



Carbon dioxide dynamics of a boreal peatland over a complete growing season, Komi Republic, NW Russia

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This study focuses on carbon dioxide dynamics of a boreal peatland ecosystem in northern Russia. Recently, the boreal peatlands have been subject to many speculations in relation to climate change effects and greenhouse gas exchange. Peatlands are well known to be a longterm sink for atmospheric carbon dioxide, but in a changing climate, the CO₂ fluxes can be significantly changed, and peatlands may even become an atmospheric carbon source. The Russian boreal zone covers vast areas, and peatlands are major ecosystems of this region. However, still little scientific evidence is available from this region. Our studied peatland is located at 61°56'N, 50°13'E in the European part of northern Russia. We determined net ecosystem CO₂ exchange and its components ecosystem respiration and gross photosynthesis using the closed chamber technique. It is important to quantify the CO₂ fluxes, but we also need to improve our understanding how the ecosystem-atmosphere interactions are controlled. To do so, we measured a wide range of meteorological parameters and quantified vegetation characteristics by measuring the foliage cover (LAI) and green area of vascular leaves. The few studies reporting CO₂ fluxes from boreal peatlands in Russia all focus on measurements during summer time. To improve our understanding of the CO₂ flux dynamics of a peatland over the year, further research on the CO₂ dynamics during the spring and autumn seasons was needed. We started the field measurements on the 25th of April during the snow melt and continued until the end of the vegetation period and the first frost on the 20th of October 2008. Here, we present the CO₂ dynamics and budget for the investigation period and discuss the regulating factors.