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An internet of things system for urban flood monitoring and short-term flood forecasting in Colima, Mexico

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Urban flooding is one of the major issues in many parts of the world and its management often challenging. Here we present Internet of Things (IoT) approach for monitoring urban flooding in the City of Colima, Mexico. A network of water level and weather sensors have been developed along with a web-based data platform integrated with IoT techniques to retrieve data using 3G/4G and Wi-Fi networks. The developed architecture uses the Message Queuing Telemetry Transport protocol to send real-time data packages from fixed nodes to a server that stores retrieved data in a non-relational database. Data can be accessed and displayed through different queries and graphical representations, allowing future use in flood analysis and prediction. Additionally, machine learning algorithms are integrated into the system for short-range water level predictions at different nodes of the network.