

Supplementary Material:

Table S1. Correlations of hydrometeorological indices for all time scales.

Basin ID	Scale 12			Scale 24			Scale 36			Scale 48		
	SPI-SPEI	SPI-SSFI	SPEI-SSFI									
B1	0.83	0.69	0.82	0.82	0.68	0.88	0.80	0.65	0.92	0.77	0.61	0.93
B2	0.89	0.77	0.83	0.89	0.84	0.89	0.90	0.87	0.91	0.89	0.89	0.90
B3	0.82	0.78	0.83	0.85	0.85	0.88	0.86	0.88	0.90	0.83	0.90	0.91
B4	0.76	0.66	0.88	0.65	0.67	0.92	0.56	0.64	0.93	0.48	0.59	0.94
B5	0.86	0.68	0.80	0.82	0.74	0.89	0.80	0.78	0.90	0.80	0.79	0.90
B6	0.86	0.79	0.83	0.80	0.80	0.85	0.76	0.77	0.83	0.75	0.71	0.83
B7	0.93	0.87	0.89	0.92	0.90	0.94	0.91	0.89	0.94	0.94	0.89	0.95
B8	0.88	0.79	0.81	0.86	0.81	0.88	0.81	0.77	0.88	0.75	0.70	0.83
B9	0.96	0.93	0.92	0.97	0.96	0.96	0.97	0.97	0.96	0.97	0.97	0.94
B10	0.92	0.89	0.87	0.90	0.91	0.90	0.89	0.92	0.90	0.87	0.92	0.87
B11	0.94	0.89	0.90	0.92	0.82	0.86	0.89	0.71	0.80	0.88	0.61	0.74
B12	0.95	0.91	0.92	0.95	0.90	0.92	0.95	0.89	0.92	0.95	0.86	0.89
B13	0.93	0.80	0.86	0.92	0.86	0.90	0.93	0.89	0.93	0.95	0.90	0.94
B14	0.92	0.60	0.68	0.89	0.68	0.73	0.90	0.77	0.79	0.90	0.84	0.86
B15	0.82	0.78	0.81	0.81	0.84	0.87	0.80	0.88	0.90	0.81	0.90	0.90
B16	0.64	0.64	0.78	0.52	0.59	0.85	0.47	0.53	0.88	0.49	0.51	0.90
B17	0.77	0.69	0.70	0.73	0.71	0.74	0.67	0.72	0.73	0.65	0.72	0.75
B18	0.67	0.27	0.45	0.64	0.24	0.48	0.58	0.24	0.51	0.51	0.26	0.52
B19	0.53	0.59	0.57	0.32	0.56	0.54	0.19	0.53	0.53	0.09	0.49	0.50
B20	0.34	0.41	0.29	0.06	0.49	0.20	-0.11	0.58	0.19	-0.14	0.68	0.23

Table S2. Boxplot’s five-number summary for minimum and maximum precipitation monthly values, for 1981-2010 and 2011-2021 periods.

Min precipitation															
Basin	1981-2010					2011-2021					% of change				
	Min	1st quart.	Median	3rd quart.	Max	Min	1st quart.	Median	3rd quart.	Max	Min	1st quart.	Median	3rd quart.	Max
B01	4.8	5.8	6.8	7.5	21.0	4.7	5.1	5.4	6.6	25.1	-2%	-13%	-20%	-12%	19%
B02	3.5	4.1	4.7	5.6	16.9	3.3	3.6	3.9	4.5	55.1	-6%	-12%	-18%	-19%	225%
B03	3.7	4.2	4.5	5.1	15.5	3.7	4.2	4.3	4.6	81.1	1%	-1%	-5%	-10%	424%
B04	5.8	7.2	7.8	9.8	25.2	5.3	6.0	6.7	11.7	19.4	-9%	-16%	-13%	20%	-23%
B05	5.1	5.5	6.4	8.0	28.8	4.7	5.1	5.6	6.7	25.3	-8%	-6%	-13%	-17%	-12%
B06	8.0	12.9	21.6	28.4	46.3	8.7	13.1	15.4	25.5	36.8	9%	1%	-29%	-10%	-21%
B07	6.7	15.6	23.7	33.0	62.8	9.5	13.8	14.8	25.5	36.8	42%	-12%	-38%	-23%	-41%
B08	6.0	11.3	17.6	30.3	50.3	7.4	10.3	13.1	19.0	35.8	24%	-9%	-26%	-37%	-29%
B09	14.6	30.5	38.7	50.3	118.9	13.0	19.1	30.1	57.6	85.3	-11%	-37%	-22%	14%	-28%
B10	10.1	25.5	42.8	65.2	108.2	9.3	28.5	34.2	46.9	85.9	-9%	12%	-20%	-28%	-21%
B11	21.5	44.0	52.0	71.2	116.9	13.9	27.7	35.1	74.2	98.3	-35%	-37%	-32%	4%	-16%
B12	20.4	35.3	50.8	78.6	120.8	8.5	25.7	51.2	72.0	108.2	-58%	-27%	1%	-8%	-10%
B13	4.8	5.5	6.1	7.1	20.7	5.1	5.5	5.6	6.4	22.2	5%	0%	-7%	-10%	7%
B14	2.2	2.6	2.9	3.2	4.0	2.2	2.5	2.6	3.0	44.4	0%	-5%	-10%	-6%	1021%
B15	3.0	3.4	3.6	3.7	9.7	2.7	3.2	3.6	3.8	89.9	-10%	-6%	1%	0%	832%
B16	4.2	5.0	5.7	7.1	12.9	4.4	4.7	5.6	7.0	147.8	5%	-6%	-1%	-1%	1047%
B17	3.7	4.9	5.7	6.6	19.8	5.0	5.1	5.9	6.7	67.8	35%	5%	3%	2%	242%
B18	4.5	5.0	6.6	7.5	27.3	4.8	5.2	6.1	8.1	42.7	8%	4%	-7%	7%	57%
B19	12.0	14.5	18.4	25.0	39.7	10.1	18.5	22.5	25.9	156.9	-16%	28%	22%	4%	295%
B20	3.3	4.1	4.6	5.4	8.4	3.4	4.0	4.1	5.3	216.7	4%	-3%	-9%	-2%	2479%

Max precipitation

Basin	Min	1st quart.	Median	3rd quart.	Max	Min	1st quart.	Median	3rd quart.	Max	Min	1st quart.	Median	3rd quart.	Max
B01	169.9	310.5	353.7	415.0	496.8	271.8	317.6	365.2	376.6	438.7	60%	2%	3%	-9%	-12%
B02	179.6	305.5	346.8	390.2	479.8	270.2	302.3	318.0	347.9	426.8	50%	-1%	-8%	-11%	-11%
B03	184.1	282.2	331.2	362.8	428.2	254.6	294.8	306.6	331.5	385.5	38%	4%	-7%	-9%	-10%
B04	193.5	289.9	323.3	393.0	467.9	222.6	257.6	300.1	362.9	385.4	15%	-11%	-7%	-8%	-18%
B05	241.3	292.1	309.8	373.3	468.8	183.0	260.7	282.6	310.5	322.5	-24%	-11%	-9%	-17%	-31%
B06	177.1	230.6	261.6	287.3	389.6	181.8	213.0	229.3	264.5	291.7	3%	-8%	-12%	-8%	-25%
B07	173.2	225.8	253.7	280.2	344.4	200.7	218.9	248.4	256.6	290.8	16%	-3%	-2%	-8%	-16%
B08	189.1	234.6	250.6	283.2	342.4	201.8	224.9	247.0	262.5	277.0	7%	-4%	-1%	-7%	-19%
B09	172.5	226.2	265.6	310.7	477.1	183.6	234.3	263.9	278.6	312.7	6%	4%	-1%	-10%	-34%
B10	223.4	254.3	298.9	362.8	474.8	212.5	259.3	302.6	322.9	385.0	-5%	2%	1%	-11%	-19%
B11	186.8	221.7	258.9	291.6	597.1	208.7	266.1	279.5	324.2	394.8	12%	20%	8%	11%	-34%
B12	202.2	224.0	262.8	318.7	614.4	181.4	250.4	269.3	301.5	405.6	-10%	12%	2%	-5%	-34%
B13	173.6	312.0	346.1	388.2	481.0	243.0	272.0	313.7	331.5	423.2	40%	-13%	-9%	-15%	-12%
B14	143.2	209.0	233.1	262.1	455.0	160.5	178.7	207.2	262.2	398.7	12%	-14%	-11%	0%	-12%
B15	204.6	293.9	329.1	371.2	581.8	254.4	268.8	305.4	360.9	383.0	24%	-9%	-7%	-3%	-34%
B16	252.6	284.4	303.1	345.4	471.7	277.1	308.8	329.2	338.1	393.6	10%	9%	9%	-2%	-17%
B17	230.0	279.1	313.5	347.1	426.4	210.1	238.5	290.9	345.8	417.1	-9%	-15%	-7%	0%	-2%
B18	225.2	254.8	296.0	329.7	423.7	187.1	242.2	256.5	294.4	350.5	-17%	-5%	-13%	-11%	-17%
B19	206.7	238.3	261.0	280.1	332.3	236.3	260.7	284.1	294.0	309.8	14%	9%	9%	5%	-7%
B20	283.9	316.7	358.7	402.9	501.2	313.0	340.8	397.2	418.9	485.8	10%	8%	11%	4%	-3%

Table S3. Boxplot’s five-number summary for minimum and maximum streamflow monthly values, for 1981-2010 and 2011-2021 periods.

Min Streamflow															
Basin	1981-2010					2011-2021					% of change				
	Min	1st quart.	Median	3rd quart.	Max	Min	1st quart.	Median	3rd quart.	Max	Min	1st quart.	Median	3rd quart.	Max
B01	52.8	81.5	106.2	139.3	240.4	38.9	70.8	80.1	86.15	167.9	-26%	-13%	-25%	-38%	-30%
B02	82.3	113.3	174.75	197.3	365.7	47.6	68.5	86.9	128.6	266.1	-42%	-40%	-50%	-35%	-27%
B03	314.4	476.9	549.05	626.4	1056.1	187.5	292.7	340.7	446.3	938.7	-40%	-39%	-38%	-29%	-11%
B04	209.9	273.2	369.05	434.3	920.7	96.9	156.25	215.6	275.35	423.6	-54%	-43%	-42%	-37%	-54%
B05	465.3	680.9	742.45	947.6	2056	231.4	392.3	556.5	651.05	759	-50%	-42%	-25%	-31%	-63%
B06	61.3	108.3	130.05	158	336.7	59	97.2	114.7	138.1	182.8	-4%	-10%	-12%	-13%	-46%
B07	331.1	514.7	588.5	807.2	1292.7	368.1	497	661.4	763.5	977.3	11%	-3%	12%	-5%	-24%
B08	4712.9	5688.8	5946	7738.1	12227.6	3823	5481	6407	7146.85	8545.1	-19%	-4%	8%	-8%	-30%
B09	80.5	177.3	221	269.7	588.5	83.8	169.75	216.9	326.6	480.3	4%	-4%	-2%	21%	-18%
B10	120.7	277.1	378.2	466.3	900.2	134.8	290.7	342.6	642.7	802.3	12%	5%	-9%	38%	-11%
B11	26.5	56	74.7	108.2	177.1	11.5	54.15	73.2	103.2	192.3	-57%	-3%	-2%	-5%	9%
B12	214.9	274.5	379.15	648.2	900.1	147.8	286.45	377.1	487.35	778.6	-31%	4%	-1%	-25%	-13%
B13	80.1	113.8	180.6	215.1	487	26.6	58.95	126.9	138.1	266.1	-67%	-48%	-30%	-36%	-45%
B14	505.9	669.1	873.4	1047.4	1481.1	212.5	318.9	397.8	594.15	1254.1	-58%	-52%	-54%	-43%	-15%
B15	96.6	135.5	210.1	266.6	395.6	90.9	93.9	117.1	127.1	482.1	-6%	-31%	-44%	-52%	22%
B16	1575.2	1867.5	2401.45	2588.2	3190.2	1090.4	1332.3	1544.2	1774.55	6838	-31%	-29%	-36%	-31%	114%
B17	41.9	59.9	72.9	78.2	93.7	38.7	45.55	48.9	53.1	90.2	-8%	-24%	-33%	-32%	-4%
B18	61.5	74.5	85.8	100.2	108.2	57.6	61.55	64.7	67.6	70	-6%	-17%	-25%	-33%	-35%
B19	2787.5	3835.2	4676.45	5756.9	10413.4	3360.6	3727.6	4235.1	5489.6	23827.3	21%	-3%	-9%	-5%	129%
B20	376	731.4	882.5	975.1	1126.5	574.2	805.3	1015.7	1616.2	4111.6	53%	10%	15%	66%	265%

Max Streamflow

Basin	Min	1st quart.	Median	3rd quart.	Max	Min	1st quart.	Median	3rd quart.	Max	Min	1st quart.	Median	3rd quart.	Max
B01	351.9	512.9	616.85	760.2	1242.8	242.7	342.2	383.5	610.3	736.8	-31%	-33%	-38%	-20%	-41%
B02	511.4	858.6	1126.45	1302.1	2329.4	530.4	573.35	691.8	875.4	1573.4	4%	-33%	-39%	-33%	-32%
B03	1669.2	2741.7	3354.9	3816.4	6649	1736.2	1788.35	2118.4	2728.4	4533	4%	-35%	-37%	-29%	-32%
B04	1029.1	1755.6	1941.6	2593.8	3620.6	561.2	914.35	1286.1	2098.65	2959.1	-45%	-48%	-34%	-19%	-18%
B05	1926.8	3347.3	3907.25	4856.2	7228.5	1347	2109.45	2980.5	3882	4831.4	-30%	-37%	-24%	-20%	-33%
B06	274.2	390	572.35	714.4	1552.3	213.3	239.5	460.6	475.5	935.4	-22%	-39%	-20%	-33%	-40%
B07	1233.5	1829.2	2317.85	3158	7333.7	870.3	1650.55	2687.8	3183.9	5085.9	-29%	-10%	16%	1%	-31%
B08	13619.8	18373.8	19478.95	21303.9	31629.5	12712.8	15483.3	17813.4	21242.95	27255.6	-7%	-16%	-9%	0%	-14%
B09	466.1	1338.9	1741.5	2148.5	5150	756.8	1331.65	1629.8	1784.95	3145.7	62%	-1%	-6%	-17%	-39%
B10	826.9	1910.6	2763.4	3455.4	8257.6	1075.1	2096.3	2313.6	2985.55	5265.6	30%	10%	-16%	-14%	-36%
B11	327.2	509.2	728.4	953.6	1807.2	304.9	517.15	767.5	1134.55	1295.2	-7%	2%	5%	19%	-28%
B12	1238.6	2436.3	3523.15	4558.6	10048.4	1321.9	2182.35	2566	4920.85	5898	7%	-10%	-27%	8%	-41%
B13	796.2	1421.7	1806.4	2300.8	3743.9	460.5	783.95	945.5	1431.35	2795.6	-42%	-45%	-48%	-38%	-25%
B14	3157.7	4387.8	5217.1	6785.6	12915.1	2009.9	2559.8	3537.6	4619.3	5947.5	-36%	-42%	-32%	-32%	-54%
B15	976.6	1300.2	1802.85	2322.5	4277.8	812.2	979.95	1384.6	1638.1	2432.5	-17%	-25%	-23%	-29%	-43%
B16	18787.7	24274.7	27690.35	31338.7	38025.8	14384.5	21571.95	25759	27105.2	29989.7	-23%	-11%	-7%	-14%	-21%
B17	289	377.5	423.7	496.5	727.1	287	338.55	403.3	463.4	504.2	-1%	-10%	-5%	-7%	-31%
B18	87.7	122.5	142.4	157	178	83.8	94.1	99.5	101.95	119.9	-4%	-23%	-30%	-35%	-33%
B19	29043	32937.2	35932.25	40148.2	47069.4	32762	34322.55	35722.9	41096.55	54389.8	13%	4%	-1%	2%	16%
B20	5403.4	7324.5	8351.75	8945.2	12305	3115.5	6523.15	8385	8804.35	10531.1	-42%	-11%	0%	-2%	-14%

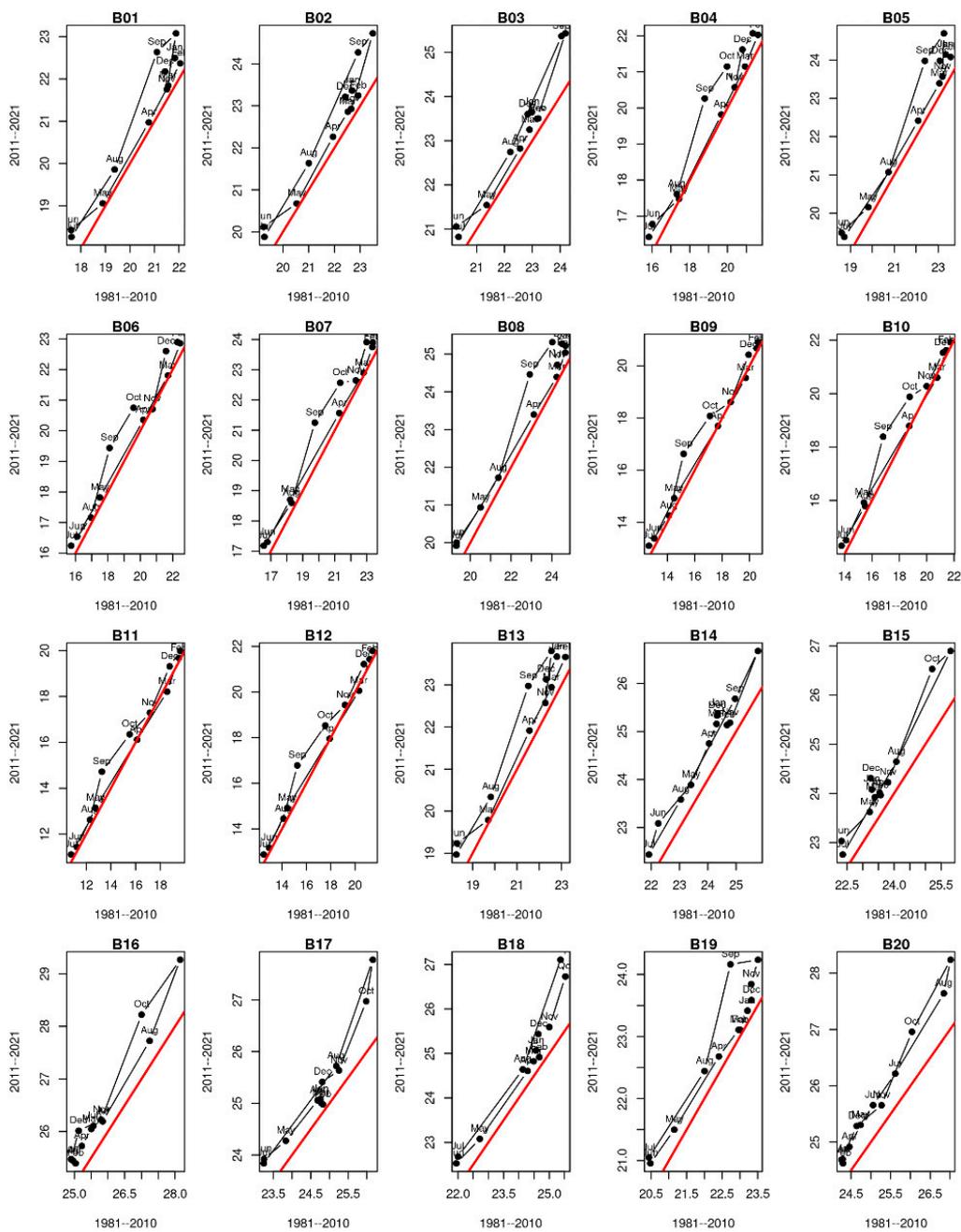


Figure S1. Innovative Polygon Trend Analysis – IPTA [1] of 2m temperature (surface) ERA5 Land monthly data (1:1 No trend-line - red line), for 1981-2010 (horizontal axis) and 2011-2021 (vertical axis) periods, for the studied basins.

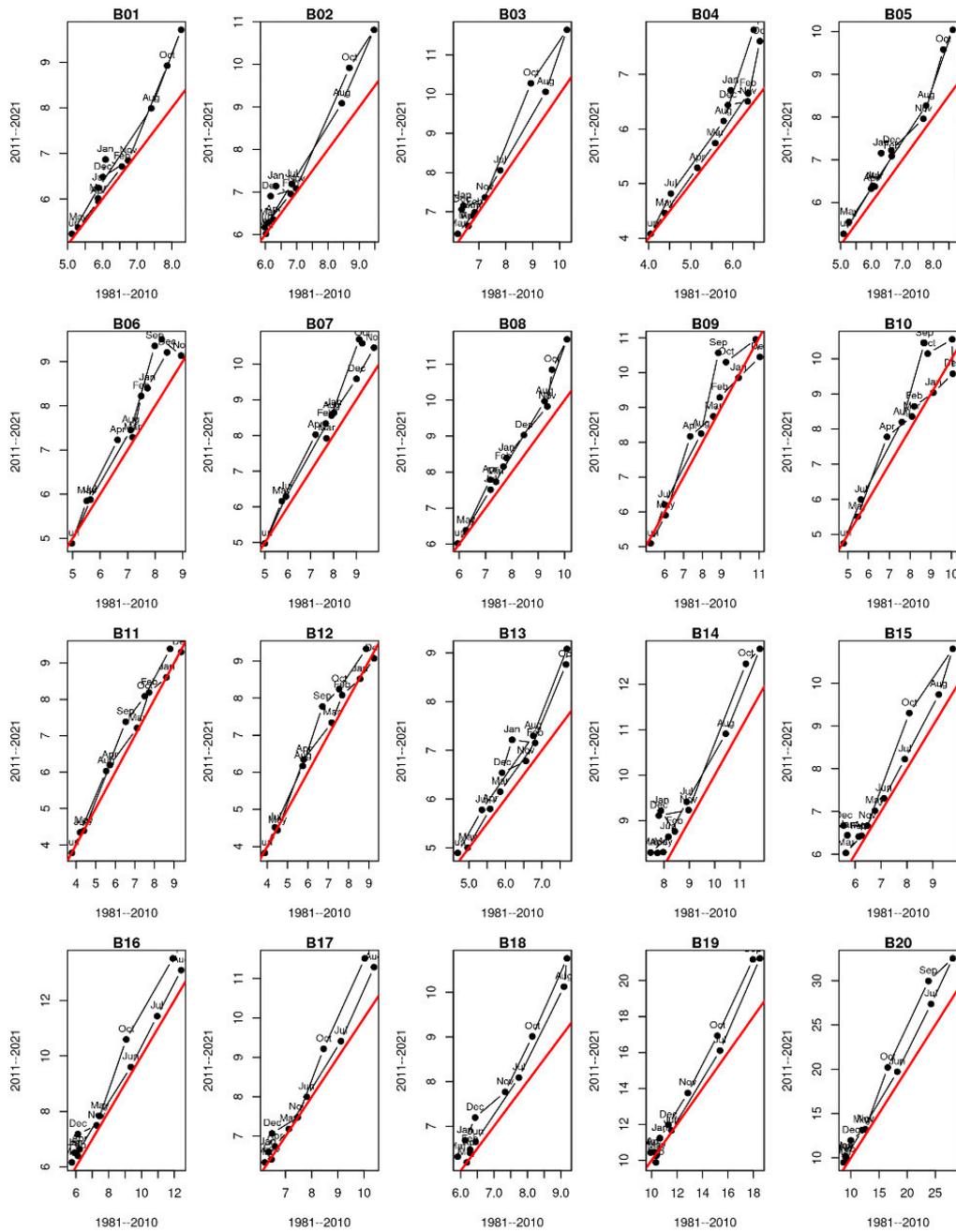


Figure S2. Innovative Polygon Trend Analysis – IPTA [1] of potential evapotranspiration ERA5 Land monthly data (1:1 No trend-line - red line), for 1981-2010 (horizontal axis) and 2011-2021 (vertical axis) periods, for the studied basins.

Reference:

1. Şen, Z.; Şişman, E.; Dabanlı, I. Innovative Polygon Trend Analysis (IPTA) and applications. *J. Hydrol.* **2019**, *575*, 202–210, doi:10.1016/j.jhydrol.2019.05.028.