

**Manuscript:** WFDE5: bias adjusted ERA5 reanalysis data for impact studies

### **Major remarks**

The authors developed a new meteorological forcing dataset that can be used to force impact models, as reference dataset for bias correction or for climate model evaluation studies. The new WFDE5 dataset is based on bias-adjusted ERA5 reanalysis data and is a successor of the widely used WATCH forcing datasets based on ERA40 (WFD) and ERA-Interim (WFDEI). Consequently, the application potential of the WFDE5 is high and will be likely receive a similar interest by the scientific community as its two predecessors. Therefore, the dataset and the associated manuscript are well suited for a publication in ESSD.

The paper is well written and provides the necessary information about the data and includes a suitable comparison to selected Fluxnet data and to ERA5 and WFDEI data. I have only one major remark.

Currently there are only two sentences in the end of the conclusions that note the availability of 0.25° gridded precipitation datasets and the potential of utilizing the higher resolution of ERA5 instead of the present aggregation to 0.5°. This was actually my first thought about WFDE5, i.e. why it is still using 0.5° and not 0.25°? Therefore I think that the choice of losing resolution and, hence, not using 0.25° should be discussed more thoroughly with pros and cons for both resolutions. Precipitation is the most important variable and a bias adjustment with 0.25° gridded observations can already be conducted. Only using a bias adjustment of other variables with coarser resolution data (such as 0.5° CRU data) may lead to a loss of some high resolution information.

In summary, I suggest accepting the paper for publication after minor revisions are conducted.

### **Minor remarks**

In the following suggestions for editorial corrections are marked in *Italic*.

Line 7

... *result* ...

Line 50

ERA5 *utilizes* a vast ...

Line 55

Abbreviation CMIP5 needs to be explained.

Line 132

... only *for grid*-points ...

Line 181

Section 3 is largely redundant with section 7. Please remove one of these two sections.

Line 206

... of *data have* been ...

Line 211

... any time *step* ...

Line 277

... *performances* ...

Line 307-316

It should be made clear, that W5E5 is not part of the present publication and the associated information is only provided to highlight the differences between WFDE5 and W5E5. I assume that the details of W5E5 are already published elsewhere (e.g. Lange 2019c), so the authors may even shorten this subsection.

Line 321

... shortwave *radiation* ...

Line 322

Sentence is unclear and needs rewriting.