

# Reviewing operational and near operational progress in surface water flood forecasting for urban areas

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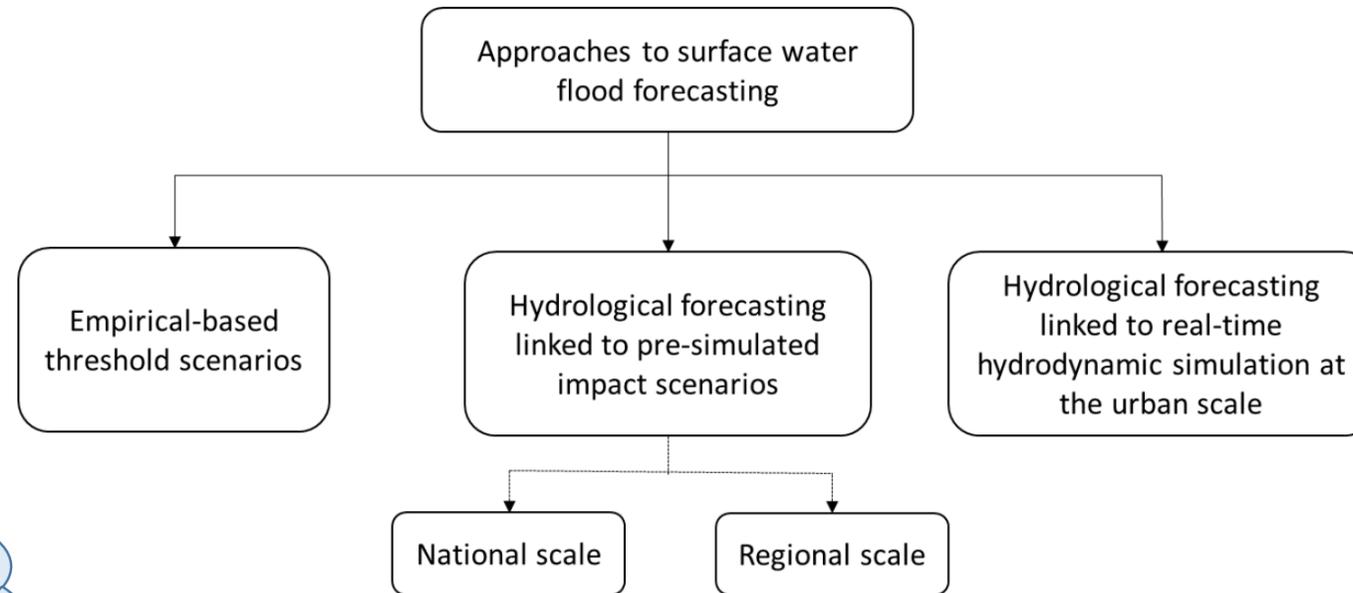
**Surface water flood forecasting** is an ongoing **challenge** for decision makers because of the **high uncertainties** around predicting the location, timing and impact of what are typically **localised events**.

The Scottish Environment Protection Agency (SEPA) asked us:

“What should we know about if we want to improve surface water flood forecasting?”

In particular they wanted to know:

- What is the current science around precipitation observations and forecasts
- What tools are available for pluvial flood forecasting at multiple scales
- What tools are available for monitoring surface water flooding impacts in real time?
- What possible approaches could be taken to pluvial flood forecasting in Scotland?



Different approaches have developed as decision-makers have different requirements from a flood forecasting system. The actions they take may require different lead times to activate and they may be willing to accept different levels of risk. Decisions need to be made around appropriate modelling scales, available computational ability, integration with existing systems and available staff support time. **There is not a one size fits all solution.**



Further details available [here](#)

**To find out more:**

Read the full report to SEPA <https://doi.org/10.17868/69416>

Or look out for our paper: *Operational and emerging capabilities for surface water flood forecasting*, submitted to WIREs Water

A step-changes in the ability to model convection, and the use of ensembles forecasts, means that **it is now possible to forecast and warn for surface water flooding to support informed decision-making**. However such forecasts will remain uncertain at lead times beyond a few hours and at spatial scales less than  $\sim 10\text{km}^2$ .

The adoption of new approaches will **require re-thinking of flood forecasting practices to deal with short lead times and uncertainty in decision-making**. The ability to make flood risk management decisions based on surface water flood forecasts depends on an **interdisciplinary understanding of the strengths and limitations of the forecasting chain**.

