

Interactive comment on “Runoff formation from plot, field, to small catchment with shallow groundwater table and dense drainage system in agricultural North Huaihe River Plain, China” by S. Han et al.

Anonymous Referee #3

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Title: Runoff formation from plot, field, to small catchment with shallow groundwater table and dense drainage system in agricultural North Huaihe River Plain, China

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Comments:

The authors collected excellent experimental data of hourly rainfall, runoff, and groundwater table et al. Based on this comprehensive database, they investigated the impact

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of ground water depth on runoff formation over different spatial scales.

They found the ground water depth has significant impact on the runoff formation and concluded that the ground water depth would be an important parameter for future study.

This experimental result is very important and interesting. I recommended “Accepted subject to revisions”. Below I have a few major comments with more minor comments to improve the presentations and English.

Major comments:

- 1) Abstract, Page 4236, lines 12-14, this is very confusing.
- 2) Fig.1, adding a photo may help to understand this schematic diagram.
- 3) The information in Table 1 is important, but other statistics of the hourly data reflecting the distributions are as important as those. Maybe design a figure to show how those hourly rainfall and discharge data are distributed for each event. This information would be much helpful for other studies.
- 4) Table 3, I am surprised that the relationship between P-R and initial depth and that between P-R and the change of depth are very similar. And the relationship does not show much difference among the three experiments. I wonder why.

Minor comments:

- 1) The title is too detailed. Experiment or observation is a key word, which is missing.
- 2) Page 4236, lines 2-3, at an experimental. . . a field. . . a small catchment. . .
- 3) Page 4236, line 21, surface runoff
- 4) Page 4236, line 24, catchments
- 5) Page 4237, line 2, over past decades. . .

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- 6) Page 4237, lines 22-23, a distinction between the two mechanism in a quantitative way may help.
- 7) Page 4238, line 14, "runoff circulation networks"?
- 8) Page 4238, line 19, distance between
- 9) Page 4239, line 13, depend. . .
- 10) Page 4238, lines 16-17, delete "(the . . . China)"
- 11) Page 4238, line 25, delete "in the study area"
- 12) Page 4240, lines 5-7, 60-80% of the annual precipitation falls in summer. . . Then delete "which. . . precipitation"
- 13) Page 4240, line 13, divide the "site"? which site?
- 14) Page 4242, line 18, "15-30 m". Unit is meter?
- 15) Page 4245, lines 12-15, previous studies cannot confirm yours. Yours is consistent to theirs.
- 16) Page 4247, line 6, scattered. Line 21, found, Line 22, these imply
- 17) Page 4248, line 6, total runoff? (runoff generally means for the surface)
- 18) Fig.2, colour lines would be better. (HESS would not charge you more anyway)
- 20) Fig.3, figs.5-8, delete "Plots of"
- 21) Fig.7, "early growth". Define the early/late growth here. It is really hard to find in the text.
- 22) Fig. 8, difference between the catchment and plot.

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