



Assessment of Forest Carbon Management Using Net Primary Productivity on the Korean Peninsula

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The functions of terrestrial ecosystems are various, and recent study suggests the major three functions which are carbon, water, and energy cycling. They are all originated from land, the fundamental components of terrestrial ecosystems. Land consists of major five land cover: cropland, grassland, built-up area, wetland, and forest land. Forest land is described as high potential to remove Greenhouse gases under climate change era and thus the forest carbon management has been raised for effective land management in terms of carbon removal. Korean peninsula, South Korea and North Korea, has undergone the severe war between them and it damaged the whole territory, which consists of more than 60% of forest land. Therefore, two countries tried to revegetate and implemented forestation plans for recover the forest land over 50 years. Therefore, this study assessed the forest carbon management on the Korean Peninsula using Net Primary Productivity(NPP) from the 1980s to 2010s. To estimate NPP, Carnegie-Ames-Stanford Approach(CASA) model was applied. The study adopted the carbon demand and supply method for assessment. We defined carbon demand as amount of carbon loss from forest land in previous year due to forest land changes, and carbon supply as amount of newly updated carbon sink from forest land due to afforestation. According to research findings, even though South Korea achieved successful forest expansion, it only focused on the amount of forest area rather the quality of carbon management. However, the situation in North Korea described not only the failure of increasing forest area but also forest carbon management. Further research would be analyzed the outcomes with forest plans in South Korea and North Korea.