



Climate change impact on the vegetation dynamics in Russia

L.L. Golubyatnikov (1), E.A. Denisenko (2)

(1) A.M.Obukhov Institute of Atmospheric Physics, Russian Academy of Sciences, Moscow, Russia, (2) Institute of Geography, Russian Academy of Sciences, Moscow, Russia (golub@ifaran.ru / Fax: +7-495-9531652)

An inhomogeneity of the climate change can cause essential modifications in structure, species composition, and seasonal dynamics of terrestrial vegetation. We analyzed regional changes in the vegetation under anthropogenic warming in the 21st century over the territory of Russia. We used outputs of the intermediate-complexity climate model IAP RAS CM developed at the Institute of Atmospheric Physics (Russian Academy of Sciences). In numerical experiments, the future changes in atmospheric concentration of the carbon dioxide were established set according to the SRES A2 and SRES B1 scenarios.

We evaluated the response of vegetation production and possible changes in phytocenoses habitats for future global climate warming. To determine the response of phytocenoses habitats to the climate change we used predicted magnitudes of changes in net primary production (NPP) for phytocenoses and accepted rules of phytocenotic changes as a function of NPP. The obtained data indicate a mosaic pattern of possible changes in the phytocenoses within their current habitats. The results obtained are used to determine the actual phytocenoses that are most sensitive to future climate changes. We estimated the uncertainty of future changes in the vegetation characteristics under climate scenarios according to IAP RAS CM with SRES A2 and SRES B1. Our model estimates evaluate the spatial tendencies and scales for possible structural changes of the recent phytocenoses over the territory of Russia for global climate warming in 21st century.

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