

Interactive comment on “ $\delta^{18}\text{O}$ water isotope in the iLOVECLIM model (version 1.0) – Part 2: Evaluation of model results against observed $\delta^{18}\text{O}$ in water samples” by D. M. Roche and T. Caley

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Below is our answer to the comments received by reviewer #2: the initial comments are *in italic*, our response **in bold** and the subsequent changes to the text *in typewriter* where necessary.

We thank the reviewer for his/her constructive comments and kind words.

General Comments

C1139

The authors present an evaluation of a pre-industrial simulation of delta O-18 in iLOVECLIM, a new version of the LOVECLIM Earth system Model of Intermediate Complexity (EMIC), described in a companion manuscript. The evaluation demonstrates the overall realism of the simulation, while highlighting some important caveats (over Antarctica, the Mediterranean) that should be kept in mind if the model, or output, are adopted by others. Given the broad realism, iLOVECLIM should prove useful as an efficient EMIC for investigating delta O-18 distributions, in the oceans and over continents/ice sheets, for a range of past climates. As a model evaluation, the manuscript should be suitable for publication in GMD, subject to minor and technical revisions in response to the comments below.

Specific Comments

1. p.9, l.7-9: *I am confused by the sentence starting "Overall, an inverse relationship ..." – broadly the same correlation patterns appear in both Fig. 6 and Fig. 7, so how is the relationship "inverse ... between delta O-18 in precipitation and temperature, compared to precipitation rate"?*

Indeed the sentence was confusing as previously written. It has now been re-written and reads:

On the contrary, for the relationship between delta-18 in precipitation and temperature, a stronger and significant correlation is observed at higher latitudes whereas the correlation is insignificant at lower latitudes.

2. *Figs. 6 and 7: Please use stippling, or masking, to indicate where the correlations are significant, and explain any significance test in the caption. Ideally, also use the*

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same min/max limits in the colour scales of both figures, for straight comparison of the strength of delta O-18 correlation with precipitation rate and temperature.

We have used hatching in the revised version to indicate where correlations where poor. We use the standard textbook value of 0.35 therefore. We preferred to keep the colorscale as they where, since using the same min/max limit was hiding much of the details features of the figures.

Action: The figures are updated in the revised version and the caption is modified to take into account those changes.

Technical Corrections

Unless stated otherwise, we have implemented all suggestions as per suggestion.

1. p.2, l.20: H2 O18 is named twice in the bracket – do the authors mean HDO18?
2. p.3, l.20: "... of water isotopes on millennial timescales"
3. p.3, l.24: "... of water isotopes for our current climate in the first instance"
4. p.8, l.17: "two latter regions"
5. p.10, l.2: "leading to much less saline waters (and unrealistically depleted delta O-18)"
6. p.10, l.8: "different"
7. p.10, l.14: "too little"
8. p.11, l.27: "The latter water mass ..."
9. p.12, l.3: "Very low observed surface values ..."
10. p.12, l.14: "even when taking this aspect into account"

Interactive comment on Geosci. Model Dev. Discuss., 6, 1495, 2013.

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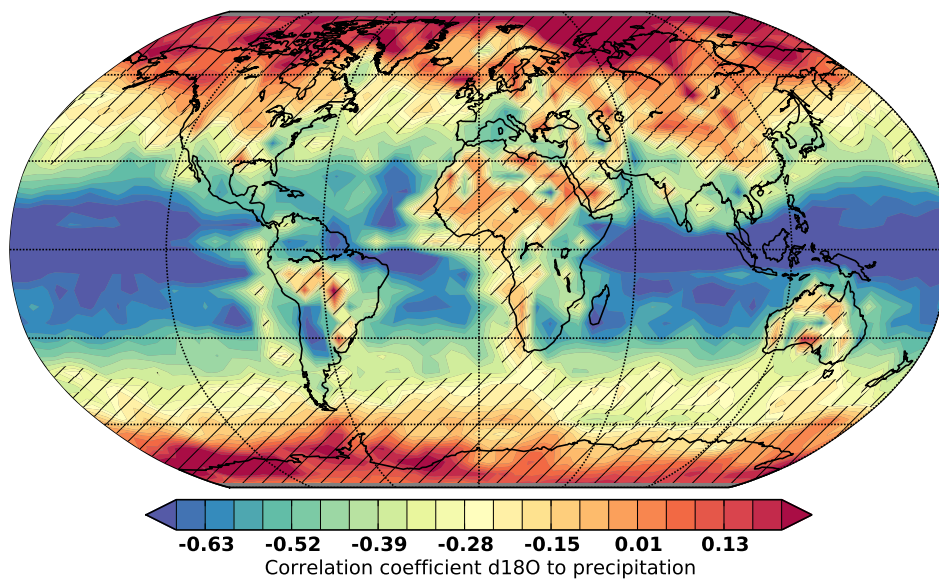


Fig. 1.

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