Global Sequestration Potential of Increased Organic Carbon in Cropland Soils

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DATASETS

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This dataset was developed as part of an analysis of the carbon sequestration potential of increasing soil organic carbon on croplands in the top 30cm of soil. This analysis is described in the paper cited below:

Zomer, R.J., Bossio., D.A., Sommer, R., Verchot, L.V. 2017. Scientific Reports. In Press

The methodology is described in detail in the Supplementary Materials associated with Zomer et al. 2017, as well as all the results datasets, including high resolution maps, are available online at: http://ciat.cgiar.org/global-soil-carbon

Description

These datasets provide per pixel (250m resolution) values of the soil organic carbon, potential soil organic carbon on cropland after 20 years, and increase in soil organic carbon after 20 years, under a Medium and High Scenario (see Zomer et al., 2017) in tons per hectare (value x 100), considering the percent of that grid cell which is classified as cropland in the GLC-Share (GLC-02) dataset. It is developed from the ISRIC SoilGrids250 database (Data downloaded from: https://www.soilgrids.org) - Hengl et al., 2017.

The top 30 cm layer was constructed as weighted average of three soil depth layers: 0-5; 5-15; 15-30 cm.

Credits

Zomer, R.J., Bossio., D.A., Sommer, R., Verchot, L.V. 2017. Scientific Reports. In Press

Source data downloaded from: https://www.soilgrids.org; and described in: Hengl, T. et al. SoilGrids250m: Global gridded soil information based on machine learning. PLoS ONE 12, e0169748 (2017).

Use limitations

Data is available for non-commercial use.
Results Datasets:

**Soil Organic Carbon in Tons per Hectare**

These datasets present values in tons per hectare, but do not take into account the actual amount of cropland found within that grid cell.

**Soil Organic Carbon on Croplands**

*File: soc_t1_30cm*

This dataset provides per pixel (250m resolution) values of the soil organic carbon on cropland, globally, in tons per hectare (value x 100). The top 30 cm layer was constructed as weighted average of three soil depth layers: 0-5; 5-15; 15-30 cm.

**Potential SOC on Croplands After 20 Yr - Medium Scenario**

*File: soc_t2_me*

This dataset provides per pixel (250m resolution) values of the potential soil organic carbon on cropland after 20 years under the Medium Scenario, in tons per hectare (value x 100).

**Potential SOC on Croplands After 20 Yr - High Scenario**

*File: soc_t2_hi*

This dataset provides per pixel (250m resolution) values of the potential soil organic carbon on cropland after 20 years under the Medium Scenario, in tons per hectare (value x 100).

**Increase in SOC on Croplands After 20 Yr - Medium Scenario**

*File: soc_dif_me*

This dataset provides per pixel (250m resolution) values of the increase in soil organic carbon on cropland after 20 years under the Medium Scenario, in tons per hectare (value x 100), i.e. the difference after 20 years ($T_2 - T_1$).

**Increase in SOC on Croplands After 20 Yr - High Scenario**

*File: soc_dif_hi*

This dataset provides per pixel (250m resolution) values of the increase in soil organic carbon on cropland after 20 years under the High Scenario, in tons per hectare (value x 100), i.e. the difference after 20 years ($T_2 - T_1$).
Soil Organic Carbon in Tons per Hectare per Grid Cell

These datasets present values in tons per hectare per grid cell, considering the percent of that grid cell which is classified as cropland in the GLC-Share (GLC-02) dataset. Multiply the value by 6.25 (the number of hectares per 250m grid cell) to obtain total tons of carbon per grid cell x 100.

Soil Organic Carbon on Croplands per Grid Cell

File: tc_t1_30cm

This dataset provides per pixel (250m resolution) values of the soil organic carbon on cropland, globally, in tons per hectare (value x 100), considering the percent of that grid cell which is classified as cropland in the GLC-Share (GLC-02) dataset. Multiply the value by 6.25 (the number of hectares per 250m grid cell) to obtain total tons of carbon per grid cell x 100.

Potential SOC on Croplands After 20 Yr - Medium Scenario per Grid Cell

File: tc_t2_me

This dataset provides per pixel (250m resolution) values of the potential soil organic carbon on cropland after 20 years under the Medium Scenario, in tons per hectare (value x 100), considering the percent of that grid cell which is classified as cropland in the GLC-Share (GLC-02) dataset. Multiply the value by 6.25 (the number of hectares per 250m grid cell) to obtain total tons of carbon per grid cell x 100.

Potential SOC on Croplands After 20 Yr - High Scenario per Grid Cell

File: tc_t2_hi

This dataset provides per pixel (250m resolution) values of the potential soil organic carbon on cropland after 20 years under the Medium Scenario, in tons per hectare (value x 100), considering the percent of that grid cell which is classified as cropland in the GLC-Share (GLC-02) dataset. Multiply the value by 6.25 (the number of hectares per 250m grid cell) to obtain total tons of carbon per grid cell x 100.

Increase in SOC on Croplands After 20 Yr - Medium Scenario per Grid Cell

File: tc_dif_me

This dataset provides per pixel (250m resolution) values of the potential increase in soil organic carbon, i.e. the difference after 20 years ($T_2 - T_1$), on cropland after 20 years under the Medium Scenario, in tons per hectare (value x 100), considering the percent of that grid cell which is classified as cropland in the GLC-Share (GLC-02) dataset. Multiply the value by 6.25 (the number of hectares per 250m grid cell) to obtain total tons of carbon per grid cell x 100.

Increase in SOC on Croplands After 20 Yr - High Scenario per Grid Cell

File: tc_dif_hi

This dataset provides per pixel (250m resolution) values of the potential increase in soil organic carbon, i.e. the difference after 20 years ($T_2 - T_1$), on cropland after 20 years, in tons per hectare (value x 100), considering the percent of that grid cell which is classified as cropland in the GLC-Share (GLC-02) dataset. Multiply the value by 6.25 (the number of hectares per 250m grid cell) to obtain total tons of carbon per grid cell x 100.
Soil Organic Carbon on High SOC Croplands per Grid Cell

File: tc_ag_hi_c

This dataset provides per pixel (250m resolution) values of the soil organic carbon on cropland which has been classified as high SOC soils, i.e. > 400 tC/ha or bulk density < 1), globally, in tons per hectare (value x 100), considering the percent of that grid cell which is classified as cropland in the GLC-Share (GLC-02) dataset. Multiply the value by 6.25 (the number of hectares per 250m grid cell) to obtain total tons of carbon per grid cell x 100.