URBAN FLOOD WARNING

PRODUCT BROCHURE | Customizable Solutions

OTT HydroMet

Flood Event Solutions

When it comes to **heavy rain events** or **rising water levels**, it is important to have the correct equipment in the field that will provide accurate and reliable data in the office to manage flood risk proactively. Accurate local data can be supplemented with public data from federal or state agencies, to deliver meaningful insights and support key decisions.

Remote data transmission, alarm notifications, and visualization software provide near real-time data, enabling you to take preventative actions to protect citizens and infrastructure from damage. Additionally, a camera offers visual confirmation to supplement quantitative data during a flood event.
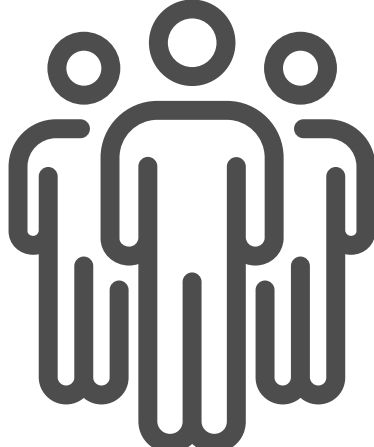
Why is Data Collection Important?

When flooding situations arise, there are several stages of action: **anticipating**, **responding**, and **preventing** possible flood events. Numerous hydrology professionals utilize data to help monitor water level before flooding occurs, make decisions during flood events, and conduct maintenance afterwards to prevent future damage.

1. You **collect** data from your stations which can be remotely transmitted to any internet-connected device, whether in the field or at the office. You can also set thresholds which trigger specific actions once they are reached, like sending you, or other stakeholders, an SMS text.

Data can include precipitation, water level, stream flow, and soil moisture. Additional data can be integrated from 3rd party sources for a comprehensive view of flood events.

2. You **communicate** the data to stakeholders or disseminate as needed to emergency first responders, city officials, and the general public. Visualized data informs their key decision-making during flood events for gates, warnings/alarms, and more.

3. You **empower** your local community with critical flood insights from an interactive web based platform that can ultimately protect lives and property.

Monitoring Heavy Rain/Rising Water Levels

There are several essential components of a flood warning network, including sensors, dataloggers, and software solutions. Individual monitoring stations can also be equipped with cameras to provide near real-time imagery giving quick insights and visual confirmation on current water levels.

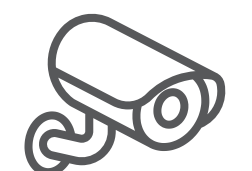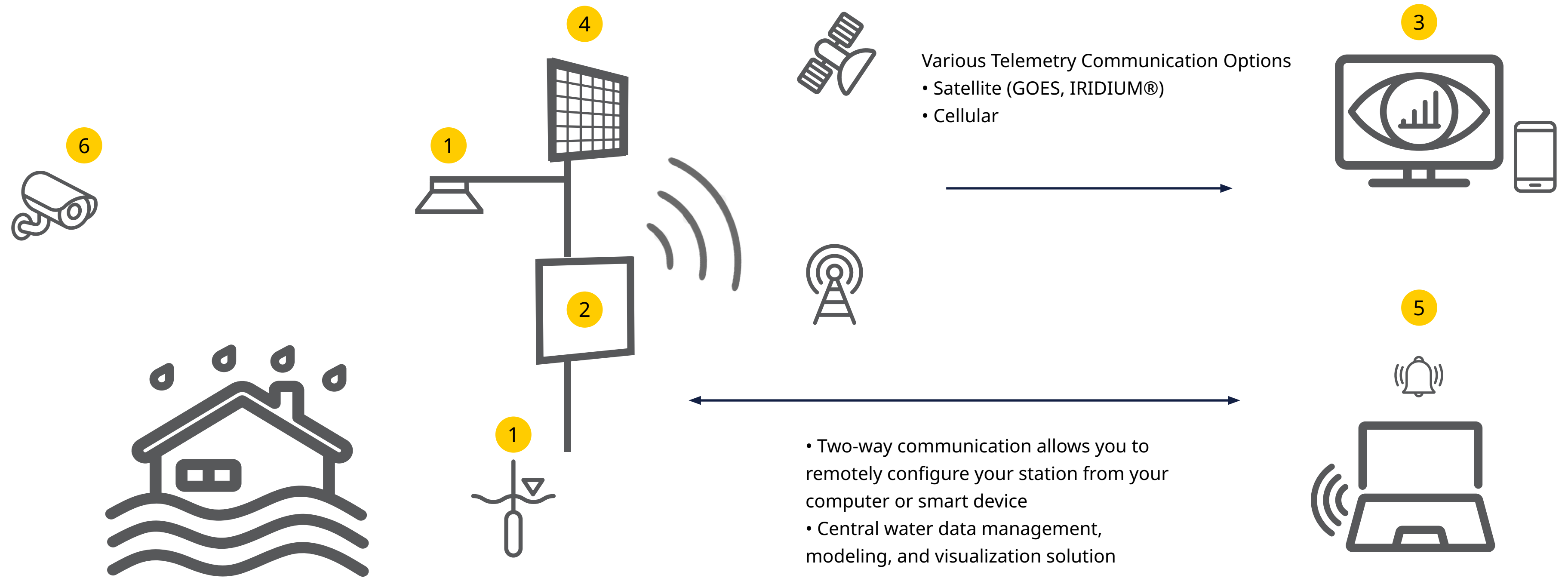|	
Sensor	A sensor is an instrument placed in the field that takes critical measurements of certain parameters, such as **water level**, **precipitation**, and **stream flow**. Easily installed at critical sites, sensors provide the measurements you need in order to know if flood events are approaching.
Datalogger/ Transmitting Data	A datalogger is a device that connects to your sensors to record the data collected in the field. They transmit data from the field back to your office or smart device at a **specified frequency**, such as every five minutes. Dataloggers can collect data **continuously** and digitally.
Data Management	Data collection software provides access, management, and **visualization** tools for field data that is transmitted by dataloggers back to the office. Near **real-time** data provides quicker insights and supports faster decision making during extreme weather events. The AQUARIUS Time-Series software combines all of these functions and integrates internal and 3rd party data sources into one web-based platform that is easily accessible. AQUARIUS is **user-friendly,** provides a unified view and is scalable across an organization.
Alarm Notifications	You can program specific **thresholds** into your field stations for each parameter you measure. You can use highly **configurable** parameters to automate alerts online, in email, or by SMS to send warnings to the right people when conditions are met. For example, an alarm can be triggered if there has been a minimum of 1" of rain for the past 3 hours, which for some regions signifies a dangerous water level. This insight can help predict flood events. **Trigger intervals** can send updates during ongoing events, and when conditions normalize, a message is sent to alert events have ceased.
Visual Confirmation	A camera provides context to sensor readings with **remote access** to current conditions at your station. **24/7 visual confirmation** gives you confidence in stream conditions. A compact station camera can seamlessly integrate into a datalogger with a ready to use Python Script.

Visualizing a Flood Network

1 Sensor(s)

2 Datalogger

3 Software solution

4 Solar panel

5 Alarm

6 Camera

Various Telemetry Communication Options
• Satellite (GOES, IRIDIUM®)
• Cellular

• Two-way communication allows you to remotely configure your station from your computer or smart device
• Central water data management, modeling, and visualization solution

Let us help you select your solution for flood monitoring:

- Alarm Water Level Gauge System

- Precipitation Gauge System

Alarm Water Level Gauge System

Your needs:
To quickly warn stakeholders of the risk of rising water levels or heavy rain to act proactively.

Our recommended solution:
Measuring stations with remote data transmission, integrated alarming, solar panel(s) for remote power, and real-time alerting software. Alarming features include:
• Customizable thresholds
• Discrete, i.e. text messages

Water data management software features include:
• Automated publishing of reports and dashboards to inform internal and external stakeholders
• Integrated, comprehensive, and easy-to-use interface

1. Sensors

OTT Radar Level Sensor (RLS)

Non-contact level solution, ideal for surface water level monitoring where debris or high sediment concentrations may be present. Easy to conceal under a bridge or structure with a cantilever mount.

∧
AND/OR
∨

OTT PLS 500

Highly accurate, vented pressure transducer to measure water level and temperature. Built-in QA/QC, metadata, and smart sensor capabilities allow you to remotely monitor the probe status.
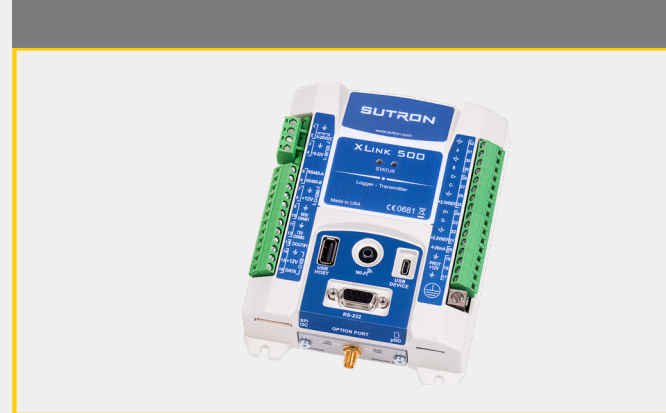
∧
AND/OR
∨

SUTRON Compact Constant Flow Bubbler

Self-contained, precision device to measure water level and temperature. Equipped with auto-purge capabilities to prevent or clear orifice line blockages.

2. Dataloggers

SUTRON XLink 500 Logging Transmitter

A multi-sensor input logger, for digital and analog sensors, with data transmission via Iridium or Cellular. Includes custom Python Scripting and compatible with the easy-to-use LinkComm GUI interface via WiFi or directly with any smart device.
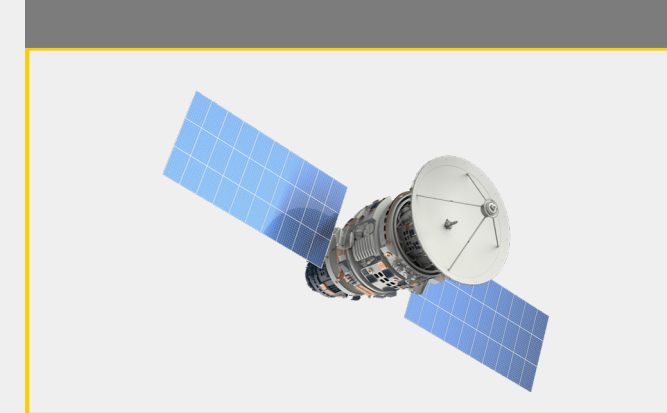
∧
INTEGRATE
∨

Compact station camera

A camera provides visual confirmation to your sensor readings. An excellent addition to any new or exisiting station with simple datalogger integration and a ready to use Python script.
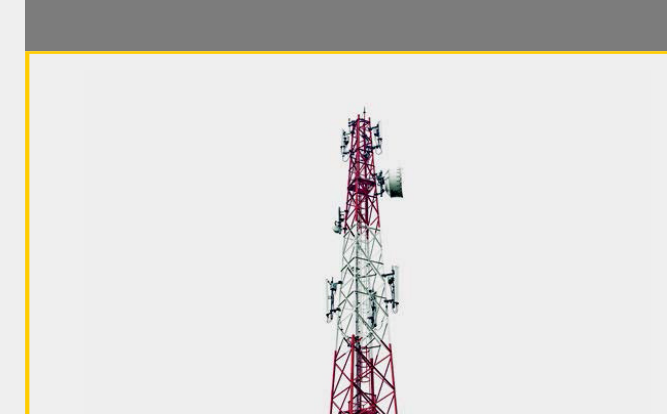
3. Telemetry

IRIDIUM®

Ideal for reliable, full global coverage to transmit data remotely. Allows for two-way communication for remote station configuration which helps reduce field visits.

∧
AND/OR
∨

Cellular

Ideal for reliable data transmission with large bandwidths and alarms where cell service is available. Methods of transmission include SMS, FTP(S), and HTTP(S). Also allows for two-way communication.

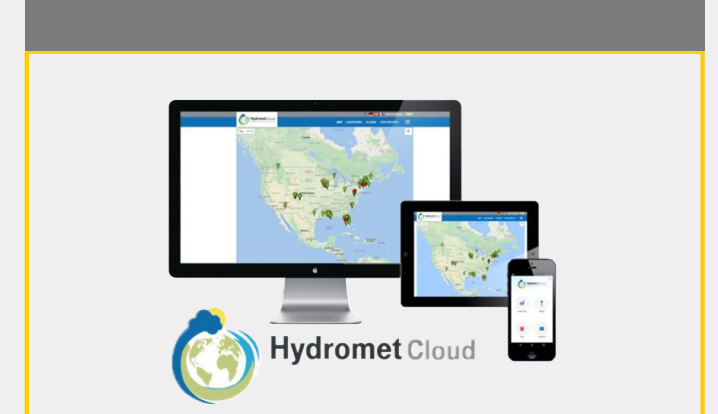## 4. Water Data Management

AQUARIUS

Quickly access time series data including water level, precipitation, and turbidity to compare, visualize and proactively forecast potential problems. Easily share rainfall and stage data, establish thresholds and set alerts based on near real-time data.

∧
AND/OR
∨

OTT Hydromet Cloud

A secure cloud-based solution with a user-friendly interface that provides quick and easy access to critical data.

Key Visualizations:
· battery level
· precipitation values
· water level

Precipitation Gauge System

1. Sensors

OTT Pluvio² S

Compact weighing precipitation gauge, for high accuracy during high intensity rain events. Ideal for liquid and non-liquid precipitation, and nearly maintenance-free.

∧
AND/OR
∨

Lufft WS100 Radar Precipitation Sensor

Smart radar rain sensor suitable for a variety of applications including flood warning. The 24-GHz Doppler radar measures all forms of condensed water.

∧
AND/OR
∨

SUTRON Stainless Steel Tipping Bucket Rain Gage

Standard precision instrument for the measurement of rainfall accumulation and/or rate. Contains an internal tipping bucket, designed for years of accurate and trouble-free operations.

2. Dataloggers
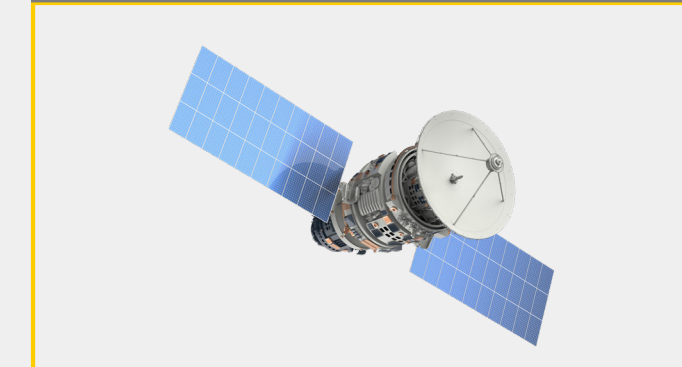
SUTRON XLink 500 Logging Transmitter

A multi-sensor input logger, for digital and analog sensors, with data transmission via Iridium or Cellular. Includes custom Python Scripting and compatible with the easy-to-use LinkComm GUI interface via WiFi or directly with any smart device.
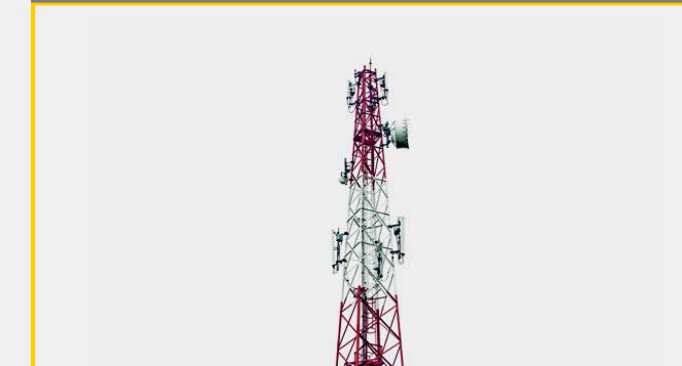
3. Telemetry

IRIDIUM®

Ideal for reliable, full global coverage to transmit data remotely. Allows for two-way communication for remote station configuration which helps reduce field visits.

∧
AND/OR
∨

Cellular

Ideal for reliable data transmission with large bandwidths and alarms where cell service is available. Methods of transmission include SMS, FTP(S), and HTTP(S). Also allows for two-way communication.

4. Water Data Management

AQUARIUS

Quickly access time series data including water level, precipitation, and turbidity to compare, visualize and proactively forecast potential problems. Easily share rainfall and stage data, establish thresholds and set alerts based on near real-time data.

∧
AND/OR
∨

OTT Hydromet Cloud

A secure cloud-based solution with a user-friendly interface that provides quick and easy access to critical data.

Key Visualizations:
· battery level
· precipitation values
· water level

Your needs:
To quickly know which geographic problem areas are affected by rain and water levels, and their duration, so you can narrow focus and deploy limited resources and emergency staff effectively.

Our recommended solution:
Small measuring stations at hotspots with visualization through a software solution.

Stations can also include remote data transmission, integrated alarming, and visualization software. Alarming features include:
• Customizable thresholds
• Discrete, i.e. text messages

Sensor Selection Guide

	Application	Parameters	Key Advantages
OTT Radar Level Sensor (RLS)	Alarm level • Surface water	• Water level • Distance water	**Ideal for debris or sediment laden rivers/streams or flash floods.** • Non-contact radar level sensor with pulse radar technology to measure safely above the water from a bridge, pier, or mounting arm to avoid large debris and high sediment loads.
OTT PLS 500	Alarm level • Surface water	• Water level / pressure • Water temperature • Calculated discharge	**Ideal for stilling wells, streams, weirs, or flumes.** • Minimize the need for data post-processing by directly outputting discharge. • Internal position sensor provides warnings if sensor is displaced due to in-stream events.
SUTRON Compact Constant Flow Bubbler	Alarm level • Surface water	• Water level • Water temperature	**Ideal for use in shallow and flashy streams with varying sediment loads.** • FastTrack mode enables real-time accuracy when rapid water level changes occur. • Loss under extreme events are minimal as all electronics are out of the water.
OTT Pluvio² S	Precipitation	• Precipitation amount • Precipitation intensity • Bucket content (real-time and non real-time)	**Ideal for highly accurate readings for both liquid and non-liquid precipitation.** • Virtually maintenance-free and lifetime calibrated. • Weighing gauge handles high volumes and intensity of rain during flood conditions.
SUTRON Stainless Steel Tipping Bucket Rain Gage	Precipitation	• Precipitation amount • Precipitation rate	**Ideal as a standard US compliant solution for accurate rainfall measurements.** • Internal tipping bucket design to measure precipitation accumulation and rate. • Fully stainless steel with built-in level indicator and pre-drilled feet.
Lufft WS100 Radar Precipitation Sensor	Precipitation	• Precipitation amount • Precipitation intensity • Precipitation type	**Ideal for remote locations with varying environmental conditions and difficult accessibility.** • Quick response time detecting precipitation from the start to finish of an event. • Low maintenance option for worry-free deployment.

Additional Services

OTT HydroMet provides on-site maintenance by our certified experts, with optional on-site training.
We also provide:

- Regular training sessions at OTT HydroMet locations
- Technical support available by phone or email
- Support for large or complex projects
- Several options for highly configurable and powerful cloud or on-premise software solutions

Insights for Experts

Let's start designing your custom solution.
Please contact us at:

OTT HydroMet Corporation
22400 Davis Drive
Suite 100
Sterling, VA 20164-7128| U.S.A.
T: +1 (800) 949-3766
sales@otthydromet.com
www.otthydromet.com

OTT HydroMet