

## **Manuscript number: nhess- 2022-253**

My co-authors and I would like to express our gratitude to the reviewers for their constructive feedback and suggestions for strengthening our research. The changes we have made to the attached file in response to such feedback and suggestions have been highlighted in blue to facilitate their identification. I would also like to offer my apologies for the length of time it took us to prepare this response. We also record our deep appreciation for the efficient handling of the manuscript.

### **Response to Reviewer#1**

**Overall Observations:** accepted as is.

We are extremely grateful for your valuable feedback and suggestions in your previous comments, which significantly contributed to improving this manuscript. We sincerely appreciate your recommendation to accept the manuscript in its current form without any additional modifications.

### **Response to Reviewer#2**

**Overall Observations:** accepted subject to minor revisions.

Thank you very much for your previous comments and suggestions that helped us improve this manuscript. We sincerely appreciate your recommendation to accept this manuscript with minor corrections.

**Comment 1:** Overall comments (figure quality, data source, etc.) were well reflected.

Response: Thank you very much; your remarks are incredibly motivating.

**Comment 2:** Figure (2) However, satellite images at 1-year intervals are not appropriate to consider the effects of short-term erosion caused by typhoons. Therefore, define short, medium, and long-term erosion and specifically state limitations of the study and model.

Response: Thank you for your insightful comment. Short-term erosion refers to the rapid erosion processes and coastal alterations that occur immediately after typhoons or over short durations, typically within days, weeks, or months. Contrarily, medium-term coastal change refers to erosion processes and coastal changes that take place over a period of time ranging from a few months to a few years. It involves the restoration and stabilization of coastal land surfaces after the typhoon. Further, long-term erosion refers to coastal erosion that occurs over extended periods, usually spanning several years to decades or even centuries, influenced by various factors like climate change, land use practices, geological processes, rising sea levels,

and tectonic movements.

The present study addresses the typhoon Soulik-induced morphodynamics over the Mokpo coast region, specifically examining short and medium-term coastal changes. To achieve this, we analyzed pre (2018-08-01) and post (2018-10-15) typhoon Sentinel-2B MSI images to understand the immediate effects of typhoon Soulik, which made landfall near Mokpo City on August 23, 2018. After that, we analyzed the recovery status, i.e., medium-term coastal changes of the Mopko coastal region, using the NSM and coastal landform change model. For this purpose, another Sentinel-2 MSI image was downloaded for the month of October 2019 (one year after the typhoon), as listed in Table 1. Finally, the results exhibited that the proposed model successfully identified the morphodynamic changes caused by the typhoon in the short-term and the recovery status of the coastal landforms in the medium-term.

The above has been discussed in the revised manuscript in Section 3.2, Line No. 217-222. In addition, as suggested, we incorporate the terms ‘short-term’ and ‘medium-term’ in the revised manuscript. We also include the limitations of the present study in the conclusion section (Line No. 783-785).