Carbon stock of coarse woody debris in Japanese forests

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The national forest soil inventory project of Japan was launched from 2006 in order to support reporting to the United Nations Framework Convention on Climate Change (UNFCCC). The second phase of the project had been started from FY2011 to FY2015. The project is collecting data from Japanese forests with respect to three carbon compartments in pedosphere; soil, litter, coarse woody debris (CWD). Here, we report our preliminary results of the analyses of CWD compartments based on 2636 plots in the second phase of the project.

The CWD data used in this study include dead wood, stump, and blighted tree. We obtained the average CWD carbon stock of 0.75 ± 0.98 kg m^{-2}, that is 8.3% of total soil carbon stock.

In secondary forests, CWD was produced by mortality dues to environmental stress, snow damage, wind damage, disease, insect pests, competition and aging. In contrast, CWD in plantation was generated by thinning or large-scale felling for forest management. The CWD in secondary forests, cedar plantation, and Japanese cypress plantation has average carbon stocks of 0.60 ± 0.83 kg m^{-2}, 1.16 ± 1.24kg m^{-2}, and 1.14 ± 0.94kg m^{-2}, respectively. These results suggest that the CDW carbon stock differs largely between secondary forest and plantation. Considering other conditions such as management practice and above ground biomass, we plan to report characteristics of CWD carbon stock in Japanese forest through different types and ages.

Keywords: soil carbon stock, forest ecosystem, inventory

表1　枯死木の調査方法とサイズ計測箇所

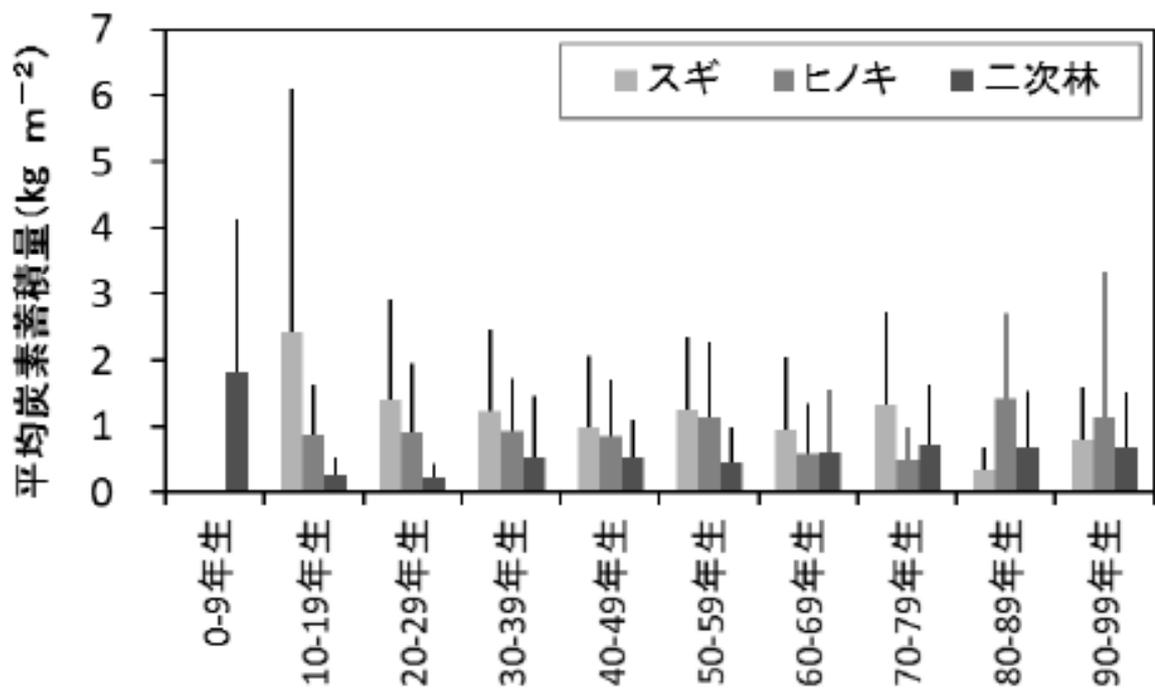| 枯死木の種類	調査方法	サイズの測定方法
倒木	ラインインターセクト法	ライン上の直径
根株	ベルトトランセクト法	直径、地際直径、斜面上部高、斜面下部高
立枯木	ベルトトランセクト法	胸高直径、高さ

図1　林齢による枯死木の平均炭素蓄積量
エラーバーは標準偏差を示す。