

Can the Level of Uncertainties of a Regional Terrestrial Biota Full Carbon Account Be Made Acceptable for Policy Makers?

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Abstract

Based on the idea that only full account of major greenhouse gases corresponds to the eventual goals of the UN Framework Convention on Climate Change and the Kyoto Protocol, the paper considers achieved and expected in future uncertainties of the regional terrestrial biota Full Carbon Account (FCA). The analysis deals with results of assessing a FCA of forest ecosystems of a large boreal region in Central Siberia. It is shown that system integration of available information sources and models of different nature provides estimating the major carbon fluxes (Net Primary Production, NPP, and heterotrophic respiration, HR) for the region for an individual year at the level of 5-8% (here and below confidential interval, CI, 0.9), Net Ecosystem Production (NEP) – 35-40% and Net Biome Production (NBP) – 60-80%. Regionalization of process-based models, introduction of climatic data in empirical models, using the appropriate length of time period for reporting, harmonization and multiple constraints of estimates received by different independent methods allow to decrease the above uncertainties of NEP and NBP by about half that makes relevant the use results of the FCA in the post Kyoto international negotiation process.

Key words:

UNFCCC, Kyoto Protocol, regional Full Carbon Account, uncertainties, fuzzy approach.