

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

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Thanks for the helpful comments, recommendations, and hints for technical shortcomings. All items together helped very much to improve the paper. As assumed by the reviewer TOT_SNOW has not been stored on the server because it can be calculated as the sum of SNOW_CON and SNOW_GSP – the variable is now excluded from Table 3. Detailed answers to the specific review comments:

1. Regarding the 2m temperature the answer to the question of added value is highly depend on the considered region and season: for May to September we have an added value (positive Brier Skill scores with eobs8.0 as observation and CCLM as reference) over almost the whole region – Scandinavia is an exception, there we found negative

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values. In the rest of the year we found an inverse structure: positive Brier Skill Scores in Scandinavia but negative values for the rest of Europe (see additional Figure1). The standard deviation of the higher resolved dataset shows no better agreement with the standard deviation of E-Obs8.0. We did not compare total precipitation, as the quality of the E-Obs8.0 datasets is not high enough to take it for judging over other datasets. Instead we took the Regnie-dataset. Please find the according figure for Brier Skill Score, which is very slightly positive for most of the grid points of Germany (see additional Figure2). The enclosed histogram confirms, that due to the higher resolution does hardly added value is achieved (see additional Figure3).

2. “The data of the atmospheric part of coastDat2 (Geyer and Rockel,2013) are downloadable from <http://dx.doi.org/10.1594/WDCC/coastDat-2> COSMO-CLM.” is included in the revised version at the end of the paper.

3. As it did not become very clear that the paper and the shown curves are only for the atmospheric part of castDat2 (seen from the comments of the other review), the sentence “The acronym coastDat stands for the set of consistent ocean and atmospheric data sets, where the atmospheric data where used as forcing for the reconstruction of the sea state.” was added to the abstract to fulfill your recommendation No 3 at once with the other clarifying for review 2.

4. “climate changes since 1948 e.g. in frequencies of extremes” added in the revised manuscript.

5. and 6. CCLM and NCEP1 added in the revised manuscript.

7. The abstract includes already the sentences ‘The acronym coastDat stands for the set of consistent ocean and atmospheric data sets, where the atmospheric data where used as forcing for the reconstruction of the sea state. Here, we describe the atmospheric part of coastDat2. . .’ – we don’t want to repeat it here.

But with the recommendation 8 the issue becomes clearer: the mentioned sentences

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was rewritten and split into two: 'The here described atmospheric part of coastDat2 was produced with the community model COSMO-CLM on the current super computer of the German Climate Computing Center (DKRZ). It is the successor of the coastDat1 regional atmospheric simulation done with REMO5.0 (Feser, 2001, Jacob, 2001).

9. The recommended change are made in the revised manuscript.

10. The recommended change are made in the revised manuscript.

11. The text is changed to 'from the 6 hourly NCEP1 reanalysis data'.

12. As we have developments in the program int2lm it is necessary for reproducibility to mention the used version. It is a not trivial interpolation in vertical and horizontal direction with land-sea-mask depended solutions. Additionally certain namelist parameter which influence the model simulation (as e.g. the albedo settings) exist or not, depend on the version.

13. 'and are undefined,' is deleted in the revised version.

14. Paragraph is moved as recommended in the revised version.

15. The purpose of the paper is the presentation of the dataset and to give a proof, that the data quality is well. Here do not want to compare with every possible dataset, but concentrate on the key variables. In case of special interest this should be done in further scientific analysis and publication.

16. After Einarson (1984), the highest Icelandic climatological station is at Hveravellir at 642m – the CCLM model orography reaches to 1560m around Vatnajökull. This can be a reason for the huge deviation between model and gridded observation. As Bromwich et al 2005, who were using Polar-MM5 for their 8km resolution Iceland-simulation, we have mean January 2m temperatures for 1991-2000 of -12°C. Bromwich found a cold bias of up to 1K during winter in his simulations. His explanation for this deviations is: 'Large cool temperature biases occur in northern Iceland where the terrain is very complicated. The northern observing stations tend to be located in valleys and the

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model resolution is too coarse to resolve such low elevations. The cool model biases may arise because, in the real world, winter valley winds mix the lower atmosphere more effectively than in the model.'

For Africa Kothe et al. (2014) found, that the used albedo values are to low compared to satellite data (see Figure 2), which leads to higher temperatures in summer. At the time when the coastDat2 simulation was started, the new albedo data set was not yet available.

17. a) A short discussion is included now. b) The figures are included in the main document and discussed accordingly.

18. The complex analysis of relation between cloud cover in different layers and implications on temperature and precipitation are beyond the scope of this paper, which should only introduce the dataset. Further detailed work will be published by the working groups themselves.

19. 'beneath 213m' is meant. The blue bars for the 00:00, 06:00 have their maximum always beneath 213m. 18:00 for DJF and SON show the same, where 18:00 for MAM and JJA have bimodal distributions with local maxima beneath 213m. 00:00, 06:00, 18:00 sounding are called 'non-noon' in the discussed sentence.

The noon sounding values show are distinct different distribution.

20. It is not clear to the author what is meant by 'insert a clear'.

Technical corrections:

1. As information is a singular form I'm using now 'is' instead of the previous 'was'.

2. – 6. All corrected in revised version.

Interactive comment on Earth Syst. Sci. Data Discuss., 6, 779, 2013.

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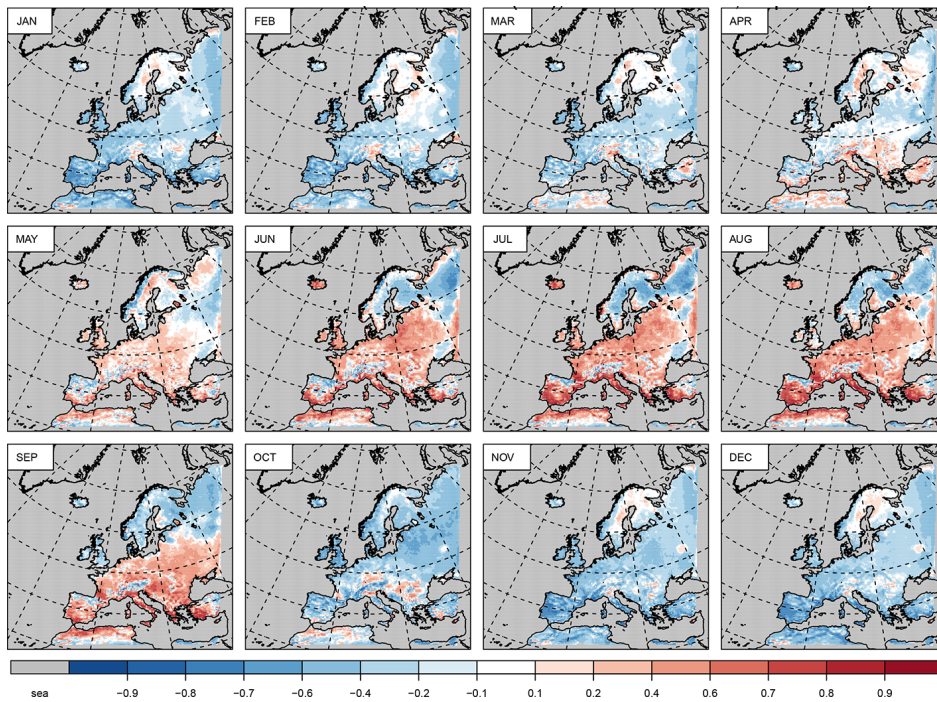


Fig. 1. BSSmod T_{2M} 1950–2007 (Observation: E-OBS8.0; Reference: REMO–SN; Experiment: CCLM)

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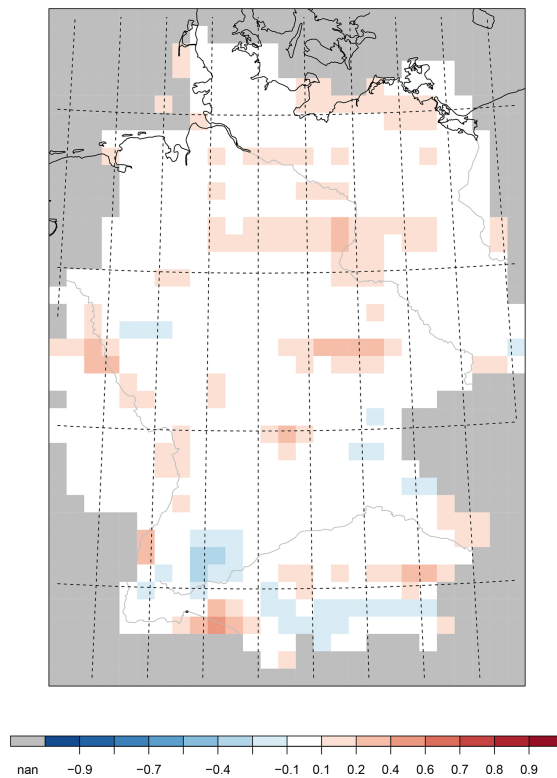


Fig. 2. BSSmod TOT_{PREC} 1951–2007 (Observation: Regnie; Reference: REMO_{SN}; Experiment: CCLM)

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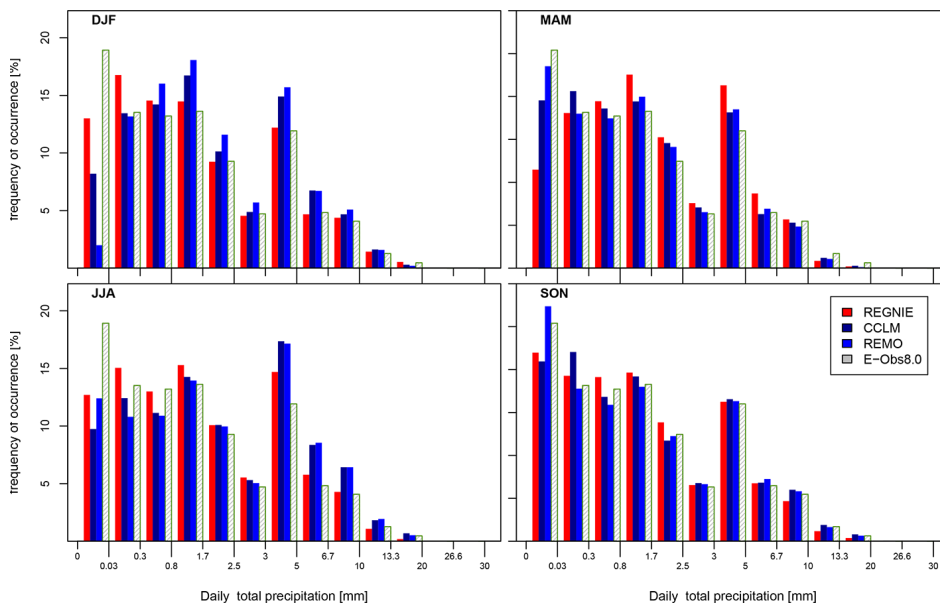


Fig. 3. Daily total precipitation frequency distribution 1951–2007, mean over Germany