

## ***Interactive comment on “A copula-based assessment of Bartlett–Lewis type of rainfall models for preserving drought statistics” by M. T. Pham et al.***

**Anonymous Referee #3**

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General comments: This article presents an approach to detect whether the simulated rainfall series can preserve drought statistics or not. The authors compare drought statistics (duration and severity) from observed data and synthetic data from five Bartlett-Lewis point processes in terms of EDI values, YAEDI365 values, and four types of copula-based return periods. This article presents a very detailed description about the methods employed in this study. Readers who interest in this article can easily follow the procedures to implement analyses. It can be accepted in present form with minor revisions which are given below.

Specific comments: 1. Page 7473. Parameters of point process models represent  
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what kind of rainfall characteristics should briefly state in the text. 2. Page 7481. The values of parameters used for 5 Bartlett-Lewis models should be stated. 3. A summary table is suggested to list results of comparisons among 5 Bartlett-Lewis models for EDI values, YAEDI365 values, and copula-based frequency analysis. 4. The authors should explain why the shape of the 5-year joint return periods of  $D \geq d$  or  $S \geq s$  (Figure 9, right above) is different with results of 10-year joint return periods (Figure 10, right above). 5. Other minor editorial suggestions: (1) Page 7480, line 2. The name of AMH, A12, and A14 should be spell out. (2) Onof et al., 2013 in page 7473 (lines 9-10), page 7474 (line 10), and page 7482 (line 4) are not consistent with Onof et al., 2012 in Reference section (page 7493). (3) The following references listed in Reference section are not cited in text, including Glasbey et al., 1995, Gyasi-Agyei, 1999 (page 7491), Gyasi-Agyei and Willgoose, 1999, Khaliq and Cunnane, 1992, Marani and Zanetti, 2007 (page 7491), Pui et al, 2012 (page 7493), Simthers et al., 2002, Vandenbergehe, 2012, Velghe et al., 1994 (page 7494).

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