ppm.
A comparison on content of the indicator between the zone and other area based on data by Flanagan(1976) and Vinogradov(1962) made clear that Ni content of the zone is fairly low for that of the area compared. However, values of Flanagan's data fluctuate greatly for various rock types. The maximum value in the zone is 268 ppm.

Fe : GMs of rock code 3, rock code 4, and rock code 5 of the zone are 6.89, 1.96, and 1.90 %, respectively but rock code 3 in the zone has the largest value of 3.77 %.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Fe content in the zone is rather low. The maximum value in the zone is 8.72 %.

Determination of Threshold Values

An interpretation was conducted on the cumulative frequency curve of Au in each geological unit. The results are summarized as follows:

Rock code 3 : Au shows a kind of dual distribution as shown in FIG.2-5-5. Geochemical values principally consist of two populations, frequency of each population is about 30 %, and 70 %. The threshold value(GM + 2 δ) determined statistically corresponds to the upper 3 % level of the second population. The second population shows a log normal distribution.

Rock code 4 : Au shows a kind of dual distribution as shown in FIG.2-5-5. Geochemical values principally consist of two populations, frequency of each population is about 40 %, and 60 %. The threshold value(GM + 2 δ)determined statistically corresponds to the upper 4 % level of the second population. The second population shows a log normal distribution.

Rock code 5 : Au shows a kind of dual distribution as shown in FIG.2-5-5. Geochemical values principally consist of two populations, frequency of each population is about 40 %, and 60 %. The threshold value(GM + 2 δ)determined statistically corresponds to the upper 4 % level of the second population.

Each rock code in the zone shows similar cumulative frequency curve pattern, suggesting that geochemical characteristics over the rock codes are nearly identical.

5-4-3 Interpretation

Principal Component Analysis

After determining the correlation coefficients between indicators, which cannot be extracted by single variable analyses, from multi-dimensional distribution characteristics, these were applied to the determination of character and the evaluation of geochemical anomalies. Results of analysis are shown in TABLE 2-5-8.

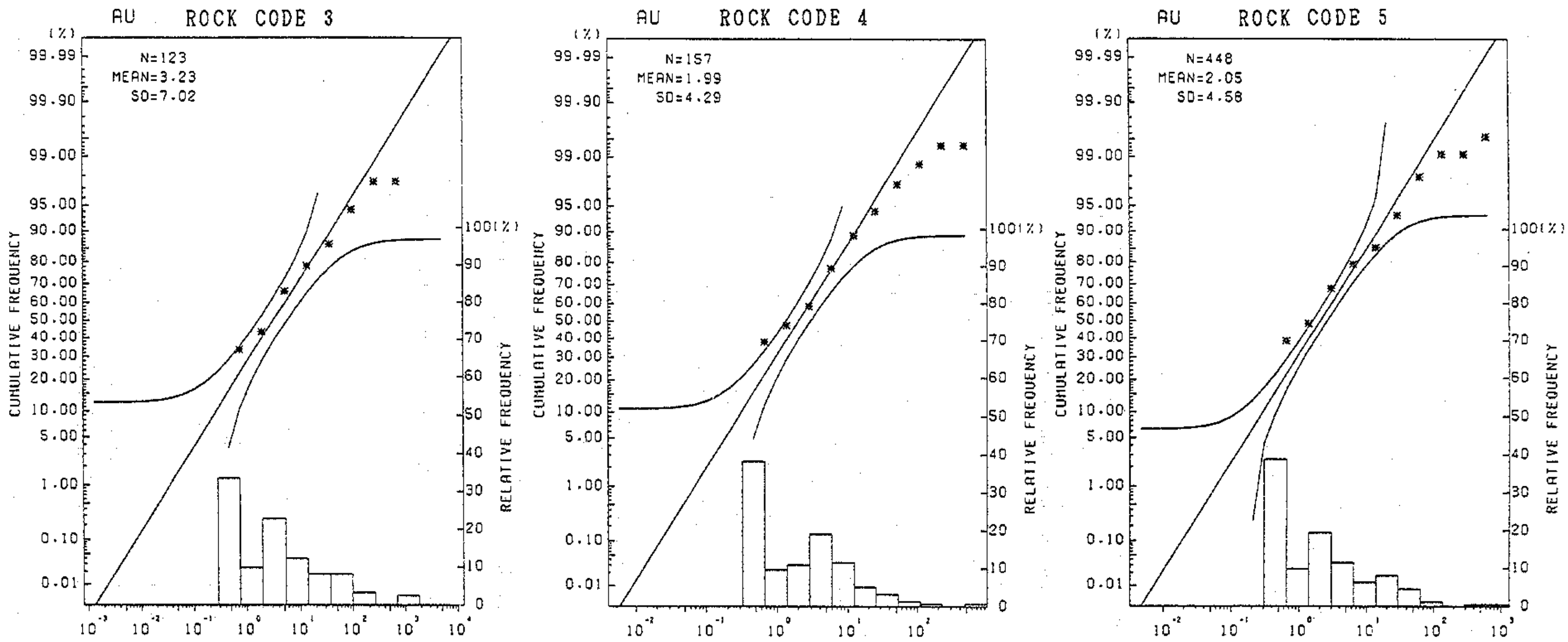


FIG. 2-5-5 Frequency Distribution and Cumulative Frequency Curve (Au;Benzi Zone)

General characteristics of principal components intimately related to Au are summarized below:

Rock code 3 : As shown in TABLE 2-5-8(1), the contribution ratio for the first principal component to all the principal components is about 29%, occupying less than one fourth of all. The total to the ratio of the fifth principal component amounts to 73 % approximately, so that a greater part of the fluctuation of all the components can be explained by them. However, the contribution ratio of each principal is general small and not decisive. Each component drops gradually and does not change markedly.

For the first principal component, Ag, Zn, Cr, Ni, and Fe show a medium correlation value of 0.41～0.66. On the other hand Au and Cu has strong correlation value of 0.73～0.88. Therefore, the first principal component is characterized by high concentration of these indicators.

Rock code 4 : As shown in TABLE 2-5-8(2), the contribution ratio for the first principal component to all the principal components is about 27%, occupying less than one third of all. The total to the ratio of the fifth principal component amounts to 75 % approximately, so that a greater part of the fluctuation of all the components can be explained by them. However, the contribution ratio of each principal is generally small and not decisive. Each component, except the first principal component, drops gradually and does not change markedly.

The third principal component has medium correlations(0.40～0.54) with Au, and Bi. On the other hand, a negative medium correlation(-0.59) with F. Therefore, high scores and low negative scores are expected for the concentration of these indicators.

The fourth principal component is characterized by a medium correlation (0.65) with Au and a negative medium correlation(-0.65) with Bi. The component is worth notice for the gold exploration, although the contribution ratio is as low as 10 %.

Rock code 5 : As shown in TABLE 2-5-8(3), the contribution ratio for the first principal component to all the principal components is about 19%, occupying less than one fifth of all. The total to the ratio of the fifth principal component amounts to 69 % approximately, so that a greater part of the fluctuation of all the components can be explained by them. However, the contribution ratio of each principal is generally small and not decisive. Each component, except the first principal component, drops gradually and does not change markedly.

The fourth principal component is characterized by a medium correlation (0.65) with Au and a negative medium correlation(-0.64) with Bi. The component is worth notice for the gold exploration, although the contribution ratio is as low as 10 %.

The fifth principal component show only medium correlations(0.59～0.69) with

TABLE 2-5-8(1) Results of Principal Component Analysis(Benzi Zone:R.C. 3)

PRINCIPAL COMPONENT	EIGEN-VALUE	CONTRIBUTION RATIO	FACTOR LOADING										SCORE	
			Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe	MAXIMUM	MINIMUM
Z1	2.8690	0.2869 (0.2869)	0.73	0.41	-0.14	0.04	0.88	0.31	0.42	0.61	0.66	0.54	5.338	-0.817
Z2	1.3500	0.1350 (0.4219)	-0.22	0.61	0.45	0.29	-0.11	-0.09	0.65	-0.29	-0.20	0.25	3.691	-1.897
Z3	1.2090	0.1209 (0.5428)	0.00	-0.17	0.68	-0.65	-0.02	0.12	0.29	0.25	0.13	-0.36	4.450	-1.509
Z4	0.9830	0.0983 (0.6411)	-0.15	-0.01	-0.15	-0.24	-0.08	0.85	0.04	-0.17	-0.21	0.26	8.593	-1.314
Z5	0.8760	0.0876 (0.7287)	0.12	-0.02	0.02	0.53	-0.03	0.33	0.13	0.35	-0.25	-0.52	6.519	-2.154

TABLE 2-5-8(2) Results of Principal Component Analysis(Benzi Zone:R.C. 4)

PRINCIPAL COMPONENT	EIGEN-VALUE	CONTRIBUTION RATIO	FACTOR LOADING										SCORE	
			Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe	MAXIMUM	MINIMUM
Z1	2.7180	0.2718 (0.2718)	-0.07	-0.47	-0.01	-0.12	0.89	0.26	0.45	0.57	0.86	0.61	6.222	-1.302
Z2	1.6580	0.1658 (0.4376)	-0.25	0.27	0.32	0.00	0.19	0.38	0.68	-0.58	-0.34	0.58	2.010	-2.637
Z3	1.1090	0.1109 (0.5485)	0.40	0.35	0.09	0.54	0.04	-0.59	0.09	0.38	0.17	-0.05	8.592	-3.588
Z4	1.0290	0.1029 (0.6514)	0.65	-0.11	0.34	-0.65	-0.05	-0.19	-0.06	0.03	-0.05	0.10	10.900	-3.351
Z5	0.9550	0.0955 (0.7469)	-0.20	-0.11	0.88	0.21	-0.11	0.20	-0.07	0.10	0.07	-0.13	12.371	-0.359

TABLE 2-5-8(3) Results of Principal Component Analysis(Benzi Zone:R.C. 5)

PRINCIPAL COMPONENT	EIGEN-VALUE	CONTRIBUTION RATIO	FACTOR LOADING										SCORE	
			Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe	MAXIMUM	MINIMUM
Z1	1.9050	0.1905 (0.1905)	0.05	-0.56	0.11	-0.15	0.17	0.31	-0.25	0.79	0.73	-0.46	8.679	-1.509
Z2	1.8450	0.1845 (0.3750)	0.06	0.32	-0.14	-0.16	0.80	-0.01	0.61	0.23	0.43	0.66	3.812	-1.740
Z3	1.1090	0.1109 (0.4859)	-0.33	-0.20	0.85	-0.05	0.08	0.32	0.00	-0.26	0.02	0.27	5.059	-3.110
Z4	1.0790	0.1079 (0.5938)	0.65	-0.15	0.09	-0.64	-0.02	0.26	0.24	-0.16	-0.23	-0.12	13.500	-1.272
Z5	0.9620	0.0962 (0.6900)	0.59	-0.15	0.05	0.69	0.16	0.23	-0.11	-0.10	0.01	0.14	7.596	-2.052

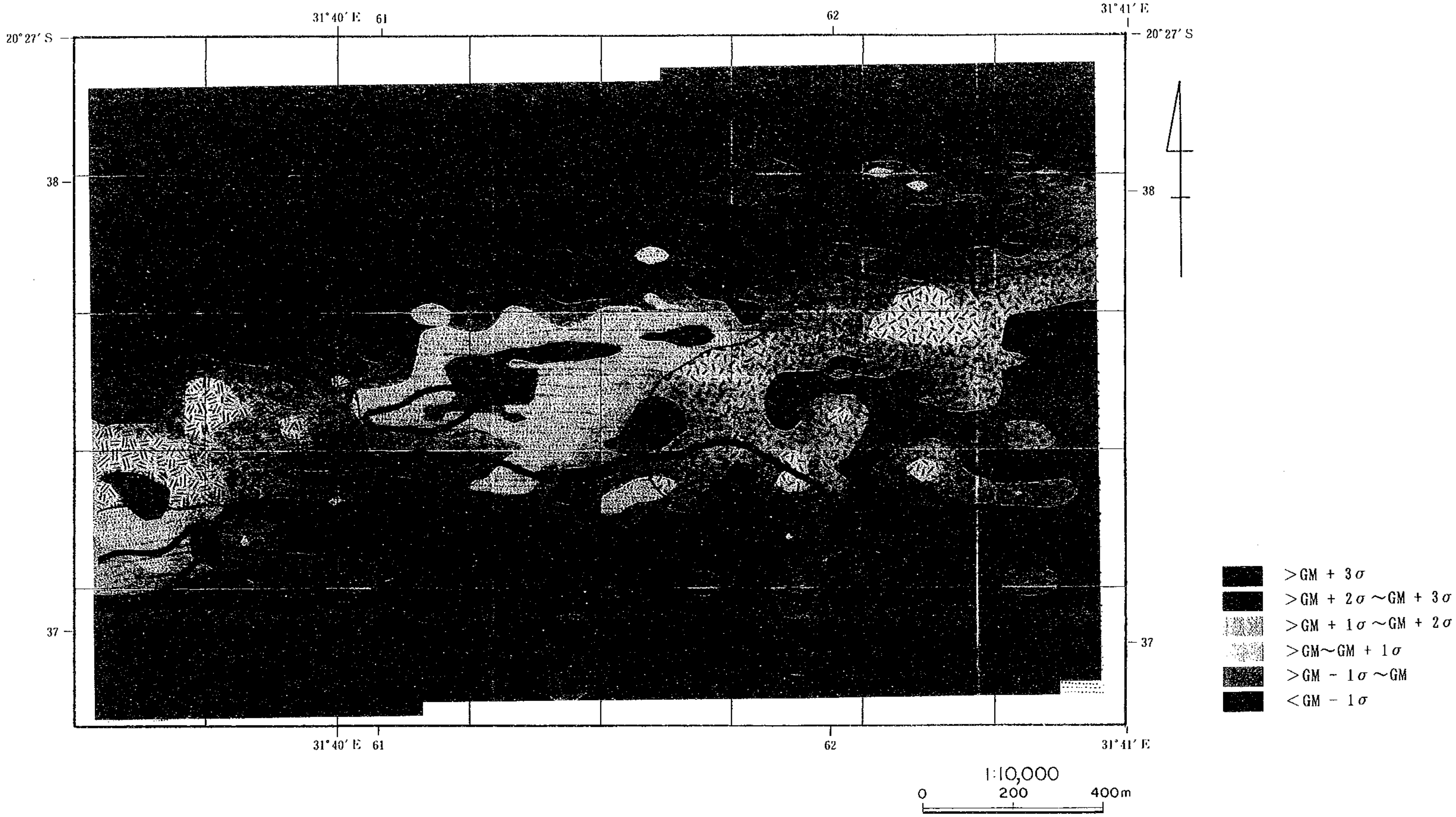


FIG. 2-5-6 Gold Distribution (Benzi Zone)

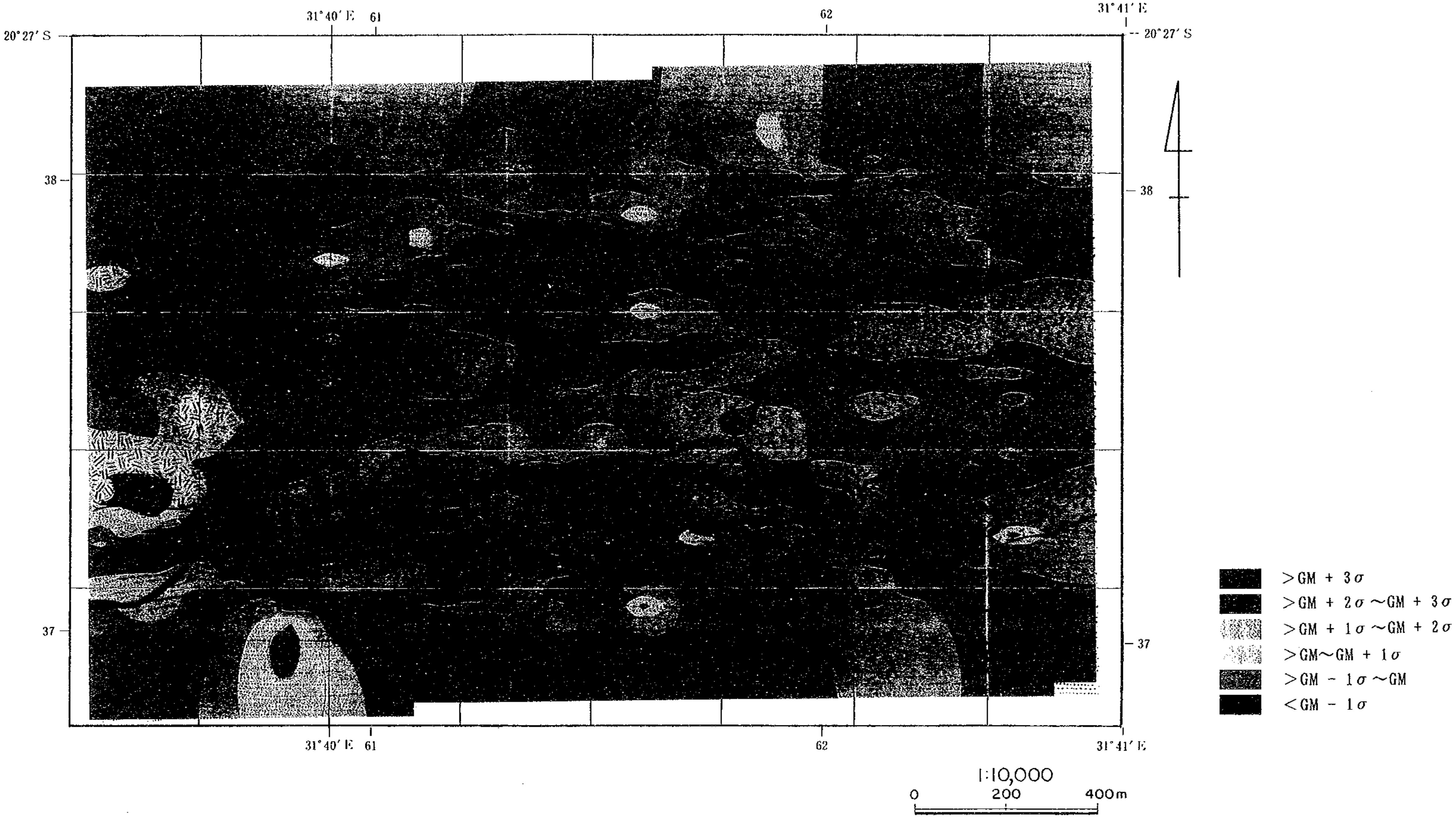


FIG. 2-5-7 Distribution of Principal Component Scores (Benzi Zone)

Bi. The component is worth notice for the gold exploration, although the contribution ratio is less than 10 %.

Au Concentration and Principal Component Scores

The concentration distribution of Au in the surveyed area indicates an anomalous zone (GM+ σ ~ GM+2 σ) with good continuity in the ENE-WSW direction, as shown in FIG. 2-5-6. Since mineralized signs have been found in the south of the anomalous zone, it was expected that an association between the mineralized signs and geochemical anomalies would be found. A noteworthy anomalous zone was found by soil geochemical survey. The center of the above anomalous zone was found to lie 200 ~ 300m north of the distribution zone of mineralized signs. Since the anomalous zone is located on a gentle slope, it may well be that it represents hydromorphic anomalies in which Au has been transported from a higher portions, although this is not so remarkably indicated as the Jegede anomalous zone. Nevertheless, it is naturally possible that the extension in the ENE-WSW direction indicated by the anomalous zone suggests the existence of a mineralized zone directly relating to the anomalous zone.

Principal components highly related to Au are the first component for code 3 and the fourth component for code 4 and 5. The condition of the distribution of such high component scores is shown in FIG.2-5-7. Since the figure shows scattered distribution of the high scores, except those for code 3, no promising place could be specified.

5-5 RUPIRI ZONE

5-5-1 Soil Sampling

Soil sampling lines were set on north-south direction due to east-west occurrences of mineralized signs and B-horizon soils were taken. Soil colour in the zone poorly reflects the basement geology.
Soils taken over the mafic granulite and gneissose granulite are 279 and 1,314, respectively.

5-5-2 Indicators

Several mineralized signs were found within the zone. Analytical results of the soils poorly agreed with the observations which confirmed mineralized signs in the zone. The contents on geochemical indicators compared with all zones studied and Rupiri zone are shown as follows:

PUPIRI ZONE

ROCK CODE	Au (PPB)	Ag (PPM)	As (PPM)	Bi (PPM)	Cu (PPM)	F (PPM)	Zn (PPM)	Cr (PPM)	Ni (PPM)	Fe (%)
ALL ZONES										
R.C.3	1.73	0.63	2.25	0.06	61.57	26.42	90.47	215.97	153.32	6.89
R.C.4	0.98	0.48	0.58	0.05	8.82	23.02	40.41	30.92	11.77	1.96
R.C.5	0.93	0.53	0.66	0.05	12.86	30.30	37.45	44.07	19.23	1.90
RUPIRI ZONE(SOIL)										
R.C.3	0.95	0.84	0.64	0.05	28.66	44.04	68.17	145.10	59.52	2.53
R.C.4	----	----	----	----	-----	-----	-----	------	-----	----
R.C.5	0.90	0.69	0.53	0.05	8.23	34.00	26.26	31.91	14.48	1.25

Background Geology and Indicator Content

Accordingly, geochemical characteristics for respective geological units are shown in TABLE 2-5-9. According to this table, geochemical characteristics on each indicator are summarized as follows:

Au : Geometric means(GMs) of rock code 3 and rock code 5 of all zones are 0.95 and 0.90 ppb, respectively but rock code 3 in the zone has larger value of 0.95 ppb.

A comparison on the contents of indicators between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. Au contents in the zone can be pointed out to be rather low. The maximum value in the zone is 10 ppb.

Ag : GMs of rock code 3 and rock code 5 of all zones are 0.63 and 0.53 ppm, respectively but rock code 3 in the zone has larger value of 0.84 ppm.

A comparison on contents of the indicators between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. Ag contents in the zone are rather high, with a maximum value of 4.40 ppm.

As : Since almost all data indicated content below its detection limit(1.00 ppm) except rock code 3, it is difficult to clarify its geochemical character in the zone. GMs of rock code 3 and rock code 5 of all zones are 2.25 and 0.66 ppm, respectively but rock code 3 in the zone has larger value of 0.64 ppm.

A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. As content in the zone is fairly low, with maximum value of 5 ppm.

Bi : Since almost all data indicated content below its detection limit(0.10 ppm) except rock code 3, it is difficult to clarify its geochemical character in the zone.

A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. As content in the zone is nearly to that of the areas compared same. Maximum value in the zone is 0.10 ppm.

Cu : GMs of rock code 3 and rock code 5 of all zones are 61.57 and 12.86 ppm, respectively but rock code 3 in the zone studied has larger value of 28.66 ppm.

A comparison on contents of the indicator between the zone and other areas based

TABLE 2-5-9 Statistical Parameter of Indicators(Rupiri Zone)

SOIL <ROCK CODE>	NO. OF SAMPLE		GEOMETRIC MEAN (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)
MAFIC GRANULITE <3>	279	←g.m.	0.95	0.84	0.64	0.05	28.66	44.04	68.17	145.10	59.52	2.53
		←s.d.	2.28	1.83	1.43	1.10	2.04	1.88	1.78	3.02	2.09	1.64
FELSIC GRANULITE <4>	0		―	―	―	―	―	―	―	―	―	―
GNEISSOSE GRANULITE <5>	1,314	←g.m.	0.90	0.69	0.53	0.05	8.23	34.00	26.26	31.91	14.48	1.25
		←s.d.	2.27	2.07	1.24	1.12	1.97	2.00	2.06	3.21	2.43	1.92

SOIL <ROCK CODE>	THRESHOLD (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)	
MAFIC GRANULITE <3>	2.16	1.53	0.91	0.05	59	83	121	438	124	4.15	←g.m.+ s.d
	4.92	2.80	1.30	0.06	120	156	215	1,323	260	6.82	←g.m.+2 s.d.
	11.22	5.12	1.86	0.07	244	294	382	3,997	543	11.18	←g.m.+3 s.d.
FELSIC GRANULITE <4>	―	―	―	―	―	―	―	―	―	―	
GNEISSOSE GRANULITE <5>	2.05	1.42	0.66	0.06	16	68	54	103	35	2.41	←g.m.+ s.d
	4.66	2.93	0.82	0.06	32	137	111	329	86	4.64	←g.m.+2 s.d.
	10.58	6.07	1.02	0.07	63	274	229	1,058	208	8.92	←g.m.+3 s.d.

	NO. OF SAMPLE	MINIMUM VALUE (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)
MAFIC GRANULITE <3>	279	0.50	0.25	0.50	0.05	4.00	10.00	14.00	1.00	6.00	0.54
FELSIC GRANULITE <4>	0	―	―	―	―	―	―	―	―	―	―
GNEISSOSE GRANULITE <5>	1,314	0.50	0.25	0.50	0.05	0.50	10.00	0.50	1.00	1.00	0.21

	MAXIMUM VALUE (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)
MAFIC GRANULITE <3>	6.00	4.20	4.00	0.10	188	380	275	2,110	482	10.74
FELSIC GRANULITE <4>	―	―	―	―	―	―	―	―	―	―
GNEISSOSE GRANULITE <5>	10.00	4.40	5.00	0.10	114	370	222	475	431	12.25

g.m. : geometric mean s.d. : standard deviation

ROCK CODE	Au (PPB)	Ag (PPM)	As (PPM)	Bi (PPM)	Cu (PPM)	F (PPM)	Zn (PPM)	Cr (PPM)	Ni (PPM)	Fe (%)
ALL ZONES										
R.C.3	1.73	0.63	2.25	0.06	61.57	26.42	90.47	215.97	153.32	6.89
R.C.4	0.98	0.48	0.58	0.05	8.82	23.02	40.41	30.92	11.77	1.96
R.C.5	0.93	0.53	0.66	0.05	12.86	30.30	37.45	44.07	19.23	1.90
RUPIRI ZONE (SOIL)										
R.C.3	0.95	0.84	0.64	0.05	28.66	44.04	68.17	145.10	59.52	2.53
R.C.4	――	――	――	――	――	――	――	――	――	――
R.C.5	0.90	0.69	0.53	0.05	8.23	34.00	26.26	31.91	14.48	1.25

ROCK TYPE	Au (PPB)	Ag (PPM)	As (PPM)	Bi (PPM)	Cu (PPM)	F (PPM)	Zn (PPM)	Cr (PPM)	Ni (PPM)	Fe (%)
MAFIC ROCK	4.00	0.10	2.00	0.01	100	370	130	200	160	8.56
INT. ROCK	――	0.07	2.40	0.01	35	500	72	50	55	5.85
FELSIC ROCK	4.50	0.05	1.50	0.01	20	800	6	25	8	2.70
GRANITE	1.00	0.05	0.25	0.43	12	1,250	85	7	5	1.85
MICA SCHIST	――	0.30	――	――	30	――	70	70	50	4.90
<After Flanagan(1976) & Vinogradov(1962)>										
RUPIRI ZONE (ROCK)										
R.C.3	――	――	――	――	――	――	――	――	――	――
R.C.4	――	――	――	――	――	――	――	――	――	――
R.C.5	0.50	0.25	0.50	0.05	36	57	84	28	21	1.53

INT. ROCK : INTERMEDIATE ROCK
―― : NO DATA

on data by Flanagan(1976) and Vinogradov(1962) was made. Copper content in rock code 3 and rock code 5 of the zone is fairly low compared to that of the areas compared. The maximum value in the zone is 188 ppm.

F : GMs of rock code 3 and rock code 5 of all zones are 26.42 and 30.30 ppm, respectively but rock code 3 in the zone has larger value of 44.04 ppm.
A comparison on contents of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. F content in the zone is fairly low, with maximum value of 380 ppm.

Zn : GMs of rock code 3 and rock code 5 of all zones are 90.47 and 37.45 ppm, respectively but rock code 3 in the zone has larger value of 68.17 ppm.
A comparison on contents of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Zn content in the zone is normal. The maximum value in the zone is 275 ppm.

Cr : GMs of rock code 3 and rock code 5 of all zones are 215.97 and 44.07 ppm, respectively but rock code 3 in the zone has larger value of 145.10 ppm.
A comparison on contents of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Cr contents of rock code 5 of the zone are almost same. However, the indicator's values fluctuate greatly for rock types according to Flanagan's data. The maximum value in the zone is 2,110 ppm.

Ni : GMs of rock code 3 and rock code 5 of all zones are 153.32 and 19.23 ppm but rock code 3 in the zone has larger value of 59.52 ppm.
A comparison on contents of the indicator between the zone and other area based on data by Flanagan(1976) and Vinogradov(1962) made clear that Ni contents of rock code 5 of the zone is almost the same for the area compared. However, values of Flanagan's data fluctuate greatly for various rock types. The maximum value in the zone is 482 ppm.

Fe : GMs of rock code 3 and rock code 5 of all zones are 6.89 and 1.90 %, respectively but rock code 3 in the zone has larger value of 2.53 %.
A comparison on contents of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Fe contents in the zone is rather low. The maximum value in the zone is 12.26 %.

Determination of Threshold Values

An interpretation was conducted on the cumulative frequency curve of Au in each geological unit. The results are summarized as follows:

Rock code 3 : Au shows a kind of dual distribution as shown in FIG.2-5-8. Geochemical values principally consist of two populations, frequency of each population is about 60 %, and 40 %. The threshold value(GM + 2δ) determined statistically corresponds to the upper 3 % level of the second population.

Rock code 5 : Au shows a kind of dual distribution as shown in FIG.2-5-8.

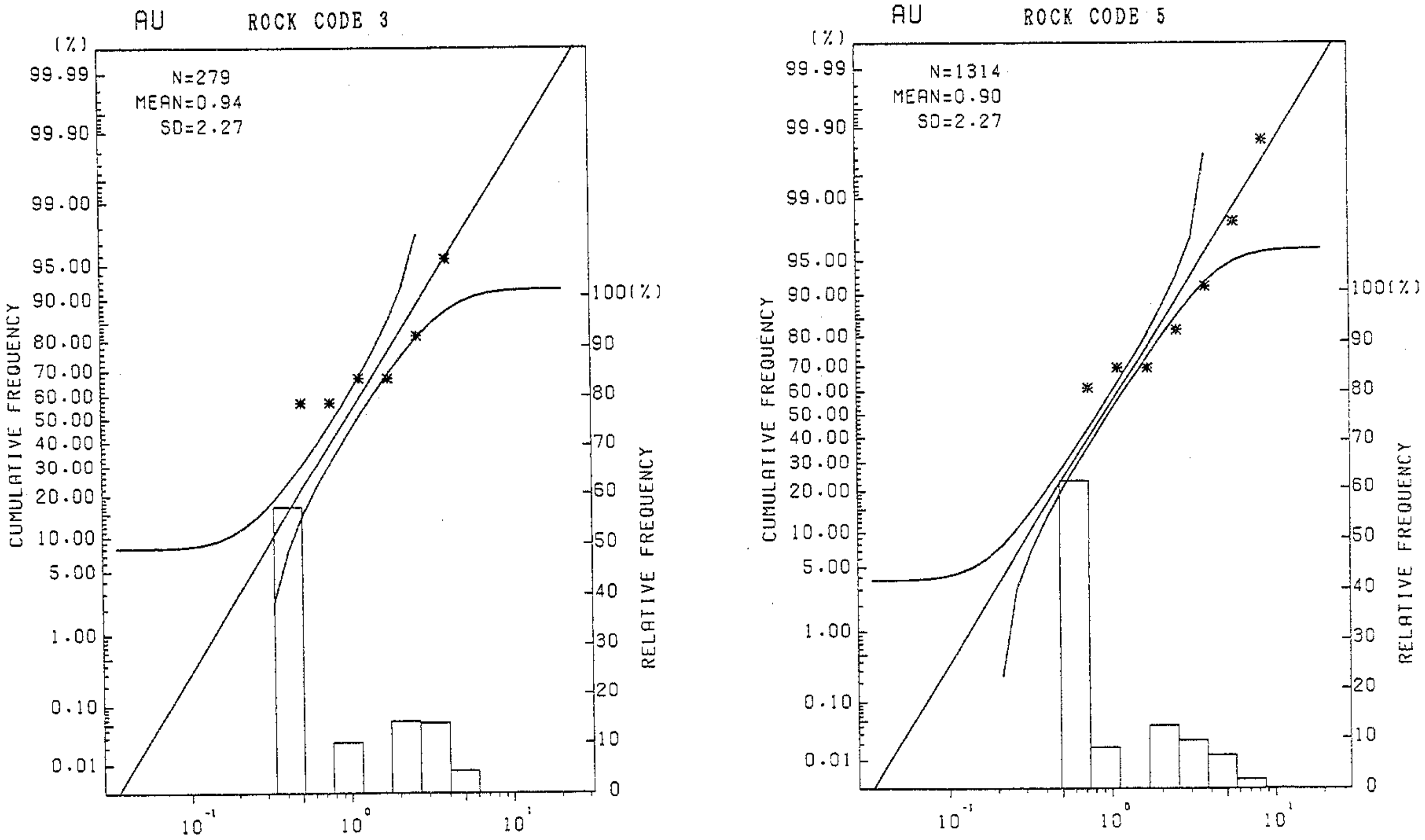


FIG. 2-5-8 Frequency Distribution and Cumulative Frequency Curve (Au;Rupiri Zone)

Geochemical values principally consist of two populations, frequency of each population is about 60 %, and 40 %. The threshold value(GM + 2δ) determined statistically corresponds to upper 3 % level of the second population. It can be observed positive skewness on the cumulative frequency curve of the second population.

5-5-3 Interpretation

After determining the correlation coefficients between indicators, which cannot be extracted by single variable analyses, from multi-dimensional distribution characteristics, these were applied to the determination of character and the evaluation of geochemical anomalies. Results of analysis are shown in TABLE 2-5-10.

General characteristics of principal components intimately related to Au are summarized below:

Rock code 3 : As shown in TABLE 2-5-10(1), the contribution ratio for the first principal component to all the principal components is about 31%, occupying less than one third of all. The total to the ratio of the fifth principal component amounts to 77 % approximately, so that a greater part of the fluctuation of all the components can be explained by them. However, the contribution ratio of each principal is general small and not decisive. Each component, except for the first principal component drops gradually and does not change markedly.

The fourth principal component shows a strong correlation(0.89) with Au. Therefore, the component is worth notice for the exploration of gold, although the contribution ratio is as small as 10 %.

Rock code 5 : As shown in TABLE 2-5-10(2), the contribution ratio for the first principal component to all the principal components is about 31%, occupying less than one third of all. The total to the ratio of the fifth principal component amounts to 76 % approximately, so that a greater part of the fluctuation of all the components can be explained by them. However, the contribution ratio of each principal is generally small and not decisive. Each component, except for the first and second principal components, drops gradually and does not change markedly.

The second principal component is characterized by a medium correlation (0.40) with Au and a strong correlation(0.72) with Ag. On the other hand, medium negative correlations(-0.49～-0.52) with Bi and F. High scores and low negative scores are expected in the concentration of these indicators.

The third principal component has medium correlations(0.44～0.66) with Au, As, and Bi. Therefore, high scores are expected for the concentration of these indicators.

The fifth principal component show a medium correlation(0.52) and negative

TABLE 2-5-10(1) Results of Principal Component Analysis(Rupiri Zone:R.C. 3)

PRINCIPAL COMPONENT	EIGEN-VALUE	CONTRIBUTION RATIO	FACTOR LOADING										SCORE	
			Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe	MAXIMUM	MINIMUM
Z1	3.1230	0.3123 (0.3123)	-0.01	-0.14	0.35	0.10	0.85	0.16	0.86	0.30	0.77	0.90	3.281	-1.462
Z2	1.4260	0.1426 (0.4549)	-0.13	-0.56	0.45	0.63	-0.03	0.64	-0.16	0.14	-0.17	-0.16	6.725	-2.443
Z3	1.1720	0.1172 (0.5721)	-0.34	-0.40	-0.01	-0.45	-0.23	-0.13	-0.14	0.76	0.18	-0.04	5.182	-2.239
Z4	0.9880	0.0988 (0.6709)	0.89	-0.12	0.25	-0.03	-0.03	-0.17	-0.15	0.24	0.06	-0.04	7.561	-1.813
Z5	0.9740	0.0974 (0.7683)	-0.26	0.30	0.67	0.17	0.04	-0.52	0.01	0.13	-0.21	-0.05	3.412	-0.984

TABLE 2-5-10(2) Results of Principal Component Analysis(Rupiri Zone:R.C. 5)

PRINCIPAL COMPONENT	EIGEN-VALUE	CONTRIBUTION RATIO	FACTOR LOADING										SCORE	
			Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe	MAXIMUM	MINIMUM
Z1	3.1280	0.3128 (0.3128)	-0.05	-0.14	0.14	0.03	0.85	0.42	0.69	0.66	0.82	0.78	6.302	-1.628
Z2	1.2670	0.1267 (0.4395)	0.40	0.72	0.07	-0.52	0.11	-0.49	0.19	0.13	-0.02	0.06	3.594	-6.061
Z3	1.0920	0.1092 (0.5487)	0.56	0.09	0.59	0.44	-0.07	0.26	0.03	-0.04	0.03	-0.16	5.665	-2.627
Z4	0.9790	0.0979 (0.6466)	-0.22	-0.25	0.66	-0.48	-0.12	-0.05	-0.32	0.24	0.13	-0.05	17.116	-1.840
Z5	0.8820	0.0882 (0.7348)	-0.46	0.26	0.24	0.52	-0.05	-0.43	0.13	0.24	0.07	-0.15	6.715	-1.394

correlations(-0.43～-0.46) with Au and F.

Au Concentration and Principal Component Scores

The concentration distribution of Au in this surveyed zone indicates anomalies(GM+ σ ～ GM+2 σ) with continuity in the NNW-SSE direction, which can roughly be divided into three zones. The anomalous zones of this surveyed zone may be combinations of the above anomalies and those stretching in the ENE-WSW direction. These anomalies are not so remarkable, thus no geological results relating to them could be extracted by the field survey.

Principal components highly related to Au are the fourth component for code 3 and the third component for code 5. From the distribution of high scores, no promising zone could be specified.

5-6 CHIPFUNDE ZONE

5-6-1 Soil Sampling

Soil sampling lines were set on north-south direction due to east-west occurrences of mineralized signs and B-horizon soil was taken.
Soils taken over the mafic granulite and gneissose granulite are 585 and 313, respectively.

5-6-2 Indicators

Several mineralized signs were found within the zone. Analytical results of the soils poorly agreed with the observations which confirmed the mineralized sings in the zone. The content on geochemical indicators compared with all zones studied Chipfunde zone are shown as follows:

CHIPFUNDE ZONE

ROCK CODE	Au (PPB)	Ag (PPM)	As (PPM)	Bi (PPM)	Cu (PPM)	F (PPM)	Zn (PPM)	Cr (PPM)	Ni (PPM)	Fe (%)
ALL ZONES										
R.C.3	1.73	0.63	2.25	0.06	61.57	26.42	90.47	215.97	153.32	6.89
R.C.4	0.98	0.48	0.58	0.05	8.82	23.02	40.41	30.92	11.77	1.96
R.C.5	0.93	0.53	0.66	0.05	12.86	30.30	37.45	44.07	19.23	1.90
CHIPFUNDE ZONE(SOIL)										
R.C.3	1.71	0.51	0.88	0.06	98.21	21.86	101.62	330.44	231.47	9.50
R.C.4	----	----	----	----	-----	-----	-----	------	-----	----
R.C.5	1.00	0.56	0.55	0.06	27.77	18.27	51.69	128.59	50.31	3.21

Background Geology and Indicator Content

Accordingly, geochemical characteristics for respective geological units are shown in TABLE 2-5-11. According to this table, geochemical characteristics on each element are summarized as follows:

Au : Geometric means(GMs) of rock code 3 and rock code 5 of all zones are 1.73 and 0.93 ppb, respectively but rock code 3 in the zone has larger value of 1.71 ppb.

TABLE 2-5-11 Statistical Parameter of Indicators(Chipfunde Zone)

S O I L <ROCK CODE>	NO. OF SAMPLE	GEOMETRIC MEAN (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)		THRESHOLD (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)	
MAFIC GRANULITE													5.77	0.86	1.75	0.08	147	46	147	1,423	440	14.55	←g.m.+ s.d
	585	1.71	0.51	0.88	0.06	98.21	21.86	101.62	330.44	231.47	9.50	←g.m.	19.47	1.45	3.46	0.11	220	95	211	6,127	838	22.29	←g.m.+2 s.d.
<3>		3.37	1.69	1.98	1.40	1.50	2.09	1.44	4.31	1.90	1.53	←s.d.	65.68	2.44	6.85	0.15	328	199	305	26,382	1,595	34.15	←g.m.+3 s.d.
FELSIC GRANULITE	0	———	———	———	———	———	———	———	———	———	———		———	———	———	———	———	———	———	———	———	———	
<4>		———	———	———	———	———	———	———	———	———	———												
GNEISSOSE GRANULITE													2.60	0.91	0.71	0.09	53	35	77	445	115	5.44	←g.m.+ s.d
	313	1.00	0.56	0.55	0.06	27.77	18.27	51.69	128.59	50.31	3.21	←g.m.	6.76	1.46	0.91	0.14	100	69	116	1,539	263	9.22	←g.m.+2 s.d.
<5>		2.60	1.62	1.29	1.55	1.90	1.94	1.50	3.46	2.29	1.69	←s.d.	17.57	2.37	1.18	0.22	191	133	174	5,326	602	15.62	←g.m.+3 s.d.

	NO. OF SAMPLE	MINIMUM VALUE (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)	MAXIMUM VALUE (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)
MAFIC GRANULITE <3>	585	0.50	0.25	0.50	0.05	11.00	10.00	30.00	1.00	22.00	0.23	83.00	2.40	9.00	0.50	314	190	314	6,550	1,590	20.84
FELSIC GRANULITE <4>	0	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
GNEISSOSE GRANULITE <5>	313	1.00	0.25	0.50	0.05	0.50	10.00	9.00	1.00	5.00	0.56	115.00	11.00	240.00	1.10	432	650	5,050	5,400	294	22.09

g.m. : geometric mean　　s.d. : standard deviation

ROCK CODE	Au (PPB)	Ag (PPM)	As (PPM)	Bi (PPM)	Cu (PPM)	F (PPM)	Zn (PPM)	Cr (PPM)	Ni (PPM)	Fe (%)
A L L Z O N E S										
R. C. 3	1.73	0.63	2.25	0.06	61.57	26.42	90.47	215.97	153.32	6.89
R. C. 4	0.98	0.48	0.58	0.05	8.82	23.02	40.41	30.92	11.77	1.96
R. C. 5	0.93	0.53	0.66	0.05	12.86	30.30	37.45	44.07	19.23	1.90
C H I P F U N D E Z O N E (S O I L)										
R. C. 3	1.71	0.51	0.88	0.06	98.21	21.86	101.62	330.44	231.47	9.50
R. C. 4	----	----	----	----	----	----	----	----	----	----
R. C. 5	1.00	0.56	0.55	0.06	27.77	18.27	51.69	128.59	50.31	3.21

ROCK TYPE	Au (PPB)	Ag (PPM)	As (PPM)	Bi (PPM)	Cu (PPM)	F (PPM)	Zn (PPM)	Cr (PPM)	Ni (PPM)	Fe (%)
MAFIC ROCK	4.00	0.10	2.00	0.01	100	370	130	200	160	8.56
INT. ROCK	----	0.07	2.40	0.01	35	500	72	50	55	5.85
FELSIC ROCK	4.50	0.05	1.50	0.01	20	800	6	25	8	2.70
GRANITE	1.00	0.05	0.25	0.43	12	1.250	85	7	5	1.85
MICA SCHIST	----	0.30	----	----	30	----	70	70	50	4.90
					<After Flanagan(1976) & Vinogradov(1962)>					
C H I P F U N D E Z O N E (R O C K)										
R. C. 3	1.00	0.25	0.50	0.05	164	140	81	234	134	7.49
R. C. 4	0.50	0.25	0.50	0.05	4	250	31	224	4	0.96
R. C. 5	0.71	0.25	0.59	0.05	10	282	46	191	30	1.86

INT. ROCK : INTERMEDIATE ROCK
---- : NO DATA

A comparison on the content of indicator between the zone and other area based on data by Flanagan(1976) and Vinogradov(1962) was made. Au contents in the zone can be pointed out to be low. The maximum value in the zone is 115 ppb.

Ag : GMs of rock code 3 and rock code 5 of all zone are 0.63 and 0.53 ppm, respectively but rock code 5 in the zone has larger value of 0.56 ppm.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. Ag content in the zone rather high, with a maximum value of 11 ppm.

As : Since approximately 50 % of data indicated content below its detection limit(1.00 ppm), it is difficult to clarify its geochemical character in the zone.
GMs of rock code 3 and rock code 5 of all zone are 2.25 and 0.66 ppm, respectively but rock code 3 in the zone has larger value of 0.88 ppm.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov (1962) was made. As contents of the zone is fairly low, with maximum value of 240 ppm.

Bi : Since approximately 95 % of data indicated content below its detection limit(0.10 ppm), it is difficult to clarify its geochemical character in the zone.
A comparison on contents of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. Bi content in the zone is nearly the same. Maximum value in the zone is 1.10 ppm.

Cu : GMs of rock code 3 and rock code 5 of all zones are 61.57 and 12.86 ppm, respectively but rock code 3 in the zone has larger value of 98.21 ppm.
A comparison on contents of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. Copper contents in rock code 3 and rock code 5 of the zone is nearly the same as the areas compared.
The maximum value in the zone is 432 ppm.

F : GMs of rock code 3 and rock code 5 of all zones are 26.42 and 30.30 ppm, respectively but rock code 3 in the zone has larger value of 21.86 ppm.
A comparison on contents of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. F contents in the zone is fairly low, with maximum value of 650 ppm.

Zn : GMs of rock code 3 and rock code 5 of the zone are 90.47 and 37.45 ppm, respectively but rock code 3 in the zone has larger value of 101.62 ppm.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Zn content in the zone is rather low. The maximum value in the zone is 5,050 ppm.

Cr : GMs of rock code 3 and rock code 5 of the zone are 215.97 and 44.07 ppm, respectively but rock code 3 has larger value of 330.44 ppm.
A comparison on contents of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Cr contents of the

zone is almost same. However, the indicator's values fluctuate greatly for rock types according to Flanagan's data. The maximum value in the zone is 6,550 ppm.

Ni : GMs of rock code 3 and rock code 5 of the zone are 153.32 and 19.23 ppm but rock code 3 has larger value of 231.47 ppm.

A comparison on contents of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Ni content of the zone is almost the same for the area compared. However, values of Flanagan's data fluctuate greatly for various rock types. The maximum value in the zone is 1,590 ppm.

Fe : GMs of rock code 3 and rock code 5 of the zone are 6.89 and 1.90 %, respectively but rock code 3 has larger value of 9.50 %.

A comparison on contents of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Fe content in the zone is normal. The maximum value in the zone is 22.09 %.

Determination of Threshold Values

An interpretation was conducted on the cumulative frequency curve of Au in each geological unit. The results are summarized as follows:

Rock code 3 : Au shows a kind of dual distribution as shown in FIG.2-5-9. Geochemical values principally consist of two populations, that is, cumulative frequency of each population is about 40 %, and 60 %. The threshold value(GM + 2 δ)determined statistically corresponds to the upper 4 % level of the second population.

Rock code 5 : Au shows a kind of dual distribution as shown in FIG.2-5-9. Geochemical values principally consist of two populations, that is, cumulative frequency of each population is about 60 %, and 40 %. The threshold value(GM + 2δ) determined statistically corresponds to the upper 3 % level of the second population.

It can be point out that the rock code 3 has a tendency to show positive skewness in the second population.

5-6-3 Interpretation

Principal Component Analysis

After determining the correlation coefficients between indicators, which cannot be extracted by single variable analyses, from multi-dimensional distribution characteristics, these were applied to the determination of character and the evaluation of geochemical anomalies. Results of analysis are shown in TABLE 2-5-12.

General characteristics of principal components higly related to Au are summarized below:

Rock code 3 : As shown in TABLE 2-5-12(1), the contribution ratio for the first

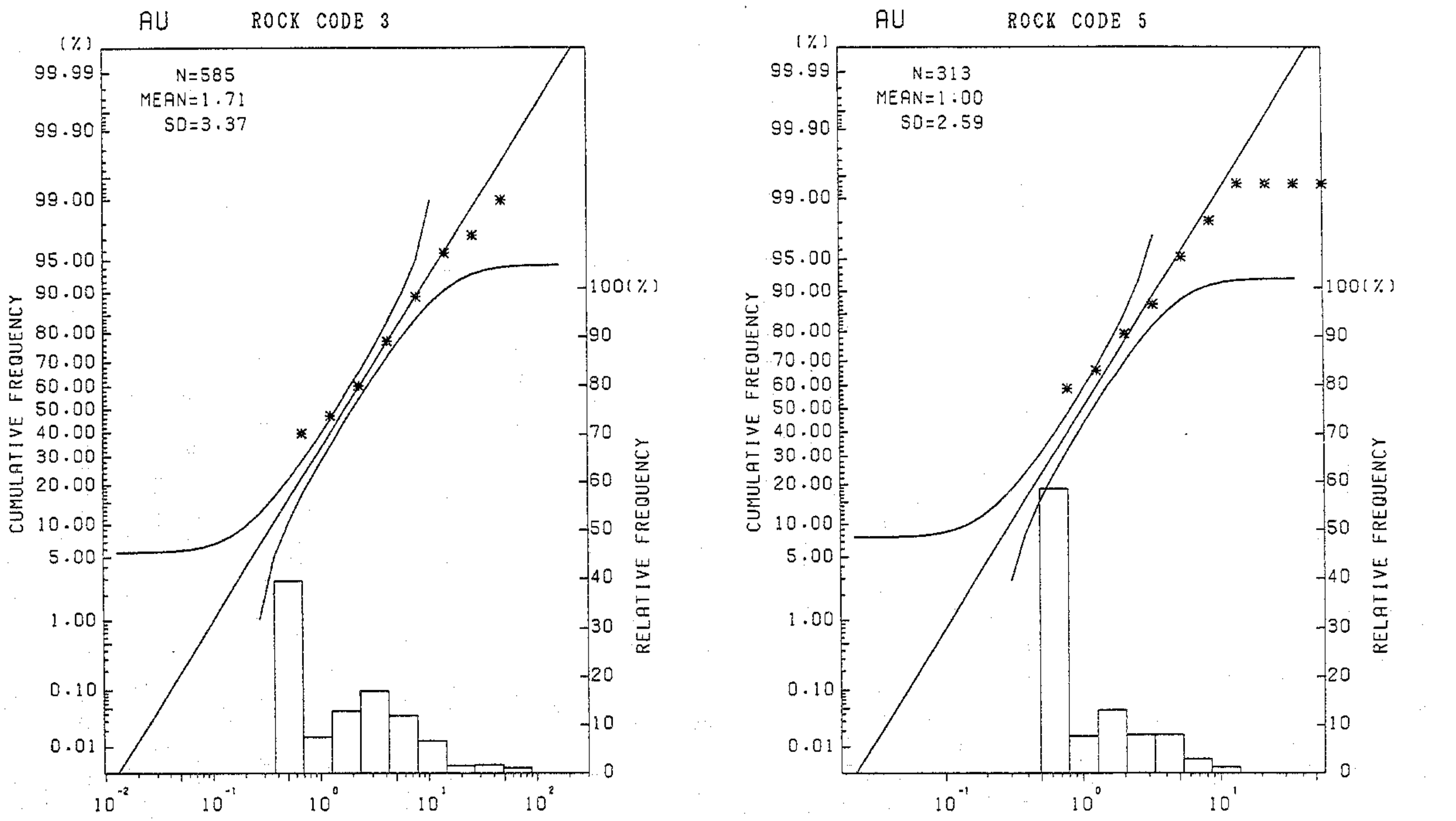


FIG. 2-5-9 Frequency Distribution and Cumulative Frequency Curve (Au;Chipfunde Zone)

TABLE 2-5-12(1) Results of Principal Component Analysis(Chipfunde Zone:R.C. 3)

PRINCIPAL COMPONENT	EIGEN-VALUE	CONTRIBUTION RATIO	FACTOR LOADING										SCORE	
			Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe	MAXIMUM	MINIMUM
Z1	3.3440	0.3344 (0.3344)	-0.06	-0.28	0.01	0.07	0.67	-0.12	0.74	0.77	0.88	0.94	4.442	-1.789
Z2	1.8750	0.1875 (0.5219)	0.24	0.52	0.69	0.31	0.56	0.50	0.48	-0.43	-0.29	0.12	5.355	-1.847
Z3	1.0010	0.1001 (0.6220)	0.86	0.18	-0.15	-0.42	-0.10	0.04	0.07	0.09	0.11	0.00	7.324	-1.631
Z4	0.9650	0.0965 (0.7185)	0.31	0.12	-0.37	0.81	-0.05	-0.23	0.03	0.05	-0.02	-0.04	8.494	-1.548
Z5	0.8750	0.0875 (0.8060)	-0.22	0.39	-0.34	0.04	-0.23	0.65	-0.02	0.21	0.18	0.20	8.287	-1.720

TABLE 2-5-12(2) Results of Principal Component Analysis(Chipfunde Zone:R.C. 5)

PRINCIPAL COMPONENT	EIGEN-VALUE	CONTRIBUTION RATIO	FACTOR LOADING										SCORE	
			Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe	MAXIMUM	MINIMUM
Z1	2.9970	0.2997 (0.2997)	0.02	-0.02	0.41	0.15	0.85	0.06	0.43	0.61	0.87	0.88	3.277	-1.649
Z2	1.3870	0.1387 (0.4384)	-0.26	0.60	0.29	0.40	-0.02	0.49	0.60	-0.26	-0.20	-0.11	6.423	-2.347
Z3	1.0320	0.1032 (0.5416)	0.49	0.60	0.06	-0.49	-0.13	-0.34	0.23	0.07	0.05	0.00	3.595	-1.728
Z4	0.9660	0.0966 (0.6382)	0.81	-0.24	0.19	0.29	0.10	0.25	-0.02	-0.20	-0.11	-0.02	6.066	-1.233
Z5	0.9320	0.0932 (0.7314)	-0.18	-0.29	0.62	-0.28	0.14	-0.33	0.14	-0.44	-0.15	0.02	12.396	-0.427

principal component to all the principal components is about 33%, occupying one third of all. The total to the ratio of the fifth principal component amounts to 81 % approximately, so that a greater part of the fluctuation of all the components can be explained by them. However, the contribution ratio of each principal component is rather higher than other rock codes. Each component, however, except for the first and second components drops gradually and does not change markedly.

The third principal component has a strong correlation(0.86) with Au. Therefore, the component is worth notice for the exploration of gold. On the other hand, a negative medium correlation(-0.42) with Bi is observed.

Rock code 5 : As shown in TABLE 2-5-12(2), the contribution ratio for the first principal component to all the principal components is about 30 %, occupying less than one third of all. The total to the ratio of the fifth principal component amounts to 73 % approximately, so that a greater part of the fluctuation of all the components can be explained by them. However, the contribution ratio of each principal is generally small and not decisive. Each component, except for the first principal component, drops gradually and does not change markedly.

The third principal component has medium correlations(0.49~0.60) with Au, and Ag. Therefore, high scores are expected for the concentration of these indicators. On the other hand, the component also has a negative medium(-0.49) with Bi.

The fourth principal component is characterized by a strong correlation (0.81) with Au. The component is worth notice for the gold exploration , although the contribution ratio is as low as 10 %.

Au Concentration and Principal Component Scores

The concentration distribution of Au in this surveyed zone indicates an anomalous zone ($GM+\sigma \sim GM+2\sigma$) with rather good continuity in the ENE-WSW direction. The anomalous zone is located within mafic granulite and its extension direction parallels that of the country rock.

Principal components highly related to Au are the third component for code 3 and the fourth component for code 5.

The distribution of the high scores overlaps with the geochemical anomalous zone , reflecting the strong relationship between the factor loadings of the principal components and Au.

5-7 FUMURE ZONE

5-7-1 Soil Sampling

Soil sampling lines were set on north-south direction due to east-west occurrence of mineralized signs and B-horizon soil was taken.
In general, gray soils are predominant in the southern and northwestern portions underlain by gneissose granulite of the zone and red soils in the central portion underlain by mafic granulite.
Soils taken over the mafic granulite and gneissose granulite are 374 and 322, respectively.

5-7-2 Indicators

Several mineralized signs were found within the zone. Analytical results of the soils also roughly agreed with the observations which confirmed the mineralized signs in the field. The contents on geochemical indicators compared with the zone and all studied zone by phase Ⅱ are shown as follows:

FUMURE ZONE

ROCK CODE	Au (PPB)	Ag (PPM)	As (PPM)	Bi (PPM)	Cu (PPM)	F (PPM)	Zn (PPM)	Cr (PPM)	Ni (PPM)	Fe (%)
ALL ZONES										
R.C.3	1.73	0.63	2.25	0.06	61.57	26.42	90.47	215.97	153.32	6.89
R.C.4	0.98	0.48	0.58	0.05	8.82	23.02	40.41	30.92	11.77	1.96
R.C.5	0.93	0.53	0.66	0.05	12.86	30.30	37.45	44.07	19.23	1.90
FUMURE ZONE(SOIL)										
R.C.3	2.89	0.77	14.29	0.07	66.60	36.17	114.06	518.51	398.48	8.99
R.C.4	----	----	----	----	-----	-----	-----	------	-----	----
R.C.5	0.91	0.51	0.97	0.07	12.71	31.23	45.77	49.18	32.85	1.62

<u>Background Geology and Indicator Content</u>

Accordingly, geochemical characteristics for respective geological units are shown in TABLE 2-5-13. According to this table, geochemical characteristics on each element are summarized as follows:

<u>Au</u> : Geometric means(GMs) of rock code 3 and rock code 5 of all zones are 1.73 and 0.93 ppb, respectively but rock code 3 in the zone has larger value of 2.89 ppb.
A comparison on the content of indicator between the zone and other area based on data by Flanagan(1976) and Vinogradov(1962) was made. Au content in the zone can be pointed out to be rather high. The maximum value in the zone is 221 ppb.

<u>Ag</u> : GMs of rock code 3 and rock code 5 of all zone are 0.63 and 0.53 ppm, respectively but rock code 3 in the zone has larger value of 0.77 ppm.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. Ag content in the zone rather high, with a maximum value of 4.70 ppm.

<u>As</u> : Since approximately 50 % of data indicated content below its detection

TABLE 2-5-13 Statistical Parameter of Indicators(Fumure Zone)

SOIL <ROCK CODE>	NO. OF SAMPLE		GEOMETRIC MEAN (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)
MAFIC GRANULITE <3>	374	←g.m.	2.89	0.77	14.29	0.07	66.60	36.17	114.06	518.51	398.48	8.99
		←s.d.	4.36	1.78	6.30	1.88	1.60	2.20	1.40	3.55	2.82	1.42
FELSIC GRANULITE <4>	0		—	—	—	—	—	—	—	—	—	—
GNEISSOSE GRANULITE <5>	322	←g.m.	0.91	0.51	0.97	0.07	12.71	31.23	45.77	49.18	32.85	1.62
		←s.d.	2.23	2.04	2.87	2.32	1.95	2.21	1.40	4.09	3.73	1.82

SOIL <ROCK CODE>	THRESHOLD (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)	
MAFIC GRANULITE <3>	12.61	1.37	90.07	0.13	107	80	159	1,838	1,123	12.80	←g.m.+ s.d
	54.99	2.44	567.71	0.24	171	175	222	6,516	3,167	18.23	←g.m.+2 s.d.
	239.86	4.35	3,578	0.44	273	385	310	23,100	8,927	25.96	←g.m.+3 s.d.
FELSIC GRANULITE <4>	—	—	—	—	—	—	—	—	—	—	
GNEISSOSE GRANULITE <5>	2.03	1.03	2.77	0.16	25	69	64	201	122	2.94	←g.m.+ s.d
	4.52	2.11	7.97	0.38	48	152	90	824	456	5.35	←g.m.+2 s.d.
	10.08	4.31	22.88	0.89	94	335	127	3,372	1,702	9.72	←g.m.+3 s.d.

SOIL <ROCK CODE>	NO. OF SAMPLE	MINIMUM VALUE (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)
MAFIC GRANULITE <3>	374	0.50	0.25	0.50	0.05	16.00	10.00	50.00	1.00	40.00	2.20
FELSIC GRANULITE <4>	0	—	—	—	—	—	—	—	—	—	—
GNEISSOSE GRANULITE <5>	1,154	0.50	0.25	0.50	0.05	4.00	10.00	21.00	0.50	2.00	0.54

SOIL <ROCK CODE>	MAXIMUM VALUE (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)
MAFIC GRANULITE <3>	221.00	4.70	1,360	2.10	295	340	299	5,710	3,150	18.58
FELSIC GRANULITE <4>	—	—	—	—	—	—	—	—	—	—
GNEISSOSE GRANULITE <5>	8.00	4.00	74.00	2.40	98	210	174	883	1,310	12.77

g.m. : geometric mean　　s.d. : standard deviation

ROCK CODE	Au <PPB>	Ag <PPM>	As <PPM>	Bi <PPM>	Cu <PPM>	F <PPM>	Zn <PPM>	Cr <PPM>	Ni <PPM>	Fe <%>
A L L ZONES										
R. C. 3	1. 73	0. 63	2. 25	0. 06	61. 57	26. 42	90. 47	215. 97	153. 32	6. 89
R. C. 4	0. 98	0. 48	0. 58	0. 05	8. 82	23. 02	40. 41	30. 92	11. 77	1. 96
R. C. 5	0. 93	0. 53	0. 66	0. 05	12. 86	30. 30	37. 45	44. 07	19. 23	1. 90
F U M U R E ZONE (SOIL)										
R. C. 3	2. 89	0. 77	14. 29	0. 07	66. 60	36. 17	114. 06	518. 51	398. 48	8. 99
R. C. 4	----	----	----	----	----	----	----	----	----	----
R. C. 5	0. 91	0. 51	0. 97	0. 07	12. 71	31. 23	45. 77	49. 18	32. 85	1. 62

ROCK TYPE	Au <PPB>	Ag <PPM>	As <PPM>	Bi <PPM>	Cu <PPM>	F <PPM>	Zn <PPM>	Cr <PPM>	Ni <PPM>	Fe <%>
MAFIC ROCK	4. 00	0. 10	2. 00	0. 01	100	370	130	200	160	8. 56
INT. ROCK	----	0. 07	2. 40	0. 01	35	500	72	50	55	5. 85
FELSIC ROCK	4. 50	0. 05	1. 50	0. 01	20	800	8	25	8	2. 70
GRANITE	1. 00	0. 05	0. 25	0. 43	12	1, 250	85	7	5	1. 85
MICA SCHIST	----	0. 30	----	----	30	----	70	70	50	4. 90
<After Flanagan(1976) & Vinogradov(1962)>										
F U M U R E ZONE (ROCK)										
R. C. 3	0. 50	0. 25	6. 00	0. 05	8	93	101	1, 585	472	7. 42
R. C. 4	----	----	----	----	----	----	----	----	----	----
R. C. 5	0. 50	0. 25	1. 00	0. 05	7	68	45	3	12	1. 16

INT. ROCK : INTERMEDIATE ROCK
---- : NO DATA

limit(1.00 ppm) except rock code 3, it is difficult to clarify its geochemical character in the zone.
A comparison on content of the indicator between the zone and other area based on data by Flanagan(1976) and Vinogradov(1962) was made. Content of rock code 3 in the zone is fairly high, with maximum value of 1,360 ppm.

Bi : Since approximately 80 % of data indicated content below its detection limit(0.10 ppm), it is difficult to clarify its geochemical character in the zone.
A comparison on content of the indicator between the zone and other area based on data by Flanagan(1976) and Vinogradov(1962) was made. Content in the zone is nearly the same. Maximum value in the zone is 2.40 ppm.

Cu : GMs of rock code 3 and rock code 5 of all zone are 61.57 and 12.86 ppm, respectively but rock code 3 in the zone has larger value of 66.60 ppm.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. Copper content in rock code 3 and rock code 5 of the zone is nearly the same as the area.
The maximum value in the zone is 295 ppm.

F : GMs of rock code 3 and rock code 5 of the zone are 26.42 and 30.30 ppm, respectively but rock code 3 in the zone has larger value of 36.17 ppm.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. F content in the zone is fairly low, with maximum value of 340 ppm.

Zn : GMs of rock code 3 and rock code 5 of the zone are 90.47 and 37.45 ppm, respectively but rock code 3 in the zone has larger value of 114.06 ppm.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Zn content in the zone is normal. The maximum value in the zone is 299 ppm.

Cr : GMs of rock code 3 and rock code 5 of the zone are 215.97 and 44.07 ppm, respectively but rock code 5 in the zone has larger value of 518.51 ppm.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Cr content of rock code 5 of the zone is almost same but the content of rock code 3 is nearly twice as much as the area compared. However, the indicator's values fluctuate greatly for rock types according to Flanagan's data. The maximum value in the zone is 5,710 ppm.

Ni : Ni has almost same characteristics with that of Cr. GMs of rock code 3 and rock code 5 of the zone are 153.32 and 19.23 ppm but rock code 3 in the zone has larger value of 398.48 ppm.
A comparison on content of the indicator between the zone and other area based on data by Flanagan(1976) and Vinogradov(1962) made clear that Ni content of rock code 5 of the zone is almost the same for the area compared but rock code 3 of the

zone has fairly higher than the area. However, values of Flanagan's data fluctuate greatly for various rock types. The maximum value in the zone is 3,150 ppm.

Fe : GMs of rock code 3 and rock code 5 of the zone are 6.89 and 1.90 %, respectively but rock code 3 in the zone has larger value of 8.99 %.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Fe content in the zone is normal. The maximum value in the zone is 18.58 %.

Determination of Threshold Values

An interpretation was conducted on the cumulative frequency curve of Au in each geological unit. The results are summarized as follows:

Rock code 3 : Au shows a kind of dual distribution as shown in FIG.2-5-10. Geochemical values principally consist of two populations, frequency of each population is about 30 %, and 70 %. The threshold value(GM + 2 δ)determined statistically indicates the upper 2.5 % level of the second population.

Rock code 5 : Au shows a kind of dual distribution as shown in FIG.2-5-10. Geochemical values principally consist of two populations, frequency of each population is about 60 %, and 40 %. The threshold value(GM + 2 δ)determined statistically corresponds to the upper 5 % level of the second population.

5-7-3 Interpretation

Principal Component Analysis

After determining the correlation coefficients between indicators, which cannot be extracted by single variable analyses, from multi-dimensional distribution characteristics, these were applied to the determination of character and the evaluation of geochemical anomalies. Results of analysis are shown in TABLE 2-5-14.
General characteristics of principal components highly related to Au are summarized below:

Rock code 3 : As shown in TABLE 2-5-14(1), the contribution ratio for the first principal component to all the principal components is about 27%, occupying less than one fourth of all. The total to the ratio of the fifth principal component amounts to 80 % approximately, so that a greater part of the fluctuation of all the components can be explained by them. However, the contribution ratio of each principal is general small and not decisive. Each component drops gradually and does not change markedly.

The second principal component is characterized by a high correlation(0.80~0.82) of Au and Ag. Therefore, the principal component is worth notice for the exploration of gold and silver, although the contribution ratio is as small as 17 %.

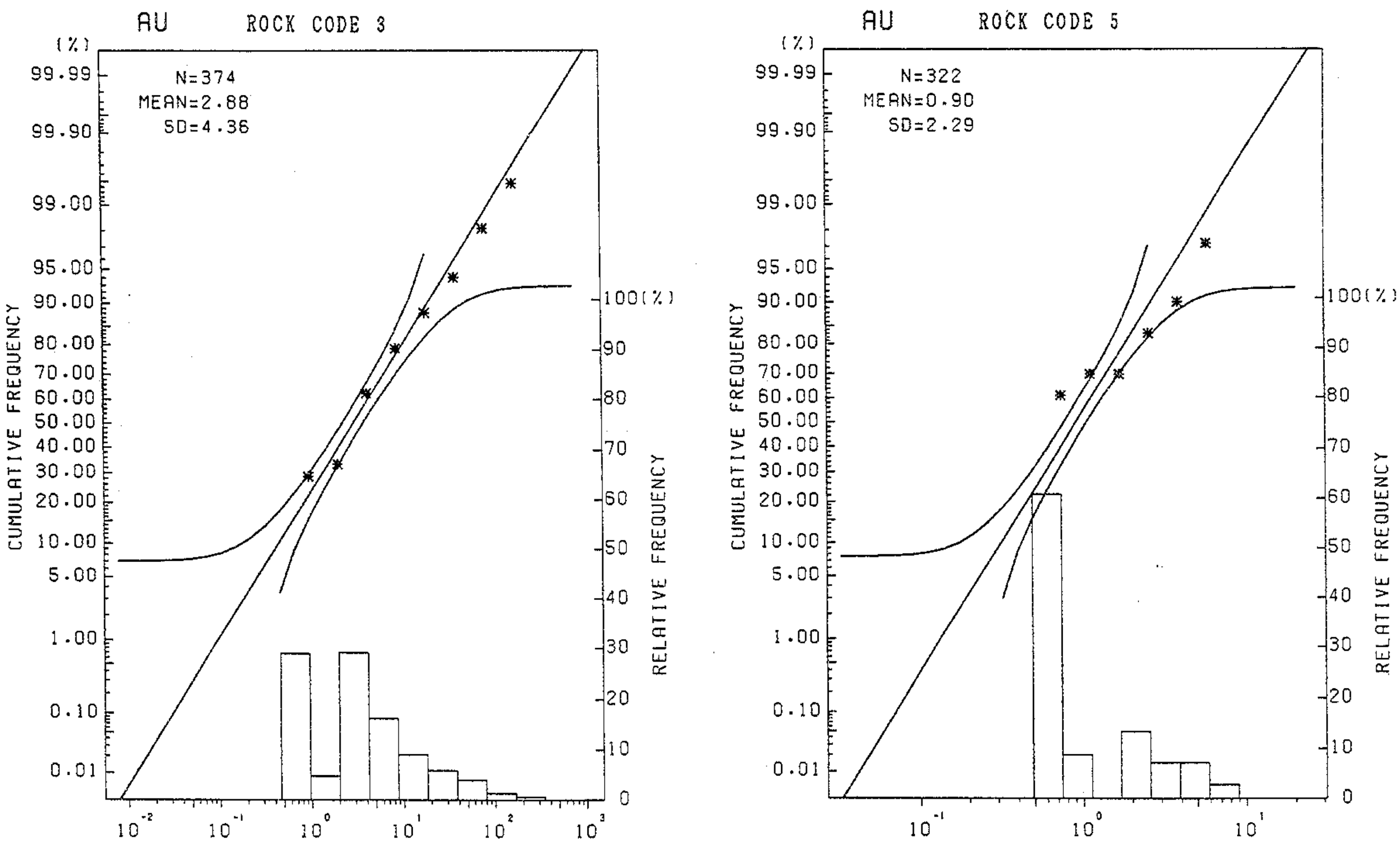


FIG. 2-5-10 Frequency Distribution and Cumulative Frequency Curve (Au;Fumure Zone)

TABLE 2-5-14(1) Results of Principal Component Analysis(Fumure Zone:R.C. 3)

PRINCIPAL COMPONENT	EIGEN-VALUE	CONTRIBUTION RATIO	FACTOR LOADING										SCORE	
			Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe	MAXIMUM	MINIMUM
Z1	2.6600	0.2660 (0.2660)	0.13	-0.38	0.23	0.39	0.54	-0.30	0.76	0.58	0.57	0.81	5.588	-2.063
Z2	1.6800	0.1680 (0.4340)	0.82	-0.39	0.80	0.12	-0.24	-0.18	-0.14	-0.08	-0.07	-0.28	4.018	-1.304
Z3	1.4740	0.1474 (0.5814)	-0.03	0.01	-0.04	-0.05	-0.71	0.26	-0.32	0.59	0.66	0.03	8.514	-0.707
Z4	1.2450	0.1245 (0.7059)	0.32	0.60	0.17	0.32	0.15	0.76	0.24	0.00	0.03	-0.04	6.628	-1.409
Z5	0.9170	0.0917 (0.7976)	0.01	-0.22	-0.35	0.83	-0.09	-0.03	-0.19	-0.06	-0.07	-0.09	13.692	-1.715

TABLE 2-5-14(2) Results of Principal Component Analysis(Fumure Zone:R.C. 5)

PRINCIPAL COMPONENT	EIGEN-VALUE	CONTRIBUTION RATIO	FACTOR LOADING										SCORE	
			Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe	MAXIMUM	MINIMUM
Z1	3.0880	0.3088 (0.3088)	0.13	0.04	0.46	-1.15	0.88	0.17	0.77	0.46	0.57	0.95	6.788	-1.225
Z2	1.6220	0.1622 (0.4710)	-0.44	0.66	-0.18	0.53	0.23	0.49	0.35	-0.26	-0.44	0.02	5.217	-1.706
Z3	1.1040	0.1104 (0.5814)	0.28	0.34	-0.24	0.07	-0.16	0.52	-0.29	0.60	0.31	-0.11	4.548	-2.618
Z4	0.9620	0.0962 (0.6776)	0.64	0.24	0.47	0.44	-0.07	-0.12	-0.04	-0.23	-0.02	-0.02	6.116	-1.234
Z5	0.8510	0.0851 (0.7627)	-0.34	-0.16	-0.07	0.65	-0.04	-0.30	-0.14	0.14	0.38	0.09	7.061	-0.981

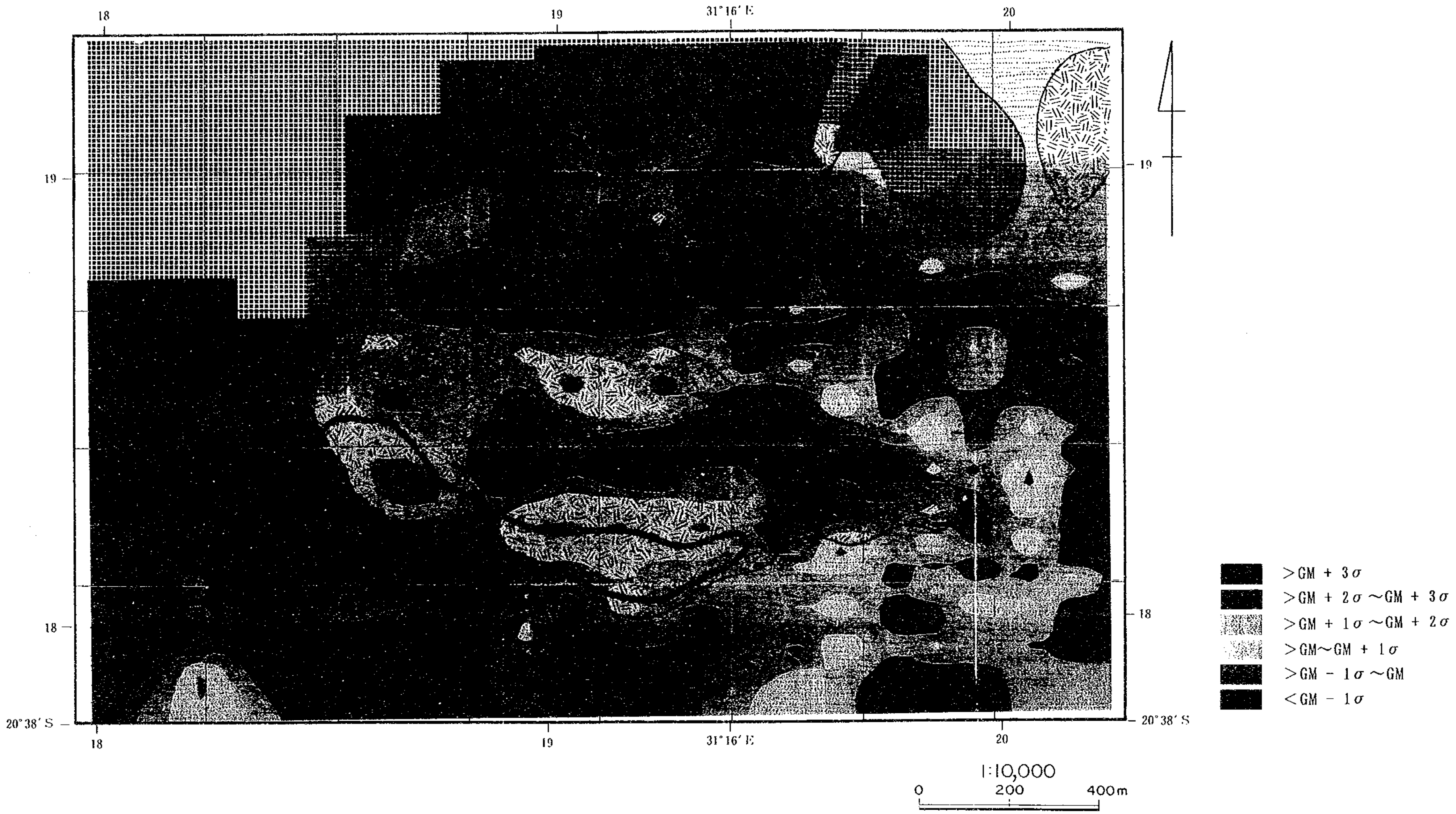


FIG. 2-5-11 Gold Distribution(Fumure Zone)

Rock code 5 : As shown in TABLE 2-5-14(2), the contribution ratio for the first principal component to all the principal components is about 31%, occupying less than one third of all. The total to the ratio of the fifth principal component amounts to 76 % approximately, so that a greater part of the fluctuation of all the components can be explained by them. However, the contribution ratio of each principal is generally small and not decisive. Each component, except the first principal component, drops gradually and does not change markedly.

The second principal component is characterized by a medium correlation (0.49 ~0.66) with Ag, Bi, and F. On the other hand, a medium negative correlation (-0.44) with Au and Ni. High scores and low negative scores are expected in the concentration of these indicators.

The fourth principal component is characterized by a medium correlation (0.44 ~0.64) with Au, As, and Bi. The component is worth notice for the gold exploration , although the contribution ratio is as low as 10 %.

Au Concentration and Principal Component Scores

As shown in FIG. 2-5-11, the concentration distribution of Au in the surveyed zone indicates continuous anomalies (GM+ σ ~ GM+2 σ), which form an elliptical figure, a little to the south of the central part of this zone. These anomalies can also be estimated to be similar to those of the Jegede zone, i.e., hydromorphic anomalies in which Au has been transported from a higher portions.

Principal components highly related to Au are the second component for code 3 and the fourth component for code 5.
The distribution of the high scores is scattered, indicating no promising zone.

5-8 NYAHONDO ZONE

5-8-1 Soil Sampling

Soil sampling lines were set on north-south direction due to east-west occurrence of mineralized signs concordant with the foliation of gneissose granulite and B-horizon soil was taken.
Soils taken over gneissose granulite are 1,057.

5-8-2 Indicators

No promising geochemical anomalies were detected although several mineralized signs were found within the zone. The contents on geochemical indicators compared with the zone and all studied zone by phase II are shown as follows:

NYAHONDO ZONE

ROCK CODE	Au (PPB)	Ag (PPM)	As (PPM)	Bi (PPM)	Cu (PPM)	F (PPM)	Zn (PPM)	Cr (PPM)	Ni (PPM)	Fe (%)
ALL ZONES										
R.C.3	1.73	0.63	2.25	0.06	61.57	26.42	90.47	215.97	153.32	6.89
R.C.4	0.98	0.48	0.58	0.05	8.82	23.02	40.41	30.92	11.77	1.96
R.C.5	0.93	0.53	0.66	0.05	12.86	30.30	37.45	44.07	19.23	1.90
NYAHONDO ZONE(SOIL)										
R.C.3	----	----	----	----	-----	-----	-----	------	-----	----
R.C.4	----	----	----	----	-----	-----	-----	------	-----	----
R.C.5	1.05	0.59	0.57	0.05	31.41	38.26	37.74	40.03	19.73	1.79

<u>Background Geology and Indicator Content</u>

Accordingly, geochemical characteristics for respective geological units are shown in TABLE 2-5-15. According to this table, geochemical characteristics on each element are summarized as follows:

<u>Au</u> : Geometric means(GMs) of rock code 5 of all zones are 0.93 ppb but rock code 5 in the zone has larger value of 1.05 ppb. A comparison on the content of indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. Au content in the zone can be pointed out to be rather low. The maximum value in the zone is 133 ppb.

<u>Ag</u> : GMs of rock code 5 of all zone are 0.53 ppm but GM is 0.59 ppm of rock code 5. A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. Ag content in the zone rather high, with a maximum value of 2.70 ppm.

<u>As</u> : Since more than 80 % of data indicated content below its detection limit(1.00 ppm), it is difficult to clarify its geochemical character in the zone.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. Content of rock code 5 in the zone is fairly low, with maximum value of 3.00 ppm.

<u>Bi</u> : Since almost all data indicated content below its detection limit(0.10 ppm), it is difficult to clarify its geochemical character in the zone.
GMs of all zones and the zone are both 0.05 ppm. There is no difference among the GMs of the element. A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. Content in the zone is nearly the same. Maximum value in the zone is 0.10 ppm.

<u>Cu</u> : GM of rock code 5 of all zones is 12.86 ppm but rock code 5 in the zone has value of 31.41 ppm. A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. Copper content in rock code 5 of the zone is nearly the same as the areas.
The maximum value in the zone is 324 ppm.

<u>F</u> : GM of rock code 5 of all zones is 30.30 but rock code 5 in the zone has value of 38.26 ppm. A comparison on content of the indicator between the zone and

TABLE 2-5-15 Statistical Parameter of Indicators(Nyahondo Zone)

S O I L <ROCK CODE>	NO. OF SAMPLE	GEOMETRIC MEAN (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)	
MAFIC GRANULITE <3>	0	—	—	—	—	—	—	—	—	—	—	
FELSIC GRANULITE <4>	0	—	—	—	—	—	—	—	—	—	—	
GNEISSOSE GRANULITE <5>	1,057	1.05	0.59	0.57	0.05	31.41	38.26	37.74	40.03	19.73	1.79	←g.m.
		2.03	1.58	2.12	1.16	2.99	2.55	2.15	2.66	4.30	2.07	←s.d.

S O I L <ROCK CODE>	THRESHOLD (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)	
MAFIC GRANULITE <3>	—	—	—	—	—	—	—	—	—	—	
FELSIC GRANULITE <4>	—	—	—	—	—	—	—	—	—	—	
GNEISSOSE GRANULITE <5>	2.14	0.93	1.20	0.06	94	97	81	107	85	3.70	←g.m.+ s.d
	4.33	1.47	2.55	0.07	280	248	174	284	365	7.66	←g.m.+2 s.d.
	8.79	2.32	5.39	0.08	838	631	374	757	1,569	15.86	←g.m.+3 s.d.

S O I L <ROCK CODE>	NO. OF SAMPLE	MINIMUM VALUE (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)
MAFIC GRANULITE <3>	0	—	—	—	—	—	—	—	—	—	—
FELSIC GRANULITE <4>	0	—	—	—	—	—	—	—	—	—	—
GNEISSOSE GRANULITE <5>	1,057	0.50	0.25	0.50	0.05	5.00	10.00	13.00	1.00	3.00	0.46

S O I L <ROCK CODE>	MAXIMUM VALUE (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)
MAFIC GRANULITE <3>	—	—	—	—	—	—	—	—	—	—
FELSIC GRANULITE <4>	—	—	—	—	—	—	—	—	—	—
GNEISSOSE GRANULITE <5>	133.00	2.70	3.00	0.10	324	640	279	313	302	5.54

g.m. : geometric mean   s.d. : standard deviation

ROCK CODE	Au (PPB)	Ag (PPM)	As (PPM)	Bi (PPM)	Cu (PPM)	F (PPM)	Zn (PPM)	Cr (PPM)	Ni (PPM)	Fe (%)
ALL ZONES										
R.C.3	1.73	0.63	2.25	0.06	61.57	26.42	90.47	215.97	153.32	6.89
R.C.4	0.98	0.48	0.58	0.05	8.82	23.02	40.41	30.92	11.77	1.96
R.C.5	0.93	0.53	0.66	0.05	12.86	30.30	37.45	44.07	19.23	1.90
NYAHONDO ZONE (SOIL)										
R.C.3	----	----	----	----	----	----	----	----	----	----
R.C.4	----	----	----	----	----	----	----	----	----	----
R.C.5	1.05	0.59	0.57	0.05	31.41	38.26	37.74	40.03	19.73	1.79

ROCK TYPE	Au (PPB)	Ag (PPM)	As (PPM)	Bi (PPM)	Cu (PPM)	F (PPM)	Zn (PPM)	Cr (PPM)	Ni (PPM)	Fe (%)
MAFIC ROCK	4.00	0.10	2.00	0.01	100	370	130	200	160	8.56
INT. ROCK	----	0.07	2.40	0.01	35	500	72	50	55	5.85
FELSIC ROCK	4.50	0.05	1.50	0.01	20	800	6	25	8	2.70
GRANITE	1.00	0.05	0.25	0.43	12	1,250	85	7	5	1.85
MICA SCHIST	----	0.30	----	----	30	----	70	70	50	4.90
<After Flanagan(1976) & Vinogradov(1962)>										
NYAHONDO ZONE (ROCK)										
R.C.3	----	----	----	----	----	----	----	----	----	----
R.C.4	0.50	0.25	1.00	0.05	33	31	17	219	9	0.95
R.C.5	1.82	0.25	0.63	0.05	12	133	39	19	18	1.71

INT. ROCK : INTERMEDIATE ROCK
---- : NO DATA

After Flanagan(1976) & Vinogradov(1962)

other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. F content in the zone is fairly low, with maximum value of 640 ppm.

Zn : GM of rock code 5 of all zone is 37.45 ppm but rock code 5 in the zone has value of 37.74 ppm. A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Zn content in the zone is nearly same. The maximum value in the zone is 279 ppm.

Cr : GM of rock code 5 of all zone is 44.07 ppm but rock code 5 in the zone has value of 40.03 ppm. A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Cr content of rock code 5 of the zone is almost same to that of the areas compared. However, the indicator's values fluctuate greatly for rock types according to Flanagan's data. The maximum value in the zone is 313 ppm.

Ni : Ni has almost same characteristics with that of Cr. GM of rock code 5 of all zones is 19.23 ppm but rock code 5 has value of 19.73 ppm. A comparison on content of the indicator between the zone and other area based on data by Flanagan(1976) and Vinogradov(1962) made clear that Ni content of rock code 5 of the zone is almost the same for the area compared. However, values of Flanagan's data fluctuate greatly for various rock types. The maximum value in the zone is 302 ppm.

Fe : GM of rock code 5 of all zones are 1.90 % but rock code 5 in the zone has value of 1.79 %. A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Fe content in the zone is almost the same for the area compared. The maximum value in the zone is 5.54 %.

Determination of Threshold Values

An interpretation was conducted on the cumulative frequency curve of Au in rock code 5. The results are summarized as follows:

Rock code 5 : Au shows a kind of dual distribution as shown in FIG.2-5-12. Geochemical values principally consist of two populations, frequency of each population is about 55 %, and 45 %. The threshold value(GM + 2δ)determined statistically corresponds to the higher portion(upper 6 % level) of the second population.

The cumulative frequency curve of the second population shows negative skewness.

5-8-3 Interpretation

Principal Component Analysis

After determining the correlation coefficients between indicators, which cannot be extracted by single variable analyses, from multi-dimensional distribution characteristics, these were applied to the determination of character

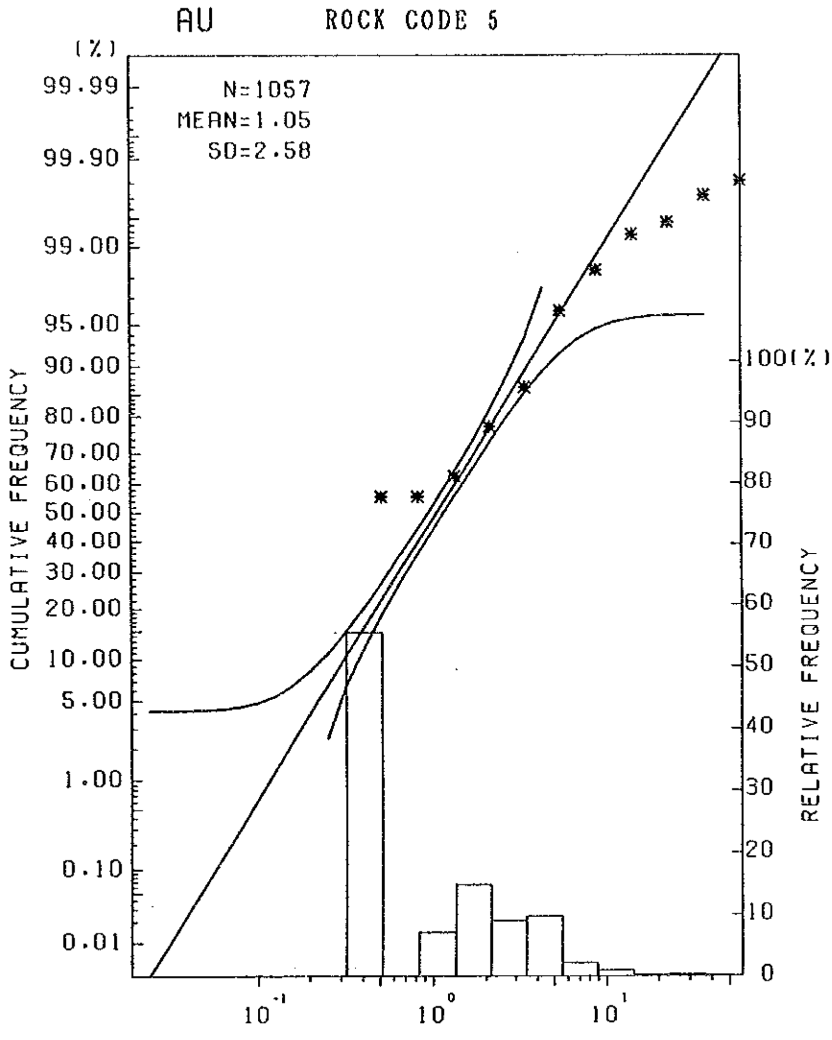


FIG. 2-5-12 Frequency Distribution and Cumulative Frequency Curve
(Au;Nyahondo Zone)

TABLE 2-5-16 Results of Principal Component Analysis(Nyahondo Zone:R.C. 5)

PRINCIPAL COMPONENT	EIGEN-VALUE	CONTRIBUTION RATIO	FACTOR LOADING										SCORE	
			Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe	MAXIMUM	MINIMUM
Z1	2.3830	0.2383 (0.2383)	0.13	0.14	-0.05	0.13	0.68	0.40	0.51	0.55	0.69	0.82	3.919	-1.958
Z2	1.2350	0.1235 (0.3618)	-0.03	0.73	0.32	0.05	-0.02	0.37	0.13	-0.48	-0.38	0.27	8.577	-2.580
Z3	1.0990	0.1099 (0.4717)	-0.51	-0.18	-0.32	0.65	0.14	-0.24	0.29	-0.30	-0.15	0.14	16.663	-3.758
Z4	0.9980	0.0998 (0.5715)	0.47	-0.03	0.51	0.61	-0.02	-0.30	-0.17	0.11	-0.02	0.06	19.186	-1.252
Z5	0.9760	0.0976 (0.6691)	-0.62	-0.26	0.68	-0.12	0.10	0.06	-0.12	0.07	0.09	0.05	8.766	-2.545

and the evaluation of geochemical anomalies. Results of analysis are shown in TABLE 2-5-16.

General characteristics of principal components intimately related to Au are summarized below:

Rock code 5 : As shown in TABLE 2-5-16, the contribution ratio for the first principal component to all the principal components is about 23%, occupying less than one fourth of all. The total to the ratio of the fifth principal component amounts to 67 % approximately, so that a greater part of the fluctuation of all the components can be explained by them. However, the contribution ratio of each principal is generally small and not decisive. Each component, except the first principal component, drops gradually and does not change markedly.

The third principal component has a medium correlation(0.65) with Bi, and negative correlation(-0.51) with Au also was detected. Therefore, high score or low negative score are expected for the concentration of these indicators. This component is worth notice for the gold exploration, although the contribution ratio is as low as 11%.

The fourth principal component is characterized by medium correlations (0.47 ~ 0.61) with Au, As, and Bi. The component is also worth notice for the gold exploration, although the contribution ratio is as low as 10 %.

The fifth principal component show medium correlations(0.68) with As and a negative medium correlation(-0.62) with Au. No any significant geochemical characteristics were detected. The component must be also worth notice for the gold exploration, although the contribution ratio is as low as 10 %.

Au Concentration and Principal Component Scores

The concentration distribution of Au in the surveyed area indicates anomalies distributed in a restricted zone and showing weak sense in the E-W direction. The anomalous zone of this zone may be a combination of the above anomalies and those stretching in the N-W direction. However, no noteworthy results were observed either in continuity or anomalous values.

The principal component highly related to Au is the fifth component for code 5 (negative correlation). The distriution of these scores indicates that no promising zone could be specified.

5-9 CHAMBURUKIRA ZONE

5-9-1 Soil Sampling

Soil sampling lines were set on north-south direction due to east-west occurrence of mineralized signs such as Fe-hydroxide, quartz, k-feldspar, etc., and B-horizon soil was taken.

Soils taken over the felsic granulite and gneissose granulite are 571 and 760, respectively.

5-9-2 Indicators

Several mineralized signs were found within the zone. Analytical results of the soils did not agreed with the observations which confirmed the mineralized signs such as Fe-hydroxide, quartz, k-feldspar, etc. in the zone.
The contents on geochemical indicators compared with the zone and all studied zones by phase II are shown as follows:

CHAMBURUKIRA ZONE

ROCK CODE	Au (PPB)	Ag (PPM)	As (PPM)	Bi (PPM)	Cu (PPM)	F (PPM)	Zn (PPM)	Cr (PPM)	Ni (PPM)	Fe (%)
ALL ZONES										
R.C.3	1.73	0.63	2.25	0.06	61.57	26.42	90.47	215.97	153.32	6.89
R.C.4	0.98	0.48	0.58	0.05	8.82	23.02	40.41	30.92	11.77	1.96
R.C.5	0.93	0.53	0.66	0.05	12.86	30.30	37.45	44.07	19.23	1.90
CHAMBURUKIRA ZONE(SOIL)										
R.C.3	----	----	----	----	-----	-----	-----	------	-----	----
R.C.4	0.98	0.30	0.56	0.05	10.88	12.88	35.64	28.63	14.59	1.73
R.C.5	0.86	0.38	0.63	0.05	10.63	18.08	36.48	31.89	16.21	1.69

Background Geology and Indicator Content

Accordingly, geochemical characteristics for respective geological units are shown in TABLE 2-5-17. According to this table, geochemical characteristics on each element are summarized as follows:

Au : Geometric means(GMs) of rock code 4 and rock code 5 of all zones are 0.98 and 0.93 ppb, respectively but rock code 4 in the zone has larger value of 0.98 ppb.
A comparison on the content of indicator between the zone and other area based on data by Flanagan(1976) and Vinogradov(1962) was made. Au content in the zone can be pointed out to be low. The maximum value in the zone is 8 ppb.

Ag : GMs of rock code 4 and rock code 5 of all zones are 0.48 and 0.53 ppm, respectively but rock code 5 has larger value of 0.38 ppm.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. Ag content in the zone is rather high, with a maximum value of 2.00 ppm.

As : Since approximately 70 % of data indicated content below its detection limit(1.00 ppm), it is difficult to clarify its geochemical character in the zone.
A comparison on content of the indicator between the zone and other area based on data by Flanagan(1976) and Vinogradov(1962) was made. Content of the indicator in the zone is fairly low, with maximum value of 36 ppm.

Bi : Since almost all data indicated content below its detection limit(0.10 ppm), it is difficult to clarify its geochemical character in the zone.
GMs of all zones are 0.05 and 0.05 ppm, respectively.
A comparison on content of the indicator between the zone and other area based

TABLE 2-5-17 Statistical Parameter of Indicators(Chamburukira Zone)

SOIL <ROCK CODE>	NO. OF SAMPLE		GEOMETRIC MEAN (PPM)										
			Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)	
MAFIC GRANULITE <3>	0		—	—	—	—	—	—	—	—	—	—	
FELSIC GRANULITE <4>	571		0.98	0.30	0.56	0.05	10.88	12.88	35.64	28.63	14.59	1.73	←g.m.
			2.32	1.48	1.33	1.21	1.71	1.64	1.54	4.14	2.45	1.64	←s.d.
GNEISSOSE GRANULITE <5>	760		0.86	0.38	0.63	0.05	10.63	18.08	36.48	31.89	16.21	1.69	←g.m.
			2.19	1.62	1.59	1.18	1.72	1.98	1.68	2.94	2.23	1.68	←s.d.

SOIL <ROCK CODE>	THRESHOLD (PPM)										
	Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)	
MAFIC GRANULITE <3>	—	—	—	—	—	—	—	—	—	—	
FELSIC GRANULITE <4>	2.29	0.45	0.75	0.06	19	21	55	118	36	2.83	←g.m.+ s.d
	5.31	0.66	0.99	0.07	32	35	84	490	88	4.63	←g.m.+2 s.d.
	12.35	0.98	1.32	0.09	55	57	129	2,024	215	7.57	←g.m.+3 s.d
GNEISSOSE GRANULITE <5>	1.89	0.61	1.00	0.06	18	36	51	94	36	2.84	←g.m.+ s.d
	4.12	0.99	1.58	0.07	31	71	103	276	81	4.76	←g.m.+2 s.d.
	9.00	1.60	2.51	0.08	54	140	172	814	181	7.98	←g.m.+3 s.d.

	NO. OF SAMPLE	MINIMUM VALUE (PPM)									
		Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)
MAFIC GRANULITE <3>	0	—	—	—	—	—	—	—	—	—	—
FELSIC GRANULITE <4>	324	0.50	0.25	0.50	0.05	0.50	10.00	13.00	1.00	0.50	0.85
GNEISSOSE GRANULITE <5>	760	0.50	0.25	0.50	0.05	1.00	10.00	4.00	1.00	2.00	0.49

	MAXIMUM VALUE (PPM)									
	Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)
MAFIC GRANULITE <3>	—	—	—	—	—	—	—	—	—	—
FELSIC GRANULITE <4>	6.00	1.80	11.00	0.10	23	450	2,350	226	621	4.64
GNEISSOSE GRANULITE <5>	8.00	2.00	36.00	5.00	93	130	174	569	576	8.14

g.m. : geometric mean s.d. : standard deviation

ROCK CODE	Au (PPB)	Ag (PPM)	As (PPM)	Bi (PPM)	Cu (PPM)	F (PPM)	Zn (PPM)	Cr (PPM)	Ni (PPM)	Fe (%)
ALL ZONES										
R.C.3	1.73	0.63	2.25	0.06	61.57	26.42	90.47	215.97	153.32	6.89
R.C.4	0.98	0.48	0.58	0.05	8.82	23.02	40.41	30.92	11.77	1.96
R.C.5	0.93	0.53	0.66	0.05	12.86	30.30	37.45	44.07	19.23	1.90
CHAMBURUKIRA ZONE (SOIL)										
R.C.3	----	----	----	----	----	----	----	----	----	----
R.C.4	0.98	0.30	0.56	0.05	10.88	12.88	35.64	28.63	14.59	1.73
R.C.5	0.86	0.38	0.63	0.05	10.63	18.08	36.48	31.89	16.21	1.69

ROCK TYPE	Au (PPB)	Ag (PPM)	As (PPM)	Bi (PPM)	Cu (PPM)	F (PPM)	Zn (PPM)	Cr (PPM)	Ni (PPM)	Fe (%)
MAFIC ROCK	4.00	0.10	2.00	0.01	100	370	130	200	160	8.56
INT. ROCK	----	0.07	2.40	0.01	35	500	72	50	55	5.85
FELSIC ROCK	4.50	0.05	1.50	0.01	20	800	6	25	8	2.70
GRANITE	1.00	0.05	0.25	0.43	12	1,250	85	7	5	1.85
MICA SCHIST	----	0.30	----	----	30	----	70	70	50	4.90
<After Flanagan(1976) & Vinogradov(1962)>										
CHAMBURUKIRA ZONE (ROCK)										
R.C.3	----	----	----	----	----	----	----	----	----	----
R.C.4	0.50	0.25	2.00	0.05	4	29	19	1	4	0.27
R.C.5	1.41	0.25	1.41	0.05	6	170	62	10	17	1.68

INT. ROCK : INTERMEDIATE ROCK
---- : NO DATA

on data by Flanagan(1976) and Vinogradov(1962) was made. Content in the zone is nearly the same. Maximum value in the zone is 5.00 ppm.

Cu : GMs of rock code 4 and rock code 5 of all zones are 8.82 and 12.86 ppm, respectively but rock code 4 has larger value of 10.88 ppm.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) was made. Copper contents in rock code 3 and rock code 5 of the zone are fairly low. The maximum value in the zone is 93 ppm.

F : GMs of rock code 4 and rock code 5 of all zones are 23.02 and 30.30 ppm, respectively but rock code 5 in the zone has larger value of 18.08 ppm.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov (1962) was made. F content in the zone is fairly low, with maximum value of 450 ppm.

Zn : GMs of rock code 4 and rock code 5 of all zones are 40.41 and 37.45 ppm, respectively but rock code 5 in the zone has larger value of 36.48 ppm.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Zn content in the zone is lower than that of the areas compared. The maximum value in the zone is 2,350 ppm.

Cr : GMs of rock code 4 and rock code 5 of the zone are 30.92 and 44.07 ppm, respectively but rock code 5 in the zone has larger value of 31.89 ppm.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Cr content of rock code 5 of the zone is almost same but the content of rock code 3 is nearly same to that of the areas compared. However, the indicator's values fluctuate greatly for rock types according to Flanagan's data. The maximum value in the zone is 569 ppm.

Ni : GMs of rock code 4 and rock code 5 of the zone are 11.77 and 19.23 ppm but rock code 5 in the zone has larger value of 16.21 ppm.
A comparison on content of the indicator between the zone and other area based on data by Flanagan(1976) and Vinogradov (1962) made clear that Ni content of rock code 5 of the zone is almost the same for the areas compared. However, values of Flanagan's data fluctuate greatly for various rock types. The maximum value in the zone is 621 ppm.

Fe : GMs of rock code 4 and rock code 5 of the zone are 1.96 and 1.90 %, respectively but rock code 4 in the zone has larger value of 1.73 %.
A comparison on content of the indicator between the zone and other areas based on data by Flanagan(1976) and Vinogradov(1962) made clear that Fe content in the zone is rather lower than that of the areas. The maximum value in the zone is 8.14 %.

Determination of Threshold Values

An interpretation was conducted on the cumulative frequency curve of Au in each geological unit. The results are summarized as follows:

Rock code 4 : Au shows a kind of dual distribution as shown in FIG.2-5-13. Geochemical values principally consist of two populations, frequency of each population is about 55 %, and 45 %. The threshold value(GM + 2δ) determined statistically indicates the upper 2 % level of the second population.

Rock code 5 : Au shows a kind of dual distribution as shown in FIG.2-5-13. Geochemical values principally also consist of two populations like rock code 4, frequency of each population is about 70 %, and 30 %. The threshold value(GM + 2δ) determined statistically indicates the upper 2 % level of the second population.

No positive skewness were observed on the cumulative frequency curves of rock code 4 and rock code 5.

5-9-3 Interpretation

Principal Component Analysis

After determining the correlation coefficients between indicators, which cannot be extracted by single variable analyses, from multi-dimensional distribution characteristics, these were applied to the determination of character and the evaluation of geochemical anomalies. Results of analysis are shown in TABLE 2-5-18.

General characteristics of prcipal components intimately related to Au are summarized below:

Rock code 4 : As shown in TABLE 2-5-18(1), the contribution ratio for the first principal component to all the principal components is about 28%, occupying less than one fourth of all. The total to the ratio of the fifth principal component amounts to 73 % approximately, so that a greater part of the fluctuation of all the components can be explained by them. However, the contribution ratio of each principal is general small and not decisive. Each component drops gradually and does not change markedly.

The third principal component has medium correlation(0.66) with Au. It means anomalous concentrations of the indicator is shown as high score value. Strong negative values(-0.53) also are detected by F. The component is worth notice for the gold exploration , although the contribution ratio is as low as 10 %.

Rock code 5 : As shown in TABLE 2-5-18(2), the contribution ratio for the first principal component to all the principal components is about 29%, occupying less than one third of all. The total to the ratio of the fifth principal component amounts to 73 % approximately, so that a greater part of the fluctuation of all the components can be explained by them. However, the contribution ratio of each principal is generally small and not decisive. Each component, except the first

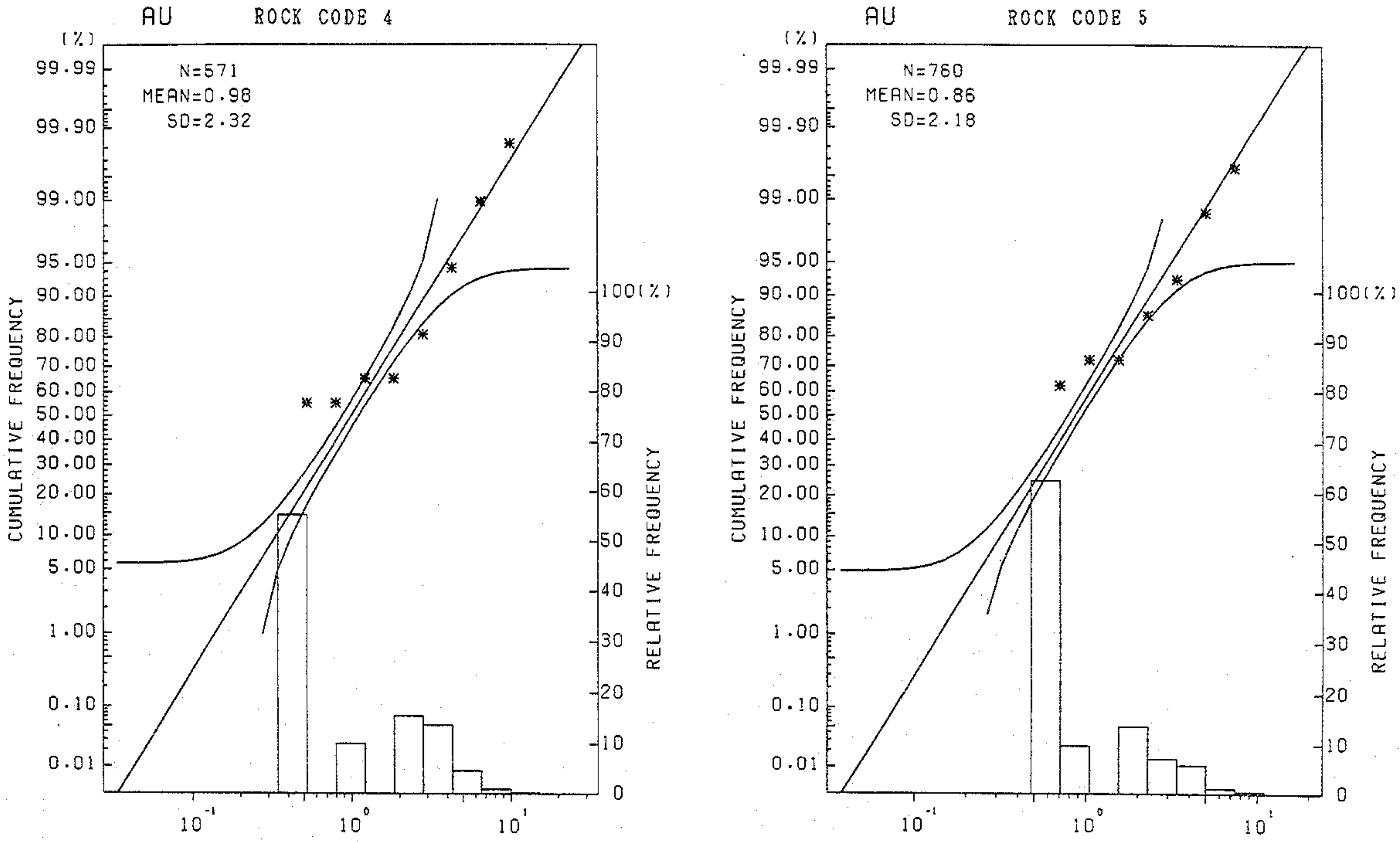


FIG. 2-5-13 Frequency Distribution and Cumulative Frequency Curve
(Au;Chamburukira Zone)

TABLE 2-5-18(1) Results of Principal Component Analysis(Chamburukira Zone:R.C. 4)

PRINCIPAL COMPONENT	EIGEN-VALUE	CONTRIBUTION RATIO	FACTOR LOADING										SCORE	
			Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe	MAXIMUM	MINIMUM
Z1	2.7880	0.2788 (0.2788)	0.06	0.07	0.18	-0.04	0.86	0.28	0.70	0.49	0.64	0.89	6.195	-1.398
Z2	1.4730	0.1473 (0.4261)	-0.28	0.76	-0.10	-0.03	-0.05	0.05	0.52	-0.53	-0.45	0.20	6.508	-3.204
Z3	1.0610	0.1061 (0.5322)	0.66	0.20	0.39	-0.33	-0.06	-0.55	0.14	0.04	-0.06	-0.01	5.363	-3.864
Z4	1.0010	0.1001 (0.6323)	0.10	0.10	-0.15	0.86	0.00	-0.45	0.07	0.09	0.04	0.07	12.609	-1.229
Z5	0.9780	0.0978 (0.7301)	-0.18	-0.01	0.87	0.32	-0.02	0.24	0.02	-0.05	-0.06	-0.15	23.187	-1.088

TABLE 2-5-18(2) Results of Principal Component Analysis(Chamburukira Zone:R.C. 5)

PRINCIPAL COMPONENT	EIGEN-VALUE	CONTRIBUTION RATIO	FACTOR LOADING										SCORE	
			Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe	MAXIMUM	MINIMUM
Z1	2.9240	0.2924 (0.2924)	-0.11	0.12	0.05	0.17	0.81	0.32	0.74	0.63	0.66	0.85	7.388	-1.328
Z2	1.3570	0.1357 (0.4281)	-0.05	0.71	0.18	-0.22	-0.06	0.52	0.39	-0.44	-0.39	0.08	4.572	-2.785
Z3	1.0540	0.1054 (0.5335)	0.68	-0.14	0.58	0.44	0.06	0.02	0.04	-0.15	-0.09	0.07	26.532	-2.151
Z4	0.9970	0.0997 (0.6332)	-0.01	0.09	-0.60	0.72	0.17	0.12	-0.01	-0.17	-0.20	-0.04	18.200	-0.783
Z5	0.9770	0.0977 (0.7309)	0.66	-0.12	-0.48	-0.38	-0.02	0.38	-0.03	0.08	0.09	-0.02	4.810	-2.088

principal component, drops gradually and does not change markedly.

The third principal component has a medium correlation(0.44～0.68) with Au, As, and Bi. Therefore, high scores are expected for the concentration of these indicators. The component is worth notice for the gold exploration , although the contribution ratio is as low as 10 %.

The fifth principal component show a medium correlation(0.66) with Au, and a negative medium correlation(-0.48) with As. The component is also worth notice for the gold exploration, although the contribution ratio is less than 10 %.

Au Concentration and Principal Component Scores

The concentration distribution of Au in this zone are tend to continue in the N-S direction.

Principal components highly related to Au are the third component for code 4 and the fifth component for code 5.

The distribution of these high scores has a tendency of the NW-SE direction in the northern part of this zone, showing different from that of the concentration distribution of Au.

As a summary of soil geochemical survey, a map of survey results and a table of evaluation are shown in FIG. 2-5-14 and TABLE 2-5-20, respectively.

TABLE 2-5-19 Statistical Parameter of Indicators(All zone)

S O I L <ROCK CODE>	NO. OF SAMPLE	GEOMETRIC MEAN (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)		THRESHOLD (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)	
													6.38	1.24	12.71	0.11	153	58	173	928	501	13.97	←g.m.+ s.d
MAFIC GRANULITE	2,149	1.71	0.63	2.25	0.06	61.57	26.42	90.47	215.97	153.32	6.89	←g.m.	23.79	2.42	71.90	0.19	383	125	331	3,984	1,638	28.29	←g.m.+2 s.d.
<3>		3.73	1.95	5.66	1.72	2.49	2.18	1.91	4.30	3.27	2.03	←s.d.	88.68	4.73	406.82	0.32	954	273	632	17,112	5,356	57.32	←g.m.+3 s.d.
													2.59	1.13	0.88	0.06	20	60	77	103	40	3.34	←g.m.+ s.d
FELSIC GRANULITE	1,247	0.98	0.48	0.58	0.05	8.82	23.02	40.41	30.92	11.77	1.96	←g.m.	6.83	2.68	1.31	0.06	45	157	148	346	134	5.70	←g.m.+2 s.d.
<4>		2.64	2.37	1.50	1.10	2.25	2.61	1.92	3.34	3.37	1.71	←s.d.	18.01	6.36	1.97	0.07	100	410	285	1,155	452	9.72	←g.m.+3 s.d.
													2.35	1.10	1.29	0.07	35	76	77	140	57	3.78	←g.m.+ s.d
GNEISSOSE GRANULITE	6,647	0.93	0.53	0.66	0.05	12.86	30.30	37.45	44.07	19.23	1.90	←g.m.	5.98	2.30	2.55	0.10	97	190	160	445	172	7.52	←g.m.+2 s.d.
<5>		2.54	2.09	1.97	1.36	2.75	2.50	2.07	3.18	2.99	1.99	←s.d.	15.21	4.82	5.04	0.13	267	476	330	1,413	513	14.97	←g.m.+3 s.d.

	NO. OF SAMPLE	MINIMUM VALUE (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)	MAXIMUM VALUE (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)
MAFIC GRANULITE <3>	2,149	0.50	0.25	0.50	0.05	0.50	10.00	0.50	0.50	0.50	0.23	854.00	9.30	1,360	2.10	401	380	774	6550	3150	20.84
FELSIC GRANULITE <4>	1,247	0.50	0.25	0.50	0.05	0.50	10.00	0.50	0.50	0.50	0.39	753.00	10.00	30.00	0.20	150	570	2350	742	695	11.13
GNEISSOSE GRANULITE <5>	6,647	0.50	0.25	0.50	0.05	0.50	10.00	0.50	0.50	0.50	0.21	1,490	14.00	240.00	5.00	432	650	5050	5400	1310	22.00

g.m. : geometric mean s.d. : standard deviation

TABLE 2-5-20 Evaluation of Anomalous Zones(Au)

SURVEYED ZONE	ROCK CODE	Au VALUE(PPB) GM	GM+σ	GM+2σ	MAXIMUM	CONTRAST (GM+σ)	RELATED P. C.	DIMENSION OF ANOMALY (>GM+σ : M x M)	CHARACTERISTICS OF Au GEOCHEMICAL ANOMALY	EVALUATION
JUWERE	R.C.3	0.84	1.86	4.12	8.00	3.71	P.C.3	200 x 500	low content,	B
	R.C.4	0.74	1.44	2.78	6.00	2.87	P.C.4		poor continuation	
	R.C.5	0.73	1.48	3.01	115.00	1.00	P.C.4			
JEGEDE	R.C.3	1.65	5.74	20.04	954.00	11.49	P.C.2	200 x 2400	high content,	A
	R.C.4	0.97	2.83	8.20	76.00	1.41	P.C.4		well continuation,	
	R.C.5	0.92	2.54	6.97	1490.00	5.07	P.C.4		<hydromorphic anomaly?>	
MUCHACHA	R.C.3	1.50	4.74	14.98	23.00	9.47	P.C.2	200 x 500	rather high content	B
	R.C.4	0.69	1.38	2.76	7.00	2.83	P.C.3		poor continuation	
	R.C.5	0.72	1.42	2.80	27.00	2.84	P.C.5			
BENZI	R.C.3	3.24	22.73	159.74	922.00	45.46	P.C.1	200 x 2000	high content,	A
	R.C.4	2.00	8.56	36.75	753.00	17.13	P.C.4		well continuation,	
	R.C.5	2.06	9.44	43.25	848.00	14.98	P.C.4		<hydromorphic anomaly??>	
RUPIRI	R.C.3	0.95	2.16	4.92	6.00	----	P.C.4	100 x 800	low content,	C
	R.C.4	----	----	----	----	----	-----		rather poor continuation	
	R.C.5	0.90	2.05	4.66	10.00	4.10	P.C.3			
CHIPFUNDE	R.C.3	1.71	5.77	19.47	83.00	5.77	P.C.4	100 x 1000	low content,	C
	R.C.4	----	----	----	----	----	-----		rather poor continuation	
	R.C.5	1.00	2.60	6.76	115.00	3.67	P.C.4			
FUMURE	R.C.3	2.89	12.61	54.99	221.00	25.21	P.C.2	200 x 1000	high content,	A
	R.C.4	----	----	----	----	----	-----		well continuation,	
	R.C.5	0.92	2.03	4.52	8.00	4.06	P.C.4		<hydromorphic anomaly?>	
NYAHONDO	R.C.3	----	----	----	----	----	-----	100 x 500	low content,	C
	R.C.4	----	----	----	----	----	-----		poor continuation	
	R.C.5	1.05	2.14	4.33	133.00	1.17	P.C.5			
CHAMBURUKIRA	R.C.3	----	----	----	----	----	-----	100 x 400	low content,	C
	R.C.4	0.98	2.98	5.31	6.00	4.53	P.C.3		poor continuation	
	R.C.5	0.86	1.89	4.12	8.00	1.34	P.C.5			

----- : NO DATA

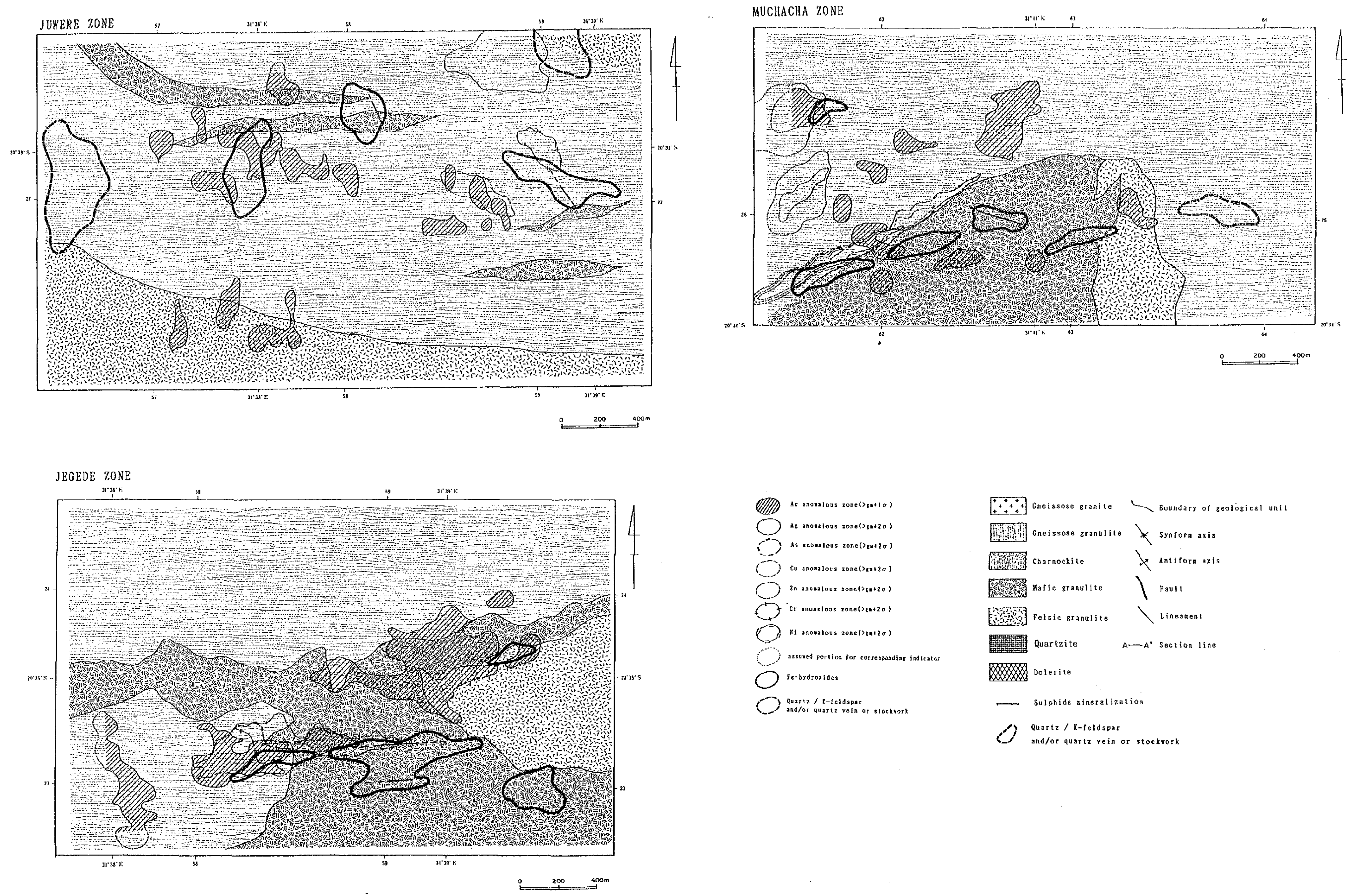
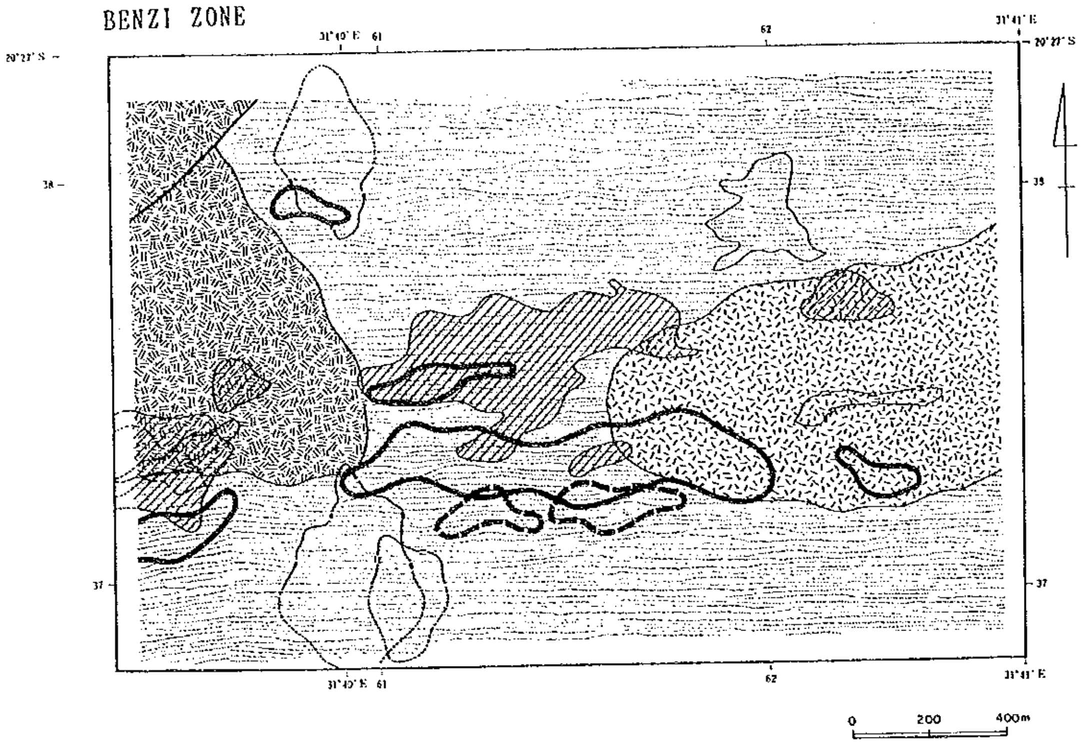
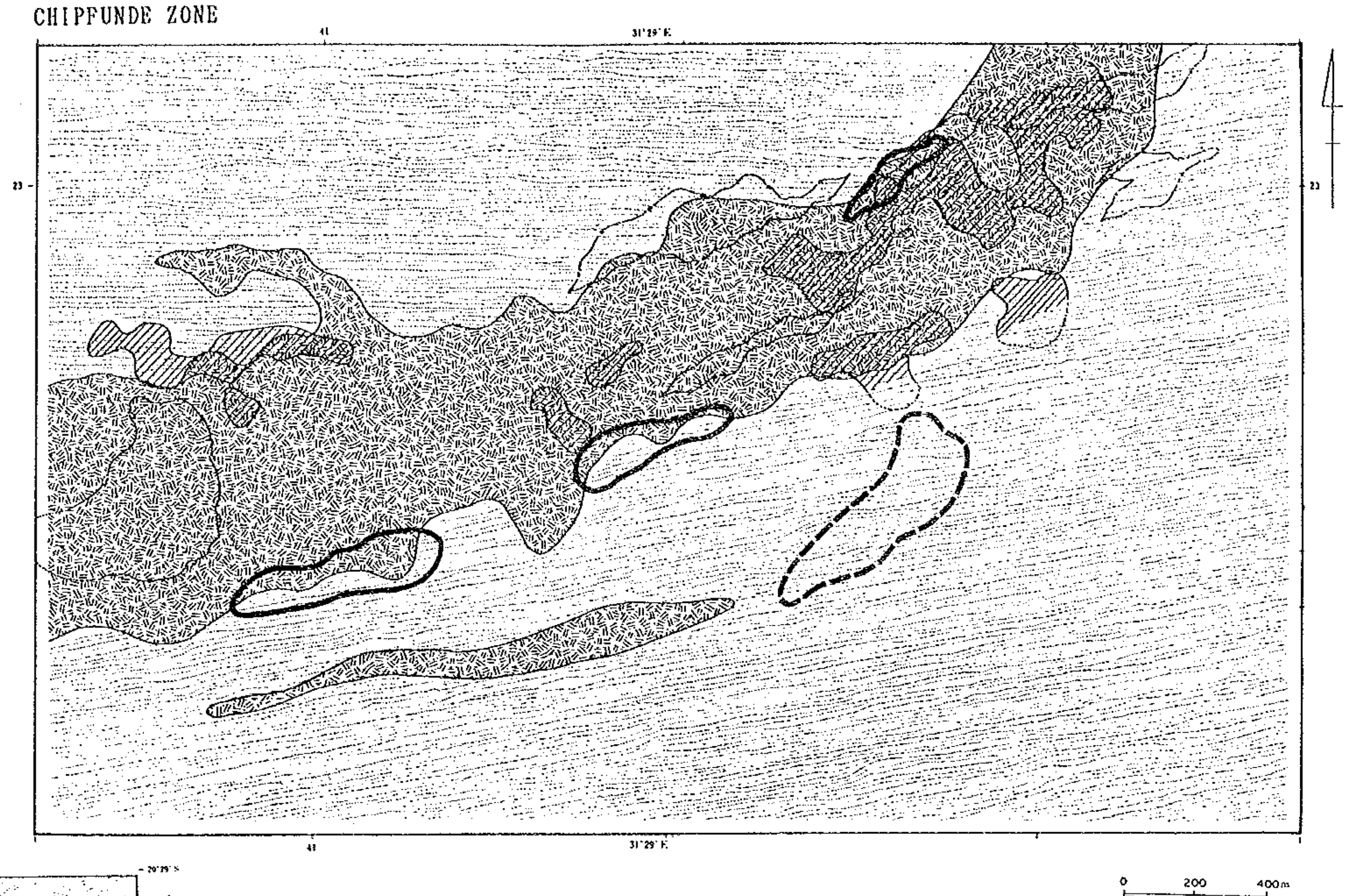
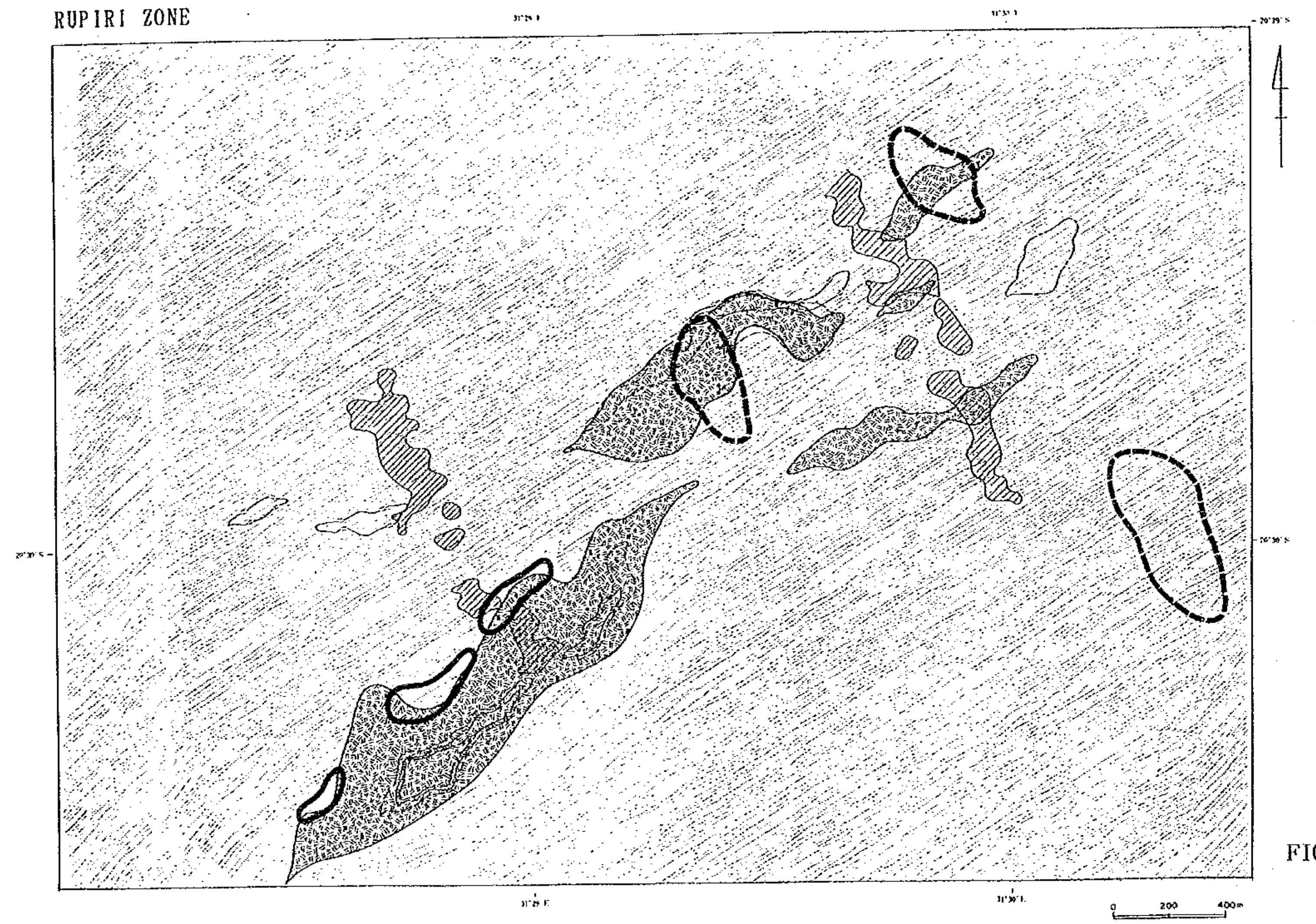


FIG. 2-5-14(1) Interpretation Map of Soil geochemical Survey Results(Benzi Zone)







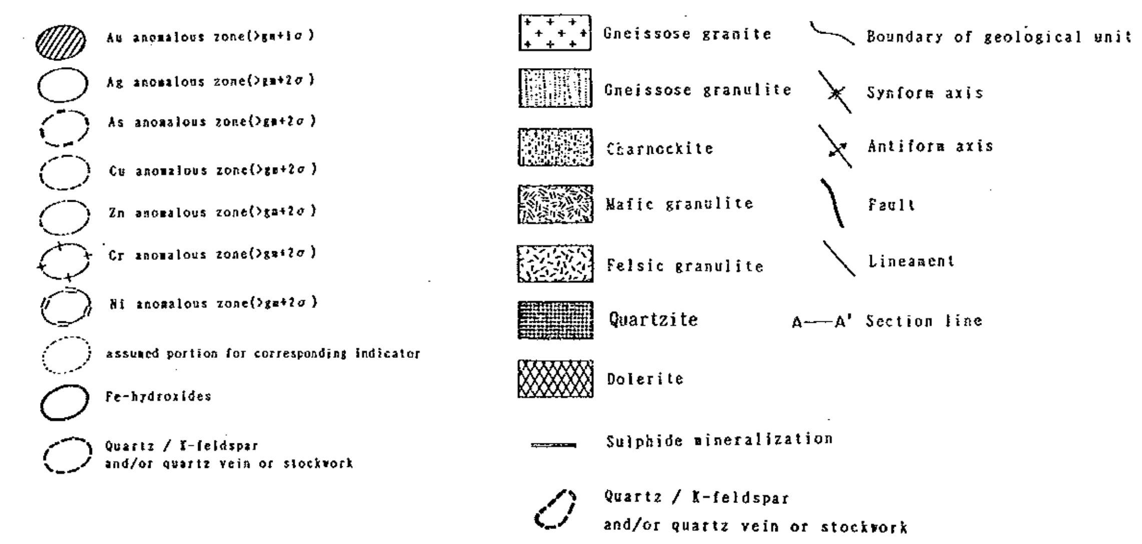


FIG. 2-5-14(2) Interpretation Map of Soil geochemical Survey Results(Jegede Zone)

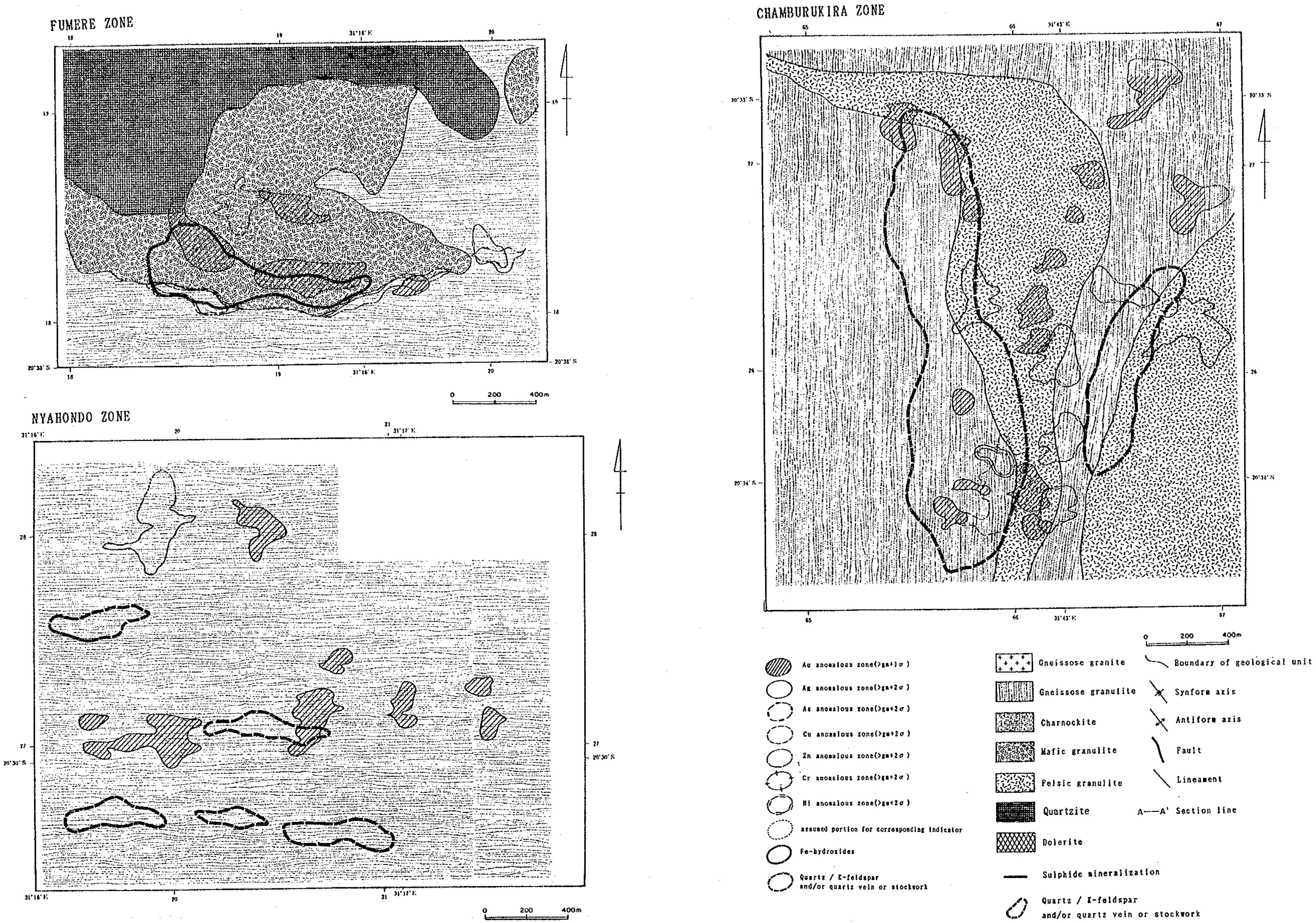


FIG. 2-5-14(3) Interpretation Map of Soil geochemical Survey Results(Fumure Zone)

CHAPTER 6 GEOPHYSICAL SURVEY(IP METHOD)

6-1 BENZI ZONE

6-1-1 Survey Method

The electrical exploration IP method of frequency domain was carried out on three survey lines in Benzi zone .

The specification and volume of survey are given below.

(1) Electrode array: dipole-dipole location

(2) Electrode spacing: 50 m

(3) Isolation coefficient: n = 1-4

(4) Transmit frequency: 3, 0.3 Hz

Survey Line	Length	Number of Stations
B-1	1,000m	21 (No.0 TO 20)
B-2	1,000m	21 (No.0 TO 20)
B-3	1,000m	21 (No.0 TO 20)

6-1-2 Data processing

First, based on the apparent resistivity (3 Hz) and PFE value which were observed, the pseudo section and plans on n = 1-4 were produced. Rock specimens were sampled in a survey zone, the sample resistivity and PFE value were measured and then measured values were referred to for consideration of the survey result.

Two dimensional simulation on boundary element method was made on the two survey lines (B-2 and B-3) where drilling survey was performed.

In this two dimensional simulation analysis, the result of drilling survey were referred to for modeling configuration and the sample resistivity and PFE values were referred to for setting up to the resistivity and PFE of the boundary-element model. The models were modified repeatedly so that calculated apparent resistivity and PFE were approximated to the observed apparent resistivity and PFE.

6-1-3 Survey Results

The apparent resistivity and PFE in the survey zone could be classified:

High apparent resistivity : 200 Ω · m or more High PFE: more than 5%

Medium apparent resistivity: 50 - 200 Ω · m Medium PFE: 4 - 3%

Low apparent resistivity : 50 Ω · m or less Low PFE: less than 3%

A high apparent resistivity of more than 500 Ω · m is distributed to the north side of each survey line. On each survey line, the border between this high resistivity zone and medium to low apparent resistivity zone of below 200 Ω · m is near the survey stations 8 to 10. However, a high resistivity zone of more than 200 Ω · m is distributed near the survey stations 12 and 13 on the survey

line B-3.
The survey line B-1 indicates a medium to low PFE of less than 4% all over except part of the survey line north end. In the survey line B-2, the north side of the survey station 9 or 10 represents a relatively high value, 4 - 6%, and the south side, a low value 2 - 4%, so that a relatively clear contrast is noticed.
Additionally, a high PFE anomaly over 5% is noticed in a shallow place below the survey stations 8 and 9. Although a medium PFE of about 4% is found below the survey stations 4 and 5 on the survey line B-3, the overall survey line contrast is weak.

6-1-4 Consideration

Because a noticeable apparent resistivity and PFE anomaly could not be captured on the survey line B-1, no simulation analysis was performed on that. As for the survey line B-2, a clear border line (high in the north and low in the south) exists between the survey stations 9 and 12, and although this is noted, the PFE value of 5% in the north is not high, therefore it is difficult to estimate the position and configuration of the source model providing this PFE value.

As a result of simulation analysis, the calculated PFE distribution presents a similar configuration to the observed PFE and the characteristic of the observed apparent resistivity section that the north side and south side represent a high and low PFE values respectively is expressed in the calculated apparent resistivity distribution.
The drilling survey result captures multiple mineralized zones below the surveystations 8 and 9, and on plan of simulated results the above mentioned model is estimated to express a condensed configuration of these mineralized zones.

As for the survey line B-3, a medium apparent resistivity is noticed in the high apparent resistivity zone below the survey stations 4-6 (shallow place) and a relatively high PFE anomaly zone exists corresponding to this medium apparent resistivity zone. As this geological interpretation, because a disseminated sulphide mineral is deposited in the high apparent resistivity, so that it is estimated that the apparent resistivity is relatively reduced and the PFE value is raised.

As a result of simulation analysis on the survey line B-3, the configuration of both calculated and observed PFE are almost same. The apparent resistivity distribution coincides with the observed apparent resistivity section. Although the result of drilling survey has captured a weak mineralized zone below the survey stations 8 and 9, considering the shape of the observed PFE distribution, a horizontal plate model is simulated, however, this shape is