SUPPLEMENTARY DATA
Verdugo-Vásquez, N., Orrego, R., Gutiérrez-Gamboa, G., Reyes, M., Zurita-Silva, A., Balbontín, C., Gaete, N., & Salazar-Parra, C. (2022). Climate trends and variability in the Chilean viticultural production zones during 1985–2015. *OENO One*, *57*(1).
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Supplementary Material

SUPPLEMENTARY TABLE S1. Geographical information for the 47 weather stations used in the study.

Weather station name	Map number	Latitude (ºS)	Longitude (ºW)	Elevation (m)	Distance to the Pacific Ocean (km)
Codpa	1	-18.83	-69.74	1870	59.6
Los Loros	2	-27.83	-70.11	940	80.3
Lautaro Embalse	3	-27.98	-70.00	1110	96.5
Canto de Agua	4	-28.10	-70.78	330	37.0
Santa Juana	5	-28.67	-70.66	560	59.6
El Trapiche	6	-29.37	-71.12	300	20.6
La Florida	7	-29.92	-71.20	142	7.6
Rivadavia	8	-29.98	-70.56	820	69.6
Vicuña	9	-30.03	-70.73	650	54.5
La Ortiga	10	-30.19	-70.48	1560	86.2
Hurtado	11	-30.29	-70.70	1100	66.9
Paloma Embalse	12	-30.70	-71.04	320	63.1
Caren	13	-30.85	-70.77	740	84.9
Cogotí Embalse	14	-31.01	-71.09	740	54.0
Las Ramadas	15	-31.02	-70.59	1380	102.4
Illapel	16	-31.65	-71.19	290	33.0
La Tranquilla	17	-31.90	-70.67	1000	78.7
Los Cóndores	18	-32.11	-71.31	190	19.7
Vilcuya	19	-32.86	-70.47	1100	93.4
Lliu-Lliu Embalse	20	-33.10	-71.21	260	33.2
Lago Peñuelas	21	-33.15	-71.56	360	11.8
Santo Domingo	24	-33.66	-71.61	75	2.3
Los Panguiles	22	-33.44	-70.03	190	55.0
Quinta Normal	23	-33.45	-70.68	527	87.7
Pirque	25	-33.67	-70.59	659	96.4
Melipilla	26	-33.68	-71.20	168	41.2
Rengo	27	-34.42	-70.87	310	103.0
Convento Viejo	28	-34.77	-71.13	239	85.1
General Freire	29	-34.97	-71.22	225	83.8
Potrero Grande	30	-35.18	-71.10	445	100.3
Pencahue	31	-35.37	-71.83	55	45.4
Talca UC	32	-35.44	-71.62	130	63.5
Colorado	33	-35.64	-71.26	420	103.4
Cauquenes	34	-35.97	-72.33	162	29.2
Parral	35	-36.19	-71.83	175	80.8
Bernardo O'Higgins	36	-36.59	-72.04	151	77.8
Quilaco	37	-37.69	-72.01	231	120.9
Traiguén	38	-38.26	-72.65	234	72.0
Carillanca	39	-38.68	-72.42	470	87.0
Maquehue	40	-38.77	-72.64	92	64.3
Remehue	41	-40.52	-73.07	73	56.6
Adolfo Matthei	42	-40.59	-73.11	55	52.0
Canal Bajo	43	-40.61	-73.06	61	56.2
La Pampa	44	-40.86	-73.16	96	58.9
Frutillar	45	-41.15	-73.05	80	68.6
El Tepual	46	-41.44	-73.10	85	52.1
Coyhaique	47	-45.57	-72.03	343	196.3

SUPPLEMENTARY DATA
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SUPPLEMENTARY TABLE S2. Mean values (1985-2015 period) for each of the 47 weather stations used for meteorological and risk indices.

Weather station name	Map number	Tmin (ºC)	Tmax (ºC)	PP (mm)	Days T > 30ºC	Days T > 35ºC	Days T <0ºC
Codpa	1	7.1	24.7	17.7	2	0	0
Los Loros	2	8.6	27.7	36.6	88.7	0.7	0.4
Lautaro Embalse	3	9.9	29	35.5	139.9	1.7	0
Canto de Agua	4	9.6	24.1	31.4	14.3	0.1	0.5
Santa Juana	5	10.6	25.2	50.9	24.4	0.4	0
El Trapiche	6	10.6	21.6	47.9	1.1	0	0
La Florida	7	10.7	18.1	81.7	0	0	0
Rivadavia	8	9.8	25.8	90.1	54.9	0.6	0
Vicuña	9	7.7	25.2	93.1	47	0.4	0.2
La Ortiga	10	8.9	24.1	134.4	16	0	0.7
Hurtado	11	8.8	25.1	117.4	43.7	0.3	0.4
Paloma Embalse	12	10	24.3	126.3	40.9	0.2	0
Caren	13	9.4	25.9	173.2	81.4	0.9	0
Cogotí Embalse	14	10.8	24.2	165.1	29.7	0.3	0
Las Ramadas	15	9.3	23.7	299.5	24.6	0.1	0.3
Illapel	16	8.6	23.6	163.9	23.3	0.2	0.1
La Tranquilla	17	9.1	24.7	246.2	54.9	0.2	0
Los Cóndores	18	9.6	21.5	240.9	1.8	0.1	0
Vilcuya	19	7.5	23.1	343.4	49.2	0.8	1.3
Lliu-Lliu Embalse	20	8.6	22.2	494.8	25	0.7	0
Lago Peñuelas	21	7.6	19.4	643	1.2	0	0
Santo Domingo	24	7.9	17.8	444.5	0.1	0	0.5
Los Panguiles	22	8.6	22.7	314.5	42.9	0.5	0
Quinta Normal	23	8.7	23	305.7	58.3	0.6	0.2
Pirque	25	5.8	22.4	424.8	37.7	0.1	4.5
Melipilla	26	8.1	21.8	368.4	16.9	0.1	0
Rengo	27	7.8	21.6	504.9	47.6	0.1	1.1
Convento Viejo	28	8.3	21	627.4	42.8	0.2	0.1
General Freire	29	7.7	21	614.9	44.4	0.3	1.3
Potrero Grande	30	5	20.5	1012.5	29.1	0.2	9.9
Pencahue	31	7.5	22.7	603.7	79.2	10.8	2
Talca UC	32	7.9	21.3	603.4	47.1	0.8	0.8
Colorado	33	7.4	19.7	1307	13	0.1	1.4
Cauquenes	34	7.7	21.6	607.9	54.4	4	1
Parral	35	7.7	20.7	919.4	34.6	1.3	1.6
Bernardo O'Higgins	36	7.1	20.4	995.2	38.2	1.7	1.3
Quilaco	37	6.1	20.1	1443.2	29	2.6	9
Traiguén	38	7	17.8	1002.2	8.3	0.6	1.9
Carillanca	39	5.6	17.5	1310.7	6	0.6	12.9
Maquehue	40	6.3	18	1128.8	6.5	0.7	8
Remehue	41	5.8	16.6	1231.1	2.1	0.1	9.3
Adolfo Matthei	42	6.3	16.9	1273.2	2.7	0	5.3
Canal Bajo	43	5.9	16.6	1232	2	0	9.7
La Pampa	44	5.7	16.2	1287.7	1.8	0	7

Frutillar	45	5.8	15	1212.6	1.5	0	0
El Tepual	46	6.3	14.9	1596.3	0.3	0	6.5
Coyhaique	47	3.9	13.2	895.6	0.9	0	15.4

Color shading from light blue (lower values) to red (higher values), except for Precipitation (PP) and T < 0ºC, which is in the opposite direction.

SUPPLEMENTARY TABLE S3. Mean values (1985-2015 period) for each of the 47 weather stations used for bioclimatic indices.

Weather station name	Map number	GST (ºC)	GDD (heat units)	HI (heat units)	BEDD (heat units)	CI (ºC)	SONMean (heat units)	SONMax (heat units)
Codpa	1	16.7	1432	1873.1	1277	9.8	1420.9	2276.4
Los Loros	2	19.9	2099.7	2672.3	1608.3	10.8	1648	2547.2
Lautaro Embalse	3	20.8	2296.4	2852.4	1628.4	11.5	1756.6	2678.1
Canto de Agua	4	18.6	1832.5	2244.2	1477.9	12.1	1496.4	2172
Santa Juana	5	19.7	2059.9	2471.6	1565.4	12.8	1600.7	2300
El Trapiche	6	17.9	1666.9	1953.9	1346.5	13	1409.5	1916.9
La Florida	7	16	1264.2	1437.9	953.8	13.1	1245.4	1583.8
Rivadavia	8	19.6	2028.5	2541.2	1568.6	11.6	1605.3	2369.5
Vicuña	9	18.5	1808.2	2409.7	1528.7	10	1490.6	2304.4
La Ortiga	10	18.7	1848.7	2346.8	1509.1	11.5	1484.1	2207.1
Hurtado	11	19.1	1929	2453.2	1539.1	11.4	1524.3	2298.5
Paloma Embalse	12	19.5	2012.2	2488.6	1553.1	12.4	1538.7	2230.3
Caren	13	19.9	2095.8	2631.1	1570.4	11.7	1600.4	2391.4
Cogotí Embalse	14	19.8	2082.1	2459.8	1530.6	13.7	1562.9	2195.5
Las Ramadas	15	18.8	1862.8	2333.2	1480.2	11.9	1448.6	2109.4
Illapel	16	18.5	1796.8	2320.3	1493.4	11	1439.4	2129.9
La Tranquilla	17	19.2	1944	2480.4	1514	11.5	1492.8	2206.4
Los Cóndores	18	17.5	1601.5	1991.6	1342	11.9	1358.6	1907
Vilcuya	19	18.3	1773.2	2391.2	1456.5	10.1	1345.1	2073.6
Lliu-Lliu Embalse	20	17.9	1668.1	2168.9	1398.1	10.6	1371.9	1989.1
Lago Peñuelas	21	15.4	1160.7	1608.8	1032.3	9.3	1196.2	1714.1
Santo Domingo	24	14.2	905.2	1258.6	735.5	9.8	1110.7	1578.2
Los Panguiles	22	18.5	1811.8	2372.8	1477.2	11	1409.2	2063.1
Quinta Normal	23	19	1918.9	2473.7	1486.4	11.4	1437.3	2091
Pirque	25	17.1	1518	2223.7	1396.7	8.3	1269.2	2004.6
Melipilla	26	17.4	1567.4	2124.2	1384.5	10.1	1343.5	1961.9
Rengo	27	18	1703.3	2307.3	1408.3	10.1	1343.2	1973.3

Convento Viejo	28	18.1	1728.2	2318.8	1411.4	10.5	1330.3	1916
General Freire	29	17.9	1675.7	2304.5	1403.1	9.9	1312	1931.3
Potrero Grande	30	15.9	1267.7	2042.3	1285.3	6.8	1154.3	1859.6
Pencahue	31	18.5	1805.9	2524.8	1450.8	9.2	1337.4	2050.6
Talca UC	32	18	1703.9	2319.4	1402.9	10.1	1323.7	1941.3
Colorado	33	16.6	1411	1982.6	1244.4	9.7	1198.2	1762
Cauquenes	34	17.9	1680.6	2300.9	1349.6	10.5	1247.3	1885.5
Parral	35	17.4	1575.4	2187.9	1332.8	9.7	1252	1843.2
Bernardo O'Higgins	36	16.9	1479.9	2135.7	1289.4	9	1212.4	1813
Quilaco	37	15.9	1264	1978.1	1197.3	7.8	1160.5	1806.4
Traiguén	38	15.1	1104.3	1655.8	1009.2	9	1069.7	1580.4
Carillanca	39	14	883.9	1479.3	883	7.3	1015.6	1556.3
Maquehue	40	14.5	970.3	1558.8	944	7.8	1053.7	1596
Remehue	41	13.4	764	1311	750.4	7.4	979.1	1482.7
Adolfo Matthei	42	13.9	859.9	1393.8	819.1	7.9	1016	1503.7
Canal Bajo	43	13.4	774.6	1308.8	754	7.3	986.2	1477.2
La Pampa	44	13.2	727.4	1248.2	701.2	7.4	953.7	1434.6
Frutillar	45	11.7	434.9	860.2	409.5	6.6	927.2	1330.7
El Tepual	46	12.6	601.4	1008	523.8	8.1	916.7	1331.2
Coyhaique	47	11.4	467.1	915	467	6.4	793.7	1258.4

Color shading from light blue (lower values) to red (higher values).

SUPPLEMENTARY TABLE S4. Pearson correlation matrix (r) obtained from the PCA analysis (Mean values of indices and geographical variables for the 47 weather stations, Figure 8).

	Latitude	Longitude	Elevation	Distance to the Pacific Ocean
Min T	0.73	0.62	0.29	
Max T	0.84	0.86	0.64	
PP	-0.86	-0.85	-0.54	
GST	0.76	0.81	0.48	
GDD	0.75	0.81	0.49	
HI	0.66	0.77	0.46	
BEDD	0.73	0.81	0.48	
CI	0.75	0.68	0.37	-0.35
SONMean	0.85	0.86	0.57	
SONMax	0.83	0.87	0.65	
Days T>30ºC	0.35	0.52	0.31	
Days T>35ºC				
Days T<0ºC	-0.69	0.58		0.47

Only significant values (p value < 0.05) are shown.

SUPPLEMENTARY TABLE S5. Pearson correlation matrix (r) obtained from the PCA analysis (Trends of indices and geographical variables for the 47 weather stations, Figure 9).

	Latitude	Longitude	Elevation	Distance to the Pacific Ocean
Min T			-0.341	
Max T	0.413	0.437	0.456	
PP	0.304			
GST				
GDD				
HI				
BEDD				
CI	-0.396	-0.394	-0.433	
SONMean				
SONMax	0.599	0.602	0.508	
Days T>30ºC	0.290	0.428	0.457	
Days T>35ºC				
Days T<0ºC				

Only significant values (p value < 0.05) are shown.

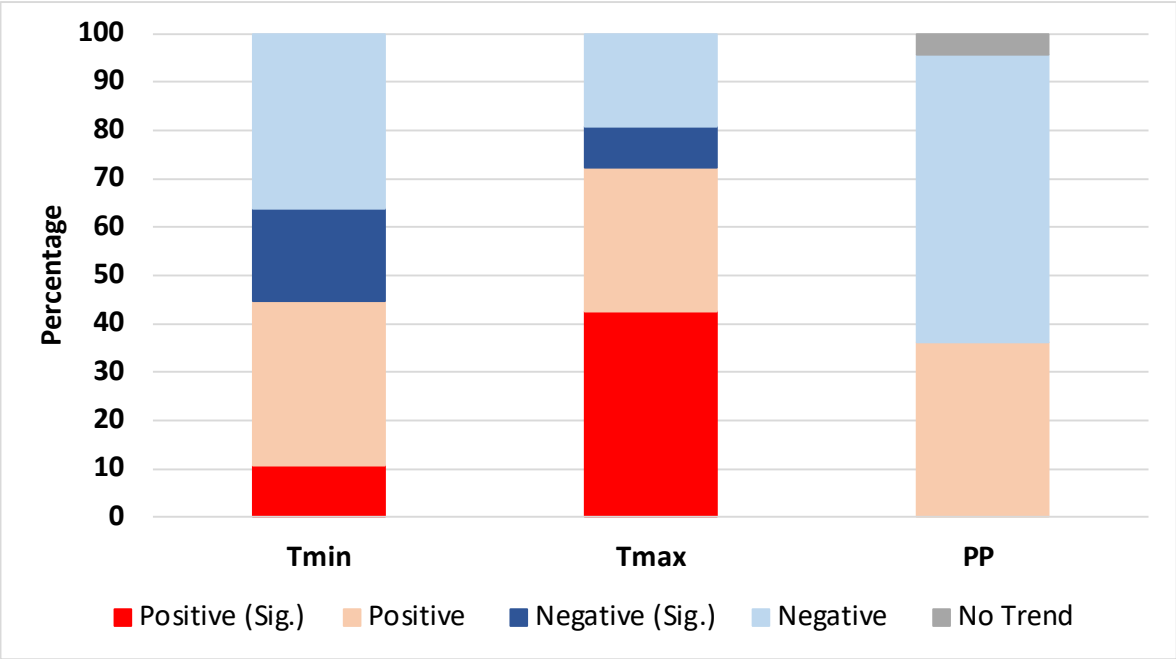
SUPPLEMENTARY TABLE S6. Pearson correlation matrix (r) obtained from the PCA analysis (Coefficient of variation of indices and geographical variables for the 47 weather stations, Figure 10).

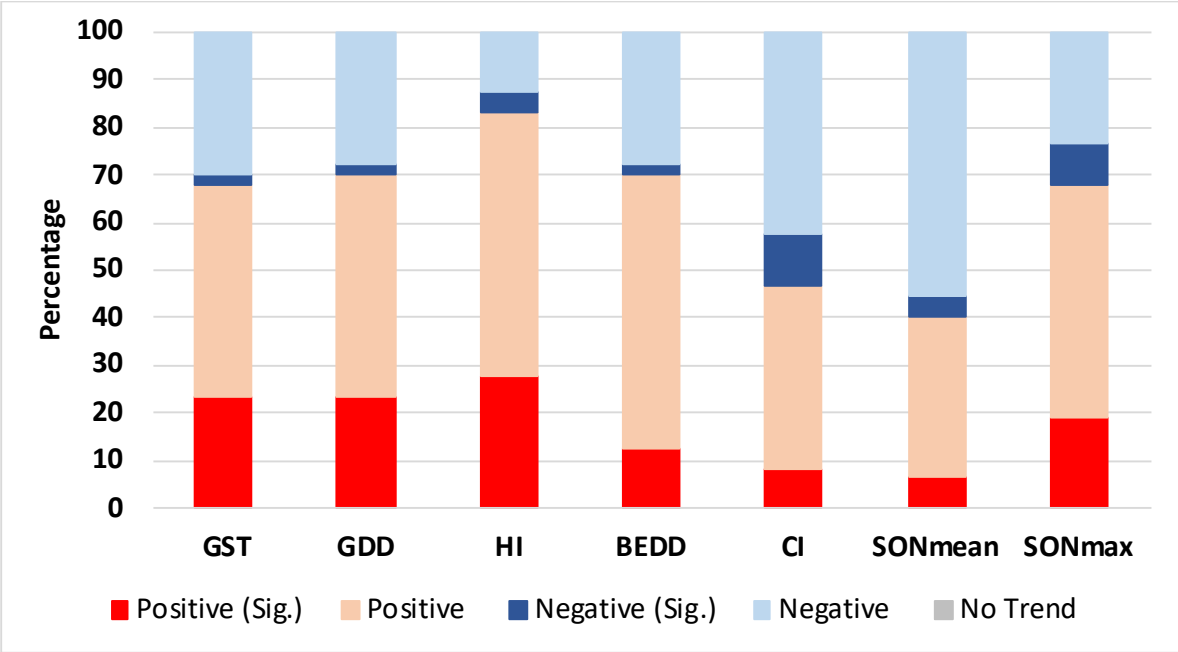
	Latitude	Longitude	Elevation	Distance to the Pacific Ocean
Min T				0.397
Max T	-0.416	-0.334		0.396
PP	0.860	0.771	0.580	
GST		-0.296		
GDD	-0.520	-0.563	-0.322	
HI	-0.529	-0.542		
BEDD	-0.584	-0.633	-0.343	
CI	-0.288	-0.355		
SONMean	-0.363			0.304
SONMax	-0.520	-0.383		0.299
Days T>30ºC				
Days T>35ºC				
Days T<0ºC				

Only significant values (p value < 0.05) are shown.

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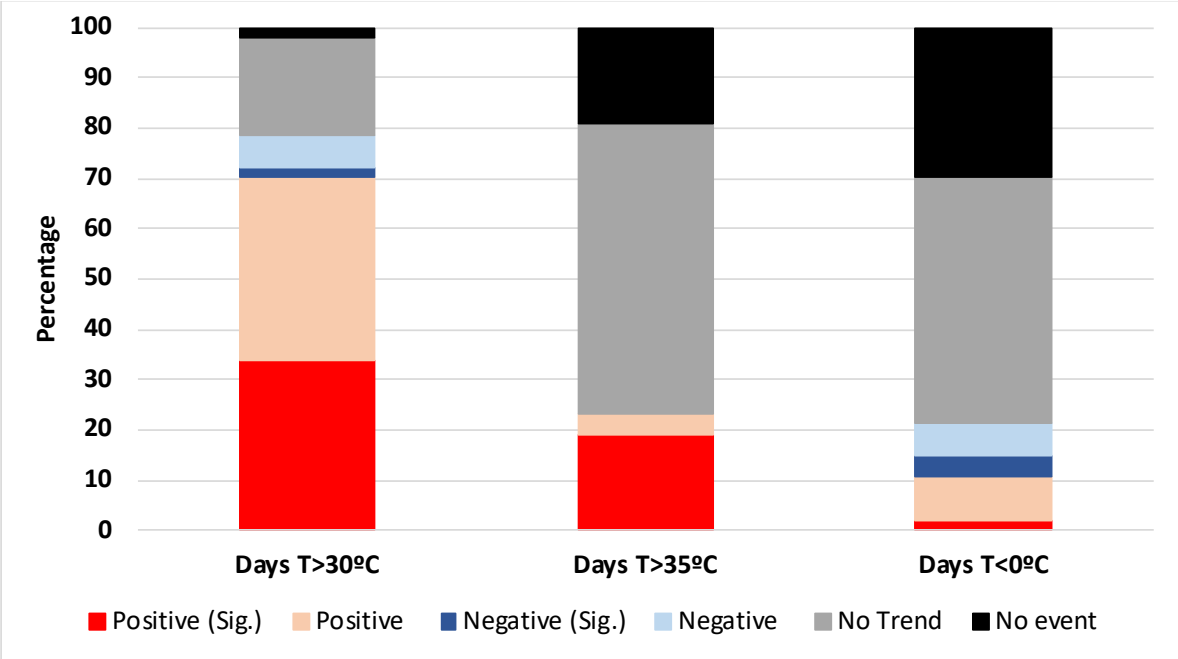
SUPPLEMENTARY FIGURE 1. Frequency of positive, negative, and no trend for the three meteorological indices obtained during the 1985-2015 period. Sig: Significant (p value < 0.05).





SUPPLEMENTARY FIGURE 2. Frequency of positive, negative, and no trend for the seven bioclimatic indices obtained during the 1985-2015 period. Sig: Significant (p value < 0.05).

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SUPPLEMENTARY FIGURE 3. Frequency of positive, negative, and no trend for the three risk indices obtained during the 1985-2015 period. Sig: Significant (p value < 0.05).