

***Interactive comment on “Technical note:
Discharge response of a confined aquifer with
variable thickness to temporal nonstationary
random recharge processes” by Ching-Min Chang
et al.***

Anonymous Referee #2

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The manuscript provides a closed-form expression for the transfer function in the frequency domain of a confined aquifer with variable thickness submitted to a variable recharge rate. The mathematical development is well described and quite easy to follow. I suggest intermediate revisions.

Here are some general comments: 1) I believe that a conceptual scheme of the system including the main variables of the problem would helpfully accompany the mathematical development 2) The assumptions should be discussed to better assess the capabilities and limitations of the solution proposed: - homogeneity: what kind of sys-

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tems (possibly known aquifers) would be fairly well modelled by the solution proposed? To what extent? - one-dimensional flow: I expect strong limitations of this assumption given the thickness variability and possible convergence or divergence of flow. One would obviously not expect a homogeneous and 1D solution to represent the complexity of natural systems. However, it can still be used as a practical rough approximation. 3) The sensitivity analysis going along with figures 1, 2 and 3 would greatly benefit from a mechanistic interpretation and/or (a short) comparison with existing works. It would reinforce the validity and usefulness of the solution proposed. This needs more effort.

Some specific comments: - There are no boundary conditions nor initial conditions for equation 10 - Line 91: may serve as a basis? not "service" - Line 119: I am not sure that b1 and b2 are defined - Line 149: "increases", not increase - Line 149: be more specific: "increase exponentially" (as shown in eq 18)

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2020-572>, 2020.

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