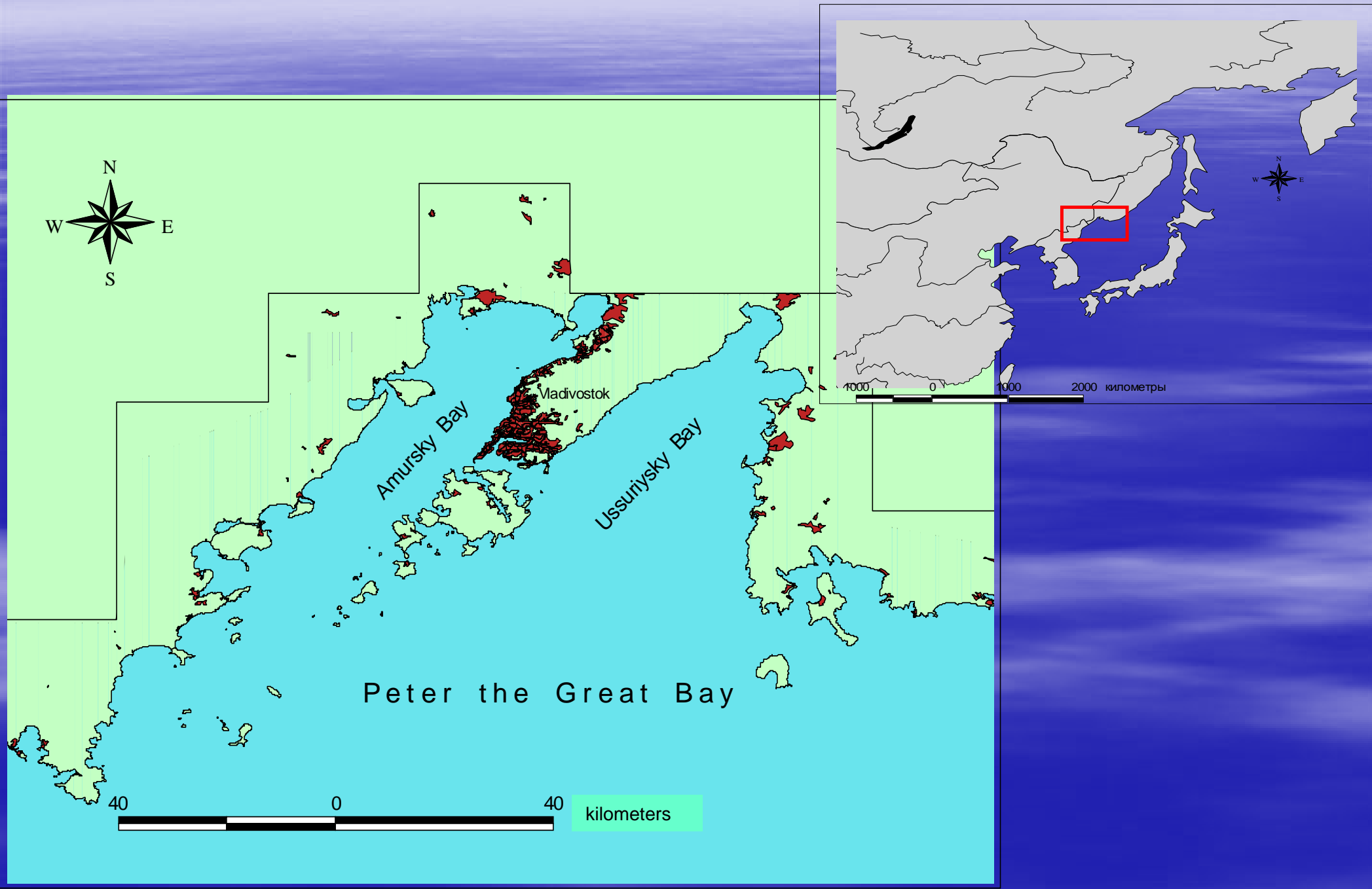


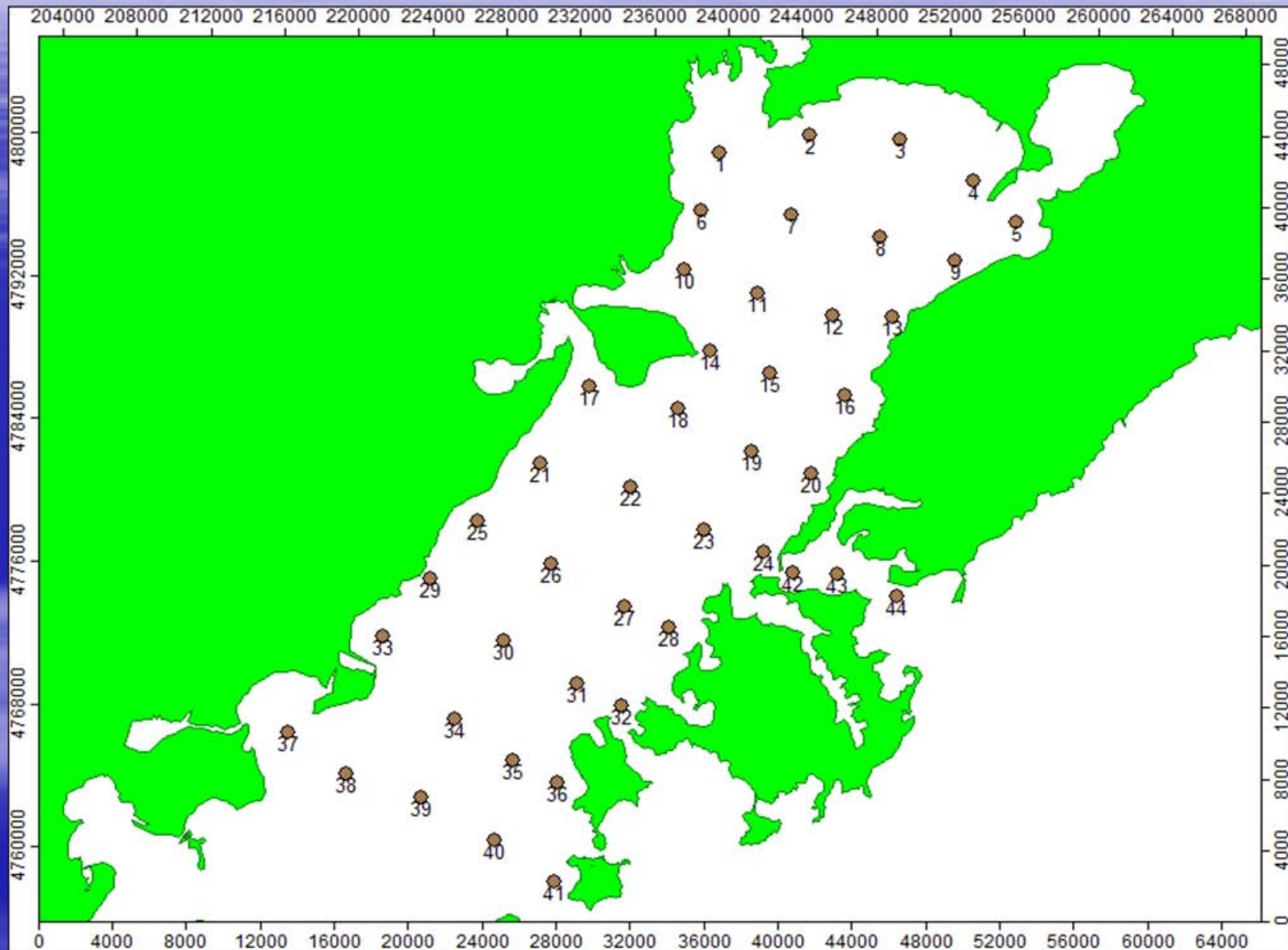
*Assessment of trace metals contamination in
surface sediments of Peter the Great Bay
(Japan/East Sea)*

Mikhail V. Simokon
TINRO-Centre

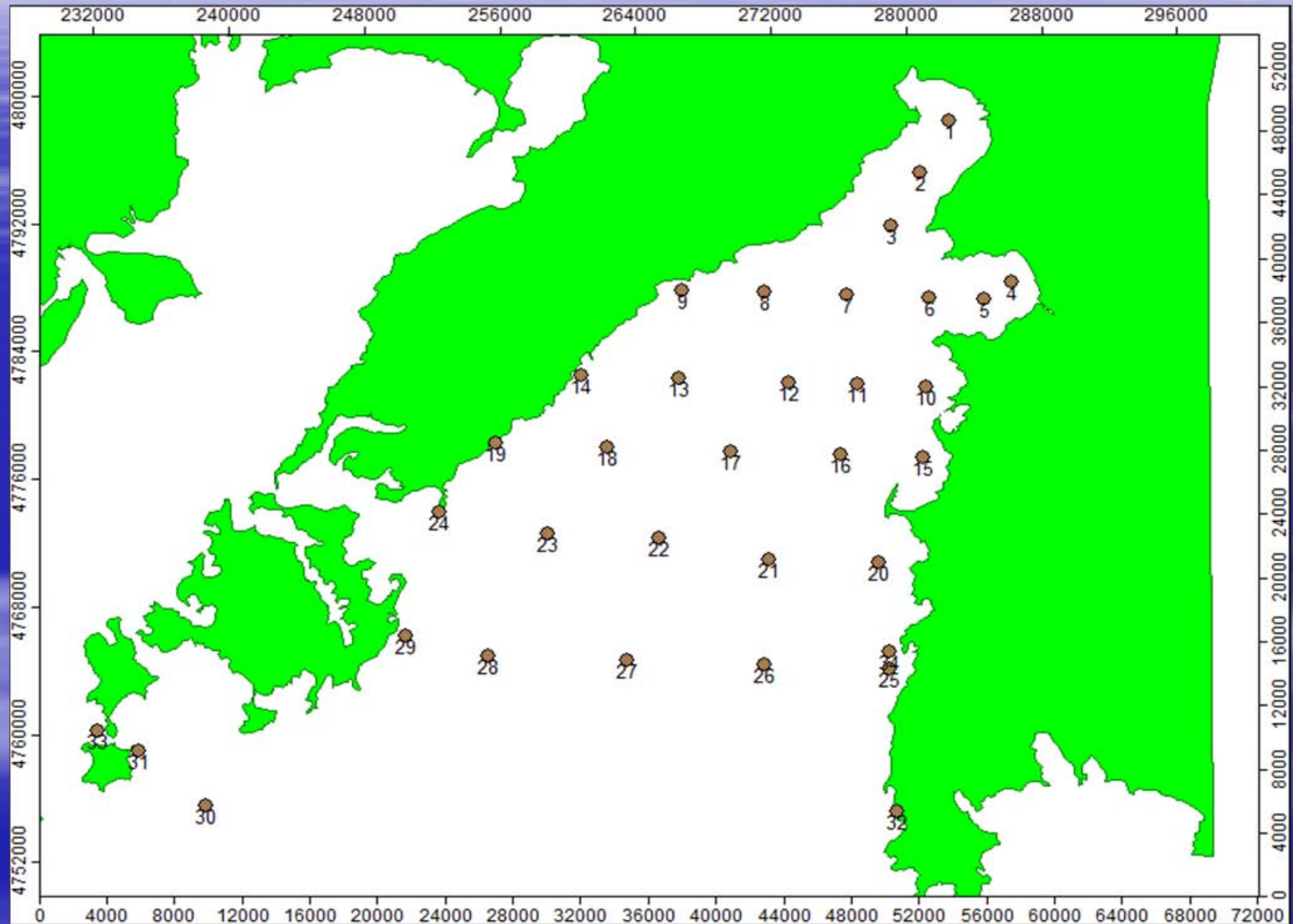
Peter the Great Bay map



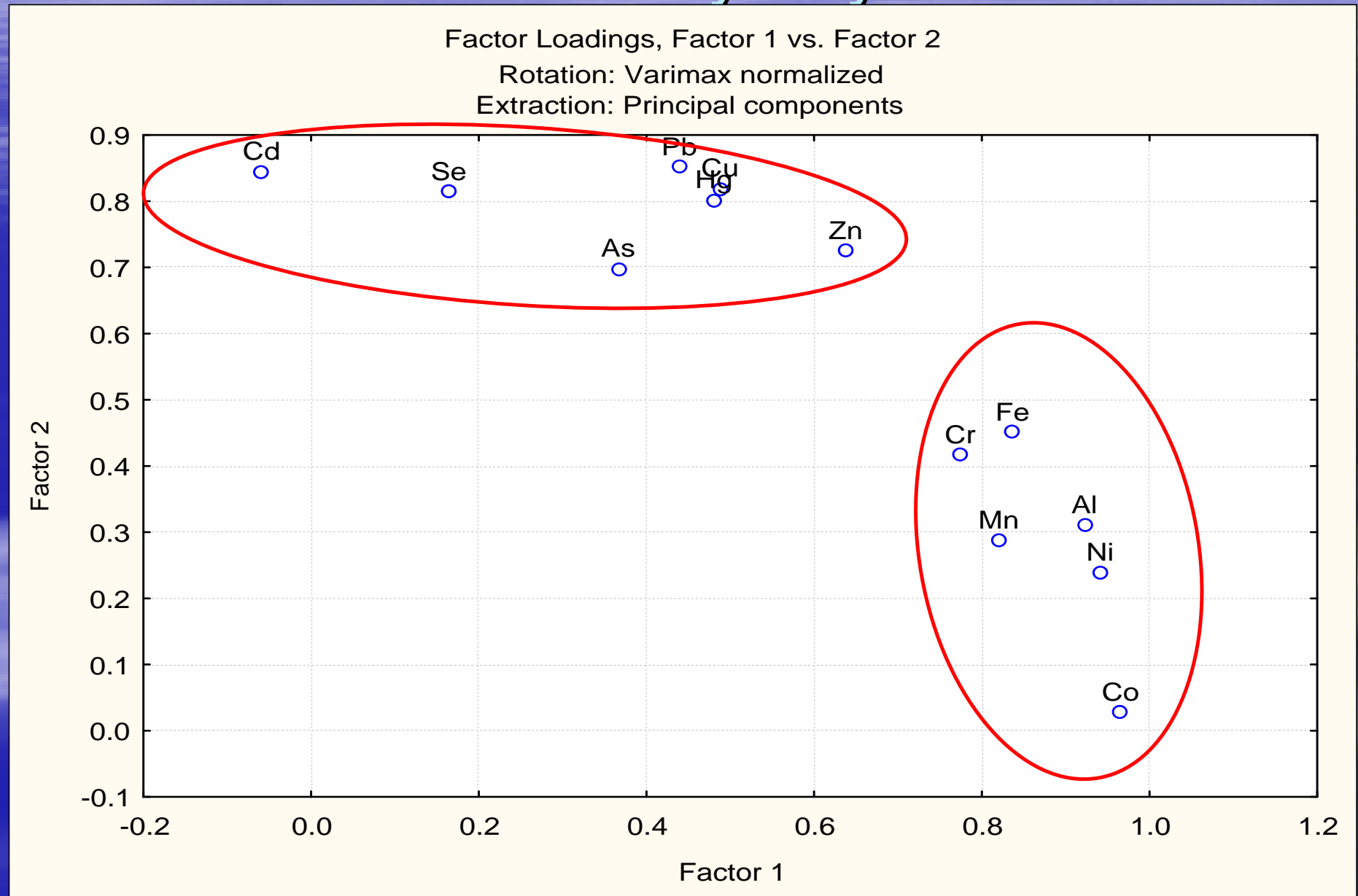
Sampling sites in Amursky bay



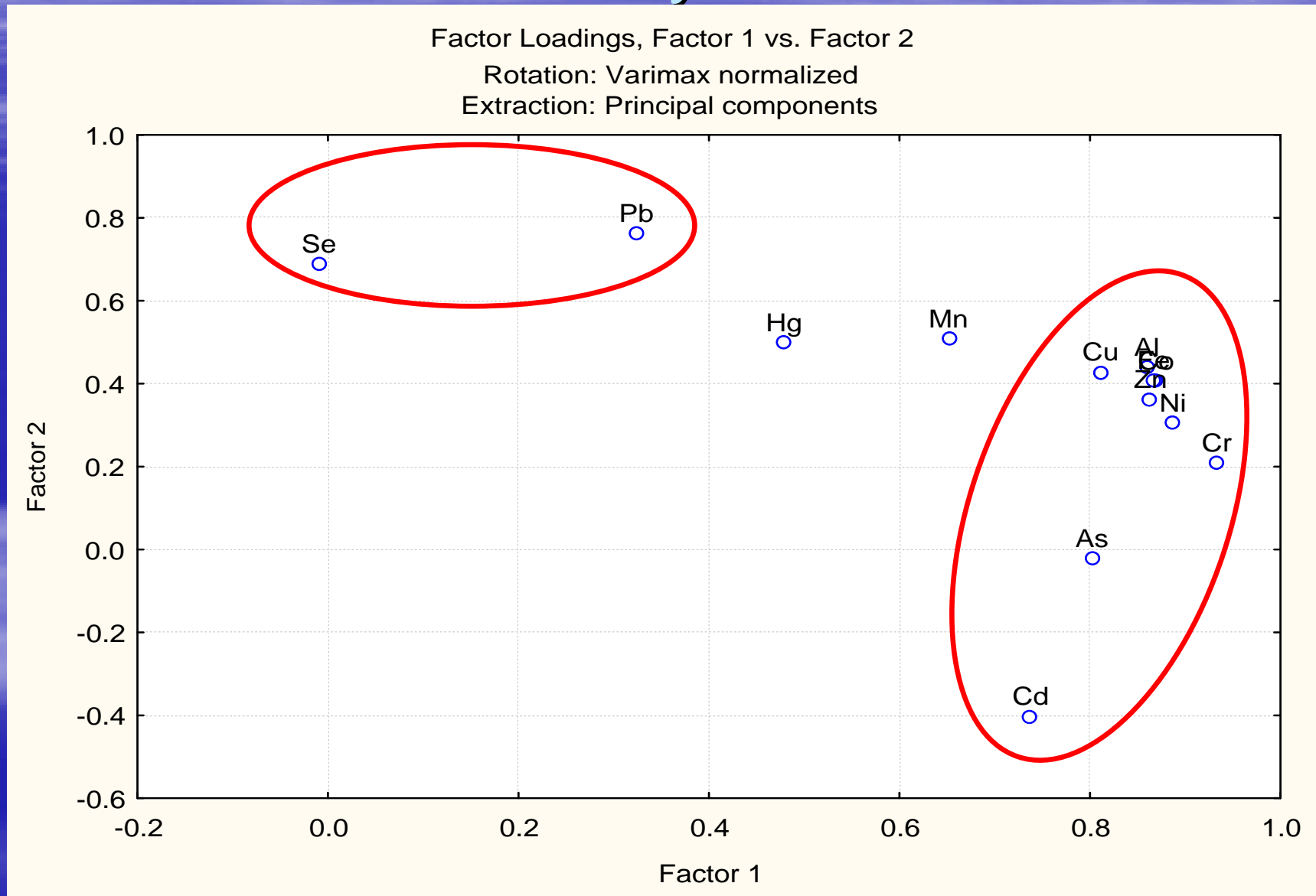
Sampling sites in Ussury bay



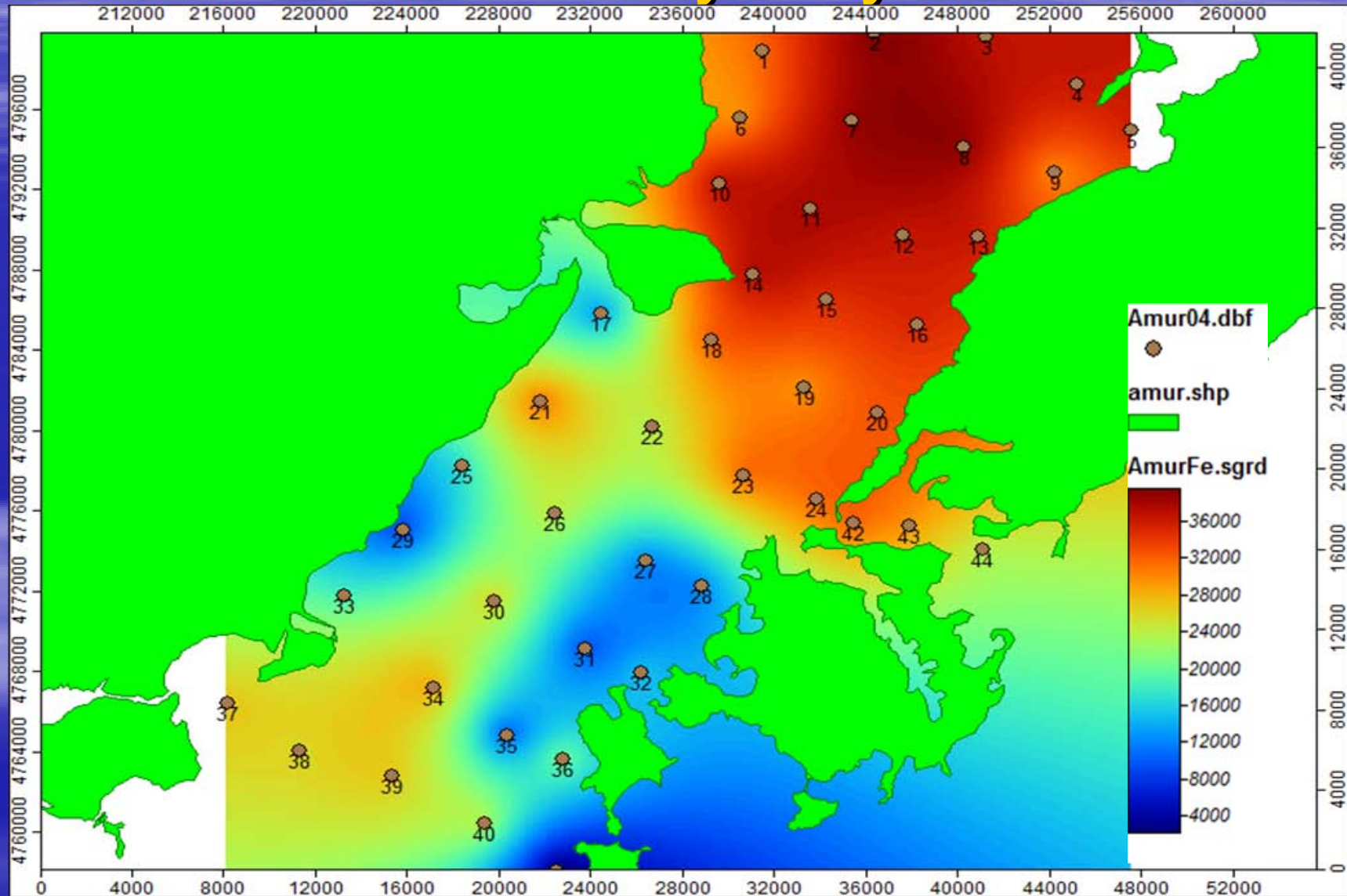
Principal component analysis of element concentrations in bottom sediments of Amursky Bay



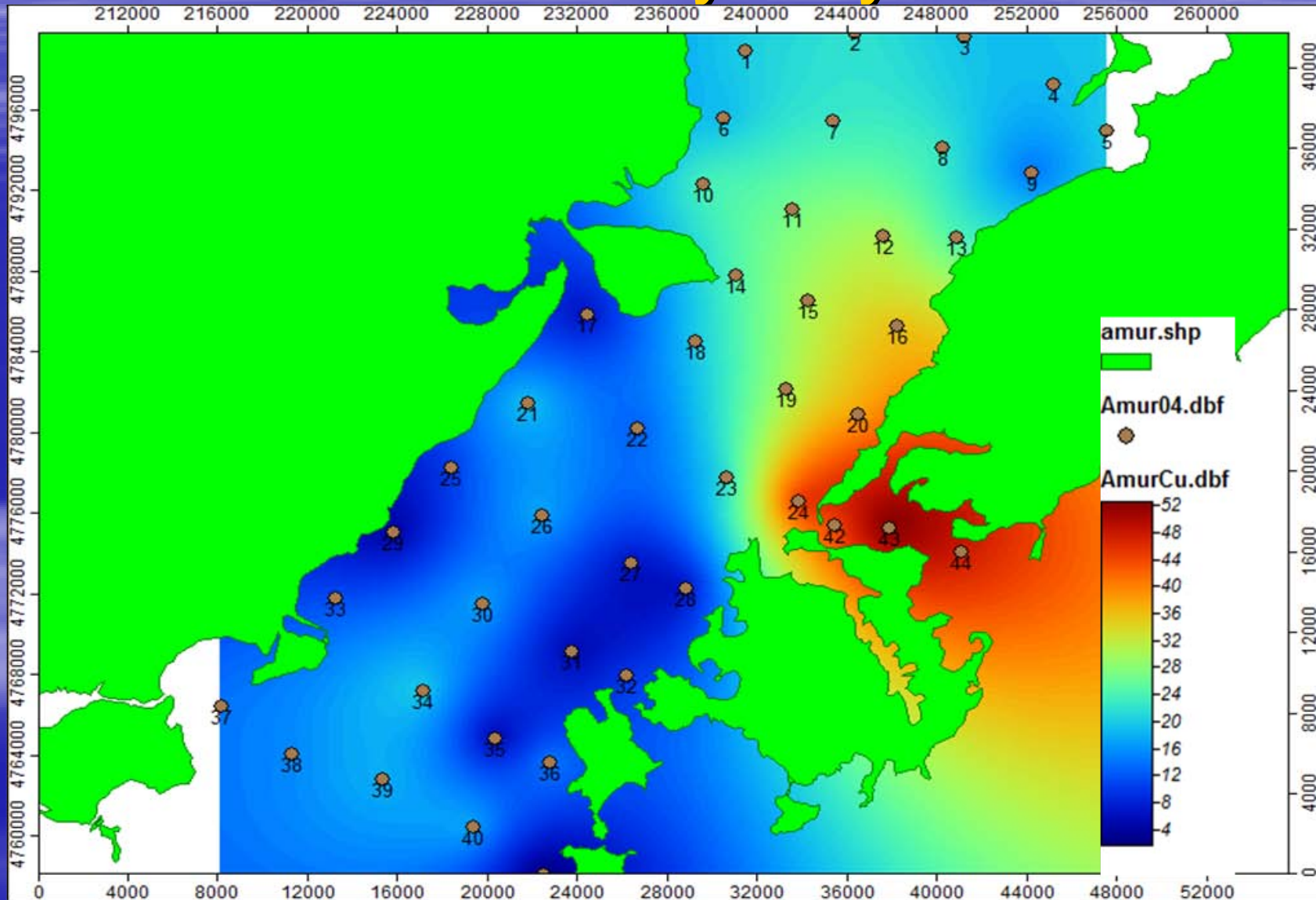
Principal component analysis of element concentrations in bottom sediments of Ussury Bay



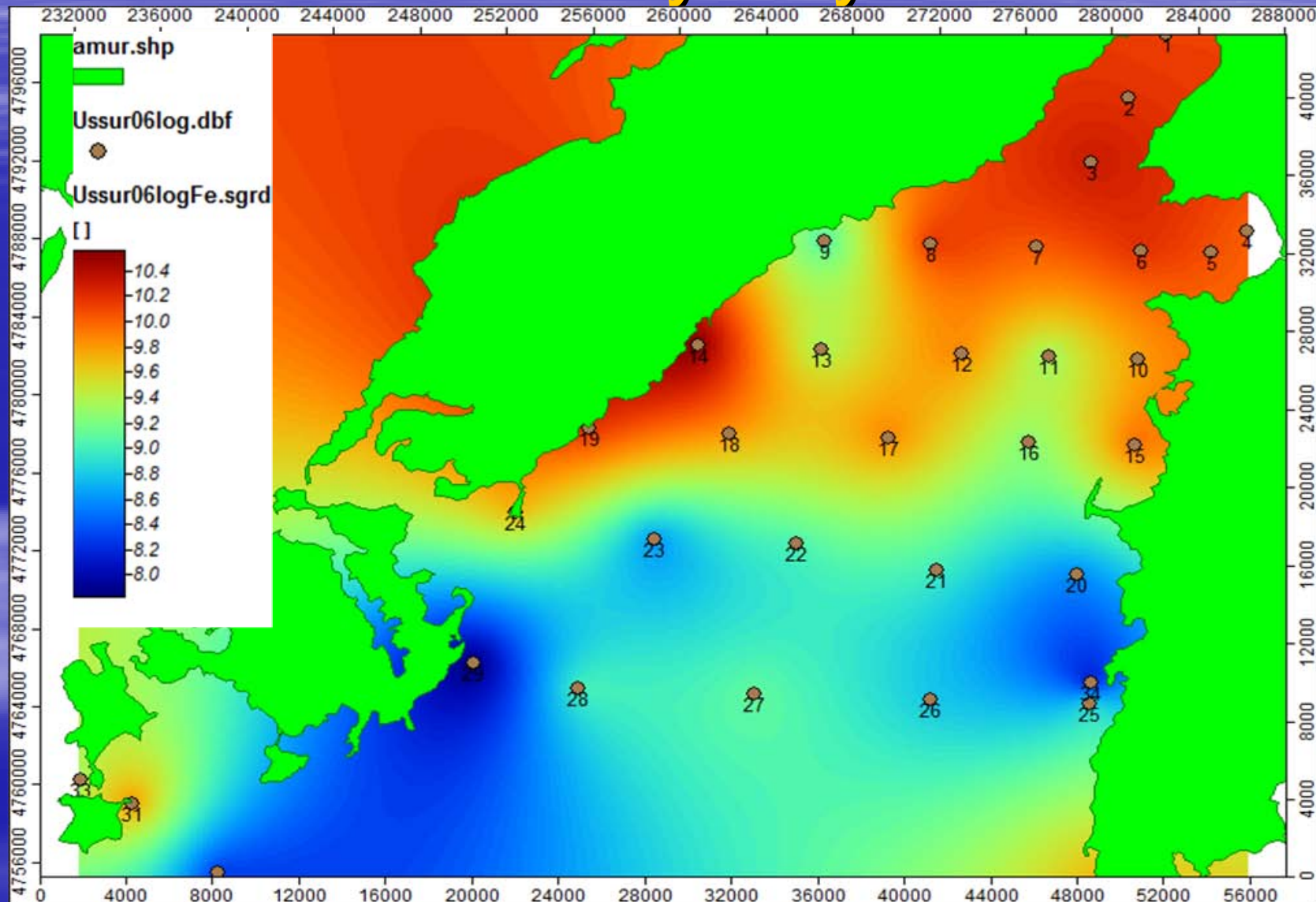
Spatial distribution of Fe concentrations (mg/kg dry wt) in bottom sediments of Amursky Bay



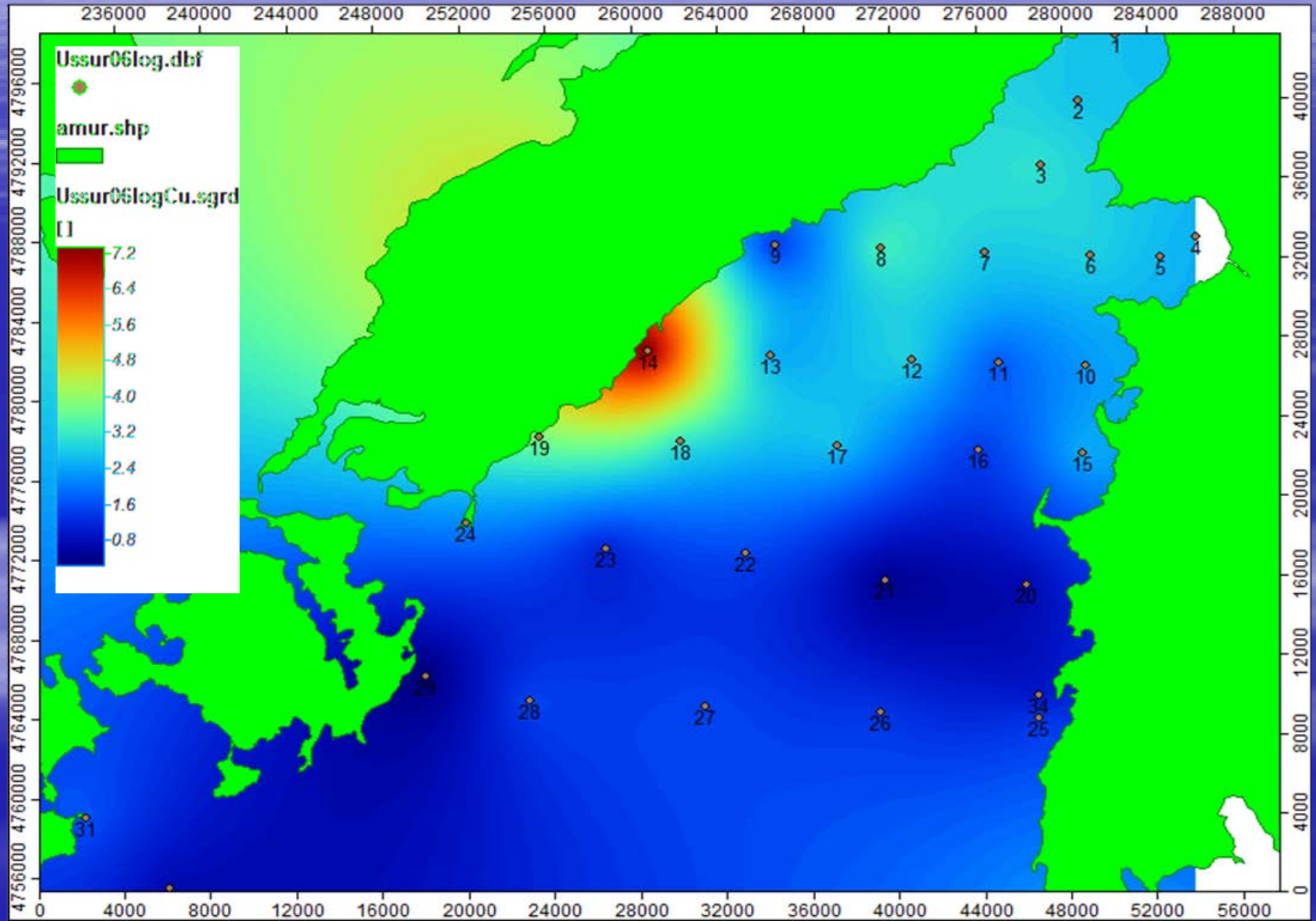
Spatial distribution of Cu concentrations (mg/kg dry wt) in bottom sediments of Amursky Bay



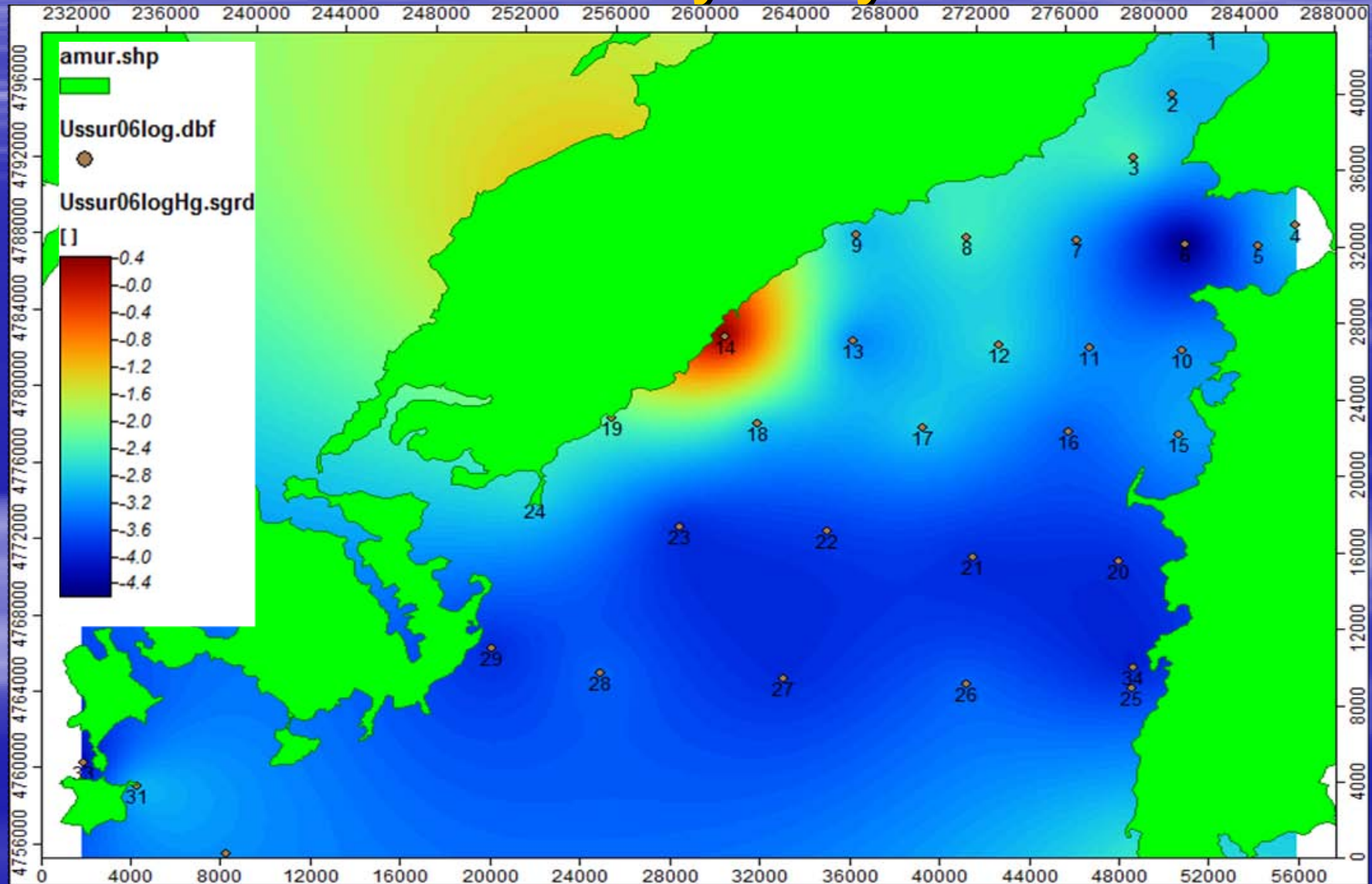
Spatial distribution of Fe concentrations (mg/kg dry wt) in bottom sediments of Ussury Bay



Spatial distribution of Cu concentrations (mg/kg dry wt) in bottom sediments of Ussury Bay



Spatial distribution of Hg concentrations (mg/kg dry wt) in bottom sediments of Ussury Bay



Element TBLs in Amursky and Ussury Bays, mg/kg

Element	m+2MAD	mean+2 σ	m+2MAD	mean+2 σ
Al	48500	50900	26060	50780
As	15.7	20.2	10.1	14.0
Cd	0.237	0.330	0.208	2.186
Co	12.5	14.5	7.3	9.0
Cr	50	54.1	41.2	78.6
Cu	29.1	44.1	18.8	584
Fe	41750	46230	32000	33400
Hg	0.161	0.254	0.080	0.619
Mn	220	251	188	399
Ni	31.2	34.4	20.4	30.7
Pb	30	57.9	27.5	164
Se	1.35	1.73	1.13	2.27
Zn	120	145	77.5	112

Geoaccumulation index: $I_{geo} = \log_2[C_n/(1.5B_n)]$

**C_n - measured concentration of the examined metal «n»
in the sediment**

B_n - geochemical background concentration.

**Factor 1.5 uses due to correction of natural metal
variability (Muller, 1981)**

I_{geo}	Class	Quality of sediment
≤ 0	0	Unpolluted
0 - 1	1	From unpolluted to moderately polluted
1 - 2	2	Moderately polluted
2 - 3	3	From moderately to strongly polluted
3 - 4	4	Strongly polluted
4 - 5	5	From strongly to extremely polluted
> 5	6	Extremely polluted

Interim sediment quality guidelines (ISQGs) and probable effect levels (PEL), mg/kg

Element	ISQG	TBL ¹	TBL ²	PEL
As	7.24	15.7	10.1	41.6
Cd	0.7	0.237	0.208	4.2
Cr	52.3	50	41	160
Cu	18.7	29.1	18.8	108
Pb	30.2	30	27.5	112
Hg	0.13	0.161	0.080	0.70
Zn	124	120	77.5	271



THANKS FOR YOUR ATTENTION