



*Supplement of*

## **Accounting for hydroclimatic properties in flood frequency analysis procedures**

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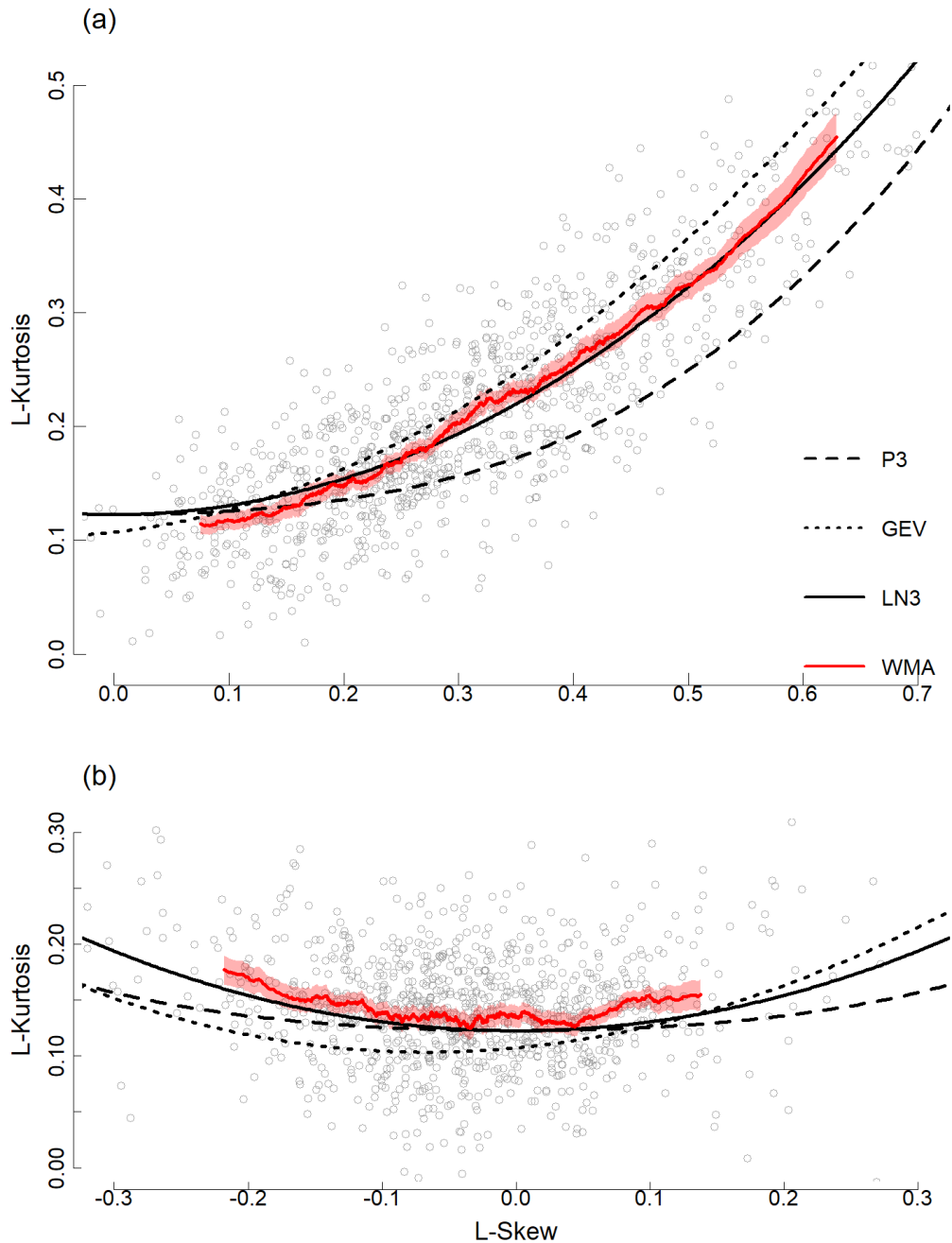
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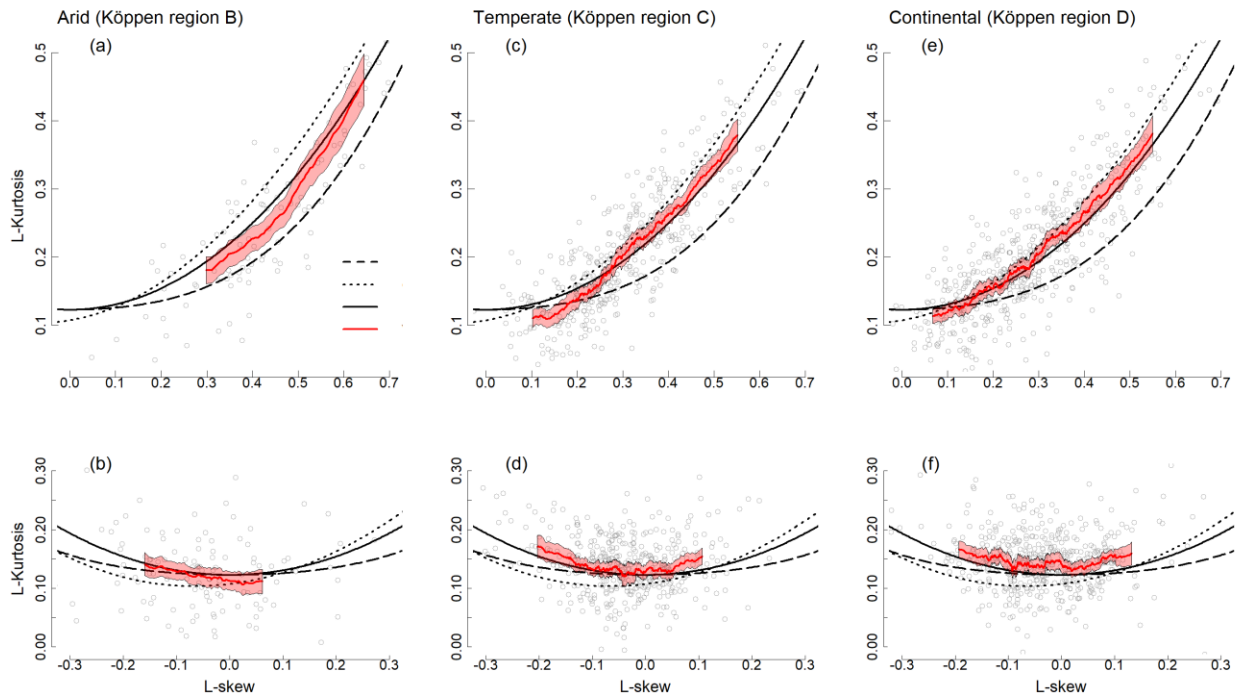
## Supplement

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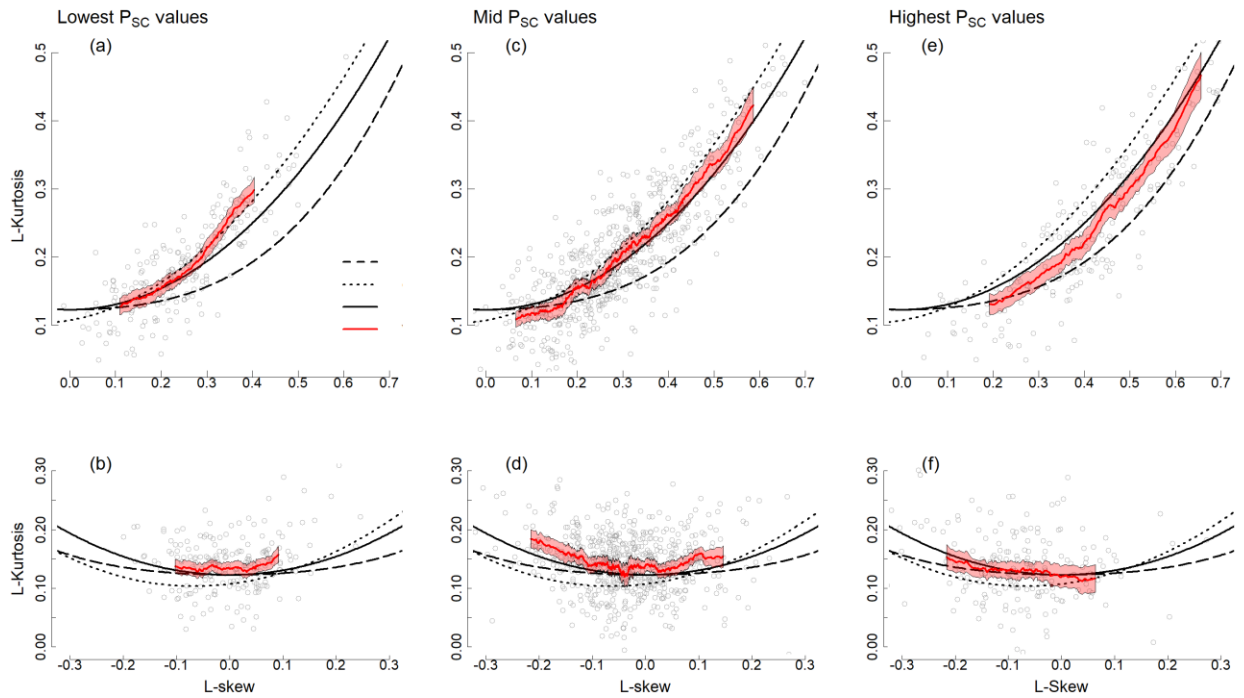
- Figure S1-S3 – L-moment diagrams on records not affected by regulation and diversion.
- Figure S4 – Histograms of the mean, standard deviation, and skewness of the records.



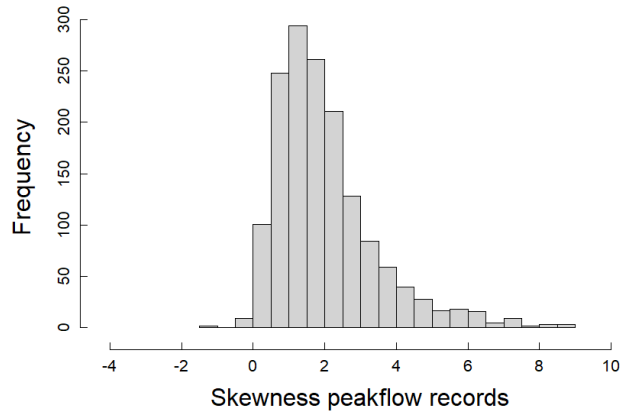
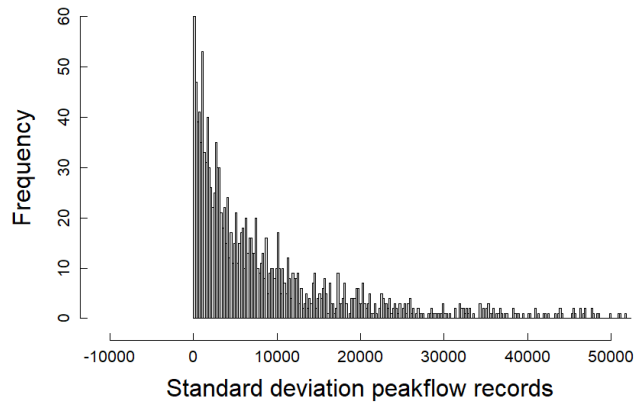
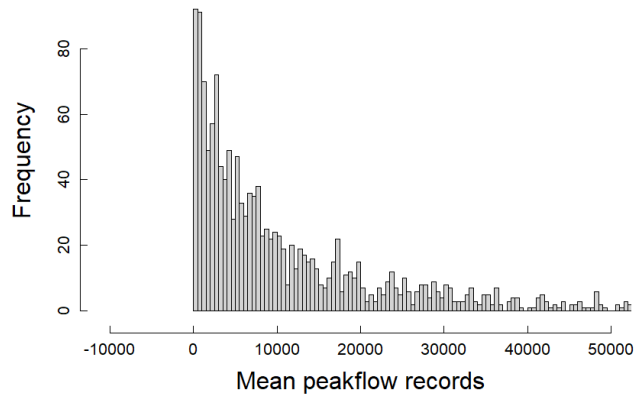
**Figure S1:** L-moment diagrams with the L-moment ratio for skew and kurtosis of annual maxima records that are not affected by regulation or diversion (USGS qualification code 5 and 6) (gray dots;  $n=1017$ ), with their weighted moving average (WMA) proportional to record length (red line) and the P3, GEV and LN distribution lines: (a) annual discharge maxima as recorded by the gage, and; (b) the logarithm of the annual discharge maxima.



**Figure S2:** L-moment diagram with the L-skew and L-kurtosis for annual maxima records that are not affected by regulation or diversion (gray dots) grouped by their Köppen climate region, their weighted moving averages (WMA) proportional by record length (red line) and the P3, GEV and LN distribution line (striped; dotted; solid). Panels (a), (c), and (e) show annual discharge maxima as recorded by the gage; Panels (b), (d), and (f) show the logarithm of the annual discharge maxima.



**Figure S3:** L-moment diagram with the L-skew and L-kurtosis for annual maxima records that are not affected by regulation or diversion (gray dots) grouped by their percentage of the maximum annual daily precipitation level by the total annual precipitation level (PSC), their weighted moving averages (WMA) proportional by record length (red line) and the P3, GEV and LN distribution line. Panels (a), (c), and (e) show annual discharge maxima as recorded by the gage; panels (b), (d), and (f) show the logarithm of the discharges.



**Figure S4:** Histograms of the mean, standard deviation and skewness of the records in the 1538 gauges-dataset used in this study.