SAS for Flood Early Warning

A proactive approach to response, mitigation and preparedness

SSsas
THE POWER TO KNOW®

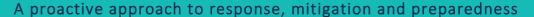## SAS Facts

SAS is ranked as a leader in advanced analytics and artificial intelligence.

SAS has redefined the future of analytics in the cloud to accelerate the power of AI for everyone.

SAS has customers in 147 countries

SAS software is installed at more than 83,000 customer sites.

Flooding damages properties and threatens lives

Storm events and high tides wreak havoc on communities as flooding closes down streets, destroys buildings, interrupts services, and poses a safety risk to human beings and animals. Many governments rely on citizens calling about flooding in order to implement response activities. Some local governments have long serving employees who remember the locations of flood events and can guess what a storm might do in certain areas.

Traditional flood response is not protecting people and properties well enough. To respond faster to flood events and to curtail future flooding, governments are turning to advanced technologies to identify flooding, alert emergency personnel and citizens, and predict future flood events.

Challenges

Government agencies are losing the battle against flooding.

- **Labor intensive.** Traditional flood management and response have relied heavily on human beings to identify rising water, redirect vehicles, evacuate people, and implement measures such as sandbags and signage.
- **Latent Awareness.** Without a way to identify rising water and send alerts, emergency responders and citizens only know about flooding after water has risen. Often, it is too late to prevent property damage and unsafe conditions.
- **Dependence on institutional knowledge.** Flooding history is often known by the people who have worked in a government for years. As people retire or move to other positions, the institutional knowledge is lost. Without a long series of hydrologic data, governments do not have useful historical flood records.
- **Outdated Mapping and Surveys.** Understanding vulnerabilities involves expensive mapping and surveys that need to be kept up to date with changes in land use and urban growth.
- **Complex coordination of response.** Emergency response is complicated when flooding occurs rapidly, covers vast areas of land, or blocks primary vehicular routes. Often, flooding causes infrastructure to fail, exacerbating the challenge of communicating between responders and to citizens.
- **Speculative action.** Preventive measures are often employed without the benefit of predictive analysis. These measures can be costly and disappointing. Without thorough insights, governments cannot identify the indicators of an unfolding disaster in time to trigger a response.

Our Approach

SAS helps organizations use large volumes of historical data from weather systems and data collected by water level sensors systems to quickly understand the current flooding environment and predict future flood events.

We approach the problem by providing software and services to help you:

- **Access all relevant data**. Quickly access and prepare relevant weather, environmental, sensor, and development data for modeling, simulation, and insight generation.
- **Forecast future conditions.** Identify weather and development trends that can provide timely insights regarding the magnitude of storm events, the impact of development, and the location and magnitude of flooding.
- **Improve forecasting models.** Use existing data to refine how flooding is predicted.
- **Identify the effects of policy and development changes.** Perform micro-simulations using weather and flooding data to better understand the potential impact of policy and development decisions on streams and floodplains.
- **Provide real-time tracking and** alerts**.** Improve awareness of rising stormwater and generate alerts to emergency responders and citizens.

Business Impact

While flooding during typical rain events can be disruptive, flooding as a result of hurricanes, tropical storms and major rain events can be destructive. Many communities are hit by new flooding before they can even recover from the last flood event. As new development occurs upstream or in the vicinity of fragile wetlands, rainwater flows over impervious surfaces, surges into creeks and streams, and overflows onto roads and into buildings. Bodies of water that were once sufficient to accommodate rainwater, are now overwhelmed.

SAS can help by providing:

- The means of ingesting copious amounts of data collected by sensors.
- Data management and data quality tools to prepare data critical to generating insights.
- Insightful and interactive visualizations that highlight current dry and wet conditions as well as potential increase in
- Alerting system that notifies emergency workers and citizens about rising water.
- Scenario analysis linked to visualizations that show the effects of potential changes.
- Automatic, large-scale forecasting that enables time series and predictive modeling for the most accurate forecasts given the uncertainty of weather events.
- A solution that can use your institutional knowledge and models, allowing comparison to ensure the most accurate models are used.