TropSOC Database

2.1.8. Forest – Vegetation – Root biomass

When using these data, please cite the database and the key publication in ESSD:

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Introduction

The dataset comprises a unique plot identifier and a subplot ID and a sampling date, followed by 13 variables that provide data regarding root monitoring in at the plot and subplot level of TropSOC's forest plots. Missing values are indicated by -9999.

Data structure

No.	Variable	Explanation	Unit
1	plotID	unique identifier of each plot and point where data were collected	-
2	subplotID	alphabetic letter representing each subplot within a plot	-
3	sample_date	sampling date	dd.mm.yyyy
4	no_cores	number of cores taken in each subplot for root sampling	-
5	layer	soil layer from which samples were collected with 0 = "O horizon"; 1 = 0–10 cm; 2 = 10 – 20 cm; 3 = 20 – 30 cm; 4 = 30 - 50 cm	-
6	o_hor	depths of O horizon	cm
7	fr_liv	living fine roots (< 2 mm)	g
8	fr_dead	dead fine roots (< 2 mm)	g
9	cr_liv	living coarse roots (> 2 mm)	g
10	cr_dead	dead coarse roots (> 2 mm)	g
11	dens_fr_liv	living fine roots (< 2 mm)	mg cm^{-3}
12	dens_fr_dead	dead fine roots (< 2 mm)	mg cm^{-3}
13	dens_cr_liv	living coarse roots (> 2 mm)	mg cm^{-3}
15	dens_cr_dead	dead coarse roots (> 2 mm)	mg cm^{-3}
16	interval	time period for root growth	dd

Methods

Prior to deciding the root coring strategy and depth layers to be sampled, root distribution was assessed using soil profiles dug in the centre of the plots for soil classification purposes (for details regarding plots and plot design see *2_forest.pdf*). This assessment revealed that roots are mostly present in the organic layer and the first 50 cm of mineral soil layers.

Root biomass: Belowground standing root biomass was sampled using a 6.8 cm diameter soil core sampler (Vienna Scientific Instruments, Austria) for 4 season per year between September 2018 and December 2019. Two undisturbed soil cores were sampled per subplot and divided into five depth layers: one organic soil layer (O horizon), and four mineral soil layers from 0 – 10 cm, 10 – 20 cm, 20 – 30 cm, 30 – 50 cm (for sampling locations and plot design see *2_forest.pdf*). Note that for samples where no root biomass has been detected for specific depths, samples were taken nevertheless. In some cases layers can be missing (for example, O horizon not present, rocks instead of soil for deeper layers). After transport to the laboratory, each sample was washed to isolate roots from the soil and sieved to separate coarse (> 2 mm diameter) and fine roots (< 2 mm diameter). In addition, roots were separated into living and dead roots following Ostonen et al. (2005). Roots were considered living when root steles were still alive, bright and resilient (Ostonen et al., 2005). The dry mass of isolated roots per plot was assessed after drying root samples at 70 °C for 72 hours.

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References

Ostonen, I., Lõhmus, K., and Pajuste, K.: Fine root biomass, production and its proportion of NPP in a fertile middle-aged Norway spruce forest: comparison of soil core and ingrowth core methods, For. Ecol. Manage., 212, 264–277, doi:10.1016/j.foreco.2005.03.064, 2005.