Below, we respond (in black) to the comments by reviewer 1 (in blue):

This paper describes a public engagement activity – a game – about sea level rise, aimed at 16–25-year-olds in the Netherlands. The paper shares the design process of the activity through a prototyping stage to development of the final game, and then reports on results of a questionnaire to assess the impact of the game with participants. Public engagement with sea level rise is an important area of research and it is interesting and useful to have insight into the design process that led to the development of this activity, as well as the impact of the game on participants. This will be a valuable paper once some things have been addressed to ensure that the paper is (1) engaging with additional relevant scholarly activity and (2) communicating more clearly with readers.

We thank the reviewer for this positive assessment and agree that these comments will help us further improve the paper.

First, I think the paper should engage with the scholarship on serious games, particularly around coastal adaptation, and situate this study in relation to this work. Here are some papers to look at:

Flood et al, 2018, 'Adaptive and interactive climate futures: systematic review of 'serious games' for engagement and decision-making', *Environ. Res. Lett.* **13** 063005, https://iopscience.iop.org/article/10.1088/1748-9326/aac1c6

Lawrence, J. and Haasnoot, M. (2017). 'What it took to catalyse a transition towards adaptive pathways planning to address climate change uncertainty.' *Environmental Science and Policy*. http://dx.doi.org/10.1016/j.envsci.2016.12.003

Yang, Wei and Harrison, Sarah and Blackett, Paula and Allison, Andrew, 'An explorative analysis of gameplay data based on a serious game of climate adaptation in Aotearoa New Zealand' SSRN, (2024). Available at http://dx.doi.org/10.2139/ssrn.4818597

Lawrence Judy , Stephens Scott , Blackett Paula , Bell Robert G. , Priestley Rebecca, 'Climate Services Transformed: Decision-Making Practice for the Coast in a Changing Climate' *Frontiers in Marine Science*, v8, 2021

https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2021.703902/full

We thank the reviewer for this suggestion and the list of relevant papers, and will add a paragraph in the introduction section where we discuss some of these papers and how our work relates to them.

Other overriding issues are:

- there is too much emphasis in the paper on the prototype, and not enough on the final product. I found it hard to understand the game until I read the supplementary material, and I suggest that some relevant information from the supplementary material be included in the paper

Excellent suggestion; in the revised version of our paper, we will add a section directly after the introduction where we describe the final version of the Sea level game 2080, including the impact questionnaire.

Agreed; the addition of the new section mentioned above should help with this.

We will amend the captions to better clarify their contents.

We will carefully go through the manuscript to improve language, and hope that addressing the specific comments below will solve this issue.

Page specific comments follow:

Abstract: the phrase 'response efficacy and perceived relevance' is not conveying much useful information here, suggest revise

In the revised version of our paper, we will replace this with "reduce participants' psychological distance to sea level rise", which should be clearer for readers.

Line 55: In discussing science capital you should also cite Archer et al 2015 which is in the list of references but is not cited (I suggest a thorough check to ensure papers cited are in the list of references and vice versa)

Thanks for catching this; the Archer et al (2015) reference was of course meant to be cited here, but seems to have disappeared inadvertently. We will add this citation back to this section, and double check the rest as well.

Line 88: what do you mean by 'people like' the participants? Maybe there's another way of phrasing this, referring more specifically to the demographics of this group?

This refers to the concept of psychological distance as introduced earlier in this paragraph; we will amend the text to make clearer what we mean by this.

Line 116: 2080 was chosen as 'most of the young adult participants will still be alive by then' which is a good explanation of why a later date, 2100 for example, was not chosen, but why not an earlier date, say 2050 or 2060 for example? A simple explanation would help.

Good point; we have chosen this year as a point far enough in the future to possibly have a reasonable amount of sea level rise. We will add a few words to explain.

Page 6, figure 1: There's not enough information for this figure to be useful. What do the numbers represent? What are A and B? For this to be useful, the reader needs to know what the six dilemmas are, and how the questions asked relate to this figure. Telling us what the dilemmas are would also help section 2.3 on page 5. If space is an issue, then knowing the specific dilemmas presented to players would be more useful than knowing the options chosen in the prototyping stage.

Agreed; we will update this in the revised version of the paper.

Page 6, 170: was there really a team with only one player? If so, why, and did that impact on how that game went?

As discussed in Section 4.2, there were several sessions where one or both of the teams had only one player. This did not seem to impact the gameplay much, it mostly meant that participants did not have the opportunity to discuss amongst their team and therefore went through the game a bit quicker. We did not record team sizes for the game sessions, but for future research, it might be interesting to see if the lack of discussion in one-person teams has consequences for the game's impact.

Figure 3, p7: For figure 3 to be useful we need to know what 'low' 'medium' and 'high' mean

We will explain this better in the revised version of our manuscript.

Figure 4, p8: Again, we need some information about what 'low' 'medium' and 'high' mean

We will also explain this better in the revised version of our manuscript.

Section 2.5: If there is space, it would be useful to have the final version of the game board, along with the questionnaire, in the paper itself rather than in the supplementary papers. At the moment, there's a real emphasis on the prototype – which is good to learn about the design process – but not enough on the game itself

Absolutely; as mentioned above, we will add a new section with a thorough description of the final version of the game.

Line 288: this phrase 'response efficacy and perceived relevance' is not conveying a lot of information, I suggest rephrase

We will add the descriptions of both terms here, as given in Section 2.1, in our revised manuscript.

Line 330: this line refers to 'low sea level, high solution level' etc – if this is what the low/low, low/medium' etc was referring to in the graphic earlier, this information should be included earlier in the paper

We will explain this better in the revised version of our manuscript.

Line 379: This specific information about the questionnaire would have been useful earlier

This will also be much clearer with the addition of a new section about the final version of the game (including the impact measurement questionnaire), as described above.

Looking at the supplementary papers gave me a much better understanding of the game. If there is space, I would suggest that some specific information about the dilemmas, and the future scenarios, be included in the main paper.

This is a good comment. We will include more specific information about the gameplay (including the dilemmas and future scenarios) in the revised version of the manuscript.