Table S1 Criteria for Surveying Dominant Tree Species (Groups) by Age Class

Tree species	Area	Origin	Age group division					Age class division
			young forest	middle-aged forest	near-mature forest	mature forest	over-mature forest	
Pinus koraiensis, Picea asperata, Cupressus funebris, Taxus cuspidata, Tsuga chinensis	N	natural forest	<60	61-100	101-120	121-160	>161	20
	N	plantation	<40	41-60	61-80	81-120	>121	20
	S	natural forest	<40	41-60	61-80	81-120	>121	20
	S	plantation	<20	21-40	41-60	61-80	>81	20
Larix gmelinii, Abies fabri, Pinus sylvestris, Pinus densiflora, Pinus thunbergii	N	natural forest	<40	41-80	81-100	101-140	>141	20
	N	plantation	<20	21-30	31-40	41-60	>61	10
	S	natural forest	<40	41-60	61-80	81-120	>121	20
	S	plantation	<20	21-30	31-40	41-60	>61	10
Pinus tabuliformis, Pinus massoniana, Pinus yunnanensis, Pinus kesiya, Pinus armandii, Pinus densata	N	natural forest	<30	31-50	51-60	61-80	>81	10
	N	plantation	<20	21-30	31-40	41-60	>61	10
	S	natural forest	<20	21-30	31-40	41-60	>61	10
	S	plantation	<10	11-20	21-30	31-50	>51	10
Populus, Salix, Eucalyptus robusta, Sassafras, Paulownia fortunei, Casuarina equisetifolia, Melia azedarach, Pterocarya stenoptera, Acacia, soft broadleaf	N	plantation	<10	11-15	16-20	21-30	>31	5
	S	plantation	<5	6-10	11-15	16-25	>26	5
Betula, Ulmus pumila, Schima superba, Liquidambar formosana, Davidia involucrata	N	natural forest	<30	31-50	51-60	61-80	>81	10
	N	plantation	<20	21-30	31-40	41-60	>61	10
	S	natural forest	<20	21-40	41-50	51-70	>71	10
	S	plantation	<10	11-20	21-30	31-50	>51	10
Quercus, Xylosma congesta, Castanopsis sclerophylla, Castanopsis fargesii, Cinnamomum camphora, Phoebe zhennan, Tilia tuan, Fraxinus mandschurica, Juglans regia, Phellodendron amurense, hardwood	N/S	natural forest	<40	41-60	61-80	81-120	>121	20
	N/S	plantation	<20	21-40	41-50	51-70	>71	10
Cunninghamia lanceolata, Cryptomeria fortunei, Metasequoia glyptostroboides	S	plantation	<10	11-20	21-25	26-35	>36	5

N is for Northern China, and S is for Southern China

Table S2 The average age of different forest age classes of dominant tree species

Forest Type	Region	young forest	middle-aged forest	near-mature forest	mature forest	over-mature forest
Pinus koraiensis, Picea asperata, Cupressus funebris, Taxus cuspidata, Tsuga chinensis	N	25	65	90	120	160
	S	15	40	60	85	120
Larix gmelinii, Abies fabri, Pinus sylvestris, Pinus densiflora, Pinus thunbergii	N	15	42.5	62.5	85	115
	S	15	37.5	52.5	75	105
Pinus tabuliformis, Pinus massoniana, Pinus yunnanensis, Pinus kesiya, Pinus armandii, Pinus densata	N	12.5	32.5	45	60	80
	S	7.5	20	30	45	65
Populus, Salix, Eucalyptus robusta, Sassafras, Paulownia fortunei, Casuarina equisetifolia, Melia azedarach, Pterocarya stenoptera, Acacia, soft broadleaf	N	5	12.5	17.5	25	35
	S	2.5	7.5	12.5	20	30
Betula, Ulmus pumila, Schima superba, Liquidambar formosana, Davidia involucrata	N	12.5	32.5	45	60	80
	S	7.5	22.5	35	50	70
Quercus, Xylosma congesta, Castanopsis sclerophylla, Castanopsis fargesii, Cinnamomum camphora, Phoebe zhennan, Tilia tuan, Fraxinus mandschurica, Juglans regia, Phellodendron amurense, hardwood	N	15	40	57.5	80	110
	S	15	40	57.5	80	110
Cunninghamia lanceolata, Cryptomeria fortunei, Metasequoia glyptostroboides	N	-	-	-	-	-
	S	5	15	22.5	30	40
Mixed coniferous and broadleaf forests	N	15.42	40.96	57.79	77.92	104.75
	S	11.39	30.32	44.36	63.14	88.43
mixed coniferous forests	N	17.50	46.67	65.83	88.33	118.33
	S	12.08	31.46	45.73	65.42	92.08
mixed broadleaf forests	N	12.92	33.75	47.50	65.00	88.33
	S	10.42	28.75	42.50	60.00	83.33

The method of Dai et.al is as follows:

$$f(ci)=(c_N+c_p)/2 \ (i=1,2,3,4)$$

where f(ci) denotes the average stand age of an age group of a species; c_N denotes the average stand age of a natural forest of a dominant species; and c_P denotes the average stand age of a plantation of a dominant species; where i = 1,2,3,4 denotes the young, intermediate, near-mature and mature forest groups, respectively.

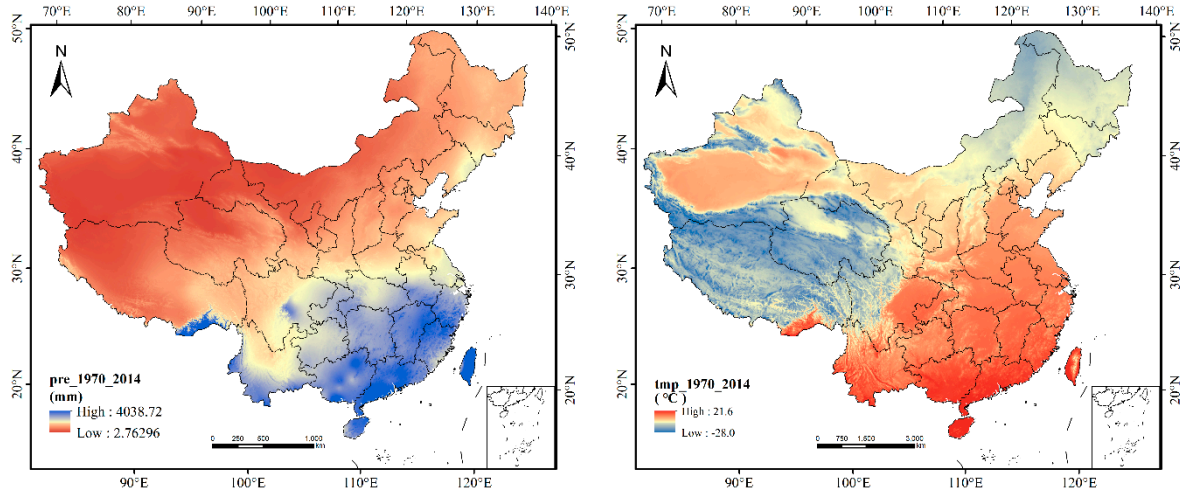
For the average age of over-mature forests of different dominant tree species take the minimum age specified in the *Technical Regulations for Continuous Forest Inventory* (2014) plus the average of the age classes (Table S1). Equation (1) is then substituted into equation (2) to calculate the average age of mixed coniferous forests, mixed broad-leaved forests, and mixed broad-leaved forests in each age group in the north and south:

$$g(tki) = \frac{1}{m}\sum_{j=1}^{m} f\left(C_{jki}\right) \quad (t=1,2,3)(k=1,2)(i=1,2,3,4,5)$$

Where t = 1, 2, 3 denotes mixed coniferous forest, mixed broad-leaved forest, mixed broad-leaved forest, respectively; k = 1, 2 denotes north and south, respectively; i = 1, 2, 3, 4, 5 denotes young forest group, middle-aged forest group, near-mature forest group, mature forest group, and overmature forest group, respectively; g (tki) denotes the average age of the i age group of the t-mixed forest in the k area; j denotes the number of dominant tree species belonging to the seven major categories of dominant tree species (groups) in the age-group classification table of t-type mixed forests; m denotes the number of tree species belonging to the j category of t-type mixed forests; The following table of average stand ages for different age groups of each dominant tree species was obtained (Table S2).

Table S3 Year of Forest Inventory in Each Province

Survey year	Province	number
2014	Jilin, Shanghai, Zhejiang, Anhui, Hubei, Hunan,Shaanxi	7
2015	Shanxi, Liaoning, Heilongjiang, Guangxi, Guizhou, Ningxia, Jiangsu	7
2016	Beijing, Hebei, Jiangxi, Tibet, Gansu, Xinjiang	6
2017	Tianjin, Shandong, Guangdong, Chongqing, Yunnan, Sichuan	6
2018	Inner Mongolia, Fujian, Henan,Hainan, Qinghai	5



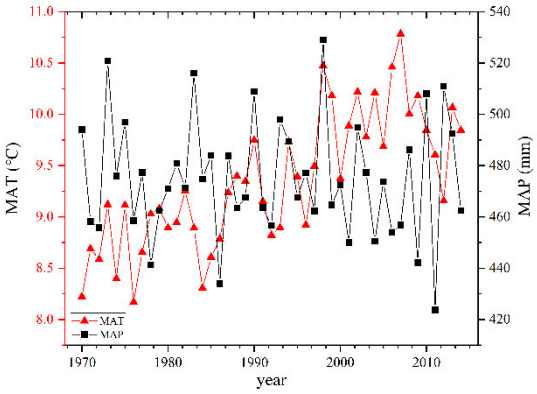


Figure S1. Temperature and precipitation in China, 1970-2014.

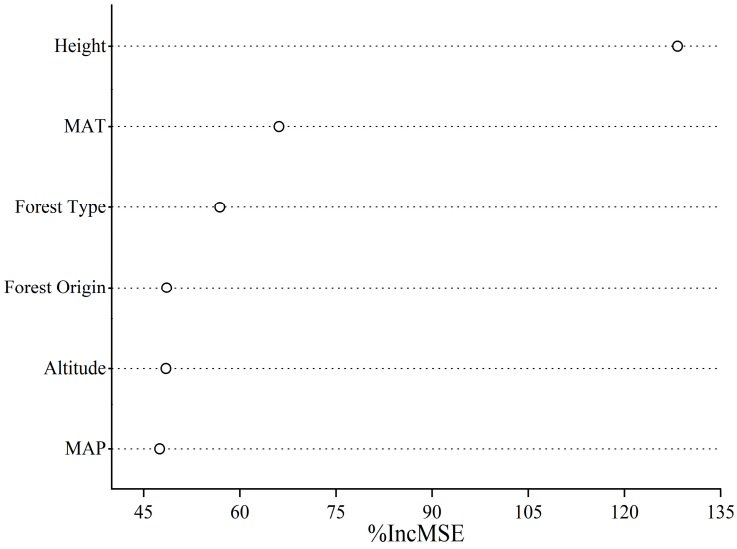


Figure S2. Importance of random forest variables

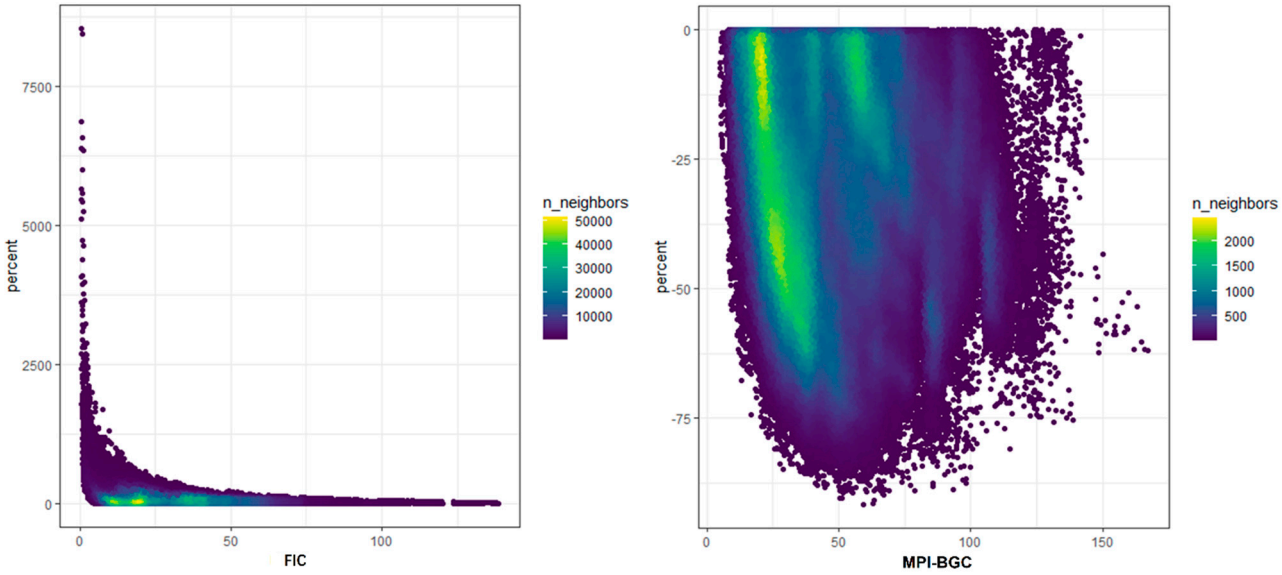


Figure S3. Percentage deviation between MPI-BGC age and FIC age

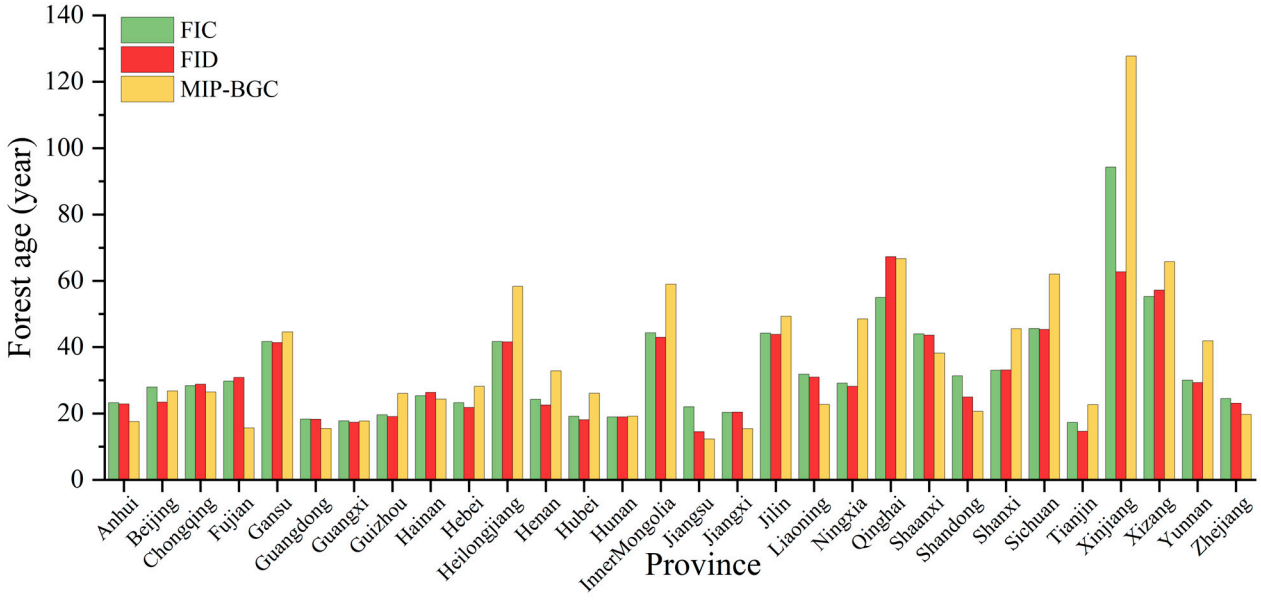


Figure S4 Differences between the different forest age datasets at the provincial scale

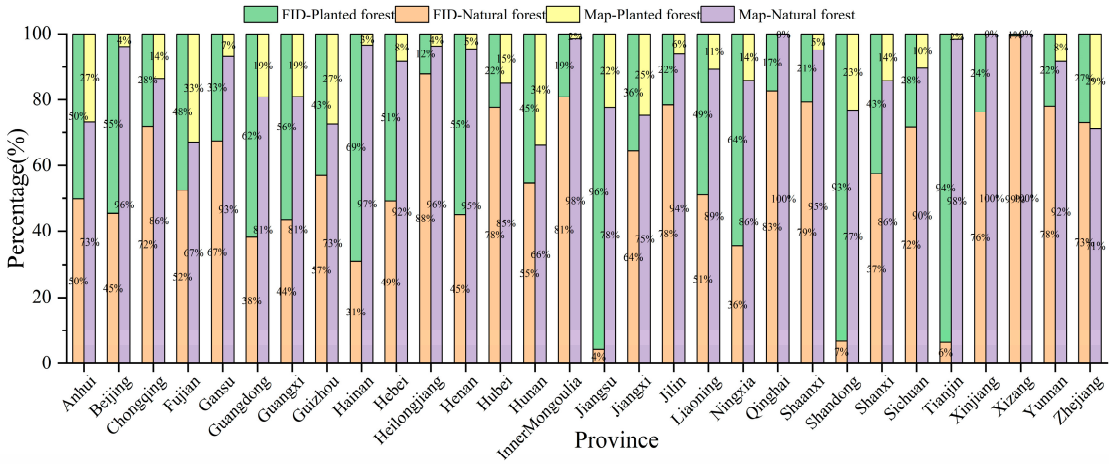


Figure S5 Proportion of artificial and natural forests in different provinces