

***Interactive comment on “A hierarchical approach
on groundwater-surface water interaction in
wetlands along the upper Biebrza River, Poland”
by C. Anibas et al.***

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The paper introduces new information and methods to study groundwater-surface water interactions in wetland systems. It is particularly novel in that (and as the authors themselves point out) in that it examines the exchange processes in an organic matter-dominated matrix for the first time, as opposed to sand/silt matrices which have been studied before using the applied methods. Thus, the scientific questions addressed in the paper introduce some novel ideas and outcomes. The conclusions based on the study results are robust, and the scientific methods and assumptions are generally

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clearly outline. The paper is extensively well referenced, and both cited information and the authors original contributions come out quite clearly and distinctly. The title of the paper conforms to the content.

The description of experiments and calculations are, for the most part, sufficiently complete and precise to allow their reproduction by fellow scientists, but it should be noted that natural heterogeneities in the earth materials and hydrogeological parameters in different areas may confound the results. Here, it is the logical process followed that I consider more important than reproducibility for the given reasons.

1. Presentation: is well structured and clear. 2. Language is fluent and precise for the most part – corrections are indicated below. 3. Mathematical diction and rigor is applied. 4. Some parts of the paper need clarification, etc., see below. 5. References are appropriate in number and quality.

Other than for the minor comments/corrections below, the manuscript is of sufficient merit for publication.

1. Abstract: A summary statement on the influencing first and second order factors should be included as they are referred to extensively in the discussion and conclusion sections, forming some of the outcomes of the study. 2. The word “however” if used in the middle of a sentence, should be preceded and followed by commas. 3. Pg 9545, lines 25 and 26: Put commas after “was” and before “still” 4. Pg 9546, line 9: symbol should be % not per mil. 5. Pg 9546, line 23: Insert the word “on” after 301 6. Pg 9547 line 5: “on average” not “in average”. This should be corrected in other sections of the text as well. 7. Pg 9547 lines 8 & 9: Text “fig. 4a and b, respectively, should be in brackets. 8. Pg 9547 line 15: “Rising” not “Raising”. 9. Pg 9549, line 17/18: insert the word “the” between “to” and “groundwater” 10. Pg 9550, line 26: insert “to” after “equivalent” 11. Pg 9551, line 22: “the” not “he” 12. Pg 9551, line 24: insert “the” before “valley” 13. Pg 9551, line 26: Put a fullstop after “floor” 14. Pg 9551, line 28: “than” not “then” 15. Pg 9553 line 14: insert “in” before “the region” 16. Pg 9554, line 20: change

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"is steeply narrowing" to "steeply narrows" 17. Pg 9554, line 22: "on average" not "in average". 18. Pg 9555, line 5: "an heterogeneous" not "a heterogeneous" 19. Pg 9555, line 10: "months" not "month" 20. Pg 9556 line 2: change "at first instance" to "and in the first instance" 21. Pg 9556 line 5: Explain why the parameter r-squared was set as 1800. What was the rationale? It needs a justification. 22. Pg 9556 line 15: change "determines strongly" to "strongly determines" 23. Pg 9557 line 10: change "can be accounted: to "can account" 24. Pg 9557 line 25: insert "the" before "slope" 25. Pg 8558 line 21: change "only can explain partly" to "can only partly explain" 26. Pg 8558 lines 23&24: The sentence "these point...reach scale" is not clear. Rewrite for clarity. 27. Pg 9559 line 11: change "rate in depth" to "rate at depth" 28. Pg 9559 line 24: put commas after "is" and "range" 29. Pg 9560 line 13: change "adverse" to "reverse" 30. Pg 9560 line 15: "were" not "where" 31. Pg 9560 line 18: put commas after "shows" and "no. 4" 32. Pg 9560 line 20: spelling "respective" and put a comma after "shows" and on the next line after "4" 33. Pg 9560 line 20: change to "the slope crack, and the vally floor is wider, ... 34. Pg 9561 lines 5 to 8: The sentences starting "By" and ending with "results" are repetitions. Delete. 35. Pg 9561m lines 10 to 12: Explain further or clarify why the head based fluxes and seepage meter flux have that very large discrepancy. In addition, what are the implications of this discrepancy for the results of the study and their interpretations? 36. Pg 9562 line 3: what is meant by "observed but possible"? This sentence is not clear. Rewrite. 37. Pg 9562 line 20: insert "the" after "cover" 38. Pg 9562 line 24: change "occur therefore" to "therefore occur" 39. Pg 9562 line 27: insert "the" before "subject" 40. Pg 9562 line 29: change "underlie also" to "also underlie" 41. Pg 9563 line 27: insert "and are" before "especially" 42. Pg 9563 line 29: change "regard consequently" to "consequently regard" and insert "as being" before "responsible" 43. Pg 9564 line 7: change "as these" to "than those" 44. Pg 9564 lines 16&17: It is not clear to me how groundwater-surface water exchange can influence the formation of meanders. Can this be elucidated? 45. Pg 9564 line 28: change "capable to connect" to "capable of connecting" 46. Pg 9565 line 3: change "to select" to "of selecting"

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