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Modelling black spruce primary production and carbon allocation in the Quebec boreal forest

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Boreal ecosystems are crucial carbon stores that must be urgently quantified and preserved. Their future evolution is extremely important for the global carbon budget. Here, we will show the progresses achieved with the MAIDEN forest ecophysiological model in simulating carbon fluxes of black spruce (Picea mariana (Mill.) B.S.P.) forests, the most representative ecosystem of the North American boreal biome. Starting from daily minimum-maximum air temperature, precipitation and CO_2 atmospheric concentration, MAIDEN models the phenological (5 phenological phases are simulated each year) and meteorological controls on gross primary production (GPP) and carbon allocation to stem. The model is being calibrated on eddy covariance and tree-ring data. We will discuss the model's performance and the modifications introduced in MAIDEN to adapt the model to temperature sensitive forests of the boreal region.