

RESPONSE LETTER

Review of Manuscript No.: **essd-2019-52**

Title: **STEAD: A high-resolution daily gridded temperature dataset for Spain**

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GENERAL COMMENTS

The manuscript entitled “STEAD: A high-resolution daily gridded temperature dataset for Spain” shows a very serious analysis of daily precipitation spatial and temporal behaviour in an area where rainfall has been widely studied.

I really enjoyed reading this work about the methodological procedure for generating a high resolution gridded dataset for temperatures in Spain. The paper is, overall, very good and very well written. The objectives proposed are carried out rigorously following a proper structure. Moreover, the discussion is very well developed and carries out a very interesting deepening about the implications of considering different criteria to develop the dataset. The results shown are very consistent.

I do really appreciate the exhaustive quality control over daily temperature data base on paired comparisons between observations and standardized predictions shown in section 3.3, as well as the consideration of the distance to the coast as a source of variation of the local models.

I think that it fits the scope of the journal and can be published as it is, only with very few corrections.

Thank you for your comments. We have been working in the development of the methodology for a long time, testing different approaches with different parameters. The present version is the most accurate given the great variety of temperature values in a large dataset as the Spanish network.

SPECIFIC COMMENTS

- p. 2 l. 24: “leads to high risks related to...” risks such as?

We added a short sentence in this part of the text to clarify the type of risks.

“[...] such as increments in the frequency and magnitude of extreme events.”

- p. 5 l. 5-6: can you explain why you chose these thresholds or it is a subjective criteria?

The thresholds are based on the maximum and minimum absolute records of the Spanish Meteorological Agency (AEMET). This organism checks the reliability of the absolute temperature extremes, being the official ones -30.0 °C (1963) for minimum temperature and +46.7 °C (2017) for maximum temperature. We used -35 and +50, respectively, to discard wrong data.

- p. 10 l. 2: “and” instead of “&”, the double condition is more understandable this way

Modified as suggested.

- p. 13: I suggest to move Table 1 to the previous page

Thank you. We agree that the table should be near to the beginning of section 4.1. We will report this back to the responsible of the publication production process.