Interactive comment on "Bivariate return periods of temperature and precipitation explain a large fraction of European crop yields" *by* Jakob Zscheischler et al.

Anonymous Referee #1

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This is an interesting manuscript, and outlines a novel application of multivariate return periods. In my opinion it deserves publication: it is clear, well written, and the mathematical tools used are well referenced.

I only have two minor remarks:

1- There are two typos on page 5, line 10: it is $Pr(X<x)$, not $F(X<x)$, and similarly for Y.

2- On page 3, lines 9-13, the Authors should add that the concept of "critical regions" has recently been well mathematically formalized in the paper mentioned below, via the notions of Hazard Scenarios and Upper Sets (which provide a consistent mathematical framework): such a piece of information may be useful for the interested readers.

C1

G. Salvadori, F. Durante, C. De Michele, M. Bernardi, and L. Petrella.

A multivariate Copula-based framework for dealing with Hazard Scenarios and Failure Probabilities.

Water Resources Research, 53:3701–3721, 2016. doi: 10.1002/2015WR017225.

Interactive comment on Biogeosciences Discuss., doi:10.5194/bg-2017-21, 2017.