

Interactive comment on “A conceptual framework for assessing socio-hydrological resilience under change” by Feng Mao et al.

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We thank the anonymous reviewer for their very constructive and insightful comments, and are pleased they recognise the ‘paper [makes] a valuable contribution to socio-hydrology’ debates. To clarify, the main purpose of our opinion paper is to encourage debate on socio-hydrology and its interrelations with resilience, and consequently, we’re pleased that the reviewer recognises there are multiple perspectives in socio-hydrology to examine, and that there’s value in seeing how these perspectives might be brought into closer engagement with resilience. We take the two thoughtful reviews we have already received on the paper as indicative that this objective has been at least partially achieved.

Referring to RC2’s specific comments, here we briefly clarify our opinions and argu-

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ments in relation to socio-hydrology debates. We also set out how we will address the reviewer’s comments through proposed changes that will be incorporated in the revised paper.

(1) Socio-hydrology, hydro-sociology, and bi-directional feedbacks. We agree with the reviewer that the coupled human-water system can be further classified into socio-hydrological systems and hydro-social systems, each of which has different emphasises. We also fully agree that bi-directional feedbacks are the main source of resilience for human-water couplings.

However, we think extensive discussion of the differences between the two perspectives on the coupled human-water system (i.e. socio-hydrological system and hydro-sociological system) would go beyond the remit of an opinion paper. To reiterate, our aim with this paper is to encourage debate on socio-hydrology and its interrelations with resilience by conceptualising the different linkages between them. This is based on our argument that defining the system type (‘coupled human-water systems’) is vital to understanding their intrinsic resilience properties, and to defining indicators of their status. We proceed to argue that ‘hydrological ecosystem services’ can act as a status indicator of one type of bi-directional feedback. However, we emphasise that this does not mean that ‘hydrological ecosystem services’ offer the only means of measuring coupled human-water systems. For example, as the reviewer states, post-positivist questions such as who defines systems and who prescribes their desired state are not socio-hydrological specific, but also exist in water sub-systems with hydrological resilience, and human sub-systems with social resilience.

(2) The reviewer questions why we discuss the three types of human-water couplings in an ‘isolated’ way, and encourage us to ‘phrase all 3 types of resilience given in section 2 in context of the larger SHS’. We see the logic of this approach to socio-hydrological thinking: indeed, this is part of the reason why this opinion paper builds its connections with the resilience concept. However, the three types of coupling encapsulate how different fields (e.g. conservation and disaster management) deal with human-water

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couplings, instead of normative expectations of what people should (or should not) do.

What we propose to do:

- We will clarify and flag the post-positive and water governance issues water governance issues (e.g. who participate, who set the goals, and how stakeholders are engaged), especially in Section 4.
- We agree with the reviewer that hazards such as pollution are not always a short term exogenous perturbation, arguing instead that whether it is fast variable, frequent fast variable or slow variable depends on the scale and characteristics of the problem. We will clarify this in the revision.
- We will clarify the connections between absorptive, adaptive and transformative capacities, as well as how adaptation can be increased.
- We will redraft the sentence in Section 3.2, line 3, page 7 '... argue that the dynamics of social change should be better framed as part of socio-ecological research' to make it more specific.
- We will clarify what we mean by 'compositional approach'.
- We will replace 'preference' by 'dependence' on page 8.
- We thank the referee for recommending relevant academic papers and will cite these where appropriate in Section 4.3.

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