Climate of the Past Discussions

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Reply on CC1

Dirk Nikolaus Karger et al.

Author comment on "CHELSA-TraCE21k – high-resolution (1□km) downscaled transient temperature and precipitation data since the Last Glacial Maximum" by Dirk Nikolaus Karger et al., Clim. Past Discuss., https://doi.org/10.5194/cp-2021-30-AC1, 2021

Thanks for the comment. Indeed Lorenz et al is a good example we have not mentioned in the manuscript yet, and will certainly do so during the revision.

With respect to the false precision: It is indeed a problem that paleo climatic simulations are uncertain to a large degree. We do not know for example if at a specific location, the annual mean temperature was really -20°C or -24°C. What we can however be rather certain about is that temperatures at higher elevation are cooler than those of a lower elevation (although lapse rates can also be flexible in this respect). We also know that certain orographic effects for precipitation are similiar (rain shadows of moutains for example). These assumptions are based on simple physical relationships.

The CHELSA_TraCE21k model is really rather "general" in this case, then "precise". If we would have a 100% precision during the historical period, we most likely overfitted the model and it would loose generality over the long term and wont be able to produce reasonable results anymore. Thats why we are less concerned with the not perfect fit during the historical period, as this is really something rather wanted for such a model. Precision, realism, and generality are really a tradeoff in this case.

We argue that its not really a false precision, as we only estimate simple relationships here between e.g. elevation and temperature. Nevertheless, we fully agree that these points might be not neccessarily present in everybodies mind when appling the data to impact studies, and we therefore agree it will be very useful to add a paragraph concerning the caveats of the data. We will certainly add this paragraph. Thanks for brining it up.