Interactive comment on "High resolution atmospheric reconstruction for Europe 1948–2012: coastDat2" *by* B. Geyer

Anonymous Referee #2

Received and published: 22 January 2014

This study presents a high resolution atmospheric reconstruction. It is the new version of the coastDat dataset and replaces coastDat1. As coastDat1 was already widely used and coastDat2 comprises the most recent years and has a higher resolution, it is expected that coastDat2 will also be widely used in future. The paper is therefore of great interest for both the modelling and the data community. It is well written and has a clear structure. The data are stored in a common format and have informative metadata.

As this paper presents a unique dataset that is of interest for many users, I recommend publication after considering the following comments.

SPECIFIC COMMENTS:

1. The model set up for the reconstruction is very well described. A short description of the differences in the model set up between coastDat1 and coastDat2 would be useful for users changing from coastDat1 to coastDat2.

2. The link/doi where the data can be downloaded should also be mentioned in the text, not only in the abstract.

3. The paragraph about the external data should contain the references to all used datasets and an introductory sentence about the need of these data for the model.

4. The motivation for the evaluation of the selected variables is clear. The evaluation itself is quite short. The calculation of the bias for the whole period for all selected variables is clear and well described, but the significance should be added. However, the evaluation of the temporal evolution and variability is missing for all variables. At least correlations for the whole time period should be provided. Analyses for shorter time periods would be interesting. It should be included in the text if there are periods with a better or worse skill because users are not always interested in the whole period. Please also add some information on the significance of the results.

5. page 784, line 26: What about June to August in Iberian Peninsula (A2), where also large negative differences can be found?

6. page 784, line 27: It should read "December to May in Scandinavia (A5)", as deviations in MAM are even larger than in DJF.

7. Table 2: The large positive differences in JJA for 12 and 18 UTC should be mentioned in the text.

8. Table 3: Why are not all listed variables published by Geyer and Rockel (2013)? Why are they listed? Are they available? The variables SSO_GAMMA (64), SSO_SIGMA (65) and TOT_SNOW (82) are listed as published, but are missing in the CERA Database/metadata.

9. Fig. 11: These figures are confusing. Please clarify the benefit of these figures for

the users.

10. The conclusions should contain a summary of where the reconstruction is most comparable to observations and where it has shortcomings.

11. The file coastDat2_COSMO-CLM_fx contains different data than listed in table 3 and in the CERA-Database. The content is inconsistent to what is written in the CERA database description. What about FC, FIS and HHL? Please check the consistency between table 3, CERA metadata and the file itself.

TECHNICAL CORRECTIONS:

page 781, line 16: "... 5 largest wavelengths..." (plural)

page 783, lines 9 and 17: inconsistent spelling of E-OBS/eObs, also for Figs 3, 4, 5, 6, 11

page 783, line 18 and page 784, line 15 and 18: add "2" after "coastDat"

page 784, lines 20, 28, page 785, line 9: Please avoid using CCLM (this abbreviation was not introduced), but use the term coastDat2.

Page 786, line 2: change "form" to "from"

Table 1: What is the meaning of bold numbers?

Fig. 6: Add the information that it is a mean over Germany.

Fig. 7: blue should be named coastDat2 instead of COSMO_CLM

Fig. 8: The colorbar should be adapted to the range of the data.

Fig. 9: red should be named coastDat2 instead of CCLM