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Abbreviations:

LT: local temperature

OTC: open-top chamber

Supplementary Table S1. The locations of the mini-loggers used in the study, with their geographical coordinates and periods of measurement.

No.	Logger locations (short name)	Latitude/longitude (°)	Elevation (m)	Description	Distance to weather station (km)	Start date – end date
			Loggers located on rock slopes			
1	Black Island (Black.) [a]	-65.25795/-64.28064	8	N exposition, rock slope	1.868	12.02.2019 – 21.02.2020
2	Darboux Island (Darb.) [b]	-65.395220/-64.214920	25	N exposition, rock slope and limpet shell deposits in grotto	16.842	02.03.2019 – 25.02.2020
3	Grotto Island (Grotto) [c]	-65.242360/-64.247640	2	N exposition, rock slope	0.465	14.02.2019 – 23.02.2020
4	Guczny (Huchnyi) Island (Guczny) [a]	-65.234400/-64.216500	6	N exposition, rock slope, limpet shell deposits	2.164	15.02.2019 – 18.02.2020
5	Indicator Island (Indicat.) [a]	-65.245910/-64.263750	4	N exposition, rock slope	0.391	18.02.2019 – 13.02.2020
6	Rasmussen Point, moss bank (Rass. Moss) [a]	-65.247100/-64.085617	15	N exposition, on rock slope	7.930	11.02.2019 – 13.02.2020
7	South part of Petermann Island (South Pet.) [a]	-65.174730/-64.141170	26	N exposition, on the slope of rock hill	9.448	11.03.2019 – 22.02.2020

No.	Logger locations (short name)	Latitude/longitude (°)	Elevation (m)	Description	Distance to weather station (km)	Start date – end date
8	D5-Woozle Hill, Galindez Island (D5) [c]	-65.248267/-64.245433	45	N exposition, on rock slope near Anna Hill, Woozle Hill top	0.620	01.02.2019 – 31.03.2020
9	D12, Larus Tower, Galindez Island (D12) [a]	-65.247417/-64.252600	10	N exposition, on rock slope of Gull Tower	0.330	01.02.2019 – 31.03.2020
10	Near Diesel hut, Galindez Island (Dies.) [b]	-65.245867/-64.258074	3	NW exposition, rock slope on base of Diesel hut	0.162	02.02.2019 – 31.03.2020
	Loggers on rock terraces					
11	Finger Point of Skua Island (Fing. Point) [a]	-65.255150/-64.274730	11	N exposition, rock terrace	1.453	11.02.2019 – 13.02.2020
12	North part of Petermann Island (North Pet.) [b]	-65.165530/-64.140150	20	N exposition, on rock terrace	10.333	01.03.2019 – 22.02.2020
13	Port Charcot, Booth Island (Port Char.) [c]	-65.067410/-64.015470	42	N exposition, on rock terrace	22.700	13.03.2019 – 05.02.2020
14	Rasmussen Point, *Deschampsia* population (Rass. Des.) [a]	-65.247100/-64.085617	17	N exposition, on rock terrace	7.930	11.02.2019 – 13.02.2020
15	*Colobanthus*, lower point, Galindez Island (Col. low.) [b]	-65.245602/-64.257024	15	N–NW exposition, rock terrace	0.109	01.04.2019 – 31.03.2020
16	*Colobanthus*, upper point, Galindez Island (Col. up.) [c]	-65.245867/-64.258074	19	N–NW exposition, rock terrace	0.162	03.02.2019 – 31.03.2020
	Loggers on rock ledges					
17	The biggest of Barchans Island (Barch.) [b]	-65.241530/-64.301230	4	N exposition, in ledges in rock blocks	2.147	19.03.2019 – 12.02.2020
18	Moot Island (Mooth) [b]	-65.205520/-64.079920	5	N exposition, on rock ledge	9.288	08.03.2019 – 19.02.2020
19	Eight Island, lower locus (Eight low.) [b]	-65.225650/-64.209630	5	N exposition on rock ledge	3.025	11.02.2019 – 18.02.2020

No.	Logger locations (short name)	Latitude/longitude (°)	Elevation (m)	Description	Distance to weather station (km)	Start date – end date
20	*Colobanthus* locus, near station, Galindez Island (Col. St.) [b]	-65.245602/-64.257024	12	N exposition, rock ledge	0.109	14.03.2019 – 31.03.2020
21	D3, Galindez Island (D3) [c]	-65.247500/-64.240100	7	N exposition, rock ledges	0.792	01.02.2019 – 31.03.2020
22	Krapla Rock, Galindez Island (Krapla) [c]	-65.247023/-64.243284	5	N exposition, on rock ledge with limpet shell deposits	0.635	03.02.2019 – 31.03.2020
23	Point-t-24, Galindez Island (t-24) [c]	-65.245717/-64.248333	14	N exposition, on rock ledge	0.363	01.02.2019 – 31.03.2020
	Loggers at other locations					
24	The biggest of the Berthelot Islands (Berth.) [b]	-65.32884/-64.16258	30	NW exposition, rock cleft	10.307	02.03.2019 – 14.02.2020
25	Cape Perez (Cape P.) [b]	-65.40759/-64.09707	22	NW exposition, base of rock wall	19.553	02.03.2019 – 25.02.2020
26	Cape Tuxen (Cape T.) [c]	-65.26809/-64.11654	23	NW exposition, on moss bank surface	6.983	20.03.2019 – 13.02.2020
27	Eastern island of Three Little Pig Island (East. Pig.) [c]	-65.243400/-64.269900	9	NW exposition, rock surface with limpet shells deposits	0.674	13.02.2019 – 12.02.2020
28	Central island of Three Little Pig Island (Cent. Pig.) [c]	-65.242870/-64.273720	9	N exposition, rock surface with limpet shell deposits	0.861	18.02.2019 – 12.02.2020
29	Great Yalour Island (Gr. Yal.) [c]	-65.234440/-64.162180	11	N exposition on rocky outcrop	4.510	10.03.2019 – 13.02.2020
30	Cape Magnit (Magnit Point), Galindez Island (Cape M.) [c]	-65.244950/-64.253067	6	N exposition on rocky outcrop	0.129	01.04.2019 – 31.03.2020
31	D1, near meteorological station, Galindez Island (D1) [a]	-65.244767/-64.255800	13	On rocky coast	0.000	01.02.2019 – 31.03.2020
32	D2-station, Galindez Island (D2 st.) [b]	-65.245726/-64.257499	12	N exposition, near main station building	0.133	01.02.2019 – 31.03.2020

No.	Logger locations (short name)	Latitude/longitude (°)	Elevation (m)	Description	Distance to weather station (km)	Start date – end date
33	D2-OTC, Galindez Island (D2 ch.) [b]	-65.245726/-64.257499	12	N exposition, near main station building, in OTC	0.133	10.03.2019 – 31.03.2020
34	D4, Galindez Island (D4) [c]	-65.248600/-64.238230	10	N exposition, limpet shell deposits and gravel	0.923	01.02.2019 – 31.03.2020
35	Magnit hut, Galindez Island (Magn.) [b]	-65.245260/-64.251000	10	NW exposition on the base of Magnit hut	0.230	01.02.2019 – 31.03.2020
36	Moss-bank-Smith, Galindez Island (Moss. Sm.) [c]	-65.247680/-64.250750	18	NW exposition, on surface of moss bank	0.400	01.02.2019 – 31.03.2020
37	VLF hut, Galindez I. (VLF) [c]	-65.246168/-64.247900	17	NW exposition, on flat top of rock ridge	0.400	01.02.2019 – 31.03.2020

[a] Clefts in rocky areas. [b] Protected areas (grottos, steep northern slopes sheltered by buildings or other relief forms, etc.). [c] Relatively flat, open areas.

Supplementary Table S2. Amplitudes and R^2 of LT seasonal variability and R^2 of autoregressive models.

No.	Logger short name	Elevation (m)	1st harmonic amplitude (°C)	2nd harmonic amplitude (°C)	R^2 of seasonal variability	R^2 of autoregression models
			Loggers on rock slopes			
1	Black.	8	5.3	1.4	0.87	0.37
2	Darb.	25	5.2	0.4	0.85	0.52
3	Grotto	2	5.0	1.4	0.92	0.42
4	Guczny	6	5.5	1.5	0.90	0.32
5	Indicat.	4	5.5	1.2	0.90	0.34
6	Rass. moss	15	4.4	1.7	0.92	0.42
7	South Pet.	26	6.4	1.4	0.86	0.50

No.	Logger short name	Elevation (m)	1st harmonic amplitude (°C)	2nd harmonic amplitude (°C)	R^2 of seasonal variability	R^2 of autoregression models
8	D5	45	5.9	1.5	0.81	0.48
9	D12	10	5.6	1.3	0.84	0.51
10	Dies.	3	2.3	1.7	0.78	0.42
			Loggers on rock terraces			
11	Fing. Point	11	4.8	1.2	0.90	0.33
12	North Pet.	20	4.0	1.4	0.92	0.27
13	Port Char.	42	4.1	1.6	0.93	0.20
14	Rass. Des.	17	5.0	1.4	0.91	0.36
15	Col. low.	15	5.4	1.0	0.88	0.45
16	Col. up.	19	6.5	1.5	0.87	0.54
			Loggers on rock ledges			
17	Barch.	4	4.6	1.4	0.93	0.51
18	Mooth	5	6.3	1.8	0.90	0.54
19	Eight low.	5	5.5	1.6	0.89	0.48
20	Col. St.	12	5.1	1.1	0.91	0.40
21	D3	7	5.9	1.6	0.84	0.52
22	Krapla	5	5.1	1.2	0.89	0.42
23	t-24	14	5.5	1.4	0.83	0.53
			Loggers at other locations			
24	Berth.	30	5.3	0.9	0.87	0.34
25	Cape P.	22	4.5	1.2	0.89	0.50
26	Cape T.	23	3.4	1.5	0.89	0.38
27	East. Pig.	9	5.2	1.5	0.90	0.30
28	Cent. Pig.	9	5.0	1.6	0.90	0.47
29	Gr. Yal.	11	4.7	1.1	0.88	0.50
30	Cape M.	6	6.4	1.2	0.88	0.44

No.	Logger short name	Elevation (m)	1st harmonic amplitude (°C)	2nd harmonic amplitude (°C)	R^2 of seasonal variability	R^2 of autoregression models
31	D1	13	5.0	1.3	0.82	0.50
32	D2 st.	12	3.2	1.2	0.79	0.52
33	D2 ch.	12	4.7	1.6	0.91	0.32
34	D4	10	6.2	1.5	0.76	0.48
35	Magn.	10	4.2	1.1	0.77	0.56
36	Moss. Sm.	18	4.2	1.2	0.75	0.58
37	VLF	17	5.9	1.6	0.85	0.48

Supplementary Table S3. Correlations (*r*), regression coefficients (a) between LT and 2-m air temperature and wind speed and determination coefficients (R^2) of the LT statistical models.

No.	Logger short name	*r* 2-m air temperature	a 2-m air temperature	*r* Wind speed	a Wind speed	R^2 Statistical model
			Loggers on rock slopes			
1	Black.	0.69	0.779	0.41	-0.527	0.53
2	Darb.	0.81	0.862	0.38	-0.367	0.68
3	Grotto	0.71	0.748	0.40	-0.473	0.55
4	Guczny	0.73	0.822	0.45	-0.542	0.58
5	Indicat.	0.70	0.802	0.38	-0.476	0.53
6	Rass. moss	0.67	0.658	0.39	-0.446	0.49
7	South Pet.	0.79	1.035	0.39	-0.497	0.64
8	D5	0.76	0.933	0.42	-0.513	0.61
9	D12	0.75	0.852	0.43	-0.506	0.59
10	Dies.	0.56	0.336	0.43	-0.329	0.39

No.	Logger short name	*r* 2-m air temperature	a 2-m air temperature	*r* Wind speed	a Wind speed	R^2 Statistical model
			Loggers on rock terraces			
11	Fing. Point	0.68	0.672	0.39	-0.431	0.50
12	North Pet.	0.68	0.566	0.43	-0.412	0.52
13	Port Char.	0.63	0.539	0.45	-0.456	0.46
14	Rass. Des.	0.71	0.747	0.40	-0.454	0.54
15	Col. low.	0.77	0.825	0.42	-0.459	0.62
16	Col. up.	0.74	0.972	0.44	-0.603	0.59
			Loggers on rock ledges			
17	Barch.	0.66	0.625	0.39	-0.431	0.47
18	Mooth	0.75	0.967	0.41	-0.540	0.60
19	Eight low.	0.68	0.800	0.45	-0.601	0.54
20	Col. St.	0.72	0.717	0.40	-0.439	0.55
21	D3	0.80	0.894	0.46	-0.616	0.57
22	Krapla	0.75	0.784	0.40	-0.431	0.59
23	t-24	0.72	0.819	0.44	-0.536	0.56
			Loggers at other locations			
24	Berth.	0.75	0.821	0.44	-0.488	0.60
25	Cape P.	0.68	0.621	0.41	-0.436	0.51
26	Cape T.	0.64	0.513	0.41	-0.339	0.45
27	East. Pig.	0.69	0.765	0.40	-0.492	0.52
28	Cent. Pig.	0.70	0.754	0.38	-0.446	0.53
29	Gr. Yal.	0.70	0.688	0.32	-0.340	0.51
30	Cape M.	0.81	1.014	0.40	-0.462	0.67
31	D1	0.67	0.706	0.46	-0.557	0.52
32	D2 st.	0.68	0.539	0.40	-0.358	0.51
33	D2 ch.	0.68	0.667	0.41	-0.460	0.51

No.	Logger short name	*r* 2-m air temperature	a 2-m air temperature	*r* Wind speed	a Wind speed	R^2 Statistical model
34	D4	0.77	0.969	0.40	-0.510	0.60
35	Magn.	0.72	0.630	0.45	-0.424	0.56
36	Moss. Sm.	0.74	0.796	0.37	-0.410	0.57
37	VLF	0.73	0.880	0.46	-0.596	0.58

Supplementary Table S4. Correlations (*r*) between residuals of LT (after subtracting the impact of 2-m air temperature and wind speed) and other meteorological parameters. Statistically significant correlations are in boldface.

No.	Logger short name	Sunshine duration	Downward solar shortwave radiation flux	Upward (reflected) shortwave radiation flux	Downward longwave radiation flux	Upward longwave radiation flux	Daily precipitation sums	Snow depth	Air pressure	Dew point	Relative humidity	Soil temperature at 1 cm depth
					Loggers on rock slopes							
1	Black.	**0.45**	-0.14	-0.12	0.12	0.28	0.01	-0.14	-0.08	0.07	0.03	0.07
2	Darb.	**0.42**	**0.32**	0.23	0.29	**0.35**	0.05	0.25	-0.14	0.08	0.12	0.03
3	Grotto	0.22	-0.02	0.02	-0.04	**0.32**	-0.07	-0.24	-0.06	0.01	-0.09	0.14
4	Guczny	**0.36**	0.20	0.21	0.08	0.22	-0.03	0.07	-0.01	0.04	-0.02	0.09
5	Indicat.	**0.42**	0.07	0.02	0.19	0.29	-0.02	0.05	-0.06	0.03	-0.03	-0.01
6	Rass. moss	0.16	-0.10	-0.09	-0.03	**0.32**	-0.08	-0.14	-0.03	0.03	-0.04	0.07
7	South Pet.	**0.39**	0.21	0.15	0.26	0.30	-0.03	0.20	-0.10	0.07	0.07	0.04
8	D5	**0.40**	0.14	0.12	0.23	0.28	-0.03	0.11	-0.08	0.06	0.03	0.03
9	D12	0.25	0.17	0.27	-0.02	**0.34**	-0.05	-0.09	-0.04	0.04	-0.03	0.21
10	Dies.	0.04	0.10	-0.01	0.01	-0.23	-0.09	0.11	0.08	0.11	0.14	-0.24

No.	Logger short name	Sunshine duration	Downward solar shortwave radiation flux	Upward (reflected) shortwave radiation flux	Downward longwave radiation flux	Upward longwave radiation flux	Daily precipitation sums	Snow depth	Air pressure	Dew point	Relative humidity	Soil temperature at 1 cm depth
					Loggers on rock terraces							
11	Fing. Point	0.27	0.11	0.12	0.09	0.29	-0.04	0.01	-0.06	0.04	-0.01	0.06
12	North Pet.	0.22	-0.16	-0.09	-0.11	0.29	-0.09	-0.20	0.01	0.01	-0.10	0.20
13	Port Char.	0.27	-0.05	-0.01	-0.03	0.26	-0.05	0.01	-0.01	0.04	-0.05	0.16
14	Rass. Des.	0.27	-0.04	-0.01	-0.02	**0.35**	-0.04	-0.11	-0.06	0.01	-0.10	0.11
15	Col. low.	**0.40**	0.19	0.17	0.22	**0.32**	-0.03	0.09	-0.10	0.06	0.04	0.06
16	Col. up.	**0.37**	0.25	0.19	0.22	0.29	-0.04	0.18	-0.06	0.07	0.04	-0.01
					Loggers on rock ledges							
17	Barch.	0.25	0.01	0.04	-0.01	**0.35**	-0.04	-0.14	-0.07	0.03	-0.05	0.07
18	Mooth	**0.37**	0.06	0.06	0.09	0.29	-0.02	0.09	-0.09	0.04	-0.01	0.11
19	Eight low.	**0.48**	0.14	0.13	0.11	0.24	-0.03	0.10	-0.02	0.02	-0.06	-0.01
20	Col. St.	**0.41**	0.01	0.01	0.09	**0.32**	-0.08	-0.09	-0.06	0.02	-0.07	0.02
21	D3	**0.33**	0.17	0.17	0.11	0.24	-0.05	0.02	-0.02	0.05	0.01	0.01
22	Krapla	**0.33**	0.03	0.06	0.04	**0.36**	-0.04	-0.12	-0.10	0.01	-0.08	0.16
23	t-24	**0.40**	0.07	0.13	0.05	**0.33**	-0.03	0.02	-0.03	0.01	-0.08	0.13
					Loggers at other locations							
24	Berth.	0.26	0.25	0.18	0.18	0.33	0.01	0.23	-0.12	0.07	0.07	0.05
25	Cape P.	**0.38**	0.21	0.14	0.19	0.17	0.01	0.21	-0.04	0.06	0.06	-0.06
26	Cape T.	0.21	-0.12	-0.15	0.07	0.19	-0.07	-0.12	-0.05	0.04	0.01	-0.03
27	East. Pig.	**0.38**	-0.03	0.01	-0.01	**0.36**	-0.03	-0.10	-0.05	0.01	-0.11	0.17
28	Cent. Pig.	0.26	0.07	0.04	0.29	-0.05	-0.01	-0.03	0.12	0.04	0.01	-0.07
29	Gr. Yal.	0.19	0.09	0.05	0.16	0.29	-0.01	-0.11	-0.13	0.06	0.08	0.03
30	Cape M.	**0.33**	0.23	0.25	0.14	0.30	-0.04	0.04	-0.09	0.07	0.06	0.13
31	D1	**0.44**	-0.01	-0.02	0.05	0.25	-0.08	-0.03	0.04	0.01	-0.09	0.02

No.	Logger short name	Sunshine duration	Downward solar shortwave radiation flux	Upward (reflected) shortwave radiation flux	Downward longwave radiation flux	Upward longwave radiation flux	Daily precipitation sums	Snow depth	Air pressure	Dew point	Relative humidity	Soil temperature at 1 cm depth
32	D2 st.	0.26	-0.16	-0.12	-0.06	0.28	-0.09	-0.17	0.01	0.01	-0.08	0.21
33	D2 ch.	0.24	-0.14	-0.10	-0.07	0.30	-0.11	-0.21	0.01	0.02	-0.08	0.15
34	D4	**0.34**	0.28	0.26	0.19	0.27	-0.03	0.13	-0.09	0.08	0.07	0.16
35	Magn.	**0.36**	-0.07	-0.03	-0.02	0.29	-0.07	-0.17	-0.01	0.02	-0.09	0.12
36	Moss. Sm.	**0.38**	0.04	0.01	0.18	**0.40**	-0.04	-0.02	-0.12	0.03	-0.04	0.12
37	VLF	**0.33**	0.20	0.24	0.06	0.30	-0.05	0.02	-0.03	0.04	-0.02	0.13