Geophysical Research Abstracts
Vol. 16, EGU2014-7349, 2014
EGU General Assembly 2014

Respiration fluxes in a paludified shallow-peat spruce forest in the southern taiga of European Russia

Juliya Kurbatova (1)

(1) A.N. Severtsov Institute of ecology and evolution RAS, Moscow, Russian Federation (kurbatova.j@gmail.com), (2) Institute of Forest Science, Uspenskoye, Moscow region, Russian Federation, (3) K.A.Timiryazev Russian State Agrarian University - MTAA, Moscow, Russian Federation

Soil, tree stems and ecosystem carbon dioxide fluxes were measured by chambers and eddy covariance methods in paludified shallow-peat spruce forest in southern taiga of European Russia (Tver region, 56N 33E) during growing seasons of 2002 – 2012. The site was established in 1998 as part of the EUROSIBERIAN CARBONFLUX project, an international field experiment examining atmosphere-biosphere interaction in Siberia and European Russia. In all of the years the observed annual cumulative net ecosystem flux was positive (the forest was a source of carbon to the atmosphere). Soil and tree stem respiration was a significant part of total ecosystem respiration (ER) in this paludified shallow-peat spruce forest. On average, 49% of ER came from soil respiration. We found that the soil fluxes exhibited high seasonal variability ranging from 0.7 to 10 mkmol m-2s-1. Generally soil respiration depended on soil temperature and ground water level. In drought conditions soil respiration was low and did not depend on temperature. Stem respiration of spruces grew intensively in May, had permanently high values from June to the end of September and in October it dramatically decreased. Tree stem respiration in midsummer was about 3–5 mkmol•m-2s-1 for dominant trees and about 1-2 mkmol•m-2s-1 for subdominant trees. Respiration of living tree stems was about 10-20% of ER.