Supporting Information

Elemental Composition, Leachability Assessment and Spatial Variability Analysis of Surface Soils in the Mugan Plain in the Republic of Azerbaijan

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Table S1 Correlation coefficient matrix of 19 elements determined using XRF in agricultural and salt-affected soils. An asterisk (*) indicates a correlation coefficient above 0.5 or below -0.5, which means a significant correlation.

Agricultural soils (N=304)

	Al	Si	Ca	K	Mg	Fe	Mn	Ti	Cl	S	As	Co	Cr	Ga	Ni	V	Zn	Cu	P	Se
Al		0.94*	-0.02	0.84*	0.34	0.60*	0.53*	0.86*	-0.29	-0.42	0.05	0.12	0.31	0.23	0.08	-0.05	0.42	0.32	0.17	0.05
Si			-0.01	0.87*	0.33	0.50*	0.49	0.89*	-0.30	-0.47	-0.02	0.07	0.36	0.22	-0.01	-0.07	0.35	0.22	0.23	0.03
Ca				-0.10	-0.18	-0.41	0.02	0.07	0.38	0.49	-0.06	-0.22	0.09	-0.07	-0.55	0.32	-0.36	-0.36	0.55*	0.00
K					0.37	0.58*	0.51*	0.76*	-0.26	-0.39	-0.05	0.10	0.23	0.21	0.10	-0.08	0.51	0.30	0.24	0.05
Mg						0.44	0.27	0.39	-0.14	-0.25	0.10	0.10	0.20	0.10	0.40	-0.10	0.23	0.35	0.12	0.04
Fe							0.52	0.57*	-0.29	-0.34	0.20	0.35	0.17	0.22	0.68*	-0.13	0.64*	0.67*	-0.15	0.07
Mn								0.52*	-0.10	-0.33	0.16	0.16	0.12	0.10	0.20	0.03	0.41	0.31	0.10	0.03
Ti									-0.24	-0.40	0.08	0.07	0.49	0.21	0.10	-0.05	0.27	0.29	0.28	0.04
Cl										0.42	-0.13	-0.08	0.02	-0.06	-0.24	0.23	-0.30	-0.28	0.13	0.02
S											-0.12	-0.02	-0.14	-0.11	-0.19	0.35	-0.25	-0.25	0.17	0.01
As												0.01	0.01	-0.01	0.24	-0.02	0.11	0.24	-0.12	0.01
Co													-0.02	0.07	0.28	-0.04	0.28	0.27	-0.11	0.09
Cr														0.10	0.05	0.00	-0.10	0.01	0.21	-0.04
Ga															0.09	-0.04	0.16	0.32	0.01	0.24
Ni																-0.17	0.43	0.63*	-0.29	0.02
V																	-0.09	-0.15	0.19	0.00
Zn																		0.54	-0.13	0.06
Cu																			-0.13	0.11
P																				0.04

Salt-affected soils (N=304)

	Al	Si	Ca	K	Mg	Fe	Mn	Ti	Cl	S	As	Co	Cr	Ga	Ni	V	Zn	Cu	P	Se
Al		0.98*	-0.55*	0.94*	0.56*	0.85*	0.72*	0.93*	-0.36	-0.65*	0.08	0.24	0.57*	0.29	0.58*	-0.39	0.73*	0.58*	-0.08	0.05
Si			-0.59*	0.94*	0.55*	0.83*	0.74*	0.96*	-0.35	-0.70*	0.06	0.24	0.61*	0.27	0.53*	-0.42	0.70*	0.52*	-0.08	0.06
Ca				-0.58*	-0.39	-0.73*	-0.40	-0.56*	0.16	0.70*	0.00	-0.37	-0.31	-0.23	-0.68*	0.54*	-0.62*	-0.50*	0.59*	-0.11
K					0.53*	0.85*	0.77*	0.89*	-0.42	-0.64*	0.08	0.25	0.53*	0.24	0.59*	-0.38	0.78*	0.59*	-0.02	0.01
Mg						0.49	0.36	0.51*	-0.12	-0.47	-0.02	0.11	0.41	0.21	0.41	-0.27	0.42	0.36	-0.04	-0.05
Fe							0.64*	0.81*	-0.48	-0.69*	0.13	0.39	0.43	0.31	0.80*	-0.46	0.88*	0.75*	-0.37	0.09
Mn								0.75*	-0.21	-0.56*	0.16	0.08	0.44	0.17	0.38	-0.30	0.63*	0.40	-0.04	0.03
Ti									-0.30	-0.68*	0.11	0.23	0.67*	0.26	0.46	-0.43	0.63*	0.46	-0.09	0.09
Cl										0.14	-0.10	-0.33	-0.09	-0.07	-0.40	0.13	-0.43	-0.47	0.04	0.09
S											-0.20	-0.13	-0.36	-0.23	-0.51	0.53	-0.55*	-0.50*	0.40	-0.13
As												-0.16	0.17	-0.21	0.16	-0.10	0.12	0.09	-0.09	-0.08
Co													0.04	0.15	0.27	-0.20	0.34	0.36	-0.20	0.01
Cr														0.09	0.19	-0.23	0.23	0.05	0.11	0.02
Ga															0.28	-0.14	0.28	0.41	-0.13	0.26
Ni																-0.40	0.77*	0.74*	-0.41	0.03
V																	-0.39	-0.35	0.35	-0.02
Zn																		0.77*	-0.29	0.06
Cu																			-0.28	0.04
P																				-0.20

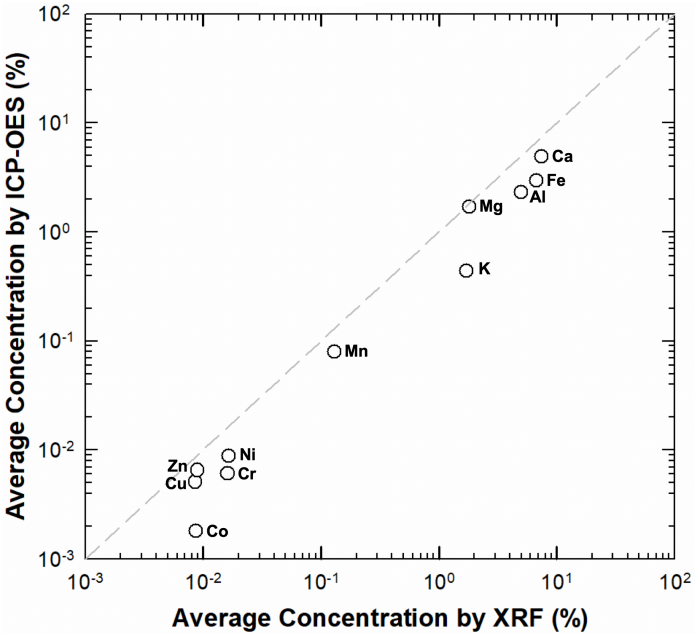

Fig. S1 Scatter plot of the average concentrations of 11 elements measured by XRF and ICP-OES. The samples measured by ICP-OES were digested with aqua regia solution, while dried and ground samples were used for XRF analysis. A log scale is used, and the text indicates element abbreviations. The gray dashed line indicates the 1:1 line. The number of samples is 70 and 20 for agricultural and salt-affected soils, respectively.

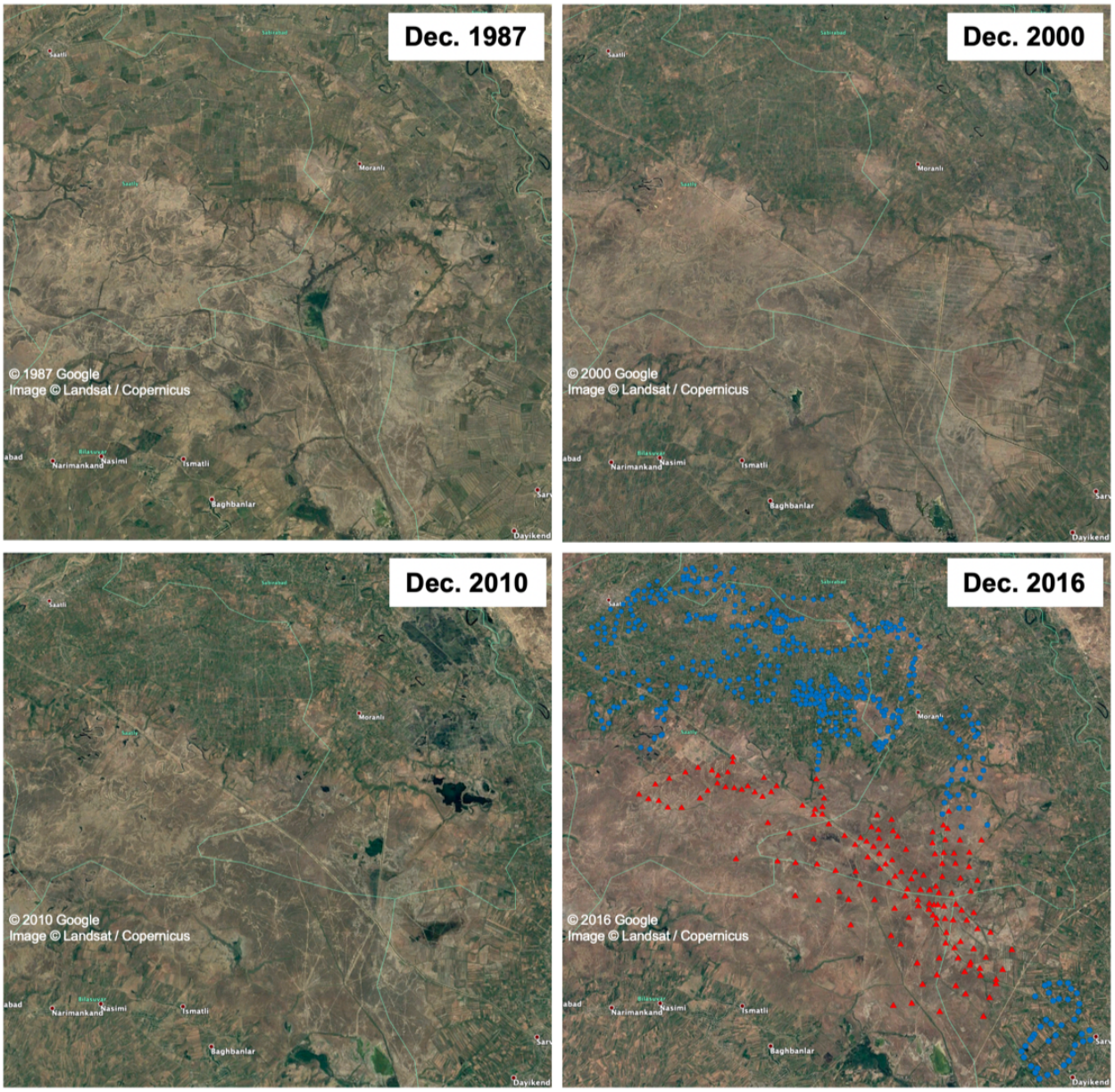

Fig. S2 Sequential Google satellite images from Dec. 1987 to Dec. 2016. Blue circles and red triangles indicate agricultural and salt-affected soils, respectively. The satellite map was from Google Earth software (Map data: Landsat/Copernicus).