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Worldwide lake level trends and responses to background climate variation

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Table S1: Lake characteristics and locations. Lake names, latitudes, and longitudes are those given in the USDA water level database. Lake characteristics are from the HydroLakes database.

Lake	Lat	Lon	Lake Area (km2)	Mean Depth (m)	Watershed Area (km2)	Elevation (m)
Aberdeen	64.49	-99.12	1102.61	31.6	150856.5	51
Amadjuak	64.89	-71.16	2994.94	24.8	19638.2	91
Angostura	16.12	-92.55	566.28	16.2	18330.8	525
Ang-tzu	31.03	87.15	389.33	8.7	7132.4	4685
Aral_Sea_1	44.98	59.81	23865.91	1.1	622506.9	29
Aral_Sea_3	46.33	61.05	2964.43	26.8	325885.8	39
Argentino	-50.22	-72.23	1319.94	166.6	9811.2	179
Athabasca	59.13	-110.12	7528.73	20.6	291489.3	207
Aydarkul	40.55	67.57	2742.41	16.2	20310.3	241
Aylmer	64.12	-108.31	800.94	19.7	40140.4	355
Baikal	51.9	105.69	31967.85	738.7	569176.2	449
Baird_Inlet	60.79	-163.49	42.82	1.4	417.1	12
Baker	64.17	-95.48	1664.7	60	244118.8	2
Balbina	-1.82	-59.58	2304.63	7.6	18894.9	38
Balkhash_1	46.56	74.79	16717.89	6.7	404800.5	338
Bansagar	24.05	80.88	384.24	14.1	18725	331
Bear_2	42.1	-111.26	281.36	37	1022.2	1805
Becharof	57.89	-156.4	1166.38	55.6	3385.5	4
Beysehir	37.68	31.56	626.91	6.6	4092.2	1122
Boguchany	58.42	100.43	1702.79	34.8	782364.1	291
Bosten	41.93	87.3	961.84	9.1	40982.3	1050
Bratskoye	56.07	101.88	4810.66	35.1	734125.3	391
Cabora_Bassa	-15.69	31.77	2048.68	30.8	1068237	317
Carey	62.2	-102.82	250.73	12.1	26251.3	265
Caspian_Sea	40.03	50.87	377001.91	200.5	1404108	-29
Cedar	53.22	-100.19	2504.26	3.9	331739	253
Chad	12.99	14.39	18751.52	0.1	980211.9	282
Cha-jih	30.93	85.82	958.1	25	20080.1	4612
Champlain	45.16	-73.26	1141.3	22.6	21344.2	28
Chany	54.98	77.36	1966.57	2.1	25548.3	101

Chardarinskoye	41.18	68.02	745.08	9	199564	248
Chiquita	-30.57	-62.8	6132.89	2.4	129875.5	69
Chiuta	-14.72	35.88	143.85	3.9	4341.1	628
Chukchagirskoye	52.05	136.68	372.31	15.6	1099.3	68
Claire	58.35	-112.02	1332.93	1.3	21416.2	207
Colhue_Huapi	-45.51	-68.69	623.21	2.6	29104	253
Dale_Hollow	36.57	-85.38	89.62	23.5	2408.3	195
Diefenbaker	50.94	-106.9	391.72	25.2	118913.8	551
Dogai_Coring	34.59	89.15	268.13	22.5	7618.7	4818
Dogen	31.62	91.12	134.17	11.9	1209.4	4551
Dore	54.71	-107.33	627.55	10.9	2524.2	454
Dorgon	47.68	93.53	370.35	6.6	6654.4	1128
Dubawnt	62.92	-101.37	3583.21	25.5	54612.5	218
Eildon	-37.21	145.91	43.45	78	3881	260
Emborcacao	-18.38	-47.7	206.21	85.3	29099.5	633
Erie	42.12	-81.47	25767.79	19.4	679903.4	172
Eyre	-27.95	136.96	8026.7	3	736713.1	-15
Falcon	26.8	-99.25	120.78	32.5	430278.8	80
FD_Roosevelt	48.54	-118.15	269.2	23.8	194674.4	384
Forde	63.25	-97.16	265.7	12.8	56030.1	80
Fort_Peck	47.64	-107.69	814.09	28.9	147429.4	679
Gandhi	24.33	75.34	523.51	14	22820.1	386
Gaoyou	32.86	119.33	703.14	7.9	171466.1	2
Gilgel_Gibe_III	7.4	37.38	1084.75	7.4	16336	1176
Gods	54.77	-94.02	1024.08	13.5	26706.4	178
Gorkovskoye	57.36	43.11	1325.39	6.6	230390.3	80
Grande_Riviere_II	53.71	-77.68	2758.99	22.4	94256.6	170
Grande_Riviere_III	53.78	-75.5	2401.01	25	62404.7	250
Grande_Riviere_IV	54.05	-73.06	805.72	24.2	34525.2	372
Great_Bear	65.9	-120.2	30450.64	72.2	147665.4	145
Great_Slave	61.51	-114.91	26734.29	59.1	995312.3	148
Guri	7.37	-62.88	3661.1	36.9	87349.9	270
Hammar_4	31.53	47.73	89.68	1	3547.8	4

Har_2	48.06	93.14	574.52	4.1	80448.2	1129
Hardisty	64.72	-117.57	384.88	26.9	16707.1	186
Hongze	33.3	118.54	1374.36	9.8	165046.9	10
Hovs_Gol	51.32	100.5	2767.8	138.6	7714.6	1642
Hulun	49.07	117.57	2121.43	6.2	133702.3	540
Huron	44.98	-81.9	59399.3	59.8	576017.7	175
Ijsselmeer	52.76	5.32	1962.7	4.5	10569.5	0
Iliamna	59.66	-154.77	2634.62	43.8	16869.4	13
Issyk-Kul	42.44	77.52	6195.93	280.5	21917	1601
Itaipu	-25.23	-54.49	1156.44	25.1	824128.6	217
Itumbiara	-18.34	-48.66	333.17	51	94788.5	504
Jose_Richa	-25.54	-53.08	115.13	31	57095.9	326
Kafue	-15.7	27.76	90.29	1	128272.3	978
Kainji	10.49	4.5	1034.85	14.5	1571130	139
Kajakai	32.35	65.19	42.72	62.7	46815.2	1010
Kakhovskoye	47.5	34.18	2092.3	8.7	487441.1	13
Kamskoye	58.7	56.11	1584.87	7.7	166876.3	104
Kapchagayskoye	43.84	77.25	1205.95	23.3	113657.6	475
Kara-Bogaz	41.41	53.67	377001.91	200.5	1404108	-29
Karakaya	38.44	38.8	194.88	49.2	79632.6	675
Kariba	-16.64	28.56	5276.89	35.1	679343.6	487
Kasba	60.12	-102.01	1330.11	15.7	14582.2	324
Keller	63.93	-121.48	391.42	8	1579	233
Khanka	45.24	132.72	4118.84	4.4	17049.4	64
Kinbasket	52.1	-118.51	419.13	59.6	20975.7	729
Kinkony	-16.17	45.76	154.74	6.7	2789.5	12
Kiyevskoye	50.85	30.48	636.17	5.9	245547	98
Koocanusa	48.61	-115.24	163.81	45.4	23324	721
Krasnooskol	49.54	37.69	85.58	5.5	14661.6	70
Krasnoyarskoye	55.12	91.77	1629.53	45	290947.3	223
Kremenshugskoye	49.23	32.83	1849.09	7.3	388063.7	77
Kuybyshevskoye	54.09	48.76	5060.1	11.5	1205909	45
Kwania	1.73	32.69	2788.19	3	318838	1034

Kyoga	1.49	32.78	2788.19	3	318838	1034
La-ang	30.64	81.27	261.27	32.5	6584.7	4570
Ladoga	60.94	31.61	17444.01	48	279581.2	-10
Lake_of_the_Woods	49.05	-95	3472.81	10.7	69313.9	320
Lesser_Slave	55.42	-114.93	1186.51	11.4	13479	572
Low	52.39	-76.69	929.1	9.1	40948.8	210
Lower_Arrow	49.43	-118.1	510.05	22.2	36413.2	429
Madaba_Grande	-2.37	-56.55	22.86	1	92.9	1
Malawi	-10.87	34.41	29544	261.3	128727.2	476
Mallery	63.84	-98.37	460.6	14.1	7699.5	121
Mangueira	-33.36	-53	3899.7	6	47756.3	0
Manitoba	50.79	-98.58	23923.04	11.9	919611.5	215
Martre	63.13	-117.5	1679.89	10	13423.7	249
Michigan	42.43	-86.89	57726.84	84.2	176006.4	175
Mosul	36.71	42.77	346.9	36	50755.1	307
Mweru	-9.02	28.64	5042.56	7.6	216298.5	921
Naivasha	-0.75	36.41	128.23	13.6	3253	1881
Napaktuluk	66.14	-112.94	1031.69	48.1	7177.5	366
Nasser	23.29	32.85	5385.34	30.1	2764126	179
Nettiling	66.14	-71.03	4872.7	23.4	63399.7	18
Ngoring	34.92	97.74	617.76	17.4	18713.7	4267

Table S2: Goodness of fit metric and for the best BRTs, and long-term water level trends associated with each lake. Slope-pre refers to the slope fit to the raw lake level data and slope-post refers to the slope of a Thiel-Sen regression after accounting for the effects of background climate variation. The press statistic is the predicted residual error sum of squares calculated in the cross validation of each lakes' best BRT. The number of monthly mean water level observations used for each lake's BRT can be found in the "n" column.

Lake	Slope-pre (cm year^{-1})	Slope-pre p-value	Slope-post (cm year^{-1})	Slope-post p-value	PRESS (m)	n
Aberdeen	1.8	0.125	2	0.004	0.139	326
Amadjuak	3	0.001	3.1	< 0.001	0.0379	326
Angostura	-12.6	0.29	-4	0.318	8.04	289
Ang-tzu	34.5	< 0.001	34.5	< 0.001	0.112	326
Aral_Sea_1	-38.9	< 0.001	-39	< 0.001	0.0126	327

Aral_Sea_3	6.5	0.009	7.1	0.001	0.039	326
Argentino	0.8	0.113	0.8	0.047	0.0424	326
Athabasca	0.8	0.512	0.3	0.559	0.109	327
Aydarkul	13.9	0.005	13.9	0.005	0.128	313
Aylmer	1.1	0.135	1	0.001	0.0407	326
Baikal	-0.5	0.127	-0.6	0.015	0.0161	327
Baird_Inlet	-0.7	0.075	-0.6	0.018	0.0168	326
Baker	2.9	0.004	3	0.001	0.0468	325
Balbina	-0.7	0.403	-0.2	0.512	0.58	327
Balkhash_1	6.5	0.001	6.3	0.001	0.00933	327
Bansagar	92	0.001	96.4	< 0.001	0.97	254
Bear_2	0.2	0.509	-0.1	0.471	0.0754	257
Becharof	0.4	0.146	0.5	< 0.001	0.0119	327
Beysehir	3.2	0.178	2.8	0.046	0.083	326
Boguchany	50.9	0.012	2.1	0.051	1	226
Bosten	-5.5	0.377	-5.3	0.29	0.0168	326
Bratskoye	-5.9	0.302	-2.1	0.077	0.959	327
Cabora_Bassa	19.9	0.014	16	0.006	1.39	327
Carey	4.2	< 0.001	4.2	< 0.001	0.0342	313
Caspian_Sea	-4.5	< 0.001	-4.5	< 0.001	0.00216	326
Cedar	2.8	0.093	2.1	0.005	0.152	327
Chad	0.00E+00	0.512	-0.2	0.486	0.0285	326
Cha-jih	9	0.009	9.9	0.002	0.11	269
Champlain	0.7	0.408	1.3	0.066	0.0265	255
Chany	1.7	0.151	1.4	0.1	0.0477	326
Chardarinskoye	1.4	0.46	0.8	0.556	1.06	326
Chiquita	-6.4	0.071	-6.4	0.082	0.0328	326
Chiuta	1.3	0.53	0	0.554	0.159	255
Chukchagirskoye	2.2	0.07	2	0.137	0.0539	326
Claire	0.4	0.489	0.1	0.568	0.0452	327
Colhue_Huapi	-14.7	0.001	-14.7	< 0.001	0.0435	306
Dale_Hollow	0.6	0.495	1	0.024	0.421	251
Diefenbaker	1.6	0.453	2	0.086	0.924	256
Dogai_Coring	28.5	< 0.001	27.7	< 0.001	0.0453	240
Dogen	5.9	0.029	4.8	0.002	0.0158	228
Dore	4.9	< 0.001	4.8	< 0.001	0.0144	326
Dorgon	-5.2	0.066	-4.6	0.067	0.0234	326
Dubawnt	4.1	0.001	4.2	0.001	0.0532	326
Eildon	-15.3	0.455	-9	0.494	15.4	248

Emborcacao	-61.4	0.04	-44.2	0.001	14.3	251
Erie	0.9	0.22	0.8	0.192	0.0183	327
Eyre	-0.1	0.465	-0.1	0.163	0.00308	256
Falcon	7.6	0.499	6.2	0.319	2.68	252
FD_Roosevelt	2.1	0.52	1.9	0.316	3.69	251
Forde	-0.9	0.449	-0.5	0.002	0.345	252
Fort_Peck	4.7	0.379	3.8	0.333	2.6	256
Gandhi	12.3	0.449	4.7	0.433	4.08	253
Gaoyou	1.2	0.105	1	0.043	0.076	325
Gilgel_Gibe_III	8.9	0.017	6.3	0.008	21.4	253
Gods	1.3	0.348	-0.1	0.581	0.122	326
Gorkovskoye	0	0.414	0.1	0.501	0.0687	315
Grande_Riviere_II	3.9	0.014	3.7	0.001	0.155	324
Grande_Riviere_III	14.9	0.005	15.1	0.001	0.827	326
Grande_Riviere_IV	10	0.089	9.9	0.002	0.369	254
Great_Bear	2.8	0.001	2.7	0.001	0.0135	326
Great_Slave	0.4	0.435	0.2	0.089	0.0291	326
Guri	1.5	0.567	-3	0.512	8.01	327
Hammar_4	-10.2	0.023	-3.7	< 0.001	0.179	260
Har_2	-3.2	0.056	-3	0.035	0.0762	326
Hardisty	0.7	0.397	0.2	0.319	0.058	251
Hongze	-4.3	0.015	-4	< 0.001	0.228	255
Hovs_Gol	0.9	0.194	0.8	0.021	0.0363	326
Hulun	-12.4	0.047	-12.9	0.037	0.0118	326
Huron	-0.1	0.578	0.2	0.416	0.0133	327
Ijsselmeer	0.1	0.386	0.1	0.059	0.00397	327
Iliamna	-0.4	0.435	-0.4	0.057	0.0417	323
Issyk-Kul	1.8	0.124	1.5	0.023	0.00402	327
Itaipu	-2.5	0.086	-1.5	0.018	0.184	326
Itumbiara	-14.5	0.27	-7.1	0.009	10.8	254
Jose_Richa	36.4	0.002	14.9	0.001	0.242	241
Kafue	-0.1	0.57	0.8	0.177	0.297	257
Kainji	5.4	0.027	5.7	0.009	0.9	327
Kajakai	7.3	0.495	3.6	0.339	10.5	253
Kakhovskoye	0	0.597	-0.2	0.031	0.0223	326
Kamskoye	0.4	0.625	0.3	0.472	0.815	325
Kapchagayskoye	7.5	0.041	7.7	< 0.001	0.275	255
Kara-Bogaz	-4.5	0.082	-4.8	0.116	0.0942	326
Karakaya	-9.6	0.355	7.6	0.317	4.8	255

Kariba	6	0.417	-0.6	0.361	1.3	325
Kasba	3.5	0.004	3.4	< 0.001	0.0583	325
Keller	2.6	0.001	2.5	< 0.001	0.0321	326
Khanka	5.2	0.005	4.7	< 0.001	0.0651	327
Kinbasket	8	0.503	20.7	0.072	13.9	250
Kinkony	1	0.421	2.5	0.005	0.208	252
Kiyevskoye	1	0.075	0.3	0.029	0.0168	324
Koocanusa	27.1	0.084	27.6	0.003	15.7	325
Krasnooskol	-0.9	0.434	-1.1	0.002	0.0616	254
Krasnoyarskoye	12.6	0.131	8.3	0.011	4.82	327
Kremenshugskoye	1.2	0.1	1.2	0.084	0.0562	326
Kuybyshevskoye	6	0.009	6	0.008	0.426	327
Kwania	1.3	0.501	1.3	0.512	0.0374	326
Kyoga	-0.4	0.355	-0.4	0.424	0.0388	327
La-ang	-21.2	< 0.001	-21	< 0.001	0.0172	325
Ladoga	0.7	0.556	0.7	0.048	0.0899	327
Lake_of_the_Woods	-0.4	0.504	-0.4	0.025	0.0544	327
Lesser_Slave	1.3	0.364	1.1	0.299	0.0727	326
Low	12.4	< 0.001	12.4	< 0.001	0.0631	326
Lower_Arrow	7.3	0.493	7.4	0.002	3.97	254
Madaba_Grande	2.1	0.436	2.4	0.266	0.323	255
Malawi	-0.9	0.517	-0.5	0.508	0.0365	326
Mallery	1	0.227	0.7	0.001	0.0448	327
Mangueira	-3.1	0.218	-3.2	0.113	0.116	326
Manitoba	1	0.246	0.9	0.176	0.0391	326
Martre	0.1	0.435	0.1	0.16	0.00911	327
Michigan	-0.2	0.494	0.1	0.461	0.0142	326
Mosul	-35.6	0.059	-36.1	0.003	11	254
Mweru	3	0.162	3.1	0.156	0.0161	326
Naivasha	8.8	0.064	5.2	0.009	0.127	255
Napaktuluk	0.5	0.322	0.4	0.116	0.0178	306
Nasser	3.3	0.449	4.2	0.29	2.54	327
Nettiling	-0.3	0.452	-0.2	0.524	0.0571	326
Ngoring	10.7	0.002	10.5	0.001	0.0563	326
Nicaragua	0.6	0.464	0.5	0.242	0.0663	326
Nipigon	0.1	0.535	0	0.415	0.0379	327
Nizhnekamsk	1.6	0.131	1.6	0.006	0.0483	256
Nova_Ponte	-58.1	0.068	-30.6	0.002	19.5	235
Novosibirskoye	0.7	0.52	0.7	0.165	0.201	256

Nueltin	2.1	0.026	2.1	0.004	0.0355	326
Nuozhadu	221.9	0.009	221.9	0.001	4630	190
Oahe	-1.1	0.499	-1.1	0.261	0.925	249
Onegh	0.8	0.277	0.6	0.009	0.0249	326
Ontario	0.00E+00	0.592	-0.1	0.489	0.0194	326
Orba	1.5	0.163	1	0.003	0.0317	252
Oulujarvi	2.3	0.012	2.3	< 0.001	0.0562	325
Ozarks	4.2	0.042	4.7	< 0.001	0.0701	256
Pangong	10.1	< 0.001	10.2	< 0.001	0.00338	263
Peipus	0.2	0.509	0.1	0.391	0.0686	326
Poopo	2	0.004	1.4	< 0.001	0.00233	240
Powell_1	-95.9	0.038	-97.3	0.002	7.12	250
Primrose	0.8	0.301	0.5	0.068	0.0324	326
Promissao	-1.7	0.28	-0.7	0.094	0.279	251
Reindeer	4	0.024	3.7	0.001	0.0731	327
Rukwa	-15.2	< 0.001	-15.2	< 0.001	0.0632	326
Rybinkskoye	3.6	0.1	4.5	0.001	0.364	327
Saimmaa	0.1	0.502	0.2	0.095	0.049	285
Saitlan	2.9	0.01	3.1	0.005	0.0118	326
Sakakawea	3.8	0.524	4.4	0.474	1.13	313
Salton_Sea	-11	< 0.001	-10.8	< 0.001	0.0101	327
Sao_Simao	-5.5	0.196	-4.3	0.002	1.58	253
Saratov	0.9	0.008	0.7	< 0.001	0.0175	255
Sarykamyshskoye	23	< 0.001	23.1	< 0.001	0.04	327
Sasykkol	2.8	0.005	2.7	0.003	0.0281	327
Sayano-shushenskoye	-12.4	0.141	-12.6	0.18	3.24	256
Schultz	4.1	0.054	3.4	0.002	0.268	299
Seul	-0.3	0.499	-0.5	0.073	0.0702	250
Shiroro	7.3	0.537	5.8	0.105	13.6	255
Shui_Feng	3.9	0.459	5.8	0.543	35.8	255
Sivash	-0.8	0.169	-0.6	0.007	0.0467	256
Smallwood	10.5	< 0.001	9.8	< 0.001	0.115	314
Sobradinho	-7.2	0.153	-3.7	0.007	1.07	253
SongHua	-20.8	0.109	-13.3	0.009	11.3	255
Southern_Indian	3.6	0.008	3.6	0.002	0.0538	325
Srisailam	-10.8	0.032	-10.2	0.001	2.33	254
St.Jean	1.2	0.381	1.1	0.059	0.203	324
Sterkfontein	36	0.017	31.3	0.005	2.47	239
Superior_1	0.1	0.47	0.2	0.443	0.00749	327

Talbot	3.3	0.002	3.2	< 0.001	0.0253	326
Tana_1	0.7	0.467	1.1	0.218	0.0388	326
Tanganyika	2.4	0.146	1.9	0.199	0.0348	326
Tarbela	10.6	0.417	19	0.233	66.2	250
Taupo	-0.5	0.52	0.2	0.556	0.0271	246
Tehek	0.5	0.23	0.7	0.001	0.0288	252
Tehri	268.3	0.002	311.6	< 0.001	131	198
Tharthar	-54.9	0.004	-52.8	0.002	3.1	327
Todos_los_Santos	0.7	0.403	0.4	0.336	0.0657	326
Tonle	1.4	0.552	1.4	0.374	0.554	256
Torrens	0.1	0.372	0.1	0.156	0.00106	257
Towuti	1.9	0.218	2.8	0.001	0.143	270
Tshchikskoye_1	-2.8	0.261	-3	0.003	0.369	268
Tsimlyanskoye	-3.1	0.195	-3.7	0.049	0.181	326
Turkana	9.2	0.037	8.7	0.015	0.101	326
Ulungar	4.5	0.041	3.9	0.004	0.0483	255
Urmia_1	-28.8	< 0.001	-28.8	< 0.001	0.0622	326
Ust-Ilimskoye	-0.6	0.276	-0.2	0.04	0.0673	254
Vallabh	8.7	0.475	8.6	0.056	2.94	256
Vanern	0.2	0.54	0.1	0.44	0.0396	326
Vermelha	-9.5	0.061	-6.7	0.025	1.57	254
Victoria_1	1.2	0.41	1.2	0.388	0.025	326
Vilyuyskoye	-7.5	0.066	-6.5	0.001	0.843	325
Volgogradskoye	0.3	0.543	0.2	0.024	0.0306	326
Volta	5.4	0.321	2.9	0.293	1.52	326
Votkinskoye	1.1	0.476	-0.3	0.562	0.358	280
Williston	3.9	0.436	5.5	0.022	2.47	252
Windsor_1	0.4	0.342	0.3	0.006	0.00648	255
Winnebago	0.2	0.193	0.2	0.029	0.0121	326
Winnipeg	2.3	0.068	2.1	0.002	0.0542	327
Winnipegosis	4.7	0.025	4.9	0.003	0.035	327
Wollaston	1.5	0.055	1.5	< 0.001	0.0404	326
Xiaolangdi	353.4	< 0.001	353.4	< 0.001	1510	250
Xiaowan	488.3	< 0.001	488.3	< 0.001	2560	254
Yathkyed	5.5	0.009	4.8	0.002	0.159	311
Yellowstone	0.2	0.512	0.3	0.46	0.0395	327
Zaysan	3	0.381	2.7	0.069	0.439	291
Zeyaskoye	21.7	0.023	20.8	0.001	1.88	325
Zhexi	12.9	0.205	11.3	0.002	8.98	232

Table S3: Summary statistics for the PCs used in this study including the variable name ("Variable"), the number of lakes where the variable was selected in that lake's "best" model ("Number of Lakes"), the median across lakes in the relative influence of each variable on water levels (Median Relative Influence) on a scale from 0-100 with 100 being the maximum relative influence, the percent variance in temperature explained by each PC ("Variance Explained"), and the p-value of a Box-Ljung test representing the probability that the time series can be explained merely as white noise. Box-Ljung tests are plotted in Figure S4. PCs that were not selected in any of the lake's best models are omitted from the table.

Variable	Number of Lakes	Median Relative Influence (0-100)	Variance Explained (%)	p-value
decyear	200	24.58	NA	NA
month	200	10.19	NA	NA
1	107	4.92	9.2	< 0.001
2	30	3.11	7.3	< 0.001
3	75	3.29	6.7	< 0.001
4	78	4.19	5.5	< 0.001
5	69	4.26	4	< 0.001
6	70	4.07	3.3	< 0.001
7	48	3.54	3.2	< 0.001
8	52	4.35	2.9	< 0.001
9	56	3.54	2.5	< 0.001
10	44	3.72	2.4	< 0.001
11	62	3.49	2.2	< 0.001
12	41	4.47	1.9	< 0.001
13	28	3.23	1.9	< 0.001
14	30	4.04	1.7	< 0.001
15	25	3.16	1.6	< 0.001
16	33	3.76	1.5	< 0.001
17	50	3.43	1.5	< 0.001
18	52	3.46	1.4	< 0.001
19	51	3.45	1.3	< 0.001
20	17	3.43	1.3	< 0.001
21	15	2.77	1.2	< 0.001
22	39	3.4	1.1	< 0.001
23	25	3.79	1.1	< 0.001
24	35	3.71	1	< 0.001
25	34	3.77	1	< 0.001
26	57	3.51	1	< 0.001

27	23	3.08	1	< 0.001
28	34	3.76	0.9	< 0.001
29	46	3.75	0.8	< 0.001
30	21	3.48	0.8	< 0.001
31	10	2.38	0.8	< 0.001
32	16	2.89	0.8	< 0.001
33	39	3.18	0.7	< 0.001
34	18	3.24	0.7	< 0.001
35	23	3.19	0.7	< 0.001
36	22	3.45	0.7	< 0.001
37	23	3.13	0.7	< 0.001
38	19	3.53	0.6	< 0.001
39	16	3.64	0.6	< 0.001
40	21	2.98	0.6	< 0.001
41	8	3.46	0.6	< 0.001
42	22	3.03	0.5	< 0.001
43	20	2.64	0.5	< 0.001
44	17	2.48	0.5	< 0.001
45	32	3.31	0.5	< 0.001
46	32	3.14	0.5	< 0.001
47	27	2.87	0.5	< 0.001
48	23	2.34	0.4	< 0.001
49	13	2.94	0.4	< 0.001
50	23	2.93	0.4	< 0.001
51	18	3.12	0.4	< 0.001
52	23	2.85	0.4	< 0.001
53	18	3.86	0.4	< 0.001
54	8	2.56	0.4	< 0.001
55	15	2.62	0.4	< 0.001
56	14	3.18	0.3	< 0.001
57	12	3.9	0.3	< 0.001
58	8	4.23	0.3	< 0.001
59	18	3.63	0.3	< 0.001
60	11	2.42	0.3	< 0.001
61	7	4.49	0.3	< 0.001
62	19	3.27	0.3	< 0.001
63	14	3.13	0.3	< 0.001
64	14	3.1	0.3	< 0.001
65	17	4.44	0.3	< 0.001

66	27	3.36	0.3	< 0.001
67	16	2.68	0.2	< 0.001
68	19	2.42	0.2	< 0.001
69	9	3.46	0.2	< 0.001
70	9	2.92	0.2	< 0.001
71	10	2.77	0.2	< 0.001
72	20	3.15	0.2	< 0.001
73	15	3.76	0.2	< 0.001
74	14	3.41	0.2	< 0.001
75	15	4.57	0.2	< 0.001
76	7	3.33	0.2	< 0.001
77	8	2.44	0.2	< 0.001
78	17	2.62	0.2	< 0.001
79	4	3.85	0.2	< 0.001
80	8	3.1	0.2	< 0.001
81	6	3.09	0.2	< 0.001
82	9	3.7	0.2	0.005
83	9	3.02	0.2	< 0.001
84	9	3.26	0.2	< 0.001
85	14	2.85	0.1	< 0.001
86	4	4.27	0.1	< 0.001
87	8	2.68	0.1	< 0.001
88	4	1.53	0.1	0.035
89	1	4.27	0.1	0.002
90	3	2.94	0.1	0.051
91	3	6.91	0.1	0.001
92	9	2.3	0.1	< 0.001
93	6	2.57	0.1	< 0.001
94	1	2.45	0.1	< 0.001
95	7	3.68	0.1	< 0.001
96	2	4.42	0.1	0.005
97	2	1.64	0.1	0.059
98	5	2.62	0.1	0.001
100	4	4.85	0.1	0.001
101	3	2.84	0.1	0.013
102	2	3.19	0.1	0.272
103	10	2.68	0.1	0.002
104	1	1.87	0.1	< 0.001
105	3	2.64	0.1	0.008

106	1	4.92	0.1	0.015
107	6	2.4	0.1	< 0.001
108	13	2.94	0.1	0.003
109	8	3.07	0.1	0.039
110	4	2.89	0.1	0.104
111	5	2.56	0.1	0.012
112	3	2.15	0.1	0.51
113	1	1.98	0.1	0.013
114	2	0.8	0.1	0.222
115	1	2.03	0.1	0.23
116	3	4.76	0.1	0.234
117	3	1.83	0.1	0.065
118	2	2.79	0.1	0.045
119	1	1.89	0.1	0.019
120	3	2.71	0.1	0.366
121	1	4.43	0.1	0.956
122	4	2.36	0.1	0.722
123	3	1.7	0.1	0.35
124	1	1.81	0.1	0.042
125	2	3.13	0.1	0.884
126	1	2.64	0.1	0.433
127	1	1.84	0.1	0.268
128	1	1.98	0.1	0.812
129	3	3.44	0.1	0.025
130	2	2.92	0.1	0.682
131	1	2.39	0.1	0.936
132	1	3.73	0.1	0.682
134	1	13.48	0	0.508
135	1	2.4	0	0.957
136	2	2.12	0	0.638
137	2	1.53	0	0.731
139	1	2.44	0	0.639
140	3	2.97	0	0.53
141	3	2.83	0	0.412
143	1	3.82	0	0.002
144	1	1.75	0	0.633
145	2	0.93	0	0.776
146	2	3.77	0	0.104
148	1	5.39	0	0.081

149	3		2.23	0	0.12
150	2		2.21	0	0.078
154	3		4.06	0	0.992
156	1		4.57	0	0.003
157	1		2.95	0	0.049
158	1		3.23	0	0.023
160	1		3.49	0	0.002
162	1		0.07	0	0.045
164	1		1.75	0	0.052
165	1		2.29	0	< 0.001
166	2		5.32	0	< 0.001
171	1		1.35	0	0.099
173	1		3.78	0	0.012
174	1		3.76	0	0.005
176	3		2.79	0	< 0.001
179	1		4.53	0	0.326
183	1		2.08	0	0.009
185	1		15.56	0	< 0.001
187	1	<0.01		0	0.001
192	1		8.8	0	0.041
195	1		0.04	0	< 0.001
199	2		11.37	0	0.004
200	1		8.32	0	< 0.001
201	1		5.1	0	< 0.001
206	1		2.07	0	0.004
209	1		2.57	0	< 0.001
221	1		18.12	0	< 0.001
223	1		8.92	0	< 0.001
225	2		2.81	0	< 0.001
228	1		5.26	0	< 0.001
239	1		1.91	0	< 0.001
240	1		0.14	0	< 0.001
243	1		2.83	0	< 0.001
244	1		12.25	0	0.001
250	1		7.78	0	< 0.001
264	1		2.94	0	< 0.001
303	1		1.52	0	< 0.001
304	1		6.58	0	< 0.001
314	2		3.44	0	< 0.001

Figure S1: The p-value of a Box-Ljung test applied to each PC. The p-value for each PC represents the probability that the time series can be explained merely as white noise. Low p-values were interpreted as time series that are more statistically distinguishable from white noise. Interestingly, the p-values of mid order PCs are less distinguishable from noise and the low and high order PCs are more distinguishable from noise. This result led us to include all PCs as predictors in the model regardless of PC order rather than arbitrarily selecting only the lower order PCs.