

**Table S3.** Summary statistics (coefficients, confidence intervals and P-value) of the linear regression analysis of the anomaly in timing of budbreak predicted by the anomaly in the drought index during timing of budbreak per site, climate model, and socioeconomic pathways.

Variable	Coefficients	Confidence interval		P-value
		Low (2.5 %)	High (97.5 %)	
<b>Intercept</b>	<b>-283.30</b>	<b>-309.47</b>	<b>-257.09</b>	<b><math>&lt; 2.00 \times 10^{-16}</math></b>
Anomaly in drought index	0.17	-0.29	0.64	0.46
<b>Year</b>	<b>0.14</b>	<b>0.13</b>	<b>0.16</b>	<b><math>&lt; 2.00 \times 10^{-16}</math></b>
<b>Site [South]</b>	<b>-75.95</b>	<b>-97.20</b>	<b>-54.71</b>	<b><math>2.71 \times 10^{-12}</math></b>
<b>Model [CanESM5]</b>	<b>-156.40</b>	<b>-186.52</b>	<b>-126.21</b>	<b><math>&lt; 2.00 \times 10^{-16}</math></b>
<b>Model [GFDL_ESM4]</b>	<b>82.52</b>	<b>52.33</b>	<b>112.71</b>	<b><math>8.78 \times 10^{-8}</math></b>
<b>Model [MIROC6]</b>	<b>-52.59</b>	<b>-82.98</b>	<b>-22.19</b>	<b><math>7.01 \times 10^{-4}</math></b>
<b>SSP [585]</b>	<b>-174.70</b>	<b>-195.95</b>	<b>-153.51</b>	<b><math>&lt; 2.00 \times 10^{-16}</math></b>
Anomaly_SPEI × Model [CanESM5]	0.36	-0.29	1.01	0.27
<b>Anomaly_SPEI × Model [GFDL_ESM4]</b>	<b>0.90</b>	<b>0.24</b>	<b>1.55</b>	<b><math>7.08 \times 10^{-3}</math></b>
<b>Anomaly_SPEI × Model [MIROC6]</b>	<b>1.36</b>	<b>0.71</b>	<b>2.02</b>	<b><math>4.66 \times 10^{-5}</math></b>
<b>Year × Site [South]</b>	<b>0.04</b>	<b>0.03</b>	<b>0.05</b>	<b><math>3.39 \times 10^{-13}</math></b>
<b>Year × Model [CanESM5]</b>	<b>0.08</b>	<b>0.06</b>	<b>0.09</b>	<b><math>&lt; 2.00 \times 10^{-16}</math></b>
<b>Year × Model [GFDL_ESM4]</b>	<b>-0.04</b>	<b>-0.06</b>	<b>-0.03</b>	<b><math>3.69 \times 10^{-8}</math></b>
<b>Year × Model [MIROC6]</b>	<b>0.03</b>	<b>0.01</b>	<b>0.04</b>	<b><math>4.32 \times 10^{-4}</math></b>
<b>Year × SSP [585]</b>	<b>0.09</b>	<b>0.08</b>	<b>0.10</b>	<b><math>&lt; 2.00 \times 10^{-16}</math></b>
<b>Site [South] × Model [CanESM5]</b>	<b>-2.00</b>	<b>-3.29</b>	<b>-0.70</b>	<b><math>2.46 \times 10^{-3}</math></b>
<b>Site [South] × Model [GFDL_ESM4]</b>	<b>-2.40</b>	<b>-3.69</b>	<b>-1.11</b>	<b><math>2.78 \times 10^{-4}</math></b>
<b>Site [South] × Model [MIROC6]</b>	<b>-2.82</b>	<b>-4.11</b>	<b>-1.53</b>	<b><math>1.86 \times 10^{-5}</math></b>
<b>Model [CanESM5] × SSP [585]</b>	<b>2.66</b>	<b>1.37</b>	<b>3.95</b>	<b><math>5.46 \times 10^{-5}</math></b>
Model [GFDL_ESM4] × SSP [585]	0.40	-0.89	1.69	0.55
<b>Model [MIROC6] × SSP [585]</b>	<b>1.84</b>	<b>0.54</b>	<b>3.13</b>	<b><math>5.33 \times 10^{-3}</math></b>