TropSOC Database

2. Forest overview

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

Doetterl, S.; Bukombe, B.; Cooper, M.; Kidinda, L.; Muhindo, D.; Reichenbach, M.; Stegmann, A.; Summerauer, L.; Wilken, F.; Fiener, P. (2021): TropSOC Database. V. 1.0. GFZ Data Services.
https://doi.org/10.5880/fidgeo.2021.009
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Doetterl S., Asifiwe R.K., Baert G., Bamba F., Bauters M., Boeckx P., Bukombe B., Cadisch G., Cizungu L.N., Cooper M., Hoyt A., Kabaseke C., Kalbitz K., Kidinda L., Maier A., Mainka M., Mayrock J., Muhindo D., Mujinya B.B., Mukotanyi, S.M., Nabahungu L., Reichenbach M., Rewald B., Six J., Stegmann A., Summerauer L., Unseld R., Van-lauwe B., Van Oost K., Verheyen K. Vogel C., Wilken F., Fiener P. Organic matter cycling along geochemical, geo-morphic and disturbance gradients in forests and cropland of the African Tropics - Project TropSOC Database Version 1.0. *Earth System Science Data*. https://doi.org/10.5194/essd-2021-73, 2021.

Description:

TropSOC's forest data consists of seven parts:

Part 1 – Vegetation data acquired in 2018, 2019 and 2020 at all forest plots, comprising 13 data sets: *211_forest_invent.csv/pdf, 212_forest_invent_agg.csv/pdf, 213_fresh_leaves.csv/pdf, 214_fresh_leaves_agg.csv/pdf, 215_litter.csv/pdf, 216_litter_seasonal.csv/pdf, 217_litter_an-nual.csv/pdf, 218_root_biomass.csv/pdf, 219_root_biomass_seasonal.csv/pdf, 2110_root_bio-mass_annual.csv/pdf, 2111_root_prod.csv/pdf, 2112_root_prod_seasonal.csv/pdf, 2113_root_prod_annual.csv/pdf.*

Part 2 – Mineral soil layer data acquired in 2018 at all forest plots, comprising 3 data sets: *221_soil_carbon.csv/pdf; 222_soil_phy_chem.csv/pdf; 224_soil_spec.csv/pdf*

Part 3 – Organic soil layer data acquired in 2018 at all forest plots, comprising 1 data set: *231_soil_organic_layer.csv/pdf*

Part 4 – Pu soil inventory carried out in 2018. In contrast to part 1 to 3 of the forest data, Pu data represents individual points and does not follow the plot concept in a strict manner. *241_pu_inven-tory.csv/pdf*

Part 5 – Soil experiments. This part of the database comprises 3 data sets with results from labora-tory experiments and additional data from soil sample analyses: *251_incubation.csv/pdf, 252_micro-biology.csv/pdf, 253_c14.csv/pdf*

Part 6 – Parent material elemental composition analysed based on unweathered rock samples taken within plots or from nearby road cuts and mines surrounding the study sites.

261_rocks.csv/pdf

Part 7 – Soil profile descriptions done in soil pits at the centre of plots following WRB-FAO soil de-scription.

271_profiles.csv/pdf

Location of plots and plot design

Data acquired for part 1 to 3 and 7 are based on a strict catena approaches to investigate differences in soil and plant parameters with land use, topography, geochemistry and soil depth. For each geo-chemical region (see introduction to database) twelve 40 m x 40 m forest plots were established in 2018 at three different landscape positions (plateau [slope < 5 %], sloping [slope 6-60%] and valleys [slope < 5%] in three (plateau and valley) and six (sloping positions) field replicates. Note that 6 out of 12 plots (KBPL1,2,3,7,8,9) in the mafic region had to be given up due to safety reasons in January 2019. 4 new plots (KBPL13,14,15,16) were established in the same month to continue monitoring vegetation biomass dynamics as well as water and heat fluxes at similar topographic positions nearby. Each plot was subdivided into four subplots of 20 x 20 m from which four 100 cm soil cores were extracted using a cylindrical soil corer for undis-turbed sampling (Figure 1). Post sampling soil cores were com-bined to depth-explicit composite samples at the plot level in 10 cm depth increments. In addition, one soil profile pit was dug to a depth of 100 cm in the centre of one of three replicate plots per topographic position in each geo-logical region (Figure 1). Leaf litter (L horizon) and partially decom-posed organic material in O hori-zons were sampled at nine points along the border and in the centre of each 40 m x 40 m forest plot (Figure 1). The nine samples of each layer were combined to one composite sample representing a

Figure 1. Schematic overview of sampling and monitoring scheme for forest plots (36 plots, distributed over 3 geochemical regions and 4 topographic positions).

40 x 40 m forest plot. Forest inventories in 2018 and 2020 were performed for the entire area of the 36 plots. Belowground biomass was sampled in the centre of each subplot, while ingrowth nets were established at eight positions within each plot (Figure 1). Moreover, ten litter traps were established in each plot (Figure 1). For mo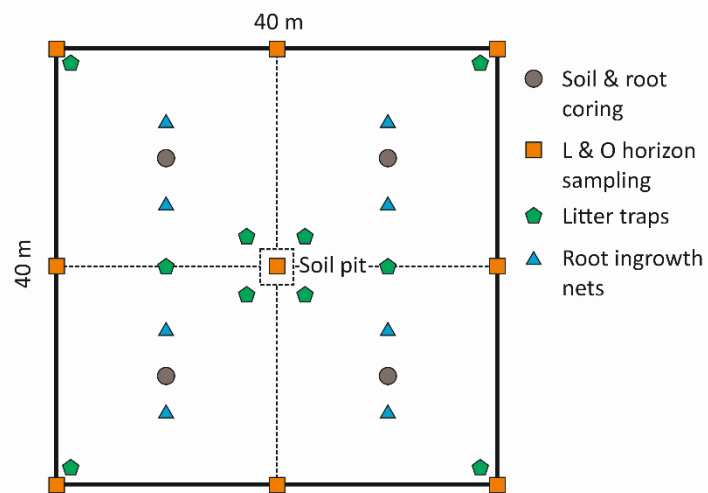re details regarding sampling see the individual data sets.