1128-92-205 **Nikolay S Strigul*** (nick.strigul@wsu.edu), 14204 NE Salmon Creek Ave, Vancouver, WA 98686. *Linking mathematical models of forest dynamics operating at different scales.*

Hierarchical patch dynamics concept provides theoretical foundation for scaling vegetation dynamics across temporal and spatial scales. One fundamental challenge to obtaining trustworthy predictions of forest dynamics has been our limited proficiency to scale crops functional traits and mortality characteristics to the landscape level. This difficulty is owed in part to complexity of forested ecosystems, variable land use practices and ecological and climatic factors such as non-stationary disturbance regimes numerous non-linear functional relationships and feedback loops between different organisms. In this work I link two models predicting dynamics of individual trees, the individual-based forest simulator called LES and the analytically tractable model called the Perfect Plasticity Approximation, PPA, with the discrete landscape-level patch dynamics models of forest stand dynamics formulated as inhomogeneous Markov Chains. This upscaling technique allows to formulate Markov Chain model of forest patch dynamics based on the individual tree traits employed in LES and PPA. This hierarchical scaling approach naturally includes non-stationary disturbance regimes and it can be directly employed to simulate vegetation changes under different climate change scenarios. (Received February 27, 2017)