

CASE STUDY

Harris County, TX Initiates AI Flow Data Collection to Better Forecast Flood Risk

CHALLENGE

Harris County's population growth has put its rapidly expanding urban and suburban areas at increased risk for flood events due to changing weather patterns.

Officials in Harris County Flood Control District had historically identified flood threats using simple water level and rainfall sensors that require manual measurements to be carried out at every site using mechanical or acoustic current meters over a period of 1 to 2 years. Although the industry standard, this process is complex, time-consuming, and very expensive.

By continuously measuring level and velocity, the new technology offered by the RQ-30 radar discharge sensor provides real-time level, velocity, and flow/discharge data from the moment it is installed. The ability to expand a flood warning network in a more cost-effective manner means improving flood forecasting and access to real-time data.

SOLUTION

In 2019, HCFCD incorporated 54 RQ-30 sensors into its existing Flood Warning Network, giving staff broader access to real-time conditions. The RQ-30 produces flow/discharge data from the moment it is turned on, providing highly accurate water level, velocity, and flow/discharge through the use of non-contact Pulse and Doppler radar technology.

After calculating the flow/discharge using AI based machine learning, the RQ-30 wirelessly transmits the collected data to a central hub where it is processed and posted to a web-based system for visualization, analysis, and real-time action. The real-time data that is collected is used to support flood forecast model calibration. With more accurate flood forecast models, the county can better anticipate where flooding will occur.

This enhanced data collection will also more directly benefit the community-at-large by giving residents access to flood forecast insights through the same Flood Warning System they already use to view flood risk and predictions.

AT A GLANCE

From 2019 to 2020, Harris County Flood Control District deployed 54 Next Generation non-contact Radar Discharge Sensors into their existing Flood Warning Network, delivering continuous real-time level, velocity and discharge data providing Harris County FCD with new insights into the forecasting of flood events.



STATUS

operational since 2019



WHO SHOULD CONSIDER?

Urban and rural counties, along with water management districts, that experience floods that threaten public safety and damage property.



Conducting Continuous,
Safer & More Accurate
Situational Awareness

OUTCOMES

Outcome 1

Harris County Flood Control District can better monitor and forecast flood risk, creating greater security for its residents' lives and property

Outcome 2

Deployment of this technology allows a substantial expansion of a flood warning network at a significantly reduced investment

Outcome 3

The AI learning capability of the RQ-30 provides Harris County with a significantly improved real-time picture of stream conditions

Outcome 4

Automated measurement and delivery of water data allows district officials to recoup staff time that can be used for other tasks

Outcome 5

HCFCF has new tools to better forecast floods into the future as changing weather patterns increase their likelihood



LEARN MORE

U.S. Geological Survey (USGS) with aid from the Colorado Department of Transportation installed the RQ-30 flash flood warning system in the Rocky Mountains in a as a proof of concept.

Cable-suspended radar sensors continually measured velocity in the remote area of Waldo Canyon and transmitted data over cellular and iridium satellite networks.

Read findings in *Remote Sens*
bit.ly/3GB1wRw