Minutes of the first RainGain National Observers Group meeting (NL)
Prepared by Matthieu Spekkers and Marie-claire ten Veldhuis

Date: Tuesday 13 March 2012
Venue: Gemeentewerken Rotterdam, Mediazaal

Purpose of the meeting:

- To introduce the RainGain project to a group of national observers comprising specialists, practitioners, academics and local and central government policy-makers
- To discuss the observers' expectations from the RainGain project, regarding rainfall data estimation, potential improvements in modelling, forecasting and management of urban pluvial flooding
- To give the observers the possibility of getting involved in the RainGain project

Present:

Name	Organisation	Job Title
Frank Kenselaar	Gemeentewerken Rotterdam	Chair of NOG Meeting
Jos Streng	Gemeentewerken Rotterdam	Policy advisor environmental management, partner RainGain
Pieter Otten	Gemeentewerken Rotterdam	Policy advisor environmental management, partner RainGain
Daniel Goedbloed	Gemeentewerken Rotterdam	Policy advisor environmental management, partner RainGain
Erik de Haan	Provincie ZH, afdeling Water	Policy advisor water management, partner RainGain
Marie-claire ten Veldhuis	TU Delft	Coordinator RainGain project
Matthieu Spekkers	TU Delft	Urban hydrology researcher
Guenda Bruni	TU Delft	Urban hydrology researcher, partner RainGain
Aart Overeem	KNMI	Climate researcher
Hidde Leijnse	KNMI	Climate researcher
Irene Poortinga	Hydrologic	Consultant
Wytse Dassen	Hydrologic	Consultant
Kevin Gortmaker	Arcadis	Consultant
Hugo Gastkemper	Stichting RIONED	Director of RIONED Foundation
Wim Rijkaart van Cappellen	TMC/Buienradar.nl	Weather data enterpreneur
Remko Uijlenhoet	WUR	Hydrology researcher
Arno Lammers	Stadsgewest Haaglanden	Policy advisor water and environmental management
Marc den Ouden	HH Schieland en Krimpenerwaard	Policy advisor watermanagement
Adriana Osorio	HH Schieland en Krimpenerwaard	Policy advisor watermanagement
Peter Ganzevles	Waterschap Hollandse Delta	Policy advisor watermanagement

Stefan Jansen	HH van Delfand	Policy advisor watermanagement
Peter Hollander	HH van Delfand	Policy advisor watermanagement
Remco van de Beek	Meteoconsult	Consultant
Mark Alblas	Meteoconsult	Consultant
Floris Bijlsma	Meteoconsult	Consultant
Fons Neelen	Neelen en Schuurmans	Consultant
Arnejan van Loenen	Deltares	Consultant

Opening of the meeting
Opening and welcome by Frank Kenselaar (Gemeentewerken Rotterdam)

Frank Kenselaar welcomed everyone to this meeting. In his introduction, he stressed the importance for the City of Rotterdam to participate in the RainGain programme. Rotterdam has to deal with four sources of flooding: river, sea, groundwater, rainfall. It is the lack of detailed rainfall measurements that inhibits adequate pluvial flood risk management. The practical questions that are strongly related to the management of flooding are, for example:
- When, where and how much will it rain?
- When do we have to start pump facilities?
- When do we have to open storage facilities?

Introduction to the RainGain project
Presentations by Marie-claire ten Veldhuis and Daniel Goedbloed (presentations will be available on the website: www.raingain.eu)

Marie-claire ten Veldhuis, coordinator of RainGain, explained the topic of extreme rainfall and pluvial flooding in urban areas and the aim of the RainGain project to better understand/forecast flooding by using data from X-band weather radar. Detailed spatial and temporal rainfall data are needed to identify the causes of flooding. Urban drainage processes have rainfall-runoff response times of 5-15 minutes and cities are characterised by high spatial variability, so rainfall data is needed at these scales in order to capture rainfall peaks. X-band weather radar could provide a solution here: within a short radius (~30km) of the radar highly detailed rainfall data will be available. The data from the X-band weather radar will have more detail compared to the C-band weather radars that are currently available in the Netherlands. Moreover, the X-band radar will be equipped with polarimetric instruments, which will improve rainfall estimates.

Partners in RainGain and update of case studies
Marie-claire listed the 13 international partners of the programme, introduced the Dutch partners and briefly explained the structure of the work packages.
Daniel Goedbloed mentioned the three waterboards, HH Schieland en de Krimpenerwaard, HH Delfland and HH Hollandse Delta, as partners of the City of Rotterdam.

Marie-claire gave an update of the other case studies in RainGain:
- The partners in London want to upgrade their existing C-band radars to polarimetric C-band radars.
- In Leuven the X-band radar is operational since 2008, thus the partners of Leuven will bring their experiences with X-band radars to the project.

- The partners in Paris are currently looking for a suitable location of the radar. It will be either on the Tour EDF or on the ParisTech campus.
- In Rotterdam the dual drainage concept (the combination of overland flow model and sewer network model) will be elaborated in more detail; the trade-off between detail and computational speed will be researched as well as the use of (fast) hybrid computational schemes. Improved flood modelling should eventually lead to better analyses of local flooding, more efficient investments for flood control, optimisation of water storage and possibly an early warning system for pluvial flooding.
  Cooperation with the existing (Dutch) 3Di Waterbeheer project could be valuable here; this still needs to be discusses in further detail.

The role of the National Observer Groups in RainGain
The role of the NOGs is to share information from the project and to exchange information, data and knowledge between different stakeholders, such as specialists, policy makers and urban planners. Additionally, there will be training on the models and forecasting techniques developed in RainGain. The frequency of NOG-meetings is once a year; four times throughout the project period.

Case study: Rotterdam
Daniel Goedbloed explained Rotterdam's ambition to reduce CO2 by 50% and to make the city 100% climate proof. The aim is for Rotterdam to be an attractive and economically strong city. He showed some examples of pluvial flooding in Rotterdam, e.g. the flooding in 2005 where basements and public spaces where flooded in the city centre. These events are the main motivation to participate in the RainGain programme. Other topics that are on Rotterdam's agenda are water quality and urban heat stress. Three examples of measures for flood reduction taken by the City of Rotterdam in densely built areas are:

1. Underground storage facilities (e.g. Museumpark, 10000m3)
2. Water squares (e.g. Belamyplein, Benthemplein, 17000m3)
3. Green roofs

Three examples of how detailed rainfall data can improve flood management for Rotterdam:

- Rotterdam has a combined sewer system with 40 pumping stations that can be operated from a central control room. Operational decisions to control pumping stations are based on rainfall measurement provided by KNMI. More detailed rainfall data could eventually lead to further optimisation of system operation.
- Better information on when to open underground storage facilities for best performance.
- Detailed rainfall data to assess the performance of retention squares after an extreme rainfall event.

Rotterdam opened a tender for the installation of the X-band weather radar. The location of the weather radar will be on the roof of the Delftse Poort building. A practical question still to be solved is how to get the radar on top of the building. Proposed solutions: using a helicopter or the outer elevator used by window cleaners. The installation is planned to take place in the third quarter of this year.

Plenary discussion
Main remarks from the discussion are summarised as follows:

Rainfall forecast:
- For the City of Rotterdam, the required lead-time of the weather forecast should be 'some' hours, depending on the available water storage in the system
- It should be studied how X-band data can improve national weather forecast. It is likely that the information that is gained will improve operational models and thus improve predictions

Radar ownership
- The City of Rotterdam doesn't want to own and maintain to radar after the project. The building owner (Nationale Nederlanden) wants to have a guarantee that the radar will be removed after the lifetime of the project. It should become clear during the project what to do with the radar after the project: if it is a success, commercial options should be researched

Data from the project:
- All data will be available for public since RainGain is an EU project. It is unclear for now how to deal with quality issues of data before data will be made public.
- After the project there will be training on the developed models, e.g. to educate water boards and municipalities. The use of developed models and tools should not stop when the project ends.

Data input for the project
- During the duration of the project rain gauge stations that are currently available/operational will be used for validation purposes. But it is not part of RainGain to study the number of stations that are needed and how the measurement network should look like. The existing rain gauges do not have the same quality standard as those stations owned by KNMI, but some of the equipment is the same
- It is the ambition of the RainGain project to both improve model input data (by using X-band data) and the flood model itself. The input data for model is however the main concern for RainGain. The model itself will be improved in projects that are closely related to RainGain:
    - The use of detailed elevation models;
    - In-sewer water level measurements (and thus better calibration);
    - Inclusion of social media functionality;
    - The use of water detection sensors.
- The radar that is to be acquired for Rotterdam will be equipped with dual polarisation. Dual polarisation is a new and costly method; however there is a lot of interest from manufacturers to build/develop such equipment.
- Other developments that are closely related to RainGain are:
    - The use of telecommunication links to measure path-integrated rainfall volumes. Aart Overeem et al. are publishing an article on a pilot study in Rotterdam. They would like to use X-band to compare results.

Break-out sessions
The audience was split into two groups to discuss the following topics: rainfall data and flood modelling and data use after the end of the project.

Main remarks from the sessions are summarised as follows:
- There are a number of ongoing initiatives on data collection for rainfall, water systems and flooding; mostly operating at a larger than urban scale. RainGain focuses on a more detailed, finer resolution. There are interesting options for cooperation and combination of collected data.
- Possible applications of the rainfall data include detailed information to the public about expected rainfall (extreme rainfall, but also minor rainfall including drizzle), ex-post assessment of extreme events (how intense was the event, does the event exceeded the design thresholds of sewer systems, assessment of retention squares performance, to better calibrate models and to assess the performance of drainage systems.
- Forecast lead time from X-band radars is expected to be up to 5 hours; water authorities prefer to have 12 hours lead time to allow sufficient time to make water storage available, for instance by lowering water levels through pumping.
- At this moment, solutions for improved flood control such as temporarily lowering surface water levels are not yet accepted by all responsible politicians. The availability of more accurate data could help to make such solutions more acceptable, even though changes in standards and policies for watermanagement will also be needed to provide more flexibility.
- Open access to data generated in the RainGain project was discussed. At this stage, it is not yet clear whether open data access will extend to the raw data or to data products. Researchers will be given the opportunity to publish their results before data will be made available to others. Data storage during the project will be organised at the 3TU Data centre.

Further information and next meeting
Several participants have expressed their wish to meet more frequently than once a year. It is therefore proposed to organise a second NOG-meeting in October; focus of this meeting will be to discuss applications of data generated in the RainGain project as well as other data sources from related projects.
Meanwhile, a newsletter will be distributed to all RainGain partners and NOG-participants with information about the project and ongoing activities. Updates on the project can also be found on the website: www.raingain.eu.

Closure
Frank Kenselaar concluded by thanking all participants for their contributions to the discussion and breakout sessions.