

Interactive comment on “Coupling urban drainage–wastewater systems and electric smart grids during dry periods: a gain/loss framework using the relative economic value with ensemble flow forecasts to predict the switch” by Vianney Courdent et al.

Vianney Courdent et al.

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Dear reviewer,

We greatly appreciate the review and acknowledge that the comments and suggestions will lead to an improved paper. Our reply to the general comments:

I can find little to fault the paper. My main query would be that I could find no details or reference as to how the system is operated during the 'optimised' phase apart from

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relatively vague statements. While the paper is interesting without this, it does limit the understanding / reproducibility. I can see that the omission of this may be due to commercial reasons given the authors' affiliations, but it would be useful to explicitly state this.[1]

[1] The aim of this article is to provide a framework using EPS NWP to predict when a management switch to IUWDS is beneficial considering the uncertainty of the weather forecast. The control strategy needed for the optimisation scheme is developed in another manuscript by R. Halvgaard et al. that is currently in review (see below).

R. Halvgaard, L. Vezzaro, P. S. Mikkelsen, M. Grum, T. Munk-Nielsen, P. Tychsen, H. Madsen: "Intergrated Model Predictive Control of Wastewater Treatment Plants and Sewer Systems in a Smart Grid" (in Review Process).

It would also be useful to understand more details of the calibration of the hydrological model even if just a few short sentences. [2]

[2] This comment is similar to the general comment [1] and the specific comment [10] from the first reviewer.

Section 2.3 (P5 and 6) will be split in 2, the first on the study case which will be expanded with more data on the WWTP and the second on the hydrological model which will be further developed. We will also explain with more clarity that further information on the hydrological model is available in (Courdent et al., 2016).

While clearly outside the scope of this paper, it would be of great interest to see any results from a real world implementation of the proposed framework should it be implemented! [3]

[3] We agree that further information on results and performance would be appreciated and we are working towards it. Indeed, two large pipes will be constructed just before the inlet to the Damhusåen WWTP with the primary purpose to reduce CSO to cope with new regulations. Those 2 pipes can contained a volume corresponding to one day

of dry weather flow and would nicely fit the concept developed in this paper and in R. Halvgaard et al. paper.

We will make changes to the paper that accommodate the technical comments by the reviewer, including careful proofreading. We would like to express our sincere thanks to the reviewers for their constructive comments and identification of areas in the manuscript which needed clarification.

On behalf of all the authors,

Vianney Courdent

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-522, 2016.

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