This manuscript released the global 5km drought indices for 1981-2022. This is a very meaningful work because it is a high-resolution dataset of drought. However, some other problems in the manuscript are still concerned in the following:

Authors´ response:

- Thank you for recognizing our efforts and providing feedback.

1. In Figure 5, I suggest the authors to replace (e) with North America.

Authors´ response:

- Thank you. Figure 5e is updated as recommended.

2. A flow chart of generating this dataset could help the future readers.

Authors´ response:

- Thank you for the recommendation. We have included a textual explanation of the workflow in the methodology section and have also added a flowchart in the supplementary materials to balance the number of figures

3. More details on the method should be exposed.

Authors´ response:

- Thank you for your valuable recommendation. We have enhanced the methodology section by incorporating a flowchart and providing a detailed explanation of the steps used in developing the datasets, including the selection of log-logistic probability distribution.

4. One advantage of this dataset is high resolution. Therefore, the examples of spatial details could be shown and compared with other datasets.

Authors´ response:

- We also considered this a valuable suggestion, thanks to the reviewer's recommendation. As a result, we have incorporated two high-resolution datasets into the evaluation for Central Asia and Africa (see the attached figures). Both the African and Central Asian datasets have been derived from CHIRPS data and exhibit a very high correlation when compared to MSWEP.
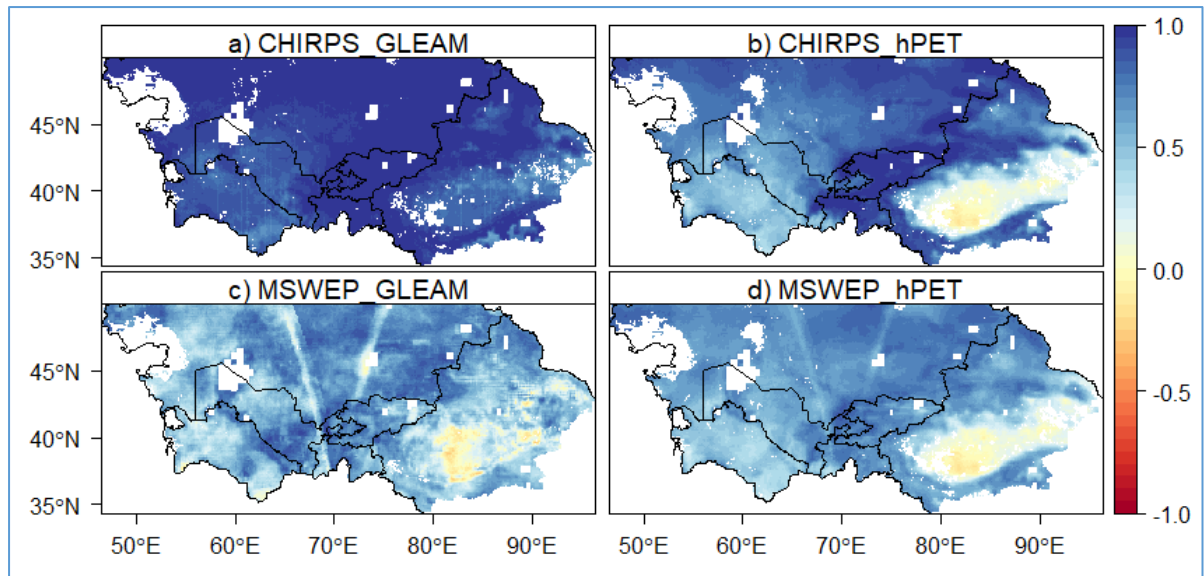
Figure. Correlation between the new high resolutions SPEI (SPEI-HR) based on (a) CHIRPS_GLEAM, b) CHIRPS_hPET, c) MSWEP-GLEAM, and d) MSWEP-hPET and Central Asia's high resolution SPEI dataset (Pyarali et al., 2022) for SPEI-1month for the period 1981–2018.
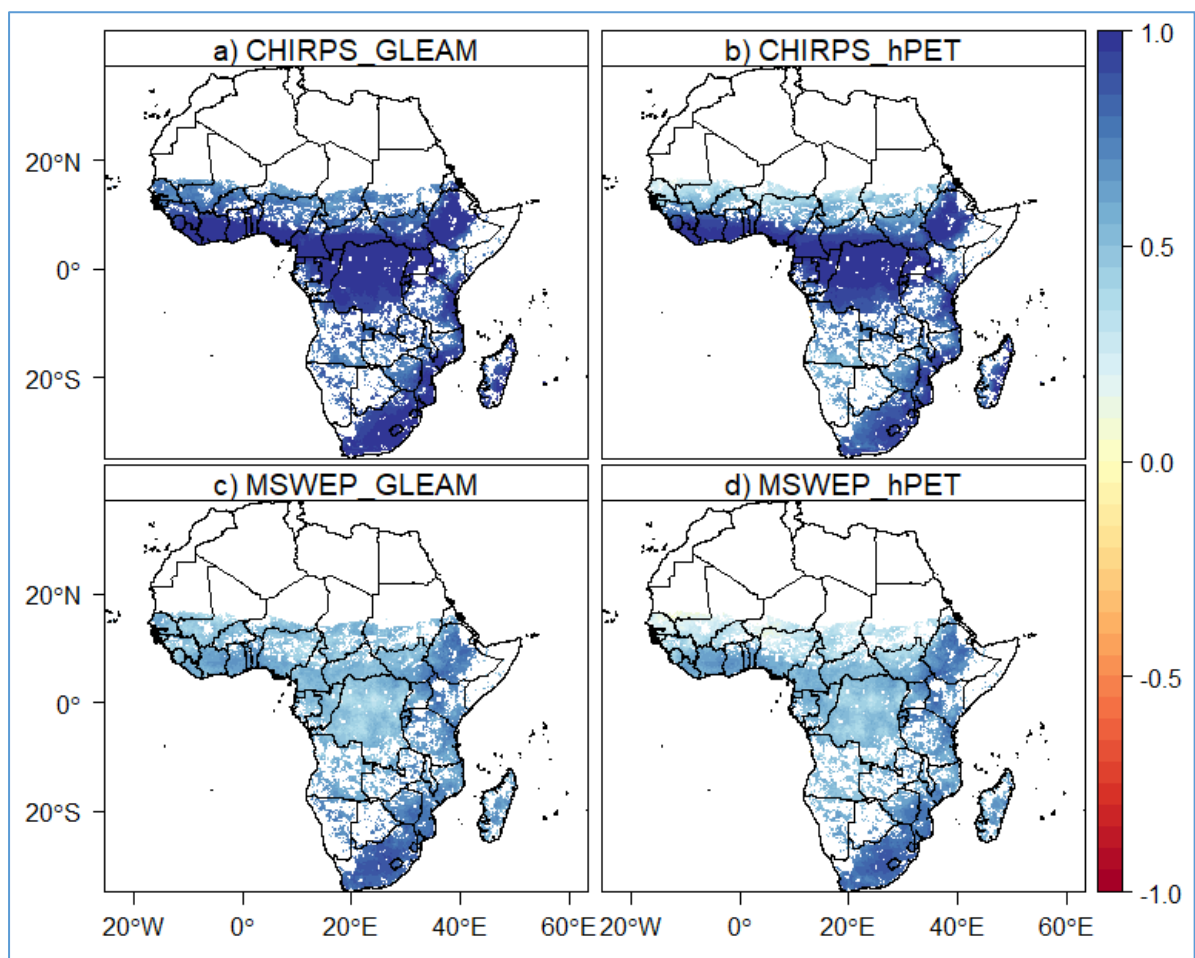
Figure. Correlation between the new high resolutions SPEI (SPEI-HR) based on (a) CHIRPS_GLEAM, b) CHIRPS_hPET, c) MSWEP-GLEAM, and d) MSWEP-hPET and the Pan African high resolution (0.05°) SPEI dataset (Peng et al., 2020) for SPEI-1month for the period 1981–2016.

5. The organization of this manuscript should be added to the end of the introduction.

Authors´ response:

- Thank you. Based on your recommendation we have added the organization of the manuscript at the end of the introduction as: "The manuscript provides a detailed description of the datasets used and the methods in Section 2. Section 3 presents a thorough analysis of the results and offers a discussion of these results. The availability, including links to the newly developed high-resolution datasets, is described in Section 4, while Section 5 provides a clear conclusion of the work."

Reference

Peng, J., Dadson, S., Hirpa, F., Dyer, E., Lees, T., Miralles, D. G., Vicente-Serrano, S. M., and Funk, C.: A pan-African high-resolution drought index dataset, Earth System Science Data, 12, 753–769, https://doi.org/10.5194/essd-12-753-2020, 2020.

Pyarali, K., Peng, J., Disse, M., and Tuo, Y.: Development and application of high resolution SPEI drought dataset for Central Asia, Sci Data, 9, 172, https://doi.org/10.1038/s41597-022-01279-5, 2022.