Data Assimilation for REsilient City (DARE): urban flooding

S. L. Dance¹ | S. Vetra-Carvalho¹ | D. C. Mason¹ | J. Garcia-Pintado²
¹University of Reading | ²University of Bremen

Motivation

Urban and rural flooding can result from intense rainfall, flash floods, coastal floods or river floods. However, in cities, unlike in rural areas, there is very little open soil available for water storage and most floodwater is transported to surface water or the sewage system. Also, since most large cities are situated near water bodies, floods due to climate changes are more likely to occur in a near future.

Today, 54% of the world’s population lives in urban areas, a proportion that is expected to increase to 66% by 2050 [1]. Thus, early and accurate urban flood forecasts are very important to minimise social and financial damage as well as potential loss of life.

What is data assimilation?

Data assimilation (DA) is an emerging mathematical technique for improving predictions from large and complex forecasting models by combining uncertain model predictions with a diverse set of observational data in a dynamic feedback loop.

Cities considered in the project

Our project relies on having enough observations in cities, thus we choose to work with cities where we think there would be good cover of observations available, e.g. from CCTV cameras.

Cities we are currently working with are: London, Bristol, Exeter, Glasgow, Leeds and Tewkesbury.

Acknowledgements

DARE project team gratefully acknowledge the EPSRC Senior Fellowship in Digital Technology for Living with Environmental Change supporting the project.

Contact Information

- Project website: blogs.reading.ac.uk/dare/
- Department of Meteorology, University of Reading, Reading, RG6 6BB, UK
- Email: s.vetra-carvalho@reading.ac.uk

References