Dear Mario Wetzel,

Thank you for your comments to the open discussion. Please find our responses (in blue) to the main points raised (shown in black) below.

1. Figure 2: The CLD in figure 2 shows in a very comprehensive way the interlinkages of different factors that finally lead to the specific risk. However, the figure does not contain feedback loops. Could you please clarify the difference here to an Impact Chain (cause-and-effect chain) or a Directed Acyclic Graph such as used in Bayesian Network modelling. Did you consider and model direct feedback loops in your study?

The causal loop diagram (CLD) was developed as an initial conceptual framework and feedback loops were not identified in this specific case. It has indeed common points to the so-called Impact Chains (e.g. reference to the IPCC AR5 risk components) or to the Bayesian Networks (e.g. focus on variable's probabilistic representations) although system dynamics modelling aimed to characterize the time-dependent functions affecting the variables of the system under study.

2. P. 2, 54ff: The manuscript mentions the benefits of the methodology to better understand the dynamics between anthropogenic and environmental processes. Looking at figure 2, I associate land-use, water turbined and reservoir volume to factors that are driven by anthropogenic processes and the interplay of anthropogenic and environmental processes. However, pertaining to exposure, "water turbines" and "reservoir volume" are solely driven by "month of the year". "Month of the year" remains a black box, in a sense that drivers that specify the differentiated role of intra-annual dynamics are not further specified. Is "month of the year" solely driven by precipitation variations, or also informed by differentiated economic activities, water consumption etc.?

Thanks and we see the need to better explain the variables under exposure as mentioned by the reviewers. While "water turbines" and "reservoir volumes" represent the element exposed to potential risk conditions, "month of the year" is here considered as a factor affecting the level of exposure and it is mostly related to the reservoir monthly management both due to the environmental (e.g. precipitation) and anthropogenic conditions (e.g. lowering the level of the reservoir in March-April to anticipate higher water inflow in May and June) from the previous years (baseline).

3. P. 19, 383ff: Can the application of scenarios regarding the reservoir management be integrated here, or an alternative assumption (compared to the stationary) based on potential societal changes?

Thanks for this comment. The statistical approaches allowed to replicate past reservoir management and to keep them unchanged in the future for investigating potential critical states conditions of water turbined and reservoir volume. However, we see the possibility to play with future conditions of water inflow to the reservoir according to different scenarios of upstream anthropogenic water withdrawals since the upstream-downstream water management is an important feature to potential future disputes.