Minutes of the Fourth RainGain National Observers Group Meeting (UK)
Prepared by Susana Ochoa Rodríguez

Date & Time: Friday 11th September 2015, from 09:30 to 16:00

Venue: Room 201, Skempton Building, Imperial College London, SW7 2AZ

Purpose of the meeting:

- To present the main outputs and research findings of the UK RainGain partners, including:
    - Results of the testing of radar technologies to obtain higher resolution rainfall estimates for cities, including associated costs and feasibility of obtaining such estimates;
    - New techniques for further improving the accuracy and applicability of radar rainfall estimates, through combination with rain gauge data and through temporal interpolation of radar images;
    - Results of the testing of high resolution models for simulation and forecasting of urban pluvial flooding;
    - Results of our research on governance and use of technology to improve place-based flood resilience.
- To discuss the implications of the project's results with partners and relevant stakeholders, and jointly identify remaining challenges

Present:

A total of 78 people attended the meeting, including 13 project partners and 65 national observers. National observers included academics, practitioners and representatives from local and central government.

Name	Company
Linda Speight	_
Andy Palmer	AECOM
Danielle Skilton	AECOM
Paul Davies	Arup
Kristian Ravnkilde	Atkins
Sean Whelan	Atkins
Stephanie Dufour	BMT WBM
Kevin Tidy	Bracknell Forest Council
Simon Bunn	Cambridge City Council
Steven Cole	Centre for Ecology & Hydrology
Robert J. Moore	Centre for Ecology & Hydrology
Gianni Vesuviano	Centre for Ecology & Hydrology
Johan Verlinde	City of Rotterdam
Andrew Bailey	Clear Environmental Consultants Ltd
Katya Perez	CONDESAN (NGO)

Name	Company
Marie-claire ten Veldhuis	Delft University of Technology
Luis Brines	Environment Agency
Christopher Chapman	Environment Agency
Tim Harrison	Environment Agency
Daniel Hine	Environment Agency
Andrew Naish	Environment Agency
Tim Norton	Environment Agency
David Rylands	Environment Agency
David Stewart	Environment Agency
Michael Vaughan	Environment Agency
Sue Woodhead	Environment Agency
Hye One Yang	Environment Agency
Kris Cauwenberghs	Flanders Environment Agency
Thomas Vansteenkiste	Flanders Environment Agency
Graeme Boyce	Flood Forecasting Centre
Graham Squibbs	G. Squibbs Consultancy
Alex Nickson	Greater London Authority
Charlotte Hawkins	Hertfordshire County Council
Richard Kellagher	HR Wallingford Ltd
Tilashwork Alemie	Imperial College London
Filip Babovic	Imperial College London
Cedo Maksimovic	Imperial College London
Bastian Manz	Imperial College London
Ana Mijic	Imperial College London
Susana Ochoa Rodriguez	Imperial College London
Boris Ochoa Tocachi	Imperial College London
Chris ONOF	Imperial College London
Rui Pina	Imperial College London
Zed Zulkafli	Imperial College London
Richard Body	Innovyze
Andrew Walker	Innovyze
Elizabeth Gorton	JBA Consulting
Neil Hunter	JBA Consulting
David Hickman	Lincolnshire County Council
Mark Welsh	Lincolnshire County Council
Jonathan Carr-West	Local Government Flood Forum/LGiU
Andy Johnston	Local Government Flood Forum/LGiU
Barry O'Brien	Local Government Flood Forum/LGiU
Andrew Walker	Local Government Flood Forum/LGiU
Dawn Harrison	Met Office
Dave Hiscock	Met Office
Sharon Jewell	Met Office

Name	Company
Dave Jones	Met Office
Patricia MacKenzie	Met Office
Bryony May	Met Office
Katie Norman	Met Office
Caroline Sandford	Met Office
Michael Mair	Metis Consultants
Santosh Regmi	Mountain EVO, Nepal
Zuura Mamadalieva	Mountain Societies Research Institute University of Central Asia
Ian Ward	Rochford District Council
Michael Cranston	Scottish Flood Forecasting Service (SEPA)
Peter Melville-Shreeve	Severn Trent / University of Exeter
Praju Gurung	SOHAM Nepal
Prem Sagar Chapagain	SOHAM, NEPAL
Jessica Fleming	Suffolk County Council
Geoff Brown	Thames Water Utilities Limited
David Stewart	Torbay Council
Feng Mao	University of Birmingham
Aiganysh Isaeva	University of Central Asia
Albert Chen	University of Exeter
Slobodan Djordjevic	University of Exeter
Andrew Duncan	University of Exeter Centre for Water Systems

Minutes & Programme – Fourth (and final) RainGain National Observers Group (NOG) meeting (UK)

The meeting followed the programme below and was chaired by Susana Ochoa-Rodriguez. As can be seen in the programme, the meeting had two main parts:

(1) Presentations by UK RainGain project partners about their results and findings, followed by a Q&A session chaired by Graeme Boyce (Flood Forecasting Centre). There was great interest from the audience in the results of the RainGain project, particularly in the practical implications and recommendations made about the use of radar technologies, local urban pluvial flooding forecasting systems, and the use of these technologies to enhance community resilience.

(2) Presentations by invited stakeholders about the implications of the project's results in their job and sector. These presentations were followed by a panel, chaired by Alex Nickson (Greater London Authority), in which the invited stakeholders answered questions from the audience and further discussed the implications of the projects' results and remaining challenges. The projects' results were considered very useful by stakeholders and by the audience in general. While significant scientific advances were made throughout the project, a key remaining challenge is the engagement of communities in local flood risk management, in order to ultimately improve their resilience.

The slides used by project partners and invited stakeholders in their presentations are available in the project website (www.raingain.eu).

PROGRAMME	
09:30	**Refreshments**
10:00	**Welcome and introduction** *(Susana Ochoa-Rodriguez, Imperial College London)*
10:10	**Overview of the RainGain project** *(Marie-Claire ten Veldhuis – RainGain Project Coordinator, TU Delft)*
10:25	**Radar technologies to obtain higher resolution rainfall estimates suitable for urban hydrological applications** *(Katie Norman, Met Office & Susana Ochoa-Rodriguez, Imperial College London)* • UK Met Office super-resolution C-band radar product • X-band radar technologies: lessons learnt from tests at RainGain pilot locations • Costs, relative advantages and disadvantages of C-band and X-band technologies • Cost and availability of radar data in the UK
11:15	**Break: tea & coffee**
11:30	**Post-processing of radar rainfall estimates to enhance their accuracy and applicability for urban hydrology** *(Christian Onof, Imperial College London & Sharon Jewell, Met Office)* • Evaluation of nation-wide as well as localised radar-rain gauge merging strategies • New temporal interpolation techniques to meet the scales of fast urban runoff processes
12:00	**High-resolution urban drainage (flooding) simulation** *(Susana Ochoa-Rodriguez, Imperial College London)* • Added benefit of higher resolution urban drainage models • Added benefit of higher resolution rainfall estimates for urban drainage modelling • Short term forecasting of urban runoff: alternatives for local surface water flooding forecasting systems
12:30	**Lunch**
13:15	**Place-Based Flood Resilience: Technology and governance** *(Andy Johnston & Andrew Walker, Local Government Information Unit)* • How can flood management integrate better with wider local government goals? • How does technology help us to build a more holistic and social idea of resilience? • Thinking about infrastructure in a different way to utilise community networks and assets
13:45	**Questions Session:** members of the RainGain team will answer questions submitted by the audience *(chaired by Graeme Boyce, Flood Forecasting Centre)*
14:15	**Stakeholders' presentations:** a range of stakeholders will give brief presentations on how RainGain results are being used or might be used in their sector and what challenges remain. Speakers include: • *Robert Moore, Centre for Ecology and Hydrology* • *Johan Verlinde, City of Rotterdam* • *Graham Squibbs, Representative of CIWEM Urban Drainage Group* • *David Stewart, Torbay Council* • *Michael Cranston, Scottish Environment Protection Agency*
15:00	**Break: tea & coffee**
15:15	**Stakeholders' panel discussion:** stakeholders will answer questions from the audience and will further discuss the implications of RainGain results and remaining challenges *(chaired by Alex Nickson, Greater London Authority)*
16:00	**Close**