

3rd UK National Observers Group (NOG) Meeting

Friday, 21 March 2014

Welcome & Introduction:
Dr Andy Johnston, LGiU/LGFF





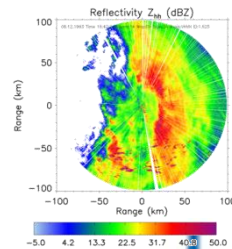
THE RAINGAIN PROJECT



Advanced observation and rainfall prediction for urban pluvial flood management

(Sep 2011 – Jul 2015)

Objective: to improve fine-scale measurement and prediction of rainfall and to enhance urban pluvial flood prediction in order to enable urban water managers to adequately cope with intense storms, so that the vulnerability of populations and critical infrastructure can be reduced.



Project Partners



- 1) TU Delft (NL)
- 2) Zuid-Holland Province (NL)
- 3) Gemeentewerken Rotterdam (NL)
- 4) KU Leuven (B)
- 5) Aquafin NV (B)
- 6) Ecole des Ponts ParisTech (F)
- 7) Marne-la-Vallée (F)
- 8) Seine-St.-Denis (F)
- 9) Météo France (F)
- 10) Imperial College London (UK)
- 11) Met Office (UK)
- 12) Local Government Flood Forum (UK)
- 13) Véolia (F)



**Extreme rainfall events
exceed the capacity of
the drainage system**





- Insufficient capacity of sewer system
- Surface flow (overland system)

- Dynamic interactions between the two systems
- It's localised and happens quickly – “flash floods”



Model Assembly for Pluvial Flood Modelling, Forecasting and Management



Rainfall Estimation /
Forecasting

Flood Modelling /
Forecasting

Management (urban
planning, emergency)

Supported by data (monitoring)

Same “framework” as other types of flooding, but for urban pluvial flooding each step is a bit more complex





This project has received
European Regional
Development Funding
through INTERREG IV B.



INTERREG IVB

Rainfall
Estimation /
Forecasting

Flood Modelling /
Forecasting

Management
(urban planning,
emergency)

- The rainfall events which generate pluvial flooding are often associated with **thunderstorms of small spatial scale** (~ 10 km), whose magnitude and spatial distribution are **difficult to monitor and predict** (also: lead time vs. accuracy)
- Rainfall estimates/forecasts with fine spatial and temporal resolution required

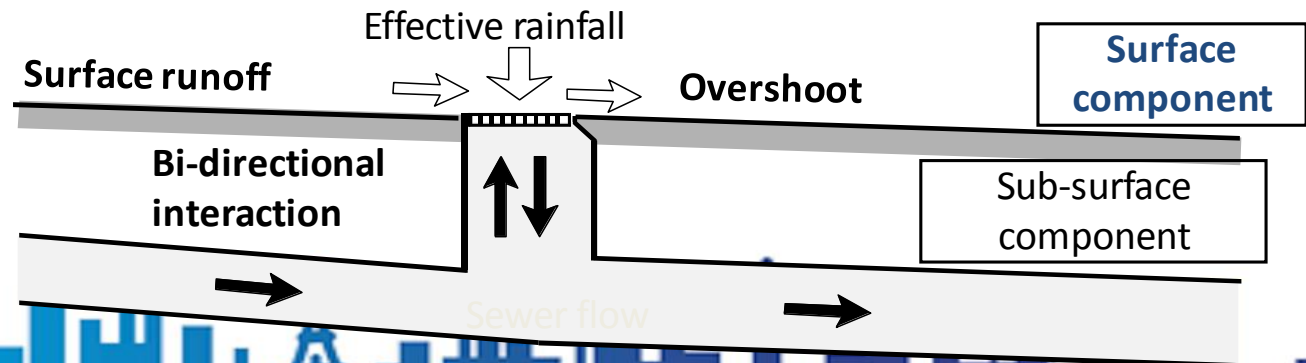


Rainfall Estimation
/ Forecasting

**Flood Modelling /
Forecasting**

Management
(urban planning,
emergency)

- Urban “jungle” is complex
- Interaction of sewer and overland systems
- Since flooding is localised, models must have fine spatio-temporal resolution
- Model detail vs. Runtime





Rainfall Estimation
/ Forecasting

Flood Modelling /
Forecasting

Management
(urban planning,
emergency)

- Urban catchments **change** constantly
- Complete **flood records** for calibration and verification are seldom available
- High **uncertainty in boundary conditions**
- High **operational uncertainty** (blockages, pipe burst, pump failure, change in geometry of roads and other channels, etc.)
- **Individual sources of uncertainty are magnified by small scale**



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INTERREG IV B

Rainfall Estimation
/ Forecasting

Flood Modelling /
Forecasting

Management
(urban planning,
emergency)

- **Uncertainty** in modelling and forecasting **hinders** decision making
- **Low awareness**
- Given rapid onset and short forecasting lead-times, the **public become the principal responders**, but they are not so willing to respond
- **Lack of coordination** between stakeholders involved
- **Budgetary cuts**
- ...



Tackling the Challenges

Rainfall Estimation /
Forecasting

Flood Modelling /
Forecasting

Management (urban
planning, emergency)



Three pilot locations have been adopted



- Cranbrook catchment (London Borough of Redbridge)
- Purley Area (London Borough of Croydon)
- Torquay City Centre (Torbay, Devon)



The previous NOG meetings



- **NOG 1 (Feb 2012):**

- General introduction to the project.
- Main challenges and research needs in urban pluvial flood modelling, forecasting and management were identified:
 - Prioritised rainfall accuracy (over finer resolution), enhanced model runtimes, better management of uncertainty and partnership work for facilitating access to data.
 - For councils better investment decisions and more robust planning.

- **NOG 2 (Apr 2013):**

- Experts and managers from across UK, France, Belgium and the Netherlands.
- Approaches for local surface water flood warning systems were discussed: advocated two tier (national/local) approaches, as opposed to a single national system, and the use of pre-simulated scenarios.



Today's workshop:



- Scoping of decision making criteria to inform a cost/benefit analysis for the implementation of a local surface water flooding forecasting system
- Design of an interface for a local surface water flood warning system.



RainGain 3rd UK National Observers Group Meeting

Friday 21st March 2014



10:10	Progress to date and next steps for the RainGain Project (UK Project Partners): <ul style="list-style-type: none"> Marie-Claire ten Veldhuis – Project Manager, Technical University of Delft Jacqueline Sugier & Timothy Darlington – UK Met Office Susana Ochoa-Rodríguez – Imperial College London Andy Johnston – Local Government Flood Forum
11:15	Coffee
11:30	Presentations by invited speakers (session 1): <ul style="list-style-type: none"> Ian Titherington, Cardiff County Council: Greener Grangetown, a partnership approach to sustainable drainage Alex Nickson, Greater London Authority: Involving Londoners in flood risk management
12:30	Lunch
13:15	Presentations by invited speakers (session 2): <ul style="list-style-type: none"> Linda Speight, Scottish Environment Protection Agency: Implementation of a pilot urban flood forecasting system for the Commonwealth Games 2014 Anthony Maguire, Dublin City Council: Interreg IVB FloodResilienCity Project - Developing Dublin's Pluvial Flood Risk Management Strategy
14:15	Workshop session: Topic: cost / benefit analysis and interface design of a local surface water flood forecasting system
15:15	Conclusions & Close