Supplementary Material
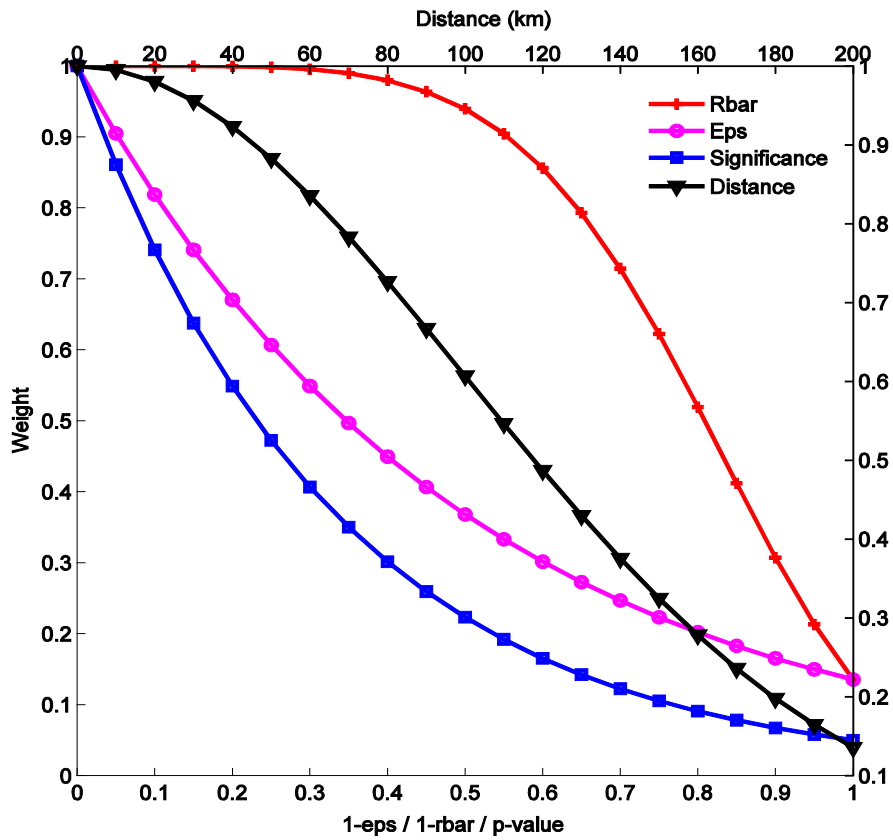
Table S1. Raw-ring width series from the ITRDB with identified errors.

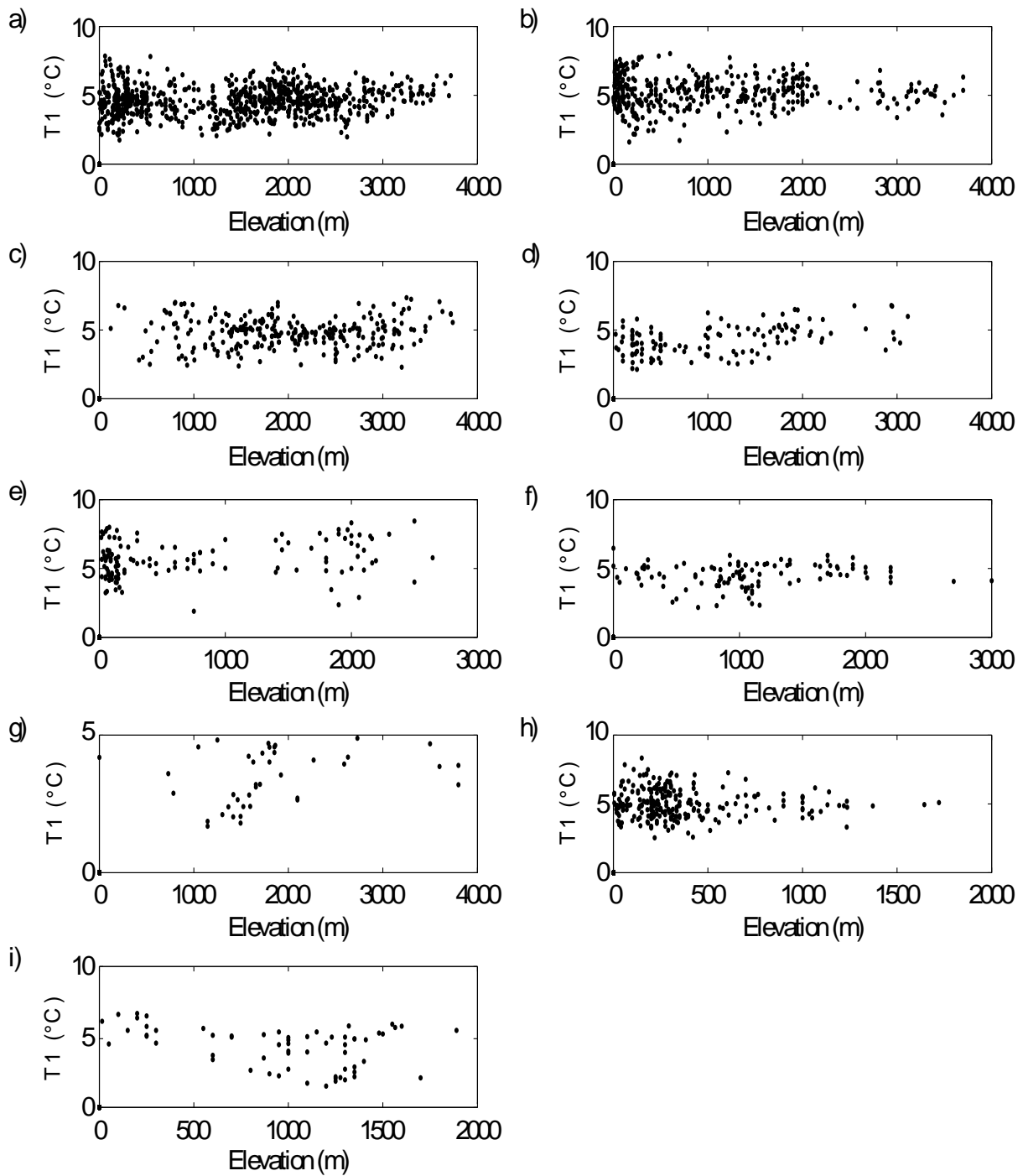| File	Series	Problem	What has been done
ak051.rwl		Arstan cannot read in files	Remove hyphens at the end of each label in each line
aust004.rwl	108400, 108410, 108430, 108440, 108450, 108460, 108470, 108480, 108490, 108500, 108510, 108520, 108530, 108540, 108550, 108560, 108570, 108580, 108590, 108610, 108620, 108630	22 of 59 series are redundant Decimal points Erroneous time span	File not used
aust005.rwl-aust008.rwl		Arstan cannot read in files	Remove hyphens at the end of each header line
brit015.rwl-brit026.rwl, brit048w.rwl, brit049w.rwl		Arstan cannot read in files	Remove hyphens at the end of each header line
brit020.rwl	568112	Erroneous time span	Delete -999 in last row
ca580.rwl-ca597.rwl		Arstan cannot read in files	Remove underlines in header
cana038.rwl, cana039.rwl, cana041.rwl-cana098.rwl, cana111.rwl-cana114.rwl, cana168w.rwl-cana173w.rwl		Arstan cannot read in files	Remove hyphens at the end of each header line
cana165.rwl-cana167.rwl		Erroneous time span	File not used
cana262.rwl		Arstan cannot read in files	Remove hyphen in middle header line
cana275.rwl	bs480a1, bs480a2	Erroneous time span	Change position of -9999
chil012.rwl	AGU261	Erroneous time span	Change position of the line with 1940-1949 data to the right place in the series
co562.rwl	BLA08B	Arstan cannot read in files	Add 999 at end of series
czec.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
czec2.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
czec3.rwl		Units in ITRDB are given in feet	Conversion from feet into metres

fran015.rwl-fran028.rwl, fran032w.rwl, fran033w.rwl		Arstan cannot read in files	Remove hyphens at the end of each header line
germ014.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
germ018.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
germ1.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
germ12.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
germ15.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
germ16.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
germ17.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
germ18.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
germ21.rwl		Erroneous time span Decimal points	File not used
germ3.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
germ301.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
germ4.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
germ5.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
ital006.rwl-ital017.rwl		Arstan cannot read in files	Remove hyphens at the end of each header line
ital022.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
ital023.rwl	VIG641	Erroneous time span	Add 999 at end of series
ital027.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
ital2.rwl		Units in ITRDB are given in feet	Conversion from feet into metres
mt115.rwl		No data available because it has not been added yet	File not used
nc4.rwl		Arstan cannot read in files	Remove hyphens at the end of each header line Add a break before year date
nc5.rwl-nc11.rwl, nc016.rwl		Format problems	File not used
neth005.rwl		No header info Erroneous time span	File not used

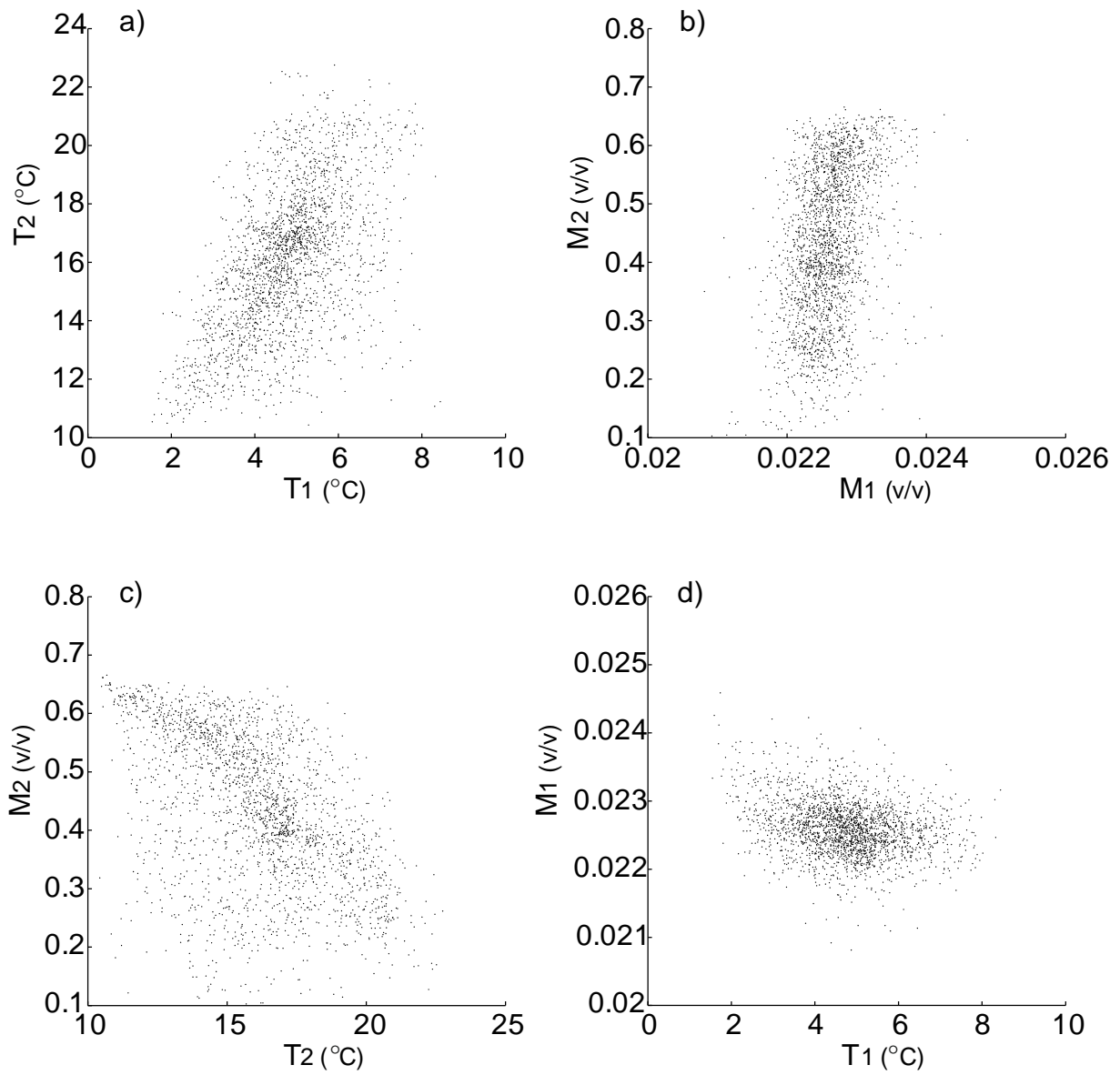|			
newz076.rwl		Arstan cannot read in files Erroneous time span	Remove hyphen in series Add break after series name Change 9999 into 999
nv505.rwl	Q43102	Erroneous time span	Add 999 at end of series
ny.rwl		Format problems	File not used
or015b.rwl		Subgroup of series from or015.rwl	File not used
or082.rwl- or084.rwl		Hyphens in series names cause format problems	File not used
or088.rwl		Arstan cannot read in files	Remove hyphens at some of the series names
russ020w.rwl, russ022w.rwl		Arstan cannot read in files	Remove hyphens at the end of each header line
russ023w.rwl	863122	Erroneous time span	Change position of 999
russ024w.rwl	864101, 864162, 864172	Erroneous time span	Change position of 999
russ027w.rwl	870062	Erroneous time span	Change position of 999
russ030w.rwl	873282	Erroneous time span	Change position of 999
russ031w.rwl	874032, 874091	Erroneous time span	Change position of 999
russ032w.rwl	875143	Erroneous time span	Change position of 999
russ033w.rwl	876102	Erroneous time span	Change position of 999
russ035w.rwl	878021, 878131	Erroneous time span	Change position of 999
russ036w.rwl	879382	Erroneous time span	Change position of 999
russ039w.rwl	882091, 882111, 882112, 882451	Erroneous time span	Change position of 999
russ040w.rwl	884091	Erroneous time span	Change position of 999
russ042w.rwl	886032, 886232	Erroneous time span	Change position of 999
russ043w.rwl	892081, 892082	Erroneous time span	Change position of 999
russ044w.rwl	892242	Erroneous time span	Change position of 999
russ046w.rwl	895271	Erroneous time span	Change position of 999
russ051w.rwl	911102	Erroneous time span	Change position of 999
russ053w.rwl	913132	Erroneous time span	Change position of 999
russ055w.rwl	914122	Erroneous time span	Change position of 999
russ056w.rwl	915071	Erroneous time span	Change position of 999
russ059w.rwl	919012, 919061, 919122	Erroneous time span	Change position of 999
russ060w.rwl	920161	Erroneous time span	Change position of 999
russ062w.rwl	923412, 923421	Erroneous time span	Change position of 999
russ064w.rwl	925432	Erroneous time span	Change position of 999
russ065w.rwl	926092	Erroneous time span	Change position of 999
russ066w.rwl	927272, 927362	Erroneous time span	Change position of 999
russ068w.rwl	928020, 928050, 928090, 928121, 928122, 928170, 928261, 928262, 928640, 928740, 928750	Erroneous time span	Change position of 999
russ073w.rwl	933051, 933052, 933072, 933112	Erroneous time span	Change position of 999

russ084w.rwl	952212, 952281	Erroneous time span	Change position of 999
russ087w.rwl	954172	Erroneous time span	Change position of 999
russ089w.rwl	956041, 956042, 956122	Erroneous time span	Change position of 999
russ090w.rwl	957051, 957081, 957131	Erroneous time span	Change position of 999
russ093w.rwl	960152	Erroneous time span	Change position of 999
russ098w.rwl	965181, 965262	Erroneous time span	Change position of 999
russ099w.rwl	966051, 966111	Erroneous time span	Change position of 999
russ152w.rwl	977191	Erroneous time span	Change position of 999
spai002.rwl	493062	Erroneous time span	Add 999 at end of series
swed019w.rwl-swed023w.rwl		Arstan cannot read in files	Remove hyphens at the end of each header line
swit102.rwl-swit120.rwl, swit138w.rwl-swit140w.rwl		Arstan cannot read in files	Remove hyphens at the end of each header line
swit177w.rwl		0 in data gaps	File not used
turk033.rwl		Arstan cannot read in files	Remove hyphens at the end of each label in each line
tx040.rwl		Data has been removed from ITRDB	File not used
ut510.rwl-ut512.rwl		Arstan cannot read in files	Remove hyphens at the end of each header line
va20.rwl	3996	Erroneous time span	Add 999 at end of series
wa034.rwl	711091	Erroneous time span	Add 999 at end of series Delete double years 1730-1890
wa043.rwl	66041	Erroneous time span	Add 999 at end of series

Fig. S1. Weight functions for tree-ring chronologies located within a 200 km search circle around

Fig. S2. Comparison of the site values of the threshold temperature T_1 at corresponding elevations for different tree genera: a) pine, b) spruce, c) fir, d) hemlock, e) larch, f) cedar, g) juniper, h) oak, and i) nothofagus.

Fig. S3. Scatterplots of joint posterior relationships at each site between parameters a) T_1 and T_2, b) M_1 and M_2, c) T_2 and M_2, and d) T_1 and M_1.