

1 *Supplement of*

2 **A temperature threshold to identify the driving climate forces of**
3 **the respiratory process in terrestrial ecosystems**

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9 **Table S1.** Basic information (including site ID, latitude, longitude, plant functional type (PFT), climate class, year of data collection, and
 10 reference) of the database used in this study.

Site ID	Latitude ¹	Longitude ²	PFT	Climate class	Period	Reference
AT-Neu	47.12	11.32	GRA	Cfb	2002-2004	(Wohlfahrt et al., 2008)
AU-Fog	12.54	131.31	WET	Aw	2006-2007	----
AU-How	12.49	131.15	WSA	Aw	2001-2006	(Eamus et al., 2001)
AU-Tum	-35.66	148.15	EBF	Cfb-Marine	2001-2006	(van Gorsel et al., 2008)
AU-Wac	-37.43	145.19	EBF	Cfb-Marine	2005-2007	(van Gorsel et al., 2008)
BE-Bra	51.31	4.52	MF	Cfb	1997-1998, 2000-2002, 2004-2006	(Gielen et al., 2010)
BE-Jal	50.56	6.07	MF	Cfb	2006	----
BE-Lon	50.55	4.74	CRO	Cfb	2004-2006	(Moureaux et al., 2006)
BE-Vie	50.31	6	MF	Cfb	1996-2006	(Aubinet et al., 2001)
BR-Sa3	3.02	-54.97	EBF	Am	2000-2003	(Aubinet et al., 2001)
BW-Ghg	21.51	21.74	SAV	BSh	2003	----
BW-Ghm	21.2	21.75	WSA	BSh	2003	----
BW-Ma1	19.92	23.56	WSA	BSh	1999-2001	(Veenendaal et al., 2004)
CA-Man	55.88	-98.48	ENF	Dfc	1994-1995, 1997-2003	(Dunn et al., 2007)
CA-Mer	45.41	-75.52	WET	Dfb	1999-2005	(Lafleur et al., 2003)
CA-NS1	55.88	-98.48	ENF	Dfc	2002-2005	(Goulden et al., 2006)

CA-NS2	55.91	-98.52	ENF	Dfc	2001-2005	(Goulden et al., 2006)
CA-NS3	55.91	-98.38	ENF	Dfc	2001-2005	(Goulden et al., 2006)
CA-NS4	55.91	-98.38	ENF	Dfc	2003-2004	(Goulden et al., 2006)
CA-NS5	55.86	-98.49	ENF	Dfc	2001-2005	(Goulden et al., 2006)
CA-NS6	55.92	-98.96	OSH	Dfc	2001-2005	(Goulden et al., 2006)
CA-NS7	56.64	-99.95	OSH	Dfc	2002-2005	(Lafleur et al., 2003)
CA-Qcu	49.27	-74.04	ENF	Dfc	2001-2006	(Giasson et al., 2006)
CA-Qfo	49.69	-74.34	ENF	Dfc	2003-2006	(Bergeron et al., 2007)
CA-SF1	54.49	-105.82	ENF	Dfc	2003-2005	(Zha et al., 2009)
CA-SF2	54.25	-105.88	ENF	Dfc	2003-2005	(Zha et al., 2009)
CH-Oe1	47.29	7.73	GRA	Cfb	2002-2006	(Ammann et al., 2007)
CH-Oe2	47.29	7.73	CRO	Cfb	2005	(Ammann et al., 2007)
CZ-BK1	49.5	18.54	ENF	Dfb	2000-2006	(Reichstein et al., 2003)
CZ-wet	49.03	14.77	WET	Cfb	2006	----
DE-Bay	50.14	11.87	ENF	Cfb	1996-1999	(Valentini et al., 2000)
DE-Geb	51.1	10.91	CRO	Cfb	2004-2006	(Anthoni et al., 2004)
DE-Gri	50.95	13.51	GRA	Cfb	2005-2006	(Gilmanov et al., 2007)
DE-Hai	51.08	10.45	DBF	Cfb	2000-2006	(Knohl et al., 2003)
DE-Kli	50.89	13.52	CRO	Cfb	2004-2006	(Chen et al., 2010)
DE-Meh	51.27	10.65	GRA	Cfb	2003-2006	(Don et al., 2009)

DE-Tha	50.96	13.57	ENF	Cfb	1996-2006	(Arain and Restrepo-Coupe, 2005)
DE-Wet	50.45	11.46	ENF	Cfb	2002-2006	(Rebmann et al., 2010)
DK-Fou	56.48	9.59	CRO	Cfb	2005	----
DK-Lva	55.68	12.08	GRA	Cfb	2005-2006	(Gilmanov et al., 2007)
DK-Ris	55.53	12.1	CRO	Cfb	2004-2005	(Chen et al., 2010)
DK-Sor	55.49	11.65	DBF	Cfb	1996-2006	(Pilegaard et al., 2003)
ES-ES1	39.35	-0.32	ENF	Csa	1999-2006	(Reichstein et al., 2005)
ES-ES2	39.28	-0.32	CRO	Csa	2004-2006	(Chen et al., 2010)
ES-LMa	39.94	-5.77	SAV	Csa	2004-2006	(Yi et al., 2010)
ES-VDA	42.15	1.45	GRA	Cfb	2004-2006	(Migliavacca et al., 2011)
FI-Hyy	61.85	24.29	ENF	Dfc	1996-2006	(Suni et al., 2003)
FI-Kaa	69.14	27.3	WET	Dfc	2000-2006	----
FI-Sod	67.36	26.64	ENF	Dfc	2000-2006	(Suni et al., 2003)
FR-Fon	48.48	2.78	DBF	Cfb	2005-2006	(Migliavacca et al., 2011)
FR-Gri	48.84	1.95	CRO	Cfb	2005-2006	(Migliavacca et al., 2011)
FR-Hes	48.67	7.06	DBF	Cfb	1997-2006	(Granier et al., 2000)
FR-LBr	44.72	-0.77	ENF	Cfb	1996-1998, 2000, 2003-2005	(Berbigier et al., 2001)
FR-Lq1	45.64	2.74	GRA	Cfb	2004-2006	(Gilmanov et al., 2007)
FR-Lq2	45.64	2.74	GRA	Cfb	2004-2006	(Gilmanov et al., 2007)
FR-Pue	43.74	3.6	EBF	Csa	2000-2006	(Rebmann et al., 2004)

HU-Bug	46.69	19.6	GRA	Cfb	2002-2006	----
HU-Mat	47.85	19.73	GRA	Cfb	2004-2006	(Pintér et al., 2008)
ID-Pag	2.35	114.04	EBF	Af	2002-2003	----
IE-Ca1	52.86	-6.92	CRO	Cfb	2004-2006	(Gilmanov et al., 2007)
IE-Dri	51.99	-8.75	GRA	Cfb	2003-2005	(Jaksic et al., 2006)
IL-Yat	31.34	35.05	ENF	BSh	2001-2006	----
IS-Gun	63.83	-20.22	DBF	Cfc	1996-1998	----
IT-Amp	41.9	13.61	GRA	Cfa	2002-2006	(Gilmanov et al., 2007)
IT-BCi	40.52	14.96	CRO	Csa	2004-2006	(Migliavacca et al., 2011)
IT-Cas	45.06	8.67	CRO	Cfa	2006	----
IT-Col	41.85	13.59	DBF	Cfa	1996-2005	(van Dijk & Dolman, 2004)
IT-Cpz	41.71	12.38	EBF	Csa	1997, 2000-2006	(Garbulsky et al., 2008)
IT-Lav	45.96	11.28	ENF	Cfb	2000-2002, 2004, 2006	(Marcolla et al., 2003)
IT-Lec	43.3	11.27	EBF	Cfa	2005-2006	(Groenendijk et al., 2011)
IT-LMa	45.58	7.15	GRA	Cfb	2003-2006	----
IT-Mal	46.12	11.7	GRA	Cfb	2003-2006	(Gilmanov et al., 2007)
IT-MBo	46.02	11.05	GRA	Cfb	2003-2006	(Migliavacca et al., 2009)
IT-Non	44.69	11.09	DBF	Cfa	2001-2003, 2006	(Reichstein et al., 2005)
IT-Pia	42.58	10.08	OSH	Csa	2002-2005	(Reichstein et al., 2005)
IT-PT1	45.2	9.06	DBF	Cfa	2002-2004	(Migliavacca et al., 2009)

IT-Ren	46.59	11.43	ENF	Dfb	1999-2006	(Montagnani et al., 2009)
IT-Ro1	42.41	11.93	DBF	Csa	2000-2006	(Rey et al., 2002)
IT-Ro2	42.39	11.92	DBF	Csa	2002-2006	(Tedeschi et al., 2006)
IT-SRo	43.73	10.28	ENF	Csa	1999-2006	(Chiesi et al., 2005)
NL-Ca1	51.97	4.93	GRA	Cfb	2003-2006	(Gilmanov et al., 2007)
NL-Haa	52	4.81	GRA	Cfb	2003-2004	----
NL-Hor	52.03	5.07	GRA	Cfb	2004-2006	(Jacobs et al., 2007)
NL-Lan	51.95	4.9	CRO	Cfb	2005-2006	----
NL-Loo	52.17	5.74	ENF	Cfb	1996-2006	(Dolman et al., 2002)
NL-Lut	53.4	6.36	CRO	Cfb	2006	----
NL-Mol	51.65	4.64	CRO	Cfb	2005-2006	----
PL-wet	52.76	16.31	WET	Cfb	2004-2005	(Chojnicki et al., 2007)
PT-Esp	38.64	-8.6	EBF	Csa	2002-2004, 2006	----
PT-Mi1	38.54	-8	EBF	Csa	2003-2005	(Reichstein et al., 2003)
PT-Mi2	38.48	-8.02	GRA	Csa	2004-2006	(Yi et al., 2010)
RU-Cok	70.62	147.88	OSH	Dfc	2003-2005	----
RU-Fyo	56.46	32.92	ENF	Dfb	1998-2004	(Kurbatova et al., 2008)
RU-Ha1	54.73	90	GRA	Dfc	2002-2004	(Chevallier et al., 2006)
RU-Ha2	54.77	89.96	GRA	Dfc	2002-2003	(Belelli Marchesini et al., 2007)
RU-Ha3	54.7	89.08	GRA	Dfc	2004	(Belelli Marchesini et al., 2007)

RU-Zot	60.8	89.35	ENF	Dfc	2002-2004	----
SE-Deg	64.18	19.55	WET	Dfc	2001-2005	(Chevallier et al., 2006)
SE-Faj	56.27	13.55	WET	Cfb	2005-2006	(Lund et al., 2007)
SE-Fla	64.11	19.46	ENF	Dfc	1996-1998, 2001-2002	(Lindroth et al., 2008)
SE-Nor	60.09	17.48	ENF	Dfb	1996-1999, 2003, 2005	(Lagergren et al., 2008)
SE-Sk1	60.13	17.92	ENF	Dfb	2005	----
SE-Sk2	60.13	17.84	ENF	Dfb	2004-2005	----
SK-Tat	49.12	20.16	ENF	Dfb	2005	----
UK-AMo	55.79	-3.24	WET	Cfb	2005	----
UK-EBu	55.87	-3.21	GRA	Cfb	2004, 2006	(Yi et al., 2010)
UK-ESa	55.91	-2.86	CRO	Cfb	2003-2005	(Groenendijk et al., 2011)
UK-Gri	56.61	-3.8	ENF	Cfc	1997-1998, 2000-2001, 2005-2006	(Rebmann et al., 2004)
UK-Ham	51.15	-0.86	DBF	Cfb	2004-2005	----
UK-Her	51.78	-0.48	CRO	Cfb	2006	----
UK-PL3	51.45	-1.27	DBF	Cfb	2005-2006	----
UK-Tad	51.21	-2.83	GRA	Cfb	2001	----
US-ARM	36.61	-97.49	CRO	Cfa	2003-2006	(Fischer et al., 2007)
US-Aud	31.59	-110.51	GRA	BSk	2002-2006	(Yi et al., 2010)
US-Bar	44.06	-71.29	DBF	Dfb	2004-2005	(Jenkins et al., 2007)
US-Bkg	44.35	-96.84	GRA	Dfa	2004-2006	(Gilmanov et al., 2005)

US-Blo	38.9	-120.63	ENF	Csa	1997-2006	(Goldstein et al., 2000)
US-Bo1	40.01	-88.29	CRO	Dfa	1996-2007	(Migliavacca et al., 2011)
US-FPe	48.31	-105.1	GRA	BSk	2000-2006	(Yi et al., 2010)
US-Goo	34.25	-89.87	GRA	Cfa	2002-2006	(Yi et al., 2010)
US-Ha1	42.54	-72.17	DBF	Dfb	1991-1998, 2004-2005	(Urbanski et al., 2007)
US-Ho1	45.2	-68.74	ENF	Dfb	1996-2004	(Hollinger et al., 2004)
US-Ho2	45.21	-68.75	ENF	Dfb	1999-2004	(Oren et al., 2006)
US-Los	46.08	-89.98	CSH	Dfb	2001-2005	(Sulman et al., 2009)
US-Me4	44.5	-121.62	ENF	Csb	1996-2000	(Sun et al., 2004)
US-MMS	39.32	-86.41	DBF	Cfa	1999-2005	(Schmid et al., 2000)
US-MOz	38.74	-92.2	DBF	Cfa	2004-2006	(Gu et al., 2006)
US-Ne1	41.17	-96.48	CRO	Dfa	2001-2005	(Richardson et al., 2006)
US-Ne2	41.16	-96.47	CRO	Dfa	2001-2005	(Richardson et al., 2006)
US-Ne3	41.18	-96.44	CRO	Dfa	2001-2005	(Richardson et al., 2006)
US-Oho	41.55	-83.84	DBF	Dfa	2004-2005	(DeForest et al., 2006)
US-PFa	45.95	-90.27	MF	Dfb	1996-2000, 2003	(Davis et al., 2003)
US-SP1	29.74	-82.22	ENF	Cfa	2000-2001, 2005	(Migliavacca et al., 2011)
US-SP2	29.76	-82.24	ENF	Cfa	1998-2004	(Migliavacca et al., 2011)
US-SP3	29.75	-82.16	ENF	Cfa	1999-2002	(Migliavacca et al., 2011)
US-SP4	29.8	-82.2	ENF	Cfa	1998	(Migliavacca et al., 2011)

US-Syv	46.24	-89.35	MF	Dfb	2002-2006	(Desai et al., 2005)
US-Ton	38.43	-120.97	WSA	Csa	2001-2006	(Ma et al., 2007)
US-UMB	45.56	-84.71	DBF	Dfb	1999-2003	(Gough et al., 2008)
US-Var	38.41	-120.95	GRA	Csa	2001-2006	(Xu & Baldocchi, 2004)
US-WBW	35.96	-84.29	DBF	Cfa	1995-1999	(Ma et al., 2007)
US-WCr	45.81	-90.08	DBF	Dfb	1999-2006	(Cook et al., 2004)
US-Wi0	46.62	-91.08	ENF	Dfb	2002	----
US-Wi1	46.73	-91.23	DBF	Dfb	2003	----
US-Wi2	46.69	-91.15	ENF	Dfb	2003	----
US-Wi4	46.74	-91.17	ENF	Dfb	2002-2005	----
US-Wi5	46.65	-91.09	ENF	Dfb	2004	----
US-Wi6	46.62	-91.3	OSH	Dfb	2002	----
US-Wi7	46.65	-91.07	OSH	Dfb	2005	----
US-Wi8	46.72	-91.25	DBF	Dfb	2002	----
US-Wi9	46.62	-91.08	ENF	Dfb	2004-2005	----
ZA-Kru	25.02	31.5	SAV	Cwa	2001-2003	(Williams et al., 2009)

11 ¹ Positive value indicates north latitude.

12 ² Negative value indicates west longitude.

13 Different plant functional types: CRO, croplands; CSH, closed shrublands; GRA, grasslands; MF, mixed forests; WET, permanent wetlands;

14 DBF, deciduous broadleaf forests; ENF, evergreen needleleaf forests; OSH, open shrublands; EBF, evergreen broadleaf forests; SAV, savannas;

15 WSA, woody savannas.

16 Different climate classes: Aw, equatorial & winter dry; Dfb, snow & fully humid & warm summer; Dfc, snow & fully humid & cool summer;

17 Cfb, warm temperate & fully humid & warm summer; Cfc, warm temperate & fully humid & cool summer; Dfa, snow & fully humid & hot

18 summer; Cfa, warm temperate & fully humid & hot summer; Csa, warm temperate & summer dry & hot summer; BSk, arid & steppe & cold

19 arid; BSh, arid & steppe & hot arid.

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