Review of manuscript (hess-2014-138) by Halawatura et al.

The objective of this study is to quantify the Severity-Duration-Frequency (SDF) curves of short- and long-term drought in Eastern Australia using three drought indices, namely SPI, RDI and SPEI. The authors conclude the using these easily accessible data mine rehabilitation managers can adopt the concept of using SDF curves as early risk assessment tool. In view of the interactive discussion and my own review, I recommend that the paper still needs to clarify some major and minor points before it is acceptable for publication.

Page 1, lines 17; page 3, line 33: Although the authors state the objective as to quantify the SDF of short- and long-term drought evens and that they define the short-term droughts as droughts of less than three months, they attempted to characterize drought only for medium- (3 months) and long-term assessment throughout the paper (see e.g. p. 5, line 9; Figs. 4 to 6).

Page 5, Materials and methods: There is no detail of the data in use in terms of record length and quality (missing data, gaps). Are the data long enough to conduct a frequency analysis and fit probability functions?

Page 5, line 29: Why did the authors use evaporation rather than evapotranspiration to calculate the drought indices if they are talking about agro-climatic regions, extensive cropping and grazing areas as mentioned in the introduction (page 2, lines 12-13)?

Page 7, lines 4 and 5: The authors define drought severity as the summation of negative index values. To my understanding, this is rather the magnitude of drought. Drought severity is defined as the magnitude of drought at a given time. On the other hand, in page 12, line 7, the authors define severity as negative values of drought index. Please clarify based on for instance the following references for definitions of drought characteristics:

Chen, S.-T., Kuo, C.-C., Yu, P.-S., 2009. Historical trends and variability of meteoro-logical droughts in Taiwan. Hydrol. Sci. J. 54 (3), 430–441.

Edossa, D.C., Babel, M.S., Gupta, A.D., 2010. Drought analysis in the Awash Riverbasin, Ethiopia. Water Resour. Manage. 24, 1441–1460.

Mishra, A.K., Singh, V.P., 2010. A review of drought concepts. J. Hydrol. 391, 202–216.

Pages 9, lines 28 & 29; page 10, lines 1-4; Fig. 5; Appendix E: First, $p > 0.05$ should be corrected to $p< 0.05$. Second, the correlation coefficients alone are not decisive indicators of match of drought characteristics. A good correlation could be found but this does not mean that the timing of drought matches between the different drought indices. Serial correlation (autocorrelation coefficient) is more

appropriate since a lot of emphasis has been put on recurrence interval. Third, can the author give any physical explanation why correlations were lowest for arid areas?

Page 12, line 20; Section 4.2, lines 19-21: The authors claim that their concept provides "a quantitative estimate of ecosystem rehabilitation failure due to water deficit". This concern was also raised in the referee report # 2, but the answer still remains superficial and speculative if no quantitative measure of consequent risk is given. For instance, the possible outcomes of disaster on a cropping system must consider the crop yield to assess the risk. It is to be emphasized here that not all drought events cause failure. If the authors cannot identify the consequence of ecosystem rehabilitation failure, these objective and statements should be removed from the whole paper. Then, the tile of the paper should be changed to

Severity-Duration-Frequency curves of drought: a tool for ecosystem managers to address site-based climatic conditions

List of references: The authors should be consistent in formatting the titles of references as regards the use of capital and small letters based on the journal guidelines. In this manuscript, a mixture of these formats is used.

Table 1: The reader cannot understand the too many undefined symbols and abbreviations (columns 4 to 6) though this table has been referred to at least 4 times in the introduction. I recommend removing these abbreviations and leave the text.

Table 2: Where is this table mentioned in the text?