



monitoring

# flood alert



Complete kits for flood monitoring and alerts



# Flood alert systems

Being prepared for floods requires measurement and notification of water level, velocity, and precipitation. This guide will help you choose the right equipment and install a flood alert system that can help you coordinate emergency response and activate alarms for the public.

## Components of a Flood Alert System:

- Monitor Water Level
- Log Precipitation
- Calculate Water Discharge
- Transmit Information
- Install and Maintain

YSI technology has been used by all major U.S. government monitoring agencies, including the U.S. Geological Survey and U.S. Army Corps of Engineers.

For your convenience, the flood alert systems are packaged with the required components to send alert notifications with minimal set-up.



*Radar level installation above a river measures river level. Enclosure is open for display purposes only.*

## 1 Water Level

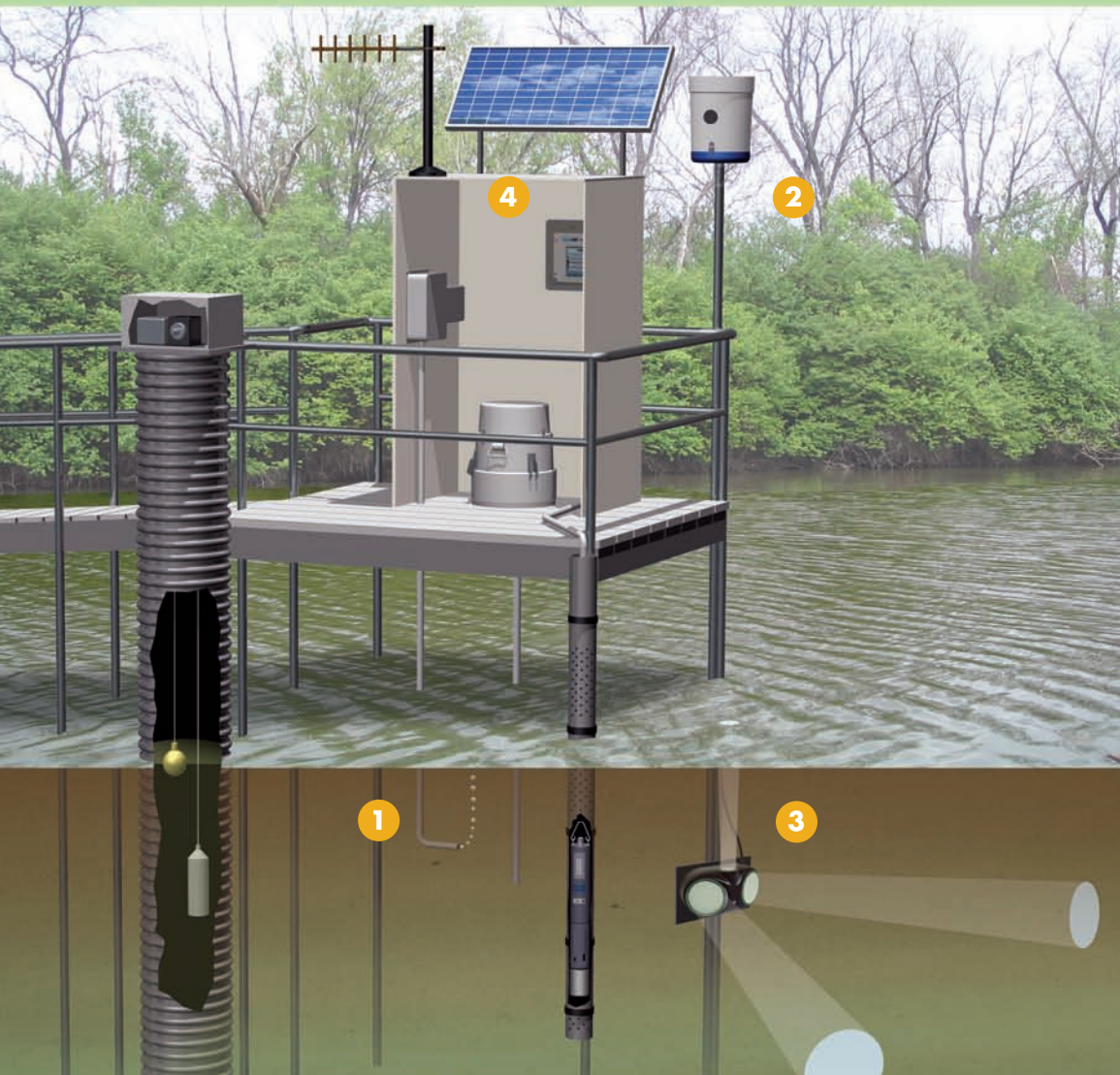
Choosing the right sensor for measuring water level depends largely on the site and the data required by flood models.

**Pressure:** Submersible vented pressure sensor is a very simple system for monitoring water level. However, because the sensor is submerged, it is subject to biofouling and requires routine maintenance to provide reliable data.

**Radar:** Mounting the radar level to an arm, bridge, or other structure above the water level provides the most maintenance-free method of monitoring water level. Because the sensor never makes contact with the water, biofouling is eliminated, which lowers the cost of maintenance. The radar level is also protected from debris in water surges.

**Bubbler:** A bubbler uses the back pressure of air pumped into the water to monitor stage changes. A simple polyurethane tube is installed in the water below the lowest water level point. Biofouling and maintenance are reduced because of the positive pressure of air exiting the tube. The system electronics are secured in an enclosure, preventing damage from vandalism.





## 4 Data Transmission

Transmitting and alarming are two important components of a flood warning system. These three pre-configured options transmit data quickly to the people who need to act on it.

**Data to Web:** Transmitting water level, precipitation, and velocity data to a public web site is simple with the EcoNet data logger. The data are sent directly from the field to a web server where information can be shared with the public and email alerts sent to specific individuals. The data logger uses the cellular network and is autonomous of local computers and software.

**ALERT Network:** If a dedicated local ALERT network is available, consider using a transmitter that supports standard ALERT protocols. The network operates through a series of repeater stations and transmits messages over RF in conjunction with the local radio authority. The data are relayed to a local control center, which runs software to manage data from all the sensors.

**Data to Desktop:** When an ALERT network isn't available and web hosting isn't appropriate, then a local PC can retrieve level, velocity, and precipitation data. A graphic display interface on the computer manages the log files and can be configured with specific gauges and displays.

## 2 Precipitation

In most flood alert systems, rain precipitation is an early warning of floods. To measure rainfall, a tipping bucket rain gauge is most typically used. Its output is logged by the data logger. The bucket is mounted on a flat fixed structure or concrete pad. Optionally, a fabricated stand can hold the system off the ground.

## 3 Discharge

A side-looking or up-looking current meter may be required to calculate water flow for monitoring sites that are not gravity fed or may have variable backwater. At these sites, measuring water level is not sufficient for determining discharge. Data indicating a water velocity change—while water level remains fixed—can be an important trigger for flood events.



To order or for more information, contact YSI.

YSI Integrated Systems & Services  
+1 508 748 0366  
+1 508 748 2543 fax  
systems@ysi.com

YSI Inc.  
+1 937 767 7241  
environmental@ysi.com

SonTek/YSI  
+1 858 546 8327  
inquiry@sontek.com

Design Analysis Associates  
+1 435 753 2212  
sales@waterlog.com

YSI Gulf Coast  
+1 225 753 2650  
gulfcoast@ysi.com

YSI Hydrodata  
European Support Centre (UK)  
+44 1462 673581  
europe@ysi.com

YSI Middle East  
+973 17536222  
halsalem@ysi.com

YSI South Asia  
+91 9891220639  
sham@ysi.com

YSI China  
+86 10 5203 9675  
beijing@ysi-china.com

YSI Hong Kong  
+852 2891 8154  
hongkong@ysi.com

YSI Nanotech (Japan)  
+81 44 222 0009  
nanotech@ysi.com

YSI Australia  
+61 7 3162 1064  
australia@ysi.com

## Flood Alert Kit Ordering Guide

**YSI Standard Flood Alert Kit** includes a radar level sensor, tipping bucket rain gauge, and data-to-web transmission complete with one year of Verizon cellular service and data hosting. The Standard Kit can be shipped quickly for emergency response and comes with all the equipment necessary for an easy set-up. The user is responsible for field installation unless optional installation services are ordered.

**Or, build your own solution** from the following components if the Standard Kit doesn't meet your requirements.

### Water Level *Choose 1:*

- |       |   |
|-------|---|
| FAK10 | Submersible Vented Pressure Sensor with SDI-12 output, for water depths up to 10.5 meters. Includes 20-meter connection cable to data transmitter.                |
| FAK11 | Radar Level for non-contact water level measurement in 0-19 meter range. Includes 20-meter signal cable from data transmitter to the pulsed radar sensor.         |
| FAK12 | Self-contained Continuous Flow Bubbler with integrated pressure sensor for use with data transmitter. Includes desiccating air dryer and 1-meter interface cable. |

### Precipitation

- |       |   |
|-------|---|
| FAK20 | Tipping bucket rain gauge with 10-meter signal cable. |
|-------|---|

### Discharge *Choose 1:*

- |       |   |
|-------|---|
| FAK30 | Upward-looking velocity sensor for water depths up to 5 meters. Includes 10-meter field cable.                    |
| FAK31 | Side-looking velocity sensor for measuring channel widths from 0.75 to 120 meters. Includes 10-meter field cable. |

### Data Transmission *Choose 1:*

- |       |   |
|-------|---|
| FAK40 | Data-to-Web transmission kit. Includes data logger, solar panel, battery, CDMA cellular modem and antenna to collect and transmit data directly to the web for private/public display.                                    |
| FAK41 | ALERT ID and data reports in variety of serial data formats. It buffers, parses, and converts data to 300 baud FSK audio signals in binary ALERT format. For use in an existing ALERT network.                            |
| FAK42 | Data-to-Desktop solution delivers delimited data to base station for post-processing. Local set-up delivers raw data to dedicated PC. Includes interrogation software, solar power, and a modem that requires activation. |

### Installation *Optional*

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|--------|--|
| FLDENG | Field installation and configuration services, costs vary based on project specifications, field days, materials, and travel costs.<br>Note: All solutions require secure field installations for accurate data. |
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YSI service engineers can help install your system quickly, anywhere in the world. You can benefit from our years of experience in system design, hardware manufacture, and installation and maintenance expertise.