

Reviewer comments on esurf-2021-58 resubmission

General comments:

This manuscript is much improved following the revisions and reorganisation that it has undergone – well done. In particular, the restricting of the Methods has made the whole document much clearer and I now understand why only the “soft” peat categories were virtually verified and there was some other verification of classification in the form of field visits. In some ways, it would be good to see an attempt at verification of the “stiff” peat, even if it was not as good, but I understand that choosing features from maps to do this would be difficult. I can now also see why 2018 was excluded as it has become clearer that you effectively set out to characterise a “baseline” (in essence) where major drought events would skew this aim, but I am pleased to see further consideration of this exclusion in the results and discussion.

I do still have a few comments below that I feel would improve the manuscript further, but most of them are relatively minor changes.

Specific comments:

Figure 1 – the map could do with more distinction between colours. Particularly, the brown is too dark and there is little difference between the dark green of forest and the slightly lighter green in the north of the map (which is what?).

Figure 2 – specifying “peak timing, t ” as a “dotted line” is a little unclear given the number of dotted lines on the figure. Is the bolder horizontal dotted line used to find t or is it a ? Either way, in part b, this dotted line extends outside of the May16-May17 motion year that the legend describes – why? Also, please specify if positive displacement is a rise or fall in bog surface (I assume rise but this would then mean that the bog was at its most swelled during the driest periods for stiff peat).

Figure S2 – the key to part c of the figure is very unhelpful. No reader will count 57000+ days from 1st January 1901 to try and work this out. The key needs to be changed to dates. If this is not possible in the software (which it should be), table of the dates should be overlain on the figure.

L155-164 – you say the analysis concentrated on May 2015 to May 2018 but then specify the last year of the timeseries as 2018-2019. Was 2018-2019 included or not?

L165 – if you are going to mention a 3-axis plot here, it would be useful to know where/what it is (i.e. refer to Figure X).

Table S4 – clusters 1, 3 and 4 seem to have PFGs with more than 3 names in, including categories with 0.0 in. Also, check if they match Table 2 (e.g. for Grass/rushes, G,R,S,nSp,nM when the n is not explained).

Table S5 – using percentages now makes it clearer but unfortunately the symbols chosen now mean the table makes less sense. \leq means less than or equal to. This means that 0% is included in the $\leq 20\%$ category (but is not) and everything should be included in the $\leq 100\%$. What I think you mean is that the categories should be 0%, 0.1-20%, 20.1-40%, etc. Given that the cumulative total of buffer zones column reads upsidedown, maybe reordering the table so that 100% is at the top would make more sense. Also, the 0% row should not be separate as this number is a separate category; however, it should be made clear that the 100% category is merely a subcategory of the $\leq 100\%$ category otherwise the numbers do not add up.

L391-394 – this partly relates to the comments on % categories on Table S5. Whilst the explanation of the method and interpretation of this remote validation is indeed clearer than before, the way it is phrased still gives room for misinterpretation. As you were classifying the % of pixels in the 150 m buffer of a pool system that were identified as “soft” peat (L249-251), to just say that 97.9% of the pool system markers occurred within 150 m of the “soft” peat class misses quite a bit of detail. Firstly, these parts of the text need to refer to Table S5 (which is currently referred to only in the Methods). Secondly, I think it would be a lot more accurate and less open to misinterpretation/confusion to say something along the lines of “at least one pixel classed as “soft” peat was found within 150 m of 97.9% of the pool system markers”.

Technical corrections:

L71 – comma missing after Scotland. Also not sure the location of the peatlands requires a reference.

L85 – ESRI, not ERSI.

L135 – “01 July 1st”. Need to decide on date format. Not sure why many (but not all) dates in the document have changed to an American format given this is submitted to a European journal.

L147 – the comma after “one” should be replaced by “is” to make a full sentence.

L149 – as for line 147 with “two”.

L151 – remove comma after “three”.

L179 – remove comma after “statistics”.

L187 – remove commas outside of brackets.

L192 – “by walking across the area mapped in the polygon”? Or words to that effect – not sure the author actually walked a polygon!

L200 – PFT not PTF.

L278 – line should end in a full stop.

L299 and 302 – should “mass” be “height” or “speed”?

L318 – “reflecting a variable degree” missing a.

L391 – Table S5 says 97.8% but it is 97.9% here?

L437 – Repetition of “Winter” in brackets is unnecessary.