

1086-92-2814

Nikolay Strigul* (nick.strigul@vancouver.wsu.edu), 14204 NE Salmon Creek Avenue, Vancouver, WA 98686, and **Ionut Florescu**. *A Markov chain model for the forest stand dynamics.*

The forested ecosystem is a complex adaptive system having a complicated hierarchical structure. The Matreshka model considers vegetation dynamics as the results of vegetation processes at several hierarchical scales driven by natural and anthropogenic disturbances of different magnitude. The particular processes include growth of individual trees, dynamics of trees within the stand, forest stand mosaic, and changes of the collection of forest stands of different forest types at the landscape level. In this presentation we introduce a Markov chain model of forest stand dynamics. The model is an irreducible Markov chain containing transition probabilities as estimated using the US and Canadian data sets. We have obtained various macroscopic characteristics of forest stands from USDA FIA data on individual trees (biodiversity measures, uniformity of forest stand composition, biomass and basal area measures, and an original parameter called the shade tolerance index). We have also described the spatial patterns of the forest stand mosaic of North-American forests. It is anticipated that this research will improve our understanding of the role of spatial heterogeneity caused by disturbances of different magnitude on successional patterns of forested ecosystems. (Received September 25, 2012)