

Article

Future changes in hydro-climatic extremes across Vietnam: Evidence from a semi-distributed hydrological model forced by downscaled CMIP6 climate data

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Supplementary Materials

Table S1. SWAT model's parameters and calibrated ranges. The "Sensitivity significance" field provides the sensitivity analysis results; an asterisk indicates that the parameter is sensitive (i.e., the *p*-value is smaller than 0.05) for the corresponding catchment.

Seq.	Parameter	Description	Calibration method	Calibrated range	Sensitivity significance						
					CHU	XLA	NKH	SDI	AHO	GSO	CDA
1	CN2	SCS runoff curve number	Relative	-0.25 - 0.25	*	*	*	*	*	*	*
2	ALPHA_BF	Baseflow alpha factor (days)	Replace	0 - 1	-	-	-	-	-	-	-
3	GW_DELAY	Groundwater delay	Replace	0 - 500	-	-	-	-	-	-	-
4	GWQMN	Threshold depth of water in the shallow aquifer required for return flow to occur (mm)	Replace	0 - 5000	-	-	-	-	-	-	-
5	RCHRG_DP	Deep aquifer percolation fraction	Relative	0 - 1	-	-	*	*	-	-	-
6	GW_REVAP	Groundwater "revap" coefficient	Relative	0.02 - 2	-	-	-	-	-	-	-
7	SURLAG	Surface runoff lag time	Replace	0.05 - 24	-	-	-	-	-	-	-
8	LAT_TTIME	Lateral flow travel time	Replace	0 - 180	-	-	-	-	-	-	-
9	OV_N	Manning's "n" value for overland flow	Replace	0.01 - 1	*	-	-	*	-	*	*
10	ESCO	Soil evaporation compensation factor	Relative	0 - 1	*	*	-	-	-	*	*
11	EPCO	Plant uptake compensation factor	Replace	0 - 1	-	-	-	-	-	-	-
12	SLSUBBSN	Average slope length	Replace	-0.25 - 0.25	-	-	-	-	*	-	-
13	HRU_SLP	Average slope steepness	Replace	-0.25 - 0.25	-	-	-	-	-	-	-
14	CH_N2	Manning's "n" value for the main channel	Relative	0 - 0.3	*	*	*	-	-	*	*
15	CH_K2	Effective hydraulic conductivity in main channel alluvium	Relative	0 - 500	*	*	*	*	*	*	*
16	ALPHA_BNK	Baseflow alpha factor for bank storage	Replace	0 - 1	*	*	*	*	*	*	*
17	SOL_AWC	Available water capacity of the soil layer	Replace	-0.5 - 0.5	*	*	-	-	-	*	*
18	SOL_BD	Moist bulk density	Replace	-0.25 - 0.25	*	-	-	-	-	-	-

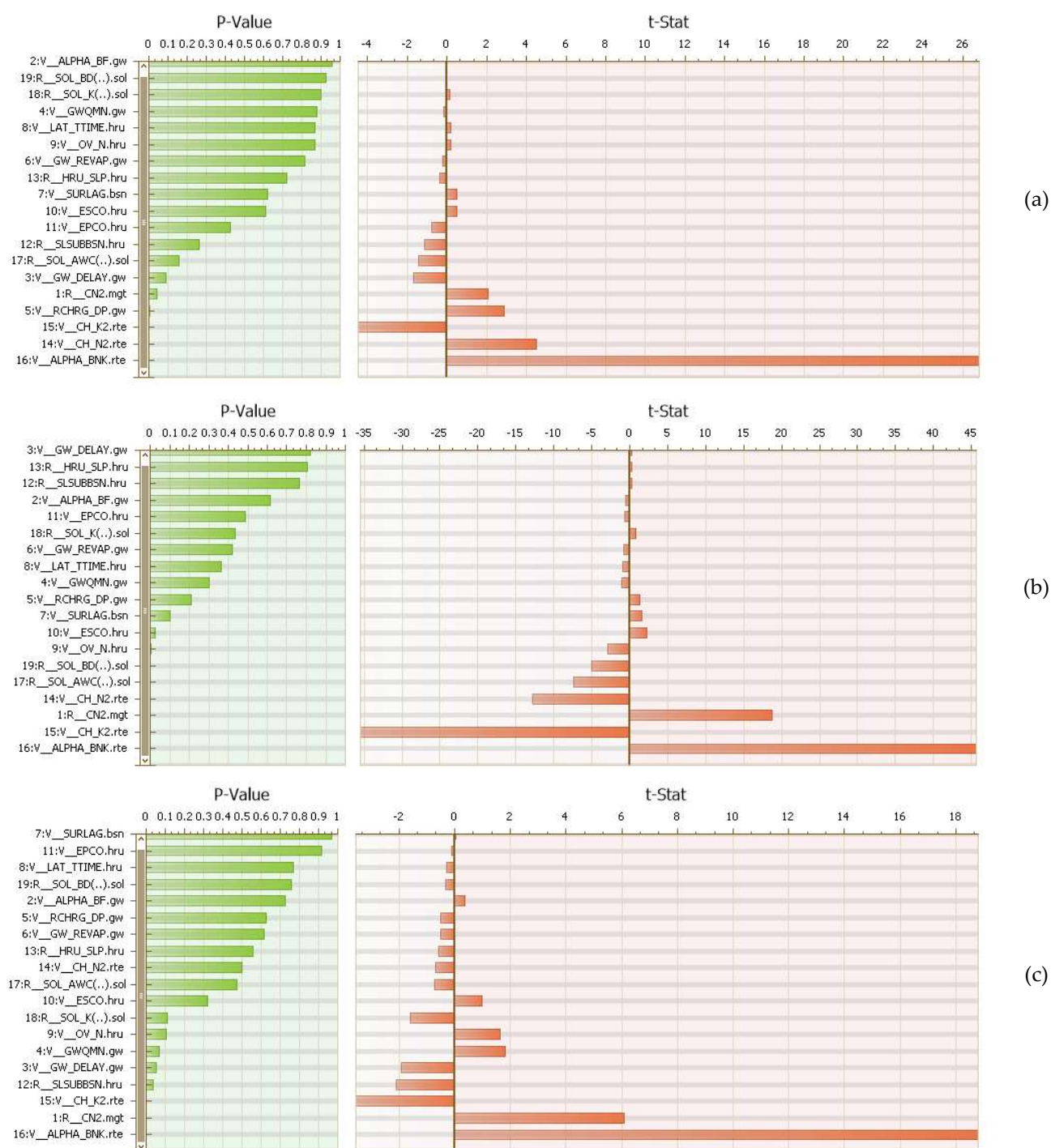


Figure S1. The results of the sensitivity analysis of (a) NKH, (b) CHU, and (c) AHO catchments. Parameters with low p -value and high t -statistic are the most sensitive ones.

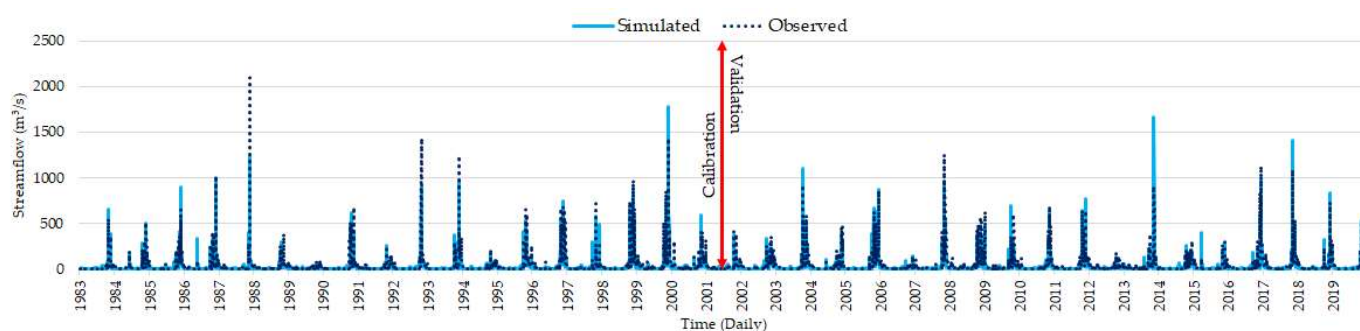


Figure S2. Simulated and observed streamflow of AHO over the calibration and validation period.

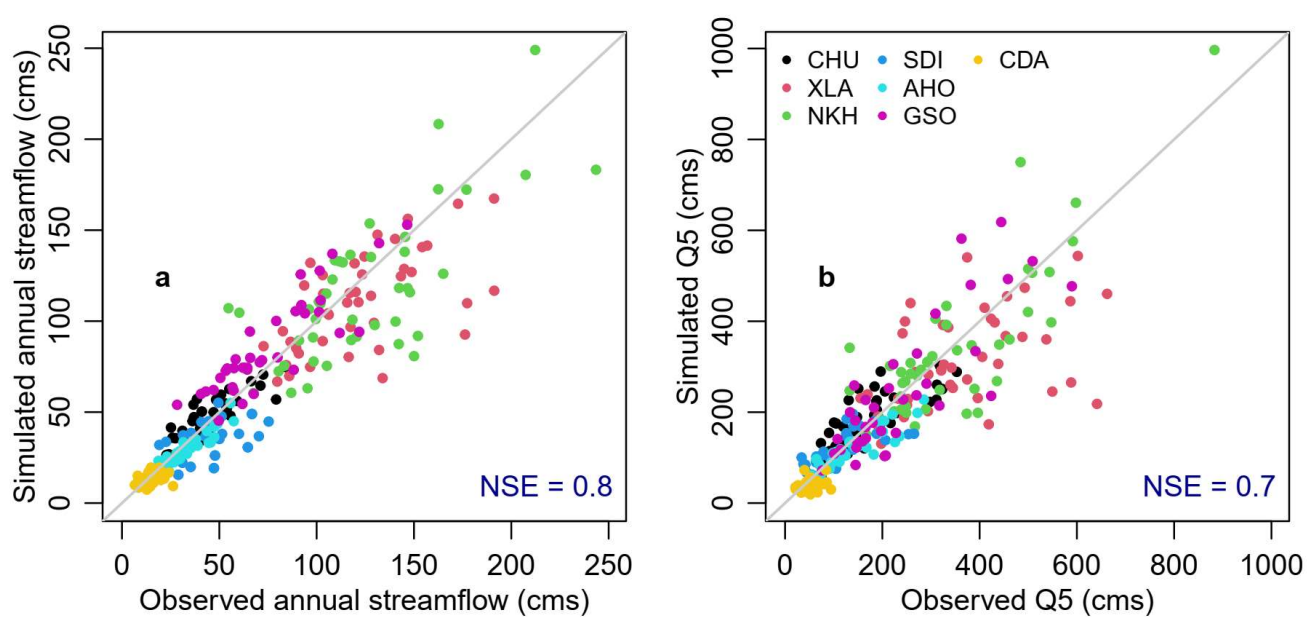


Figure S3. Scatterplots between simulated and observed values across all assessed catchments for (a) annual streamflow (yearly average) and (b) Q5 index. Note that the NSE values were calculated for all data points from seven catchments.