Table S1. Scaling factors used for the stochastically generated weather in the Century model, for the model initialization (before 800 AD) and for the spin-up period (800–1905).

Scaling factors	Model initialization (before 800 AD)	Period 800–1905
ΔT_{winter} [a]	0.10	-0.20
ΔT_{summer} [b]	-0.10	-0.30
ΔT_{autumn_spring} [c]	0.00	-0.25
$P_{SF,winter}$ [d]	1.003	0.993
$P_{SF,summer}$ [e]	0.997	0.990
$P_{SF,autumn\_spring}$ [f]	1.000	0.991

[a] ΔT_{winter}: winter temperature difference (December–February) compared to the year 1950 (Van Engelen et al., 2001).
[b] ΔT_{summer}: summer temperature difference (June–August) compared to the year 1950 (Van Engelen et al., 2001).
[c] ΔT_{autumn_spring}: autumn (September–November) and spring (March–May) temperature difference, calculated as the average of the above winter and summer temperature differences.
[d] $P_{SF,winter}$: Scaling factor for winter precipitation (December–February), calculated using the relationship $P_{SF,winter} = 1.109^{\Delta Twinter/3}$ (Brandsma and Buishand, 1996).
[e] $P_{SF,summer}$: Scaling factor for summer precipitation (June–August), calculated using the relationship $P_{SF,summer} = 1.109^{\Delta Tsummer/3}$ (Brandsma and Buishand, 1996).
[f] $P_{SF,\ autumn\_spring}$: Scaling factor for autumn (September–November) and spring (March–May) precipitation, calculated as the average of the above scaling factors for winter and summer precipitation.

Table S2. Changes in carbon inputs and decomposition factors for the grassland systems on sandy and loamy soil for the period 2013–2100, under the various climate change scenarios.

Scenarios	Soil type	Cinput,$_{1992\text{-}2012}$, %	Cinput,$_{2080\text{-}2100}$, %	ΔCinput, %	defac,$_{1992\text{-}2012}$	defac,$_{2080\text{-}2100}$	Δ(defac), %
W+ cc T, P[a]	sandy	0.0911	0.0915	0.5	0.38	0.41	7.9
	loamy	0.1071	0.1116	4.2	0.40	0.49	22.4
W+ cc T[b]	sandy	0.0911	0.0941	3.4	0.38	0.45	20.7
	loamy	0.1071	0.1122	4.8	0.40	0.51	28.9
W+ cc P[c]	sandy	0.0911	0.0890	-2.2	0.38	0.34	-10.2
	loamy	0.1071	0.1070	0.0	0.40	0.40	-0.2
No cc[d]	sandy	0.0911	0.0909	-0.2	0.38	0.37	-0.8
	loamy	0.1071	0.1073	0.2	0.40	0.41	2.4
G+ cc T, P[e]	sandy	0.0911	0.0926	1.7	0.38	0.39	4.0
	loamy	0.1071	0.1108	3.5	0.40	0.44	11.4

[a] W+ climate change scenario, considering changes in both temperature (T) and precipitation (P).
[b] W+ climate change scenario, considering changes only in temperature (T).
[c] W+ climate change scenario, considering changes only in precipitation (P).
[d] No-climate-change scenario.
[e] G+ climate change scenario, considering changes in both temperature (T) and precipitation (P).

Table S3. Changes in carbon inputs and decomposition factors for the arable land systems on sandy and loamy soil for the period 2013–2100, under the various climate change scenarios.

Scenarios	Soil type	$Cinput_{,1992\text{-}2012}$, %	$Cinput_{,2080\text{-}2100}$, %	ΔCinput, %	$defac_{,1992\text{-}2012}$	$defac_{,2080\text{-}2100}$	Δ(defac), %
W+ cc T, P[a]	sandy	0.0628	0.0637	1.4	0.43	0.45	4.6
	loamy	0.0722	0.0808	11.9	0.46	0.54	18.4
W+ cc T[b]	sandy	0.0628	0.0668	6.5	0.43	0.51	17.9
	loamy	0.0722	0.0802	11.1	0.46	0.57	25.5
W+ cc P[c]	sandy	0.0628	0.0615	-2.0	0.43	0.38	-11.9
	loamy	0.0722	0.0736	2.0	0.46	0.45	-1.6
No cc[d]	sandy	0.0628	0.0630	0.4	0.43	0.42	-2.0
	loamy	0.0722	0.0729	1.1	0.46	0.46	0.7
G+ cc T, P[e]	sandy	0.0628	0.0648	3.2	0.43	0.44	2.2
	loamy	0.0722	0.0769	6.6	0.46	0.50	9.1

[a] W+ climate change scenario, considering changes in both temperature (T) and precipitation (P).
[b] W+ climate change scenario, considering changes only in temperature (T).
[c] W+ climate change scenario, considering changes only in precipitation (P).
[d] No-climate-change scenario.
[e] G+ climate change scenario, considering changes in both temperature (T) and precipitation (P).

Table S4. Changes in carbon inputs and decomposition factors for the forest systems on sandy and loamy soil for the period 2013–2100, under the various climate change scenarios.

Scenarios	Soil type	$Cinput_{,1992\text{-}2012}$, %	$Cinput_{,2080\text{-}2100}$, %	ΔCinput, %	$defac_{,1992\text{-}2012}$	$defac_{,2080\text{-}2100}$	Δ(defac), %
W+ cc T, P[a]	sandy	0.0110	0.0125	13.0	0.37	0.39	6.0
	loamy	0.0092	0.0107	17.2	0.47	0.55	16.8
W+ cc T[b]	sandy	0.0110	0.0138	24.8	0.37	0.44	19.4
	loamy	0.0092	0.0115	25.7	0.47	0.57	21.8
W+ cc P[c]	sandy	0.0110	0.0106	-3.6	0.37	0.33	-11.3
	loamy	0.0092	0.0091	-0.5	0.47	0.47	0.8
No cc[d]	sandy	0.0110	0.0117	5.7	0.37	0.37	-0.9
	loamy	0.0092	0.0096	4.4	0.47	0.47	1.5
G+ cc T, P[e]	sandy	0.0110	0.0120	9.2	0.37	0.38	3.0
	loamy	0.0092	0.0100	8.8	0.47	0.51	9.0

[a] W+ climate change scenario, considering changes in both temperature (T) and precipitation (P).
[b] W+ climate change scenario, considering changes only in temperature (T).
[c] W+ climate change scenario, considering changes only in precipitation (P).
[d] No-climate-change scenario.
[e] G+ climate change scenario, considering changes in both temperature (T) and precipitation (P).