Dear All,

Thank you all for the review and feedback they were all well appreciated. Please see my point-by-point response to all the comments below.

Reviewer 1,

Line 11-12: should be: The objective of this research was to build on this work by developing an improved model that forecasts vegetation conditions at longer lead times

Response: The sentence has been corrected as "*The objective of this research was to build on this work by developing an improved model that forecasts vegetation conditions at longer lead times.*" to reflect the comment. Page 1

Line 157; should be "Equation (4) can be re-written as"

Response: The typo has been fixed in line 161 on page 9

Line 173: thus, the need to use -> verb missing

Response: This was fixed to read as "*Computing equation 7 requires very complex integrals (Lambert, 2018) thus the HMC sampling algorithm (Hoffman and Gelman, 2014) was used for estimating the model parameters*" in line176 on page 9

Reviewer 2,

The authors have addressed most of the comments satisfactorily. However, a set of minor suggestions are still needed to consider the paper for its publication.

The selection of VCI for monitoring droughts is based on the previous experience of the national drought monitoring authority (NDMA) in Kenya. However, a discussion about the strengths and drawbacks of VCI compared with other indices should be included.

Response: The comment was addressed by including a sentence in the introduction section on the strengths of VCI. A reference to a paper (See below) on a comparative analysis between VCI and other Drought indicators done by our team soon after this paper was submitted has also been added. Line 50 -57 on pages 2 - 3

Bowell, A., Salakpi, E. E., Guigma, K., Muthoka, J. M., Mwangi, J., and Rowhani, P.: Validating commonly used drought indicators in Kenya, Environmental Research Letters, 16, 084 066, https://doi.org/10.1088/1748-9326/ac16a2, 2021.

In the case study, information about its extent in km2 is still missing.

Response: The comment was addressed by adding the sentence "*The ASAL regions make up about 80% (46,000km2) of Kenya's total land area (Marigi et al., 2016)*" on the estimated area covered by ASAL region in Kenya under the section on study area on page 3

51. Please change 'it's' to 'it is'.

Response: The sentence has been fixed

108. The description of VCIi is still missing.

Response: The description of VCIi has been added to eq. 2 on page 6

Eqs. 4 and 5. No changes are appreciated between the first and revised submissions of the paper.

Response: Eq 4 was initially Eq 3, and the subscripts *I,* which were used to indicate the lags, were changed to p and q to reflect the ARDL(p,q) process. Eq 5 is a simplified version of eq 4 to show how the ARDL(p,q) fits in the Bayesian context.

Figure 4. A legend is missing to show the value of the contour colours.

Response: The colour of the contour lines indicated the level of correlation between predicted and observed values. The sentence has been added to explain this in the caption of Figure 4 on page 13

255-260. The R2 values do not correspond with the values shown in Table 2. A comment should be added to the text to explain to the readers the source of the differences.

Response: A comment explaining the difference has been added to the description of the table on page 16

Figure 7. The paper (figure caption or text) should include that the forecast line (green line) represents the mean value of the BARD model outputs.

Response: The caption text for this figure has been amended on page 17

332-333. Please, improve the understandability of this sentence.

Response: The sentence has been restructured as " *The sharpness plots in figure 9 also indicated that the model was generally sensitive to identifying drought events more frequently till eight weeks ahead.*" to make it clear to the reader. lines 335-338 on page 23