Country situation on estimation of carbon stock change in mineral soils

Country Sri Lanka

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1) Greenhouse gas emission (GHG) data

GHG emissions and removals in 2010 in Gg CO_2-eq

Overall GHG in AFOLU sector

Sector	CO_2 emissions	CO_2 removals	CH_4	N_2O	HFCs	Total
Energy	12,810.00		950.46	393.70		14,154.16
IPPU	435.59				12.98	448.57
Agriculture	340.45		2,860.62	3,304.60		6,505.67
Waste	122.78		527.94	325.50		976.22
Total excluding LULUCF	13,708.82		4,339.02	4,023.80	12.98	22,084.62
LULUCF-emissions	21,342.40		112.77	4.96		21,460.13
LULUCF-removals		-39,826.30				-39,826.30
Net Total	35,051.22	-39.826.3	4,451.79	4,028.76	12.98	3,718.45

TNC: 2022, MOE

1) Greenhouse gas emission (GHG) data

Land use categories carbon stock changes (CSCs) in mineral soils reported?

Emissions from agriculture sector in 2010

GHGs Sources Categories			CO_2 Gg	CH_4 Gg	N_2O Gg	CO Gg	NO_x Gg
3			**340.14**	**136.23**	**10.66**	**56.76**	**1.54**
	3A1	Enteric fermentation		69.28			
	3A2	Manure management		6.79			
	3C1	Field biomass burning		1.67	0.04	56.76	1.54
	3C2	Liming	37.09				
	3C3	Urea application	303.05				
	3C4	Direct N_2O emission from managed soil			6.61		
	3C5	Indirect N_2O emissions from managed soil			3.98		
	3C6	Indirect N_2O from manure management			0.03		

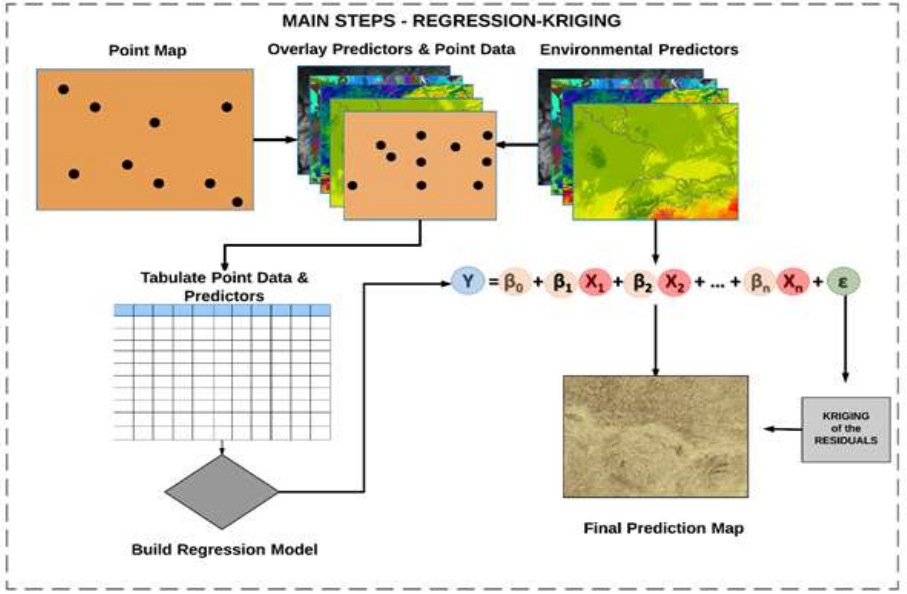
TNC :2022,MOE

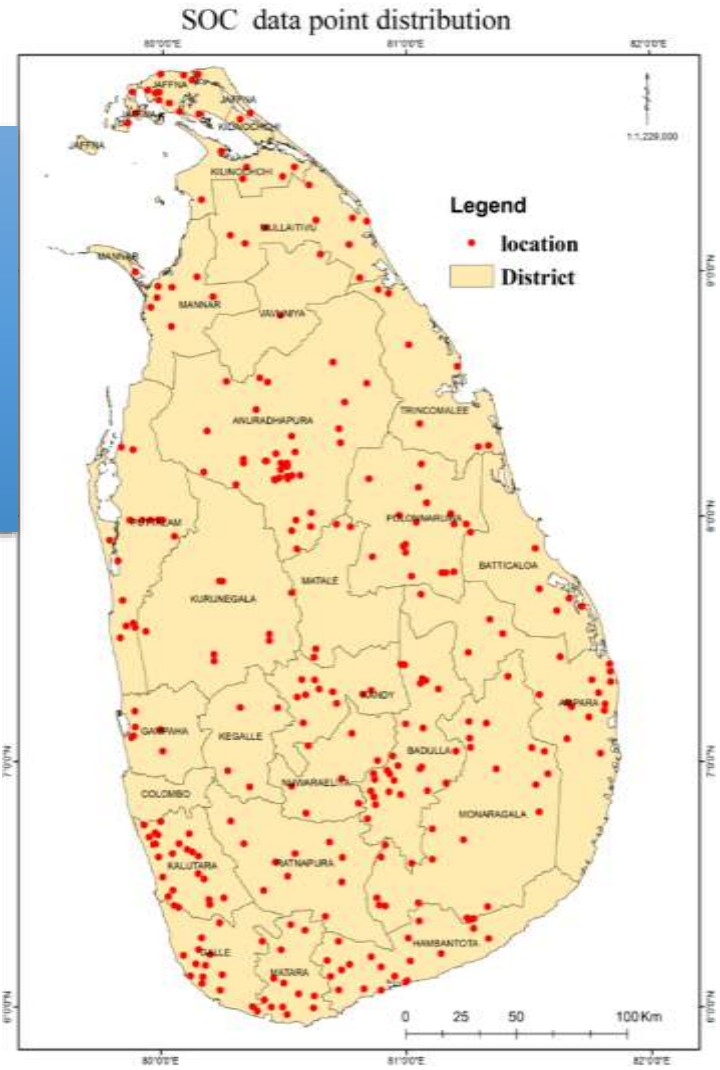
Availability of Soil Organic Carbon Data

- SOC (%) for 322 locations collected from different sources were used for development of SOC map (1km) using
- SOC % values converted to g/kg using Soil profile depth & BD using spline tool (free software)
- Considered soil depth 0-30cm
- Analytical approaches learned from FAO-expert group training done under AFACI – Soil Project were used with R-modeling software.
- Updating of SOC map to be done in next year

Regression Kriging

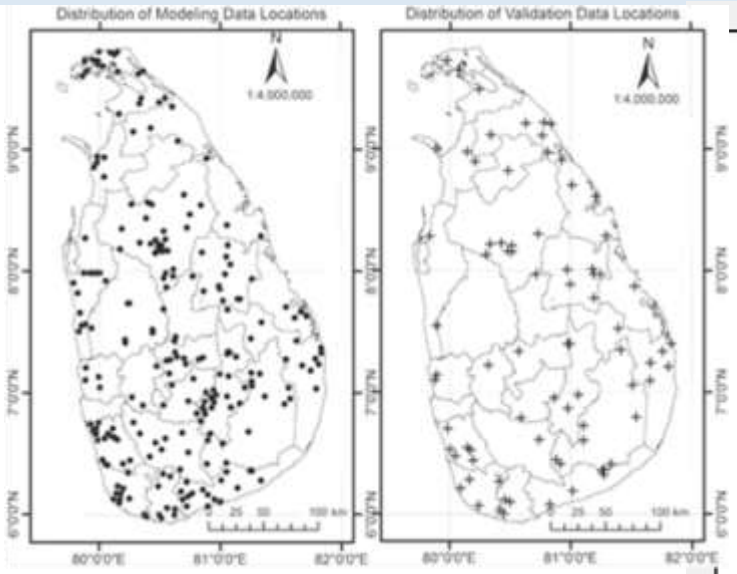
Regression kriging (RK) also called as "kriging after de-trending" is a hybrid method that combines either a simple or a multiple-linear regression model with ordinary kriging of the prediction residuals.



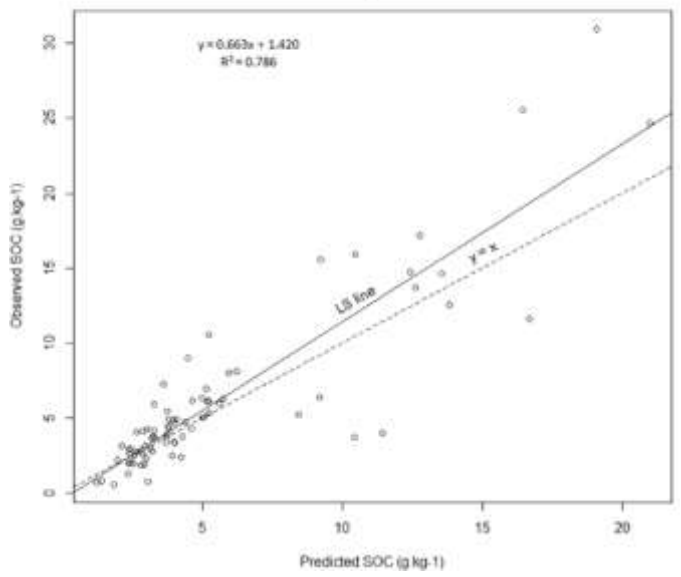


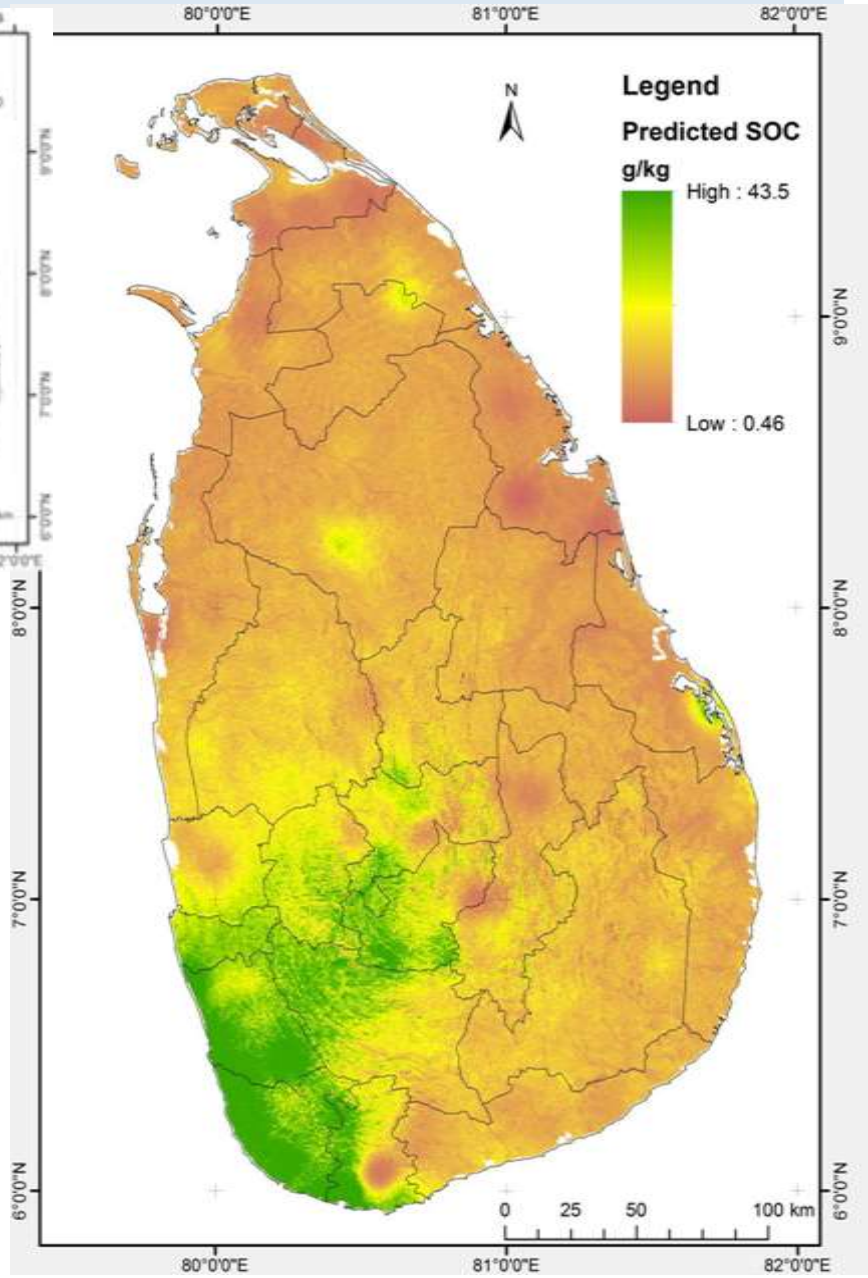
3) What are the soil organic carbon data/maps available at national level ?

- The predicted maps of SOC at a 250m resolution were produced using regression kriging method
- The predicted SOC values ranged between 0.46 to 43.5 $g.kg^{-1}$ with a mean value of 4.2 and standard deviation of 2.7. According to prediction SOC values are relatively higher in the southwest and western central mountain areas which are characterized by wet cold weather and better vegetation conditions, whereas lower SOC can be found in most parts of north and northwest where the dry hot weather conditions prevails most of months.



Prediction Accuracy





5) What national policies targeting SOC sequestration potential have been adopted?

- Sri Lanka's per capita greenhouse gas emission in 2010 was 1.02 tons and its global cumulative contribution in 2019 was 0.03%.
- Despite low carbon footprint and highly vulnerable status, Sri Lanka commits to increase 32% forest cover by 2030
- Reduce greenhouse emissions by 14.5% for the period of 2021-2030 from Power (electricity generation), Transport, Industry, Waste, Forestry, and Agriculture
- To achieve 70% renewable energy in electricity generation by 2030

- To achieve Carbon Neutrality by 2050 in electricity generation
- No capacity addition of Coal power plants
- Promoting organic fertilizer and farming
- Sri Lanka expects to achieve its Carbon Neutrality by 2060
- Halt the conversion of forests and Wetlands to other land cover classes
- Reduce land degradation including soil erosion to improve land productivity and soil organic carbon stocks
- Forest landscape restoration

- Regulation of removal of trees even in privately owned lands

Thank you