

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

Anonymous Referee #3

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This manuscript reports on measurements of gadolinium anomalies in water in agricultural polders to determine the relative influence of local water to that of pumped-in river water. The study is well designed and the paper is well organized and nicely written. Thus I recommend publication with only minor changes.

Specific comments 1) P. 1412, line 5, should be “hydrologically complex” 2) P. 1412, line 6, after “polder area” mention the study site location 3) P. 1412, line 7, mention here the time frame of the study 4) P. 1413, lines 13-14, Van Vliet and Zwolsman is not listed in the references 5) P. 1414, line 1, I think this should be “policies stipulate” 6) p. 1414, line 24 and beyond and p. 1424 line 10, Regarding spatial propagation of

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inlet water the authors should review literature on tracer tests in wetlands. My opinion is that the general concept is analogous to this study (the authors were not able to find peer-reviewed studies on the topic). See for example Dierberg et al., 2005, Ecol. Eng. for a field study of spatial propagation of inlet water in a large (147 ha) wetland; also see Paudel et al., 2010, Ecol. Eng. for a spatial model of that field study. 7) P. 1416, line 3, “arable land” usually means land that can grow crops, so maybe something different is meant here. 8) Pp. 1415-1416, Some references should be cited for the background information on the study site. 9) P. 1416, lines 25-26. Some clarification is needed here. Is “discharge” from the polder or to the polder? Also, “first order” usually implies headwaters or smallest streams. So “first order main channels” is not clear. 10) P. 1417, lines 19-20, Add charges to ions and correct spelling typo. 11) P. 1417, line 25, Siderius 2011 is not listed in the reference list. 12) P. 1418, The abbreviation “REE” has already been introduced. 13) P. 1418, line 17, Should be “Here, the REE. . .” 14) P. 1418, lines 25-26 and p. 1420 line 2, The “reproducibility” and accuracy values are both listed as 10%. If these are intended to mean the same thing, then it is not needed to say this twice. If they are not intended to mean the same thing, then some clarification is needed. 15) P. 1419, lines 6-7, Were the locations of the P and ET measurements described in the methods section? 16) P. 1419, lines 25, should be “X-series 2” 17) P. 1422, lines 1-3, Figure 4 shows data from two monitoring locations with low anomalies, but the number of stations with higher anomalies needs to be specified. Also, is there a reason data from only a few of the 22 stations are summarized in this figure? Finally, I suggest reporting results of statistical tests of significance for the differences between these less-impacted and more-impacted locations. 18) Fig 3. Can the font for the numbers in this figure be made larger? 19) Fig. 5, I was not able to tell the differences between the colors for low- and high-impacts from the river. Are they red/green? I suggest choosing other color combinations because many people are red/green color blind.

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