PROJECT SUMMARY

Recent studies have pointed out old-growth forests (OGF) as globally important carbon (C) sinks. However, important knowledge gaps, regarding OGF pools and mechanisms of C sequestration, remain. An example in this regard is the role of forest woody debris (WD, fallen dead trees and remains of dead branches on the forest floor), a potentially large but mainly unknown OGF C sink. DeWooD pretends to study in detail the WD contribution to total ecosystem C budgets using a temperate OGF European beech-silver fir. The goals of DeWooD are to better understand: (1) the WD contribution to OGF C stocks; (2) the controls of WD decay by exploring the interactive role of climate, wood traits, decomposers (fungi, saproxylic insects), and deadwood inhabiting organisms (bryophytes). DeWooD's novelty relies on combining field inventories with different methods to estimate seasonal variations of: rates of WD decay (mass losses, CO2 production) and abiotic and biotic controls of WD decay. DeWooD's results will provide accurate process-based predictions of the C sink capacity of OGF and accurate estimates of the vulnerability to climate change of key ecosystem compartments (e.g. WD, saproxylic insects, bryophytes) and key processes (WD decay), largely unknown contributors to the OGF C sink capacity. DeWooD will therefore define practical guidelines for forest ecosystem management regarding C sequestration and reduction of the amount of C stored in forests with the aim to mitigate climate change.