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Comment

## ***Interactive comment on ““Changes” of the thermal continentality in Central Europe between the years 1951 and 2013: case study – Slovak Republic” by J. Vilček et al.***

### **Anonymous Referee #3**

Received and published: 6 October 2015

Review of “Changes of the thermal continentality in Central Europe between the years 1951-2013: case study – Slovak Republic” by J. Vilcek et al.

The authors have undertaken an analysis of continentality as marked by the annual temperature cycles at a number of stations across the Slovak Republic. The analysis is reasonable insofar as it goes but is arguably not sufficiently substantial to warrant publication in the journal in current form.

This is not helped by the English being of relatively poor quality in many places in the submitted text. This makes the text harder to read and interpret than is necessary. Enlisting the help of a native English speaker to help in redrafting would inevitably lead

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to a more accessible analysis to the journal readership.

In addition to ensuring clearer English in any resubmission, my scientific concerns / suggestions are as follows:

1. It is unclear as currently written whether the authors are using the original data records or records that have been quality controlled and / or bias adjusted.

a. If the authors are using the original data records they should undertake at least basic quality control and homogeneity assessments prior to the analysis of continentality. Several possible procedures are freely available such as ACMANT and HOMER that could be used virtually 'off the shelf' and the homogenised series would represent a valuable contribution and substantially increase the science quality of the submission.

b. If the data have already been quality controlled and homogenised then the relevant papers should be cited and the homogeneity assessment that was performed should be summarised in the redraft to such an extent that the reader can properly interpret the degree of likely homogeneity of these data records.

2. If the stations form a contribution to the global analyses CRUTEM4, GHCNMv3 or Berkeley and / or more regional / European analyses of surface temperatures then the station series from these collections could be used to get an estimate of sensitivity of the analysis to quantified uncertainty in QC and adjustments. An assessment of sensitivity to this would yield scientifically stronger conclusions. The GHCN, Berkeley and CRUTEM station records are all publically available.

3. Continentality is but one derived index possible from the available temperature elements. It is not clear that it is the most relevant as the paper is written. The paper should either better justify why continentality is so important or consider the trends in a broader range of temperature related indices. The authors could, for example, use the 12 (I think) temperature related ETCCDI measures and analyse changes in these for the country. This may yield both a more complete assessment of temperature related

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changes and their impacts and one that is more directly comparable to other studies. Further information on the ETCCDI indices can be found at [www.climdex.org](http://www.climdex.org). These could be considered in addition to continentality.

4. Because some stations are available for 1951-> and others 1961-> it is hard to disentangle in the text and tables as it stands where distinctions in reported trends and / or significance relate to real geographic gradients or instead to the time period considered. The analysis would be clearer if it were split in two with a consideration of the long-period trends (a subset of stations) and the shorter period trends (all stations). This would mean deriving two sets of tables – one for 1951-> and one for 1961-> and discussing these as two distinct results. I believe that this would simplify the analysis and help the authors to better highlight the salient points of their analysis.

5. My interpretation of the study would have been substantially aided by a figure showing the study domain area and its topography and highlighting the location of the six sites relative to urban developments, forests, lakes, ocean etc. In particular for continentality it would be important to the reader who is unlikely to be knowledgeable of the geography of the Slovak Republic to be able to understand the geographic context of the six analysed series both nationally and regionally. The domain should extend at least to the Mediterranean, Baltic and Black Sea that presumably represent the three nearest 'Oceanic' regions.

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Interactive comment on Earth Syst. Dynam. Discuss., 6, 1261, 2015.

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