Supplementary Information for

Global patterns of soil organic carbon dynamics in the 20–100 cm soil profile for different ecosystems: A global meta-analysis

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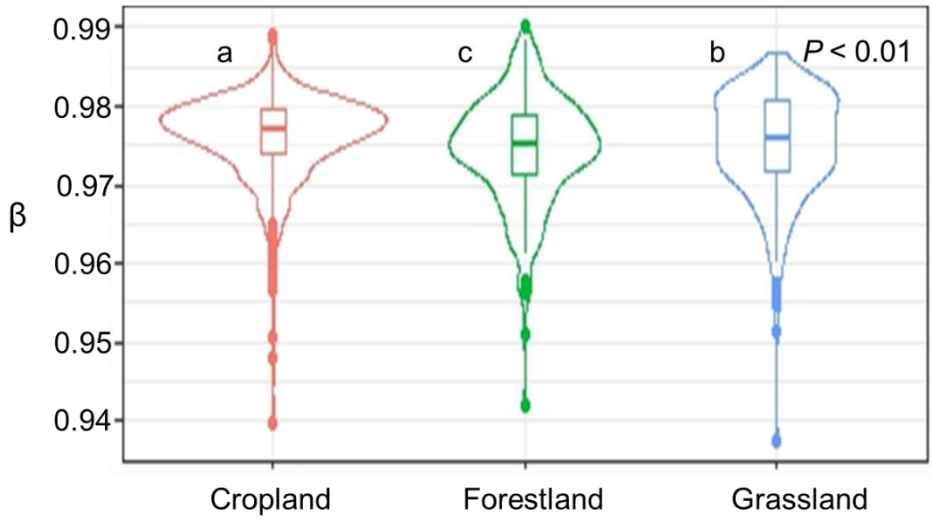
Figure S1. Soil β values of the study sites showing significant differences in different ecosystems with ANOVAR analysis and Duncan's new multiple range test.
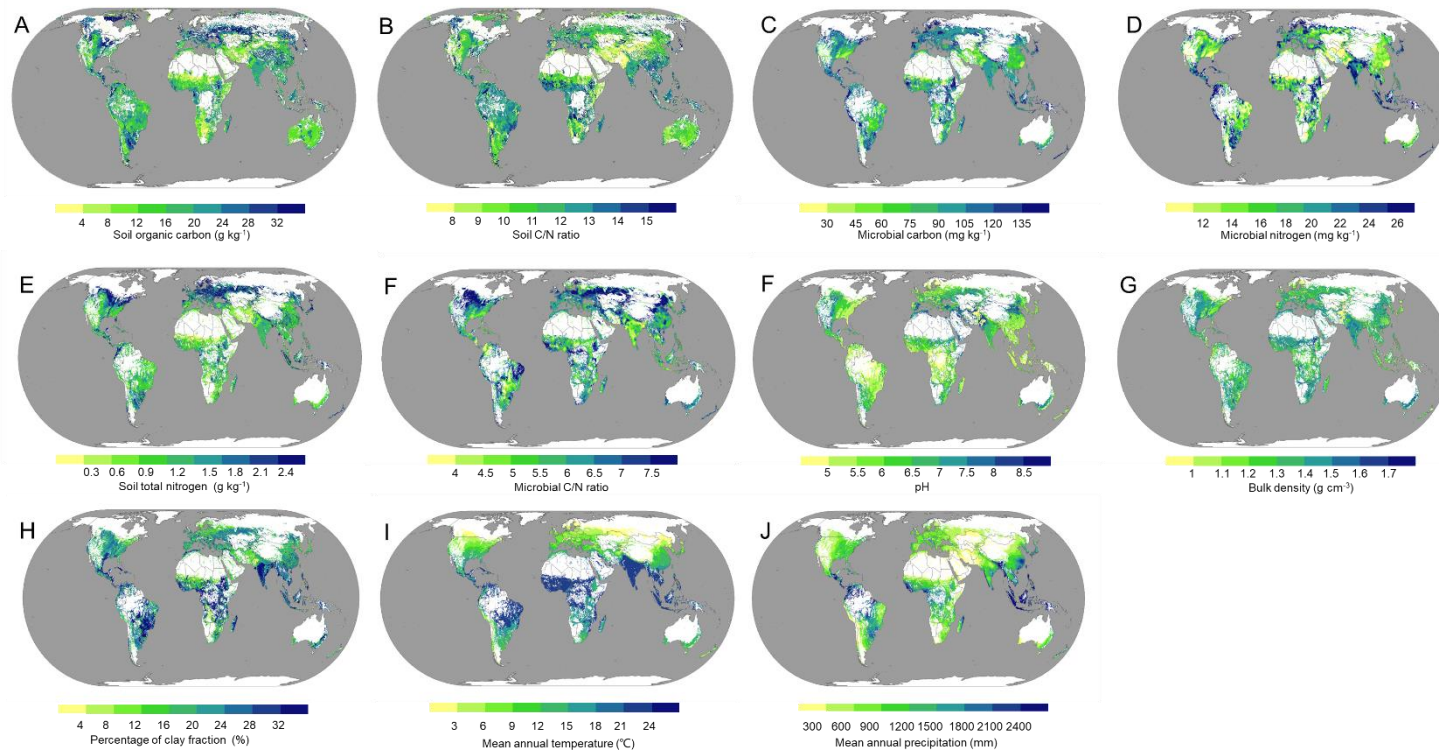
Fig. S2 Cropland: Global grid-level soil organic carbon (A), soil C/N ratio (B), microbial carbon (C), microbial nitrogen (D), soil total nitrogen (E), microbial C/N ratio (F), pH (G), bulk density (H), percentage of clay fraction (I), mean annual temperature (J), mean annual precipitation (K).
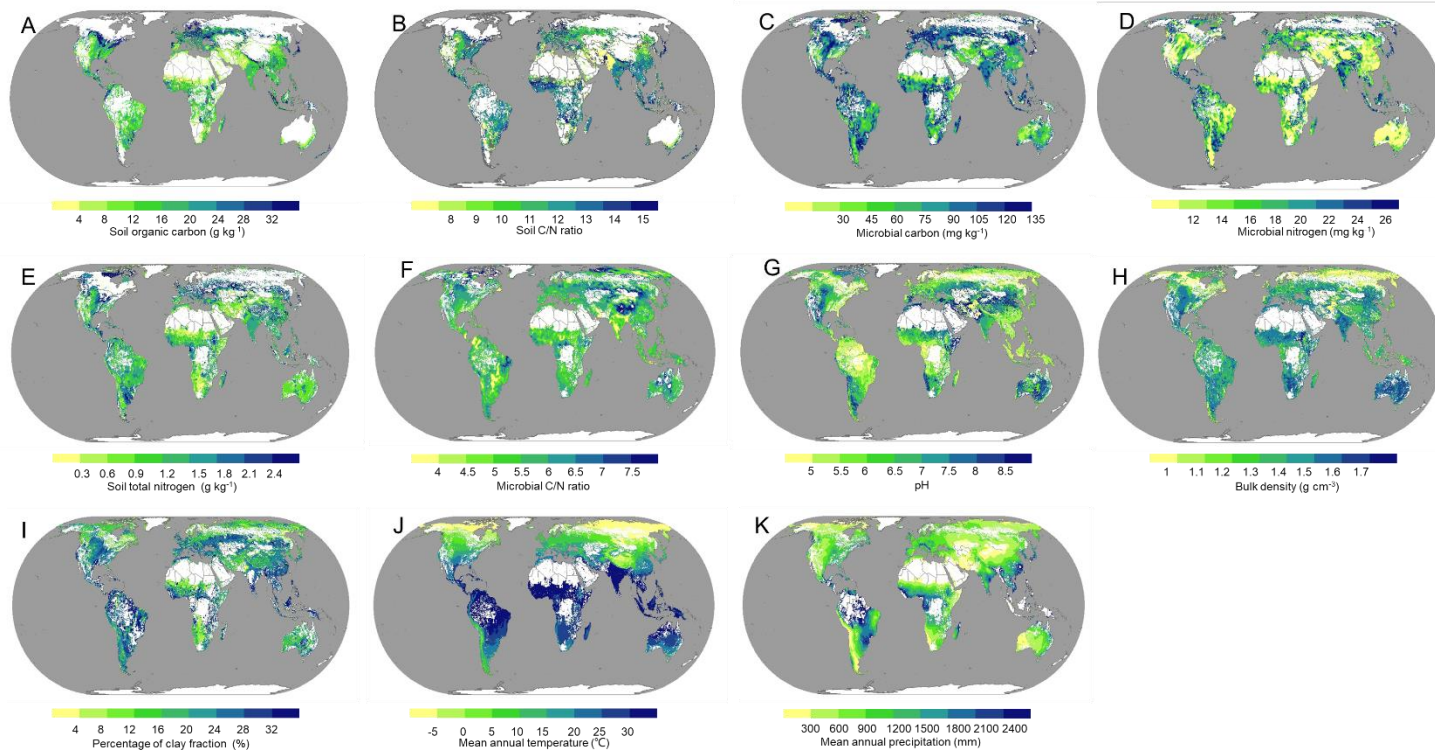
Fig. S3 Grassland: Global grid-level soil organic carbon (A), soil C/N ratio (B), microbial carbon (C), microbial nitrogen (D), soil total nitrogen (E), microbial C/N ratio (F), pH (G), bulk density (H), percentage of clay fraction (I), mean annual temperature (J), mean annual precipitation (K).
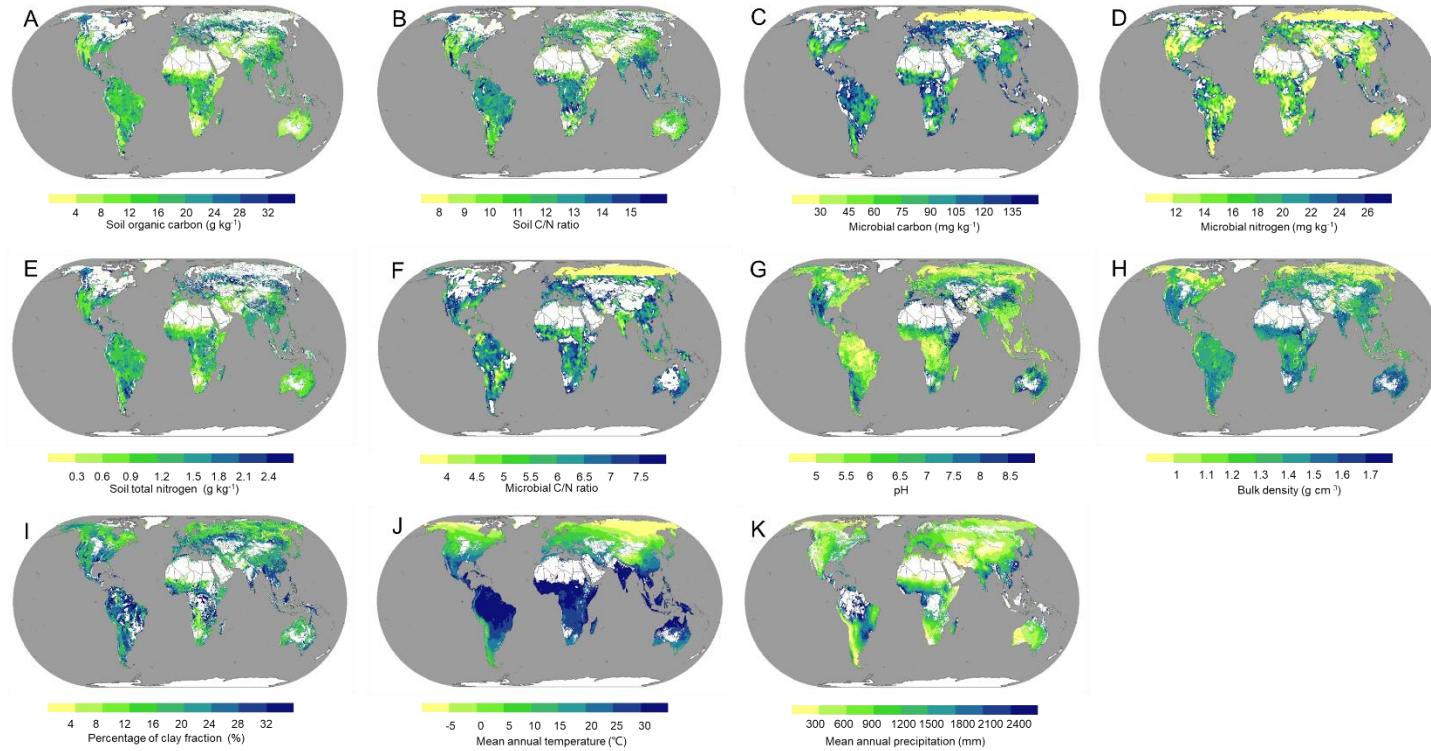
Fig. S4 Forestland: Global grid-level soil organic carbon (A), soil C/N ratio (B), microbial carbon (C), microbial nitrogen (D), soil total nitrogen (E), microbial C/N ratio (F), pH (G), bulk density (H), percentage of clay fraction (I), mean annual temperature (J), mean annual precipitation (K).
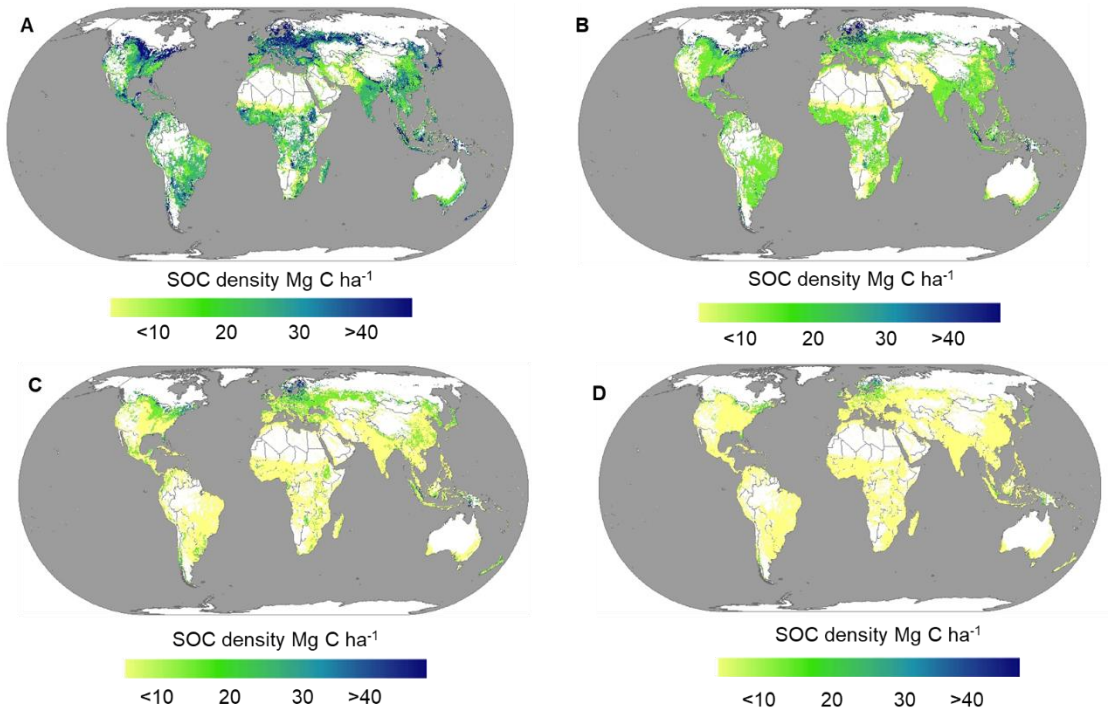
Figure S5. Grid-level maps showing the predicted global soil profiles SOC density of the cropland. A, B, C and D represents the 20–40 cm, 40–60 cm,60–80cm,80–100cm layer, respectively.
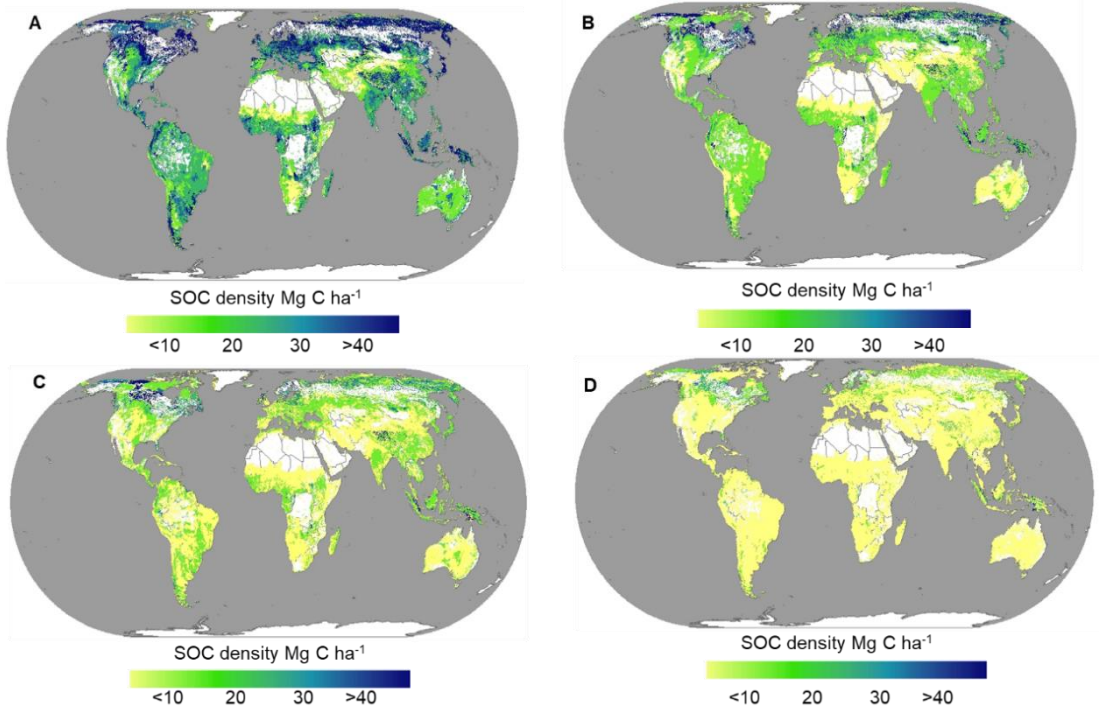
Figure S6. Grid-level maps showing the predicted global soil profiles SOC density of the grassland. A, B, C and D represents the 20–40 cm, 40–60 cm,60–80cm,80–100cm layer, respectively.
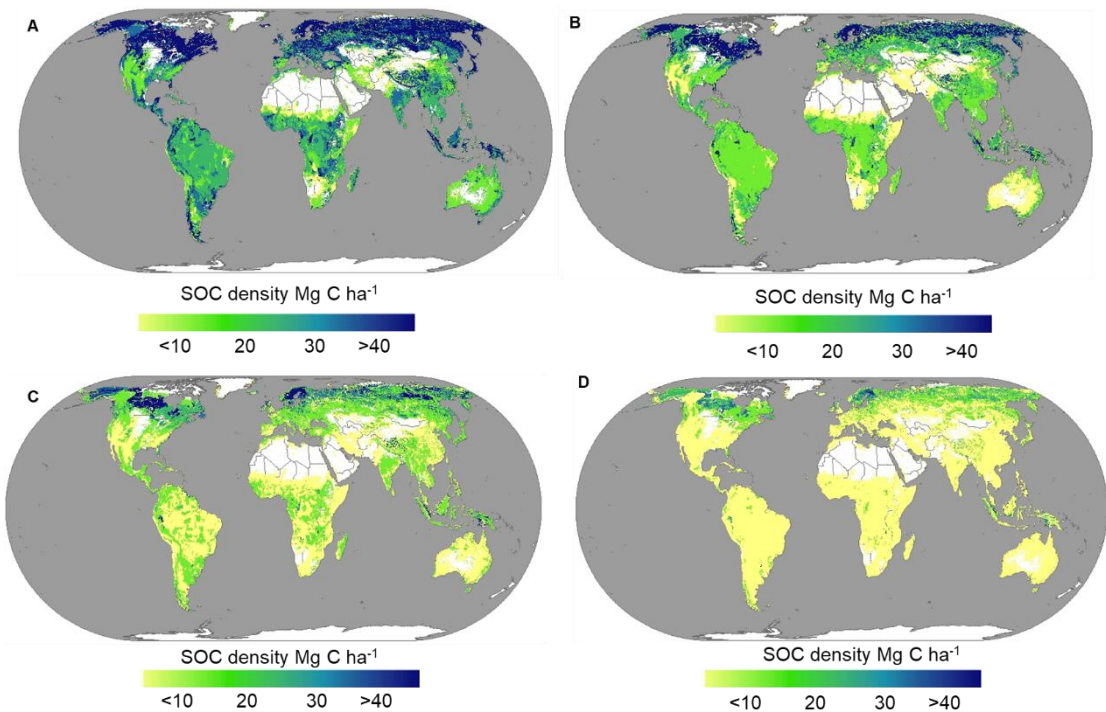
Figure S7. Grid-level maps showing the predicted global soil profiles SOC density of the forestland. A, B, C and D represents the 20–40 cm, 40–60 cm,60–80cm,80–100cm layer, respectively.

Table S1. Comparisons of estimated SOC density with other studies

	Topsoil (Mg ha^{-1}) 0-30 (0-20) (cm)	Subsoil (Mg ha^{-1}) 30-100 (20-100) (cm)	Total (Mg ha^{-1}) 0-100 (cm)	References
Cropland	41	48	89	Liu et al., 2021
Tropical cropland	85	184	269	Reichenbach et al., 2023
Paddy	51	57	108	Liu et al., 2021
Cropland	54.6	63.8	118.4	This study
Forestland	87	102	189	Dixon et al., 1994
Tropical forestland	91	189	280	Reichenbach et al., 2023
Mangrove	130	153	283	Atwood et al., 2017
Forestland	80.2	100.4	180.6	This study
Grassland	38	44	82	Conant et al., 2017
Grassland	70.4	83.3	153.7	This study
All land	45	53	98	Hiederer et al., 2011
All land	68.4	82.5	150.9	This study