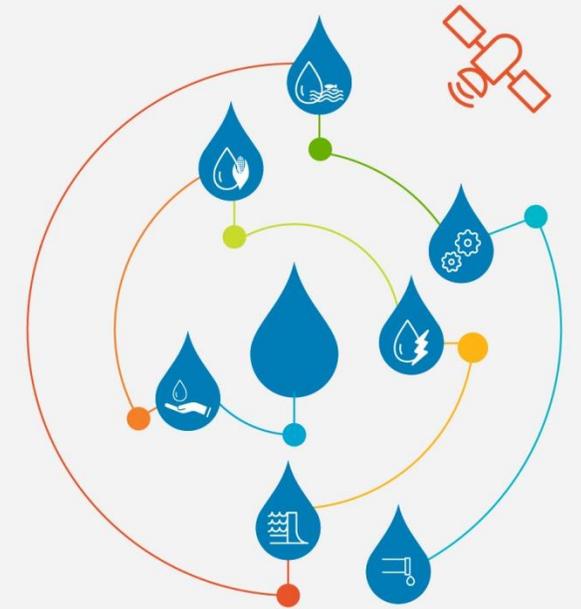# Flash flood intelligence in the age of instant communication

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BMT

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ADB

Managing flood hazard in Australia

- Most expensive natural hazard in Australia
- Second most dangerous natural hazard (fatalities)
- However, floods are the most predictable hazard
- Why are they so deadly and costly?
- Flood modelling identifies locations of highest risk, before an event or in real time
- Highly valuable information for emergency managers

Recurring challenges for flood response

- Translating forecasts into flood intelligence (impacts)
- Data / information distributed across multiple agencies / systems
- Different users need different information during an event
- Different users have different levels of familiarity / training
- Barriers to accessing systems (installing software, licences etc)
- Are we making the most of latest information / technology?
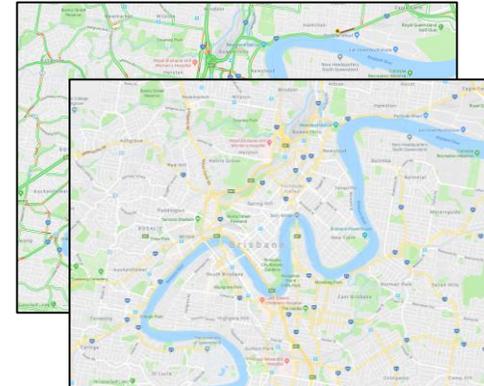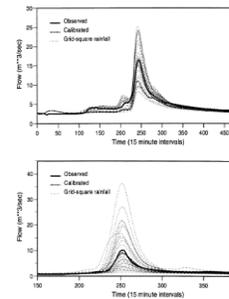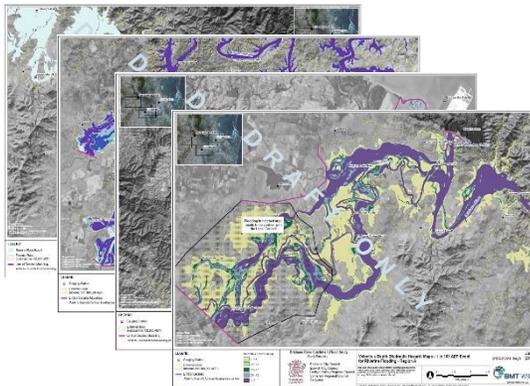
Challenges specific to flash flooding

- More difficult to forecast than prolonged meteorological events
- Rapid onset and high intensities exacerbates risk
- Requires early warning (less confidence)
- Limited time to evacuate (road closure information critical)
- Risk increasing due to urbanization and global warming
- Real-time response increasingly important

Designing a flood intelligence system

- Streamline / communicate intelligence quickly and accurately

- Provide a 'single point of truth' (integrated system)

- Tailored to users (engineers, emergency responders, community)

- Intuitive (e.g. Google Maps)

- Online system (with offline resilience) via standard web browser

- Flexible design, scalable for big data, real time modelling
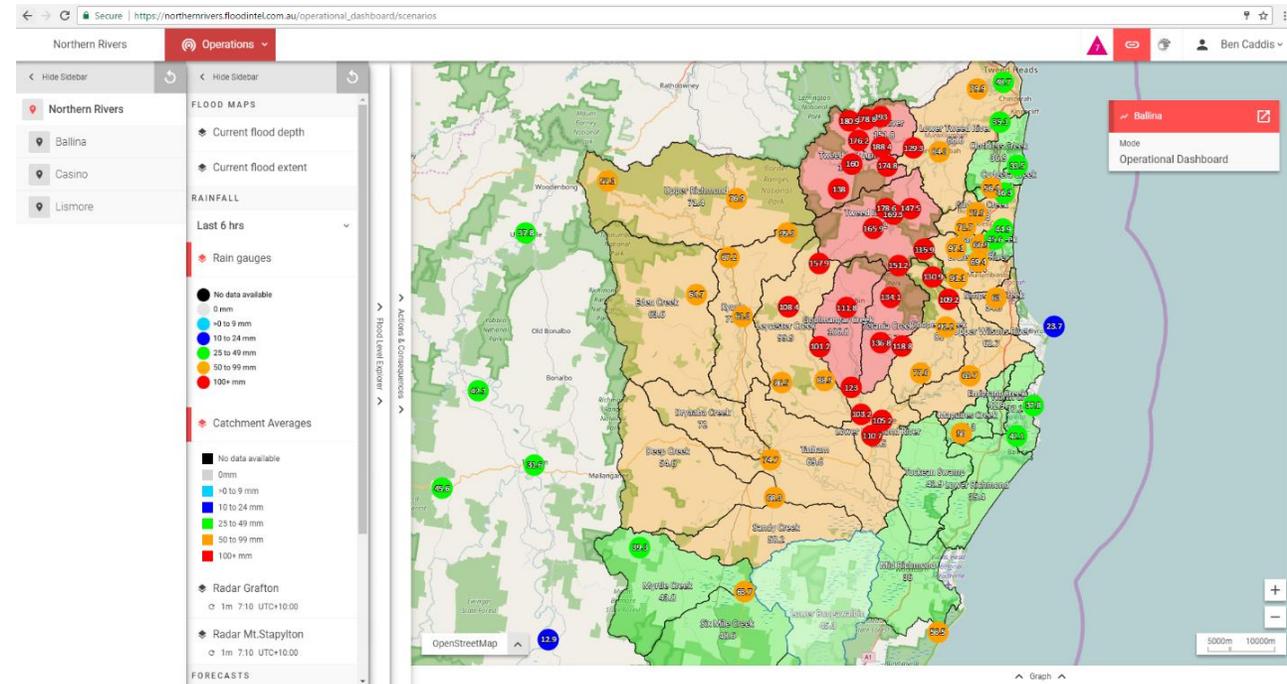
FloodIntel modules

1 **Floodplain Manager**

Compilation and interpretation of existing flood data

2 **Operational**

Translation of real-time flood information into consequences and actions

3 **Event Analysis**

Capacity building and planning

FloodIntel features

- Gauge and radar rainfall

- Current and predicted water levels

- Historical and/or real time flood mapping

- Trigger-based alerts and reports

- Inundated properties and infrastructure

- Road closures

- Flood damage estimates
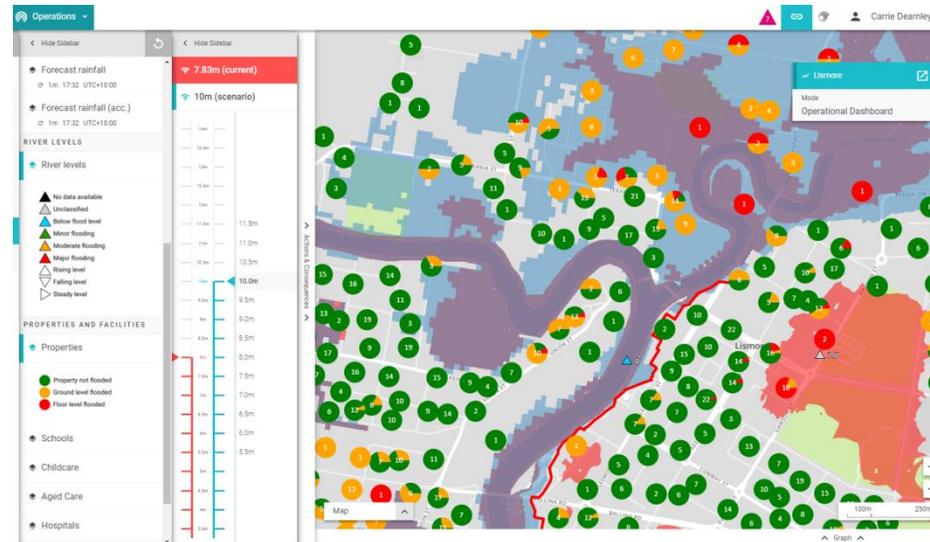
Example workflow

Threshold triggered, receive text message
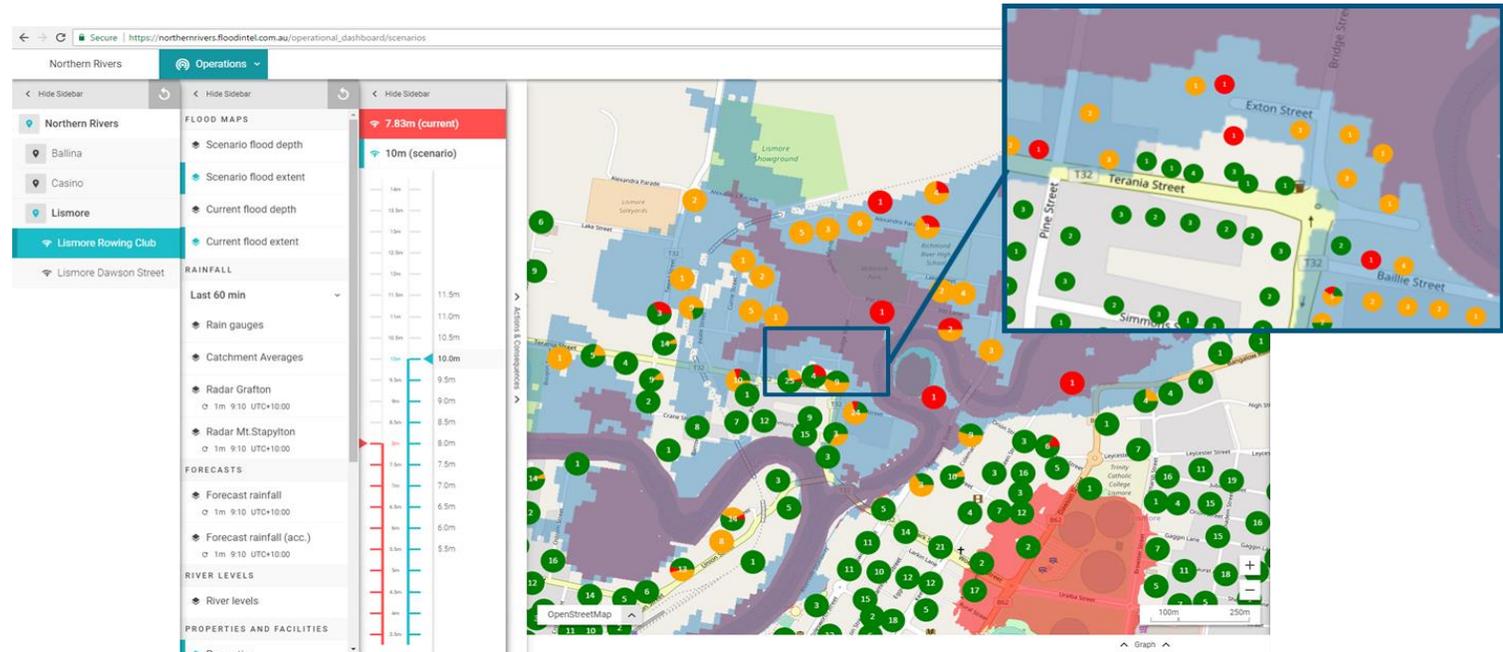
Dashboard with warning summary and maps

Explore current situation

Explore impacts
(properties, roads, critical infrastructure)

Explore scenarios based on forecasts

FloodIntel benefits

- Streamline workflows and decision making

- Access latest and consistent data

- Easy and intuitive to use, no training

- Fast and resilient, flexible and future proof

- Cloud-based desktop and mobile access

- Customizable and secure user profiles

- Compatible with Delft FEWS and industry modelling platforms
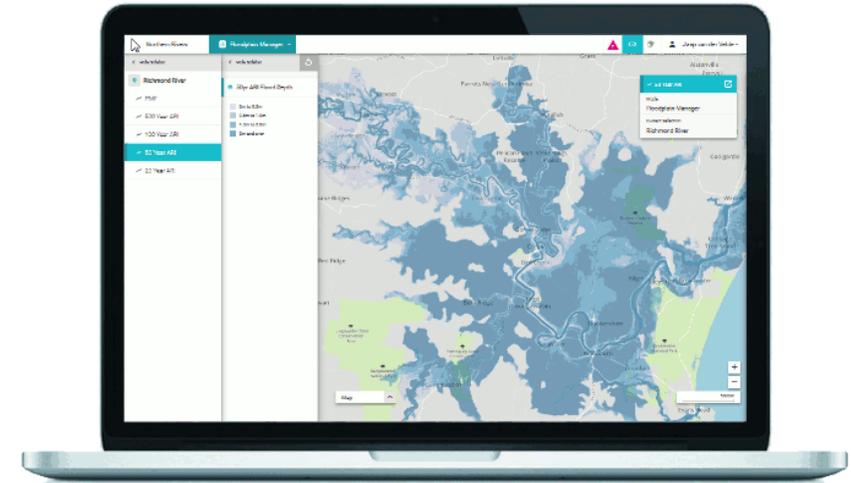
Conclusion

- With flash flood risk increasing, the ability to understand and communicate risk as a flood is evolving is critical to protect lives and properties from damage

- An 'end-to-end' flash flood forecasting system significantly advances the ability of emergency manages to easily access and understand relevant information in a time-critical situation

- FloodIntel is fully automated to ingest telemetry, run models, display mapping, intersect with assets, issue trigger-based alerts

Thank you