Hydrol. Earth Syst. Sci. Discuss.,
doi:10.5194/hess-2016-362-RC2, 2016

Hydrology and Earth System Sciences
Discussions
Open Access
EGU

Interactive comment on "Urban sewershed overflow analysis using super-resolution weather radar rainfall" *by* J. Y. Hyun et al.

Anonymous Referee #2

Received and published: 6 October 2016

The paper consists two parts, the authors first investigate different methodologies to translate reflectivity into intensity, which is not my expertise so I don't have specific comments regarding this part.

The second part is regarding the CSO analysis and there are several points unclear to me. 1. Could the authors define the "overflow depth"? Do the author mean the overflow water depth from CSO? or the runoff depth on the surface? If it is the casued overflow from CSO, it should be a volume divided by an area. How is the area defined? If it is the runoff depth on the surface, would "runoff depth" be more appropriate? However, the runoff depth is spatial varied and what is the location the authors are referring to? Also, the runoff depends on the terrain (slope, catchment area, etc.) and the drainage capacity, how did the author determine the depth? Also, in most cases, the overflow from CSO is unlikely to be linear relationship to rainfall depth when considering the

Printer-friendly version

Discussion paper

rainfall pattern, topography, catchment area and concentration time, drainage network and capacity. The ratio of "overflow depth" to "rainfall depth" is over-simplified and misleading.

2. The authors only discussed the relationship between the "rainfall depth" and "overflow depth" without considering the hydrology and hydraulics in the whole process. This is the major weakness of the paper. The authors said "a search to understand the contributing factors causing overflow events is warranted.", but the paper does not cover those critical contributing factors.

3. L352 The authors identified 95 rain events with coupled CSO occurrence in the sewershed. Is this a correct statement? Are those events selected according to EPA definition without considering CSO?

4. L370 Why it is not possible to determine the flow in sewer network and the overflow? Using sewer model can easily provide the answer. Otherwise, how did the authors get the overflow depth? If the rainfall-runoff index is a ratio of overflow depth to GAUGE rainfall depth, what's the point to estimate radar rainfall?

5. L441 How to determine the convective radar pixels and the total number of rain pixels? Are those only the pixels covering the sewershed? If yes, the sewershed is 13 ha and a radar pixel is about 5ha. So only up to 3 pixels are considered? If not, how will the rainfall outside the sewershed affect the flow in the sewershed?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-362, 2016.

Printer-friendly version

Discussion paper