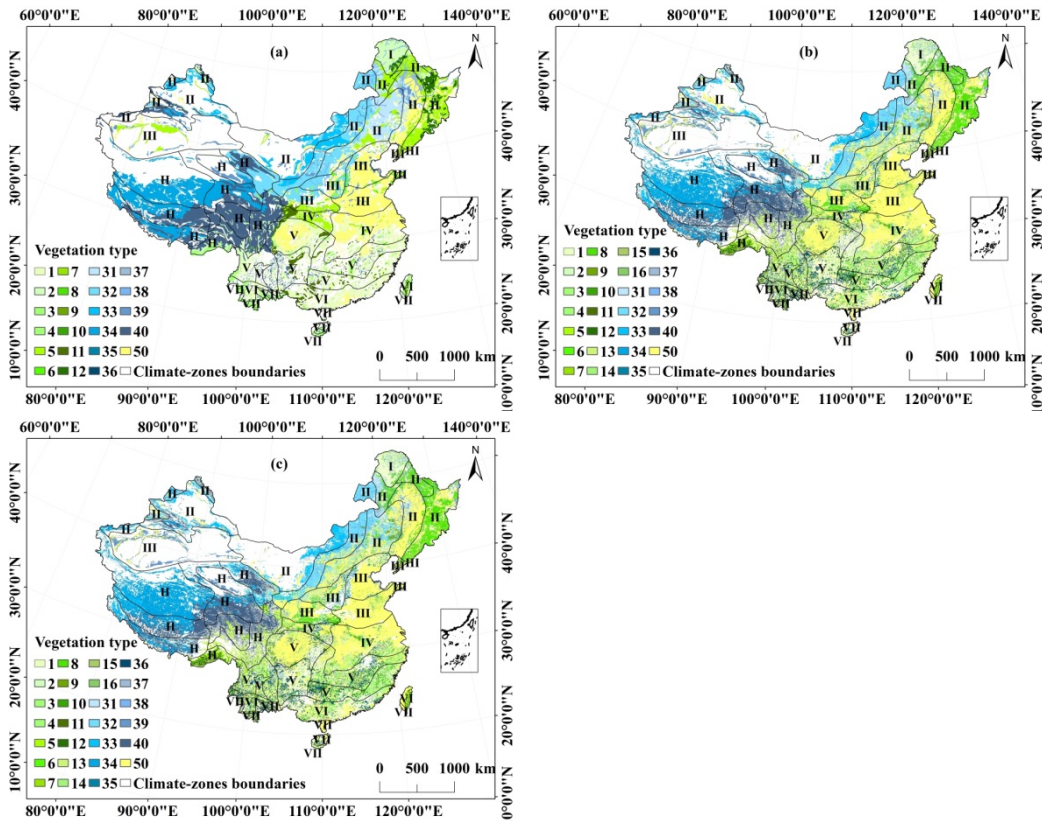


# Supplementary Materials

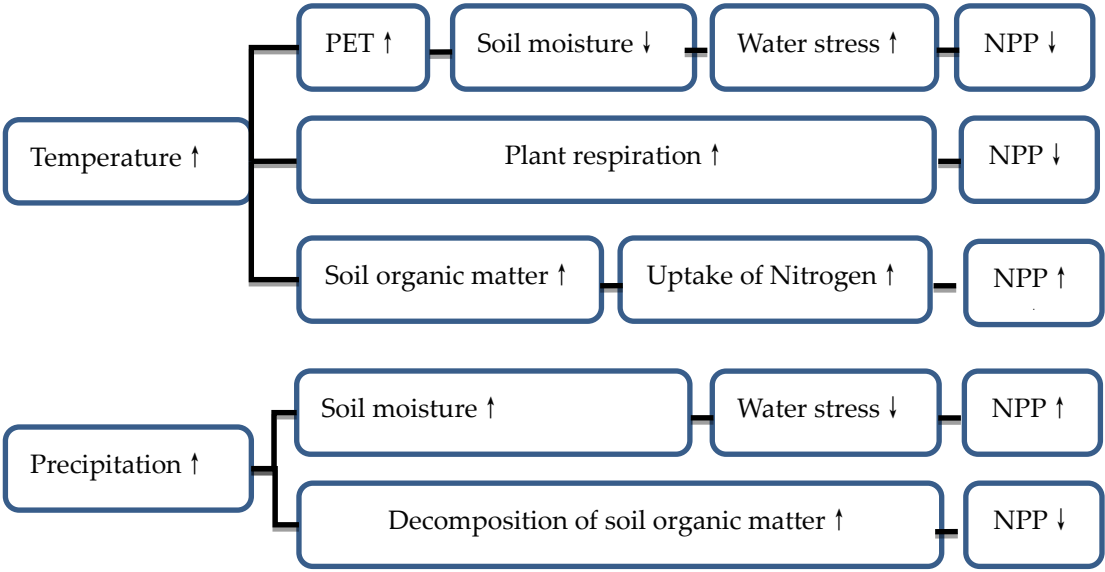
## 2 Figure, 5 Tables and Abbreviations

**Figure S1:** Distribution of Chinese vegetation from the 1960s to 2000s



**Figure S1:** Distribution of Chinese vegetation from the 1960s to 2000s: (a) Vegetation type in the 1960s; (b) Vegetation type in the 1980s; (c) Vegetation type in the 2000s

26 **Figure S2:** The influence of climate change to NPP



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29 **Figure S2.** The influence of climate change to NPP

30 Notes: PET: Potential Evapotranspiration

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**Table S1:** Chinese vegetation classification

**Table S2:** The summarized coefficients for estimation of farmland NPP

**Table S3:** The summarized coefficients for estimation of grassland NPP

**Table S4:** The summarized coefficients for estimation of forest NPP

**Table S5:** The abbreviations of Chinese provinces

**Table S1.** Chinese vegetation classification

ID	Vegetation type	Vegetation type Group	area (km <sup>2</sup> )
1	<i>Needleleaf forests in cold-temperate zone and on mountains in temperate zone</i>	Needleleaf Forests	160185.94
2	<i>Needleleaf forests in temperate zone</i>	Needleleaf Forests	40196.18
3	<i>Needleleaf forests in subtropical zone</i>	Needleleaf Forests	466128.55
4	<i>Needleleaf forests in tropical zone</i>	Needleleaf Forests	65.14
5	<i>Needleleaf forests on mountains in subtropical and tropical zones</i>	Needleleaf Forests	149388.13
6	<i>Needleleaf and deciduous broadleaf mixed forests in temperate zone</i>	Needleleaf and Broadleaf Mixed Forests	17361.88
7	<i>Needleleaf, evergreen and deciduous broadleaf mixed forests on mountains in subtropical zone</i>	Needleleaf and Broadleaf Mixed Forests	4299.07
8	<i>Broadleaf deciduous forests in temperate zone</i>	Broadleaf Forests	401102.19
9	<i>Microphyllous deciduous woodlands in temperate zone</i>	Broadleaf Forests	31366.41
10	<i>Broadleaf deciduous forests in subtropical zone</i>	Broadleaf Forests	37579.04
11	<i>Broadleaf evergreen and deciduous mixed forests in subtropical zone</i>	Broadleaf Forests	19285.72
12	<i>Broadleaf evergreen forests in subtropical zone</i>	Broadleaf Forests	126565.82
13	<i>Sclerophyllous broadleaf evergreen forests in subtropical zone</i>	Broadleaf Forests	15712.2
14	<i>Tropical monsoon forests</i>	Broadleaf Forests	6165.31
15	<i>Tropical rain forests</i>	Broadleaf Forests	19242.31
16	<i>Bamboo forests and scrubs in subtropical and tropical zones</i>	Broadleaf Forests	34452.14
31	<i>Temperate grass, forb meadow steppes</i>	Steppes	93396.06
32	<i>Temperate tufted grass steppes</i>	Steppes	445778.58
33	<i>Temperate tufted low grass, nano-semi-shrub desert steppes</i>	Steppes	227079.83
34	<i>Grass, Carex spp. high-cold steppes</i>	Steppes	635375.2
35	<i>Temperate grasslands</i>	Grasslands	58140.86
36	<i>Subtropical and tropical grasslands</i>	Grasslands	243033.6
37	<i>Grass and forb meadows</i>	Meadows	123859.63
38	<i>Grass, Carex and forb swamp meadows</i>	Meadows	62693.55
39	<i>Grass and forb halophytic meadows</i>	Meadows	161094.3
40	<i>Kobresia spp., forb high-cold meadows</i>	Meadows	683327.95
50	<i>Farmland</i>	Farmland	1999379.83

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**Table S2.** The summarized coefficients for estimation of Farmland NPP

Farmland type	<i>HI</i>	<i>Mc</i>	<i>f<sub>AG</sub></i>
wheat	0.37	0.125	0.83
corn	0.49	0.135	0.85
paddy	0.4	0.1375	0.80
Beans	0.25	0.125	0.87
Potato	0.68	0.133	0.80
cotton	0.35	0.083	0.80
Oil	0.39	0.09	0.94
Sugar material	0.39	0.133	0.80

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Note: *HI* is the crop harvest index (economic production and the ratio of plant dry weight above

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ground.) [1-3], *Mc* is the water content of the crop harvest (%) [1-3], *f<sub>AG</sub>* refers to the fraction of the

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aboveground biomass to the total biomass [1, 4-7]. Different crops had different parameters, which can

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be seen in Table S2.

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**Table S3.** The summarized coefficients for estimation of )Grassland NPP[8-11]

<b>Grassland type</b>	<b>Sug</b>	<b>Sbn</b>	<b>R<sub>fd</sub></b>	<b>PWC</b>
<i>Temperate grass,forb meadow steppes</i>	5.26	0.45	3.2	15%
<i>Temperate tufted grass steppes</i>	4.25	0.45	3	15%
<i>Temperate tufted low grass, nano-semi-shrub desert steppes</i>	7.89	0.45	2.7	15%
<i>Grass,Carex spp. high-cold steppes</i>	7.91	0.45	3	15%
<i>Temperate grasslands</i>	4.42	0.45	3.2	15%
<i>Subtropical and tropical grasslands</i>	4.42	0.45	3.2	15%
<i>Grass and forb meadows</i>	6.23	0.45	3.5	15%
<i>Grass,Carex and forb swamp meadows</i>	15.68	0.45	5	15%
<i>Grass and forb halophytic meadows</i>	6.31	0.45	3.5	15%
<i>Kobresia spp.,forb high-cold meadows</i>	7.92	0.45	3.2	15%

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**Table S4.** The summarized coefficients for estimation of Forest NPP[3, 10] [12-14]

Forest type	a	b	c	d	e	f
<i>Kashiwagi</i>	1.0202	0.0022	0.1132	0.0745	9.8391	0.1337
<i>Huashan pine forest</i>	1.239	0.0013	0.384	0.0104	7.5272	0.1102
<i>Birch forest</i>	0.8115	0.0019	0.308	0.0138	16.722	0.0324
<i>Broad-leaved mixed forest</i>	0.5788	0.002	0.3018	0.0331	9.1028	0.0575
<i>Alpine oak forest</i>	0.7823	0.0014	0.2989	0.0117	34.845	0.0283
<i>Larch forest</i>	1.1111	0.0016	0.1885	0.0728	16.734	0.0577
<i>Masson pine forest</i>	1.4254	0.0004	0.4046	0.0098	15.451	0.0225
<i>Other warm pine</i>	1.3624	0.0003	0.2423	0.0581	18.905	0.0422
<i>Tropical forest (Eucalyptus, Casuarina)</i>	0.6809	0.0006	0.1797	0.0344	8.0976	0.054
<i>Chinese fir forest (cedar, Metasequoia)</i>	1.2917	0.0022	0.4598	0.0069	10.132	0.0874
<i>Chinese fir forest (cedar, Metasequoia)</i>	1.2917	0.0022	0.4598	0.0069	8.7239	0.0418
<i>Pinus tabulaeformis (Pinus sylvestris, black pine, arborvitae)</i>	1.0529	0.002	0.352	0.0161	11.177	0.1501
<i>Spruce Forest</i>	1.3667	0.0012	0.2267	0.0526	27.204	0.0812
<i>Spruce Forest (only in Xinan China)</i>	1.3667	0.0012	0.2267	0.0526	3.34±0.9277	
<i>Pinus sylvestris</i>	1.2544	0.003	0.1405	0.1203	4.2±0.3538	
<i>Mixed coniferous and broad-leaved forest (Korean pine)</i>	1.1731	0.0018	0.1038	0.0761	3.46±0.9597	
<i>Evergreen broad-leaved forest</i>	0.7883	0.0026	0.2503	0.0226	20.507	0.0383
<i>Deciduous broad-leaved forests (oaks, hardwoods, lime trees, miscellaneous trees and water hyacinths, etc.)</i>	0.6539	0.0038	0.2393	0.0495	18.246	0.0366

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**Table S5.** The abbreviations of Chinese provinces

Name abbreviation	Name
BJ	Beijing
FJ	Fujian
GS	Gansu
GD	Guangdong
GX	Guangxi
GZ	Guizhou
HAN	Hainan
HEB	Hebei
HEN	Henan
HLJ	Heilongjiang
HUB	Hubei
HUN	Hunan
JL	Jilin
JS	Jiangsu
JX	Jiangxi
LN	Liaoning
NMG	Neimeng
NX	Ningxia
SD	Shandong
SX	Shanxi
SAX	Shannxi
SH	Shanghai
SC	Sichuan
TJ	Tianjin
XJ	Xinjiang
YN	Yunnan
ZJ	Zhejiang
CQ	Chongqing

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## Abbreviations

NPP: net primary productivity; AGB: aboveground biomass; BGB: belowground biomass; AVHRR: Advanced Very High Resolution Radiometer; MODIS: Moderate Resolution Imaging Spectroradiometer; CASA: Carnegie-Ames-Stanford-Approach; GLO-PEM: Global Production Efficiency Model; EC-LUE: Eddy Covariance-Light Use Efficiency; SPOT: Satellite Pour l'Observation de la Terre; BEF: biomass expansion factors; GPPDI: Global Primary Production Data Initiative; HHH: Huang-Huai-Hai; YR: Yangtze River Middle Plains; SCB: Sichuan Basin; IBIS: Integrated Biosphere Simulator; NDVI: Normalized Difference Vegetation Index; AVIM2: Atmosphere-Vegetation Interaction Model; BEPS: Boreal Ecosystem Productivity Simulator; BIOME-BGC: BIOME BioGeochemical Cycles; CEVSA: Carbon Exchange between Vegetation, Soil and Atmosphere model; TEM: Terrestrial Ecosystem Model.

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