TropSOC Database

1.1 Basic Information – Location and basic background information for all plots and points where data were collected

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
Licence: Creative Commons Attribution 4.0 International (CC BY 4.0)

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., Vanlauwe B., Van Oost K., Verheyen K. Vogel C., Wilken F., Fiener P. Organic matter cycling along geochemical, geomorphic 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.

Introduction

The database comprises basic information of all plots and points where data were collected during project TropSOC. It comprises a unique plot or point identifier that is used in the entire database. The following six variables refer to the location of plots and points. These are followed by five variables that give additional plot or point characteristics determined during field work. Finally, six variables are added from global or regional maps (Climate and Surface geology). Points are used as decimal signs. The structure of the plotID is given in Table 1.

Table 1. Structure of the plotIDs in TropSOC for different types of samples.

forest site soil samples				
location	plot	composite	increment	subplot
AAA(A)	B(B)	C(C)	D(D)	(E)

forest site biomass samples			
location	plot	composite	sample_type
AAA(A)	B(B)	C(C); CCCC(C)	F(FF); FFFFFF

cropland site samples			
location	plot	composite	increment
GG(GGG)	H(H)	C	D(D)

forest site plutonium samples					
location	plot	subplot	composite	increment/ sample_type	Pu suffix
AAA(A)	I(I)	J(J)	KKKK	L(L)	MM

cropland catchment plutonium samples			
location/ position	sample point	increment	Pu suffix
NNN	O(O)	PP	QQ(QQ)

Longitude, latitude and altitude were measured using a handheld GPS. Slope steepness was derived from inclinometer measurements. Based on GPS coordinates, additional regional to global information was derived from other data sources, e.g. temperature from WorldClimV2 (2020).

Data structure

No.	Variable	Explanation	Unit
1	plotID	unique identifier of each plot and point where data were collected	-
2	country_code	international country code, Democratic Republic of Congo = DRC; Uganda = UG; Rwanda = RW	-
3	site_name	local site name of regions where plots or points are located	-
4	lat	latitude in geographic coordinates (WGS 1984; Projection EPSG 4326)	°
5	long	longitude in geographic coordinates WGS 1984; Projection EPSG 4326)	°
6	altitude	plot or point altitude above sea level (WGS 1984; Projection EPSG 4326)	m
7	topographic_position	at all study sites, plots were analysed along a slope catena representing different topographic positions where PL = plateau, US = upper slope, MS = mid-slop and V = valley. These positions are given for all forest sites and cropland sites, where a catena approach was followed. At other locations simply, S = slope is used as an indication of topographic position.	-
8	sampling_area	spatial area represented by single or composite sampling points	m²
9	slope	slope measured in slope direction, measured using an inclinometer (Company, Country) or derived from an SRTM 30 m x 30 m digital elevation model	%
10	slope_flag	in case of inclinometer measurements (flag = 1); in case of slopes derived from SRTM 30 m x 30 m digital elevation model (flag = 2)	
11	land_use	cropland or forest land cover	-
12	Soil_type	soil types following WRB classification. Data taken from Dewitte et al. (2013; DRC, UG) and Verdooht & Ranst (2003; RW)	-
13	geology	geological information taken from Dressée Par L. & J. Lepersonne (1949; DRC), Dewitte et al. (2013; UG) and Verdooht & Ranst (2003; RW)	-
14	geochemistry	geochemical characterization of soil parent material into mafic (=mafic magmatic rocks), felsic (=felsic magmatic rocks) and mixed (= mixed sedimentary rocks)	-
15	MAT	annual mean temperature (1970-2000; WorldClim 2020)	° C
16	MAP	annual mean precipitation (1970-2000; WorldClim 2020)	mm
17	PET	annual mean potential evapotranspiration (1970-2000; WorldClim 2020)	mm

Acknowledgment

References

Fick, S. E., and Hijmans, R. J.: WorldClim 2: new 1-km spatial resolution climate surfaces for global land areas, Int. J. Climatol., 37, 4302–4315, https://doi.org/10.1002/joc.5086, 2017.

Dewitte, O., Jones, A., Spaargaren, O., Breuning-Madsen, H., Brossard, M., Dampha, A., Deckers, J., Gallali, T., Hallett, S., Jones, R., Kilasara, M., Le Roux, P., Michéli, E., Montanarella, L., Thiombiano, L., Van Ranst, E., Yemefack, M., and Zougmore, R.: Harmonisation of the soil map of Africa at the continental scale, Geoderma, 211-212, 138-153, 10.1016/j.geoderma.2013.07.007, 2013.

Verdooht, A. and Van Ranst, E.: Land evaluation for agricultural production in the tropics. A large-scale land suitability classification for Rwanda, ISBN 90-76769-89-3, 183p, 2003.

Dressée P. L. C., and Lepersonne, J.: Carte Géologique.1.5000000, Institut Royal Colonial Belge Commission centrale de látlas general du Congo Belge et du Ruanda-Urundi, Index No 31, 1949.

Trabucco, A., and Zomer, R. J.: Global aridity index and potential evapo-transpiration (ET0) climate database v2, CGIAR Consortium for Spatial Information (CGIAR-CSI), https://cgiarcsi-community, 2018.