

Supplementary materials

Table S1. Catchment descriptors.

Attributes	CD	WS1	WS2	WS3	WS4
Topography / Morphometry	Drainage area (A), km ²	1116.0	623.9	197.1	69.9
	Perimeter (P), km	198.0	131.8	93.2	56.8
	Basin length (L _b), km	54.6	35.1	32.1	17.1
	Mean slope, °	16.3	18.4	18.9	18.2
	Elevation range (H _{min} , H _{max}), m	14, 1469	56, 1469	56, 1309	45, 1271
	Gravelius coefficient (K _G),	1.7	1.5	1.9	1.9
	Effective basin width (R _b), km	20.4	17.8	6.1	4.1
	Elongation ratio (R _e),	0.7	0.8	0.5	0.6
	Unit shape factor (R _u)	1.6	1.4	2.3	2.0
	Total relief (R _t)	1455	1413	1253	1226
	Relative relief (R _r), km	1.4	1.4	1.2	1.2
	Relief ratio (R _n)	0.03	0.04	0.04	0.07
	Total stream length (L _t)	1153.8	621.9	206.2	70.5
	Length of main stream (L _c), km	94.0	49.3	31.4	9.9
	Total number of stream segment (N _u)	5652.0	3647.0	1166.0	426.0
	Drainage density (D _d), km.km ⁻²	1.03	1.00	1.05	1.00
	Constant of channel maintenance (C _m)	0.97	1.00	0.96	0.99
	Ruggedness number (R _n)	1.5	1.4	1.3	1.2
Land cover	Crop	35.6	15	36.3	40.8
	Mos	9.6	7.6	23.1	10.7
	Tree	54.7	77.4	40.6	48.4
	CN_est	63.3	58.7	64.1	64.5
Soil	Acrisols (Acri)	24.7	7.9	18.9	30.5
	Ferrasols (Ferra)	73.1	90.1	78.8	64.7
	Lixisols (Lixi)	1.7	1.2	2.3	4.7
	Cambisols (Cambi)	0.4	0.7	0	0.2
	Sandy-Clay (S-C)	0.5	0.4	0.8	0.0
	Clay-Loam (C-L)	28.4	29.0	42.0	47.5
	Sandy-Clay-Loam (S-C-L)	71.0	70.6	57.2	52.5
	Organic Carbon Density OC (g/dm ³)	362.2	371.7	383.7	373.4
	Dg (µm)	299.0	295.1	301.2	294.4
	Moderate runoff potential (H-C)	34.8	28.5	18.5	48.8
	High runoff potential (H-D)	65.2	71.5	81.5	51.2
Geology	Gneiss	14.3	22.6	0.0	0.9
	Gran	70.7	64.0	88.9	55.5
	Shales	6.4	1.8	0.0	43.6
	Quartz.	8.6	11.6	11.1	0.0

Table S2. Hydrological signatures.

HSs	WS 1	WS 2	WS 3	WS 4
BFI [-]	0.63	0.60	0.68	0.68
Rc [-]	0.34	0.09	0.13	0.26
Qp [mm/h]	0.66	0.34	0.71	1.38
ts [h/km]	0.11	0.13	0.11	0.22
Q5 [mm/day]	8.65	5.72	6.05	7.4
Q95 [mm/day]	1.25	0.87	1.58	1.60
q_mean [mm/day]	3.93	2.80	3.22	3.78

Figure S1. Correlation between the selected CDs and HSs (WS1 = green; WS2 = red; WS3 = blue; WS4 = grey).

