

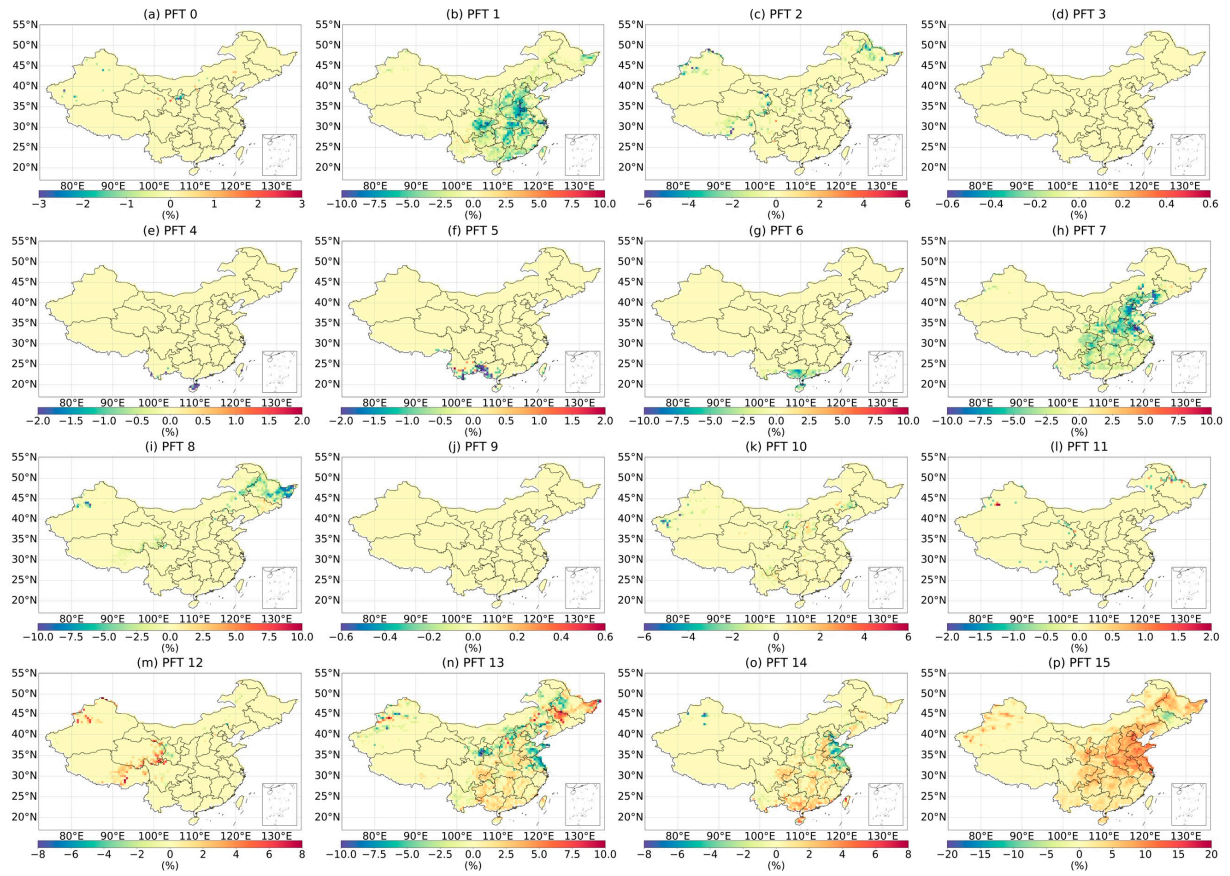
## Supplementary Materials

### Spatial distribution and change in individual plant function types in China

The main distribution areas and distribution changes in China during 1850–2014 for each of the 16 types of vegetation (**Table S1**) coverage are summarized in the following (Figure S1).

**Table S1.** The 16 Chinese plant function types in LUH2.

Abbreviation	Plant functional type
PFT 0	Non-vegetated areas
PFT 1	Areas of needleleaf–evergreen–temperate tree land
PFT 2	Areas of needleleaf–evergreen–boreal tree land
PFT 3	Areas of needleleaf–deciduous–boreal tree land
PFT 4	Areas of broadleaf–evergreen–tropical tree land
PFT 5	Areas of broadleaf–evergreen–temperate tree land
PFT 6	Areas of broadleaf–deciduous–tropical tree land
PFT 7	Areas of broadleaf–deciduous–temperate tree land
PFT 8	Areas of broadleaf–deciduous–boreal tree land
PFT 9	Areas of broadleaf–evergreen–shrub land
PFT 10	Areas of broadleaf–deciduous–temperate shrub land
PFT 11	Areas of broadleaf–deciduous–boreal shrub land
PFT 12	Areas of C3–arctic–grassland
PFT 13	Areas of C3–nonarctic–grassland
PFT 14	Areas of C4–grassland
PFT 15	Areas of C3–cropland



**Figure S1** Distribution of the change in proportion of 16 plant functional types (PFTs 0–15) in China during 1979–2012.

Areas of non-vegetated land (PFT 0) were widely distributed in the deserts of Northwest China, on the Qinghai–Tibetan Plateau, and in northwestern Inner Mongolia. The areal proportion declined to differing degrees around some desert areas in Northwest China and Inner Mongolia, with a decrease rate of 0%–3%. Moreover, some small increase occurred in Gansu and Inner Mongolia as well by approximately 1%–2%.

Areas of needleleaf–evergreen–temperate tree land (PFT 1) were widely distributed in North China, Northeast China, Central China, Southeast China, and Southwest China. North China, Central China, East China, Northeast China, and eastern parts of Southwest China all showed a reduction with a rate of decrease of 0%–10%; the largest decreases appeared in eastern parts of Sichuan Province and the border area of Hebei, Shandong, and Anhui Provinces. Areas of needleleaf–evergreen–boreal tree land (PFT 2) were distributed in Northeast China, eastern parts of the Qinghai–Tibetan Plateau, and Xinjiang Province, where the areal distribution decreased by <6%. Of the needleleaf–deciduous–boreal tree land (PFT 3) areas, very few were distributed in the far north of Northeast China, and they remained broadly unchanged. Of the areas of broadleaf–evergreen–tropical tree land (PFT 4), only those in the southern areas of South China, such as Yunnan and Hainan provinces, decreased by between 1% and 2%. Areas of broadleaf–evergreen–temperate tree land (PFT 5) were distributed in

Yunnan and Guangxi provinces. The areal distribution decreased in southern parts at a rate of 1%–2% (greatest in the southeast of Guangxi Province), but some areas in Yunnan Province showed a slight increase. The areas of broadleaf–deciduous–tropical tree land (PFT 6) were distributed in southernmost China, including in Guangdong, Guangxi, and Hainan provinces, and a reduction of 0%–10% in the areal distribution was pervasive, with the largest decreases in southern Guangxi Province and Hainan Province. Areas of broadleaf–deciduous–temperate tree land (PFT 7) were distributed in Eastern China but mainly in North China and Central China. In North China, Central China, and Southern China, the areal distribution decreased at a rate of 0%–20%; North China and Central China had the largest reduction, followed by eastern parts of Southern China. Areas of broadleaf–deciduous–boreal tree land (PFT 8) were distributed in Northeast China and Qinghai Province, Gansu Province, Ningxia Province, and western Xinjiang Province. In all regions, the reduction in areal distribution was pervasive, with the greatest rate of decrease of 5%–9% in Northeast China (even up to >10% in easternmost parts) and a smaller rate of decrease of 0%–5% in other areas.

There was almost no distribution of broadleaf–evergreen–shrub land (PFT 9) in China. Of the areas of broadleaf–deciduous–temperate shrub land (PFT 10), a small amount was distributed unevenly in both Eastern China and Western China. In some areas of Northwest China, the rate of decrease was approximately 5%, whereas in other areas of northern China, the rate of increase was approximately 2%. Moreover, some quite slight increases also occurred in many areas of Eastern China. Areas of broadleaf–deciduous–boreal–shrub land (PFT 11) were mainly distributed on the Qinghai–Tibetan Plateau, in northwestern Xinjiang Province, and Northeast China. Small changes (both increases and decreases) in areal distribution occurred in scattered small parts of Western China and a small part of Northeast China, whereas there was no evident change in other areas.

Areas of C3–arctic grassland (PFT 12) were mainly distributed on the Qinghai–Tibetan Plateau, in northwestern Xinjiang Province, and in western Northeast China; the densest distribution was on the Qinghai–Tibetan Plateau. Overall, the trend showed a significant increase at a rate of 0%–8% in the southern and eastern parts of the Qinghai–Tibetan Plateau and northwestern Xinjiang Province but a small decrease (<3%) in the Greater Khingan Mountains and Gansu Province. The areas of C3–nonarctic grassland (PFT 13) were widely distributed except on the Qinghai–Tibetan Plateau and in most parts of Northwest China. Initially, the distribution was mainly in northern China, but the distribution in the north and the south tended to become equivalent over time, though the most intensive distribution was in Northeast China. In addition to Yunnan Province, which had a rate of decrease of approximately 2.5%, the distributions in southern China increased at the rate of 0%–5%. However, in East China and the provinces close to Inner Mongolia province, there was a significant decrease of 0%–8%, and the highest rate was close to 10%. In Northwest China, which also had small parts of decrease and increase in northwestern Xinjiang Province, the overall range of change was not large. The areas of C4–grassland (PFT 14) were mainly distributed in eastern and southern China. Overall, the areal distribution increased at a rate of 0%–5% (highest in the southern coastal areas), though small decreases (approximately 5%) occurred in Shandong and Jiangsu provinces.

The distribution and change for cropland (PFT 15) can be found in Section 3.7.