

***Interactive comment on* “Exchange between a river and groundwater, assessed with hydrochemical data” by E. Hoehn and A. Scholtis**

Anonymous Referee #1

Received and published: 10 January 2011

General comments

This paper describes a method to assess the chemical compositions of groundwater near River Thur, which has different origins and is undergoing mixture, with respect to river restoration measures in general. The paper focuses on interpretation of water quality data from surface and subsurface water and gives a conceptual model of these mixture processes. This objective is of great importance especially to water resources management and river restoration, and therefore, this paper should be improved and revised to publish it in HESS. The main deficits are: (1) a less distinctive description of the aim of this work, and (2) a discrepancy between the (quantitative) relationships of hydrochemical results and the restoration measures as announced.

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Specific Comments

Introduction

The motivation of the paper was clearly stated but the aim of this work, formulated in the last paragraph of the Introduction, is still vague. What does it mean: ".to investigate the chemical processes, which are necessary to manage groundwater quality during river restoration"? What processes are important? The authors should explain the link between the chemical composition analysis to the river management more precisely.

2.4 Water from the valley slopes

Because this water is of great importance for groundwater quality development in the river corridor it must be announced before, e.g. in the Introduction.

3. Depth dependence of groundwater quality

The following sentence must explained: "Groundwater of precipitation origin is mostly older than groundwater of riverbank", because this is not true at all.

4. Temporal changes of groundwater quality

I venture to doubt that nitrogen is stored in the unsaturated zone without any chemical change or reaction.

5. Implications for river restoration

The authors should reformulate this paragraph, because there are to less quantifiable information.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 9023, 2010.

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