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<b>Abstract</b>	The forest biomass (which is referred to the arbor aboveground biomass in this research) is one of the most primary factors to determine the forest ecosystem carbon storages. There are many kinds of estimating methods adapted to various scales. It is a suitable method to estimate forest biomass of the farm or the forestry bureau in middle and last scales. First each subcompartment forest biomass should be estimated, and then the farm or the forestry bureau forest biomass was estimated. In this research, based on maoershan farm region, first the single tree biomass equation of main tree species was established or collected. The biomass of each specie was calculated according to the materials of tally, such as height, diameter and so on in the forest inventory data. Secondly, each specie' s biomass and total biomass in subcompartment were calculated according to the tree species composition in forest management investigation data. Thus the forest biomass spatial distribution was obtained by taking subcompartment as a unit. And last the forest total biomass was estimated.
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## Forest Biomass Estimation Based On Forest Inventory Data In Middle And Last Scales

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**Keywords:** Forest biomass, Forest inventory data, Maershan forest farm

**Abstract.** The forest biomass (which is referred to the arbor aboveground biomass in this research) is one of the most primary factors to determine the forest ecosystem carbon storages. There are many kinds of estimating methods adapted to various scales. It is a suitable method to estimate forest biomass of the farm or the forestry bureau in middle and last scales. First each subcompartment forest biomass should be estimated, and then the farm or the forestry bureau forest biomass was estimated. In this research, based on maershan farm region, first the single tree biomass equation of main tree species was established or collected. The biomass of each specie was calculated according to the materials of tally, such as height, diameter and so on in the forest inventory data. Secondly, each specie's biomass and total biomass in subcompartment were calculated according to the tree species composition in forest management investigation data. Thus the forest biomass spatial distribution was obtained by taking subcompartment as a unit. And last the forest total biomass was estimated.

### Introduction

The main carbon store form in the land ecosystem divided by the ecology type is forest, grassland, wetland, cultivated land and so on. Others such as tundra and desert is only a small proportion. Among the global different vegetation types of carbon reserves, land ecosystem carbon reserves is mainly in forest area, and about 77 percent global vegetation carbon reserves is in forest biomass<sup>[1]</sup>. Quantitative evaluation of the forest solid carbon is very important for the study of the carbon content in the atmosphere, land, sea and the cyclic process of the mutually transform. It is also an important way to open out the global change mechanism and constitute the sustainable development tactic. Therefore, the quantitative investigation of the forest ecosystem function in global CO<sub>2</sub> balance of revenues and expenditures is always the global carbon cycle researches' difficulty and hot spot since 1960's era<sup>[2]</sup>. As early as the 20th century and 50's, country scientists in Japan, former Soviet Union, England have already started to investigate and collect the material of the country's main forest ecosystem biomass. In the international biology plans (IBP) period, the global forest biomass research work developed greatly which provided the essential and absolutely necessary data for the global forest ecosystem biomass distributed pattern as well as the global change research. Forest vegetation biomass research in our country started at the end of 70's and the beginning of 80's in the 20th century. Fang Jingyun<sup>[3]</sup> estimated that the Chinese forest vegetation carbon reserves was 4.1PgC according to the third forest inventory material (1984-1988) (according to 0.45 conversion ratio between the dry material of biomass and the carbon quantity); Wang Yexu<sup>[4]</sup> estimated that the forest vegetation carbon reserves was 5.41PgC according to the plots' investigation material of part province in the fourth forest inventory (1989-1993); Liu Guohua<sup>[5]</sup> calculated our country's forest carbon storage in lately 20 years by using forest resources inventory material from the first (1973-1976) to the fourth (1989-1993), which indicated that the forest total carbon reserves respectively was 3.75, 4.12, 4.06 and 4.20PgC in our country's four forest resources inventory (1973-1976, 1977-1981, 1984-1988 and 1989-1993); Fang Jingyun<sup>[6]</sup> estimated the Chinese forest vegetation carbon reserves changing from 4.38 to 5.06PgC in 50 years by using seven forest resource inventory material from 1949 to 1998. Obviously, a majority of researches all aimed at the entire forest which the forest biomass carbon

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