

Table S2. Model parameters a , b and c , and Akaike Weights of the nine temperature dependence models of the seven sites:

a) Kiskunság (HU); b) Garraf (ES); c) Capo Caccia (IT); d) Mols (DK-M); e) Brandbjerg (DK-B); f) Oldebroek (NL); g) Cloacaenog (UK).

Statistically significant models are highlighted in thick frames. Soil moisture threshold points are at $p < 0.05$; threshold points at $p < 0.01$ are in bold.

T is soil temperature in Kelvin, AW is the Akaike Weight, considering all the nine models (AW in brackets represents the three temperature models only, without soil moisture).

a) HU 2010.04 - 2012.11		Exponential function [Resp = exp(a+b*T)]	Lloyd-Taylor function [Resp = exp(a+b*(T-c) ⁻¹)]	Gaussian function [Resp = exp(a+b*T+c*T ²)]
no soil moisture effect	a	-8.234	0.383	-291.3
	b	0.027	-17.740	1.949
	c	---	267.136	-0.003261
	AW	<0.01 (<0.01)	<0.01 (<0.01)	<0.01 (1.0000)
additive soil temperature and moisture effects		Soil moisture intervals (vol%) ≤ 2.5 > 2.5	Soil moisture intervals (vol%) ≤ 2.5 2.5 – 5.6 > 5.6	Soil moisture intervals (vol%) ≤ 2.5 2.5 – 5.6 > 5.6
	a	-11.971	-11.229	0.168 0.850 1.111
	b	0.037255	-32.840	263.473
	c	---	<0.01	-0.002838
	AW	<0.01	<0.01	<0.01
interactive soil temperature and moisture effects		Soil moisture intervals (vol%) ≤ 2.5 2.5 – 2.8 2.8 – 3.8 3.8 – 5.6 > 5.6	Soil moisture intervals (vol%) ≤ 2.6 > 2.6	Soil moisture intervals (vol%) ≤ 2.5 2.5 – 3.8 3.8 – 4.3 4.3 – 5.6 > 5.6
	a	-0.693 -0.267 -9.147 -19.605 -22.960	0.000 1.122	3.303 -218.4 -1200.0 -168.7 -314.5
	b	0.000 0.000 0.030 0.066 0.078	-24.755 -43.478	-0.013 1.454 8.003 1.095 2.091
	c	---	260.420	0.000 -0.002419 -0.01333 -0.001776 -0.003471
	AW	<0.01	<0.01	0.9998

b) ES 2002.04 - 2003.12		Exponential function [Resp = exp(a+b*T)]	Lloyd-Taylor function [Resp = exp(a+b*(T-c) ⁻¹)]	Gaussian function [Resp = exp(a+b*T+c*T ²)]
no soil moisture effect	a	-9.456	0.782	-197.2
	b	0.032	-13.715	1.308
	c	---	270.418	-0.002164
	AW	<0.01 (<0.01)	<0.01 (<0.01)	<0.01 (0.9969)
additive soil temperature and moisture effects		Soil moisture intervals (vol%) ≤ 6.7 6.7 – 9.3 9.3 – 17.6 17.6 – 20.7 > 20.7	Soil moisture intervals (vol%) ≤ 6.7 > 6.7	Soil moisture intervals (vol%) ≤ 6.7 > 6.7
	a	-14.434 -13.725 -13.380 -13.160 -13.502	0.652	1.496
	b	0.046	-37.623	0.982
	c	---	262.716	-0.001591
	AW	<0.01	<0.01	<0.01
interactive soil temperature and moisture effects		Soil moisture intervals (vol%) ≤ 6.7 6.7 – 9.3 9.3 – 17.6 > 17.6	Soil moisture intervals (vol%) ≤ 6.7 6.7 – 9.2 9.2 – 17.6 17.6 – 22.2 > 22.2	Soil moisture intervals (vol%) ≤ 6.7 6.7 – 9.3 > 9.3
	a	-9.093 -8.820 -10.556 -22.080	1.119 1.472 1.489 2.065 1.119	-442.1 -345.2 -182.6
	b	0.029 0.030 0.037 0.077	-53.657 -43.417 -33.295 -44.846 -25.807	2.841 2.256 1.195
	c	---	265.459	-0.004564 -0.003681 -0.001946
	AW	<0.01	0.3809	0.6190

c) IT 2010.02 - 2011.11		Exponential function [Resp = exp(a+b*T)]	Lloyd-Taylor function [Resp = exp(a+b*(T-c) ⁻¹)]	Gaussian function [Resp = exp(a+b*T+c*T ²)]
no soil moisture effect	a	-4.549431	1.518	-28.896335
	b	0.018779	-19.558	0.186279
	c	---	257.609	-0.000288
	AW	<0.01 (0.5679)	<0.01 (0.2231)	<0.01 (0.2090)
additive soil temperature and moisture effects		Soil moisture intervals (vol%) ≤ 10.8 10.8 - 17.7 > 17.7	Soil moisture intervals (vol%) ≤ 10.8 10.8 - 17.7 > 17.7	Soil moisture intervals (vol%) ≤ 10.8 10.8 - 17.7 > 17.7
	a	-9.098295 -8.649838 -8.750173	0.76388 1.11953 0.77847	-9.0982935 -8.649838 -8.750173
	b	0.033481	-0.03499	0.033481
	c	---	299.75419	0.000
	AW	0.3437	<0.01	0.1182
interactive soil temperature and moisture effects		Soil moisture intervals (vol%) ≤ 10.8 > 10.8	Soil moisture intervals (vol%) ≤ 10.8 > 10.8	Soil moisture intervals (vol%) ≤ 10.8 > 10.8
	a	-14.43981 -9.39497	3.956 3.130	-14.43981 -154.8
	b	0.05157 0.03590	-203.978 -124.430	0.05157 1.040
	c	---	230.661	0.000 -0.001733
	AW	0.3157	0.1206	0.1018

d) DK-M 2011.05 - 2012.09		Exponential function [Resp = exp(a+b*T)]	Lloyd-Taylor function [Resp = exp(a+b*(T-c) ⁻¹)]	Gaussian function [Resp = exp(a+b*T+c*T ²)]		
no soil moisture effect	a	-25.318	3.595	-346.6		
	b	0.092	-72.230	2.349		
	c	---	255.875	-0.003962		
	AW	<0.01 (0.0191)	0.0406 (0.3115)	0.0873 (0.6694)		
additive soil temperature and moisture effects	a	-25.318	3.595	-346.6		
	b	0.092	-72.230	2.349		
	c	---	255.875	-0.003962		
	AW	<0.01	0.0406	0.0873		
interactive soil temperature and moisture effects	Soil moisture intervals (vol%)		Soil moisture intervals (vol%)		Soil moisture intervals (vol%)	
	≤ 9.6		> 9.6			
	a	-17.582	-30.477	3.595	-346.6	
	b	0.065	0.111	-72.230	2.349	
	c	---	---	255.875	-0.003962	
	AW	0.6114		0.0406	0.0873	

e) DK-B 2011.03 - 2012.12		Exponential function [Resp = exp(a+b*T)]	Lloyd-Taylor function [Resp = exp(a+b*(T-c) ⁻¹)]	Gaussian function [Resp = exp(a+b*T+c*T ²)]				
no soil moisture effect	a	-40.320	8.439	-221.0				
	b	0.143	-495.869	1.424				
	c	---	222.804	-0.002271				
	AW	<0.01 (0.0346)	<0.01 (0.5581)	<0.01 (0.4073)				
additive soil temperature and moisture effects	Soil moisture intervals (vol%)		Soil moisture intervals (vol%)		Soil moisture intervals (vol%)			
	≤ 8.8		8.8 - 9.9		> 9.9			
	a	-41.017	-41.442	-40.964	8.050	8.189	-218.7	-218.4
	b	0.145		-446.459		1.404		
	c	---		226.611		-0.002230		
	AW	0.4301		0.3701		0.1885		
interactive soil temperature and moisture effects	a	-40.320	8.439	-221.0				
	b	0.143	-495.869	1.424				
	c	---	222.804	-0.002271				
	AW	<0.01	<0.01	<0.01				

f) NL 2010.07 - 2012.06		Exponential function [Resp = exp(a+b*T)]	Lloyd-Taylor function [Resp = exp(a+b*(T-c) ⁻¹)]	Gaussian function [Resp = exp(a+b*T+c*T ²)]									
no soil moisture effect	a	-32.914	32.520	-32.914									
	b	0.115	-9272.29	0.115									
	c	---	0.00	0.000									
	AW	<0.01 (0.6156)	<0.01 (0.1641)	<0.01 (0.2203)									
additive soil temperature and moisture effects	a	-32.914	32.52	-32.914									
	b	0.115	-9272.29	0.115									
	c	---	0.00	0.000									
	AW	<0.01	<0.01	<0.01									
interactive soil temperature and moisture effects	Soil moisture intervals (vol%)		Soil moisture intervals (vol%)		Soil moisture intervals (vol%)								
	≤ 16.8		16.8 - 23.7		23.7 - 28.2		> 28.2						
	a	-31.415	-30.487	-25.647	-33.774	30.930	30.680	24.570	33.580	-34.848	-722.900	-33.147	
	b	0.110	0.108	0.089	0.119	-8864.030	-8691.730	-7069.750	-9560.940	0.122	4.991	0.116	
	c	---		---		0.000		0.000		0.000		-0.008611	0.000
	AW	0.7747		0.2253		<0.01							

g) UK 2010.01 - 2012.12		Exponential function [Resp = exp(a+b*T)]	Lloyd-Taylor function [Resp = exp(a+b*(T-c) ⁻¹)]	Gaussian function [Resp = exp(a+b*T+c*T ²)]									
no soil moisture effect	a	-39.358	39.100	-39.358									
	b	0.140	-11004.600	0.140									
	c	---	0.000	0.000									
	AW	<0.01 (0.6266)	<0.01 (0.1458)	<0.01 (0.2276)									
additive soil temperature and moisture effects	Soil moisture intervals (vol%)		Soil moisture intervals (vol%)		Soil moisture intervals (vol%)								
	≤ 38.2		> 38.2		≤ 38.2			> 38.2					
	a	-37.547	-37.736	37.55	37.36	-37.547	-37.736						
	b	0.134		-10531.810		0.134							
	c	---		0.000		0.000							
	AW	<0.01		<0.01		<0.01							
interactive soil temperature and moisture effects	Soil moisture intervals (vol%)		Soil moisture intervals (vol%)		Soil moisture intervals (vol%)								
	≤ 33.3		33.3 - 38.2		38.2 - 57.9		> 57.9						
	a	-75.430	-33.159	-37.085	-26.846	26.341	11.389	12.415	8.913	-871.600	-550.600	-34.976	
	b	0.268	0.118	0.131	0.095	-2558.206	-1088.599	-1208.167	-858.340	5.905	3.807	0.124	
	c	---		---		184.731		---		-0.009977		-0.006572	0.000
	AW	0.7087		0.2799		0.0114							