



aan Kontichsesteenweg/A12 wateroverlast.

Investing in Opportunities



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RainGain

- 5th Project meeting -

Aartselaar, 1 April 2014

Marie-Claire ten Veldhuis
Project coordinator

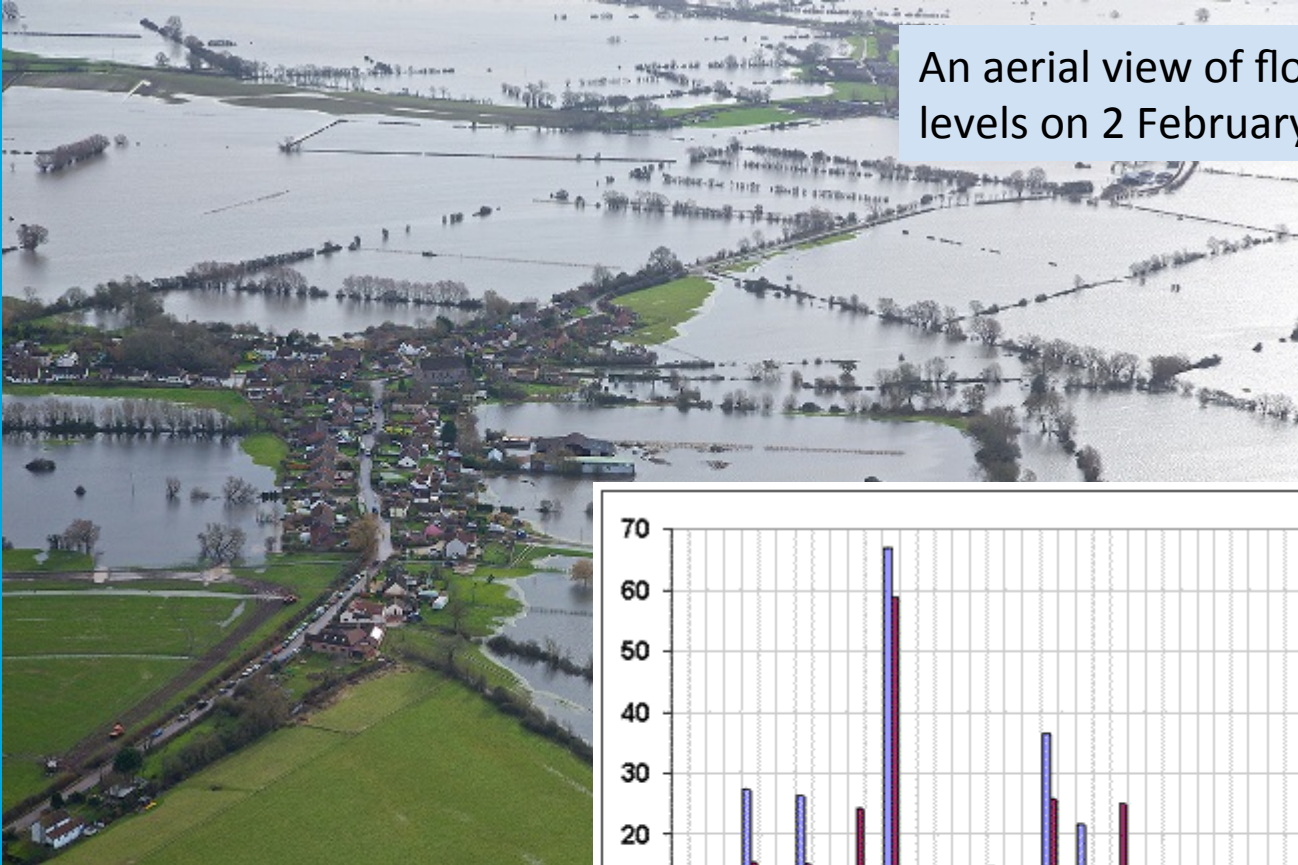
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RainGain - 4th Project meeting - Paris, Oct 2013

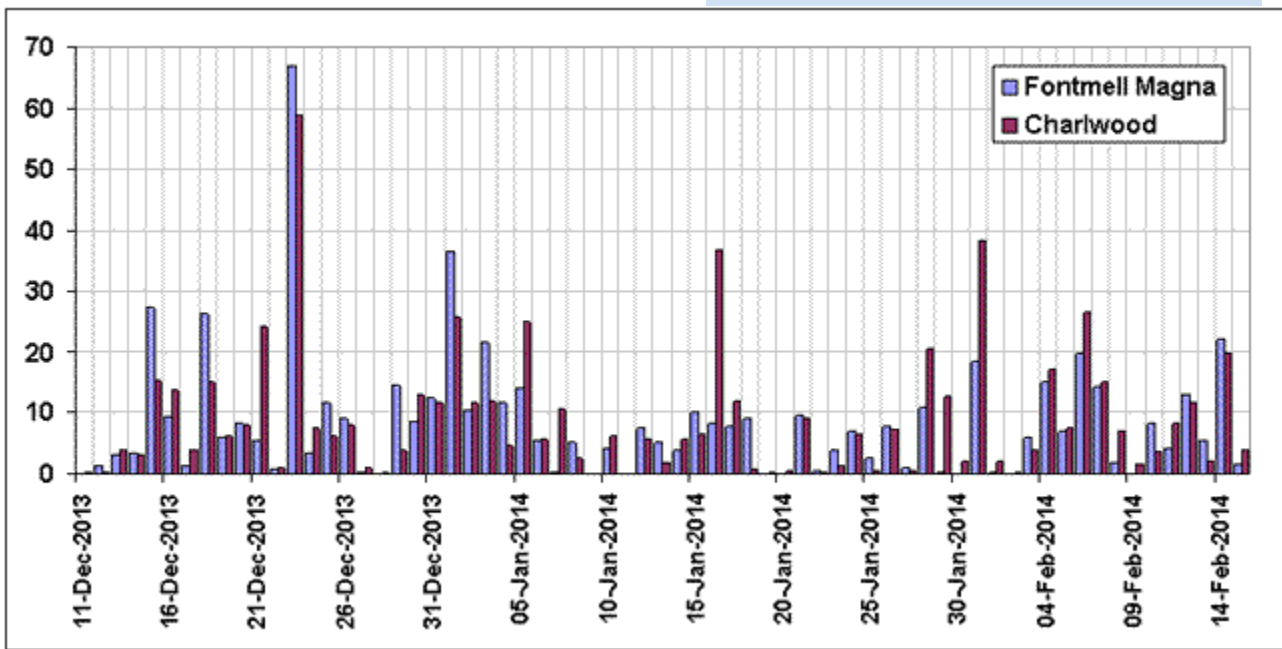


UK Flooding January – February 2014



An aerial view of flooding on the Somerset levels on 2 February

Daily rainfall totals (mm) for two stations in southern England 11 December 2013 to 15 February 2014





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Floods alert in South-Est of France : interview to Emphoux and Aicardi (City of Antibes)

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Interview Valérie Emphoux and Jean-Marie Aicardi (Antibes)

X ibuk fef lif kpotfrvfoft pgaiftf tujph sbjtpen t jz ppsvkrppaz boe upx zpvstrawp utt artpoere ip u j n k n r o o z s

Wsbtpbhtjstfllw ftyqsfodfe t j o j t b o u t p e j h i h b g f v B s h o t - i / / * - l v u i l f D p v o u z b o s r j f t . N b s h j n f t k b t s b u d e r k a b a f e / i f e l u f t f e f k f o u f s t b o e i b o t d v t f e l o n f a p v t h o e t j f t k j i i p b e t i n t - l v a i s t u j d e r f x p a f a p x t b o e v s c h o l o p C f p s t b o e l e v j h l i f t p a n t - k f t f u q p v s t h o e b a e t p d e v a t ; k f b u f s t v a t j b o d f - l e v j h p a c h f b e f a t z N O i j p . B b o d f - b e f a j h n v o j t t j b e f n t - j f e h n p o j t p e j h - j a f g b B u f f o e - u f s t k b t t o p k f f e i p k p t i k p e t p s f b o d u l q f p q f i b t u k f f l f o e (G Z b i k n

B l e v n t j p e j t b u p o f . c b o e h b e s i g a w j e f t l i f D j z p g s o u j f t B b o r t . Q p t e f b j e f e j o p a n b u p e f t l - j o j b a j h b e l e v j h l i f k d f o u s b j t p a n i f e o u

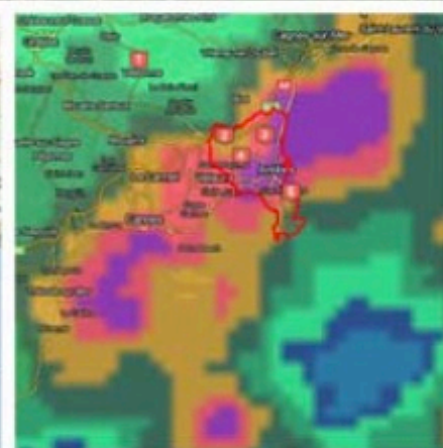
B t h k b t j a t f o f e b u l f S b j h b p t a n q p t j p P d p c f s 1 2 4 - u j t b e v j t j m t f e i p h , j u f o r j z i - i / / * - b o e k t p x j i b 2 i p v s t p a f d u t f f e i p f , A l l f o b c i f t n t i p k g b f u f i l z e p a x p p i b e j h p g t p a n x b u f s t f x f s b f x p a t - i / / * - b o e h f b o t a n f o u f x p a t - b o e i p k f b a p x t a t i p e p b i r v j l i l z e p p h j a b o b a t j /

Z p v k u j f e b i f o e f o z p g a i f k t j p f o u t p v o e f a t j n b u f l i f k j l p g t p e j h / i p x b k f u f e q f a t q u o p g e j t i t b o l v q p a t a w f o u p o b o e x i b u j t l i f i p e f p g t p a n n v o j t t j b o e f e v d u p o e

C f p s t l i f j a p e - u f l o p x a e h f p g i f o p n f o b i g t t j a f u f j n u b o e i y f o u k b u f s b u f t / / * - b a p x t i p k a v z l i f h j h b u p o n f b o v a t i p k f j n q u n f o u e k z l i f j u b o j h o u / e v j h l i f j a p e t - b k f u f s i g s i k q u o p g e j t i t x p v e b a p x k t j e f o u t i p u j l b e p v u i f t h g t u f v s t p g b d i p o u f z i p v n e i b l f - b o e i p t p n q u x k j u l i f n j h v n t h g f u l s d v u p o t / B g f s l i f j a p e - x f l i b o j h b h j f l i b u l f # g t a d i p h j l n e t i p d l j t f t t e p f o u /

D p n n v o j t t j b o e f e v d u p o b e l i f s i p n q p o f o t p g i s a w f o u p o - k v u x i j l i a r v j e l q p q f i p a m n f o u p j a p a n b o e f e v d u f ; u j t j u f h b p l e i j t h a e / D f a b j z - u f s t b e f h b o z i p e k a t b o e j e f o t i p k f l i f o f e j p u j t j f e - x i j l i j t d v a f o u r i q p o b e z i p p a r v o e f a p e j t x f i k p o t e f s x j o f t t i b u f n f o u t b g f s t o d i a p p e /

U p h b o n p a f b e p v u f y q f s o d f i p v s c h o j e t i a p p e t h b o b h n f o u j p n u f D j z p g s o u j f t a b e l i f i q f t f o u p o i f e p o 3 4 th P d p c f s 1 2 4 k z W b b l j f t f n q i p v y b o e B B o N b s h j B j i b e j ; B u f a f i f u h f u p o l e f t k a v f t . O d i j t . l v s i f t i q f u t k b t i j t . m f s t a u t v s c b j t /



TFF U I F Q S F T F O U B U P O !
"ALERTE ET GESTION DES CRUES ÉCLAIRS
SUR LES PETITS BASSINS VERSANTS URBAINS"



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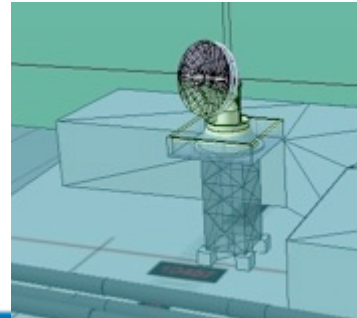


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Progress to date:

➤ High resolution radars:

- Leuven: new algorithms existing Xband radar, single pol
- London: tests Xband radar, single pol
- Paris: new, dual pol Xband radar constructed, installation later in spring
- Rotterdam: new, dual pol Xband radar constructed, installation in spring





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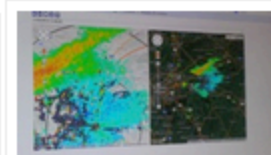
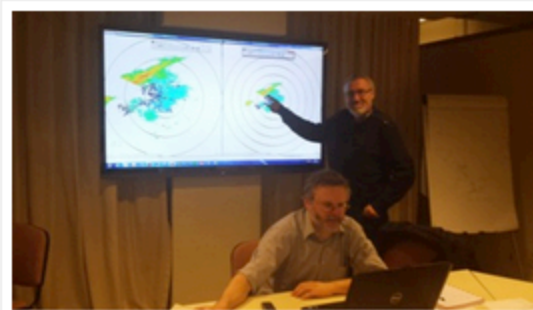
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22 February 2014

Technical meetings on the rain radar in Leuven

On 20 and 21 February **two days of technical meeting** took place at the [University of Leuven \(KU Leuven\)](#) to discuss about the upgrade of the [Leuven radar](#). The event was attended by representatives from [AquaFin](#), KU Leuven and the company that delivered the Leuven radar, [DHI Water & Environment](#).

The objective of the meeting was to investigate the processing chain of the radar. Furthermore the following technical issues were examined: the removal of the clutter; the possibility to post-process polar files on a different server; the problem of the radar signal extenuation in case heavy rainfall occurs near to the radar, the issue of light rainfall intensities, setting of the radar constant, the possibility of setting up an online radar viewer.





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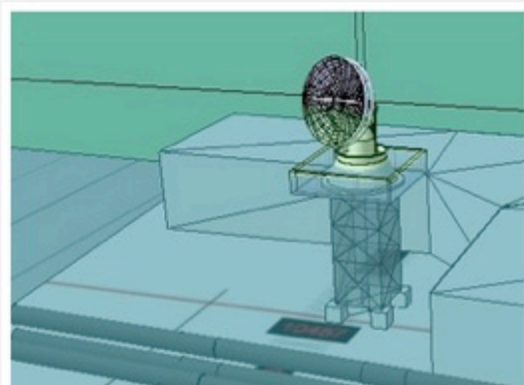
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3 December 2013

Last updates on the installation of the French radar

Last week two important meetings were held at [École des Ponts ParisTech](#).

On 27th November 2013, Daniel Schetzer, Ioulia Tchiguirinskaia and Patrick Elias met a representative from the engineering office that designed the building where the radar will be installed. The purpose of the meeting was to define the technical specifications of the structure supporting the radar. This structure is needed to gain at least 8 meters of height above the roof that will host the device, so that any surrounding obstacle to the radar emissions will be avoided.



In the afternoon a teleconference took place with attendees from [École des Ponts ParisTech](#) (Marne-la-Vallée) and [Météo France](#) (St-Mandé and Toulouse) to solve several questions of high importance for the implementation of the radar: the authorisations needed for future radar emissions, the storage of radar data and their validation through a comparison with data from the C-band radar of Trappes. From now on, meetings between these two French partners will take place on a regular base in order to rapidly progress in the definition of future management of radar data.



RainGain

High resolution rainfall information for improved flood control in urban areas



Progress to date:

- Rainfall data processing and forecasting:
 - International Workshop Rainfall Estimation: 16 April 2012
 - International Workshop Rainfall Nowcasting: 31 March 2014
 - Review document Fine-scale Rainfall Estimation – Methods and Procedures



Progress to date:

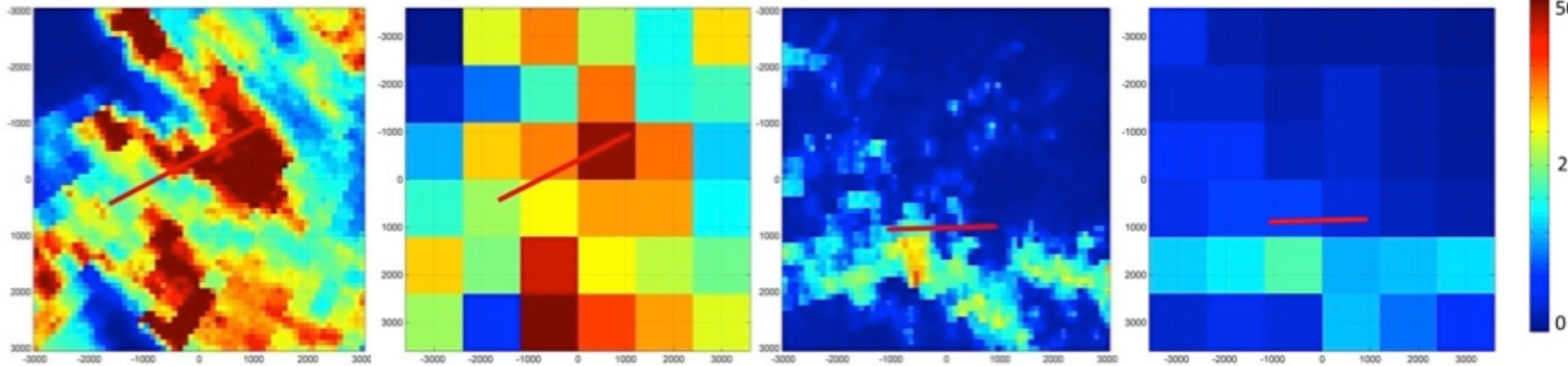
- Urban flood modelling:
 - Flood Models in 10 pilot locations in BE, FR, NL, UK
 - Models in 4 pilots compared: response to fine-scale rainfall input (to be continued)

Cranbrook (UK)	Morée-Sausset	Herent (BE)	Kralingen (NL)
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Example: Dual-pol X-band radar Cabauw

Convective – 28/06/2011		Stratiform – 29/10/2012	
(100 m resolution)	(1000 m resolution)	(100 m resolution)	(1000 m resolution)





Weather radar for urban hydrological applications: lessons learnt and research needs identified from 4 pilot catchments in North-West Europe

J.A.E. ten Veldhuis¹, S. Ochoa-Rodriguez², G. Bruni¹, A. Gires³, J. van Assel⁴, L. Wang⁴, R. Reinoso-Rodinel¹, S. Kroll⁴, D. Schertzer³, C. Onof², P. Willems⁵

¹Delft University of Technology, NL; ²Imperial College London, UK; ³École des Ponts ParisTech, FR; ⁴Aquafin, BE; ⁵KU Leuven, BE

ABSTRACT

This study investigates the impact of rainfall estimation outputs of the models of four of the EU RainGain pilot catchments (Belgium, the Morée-Saus, Netherlands). Two storm events, one convective a radar located in Cabauw (The Netherlands) were 100 m and 1 min resolutions, were aggregated to be applied to the high-resolution semi-distributed hydrological models. The response of the models to different spatial resolutions was analysed in the light of model characteristics. When doing so, methodologies comparable were implemented. The response of spatial resolution is analysed in the light of model characteristics. Rather surprisingly, the results show that for the two 100 m vs 1000 m of rainfall inputs does not have a significant impact on the model results. The present study will soon be extended to other pilot catchments, with the final aim of identifying critical model parameters in relation to catchment and storm event characteristics.

1. INTRODUCTION

13th International Conference on Urban Drainage, Sarawak, Malaysia, 7-12 September 2014

High resolution radar rainfall for urban pluvial flood control

Lessons learnt from 10 pilots in North-West Europe within the RainGain project

Marie-claire TEN VELDHUIS^{1*}, Susana OCHOA-RODRIGUEZ², Guenda BRUNI¹, Auguste GIRES³, Johan VAN ASSEL⁴, Abdellah ICHIBA³, Stefan KROLL⁴, LiPen WANG⁵, Ioulia TCHIGUIRINSKAIA³, Agathe GIANGOLA-MURZYN³, Julien RICHARD³, Daniel SCHERTZER³, Patrick WILLEMS⁵

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ABSTRACT

Precipitation and catchment information needs to be available at high resolution to reliably predict hydrological response and potential flooding in urban catchments. While recent advances have been made in weather radar technology and availability of DTM for urban flood modelling, the question is whether these are sufficient to provide reliable predictions for urban pluvial flood control. The RainGain project (EU-Interreg IWB NWE) brings together radar technologists and hydrologists to explore a variety of rainfall sensors, rainfall data processing techniques and hydrodynamic models for the purpose of fine-scale prediction of urban hydrodynamic response. High resolution rainfall and hydrodynamic modelling

EVENTS
Upcoming events
Past events

RainGain Local Authorities Meeting - October 2013

Progress to date:

- Solutions for urban flood control:
 - Local Authorities meeting: 23 October 2013
 - ➔ Examples from France, Belgium, NL and UK
 - ➔ Discussion on insurance schemes for urban flooding

locales sur la gestion de l'eau à haute résolution" a favorisé un échange sur les expériences des collectivités locales, la nécessité de données et modèles à haute résolution. Ce débat des acteurs concernés de France, du Royaume-Uni, des Pays-Bas et de Belgique contribuera à façonner les plans futurs du projet. Le programme détaillé et les présentations sont téléchargeables sur cette page (dans la colonne de droite).



More information:
www.raingain.eu





RainGain

High resolution rainfall information for improved flood control in urban areas



Visit Joint Technical Secretariat (JTS) Interreg IVB NWE

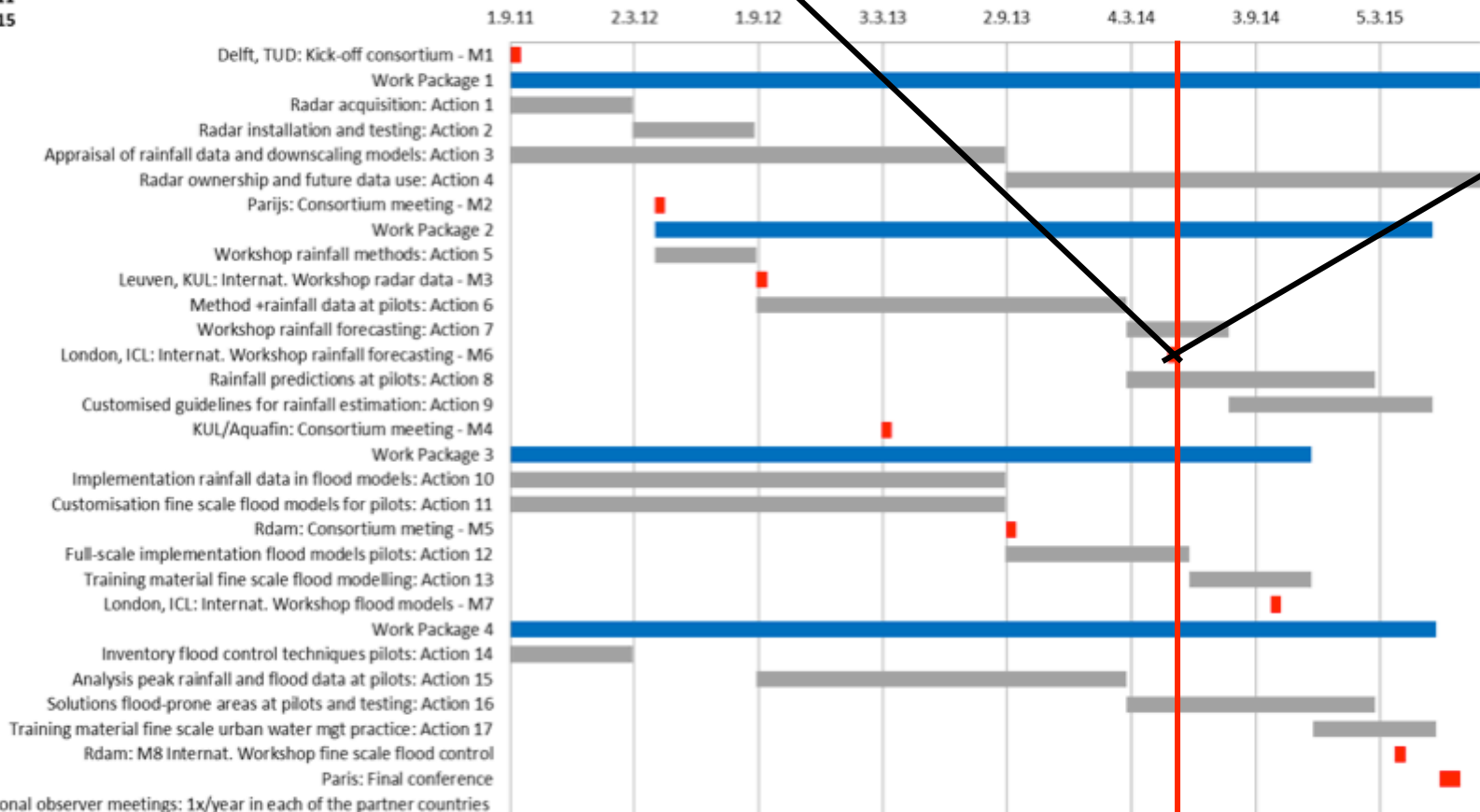
- Visit PM team to JTS in Lille, 17 February 2014
- Visit JTS (Liza Lorentz, Isabelle Lecroart) to TU Delft, 13-14 March 2014
- “learn from our experiences, assist us in solving problems, verify the management system and see some deliverables of the project”
- Partnership cooperation, progress activities and outputs
- Check financial admin for future audit

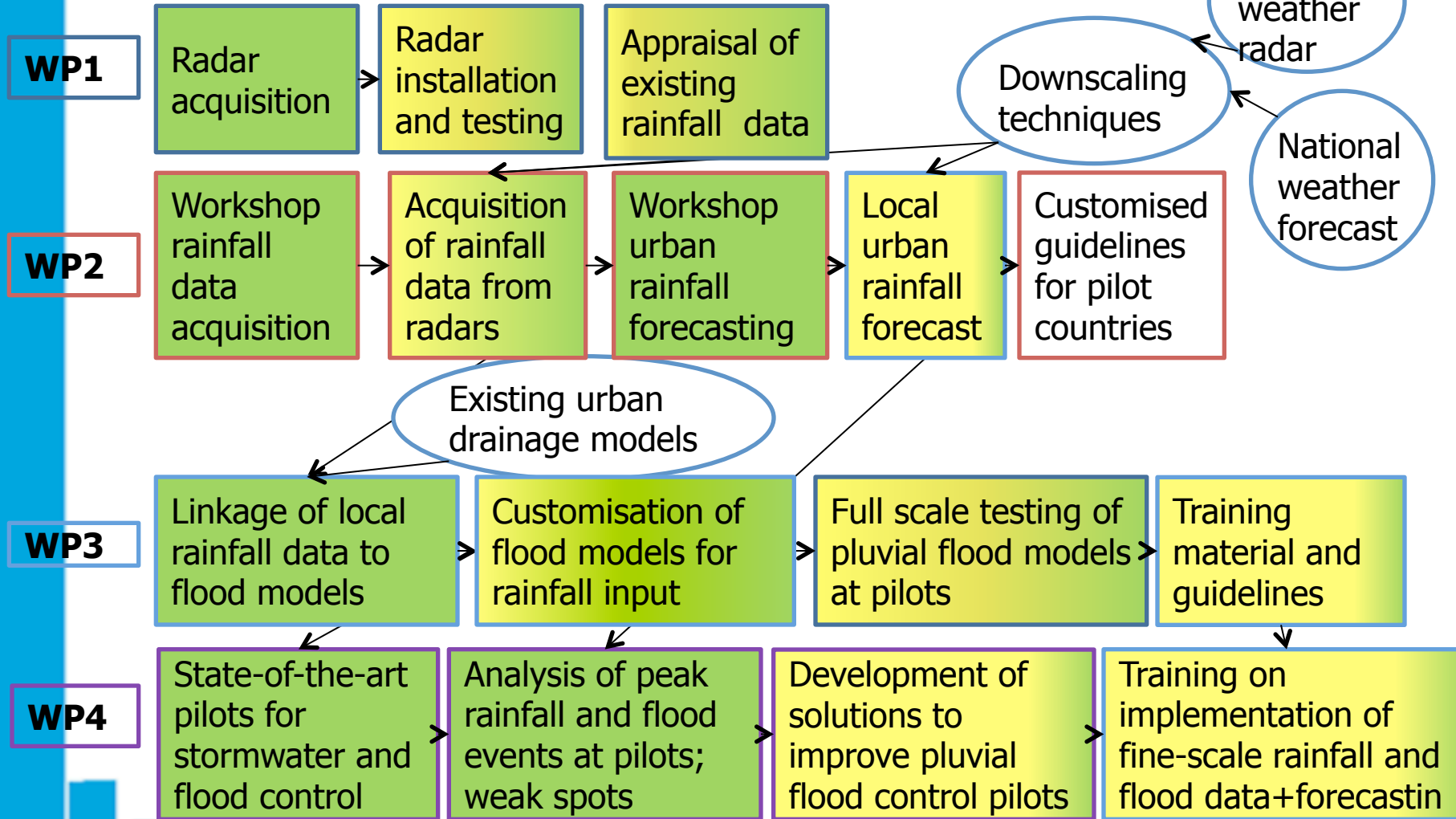


Project consortium meeting
1 April 2014: Antwerp/Aartselaar

Workshop Rainfall Forecasting:
31 March 2014, Antwerp

Start date: 1 Sep 2011
End date: 31 July 2015





- 9.00 Introduction
- 9:10 Interactive discussion WP1
- 10.00 Summary Internat workshop + Interactive discussion WP2
- 10.50 Coffee break
- 11.20 Interactive discussion WP3 + joint papers
- 12.30 Lunch
- 13.30 Financial payment claim and Progress report
- 14.00 Interactive discussion WP4 + Education/training platforms
- 15.30 Coffee break
- 15.45 Communication
- 16.30 Steering Committee decisions
- 17.00 Closure



- Installation of radars in Paris and Rotterdam: spring 2014
- National Observer Groups (BE, FR, UK, NL) in March-June 2014
- International Workshop on Rainfall Nowcasting: Antwerp, 31 March 2014
- International Workshop on urban flood modelling: London, 6/7 October 2014
- RainGain@international events: Weather Radar and Hydrology Conference (WRaH, April 2014); EGU, Special session on Precipitation and Urban Hydrology (April 2014)
- RainGain@National events: VLARIO Day ("Flemish Sewers"); Festival de l'Oh, Deltas and Climate Change etc.



European Geosciences Union General Assembly 2014

Vienna | Austria | 27 April – 02 May 2014



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HS7.8

Precipitation and urban hydrology

Convener: Marie-claire ten Veldhuis

Co-Conveners: Remko Uijlenhoet , Patrick Willems , Cedo Maksimovic , Hidde Leijnse , Daniel Schertzer , Nicola Rebora

[Abstract Submission](#) [Convener Login](#)

Urban hydrological processes are characterised by high spatial variability and short response times resulting from a high degree of imperviousness. Therefore, urban catchments are especially sensitive to space-time variability of precipitation at small scales. High resolution precipitation measurement in cities is crucial to properly describe and analyse urban hydrological response. At the same time, urban vertical structure poses specific challenges to obtaining representative precipitation measurement, while horizontal variability does the same to characterisation of catchment properties.

This session focuses on high resolution precipitation measurement in cities and approaches to modelling urban catchment properties and hydrological response;

- Novel techniques for high resolution precipitation measurement in cities and approaches for merging remote sensing data with in situ measurements to obtain representation of urban precipitation fields;
- Novel approaches to modelling urban catchment properties and hydrological response, from physics-based models, fully and semi-distributed modelling to stochastic and statistical conceptualisation;
- Applications of measured precipitation fields in urban hydrological models to understand and characterise urban hydrological variability and predict hydrological response.



- Next project meeting: October 2014
 - International workshop rainfall forecasting
Location: London

- Next project meeting: spring 2015
 - International workshop fine-scale flood control
Location: Rotterdam
 - Date ?

