SOC GIS layers – ISRIC-WISE30sec data set (addendum)

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This document provides a link to the GIS layers for SOC (soil organic carbon) density and stocks relating to WISE30sec database (Batjes 2016). For this, the GIS files (Batjes 2021) were extracted from the ISRIC WDC archives.

All materials relating to WISE30sec, i.e. journal paper, technical report (with addendum), datasets as well as the SOC GIS layers can be accessed at:
https://data.isric.org/geonetwork/metadata/dc7b283a-8f19-45e1-aaed-e9bd515119bc

The GIS layers for SOC density (SOCPi, kg C m^{-2} for five depth ranges (0-30 cm (i= 1), 0-50 cm (i= 2), 0-100 cm (i= 3), 0-150 cm(i= 4) and 0-200 (i= 5) cm) themselves can also be accessed via https://dx.doi.org/10.17027/isric-wdc-202104.

The SOC stocks (SOC_pi), per depth range in Pg C are shown in Table S1. Please note that the zip files with GIS layers for SIC (inorganic carbon) and TOTN (total nitrogen) could not be traced yet.

Table S1: World soil carbon (SOC and SIC) and nitrogen (TOTN) pools (in Pg C and N respectively)

Depth (cm)	SOC [a]	SIC	SOCSIC	TotN
0 – 30	748	173	922	59
0 – 50	998	308	1307	81
0 – 100	1423	684	2018	120
0 – 150	1785	1094	2879	154
0 – 200	2045	1555	3601	184

[a] SOC = organic carbon; SIC = inorganic carbon; SOCSIC = total carbon (SOC+SIC); TotN = total nitrogen;
1 Pg = 10^{15} g. Values may differ slightly due to rounding (n= 1).

Note:

The Geoderma paper itself presents estimates for mean global SOC stocks, to a given depth, as derived from simulation (Batjes 2016, Table 4, n= 400 runs). Those estimates differ slightly from the mean values for SOC in Table S1 (i.e., as computed for the original derived data i.e. n= 1). The absolute difference observed between mean values in Table S1 and those presented for 'n= 400' is < 1 %.

During the simulation runs, 'pedologically unrealistic' values were corrected using expert-rules. For example, if the simulated proportion of coarse fragments for the given run was < 0 % then this value was set to 0 %; similarly, when it was > 100 %, the simulated value was set to 100 %. Further, when the simulated bulk density was > 2.5 g cm^{-3} the simulated value was set to 2.5 g cm^{-3}.

Data use

ISRIC – World Soil Information, host of the World Data Center for Soils (WDC-Soils), is pleased to make available a range of soil-geographic and attribute data, and scanned maps and publications. You are most welcome to use this dataset in accord with the terms specified in the ISRIC Data and Software Policy.

References cited

Batjes NH 2016. Harmonised soil property values for broad-scale modelling (WISE30sec) with estimates of global soil carbon stocks. *Geoderma* 269, 61-68. http://dx.doi.org/10.1016/j.geoderma.2016.01.034

Batjes NH 2021. *SOC GIS layers – ISRIC-WISE30sec data set (Addendum to:* https://doi.org/10.1016/j.geoderma.2016.01.034*)*, ISRIC - World Soil Information, Wageningen. https://dx.doi.org/10.17027/isric-wdc-202104