Table S3 Scenrio settings in the model validation year of 2008.

Group	Factor	Group	Scenario	Description
Baseline	−	−	Base	Historical 3h T_{air} and Pre; Conventional tillage and fertilization
Single factor change	T_{air} [a]	Lower warming scenario	T_{air}+0.2℃	3h T_{air} of Base was increased by 0.2 °C
			T_{air}+0.4℃	3h T_{air} of Base was increased by 0.4 °C
			T_{air}+0.6℃	3h T_{air} of Base was increased by 0.6 °C
			T_{air}+0.8℃	3h T_{air} of Base was increased by 0.8 °C
			T_{air}+1.0℃	3h T_{air} of Base was increased by 1.0 °C
			T_{air}+1.2℃	3h T_{air} of Base was increased by 1.2 °C
			T_{air}+1.4℃	3h T_{air} of Base was increased by 1.4 °C
			T_{air}+1.6℃	3h T_{air} of Base was increased by 1.6 °C
			T_{air}+1.8℃	3h T_{air} of Base was increased by 1.8 °C
			T_{air}+2.0℃	3h T_{air} of Base was increased by 2.0 °C
		Higher warming scenario	T_{air}+2.2℃	3h T_{air} of Base was increased by 2.2 °C
			T_{air}+2.4℃	3h T_{air} of Base was increased by 2.4 °C
			T_{air}+2.6℃	3h T_{air} of Base was increased by 2.6 °C
			T_{air}+2.8℃	3h T_{air} of Base was increased by 2.8 °C
			T_{air}+3.0℃	3h T_{air} of Base was increased by 3.0 °C
			T_{air}+3.2℃	3h T_{air} of Base was increased by 3.2 °C
			T_{air}+3.4℃	3h T_{air} of Base was increased by 3.4 °C
			T_{air}+3.6℃	3h T_{air} of Base was increased by 3.6 °C
			T_{air}+3.8℃	3h T_{air} of Base was increased by 3.8 °C
			T_{air}+4.0℃	3h T_{air} of Base was increased by 4.0 °C
		Lower cooling scenario	T_{air}−0.2℃	3h T_{air} of Base was decreased by 0.2 °C
			T_{air}−0.4℃	3h T_{air} of Base was decreased by 0.4 °C
			T_{air}−0.6℃	3h T_{air} of Base was decreased by 0.6 °C
			T_{air}−0.8℃	3h T_{air} of Base was decreased by 0.8 °C
			T_{air}−1.0℃	3h T_{air} of Base was decreased by 1.0 °C
			T_{air}−1.2℃	3h T_{air} of Base was decreased by 1.2 °C
			T_{air}−1.4℃	3h T_{air} of Base was decreased by 1.4 °C
			T_{air}−1.6℃	3h T_{air} of Base was decreased by 1.6 °C
			T_{air}−1.8℃	3h T_{air} of Base was decreased by 1.8 °C
			T_{air}−2.0℃	3h T_{air} of Base was decreased by 2.0 °C
		Higher cooling scenario	T_{air}−2.2℃	3h T_{air} of Base was decreased by 2.2 °C
			T_{air}−2.4℃	3h T_{air} of Base was decreased by 2.4 °C
			T_{air}−2.6℃	3h T_{air} of Base was decreased by 2.6 °C
			T_{air}−2.8℃	3h T_{air} of Base was decreased by 2.8 °C
			T_{air}−3.0℃	3h T_{air} of Base was decreased by 3.0 °C
			T_{air}−3.2℃	3h T_{air} of Base was decreased by 3.2 °C
			T_{air}−3.4℃	3h T_{air} of Base was decreased by 3.4 °C
			T_{air}−3.6℃	3h T_{air} of Base was decreased by 3.6 °C
			T_{air}−3.8℃	3h T_{air} of Base was decreased by 3.8 °C
			T_{air}−4.0℃	3h T_{air} of Base was decreased by 4.0 °C

	Pre [a]	Lower rain-enhanced scenario	Pre+2%	3h Pre of Base was increased by 2%
			Pre+4%	3h Pre of Base was increased by 4%
			Pre+6%	3h Pre of Base was increased by 6%
			Pre+8%	3h Pre of Base was increased by 8%
			Pre+10%	3h Pre of Base was increased by 10%
			Pre+12%	3h Pre of Base was increased by 12%
			Pre+14%	3h Pre of Base was increased by 14%
			Pre+16%	3h Pre of Base was increased by 16%
			Pre+18%	3h Pre of Base was increased by 18%
			Pre+20%	3h Pre of Base was increased by 20%
		Higher rain-enhanced scenario	Pre+22%	3h Pre of Base was increased by 22%
			Pre+24%	3h Pre of Base was increased by 24%
			Pre+26%	3h Pre of Base was increased by 26%
			Pre+28%	3h Pre of Base was increased by 28%
			Pre+30%	3h Pre of Base was increased by 30%
		Lower rain-reduced scenario	Pre−2%	3h Pre of Base was decreased by 2%
			Pre−4%	3h Pre of Base was decreased by 4%
			Pre−6%	3h Pre of Base was decreased by 6%
			Pre−8%	3h Pre of Base was decreased by 8%
			Pre−10%	3h Pre of Base was decreased by 10%
			Pre−12%	3h Pre of Base was decreased by 12%
			Pre−14%	3h Pre of Base was decreased by 14%
			Pre−16%	3h Pre of Base was decreased by 16%
			Pre−18%	3h Pre of Base was decreased by 18%
		Higher rain-reduced scenario	Pre−20%	3h Pre of Base was decreased by 20%
			Pre−22%	3h Pre of Base was decreased by 22%
			Pre−24%	3h Pre of Base was decreased by 24%
			Pre−26%	3h Pre of Base was decreased by 26%
			Pre−28%	3h Pre of Base was decreased by 28%
			Pre−30%	3h Pre of Base was decreased by 30%
	Land use	−	UFL	Sloping upland of Base was changed into forest land
	Tillage	−	No tillage	Traditional tillage of Base was changed into no tillage
Multi factor change	T_{air} and Pre	−	Low GHG [a]	3h T_{air} and Pre of Base were increased by 1.5 °C and 10%, respectively
		−	High GHG	3h T_{air} and Pre of base were increased by 4 °C and 30%, respectively
	T_{air}, Pre and land use	−	Low GHG with UFL	3h T_{air} and Pre of Base were increased by 1.5 °C and 10%, respectively, in a combination of UFL
		−	High GHG with UFL	3h T_{air} and Pre of Base were increased by 4 °C and 30%, respectively, in a combination of UFL

[a] T_{air}, Pre and GHG are the abbreviations of air temperature, precipitation and greenhouse gas, respectively.