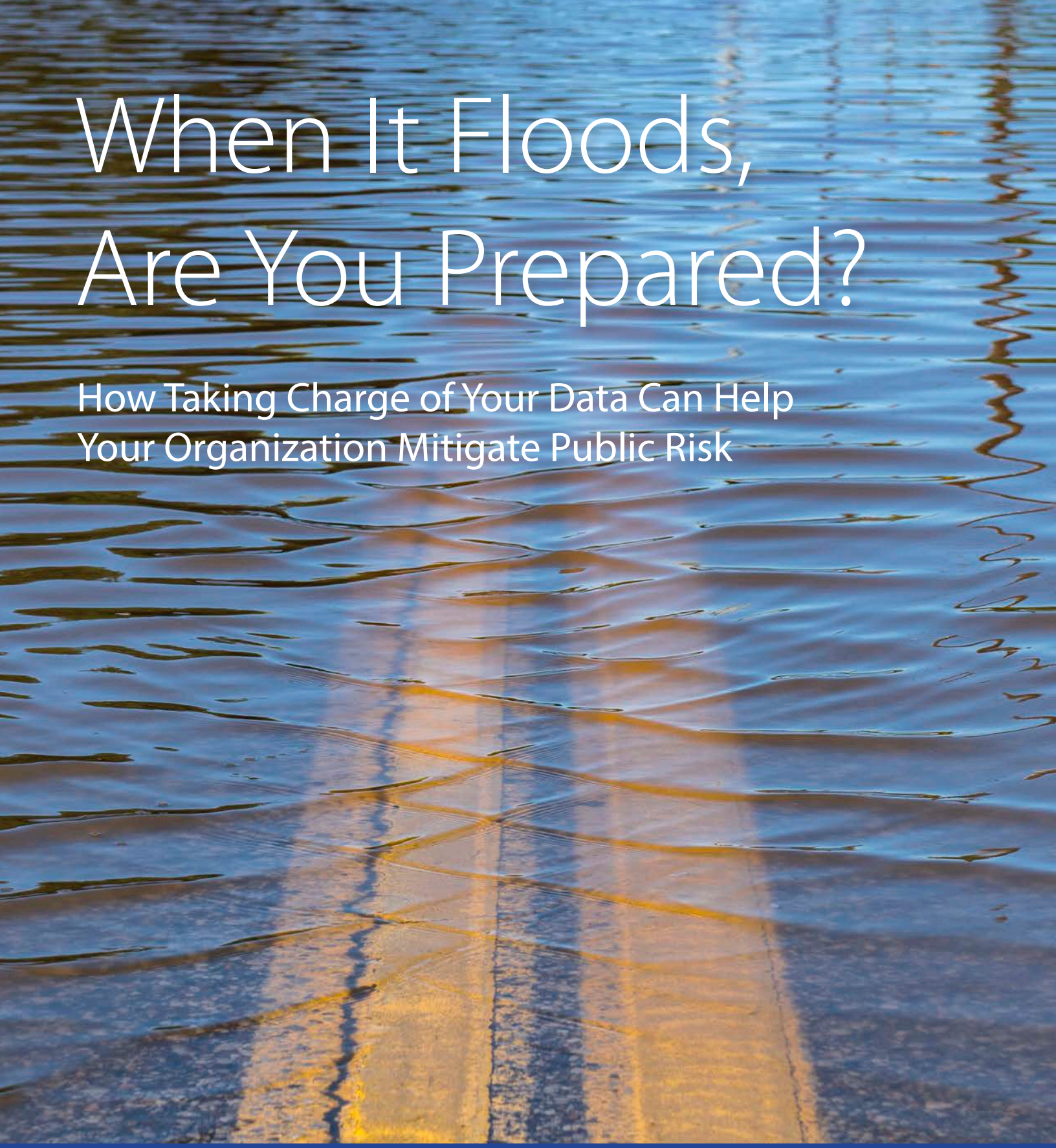


When It Floods, Are You Prepared?

How Taking Charge of Your Data Can Help Your Organization Mitigate Public Risk

AQUATIC Informatics

eBook

As the world sees an increase in extreme weather events, new communities are having to plan for unprecedented flooding.

Coastal flooding does $3 trillion in damage worldwide.
(Source: National Geographic, *Floods*)

Residents of flooded areas are often left without power and clean drinking water, which can lead to outbreaks of deadly waterborne diseases such as typhoid, hepatitis A, and cholera.
(Source: National Geographic, *Floods*)

Even in developed countries where flood mitigation and prediction is advanced, such as in the United States, floods do about $6 billion worth of damage and kill 140 people every year.
(Source: National Geographic, *Floods*)

Global sea level rose about 8 inches in the last century. The rate in the last two decades, however, is nearly double that of the last century.
(Source: NASA, *Global Climate Change: Vital Signs of the Planet*)

The United States had more floods in 2016 than any year on record.
(Source: Munchner Ruckversicherungs-Gesellschaft, Geo Risks Research, NatCatSERVICE)

Flooding represents a real impact on human health and safety. So what's being done to prepare for and respond to flooding?

Fortunately, even with the increase in flooding, fewer people are dying from flood-related causes thanks to measures that many organizations are taking.

Many organizations are making a real effort to improve their flood prevention schemes and response plans. For example, organizations are placing more importance on improving building strength, monitoring aging infrastructure, dam safety, establishing monitoring systems, and educating the public in at-risk communities.

However, none of these measures can be truly effective unless organizations are able to effectively harness their historical data and are ready to act on real-time information when emergencies occur. Unfortunately, many organizations report not being able to leverage all of their data, even in the best of times.

Are you effectively leveraging all of your environmental data?

What is data management in the context of flooding?

Let's start by looking at flood data management specifically. In the context of flooding, data management allows organizations to:

- Aggregate baseline water and weather data
- Monitor data in real time, allowing for quick reaction times during flood events
- Provide context to real-time data relative to historical data
- Correct and process data to help separate the signal from the noise
- Automate data sharing through public and internal data exchanges
- Mitigate risk by quantifying impact on the public
- Utilize geospatial mapping
- Collect data to rationalize new public infrastructure investments

What monitoring activities are needed to best manage emergency flood events?

In the event of flooding, it is important to monitor:

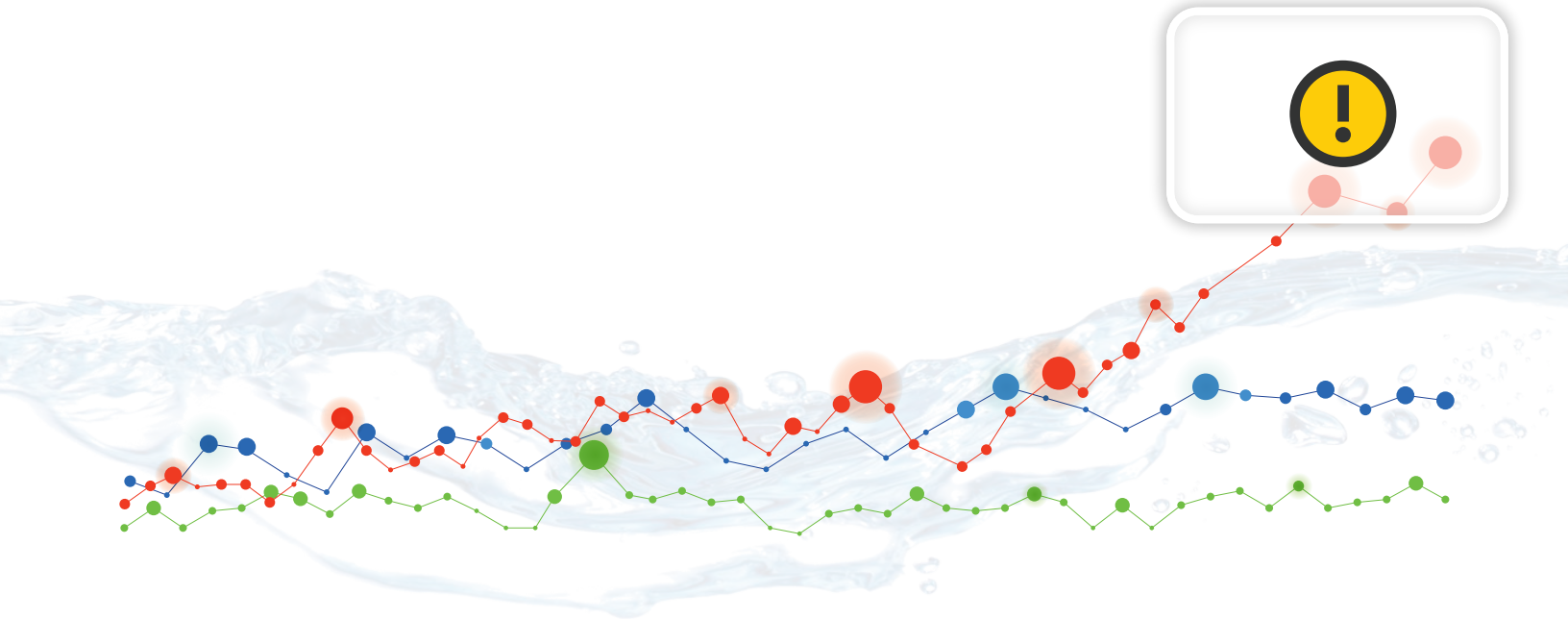
- Sewer overflow discharge
- Stormwater runoff
- Reservoir levels
- Aquatic habitat changes
- Inundation patterns
- Dam safety
- Coastal community communications

These types of monitoring activities can be complex and are often extremely time-sensitive, making it necessary for organizations to have access to accurate, real-time, and defensible data.

So, what should your organization be doing?

Forecasting and flood planning are important activities for organizations such as yours to be involved in. However, regardless of how good your flood prevention plan is, flooding can and will occur. Over the last few decades, the world has witnessed an increase in extreme flood events, meaning that the trend of an increasing number of floods each year may well continue. This only makes flood preparedness and response plans all the more important.

You have likely investigated infrastructure improvements such as adding capacity and implementing stormwater management programs; however, a more economical upgrade would be to adopt data management tools to help you leverage your historical data. In fact, early warning systems and more accurate data can be more cost effective and have a more immediate impact than infrastructure upgrades when it comes to flood response and preparedness.

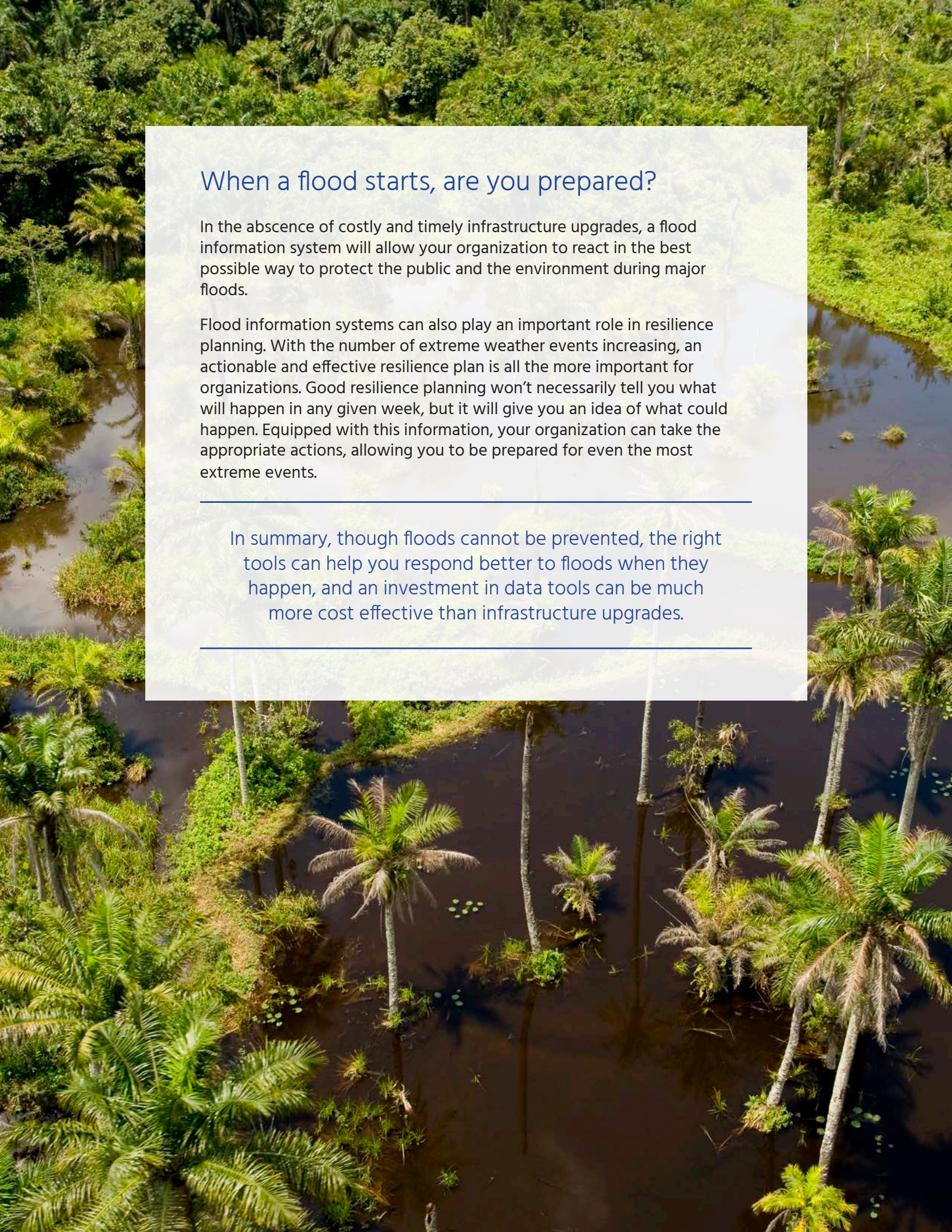


What does the ideal flood data management tool look like?

With so much data needed, it is important for organizations to create robust flood response plans. The ideal data management tool will enable organizations to:

- **Manage data from multiple sources.** Many different types of data are required in order to create the most robust flood action plans. Data may come from meteorological sources, stream gauges, tide gauges, and stormwater networks, in addition to many others, so having a system where this data can be managed together saves both time and money.
- **Provide alerts and facilitate information sharing.** The ability to share notifications with others is extremely important during a live event. Real-time alerts and information sharing enable on-site responders to get the latest situation reports and allow them to drill into the data behind the alert. The ideal flood management tool also enables responders to display current water event data against historical data, and connects high-risk communities with public safety and health alerts.

In short, the ideal flood data management tool increases information availability, allows for instant stakeholder alerting, and improves data quality overall.



When a flood starts, are you prepared?

In the abscence of costly and timely infrastructure upgrades, a flood information system will allow your organization to react in the best possible way to protect the public and the environment during major floods.

Flood information systems can also play an important role in resilience planning. With the number of extreme weather events increasing, an actionable and effective resilience plan is all the more important for organizations. Good resilience planning won't necessarily tell you what will happen in any given week, but it will give you an idea of what could happen. Equipped with this information, your organization can take the appropriate actions, allowing you to be prepared for even the most extreme events.

In summary, though floods cannot be prevented, the right tools can help you respond better to floods when they happen, and an investment in data tools can be much more cost effective than infrastructure upgrades.

AQUARIUS can help you build your flood response and resilience plans.

AQUARIUS is a software solution that can be used for flood monitoring and alerting, as well as more general water data management. Our robust system allows organizations to collect, monitor, and respond to real-time data from virtually any data source. We take pride in facilitating our customers' access to water level information leading up to and during flood events, enabling the cooperation of emergency management, volunteers, first responders, and national agencies, in real time.

AQUARIUS architecture can scale across many organization sizes, and our web services allow for infinite integrations with other systems, such as GIS.

AQUARIUS functionality also includes the ability to:

- Acquire data across your infrastructure
- Compare current and historical values
- Differentiate sensor errors from events
- Automate data sharing through public and internal data exchanges
- Drill into your data through a map interface
- Define visual warning thresholds
- Assess and visualize risk levels
- Build customizable dashboards
- Model flow and flood discharge
- Correct data to ensure accuracy
- Collect data to rationalize new public infrastructure investments
- Integrate data from other systems
- Leverage 3rd party information, such as public information from the USGS and Water Survey Canada
- Automate data sharing through public and internal data exchanges

In essence, AQUARIUS software can help you to manage your data as a strategic asset by allowing you to store and access your historical data and to react to real-time data.

Customer Stories

Brisbane City Council

Brisbane City Council (BCC) uses AQUARIUS software for their Floodwise program. With AQUARIUS, all 450 BCC users from 8 different agencies and departments are able to have quick access to both real-time and historical flood information. BCC has also set up alerting by email and SMS, which has allowed for timely warnings and fast investigations.

As a result, BCC has had significant cost savings, efficiency gains, and improved management of flash floods.

Water Survey of Canada

Government of Canada

Gouvernement du Canada

Water Survey of Canada (WSC) has 2,500 water level and streamflow locations, and 1,600 stations that are transmitting in real time. With AQUARIUS, WSC now has a reliable automated data acquisition system and an improved telemetry network. WSC uses both AQUARIUS EnviroSCADA and AQUARIUS Time-Series to ensure real-time collection and correction of water data.

As a result of using AQUARIUS, WSC has been able to provide data for the whole of Canada that is both timely and reliable.

Need more information?

Commercial off-the-shelf (COTS) systems are designed to meet the unique requirements of water professionals. This document explores 10 of the top advantages to choosing a COTS platform.

READ FREE WHITEPAPER

Ready to talk?

Book a FREE consultation today! We would like to learn about your water monitoring program and discuss the advantages of AQUARIUS solutions.

BOOK A CONSULTATION

500+ customers including national agencies; state, regional and local water authorities; hydropower operators; mining companies; consulting organizations; and academic groups around the world trust AQUARIUS every day.

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