

## ***Interactive comment on “Coupling urban event-based and catchment continuous modelling for combined sewer overflow river impact assessment” by I. Andrés-Doménech et al.***

### **Anonymous Referee #1**

Received and published: 24 July 2010

The paper presents an application of a holistic approach to a real case study. Specifically, the authors assess the effect of CSOs on the RWB quality state. A detailed urban drainage model was calibrated on the basis of real data in order to derive the CSOs distributions in terms of frequency, volume and intensity. A hydrologic model was also employed in order to reproduce the behaviour of the river and assess the effect of the CSOs on the river. Synthetic rainfall events were also considered in order to evaluate the most probable state of the RWB. I find this study relevant for the field of urban drainage modelling. However I have some concerns with the manuscript:

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M1 The introduction should be focus much more on previous studies regarding integrated urban drainage. Also the results should be compared with previous studies already carried out and published in the technical literature.

M2 The English should be improved especially with regards to the technical terms that regards urban drainage!

M3 The time scales adopted for the different employed models and the downscaling and upscaling process should be better explained since they can be a crucial parts of the research.

M4 The case study has to be better described expecially with regards to the WWTP that seems presents BUT it seems to be neglected.

M5 The urban drainage model calibration is lacking! Authors should reports more results and evidence that the models employed have been calibrated in order to support their results. The calibration of the quality submodel is not described! What parameters have been calibrated and what data were available!

In addition to above major comments, please find below other remarks:

(1) PAG. 3282 LN. 2 please refrease “protection” (2) pag 3282 In 5 “CSO cannot be accepted” rephrase (3) pag. 3282 In. 8 “..their impact” please correct the impact is on the RWB! (4) pag. 3282 In. 26 and 3283 In 27. the aim is laso to protect population against diseases! (5) pag. 3283 In 1 “...During dry weather, ...” this is true for Combined sewer! Please specify. (6)pag. 3283 In. 22 please mention also other mitigation measures such as Best mangagemnet practices see for instance Freni, G., Mannina, G. and Viviani, G. (2010) Urban stormwater quality management: centralized versus source control. J. of Water Resources Planning and Management – Asce. Volume 136(2), 268-278. (7) pag. 3284 In 6-7 I disagree with this statement! Previous studies have demonstrated that frequency and spills volumes cannot be adequate for decribing the RWB quality state according tpo the WFD. See for instance:

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Engelhard, C., De Toffol, S. & Rauch, W. 2008 Suitability of CSO performance indicators for compliance with ambient water quality targets. *Urban Water J.* 5(1), 43–49.

Freni, G., Mannina, G. and Viviani, G. (2010) Emission standards versus immission standards for assessing the impact of urban drainage on ephemeral receiving water bodies. *Water Science & Technology*, 61(6), 1617-1629. (8) pag. 3284 In 14 define WWTP (9) pag. 3284 Ins 27-29 please clarify! (10) pag. 3285 Ins 20 the effect of the CSO is of the order of minutes how ca the author reproduce the effect of shock load with this time resolution! Please comment (11) pag. 3287 In. 1 what about the WWTP?? (12)pag. 3288 Ins. 25-26 please clarify the reason for that is very unusual! (13) pag. 3289 Ins 8-12 response time for urban catchment can be of the order of minutes! See the following reference about the resolutiontime effect.

Freni, G. Mannina, G. and Viviani, G. (2010) The influence of rainfall time resolution for urban water quality modelling. *Water Science & Technology*, 61(9), 2381-2390.

(14) pag. 3289 In 27 please provide some details about how has been assessed the value of 14 h! (15) pag. 3291 please define the terms of eq. 1 and in the following equatiuons. (16) pag 3292 In 20-21 plese explain the meaning of the resported values! (17) pag 3292 In 26-28 please add some details about the resolution of the rainfall (5 minutes?) and how do you have used such resolution to obtain a resolution time of the output of 1 minute! (18) pag. 3293 Ins 2 please provide details about the value of 10-4 m<sup>3</sup>/s. Why did you consider such value and how did you have assessed it? (19) plese add reference to eq. 6-7 (20) pag. 3298 In. 14 please add reference to the adopted model! (21) pag. 3298 please explain how do you have calibrated the quality submodel of the urban drainage model!

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 3281, 2010.

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