

CO₂ and heat fluxes in a recently clear-cut spruce forest in European Russia.

*Vadim Vital'evich Mamkin¹, Julia Alexandrovna Kurbatova¹, Vitaly Constantinovich Avilov¹, Dmitry Genad'evich Ivanov¹, Alexandr Valentinovich Olchev²

1. Severtsov Institute of Ecology and Evolution, Russian Academy of Science, Moscow, Russian Federation, 2. Faculty of Geography, Lomonosov Moscow State University, Moscow, Russian Federation

Ecosystem carbon dioxide, energy and water fluxes were measured using eddy covariance and portable chambers in a fresh clear-cut surrounded by a mixed spruce-birch-aspen forest in the boreal zone of European Russia. Measurements started in April 2016 following harvest and continued for five months. The clear-cut was a permanent source of CO₂ to the atmosphere. Total ecosystem respiration (TER) and gross primary production (GPP) were about 7.4 gC m⁻² and 4.1 gC m⁻² per day respectively. Eddy covariance data showed a reasonable accordance with the chamber measurements. During the mid-spring the mean daily latent (LE) and sensible (H) heat fluxes were similar and the Bowen ratio (Bo=H/LE) averaged about 1.0. During the late spring and summer months the net ecosystem exchange of CO₂ (NEE) remained slightly positive following onset of vegetation growth, while Bo was changing in the range from 0.3 to 0.5. There was strong diurnal variability in NEE, LE and H over the measurement period that was governed by solar radiation and temperature as well as leaf area index (LAI) of regrown vegetation. This study was supported by a grant from the Russian Science Foundation (14-14-00956).

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