



Change of the carbon cycle in oligotrophic bog in the Western Siberia at climate change

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Peatlands are the unique terrestrial ecosystems which accumulate carbon from the atmosphere for a long time in a form of peat. Peatlands in the Western Siberia occupy about 0.35 mln square km and essentially influences of net carbon fluxes in the Northern Hemisphere. Results of experimental study of the carbon balance of in 1999-2006 yrs are presented in this paper. The basic features of seasonal course of net primary production and carbon dioxide emission from the peat deposit are revealed. The main factors governing the carbon fluxes are air temperature, temperature of the active peat layer and water table level. It was found, that carbon accumulation during the photosynthesis is about two times more than carbon emission in form of carbon dioxide from the surface of peat deposit. The carbon accumulation process prevails in the Western Siberia native peatland ecosystems at the modern climate. Forecast of the peatland development at the predicting future climate change was performed using local model of the carbon cycle. Depending on the climate change scenario the carbon storage in vegetation phytomass increases by 26 - 55% toward the end of the XXI century. Warming and rise of atmospheric carbon dioxide concentration results in increase of carbon accumulation rate by 50 - 75 % and growth of carbon dioxide emission rate by 16 - 27 % in comparison to the present rates. According to simulation results the positive carbon balance remains in the studied peatlands during the XXI century.