Part II Detailed Descriptions

Chapter 1 Stream sediment survey

1 - 1 Objective

The objective of the stream sediment survey is to obtain data for understanding the regional geochemical characteristics of the survey area through the sampling of stream sediments and the chemical analysis for 29 elements. The sampling points were selected from tributaries of the Rewa River, the Navua River and the Sigatoka River and relatively small rivers that empty directly to the south coast.

1 - 2 Survey methods

The stream sediment samples were picked up and sieved with 80 mesh sieves (180 μ) in the field. The weight of one sample is approximately 100 g. The samples were packed into plastic bags and carried back to the base camp. Then the samples were sent to the Lab (ALS Chemex, CANADA) for chemical analysis. A total of 1845 samples collected from 1717 points were chemically analysed for 29 elements. Among 1845, 905 samples from 822 points were collected in the Phase I and 940 samples from 895 points were collected in the Phase II. In the laboratory, 27 elements except Au and Hg were analysed by Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES) after preparation, in which samples were dissolved in HF - HNO3 - HCLO4 acid and then the residue was dissolved in HCl acid. In this preparation, almost all minerals in the samples are dissolved. The Au was analysed by ICP-AES after fire assay fusion. The Hg was analysed by Cold Vapor Atomic Absorption Spectrometry (CV/AAS). (ALS Chemex code: ME-ICP61, Au-ICP21 and Hg-CV41).

Analytical elements and its detection limits are shown below (unit is ppm except %).

Au	(0.001 - 2)	Ca	(0.01% - 25%)	Mn	(5 - 10,000)	S	(0.01%-1%)
Hg	(0.01 - 100)	Cd	(0.5 - 500)	Mo	(1 - 10,000)	Sb	(5-10,000)
Ag	(0.5 - 100)	Co	(1 - 10,000)	Na	(0.01%-10%)	Sr	(1-10,000)
Al	(0.01%-25%)	Cr	(1 - 10,000)	Ni	(1 - 10,000)	Ti	(0.01%-1%)
As	(5 – 10,000)	Cu	(1 - 10,000)	P	(10 - 10,000)	V	(1 - 10,000)
Ba	(10 - 10,000)	Fe	(0.01% - 25%)	W	(10 - 10,000)		
Be	(0.5 - 1000)	K	(0.01% - 10%)	Zn	(2 - 10,000)		
Bi	(2 - 10,000)	Mg	(0.01% - 15%)	Pb	(2 - 10,000)		

The sampling locations are shown in Fig.II-1-1. Analysis result is shown in Appendix 1.

1 - 3 Result of the survey

1-3-1 Statistical treatments

In general, the geochemical analytical values, especially in the case that reliability of analysis precision of the trace elements being sufficient and the population being single, show the logarithmic normal distribution. Therefore, a common logarithmic value of each analytical value is used for data processing. As for an analytical value lower than detection limit value, a half value of the lower detection limit is adopted in the statistical processing. As for an analytical value higher than a maximum detection limit value, the higher detection limit value is adopted.

Table II-1-1, shows the basic statistical values of each element. The histograms and probability plots of each element are shown in Fig.II-1-2-(1)/(4). The class interval of histogram is 1/2 of a standard deviation (σ). More than 75% of samples show the values of Ag, As and Bi

under each detection limits. The W values are almost under detection limit or nearby low values. Table II-1-2, shows the Variance-Covariance Matrix and Table II-1-3, shows the Correlation Coefficient Matrix.

In order to appraise reappearance of analysis, 128 duplicated samples were collected in the Phase I&II survey. Correlations between original sample values and duplicate sample values are indicated in Appendix 6. The elements, which have generally large contents (several tens ppm - several %), such as Al, Ba, Ca, Co, Cr, Cu, K, Mg, Na, Ni, P, Sr, V and Zn, show relatively good positive correlations. The trace elements, which have many values under detection limits, generally do not show good correlations. The poor correlation of Au is due to nugget effect of gold particles.

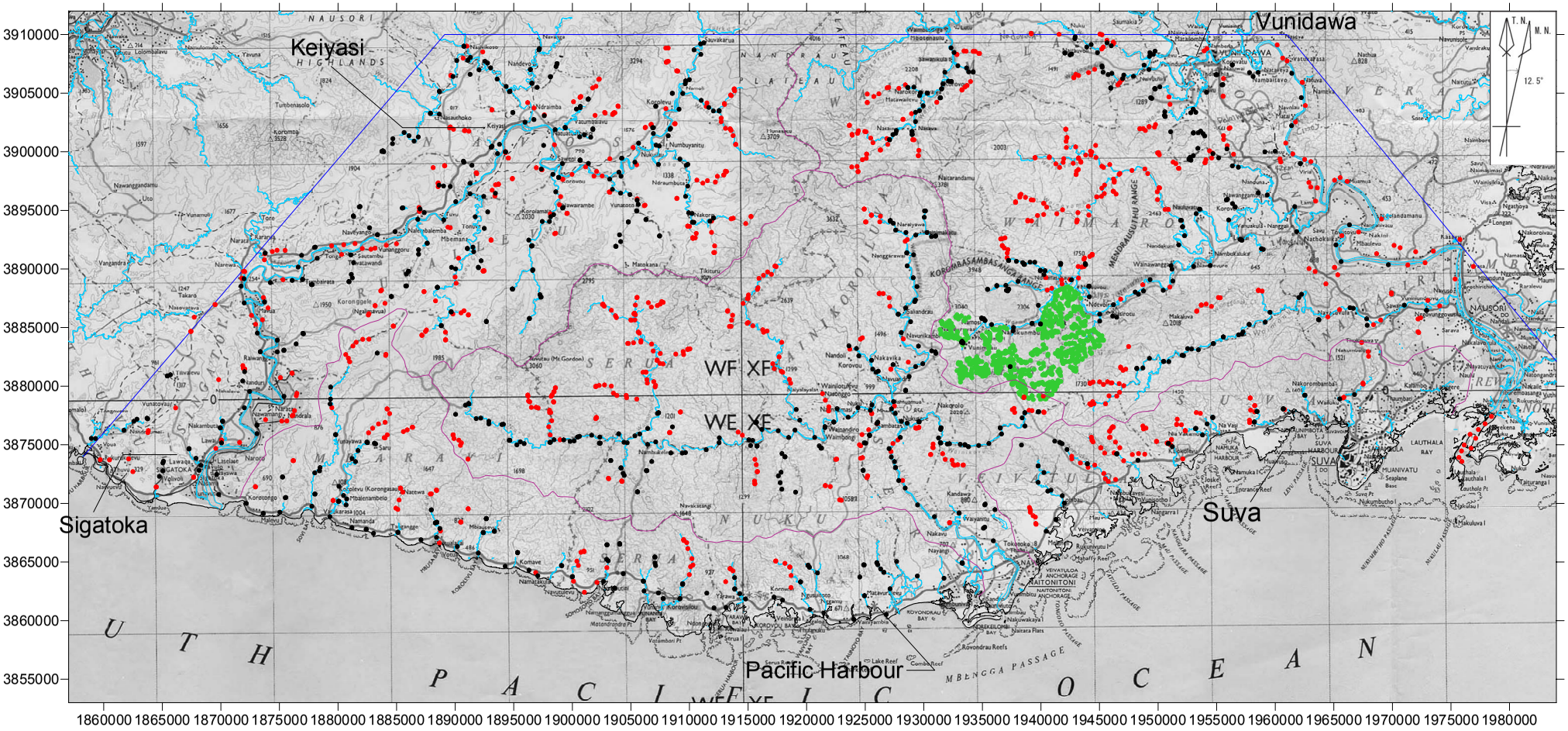

Figure II-1-1 Location map of stream sediment sampling. (1:500,000)

- 1st phase
- 2nd phase
- Exploration of Nittetsu Mining&MMAJ
- Drainage boundary

Table II-1-1 Basic statistics of stream sediment samples

Elements	Unit	Detection limit	Under detection limit	Max value	Minimum value	Log Average (m)	Log Standard dev (σ)	m+σ	m+2σ	m+3σ
Au	ppm	0.001	971	9.14	0.0005	0.00137	0.71474	0.0071	0.03682	0.1909
Hg	ppm	0.01	605	0.42	0.005	0.00945	0.26135	0.01725	0.03149	0.05748
Ag	ppm	0.5	1812	9	0.25	0.25503	0.07237	0.30127	0.3559	0.42043
Al	%	0.01	0	13.25	0.79	5.93369	0.123	7.87635	10.455	13.8779
As	ppm	5	1619	105	2.5	2.91861	0.20585	4.68846	7.53156	12.0987
Ba	ppm	10	5	570	5	86.2263	0.24807	152.653	270.253	478.449
Be	ppm	0.5	853	7.4	0.25	0.52273	0.34524	1.15749	2.56304	5.67537
Bi	ppm	2	1405	32	1	1.38493	0.27844	2.62946	4.99235	9.47858
Ca	%	0.01	0	21.7	0.09	1.67131	0.31267	3.43344	7.05346	14.4902
Cd	ppm	0.5	1106	14.8	0.25	0.53584	0.46224	1.55335	4.50305	13.054
Co	ppm	1	0	138	1	29.7423	0.25988	54.1067	98.4299	179.062
Cr	ppm	1	0	5010	9	166.289	0.41037	427.792	1100.53	2831.2
Cu	ppm	1	1	1100	0.5	36.5267	0.31243	74.9957	153.979	316.147
Fe	%	0.01	0	25	0.59	12.8373	0.20657	20.6557	33.2356	53.4772
K	%	0.01	0	2.43	0.04	0.42618	0.25857	0.77296	1.40192	2.54267
Mg	%	0.01	0	4.91	0.07	1.26224	0.24678	2.22803	3.93278	6.94191
Mn	ppm	5	0	10000	174	1902.79	0.17656	2857.27	4290.54	6442.78
Mo	ppm	1	1146	29	0.5	0.82997	0.34381	1.8318	4.04289	8.92289
Na	%	0.01	0	3.68	0.03	0.96731	0.28059	1.84568	3.52166	6.71952
Ni	ppm	1	27	161	0.5	19.3752	0.36637	45.042	104.71	243.422
P	ppm	10	212	2140	5	113.22	0.65917	516.531	2356.51	10750.8
Pb	ppm	2	416	174	1	4.35594	0.42679	11.6378	31.0928	83.071
S	%	0.01	664	7.15	0.005	0.01461	0.54031	0.05071	0.17595	0.61051
Sb	ppm	5	1368	25	2.5	3.4431	0.24946	6.11519	10.861	19.29
Sr	ppm	1	29	4770	0.5	98.9429	0.42798	265.073	710.146	1902.52
Ti	%	0.01	0	2.18	0.11	0.79203	0.14559	1.10747	1.54855	2.1653
V	ppm	1	0	2540	14	457.819	0.28423	880.902	1694.97	3261.33
W	ppm	10	1048	30	5	7.21059	0.20073	11.4473	18.1733	28.8513
Zn	ppm	2	0	1440	18	174.277	0.23444	299.008	513.008	880.169

Valid sample number : 1845

Value under detection limit is represented by half value of detection limit

Value over upper detection limit is represented by upper detection limit

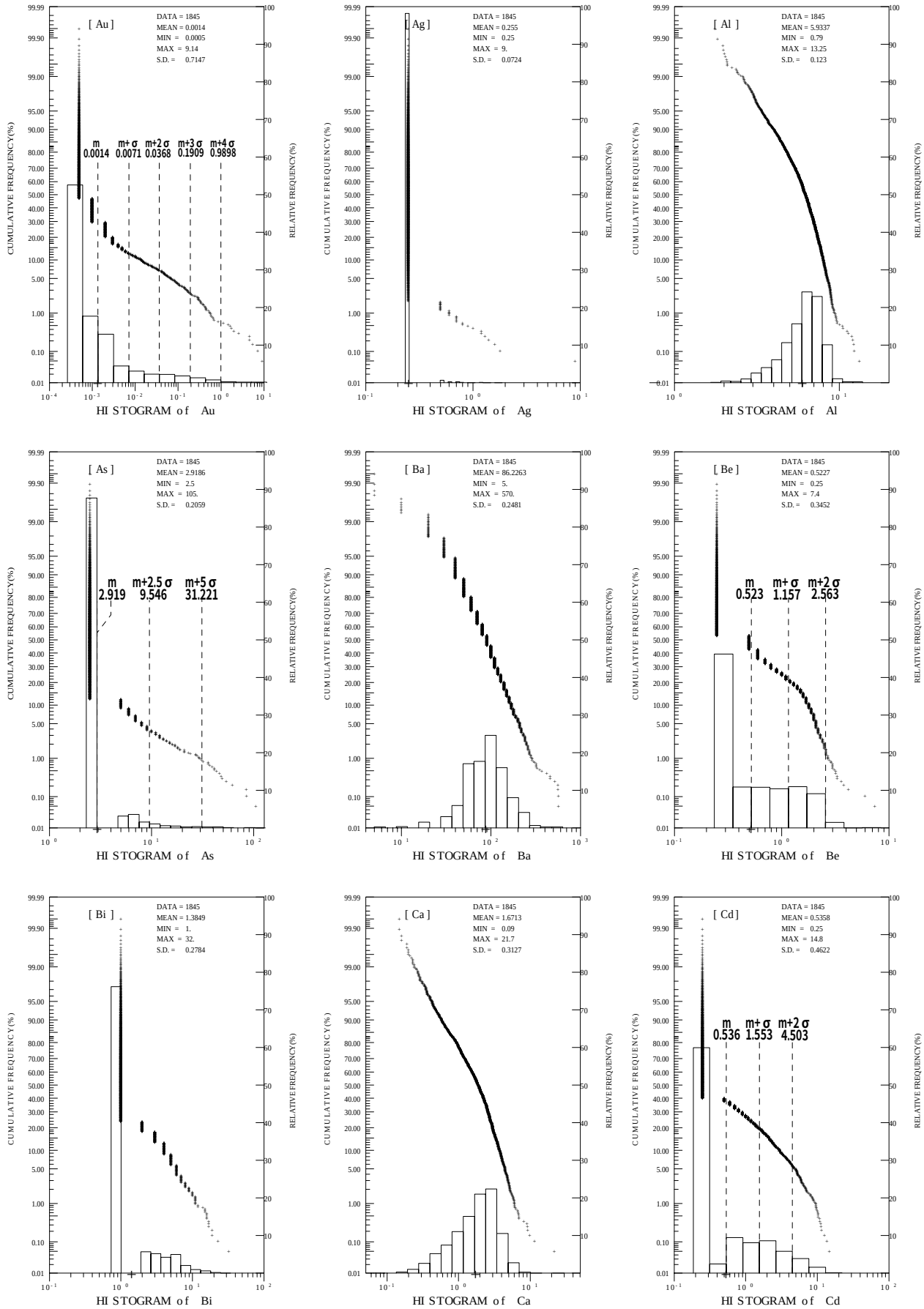

Fig.II-1-2-(1) Probability plot of stream sediment samples

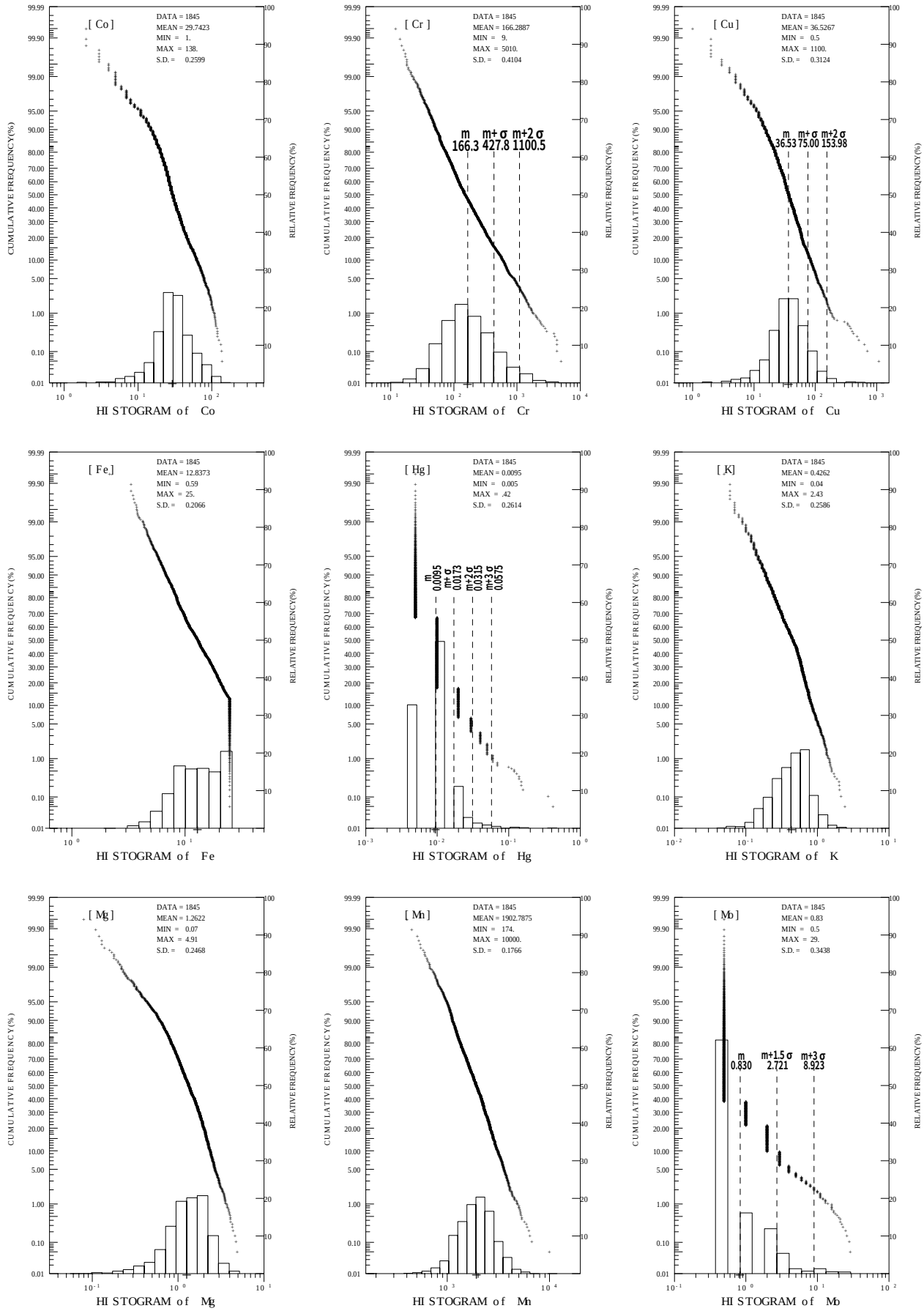

Fig.II-1-2-(2) Probability plot of stream sediment samples

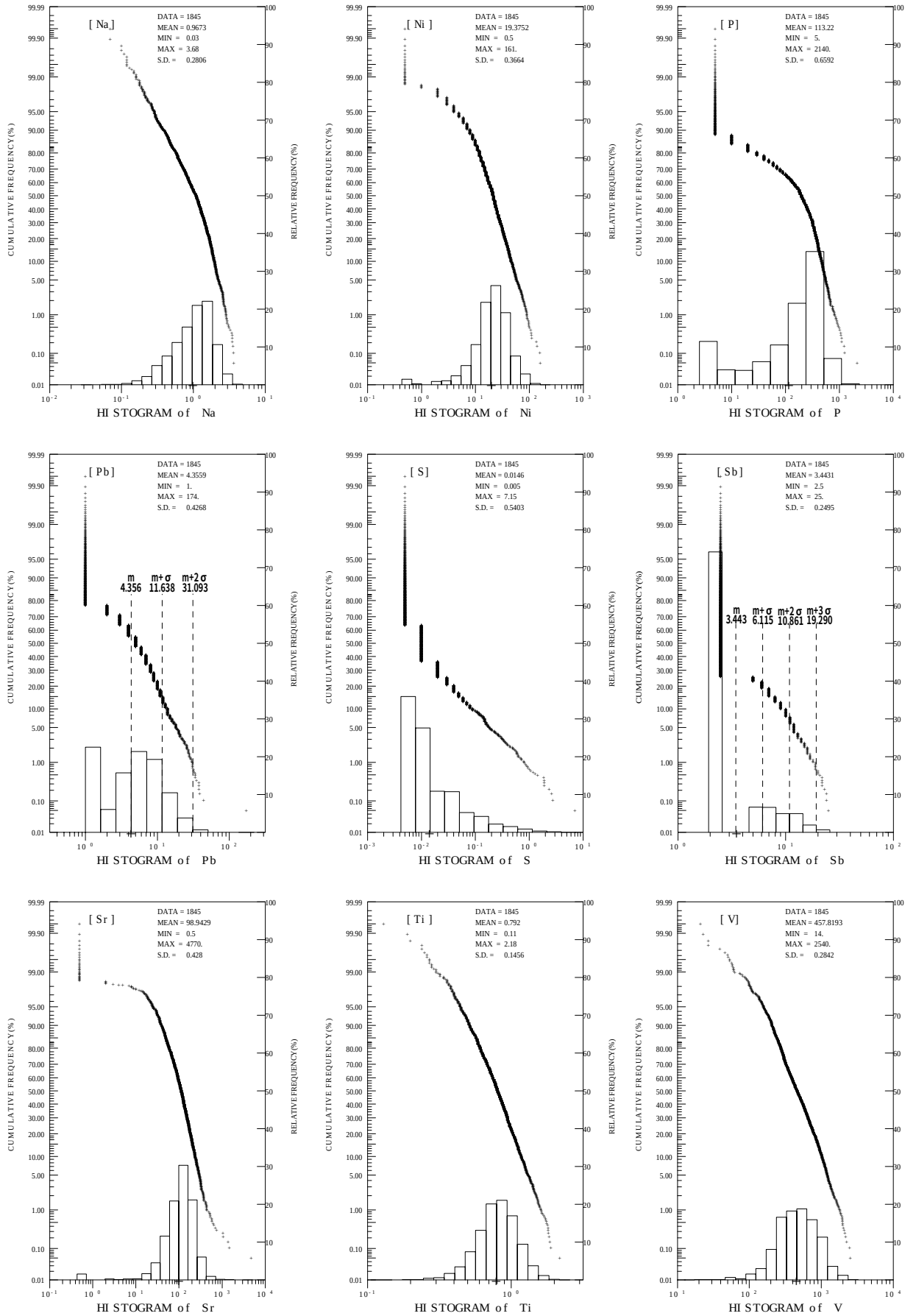

Fig.II-1-2-(3) Probability plot of stream sediment samples

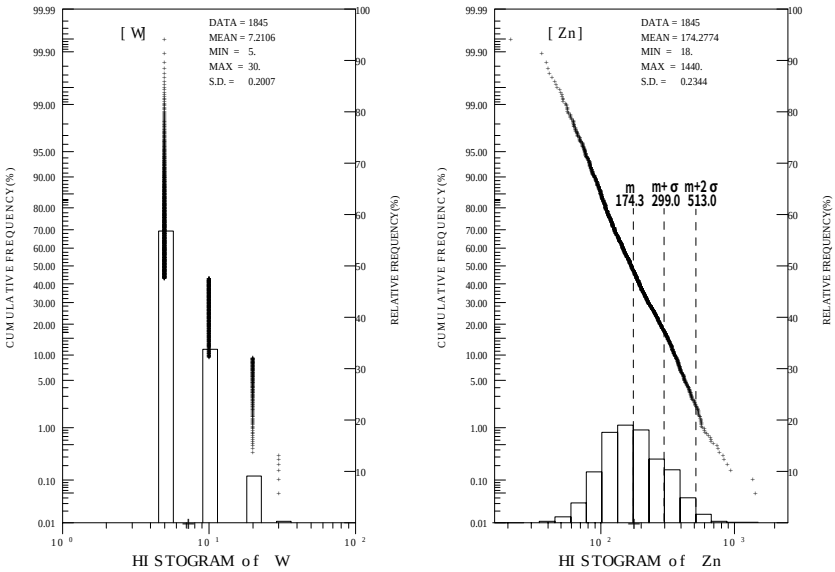

Fig.II-1-2-(4) Probability plot of stream sediment samples

Table II-1-2 Variance-covariance matrix of stream sediment samples

cov_mat	Au	Hg	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Sr	Ti	V	W	Zn
Au	0.511	0.030	0.006	0.002	0.034	0.009	−0.008	0.003	−0.039	0.000	0.004	−0.009	0.053	0.011	0.011	−0.007	−0.012	0.016	−0.031	0.004	0.007	0.035	0.049	−0.004	−0.018	0.004	0.025	−0.002	0.020
Hg	0.030	0.068	0.000	0.007	0.013	0.007	−0.003	−0.003	−0.032	−0.020	0.000	−0.004	0.026	−0.005	−0.001	−0.009	−0.005	0.000	−0.023	0.002	0.010	0.007	0.022	−0.003	−0.014	−0.001	−0.008	−0.004	0.007
Ag	0.006	0.000	0.005	−0.001	0.001	−0.001	−0.001	0.001	−0.001	0.001	0.002	0.000	0.001	0.002	−0.001	0.000	0.001	0.001	−0.002	0.000	−0.003	0.003	0.002	0.000	−0.003	0.000	0.002	0.000	0.002
Al	0.002	0.007	−0.001	0.015	0.003	0.011	0.007	−0.004	0.008	−0.011	−0.004	−0.005	0.008	−0.012	0.012	0.010	−0.011	−0.005	0.013	0.008	0.049	−0.004	0.017	−0.001	0.022	0.000	−0.010	−0.004	−0.007
As	0.034	0.013	0.001	0.003	0.042	0.010	−0.004	0.006	−0.011	−0.001	−0.002	−0.011	0.019	−0.003	0.009	−0.002	−0.006	0.017	−0.007	0.000	0.026	0.018	0.031	0.001	0.000	−0.001	−0.002	−0.003	0.005
Ba	0.009	0.007	−0.001	0.011	0.010	0.062	0.011	0.002	0.006	−0.023	−0.012	−0.014	0.014	−0.015	0.049	0.005	−0.014	0.006	0.018	−0.004	0.077	0.013	0.028	0.001	0.046	0.003	−0.013	−0.010	−0.010
Be	−0.008	−0.003	−0.001	0.007	−0.004	0.011	0.119	0.003	0.006	0.061	−0.001	−0.002	0.006	−0.009	0.013	0.008	−0.007	−0.019	0.013	0.003	0.062	−0.011	0.017	−0.005	0.009	0.010	−0.005	0.035	−0.007
Bi	0.003	−0.003	0.001	−0.004	0.006	0.002	0.003	0.078	0.002	0.011	0.012	0.002	0.007	0.013	−0.005	0.003	0.007	0.005	−0.007	0.001	−0.009	0.008	−0.012	0.006	0.004	0.002	0.015	0.003	0.013
Ca	−0.039	−0.032	−0.001	0.008	−0.011	0.006	0.006	0.002	0.098	0.019	0.017	0.024	−0.011	0.000	0.007	0.053	−0.003	−0.008	0.053	0.031	0.055	−0.007	−0.001	0.008	0.080	0.007	0.017	0.002	−0.013
Cd	0.000	−0.020	0.001	−0.011	−0.001	−0.023	0.061	0.011	0.019	0.214	0.038	−0.006	0.020	0.028	−0.021	0.024	0.015	0.008	−0.016	0.028	0.012	0.001	−0.017	0.039	−0.033	0.014	0.041	0.066	0.026
Co	0.004	0.000	0.002	−0.004	−0.002	−0.012	−0.001	0.012	0.017	0.038	0.068	0.035	0.049	0.036	−0.022	0.039	0.018	−0.005	−0.028	0.060	−0.026	0.018	−0.025	0.005	0.003	0.008	0.053	0.015	0.037
Cr	−0.009	−0.004	0.000	−0.005	−0.011	−0.014	−0.002	0.002	0.024	−0.006	0.035	0.168	0.012	0.015	−0.009	0.027	0.009	−0.016	−0.003	0.086	−0.041	0.007	−0.024	−0.006	0.010	0.004	0.022	0.002	0.000
Cu	0.053	0.026	0.001	0.008	0.019	0.014	0.006	0.007	−0.011	0.020	0.049	0.012	0.098	0.018	0.000	0.030	−0.001	0.007	−0.037	0.053	0.038	0.031	0.032	0.003	0.009	0.007	0.037	0.007	0.037
Fe	0.011	−0.005	0.002	−0.012	−0.003	−0.015	−0.009	0.013	0.000	0.028	0.036	0.015	0.018	0.043	−0.019	0.009	0.027	0.007	−0.026	0.010	−0.055	0.015	−0.025	0.003	−0.019	0.009	0.049	0.011	0.032
K	0.011	−0.001	−0.001	0.012	0.009	0.049	0.013	−0.005	0.007	−0.021	−0.022	−0.009	0.000	−0.019	0.067	0.005	−0.016	0.002	0.026	−0.012	0.083	0.006	0.031	−0.002	0.044	0.002	−0.018	−0.009	−0.018
Mg	−0.007	−0.009	0.000	0.010	−0.002	0.005	0.008	0.003	0.053	0.024	0.039	0.027	0.030	0.009	0.005	0.061	−0.001	−0.007	0.017	0.053	0.051	0.009	0.006	0.007	0.043	0.007	0.029	0.007	0.010
Mn	−0.012	−0.005	0.001	−0.011	−0.006	−0.014	−0.007	0.007	−0.003	0.015	0.018	0.009	−0.001	0.027	−0.016	−0.001	0.031	0.004	−0.016	−0.002	−0.054	0.009	−0.026	0.002	−0.024	0.004	0.021	0.007	0.024
Mo	0.016	0.000	0.001	−0.005	0.017	0.006	−0.019	0.005	−0.008	0.008	−0.005	−0.016	0.007	0.007	0.002	−0.007	0.004	0.118	−0.004	−0.013	0.016	0.028	0.027	0.013	−0.016	0.002	0.009	−0.005	0.003
Na	−0.031	−0.023	−0.002	0.013	−0.007	0.018	0.013	−0.007	0.053	−0.016	−0.028	−0.003	−0.037	−0.026	0.026	0.017	−0.016	−0.004	0.079	−0.007	0.069	−0.011	0.017	0.002	0.054	0.001	−0.027	−0.007	−0.030
Ni	0.004	0.002	0.000	0.008	0.000	−0.004	0.003	0.001	0.031	0.028	0.060	0.086	0.053	0.010	−0.012	0.053	−0.002	−0.013	−0.007	0.134	0.012	0.020	−0.015	0.005	0.025	0.006	0.032	0.008	0.018
P	0.007	0.010	−0.003	0.049	0.026	0.077	0.062	−0.009	0.055	0.012	−0.026	−0.041	0.038	−0.055	0.083	0.051	−0.054	0.016	0.069	0.012	0.435	−0.002	0.163	0.019	0.114	0.026	−0.024	0.003	−0.047
Pb	0.035	0.007	0.003	−0.004	0.018	0.013	−0.011	0.008	−0.007	0.001	0.018	0.007	0.031	0.015	0.006	0.009	0.009	0.028	−0.011	0.020	−0.002	0.182	0.019	0.014	−0.016	0.001	0.019	−0.001	0.033
S	0.049	0.022	0.002	0.017	0.031	0.028	0.017	−0.012	−0.001	−0.017	−0.025	−0.024	0.032	−0.025	0.031	0.006	−0.026	0.027	0.017	−0.015	0.163	0.019	0.292	0.004	0.027	0.015	−0.011	−0.011	−0.008
Sb	−0.004	−0.003	0.000	−0.001	0.001	0.001	−0.005	0.006	0.008	0.039	0.005	−0.006	0.003	0.003	−0.002	0.007	0.002	0.013	0.002	0.005	0.019	0.014	0.004	0.062	−0.006	0.006	0.008	0.017	0.006
Sr	−0.018	−0.014	−0.003	0.022	0.000	0.046	0.009	0.004	0.080	−0.033	0.003	0.010	0.009	−0.019	0.044	0.043	−0.024	−0.016	0.054	0.025	0.114	−0.016	0.027	−0.006	0.183	0.010	−0.004	−0.024	−0.026
Ti	0.004	−0.001	0.000	0.000	−0.001	0.003	0.010	0.002	0.007	0.014	0.008	0.004	0.007	0.009	0.002	0.007	0.004	0.002	0.001	0.006	0.026	0.001	0.015	0.006	0.010	0.021	0.019	0.006	0.005
V	0.025	−0.008	0.002	−0.010	−0.002	−0.013	−0.005	0.015	0.017	0.041	0.053	0.022	0.037	0.049	−0.018	0.029	0.021	0.009	−0.027	0.032	−0.024	0.019	−0.011	0.008	−0.004	0.019	0.081	0.014	0.034
W	−0.002	−0.004	0.000	−0.004	−0.003	−0.010	0.035	0.003	0.002	0.066	0.015	0.002	0.007	0.011	−0.009	0.007	0.007	−0.005	−0.007	0.008	0.003	−0.001	−0.011	0.017	−0.024	0.006	0.014	0.040	0.008
Zn	0.020	0.007	0.002	−0.007	0.005	−0.010	−0.007	0.013	−0.013	0.026	0.037	0.000	0.037	0.032	−0.018	0.010	0.024	0.003	−0.030	0.018	−0.047	0.033	−0.008	0.006	−0.026	0.005	0.034	0.008	0.055

Table II-1-3 Correlation coefficient matrix of stream sediment samples

cor_mat	Au	Hg	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Sr	Ti	V	W	Zn
Au	1.000	0.160	0.113	0.023	0.231	0.053	−0.030	0.017	−0.176	0.000	0.024	−0.032	0.237	0.077	0.060	−0.037	−0.095	0.066	−0.156	0.014	0.015	0.115	0.127	−0.025	−0.060	0.043	0.124	−0.014	0.121
Hg	0.160	1.000	0.001	0.207	0.234	0.112	−0.035	−0.038	−0.389	−0.166	0.007	−0.038	0.322	−0.095	−0.014	−0.139	−0.117	−0.005	−0.312	0.025	0.056	0.063	0.159	−0.046	−0.124	−0.019	−0.102	−0.079	0.112
Ag	0.113	0.001	1.000	−0.134	0.086	−0.073	−0.041	0.028	−0.050	0.038	0.083	0.000	0.051	0.106	−0.068	−0.018	0.050	0.034	−0.101	−0.001	−0.059	0.093	0.055	−0.010	−0.106	−0.033	0.112	−0.009	0.101
Al	0.023	0.207	−0.134	1.000	0.134	0.361	0.155	−0.102	0.208	−0.189	−0.117	−0.096	0.213	−0.492	0.376	0.341	−0.527	−0.111	0.363	0.173	0.601	−0.076	0.261	−0.029	0.416	0.020	−0.293	−0.167	−0.251
As	0.231	0.234	0.086	0.134	1.000	0.198	−0.060	0.109	−0.174	−0.013	−0.034	−0.135	0.302	−0.071	0.176	−0.032	−0.166	0.240	−0.124	−0.006	0.190	0.210	0.279	0.019	0.003	−0.028	−0.038	−0.077	0.106
Ba	0.053	0.112	−0.073	0.361	0.198	1.000	0.125	0.028	0.076	−0.199	−0.192	−0.139	0.183	−0.292	0.762	0.086	−0.311	0.070	0.264	−0.045	0.471	0.118	0.208	0.017	0.433	0.090	−0.186	−0.199	−0.173
Be	−0.030	−0.035	−0.041	0.155	−0.060	0.125	1.000	0.036	0.059	0.383	−0.007	−0.013	0.054	−0.121	0.141	0.093	−0.111	−0.162	0.138	0.021	0.272	−0.074	0.089	−0.053	0.058	0.199	−0.051	0.500	−0.088
Bi	0.017	−0.038	0.028	−0.102	0.109	0.028	0.036	1.000	0.025	0.084	0.161	0.016	0.086	0.218	−0.074	0.043	0.139	0.054	−0.084	0.010	−0.051	0.069	−0.080	0.088	0.031	0.038	0.196	0.059	0.195
Ca	−0.176	−0.389	−0.050	0.208	−0.174	0.076	0.059	0.025	1.000	0.135	0.212	0.190	−0.108	−0.002	0.082	0.682	−0.048	−0.072	0.602	0.270	0.267	−0.049	−0.006	0.108	0.594	0.153	0.193	0.038	−0.182
Cd	0.000	−0.166	0.038	−0.189	−0.013	−0.199	0.383	0.084	0.135	1.000	0.313	−0.032	0.142	0.289	−0.174	0.214	0.188	0.052	−0.121	0.165	0.039	0.005	−0.066	0.335	−0.169	0.205	0.312	0.710	0.236
Co	0.024	0.007	0.083	−0.117	−0.034	−0.192	−0.007	0.161	0.212	0.313	1.000	0.330	0.606	0.665	−0.322	0.611	0.385	−0.056	−0.379	0.631	−0.151	0.158	−0.179	0.084	0.028	0.208	0.724	0.281	0.608
Cr	−0.032	−0.038	0.000	−0.096	−0.135	−0.139	−0.013	0.016	0.190	−0.032	0.330	1.000	0.091	0.175	−0.088	0.262	0.125	−0.112	−0.025	0.570	−0.153	0.039	−0.110	−0.059	0.058	0.059	0.190	0.023	−0.001
Cu	0.237	0.322	0.051	0.213	0.302	0.183	0.054	0.086	−0.108	0.142	0.606	0.091	1.000	0.279	0.002	0.395	−0.014	0.066	−0.424	0.462	0.184	0.231	0.187	0.042	0.067	0.153	0.413	0.105	0.503
Fe	0.077	−0.095	0.106	−0.492	−0.071	−0.292	−0.121	0.218	−0.002	0.289	0.665	0.175	0.279	1.000	−0.357	0.172	0.730	0.100	−0.452	0.138	−0.405	0.168	−0.223	0.067	−0.218	0.291	0.828	0.258	0.658
K	0.060	−0.014	−0.068	0.376	0.176	0.762	0.141	−0.074	0.082	−0.174	−0.322	−0.088	0.002	−0.357	1.000	0.082	−0.348	0.020	0.352	−0.132	0.488	0.052	0.225	−0.025	0.396	0.040	−0.243	−0.175	−0.303
Mg	−0.037	−0.139	−0.018	0.341	−0.032	0.086	0.093	0.043	0.682	0.214	0.611	0.262	0.395	0.172	0.082	1.000	−0.013	−0.081	0.246	0.581	0.316	0.083	0.044	0.120	0.412	0.207	0.410	0.134	0.180
Mn	−0.095	−0.117	0.050	−0.527	−0.166	−0.311	−0.111	0.139	−0.048	0.188	0.385	0.125	−0.014	0.730	−0.348	−0.013	1.000	0.058	−0.315	−0.035	−0.464	0.122	−0.276	0.042	−0.316	0.154	0.427	0.196	0.569
Mo	0.066	−0.005	0.034	−0.111	0.240	0.070	−0.162	0.054	−0.072	0.052	−0.056	−0.112	0.066	0.100	0.020	−0.081	0.058	1.000	−0.039	−0.100	0.069	0.193	0.146	0.157	−0.107	0.043	0.095	−0.077	0.032
Na	−0.156	−0.312	−0.101	0.363	−0.124	0.264	0.138	−0.084	0.602	−0.121	−0.379	−0.025	−0.424	−0.452	0.352	0.246	−0.315	−0.039	1.000	−0.065	0.372	−0.095	0.112	0.034	0.448	0.023	−0.340	−0.118	−0.463
Ni	0.014	0.025	−0.001	0.173	−0.006	−0.045	0.021	0.010	0.270	0.165	0.631	0.570	0.462	0.138	−0.132	0.581	−0.035	−0.100	−0.065	1.000	0.050	0.127	−0.075	0.060	0.162	0.104	0.305	0.111	0.213
P	0.015	0.056	−0.059	0.601	0.190	0.471	0.272	−0.051	0.267	0.039	−0.151	−0.153	0.184	−0.405	0.488	0.316	−0.464	0.069	0.372	0.050	1.000	−0.009	0.458	0.116	0.403	0.275	−0.129	0.026	−0.305
Pb	0.115	0.063	0.093	−0.076	0.210	0.118	−0.074	0.069	−0.049	0.005	0.158	0.039	0.231	0.168	0.052	0.083	0.122	0.193	−0.095	0.127	−0.009	1.000	0.080	0.134	−0.090	0.009	0.157	−0.014	0.334
S	0.127	0.159	0.055	0.261	0.279	0.208	0.089	−0.080	−0.006	−0.066	−0.179	−0.110	0.187	−0.223	0.225	0.044	−0.276	0.146	0.112	−0.075	0.458	0.080	1.000	0.027	0.118	0.192	−0.072	−0.099	−0.065
Sb	−0.025	−0.046	−0.010	−0.029	0.019	0.017	−0.053	0.088	0.108	0.335	0.084	−0.059	0.042	0.067	−0.025	0.120	0.042	0.157	0.034	0.060	0.116	0.134	0.027	1.000	−0.058	0.174	0.107	0.332	0.100
Sr	−0.060	−0.124	−0.106	0.416	0.003	0.433	0.058	0.031	0.594	−0.169	0.028	0.058	0.067	−0.218	0.396	0.412	−0.316	−0.107	0.448	0.162	0.403	−0.090	0.118	−0.058	1.000	0.154	−0.030	−0.276	−0.264
Ti	0.043	−0.019	−0.033	0.020	−0.028	0.090	0.199	0.038	0.153	0.205	0.208	0.059	0.153	0.291	0.040	0.207	0.154	0.043	0.023	0.104	0.275	0.009	0.192	0.174	0.154	1.000	0.456	0.194	0.142
V	0.124	−0.102	0.112	−0.293	−0.038	−0.186	−0.051	0.196	0.193	0.312	0.724	0.190	0.413	0.828	−0.243	0.410	0.427	0.095	−0.340	0.305	−0.129	0.157	−0.072	0.107	−0.030	0.456	1.000	0.241	0.516
W	−0.014	−0.079	−0.009	−0.167	−0.077	−0.199	0.500	0.059	0.038	0.710	0.281	0.023	0.105	0.258	−0.175	0.134	0.196	−0.077	−0.118	0.111	0.026	−0.014	−0.099	0.332	−0.276	0.194	0.241	1.000	0.176
Zn	0.121	0.112	0.101	−0.251	0.106	−0.173	−0.088	0.195	−0.182	0.236	0.608	−0.001	0.503	0.658	−0.303	0.180	0.569	0.032	−0.463	0.213	−0.305	0.334	−0.065	0.100	−0.264	0.142	0.516	0.176	1.000