



Supplement of

Improvement of soil properties maps using an iterative residual correction method

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Table S1. Performance metrics (RMSE, R^2 , and correlation coefficient ρ) for posterior predictions of soil properties, including mass fraction of sand content (% mass), silt content (% mass), and clay content (% mass), pH, oven-dry bulk density (BD; g cm^{-3}), and soil organic matter (SOM; % mass) at different depths. This table serves as a supplement to the table 1 in the main context.

Property	Depth (cm)	RMSE	R^2	ρ
Sand (% mass)	0-5	6.998	0.903	0.951
	5-15	6.998	0.900	0.949
	15-30	7.475	0.888	0.942
	30-60	9.438	0.829	0.911
	60-100	10.788	0.804	0.898
	100-200	12.594	0.761	0.874
Silt (% mass)	0-5	5.340	0.861	0.928
	5-15	5.384	0.849	0.922
	15-30	5.754	0.822	0.908
	30-60	6.602	0.768	0.878
	60-100	7.156	0.748	0.867
	100-200	8.488	0.704	0.842
Clay (% mass)	0-5	3.020	0.947	0.973
	5-15	4.414	0.891	0.944
	15-30	5.111	0.872	0.934
	30-60	5.962	0.793	0.892
	60-100	6.888	0.813	0.903
	100-200	6.947	0.788	0.890
pH ($\log_{10}[\text{H}^+]$)	0-5	0.213	0.957	0.979
	5-15	0.260	0.936	0.968
	15-30	0.259	0.943	0.971
	30-60	0.295	0.935	0.967
	60-100	0.302	0.941	0.970
	100-200	0.269	0.956	0.978
BD (g cm^{-3})	0-5	0.166	0.710	0.847
	5-15	0.173	0.673	0.826
	15-30	0.163	0.684	0.832
	30-60	0.170	0.656	0.816
	60-100	0.163	0.691	0.835
	100-200	0.146	0.667	0.821
SOM (% mass)	0-5	3.335	0.476	0.755
	5-15	2.560	0.514	0.743
	15-30	1.626	0.664	0.826
	30-60	1.522	0.654	0.816
	60-100	1.026	0.706	0.852
	100-200	1.175	0.597	0.794

Table S2. Number of available soil observations for each soil property and depth interval used in this study. Reported values indicate the count of samples available over California to perform iteratively residual correction for mass percentage of sand content (% mass), silt content (% mass), and clay content (% mass), pH, soil organic matter (SOM; mass fraction), and oven-dry bulk density (BD; g cm^{-3}) within each depth interval.

Depth interval (cm)	Sand (% mass)	Silt (% mass)	Clay (% mass)	pH ($\log_{10}[\text{H}^+]$)	SOM (% mass)	BD (g cm^{-3})
0-5	3,856	3,920	3,083	2,806	2,048	2,254
5-15	3,607	3,621	2,995	3,885	2,770	3,283
15-30	2,044	2,036	1,814	4,247	3,141	3,256
30-60	1,348	1,333	1,305	4,909	3,588	4,217
60-100	1,048	1,047	1,045	4,545	3,306	3,732
100-200	905	896	866	3,717	2,616	2,814
Total	12,808	12,853	11,108	24,109	17,469	19,556