

## ***Interactive comment on “Holistic versus monomeric strategies for hydrological modelling of modified hydrosystems” by I. Nalbantis et al.***

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First we would like to thank Dr G. Di Baldassare for his eponymous review (which we find absolutely consistent with the public character of the review process in HESSD), as well as for his constructive comments and suggestions. Below we reply to these comments.

1. We understand Di Baldassare (2010) stating that the title, the abstract and the introduction lead readers to expect more from the case study than that is actually presented. As already stated in our reply to Anonymous Referee 1 (hereinafter referred to as AR 1), the aim of the paper was not to exhaustively address every possible combination of approaches (bottom-up/top-down and monomeric/holistic). Conversely the aim is  
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much narrower than that: on page 8269, lines 14 and 15 we state “To represent the BU-M approach we will consider a particular modelling strategy, called here strategy A.” Later, on page 8270, lines 8 and 9 we define strategy B by saying “An alternative modelling strategy, called here strategy B, will be used to represent a top-down/holistic approach.” Within the scope of BU-M and the top-down-holistic (TD-H) approaches we further limit the scope of our research by employing specific modelling frameworks. On page 8271, lines 4-10 we give a brief description of the frameworks used. Later (page 8283, lines 18-24) we say explicitly what we did, i.e., our research was limited to the combined effects of all key modelling options defined. We agree with Di Baldassare (2010) that the above are perhaps not sufficient to put the paper in its right dimensions, i.e., those of a critical discussion of two modelling strategies. All this should be said earlier and, in any case, after the options are defined. We will revise the text to respond to the above.

2. Not used.

3. We agree with Di Baldassare (2010): The term “human-modified” will replace “modified” in every instance of it.

4. We agree to add this material and references on page 8269, line 13. This enhances the significance of our research for hydrological modelling in our times.

5. We agree that the phrase “Strategy B adopts model integration, which copes with the problem.” indeed may give the impression of some scientific arrogance. We will amend this into “An effort is made towards coping with this problem in some manner in Strategy B.”

6. We agree that in a research paper dealing with a very specific method, model or process one normally does not expect to see any reference in the conclusion section. Yet, our paper deals with a critical discussion of modelling philosophies in relation to model misuse in engineering practice. This inevitably leads to referring to works of others, even in the conclusions. Regarding the conclusions themselves Di Baldassare

may refer to our reply to AR 1, where we say: "... conclusions are effectively drawn which correspond to the limited aims of the paper as the latter are explained above. More specifically we believe that: (1) we quantified the deterioration of model performance in cases that no attention is paid to all components of a modified hydrosystem; to our view this finding cannot be considered as being absolutely insignificant; no such kind of comparison is found in literature which seems to ignore what is effectively applied in practice; yet, in practice one can frequently come across model misuse cases such as the one we tested; (2) sources of error were identified although their individual contribution to the overall prediction error was not quantified." We will amend the conclusion section by adding quantitative information on the performance of the two modelling strategies (page 8287, line 28). Additionally, we will move part of the material from page 8287, line 28 to page 8288, line 13 into the introduction and leave only epigrammatic comments here.

7. The proposed references will be added in the revised manuscript.

#### Reference

G. Di Baldassarre , Interactive comment on "Holistic versus monomeric strategies for hydrological modelling of modified hydrosystems" by I. Nalbantis et al., Hydrol. Earth Syst. Sci. Discuss., 7, C3650–C3652, 2010 ([www.hydrol-earth-syst-sci-discuss.net/7/C3650/2010/](http://www.hydrol-earth-syst-sci-discuss.net/7/C3650/2010/))

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