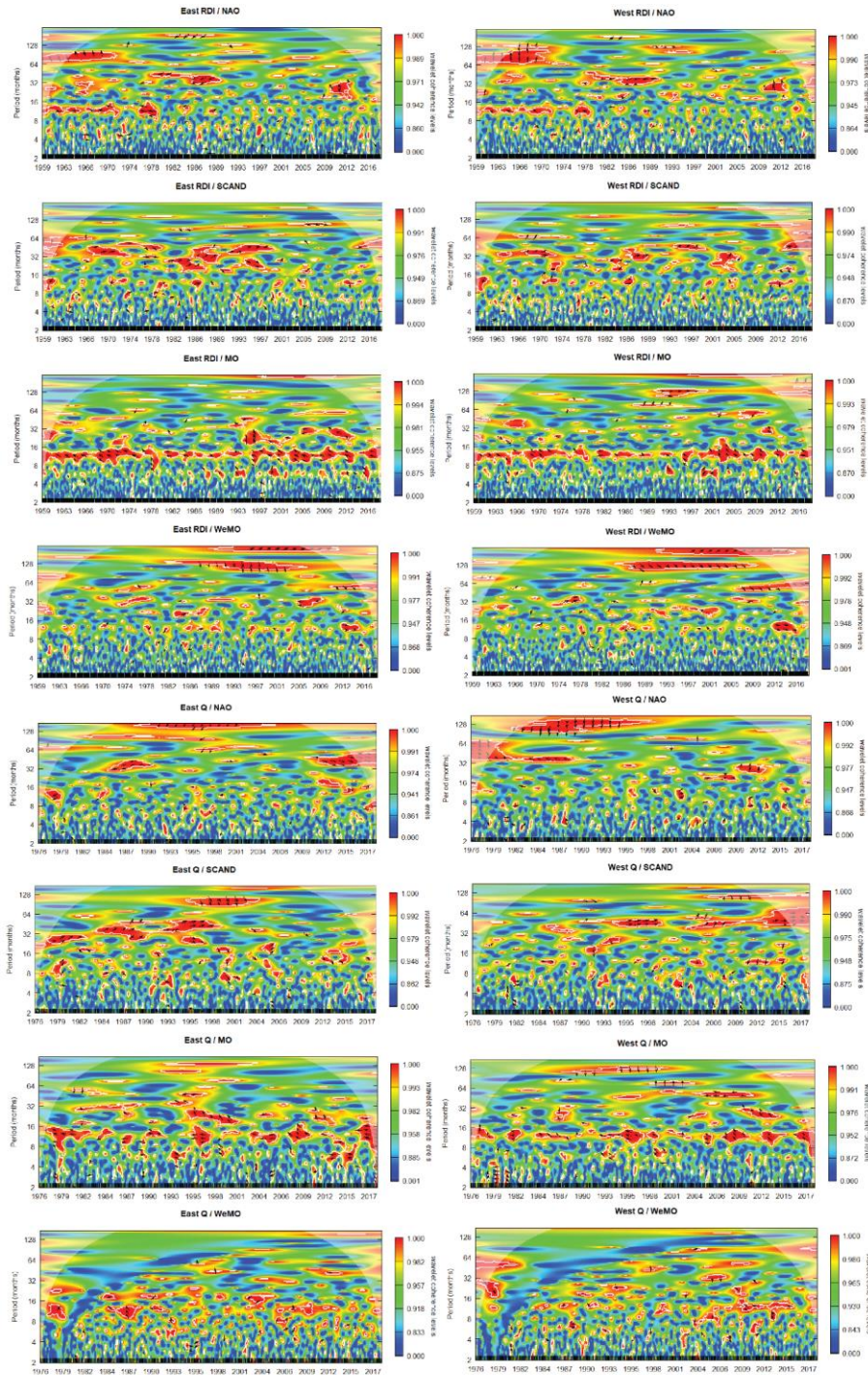**Supplementary Materials**

Table S 1 : Significant (p < 0.05) local maxima of average wavelet power of RDI03 and Q, NAO, SCAND, MO, and WeMO

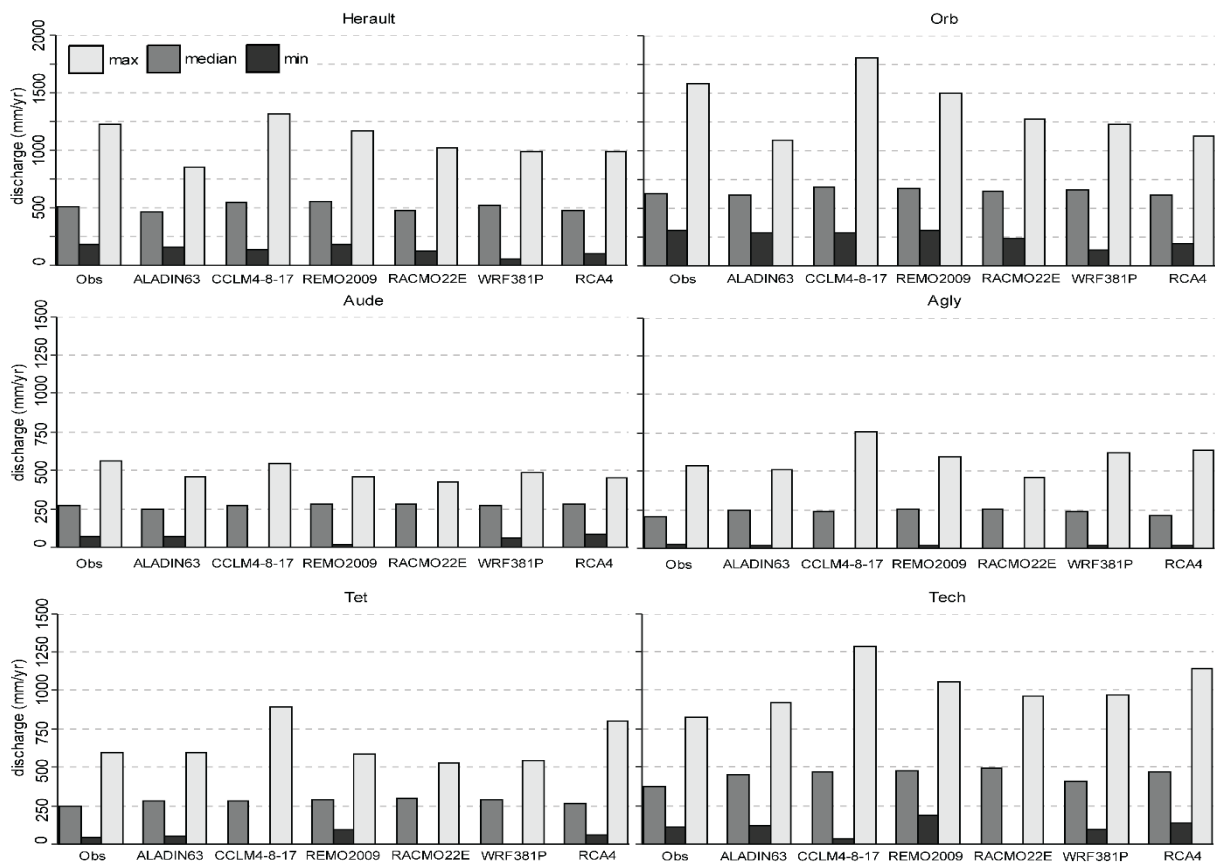| Variable	Period (years)	Average power	Pv
East-RDI03	0.7-1.2 (1.0)	15.21	<0.01
East-Q	0.7-3.0 (1.0)	5	<0.01
	3.0-6.0 (3.0)	0.68	0.03
	6.0-9.0 (8.4)	0.6	<0.01
	9.0-15.0 (9.3)	0.51	0.02
West-RDI03	0.7-1.2 (1.0)	16.87	<0.01
West-Q	0.7-3 (1.0)	6.17	<0.01
	3.0-6.0 (4.3)	1.06	<0.01
	12.0-14.0 (14.0)	0.36	0.01
NAO	0.5-2.0 (0.5)	2.52	0.01
	2.0-3.0 (2.4)	0.83	0.01
	11.0-16.0 (13.6)	0.21	0.01
SCAND	0.5-1.7 (0.7)	2.09	0.02
	0.8-10.0 (8.7)	0.27	<0.01
MO	0.4-1.2 (1)	5.87	<0.01
WeMO	0.9-1.3 (1)	1.64	0.01
	10.0-20.0 (18)	0.39	0.02

5   **Figure S 1 : Cross wavelet coherence of RDI03 and Q for each cluster and NAO, Scand, MO, and WeMO. White lines indicate the 5% significance level. Parallel black arrows indicate coherence; arrows pointing exactly to the right indicate that the two series are in phase at the respective period, arrows pointing to the left indicate an opposite in phase behaviour**
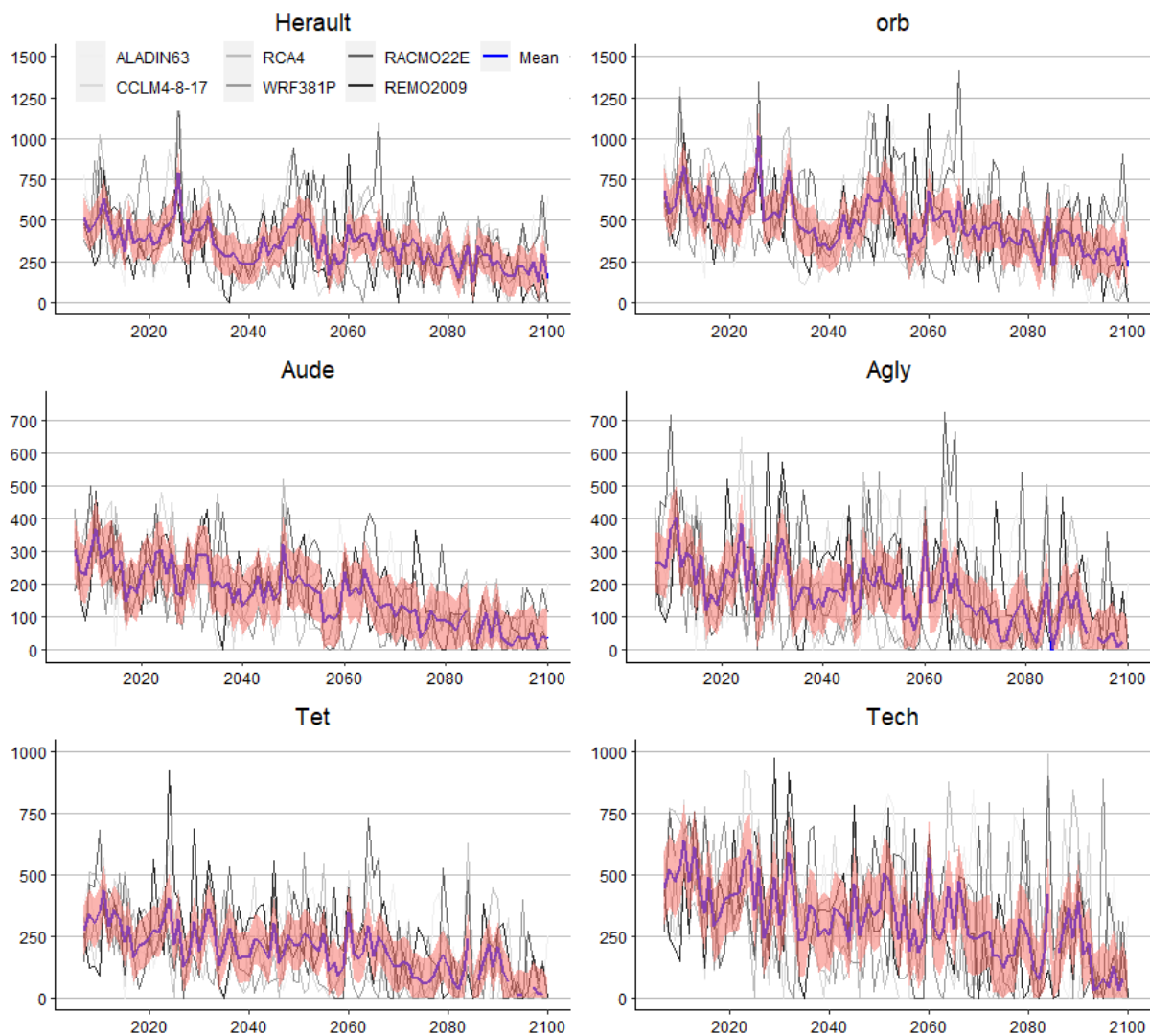
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Table S 2 : Significant (p < 0.05) local maxima of average cross wavelet coherence of RDI03 and Q, NAO, SCAND, MO, and WeMO

Cluster	Variable	Period (months)	Average power	Pv
East	NAO-Q	6	0.92	0.04
	SCAND-Q	6.0-9.0 (8.6)	0.95	0.02
		11.5-13.5 (13)	0.96	<0.01
		20.0-21.2 (21)	0.97	0.01
	MO-Q	2.5-6.5 (6)	0.95	<0.01
		10.5-14.0 (12)	0.99	<0.01
		19	0.96	0.02
		35.5	0.97	0.03
	WeMO-Q	11.0-12.5(12)	0.96	<0.01
	NAO-RDI03	2	0.87	0.03
		5.5-6.5 (6)	0.93	<0.01
		10.0-14.0 (13)	0.96	0.01
		31	0.96	0.02
		66.0-68.5(68.5)	0.98	0.02
		71	0.98	0.03
	SCAND-RDI03	2.0-2.5(2)	0.89	<0.01
		5.5-6.5(6)	0.93	<0.01
		11.0-13.5(13)	0.97	<0.01
		20.0-22.0(21)	0.96	0.02
		31.0-34.0(32)	0.97	0.01
		49	0.97	0.04
		100	0.98	0.04
	MO-RDI03	2	0.89	0.01
		5.0-6.7(6)	0.96	<0.01
		9.5-14.5(12)	1	<0.01
		31.0-33.0(32)	0.98	<0.01
	WeMO-RDI03	2	0.88	<0.01
		5.0-6.5(6)	0.86	<0.01
		9.5-14.5(12)	0.99	<0.01
		32	0.96	0.01
		128	0.98	0.03
West	NAO-Q	5.8-6.3 (6.0)	0.92	0.03
		10.0-11.0 (10.6)	0.94	0.03
		73.0-76.2 (73.5)	0.98	0.04
	SCAND-Q	6.5	0.92	0.05
		11.0-13.5 (13)	0.97	0.01
		21	0.95	0.05
		42.0-44.0 (44)	0.98	0.02
		104.0-108.0 (108)	0.99	0.04
	MO-Q	5.5-6.3 (6)	0.94	<0.01
		10.0-14.0 (12)	1	<0.01
		76	0.98	0.05
	WeMO-Q	6	0.91	0.04
		11.0-13.0 (12)	0.96	<0.01

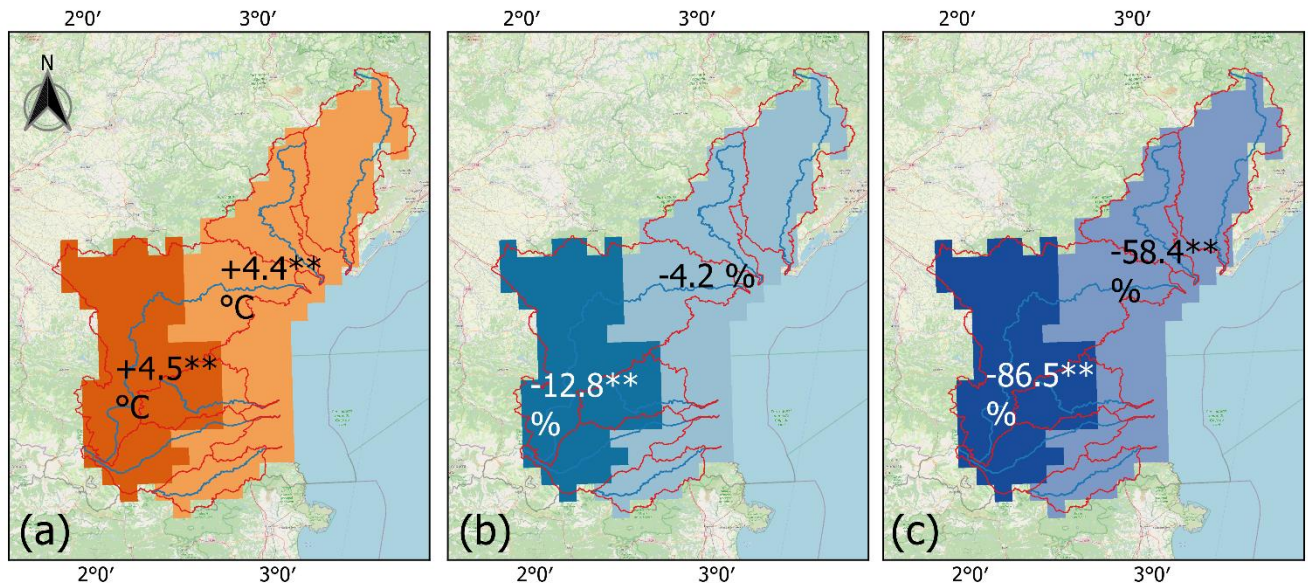|			
	18	0.95	0.02
NAO-RDI03	6	0.91	0.03
	10.0-14.0(13)	0.96	0.01
	21.0-23.0(22)	0.96	0.02
	35.5-38.0(38)	0.97	0.03
	128	0.98	0.05
SCAND-RDI03	2.0-2.5(2)	0.89	<0.01
	6.0-6.5(6.0)	0.93	<0.01
	11.0-13.5(13)	0.97	<0.01
	31.0-32.0(32)	0.97	0.03
MO-RDI03	2.0-2.5(2)	0.88	0.02
	4.0-6.5(6)	0.96	<0.01
	9.5-14.5(12)	1	<0.01
	32.0-33.0(32)	0.96	0.04
WeMO-RDI03	2.0-2.5(2)	0.88	<0.01
	5.0-6.5(6)	0.96	<0.01
	9.5-14.5(12)	1	<0.01
	32	0.96	0.04
	128	0.98	0.03

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Figure S 2: Comparison of the statistical characteristics of the simulated water discharge series for the period 1959-2005 obtained from RCMs and from Safran's variables (Obs). Light, mid, and dark grey bars are the maximum (max), median, and minimum (min), respectively, obtanied throughout the series

Figure S 3: Annual Qmod on the period 2006-2100 for each RCMs. Blue line shows the ensemble mean series (Mean), and pink shade is the associated standard deviation error

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Figure S 4*: Cluster-wise linear trends for projected annual hydro-climatic variables under a scenario RCP 8.5 and for the period 2006-2100. Results are shown for the ensemble-mean of the 6 RCMs used in this study (a) temperature in °C (b) precipitation in % and (c) water discharge in %. Map data: © OpenStreetMap contributors 2021. Distributed under the Open Data Commons Open Database License (ODbL) v1.0.*