Clim. Past Discuss.,
https://doi.org/10.5194/cp-2019-108-RC4, 2019

Climate of the Past Discussions

Interactive comment on "Global aridity synthesis for the last 60 000 years" *by* Florian Fuhrmann et al.

Anonymous Referee #4

Received and published: 30 November 2019

Dear Authors,

You provide a manuscript attempting to synthesize global aridity. You select several key regions with a decent data coverage from different geoarchives. Having read your manuscript and the discussion up to date, I have a clear opinion about your manuscript.

Your conceptual idea of using suites of geoarchives to address aridity is in my opinion great and clearly worth investigating and publishing. At the same time I hold the opinion that several aspects need some work before publication. I agree with most points of other reviewers, see also comments below.

My main comments are: You mention that you focus on openly available data in Supplements to papers. The ELSA vegetation stack data is available in the Pangaea database

Printer-friendly version

Discussion paper

– using also the NOAA and PANGAEA databases as source would have been appropriate. Please add a Table in Supplements where data are from (websites/databases). You screened 'about 2000 papers' – that is not a reproducible statement. Please ensure that your data processing is 100% transparent and reproducible. Yet I have only a decent idea how this was done. If necessary, please provide sheets and computer code in Supplements.

Uncertainty of the aridity index seems constant with time and data resolution – that clearly does not make sense. Please adjust your method of uncertainty estimation to be at least more realistic. An idea may be to use a relative reliability index, where both lowest data resolution and highest data uncertainty play a role. You do mention that different age models will have an impact on your results. It would be nice to get an idea how this impacts results in one example, but I do see that this is difficult.

For Asia and Europe, more than single dust records are available in databases – please synthesize these. The presented data selection seems biased towards the authors' work, and I suggest to compile data for several regions in a more extensive way, and maybe focus on less regions. Obvious questions are, why are data from Tenaghi Phillipon and more Mediterranean cores not used? Why is there only 1 dust record from Asia and Europe? More are available.

The data selection for several regions is problematic in my opinion: Southern Europe: Data from the Lac du Bouchet is in my opinion hardly comparable to the Portuguese Margin – two datasets from the Portuguese Margin are probably leading to a location bias here, too. This should in my opinion at least be discussed. Why are SST data from the Mediterranean not included? Why are loess data from Spain neglected? Cariaco Basin: the dust record here may actually not reflecting local dust, but African aridity (also discussed in the reference you cite) – please be more self-critical in the discussion.

More drastically, data from New Zealand and Australia probably do not indicate the

same climate system at all – combining these at least requires a more sensitive discussion. In my opinion these should not be combined for an aridity analysis.

More detailed comments are:

Please avoid abbreviations in the abstract

The first sentence of the introduction is in my opinion not generally true.

You begin with your own data – OK, a scientific reasoning is more appropriate.

Page 8, line 9: You mention geographic regions and China as country – please avoid such political statements

Page 9, Line 11f: this is not a result, but more speculation

Interactive comment on Clim. Past Discuss., https://doi.org/10.5194/cp-2019-108, 2019.

Printer-friendly version

Discussion paper