

Comment on **essd-2021-401**

Anonymous Referee #2

Referee comment on "Historical and future weather data for dynamic building simulations in Belgium using the regional climate model MAR: typical and extreme meteorological year and heatwaves" by Sébastien Doutreloup et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-401-RC2>, 2022

Thank you for your manuscript about future temperature changes in relation to building simulations. I am not a potential user of this data set, therefore my review may lack in terms of this. However, I found it interesting, although that I do have some comments.

Generally

- You use many abbreviations. Please explain all of these when meet first. Example is MAR, but also CMIP6 which you first introduce in line 92 even though it is used much before. There are many more abbreviations than these, so please careful check this to assist the reader.
- Be consistent with font type in text and figures
- Please discuss the sources of errors at a higher level than presented in the paper. This is modelled data, therefore you need to argue why this is useful.
- Would other methods than MAR give another results, and would it be better to provide the entire data set used as input, together with the output from the MAR downscaling model?

Title

- Please do not use abbreviations in title unless you are certain that the reader knows what it means.

Abstract

- Line 20. Which resolution did you have? What do you mean by 'spatially and temporally homogeneous'?
- Line 24. Normally you don't cite a paper in an abstract.
- Please provide information of what the dataset consists of. It is not clear.

Introduction

- Please explain more clearly what these data is used for. Why is the future data important? Are we designing cooling systems that last 100 years?

Methodology

- Line 65. Please describe what is meant by reanalysis
- Line 66. I cannot see that 'MAR' is 3-D in Figure 1. Please describe what you mean.
- Line 78. You don't call this scenario for historical afterwards. Be consistently.
- Line 84. 'The spatial resolution of MAR is 5 km...' Isn't the output from the MAR that is 5 km.
- Figure 2. Please draw a thick line around Belgium. Not all are familiar with the border of the country.
- Why are country sides not interesting? Don't they apply this method outside cities?
- Line 105. You need to explain 'Shared Socioeconomic Pathways' further.
- Line 109. What makes the calculations so expensive?
- Maybe a drawing of the different combinations would help the reader.
- 3. It is hard to see that red (CSM2-MR) should be higher than the blue color (ESM1.2) referring to line 100-105.
Axis titles and legend is missing.
- Table 1. Why do you give new names now? Could this be introduced earlier, and applied throughout the paper?
- Line 150. Why is it called 'para' and when reading the steps 153-174 it is not clear if you do the steps for each parameter in 'para' or if you combine it.
- Line 188. Please explain Sint, Sdep and Spic, why these names.

Data set

- Very nice with the appendix guiding the user through a data set.
- What is TT and SWD?
- December 31 is missing in e.g. this file Mons-City_TMY1991-2005_hist_MAR-MPI_TTbased.csv. Please check the data that other dates are not missing.

