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*Supplement of*

**Technical Note: Higher-order statistical moments and a procedure that detects potentially anomalous years as two alternative methods describing alterations in continuous environmental data**

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**Table S1** Skewness in probability distributions of daily minimum stream temperature by season and decade at unregulated (sites 1-5) and regulated (sites 6-10) streams.

site ID	season/time period											
	fall			winter			Spring			summer		
	80-89	90-99	00-09	80-89	90-99	00-09	80-89	90-99	00-09	80-89	90-99	00-09
site 1	0.335	-0.225	-0.066	-0.543	-0.662	-0.631	0.865	0.747	0.789	-0.221	-0.142	-0.486
site 2	-0.170	-0.225	-0.115	-0.345	-0.538	-0.574	0.823	0.664	0.772	-0.522	-0.220	-0.764
site 3	0.064	-0.025	-0.142	0.152	0.103	-0.805	0.450	0.549	1.010	0.048	-0.204	-0.630
site 4	-0.355	-0.210	-0.185	0.210	0.138	-0.244	1.059	0.831	1.371	-0.859	-0.604	-0.999
site 5	0.109	-0.060	0.003	-0.074	-0.462	-0.206	0.716	1.044	0.963	-0.922	-0.743	-0.821
site 6	-0.300	0.067	-0.283	0.456	-0.005	-0.034	0.647	0.216	0.195	-0.422	0.153	0.744
site 7	0.031	-0.263	-0.177	-0.353	-0.581	-0.340	0.902	0.763	0.771	-0.421	-0.160	-0.606
site 8	-0.836	-0.529	-0.416	0.002	-0.363	-0.143	0.621	0.340	0.633	-0.361	-0.395	-1.335
site 9	0.853	0.877	0.711	0.781	0.562	0.397	0.444	0.277	0.017	0.414	0.329	0.519
site 10	-0.163	-0.137	-0.103	0.187	0.755	-0.118	0.134	0.138	0.200	-1.161	-0.835	-0.229

**Table S2** Skewness in probability distributions of daily mean stream temperature by season and decade at unregulated (sites 1-5) and regulated (sites 6-10) streams.

site ID	season/time period											
	fall			winter			Spring			summer		
	80-89	90-99	00-09	80-89	90-99	00-09	80-89	90-99	00-09	80-89	90-99	00-09
site 1	0.364	-0.192	-0.022	-0.466	-0.579	-0.493	1.026	0.827	0.821	-0.292	-0.191	-0.533
site 2	-0.122	-0.182	-0.108	-0.322	-0.572	-0.557	0.902	0.711	0.713	-0.501	-0.192	-0.732
site 3	-0.001	-0.034	-0.156	0.214	0.072	-0.561	0.449	0.506	1.002	-0.079	-0.259	-0.674
site 4	-0.303	-0.218	-0.155	0.217	0.166	-0.060	1.000	0.778	1.335	-0.874	-0.562	-1.015
site 5	0.124	-0.005	0.084	-0.227	-0.607	-0.351	0.641	1.016	0.882	-1.056	-0.640	-0.934
site 6	-0.199	0.099	-0.252	0.484	0.187	-0.058	0.594	0.229	0.306	-0.468	0.218	0.777
site 7	0.027	-0.265	-0.180	-0.322	-0.622	-0.316	0.980	0.777	0.755	-0.518	-0.286	-0.674
site 8	-0.730	-0.465	-0.389	0.107	-0.286	-0.031	0.702	0.420	0.617	-0.402	-0.432	-1.251
site 9	0.806	0.906	0.626	0.795	0.675	0.416	0.418	0.302	0.024	0.394	0.299	0.437
site 10	-0.182	-0.145	-0.061	-0.012	0.609	-0.128	0.120	0.246	0.202	-1.280	-1.023	-0.872

**Table S3** Skewness in probability distributions of daily maximum stream temperature by season and decade at unregulated (sites 1-5) and regulated (sites 6-10) streams.

site ID	season/time period											
	fall			winter			Spring			summer		
	80-89	90-99	00-09	80-89	90-99	00-09	80-89	90-99	00-09	80-89	90-99	00-09
site 1	0.382	-0.161	0.018	-0.396	-0.503	-0.369	1.132	0.889	0.857	-0.374	-0.264	-0.576
site 2	-0.066	-0.154	-0.101	-0.335	-0.608	-0.551	0.945	0.741	0.652	-0.477	-0.185	-0.705
site 3	-0.064	0.010	-0.159	0.265	0.082	-0.339	0.509	0.487	0.899	-0.178	-0.332	-0.766
site 4	-0.292	-0.226	-0.162	0.231	0.195	0.145	0.946	0.725	1.208	-0.840	-0.464	-0.874
site 5	0.147	0.069	0.194	-0.355	-0.697	-0.521	0.569	0.893	0.762	-0.960	-0.398	-0.828
site 6	-0.111	0.134	-0.191	0.461	0.300	-0.049	0.545	0.245	0.397	-0.448	0.291	0.794
site 7	0.032	-0.263	-0.185	-0.300	-0.681	-0.317	1.029	0.787	0.756	-0.550	-0.435	-0.775
site 8	-0.581	-0.380	-0.324	0.213	-0.205	0.077	0.772	0.507	0.618	-0.398	-0.459	-1.025
site 9	0.796	0.972	0.552	0.671	0.747	0.363	0.402	0.333	0.042	0.319	0.231	0.264
site 10	-0.147	-0.070	0.005	-0.111	0.477	-0.063	0.109	0.349	0.219	-0.821	-0.723	-0.551

**Table S4** Type of excess kurtosis of probability distributions of daily minimum stream temperature by season and decade at unregulated (sites 1-5) and regulated (sites 6-10) streams.

site ID	season/time period											
	fall			winter			spring			summer		
	80-89	90-99	00-09	80-89	90-99	00-09	80-89	90-99	00-09	80-89	90-99	00-09
site 1	-0.187	-0.268	-0.571	0.768	0.715	0.906	1.193	0.053	0.168	-0.396	-0.428	-0.021
site 2	0.220	-0.240	-0.592	0.119	-0.135	0.671	1.104	0.016	0.208	-0.347	-0.587	0.706
site 3	-0.770	-0.877	-0.806	-0.289	-0.093	1.223	-0.104	-0.269	0.893	-0.598	-0.479	-0.290
site 4	-0.366	-0.480	-0.667	-0.332	0.039	0.065	1.171	0.414	2.004	0.409	-0.046	0.953
site 5	-0.785	-0.983	-0.981	-0.513	-0.038	-0.398	0.172	0.737	0.702	1.288	0.200	0.910
site 6	-0.683	-0.792	-0.790	0.076	0.178	-0.168	0.453	-0.491	-0.052	-0.302	-0.687	0.664
site 7	-0.528	-0.466	-0.639	-0.219	-0.155	0.137	1.275	0.434	0.322	0.056	-0.192	-0.026
site 8	0.960	-0.178	-0.612	0.670	0.314	0.800	-0.140	-0.691	-0.375	0.342	0.660	4.217
site 9	0.037	-0.178	-0.852	0.613	0.314	0.215	-0.955	-0.993	-0.867	-0.896	-0.863	-0.125
site 10	-1.079	-1.066	-1.166	-0.513	2.350	-0.074	-1.052	-0.996	-0.940	2.440	0.958	0.570

**Table S5** Type of excess kurtosis of probability distributions of daily mean stream temperature by season and decade at unregulated (sites 1-5) and regulated (sites 6-10) streams.

site ID	season/time period											
	fall			winter			spring			summer		
	80-89	90-99	00-09	80-89	90-99	00-09	80-89	90-99	00-09	80-89	90-99	00-09
site 1	-0.177	-0.340	-0.551	0.886	0.704	0.770	1.672	0.228	0.188	-0.284	-0.374	0.062
site 2	0.159	-0.301	-0.580	0.194	0.003	0.752	1.291	0.109	0.114	-0.250	-0.509	0.694
site 3	-0.759	-0.872	-0.744	-0.286	-0.006	1.026	-0.091	-0.419	0.582	-0.557	-0.529	-0.114
site 4	-0.370	-0.469	-0.720	-0.427	0.113	0.016	1.054	0.160	1.504	0.586	-0.059	1.251
site 5	-0.893	-1.133	-1.072	-0.319	0.315	-0.116	-0.151	0.750	0.445	1.536	-0.040	0.976
site 6	-0.774	-0.816	-0.828	0.084	-0.047	-0.203	0.214	-0.485	-0.107	-0.336	-0.717	0.704
site 7	-0.544	-0.457	-0.612	-0.095	0.042	0.243	1.463	0.374	0.320	0.239	-0.068	0.195
site 8	0.692	-0.320	-0.639	0.788	0.369	0.860	0.047	-0.591	-0.357	0.227	0.500	3.718
site 9	-0.069	-0.210	-1.000	0.598	0.297	0.403	-1.035	-0.962	-0.887	-0.861	-0.837	-0.345
site 10	-0.958	-1.244	-1.183	-0.501	2.208	-0.658	-1.029	-0.729	-0.921	1.999	1.166	1.753

**Table S6** Type of excess kurtosis of probability distributions of daily maximum stream temperature by season and decade at unregulated (sites 1-5) and regulated (sites 6-10) streams.

site ID	season/time period											
	fall			winter			spring			summer		
	80-89	90-99	00-09	80-89	90-99	00-09	80-89	90-99	00-09	80-89	90-99	00-09
site 1	-0.173	-0.398	-0.508	1.133	0.723	0.767	1.962	0.374	0.285	-0.209	-0.331	0.114
site 2	0.098	-0.319	-0.559	0.311	0.133	0.883	1.278	0.164	0.038	-0.148	-0.401	0.678
site 3	-0.771	-0.852	-0.708	-0.275	0.017	0.891	0.031	-0.412	0.281	-0.483	-0.617	0.148
site 4	-0.352	-0.453	-0.681	-0.462	0.159	0.126	0.802	-0.050	0.917	0.667	-0.035	1.544
site 5	-0.954	-1.191	-1.032	-0.052	0.745	0.290	-0.373	0.588	0.190	1.223	-0.249	0.700
site 6	-0.727	-0.822	-0.810	0.058	-0.108	-0.194	0.040	-0.466	-0.131	-0.435	-0.684	0.752
site 7	-0.504	-0.428	-0.572	0.165	0.355	0.473	1.374	0.292	0.289	0.142	-0.019	0.497
site 8	0.441	-0.416	-0.635	1.005	0.500	0.924	0.218	-0.430	-0.302	-0.090	0.150	2.325
site 9	-0.169	0.025	-1.105	0.282	0.371	0.359	-1.015	-0.871	-0.848	-0.797	-0.841	-0.524
site 10	-0.908	-1.235	-1.166	-0.425	1.627	-0.577	-1.011	-0.536	-0.871	0.757	0.493	1.068

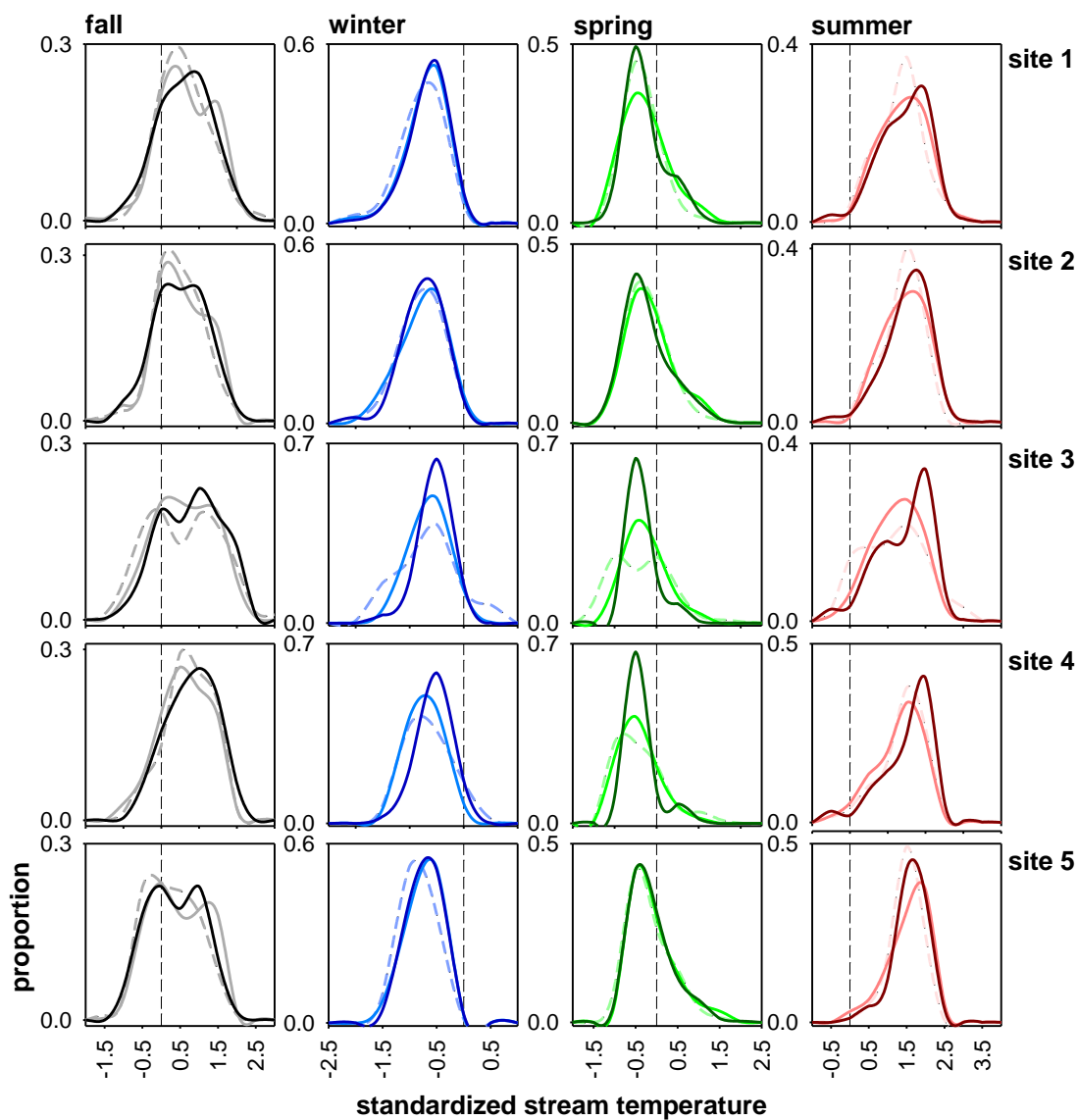




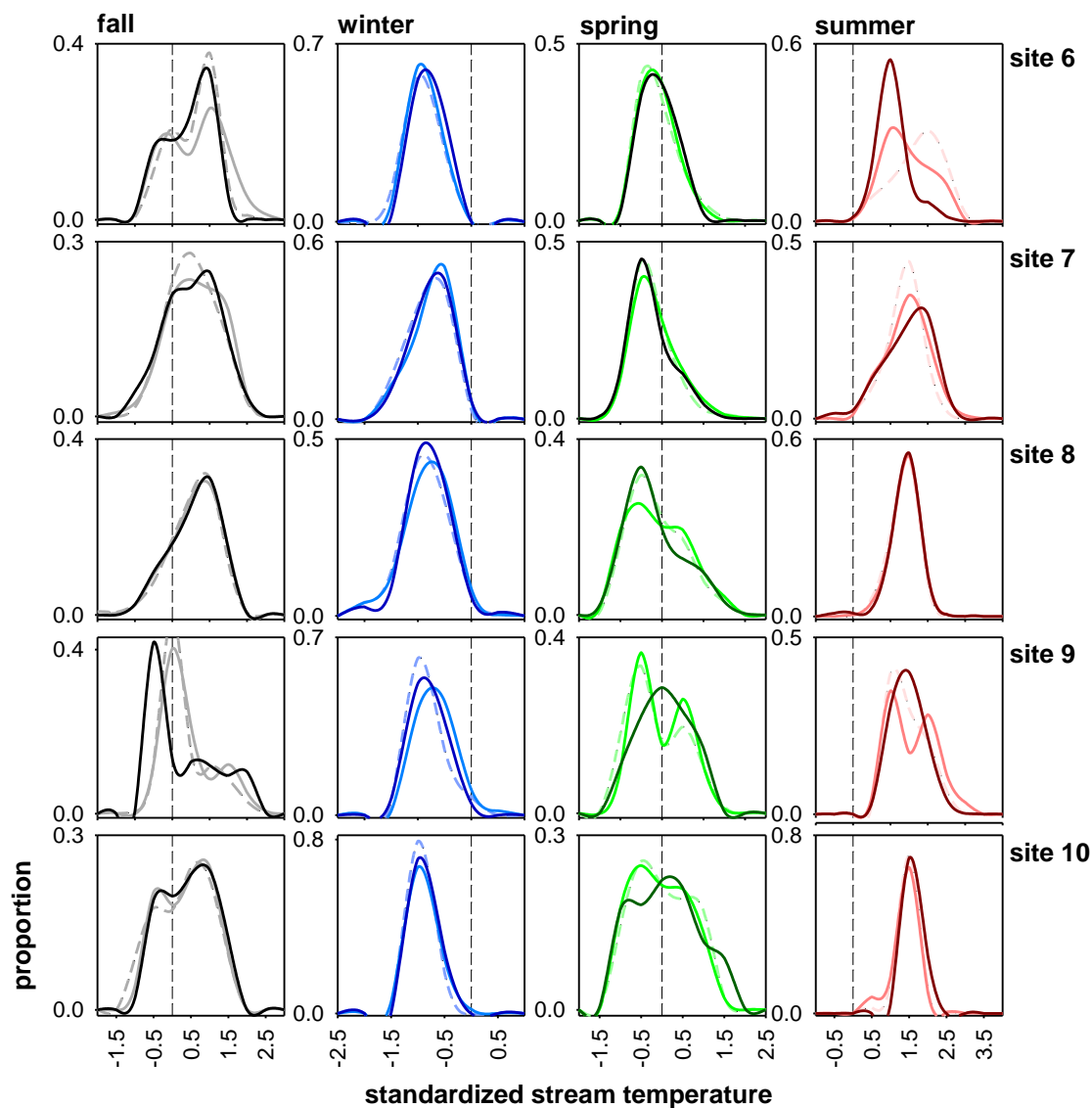


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1999				
2000				
2001				
2002				
2003	0.90			0.90
2004				
2005				
2006				
2007				
2008	0.95	0.95	0.95	0.95
2009				



**Fig. S1** Density plots of standardized temperatures by decade (period 80-89 dashed line; period 90-99 solid lighter color; period 00-09 dark color) and season (winter – blue line; spring – green line; summer – red line; fall – black line) using time series of daily minimum in unregulated streams.



**Fig. S2** Density plots of standardized temperatures by decade (period 80-89 dashed line; period 90-99 solid lighter color; period 00-09 dark color) and season (winter – blue line; spring – green line; summer – red line; fall – black line) using time series of daily minimum in regulated streams.