

Impacts of climate change on suitability zonation for potato cultivation in Jilin Province, Northeast China

Yaqiu Zhu¹, Qiang Yu^{1,*}, Qiyu Luo¹, Hua Zhang¹, Jinling Zhao², Zhanghong Ju¹, Yating Du¹ &Yadong Yang^{1,*}

¹Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences, Beijing, 100081, China.

²State Key Laboratory of Vegetation and Environmental Change, Institute of Botany, Chinese Academy of Sciences, Beijing, 100093, China.

* email: yqiang@caas.cn; yangyadong@caas.cn

Supplementary information is available for this paper

Table S1. Statistical characteristics of soil mechanical compositions in Jilin Province

Type	Number	Max/%	Min/%	Mean/%	Median	Standard deviation	Skewness	K-S test	CV/%
Sand	81	86.62	0.00	46.31	47.39	21.43	-0.40	0.11	46.28
Silt	81	51.57	2.75	26.35	26.64	13.86	0.02	-1.12	52.62
Clay	81	54.86	7.32	23.35	23.28	9.32	0.79	1.39	39.93

Table S2. Statistical characteristics of soil physico-chemical properties in Jilin Province

Type	Number	Mean	Median	Standard deviation	Skewness	Mean	Median	S-W test	Sig.
PH	79	6.32	5.82	1.28	-1.06	0.57	20.29	0.86	0.000
OM (g/kg)	79	32.92	30.98	12.34	0.64	0.74	37.48	0.98	0.255
AP (mg/kg)	79	50.18	28.15	49.14	2.13	1.56	97.93	0.82	0.000
QAK (mg/kg)	79	144.06	134.40	70.01	3.23	1.45	48.60	0.86	0.000
AN (mg/kg)	79	160.03	146.27	76.29	1.36	0.96	47.68	0.94	0.003

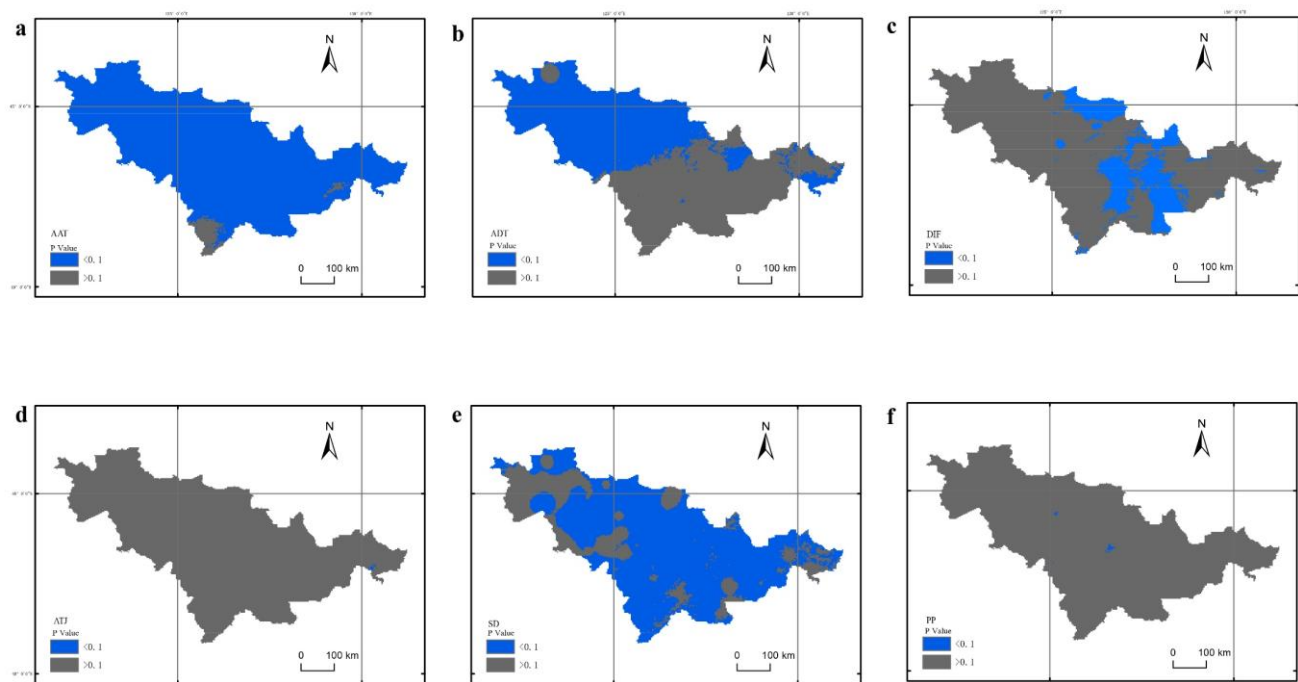


Figure S1. Results of t test for climate inclination rates of the six climatic factors from 1961 to 2018. The grey shades in (a–f) indicate the regions where trends in change of climatic factors were not significant ($P > 0.1$). (a) AAT: sum of active accumulated temperature $\geq 10^{\circ}\text{C}$; (b) ADT: average daily temperature during the growth period; (c) DIF: the day/night temperature difference from July to August; (d) ATJ: average temperature in July; (e) SD: total sunshine duration during the growth period; (f) PP: total precipitation during the growth period.

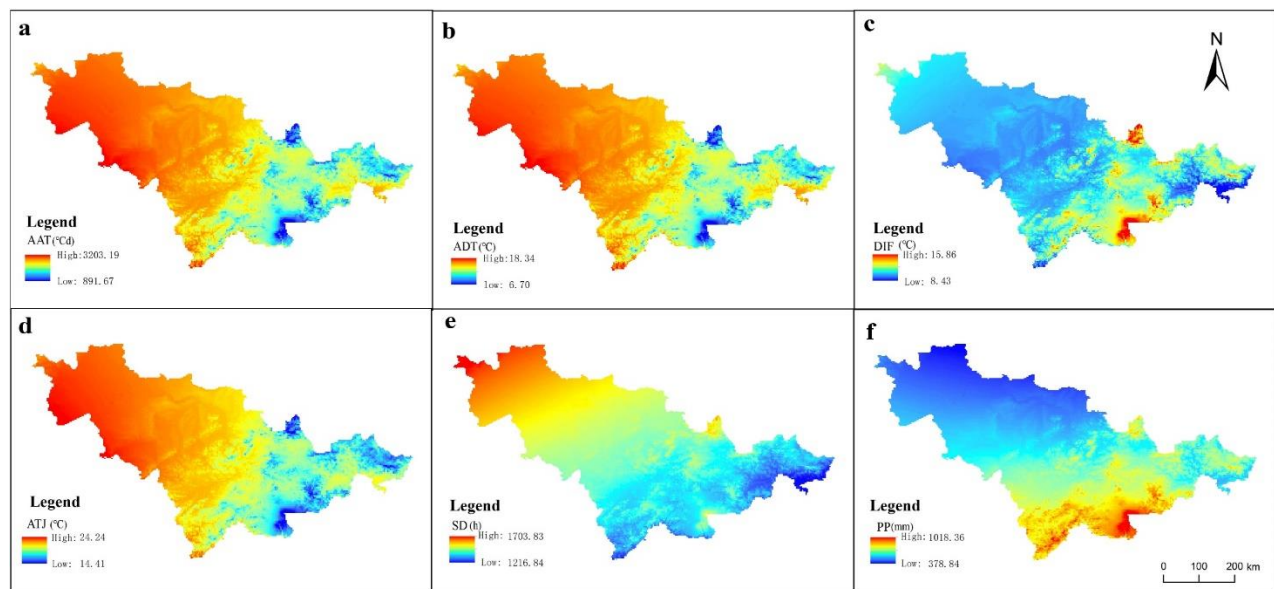


Figure S2. Spatial distribution of the six climatic factors in 1961. (a) AAT: sum of active accumulated temperature $\geq 10^{\circ}\text{C}$; (b) ADT: average daily temperature during the growth period; (c) DIF: the day/night temperature difference from July to August; (d) ATJ: average temperature in July; (e) SD: total sunshine duration during the growth period; (f) PP: total precipitation during the growth period (same below).

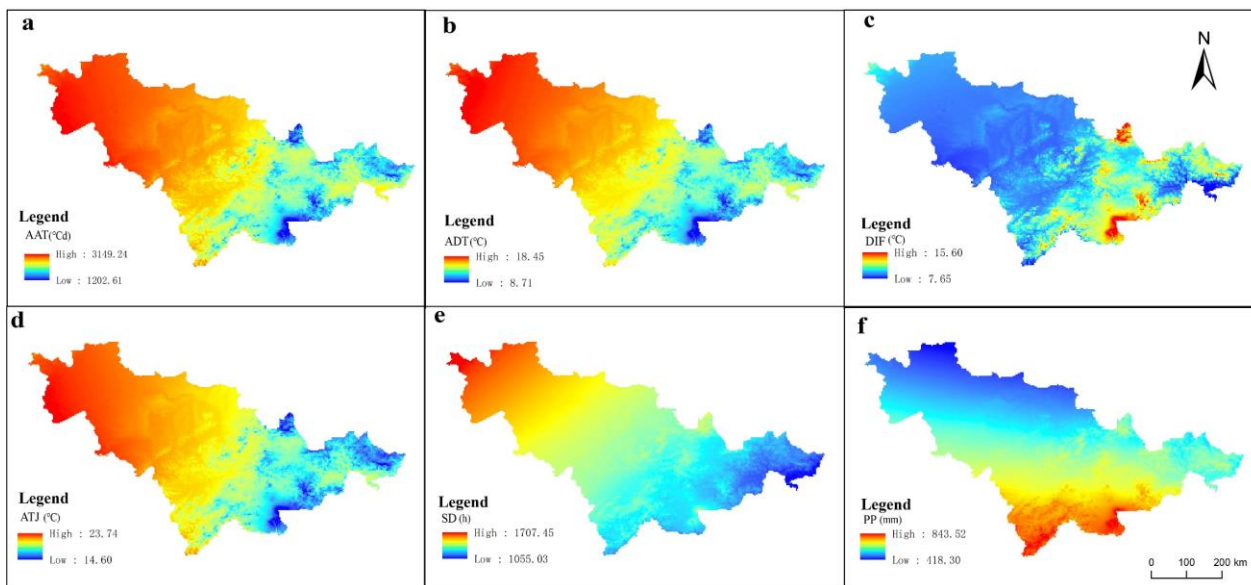


Figure S3. Spatial distribution of the six climatic factors in 1988.

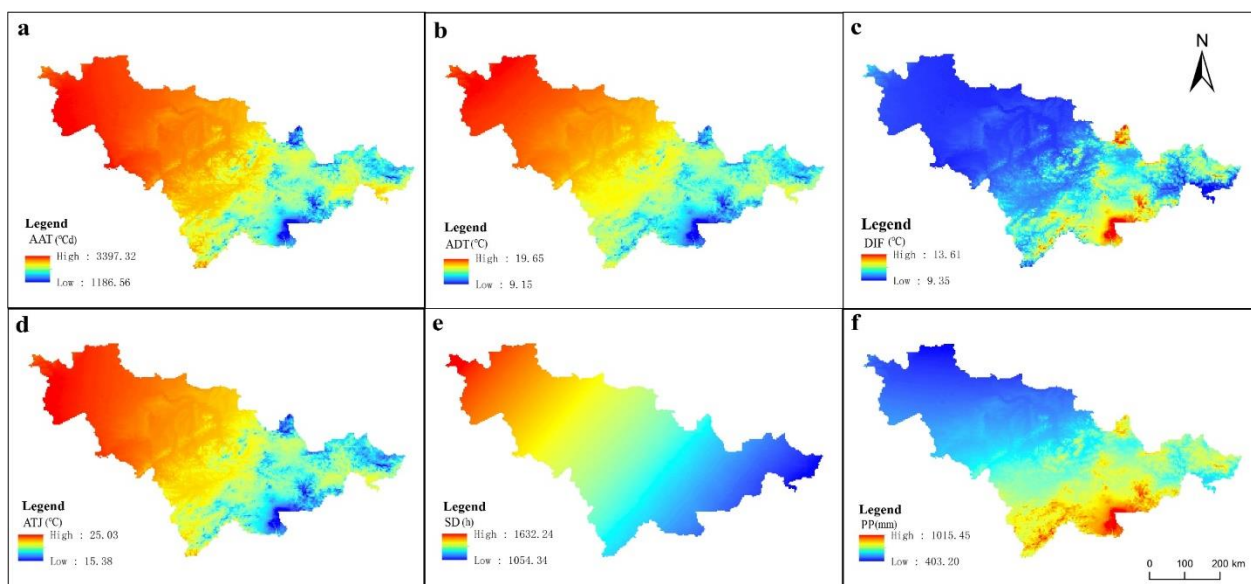


Figure S4. Spatial distribution of the six climatic factors in 2018.