

Supplementary Materials: Time Series Analysis of Floods across the Niger River Basin

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1. Supplementary Material to Section 3.1

Table S1. Availability of AMAX data for the analyzed gauges.

Gauge	River	Region	Period of AMAX Data	Missing Years
Kouroussa	Niger	Guinean	1945–2011	1960;1962;1976;1977;2003
Koulikoro	Niger	Guinean	1907–2005	-
Douna	Bani	Guinean	1922–2000	1938–1948; 1958; 1969; 1999
Mopti	Niger	Guinean	1943–2010	1949;1962–1964; 1978
Diré	Niger	Guinean	1924–2012	1993; 1999
Ansongo	Niger	Sahelian	1950–2012	1966; 1969–1971; 1980; 1981; 1993; 1997; 1999
Alcongui	Gorouol	Sahelian	1961–2012	1978; 1988; 1990; 1991; 1995–1999; 2004; 2005; 2010
Garbe-Kourou	Sirba	Sahelian	1956–2012	1957; 1959–1961; 1991–1993; 1996; 1997; 2000; 2004; 2005
Niamey	Niger	Sahelian	1943–2012	-
Garoua	Benue	Benue	1982–2008	-
Ibi	Benue	Benue	1970–2012	1971; 1972; 1992–1994; 1996–1998; 2000; 2003–2006; 2009–2011
Lokoja	Niger, Benue	Benue	1970–2012	1993–1997; 2003

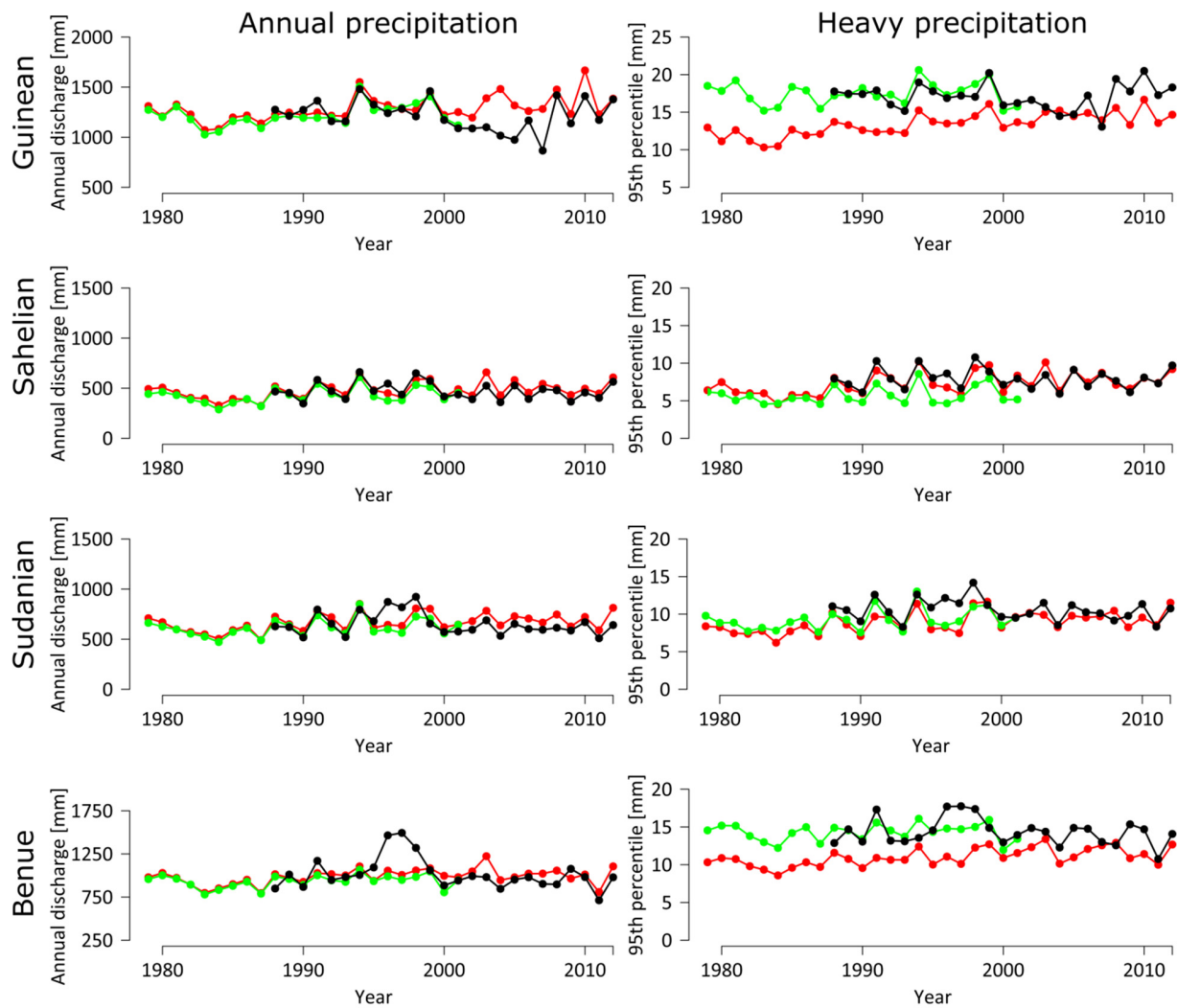


Figure S1. Comparison of precipitation reanalysis data with gridded observations (GPCC). Left: Annual sum of observed, WFD and WFDEI precipitation Right: 95th percentile of daily precipitation for the year for observed, WFD and WFDEI precipitation.

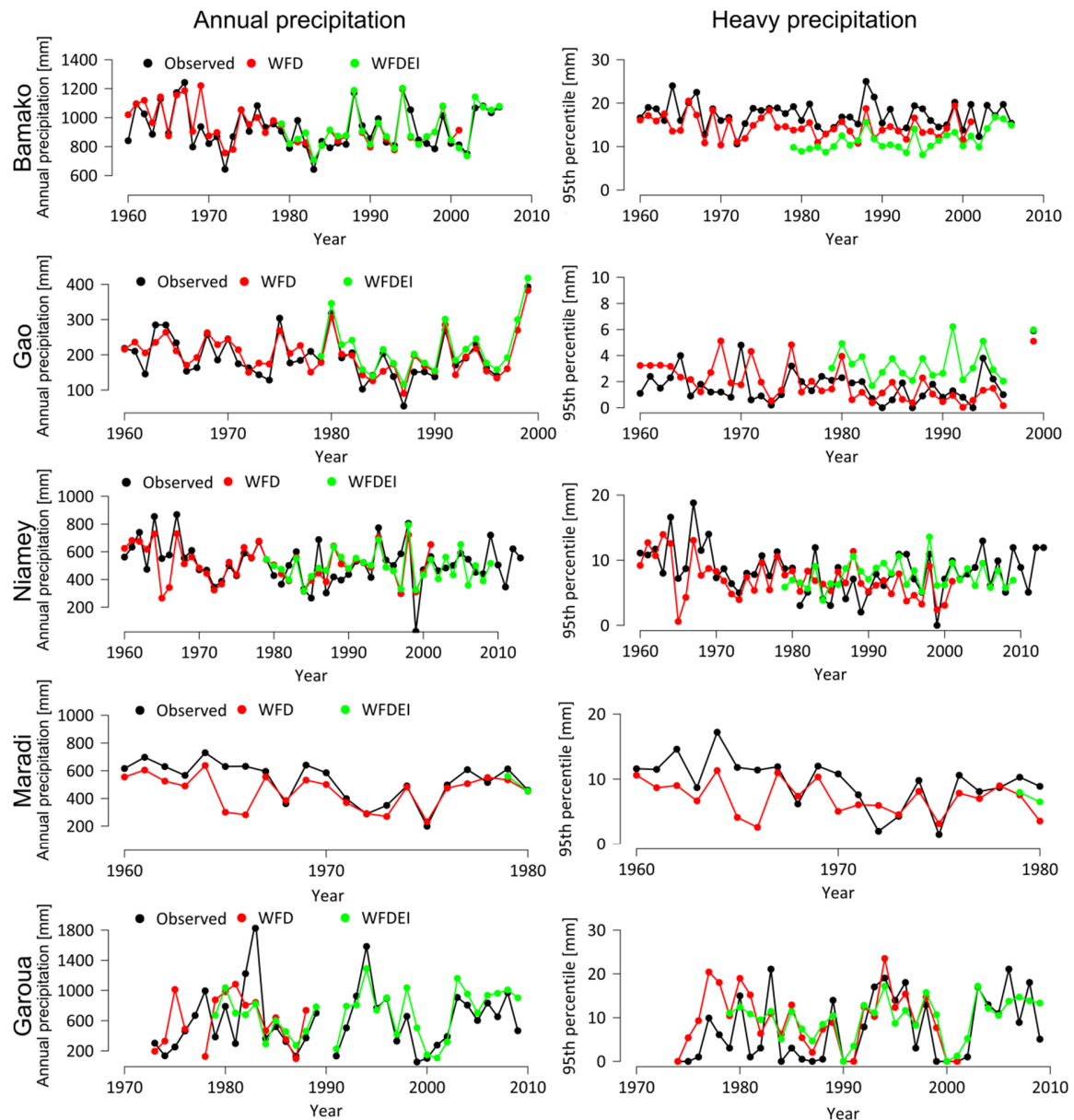


Figure S2. Validation of precipitation reanalysis data. Left: Annual sum of observed, WFD and WFDEI precipitation in Bamako, Gao (Mali), Niamey, Maradi (Niger), and Garoua (Cameroon). Right: 95th percentile of daily precipitation for the year for observed, WFD and WFDEI precipitation in Bamako, Gao (Mali), Niamey, Maradi (Niger), and Garoua (Cameroon).

2. Supplementary Material to Section 4.1.1

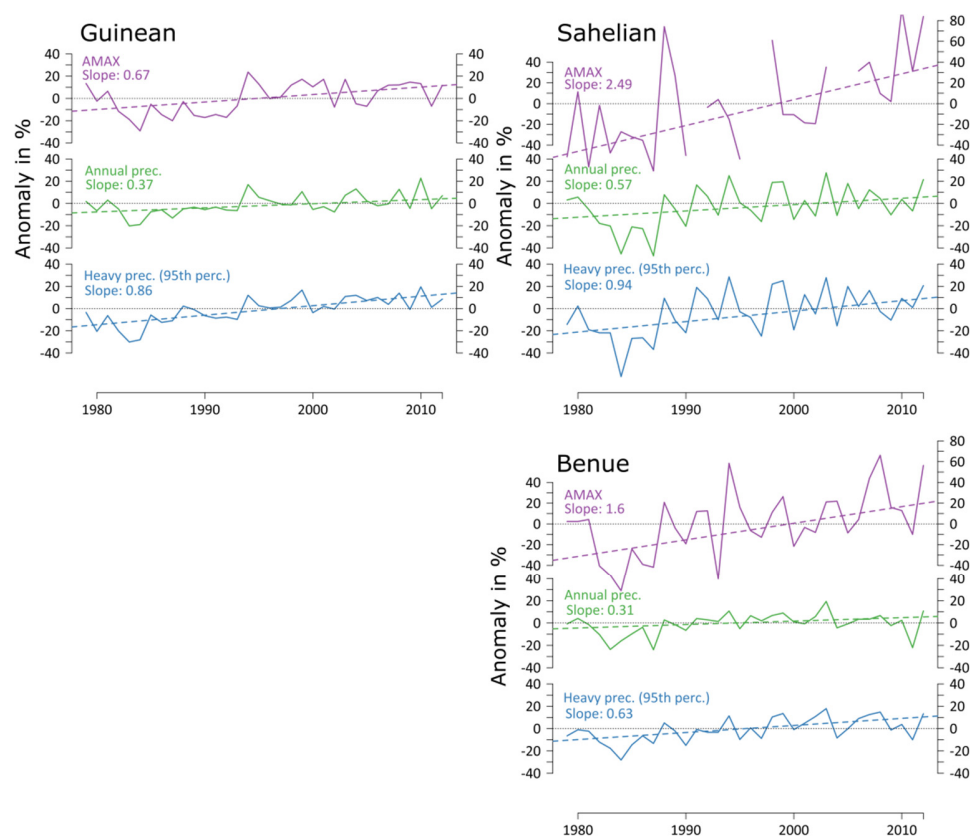


Figure S3. AMAX, annual precipitation and heavy precipitation for the three subregions of the Niger River Basin as an anomaly from 1979-2012. All trends are significant ($\alpha=0.05$) and the Theil-Sen estimator trend is added as a dashed line and the slope as number.

3. Supplementary Material to Section 4.1.3

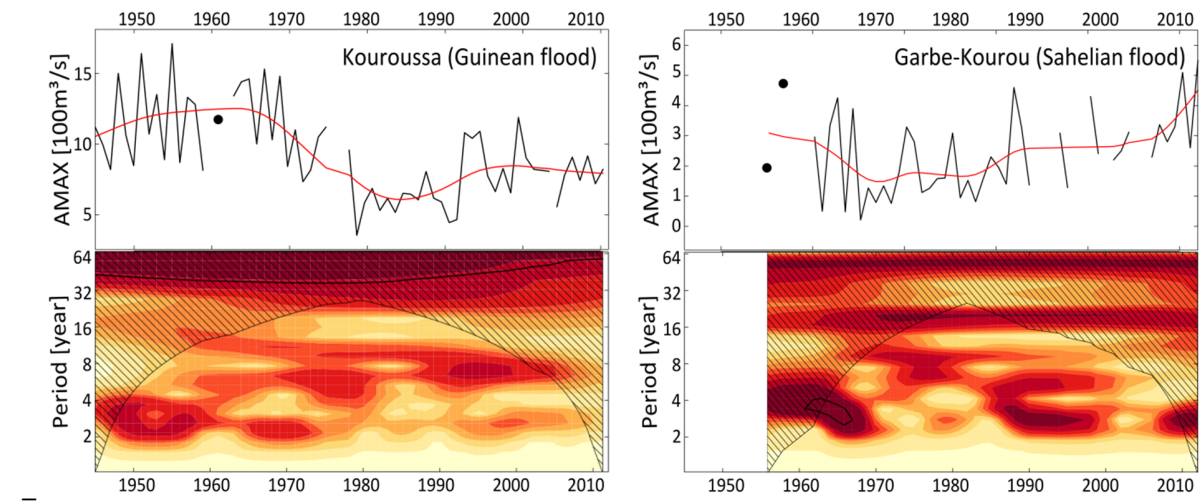


Figure S4. Top: AMAX time series with local regression curve in red. Bottom: wavelet power spectrum for Guinean, Sahelian, and Sudanian flooding. Brighter colors correspond to smaller wavelet coefficients and darker colors to higher coefficients with the Morlet wavelet. The shaded area is outside the cone of influence and should not be included in the interpretation.