Exploring the Spatiotemporal Alterations in China's GPP Based on the DTEC Model

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Table S1. Grading of the impact of GPP_{CC} and GPP_{HA}.

*Slope (*GPP)[a]	Degree of impact
≤ -25	Significantly suppressed
-25 ~ -5	Moderately suppressed
-5 ~ -1	Slightly suppressed
-1 ~ 1	Stable
1 ~ 5	Slightly promoted
5 ~ 25	Moderately promoted
≥ 25	Significantly promoted

Note: "*a*" refers to the trend of GPP changes influenced of climate change or anthropogenic activities.

Table S2. Determination Criteria for Drivers of China's GPP Changes and Calculation Method of Contribution Rate.

Slope (GPP)	Driving factors	Predicted and residual		Relative contribution (%)	
		Slope (GPP_{CC})	Slope (GPP_{HA})	C_{CC}	C_{HA}
>0	CC&HA	>0	>0	$\frac{slope(GPP_{CC})}{slope(GPP)}$	$\frac{slope(GPP_{HA})}{slope(GPP)}$
	CC	>0	<0	100	0
	HA	<0	>0	0	100
<0	CC&HA	<0	<0	$\frac{slope(GPP_{CC})}{slope(GPP)}$	$\frac{slope(GPP_{HA})}{slope(GPP)}$
	CC	<0	>0	100	0
	HA	>0	<0	0	100

Where CC and HA represent climate change and human activities, respectively; C_{CC} and C_{HA} represent the contributions of climatic factors and human activities to GPP; and GPP_{CC} and GPP_{HA} represent the trend values of CC and HA.

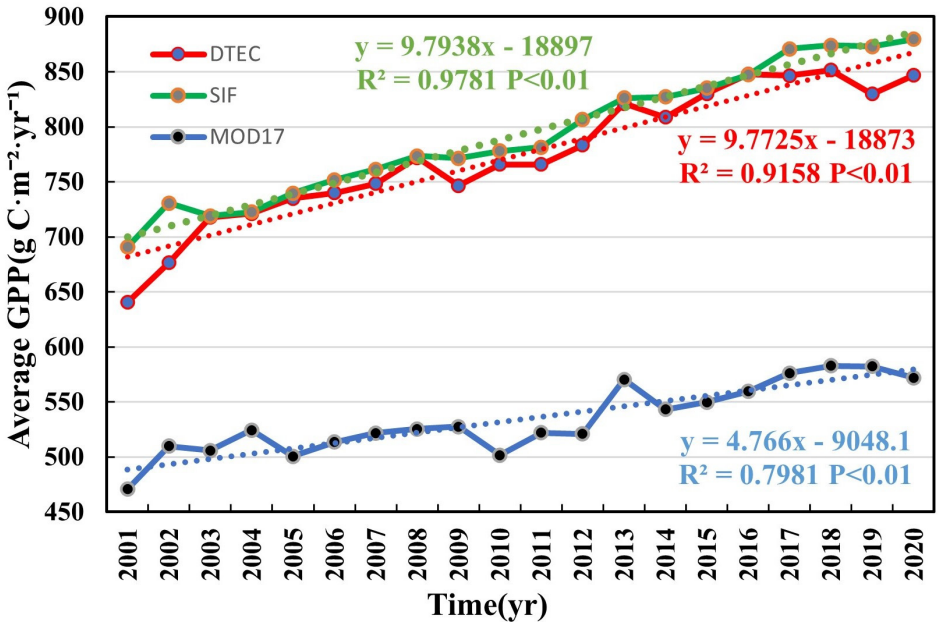

Figure S1. Inter-annual changes in China's GPP from 2001 to 2020, where DTEC stands for the simulated value of the DTEC model, SIF stands for the simulated value of the GO-SIF model, and MOD17 stands for the simulated value of the MOD17 model.

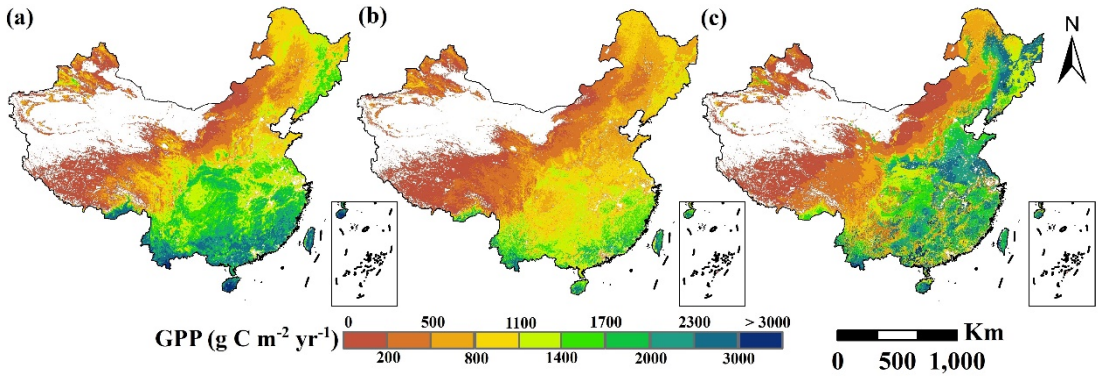

Figure S2. Spatial distribution of the annual mean values of GPP from 2001 to 2020: GO-SIF (a), MOD17 (b), and DTEC(c). Among them, the darker the blue color, the higher the value of GPP in the region.

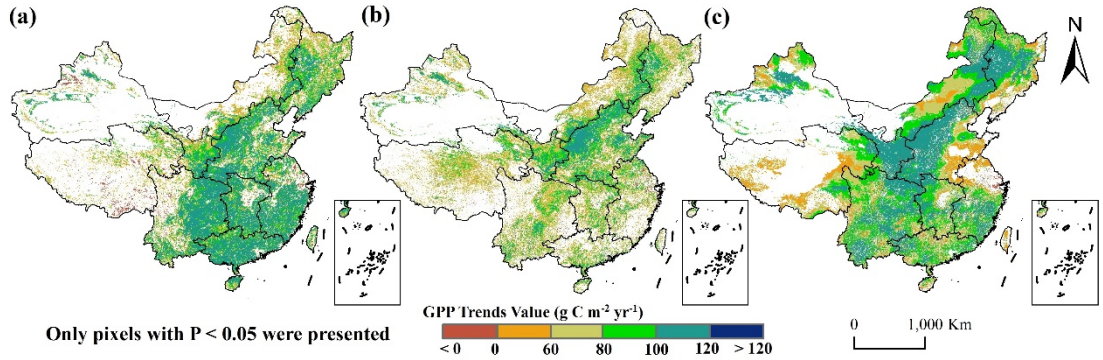

Figure S3. Spatial distribution of GPP passing the significance test for 2001-2020: GO-SIF (a), MOD17 (b), and DTEC (c). Among them, the darker the blue color, the higher the trend of GPP growth in the region.

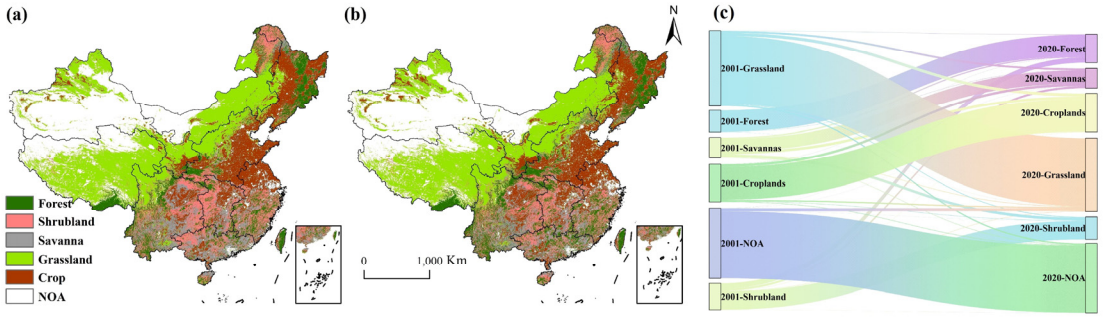

Figure S4. Spatial distribution of land use types in China from 2001 (a) to 2020 (b) and conversion between different land use types from 2001 to 2020 (c). The land use types in China were resampled into six: forest, shrubland, savanna, grassland, crop, and non-vegetated area (NOA).