Interactive comment on "Dynamics of shallow wakes on gravel-bed floodplains: Data set from field experiments" *by* Oleksandra O. Shumilova et al.

Anonymous Referee #2

Received and published: 31 December 2020

Review of "Dynamics of shallow wakes on gravel-bed floodplains: Data set from field experiments" by Shumilova, O.O., Sukhodolov, A.N., Constantinescu, G.S., and MacVicar, B.J.

General Comments

The paper reports comprehensive field experiments and associated data sets of flow velocities, turbulence parameters, free-surface topography, and flow visualisations involving drone videos. The focus is on the identification of key features of shallow wakes behind the porous obstacles typical for fluvial environments such as floodplains, estuaries, and overland flows on the catchment slopes. The information on such shal-

low wakes and advanced capabilities for their simulations and predictions is critically important for fluvial hydraulics, morphodynamics, and eco-hydraulics. Practical applications are numerous as the shallow wakes significantly affect hydraulic resistance, mixing and transport of various substances (e.g., sediments, contaminants, and microplastics), habitat fragmentation and most flow quantities important for ecosystem functioning. Thus, the data provided in this paper will help make step changes in current practices related to river and catchment management. Indeed, the coverage of measured parameters, precise experimental set-ups and careful control of background conditions, relevant ranges of experimental scenarios, and the real-life scales of all configurations make these experiments an important steppingstone towards much improved knowledge and predictive capabilities. I must add that as an experimentalist I have been thoroughly impressed by the comprehensive approach, attention to detail, and scientific rigor of this work. It may serve as an excellent example to follow for others in relation to data reporting for a wider use by scientific community.

I found the paper to be very well written and helpfully illustrated with photos, sketches and data plots. The data sets at Zenodo are thoroughly organised, easily accessible, and can be used straight away for various scientific analyses, validation of numerical simulations and modelling, comparisons with the theoretical predictions (both currently available and forthcoming), and, very importantly, for addressing scale issues to help utilizing laboratory experiments for real-life-scale assessments. I believe that the paper and the data sets will be very important contributions to fluvial hydraulics and Earth-Sciences. They can be published, in my view, after a fairly minor revision that should include fixing a few misprints, sharpening text in a few places, adding some minor additional information, and checking/updating a few definitions (please see a complementary file with specific and technical comments and proposed edits).

Specific comments

My specific comments and technical suggestions can be found in a complementary file 'essd-2020-221-supplement.pdf'

Technical corrections

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Please also note the supplement to this comment:
https://essd.copernicus.org/preprints/essd-2020-221/essd-2020-221-RC2-supplement.pdf

Interactive comment on Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2020-221, 2020.

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