

## ***Interactive comment on “The cost of ending groundwater overdraft on the North China Plain” by C. Davidsen et al.***

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Received and published: 16 August 2015

Thanks a lot for your positive feedback.

(1) We agree that the sentence should be modified to the suggested: “Persistent overdraft from the groundwater aquifers on the North China Plain has caused declining groundwater levels and infiltration of saline water and wastewater”. We suggest to replace “tables” with “levels”.

(2) “SP E” is the average increase in the total costs as a consequence of introducing a minimum in-stream flow constraint. To estimate this shadow price, we need comparable scenario runs with and without this additional ecosystem constraint. The presented shadow price is only valid for that particular scenario, and does therefore not cover e.g.

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before/after the SNWTP. The white area above and below the listed value is confusing because it may indicate that the shadow price covers all scenarios. We suggest to add a “-“ or “n/a” in the blank rows of table 2 and will also explain the meaning of SP E in more detail in the revised paper.

(3) “SP SNWTP” is the average reduction in the total costs, associated with the introduction of the South-to-North Water Transfer Project (SNWTP). The total costs after the SNWTP is put in operation are compared to the scenario without the SNWTP (pre-2008) and divided by the allocated SNWTP water. While this is meaningful when comparing identical scenarios with and without the SNWTP, it is misleading when the increased costs are caused by other factors. In the case with a lower initial groundwater table, the total costs increases significantly, which then lowers the SNWTP shadow price. The true SNWTP shadow price will probably be the highest of all the scenarios, and can correctly be found by comparison with a similar baseline scenario without the SNWTP AND with a low initial groundwater table. We suggest to delete the SP SNWTP values for all scenarios not identical to the baseline setup. This will leave only two SP SNWTP (row 2 and 5) and it might therefore be better to delete the last four columns of table 2 and present the values from these columns in the text. We will also explain the meaning of SP SNWP in more detail in the revised paper.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 5931, 2015.

**HESSD**

12, C3096–C3097, 2015

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