

## Modelling the NPP Response on Climate Change for the European territory of Russia

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Modelling the net primary production (NPP) of terrestrial ecosystems is among the key problems in studies dealing with the effects of the anthropogenic impact on the quantitative parameters of global organic matter cycle and the structure of the biosphere as a whole. The NPP, one of the key characteristics of the plant cover, is determined as the amount of organic matter accumulated in both above- and underground spheres of a plant community per unit of its area during a certain period of time (usually, a year). Analysis of the vegetation response and estimation of the NPP change are urgent problems in the studies of possible climate change and its consequences.

The aim of the research is a forecast of the possible changes for the NPP due to climate change for European territory of Russia. In order to estimate the magnitude of possible NPP change, the forecasts for the annual evapotranspiration changes are used, the relationships between the radiation balance and the annual sum of effective temperatures are analyzed and the dependence of terrestrial phytocenosis NPP on the annual radiation balance and total evapotranspiration is defined.

The forecast method for the NPP response on possible climatic changes is presented. Using the climate change scenarios for the new climatic equilibrium due to a doubling of carbon dioxide in the atmosphere from three general circulation models (ÑÑÑ, GFHI, UKHI), the model estimations for the NPP of the European Russia are obtained. Simulated results enable to determine both common tendencies of NPP changes for phytocenosis of the European territory of Russia for possible climate changes,

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and local singularities of the annual vegetation increment for various climate change scenarios of different models.

Moreover, regions of the European territory of Russia with most significant NPP changes in comparison with 20th century are detected.