Assessing tropical rainforest growth traits: Data – Model fusion in the Congo basin and beyond

Stephan Pietsch

(pietsch@iiasa.ac.at)

Virgin forest ecosystems resemble the key reference level for natural tree growth dynamics. The mosaic cycle concept describes such dynamics as local disequilibria driven by patch level succession cycles of breakdown, regeneration, juvenescence and old growth. These cycles, however, may involve different traits of light demanding and shade tolerant species assemblies.

In this work a data model fusion concept will be introduced to assess the differences in growth dynamics of the mosaic cycle of the Western Congolian Lowland Rainforest ecosystem. Field data from 34 forest patches located in an ice age forest refuge, recently pinpointed to the ground and still devoid of direct human impact up to today - resemble the data base. A 3D error assessment procedure versus BGC model simulations for the 34 patches revealed two different growth dynamics, consistent with observed growth traits of pioneer and late succession species assemblies of the Western Congolian Lowland rainforest.

An application of the same procedure to Central American Pacific rainforests confirms the strength of the 3D error field data model fusion concept to Central American Pacific rainforests confirms the strength of the 3D error field data model fusion concept to assess different growth traits of the mosaic cycle of natural forest dynamics.