

Interactive comment on “Stochastic rainfall analysis for storm tank performance evaluation” by I. Andrés-Doménech et al.

Anonymous Referee #2

Received and published: 11 April 2010

This paper presented an interesting and new stochastic approach to stormwater tank design and performance verification. The paper is mostly oriented on the description of the rainfall model and on its reliability. This is acceptable considering that the novelty of the paper relies on that approach but I would like to suggest some point to be better discussed in order to make the paper clearer to urban drainage planners and designers:

1) Case study description: I assume that the analyzed tank is existing. More details on the design scheme (in line or off-line, catch basin or through flow, centralized or source control, etc.), real dimension, etc. would be valuable. past "urban drainage" literature showed that the system configuration is important to understand your final graph (Figure 8) if you are not only interested in the adaptation of the two compared

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methods. Just to give you an example of the information that I would like to see in the description, here I report some references from the "urban drainage" field:

Sieker, H., and Klein, M. (1998). "Best management practices for stormwater-runoff with alternative methods in a large urban catchment in Berlin, Germany." *Water Sci. Technol.*, 38(10), 91–97. Freni, G., Mannina, G., Viviani, G. (2010) Urban Storm-Water Quality Management: Centralized versus Source Control. *Journal Of Water Resources Planning And Management-Asce* (2010) vol. 136 (2) pp. 268-278 Mays, L. (2001). *Stormwater collection systems design handbook*, McGraw-Hill, New York. Vaes, G., and Berlamont, J. (2004). "Source control design using continuous long term modeling." *Proc., 6th Int. Conf. on Urban Drainage Modeling (UDM'04)*, Institute for Urban Water Management, Dresden, 599–608. Lau, K. T., Butler, D., and Schutze, M. (2002). "Is combined sewer overflow spill frequency/volume a good indicator of receiving water quality impact?" *Urban Water*, 4(2), 181–189.

2) Rainfall data and stochastic model: Rainfall data were available with a temporal resolution of 5 minutes. If I understood well, the stochastic model analyses each rainfall event as a single rectangular pulse. If my understanding is correct, the final results show that the availability of high resolution rainfall data is not relevant if you look at tank design. This is probably an interesting conclusion if you think that usually high resolution rainfall data are available for few years while several urban areas were monitored at hourly scale for decades.

3) The rainfall-runoff model: I would like the Authors to better state if the CN model was distributed over the catchment or lumped (only making differences between the four land types). Also model time step should be clearly stated. Such comments also apply to the detailed urban drainage model used for comparison in the results discussion

4) Tank overflow model: The authors state that Q_v was set to zero during the runoff event. The emptying time should be then clearly stated because, in the real world, it may interact with the inter-event time. What happens if the tank is partially full at the

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beginning of a runoff event?

5) Detailed INFOWORKS model: the model is complex and well documented in literature but the application to PioXII catchment should be better described or referred to appropriate literature. How many sub-catchments, nodes, pipes were present in the model? Calibrated parameters? was it calibrated in a lumped or distributed way? Which data were used for this scope?

6) Does the Valencia municipality have data about tank inflow, outflow or levels for calibrating the models and verify the results?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 1849, 2010.