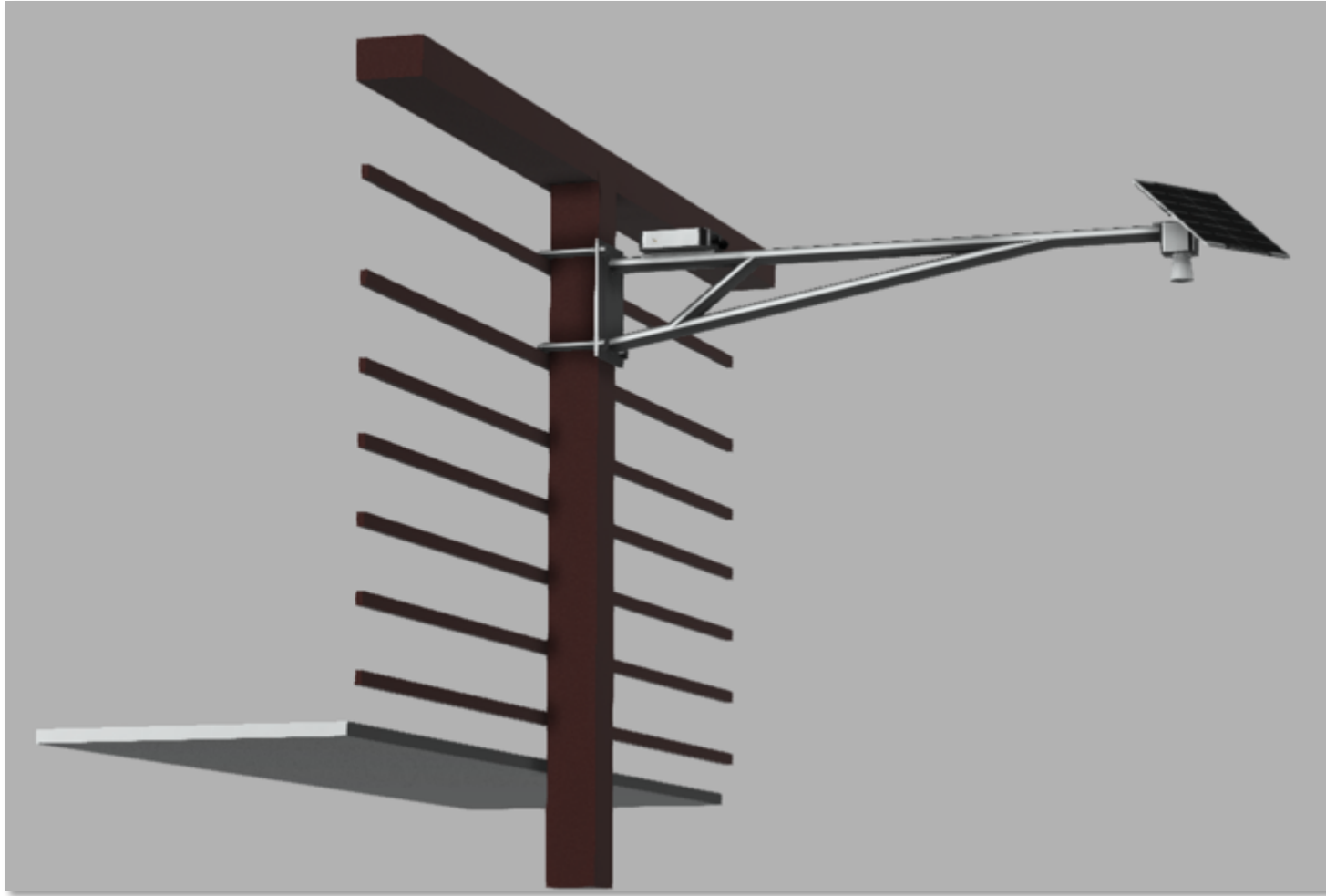
Resolution: 0.08 mm/hr

Ruggedized: IP66

Heated

n.b. supplied by a UK-based manufacturer

Mounts and Accessories



- ✓ Standard and custom mounts and stands available
- ✓ Components and replacement parts

Contact

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 green-stream-technologies



**Green
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Small business

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NC SosID #1779776