Response to Referee #1

We thank Referee #1 for the review and helpful suggestions. The comments have been useful in improving the manuscript. Below, we provide our responses to each point and describe the changes that will be made in the revised version.

General Comment

Comment: **Overall**, the concept of this study is quite straightforward and sound. However, the gaps and novelties revealed are not yet clear, aside from the fact that it is a recent case study.

Response: We appreciate this comment and agree with the reviewer. This aspect was not explained clearly enough in the previous version of the manuscript, and we will address it in both the Introduction and Discussion sections. Our goal is not only to document the recent flood event in Aceh, but also to highlight several unusual aspects of the Senyar case. These include the regeneration of Tropical Cyclone Senyar near the Equator in the Strait of Malacca, the occurrence of rainfall exceeding 400 mm day^{-1} without direct cyclone landfall over Aceh, and the role of persistent moisture transport together with the Bukit Barisan topography in contributing to the flooding. These points will be clarified in the revised manuscript.

Comment 1

Comment: The Vamei (2001) system case also warrants comparison in the analysis and background, given the cyclonic system that passed through Sumatra and its proximity to the equator.

Response: We agree. Tropical Cyclone Vamei (2001) is one of the best-known examples of a cyclone developing very close to the Equator in the Maritime Continent. In the revised manuscript, we will compare the Senyar and Vamei events. We will discuss how the two systems evolved, where they developed, and the different impacts they produced. We hope that this comparison will give readers a clearer picture of why the Senyar event is unusual.

Comment 2

Comment: Other studies of flooding and cyclonic events in the study area also need to be discussed.

Response: Thank you for your suggestion. We will add more information about past flooding events in Aceh and other hydrometeorological events in northern Sumatra. This will help readers better understand the Senyar event and how it compares with previous events in the region.

Introduction

Comment 3

Comment: Line 35 needs to add a reference for the first sentence.

Response: Thank you for the comment. We will add an appropriate reference to this sentence in the revised manuscript.

Comment 4

Comment: There is a duplication in line 59, the discussion of the BMKG data explained in the previous paragraph.

Response: We agree. We will take out the repeated text and change the section to make it clearer and shorter.

Comment 5
Comment: There is a typo in line 66.
Response: Thank you for pointing this out. We will correct it in the revised manuscript.

Comment 6
Comment: Again, gaps and novelties are not emphasized enough in the background and need to be explained in more detail.
Response: We agree to make changes to the Introduction section. In the updated version, we will explain more clearly what makes this study important. We will mention that there are not many reports and studies about how tropical cyclones affect the weather in Aceh and northern Sumatra compared to areas like the South China Sea, western North Pacific, and northern Australia. We will also talk about the regional characteristics of Aceh, such as the Bukit Barisan mountain range, which may have affected how rain fell during this event.

Data & Method
Comment 7
Comment: References for each data and method should be given more attention and added, such as ERA5 data (Hersbach et al., 2020) and other data/methods used.
Response: We agree. We did not provide enough references in this section. In the revised manuscript, we will add the main references for the datasets and methods used in this study. These include Hersbach et al. (2020) for ERA5, Huffman et al. (2020) for GPM IMERG, and references related to the Sentinel-1 flood mapping workflow.

Result
Comment 8
Comment: Figure 1. The position of Senyar in each phase needs to be clarified with markings.
Response: We agree. We will indicate the location of Senyar in each panel of Figure 1. This will help readers follow the evolution of the system and distinguish Senyar from other low-pressure systems in the region.

Comment 9
Comment: In the wakening phase, there is a system in the South China Sea. Is that also Senyar? If not, there will be confusion.
Response: The circulation visible over the SCS is not Senyar. We will clarify this in the revised figure and caption to avoid confusion.

Comment 10
Comment: The use of a blue, white, red (or other) color bar would be more appropriate for anomaly values.
Response: Thank you for this suggestion. Since Figure 1 shows IVT magnitude and not anomalies, we will replace the current color scheme with a sequential color scale that is more appropriate for this variable.

Comment 11
Comment: Need to add the units and representative value of the wind vector in Figure 1.

Response: We agree. A reference wind vector and its units (m s^{-1}) will be added to Figure 1 in the revised manuscript.

Comment 12

Comment: The preprint contains strange and confusing boxes.

Response: Thank you for pointing this out. We will regenerate the figures and check them carefully to make sure this issue does not appear in the revised manuscript.

Comment 13

Comment: The image caption could be shortened.

Response: We agree. We will revise the captions to make them shorter and easier to understand while keeping the key information.

Comment 14

Comment: **Figures 2 and 3**, especially 2(a) and 3(c). Do those figures show the same observation data?

Response: We appreciate your comment. The two figures were intended to show different things. Figure 2 focuses on rainfall, whereas Figure 3 focuses on the flooded areas detected from satellite data. We will add a clearer explanation in both the captions and the main text so that readers can easily understand the purpose of each figure.

Comment 15

Comment: The color bar in Figure 3 does not accurately represent the contrast in rainfall. Values below 0 or below 1 can be shown in white. And choosing a different color bar with better contrast is suggested (see Figure 2).

Response: Thank you for this suggestion. We agree that the current color scale does not clearly show the contrast between very low and high rainfall amounts. In the revised figure, we will use a different color scheme and assign white or near-white color to very low rainfall values to improve the visual contrast.

Comment 16

Comment: The discussion of the GPM data in section 3.2 is not clearly necessary.

Response: We appreciate this comment. We will be more explicit in our methods section on how exactly GPM IMERG was used in this study and what role it plays in the analysis. In addition, we will revise the discussion in a way that better integrates satellite data and data from meteorological stations.

In-depth discussion option

Comment 17

Comment: Is all rainfall truly related to the Senyar system? or there is a convective system along with that. Can you divine the rainfall of Senyar or the convective system??

Response: This is an important question. We understand that not all the rain came directly from Senyar. Some of the rainfall may also have been associated with local convective storms. However, the heavy rainfall occurred at the same time that Senyar was bringing additional moisture into the region and affecting the wind pattern near the surface. The heavy rainfall was likely associated with

the combined effects of Senyar-induced moisture transport, local convective processes, and topographic influences. We will add more discussion on this point in the revised manuscript and explain how local storms may have contributed to the event. A quantitative separation between rainfall associated with Senyar and local convective storms is beyond the scope of the present study.

Comment 18

Comment: Why does Figure 4 only show data from 25–26? Why not the entire pre- to post-Senyar sequences?

Response: Thank you for this comment. We chose this period because it shows the peak flooding observed in the satellite data. We will explain this more clearly in the revised manuscript. We will also check whether additional dates can be included to show how the flooding changed during the event.

Comment 19

Comment: How did inundation change from day to day throughout the Senyar episode compared to rainfall at the same time? How did the location of rainfall and peak rainfall correspond to the location of inundation? Why did inundation/flooding occur so massively?

Response: Thank you for your questions. We agree that it is important to discuss the relationship between rainfall and flooding. The ability to create daily flood maps during the whole event is limited by how often Sentinel-1 images are available. That is why Figure 4 shows only the period when flooding was at its maximum. In the revised manuscript, we will explain more clearly when and where heavy rainfall occurred and how it relates to the observed flood extent. We will also discuss other factors that may have contributed to the widespread flooding, including persistent rainfall, moisture transport associated with Senyar, and the response of the affected river basins.

Comment 20

Comment: Adding data on land cover and the impact of settlements would further refine the analysis.

Response: Although land cover data could improve the analysis, this study is a Brief Communication focused on documenting the Senyar event and the flooding it produced. For this reason, we did not conduct a detailed land cover analysis. We will include a short discussion on land-use change and flooding, supported by relevant studies. A more detailed assessment of land cover and settlement exposure will be considered in future work.

We thank Referee #1 again for the helpful review. The comments have been useful in improving the manuscript, and we will take them into account in the revised version.