Geoscientific
Model Development
Discussions

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Interactive comment on "Methodological aspects of a pattern-scaling approach to produce global fields of monthly means of daily maximum and minimum temperature" *by* S. Kremser et al.

Anonymous Referee #1

Received and published: 8 November 2013

1   Overall Assessment

This manuscript is a valuable contribution towards constructing large computationally cheap climate ensembles as a function of external forcing on a regional to local scale for climate assessment and impact studies. The fundamental approach and several enhancements used to downscale the global simulations (or observations) and inflate the ensemble, based primarily on linear regression, are well presented and the major limitations of the procedure are discussed.

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Interactive Discussion

Discussion Paper

2 Comments

The assumption in the CPSM approach of linearity across scenarios in the response of the regression predictor to the predictand(s) may limit its applicability for most variables strongly influenced by large scale circulation, for example as in case for regional precipitation. This is even true for surface temperature response to forcing as discussed in Section 3 and Fig. 5 for the Arctic ocean. This climate sensitive region is subject to enhanced feedback mechanisms due major changes sea ice distribution. It is anticipated that similar nonlinear effects may occur for example in regions subject to strong orographic forcing.

3 Minor revisions

Section 4.2:
Since the basis time series are orthogonalized, direct interpretations with the original basis is no longer valid. Thus the orthogonalized basis may not be labeled as northern/southern hemispheric land/ocean temperature in Fig 6.

Interactive comment on Geosci. Model Dev. Discuss., 6, 4833, 2013.