

Interactive comment on “The European 2015 drought from a climatological perspective” by M. Ionita et al.

Anonymous Referee #3

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General:

An in-depth study of the 2015 European drought would be a valuable addition to the literature. This is clearly a strong group of researchers, but I was very underwhelmed by this article. The analysis is almost entirely descriptive and largely consists of maps of precipitation and temperature anomalies, along with accompanying maps of drought indices. All of this information is easily or widely available. Most of the conclusions reached are obvious: the drought was associated with below average precipitation, above average temperature, positive 500Pa height anomalies, and “widespread areas of negative SPI and SPEI” (quote from Abstract). What drought doesn’t have these features? The result that is most interesting is the associated sea-surface temperature patterns, but, like the other analyses, this is a largely descriptive exercise. The comparison with 2003 provides some additional substance, but it makes one wonder about

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the features of other past droughts. Why use just one year for the comparison when an ensemble approach is much more valuable? Similarly, no probabilistic information on how unusual (extreme) the 2015 drought was is provided other than that inferred from the SPI and SPEI values. The article reads like a routine government report rather than cutting-edge research.

Specific:

(1) At a minimum, this article needs to incorporate a more quantitative and probabilistic perspective on the 2015 drought. The SPI and SPEI values are a start but don’t fully show how unusual the values are. This could be done at each grid point or regionally over appropriate areas (such as agricultural regions or drainage basins).

(2) Building on the lack of probabilistic information, there also is an opportunity to include a paleoclimatic drought perspective. This could easily be done by using data from the Old World Drought Atlas (Cook et al., 2015) and then using that information in a more probabilistic approach.

(3) In terms of what other droughts have occurred and how they compare to these two, the current analysis suggests that the SST dipole may be an important and presumably causal feature. But it is unclear how often this occurs and how long it persists. Is it necessary but not sufficient? What other SST patterns cause extreme droughts in this area? Some additional analysis of that feature could make this a much more useful piece.

Technical:

(1) In the title, “2015 European drought” seems more appropriate than “European 2015 drought”. (2) The information on losses of 5000 billion Euro is given twice in the Introduction. (3) The rainbow color map used in Fig. 7 is not appropriate.

References:

Cook, Edward R., et al. "Old World megadroughts and pluvials during the Common

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Era." *Science Advances* 1.10 (2015): e1500561.

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