

Changes in Forest Biomass Carbon Storage Between 1971 and 2018 in Tonya

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Abstract: Climate change is seen as one of the most common problems of the world today. Countries, organizations are making extraordinary efforts to reduce the negative effects of this phenomenon. Forests are accepted as the biggest mechanism with the advantage of storing large quantities of carbon as well as having the opportunity to increase their carbon content through increasing the size, apply rehabilitation in the degraded stands, or doing interventions. Therefore, monitoring the forests, taking measures and applying forestry activities when needed is utmost important. In this regard, temporal monitoring of the amount of carbon in forest biomass offers advantages as it is easy to implement and understand. In this study, forest biomass carbon was displayed for Tonya Planning Unit (PU), works under Trabzon Forest Enterprise for the periods between 1971 and 2018, meaning nearly half century. Tonya PU is covering a total area of 12,532.3 ha, of which 5620.7 ha (44.8%) is forested landscape. The vegetation type is primarily composed of Oriental Spruce (*Picea orientalis* Link), Oriental Beech (*Fagus orientalis* Lipsky) and Alder (*Alnus glutinosa sub. barbata* Mey). There is also certain amount of Anatolian Chestnut (*Castanea sativa* Mill.), and Hornbeam (*Carpinus orientalis*) dominated stands. Tree specific biomass expansion factors were used in the calculation of above and belowground biomass carbon content. In addition to determining the amount of total carbon, the outputs were handled in the context of forest dynamics represented by temporal changes of land cover. Quantitative evidence showed that there were drastic changes of carbon storage in above and below ground forest ecosystems between two periods.

Keywords: Forest biomass, Biomass expansion factors, Carbon storage, Temporal change, Tonya.