

## LIST OF THE CHANGES IN MANUSCRIPT

Article title: **Thermal continentality and its changes in Slovakia in the period 1961 – 2013** in new version **Minimal change of thermal continentality in Slovakia within the period 1961–2013\***

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\* We provide the new version of the title due to comment from the reviewer No. 2

\*\* In new version is Ms. P. Nalevanková shifted from the last position to the fourth position (because of her significant contribution to the revised manuscript).

### Dear editor and reviewers

In following sentences we describe changes made in our manuscript uploaded on May 2<sup>nd</sup> 2016. Many thanks for time you spent with our manuscript.

Generally, all the reviewers as well as editor suggested professional English check. Therefore the manuscript professionally checked by the Proof-Reading-Service.com (Devonshire Business Centre, Works Road, Letchworth Garden City, SG6 1GJ, Hertfordshire, United Kingdom).

Other corrections will be described in following paragraphs.

#### Comments from the reviewer No. 1

There are only few mistakes (rising from the English) reported by the reviewer. These mistakes were corrected due to professional proofreading by the company described above.

Thank you

#### Comments from the reviewer No. 2

#### General comments and suggestions

##### Title

**RC (reviewers comment)** "Expression <CHANGES> suggests that there are some..."

**AC (authors comment)** We agree. Thank you. Therefore we decided to change the title from *Thermal continentality and its changes in Slovakia in the period 1961 – 2013* to *Minimal change of thermal continentality in Slovakia within the period 1961–2013*.

##### Abstract

**RC** "Does not give the general information about the work done. The aim, data, methods and the results should be described in a very concise form."

**AC** Thank you. Because of this we made several changes in abstract. Please see page 1, lines 14-24.

### Introduction

**RC** “The paragraphs could be a little bit more organized ... It would be valuable to have described the general findings of the literature cited (to emphasize the value of the study itself) ... The AIM of the study is not precised clearly; Is the analysis of the changes in the thermal continentality within the given period the aim? If so - please specify at least what changes ...)”

**AC** We agree. Therefore we add sentences on page 2 lines 8-10, 27-29, 31-33 as well as on page 3 lines 1-3.

### Material and methods

**RC** “Paragraph 2.2 can be involved into temperature data description.”

**AC** We do not want to do this change because Station description is a geographical complex where climate (in our case temperature characteristics) characteristics are implicitly required.

**RC** “Are mountains stations - especially Skalnate Pleso - highland stations? In different parts of the study they are named as mountains or highlands stations - no consistency.”

**AC** We agree. It was our mistake. Please see page 3 line 27

**RC** “Moreover, if the main reason of choosing the 6 stations was a geographical location (as stated in the first sentence) there is a pity that none of them represents the western part of the country (taking into account the essence of continentality)”

**AC** We disagree. These stations were sensitively selected. Western part of Slovakia is represented by station Hurbanovo. This station is very representative for the western part of the country because as seen from the figure 1, prevailing geomorphological structure here is the Podunajská nížina lowland (for which is Hurbanovo representative station). This is confirmed also by using this station for representative purposes by e.g. the GPCC, CRU etc. in the area.

**RC** “Paragraph 2.3: There should be explained why those indices have been selected. As the annual temperature amplitude is the main variable in all indices, a short introduction to the paragraph (regarding the essence of the amplitude) is advisable. The methodological question arises - what differences were expected by the Authors to find as the indices are based on the same parameters?”

**AC** Because of this question arises, we add sentences on page 5 lines 15-21

**RC** “The whole paragraph <2> lacks the information about the methods used in the study (except for the indices description)”

**AC** Yes we agree. We add sentences on page 5 lines 22-25.

## Results

**RC** “3.1 The paragraph needs the introduction about temperature spatial differentiation (in general) – to highlight the differences in temperature amplitude described in following chapters (probably the parts moved from stations descriptions would be enough).”

**AC** Introduction about temperature spatial differentiation is described in paragraph. Moving with section are non-acceptable due to reasons described above. However we understand that reader could have problem to find this description in fast way. Therefore link on the temperature description is written on page 5 line 30.

**RC** “There is no annual mean temperature variability presented on the graphs...”

**AC** Right, we agree. Please see changed figure No. 3.

**RC** “3.2. There is no further comparison/discussion/comments except for statistical description of the selected indices ... The only conclusion in that part is that Gorczynski index is the best as being sensitive to longitude and elevation what seems not to be justified ...”

**AC** We cannot accept this statement. Several interesting findings were discussed. For example: Higher thermal continentality in north of the country in comparison to south (because of Alpine continentality), influence of temperature inversions in valleys on thermal continentality characteristics and finally identification of continentality border in eastern Slovakia (because of influence of Sarmatic plain). These findings were discussed in whole paragraph 3.2.

However we decided to „summarize,, these findings (clarification for readers) in last section of the paragraph 3.2 (please see page 8 lines 8-19).

**RC** “3.3 As mentioned before (par. 2.3) - because all the indices are based on the same parameters with the only contrast in constant values it is not surprising that there are almost no differences in long-term trends (table 4). Unfortunately there is no discussion on the point ... R2 statistical characteristics means coefficient of determination and describes how well the regression line approximates the real data and cannot be interpreted as the intensity of the tendency”

**AC** On first part of the comment we provided detailed justification of the reasons which lead to using selected indices (please see page 5 lines 15 – 21).

Second comment on R2 characteristic is interesting. Thank for this. I will cite from the statistical guide of The National Center for Atmospheric Research (NCAR).

The detection, estimation and prediction of trends and associated statistical and physical significance are important aspects of climate research. Given a time series of (say) temperatures, the trend is the rate at which temperature changes over a time period. The trend may be linear or non-linear. However, generally, it is synonymous with the linear slope of the line fit to the time series. Simple linear regression is most commonly used to estimate the linear trend (slope) and statistical significance (via a Student-t test) (Shea 2016) <https://climatedataguide.ucar.edu/climate-data-tools-and-analysis/trend-analysis>

Although this we see argument of the reviewer very interesting. Therefore we remained R2 statistical charactersics used in Table 4 and replaced with the linear trend values (units/year; units/observed period). In our opinion this will bring clear interpretation. Thank you.

### Conclusions

**RC** “The paragraph lacks the convincing arguments for the results of the study. Some general (well known) remarks appear (as spatial differentiation of thermal continentality towards East in Slovakia located in Central Europe, the lowest values of the indices in high mountains). It is difficult to find out what are the main achievements of the paper ...”

**AC** We agree with the comment. Because of this we add sentences (page 9 lines 27-32). In addition our changes made also in introduction part are sensitively linked with conclusions (clear question – clear answer).

All technical comments were accepted and incorporated.

Thank you

Authors