Figure S1: Polar heatmaps showing metric scores calculated over 30 year moving windows for all available hydrological years of observed flow data. Each bar represents one of the 305 catchments, plotted around the perimeter of the circle, and grouped by hydrometric region: see Figure 1 in the main article for region abbreviations. The starting year of the 30 year window is represented on the radial axis with 1891 plotted towards the centre of the circle. Catchments with longer observational records have longer bars. The shading of the bars represent the metric scores, with darker colours being optimum. The hardest (H), middle (M) and softest (S) thresholds are labelled on the legend.

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Table S1: Summary statistics for the LHS1 runs for nine case study catchments. Evaluation metrics scores given in black are for the calibration period 1982-2014, those in red italics show the scores for the case study period 1971-1980, both using hydrological years.

catchid	River	Area (sqkm)	Region	Obs Start	Threshold Met	NSE Calib	NSE *CS*	logNSE Calib	logNSE *CS*	MAPE Calib	MAPE *CS*	absPBIAS Calib	absPBIAS *CS*	MAM30APE Calib	MAM30APE *CS*	Q95APE Calib	Q95APE *CS*	Uncertainty Width Calib	Uncertainty Width *CS*	Containment Ratio Calib	Containment Ratio *CS*	Containment Ratio *SSI-12 CS*
8004	Avon	542.8	ES	1952	2	0.40	*0.21*	0.43	*0.34*	51.67	*56*	10.34	*12*	59.04	*48.1*	65.94	*60.98*	0.88	*0.9*	73.21	*73.42*	*55.83*
27051	Crimple	8.1	NEE	1972	2	0.52	*0.44*	0.76	*0.77*	73.71	*60.97*	9.00	*14.28*	0.31	*1.404*	17.22	*0*	1.51	*1.52*	86.20	*86.41*	*53.75*
28072	Greet	46.2	ST	1974	1	0.50	*0.63*	0.74	*0.79*	26.59	*25.61*	0.54	*3.018*	7.53	*3.365*	1.09	*6.383*	0.87	*0.88*	91.42	*94.20*	*56.90*
33018	Tove	138.1	ANG	1962	1	0.65	*0.62*	0.81	*0.87*	36.84	*27.62*	1.12	*10.07*	6.21	*3.353*	3.24	*15.42*	1.18	*1.2*	88.44	*92.83*	*50.00*
39019	Lambourn	234.1	SE	1962	1	0.91	*0.86*	0.91	*0.85*	12.50	*12.57*	0.11	*1.314*	0.15	*9.399*	1.42	*12.12*	0.22	*0.23*	48.08	*51.93*	*25.83*
45005	Otter	202.5	SWESW	1963	1	0.52	*0.49*	0.68	*0.69*	40.45	*39.8*	5.38	*4.574*	0.92	*0.012*	0.61	*12.35*	1.03	*1.04*	90.30	*91.71*	*68.33*
67018	Dee	53.9	NWENW	1969	1	0.79	*0.73*	0.84	*0.84*	47.97	*44.8*	1.47	*3.397*	15.31	*13.77*	46.71	*19.13*	1.41	*1.44*	92.75	*92.64*	*30.00*
81002	Cree	368	WS	1963	1	0.84	*0.78*	0.92	*0.9*	27.37	*31.2*	0.59	*5.921*	7.27	*16.06*	6.83	*6.025*	1.43	*1.46*	92.68	*91.73*	*36.67*
204001	Bush	299.2	NI	1972	1	0.67	*0.67*	0.76	*0.74*	37.48	*50.82*	0.85	*7.728*	2.90	*20.9*	0.49	*46.55*	1.10	*1.11*	91.29	*87.13*	*46.48*
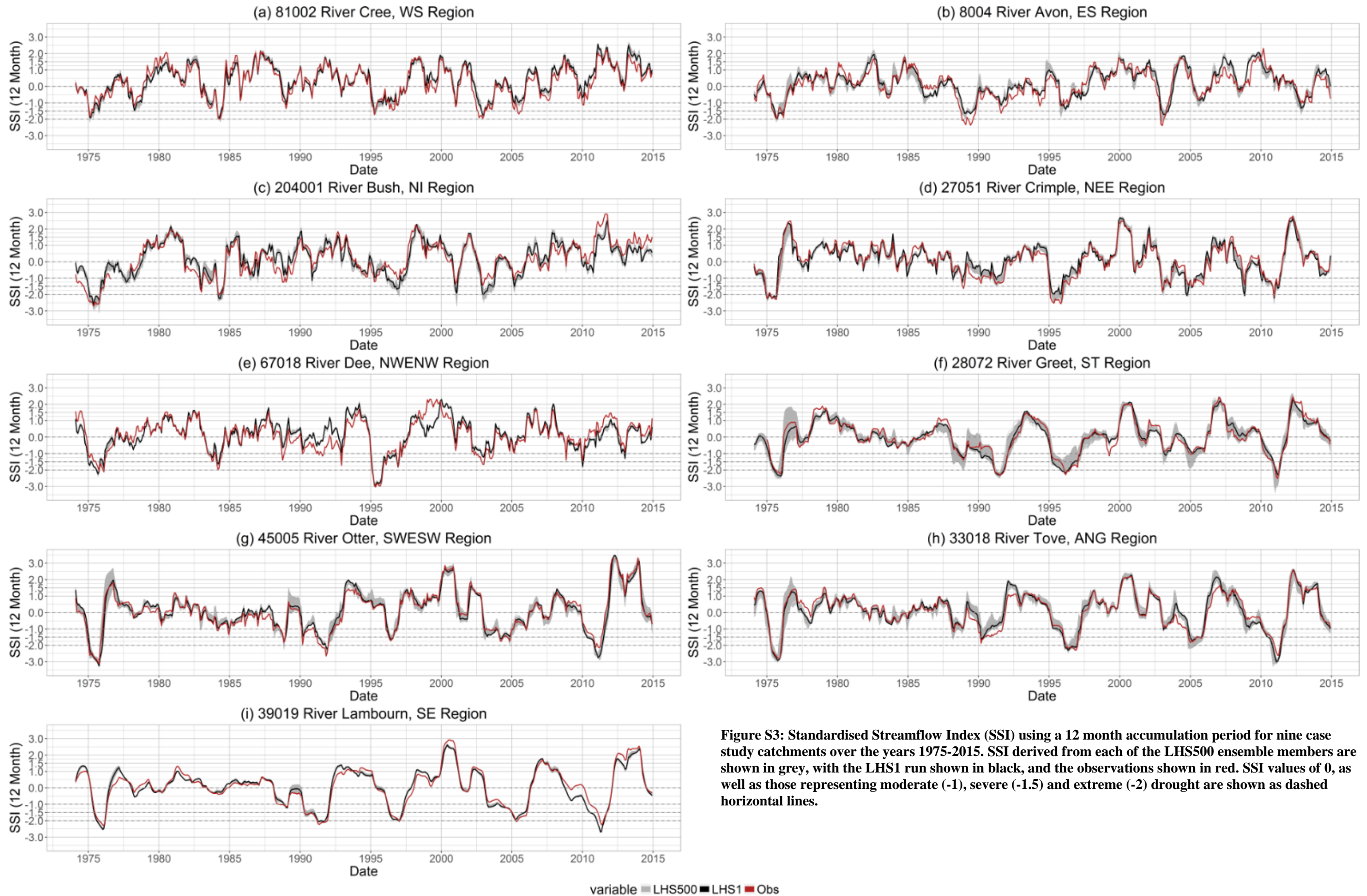
Figure S3: Standardised Streamflow Index (SSI) using a 12 month accumulation period for nine case study catchments over the years 1975-2015. SSI derived from each of the LHS500 ensemble members are shown in grey, with the LHS1 run shown in black, and the observations shown in red. SSI values of 0, as well as those representing moderate (-1), severe (-1.5) and extreme (-2) drought are shown as dashed horizontal lines.