Supplementary Material

Validation and bias correction of monthly $\delta^{18}O$ precipitation time series from ECHAM5-wiso model in Central Europe

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Table S1. Details for the GNIP sampling sites used in this study.

Station Index	Station Name	Country	Latitude (d. d[1])	Longitude (d. d.)	Altitude (m)	Distance from the coastline (D_{coast}, km)	Data Completeness (%)	Köppen-Geiger climate type[2]
1	ARTERN	DE	51.374401	11.2919	164	286	48.8	Cfb
2	BAD SALZUFLEN	DE	52.104198	8.7519	135	163.7	94.1	Cfb
3	BERLIN	DE	52.467201	13.4019	48	141.2	96.8	Cfb
4	BERN	CH	46.952225	7.439321	511	313.6	97.1	Cfb
5	BRAUNSCHWEIG	DE	52.291401	10.4464	81	188.2	97.1	Cfb
6	BUCHS/SUHR	CH	47.372337	8.083138	397	347.4	56.6	Cfb
7	CUXHAVEN	DE	53.8713	8.7058	5	14.6	97.1	Cfb
8	EMMERICH	DE	51.830002	6.25	43	173.6	96.8	Cfb
9	GARMISCH-PARTENKIRCHEN	DE	47.4828	11.0622	719	250.9	99.8	Cfb
10	GOERLITZ	DE	51.162201	14.9506	238	288.3	48.3	Cfb
11	GRAZ (UNIVERSITAET)	AT	47.077778	15.448889	366	195	66.9	Cfb
12	GRIMSEL	CH	46.572483	8.33272	1950	247.3	100	ET
13	GRONINGEN	NL	53.23	6.55	1	37.2	90.2	Cfb
14	GUTTANNEN	CH	46.657726	8.292706	1055	247.2	99.5	ET
15	HOF-HOHENSAAS	DE	50.311901	11.8758	565	410.5	91.2	Cfb
16	HOHENPEISSENBERG	DE	47.8008	11.0108	977	289.8	80.9	Cfb
17	KAHLER ASTEN	DE	51.18	8.4889	839	258.3	48	Cfb
18	KARLSRUHE	DE	49.0392	8.365	112	433.3	97.1	Cfb
19	KLAGENFURT FLUGHAFEN	AT	46.648335	14.318334	450	111.5	65.9	Cfb
20	KOBLENZ	DE	50.3381	7.6	85	305.1	96.3	Cfb
21	KONSTANZ	DE	47.6772	9.19	443	348.3	100	Cfb
22	KRAKOW (WOLA JUSTOWSKA)	PL	50.061668	19.848612	205	480.4	93.9	Cfb
23	LA BREVINE	CH	46.981415	6.608	1042	340.6	58.6	Cfb
24	LEIPZIG	DE	51.349998	12.43	125	284.4	54.2	Cfb
25	LIPTOVSKY MIKULAS-ONDRASOVA	SK	49.0975	19.59	570	566.7	59.3	Dfb
26	LJUBLJANA	SI	46.095001	14.597	282	75.2	71.3	Cfb
27	LOCARNO	CH	46.173786	8.788556	379	194.1	92.2	Cfb
28	MEIRINGEN	CH	46.727386	8.186782	632	274.8	99.3	Cfb
29	NORDERNEY	DE	53.7122	7.1519	11	8.6	37	Cfb
30	NYON	CH	46.39864	6.233804	436	285.6	62.5	Cfb
31	PASSAU-FUERSTENZELL	DE	48.544998	13.3528	476	314.2	48.5	Cfb
32	PONTRESINA	CH	46.491432	9.898181	1724	229.7	56.1	ET
33	REGENSBURG	DE	49.042198	12.1019	365	371.1	100	Cfb
34	SEEHAUSEN	DE	52.891102	11.7294	21	122.2	48.8	Cfb
35	SION	CH	46.22031	7.338484	482	222.8	49.5	Cfb
36	STUTTGART	DE	48.828098	9.2	314	445.1	100	Cfb
37	THONON-LES-BAINS	FR	46.372223	6.470833	385	275.6	68.1	Cfb
38	TRIER	DE	49.747799	6.6581	265	290.5	99.8	Cfb
39	VIENNA (HOHE WARTE)	AT	48.248611	16.356388	198	355.2	97.8	Cfb
40	VILLACHER ALPE	AT	46.603054	13.671389	2156	99.7	67.6	Dfc
41	WASSERKUPPE RHOEN	DE	50.4972	9.9428	921	352.2	100	Cfb
42	WEIL AM RHEIN	DE	47.595833	7.594444	249	378.8	90.7	Cfb
43	WUERZBURG	DE	49.770302	9.9578	268	446.7	100	Cfb

[1] d. d. : decimal degrees, [2] Rubel et al. 2017 (http://koeppen-geiger.vu-wien.ac.at/present.htm), Bryant et al., 2017.

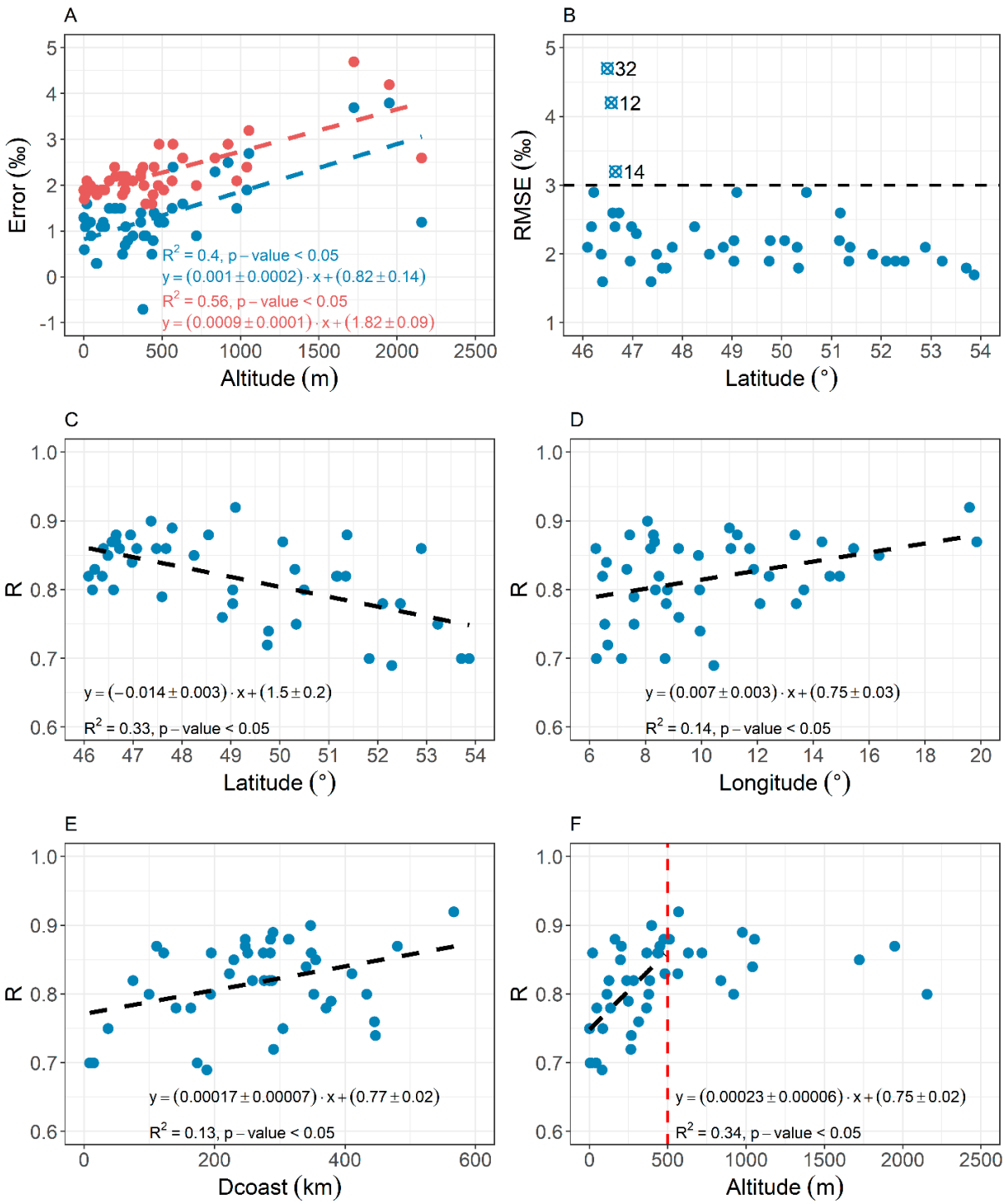

Figure S1. A) MBE (blue) and RMSE (red) vs. Altitude, B) RMSE vs. Latitude, C) R vs. Latitude, D) R vs. Longitude, E) R vs. D_{coast}, F) R vs. Altitude.

References

Rubel, F.; Brugger, K.; Haslinger, K.; Auer, I. The climate of the European Alps: shift of very high resolution Köppen-Geiger climate zones 1800-2100. *Meteor. Zeitsch.* **2017**, 26 (2), pp. 115-125.

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