

PARAMETERIZED MODEL FOR CARBON DIOXIDE FLUXES CALCULATIONS BETWEEN NATIVE ECOSYSTEMS IN NORTH-WESTERN EUROPE AND ATMOSPHERE

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The paper presents the general parameterized model for calculation of CO₂ fluxes between the atmosphere and native ecosystems most widely distributed in the north-western Europe – conifer forests and oligotrophic peatlands. The results of experimental study at 11 sites have been analyzed for construction of the model. The model is intended for calculation of average daily, monthly, and annual CO₂ balance under different climatic conditions (contemporary climate, future climate). The leaf area index (LAI) has been used as a characteristic of plant development. Photosynthetic photon flux density (PPFD) has been found from conventional actinometrical observations of solar radiation. Testing of the model was carried out for climatic conditions of Karelia (Petrozavodsk). The examples of simulated relationship between PPFD and CO₂ adsorption of conifer forest and peatland in summer and autumn are presented. According to the model the daily balance of CO₂ for July in conifer forest is $-4.9 \text{ g CO}_2 \text{ m}^{-2}$, the associated monthly balance is $-149 \text{ g CO}_2 \text{ m}^{-2}$, the associated monthly acceptance of carbon in biomass is 40 g C m^{-2} .

Key words: atmosphere, greenhouse gas, ecosystem, carbon dioxide fluxes, parametrization.