Supplementary Materials

Supplementary Figures

Figure S1. The proportion of cropland area affected by different soil erosion intensities in China from 1980 to 2018.

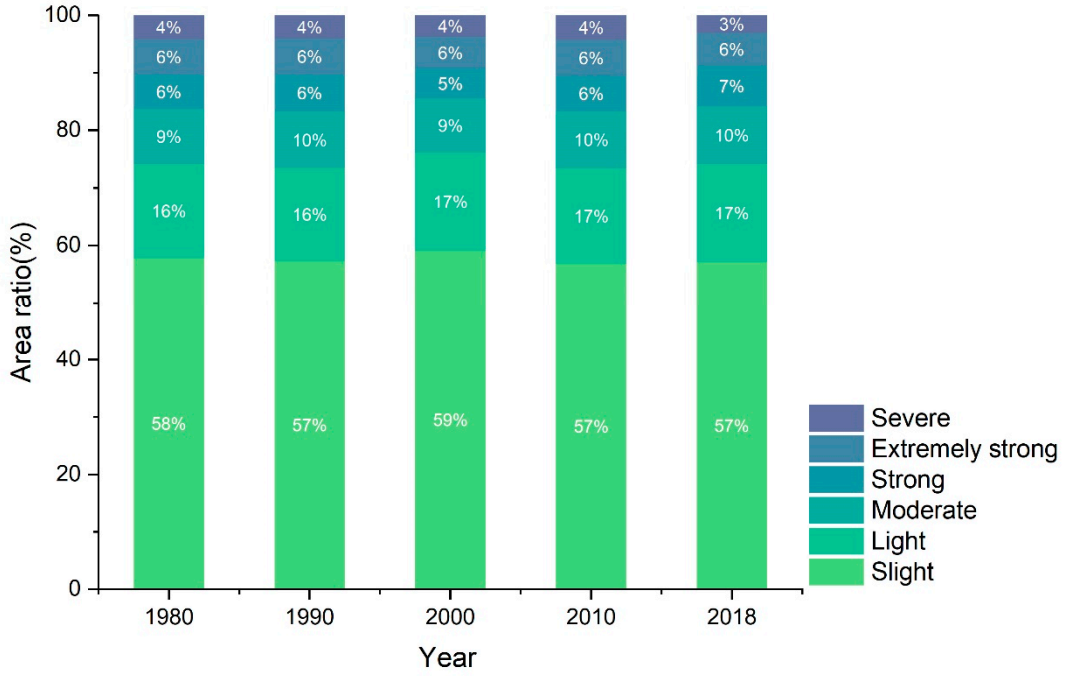
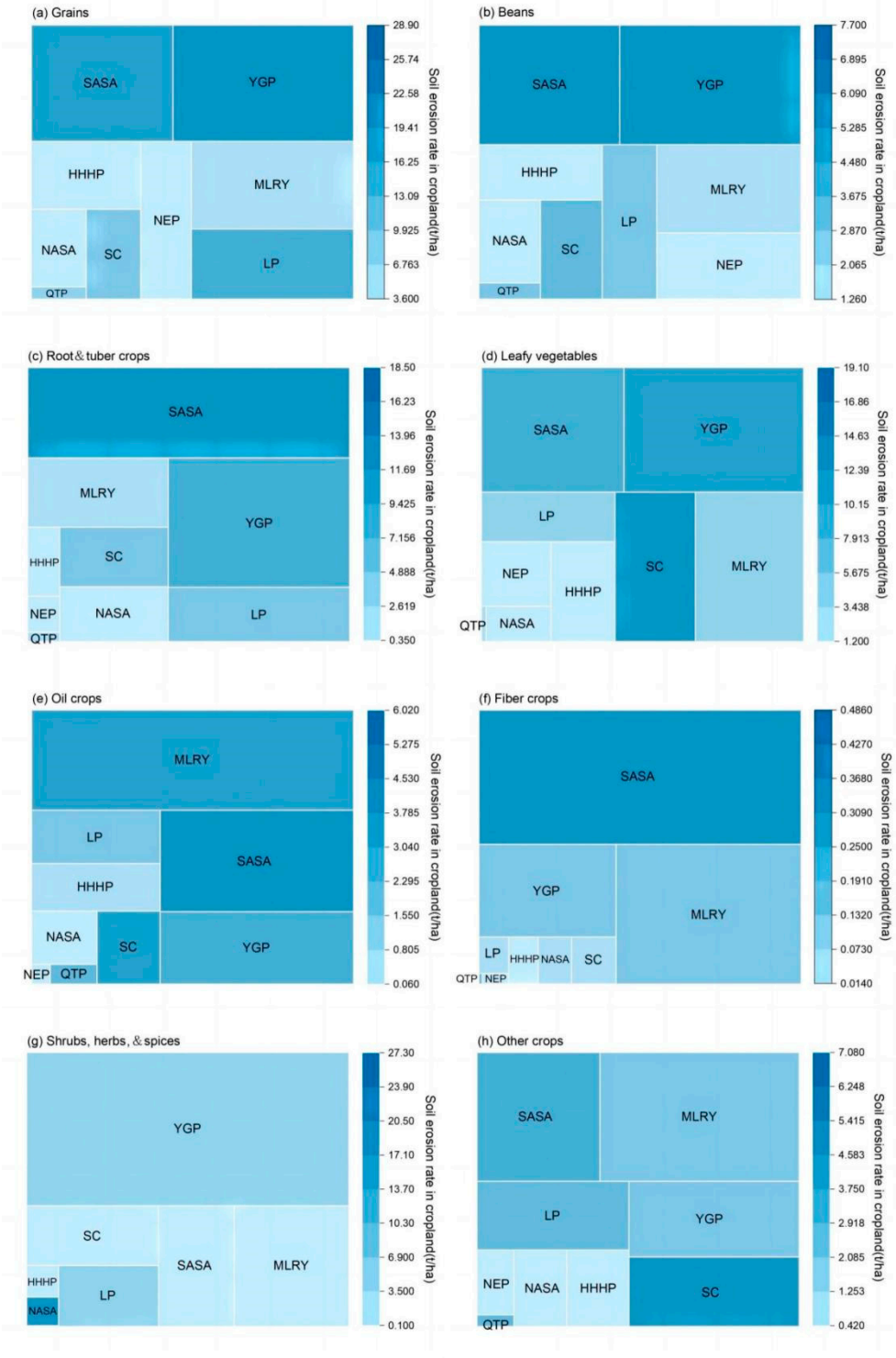


Figure S2. Soil erosion rates (the size of the rectangle area*) and annual total erosion (the color intensity of the rectangle*) of different crops in different agricultural regions of China in 2010.



*The size of the rectangle area represents the relative magnitude of annual total cropland soil erosion in each region, while the color intensity indicates the relative magnitude of annual cropland soil erosion rates.

Supplementary Tables

Table S1. Statistics of cropland and soil erosion in China from 1980-2018.

Year	**1980**	**1990**	**2000**	**2010**	**2018**
Cropland area in China (10^8 *ha*)	1.761	1.772	1.799	1.790	1.785
Cropland-related soil erosion area in China (10^8 *ha*)	1.758	1.768	1.796	1.786	1.782
Annual cropland soil erosion rate ($t \cdot ha^{-1}$)	29.63	29.59	27.24	30.23	26.39
Total annual soil erosion (10^8 *t*)	52.08	52.33	48.91	53.99	47.03

Table S2. Soil erosion rates of different crops in 2010.

Crop types	Soil erosion rate ($t \cdot ha^{-1}$)
Grains	11.11
Beans	2.85
Root & tuber crops	4.34
Leafy vegetables	5.88
Oil crops	2.08
Fiber crops	0.04
Shrubs, herbs, & spices	1.03
Other crops	2.21

Table S3. Soil erosion rates ($t \cdot ha^{-1}$) and annual total erosion (Mt) of different crops from different agricultural regions in 2010.

Agricultural regions*	Crop types	Grains	Beans	Root & tuber crops	Leafy vegetables	Oil crops	Fiber crops	Shrubs, herbs, & spices	Other crops
NASA	Rate	3.66	1.27	2.21	1.25	0.57	0.079	27.29	0.77
	Total amount	96.04	29.63	52.38	27.35	14.58	0.121	1.91	18.12
NEP	Rate	6.11	1.94	0.39	2.11	0.08	0.015	0.12	0.42
	Total amount	180.47	55.10	10.12	53.62	1.55	0.022	0.02	10.79
SC	Rate	14.69	5.09	8.13	19.10	4.79	0.128	2.45	7.06
	Total amount	109.91	35.20	56.78	143.37	19.31	0.162	16.50	53.08
HHHP	Rate	5.41	1.32	0.65	2.71	0.93	0.032	0.26	0.75
	Total amount	167.59	39.36	19.45	75.98	25.75	0.107	2.11	21.32
LP	Rate	20.73	4.13	7.59	6.91	2.52	0.099	9.42	3.99
	Total amount	256.01	48.68	86.57	78.97	28.93	0.084	12.65	46.81
QTP	Rate	12.24	4.15	3.24	5.33	3.56	0.250	0.64	4.22
	Total amount	14.91	5.67	86.57	1.93	3.88	0.003	0.04	1.94
SASA	Rate	25.27	6.96	18.46	14.29	6.01	0.485	1.58	4.67
	Total amount	370.78	97.43	256.58	211.70	82.66	3.364	19.08	70.98
YGP	Rate	28.87	7.69	12.98	16.49	3.86	0.203	7.14	3.54
	Total amount	473.07	125.51	206.49	266.95	58.92	0.988	103.10	57.72
MLRY	Rate	9.61	2.39	2.74	6.25	4.77	0.194	1.10	3.59
	Total amount	319.94	73.51	85.83	192.99	135.96	2.004	28.87	114.92

*Agricultural regions: the Northern Arid and Semi-arid region (NASA), the Northeast Plain region (NEP), the Yunnan-Guizhou Plateau region (YGP), the South China region (SC), the Sichuan Basin and Surrounding Areas region (SASA), the Middle and Lower Reaches of the Yangtze River region (MLRY), the Qinghai-Tibet Plateau region (QTP), the Loess Plateau region (LP), the Huang-Huai-Hai Plain region (HHHP).

Table S4. Comparison between this study and Yue et al.'s study [85] on rainfall erosivity.

	Year	R factor range ($MJ \cdot mm \cdot h^{-1} \cdot ha^{-1} \cdot a^{-1}$)	
		MIN	MAX
Yue et al. (2022)'s study	1951-2018 (annual mean)	0	25300
	1981-2010 (annual mean)	0	27156
This study	1980-2010 (annual mean)	0	17072
	1980	6	13445
	1990	11	26073
	2000	6	15647
	2010	8	22867
	2018	10	19804

Table S5. Soil erosion rates ($t \cdot ha^{-1}$) and erosion acreage (10^4 *ha*) in different agricultural regions from 1980 to 2018.

Year	Agricultural regions*	NASA	NEP	SC	HHHP	LP	QTP	SASA	YGP	MLRY
1980	Acreage	2371.73	2624.95	857.64	3257.09	1331.09	125.11	1608.06	1702.19	3699.91
	Rate	9.92	5.30	44.11	10.31	43.35	13.73	80.64	69.74	28.13
1990	Acreage	2409.07	2757.28	841.80	3252.20	1329.36	126.53	1605.27	1698.20	3664.86
	Rate	13.80	7.35	53.76	10.91	39.56	14.21	67.19	78.21	25.65
2000	Acreage	2568.95	3000.85	821.55	3211.45	1331.15	129.07	1598.02	1699.28	3596.19
	Rate	8.05	5.58	51.99	11.14	36.78	13.14	69.53	75.45	23.13
2010	Acreage	2821.84	2998.69	783.87	3130.03	1261.79	162.60	1575.63	1691.97	3431.76
	Rate	8.72	10.48	56.61	11.33	45.52	19.54	72.19	77.56	28.69
2018	Acreage	2921.65	3106.28	773.15	3038.49	1245.52	162.43	1555.38	1665.60	3350.80
	Rate	12.02	8.42	45.43	11.74	38.17	22.43	60.84	74.75	20.25

*Agricultural regions: the Northern Arid and Semi-arid region (NASA), the Northeast Plain region (NEP), the Yunnan-Guizhou Plateau region (YGP), the South China region (SC), the Sichuan Basin and Surrounding Areas region (SASA), the Middle and Lower Reaches of the Yangtze River region (MLRY), the Qinghai-Tibet Plateau region (QTP), the Loess Plateau region (LP), the Huang-Huai-Hai Plain region (HHHP).

Table S6. The classification of 42 major crops from the Global Spatially-Disaggregated Crop Production Statistics Data for 2010 Version 2.0 [50] based on Borrelli et al. [9]'s classification standard.

Crop type 1: Grains	
rice	rice
maize	maize
barley	various
pearl millet	
sorghum	
small millet	
wheat	
other cereals	
Crop type 2: Beans	
bean	various
chickpea	
cowpea	
groundnut	
lentil	
pigeonpea	
soybean	
other pulses	
Crop type 3: Root & tuber vegetables	
cassava	various
potato	
sugarbeet	
sweet potato	
yams	
other roots	

Crop type 4: Leafy vegetables	
tobacco	tobacco
vegetables	various
Crop type 5: Oil crops	
rapeseed	various
sunflower	
sesameseed	
other oil crops	
cotton	cotton
Crop type 6: Fibre crops	
other fibre crops	fibre crops
Crop type 7: Shrubs, herbs, & spices	
arabica coffee	coffee
robusta coffee	
sugarcane	various
tea	
Crop type 8: Other crops	
banana	various
cocoa	
coconut	
oilpalm	
plantain	
temperate fruit	
tropical fruit	
rest	