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## Validation of reconstructed hydroclimate variables for past drought assessment

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In present paper we compare the reconstructed gridded seasonal precipitation (P) and temperature (T) for Europe [1,2] to the available station data from the GHCN [3,4] network going back to 1800. The basic statistical properties at various time-scales ranging from 1/4 to 30 years are examined. It is shown, that there are significant biases in the reconstructed P and T and the bias in mean and variability considerably vary over the time-scales. The same applies for considered drought indices. We further investigate how the simulation of hydrological model driven by reconstructed data compares to that based on station data and runoff from GRDC database. In addition, a set of data-driven methods is used to link the reconstructed and observed P and T data to observed runoff, the results are validated and a reconstruction back to 1500 is provided. Finally, we check to what extent the raw proxy data can be used for drought reconstruction.

[1] <https://doi.org/10.1007/s00382-005-0090-8>

[2] <https://doi.org/10.1126/science.1093877>

[3] <https://doi.org/10.1175/JCLI-D-18-0094.1>

[4] doi:10.7289/V5X34VDR