

Table S1. Coordinates for sampling points in all beaches under study.

Beach Names	Sampling Points	Coordinates	
		Latitude	Longitude
Ghadira Bay	1	35°58'19.41"N	14°20'59.32"E
	2	35°58'17.25"N	14°20'59.59"E
	3	35°58'17.24"N	14°20'59.19"E
	4	35°58'17.24"N	14°20'58.78"E
	5	35°58'14.06"N	14°20'58.46"E
	6	35°58'14.08"N	14°20'58.94"E
	7	35°58'14.09"N	14°20'59.47"E
	8	35°58'14.12"N	14°20'59.99"E
	9	35°58'14.14"N	14°21'0.48"E
	10	35°58'11.54"N	14°21'1.74"E
	11	35°58'11.40"N	14°21'1.40"E
	12	35°58'11.27"N	14°21'1.01"E
	13	35°58'11.15"N	14°21'0.62"E
	14	35°58'11.00"N	14°21'0.18"E
	15	35°58'8.90"N	14°21'1.71"E
	16	35°58'9.01"N	14°21'2.16"E
	17	35°58'9.16"N	14°21'2.51"E
	18	35°58'9.30"N	14°21'2.84"E
Ramla Bay	1	36° 3'42.69"N	14°17'9.55"E
	2	36° 3'42.32"N	14°17'9.72"E
	3	36° 3'41.47"N	14°17'6.31"E
	4	36° 3'42.33"N	14°17'6.17"E
	5	36° 3'42.02"N	14°17'3.12"E
	6	36° 3'41.62"N	14°17'3.18"E
	7	36° 3'41.19"N	14°17'3.22"E
	8	36° 3'40.78"N	14°17'3.26"E
	9	36° 3'39.89"N	14°16'59.81"E
	10	36° 3'40.27"N	14°16'59.72"E
	11	36° 3'40.65"N	14°16'59.62"E
	12	36° 3'41.07"N	14°16'59.58"E

	13	36° 3'41.50"N	14°16'59.50"E
	14	36° 3'41.97"N	14°16'59.46"E
	15	36° 3'41.56"N	14°16'56.42"E
	16	36° 3'41.13"N	14°16'56.41"E
Rinella Bay	1	35°53'37.39"N	14°31'40.18"E
	2	35°53'36.90"N	14°31'40.21"E
	3	35°53'36.41"N	14°31'39.99"E
	4	35°53'35.96"N	14°31'39.74"E
	5	35°53'35.52"N	14°31'39.43"E
Marsalforn Bay	1	36° 4'18.36"N	14°15'37.63"E
	2	36° 4'18.07"N	14°15'38.05"E
	3	36° 4'17.59"N	14°15'37.63"E
	4	36° 4'17.84"N	14°15'37.26"E
	5	36° 4'17.36"N	14°15'36.65"E
	6	36° 4'17.13"N	14°15'36.85"E
Ballut Reserve Bay	1	35°50'20.38"N	14°32'55.32"E
	2	35°50'20.35"N	14°32'54.25"E
	3	35°50'20.77"N	14°32'54.49"E
	4	35°50'20.48"N	14°32'53.27"E
	5	35°50'20.89"N	14°32'53.38"E
	6	35°50'20.50"N	14°32'52.39"E
	7	35°50'20.83"N	14°32'52.41"E
	8	35°50'20.66"N	14°32'51.33"E

Table S2. Normality test results for elements studied.

Tests of Normality						
	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
As₂O₃	0.228	619	0.000	0.787	619	0.000
BaO	0.528	619	0.000	0.122	619	0.000
Bi₂O₃	0.120	619	0.000	0.895	619	0.000
CdO	0.177	619	0.000	0.790	619	0.000
CoO	0.193	619	0.000	0.858	619	0.000
Cr₂O₃	0.387	619	0.000	0.508	619	0.000
Cs₂O	0.520	619	0.000	0.075	619	0.000
CuO	0.264	619	0.000	0.264	619	0.000
Fe₂O₃	0.226	619	0.000	0.813	619	0.000
MnO	0.171	619	0.000	0.915	619	0.000
MoO₃	0.501	619	0.000	0.344	619	0.000
Nd₂O₃	0.514	619	0.000	0.221	619	0.000
NiO	0.411	619	0.000	0.305	619	0.000
PbO	0.266	619	0.000	0.684	619	0.000
Sb₂O₃	0.215	619	0.000	0.792	619	0.000
SnO₂	0.072	619	0.000	0.927	619	0.000
SrO	0.154	619	0.000	0.878	619	0.000
TeO₂	0.183	619	0.000	0.695	619	0.000
TiO₂	0.239	619	0.000	0.725	619	0.000
V₂O₅	0.530	619	0.000	0.099	619	0.000
WO₃	0.169	619	0.000	0.889	619	0.000
ZnO	0.264	619	0.000	0.479	619	0.000
ZrO₂	0.302	619	0.000	0.384	619	0.000

a. Lilliefors Significance Correction

Table S3. PLS-DA analysis using LOOCV on the training group chosen from the entire dataset (top table) and cross-validation results on the corresponding testing dataset (bottom table).

Groups	Factors	VIP>0.8	% Cumulative X	% Cumulative Y	PRESS	T ²	p>T ²	% Accuracy (R ²)
Season	3	25	41.450	10.486	*	*	*	*
Location	15	20	83.085	86.801	0.409946	0.000	1.000	84.467
Depth	6	29	62.977	7.101	*	*	*	*
Distance from Shoreline	4	18	54.514	7.671	*	*	*	*
Groups	No. of Incl. Misl. Obs.	No. of Excl. Misl. Obs.	% Incl. Misl. Obs.	% Excl. Misl. Obs.	% Misl. Accuracy	% Sensitivity	% Specificity	% Prediction
Season	191	50	38.508%	40.650%	38.934%	60.841%	61.564%	61.438%
Location	14	6	3.030%	4.032%	3.231%	99.686%	98.387%	99.530%
Depth	312	89	63.030%	71.774%	64.782%	95.488%	12.919%	68.265%
Distance from Shoreline	439	110	88.508%	89.431%	88.691%	97.989%	18.152%	83.083%

* LOOCV with NIPALS using Fast SVD were not computed.