

Variable Response in Alpine Tree-Ring Stable Isotopes Following Volcanic Eruptions in the Tropics and Iceland

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SUPPLEMENTARY Materials

Table S1. Parameter for the 34 volcanic eruptions

#	Eruption Year	month	Source	lat (°N)	Icelandic/ NHET & tropical	Earlier Eruption	Later Eruption	Rank Global	Rank NH _{et}
1	1883	8	Krakatao, 1883	-6	Tropical	1875 (-8)	1890 (+7)	30	30
2	1835	1	Cosiguina, 1835	13	Tropical	1831 (-4)	NA	29	43
3	1831	1	UE, 1831	19.5	Tropical / NHET	1823 (-8)	1835 (+4)	23	29
4	1815	4	Tambora, 1815	-8	Tropical	1809 (-6)	1823 (+8)	5	8
5	1809	1	UE, 1809	0	Tropical	NA	1815 (+6)	11	21
6	1783	6	Laki, 1783	64.4	Icelandic	NA	NA	14	3
7	1729	1	UE, 1729	45	NHET	NA	NA	41	25
8	1695	1	UE, 1695	0	Tropical	1693 (-2)	NA	16	23
9	1641	12	Parker, 1641	6.1	Tropical	1637 (-4)	1646 (+5)	10	20
10	1600	2	Huaynaputina, 1600	-16.6	Tropical	1595 (-5)	NA	15	18
11	1477	2	Veidivötn, 1477	64.6	Icelandic	1471 (-6)	1480 (+3)	42	27
12	1458	1	UE, 1458	0	Tropical	1453 (-5)	NA	2	12
13	1453	1	UE, 1453	0	Tropical	NA	1458 (+6)	28	38
14	1345	1	UE, 1345	0	Tropical	1341 (-4)	NA	17	24
15	1286	1	UE, 1286	0	Tropical	NA	NA	18	28
16	1257	7	Samalas, 1257	-8.4	Tropical	NA	NA	1	1
17	1230	1	UE, 1230	0	Tropical	NA	NA	7	13
18	1182	1	Katla, 1182	63.6	Icelandic	NA	NA	25	9
19	1171	1	UE, 1171	0	Tropical	NA	NA	13	22
20	1108	1	UE, 1108	0	Tropical	NA	1115 (+7)	12	19
21	939	4	Katla, 939	63.6	Icelandic	NA	947 (+8)	22	5
22	904	1	UE, 904	45	NHET	900 (-4)	NA	50	34
23	822	1	Katla, 822	63.6	Icelandic	817 (-6)	822 (+5)	49	33
24	817	1	UE, 817	45	Tropical	NA	NA	27	10
25	750	1	UE, 750	63.6	Icelandic	NA	756 (+6)	31	16
26	682	1	UE, 682	0	Tropical	NA	688 (+6)	4	11
27	626	1	UE, 626		NHET	NA	632 (+6)	20	4
28	574	1	UE, 574	0	Tropical	NA	NA	6	15
29	540	1	UE, 540	0	Tropical	536 (-4)	547 (+7)	3	7
30	536	1	UE, 536	45	NHET	NA	540 (+4)	9	2
31	433	1	UE, 433	0	Tropical	NA	NA	21	40
32	266	1	UE, 266	0	Tropical	NA	NA	8	14
33	169	1	UE, 169	0	Tropical	NA	NA	19	26
34	87	1	UE, 87	45	NHET	NA	NA	24	6

Table S1: Parameter for the 34 volcanic eruptions used in the superimposed epoch analyses, based on Toohey & Sigl (2017)

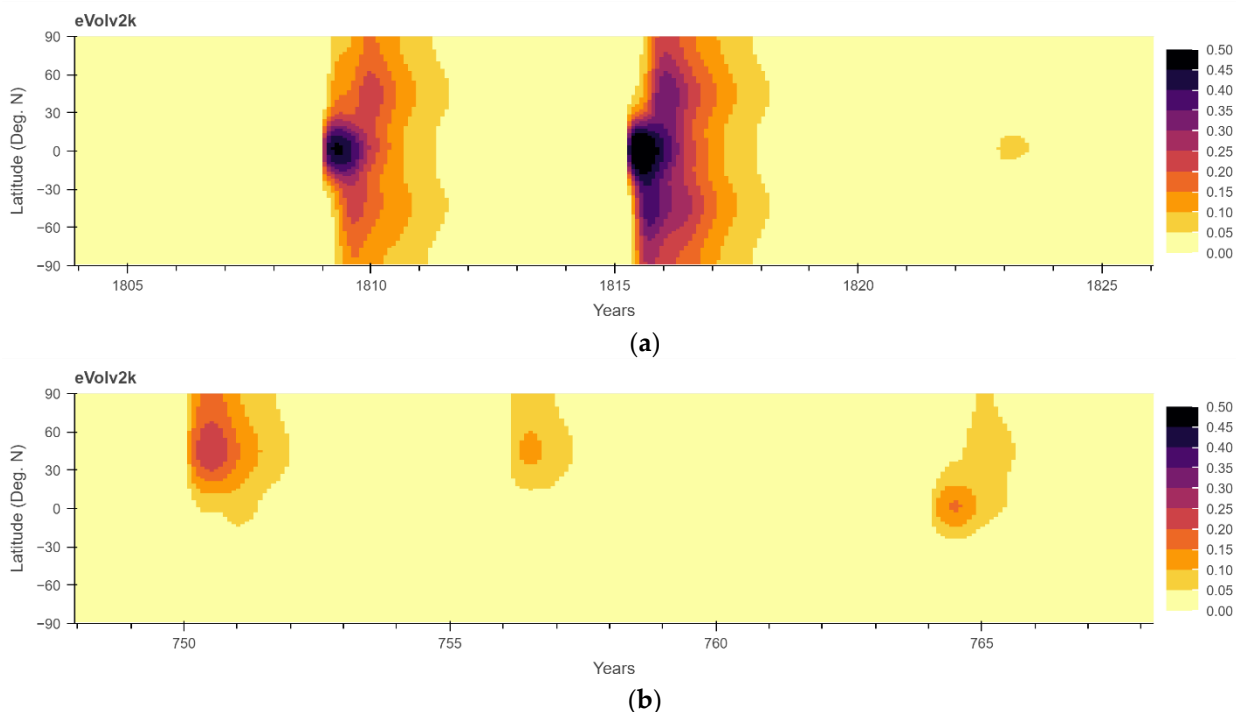


Figure S1. (a) Spatially and temporally resolved Stratospheric Aerosol Optical Depth (SAOD) reconstruction based on ice cores between 1804-1826 with volcanic eruptions in 1809 and 1815 (Toohey & Sigl 2017). (b) Spatially and temporally resolved SAOD reconstruction based on ice cores between CE 748-768 with volcanic eruptions in CE 750, 756 and 764 (Toohey & Sigl 2017).

Figure S2

Timeline used for the correlation of fig 8. The values are shown in z-score to be compared.

in red the values of larch, green the value of cembran pine and blue the mean values in the three isorope. In black the values of the climatic variable a) temperature, b) precipitation, c) sunshine

The correlation of figure 8 considers the time window from 1850 to 1980 for precipitation and temperature. For sunshine was use the time windows 1870 – 1980.

