

# RiverCare Newsletter

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## Preface

Twice a year during the RiverCare program duration (2015-2019) you will receive a newsletter issue. The December issue is the second edition of our newsletter. With this issue we not only wish you a happy new year. We also give you an overview of our last activities. Every issue is prepared by the RiverCare researchers to keep you informed of interesting progress of our work. In addition, we also report on relevant events of our project partners.

We hope you enjoy this issue and collaborate and contribute to our 2016 editions!

## RiverCare: One year after, four years to go



Figure 1. RiverCare researchers and supervisors

RiverCare consists of 15 PhD & 3 Postdoc positions (**Figure 1**). Researchers are divided into subprojects ranging from Interventions (Project A through D), Integrated Effects (Project E), Management (Project F), Communication (Project G) and Application (Project H). Most researchers have focused the aims of the projects within their research proposals (See **Table 1**). Researchers have introduced their proposals to their user committees, which comprise the organizations that will directly benefit from the research. Within those committees, discussions have been initiated about the aim and value of RiverCare contributions.

Table 1. List of PhD and PosDocs (\*) research proposals

### Project A: Optimizing longitudinal training dam design

Subproject A1. Timo de Ruijsscher	"Hydraulics and morphodynamics of longitudinal training dams"
Subproject A2. Frank Collas	"Ecology of longitudinal training dams"

### Project B: Side channels and erosion of natural banks

Subproject B1. Pepijn van Denderen	"On the dynamics of side channels as rehabilitation measure: linking theory and practice"
Subproject B2. Gonzalo Duró	"Natural bank erosion processes"

### Project C: Implications of novel stream restoration approaches

Subproject C1. Jasper Candel	"Morphodynamics of regional river systems"
Subproject C2 Tjitske Geertsema	"Impacts of water retention on lowland river hydraulics"

### Project D: Nourishment, dredging and floodplain monitoring

Subproject D1. Victor Chavarrias	"Improved prediction of sediment management measures"
Subproject D2. Liselot Arkesteijn	"Numerical modelling of the long term effects of sediment management measures"
Subproject D3. Wimala van Iersel	"Ecotope mapping using remote sensing methods on different spacial scales"

### Project E: Ecosystem services of floodplain rehabilitation

Subproject E1. Valesca Harezlak	"Floodplain rehabilitation"
Subproject E2. Remon Koopman	"Quantifying the effects of river management measures on the spacial temporal development of riverine ecosystems services"

### Project F: River governance: uncertainties, participation and rehabilitation

Subproject F1. Koen Berends	"Improving river management by estimating model uncertainty"
Subproject F2. Laura Verbrugge*	"Participation and civic engagement in monitoring and evaluation of innovative (engineering) interventions"
Subproject F3. Jan Fliervoet	"Collaboration between stakeholders to realize innovative management strategies"

### Project G: Communication program outcome

Subproject G1. Robert Jan den Haan	"A serious gaming environment to support collaborative decision-making in river management"
Subproject G2. Juliette Cortes*	"The potential of web-collaborative platforms to support knowledge exchange in river management"

### Project H: Self supporting hydrosystems and valorisation

Subproject H1. Menno Straatsma*	"Optimizing river management"
Subproject H2. Swinda Pfau	"Sustainable use of riverine residual biomass"
Subproject H2. Astrid Bout	"Value creation in maintenance of river systems, new pathways leading towards 'self supporting river systems'"
Subproject H3. Nick Leung	"Wealthy Waal: export possibilities"

## Some RiverCare facts

- Wimala (Subproject E1) has done five field campaigns already and she has just one campaign left!
- Jasper (Subproject C2) bought a hand auger that enables sediment sampling up to a depth of 9 meters without exposing the sediment to light.
- Timo & Frank (Subprojects A1 & A2) bought a boat for measuring the effects of the newly constructed longitudinal training dams.
- Valesca & Koen (Subprojects E1 & F1) travelled to South Korea as part of a RiverCare collaboration with a local research organization.

## First RiverCare Synergies

### The RiverCare BBQ

By Jasper Candel

One of the ways in which collaboration within the RiverCare program was stimulated this year was through the fantastic summertime BBQ, organized for, and by, all the RiverCare researchers (Figure 2). The BBQ took place in a typical RiverCare environment; the former floodplain of the Neder-Rhine river in Wageningen, where heavy clay deposits can be found which reminded us of the past hydrological events when Rhine river did not have its man-made dikes yet.

“A perfect soil to exchange ideas on, in a very "gezellige" setting!”



Figure 2. BBQ event on August 28th in Wageningen



Figure 3. Wimala and Valesca (D3 and E3 subprojects) on a fieldwork day

### Linking bird's-eye view to plant perspective

By Wimala van Iersel and Valesca Harezlak

From a bird's-eye view, Wimala is developing labor-extensive methods to monitor and classify floodplain vegetation (Subproject D3). From a plant perspective, Valesca is developing a plant trait model based on specific plant characteristics (Subproject E1).

The observed vegetation patterns captured by Wimala using the remote sensing techniques aid Valesca for the validation of her trait-based model (Figure 3). On the other hand, Valesca's trait-based model gives insight into the processes shaping the vegetation patterns which Wimala observes from above.

“Both subprojects require fieldwork about floodplain vegetation, so researchers help each other to acquire data”

### Citizens' help with collecting ecological monitoring data (or 1+1 = 2)

By Laura Verbrugge and Frank Collas

As any ecologist knows, Frank does not have enough time nor enough resources to collect all the monitoring data near the longitudinal training dams that he wishes (Subproject A2).

As a socio-environmental scientist Laura is searching for case studies which provide a good opportunity to study people's perceptions and thoughts of changes in landscapes (Subproject F2).

As the ultimate proof that 1+1 = 2, we propose that the involvement of citizens in monitoring ecological effects, as is the case in RiverCare, provides valuable data for two researchers working in very different disciplines.

### More of the truth through the collaboration

By Menno Straatsma

“The truth, the whole truth, and nothing but the truth” is part of the well known sworn testimony, but it also applies to science. We, as scientists, setting the boundaries of understanding at the edge of our capacity for completeness and depth. Collaboration and integration is the way forward to position ourselves within an ever expanding picture.

RiverScape, Menno's integration model, aims to integrate the fundamental scientific findings (Projects A-D) into a comprehensive decision support system (Subproject H1) to answer significant questions within the societal debate.

“The whole truth would be utopic, for now, we can settle true bit partial and more truth by collaboration”

# Second RiverCare Day

DEC 3th/2015

Delft, TUDelft University of Technology



Figure 4. RiverCare Day in TUDelft

## International case studies: Canal del Dique and Rio Cauca (Colombia)

By Liselot Arkesteijn, Victor Chavarrias and Gonzalo Duro

Eisse Wijma and Marcela Busneli of Royal Haskoning DHV, and Klaas de Groot of Arcadis provided the RiverCare day attendants with two very interesting case studies: the Canal del Dique and the Rio Cauca respectively. After a brief introduction into both projects, participants were split into two groups, to allow everyone to contribute to the case study most related to their research field.



Figure 5. RiverCare researchers working on the Canal del Dique and Rio Cauca respectively



The RiverCare days are held twice a year with the objective of sharing and exchanging knowledge; giving and receiving updates on the various RiverCare projects; and also to just get to know each other better in a somewhat informal setting. At the first RiverCare day held in January 2015, the focus was on introducing the researchers and their research topics, and identifying links between the projects.

Each edition is organized by the researchers and staff of a different university, and for this second day the organization was done by TU Delft. In total 28 people attended (Figure 4), among which almost all researchers in the project and some of their supervisors. At this second day the aim was to involve some of the users and work together on specific case studies. In addition, an activity involving group discussions about the different perspectives and expectations of the project G of RiverCare was held. Project G focuses on the communication of the programme outcomes.

The Canal del Dique project involved many different yet interlinked aspects of a river system. Some of the factors that were considered during the debate sessions were urban areas, crop lands, navigation needs and the ecology, which is threatened by sedimentation and heavy metals at the Canal del Dique valley and estuary. Subgroups were organized in order to develop strategies aimed at preserving all current river functions and control the threats to ecology (Figure 5 left).

The Rio Cauca case study presented a different challenge. A new green river is being promoted for the city of Cali and Arcadis studied the possibilities to implement some of the successful aspects of the Room for the River project within this river system. The green river project aims at recovering the floodplains along the Rio Cauca in the city of Cali. The task given to the researchers was to propose an action plan to identify the vision, aim and responsibilities of government, public officers, civilians and business to actively contribute in the sustainable implementation of a green river for the Rio Cauca (Figure 5 right).

After the debates, the ideas were presented to the whole group and both case study leaders evaluated the results. It was an interesting experience. All in all, a nice opportunity to discuss river engineering problems in a multidisciplinary group.

## User requirements: RiverCare communication tools (Project G)

By Robert-Jan den Haan and Juliette Cortes

What should the gaming environment (subproject G1) and web collaborative platform (subproject G2) do for its users? To research this, Robert Jan and Juliette (subprojects G1 and G2 respectively) launched an initial questionnaire study among all RiverCare staff (researchers as well as supervisors).

This questionnaire aimed to uncover past experiences of the RiverCare staff with the serious gaming and web collaborative platforms and what they found useful about them. Furthermore, the questionnaire mapped what types of data the researchers are working with and how they are currently communicating with end-users.

In the questionnaire, a vision was proposed on both the gaming environment and web collaborative platform that will be developed. The questionnaire respondents were asked to rate this vision and if they wanted to change or add something to this vision.

During the second half of the RiverCare day, researchers presented some of the results of the questionnaires to the RiverCare participants (Figure 6 up). In this session, the RiverCare participants discussed in subgroups how they interpreted the the vision and characteristics of the tools that were introduced in the questionnaire (Figure 6 bottom). Based on this interpretation, participants provided some ideas and remarks for next design stages that Robert-Jan and Juliette are currently analyzing.



Figure 6. Introduction of questionnaire results and working subgroups for discussion

# NCR days 2015

OCT 1 & 2/2015,  
Radboud University in Nijmegen

By Swinda Pfau

The 2015 edition of the annual meeting of the Netherlands Centre for River studies (NCR) was held at the Radboud University in Nijmegen on the 1st and 2nd of October 2015. The two-day conference took place roughly one year after the start of the RiverCare program; a research initiative which was made possible as result of the close cooperation of NCR partners.

The NCR days 2015 hosted 75 enthusiastic participants (**Figure 7 left-up**). During the two days a variety of different speakers from universities, knowledge institutes and engineering firms presented their work. 8 of the 25 oral presentations and 9 of the 13 poster presentations were (co-) authored by

RiverCare researchers or supervisors. As is customary at the NCR days, all participants were asked to fill out evaluation forms judging the different posters and presentations. At the drinks on the second day, the winners of this competition were revealed. In recognition of their great effort they received a beautiful certificate and prize money.

- **Gonzalo Duró (Figure 8 up)** won the prize for the best poster with his contribution about '*Research on natural bank erosion processes*'.

- **Mijke van Oorschot (Figure 8 bottom)** won with her oral presentation on '*Emergence of different river dynamics through changing vegetation patterns*'.

NCR days are not only about the presentations, they are also a great opportunity to catch up with peers and



Figure 8. Winners of the competition.

have fun. This year, we spent the evening at Huize Heyendaal on the Radboud University, where we enjoyed a delicious dinner buffet and some drinks.

Before everybody could indulge in the desert buffet however, they were asked to make teams and join a quiz full of river-related questions on their mobile phones (**Figure 7 up-right**). After all outdated phones were switched for smarter smart-phones, eight teams participated. In the end a team with RiverCare component won: **Koen Berends, Menno Straatsma, Astrid Bout and Jord Warmink**. The prize was a good one (**Figure 7 down-right**): they got to sing the Western song "Red River Valley", accompanied by Rob Leuven and Hans Middelkoop on the piano.



Figure 7. Visual impression of the NCR days

“For a further impression about the NCR days, check the 78(!) pictures on the website, where you can also download the book of abstracts”



## News update

### LATEST PUBLICATIONS

Besides our contributions to the NCR days, some of the latest publications of our program are:

- Fliervoet et al. (2015), *Analysing collaborative governance through social network analysis: A case study of river management along the Waal River in The Netherlands*. Environmental Management (in press)

- Koopman et al. (2015), *How to quantify spatial temporal development of riverine ecosystem services*. I.S. rivers – integrative sciences and sustainable development of rivers, June 24, 2015, Lyon (France).

- Collas et al. (2015), *Using species sensitivity distributions for assessing effects of river management measures on native and non-native mollusc assemblages*. 2nd international meeting on biology and conservation of freshwater bivalves, Buffalo (USA), October 6, 2015.

- Pfau, SF (2015). *Residual Biomass - Silver Bullet to ensure a Sustainable Bioeconomy?*. The European Conference on Sustainability, Energy & the Environment 2015: Official Conference Proceedings. 295-312.

### COMING EVENTS

- 12 January 2016: **1st Christiaan Brunings Lecture on morphodynamics and sedimentology in estuaries**, Utrecht (The Netherlands)

- 9–10 February 2016: **Netherlands Annual Ecology Meeting**, Lunteren (The Netherlands)

- 17–18 March 2016: **NCK days 2016**, Brouwersdam in Zeeland, (The Netherlands)

- 17–22 April 2016: **EGU 2016**, Vienna, (Austria)

- 12-15 July 2016: **River Flow 2016**, St Louis, Mo (USA)

### NCR WEBSITE

The **NCR website** is currently used to communicate RiverCare activities. Links to the outputs of the RiverCare program will be made available on this website.

### NEXT ISSUE (JUN/2016):

Please fill in the survey to give us your feedback about this issue.

In case you want to suggest a contribution for the next issue, here is the contact email of the Editorial board:

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