RESPONCES TO THE REVIEWERS' COMMENTS

We do appreciate all useful comments and suggestions on our manuscript.

The MS was thoroughly revised, against all revision comments from the editors and reviewers. We have taken this opportunity also to read through and tried to perfect the analysis details, discuss the results more comprehensively and pick up any minor grammar, wording or format problem and made corrections accordingly so that it strictly follows the Journal formatting requirements. Detailed corrections and revisions are listed below point by point. And, all the revisions have been addressed in the reply.

Reviewer # 1:

General comments

The Manuscript has been improved according to referee suggestions. Still there are some parts of the methodology - and thus of the analysis - which are unclear. In particular, Section "3.5 The calculation of drought propagation threshold" and the related results, remain quite difficult to follow. This is reflected also on the scheme of Figure 3.

[Authors' response]: We gratefully appreciate for your comment. We have rewritten section 3.5 to clarify the determination of drought propagation thresholds (Page 8 line 9 to 24, Page 9 line 1 to 2 and 14 to 23 and Page 10 line 1 to 14).

Minor comments

1. We gratefully appreciate for your comment. The sentence "and Strengthened significantly in BKQ" has been deleted in our revised manuscript (Page 1 line 18).

2. We are very sorry for the mistakes in this manuscript and inconvenience they caused in your reading. We have changed 'Howover' to 'However' in our revised manuscript (Page 2 line 27).

3. We gratefully appreciate for your comment. As suggested, we have changed 'And' to 'Also' in our revised manuscript (Page 3 line 8).

4. We gratefully appreciate for your comment. As suggested, we have changed 'grades' to 'classes' in our revised manuscript (Page 5 line 3).

5. We are very sorry for the mistakes in this manuscript and inconvenience they caused in your reading. We

have changed 'Antonia et al. (2021)' to 'Longobardi et al. (2021)' in our revised manuscript (Page 6 line 2 to 3).

6. We gratefully appreciate for your valuable suggestion. As suggested, we have added a figure (Figure 3) to further explain equation 3 in our revised manuscript (Page 8 line 9 to 24 and Page 9 line 1 to 2).

7. We gratefully appreciate for your comment. As suggested, we have changed 'periodicity' to 'recurrence' in our revised manuscript (Page 15 line 6).

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Reviewer # 2:

1. *Authors bring improvement into the manuscript version 2. However, they did not took account of my recommendation on testing the Normality of SPI and SRI series. Their response number 7 (reviewer 1) is not a response. It is an explanation of how they compute SPI and SRI. They said « Therefore, theoretically speaking, SPIs and SRIs series follow the standard normal distribution». My recommendation is to test if this theoretical aspect is validated by data. I speak with experience. Some SPI series elaborated with the method they describe do not fulfill the condition of normality. That's why it is required to test for this condition.*

[Authors' response]: We gratefully appreciate for your comment. As suggested, we have tested the normality of SRI-1 and SPI-1 to SPI-24 in four sub-basins. The results showed that SRI-1 of DHF and XJWP followed normal distribution at 0.05 level, while SRI-1 of other sub-basins did not follow normal distribution, as shown in the figure below. Similarly, the SPI sequences of each sub-basin at the scale of 1 to 24 months partially follow normal distribution.

However, it is worth noting that when the SRI and SPI values calculated in this paper are small, SPI and SRI are negative, and the smaller the rainfall and runoff are, the larger the absolute values of SPI and SRI are. In addition, the characterization of meteorological and hydrological drought by SPI and SRI is consistent with the actual observed drought conditions in the study area. Therefore, SPI and SRI are used in this paper to characterize meteorological and hydrological drought conditions in the study area respectively.

As for the classification of drought classes based on SPI and SRI, this paper refers to the practices of several researches on drought based on SPI and SRI.

Notes

Description	Perform Normality Test
User Name	Administrator
Operation Time	2021/12/30 16:28:26
Report Status	New Analysis Report
Data Filter	No

Input Data

	Data	Range
Data	[Book1]SRI!B"SRI-1_BKQ"	[1:636]
	[Book1]SRI!C"SRI-1_DHF"	[1:636]
	[Book1]SRI!D"SRI-1_SY"	[1:636]
	[Book1]SRI!E"SRI-1_XJWP"	[1:636]

Descriptive Statistics

	N Analysis	N Missing	Mean	Standard Deviation	SE of Mean
SRI-1_BKQ	636	0	-0.03264	1.00063	0.03968
SRI-1_DHF	636	0	-0.00563	1.01267	0.04015
SRI-1_SY	636	0	-0.01417	0.99875	0.0396
SRI-1_XJWP	636	0	0.01311	0.99457	0.03944

NormalityTest

Kolmogorov_Smirnov

	DF	Statistic	p-value	Decision at level(5%)
SRI-1_BKQ	636	0.07484	0.00158	Reject normality
SRI-1_DHF	636	0.05178	0.06535	Can't reject normality
SRI-1_SY	636	0.0763	0.00119	Reject normality
SRI-1_XJWP	636	0.04638	0.12858	Can't reject normality

SRI-1_BKQ: At the 0.05 level, the data was not significantly drawn from a normally distributed population.
SRI-1_DHF: At the 0.05 level, the data was significantly drawn from a normally distributed population.
SRI-1_SY: At the 0.05 level, the data was not significantly drawn from a normally distributed population.
SRI-1_XJWP: At the 0.05 level, the data was significantly drawn from a normally distributed population.
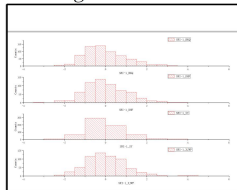
Histograms

Figure Normal test results of SRI-1 sequence in each sub-basin of Hun River Basin.

2. *Page 14 line 16 the median corresponds to 0.5 only in case of normality. That is why it is important to check for normality. In the paper of McKee et al 1993 on page 3, they insist on the fact that SPI is normally distributed. So it is needed to check for normality for SPI and SRI. Did authors verify using their samples that the median is 0.5?*

[Authors' response]: We gratefully appreciate for your comment. In this study, according to the univariate empirical frequency of drought duration (D) and severity (S), three typical drought scenarios were selected to analyze the return periods. The scenarios corresponding to the univariate cumulative empirical frequency interval of [0.5,0.75), [0.75,0.95) and [0.95,1] were defined as moderate, severe and extreme drought, respectively (Page 7 line1 12 to 13). The optimal distributions of D and S have been listed in Table 3, and they do not obey the normal distribution (Page 15 line14). Based on the best-fit marginal distributions, the boundary characteristics of these three scenarios of hydrological drought could be determined.