

## ***Interactive comment on “Hydrodynamics of long-duration urban floods: experiments and numerical modelling” by A. Arrault et al.***

### **Anonymous Referee #2**

Received and published: 31 March 2016

The paper deals with flood propagation in urban areas. Authors performed laboratory experiments in a typical urban district, containing 7 streets along each direction (in total 49 intersections). In total, 16 tests were conducted (i.e. 16 inflow conditions). The authors apply a 2D shallow-water model to simulate the experimental set-up and investigate the role of roughness and turbulence model. They also discuss the up-scaling of the laboratory observations to the field. The topic of the paper is of interest for NNES readers. The paper is well structured and generally well-written. The laboratory experiments are new and complete the existing ones, although I regret that neither velocity nor flow depth in street intersections were measured, which would provide a nice assessment of the performance of numerical models. Many researchers have provided empirical equations giving the flow partition in street-intersections, but authors cannot use their laboratory measurements to assess some equations (which

C1

are actually useful when 1D models are used for simulating urban floods) because the experimental flow partition between is not available in-between all the intersections. The 2D numerical simulations and comparisons with the laboratory observations are sound. I particularly appreciated the discussion section. I would recommend acceptance of the paper with minor revisions. There are still some issues to be addressed by the authors. The most important are summarized in the document here enclosed

Please also note the supplement to this comment:

<http://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2016-10/nhess-2016-10-RC2-supplement.pdf>

---

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., doi:10.5194/nhess-2016-10, 2016.

C2