

Interactive comment on “High frequency monitoring of water fluxes and nutrient loads to assess the effects of controlled drainage on water storage and nutrient transport” by J. C. Rozemeijer et al.

Anonymous Referee #2

Received and published: 4 August 2015

This manuscript describes experimental work in the Netherlands to investigate the usefulness of controlled drainage for water storage and nutrient transport mitigation. The manuscript is interesting, generally well written and adds to a body of work on applied water quality research. It fits, therefore, into the aims and scope of HESS.

General comments

While the work fits into the scope of the special issue on water quality and WFD related matters, the link to high-resolution nutrient monitoring is less clear. For example, what

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extra dimension does this give and could the work have proceeded without its use? This needs to be developed more in the justification for the experimental design, results (i.e. more descriptive stats on range of concs. found for example) and in the discussion. Further to this, some quality assurance information needs to be provided (preferably) or referenced on both the P and N high-resolution data to enable readers to have confidence in the load estimates and general data. See Lloyd et al. 2015 Hydrological Processes (DOI: 10.1002/hyp.10574) for a critique of the method.

The experiment is based on a reference period versus control period to assess the effect of changed conditions (controlled drainage). This is from one reference season and two controlled seasons. Clearly, the nuanced differences between annual and intra-annual rainfall patterns (magnitude, duration, wetting-drying etc.) can have significant influence on both runoff patterns and pollutant transport patterns. The authors need to justify the experimental design and how this could have been improved, for example, by a more parsimonious approach based on a synchronous control site and controlled site to eliminate the seasonal differences and influences in rainfall patterns.

Specific comments

Page 6276 line 16 amend to: “However, the introduction. . .”

Page 6276 line 22. These references need to be more up to date.

Page 6277 line 3. Needs referencing after “. . .Europe”.

Page 6277 line 27 amend to: “This study aimed to quantify. . .”

Page 6278 line 11. Check the grid reference to be more precise – doesn’t seem to locate to the site when checked in an online viewer.

Page 6280 lines 15-16. Syntax issue with this sentence.

Page 6280 line 10. Should this be “. . .precipitation was higher. . .”? as compared with same info given on next page line 24.

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Page 6282 lines 25-28. Syntax issue. Change to, for example: “. . .were lowered by (or to?) 50cm on two occasions (or instances). . .”

Page 6285 line 25 amend to “. . .load rates of change become steeper. . .”

Page 6286 lines 1-7. This is a conclusion. Delete from here.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 6275, 2015.

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