

Interactive comment on “Reviving the “Ganges Water Machine”: where and how much?” by L. Muthuwatta et al

We thank the editor for providing very useful comments. We have tried our best to address all comments/concerns to the extent possible in this manuscript.

Q1. The water balance in the additional simulations is unclear. The cumulative water budget of the system should close irrespective of the scenarios. I tried doing that by adding all base flows for Scenario 2 additional pumping, and comparing it to the case of no pumping ..the difference should be the irrigation water. However the numbers did not match up. A water balance would help clarify that.

Answer:

We agree with the editors comments. We have revisited the model and found some data issues in the simulations with groundwater abstractions. In the new manuscript, we have rectified the issue and the changes are incorporated to the table 5. New text is added to the manuscript describing the small differences in water balance under three scenarios.

When water balance is considered, the summation of total base flow under abstraction scenarios and additional water requirement must be equal to the total base flow under no pumping scenario. For instance, Sum of the totals of C8 and C7 must be equal to the total of the C5 column. However, we found some difference, which are negligible. In this case, the error is about 0.12, which is about 1.05% compared to the total base flow presented in C5. The water balance errors under remaining five abstraction scenarios also range from 0.0% to 0.8%. We presume that these small differences are due to changes in other hydrological process such as changes in soil moisture, evapotranspiration as a result of increased groundwater infiltration.

Q2. The Discussion section is really brief, and the significance of the additional simulations don't show up there. What do these additional simulations signify? A broader discussion on caveats and limitations of the study is also needed given the new simulations

Answer:

We agree with the editor's comment and additional text describing the new simulation is added to the manuscript.