

## ***Interactive comment on “Understanding and managing a complex estuary: the process towards more congruence between the physical system characteristics and the management system of the Westerschelde (Netherlands)” by A. van Buuren and L. Gerrits***

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1. The main conclusion by the reviewer is that the evaluation framework is not explicit and transparent enough. This is also something reviewer 2 has stated. We will rework our framework to be more precise in our choices by further developing its theoretical underpinning and by strengthening it. 2. The reviewer states that the article is too long and that the language needs correcting. Regarding the length: we will try to shorten.

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Regarding the language: the final version will be corrected by a native speaker. Given the expenses of a corrector we want to do this only once. 3. We will deal with the other comments in the list below:

P1372: This is correct and we will correct the text accordingly. Reviewer 2 also pointed this out.

P1373a: We will clarify this further.

P1373b: We will clarify this further.

P1374: We intended to point out that implementing one demand could come at the expense of other ambitions. We will clarify this in the text.

P1375: The case of the deepening of the UntereIbe (Germany) shows that there can be considerable effects on the high-water levels. We will correct this for the case of the Westerschelde.

P1375-1376: We gather that considerable confusion arises from our definition of the estuary. We have, incorrectly, used treated the Westerschelde and 'estu-ary' as synonyms and deemed the Zeeschelde a tidal river. We concur with the reviewer (and reviewer 2) that this created confusion in the article. Our analysis covers the Westerschelde (i.e. Vlissingen to Antwerpen and not beyond) so we will correct the article accordingly. The statement that the public (in Zeeland) thinks that setting back the dikes means a decrease of safety was found in the local newspaper Provinciale Zeeuwse Courant and stated in several interviews by our respondents (politicians from the region). We will include the reference. Furthermore, both reviewers have suggested with good reason to consult an expert on the description of the hydro-morphological state of the estuary. We will do this.

P1379: We will remove this statement as it is unnecessarily confusing and does not add to our argument.

P1380: As mentioned before, we think that the various demands from society on the

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estuary are conflicting and we do not agree with the reviewer that this is nonsense. There are ample examples of how such demands do not go well together. This was also recognized by many stakeholders and experts involved in the case and stated during interviews. However, we understand that we have to be much clearer about our statements regarding the (potential) conflicts.

P1381: We use this term to describe the network of researchers (among others RIKZ, WL Delft Hydraulics, TU Twente, WL Borgerhout).

P1382a: The reviewer is correct regarding the meaning of our statement. We will clarify this statement with examples.

P1382b: We agree with the reviewer and will not use the term anymore.

P1384a: We will relocate the methods-section and will be clearer about our methods.

P1384b: This term is based in the literature on the management of estuaries and rivers. We will put the exact reference in this text.

P1385a: We can substantiate this statement. We wanted to address the fact that research about the estuary was (for a long time) carried out by a limited group of people that moved between a limited number of organizations.

P1385b: This is a claim from the first official monitoring report (MOVE) of the second deepening. It goes beyond the scope of our article to explain this and it is not necessary for our analysis to redo the analysis that is presented in the MOVE report.

P1386: We will clarify this further.

P1389: This is a glitch on our behalf; it needs to say '&#8216;relocating&#8217;.

P1392: This whole article is about finding the congruence mentioned here. We are looking for the answer to the question whether policy makers are able to incorporate the relevant characteristics of the physical system in their decisions and decision making processes. Such characteristics (non-linearity, diversity and interconnectivity) in-

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clude the different timescales (between physical change and policy processes) and the occurrence of unforeseen changes (in the estuary).

P1393: The decision to discern between an empirical approach and a mathematical approach follows the interviews we carried out with the researchers involved in this process and the observations we made during the meetings we visited. We agree with the reviewer that ESTMORF is based on empirical formulations. Delft 3D is also being calibrated with empirical data so that is to a certain extent also empirical. The point we want to make here, however, is that the empirical approach (as our respondents call it) centered on an in-situ test at Walsoorden and experiments with the large-scale model in Walsoorden, whereas the mathematical approach relied on the computational models instead of empirical experiments. Where the Flemish experts believe in the value of observations, experiments and long-term analysis, the Dutch focus more on improving the various mathematical models. Especially in the discussions between them during meetings this difference was often emphasized. By no means did we want to imply that those computational models do not have an empirical basis. We will be more careful about the way we address the divide between the two schools of thought.

P1393: Agreed, this is a language glitch.

P1394: We will elaborate this in the revised version of the article.

We want to thank this reviewer for the thorough review and we hope that the revised version of our article meets his criticism.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 5, 1371, 2008.

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