

***Interactive comment on “Tracing the spatial propagation of river inlet water into an agricultural polder area using anthropogenic gadolinium” by J. Rozemeijer et al.***

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General: check your English

Abstract - Do not use the word 'diverted' river water. Instead, take inlet water or river water for water inlet purposes or water with a different chemical composition as compared to local drainage water - Use 'chemical surface water quality'

Ch 1 Introduction - reference to legislation and policy measures are not very relevant, skip text - use 'inlet water management' - mass balance studies can provide insight, it is just a matter of scale at which these studies are applied to - information about the penetration of inlet water to the water system can in detail be derived from simula-

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tion models, but also from detailed mass balance studies (see above) - the objectives are: 1) obtain a spatial image 2) improve interpretation of chemical water quality data 3) evaluate the results of simulation models on surface water hydrology and quality - basically, you are trying to track all different sources of the surface water present

Ch 2 Methods 2.1 - add section on the Gd element here (present/not present; significant difference between river and polder water, waste water treatment plant, etc., show some typical concentrations and/or anomalies

2.2 - check number of monitoring locations (22 or 23)

2.3 - add text on further processing Gd(ano) data, how do you proceed from the end of the paragraph

2.4 - was the surface water stream velocity zero at the moment of sampling? should be for better results - at/before 5-8-2010, was Q discharge zero and Q inlet>0? provide information - at/before 22-10-2010, was Q inlet zero and Q discharge>0? provide information - at end of paragraph, add text on why pre-concentration procedure was not followed

Ch 3 Results 3.1 - add Gd Meuse data if present, check monitoring network rivers in NL - can you quantify the mixing proportions at this stage? (x=local drainage water, y=inlet water; calculate x:y) - please compare data for 5-8-2010 and 22-10-2010: 1) spatial pattern 2) absolute concentration and/or anomaly level - check flow direction at/near waste water treatment plant outlet; provide information through water board

3.2 - to compare the chemical surface water quality data with Gd(ano): did you take the right monitoring data for the comparison? Regular samples taken at Q inlet>0 or at Q inlet=0? - what was your hypothesis on chemical surface water quality data? - to my opinion, P<sub>tot</sub>, NO<sub>3</sub> and EC only are significantly different, stick to these three variables in your text - at the end of paragraph, go back to Gd(ano) and proportions, show calculated proportions first, then show calculated fractions, and finish with comparison

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3.3 - are these modeling results and/or Gd(ano) data? - I do not understand arguments on parametrization and weir crest levels. Please add more/better information on reasons why it did (not) work, find better arguments - % mentioned, 51% and 5.1% looks very accurate, my proposal is to use 50% and 5%

Ch 4 Discussion and conclusions - no results here, you already mentioned those: skip first three paragraphs - please discuss: method, monitoring programme on Gd, and results - please draw conclusions on the objectives (see introduction) - please refer to the previous papers by other authors and check whether their conclusions and recommendations are valid and/or rejected - relevance of policy measures not clear/do not bring more weight in the text;  $P_{tot}$  may also decrease - your assumptions or hypotheses? - reference of Hendriks (1990) was for a groundwater seepage area, results might be different from the location that you studied

Figures: please complete the captions, so that these will be explanatory by themselves; arrows blue and red; use larger number fonts; add text to Fig. 6 as 1) = ... and 2) = ...

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 1411, 2012.

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