

Table S1. Average value of vertical RMSE \pm Standard deviation (four replicates) for each sample density and morphology tested.

		Interpolation Methods						Interpolation Methods			
		OK	UK	RBMF	GMRF			OK	UK	RBMF	GMRF
Sec.	SD	RMSE (m)	RMSE (m)	RMSE (m)	RMSE (m)	Sec.	SD	RMSE (m)	RMSE (m)	RMSE (m)	RMSE (m)
Q2	SD1	1.802 \pm 0.103	4.216 \pm 0.238	1.585 \pm 0.237	3.177 \pm 0.153	Q8	SD1	1.096 \pm 0.100	3.584 \pm 0.047	1.074 \pm 0.051	3.06 \pm 0.074
	SD2	1.562 \pm 0.131	2.985 \pm 0.847	1.239 \pm 0.162	2.348 \pm 0.201		SD2	1.013 \pm 0.202	1.916 \pm 0.253	0.93 \pm 0.211	2.086 \pm 0.226
	SD3	1.287 \pm 0.156	1.84 \pm 0.068	1.083 \pm 0.154	1.795 \pm 0.043		SD3	0.667 \pm 0.074	1.215 \pm 0.203	0.607 \pm 0.038	1.363 \pm 0.068
	SD4	0.921 \pm 0.043	1.216 \pm 0.082	0.864 \pm 0.021	1.247 \pm 0.034		SD4	0.451 \pm 0.048	0.829 \pm 0.083	0.491 \pm 0.050	0.818 \pm 0.081
	SD5	0.621 \pm 0.016	0.899 \pm 0.020	0.578 \pm 0.007	0.843 \pm 0.041		SD5	0.338 \pm 0.058	0.616 \pm 0.059	0.316 \pm 0.046	0.589 \pm 0.013
	SD6	0.555 \pm 0.013	0.737 \pm 0.028	0.586 \pm 0.074	0.681 \pm 0.019		SD6	0.355 \pm 0.145	0.421 \pm 0.083	0.735 \pm 0.599	0.394 \pm 0.022
	SD7	0.449 \pm 0.015	0.538 \pm 0.030	0.456 \pm 0.047	0.538 \pm 0.025		SD7	0.228 \pm 0.031	0.328 \pm 0.022	0.34 \pm 0.068	0.318 \pm 0.012
	SD8	0.347 \pm 0.040	0.455 \pm 0.034	0.436 \pm 0.127	0.436 \pm 0.030		SD8	0.182 \pm 0.015	0.196 \pm 0.036	0.255 \pm 0.118	0.265 \pm 0.012
Q3	SD1	1.593 \pm 0.190	4.353 \pm 1.461	1.349 \pm 0.069	3.804 \pm 0.149	Q15	SD1	0.711 \pm 0.180	1.833 \pm 0.484	0.532 \pm 0.068	1.87 \pm 0.124
	SD2	1.244 \pm 0.325	2.549 \pm 0.127	1.14 \pm 0.226	2.374 \pm 0.059		SD2	0.431 \pm 0.073	1.291 \pm 0.172	0.426 \pm 0.035	1.212 \pm 0.155
	SD3	1.178 \pm 0.220	1.395 \pm 0.215	0.989 \pm 0.140	1.729 \pm 0.099		SD3	0.46 \pm 0.085	1.004 \pm 0.149	0.46 \pm 0.063	0.973 \pm 0.102
	SD4	0.92 \pm 0.052	1.164 \pm 0.118	0.776 \pm 0.035	1.103 \pm 0.066		SD4	0.354 \pm 0.052	0.543 \pm 0.100	0.29 \pm 0.026	0.51 \pm 0.020
	SD5	0.684 \pm 0.042	0.782 \pm 0.101	0.555 \pm 0.023	0.748 \pm 0.020		SD5	0.275 \pm 0.017	0.408 \pm 0.061	0.261 \pm 0.018	0.402 \pm 0.036
	SD6	0.536 \pm 0.046	0.709 \pm 0.062	0.676 \pm 0.063	0.601 \pm 0.043		SD6	0.222 \pm 0.050	0.352 \pm 0.042	0.436 \pm 0.289	0.307 \pm 0.028
	SD7	0.381 \pm 0.025	0.479 \pm 0.066	0.478 \pm 0.050	0.466 \pm 0.041		SD7	0.158 \pm 0.012	0.22 \pm 0.014	0.288 \pm 0.070	0.204 \pm 0.013
	SD8	0.271 \pm 0.050	0.376 \pm 0.020	0.315 \pm 0.067	0.395 \pm 0.025		SD8	0.144 \pm 0.012	0.19 \pm 0.009	0.188 \pm 0.044	0.176 \pm 0.014
Q4	SD1	3.526 \pm 0.710	5.209 \pm 1.389	2.716 \pm 0.286	4.697 \pm 0.372	Q23	SD1	0.13 \pm 0.026	0.485 \pm 0.007	0.085 \pm 0.009	0.427 \pm 0.032
	SD2	2.391 \pm 0.219	3.827 \pm 0.180	2.34 \pm 0.255	3.223 \pm 0.450		SD2	0.072 \pm 0.005	0.297 \pm 0.021	0.085 \pm 0.022	0.276 \pm 0.013
	SD3	1.951 \pm 0.146	2.596 \pm 0.462	1.716 \pm 0.022	2.464 \pm 0.246		SD3	0.049 \pm 0.005	0.149 \pm 0.016	0.06 \pm 0.008	0.147 \pm 0.013
	SD4	1.745 \pm 0.127	1.933 \pm 0.280	1.342 \pm 0.091	1.908 \pm 0.219		SD4	0.043 \pm 0.004	0.096 \pm 0.007	0.046 \pm 0.005	0.083 \pm 0.006
	SD5	1.245 \pm 0.131	1.643 \pm 0.215	1.156 \pm 0.123	1.524 \pm 0.171		SD5	0.041 \pm 0.003	0.068 \pm 0.013	0.038 \pm 0.003	0.055 \pm 0.004
	SD6	1.043 \pm 0.011	1.251 \pm 0.025	0.979 \pm 0.039	1.128 \pm 0.032		SD6	0.035 \pm 0.002	0.047 \pm 0.005	0.054 \pm 0.005	0.043 \pm 0.001
	SD7	0.772 \pm 0.023	0.977 \pm 0.052	0.789 \pm 0.059	0.857 \pm 0.027		SD7	0.028 \pm 0.001	0.037 \pm 0.004	0.044 \pm 0.007	0.034 \pm 0.001
	SD8	0.626 \pm 0.013	0.814 \pm 0.014	0.607 \pm 0.031	0.752 \pm 0.021		SD8	0.025 \pm 0.001	0.033 \pm 0.003	0.03 \pm 0.001	0.029 \pm 0.001

Table S2. Results of ANOVA test for the RMSE statistic.

	Sum of Squares (SS)	Degree of freedom (DG)	Mean sum of squares (MS)	F	p-value
Sampling Density (SD)	287.7738	7	41.1105	720.90	0.000000
Morphology (M)	237.0265	5	47.4053	831.28	0.000000
Interpolation Method (IM)	44.7461	3	14.9154	261.55	0.000000
SD*M	80.7135	35	2.3061	40.44	0.000000
SD*IM	61.7794	21	2.9419	51.59	0.000000
M*IM	8.6532	15	0.5769	10.12	0.000000
SD*M*IM	14.3016	105	0.1362	2.39	0.000000
Error	32.8474	576	0.0570		

Figure S1. Trend graph of the RMSE of the residuals ($Z_{interpolated} - Z_{checkpoint}$) with respect to the factor Sampling Density. For each SD all morphologies and interpolation methods are included. Vertical bars denote 0.95 confidence intervals. Different letters between sampling densities indicate significant differences according to Tukey's test ($p < 0.05$).

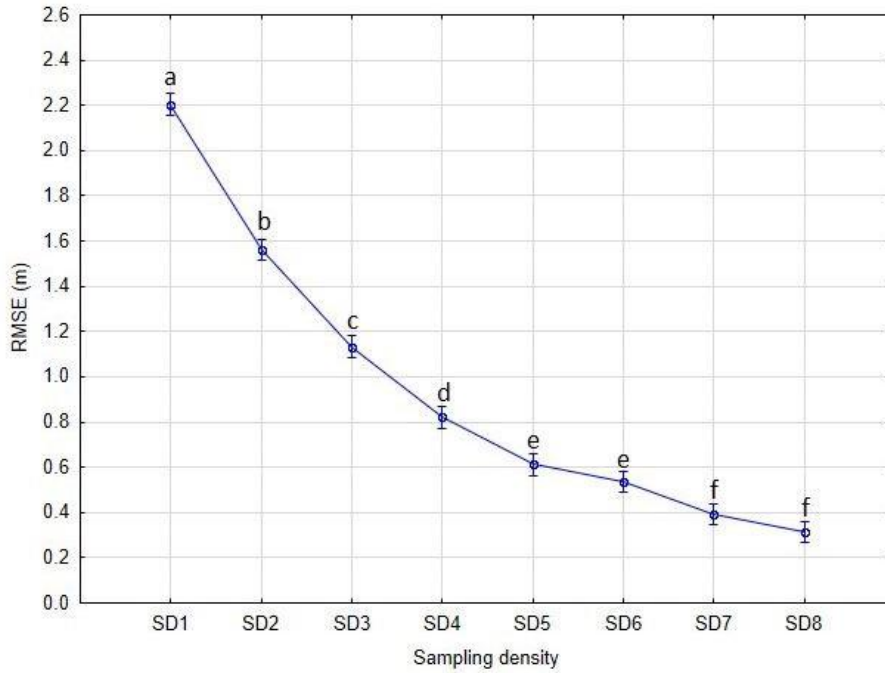


Figure S2. Trend graph of the RMSE of the residuals ($Z_{interpolated} - Z_{checkpoint}$) with respect to the factor Morphology. Vertical bars denote 0.95 confidence intervals. Different letters between morphologies indicate significant differences according to Tukey's test ($p < 0.05$).

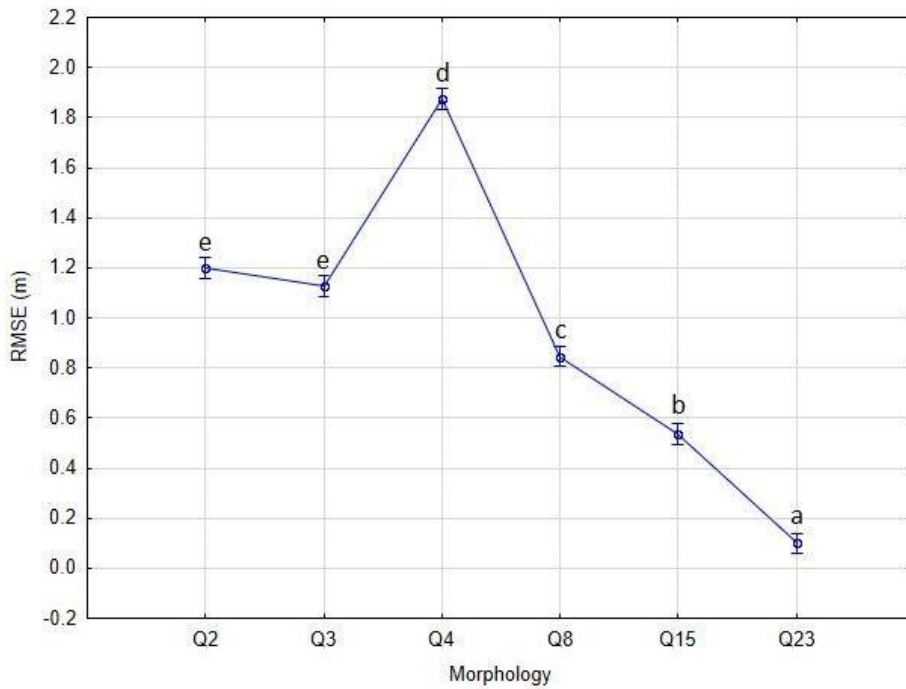


Figure S3. Trend graph of the RMSE of the residuals ($Z_{\text{interpolated}} - Z_{\text{checkpoint}}$) with respect to the factor Interpolation Method. Vertical bars denote 0.95 confidence intervals. Different letters between interpolation methods indicate significant differences according to Tukey's test ($p < 0.05$).

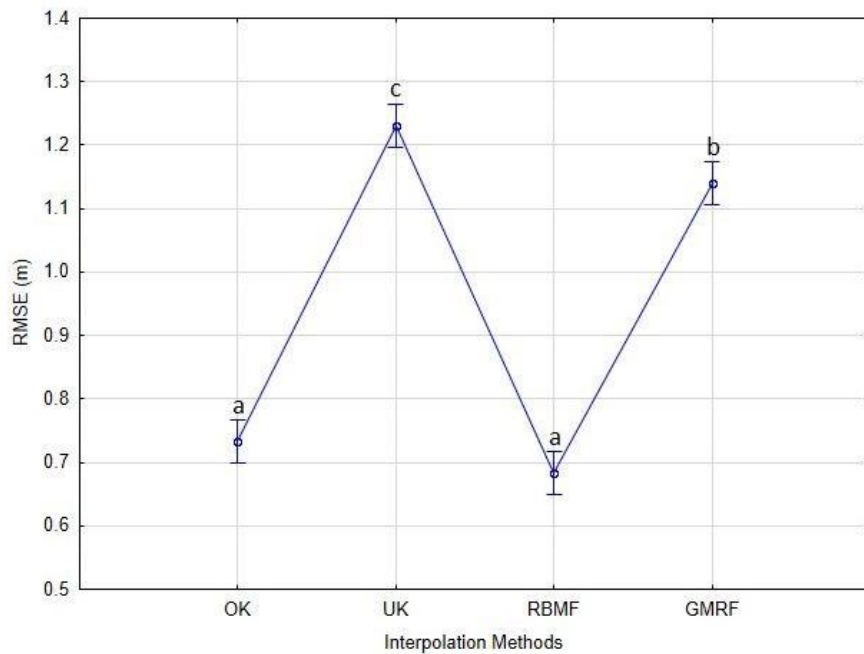


Figure S4. Trend graph of the RMSE of the residuals ($Z_{\text{interpolated}} - Z_{\text{checkpoint}}$) with respect to the interaction between Sampling Density and Morphology. Vertical bars denote 0.95 confidence intervals.

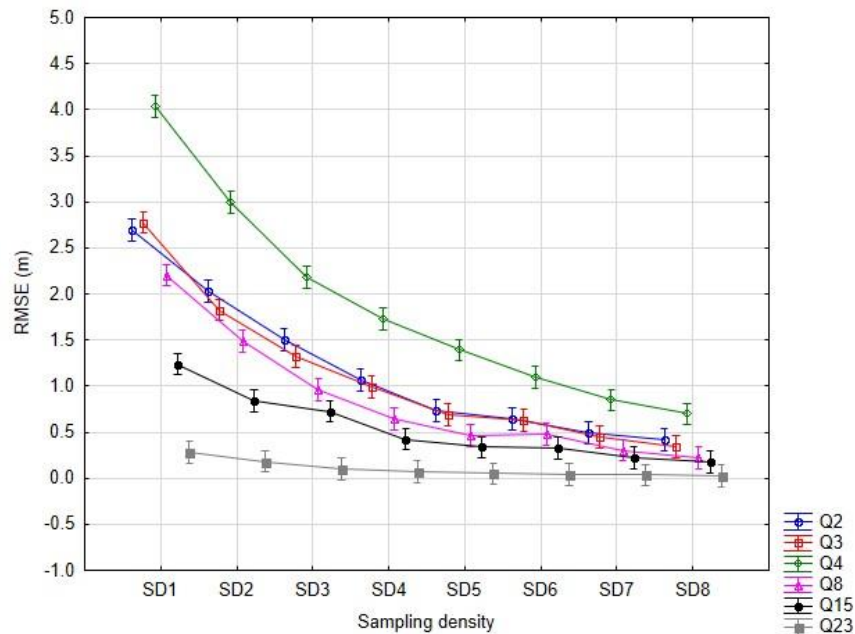


Figure S5. Trend graph of the RMSE of the residuals ($Z_{\text{interpolated}} - Z_{\text{checkpoint}}$) with respect to the interaction between Sampling Density and Interpolation Method. Vertical bars denote 0.95 confidence intervals.

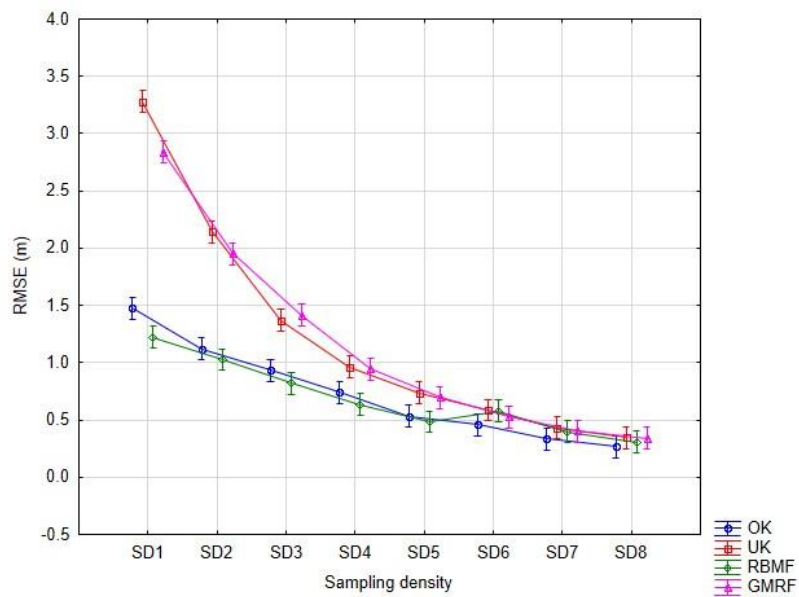


Figure S6. Trend graph of the RMSE of the residuals ($Z_{\text{interpolated}} - Z_{\text{checkpoint}}$) with respect to the interaction between Morphology and Interpolation Method. Vertical bars denote 0.95 confidence intervals.

