

Interactive comment on “Long-term water stress and drought monitoring of Mediterranean oak savanna vegetation using thermal remote sensing” by María P. González-Dugo et al.

Anonymous Referee #1

Received and published: 12 June 2020

General Comments The manuscript presents an interesting study using a long-term dataset to characterize the impact of water stress on the dehesa region of Spain. Overall, the study was well designed, the paper is well written, and the results and conclusions are fully supported. However, there are a few aspects of the study that need some clarification. The concerns, along with a handful of minor grammar and typographical errors, are noted below.

Specific Comments 1. Line 13: The sentence beginning "Drought is a ..." might be expressed more clearly as: "Drought is a devastating natural hazard that is difficult to define, detect and quantify."

C1

2. Line 13: The sentence beginning "Global meteorological data ..." is oddly constructed. It might be more clearly expressed as: "The increased availability of both meteorological and remotely sensed data provides an opportunity to develop new methods to identify drought conditions and characterize how it changes over space and time."

3. Line 26: The sentence beginning "During the drier ..." is unclear and needs revision.

4. Line 34: The sentence beginning "Drought is a ..." could be expressed more clearly if constructed as: "Drought, which is both a devastating natural hazard and globally widespread, has complex consequences across spatiotemporal scales and sectors."

5. Line 43: Replace "slow-onset nature" with "slow onset".

6. Line 48: Indicators of what?

7. Line 53: The sentence beginning "LST and VIs" reads oddly. The authors seem to be saying that by combining information about the surface temperature and vegetation, remote sensing-based models can provide accurate estimates of ET. But, rather than stating that explicitly, the authors couch it in terms of vegetation indices etc.

8. Line 115: This paragraph is a bit unclear. The authors state the parameterization of green vegetation fraction and height are unique for the dehesa. Are the authors back-calculating the leaf area index (L) using equations 8 & 9? If so, why? Also, there is no discussion of canopy height and how its calculation is modified to better represent the dehesa.

9. Line 172: It would be helpful if the authors included a histogram and an estimate of the distribution skewness for ET and relative ET. From the description given here it appears quite small.

10. Line 182: Replace "presented a general good agreement" with "generally showed good agreement".

11. Line 184: Why the greater discrepancy for the turbulent fluxes compared to the

C2

non-turbulent fluxes? Is this linked to imperfect closure for the flux measurements? Errors in partitioning the available energy between H and LE?

12. Line 206: The sentence beginning "Very low runoff ..." is redundant and could be omitted.

13. Line 207: Why isn't the relationship shown? Although it reasonable to suspect these two quantities would be correlated, a "close" relationship is a bit of a surprise. It would be useful to show this relational.

14. Line 207: Numerous metrics and indices have proposed been proposed over time to quantify aridity. It would be helpful to add a sentence or two to describe this index.

15. Line 222: Do the difference in the anomalies suggest local drought conditions? For example, during 2008/2009 there is a strongly negative value at the ES-LMa site while the value is slightly positive at StaClo. Would this indicate a local drought in the area about ES-LMa?

16. Line 253: it worth point out that the peak in the autumn is much weaker than the one earlier in the year.

17. Line 299: The phrase "and the more ..." also refers to ES-LMa, which was already discussed above. It appears to be an artifact from the writing process and should be deleted.

18. Figure 5: The word "fraction" is misspelled.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2020-190>, 2020.