

Thank you for taking the continued time and care to provide valuable feedback and contributions to this manuscript. The technical changes have been made and improved the details of the manuscript. Copy of review comments (RC) are given below, followed by the author comments (AC).

Report 1

RC	Thanks to the authors for their thorough response to my comments. The revised abstract clearly emphasizes the key findings, and the inclusion of references to more general papers on the length scale gives more context to the reader who is not familiar with the subject. The supplementary figure S2 clearly explain well the temporal filtering.
RC	The distinction between the two estimations of the length-scale is much clearer, but the advantage of the one based on the spatial network is still not crystal clear to me. Note, however, that correlation length-scales and spatial network are not my expertise. I still have the impression that you can get the spatial information from the first method (sec. 321). It has been applied to 300 points and then average to get a spatial average. Why not applying it to all the grid points and not spatially averaging? In the description of the second methods (l. 184), it is said that the length-scales estimated with the second method are comparable between the variables in each geographical location. I do not understand why (as well as why the first length-scale estimation it is not comparable) but it seems like an important motivation and should probably be stated at the beginning of the paragraph.
AC	<p>It would be too computationally costly to apply the method from section 3.2.1 to every point, for every (potentially) desired correlation threshold (this method is somewhat restricted by the need to set the same static correlation threshold across all variables). The advantage of the methods applied in Sect. 3.2.3 (Line 184) is that we do not need to select a correlation threshold (as we do in Sect. 3.2.1) across each variable's network, and instead we dynamically adjust the correlation threshold for each network so that every network, $N(x, v)$, has the same number of links (an effective way of normalising the relational data). This makes the method from 3.2.3 much more computationally cheap than the method in 3.2.1. Lines 199-204 describe how this is useful in calculating $M(x)$ – a variable independent length-scale map which is representative of the normalised maps $N(x, v)$ if the spatial pattern exhibited by all of the variables is similar.</p> <p>As suggested by the reviewer, to clarify for future readers why we cannot use the method from 3.2.1 in section 3.2.3, we added new text on line 179 onwards: <i>“Deducing the length-scales from the networks allows us to bypass the high computational cost associated with the method based on calculating spatial correlations along circles with increasing radii, described in Sect. 3.2.1. The network-based analysis from this section also provides a convenient way to normalise the structure of the spatial patterns found in each variable, without the need to select a specific correlation threshold as in Sect. 3.2.1.”</i></p>
RC	Few extra comments: l. 125: isn't that a running average with a 10 days time window? If yes, maybe you can use this term.
AC	Agreed – added this term.
RC	l. 303: close the parenthesis after « according to Sect. 3.2.3. »
AC	Agreed.

Report 2

RC	As it is the second time I review this paper, I think my initial concerns have been addressed and the paper can be accepted for publication. A few very minor issues has been included below for some last polishing on the manuscript before publication.
RC	Abstract: The sentence “We also find that the spatial distribution of length-scales are similar across each variable, as long as a specific scaling-factor for each variable is taken into account.” Was hard to understand without reading the entire paper, I propose based on my understanding: On my initial reading of the abstract, this sentence puzzled me, now after reading though the manuscript, it is still not clear to me what is meant, consider rephrasing, perhaps use “spatial pattern instead of “spatial distribution”.
AC	Agreed. Changed accordingly.
RC	Suggest: “boundaries of these” - > “boundaries between these”
	Agreed. Changed accordingly.
RC	Line 261: suggest “As with before...”
AC	Agreed the sentence could be made clearer. “As with before...” doesn’t exactly fit, as this section is approaching the data differently. Re-written to say: <i>“The work in the previous sections focused on understanding how each variable separately behaves in horizontal space. In this section, we focused on developing an...”</i>

Best wishes,
Ieuan Higgs and the co-authors