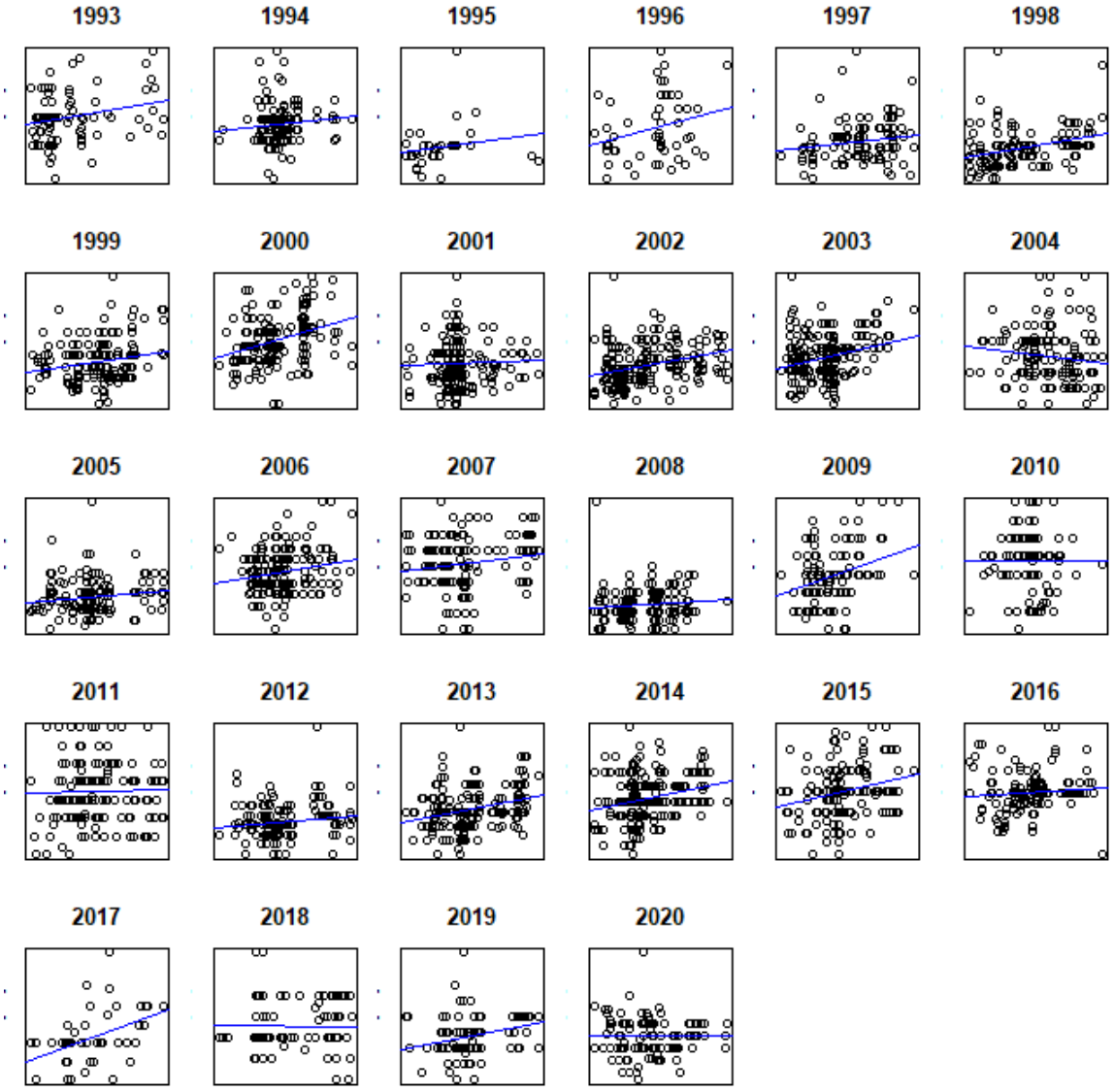
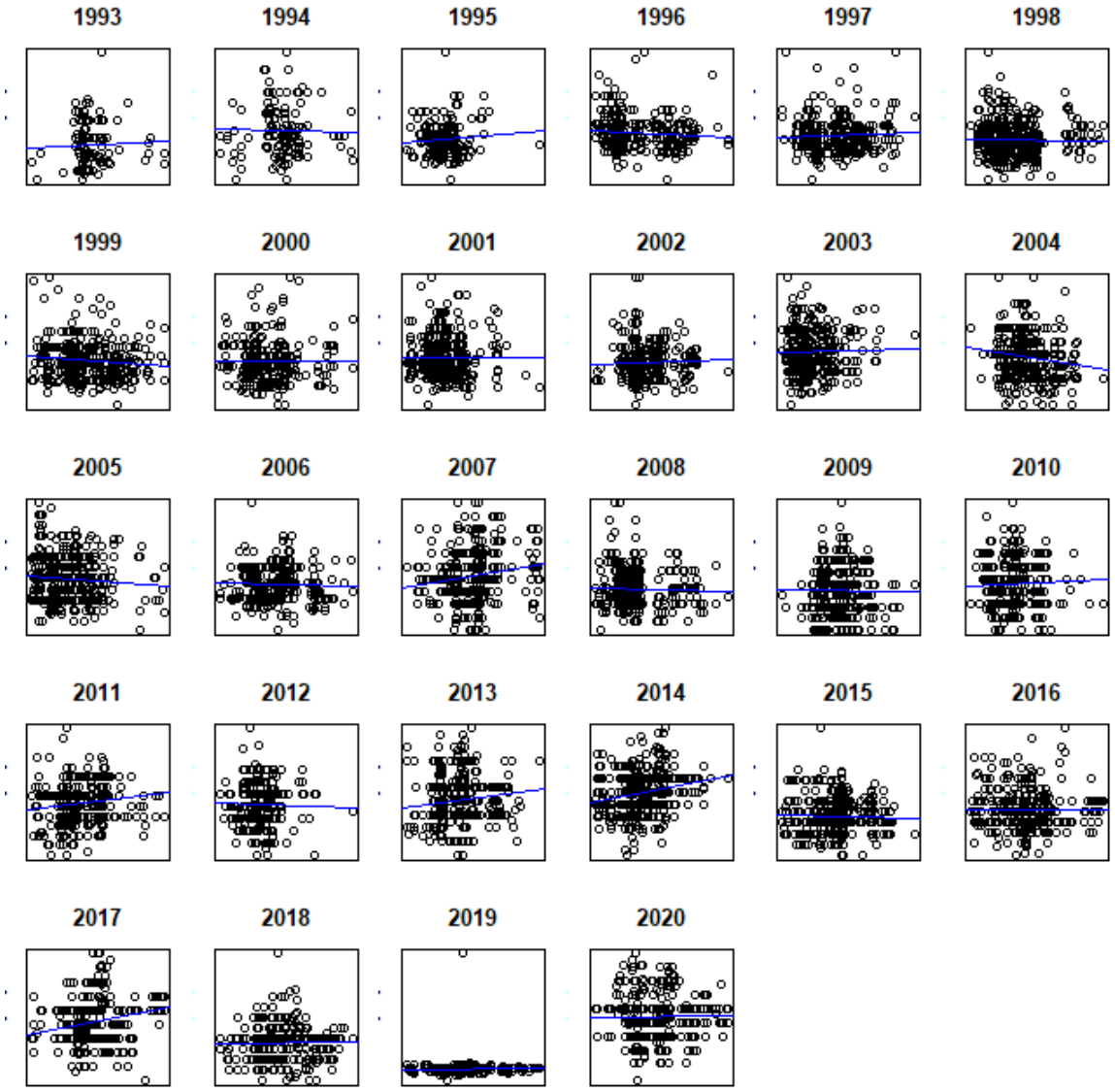
SUPPLEMENTARY FILE 1

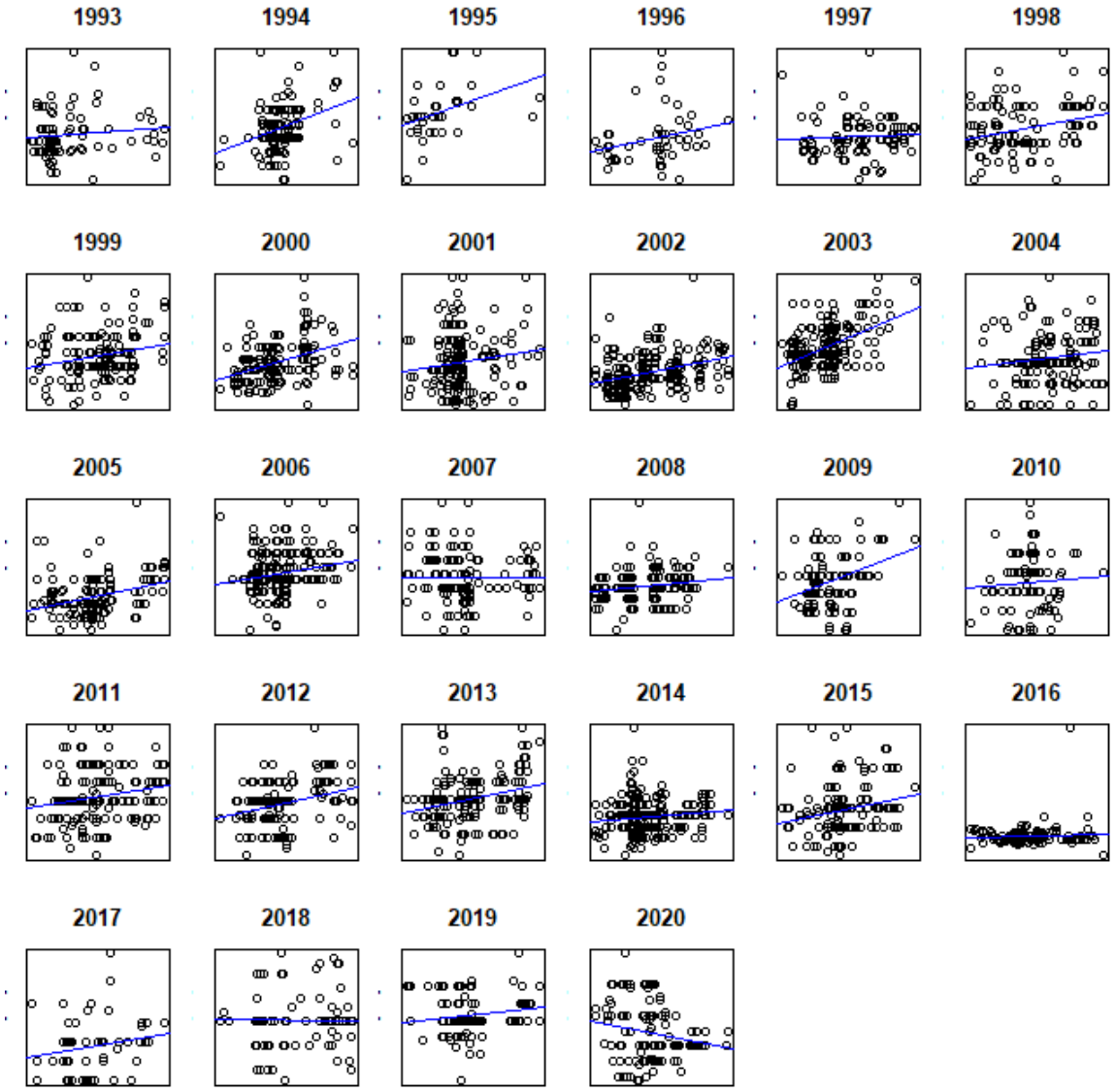
Figures S1 a-d



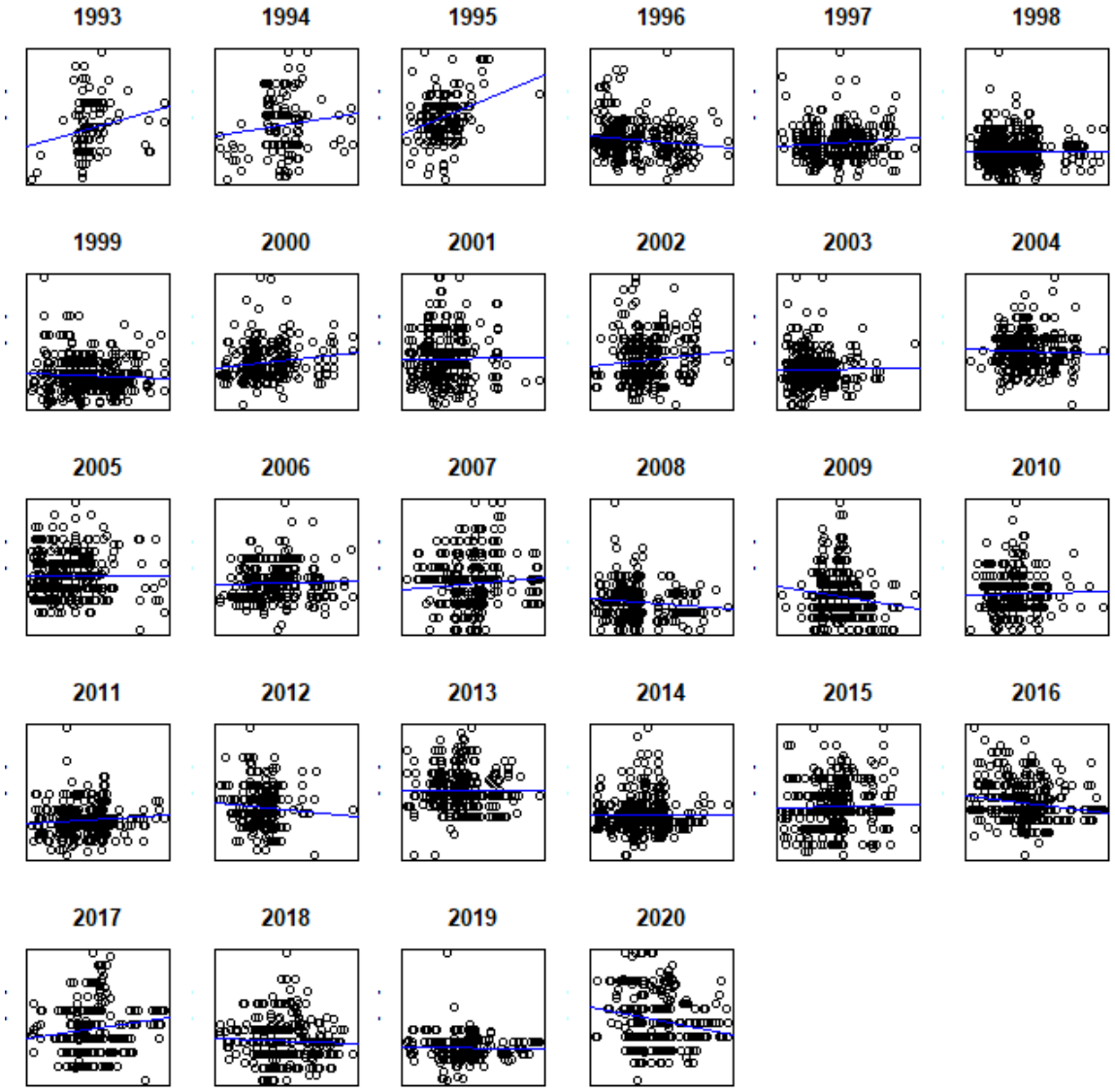
S1a. The scatter plots for BT1 vs day in a year and the estimated linear regression line in the case of male. The x-axis indicates cumulated days in the season (from April to August or September) and y-axis indicates BT1.



S1b. The scatter plots for BT1 vs day in a year and the estimated linear regression line in the case of female. The x-axis indicates cumulated days in the season (from April to August or September) and y-axis indicates BT1.



S1c. The scatter plots for BT3 vs day in a year and the estimated linear regression line in the case of male. The x-axis indicates cumulated days in the season (from April to August or September) and y-axis indicates BT3.



S1d. The scatter plots for BT3 vs day in a year and the estimated linear regression line in the case of female. The x-axis indicates cumulated days in the season (from April to August or September) and y-axis indicates BT3.

SUPPLEMENTARY FILE 2

Table S1: calculated log-likelihoods and BICs of the three regression models OLM, REM and VCM for all possible combinations of covariates applied to BT1 and BT3.

OLM	BT1		BT3	
Model	logLik	BIC	logLik	BIC
.s	-52013.93	104056.49	-50342.61	100713.85
.y	-51861.52	103751.67	-50414.53	100857.69
.lo	-52213.56	104455.74	-50485.85	101000.32
.la	-52252.65	104533.92	-50560.91	101150.44
.sy	-51575.03	103188.23	-50177.57	100393.30
.lao	-52190.31	104418.78	-50476.08	100990.33
.sla	-52011.9	104062.0	-50331.68	100701.52
.slo	-51966.23	103970.62	-50267.28	100572.74
.yla	-51806.73	103651.63	-50401.72	100841.61
.ylo	-51835.1	103708.4	-50356.59	100751.36
.ylao	-51759.36	103566.43	-50328.26	100704.23
.slao	-51966.17	103980.05	-50265.64	100579.00
.sylao	-51534.08	103125.41	-50120.6	100298.5
.sylaoSE	**-51512.62**	**103101.59**	**-50098.79**	**100273.92**
.slaloSE	-51958.38	103983.56	-50254.97	100576.74
REM				
.ry	-51780.74	103590.10	-50300.03	100628.69
.rlo	-52231.36	104491.34	-50545.55	101119.73
.rla	-52162.08	104352.79	-50534.63	101097.89
.sry	-51500.95	103040.07	-50061.35	100160.87
.srlo	-51991.02	104020.21	-50330.84	100699.85
.srla	-51935.35	103908.86	-50328.4	100695.0
.sryla	-51467.52	102982.76	-50049.0	100145.7
.srlao	-51926.24	103900.19	-50317.76	100683.24
.srylo	-51493.0	103033.7	-50052.66	100153.04
.srylalo	-51463.86	102984.97	-50042.18	100141.62
.srallSE	**-51444.8**	**102965.9**	**-50024.31**	**100124.95**
VCM				
.yIloa_12	-51445.91	102977.71	-50097.36	100280.60
.yIloa_13	-51434.08	102992.21	-50093.36	100310.78
.yIloa_14	-51426.82	103025.39	-50086.65	100345.07
.yIloa_21	-51513.53	103093.86	-50102.0	100270.8
.yIloa_31	-51454.21	102984.77	-50053.61	100183.57
.yIloa_41	-51437.81	102961.51	-50029.45	100144.78
.yIloa_22	-51435.77	102966.96	-50084.58	100264.58
.yIloa_23	-51423.15	102979.90	-50080.12	100293.83
.yIloa_24	-51416.27	103013.85	-50073.22	100327.75
.yIloa_32	-51387.91	102880.78	-50040.97	100186.90
.yIloa_42	-51361.76	102838.04	-50011.66	100137.82
.yIloa_33	-51369.19	102881.51	-50035.11	100213.36
.yIloa_34	-51365.52	102921.89	-50027.63	100246.11
.yIloa_43	-51340.59	102833.86	-50005.01	100162.70
.yIloa_44	-51336.24	102872.86	-49998.2	100196.8
SE				
.yIloa_43SE	**-51327.5**	**102826.8**	-49991.01	100153.79
.yIloa_42SE	-51346.67	102826.93	**-49995.98**	**100125.54**
.yIloa_12SE	-51426.38	102957.72	-50076.91	100258.79
.yIloa_13SE	-51416.4	102975.9	-50074.34	100291.82
.yIloa_14SE	-51406.84	103004.53	-50067.09	100325.04
.yIloa_21SE	-51494.85	103075.58	-50082.28	100250.43
.yIloa_31SE	-51435.2	102965.86	-50034.03	100163.49
.yIloa_41SE	-51420.3	102945.6	-50011.92	100128.80
.yIloa_22SE	-51418.13	102950.77	-50065.73	100245.96
.yIloa_23SE	-51407.43	102967.53	-50062.7	100278.1
.yIloa_24SE	-51398.22	102996.84	-50055.14	100310.66
.yIloa_32SE	-51370.72	102865.49	-50022.71	100169.46
.yIloa_33SE	-51354.44	102871.11	-50018.87	100199.96
.yIloa_34SE	-51348.89	102907.72	-50010.97	100231.87
.yIloa_44SE	-51321.49	102862.45	-49983.98	100187.44