Supplement of

Global transpiration data from sap flow measurements: the SAPFLUXNET database

Rafael Poyatos *et al.*

Correspondence to: Rafael Poyatos (r.poyatos@creaf.uab.cat)

Tables

Table S1 Data checks implemented in the first level of data quality control (QC1).

Check	Description
Metadata variables	All metadata variables are checked for presence and expected class (numeric, character, logical…).
Character variables values	All metadata character variables are checked against the possible values (factor levels) for that variable, raising a warning if some value is unexpected.
E-mail check	E-mail provided by contributors is checked for validity
Coordinates and biome	Site coordinates are checked for correctness (are they inside the specified country?) and fixed if needed and possible. Annual temperature and precipitation are obtained from these coordinates and biome is estimated from these values.
Soil texture	Percentages of soil textures are used to calculate the USDA classification category.
Species names	Species names in plant and species metadata are checked for spelling errors and the concordance between both metadata variables is also checked
Plant treatments	Check for uniformity in the treatment declared by plant.
Environmental variables presence	Check for concordance between the declared variables in the environmental metadata and the environmental data.
Timestamp	Format, NA presence (there is data, but there is no timestamp), concordance and continuity are checked.
Gap presence:	Data gaps (There is TIMESTAMP but there is no data) are summarised and visualized.
Soil water content	Check for percentage soil water content values and transform them to cm^3/cm^3

Table S2. Data checks implemented in the second level of data quality control (QC2).

Data check	Description
Sap flow units harmonisation	Sap flow expressed in $cm^3 h^{-1}$, sap flow per unit leaf/sapwood area in $cm^3 cm^{-2} h^{-1}$
Out of range detection	Out of range values are flagged automatically, examined in a visual app and removed if confirmed
Outlier detection	Outliers are flagged automatically, examined in a visual app and removed if confirmed
Radiation transformations	Interconversion between shortwave radiation (sw_in) and photosynthetically active radiation (ppfd_in)
VPD and relative humidity	Interconversion between VPD and relative humidity
Extraterrestrial radiation and solar timestamp	Calculation of extraterrestrial radiation and solar timestamp from timestamp and geographical data
Sap flow interconversions	When sapwood or leaf areas were available, interconversions were applied between the different expression levels for sap flow (per plant, per sapwood area or per leaf area)

Table S3. Datasets in the SAPFLUXNET database identified by numeric code, dataset code and site name. Number of species per dataset, geographic coordinates and elevation are also shown. Negative coordinate values are shown for Southern and Western Hemispheres.

#	Dataset code	Site name	Lat.	Long.	Elev. (m)	N spp.
1	ARG_MAZ	Mazaruca_Patagonia	-51.58	-72.29	550	1
2	ARG_TRE	Tres Marias	-51.32	-72.18	460	1
3	AUS_BRI_BRI	Britannia Creek	-37.87	145.85	707	1
4	AUS_CAN_ST1_EUC	Cann River	-37.58	149.17	180	1
5	AUS_CAN_ST2_MIX	Cann River	-37.58	149.17	180	2
6	AUS_CAN_ST3_ACA	Cann River	-37.58	149.17	180	1
7	AUS_CAR_THI_00F	Carrajung	-38.38	146.68	610	1
8	AUS_CAR_THI_0P0	Carrajung	-38.38	146.68	610	1
9	AUS_CAR_THI_0PF	Carrajung	-38.38	146.68	610	1
10	AUS_CAR_THI_CON	Carrajung	-38.38	146.68	610	1
11	AUS_CAR_THI_T00	Carrajung	-38.38	146.68	610	1
12	AUS_CAR_THI_T0F	Carrajung	-38.38	146.68	610	1
13	AUS_CAR_THI_TP0	Carrajung	-38.38	146.68	610	1
14	AUS_CAR_THI_TPF	Carrajung	-38.38	146.68	610	1
15	AUS_ELL_HB_HIG	Ella	-36.78	146.58	705	2
16	AUS_ELL_MB_MOD	Ella	-36.78	146.58	693	1
17	AUS_ELL_UNB	Ella	-36.78	146.58	737	1
18	AUS_KAR	Karijini NP	-22.62	118.22	710	1
19	AUS_MAR_HSD_HIG	Maroondah	-37.64	145.58	468	2
20	AUS_MAR_HSW_HIG	Maroondah	-37.65	145.57	297	2
21	AUS_MAR_MSD_MOD	Maroondah	-37.64	145.58	467	2
22	AUS_MAR_MSW_MOD	Maroondah	-37.65	145.57	261	2
23	AUS_MAR_UBD	Maroondah	-37.69	145.56	303	3
24	AUS_MAR_UBW	Maroondah	-37.89	145.57	336	3
25	AUS_RIC_EUC_ELE	Richmond NSW EucFACE	-33.62	150.74	23	1
26	AUS_WOM	WombatStateForest	-37.42	144.09	705	2
27	AUT_PAT_FOR	Patscherkofel	47.21	11.45	1950	1
28	AUT_PAT_KRU	Patscherkofel	47.21	11.45	2180	1
29	AUT_PAT_TRE	Patscherkofel	47.21	11.45	2110	1
30	AUT_TSC	Tschirgant south	47.23	10.84	750	1
31	BRA_CAM	Campos do Jordão	-22.69	-45.52	2000	1
32	BRA_CAX_CON	Caxiuana	-1.79	-51.43	15	8
33	BRA_SAN	Santa Virgínia (PESM)	-23.28	-45.18	1000	4
34	CAN_TUR_P39_POS	TUR	42.71	-80.36	184	1
35	CAN_TUR_P39_PRE	TUR	42.71	-80.36	184	1
36	CAN_TUR_P74	TUR	42.71	-80.35	184	1
37	CHE_DAV_SEE	Davos	46.82	9.86	1650	1

#	Dataset code	Site name	Lat.	Long.	Elev. (m)	N spp.
38	CHE_LOT_NOR	Lotschental	46.39	7.76	1300	2
39	CHE_PFY_CON	Pfynwald	46.30	7.60	615	1
40	CHE_PFY_IRR	Pfynwald	46.30	7.60	615	1
41	CHN_ARG_GWD	Arghan	40.75	89.99	830	1
42	CHN_ARG_GWS	Arghan	41.38	89.94	830	1
43	CHN_HOR_AFF	Horqin	42.72	122.37	226	1
44	CHN_YIN_ST1	Yingbazar	42.45	85.72	900	1
45	CHN_YIN_ST2_DRO	Yingbazar	42.11	85.13	930	1
46	CHN_YIN_ST3_DRO	Yingbazar	42.29	85.99	930	1
47	CHN_YUN_YUN	Yunxiao	23.92	117.42	0	2
48	COL_MAC_SAF_RAD	Macagual Universidad de la Amazonia	1.50	-75.36	360	1
49	CRI_TAM_TOW	TAMU Soltis Center	10.39	-84.63	600	17
50	CZE_BIK	Bik	49.49	18.53	875	1
51	CZE_BIL_BIL	Bilovice	49.25	16.69	320	1
52	CZE_KRT_KRT	Krtiny	49.32	16.75	480	1
53	CZE_LAN	Lanžhot	48.68	16.95	150	3
54	CZE_LIZ_LES	Liz	49.07	13.68	858	1
55	CZE_RAJ_RAJ	Rajec	49.44	16.70	600	1
56	CZE_SOB_SOB	Sobesice	49.25	16.69	320	1
57	CZE_STI	Stitna nad Vlari	49.04	17.97	550	1
58	CZE_UTE_BEE	Utechov	49.28	16.65	420	1
59	CZE_UTE_BNA	Utechov	49.28	16.65	390	1
60	CZE_UTE_BPO	Utechov	49.28	16.65	370	1
61	CZE_UTE_SPR	Utechov	49.28	16.65	360	1
62	DEU_HIN_OAK	Hinnensee	53.33	13.19	90	1
63	DEU_HIN_TER	Hinnensee	53.33	13.19	95	2
64	DEU_MER_BEE_NON	Merzalben	49.27	7.81	550	1
65	DEU_MER_BEE_THI	Merzalben	49.27	7.81	550	1
66	DEU_MER_DOU_NON	Merzalben	49.27	7.81	550	1
67	DEU_MER_DOU_THI	Merzalben	49.27	7.81	550	1
68	DEU_MER_MIX_NON	Merzalben	49.27	7.81	550	2
69	DEU_MER_MIX_THI	Merzalben	49.27	7.81	550	2
70	DEU_STE_2P3	Stechlin	53.10	13.00	78	1
71	DEU_STE_4P5	Stechlin	53.10	13.00	78	1
72	ESP_ALT_ARM	Alto Tajo	40.78	-2.33	1079	3
73	ESP_ALT_HUE	Alto Tajo	40.79	-2.29	907	2
74	ESP_ALT_TRI	Alto Tajo	40.80	-2.23	981	2
75	ESP_CAN	Can Balasc	41.43	2.07	270	4
76	ESP_GUA_VAL	Guadarrama	40.90	-4.03	1140	1
77	ESP_LAH_COM	LaHarina	37.74	-3.38	180	1
78	ESP_LAS	Las Canadas, Teide natinal park tenerife	28.31	-16.57	2070	1

#	Dataset code	Site name	Lat.	Long.	Elev. (m)	N spp.
79	ESP_MAJ_MAI	Majadas del Tietar	39.94	-5.77	260	1
80	ESP_MAJ_NOR_LM1	Majadas del Tietar	39.94	-5.77	260	1
81	ESP_MON_SIE_NAT	Montejo	41.12	-3.50	1400	3
82	ESP_RIN	Rinconada experimental catchment	40.60	-6.02	1200	1
83	ESP_RON_PIL	Ronda	36.69	-5.02	1734	2
84	ESP_SAN_A_45I	Sanabria orchard	37.25	-5.80	49	1
85	ESP_SAN_A2_45I	Sanabria orchard	37.25	-5.80	49	1
86	ESP_SAN_B_100	Sanabria orchard	37.25	-5.80	49	1
87	ESP_SAN_B2_100	Sanabria orchard	37.25	-5.80	49	1
88	ESP_TIL_MIX	Tillar	41.33	1.01	1018	2
89	ESP_TIL_OAK	Tillar	41.33	1.01	1011	1
90	ESP_TIL_PIN	Tillar	41.33	1.01	1065	1
91	ESP_VAL_BAR	Vallcebre	42.20	1.82	1102	1
92	ESP_VAL_SOR	Vallcebre	42.20	1.81	1257	1
93	ESP_YUN_C1	Yunquera	36.72	-4.97	1220	1
94	ESP_YUN_C2	Yunquera	36.72	-4.97	1180	1
95	ESP_YUN_T1_THI	Yunquera	36.72	-4.97	1190	1
96	ESP_YUN_T3_THI	Yunquera	36.72	-4.97	1185	1
97	FIN_HYY_SME	Hyytiala Forest Field Station	61.85	24.29	185	2
98	FIN_PET	Petsikko	69.49	27.23	251	1
99	FRA_FON	Fontainebleau-Barbeau	48.48	2.78	105	2
100	FRA_HES_HE1_NON	Hesse	48.67	7.06	300	1
101	FRA_HES_HE2_NON	Hesse	48.67	7.06	300	1
102	FRA_PUE	Puechabon	43.74	3.60	270	1
103	GBR_ABE_PLO	Aberfeldy	56.62	-3.80	340	1
104	GBR_DEV_CON	Devilla	56.03	-3.72	75	1
105	GBR_DEV_DRO	Devilla	56.03	-3.72	75	1
106	GBR_GUI_ST1	Guisachan	57.27	-4.82	300	1
107	GBR_GUI_ST2	Guisachan	57.27	-4.82	300	1
108	GBR_GUI_ST3	Guisachan	57.27	-4.82	300	1
109	GUF_GUY_GUY	Guyaflux	5.28	-52.92	40	6
110	GUF_GUY_ST2	Guyaflux	5.28	-52.91	45	7
111	GUF_NOU_PET	Nouragues station	4.08	-52.68	120	10
112	HUN_SIK	Sikfokut	47.93	20.44	330	2
113	IDN_JAM_OIL	Jambi	-2.07	102.79	71	1
114	IDN_JAM_RUB	Jambi	-2.10	102.78	90	1
115	IDN_PON_STE	Pono	-1.49	120.06	1050	8
116	ISR_YAT_YAT	Yatir	31.34	35.05	650	1
117	ITA_FEI_S17	Feichtwald-Matsch	46.69	10.61	1715	1
118	ITA_KAE_S20	Kaelbergangl-Matsch	46.70	10.61	1990	1
119	ITA_MAT_S21	Matscher Alm-Matsch	46.74	10.69	2100	2

#	Dataset code	Site name	Lat.	Long.	Elev. (m)	N spp.
120	ITA_MUN	Muntatschinig-Matsch	46.68	10.58	1160	1
121	ITA_REN	Renon	46.59	11.43	1794	3
122	ITA_RUN_N20	Runer Koepfl-Matsch	46.70	10.64	2030	2
123	ITA_TOR	Torgnon	45.82	7.56	2100	1
124	JPN_EBE_HYB	Ebetsu	43.08	141.52	40	1
125	JPN_EBE_SUG	Ebetsu	43.08	141.52	40	1
126	KOR_TAE_TC1_LOW	Taehwa	37.30	127.32	160	1
127	KOR_TAE_TC2_MED	Taehwa	37.30	127.32	160	1
128	KOR_TAE_TC3_EXT	Taehwa	37.30	127.32	160	1
129	MDG_SEM_TAL	Semi-mature forest	-18.93	48.71	950	6
130	MDG_YOU_SHO	Young secondary forest	-18.95	48.40	990	1
131	MEX_COR_YP	Cortadura	19.49	-97.04	2180	1
132	MEX_VER_BSJ	VERACRUZ_BSJ	19.51	-96.98	1440	5
133	MEX_VER_BSM	VERACRUZ_BSM	19.53	-96.99	1524	2
134	NLD_LOO	Loobos	52.17	5.74	25	1
135	NLD_SPE_DOU	Speulderbos	52.25	5.69	50	1
136	NZL_HUA_HUA	Huapai	-36.80	174.49	90	1
137	PRT_LEZ_ARN	LEZIRIAS	38.83	-8.82	15	1
138	PRT_MIT	MITRA II	38.54	-8.00	235	1
139	PRT_PIN	Pinheiro da Cruz	38.25	-8.76	5	2
140	RUS_CHE_LOW	Cherskii	68.74	161.50	90	1
141	RUS_CHE_Y4	CHE	68.74	161.41	6	1
142	RUS_FYO	Fyodorovskoye	56.46	32.92	260	3
143	RUS_POG_VAR	Pogorelsky Bor	56.36	92.95	243	3
144	SEN_SOU_IRR	Souilène	16.34	-15.43	10	1
145	SEN_SOU_POS	Souilène	16.34	-15.43	10	1
146	SEN_SOU_PRE	Souilène	16.34	-15.43	10	1
147	SWE_NOR_ST1_AF1	Norunda	60.09	17.48	45	2
148	SWE_NOR_ST1_AF2	Norunda	60.09	17.48	45	2
149	SWE_NOR_ST1_BEF	Norunda	60.09	17.48	45	2
150	SWE_NOR_ST2	Norunda	60.09	17.48	45	2
151	SWE_NOR_ST3	Norunda	60.09	17.48	45	2
152	SWE_NOR_ST4_AFT	Norunda	60.08	17.48	45	3
153	SWE_NOR_ST4_BEF	Norunda	60.08	17.48	45	2
154	SWE_NOR_ST5_REF	Norunda	60.08	17.48	45	3
155	SWE_SKO_MIN	Skogaryd	58.36	12.15	76	1
156	SWE_SKY_38Y	Skyttorp	60.13	17.84	50	1
157	SWE_SKY_68Y	Skyttorp	60.10	17.83	50	2
158	SWE_SVA_MIX_NON	Svartberget	64.26	19.77	267	2
159	THA_KHU	Khu-Muang	15.27	103.08	150	1
160	USA_BNZ_BLA	BNZSPRC1	64.70	-148.32	50	1

#	Dataset code	Site name	Lat.	Long.	Elev. (m)	N spp.
161	USA_CHE_ASP	ChEAS	45.94	-90.27	477	6
162	USA_CHE_MAP	ChEAS	45.95	-90.26	1565	2
163	USA_DUK_HAR	Duke Blackwood Hardwood	36.98	-79.09	163	6
164	USA_HIL_HF1_POS	Hill Demonstration Forest	36.22	-78.86	174	5
165	USA_HIL_HF1_PRE	Hill Demonstration Forest	36.22	-78.86	174	5
166	USA_HIL_HF2	Hill Demonstration Forest	36.22	-78.86	174	7
167	USA_HUY_LIN_NON	Huyck Preserve Lincoln Pond	42.53	-74.16	NA	1
168	USA_INM	INMMSF	39.32	-86.41	286	6
169	USA_MOR_SF	Morgan-Monroe State Forest	39.32	-86.41	275	4
170	USA_NWH	NWhiteRiver	34.58	-91.26	48	2
171	USA_ORN_ST1_AMB	ORNL-FACE	35.90	-84.33	227	1
172	USA_ORN_ST2_AMB	ORNL-FACE	35.90	-84.33	227	1
173	USA_ORN_ST3_ELE	ORNL-FACE	35.90	-84.33	227	1
174	USA_ORN_ST4_ELE	ORNL-FACE	35.90	-84.33	227	1
175	USA_PAR_FER	Parker Tract	35.80	-76.67	5	1
176	USA_PER_PER	Perry	30.21	-83.87	14	1
177	USA_PJS_P04_AMB	PJSEV -Rainfall Manipulation Experiment - Sevilleta NWR, USA	34.39	-106.53	1911	2
178	USA_PJS_P08_AMB	PJSEV -Rainfall Manipulation Experiment - Sevilleta NWR, USA	34.39	-106.53	1911	2
179	USA_PJS_P12_AMB	PJSEV -Rainfall Manipulation Experiment - Sevilleta NWR, USA	34.39	-106.53	1911	2
180	USA_SIL_OAK_1PR	Silas Little Experimental Forest premortality	39.92	-74.60	33	4
181	USA_SIL_OAK_2PR	Silas Little Experimental Forest premortality	39.92	-74.60	33	4
182	USA_SIL_OAK_POS	Silas Little Experimental Forest premortality	39.92	-74.60	33	5
183	USA_SMI_SCB	Smithsonian Conservation Biology Insitute	38.89	-78.15	273	3
184	USA_SMI_SER	Smithsonian Environmental Research Center	38.89	-76.56	19	5
185	USA_SWH	SWhiteRiver	34.11	-91.13	44	2
186	USA_SYL_HL1	Sylvania Wilderness	46.24	-89.35	500	3
187	USA_SYL_HL2	Sylvania Wilderness	46.24	-89.35	500	4
188	USA_TNB	TNBSF	36.47	-84.70	454	4
189	USA_TNO	TNOAK	35.97	-84.28	340	5
190	USA_TNP	TNPINE	35.96	-84.29	342	5
191	USA_TNY	TNYPOP	35.69	-83.50	850	3
192	USA_UMB_CON	UMBS	45.56	-84.71	236	5
193	USA_UMB_GIR	UMB	45.56	-84.70	239	4
194	USA_WIL_WC1	Willow Creek	45.81	-90.09	520	5
195	USA_WIL_WC2	Willow Creek	45.81	-90.09	520	4

#	Dataset code	Site name	Lat.	Long.	Elev. (m)	N spp.
196	USA_WVF	WVFEF	39.06	-79.69	844	5
197	UZB_YAN_DIS	Yangibazar	41.65	60.62	101	2
198	ZAF_FRA_FRA	Franshoek South Africa	-33.88	19.06	190	1
199	ZAF_NOO_E3_IRR	Nooitgedacht farm	-33.20	19.34	1089	1
200	ZAF_RAD	Radyn EGVV	-34.08	19.11	409	1
201	ZAF_SOU_SOU	Southfield EGVV	-34.09	19.09	389	1
202	ZAF_WEL_SOR	Wellington Western Cape	-33.48	18.96	81	1

Table S4. Number of plants and number of datasets for each species present in the SAPFLUXNET database.

Species	N plant	N data	Species	N plant	N data	Species	N plant	N data
Pinus sylvestris	290	28	*Acacia tortilis*	9	3	*Prunus serotina*	3	2
Picea abies	178	19	*Quercus spp.*	9	2	*Populus canescens*	3	1
Acer saccharum	162	9	*Kandelia obovata*	8	1	*Eucalyptus camaldulensis*	3	1
Fagus sylvatica	116	16	*Carpinus betulus*	8	2	*Qualea rosea*	3	1
Pinus taeda	107	6	*Castanopsis acuminatissima*	8	1	*Licania alba*	3	1
Populus tremuloides	104	1	*Pinus patula*	8	1	*Eucalyptus dives*	2	1
Pinus koraiensis	96	3	*Eucalyptus radiata*	7	5	*Licania octandra*	2	1
Eucalyptus nitens	89	8	*Betula pubescens subsp. czerepanovii*	7	1	*Swartzia racemosa*	2	1
Pinus strobus	75	5	*Avicennia marina*	6	1	*Manilkara bidentata*	2	1
Liquidambar styraciflua	69	10	*Quercus robur*	6	1	*Licania membranacea*	2	2
Quercus ilex	62	6	*Fraxinus excelsior*	6	1	*Eschweilera grandiflora*	2	1
Acer rubrum	62	12	*Cryptocarya laevigata*	6	1	*Pouteria viridis*	2	1
Liriodendron tulipifera	51	11	*Myrtaceae fam.*	6	1	*Ampelocera macrocarpa*	2	1
Fagus grandifolia	48	4	*Palaquium luzoniense*	6	1	*Otoba novogranatensis*	2	1
Pinus resinosa	43	1	*Platea excelsa*	6	1	*Mortoniodendron anisophyllum*	2	1
Eucalyptus globulus	35	2	*Pouteria firma*	6	1	*Meliosma idiopoda*	2	1
Larix decidua	34	8	*Agathis australis*	6	1	*Taxus baccata*	2	1
Abies pinsapo	34	5	*Ostrya virginiana*	6	3	*Sloanea sp*	2	2
Acacia mearnsii	33	2	*Picea mariana*	6	1	*Betula sp.*	2	1
Quercus pyrenaica	32	2	*Nothofagus pumilio*	5	1	*Picea glauca*	2	1
Quercus rubra	32	6	*Nothofagus cunninghamii*	5	1	*Fraxinus americana*	2	1
Quercus petraea	31	5	*Eucalyptus cypellocarpa*	5	4	*Carya cordiformis*	2	1
Pseudotsuga menziesii	29	5	*Eucalyptus rubida*	5	1	*Quercus prinus*	2	1
Pinus halepensis	27	2	*Drimys brasiliensis*	5	1	*Elaeagnus angustifolia*	2	1
Quercus velutina	24	4	*Alchornea triplinervia*	5	1	*Qualea tricolor*	2	1
Tsuga canadensis	24	2	*Santiria apiculata*	5	1	*Lecythis poiteaui*	2	1
Larix cajanderi	23	2	*Quercus michauxii*	5	1	*Quercus cerris*	2	1
Betula papyrifera	21	2	*Quercus phellos*	5	1	*Pleuranthodendron lindenii*	1	1
Quercus montana	21	3	*Pinus rigida*	5	3	*Inga sp.*	1	1
Quercus pubescens	19	2	*Tilia americana*	5	2	*Cupania macrophylla*	1	1

Species	N plant	N data	Species	N plant	N data	Species	N plant	N data
Abies balsamea	19	1	*Nothofagus antarctica*	4	1	*Genipa americana*	1	1
Quercus alba	19	7	*Eucalyptus baxteri*	4	2	*Brosimum alicastrum*	1	1
Pinus cembra	18	6	*Coprosma quadrifida*	4	2	*Pouteria sp.*	1	1
Populus euphratica	16	6	*Eschweilera coriacea*	4	2	*Macrolobium costaricense*	1	1
Olea europaea	16	5	*Arbutus unedo*	4	1	*Eschweilera sp.*	1	1
Quercus rotundifolia	16	3	*Psiadia altissima*	4	1	*Aspidosperma desmanthum*	1	1
Hevea brasiliensis	16	2	*Quercus suber*	4	1	*Trophis mexicana*	1	1
Betula alleghaniensis	16	2	*Betula pubescens*	4	2	*Betula pendula*	1	1
Pinus nigra	15	3	*Fraxinus pennsylvanica*	4	2	*Iryanthera sagotiana*	1	1
Picea sitchensis	15	1	*Pouteria anomala*	3	1	*Vantanea sp*	1	1
Pinus edulis	15	3	*Protium tenuifolium*	3	1	*Recordoxylon speciosum*	1	1
Juniperus monosperma	15	3	*Hieronyma alchorneoides*	3	1	*Larix kaempferi x Larix gmelinii*	1	1
Eucalyptus victrix	14	1	*Mollinedia schottiana*	3	1	*Cryptomeria japonica*	1	1
Eucalyptus obliqua	14	5	*Rustia formosa*	3	1	*Eugenia spp.*	1	1
Quercus lyrata	13	2	*Theobroma cacao*	3	1	*Ocotea samosa*	1	1
Celtis laevigata	13	2	*Carapa guianensis*	3	1	*Leptolaena sp.*	1	1
Quercus coccinea	13	4	*Gymnanthes riparia*	3	1	*Abrahamia ditimena*	1	1
Populus grandidentata	12	1	*Ilex aquifolium*	3	1	*Brachylaena ramiflora*	1	1
Malus domestica	11	3	*Vouacapoua americana*	3	3	*Cryptocarya sp.*	1	1
Eucalyptus tereticornis	10	1	*Oxandra asbeckii*	3	2	*Saurauia pedunculata*	1	1
Quercus faginea	10	2	*Goupia glabra*	3	3	*Turpinia insignis*	1	1
Pinus canariensis	10	1	*Vernonia arborea*	3	1	*Sassafras albidum*	1	1
Elaeis guineensis	10	1	*Platanus mexicana*	3	1	*Ulmus americana*	1	1
Acacia longifolia	10	1	*Clethra macrophylla*	3	2	*Carya glabra*	1	1
Pinus pinaster	10	1	*Larix sibirica*	3	1	*Quercus falcata*	1	1
Thuja occidentalis	10	1	*Larix gmelinii*	3	1	*Cornus florida*	1	1
Carya tomentosa	10	2	*Pinus sibirica*	3	1	*Licania rodriguesii*	1	1
Dicorynia guianensis	9	2	*Pinus virginiana*	3	1	*Sextonia rubra*	1	1

Table S5. Number of plants per genus present in the SAPFLUXNET database.

Genus	N plants	Genus	N plants	Genus	N plants
Pinus	725	*Cryptocarya*	7	*Ampelocera*	2
Quercus	326	*Avicennia*	6	*Otoba*	2
Acer	224	*Myrtaceae fam.*	6	*Mortoniodendron*	2
Picea	201	*Palaquium*	6	*Meliosma*	2
Eucalyptus	188	*Platea*	6	*Taxus*	2
Fagus	164	*Agathis*	6	*Sloanea*	2
Populus	135	*Ostrya*	6	*Elaeagnus*	2
Liquidambar	69	*Drimys*	5	*Lecythis*	2
Larix	64	*Alchornea*	5	*Pleuranthodendron*	1
Abies	53	*Santiria*	5	*Inga*	1
Acacia	52	*Tilia*	5	*Cupania*	1
Betula	51	*Qualea*	5	*Genipa*	1
Liriodendron	51	*Coprosma*	4	*Brosimum*	1
Pseudotsuga	29	*Arbutus*	4	*Macrolobium*	1
Tsuga	24	*Psiadia*	4	*Aspidosperma*	1
Olea	16	*Protium*	3	*Trophis*	1
Hevea	16	*Hieronyma*	3	*Iryanthera*	1
Juniperus	15	*Mollinedia*	3	*Vantanea*	1
Nothofagus	14	*Rustia*	3	*Recordoxylon*	1
Carya	13	*Theobroma*	3	*Cryptomeria*	1
Celtis	13	*Carapa*	3	*Eugenia*	1
Pouteria	12	*Gymnanthes*	3	*Ocotea*	1
Fraxinus	12	*Ilex*	3	*Leptolaena*	1
Malus	11	*Vouacapoua*	3	*Abrahamia*	1
Elaeis	10	*Oxandra*	3	*Brachylaena*	1
Thuja	10	*Goupia*	3	*Saurauia*	1
Dicorynia	9	*Vernonia*	3	*Turpinia*	1
Licania	8	*Platanus*	3	*Sassafras*	1
Kandelia	8	*Clethra*	3	*Ulmus*	1
Carpinus	8	*Prunus*	3	*Cornus*	1
Castanopsis	8	*Swartzia*	2	*Sextonia*	1
Eschweilera	7	*Manilkara*	2		

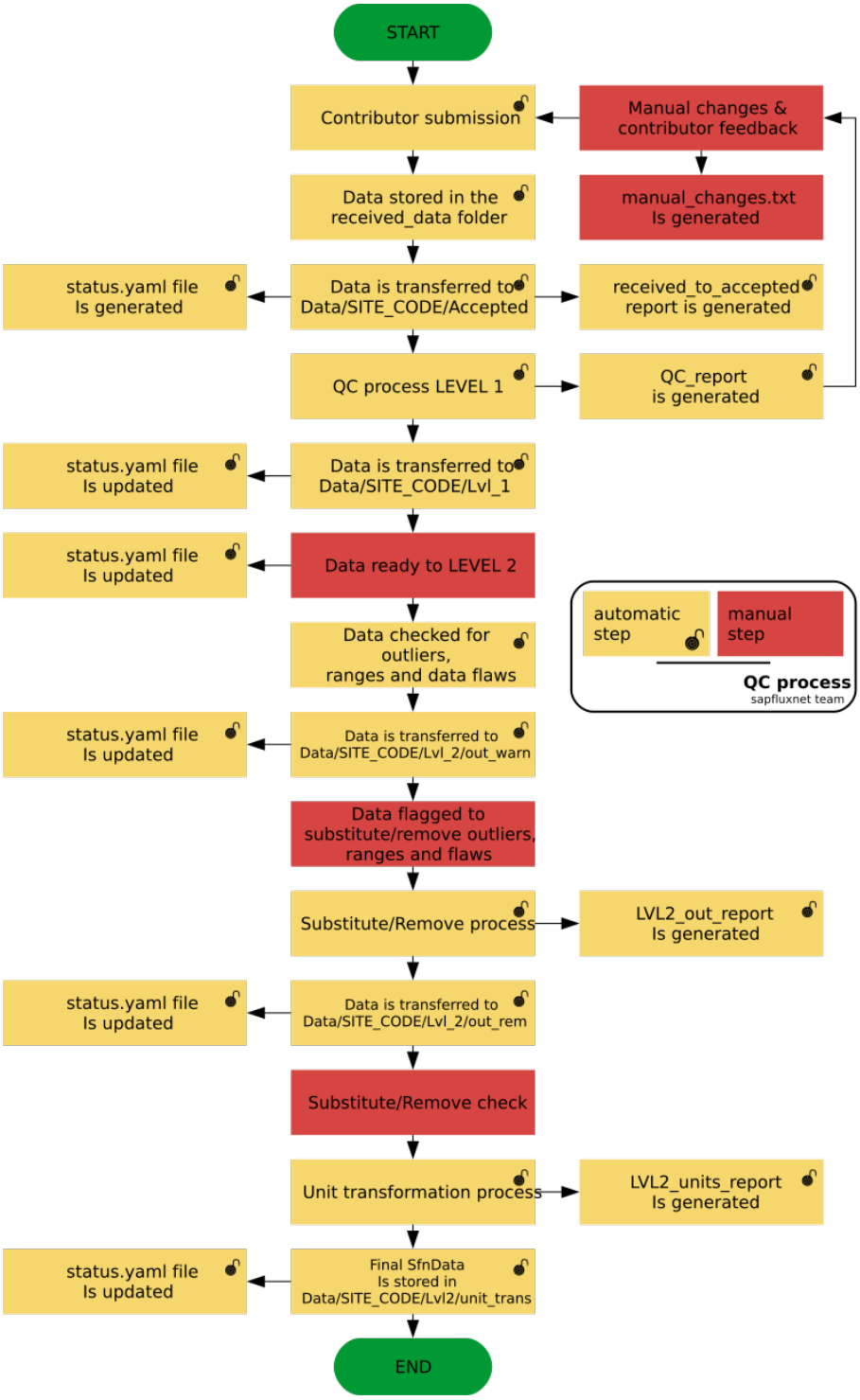

Figure S1. Overview of the data QC process, showing file management and identifying automatic (in yellow) and manual steps (in red). The column on the left shows the different updates of the status file for each dataset and the column on the right shows generated data reports and steps requiring feedback or manual changes.

(a)

(b)

```
> NLD_LOO
sfn_data object
Data from NLD_LOO site

Data kindly provided by  Jan Elbers  from  Alterra, Wageningen UR

Site related literature:  10.1016/j.agrformet.2011.07.020

Sapflow data:  70128  observations of  6  trees/plants
Species present:  Pinus sylvestris

Environmental data:  70128  observations.
Variables present:
  ta rh sw_in ppfd_in netrad ws precip swc_shallow swc_deep
vpd ext_rad

Biome:  Mediterranean

TIMESTAMP span:  2012-01-01 00:30:00 +01--2016-01-01 +01

Solar TIMESTAMP span:  2011-12-31 23:48:56 UTC--2015-12-31 23:18:56 UTC

Sapflow data flags:
MANUAL_REMOVED       OUT_WARN     NA_PRESENT
           370          29186          83613

Environmental data flags:
    RANGE_WARN MANUAL_REMOVED     NA_PRESENT       OUT_WARN     CALCULATED
             1            558           9469          51780         140256
```

Figure S2. (a) Structure of sfn_data objects, which are based on the S4 class. Boxes in the figure represent different slots where data are stored. Each object is identified by the 'si_code', stored as a slot in the object, with the format of a character vector. Slots storing time series of data and the associated data flags are of

class ‘tibble’ and have all the same number of rows (*i*), corresponding to the the number of timesteps in the dataset and labelled with two POSIXct timestamp vectors (TIMESTAMP, solar_TIMESTAMP).The slot storing sap flow data, ‘sapf_data’ contains(*j*) columns and environmental data (‘env_data’) contains *k* columns, corresponding to the number of environmental variables present. Slots with the suffix ‘md’ refer to the different metadata and all are objects of class ‘tibble’ with different dimensions. For example, the number of rows in ‘plant_md’ depends on the number of plants in the dataset (and this is depicted by the different length of the box). More information on the ‘sfn_data’ class objects can be found in the vignette ‘sfn-data-classes’ of the package sapfluxnetr. (b) Summary of a sfn_data object, showing highlights of site metadata, data dimensions, timestamp span and flags present on the data.

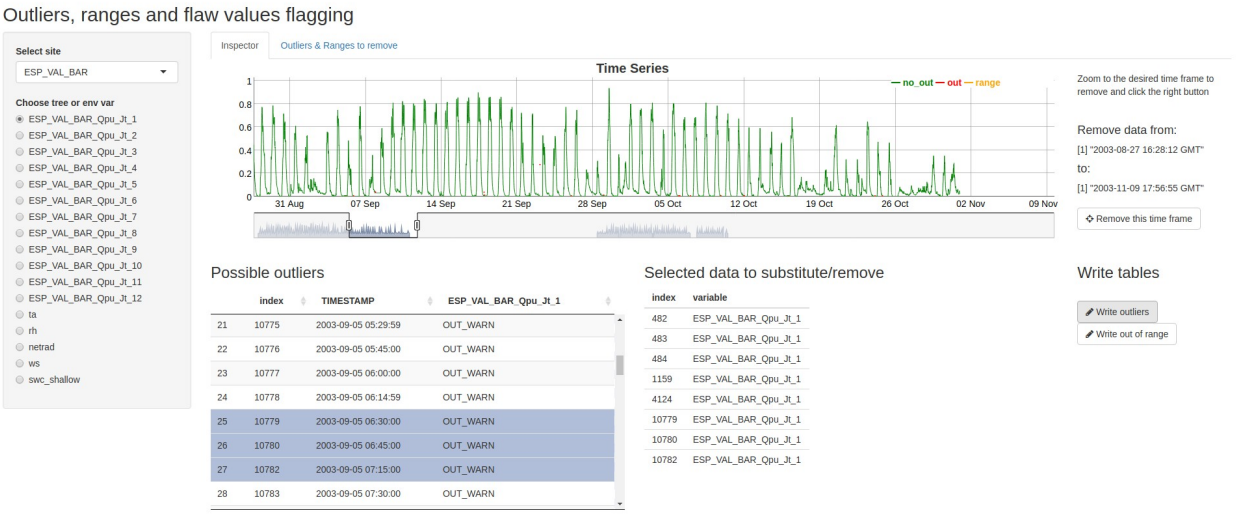

Figure S3. Example screenshot of the app used for handling outliers and out of range values in time series. The left column shows dataset and variable selection. The central part shows the time series, with out of range values in red and possible outliers in yellow. Rows to replace or remove are selected in a table and written to a text file when done.

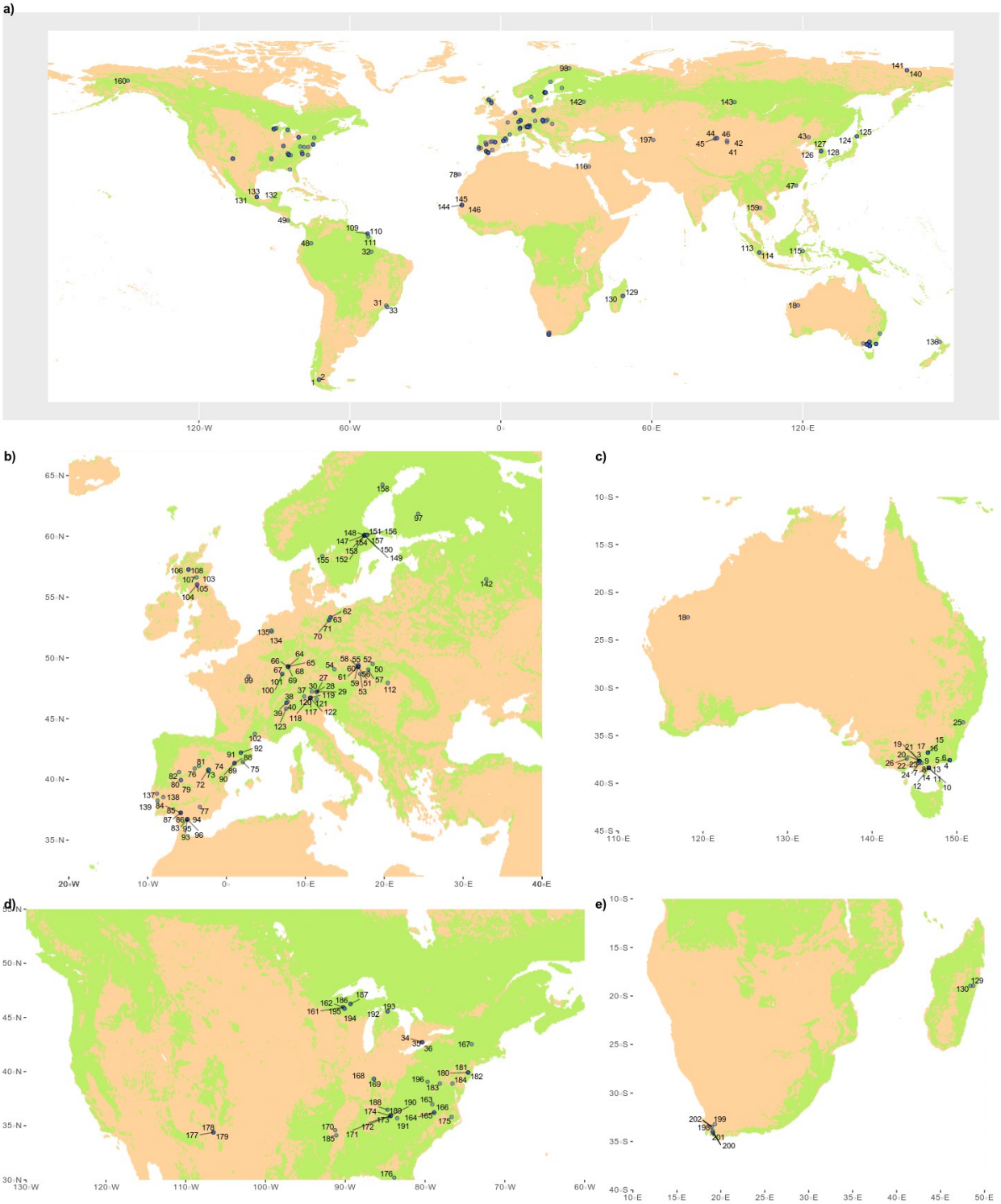

Figure S4. Detailed geographic distribution of SAPFLUXNET datasets. Datasets are labelled by dataset number in Table S8. Woodland area from Crowther et al. (2015) shown in green.