Tree root systems and nutrient mobilization
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The relationship between fine root and litterfall dynamics across various types of temperate deciduous and coniferous forests. An, J. (Kyoto University, Japan; jiyoung.an63e@stud.kyoto-u.ac.jp), Park, B. (Chungnam National University, Republic of Korea; bbpark@cnu.ac.kr), Osawa, A. (Kyoto University, Japan; aosawa@kais.kyoto-u.ac.jp), Park, G. (Korea Forest Research Institute, Republic of Korea; graceb03@snu.ac.kr).

We have little understanding of the relationship between litterfall and fine root dynamics in temperate forest ecosystems, even though these are major components in carbon and nutrient cycling. We studied litterfall, fine root biomass, and production in five deciduous and four coniferous forests at the Gwangneung Long Term Ecological Research Site in Korea. We used ingrowth cores to measure fine root turnover for 2 years. Collected roots were divided into living and dead roots of <0.5, 0.5–1, 1–2, and 2–5 mm in diameter. Litterfall was separated into leaves, twig, bark, seed, and others and all leaves were further separated by species. Our preliminary results show that fine root turnover rate was 1.68/year for deciduous forests and 2.07/year for coniferous forests and including mycorrhizal and absorptive roots. These microscopic structures can contribute a large amount of carbon and nutrients in ecosystems. Reevaluating turnover for absorptive roots and mycorrhizal hyphae, which turn over more rapidly than absorptive roots. These microscopic structures also influence total C and nutrient input into the soil and subsequent soil C sequestration. Reevaluating turnover for absorptive roots and including mycorrhizal and root hair turnover would significantly improve the accuracy of total belowground C and nutrient turnover and subsequent C storage in the soil.