

Interactive comment on “Utility of daily vs. monthly large-scale climate data: an intercomparison of two statistical downscaling methods” by E. P. Maurer and H. G. Hidalgo

Anonymous Referee #3

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This paper briefly describes two statistical downscaling methods, constructed analogues (CA) and bias correction and spatial downscaling (BCSD) and compares their ability in producing simultaneously downscaled gridded temperature and precipitation fields. The paper is written concisely and in general is clearly presented. I believe that this paper provides an interesting comparison between the two downscaling methods but needs to more clearly state its contribution to the wider community and its position in the context of previous work.

The main specific scientific points I feel need to be addressed are: 1. Some justifica-

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tion is needed for the use of the 20th percentile for dry precipitation extremes. Has this been used elsewhere and is this the most appropriate index for extreme dry conditions given that 1 in 5 days will have less precipitation than this amount? More generally, consider whether a table of definitions for the indices referred to in the text would improve understanding.

2. On page 3423, section 3.2; the first paragraph discusses the modest skill of the two methods in reproducing "dry" statistics in coastal areas but I think greater emphasis should be placed on the low skill over most of the domain. Some discussion on why the methods perform better for wet extremes may be useful. Also it would be interesting to state the results for wet extremes during summer given the likely very different distribution of daily rainfall totals in summer.

3. Given that the paper concludes that there is little skill in either method at a daily timescale for precipitation some comment as to why might be interesting given that the CA method retains daily correspondence of patterns between the two scales.

4. Some discussion of any wider implications for the downscaling community would be most interesting to add value to the paper beyond a direct comparison of two methods.

There are a few, relatively minor improvements that could be made to improve the understanding of the paper:

1. I think the discussion of the results would benefit from the inclusion of a map of the region showing at least the topography of the area and the locations of the areas named in the text e.g Mojave Desert, Madera, Yosemite. It may also be mentioned briefly why these locations are chosen as illustrative for Figure 3, e.g. varying climatological and hydrological regimes.

2. A consistent approach of naming should be adopted in the figures. Some use analogues, others use CA. I feel the latter is more consistent with the text.

3. Figure 3 in particular lacks clarity, and should be redesigned so that it is easier to

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distinguish between CA/BCSD and temperature/precipitation.

4. Figure 4 should state whether this is based on annual or seasonal statistics.

5. The caption in Fig. 7 says "Same as Fig. 5" but I believe it should refer to Fig. 6.

Some minor typographical errors have been identified:

1. pg 3417, line 2; should read "large-scale climate model"

2. pg 3420, line 3; second "of" is superfluous

3. pg 3421, line 10; change "effort" to "project"

4. pg 3421, line 19; sentence commencing "Correlations are computed..." ends abruptly. I also think it is unnecessary to define the seasons twice in successive paragraphs.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 4, 3413, 2007.

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