

Table S1. **(A)** Pearson correlation coefficients between elements measured on the regular grid in the depth 0-10 cm by pXRF (Fe, K, Pb, Ti, Mn, Sr, Sb, Cu, Zn, Zr, Sn, Rb, As, Cd, V, Cr, Ni, Nb, Th),  $\gamma$ -rays DR (dose rate) and cone index data (CI). **(B)** Pearson correlation coefficients between elements measured on the regular grid in the depth 10-45 cm by pXRF (Fe, K, Pb, Ti, Mn, Sr, Sb, Cu, Zn, Zr, Sn, Rb, As, Cd, V, Cr, Ni, Nb, Th),  $\gamma$ -rays DR (dose rate), and cone index data (CI)

(A)																								
	Ca	Fe	K	Pb	Ti	Mn	Sr	Sb	Cu	Zn	Zr	Sn	Rb	As	Cd	V	Cr	Ni	Nb	Th	$\gamma$ -ray DR	CI 0-10	CI 10-30	CI 30-45
N. cases	79	79	79	79	79	79	79	63	79	79	79	68	79	62	59	79	79	78	79	79	75	66	66	66
Fe	0.205																							
K	-0.271*	-0.097																						
Pb	0.259*	0.620**	-0.637**																					
Ti	-0.392**	-0.044	0.915**	-0.659**																				
Mn	-0.512**	-0.118	0.785**	-0.709**	0.919**																			
Sr	-0.328**	0.219	0.558**	-0.370**	0.652**	0.750**																		
Sb	0.363**	0.826**	-0.552**	0.950**	-0.595**	-0.643**	-0.142																	
Cu	0.325**	0.052	-0.339**	0.290**	-0.363**	-0.427**	-0.543**	0.150																
Zn	0.317**	0.285*	-0.483**	0.546**	-0.464**	-0.516**	-0.437**	0.445**	0.837**															
Zr	-0.697**	-0.027	0.535**	-0.412**	0.629**	0.696**	0.677**	-0.369**	-0.641**	-0.526**														
Sn	0.724**	0.757**	-0.534**	0.715**	-0.612**	-0.675**	-0.219	0.769**	0.405**	0.521**	-0.565**													
Rb	-0.662**	0.207	0.630**	-0.324**	0.675**	0.700**	0.733**	-0.297*	-0.611**	-0.489**	0.877**	-0.581**												
As	0.262*	0.632**	-0.432**	0.750**	-0.413**	-0.502**	-0.311*	0.546**	0.369**	0.513**	-0.473**	0.488**	-0.224											
Cd	-0.051	0.676**	-0.379**	0.840**	-0.375**	-0.419**	-0.150	0.808**	0.051	0.280*	-0.198	0.342**	-0.033	0.438**										
V	-0.083	0.207	0.742**	-0.420**	0.851**	0.773**	0.692**	-0.253*	-0.271*	-0.303**	0.467**	-0.109	0.487**	-0.220	-0.307*									
Cr	0.243*	0.403**	-0.405**	0.472**	-0.393**	-0.422**	-0.227*	0.391**	0.246*	0.354**	-0.349**	0.410**	-0.256*	0.433**	0.322*	-0.290**								
Ni	0.610**	0.656**	-0.487**	0.742**	-0.528**	-0.563**	-0.187	0.788**	0.349**	0.495**	-0.513**	0.895**	-0.408**	0.570**	0.457**	-0.173	0.388**							
Nb	-0.585**	0.293**	0.441**	-0.085	0.522**	0.569**	0.689**	-0.052	-0.569**	-0.351**	0.869**	-0.300*	0.838**	-0.135	0.134	0.485**	-0.136	-0.201						
Th	-0.226*	-0.045	0.346**	-0.301**	0.381**	0.406**	0.532**	-0.224	-0.497**	-0.469**	0.585**	-0.200	0.462**	-0.410**	-0.238	0.425**	-0.327**	-0.234*	0.500**					
$\gamma$ -ray DR	-0.010	-0.066	0.195	-0.372**	0.324**	0.417**	0.306**	-0.066	-0.228*	-0.265*	0.228*	-0.059	0.180	-0.308*	-0.118	0.390**	-0.247*	-0.179	0.163	0.261*				
CI 0-10	0.112	0.230	-0.094	0.293*	-0.138	-0.219	-0.124	0.209	0.221	0.293*	-0.130	0.292*	-0.099	0.235	0.171	-0.023	0.231	0.176	-0.054	-0.098	-0.155			
CI 10-30	0.048	0.182	0.075	0.244*	-0.057	-0.207	-0.189	0.204	0.109	0.196	0.004	0.190	0.014	0.120	0.201	-0.080	0.082	0.141	0.051	0.003	-0.106	0.504**		
CI 30-45	-0.073	0.126	0.114	-0.009	0.115	0.055	-0.016	-0.050	0.070	-0.049	0.091	-0.032	0.092	0.072	0.050	0.020	0.118	-0.021	0.083	-0.006	0.066	-0.059	0.445**	
CI 45-60	-0.091	0.146	0.015	0.142	-0.024	-0.093	-0.117	0.070	0.031	-0.017	0.071	-0.010	0.094	0.155	0.131	-0.127	0.064	0.004	0.057	-0.072	-0.170	0.069	0.469**	0.600**

(B)																								
	Ca	Fe	K	Pb	Ti	Mn	Sr	Sb	Cu	Zn	Zr	Sn	Rb	As	Cd	V	Cr	Ni	Nb	Th	γ-rays DR	CI 0-10	CI 10-30	CI 30-45
N. cases	74	74	74	74	74	74	74	56	74	74	74	58	74	70	45	74	74	71	74	74	74	65	65	65
Fe	0.376**																							
K	-0.415**	-0.271*																						
Pb	0.460**	0.753**	-0.675**																					
Ti	-0.504**	-0.184	0.904**	-0.698**																				
Mn	-0.582**	-0.319**	0.816**	-0.778**	0.899**																			
Sr	-0.221	-0.060	0.625**	-0.521**	0.654**	0.697**																		
Sb	0.509**	0.746**	-0.610**	0.967**	-0.637**	-0.750**	-0.347**																	
Cu	0.514**	0.369**	-0.572**	0.533**	-0.568**	-0.592**	-0.432**	0.583**																
Zn	0.553**	0.488**	-0.688**	0.671**	-0.677**	-0.694**	-0.522**	0.642**	0.836**															
Zr	-0.580**	-0.179	0.757**	-0.542**	0.748**	0.724**	0.582**	-0.510**	-0.636**	-0.662**														
Sn	0.776**	0.619**	-0.609**	0.772**	-0.647**	-0.730**	-0.251	0.855**	0.627**	0.651**	-0.596**													
Rb	-0.642**	-0.196	0.800**	-0.514**	0.714**	0.726**	0.609**	-0.452**	-0.633**	-0.654**	0.870**	-0.614**												
As	0.405**	0.649**	-0.310**	0.628**	-0.278*	-0.430**	-0.270*	0.519**	0.305*	0.488**	-0.346**	0.381**	-0.397**											
Cd	0.076	0.613**	-0.356*	0.796**	-0.347*	-0.466**	-0.323*	0.732**	0.319*	0.405**	-0.195	0.354*	-0.133	0.481**										
V	-0.276*	0.010	0.766**	-0.548**	0.878**	0.773**	0.668**	-0.494**	-0.427**	-0.517**	0.621**	-0.367**	0.551**	-0.199	-0.343*									
Cr	0.441**	0.494**	-0.501**	0.701**	-0.557**	-0.558**	-0.341**	0.714**	0.521**	0.571**	-0.456**	0.670**	-0.416**	0.401**	0.386**	-0.427**								
Ni	0.530**	0.663**	-0.579**	0.753**	-0.592**	-0.669**	-0.307**	0.801**	0.599**	0.670**	-0.542**	0.743**	-0.501**	0.519**	0.547**	-0.469**	0.546**							
Nb	-0.612**	-0.029	0.715**	-0.404**	0.735**	0.689**	0.565**	-0.399**	-0.640**	-0.611**	0.906**	-0.555**	0.840**	-0.172	-0.057	0.612**	-0.376**	-0.429**						
Th	-0.444**	0.011	0.469**	-0.286*	0.535**	0.396**	0.364**	-0.212	-0.296*	-0.280*	0.537**	-0.355**	0.498**	-0.126	0.063	0.532**	-0.298**	-0.258*	0.566**					
γ-rays DR	-0.134	-0.080	0.390**	-0.349**	0.451**	0.436**	0.491**	-0.204	-0.315**	-0.374**	0.317**	-0.099	0.283*	-0.188	-0.200	0.511**	-0.191	-0.242*	0.319**	0.197				
CI 0-10	0.101	0.186	-0.190	0.238	-0.188	-0.238	-0.167	0.163	0.110	0.203	-0.196	0.167	-0.160	0.002	0.250	-0.044	-0.002	0.206	-0.160	0.051	-0.155			
CI 10-30	0.117	0.139	-0.166	0.230	-0.184	-0.241	-0.217	0.221	0.173	0.263*	-0.185	0.230	-0.109	-0.076	0.061	-0.136	0.203	0.272*	-0.175	-0.069	-0.106	0.505**		
CI 30-45	-0.065	-0.037	0.112	-0.122	0.115	0.107	0.055	-0.179	-0.051	-0.103	0.118	-0.109	0.116	-0.145	-0.231	0.057	-0.038	-0.082	0.021	-0.073	0.066	-0.067	0.433**	
CI 45-60	-0.034	0.146	0.011	0.191	-0.075	-0.151	-0.179	0.120	0.056	0.053	0.076	-0.020	0.113	0.059	0.318*	-0.150	0.068	0.155	0.032	-0.135	-0.170	0.065	0.465**	0.604**

\*\* Correlation is significant at level 0.01 (two tails).

\* Correlation is significant at level 0.05 (two tails).