Dear Editor,

Thank you very much for taking time out of your busy schedule to improve our manuscript. We have carefully considered your comments and revised the paper accordingly. The revised parts are marked in yellow. The replies to the two main issues are as follows:

The audience mentioned the proportion of young forests identified in this work is too low. The authors attributed it to the differences in inventory time and forest age classifications and mapping errors. However, these reasons are not persuasive. At least, the authors can calculate the annual areas of young forests (using varying age thresholds, e.g., 30 years, 40 years, 50 years) and compare them with statistics. In addition, the field validation should use more data (please refer to CPSDv0: A forest stand structure database for plantation forests over China).

Response:
The audience mentioned that the proportion (19%) of young forests identified in our work is quite different from the statistical value (32.67%, Table S1) of the ninth national forest inventory (NFI) of China. We have clarified this from the following three points:

(1) The proportion of 1-31-year-old forests in our product was calculated based on the total forest area (245.20 million hectares) in China, while the proportion of young forests in the 9th NFI was calculated based on the total area of arboreal forests (179.89 million hectares, see Table S1) in China. Therefore, if we calculated the proportion of 1-31-year-old forests based on the total area of arboreal forests, the value of our product will be higher (25.69%).

Table S1. Area and standing volume of different age groups of arboreal forests in China (State Forestry Administration of China, 2018)

Age groups	**Area (million ha)**	**Area ratio (%)**	**Standing volume (million m^3)**	**Standing volume ratio (%)**
Young	58.78	32.67	2139.14	12.54
Mid-aged	56.26	31.27	4821.35	28.26
Near-mature	28.61	15.91	3514.29	20.60
Mature	24.68	13.72	4011.11	23.52
Over-mature	11.56	6.43	2572.30	15.08
Total	179.89	100.00	17058.20	100.00

(2) The rule of age-group classification in NFI is completely different from our definition of young forest age. According to the regulations formulated by the State Forestry Administration of China on age-class and age-group division of main tree-species, the delineation of different age groups is varied to the tree species, forest

types, origins, and management level (State Forestry Administration of China, 2018). For example, the natural Pinus massoniana from north of China with less than 20 years old belongs to the young stage, while the natural Red Pine from North of China with less than 40 years old also belongs to the young forest (Table S2).

However, we definite the 1-31-year-old forests as young forests, which is different from the definition of the young forest group in NFI. Thus, it is difficult to uniform 1-31-year-old forests in our map with the statistics in NFI due to its limit forest age range (1-31 years) and other forest properties (e.g., tree species, forest types, origin and management level) that are needed in the classification of forest age groups.

Table S2. Age group division of main tree species in general timber forest (State Forestry Administration of China, 2018)

Tree species	**District**	**Origin**	**Age groups (unit: years)**				
			Young	**Mid-aged**	**Near-mature**	**Mature**	**Over-mature**
Red Pine, Spruce, Hemlock, Cedar	North	Natural	⩽60	61-100	101-120	121-160	⩾161
		Planted	⩽40	41-60	61-80	81-120	⩾121
	South	Natural	⩽40	41-60	61-80	81-120	⩾121
		Planted	⩽30	31-50	51-60	61-80	⩾81
Cupressus funebris	North	Natural	⩽60	61-100	101-120	121-160	⩾161
		Planted	⩽30	31-50	51-60	61-80	⩾81
	South	Natural	⩽40	41-60	61-80	81-120	⩾121
		Planted	⩽30	31-50	51-60	61-80	⩾81
Larch, Abies fabri, Black Pine, Pinyon Pine	North	Natural	⩽40	41-80	81-100	101-140	⩾141
		Planted	⩽20	21-30	31-40	41-60	⩾61
	South	Natural	⩽40	41-60	61-80	81-120	⩾121
		Planted	⩽20	21-30	31-40	41-60	⩾61
Pinus tabuliformis, Pinus massoniana	North	Natural	⩽30	31-50	51-60	61-80	⩾81
		Planted	⩽20	21-30	31-40	41-60	⩾61
	South	Natural	⩽20	21-30	31-40	41-60	⩾61
		Planted	⩽10	11-20	21-30	31-50	⩾51
Poplar, Willow, Tung tree, Paulownia, Acer negundo	North	Natural	⩽20	21-30	31-40	41-60	⩾61
		Planted	⩽10	11-15	16-20	21-30	⩾31
	South	Natural	-	-	-	-	-
		Planted	⩽5	6-.10	11-15	16-25	⩾26
Melia azedarach	South	Natural	⩽20	21-30	31-40	41-60	⩾61
		Planted	⩽5	6-10	11-15	16-25	⩾26
Robinia pseudoacacia	North	Regard less of origins	⩽10	11-15	16-20	21-30	⩾31
	South		⩽5	6-10	11-15	16-25	⩾26
Ephedra,	South	Planted	⩽5	6-10	11-15	16-25	⩾26

Eucalyptus							
Maple Birch, Birch (excluding Black Birch), Elm, Magnolia, Sweetgum	North	Natural	⩽30	31-50	51-60	61-80	⩾81
		Planted	⩽20	21-30	31-40	41-60	⩾61
	South	Natural	⩽20	21-40	41-50	51-70	⩾71
		Planted	⩽10	11-20	21-30	31-50	⩾51
	South	Planted	⩽20	21-40	41-50	51-70	⩾71
Spruce, Fir, Hemlock	South	Planted	⩽10	11-20	21-25	26-35	⩾36

(3) The forest parameters in the 9^{th} NFI were conducted between 2014 and 2018, while the forest area we have calculated is based on the data from 2020. This difference in time period may also result in some discrepancies.

Based on the above analysis, we believe that the proportion of 1-31-year-old forests in the manuscript is reasonable. However, to ensure the rigor of the manuscript and avoid any potential misinterpretation of this value by readers, we have made the following modifications to the relevant description.

"… To show the spatial distribution of young forest age more clearly, we divided the forest into four stand age classes, namely stand age class I (1–10 years), II (11–20 years), III (21–31 years) and IV (> 31 years). In the 1-31-year-old forests, stand age class III accounted for the largest proportion (39.32%), followed by stand age class II (38.34%). Stand age class I (22.34%) accounted for the smallest proportion."

In addition, thank you for your constructive suggestions about the field validation. We have carefully read the paper titled "CPSDv0: a forest stand structure database for plantation forests in China" and downloaded its dataset (CPSDv0). It should be noted that we have made pre-processing on this dataset in three aspects:

(1) We updated the forest age in CPSDv0 based on the investigation year of sampling plots. For example, if the sampling time was 2010 and the corresponding recorded forest age was 7 years, then in 2020, the forest age should be 2020-2010+7=17 years. It should be noted that this calculation is based on the assumption that there has been no logging or land use conversion since the survey time of the sampling points.

(2) We filtered out the observation points related to longitude or latitude recorded in decimal degree notation with only two or three decimal places retained because such sampling plots do not include precise geographical coordinates.

(3) Observation points with forest ages older than 31 were also filtered out because we only calculated 1-31-year-old forest in our product.

Then, we used the coordinates of these observation points to find out the predicted forest age in our product. If the predicted age is less than the value of 2020 minus the year of investigation, we will delete this observation, as we cannot determine whether forest succession has occurred at the observation point after the year of investigation. Finally, we obtained 28 records with accurate geographical locations from CPSDv0. After combining them with the 23 validation points that we previously collected from other studies, we now have a total of 51 field measurements (Table 3). We conducted a new evaluation of forest age based on the updated field measurements. Referring to the field measurements, the predicted forest age has a correlation coefficient of 0.77 and root mean square error (RMSE) of 5.15, suggesting an acceptable correlation with the field measurements (Figure 10). Accordingly, we have updated the relevant descriptions and charts in the manuscript.

"4.1.3 Evaluation based on field measurements
The data of field measurements are composed of two parts. The first part was derived from 150 relevant papers published after 2020 from China National Knowledge Infrastructure (CNKI). We searched them using the following keywords: China and forest age. The second part was derived from Wu et al. (2023). It should be pointed out that three pre-processing steps were performed on this dataset. First, we updated the forest age in field measurements based on the investigation year of sampling plots. For example, if the sampling time was 2010 and the corresponding recorded forest age was 7 years, then in 2020, the forest age should be 2020-2010+7=17 years. It should be noted that this calculation is based on the assumption that there has been no logging or land use conversion since the survey time of the sampling points. Second, we filtered out the observation points related to longitude or latitude recorded in decimal degree notation with only two or three decimal places retained, because no precise geographical coordinates are available for these sampling plots without. Third, observation points with forest ages older than 31 were also filtered out because we only calculated 1-31-year-old forest in our product.

Then, we used the coordinates of these observation points to find out the predicted forest age in our product. If the predicted age is less than the value of 2020 minus the year of investigation, we will delete this observation, as we cannot determine whether forest succession has occurred at the observation point after the year of investigation. Finally, we obtained 51 field measurements (Table 3) with accurate geographical locations. Figure shows the scatter plot between the field measurements and predicted forest age. Referring to the field measurements, the predicted forest age has a correlation coefficient of 0.77 and root mean square error (RMSE) of 5.15, suggesting an acceptable correlation with the field measurements."

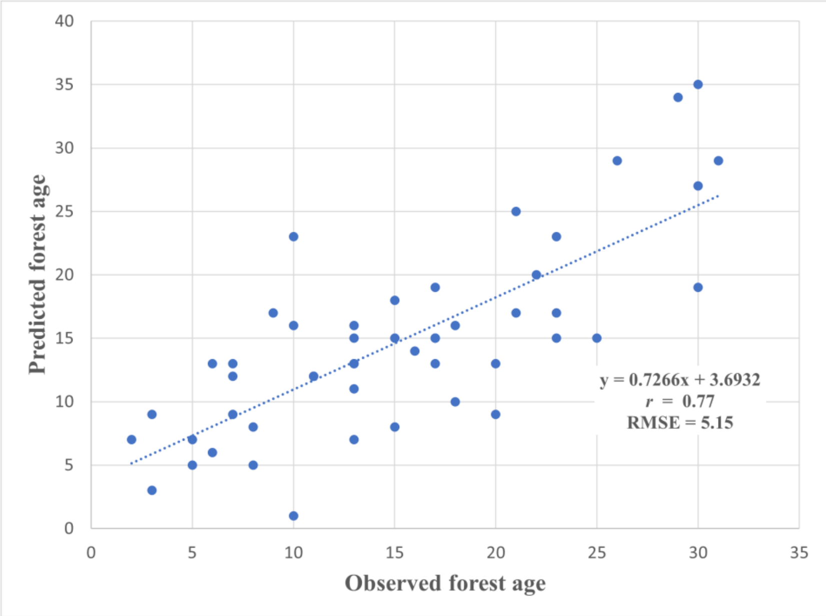

Figure 10. Comparison between the forest age derived from field measurements (observed forest age) and predicted forest age.

Table 3. Information on the 51 field measurements.

ID	Longitude	Latitude	Observed forest age	Predicted forest age	Year of investigation	Source
1	109.328858	23.050233	3	3	2021	Li et al. (2021)
2	109.332939	23.053525	8	8	2021	Li et al. (2021)
3	109.242036	23.111756	18	16	2021	Li et al. (2021)
4	109.160242	23.053275	21	25	2021	Li et al. (2021)
5	109.159194	23.040914	29	34	2021	Li et al. (2021)
6	122.491287	42.717326	20	9	2015	Han et al. (2022)
7	122.571380	42.684847	30	35	2015	Han et al. (2022)
8	113.421000	23.245000	6	6	2020	Chen et al. (2022)
9	113.393000	23.226000	10	23	2020	Chen et al. (2022)
10	113.419000	23.256000	15	18	2020	Chen et al. (2022)
11	113.394000	23.212000	20	13	2020	Chen et al. (2022)
12	113.381000	23.255000	30	27	2020	Chen et al. (2022)
13	106.740000	26.520000	11	12	2019	Yin et al. (2021)
14	110.465833	22.048333	5	5	2020	Song et al. (2021)
15	110.500833	21.919167	15	15	2020	Song et al. (2021)
16	110.500278	22.022222	5	7	2020	Song et al. (2021)
17	110.517500	21.908056	15	8	2020	Song et al. (2021)
18	110.516111	21.908056	10	1	2020	Song et al. (2021)
19	117.935278	26.881389	7	9	2017	Feng et al. (2021)
20	118.451667	26.243333	2	7	2020	Hong et al. (2021)
21	116.650833	25.172778	3	9	2020	Hong et al. (2021)

22	118.351389	27.317500	7	12	2020	Hong et al. (2021)
23	117.802222	27.275556	9	17	2020	Hong et al. (2021)
24	104.5672222	28.60166667	17	15	2011	Wu et al. (2023)
25	104.5769	28.6093	8	5	2015	Wu et al. (2023)
26	106.8760472	22.06267778	13	11	2013	Wu et al. (2023)
27	106.9072889	22.02632778	23	15	2013	Wu et al. (2023)
28	106.910175	22.02430833	23	17	2013	Wu et al. (2023)
29	106.9112	22.03783056	13	13	2013	Wu et al. (2023)
30	106.9132222	22.02641667	23	23	2013	Wu et al. (2023)
31	108.1666667	22.86666667	17	15	2012	Wu et al. (2023)
32	109.1713889	36.07972222	30	19	2015	Wu et al. (2023)
33	109.2833333	21.96666667	22	20	2012	Wu et al. (2023)
34	109.3582222	19.51252778	13	16	2012	Wu et al. (2023)
35	109.4833333	23.91666667	17	19	2009	Wu et al. (2023)
36	109.6075556	26.69930556	13	15	2010	Wu et al. (2023)
37	109.6076667	26.70025	13	13	2010	Wu et al. (2023)
38	109.8933333	24.76333333	13	7	2012	Wu et al. (2023)
39	110.1018333	21.26166667	6	13	2015	Wu et al. (2023)
40	110.10185	21.26188333	7	13	2015	Wu et al. (2023)
41	110.4028833	34.0909	17	13	2012	Wu et al. (2023)
42	110.6969444	30.91891667	25	15	2015	Wu et al. (2023)
43	112.8481306	27.29384722	11	12	2013	Wu et al. (2023)
44	112.8485611	27.29428611	10	16	2013	Wu et al. (2023)
45	113.3548833	27.35978889	11	12	2013	Wu et al. (2023)
46	113.3865194	27.35451667	18	10	2013	Wu et al. (2023)
47	116.4591167	25.63750278	17	15	2011	Wu et al. (2023)
48	117.5247222	26.81388889	21	17	2014	Wu et al. (2023)
49	117.5408333	26.80722222	16	14	2014	Wu et al. (2023)
50	119.8430556	30.24833333	31	29	2014	Wu et al. (2023)
51	122.5455556	52.97833333	26	29	2010	Wu et al. (2023)

The correction of spatial discontinuity should give clear figures and clarify why there were sharp edges between forests of older than 30 years and those of younger than 30 years.

Response:
Thank you very much for your comments and suggestions. The reason for the spatial discontinuity is that in our previous version, we did not unify the pixels greater than 31 years into one category. That is, we did not mask the areas with forest ages over 31 years, resulting in spatial discontinuity of the product. The reason for the existence of >31 years forest is that in some areas, data from 1985 are available. Thus, for these areas, we can estimate forest age of 32-35 years. However, some areas in China do

not have images before 1990, so only young forests under 31 years old can be mapped in these areas.

In the new version, to ensure the consistency of the forest age range nationwide, the forest age range we produced has been set to 1-31 years. That is, for all areas with ages larger than 31 years, we just set a uniform value presenting the meaning of > 31 years. This problem has been solved in the new version of the product, which is now openly available at https://doi.org/10.6084/m9.figshare.21627023.v7. Figures S2-S5 show the initial version of the dataset of forest age and its new version in four regions.

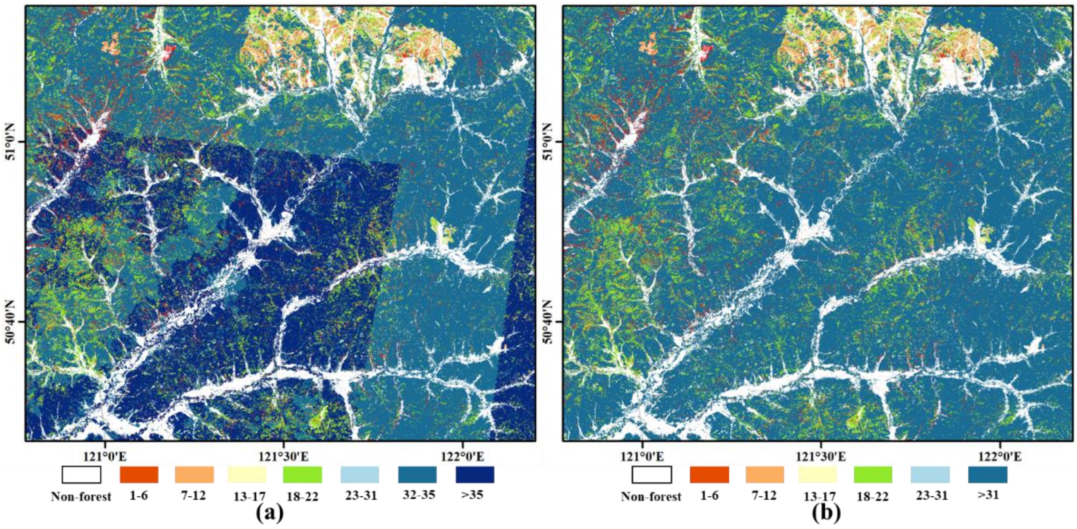

Figure S2. Initial version (a) of the dataset of forest age and its new version (b) in region 1 (R1).

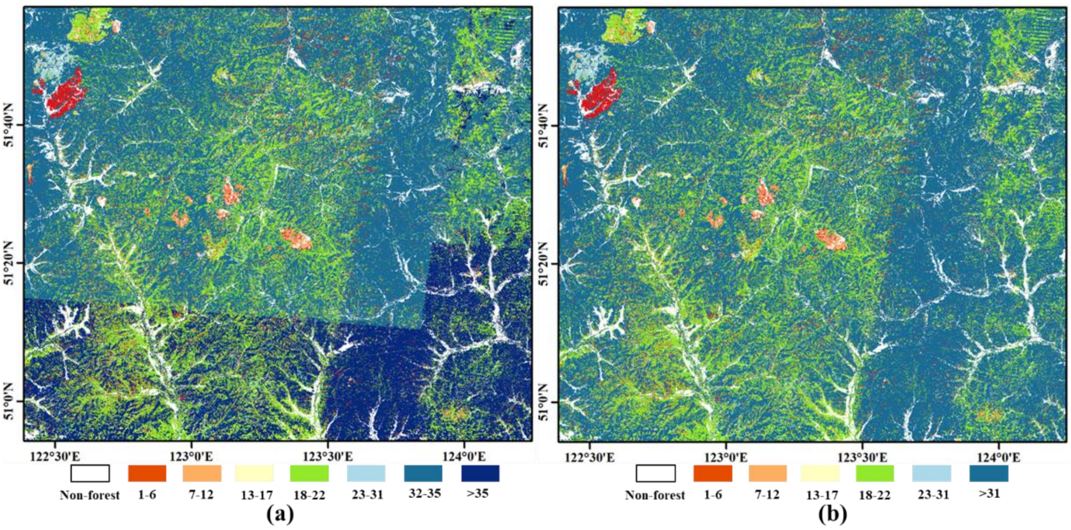

Figure S3. Initial version (a) of the dataset of forest age and its new version (b) in region 2 (R2).

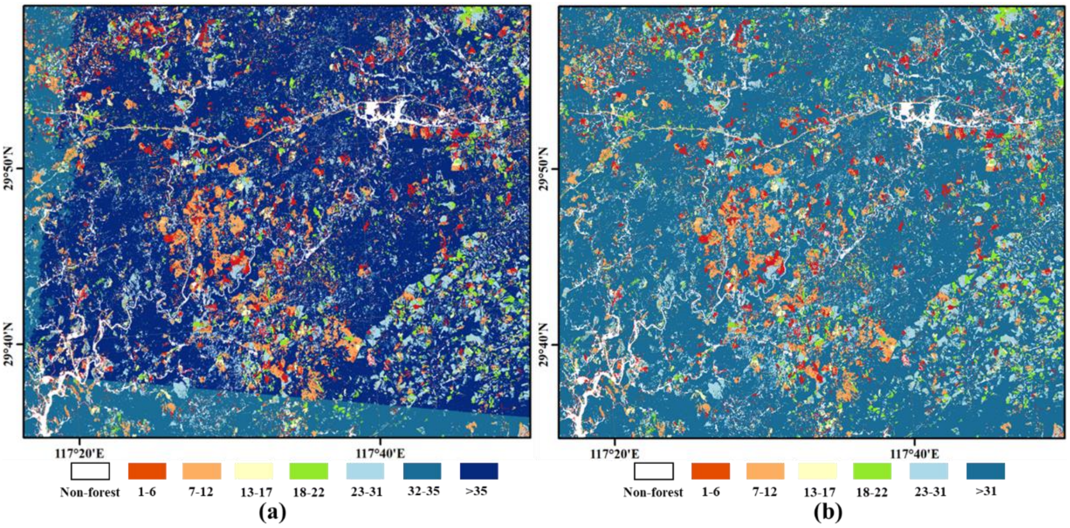

Figure S4. Initial version (a) of the dataset of forest age and its new version (b) in region 3 (R3).

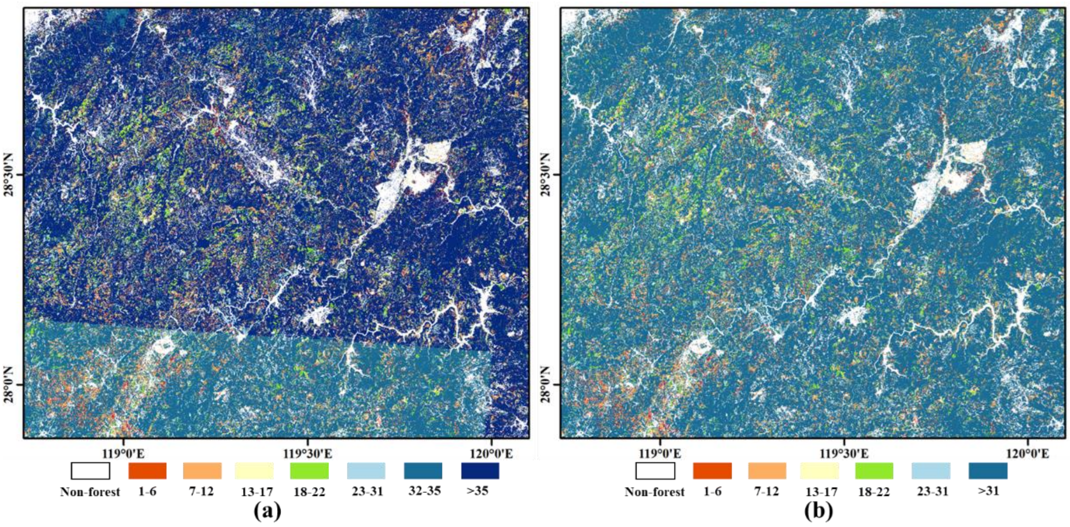

Figure S5. Initial version (a) of the dataset of forest age and its new version (b) in region 4 (R4).

Thank you again for your work on our paper. We look forward to hearing from you in due course.

With best wishes
The authors

References

State Forestry Administration of China. *"Regulations for age-class and age-group division of main tree-species."* (2018).