

Trento, September 7, 2016

Dear Editor,

we prepared the revised version of the manuscript "Age-ranked hydrological budget and a travel time description of catchment hydrology" accordingly to our answers to reviewers. Detailed, point to point answer to their observation was already submitted.

The manuscript's Introduction and Conclusions were completely rewritten, a broader context was given to the paper, and its novelties highlighted.

Answering to reviewers implied an enhancement of the paper formalism, by introducing explicitly a time interval over which precipitations are considered. This made more solid the assertion that Niemi's relation can be interpreted as an expression of the Bayes theorem.

A couple of equations in the section on life expectancy were found incorrect and modified.

To answer to some question raised by the first reviewer, a little historical appendix (B) was added where we discuss ancestors and relatives of our theory. We hope that it could be useful to give the right perspective to our contribution. As requested more or less explicitly by all the reviewers, we added an Appendix (C) where we work out the generalisation of the theory to include many reservoirs.

During the process of revision, we realised that a further aspect could have been emphasised regarding the structure of the backward probabilities, and we added Appendix D, to remark it.

Overall, the main structure of the paper and its other achievements were not modified.

Please find all the modifications from the original submission coloured in red.

We thank all the reviewers for their constructive and informative comments, and thank you for your work.

For the authors,

Riccardo Rigon