

Title: Extreme climatic events alter the aquatic insect community in a pristine German stream

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Supplementary Material 4 – Statistical Model Output of the GAMs

For each model the remaining explanatory variables can be found in Table A1. We chose a Gaussian distribution for each model as it fit better than other distributions. No random effects were added, and all explanatory variables had smoothing terms applied.

- Past values were fitted as fixed regression spline with $k=-1$
- Year was fitted as cubic regression spline with $k=-1$
- Duration was fitted as fixed regression spline with $k=-1$
- Additional ECEs were fitted as penalized regression splines, k sometimes had to be fixed due to the data. The fixed value is added in Table A1
- Water temperature, discharge, minimum winter and maximum summer water temperature, minimum and maximum discharge were all fitted as penalized regression splines

Table A1 Results of the smoothers from the employed GAMs

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value	
abundance	overall	2 weeks	heat	past value	8.493	8.768	15.446	< 0.001	
				year	7.099	7.851	6.832	< 0.001	
				max summer temperature	6.047	6.876	4.645	< 0.001	
			cold	year	3.15	3.877	4.377	< 0.01	
				number cold events (k=4)	1	1	14.57	< 0.001	
				mean temperature period	1	1	19.612	< 0.001	
			flood	past value	1	1	10.603	< 0.01	
				year	1.3	1.534	3.732	< 0.05	
				duration	2.13	2.652	3.152	< 0.05	
				mean discharge period	1.91	2.391	2.395	0.112	
			yearly	heat	past value	8.796	8.973	10.733	< 0.001
					year	8.805	8.968	11.59	< 0.001
	duration				1.126	1.24	3.073	0.058	
	mean temperature period				3.987	4.967	3.291	< 0.05	
	min winter temperature				9	9	8.768	< 0.001	
	max summer temperature				3.409	4.163	3.789	< 0.01	
	cold			mean temperature period	8.783	8.987	20.508	< 0.001	
	flood			past value	8.335	8.86	13.564	< 0.001	
				year	8.008	8.19	6.974	< 0.001	
				min discharge previous year	9	9	7.249	< 0.001	
				max discharge previous year	6.783	6.928	5.904	< 0.001	
	drought			number drought events (k=3)	1	1	4.286	< 0.05	
				mean discharge period	8.611	8.942	13.188	< 0.001	
			min discharge previous year	2.937	3.457	19.092	< 0.001		
			max discharge previous year	1.049	1.095	3.502	0.059		

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
abundance	overall	1 month	heat	past value	8.756	8.975	7.02	< 0.001
				max summer temperature	7.972	8.702	6.813	< 0.001
			cold	past value	8.852	8.974	12.731	< 0.001
				year	1	1	3.276	0.075
				number cold events (k=6)	4.986	5	20.498	< 0.001
				mean temperature period	8.611	8.957	10.846	< 0.001
				max summer temperature	8.903	8.986	13.791	< 0.001
			flood	duration	1.937	2.403	2.72	0.083
				max discharge previous year	5.231	6.229	2.623	< 0.05
	yearly		heat	past value	8.726	8.946	14.265	< 0.001
				year	6.57	7.506	4.199	< 0.01
				mean temperature period	3.702	4.565	5.153	< 0.01
				max summer temperature	2.389	2.935	4.585	< 0.01
			cold	year	1.842	2.288	1.806	0.18
				mean temperature period	7.345	8.349	2.306	< 0.05
			flood	past value	9	9	13.904	< 0.001
				mean discharge period	1.633	2.022	2.381	0.104
				min discharge previous year	7.949	8.538	3.459	< 0.01
				max discharge previous year	6.6	7.459	5.445	< 0.001
			drought	past value	1	1	6.851	< 0.05
				year	1.93	2.262	20.164	< 0.001
				mean discharge period	6.136	7.137	3.762	< 0.01
				min discharge previous year	8.976	8.998	805.299	< 0.001

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
abundance	overall	3 months	heat	past value	1	1	14.94	< 0.001
				year	1	1	11.102	< 0.01
				duration	2.293	2.793	6.363	< 0.01
				min winter temperature	1.909	2.293	2.467	0.097
			cold	past value	8.937	8.994	8.612	< 0.001
				year	8.372	8.881	5.629	< 0.001
				number cold events (k=9)	1.543	1.915	4.123	< 0.05
				mean temperature period	4.21	5.228	3.171	< 0.05
	yearly		heat	past value	1	1	10.077	< 0.01
				year	1	1	8.396	< 0.01
				number heat events (k=6)	2.123	2.627	2.234	0.145
				mean temperature period	8.792	8.979	13.338	< 0.001
				min winter temperature	2.518	2.97	3.442	< 0.05
				max summer temperature	8.31	8.774	9.54	< 0.001
			cold	past value	7.835	8.432	4.375	< 0.01
				year	5.773	6.889	2.48	< 0.05
				min winter temperature	1	1	3.352	0.071
			flood	year	6.809	7.794	3.145	< 0.01
				duration	1	1	4.091	< 0.05
				number flood events (k=3)	2	2	12.079	< 0.001
				mean discharge period	5.875	6.972	24.887	< 0.001
				min discharge previous year	7.324	8.229	6.647	< 0.001
			drought	past value	3.515	4.299	4.138	< 0.01
				number drought events (k=5)	1.37	1.644	2.728	0.059
				mean discharge period	8.208	8.776	3.395	< 0.01
				max discharge previous year	1	1	9.368	< 0.01

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
abundance	overall	6 months	heat	mean temperature period	3.264	4.071	2.122	0.091
				min winter temperature	7.325	8.229	2.652	< 0.05
			cold	past value	5.314	5.842	6.688	< 0.001
				duration	1.918	2.329	3.243	< 0.05
				number cold events	2.976	3.726	1.948	0.147
				min winter temperature	9	9	4.38	< 0.001
				max summer temperature	9	9	5.293	< 0.001
			flood	past value	8.591	8.881	24.644	< 0.001
				year	8.064	8.38	14.838	< 0.001
				max discharge previous year	9	9	14.688	< 0.001
	yearly	6 months	heat	mean temperature period	1	1	3.888	0.052
				min winter temperature	5.867	6.959	2.06	0.054
			cold	past value	8.041	8.413	5.194	< 0.001
				year	5.232	6.453	2.629	< 0.05
				min winter temperature	8.655	8.852	5.456	< 0.001
			drought	year	7.828	8.539	4.581	< 0.01
				min discharge previous year	3.709	4.289	1.871	0.101

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
abundance	overall	12 months	heat	past value	1	1	3.945	0.053
				year	7.826	8.531	4.769	< 0.01
				number heat events (k=7)	1	1	13.797	< 0.01
				mean temperature period	4.169	5.117	4.778	< 0.01
				min winter temperature	2.951	3.378	4.833	< 0.01
			cold	year	1	1	4.652	< 0.05
				mean temperature period	3.483	4.302	6.892	< 0.001
			flood	past value	1.277	1.497	4.967	< 0.05
				year	1	1	1.043	0.313
				mean discharge period	4.631	5.396	4.26	< 0.01
	yearly		heat	past value	1	1	19.379	< 0.001
				year	8.5	8.859	8.086	< 0.001
				mean temperature period	3.321	4.123	3.239	< 0.05
				min winter temperature	5.968	6.855	8.953	< 0.001
			cold	year	1.372	1.652	2.293	0.094
				mean temperature period	8.855	8.993	5.705	< 0.001
			flood	past value	1	1	10.442	< 0.01
				year	8.23	8.613	5.615	< 0.001
				min discharge previous year	4.889	5.509	8.86	< 0.001
				max discharge previous year	3.423	3.92	2.881	< 0.05
			drought	past value	1	1	7.799	< 0.01
				year	5.408	6.61	2.838	< 0.05

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
richness	overall	2 weeks	heat	past value	1	1	1.984	0.165
				year	6.423	7.478	9.952	< 0.001
				mean temperature period	1.823	2.262	3.173	< 0.05
				min winter temperature	1	1	7.949	< 0.01
			cold	past value	3.834	4.552	1.673	0.333
				year	5.844	6.777	2.042	0.059
				number cold events (k=4)	1	1	2.64	0.109
				mean temperature period	1.765	2.22	1.607	0.186
				max summer temperature	3.203	3.76	1.177	0.383
			flood	mean discharge period	2.589	3.245	3.468	< 0.05
	yearly	heat	year	7.129	8.118	6.377	< 0.001	
			number heat events (k=4)	1.969	2.337	1.872	0.122	
			mean temperature period	4.379	5.405	2.116	0.067	
		cold	past value	1.965	2.384	2.188	0.14	
			mean temperature period	7.612	8.535	4.267	< 0.001	
		flood	mean discharge period	2.158	2.715	2.455	0.11	
		drought	number drought events (k=3)	1.529	1.774	4.816	< 0.05	
			mean discharge period	8.936	8.994	6.048	< 0.001	
			min discharge previous year	2.039	2.447	14.944	< 0.001	
			max discharge previous year	4.019	4.842	4.584	< 0.01	

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
richness	overall	1 month	heat	year	8.291	8.782	9.87	< 0.001
				mean temperature period	1.869	2.351	3.47	< 0.05
				max summer temperature	2.474	3.012	1.778	0.165
			cold	past value	7.148	8.038	2.076	< 0.05
			flood	max discharge previous year	7.53	8.341	4.736	< 0.001
	yearly		heat	past value	1	1	3.075	0.084
				year	8.681	8.938	9.566	< 0.001
				number heat events (k=5)	1	1	2.754	0.101
				mean temperature period	1.318	1.57	7.708	< 0.01
				max summer temperature	3.854	4.674	3.694	< 0.01
			cold	past value	1.105	1.202	2.423	0.095
			flood	mean discharge period	2.111	2.638	2.183	0.101
				min discharge previous year	1	1	3.131	0.084
			drought	year	1.656	2.012	2.592	0.084
				min discharge previous year	8.664	8.945	14.359	< 0.001

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
richness	overall	3 months	heat	past value	2.575	3.21	2.785	0.05
				duration	3.008	3.597	3.616	< 0.05
				mean temperature period	3.502	4.344	1.651	0.209
			cold	past value	6.995	7.008	10.303	< 0.001
				year	1	1	1.257	0.266
				min winter temperature	9	9	6.576	< 0.001
				max summer temperature	6.826	7.133	6.544	< 0.001
			flood	past value	3.352	4.126	3.181	< 0.05
				year	4.078	4.819	3.715	< 0.01
				min discharge previous year	1.304	1.502	5.651	< 0.05
				max discharge previous year	1	1	14.175	< 0.01
			yearly	heat	year	3.194	3.948	3.021
	duration				1	1	3.46	0.066
	min winter temperature				2.213	2.693	3.069	< 0.05
	cold			past value	1.937	2.297	10.736	< 0.001
				year	5.116	6.128	9.558	< 0.001
				mean temperature period	1.826	2.305	5.495	< 0.01
				min winter temperature	2.856	3.413	2.805	0.05
				max summer temperature	1	1	10.352	< 0.01
	flood			past value	1.199	1.335	7.538	< 0.05
				year	4.962	5.95	3.152	< 0.05
				min discharge previous year	2.081	2.494	2.969	0.05
	drought			past value	1.199	1.335	7.538	< 0.05
				year	4.962	5.95	3.152	< 0.05
			min discharge previous year	2.081	2.494	2.969	0.05	

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
richness	overall	6 months	heat	year	1	1	3.653	0.061
				number heat events (k=6)	1	1	2.881	0.095
				max summer temperature	2.167	2.704	1.762	0.23
			cold	past value	8.656	8.664	17.174	< 0.001
				duration	1.855	2.256	2.705	0.062
				number cold events	2.528	3.161	4.276	< 0.01
				mean temperature period	7.492	8.415	3.792	< 0.01
				min winter temperature	7.326	7.336	17.13	< 0.001
			flood	max discharge previous year	3.113	3.786	1.814	0.163
			yearly	heat	past value	5.511	6.565	2.646
	year				4.497	5.509	4.132	< 0.01
	duration				1	1	6.368	< 0.05
	mean temperature period				1	1	10.436	< 0.01
	cold			year	6.774	7.78	10.831	< 0.001
				number cold events (k=8)	1.251	1.46	5.759	< 0.05
				mean temperature period	1	1	13.257	< 0.001
				min winter temperature	6.936	7.826	4.704	< 0.001
				max summer temperature	1	1	11.13	< 0.01
	flood			past value	8.788	8.984	16.548	< 0.001
				min discharge previous year	8.83	8.99	16.934	< 0.001
	drought			past value	1	1	5.918	< 0.05
			year	4.91	5.973	3.853	< 0.01	

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
richness	overall	12 months	heat	year	1	1	22.39	< 0.001
				mean temperature period	2.844	3.545	1.911	0.117
				min winter temperature	1	1	10.972	< 0.01
				max summer temperature	1.567	1.921	13.187	< 0.001
			cold	number cold events	2.139	2.66	2.331	0.116
				mean temperature period	6.031	7.168	1.782	0.092
				min winter temperature	4.736	5.645	2.478	< 0.05
			flood	mean discharge period	3.038	3.614	2.251	0.066
	yearly		heat	year	7.173	7.896	4.19	< 0.001
				mean temperature period	3.556	4.407	4.056	< 0.01
				min winter temperature	1	1	1.766	0.188
				max summer temperature	6.478	7.275	2.43	< 0.05
			cold	year	1	1	3.579	0.062
				duration	2.389	2.951	2.964	< 0.05
				min winter temperature	5.493	6.512	3.303	< 0.01
			flood	mean discharge period	5.15	6.034	2.336	0.05
			drought	mean discharge period	1	1	3.259	0.076

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
Shannon index	overall	2 weeks	heat	past value	1	1	4.279	< 0.05
				mean temperature period	7.155	8.169	4.994	< 0.001
				min winter temperature	2.07	2.453	3.981	< 0.05
				max summer temperature	4.598	5.498	4.924	< 0.01
			cold	year	2.766	3.304	4.064	< 0.05
				max summer temperature	5.068	5.95	3.875	< 0.01
			flood	past value	7.472	8.167	12.851	< 0.001
				year	1.978	2.487	4.238	< 0.05
	yearly	2 weeks	heat	duration	2.77	3.442	2.998	< 0.05
				number heat events (k=4)	1	1	3.392	0.069
				max summer temperature	1.991	2.499	1.279	0.255
			cold	min winter temperature	1.863	2.326	1.953	0.167
			drought	duration	1	1	6.62	< 0.05
				mean discharge period	4.928	5.561	16.298	< 0.001
				min discharge previous year	6.652	7.593	3.671	< 0.01
				max discharge previous year	8.754	8.949	12.948	< 0.001

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
Shannon index	overall	1 month	heat	past value	6.633	7.51	7.224	< 0.001
				year	9	9	5.664	< 0.001
				duration	1	1	9.321	< 0.01
				number heat events (k=5)	1	1	10.93	< 0.01
			cold	max summer temperature	4.125	4.824	2.866	< 0.05
				number cold events (k=6)	1	1	2.577	0.115
			flood	min winter temperature	1	1	2.769	0.102
				past value	6.538	7.173	6.593	< 0.001
	yearly	1 month	heat	year	7.765	8.15	6.916	< 0.001
				past value	7.443	8.346	3.786	< 0.01
				year	9	9	5.563	< 0.001
				mean temperature period	3.742	4.635	7.82	< 0.001
			cold	min winter temperature	1	1	13.383	< 0.001
				mean temperature period	1	1	3.823	0.056
			flood	min winter temperature	1	1	2.953	0.091
				duration	1.775	2.174	1.728	0.211

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value	
Shannon index	overall	3 months	heat	min winter temperature	1.402	1.688	1.066	0.243	
			cold	past value	4.497	5.345	3.426	< 0.01	
				year	1.549	1.87	1.134	0.408	
				min winter temperature	1	1	6.524	< 0.05	
				max summer temperature	2.221	2.626	2.599	0.108	
			flood	past value	7.421	8.035	9.447	< 0.001	
				year	8.866	8.968	10.348	< 0.001	
				min discharge previous year	5.001	5.725	4.118	< 0.01	
			yearly	heat	min winter temperature	1.492	1.829	0.383	0.702
				cold	past value	8.511	8.922	6.011	< 0.001
				flood	past value	6.085	6.831	3.973	< 0.01
					year	7.947	8.64	4.24	< 0.01
					min discharge previous year	1.862	2.142	2.647	0.073
	drought			duration	1	1	2.837	0.1	
	overall	6 months		heat	past value	8.783	8.812	24.364	< 0.001
			year		4.749	5.262	2.405	0.116	
			cold	number cold events	3.79	4.699	2.197	0.06	
				max summer temperature	7.656	8.512	3.705	< 0.01	
			flood	mean discharge period	2.978	3.675	1.59	0.19	
			cold	past value	3.742	4.538	2.351	0.062	
				flood	year	1.988	2.42	5.984	< 0.01
					min discharge previous year	4.009	4.81	2.978	< 0.05
			yearly	drought	past value	1	1	7.541	< 0.01
					number drought events (k=5)	2.198	2.695	1.5	0.163
					mean discharge period	8.681	8.965	16.295	< 0.001

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
Shannon index	overall	12 months	heat	past value	1.906	2.219	4.935	< 0.01
				year	3.12	3.893	2.962	< 0.05
				mean temperature period	2.523	3.143	4.815	< 0.01
			flood	past value	6.63	7.575	5.935	< 0.001
	yearly		heat	past value	1.067	1.128	9.714	< 0.01
				year	1	1	7.778	< 0.01
				mean temperature period	2.024	2.529	1.714	0.144
				min winter temperature	1	1	4.852	< 0.05
				max summer temperature	2.405	2.986	2.25	0.103
			cold	number cold events (k=7)	4.79	5.482	4.11	< 0.01
			flood	past value	3.251	3.928	1.995	0.128
			drought	mean discharge period	3.203	3.668	4.352	< 0.01
				max discharge previous year	5.173	6.159	2.086	0.071

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
evenness	overall	2 weeks	heat	past value	3.69	4.428	8.106	< 0.001
				max summer temperature	7.227	8.002	5.107	< 0.001
			cold	past value	6.628	7.365	15.401	< 0.001
				number cold events (k=3)	1.925	1.993	2.98	0.082
			flood	past value	4.332	4.964	30.937	< 0.001
				year	1	1	3.92	0.059
	yearly		heat	past value	8.577	8.918	3.333	< 0.01
				duration	2.886	3.582	2.909	< 0.05
				number heat events (k=4)	1	1	4.722	< 0.05
				max summer temperature	1.969	2.448	1.888	0.129
			flood	year	3.227	3.98	1.857	0.147
				mean discharge period	1.518	1.858	7.387	< 0.01
			drought	mean discharge period	2.893	3.446	4.379	< 0.01

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value	
evenness	overall	1 month	heat	past value	6.856	7.711	4.046	< 0.01	
				year	1	1	3.53	0.066	
				duration	1.946	2.369	3.019	0.069	
				number heat events (k=5)	1	1	16.914	< 0.001	
			cold	mean temperature period	1	1	15.995	< 0.001	
				min winter temperature	1	1	11.414	< 0.01	
			flood	max discharge previous year	8.832	8.987	7.628	< 0.001	
	yearly		heat	past value	5.184	5.992	2.87	< 0.05	
				year	1.777	2.198	2.48	0.057	
				mean temperature period	2.988	3.718	2.817	< 0.05	
				min winter temperature	1	1	3.404	0.069	
				max summer temperature	3.736	4.526	5.204	< 0.01	
			cold	past value	2.966	3.623	3.203	< 0.05	
				mean temperature period	2.638	3.299	4.376	< 0.01	
			flood	duration	3.451	4.234	2.369	0.077	
				mean discharge period	1.545	1.898	4.358	< 0.05	
				min discharge previous year	1.79	2.201	2.842	0.078	
			drought	number drought events (k=4)	1	1	5.985	< 0.05	
		overall	3 months	heat	number heat events (k=6)	1	1	3.325	0.074
					min winter temperature	2.13	2.581	3.596	< 0.05
				cold	past value	8.632	8.929	5.411	< 0.001
	max summer temperature				1	1	4.971	< 0.05	
	yearly	heat		number heat events (k=6)	1.656	2.057	2.026	0.145	
		cold		year	4.921	5.953	2.773	< 0.05	
				number cold events (k=7)	1	1	5.028	< 0.05	

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value	
evenness	overall	6 months	heat	year	8.899	8.996	44.983	< 0.001	
			cold	number cold events	2.943	3.675	1.754	0.145	
				max summer temperature	8.358	8.872	5.831	< 0.001	
			flood	max discharge previous year	1	1	2.341	0.133	
	yearly		heat	past value	2.566	3.017	4.443	< 0.05	
				year	5.558	6.353	5.354	< 0.01	
			cold	year	2.443	3.016	3.735	< 0.05	
				max summer temperature	2.925	3.428	1.588	0.212	
			flood	year	3.234	4	5.428	< 0.01	
				min discharge previous year	1.964	2.354	2.621	0.101	
			drought	past value	1	1	5.901	< 0.05	
				mean discharge period	3.376	3.785	4.724	< 0.01	
	overall	12 months	heat	past value	1	1	10.093	< 0.01	
				year	4.461	5.307	7.072	< 0.001	
				number heat events (k=7)	2.009	2.52	1.805	0.144	
				mean temperature period	3.135	3.871	7.128	< 0.001	
				max summer temperature	3.214	3.725	3.948	< 0.05	
			cold	number cold events	1	1	2.645	0.112	
			flood	past value	3.803	4.364	2.575	0.064	
			yearly	heat	year	1.991	2.483	1.77	0.131
					mean temperature period	2.243	2.795	1.453	0.178
					max summer temperature	3.713	4.528	1.985	0.085
				cold	number cold events (k=7)	5.383	5.855	7.027	< 0.001
				flood	past value	3.139	3.677	2.614	0.051
				drought	duration	1	1	3.574	0.067
			mean discharge period		5.793	6.879	3.301	< 0.01	

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
CTI	overall	2 weeks	heat	past value	3.006	3.741	3.916	< 0.05
				year	9	9	5.028	< 0.001
				min winter temperature	5.458	5.845	6.517	< 0.001
			cold	year	1	1	4.064	< 0.05
				number cold events (k=4)	2.615	2.887	7.632	< 0.001
				max summer temperature	2.736	3.334	5.991	< 0.01
			flood	past value	1.157	1.296	3.712	0.068
				duration	3.21	3.963	1.844	0.126
				number flood events (k=3)	1	1	2.458	0.126
	yearly		heat	past value	5.967	7.165	7.733	< 0.001
				year	8.853	8.981	8.155	< 0.001
				min winter temperature	9	9	10.691	< 0.001
			cold	year	1	1	5.396	< 0.05
				mean temperature period	8.342	8.881	4.722	< 0.001
				min winter temperature	1.536	1.88	6.775	< 0.01
				max summer temperature	1.618	1.994	5.869	< 0.01
			flood	duration	1	1	3.139	0.085
				min discharge previous year	1	1	3.909	0.056
				max discharge previous year	3.57	4.435	2.896	< 0.05
			drought	year	5.751	6.689	13.771	< 0.001
				number drought events (k=3)	1.152	1.278	7.291	< 0.05
				mean discharge period	1	1	5.569	< 0.05
				min discharge previous year	2.904	3.476	2.777	0.053
				max discharge previous year	8.777	8.925	9.325	< 0.001

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
CTI	overall	1 month	heat	past value	3.49	4.363	6.139	< 0.01
				year	9	9	10.535	< 0.001
				number heat events (k=5)	1	1	9.173	< 0.01
				min winter temperature	4.585	4.915	6.32	< 0.001
				max summer temperature	8.871	8.98	7.896	< 0.001
			cold	past value	7.058	7.872	3.237	< 0.01
				year	8.659	8.92	9.663	< 0.001
				number cold events (k=6)	3.507	4.1	5.799	< 0.01
				min winter temperature	6.53	7.437	5.593	< 0.001
			flood	year	8.184	8.799	6.146	< 0.001
				mean discharge period	1.547	1.888	2.87	0.117
	yearly		heat	past value	7.671	8.578	13.657	< 0.001
				year	8.915	8.992	16.056	< 0.001
				duration	1	1	5.596	< 0.05
				number heat events (k=5)	1.209	1.386	24.788	< 0.001
				min winter temperature	8.995	9	13.89	< 0.001
				max summer temperature	8.993	8.999	14.179	< 0.001
			cold	year	8.858	8.978	2.899	< 0.01
				max summer temperature	6.616	7.513	5.346	< 0.001
			flood	year	1	1	4.517	< 0.05
			drought	year	6.868	7.894	6.774	< 0.001
				number drought events (k=3)	1	1	8.249	< 0.01

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
CTI	overall	3 months	heat	past value	1	1	3.061	0.086
				year	1.362	1.636	4.977	< 0.05
				duration	1.885	2.298	6.882	< 0.01
				mean temperature period	4.849	5.801	4.755	< 0.01
				max summer temperature	1	1	4.635	< 0.05
			cold	year	5.186	6.176	4.035	< 0.01
				max summer temperature	8.206	8.642	3.879	< 0.001
			flood	year	5.052	6.068	2.137	0.069
				duration	3.52	4.284	3.015	< 0.05
	yearly		heat	past value	4.713	5.778	3.118	< 0.05
				year	8.524	8.911	4.431	< 0.001
			cold	past value	6.591	7.404	3.927	< 0.01
		number cold events (k=7)		1	1	5.063	< 0.05	
		mean temperature period		1	1	14.307	< 0.001	
		min winter temperature		6.895	7.626	2.877	< 0.01	
		max summer temperature		2.337	2.716	4.009	< 0.01	
		flood	mean discharge period	1.761	2.147	2.121	0.148	
			max discharge previous year	4.422	5.431	4.143	< 0.01	
		drought	number drought events (k=3)	1.887	1.986	4.154	< 0.05	
			min discharge previous year	1	1	3.988	0.054	
			max discharge previous year	3.815	4.659	7.27	< 0.001	

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
CTI	overall	6 months	heat	number heat events (k=6)	1	1	8.285	< 0.01
				min winter temperature	3.659	4.386	1.991	0.099
			cold	past value	8.616	8.904	4.994	< 0.001
				year	2.19	2.619	2.761	0.052
				max summer temperature	2.312	2.81	3.04	< 0.05
			flood	year	2.14	2.63	4.508	< 0.01
				duration	1.56	1.922	0.545	0.527
	yearly		heat	year	1	1	6.709	< 0.05
				number heat events (k=6)	3.931	4.461	4.998	< 0.01
			cold	min winter temperature	6.378	7.425	1.712	0.13
			flood	year	5.833	6.97	2.987	< 0.05
			drought	year	8.563	8.883	5.863	< 0.001
				min discharge previous year	7.47	7.915	9.865	< 0.001
				max discharge previous year	8.137	8.562	22.526	< 0.001

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
CTI	overall	12 months	heat	past value	3.059	3.803	4.455	< 0.01
				year	8.924	8.994	6.464	< 0.001
				mean temperature period	5.49	6.613	2.66	< 0.05
			cold	past value	2.223	2.632	4.043	< 0.01
				year	8.446	8.876	8.07	< 0.001
				number cold events	2.648	3.33	4.435	< 0.01
				max summer temperature	9	9	7.355	< 0.001
			flood	number flood events (k=7)	1	1	4.012	0.053
				min discharge previous year	1	1	4.766	< 0.05
	yearly		heat	past value	1	1	2.451	0.121
				year	3.061	3.719	4.017	< 0.01
				number heat events (k=9)	1.871	2.372	1.39	0.235
				max summer temperature	5.761	6.707	4.315	< 0.01
			cold	year	8.223	8.825	5.883	< 0.001
			flood	year	8.376	8.888	4.807	< 0.001
			drought	year	7.792	8.518	9.221	< 0.001
				duration	3.765	4.553	2.956	< 0.05
				number drought events (k=8)	1.242	1.436	6.461	< 0.01
				mean discharge period	2.657	3.08	12.273	< 0.001

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value	
DCM	overall	2 weeks	heat	duration	1	1	2.897	0.094	
			cold	year	1.946	2.39	1.634	0.201	
				mean temperature period	1	1	4.169	< 0.05	
			flood	year	1.478	1.801	2.705	0.164	
				duration	1	1	4.488	< 0.05	
				mean discharge period	3.431	4.233	3.584	< 0.05	
				min discharge previous year	1	1	6.223	< 0.05	
			yearly	heat	mean temperature period	2.032	2.561	1.625	0.24
					max summer temperature	6.9	7.945	1.894	0.073
	cold	year		1	1	0.271	0.604		
		duration		8.773	8.977	5.932	< 0.001		
		mean temperature period		1	1	8.643	< 0.01		
	drought	duration		4.337	5.285	1.961	0.098		
		max discharge previous year		3.476	4.237	8.595	< 0.001		
	overall	1 month	heat	past value	1	1	2.313	0.134	
				mean temperature period	1	1	5.756	< 0.05	
				max summer temperature	3.673	4.533	1.963	0.085	
			cold	min winter temperature	6.075	7.138	3.615	< 0.01	
			flood	past value	8.697	8.967	4.877	< 0.01	
			heat	past value	7.09	8.13	3.287	< 0.01	
				max summer temperature	3.852	4.755	3.382	< 0.01	
			cold	year	1	1	6.53	< 0.05	
				min winter temperature	1	1	5.285	< 0.05	
	flood	max discharge previous year		1	1	2.453	0.126		

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
DCM	overall	3 months	heat	mean temperature period	1	1	2.232	0.141
			cold	duration	1.547	1.888	1.483	0.171
				mean temperature period	1	1	4.58	< 0.05
				min winter temperature	1.02	1.04	9.761	< 0.01
				max summer temperature	1.915	2.376	1.436	0.286
			flood	past value	4.761	5.655	5.283	< 0.001
	yearly		heat	duration	7.412	8.224	3.475	< 0.01
				number heat events (k=6)	3.99	4.546	3.275	< 0.05
				min winter temperature	7.619	8.501	5.172	< 0.001
			cold	mean temperature period	1	1	3.983	< 0.05
		drought	duration	2.757	3.418	1.855	0.165	
	overall	6 months	heat	duration	1	1	2.659	0.111
				min winter temperature	3.454	4.137	1.96	0.116
			cold	year	1	1	11.938	< 0.01
				mean temperature period	3.601	4.53	1.664	0.138
				max summer temperature	3.058	3.763	1.636	0.14
			flood	mean discharge period	1	1	2.401	0.128
	yearly		heat	past value	1	1	19.85	< 0.001
				number heat events (k=6)	2.231	2.727	3.774	< 0.05
				mean temperature period	6.471	7.515	2.248	< 0.05
				max summer temperature	5.234	6.272	2.822	< 0.05
			cold	number cold events (k=6)	1.971	2.456	1.543	0.192
				duration	1	1	2.836	0.095
			flood	duration	1.945	2.361	1.907	0.149

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
DCM	overall	12 months	cold	mean temperature period	2.862	3.549	1.57	0.18
				min winter temperature	1	1	3.83	0.055
			flood	duration	1	1	6.257	< 0.05
				mean discharge period	1	1	4.51	< 0.05
				min discharge previous year	7.604	8.483	5.357	< 0.001
	yearly		heat	mean temperature period	3.026	3.765	1.373	0.272
				min winter temperature	1	1	0.022	0.884
				max summer temperature	4.537	5.418	1.987	0.078
			cold	number cold events (k=9)	1.803	2.259	2.73	0.077
			flood	past value	8.357	8.862	8.012	< 0.001
			drought	past value	1	1	12.702	< 0.01
				year	1	1	0.191	0.664
				duration	1.738	2.158	0.635	0.498
				number drought events (k=8)	4.248	5.13	2.752	< 0.05
				min discharge previous year	3.211	3.808	2.362	0.065
				max discharge previous year	1	1	3.275	0.078

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
CCP	overall	2 weeks	heat	year	8.935	8.958	36.008	< 0.001
				mean temperature period	4.068	4.994	8.895	< 0.001
				min winter temperature	5.734	5.981	15.955	< 0.001
			cold	past value	1	1	5.027	< 0.05
				number cold events (k=4)	1.523	1.847	2.584	0.062
				mean temperature period	2.002	2.496	5.656	< 0.01
			flood	past value	1.787	2.144	2.126	0.118
				max discharge previous year	1	1	5.144	< 0.05
	yearly		heat	past value	2.969	3.69	4.228	< 0.01
				year	7.687	8.433	6.647	< 0.001
				duration	1	1	4.393	< 0.05
				max summer temperature	5.623	6.492	7.281	< 0.001
			cold	past value	1	1	3.381	0.07
				year	1	1	3.735	0.058
				mean temperature period	5.287	6.416	7.01	< 0.001
			flood	min discharge previous year	3.949	4.612	3.073	< 0.05
				max discharge previous year	2.042	2.529	2.149	0.144
			drought	min discharge previous year	8.628	8.943	3.633	< 0.01
				max discharge previous year	5.533	6.371	3.907	< 0.01

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
CCP	overall	1 month	heat	past value	1	1	14.396	< 0.01
				year	9	9	6.767	< 0.001
				number heat events (k=5)	1	1	11.543	< 0.01
				min winter temperature	4.952	5.119	4.427	< 0.01
				max summer temperature	8.53	8.825	4.097	< 0.01
			cold	number cold events (k=5)	2.504	3.001	5.103	< 0.01
				mean temperature period	1.619	2.03	2.369	0.102
				max summer temperature	2.266	2.789	4.887	< 0.01
			flood	past value	2.059	2.436	3.01	0.057
				year	2.111	2.665	1.518	0.23
				max discharge previous year	1	1	2.654	0.113
	yearly		heat	year	8.602	8.91	8.803	< 0.001
				mean temperature period	3.957	4.876	2.39	< 0.05
				max summer temperature	2.7	3.33	4.437	< 0.01
			cold	mean temperature period	5.489	6.634	3.627	< 0.01
				max summer temperature	1	1	2.843	0.097
			flood	past value	2.139	2.605	1.922	0.121
				mean discharge period	2.954	3.617	2.89	0.051
		drought	year	4.878	5.784	2.713	< 0.05	
			duration	2.558	3.158	4.424	< 0.01	
			max discharge previous year	2.491	3.024	5.76	< 0.01	

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
CCP	overall	3 months	heat	past value	1	1	12.381	< 0.01
				min winter temperature	1	1	8.61	< 0.01
				max summer temperature	2.946	3.615	1.591	0.225
			cold	past value	9	9	10.781	< 0.001
				year	8.367	8.86	11.883	< 0.001
				duration	2.671	3.251	6.67	< 0.001
				number cold events (k=9)	2.356	2.936	11.955	< 0.001
				min winter temperature	1	1	5.161	< 0.05
				max summer temperature	3.774	4.289	3.755	< 0.05
				flood	past value	2.08	2.475	4.082
			year		1.001	1.002	5.979	< 0.05
			number flood events (k=5)		1.903	2.317	1.645	0.171
			max discharge previous year		1.827	2.25	2.767	0.069
	yearly		heat	year	8.7	8.897	13.101	< 0.001
				max summer temperature	4.953	5.768	4.166	< 0.01
			cold	past value	9	9	5.392	< 0.001
				year	8.299	8.847	7.84	< 0.001
				number cold events (k=7)	1.542	1.906	7.099	< 0.01
				max summer temperature	5.396	6.137	2.032	0.067
			flood	past value	1.972	2.351	2.217	0.103
				year	6.745	7.735	3.112	< 0.01
			drought	year	8.786	8.986	9.703	< 0.001
				max discharge previous year	1	1	21.513	< 0.001

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
CCP	overall	6 months	heat	year	1.931	2.44	1.822	0.183
				mean temperature period	3.521	4.384	2.864	< 0.05
			cold	past value	6.257	6.773	9.951	< 0.001
				year	6.378	7.295	5.23	< 0.001
				duration	4.235	5.141	1.98	0.081
				mean temperature period	2.723	3.439	3.265	< 0.05
				min winter temperature	4.646	5.147	2.42	< 0.05
				flood	min discharge previous year	4.067	4.831	2.746
			max discharge previous year		1.826	2.242	3.615	< 0.05
	yearly		heat	past value	8.496	8.881	22.841	< 0.001
				year	7.82	8.268	22.555	< 0.001
				duration	8.702	8.949	4.959	< 0.01
				max summer temperature	9	9	9.116	< 0.001
			cold	past value	5.029	5.669	6.353	< 0.001
				mean temperature period	2.397	3.017	3.974	< 0.05
				min winter temperature	6.189	6.962	3.411	< 0.01
				max summer temperature	3.669	4.283	4.728	< 0.01
			flood	min discharge previous year	2.548	3.133	1.661	0.18
				max discharge previous year	1	1	5.195	< 0.05
		drought	min discharge previous year	7.89	8.642	4.035	< 0.01	

Response	Probability	Period	Event Type	Variable	edf	Ref.df	F	p Value
CCP	overall	12 months	heat	year	8.623	8.953	11.994	< 0.001
				mean temperature period	1	1	2.857	0.097
				min winter temperature	1	1	5.389	< 0.05
				max summer temperature	1	1	10.946	< 0.01
			cold	year	4.354	5.29	3.333	< 0.05
				duration	1.786	2.186	1.714	0.212
			flood	number flood events (k=7)	5.634	5.93	5.343	< 0.01
	yearly		heat	past value	7.671	8.503	3.653	< 0.01
				year	6.723	7.281	3.434	< 0.01
				min winter temperature	7.702	7.987	6.68	< 0.001
				max summer temperature	5.705	6.188	1.869	0.081
			cold	year	2.296	2.819	4.412	< 0.01
				number cold events (k=9)	2.303	2.918	2.912	0.065
				mean temperature period	4.47	5.436	1.677	0.169
			flood	year	3.231	3.977	3.008	< 0.05
			drought	past value	6.025	6.999	2.854	< 0.05
				mean discharge period	1	1	13.636	< 0.01
				max discharge previous year	8.213	8.756	4.485	< 0.001