

Supplementary Materials

1. Supplementary Tables

Table S1. The Chinese Soil Taxonomy's classifications of soil and roughly equal WRB classifications.

Chinese Soil Taxonomy	WRB
Anthrosols	Anthrosols
Ferrosols	Acrisols/Lixisols/Plinthosols/Nitisols
Argosols	Luvisols/Alisols
Cambosols	Cambisols
Primosols	Fluvisols/Leptisols/Arenosols/Regosols/Cryosols

Table S2. The number of sampling points for exchangeable base cations under different land-use types.

Soil properties ^{a)}	Depth	Forest	Garden	Paddy field	Upland
Exch. Ca	0-20 cm	282	48	255	142
(cmol(+))kg ⁻¹	20-50 cm	278	47	248	139
	50-100 cm	261	45	241	125
Exch. Mg	0-20 cm	280	50	263	143
(cmol(+))kg ⁻¹	20-50 cm	277	47	257	139
	50-100 cm	263	46	244	128
Exch. K	0-20 cm	283	48	263	145
(cmol(+))kg ⁻¹	20-50 cm	279	47	259	144
	50-100 cm	260	47	248	131
Exch. Na	0-20 cm	277	51	254	142
(cmol(+))kg ⁻¹	20-50 cm	273	49	246	140
	50-100 cm	257	47	238	128

^{a)} Exch. Ca: exchangeable Ca²⁺; Exch. Mg: exchangeable Mg²⁺; Exch. K: exchangeable K⁺; Exch. Na: exchangeable Na⁺.

Table S3. The number of sampling points for exchangeable acidic cations and BSP under different land-use types.

Soil properties ^{a)}	Depth	Forest	Garden	Grassland	Paddy field	Upland
Exch. H	0-20 cm	348	84	50	194	143
(cmol(+)kg ⁻¹)	20-50 cm	344	81	46	179	135
	50-100 cm	326	79	43	152	122
Exch. Al	0-20 cm	360	85	49	198	143
(cmol(+)kg ⁻¹)	20-50 cm	355	84	47	184	136
	50-100 cm	330	80	43	160	123
BSP	0-20 cm	380	78	60	307	228
(%)	20-50 cm	374	78	51	294	225
	50-100 cm	352	76	47	275	209

^{a)} Exch. H: exchangeable H⁺; Exch. Al: exchangeable Al³⁺; BSP: base saturation percentage.

Table S4. The number of sampling points for exchangeable base cations under different soil types.

Soil properties	Depth	Anthrosols	Argosols	Cambosols	Ferrosols
Exch. Ca	0-20 cm	240	128	229	116
(cmol(+)kg ⁻¹)	20-50 cm	234	124	224	116
	50-100 cm	228	122	200	115
Exch. Mg	0-20 cm	250	132	234	116
(cmol(+)kg ⁻¹)	20-50 cm	246	130	230	116
	50-100 cm	240	127	206	115
Exch. K	0-20 cm	247	129	232	115
(cmol(+)kg ⁻¹)	20-50 cm	245	127	227	114
	50-100 cm	236	124	203	113
Exch. Na	0-20 cm	242	128	224	115
(cmol(+)kg ⁻¹)	20-50 cm	234	126	218	114
	50-100 cm	227	124	196	112

Table S5. The number of sampling points for exchangeable acidic cations and BSP under different soil types.

Soil properties	Depth	Anthrosols	Argosols	Cambosols	Ferrosols	Primosols
Exch. H	0-20 cm	192	170	287	129	47
(cmol(+))kg ⁻¹)	20-50 cm	177	164	282	127	35
	50-100 cm	152	161	254	128	25
Exch. Al	0-20 cm	196	173	296	130	46
(cmol(+))kg ⁻¹)	20-50 cm	182	170	288	130	36
	50-100 cm	160	164	255	130	23
BSP	0-20 cm	291	208	343	159	61
(%)	20-50 cm	281	205	339	159	42
	50-100 cm	263	204	306	158	32

2. Supplementary Figures

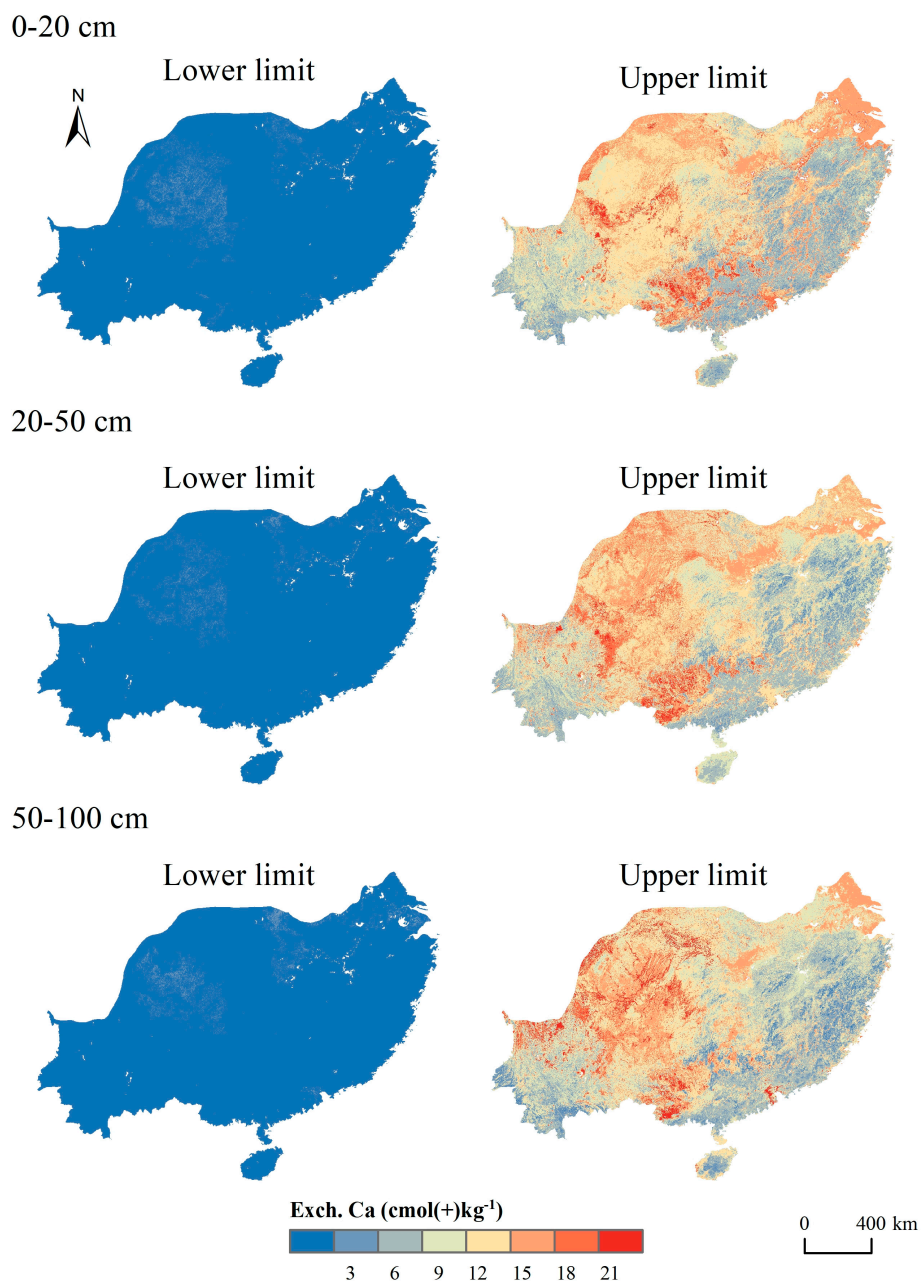


Figure S1. Maps of lower and upper limits of 90% prediction interval of Exch. Ca at soil depths of 0-20 cm, 20-50 cm and 50-100 cm.

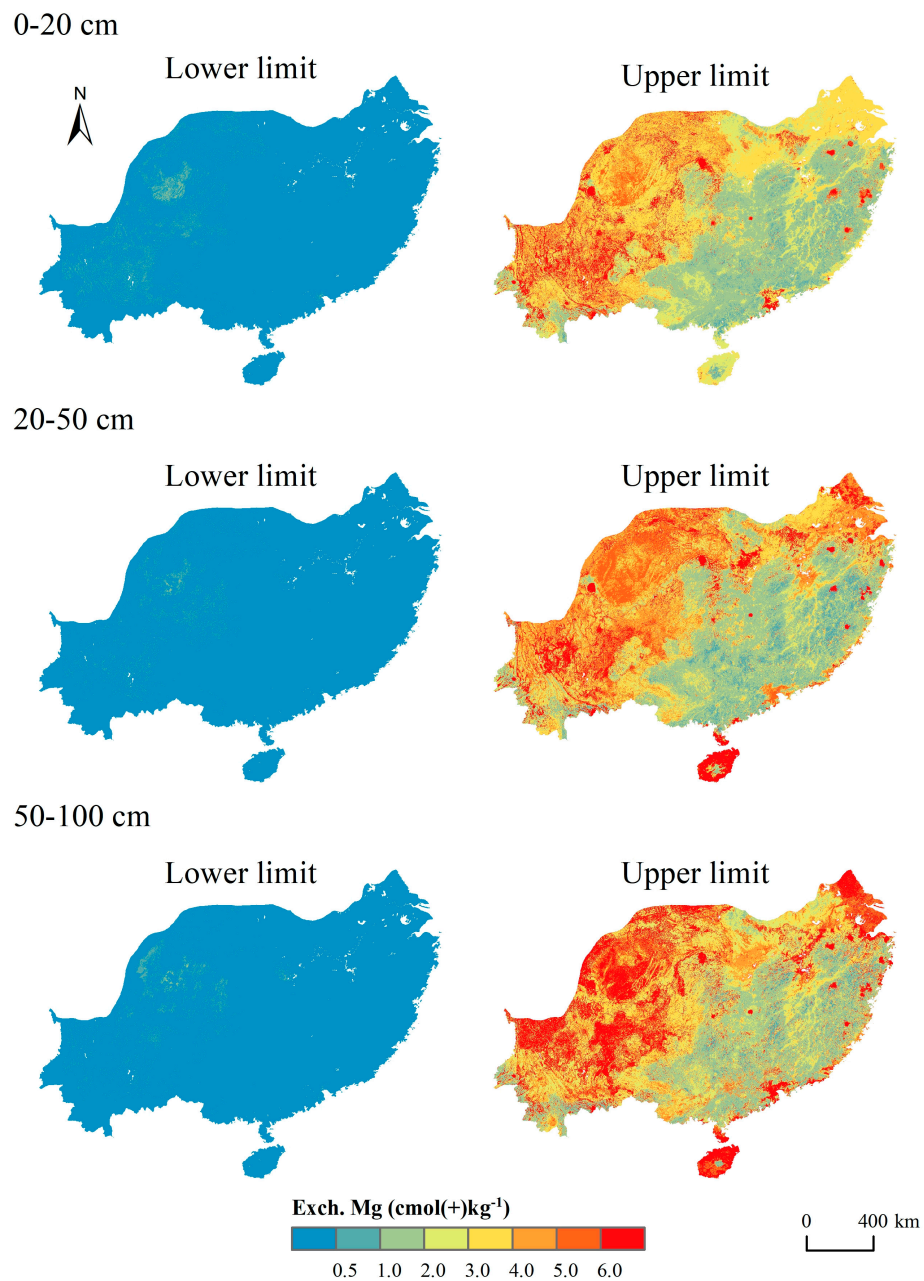


Figure S2. Maps of lower and upper limits of 90% prediction interval of Exch. Mg at soil depths of 0-20 cm, 20-50 cm and 50-100 cm.

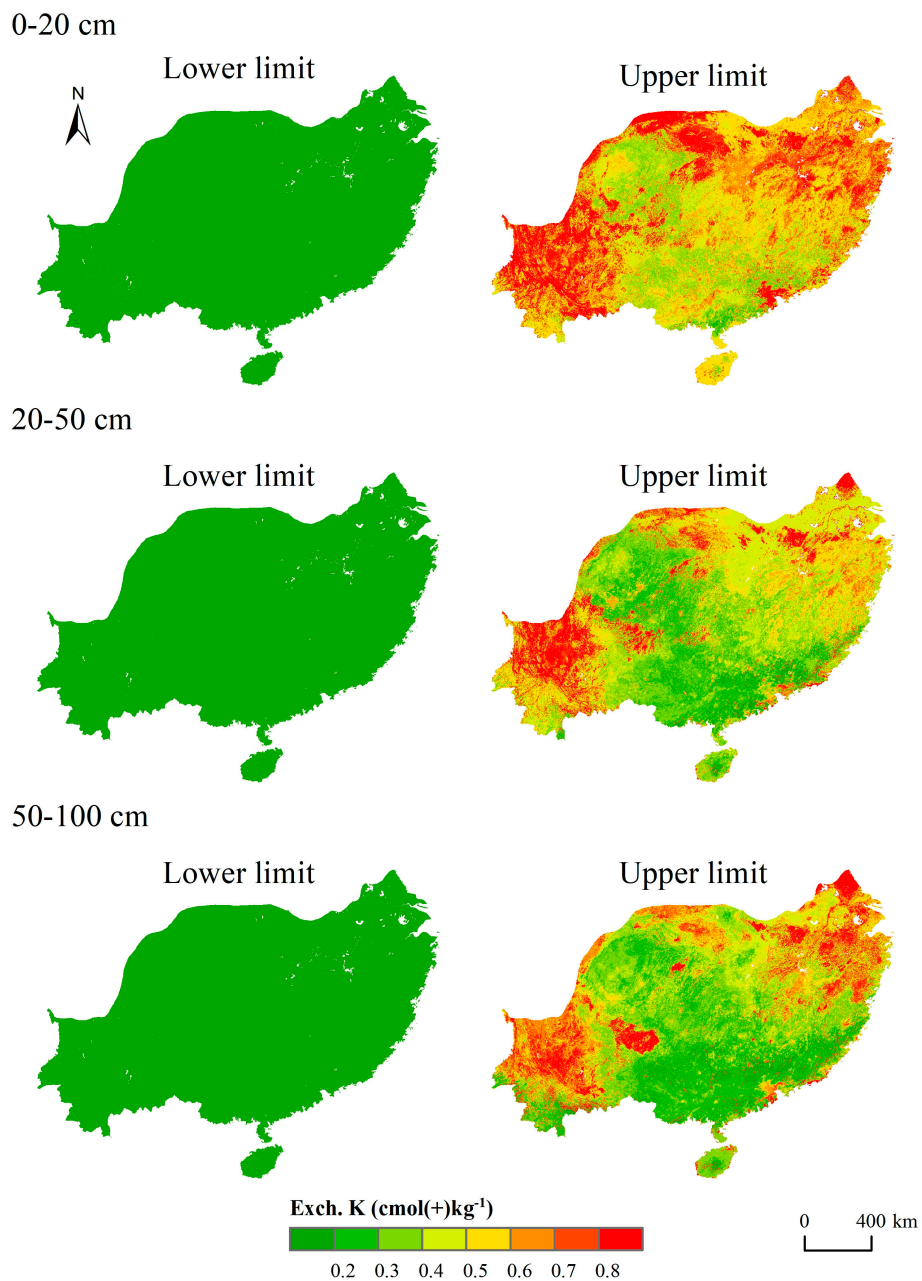


Figure S3. Maps of lower and upper limits of 90% prediction interval of Exch. K at soil depths of 0-20 cm, 20-50 cm and 50-100 cm.

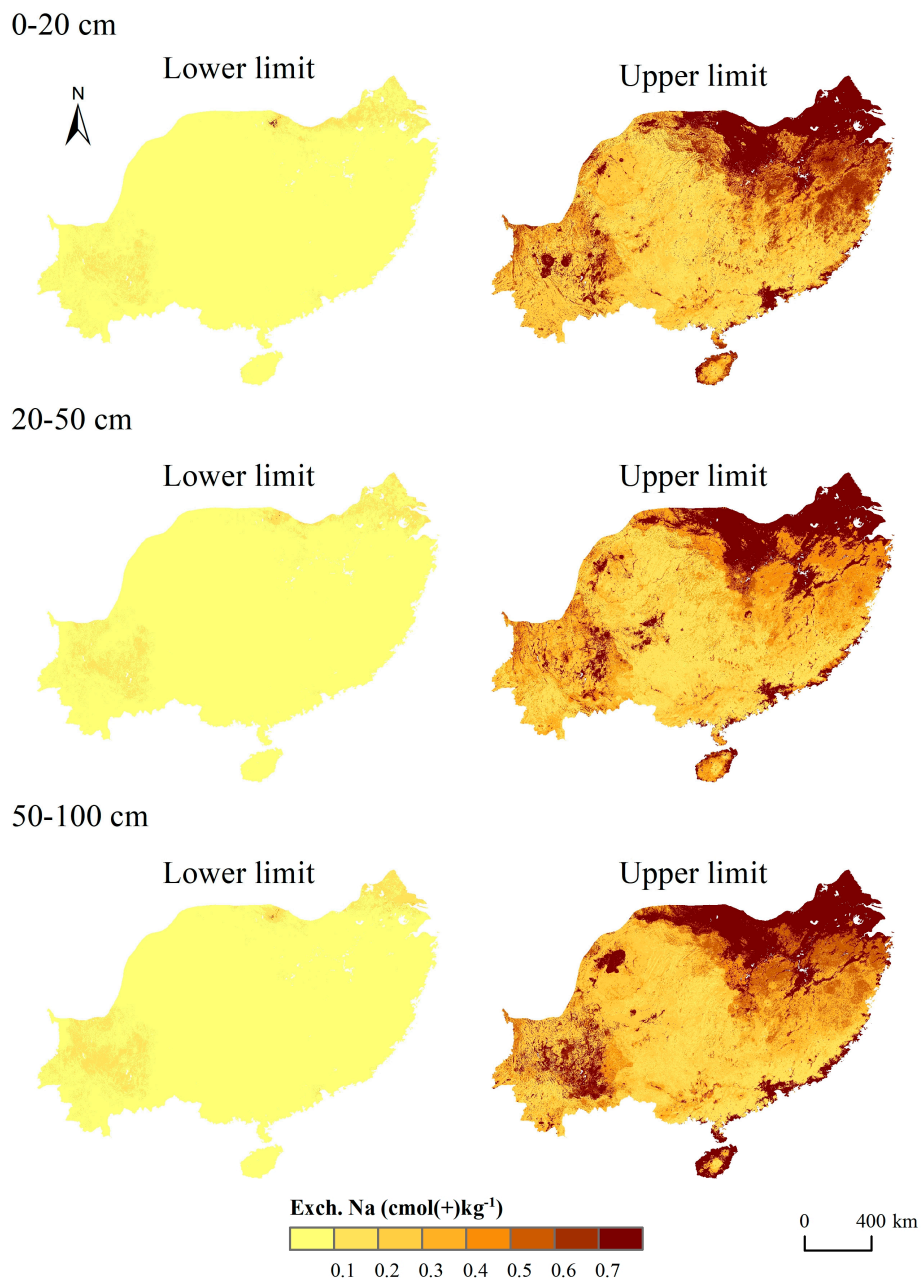


Figure S4. Maps of lower and upper limits of 90% prediction interval of Exch. Na at soil depths of 0-20 cm, 20-50 cm and 50-100 cm.

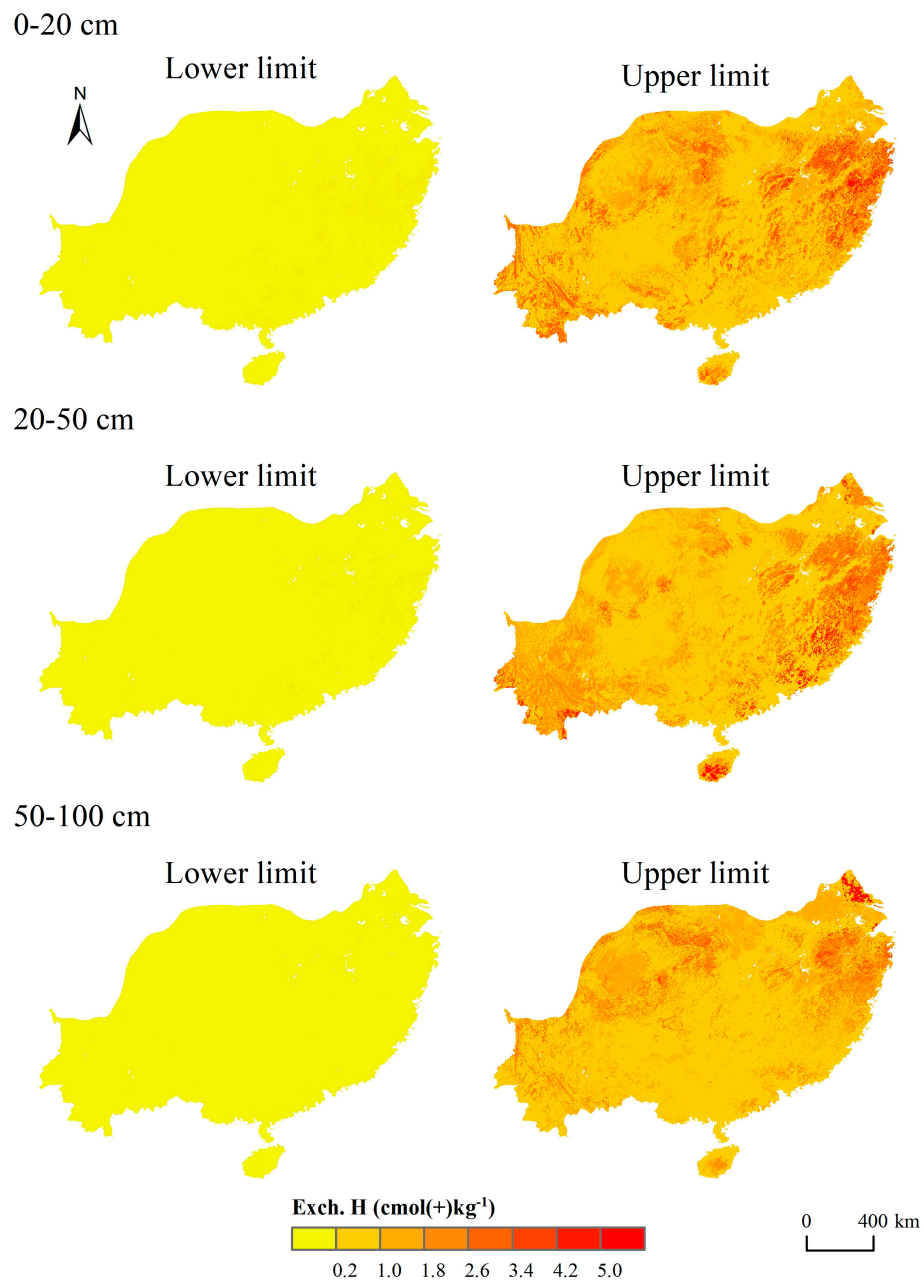


Figure S5. Maps of lower and upper limits of 90% prediction interval of Exch. H at soil depths of 0-20 cm, 20-50 cm and 50-100 cm.

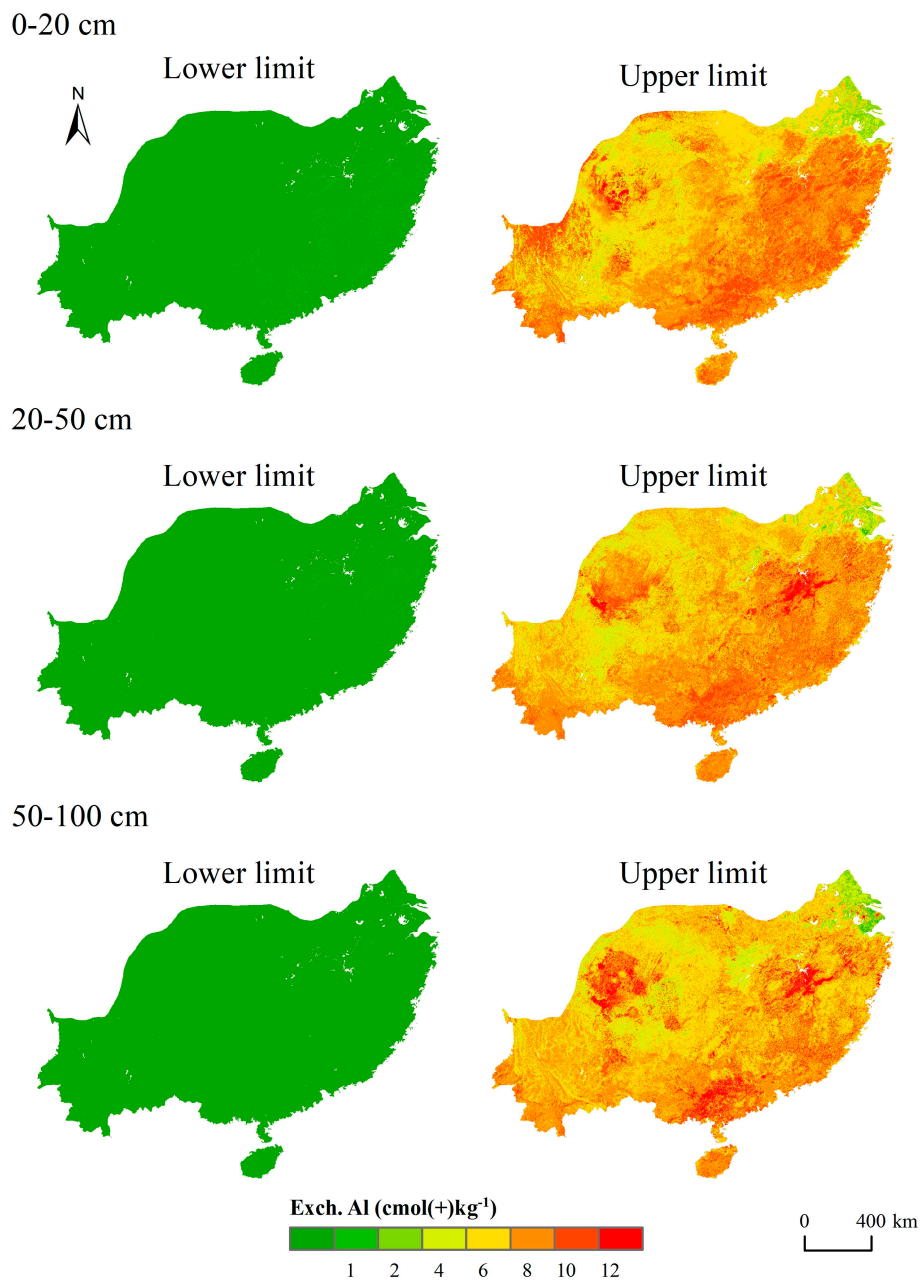


Figure S6. Maps of lower and upper limits of 90% prediction interval of Exch. Al at soil depths of 0-20 cm, 20-50 cm and 50-100 cm.

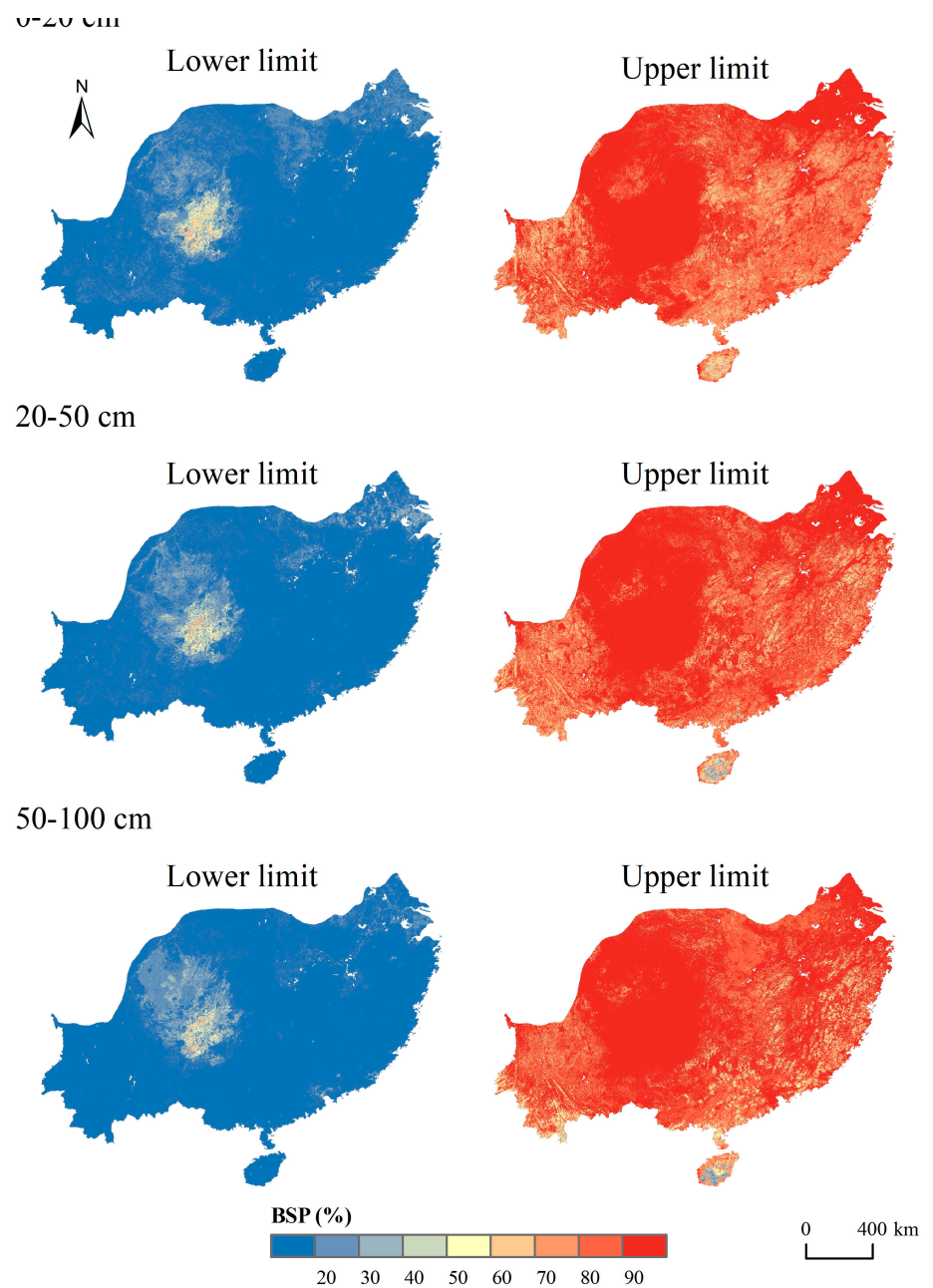


Figure S7. Maps of lower and upper limits of 90% prediction interval of BSP at soil depths of 0-20 cm, 20-50 cm and 50-100 cm.