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Flash Flood Intelligence in the Age of Instant Communication

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In a world in which there is an expectation of instant access to information, there is increasing pressure on agencies to quickly disseminate and communicate accurate information during storm events. This requires well informed decision making, collaboration between agencies, and efficient methods of communicating; both internally and with the public. There is an increasing need for systems and workflows that provide a 'single point of truth' from which all agencies can input data and extract information. In response to this need, an intuitive online system (FloodIntel) was developed to collate, interpret and communicate a range of flooding information and geospatial data via a single website.

Urban flash flooding provides a unique challenge for emergency planners and responders: the emerging risk must be identified quickly to ensure there is sufficient time for warning and response. Flash flooding can cause extremely dangerous conditions, with rapidly rising levels and fast flowing water, capable of causing property damage and serious risk to life.

In the lead up and during a storm event, a large amount of data is created and interpreted by responders to understand the likely extent, hazards and consequences. Data changes minute by minute, requiring analysis of multiple datasets over different spatial and time scales. As a further complication, multiple agencies are often seeking to coordinate responses using different data sets. FloodIntel minimises the burden on agencies during storm events by integrating these data sets and delivering consistent and useful information, tailored to each user. This can be achieved through understanding relationships between rainfall, flooding and its impacts, and establishing those relationships in the customised FloodIntel system in advance of the event.

The capabilities of next generation flood modelling software (TUFLOW HPC) has also recently expanded to include full capability for modelling stormwater drainage infrastructure, allowing these urban models to be run very quickly. For the first time, 2D stormwater and overland flow models can be run in a real-time context, identifying locations of overland flow where piped drainage has exceeded capacity. When coupled with next generation, fast hydraulic models, FloodIntel offers an end-to-end solution which uses real-time and / or forecast rainfall, displays maps of the current flood situation, analyses rainfall and mapping against critical thresholds to understand the impact of the event, and generates automated or semi-automated reports, alerts, text messages etc. The system is accessible to many users at once, through any standard browser, on a variety of devices, and is fast and highly intuitive, allowing a new user to open the system without any training and quickly find the information they need.