

Interactive comment on “Anthropogenic and natural drivers of a strong winter urban heat island in a typical Arctic city” by Mikhail Varentsov et al.

Anonymous Referee #3

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This is a very well-conducted analysis on an urban heat island effect in a high-latitude urban center during winter conditions. The paper is well written and easy to follow. I have a few minor issues to be considered before accepting the paper for publication.

The authors show that roughly up to half of the observed temperature anomaly between the sites U1 and R1 can be due to orographic effects during cold winter days, not due to a real urban heat island (UHI) effect. Yet, they define UHI directly as this temperature anomaly (page 5, lines 28-29). I would very much recommend that the authors call the observed temperature differences between any two (urban vs. rural) sites as temperature anomalies, or something related to that, but not UHI.

Page 5, line 28: Please mention explicitly in the text that T_i and T_j refer to temperatures at sites i and j , respectively. Furthermore, it might be worth mentioning that they are

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2-m air temperatures, simply because later in the paper also land surface temperatures are being discussed.

Page 6, lines 11-12: this should rather read “...make many of the proposed UHI scalings...”

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