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Database for geochemical mapping of the northeastern areas of Aichi Prefecture, central Japan – XRF major element data of stream sediments collected in 1994 to 2004 –

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ABSTRACT

The Geochemistry and Cosmochemistry Laboratory, Nagoya University, began a geochemical mapping project in 1994 to make environmental assessment of the Chubu area in Japan and to provide students with the training of collection and chemical analysis of geological samples. During ten years from 1994 to 2004, 1563 stream sediment samples were collected in the northeastern parts of Aichi Prefecture. Some of the samples have been already measured for Al, Ti and P by inductively coupled plasma atomic emission spectrometry (ICP-AES), and for K, Na, Fe, Ca, Mg and Mn by atomic absorption spectrometry (AAS) and their data have already been published. In this study, however, the sediment samples were re-measured for major-element concentrations by XRF, and the additional samples were also analyzed to get all major-element data including Si. The data for all of the sediments together with geological information are presented here for database to make a geochemical map of the northeastern areas of Aichi Prefecture. Furthermore, we discuss on difference between data by ICP-AES and AAS and, those by XRF. The geochemical and geological discussions on the major elements will be made elsewhere, and the data of trace-element concentrations of the sediments by neutron activation analysis will be offered soon.

INTRODUCTION

It is important to investigate spatial distribution of element concentrations on the earth's surface for an environmental assessment from geochemical viewpoints. The previous geochemical maps were examined for mineral exploration. In recent years, many geochemical maps covering wide regions have been made to assess the environment of the area. Nationwide geochemical mapping has been performed in Europe and the United States (Webb et al., 1978; Weaver et al., 1983; Fauth et al., 1985; Kautsky and Bølviken, 1986; Thalmann et al., 1988; Reiman et al., 1998; Gustavsson et al., 2001). In Japan, the geochemical maps have been made for Akita prefecture (Shiikawa et al., 1984), Northern Kanto area (Itoh et al., 1991; Kamioka et al., 1991). The Geological Survey of Japan started a nationwide geochemical mapping program,

which has been reported by Imai et al. (2004) and Ohta et al. (2004a, b). The nationwide map, however, was drawn using 3024 samples for whole area, and its sampling density is low, 1 site per 120 km^2.

We started a geochemical mapping based on chemical data of stream sediments in the area of Seto and Toyota Cities, mainly in the northeastern Aichi Prefecture, central Japan in 1994, in order to make geoenvironmental assessment of the area (Tanaka et al., 1994) and to provide students with the training of collection and chemical analysis of geological samples (Tanaka et al., 2001). The geochemical mapping is proper for inexperienced students in geochemistry and geology to give an encounter of geochemical and geological studies. The geochemical mapping project, therefore, is mostly made in April to educate fresh students of our Geochemistry and Cosmochemistry Laboratory. During 10 years from 1994 to 2004, we have sampled more than 1500 stream sediments, and some geochemical maps were created in the following areas: the Sanage-yama area (Tanaka et al., 1994), a part of Seto and Toyota Cities (Tanaka et al., 1995, 1996), the Tsugu area (Togami et al., 1997), and the northeastern part of Toyota City (Yamamoto et al., 1998). Asahara et al. (2006) also analyzed Sr isotope for 100 sediment samples selected, and reported spatial distribution of $^{87}Sr/^{86}Sr$ in the eastern region of Aichi Prefecture. Compared with the nationwide geochemical map, we can make more detailed geochemical map since our sediment samples are collected with high sampling density of one per about 1.5 km^2. The detailed geochemical mapping could give strict distribution of natural background concentrations of elements, and reveal artificial addition caused by human and industrial activities to the background. Especially, the distribution of major element concentrations in stream sediments reflects the surface geology of the drainage area. For example, samples from the areas where granitic rocks are exposed are rich in Al, Ca, Na, while samples from the area underlain by Tertiary sediments are enriched in Fe and Ni (Tanaka et al., 1994), and stream sediments from different granite basements differ geochemically (Yamamoto et al., 1998). According to the previous studies, major element data of stream sediments are important to make a geoenvironmental assessment of their sampling areas. It is necessary, therefore, to officially present data of element concentrations in the stream sediments for further geochemical investigations and geoenvironmental assessments.

A part of the samples in this study have been already measured for Al, Ti and P by inductively coupled plasma atomic emission spectrometry (ICP-AES), and for K, Na, Fe, Ca, Mg and Mn by atomic absorption spectrometry (AAS) in Tanaka et al. (1994, 1995, 1996), Togami et al. (1997), and Yamamoto et al. (1998). The literature data are lack of Si contents and the amount of loss on ignition. Furthermore, it remains a problem that concentrations of some elements, such as Al, were depleted due to incomplete sample digestion with HF and/or incomplete dissolution with HCl, as suggested by Tanaka et al. (1995, 1996) and Yamamoto et al. (1998). In this study, the sediment samples were re-measured for major-element concentrations by XRF, and the additional samples were also analyzed. The XRF is a method with simple preparation of a sample, and provides an adequate precision of major elements, including Si contents, in widely varying concentration. We will discuss on difference between data by ICP-AES and AAS and those by XRF. Geochemical and geological

discussions on the data will be performed in Yamamoto et al. (2006).

GEOLOGY OF STUDY AREA

The study area is located in the northeastern Aichi Prefecture, a part of the south of Gifu Prefecture, and a part of the west of Shizuoka Prefecture (Fig. 1). Nagoya City is located in the end of the west. Geological features of the study area are shown in Fig. 2. The number of legend is referred to Table 1. The Mino belt is distributed in the northwest of the study area. The Mino belt comprises a Jurassic accretionary complex which is composed of sandstone, mudstone and chert. The Cretaceous Ryoke belt is distributed throughout southwest to northeast in the area. The Ryoke belt comprises mafic to felsic plutonic rocks, and low P/T metamorphic rocks. The plutonic rocks can be divided into Inagawa, Busetsu, Naegi Granites, and others with distinct petrologic character (Nakai, 1970, 1976). The Inagawa Granite consists of four intrusive units with different texture and mineralogy. Cretaceous to Paleogene Nohi Ryolites cover constituents of both the Mino and Ryoke belts. These volcanic, plutonic and metamorphic basements are covered by Miocene sedimentary and volcanic rocks (the Mizunami and Shitara Groups) and by Pliocene non-marine sediments (the Seto Group). Quaternary sediments also cover the basements in the southwestern part.

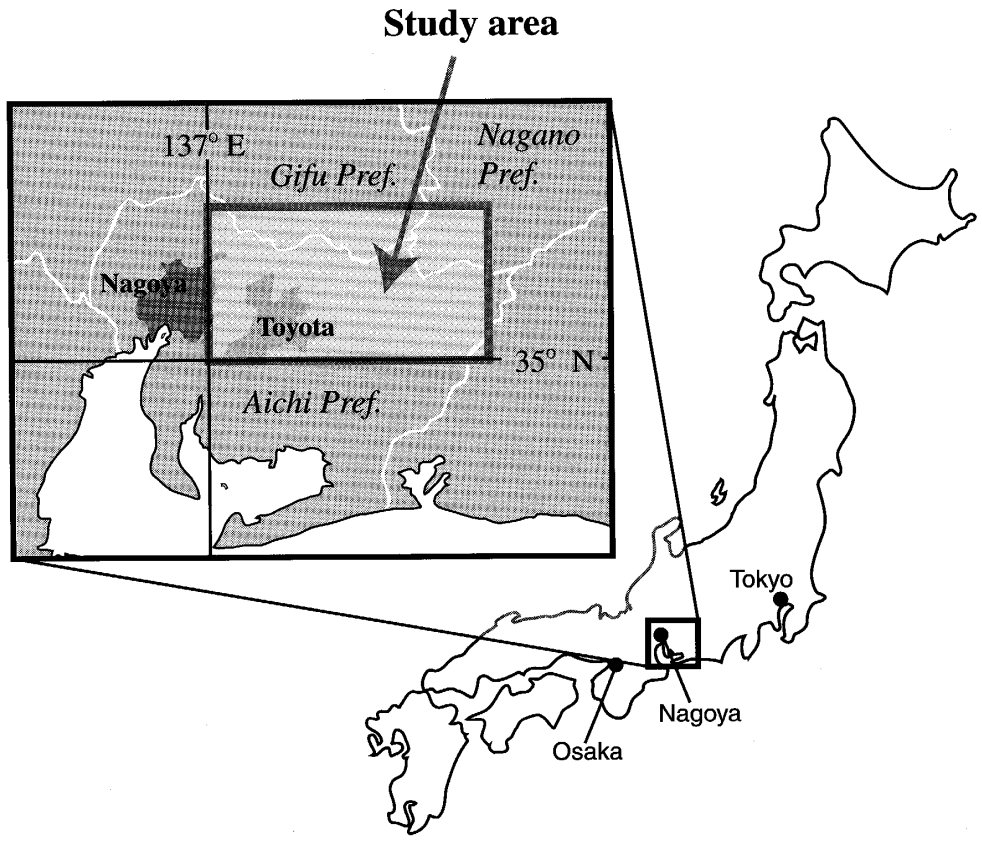

Fig. 1. Study area. It is the northeastern part of Aichi Prefecture and a part of Gifu Prefecture, central part of Japan.

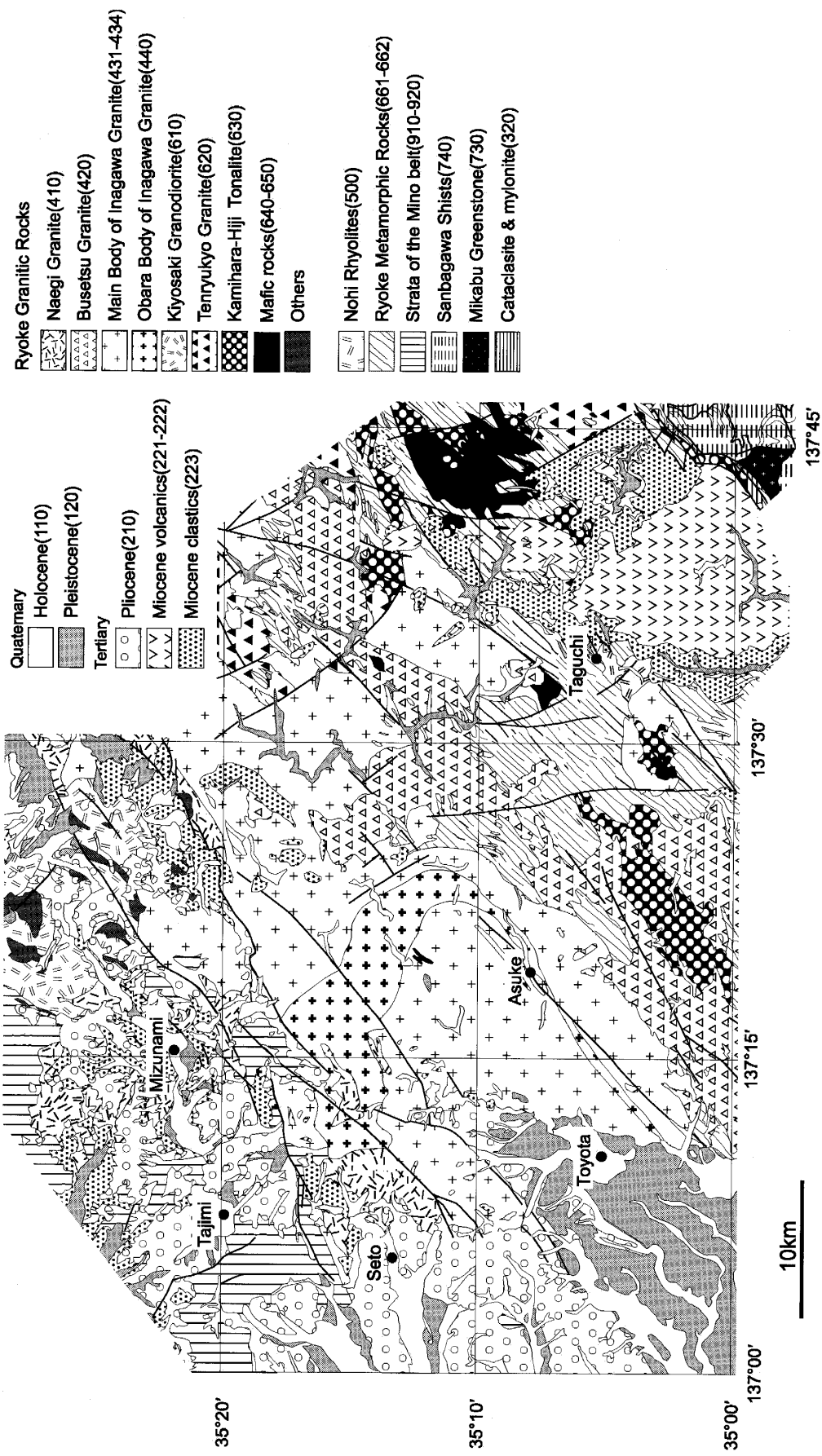

Fig. 2. Geological map of the study area. The map is modified from Makimoto et al. (2004). The number described after legend is the identification number (ID) of geology in Table 1.

Table 1 Identification number (ID) of geology, according to Geological map of Japan 1:200,000, Toyohashi and Irago Misaki.

Figure of the order of 10^2		Figure of the order of 10^1		Figure of the order of 10^0	
1	Quaternary	1	Holocene		
		2	Pleistocene		
2	Tertiary	1	Pliocene (Seto Group)		
		2	Miocene	1	Basalt and andesite
				2	Shitara Igneous Complex
				3	Clastics (Mizunami and Shitara Groups)
4	Younger Ryoke Granitic Rocks	1	Naegi-Agematsu Granite		
		2	Busetsu Granite		
		3	Main body of Inagawa Granite[1)]	1	The other types
				2	Type II
				3	Type III
				4	Type IV
		4	Obara Body of Inagawa Granite[2)]		
		6	The other granites	5	Granite porphyry
5	Nohi Rhyolites				
6	Older Ryoke Granitic Rocks	1	Kiyosaki Granodiorite		
		2	Tenryukyo Granite		
		3	Kamihara-Hiji Tonalite		
		4	Meta-mafic rocks		
		5	Gabbroic rocks		
		6	Ryoke Metamorphic Rocks	1	Silimanite zone
				2	Cordierite
7	Sambagawa Metamorphic Rocks	4	Sambagawa Crystalline Shists	3	Mafic schist
				5	Pelitic schist with psammitic schist
9	Sedimentary complex of Mino Belt	1	Sandstone and limestone		
		2	Chert		

1) Main body of Inagawa Granite is divided into four sub-types of II, III, IV and the others according to Nakai (1976). Type I, Obara Body of Inagawa Granite, is separated here.
2) Obara Granite is a sub-type of Inagawa Granite, Type I.

The Sambagawa belt is distributed in southeast part of the area. The Sambagawa belt, comprising high P/T Sambagawa Schists and Mikabu Greenstone, underwent a metamorphic event in Cretaceous. These various geological features in the study area could provide various distributions of background elements, and the area is proper for basic study about assessment of background element concentrations.

SAMPLING LOCATION

Sample locations in this study are shown in Fig. 3. The sampling points of 1563 sediments spread over approximately 2400 km^2. The average density of sampling location is one per about 1.5 km^2. The Shonai, Yahagi, Toyo rivers, and these branches run across the area. The sediment samples were collected from the bottom of small streams branching upward from the main rivers. Most of the stream sediments are

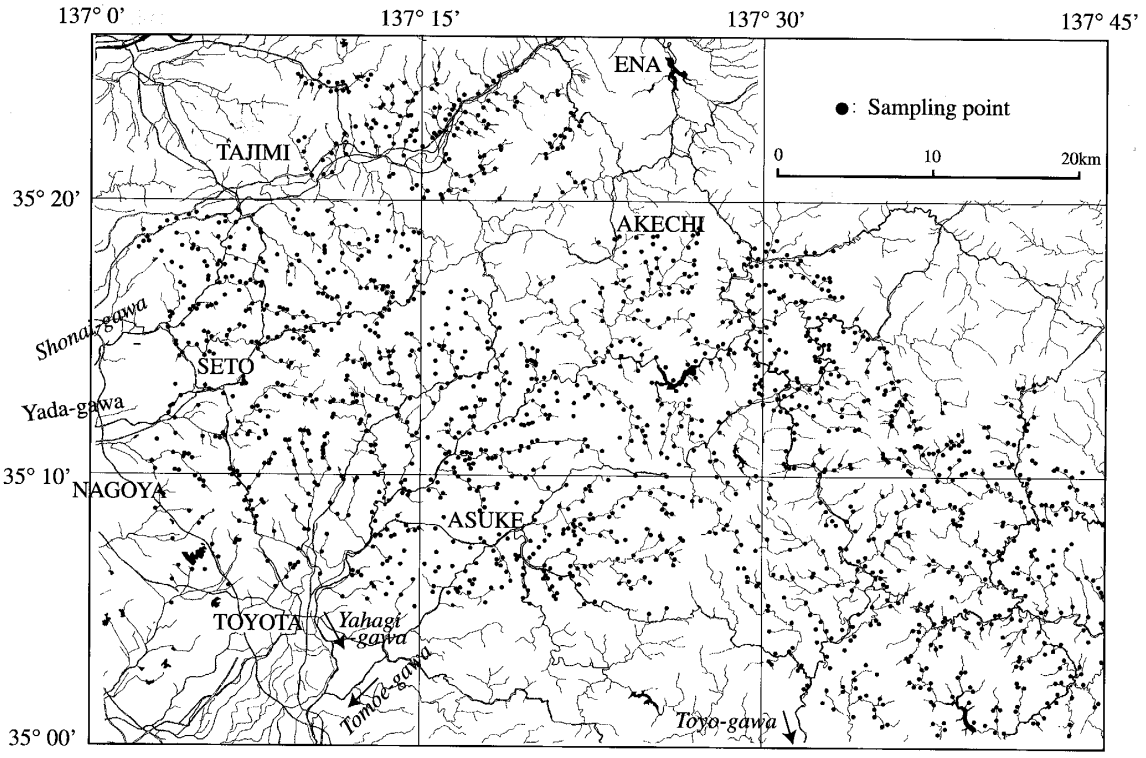

Fig. 3. Sampling locations of stream sediments in the study area.

chemically similar to the rocks exposed in drainage basins assigned by the respective small streams (Tanaka et al., 1996). Stream sediments, therefore, could represent the average chemical characteristics of exposed rocks in the upstream area.

Sample names are determined by the map number given to a 1:25,000 scale topographical map, group name and sample number. The map numbers of topographical maps are as follows: 01, Kozoji; 02, Tajimi; 03, Mashizume; 04, Akechi; 05, Yokomichi; 07, Seto; 08, Sanage-yama; 09, Odo; 10, Kanagase; 11, Nebu; 12, Chausu-yama; 13, Hirabari; 14, Toyota-hokubu; 15, Asuke; 16, Nebisodake; 17, Taguchi; 18, Midashi; 22, Mikawa-ko; 24, Mikawa-hongo; V, Toki; W, Mizunami. For example, the sample number of 15A01 represents that the sampling group "A" collected the sample at the "01" point in the area of the topographical map, "15" (Asuke). The sample names given by the topographical map number and sample number without group name, such as 11-01, in Togami et al. (1997) are revised to the form added by group name of "K", such as 11K01 in Appendix I.

ANALYTICAL METHODS

One sampling of stream sediments is usually carried out by several staffs and about twenty students of Nagoya University and the other universities in any two days in April. Stream sediments are sampled by a pair of an inexperienced student in sampling and a staff or an experienced student in sampling: one scoops up sediments form the bottom of the stream, and the other sifts the sediment with sieves.

The detailed procedure is reported in Tanaka et al. (2001). A sample was collected from the center in breadth of a stream at the exit of drainage basin over an area as possible. The collected sediment samples were passed through 16 mesh (1 mm) sieve with stream water once, passed through 80 mesh (160 μm) sieve with stream water twice, and then filtered using paper filters. The samples were brought back to the laboratory, and dried at room temperature. Then, they were pulverized and homogenized by agate ball mills for 30 minutes. Powder samples (200 mg) were placed in quartz tubes and heated in a furnace at 900°C for 2 hours to estimate the amount of loss on ignition.

Major element composition in the sediment samples was measured by XRF using Shimazu SXF-1200 energized at 40 kV and 70 mA with a rhodium target at Nagoya University. Glass beads were prepared by fusion with $Li_2B_4O_7$ as a flux. The amounts of sample and flux are 0.7: 6.0 g. Details of the methods are given in Sugisaki et al. (1977). The XRF analytical uncertainties are estimated at 1% for SiO_2 and Al_2O_3 at 5% for the rest of the major-element analyses (Sugisaki et al., 1977).

REMARKS

1. Major-element concentrations of stream sediment samples

Major-element concentrations in the sediment samples, together with the data of latitude, longitude and bedrock geology of sampling points are shown in Appendix I. The variations of elemental concentrations classified according to the bedrock geology of the sampling points are shown in Fig. 4. The stream sediments sampled from granitic areas have higher Al, Ca, Na and K concentrations than those from areas of sedimentary bedrock (Tanaka et al., 1995). Detailed geochemical discussion on the distribution of elemental concentrations in stream sediments will be made elsewhere (Yamamoto et al., 2006).

2. Comparison of analytical data by ICP-AES and AAS with those by XRF

Some of the samples were already measured by ICP-AES and AAS in the previous studies (Tanaka et al., 1994, 1995, 1996; Togami et al., 1997; Yamamoto et al., 1998). The analytical method is reported by Tanaka et al. (1995). In brief, a sediment sample is digested with HF-HNO_3-$HClO_4$ in an open Teflon beaker. After dryness, it is dissolved in HCl, and insoluble materials in the sample solution are removed by filtering with No. 5C paper. (Instead of the paper filter, a glass filter of "Whatman GF/A" was used in Yamamoto et al., 1998).

The deviation rate of the spectrometric data from the XRF data for sediment samples collected from the various geological areas is shown in Fig. 5. The concentrations of Al and Mg by the spectrometric method are lower by 15~30% and 15~40% than those by the XRF method, respectively. For example, Al concentrations by ICP-AES are significantly depleted relative to those by XRF, and the extent of depletion is larger in the samples from the area where granitic rocks are exposed than in the samples from the area where sediments and metamorphic rocks are exposed. The stream sediments sampled from areas of granitic rocks have higher Al concentrations and higher depletion in the Al data by ICP-AES (Fig. 6).

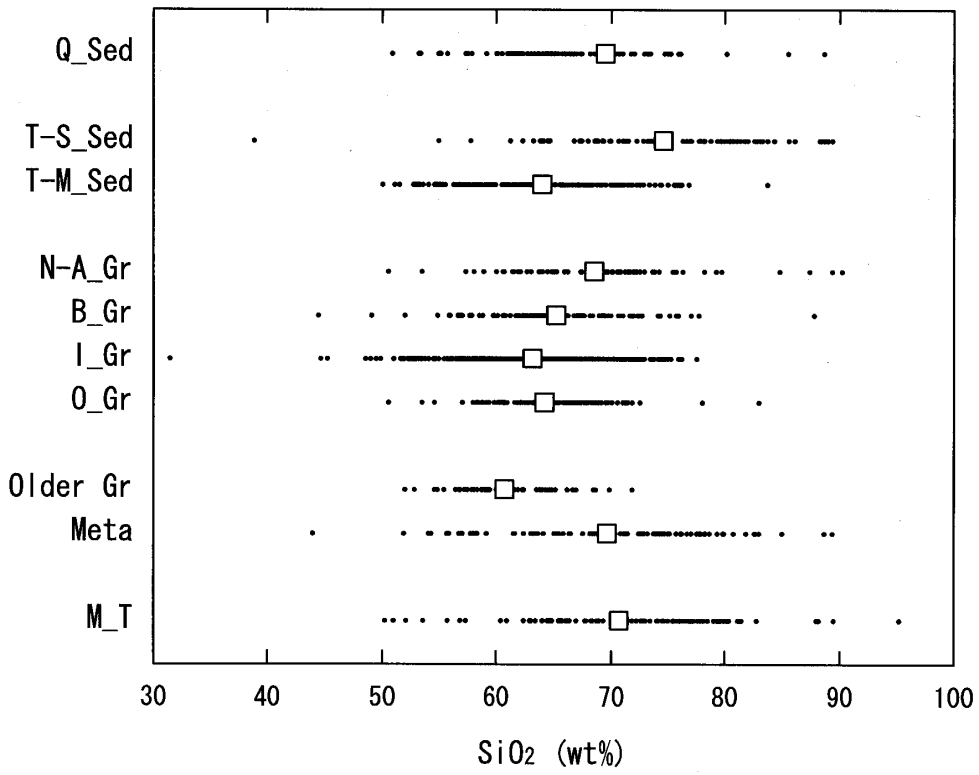
Q_Sed
T-S_Sed
T-M_Sed
N-A_Gr
B_Gr
I_Gr
O_Gr
Older Gr
Meta
M_T
30
40
50
60
70
80
90
100
SiO2 (wt%)

Fig. 4a.

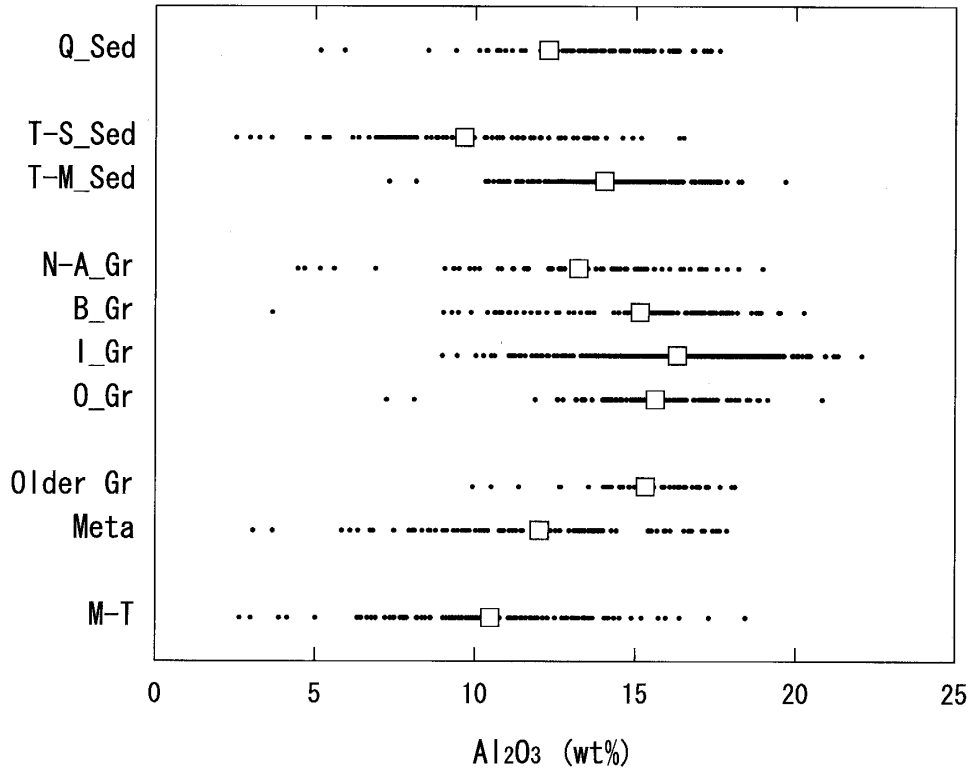
Q_Sed
T-S_Sed
T-M_Sed
N-A_Gr
B_Gr
I_Gr
O_Gr
Older Gr
Meta
M-T
0
5
10
15
20
25
Al2O3 (wt%)

Fig. 4b.

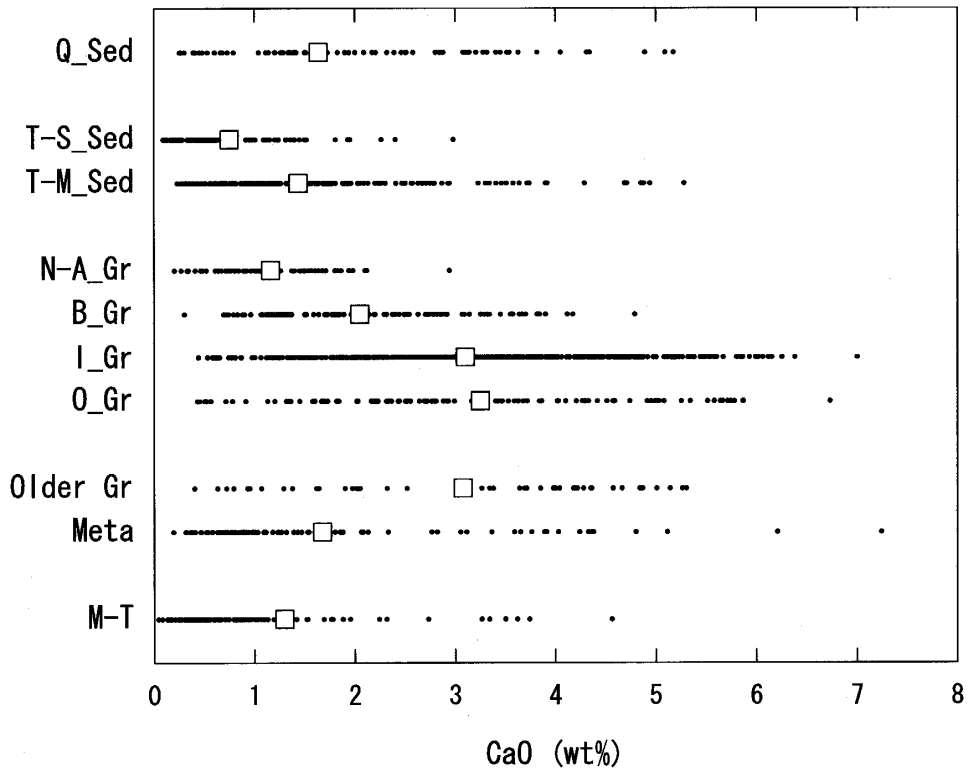
Q_Sed
T-S_Sed
T-M_Sed
N-A_Gr
B_Gr
I_Gr
O_Gr
Older Gr
Meta
M-T
0
1
2
3
4
5
6
7
8
CaO (wt%)

Fig. 4c.

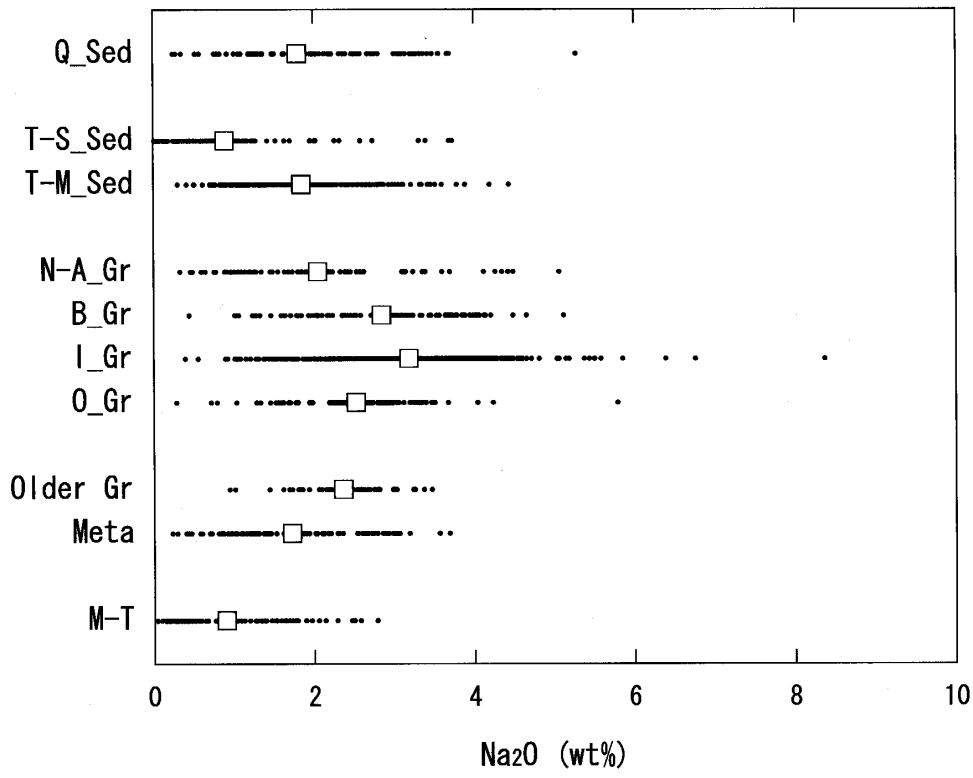
Q_Sed
T-S_Sed
T-M_Sed
N-A_Gr
B_Gr
I_Gr
O_Gr
Older Gr
Meta
M-T
0
2
4
6
8
10
Na2O (wt%)

Fig. 4d.

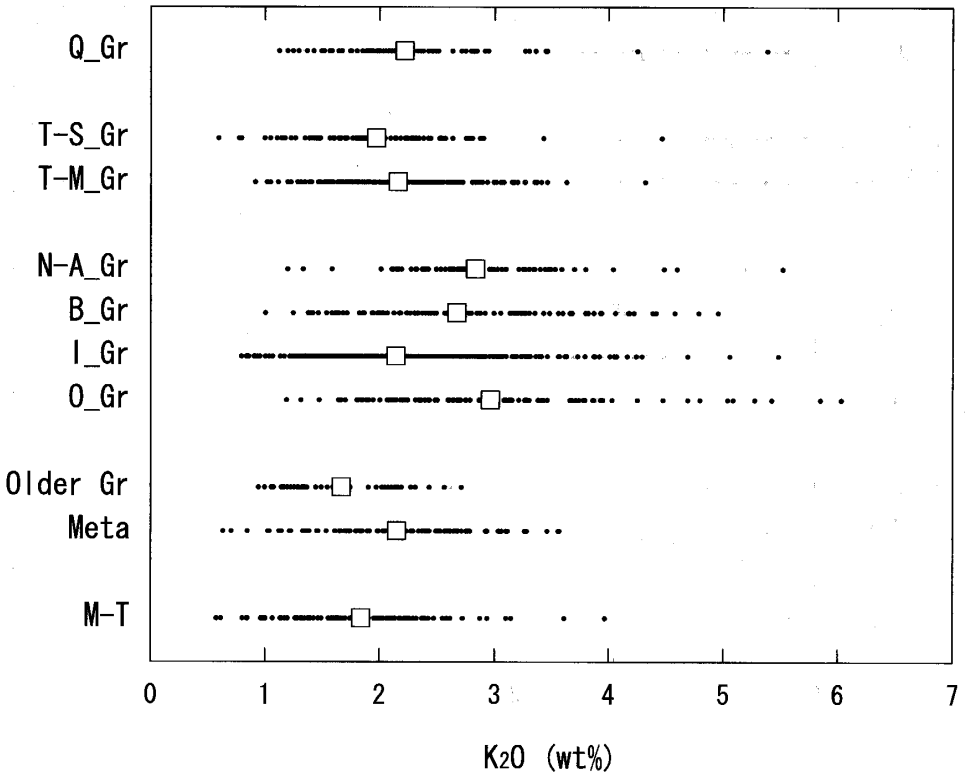

Fig. 4e.

Fig. 4. Plots of SiO_2, Al_2O_3, CaO, Na_2O and K_2O concentrations classified according to the bedrocks geology of sampling point. Q_Sed, T-S_Sed, T-M_Sed, N-A_Gr, B_Gr, I_Gr, O_Gr, Older Gr, Meta and M_T show Quaternary sediments, Sedimentary rocks of the Tertiary Seto Group, Sedimentary rocks of the Tertiary Mizunami Group, Naegi-Agematsu Granite, Busetsu Granite, Inagawa Granite, Obara Granite, Older Ryoke Granite, Ryoke Metamorphic Rocks and rocks of the Mino belt, respectively. Mean values are expressed by open squares.

The concentrations for Fe and Mn are lower by ~10%, and the Ca concentration is lower by ~15%. The degrees of the deviations are not different among the samples collected from different geological bedrocks. The results indicate that sample digestion with HF-HNO_3-$HClO_4$ was partly incomplete and the data by the spectrometric method could be lower than the true values for a part of elements. A lot of samples should be analyzed in a short time for the geochemical mapping project, and adequate decomposition for a long time is difficult to be done for each sample. Furthermore, inexperienced students in chemical analysis could make unskilled analysis of the sediment samples. The XRF method, which needs no HF digestion of a sample, is a method with simple preparation, and more suitable for analysis of a lot of sediment samples in the geochemical mapping project.

3. Representativeness of stream sediments in the sampling areas

Most of stream sediment samples represent the average chemical characteristics of exposed rocks in the upstream area. It can be ascertained by the result that chemical

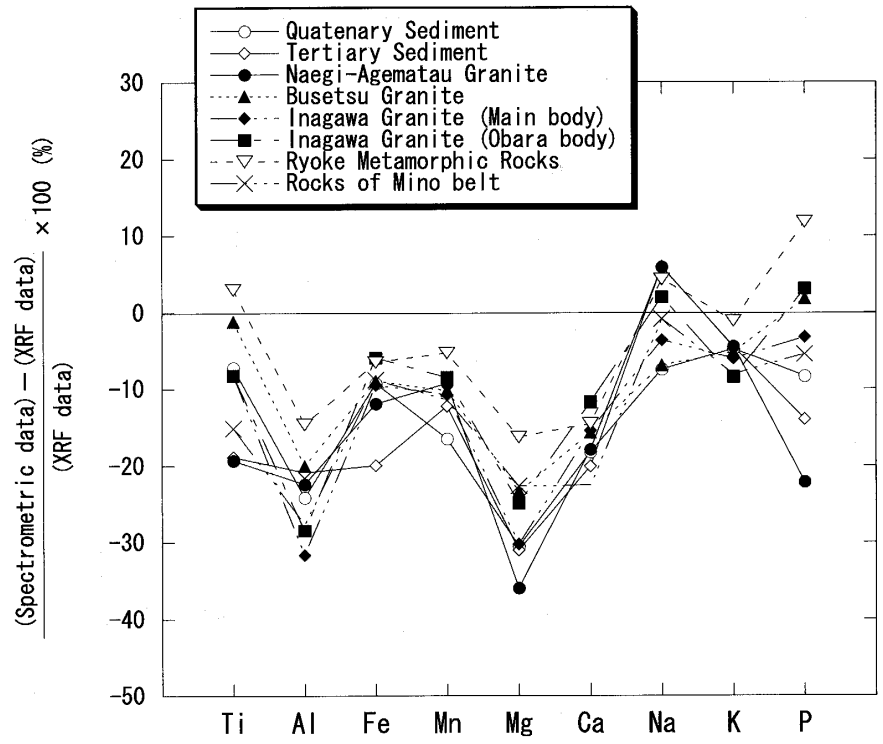

Fig. 5. The deviation rates of the spectrometric data from the XRF data for sediment samples classified according to their bedrocks.

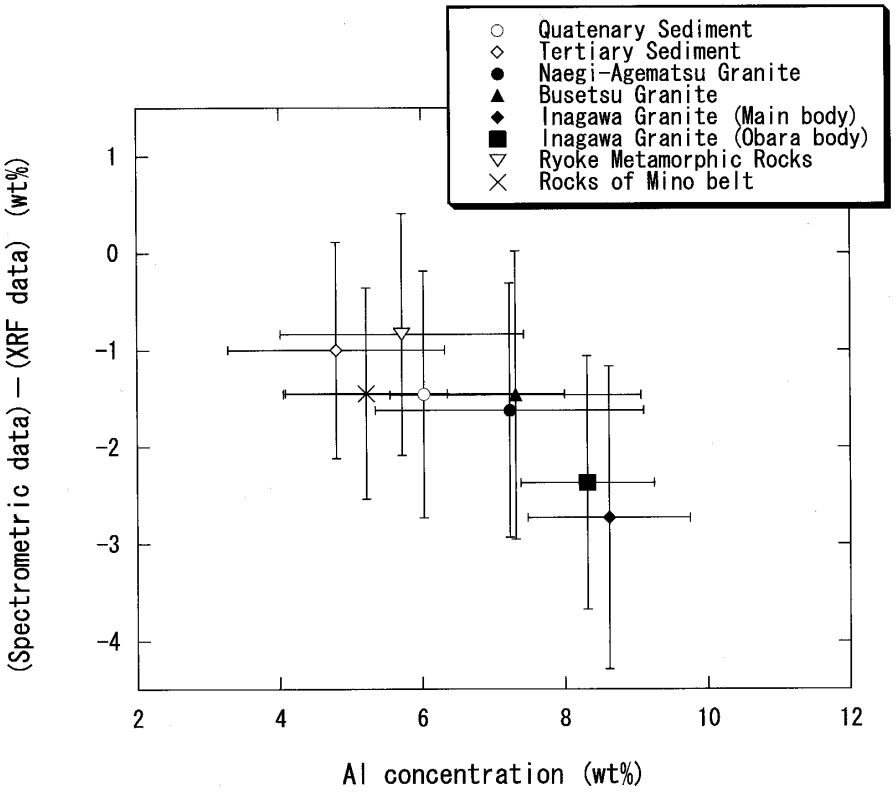

Fig. 6. Relationship between differences of spectrometric data from XRF data and Al concentrations of stream sediments. Bars show standard deviations (1σ).

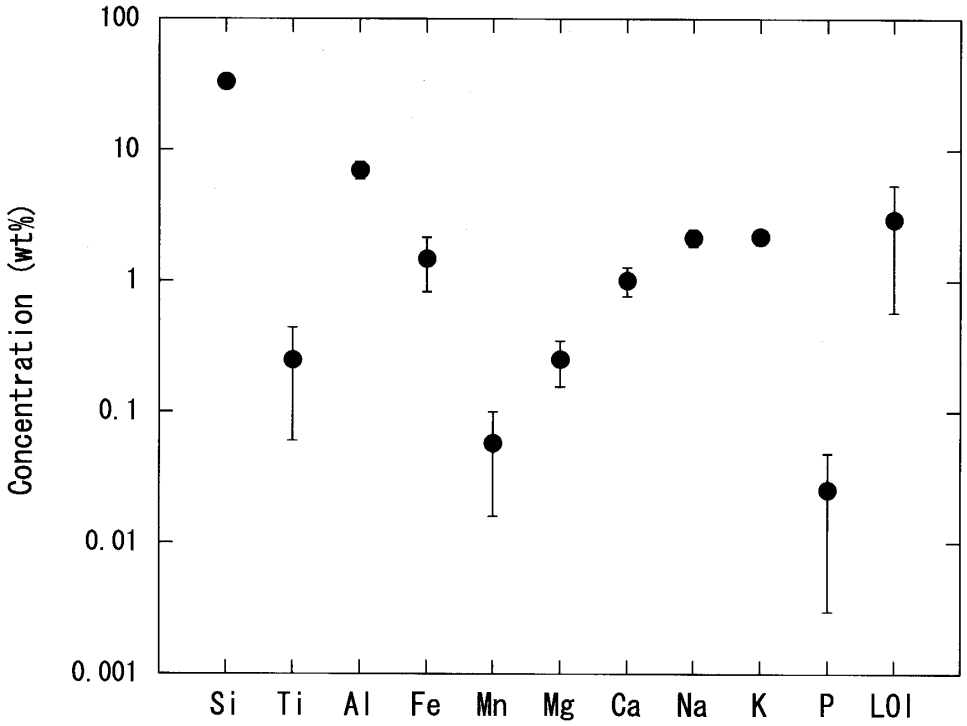

Fig. 7. Analytical data of stream sediments at the site of 07D01 from 1994 to 2004. Bars show standard deviations (1σ).

compositions of stream sediments in the area of granitic bedrocks are systematically different from those in the area of sedimentary rocks. However, analytical results of the sediment samples contain errors such as analytical error, error due to sample heterogeneity inside each sample bottle, and error due to heterogeneity of mineral particles in stream sediment at the sampling site (Tanaka et al., 1995; Togami et al., 1997). To estimate the extent of deviation due to sample heterogeneity inside each sample bottle, Tanaka et al. (1996) compared the result of a well-mixed sample in a sample bottle with that of no-mixed sample and showed that the sample heterogeneity inside each sample bottle is negligible compared with the heterogeneity of stream sediments at the sampling site. The analytical errors with the XRF method are smaller than the deviation caused from the heterogeneity of stream sediments. Therefore, heterogeneity of mineral particles in stream sediment at the sampling site could give largest effect to deviation.

Tanaka et al. (1995) evaluated sampling heterogeneity in stream sediments by comparing element concentrations in seven samples collected separately at the same site of 07D01 (35° 11' 43" N, 137° 6' 8" E), which were sampled from areas with Quaternary sedimentary bedrock in 1994. The data were reported to be ±100% variations in the concentration of Ti and ±50% or less variation for the other elements. We have been collecting the stream sediments at the location since 1994, and collected total of 53 samples. The major-element concentrations in the 53 sediment samples are shown in Appendix II and the averages are plotted in Fig. 7. The sample names are determined by sampling year, group name and sample number, with the beginning of "d". Most of elements showed the concentrations with ±20% variations while Ti and P showed

relatively fluctuated concentrations. The large deviation of Ti concentration suggests heterogeneous distribution of small grains of Ti-rich minor minerals such as Fe-Ti oxide and sphene in sediment samples (Tanaka et al., 1995). The large deviation of P suggests heterogeneous distribution of waterweed and/or organic phosphate matters. The large fluctuated amount of loss on ignition could also suggest heterogeneity of organic matters in situ stream sediment at the sampling site. These fluctuations of elemental concentrations might be caused partly by difference of sampling year. Discussion on fluctuated concentrations of major elements together with trace elements according to sampling year and month will be made elsewhere soon.

SUMMARY

The 1563 sediment samples collected in the northeastern parts of Aichi Prefecture, Japan were analyzed for major elements (Al, Ca, Fe, K, Mn, Mg, Na, P Si and Ti) by XRF and an amount of loss on ignition. The data for all of the sediments together with geological information were presented for database to make geochemical maps. The database is useful for detection of an anthropogenic contamination when high concentration of any element is distributed anywhere.

It is important for reliable environmental assessment by geochemical mapping to analyze more elements of a number of stream sediment samples collected with high sampling density because a large number of data will represent true elemental concentration ranges on the earth's surface. Therefore, a lot of samples should be analyzed, and simple analysis is needed rather than high precise analysis of individual samples in the geochemical mapping. The XRF method, which needs no HF digestion of a sample and presents Si data, is suitable for analysis of a number of sediment samples.

The database in this paper could be distributed to everyone by e-mail or by the medium of CD-ROM. The person who wants to use the database, please contact to the following:
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T. Sakakibara, Dr. M. Tanimizu, Mr. Y. Mizutani, Mr. N. Miyanaga, Mr. M. Murayama, Dr. C. Richardson, Mr. Y. Takayanagi, Mr. Y. Inoue, Mr. K. Kawasaki, Mr. S. Nebu, Dr. Y.H. Liu, Ms. I. Ohnishi, Mr. T. Kachi, Ms. Y. Kurata, Mr. T. Takama, Dr. K. Tanaka, Ms. A. Mitsuta, Mr. M. Kondo, Dr. M. Takebe, Mr. Y. Mori, Ms. R. Yamashita, Mr. T. Ogasawara, Ms. R. Kimura, Mr. F. Yamashita, Mr. T. Arao, Mr. N. Ito, Mr. Y. Inuzuka, Mr. S. Oda, Ms. M. Kondo, Ms. T. Mizutani, Dr. S. Tanaka, Mr. H. Yokota, Mr. S. Iwakiri, Ms. J. Song, Ms. M. Nomura, Ms. E. Tajima, Mr. Y. Muranaka, Mr. T. Takahashi, Dr. X. Lu, Dr. K. Tong, Dr. M. Niwa, Ms. M. Yamada, Mr. A. Umemoto, Dr. Y. Yamashita, Mr. H. Akagawa, Mr. K. Ando, Ms. H. Ishiguro, Ms. A. Ito, Mr. H. Kato, Mr. T. Kuriyama, Mr. S. Toyama, Mr. S. Wakaki, Ms. F. Ohmori, Mr. K. Tonegawa, Mr. H. Kamikubo, Ms. I. Dohniwa, Mr. H. Takahashi, Ms. S. Tashiro, Mr. Y. Hirano, Ms. M. Takigami, Mr. T. Murakami, Ms. H. Tajima, Mr. M. Okamoto, Mr. K. Ino, Mr. T. Koyama, Mr. Y. Nakano, Ms. N. Kawakami, Mr. T. Tokiwa, Ms. H. Shimizu, Ms. S. Ogawa, Mr. N. Tane, Ms. H. Ohno, Mr. K. Watanabe, Mr. K. Miyakawa, Mr. N. Kageyama, Mr. S. Tomita, Ms. K. Yoshimura, Mr. K. Nagai, Ms. A. Matsushita, Ms. T. Itoh and Mr. K. Kohno. This work was supported by the Grant-in-Aid for Scientific Research (No. 12490016) from the Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan, the Ishida Foundation (No. 99-002), the 25th Iwatani Naoji Foundation, Showa Shell Sekiyu Foundation for Promotion of Environment Research 1998, the Akasaki Foundation for Promotion of Research 2000, and Nagoya University Foundation 2004.

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Appendix I Analytical results of stream sediments.

Appendix I-1

Sample No.	N1	N2	N3[1]	E1	E2	E3[2]	ID[3]	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI[4]	Total	
Kozoji[5]																				
01A01	35	15	38	137	6	27	410	60.7	0.22	15.33	2.76	0.13	0.45	1.16	1.91	3.49	0.10	13.02	99.3	[2][6]
01A02	35	15	49	137	6	51	410	61.4	0.41	14.65	4.59	0.51	0.74	1.18	1.21	2.32	0.13	12.49	99.6	[2]
01A03	35	15	24	137	6	16	410	53.4	0.36	17.87	4.23	0.36	0.73	1.20	1.06	2.64	1.00	16.98	99.8	[2]
01A04	35	15	48	137	6	58	410	68.7	0.71	12.27	2.77	0.10	0.45	1.01	1.25	3.30	0.44	6.44	97.4	[2]
01A05	35	15	32	137	5	22	434	61.6	0.44	8.96	4.63	0.31	0.81	0.80	0.39	1.48	0.39	21.20	101.0	[2]
01A06	35	15	21	137	5	33	410	61.5	0.48	15.30	4.17	0.21	0.76	0.89	0.92	2.60	0.37	12.41	99.6	[2]
01A07	35	15	34	137	5	18	434	60.6	0.49	14.52	6.05	0.40	0.65	0.63	0.55	2.46	0.10	13.68	100.1	[2]
01A08	35	15	14	137	5	24	410	58.0	0.53	15.05	4.83	0.18	0.83	0.96	0.75	2.27	0.52	15.99	99.9	[2]
01A09	35	15	14	137	3	57	110	58.9	0.43	13.21	4.17	0.17	0.79	1.11	0.98	1.85	0.88	17.93	100.4	[2]
01A10	35	15	45	137	3	40	110	66.9	0.87	13.17	3.00	0.16	0.59	0.59	0.45	1.62	0.47	11.29	99.2	[2]
01A11	35	16	9	137	3	46	110	52.6	0.64	14.98	6.91	2.44	0.90	0.74	0.25	1.77	0.47	18.52	100.2	[2]
01A12	35	15	53	137	4	17	920	76.4	0.35	7.74	1.78	0.05	0.58	0.70	1.02	2.08	0.06	8.04	98.8	[2]
01A13	35	16	27	137	4	53	920	73.0	0.33	6.61	4.42	0.59	0.52	0.49	0.04	0.84	0.10	12.40	99.4	[2]
01A14	35	16	36	137	4	59	920	71.0	0.51	10.58	3.99	0.25	1.17	0.79	0.37	1.83	0.17	8.74	99.4	[2]
01A15	35	16	35	137	5	26	210	72.2	0.56	9.23	4.47	0.18	0.77	0.43	0.18	1.64	0.19	8.92	98.7	[2]
01A16	35	16	36	137	5	39	210	72.8	0.53	9.67	3.49	0.08	0.79	0.71	0.50	1.90	0.20	7.97	98.6	[2]
01A17	35	16	37	137	5	43	210	81.3	0.38	7.06	2.15	0.15	0.53	0.59	0.75	1.81	0.08	3.56	98.4	[2]
01A18	35	16	24	137	7	16	434	64.9	1.43	15.37	4.04	0.12	0.73	1.21	1.52	2.56	0.06	6.65	98.6	[2]
01A19	35	16	23	137	7	13	434	70.7	0.48	13.00	2.98	0.10	0.55	0.64	1.01	3.23	0.04	5.25	98.0	[2]
01A20	35	17	8	137	6	51	210	86.0	0.26	3.64	1.72	0.12	0.60	0.26	0.07	0.77	0.06	5.20	98.7	[2]
01A21	35	17	23	137	7	6	210	78.1	0.39	7.51	2.45	0.15	0.57	0.35	0.26	1.40	0.10	6.77	98.1	[2]
01A22	35	17	26	137	7	18	210	71.0	0.39	9.07	2.77	0.07	0.56	0.65	0.46	1.47	0.42	12.83	99.7	[2]
01A23	35	16	58	137	6	13	910	76.1	0.38	8.59	2.96	0.16	0.59	0.53	0.56	1.82	0.11	7.09	98.9	[2]
01A24	35	17	24	137	6	52	210	84.2	0.67	5.31	2.00	0.05	0.47	0.11	0.14	2.00	0.03	2.00	97.0	[2]
01A25	35	17	36	137	6	32	910	69.3	0.36	11.45	5.28	0.26	0.64	1.19	1.79	1.81	0.18	5.73	97.9	[2]
01A26	35	17	34	137	6	15	910	62.9	0.46	9.21	11.46	2.36	0.90	0.60	0.39	1.60	0.37	9.53	99.7	[2]
01T01	35	18	41	137	7	3	920	80.3	0.44	8.42	2.95	0.06	0.60	0.45	0.35	1.49	0.07	3.28	98.4	
01T02	35	18	39	137	7	2	920	70.2	0.63	10.64	4.40	0.07	1.06	0.15	0.09	1.61	0.12	10.83	99.8	
01T03	35	17	22	137	5	56	910	74.1	0.52	10.79	3.07	0.21	0.86	0.91	1.08	2.38	0.09	4.53	98.5	
01T04	35	18	4	137	6	7	910	50.2	0.53	11.31	4.80	0.25	1.09	0.79	0.27	1.58	0.28	32.40	103.5	
01T05	35	18	18	137	6	42	910	70.7	0.57	9.89	3.14	0.16	0.90	0.65	0.58	1.90	0.47	9.94	98.9	
01T06	35	18	10	137	5	53	910	74.6	0.53	10.03	4.03	0.27	1.20	0.51	0.48	2.23	0.09	4.25	98.3	
01T07	35	18	7	137	5	55	910	67.8	0.60	11.96	5.50	0.13	1.15	0.50	0.41	2.02	0.20	9.26	99.5	
01T08	35	18	41	137	6	22	910	73.4	0.62	11.14	3.40	0.16	0.88	0.59	0.46	1.95	0.09	6.43	99.1	
01T09	35	19	3	137	5	54	920	70.9	0.52	11.76	4.18	0.13	1.26	0.04	0.51	2.39	0.29	6.93	98.9	
01T10	35	19	4	137	6	26	910	52.0	0.51	9.61	16.86	3.97	0.87	1.06	0.24	1.63	0.19	14.95	101.9	
01T11	35	19	54	137	6	13	910	75.4	0.43	9.39	3.34	0.11	1.18	0.66	1.03	2.58	0.09	3.28	97.5	
01T12	35	19	41	137	6	15	910	75.5	0.49	8.31	3.26	0.23	0.80	0.49	0.42	2.13	0.11	6.47	98.2	
01T13	35	19	25	137	7	17	210	78.2	0.86	7.42	3.23	0.29	0.57	0.26	0.12	1.15	0.12	6.03	98.3	
01T14	35	20	11	137	6	52	110	81.6	0.39	6.95	2.20	0.08	0.64	0.42	0.57	1.95	0.11	3.35	98.2	
01T15	35	16	23	137	3	48	910	65.4	0.33	6.31	16.13	0.21	0.48	0.43	0.22	1.34	0.44	10.36	101.6	
01T16	35	16	23	137	3	47	910	79.9	0.39	6.76	3.64	0.14	0.60	0.41	0.27	1.38	0.10	4.93	98.5	
01T17	35	16	16	137	3	53	110	64.1	0.45	11.78	5.67	0.51	0.97	0.70	0.49	1.80	0.34	11.82	98.7	
01T18	35	17	24	137	4	13	110	75.9	0.42	8.91	3.15	0.17	0.86	0.47	0.55	1.74	0.09	6.18	98.5	
01T19	35	17	57	137	4	16	910	66.9	0.52	13.41	5.20	0.18	1.21	0.85	0.90	2.32	0.11	6.49	98.1	
01T20	35	18	8	137	3	51	910	79.4	0.37	6.88	3.10	0.21	0.57	0.25	0.13	0.80	0.06	6.10	97.9	
01T21	35	18	44	137	2	29	210	68.8	0.56	11.29	5.25	0.94	0.94	0.70	0.26	2.24	0.11	7.62	98.7	
01T22	35	18	59	137	2	40	110	81.2	0.50	7.27	2.63	0.08	0.57	0.25	0.36	1.87	0.07	3.76	98.5	
01T23	35	19	16	137	5	1	910	70.1	0.61	13.22	4.37	0.28	0.79	0.35	0.20	2.21	0.11	8.30	100.5	
01T24	35	19	14	137	4	8	910	74.5	0.50	9.58	2.76	0.06	0.71	0.36	0.37	2.03	0.08	9.30	100.3	
01T25	35	19	48	137	4	7	920	81.1	0.43	7.33	2.82	0.10	0.60	0.14	0.15	1.87	0.08	5.59	100.2	
01T26	35	19	59	137	4	38	920	70.7	0.48	11.48	4.08	0.08	1.50	1.52	1.46	3.14	0.12	4.56	99.1	
01T27	35	19	37	137	6	0	910	79.6	0.48	7.73	3.47	0.20	0.58	0.31	0.24	1.96	0.08	5.58	100.2	
01T28	35	19	42	137	3	45	920	66.0	0.55	13.44	5.65	0.35	1.11	0.73	0.51	2.29	0.12	9.56	100.3	
01T29	35	19	24	137	3	24	910	64.8	0.50	11.44	6.92	0.17	1.22	1.26	0.76	2.26	0.27	10.29	99.9	
01T30	35	19	1	137	2	53	210	76.6	0.43	8.81	3.85	0.54	0.47	0.37	0.11	1.17	0.11	7.97	100.4	
01T31	35	19	10	137	2	50	110	72.4	0.43	9.59	5.77	0.19	0.87	0.82	0.65	1.97	0.20	7.26	100.1	
01T32	35	19	23	137	2	41	910	77.2	0.45	7.45	4.21	0.69	0.39	0.32	0.13	1.55	0.52	6.48	99.4	
01T33	35	19	49	137	5	28	210	68.7	0.48	11.50	4.57	1.25	1.51	0.97	1.04	2.87	0.12	5.52	98.5	
01T34	35	20	5	137	5	0	920	71.3	0.53	10.51	4.63	0.26	0.87	0.46	0.81	2.25	0.11	10.09	101.8	

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
01T35	35	18	38	137	3	24	910	78.5	0.46	7.76	3.17	0.17	0.77	0.34	0.16	1.37	0.06	5.21	98.0
01X01	35	18	46	137	4	19	920	80.3	0.43	7.17	2.47	0.13	0.66	0.27	0.26	1.74	0.06	5.16	98.7
01X02	35	18	46	137	4	50	920	82.7	0.04	6.43	2.09	0.14	0.70	0.37	0.29	1.89	0.06	3.08	97.8
01X03	35	18	41	137	4	46	910	76.8	0.46	8.58	3.05	0.12	0.96	0.27	0.24	2.09	0.08	6.42	99.1
01X04	35	18	40	137	5	1	910	77.6	0.47	7.78	3.27	0.20	0.87	0.31	0.19	1.70	0.09	5.22	97.7
01X05	35	18	9	137	5	19	910	56.8	0.59	11.75	3.98	0.07	0.83	0.38	0.30	1.66	0.17	25.12	101.7
01X06	35	18	2	137	5	25	910	68.9	0.52	9.91	3.56	0.10	0.64	0.32	0.33	1.31	0.12	14.90	100.6
01X07	35	17	37	137	5	29	910	23.2	0.14	2.99	4.38	1.58	0.76	35.57	0.18	0.83	1.70	34.35	105.7
01X08	35	17	34	137	5	27	910	70.2	0.55	9.56	5.13	0.16	1.13	1.34	0.79	1.96	0.27	6.86	97.9
01X09	35	17	18	137	4	21	910	71.4	0.58	11.06	3.39	0.06	0.67	0.24	0.21	1.84	0.07	9.38	98.9
01X10	35	16	50	137	4	22	910	74.1	0.47	9.10	2.38	0.04	0.64	0.31	0.13	1.62	0.06	8.56	97.4
01X11	35	16	31	137	4	48	920	76.7	0.34	7.43	4.07	0.34	0.47	0.30	0.09	1.06	0.08	8.40	99.3
01X12	35	16	23	137	4	39	920	72.9	0.48	7.65	5.06	0.30	1.24	0.79	0.34	1.26	0.17	8.82	99.0
Tajimi																			
02A01	35	15	17	137	8	6	110	63.4	0.56	13.65	4.29	0.04	0.85	0.72	0.63	2.05	0.35	13.47	100.0
02A02	35	15	14	137	7	21	223	57.2	2.26	12.74	7.72	0.24	0.99	1.20	1.07	1.95	0.54	12.47	98.4
02A03	35	16	26	137	8	36	223	67.1	0.77	11.45	4.44	0.11	0.98	0.68	0.51	1.79	0.09	11.01	98.9
02A04	35	16	32	137	8	0	110	73.9	0.38	6.68	3.28	0.25	0.64	0.28	0.18	1.20	0.10	12.18	99.1
02A05	35	16	25	137	7	51	434	72.2	1.25	11.08	4.01	0.09	0.62	0.65	1.03	2.67	0.09	5.03	98.7
02A06	35	17	20	137	7	49	210	79.6	0.35	7.30	2.07	0.12	0.55	0.45	0.45	1.42	0.05	5.91	98.2
02A07	35	16	39	137	7	27	910	74.5	1.16	10.38	2.69	0.10	0.51	0.87	1.58	2.93	0.05	3.19	97.9
02A08	35	17	21	137	7	48	210	85.5	0.18	5.40	1.36	0.04	0.55	0.91	0.99	1.79	0.03	1.51	98.2
02A09	35	15	26	137	14	19	440	67.0	0.22	15.38	2.21	0.09	0.52	1.20	1.94	5.03	0.03	4.46	98.1
02A10	35	15	27	137	14	7	410	70.6	0.15	14.44	1.58	0.10	0.39	1.21	2.57	4.48	0.03	2.58	98.1
02A11	35	16	39	137	14	14	110	71.7	0.30	13.24	1.95	0.06	0.51	1.05	1.52	4.23	0.05	3.69	98.2
02A12	35	16	42	137	14	28	110	71.3	0.25	13.53	2.18	0.06	0.68	1.89	2.35	3.68	0.05	2.04	98.0
02A13	35	17	10	137	14	30	910	77.8	0.58	9.31	2.34	0.08	0.72	1.53	1.51	2.61	0.03	1.53	98.1
02A14	35	17	22	137	14	37	910	81.4	0.40	8.14	1.74	0.05	0.58	1.22	1.28	2.37	0.03	1.25	98.5
02A16	35	18	34	137	10	36	210	73.8	0.48	12.26	2.53	0.05	0.57	1.09	0.62	1.86	0.12	5.40	98.8
02A17	35	18	38	137	10	37	210	88.3	0.56	5.25	1.40	0.02	0.20	0.20	0.06	0.99	0.02	2.49	99.5
02A18	35	18	5	137	10	22	120	80.1	0.56	8.49	2.37	0.07	0.49	0.30	0.24	1.67	0.05	4.14	98.5
02A19	35	19	6	137	10	2	110	85.8	0.36	5.51	1.90	0.21	0.26	0.16	0.04	0.80	0.06	5.28	100.4
02A20	35	19	9	137	9	50	210	80.3	0.55	11.71	1.96	0.05	0.50	0.53	0.58	1.48	0.09	2.34	100.1
02B01	35	16	11	137	11	14	440	64.6	0.40	15.76	3.58	0.10	1.02	2.91	2.68	3.10	0.06	2.69	96.9
02B02	35	15	50	137	10	36	440	62.7	0.40	16.58	3.92	0.12	1.09	2.70	2.52	3.09	0.08	4.97	98.2
02B03	35	16	8	137	9	50	410	67.4	0.37	14.41	3.30	0.11	1.01	1.86	2.19	3.21	0.06	3.97	97.9
02B04	35	16	15	137	9	39	410	65.9	0.74	12.60	5.06	0.12	1.07	0.74	0.64	2.31	0.60	9.87	99.7
02B05	35	16	8	137	9	10	410	57.3	0.67	16.71	5.70	0.15	1.09	1.26	1.09	2.79	0.10	12.44	99.3
02B06	35	16	22	137	8	55	223	67.6	0.77	10.41	5.65	0.21	2.15	1.89	0.74	1.89	0.06	7.98	99.3
02B07	35	16	24	137	8	46	223	70.3	0.82	11.28	4.62	0.08	1.00	0.96	0.99	2.37	0.05	5.99	98.4
02B08	35	16	17	137	8	28	110	63.2	0.51	15.97	4.19	0.11	1.01	1.46	1.81	2.77	0.12	7.65	98.8
02B09	35	15	20	137	8	28	110	60.5	0.38	17.36	3.56	0.11	0.84	1.85	2.54	2.70	0.22	9.13	99.2
02B10	35	15	37	137	9	12	410	63.0	0.48	12.99	3.93	0.11	0.96	1.60	1.45	2.37	0.10	12.00	99.0
02B12	35	15	40	137	9	44	410	63.9	0.44	15.57	3.61	0.09	0.83	1.98	2.06	4.04	0.04	5.12	97.7
02B13	35	15	35	137	10	1	440	64.2	0.36	15.89	3.90	0.10	1.03	2.99	3.47	2.59	0.04	3.09	97.6
02B14	35	15	41	137	10	0	440	58.8	0.49	17.07	5.11	0.17	1.05	1.67	1.52	3.12	0.09	10.26	99.3
02B15	35	15	20	137	9	9	410	63.0	0.10	14.50	4.57	0.71	0.37	1.24	3.35	2.97	0.06	7.87	98.7
02B16	35	15	18	137	9	30	410	64.9	0.07	16.99	1.47	0.11	0.28	1.02	4.48	3.44	0.04	5.24	98.1
02B17	35	15	13	137	9	42	410	60.0	0.12	17.55	2.56	0.30	0.39	1.17	3.59	2.73	0.06	10.55	99.0
02B18	35	15	22	137	9	36	410	67.9	0.24	15.24	2.48	0.08	0.64	1.86	3.09	3.34	0.04	2.47	97.3
02B19	35	16	31	137	11	38	440	68.5	0.28	14.22	2.79	0.09	0.62	1.68	2.95	3.28	0.05	2.48	96.9
02B20	35	16	34	137	11	39	440	64.1	0.21	17.13	1.59	0.08	0.29	0.43	1.61	6.03	0.04	6.97	98.4
02B21	35	16	53	137	10	47	434	65.4	0.21	14.69	1.99	0.09	0.52	1.25	3.10	3.46	0.07	7.23	98.0
02B22	35	16	46	137	10	54	410	63.7	0.27	17.06	2.20	0.05	0.42	1.10	2.62	3.80	0.05	6.15	97.4
02B23	35	16	49	137	11	9	434	48.9	0.20	15.73	9.22	2.10	0.40	1.00	1.54	3.36	1.33	16.66	100.5
02B24	35	17	0	137	10	24	910	65.7	0.84	12.83	4.92	0.09	1.11	0.63	0.63	2.26	0.06	9.82	98.9
02B25	35	17	9	137	10	37	434	65.5	0.24	14.16	3.31	0.26	0.49	0.74	1.79	3.57	0.16	7.88	98.1
02B26	35	17	19	137	10	16	910	71.8	0.24	13.09	1.62	0.05	0.44	1.09	2.13	3.97	0.06	2.67	97.1
02B27	35	17	0	137	10	29	910	66.1	0.61	13.02	4.62	0.14	1.05	0.74	0.66	1.98	0.05	10.02	99.0
02B28	35	16	6	137	13	5	440	71.8	0.26	12.73	1.75	0.05	0.41	0.71	1.28	5.27	0.05	2.81	97.1

Appendix I-2

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total	
02B29	35	16	10	137	13	2	440	69.7	0.42	11.88	2.92	0.06	0.75	1.45	1.45	3.13	0.17	4.99	97.0	[3]
02B30	35	16	20	137	13	22	440	71.2	0.24	13.31	1.92	0.06	0.52	1.36	1.79	4.25	0.03	2.68	97.4	[3]
02B31	35	16	22	137	13	18	440	71.4	0.34	12.56	2.90	0.12	0.75	1.69	1.68	3.01	0.08	3.86	98.4	[3]
02B32	35	16	34	137	13	24	440	82.9	0.33	7.21	1.70	0.04	0.52	0.50	0.79	1.88	0.05	2.60	98.5	[3]
02B33	35	16	49	137	13	31	434	56.0	0.31	21.18	3.42	0.14	0.38	0.58	1.31	4.29	0.05	11.95	99.6	[3]
02B34	35	16	56	137	13	34	434	45.2	0.29	16.92	18.05	1.22	0.39	0.77	1.49	2.69	0.19	15.48	102.7	[3]
02B35	35	17	0	137	13	19	434	56.8	0.64	21.25	3.79	0.11	0.53	0.53	0.91	4.16	0.12	10.54	99.3	[3]
02B36	35	17	10	137	13	19	434	56.1	0.32	17.90	5.26	1.43	0.56	0.97	1.89	3.27	0.22	11.58	99.5	[3]
02B37	35	17	7	137	13	10	434	62.8	0.29	15.82	2.23	0.06	0.45	1.23	2.59	4.01	0.06	8.74	98.3	[3]
02B38	35	17	10	137	13	12	434	66.6	0.28	15.40	2.80	0.13	0.66	1.44	1.87	3.79	0.08	4.88	97.9	[3]
02B39	35	17	13	137	12	50	434	64.5	0.27	17.17	2.38	0.06	0.49	0.81	2.01	4.68	0.05	5.58	98.0	[3]
02B40	35	17	25	137	12	44	434	65.7	0.22	16.66	2.07	0.06	0.35	0.60	1.93	5.05	0.03	5.34	98.0	[3]
02B41	35	17	23	137	12	40	434	64.9	0.20	16.66	1.94	0.07	0.33	0.62	1.95	5.48	0.04	6.20	98.4	[3]
02C01	35	15	38	137	10	52	440	66.9	0.39	15.41	2.66	0.09	0.72	2.02	2.65	3.93	0.03	3.51	98.3	[3]
02C02	35	15	53	137	11	11	440	63.6	0.79	15.27	4.69	0.16	1.27	3.21	2.94	3.08	0.06	2.52	97.6	[3]
02C03	35	16	11	137	11	39	440	68.4	0.33	14.16	3.13	0.09	0.92	2.50	2.53	3.38	0.06	1.84	97.3	[3]
02C04	35	15	46	137	12	55	440	67.1	0.39	15.67	2.56	0.08	0.66	1.13	1.33	5.42	0.04	3.66	98.0	[3]
02C05	35	15	35	137	12	37	440	67.9	0.33	13.32	5.23	0.09	0.78	1.70	1.58	3.93	0.03	3.14	98.0	[3]
02C06	35	15	23	137	12	53	410	71.6	0.09	13.96	0.89	0.05	0.23	0.64	1.90	5.52	0.06	2.65	97.6	[3]
02C07	35	15	29	137	12	48	440	69.1	0.13	15.32	1.33	0.04	0.31	0.56	1.62	5.85	0.04	3.73	98.0	[3]
02C08	35	15	45	137	12	21	440	62.5	0.32	18.13	2.98	0.07	0.76	1.84	2.56	3.71	0.04	5.41	98.3	[3]
02T01	35	19	54	137	7	23	110	76.7	1.15	9.06	2.82	0.10	0.62	0.99	1.27	2.08	0.07	3.01	97.9	
02T02	35	19	21	137	7	49	110	69.1	0.56	13.01	3.19	0.10	0.81	1.43	1.81	2.80	0.09	4.91	97.8	
02T03	35	19	16	137	7	50	110	87.1	0.43	4.73	1.54	0.08	0.40	0.27	0.26	1.45	0.03	1.95	98.2	
02T04	35	18	16	137	7	43	210	73.4	0.56	10.75	3.16	0.06	0.53	0.33	0.26	1.59	0.14	7.79	98.6	
02T05	35	18	8	137	7	50	210	79.9	1.02	6.91	3.55	0.05	0.23	0.09	0.08	1.10	0.03	5.54	98.5	
02T06	35	17	50	137	7	56	210	74.0	0.50	9.39	2.53	0.09	0.94	0.53	0.75	1.89	0.32	7.29	98.3	
02T07	35	17	25	137	7	34	210	76.9	0.40	7.76	3.65	0.23	0.44	0.36	1.70	1.46	0.14	5.75	98.7	
02T08	35	18	26	137	8	28	210	78.7	0.43	8.11	1.44	0.02	0.32	0.34	0.38	1.70	0.12	6.87	98.5	
02T09	35	17	17	137	9	1	210	71.2	0.70	11.33	4.39	0.12	0.82	0.41	0.28	1.56	0.06	7.51	98.4	
02T10	35	18	4	137	9	4	110	66.1	1.31	10.12	4.82	0.12	1.01	1.15	0.67	1.91	0.51	10.71	98.4	
02T11	35	17	46	137	8	58	110	73.8	0.69	9.49	4.16	0.12	1.39	1.65	0.94	1.92	0.11	3.49	97.8	
02T12	35	18	23	137	9	22	210	80.1	0.56	6.93	2.10	0.05	0.39	0.45	0.59	1.66	0.14	4.67	97.7	
02T13	35	18	10	137	9	30	120	70.6	0.48	12.80	2.92	0.09	0.60	1.39	2.20	3.30	0.07	2.88	97.3	
02T14	35	18	35	137	10	36	210	69.2	0.68	13.44	3.17	0.06	0.55	0.77	0.67	2.23	0.17	6.94	97.9	
02T15	35	19	10	137	9	51	210	63.9	0.43	13.37	2.42	0.11	0.95	0.81	0.59	2.09	0.58	11.88	97.1	
02T16	35	19	27	137	9	16	210	64.6	0.50	9.96	8.52	1.70	0.61	0.56	0.31	1.69	0.19	10.45	99.1	
02T17	35	19	43	137	9	11	210	88.9	0.70	4.77	0.89	0.04	0.10	0.78	0.01	0.59	0.02	1.97	98.8	
02T18	35	20	7	137	9	27	910	62.4	0.65	14.50	6.82	0.31	0.54	0.27	0.16	1.70	0.14	12.12	99.6	
02T19	35	19	35	137	10	59	210	83.0	0.82	6.32	1.62	0.06	0.27	0.40	0.30	1.60	0.06	2.84	97.3	
02T20	35	18	50	137	12	54	223	59.7	0.93	16.19	5.32	0.07	1.01	1.37	1.09	1.63	0.10	11.74	99.2	
02T21	35	18	57	137	12	33	210	57.7	0.97	16.36	6.13	0.11	1.36	2.26	1.14	1.34	0.12	13.01	100.5	
02T22	35	19	3	137	12	55	210	64.0	1.18	12.01	6.05	0.15	0.84	1.24	0.92	1.94	0.43	9.92	98.7	
02T23	35	19	27	137	11	35	210	66.7	1.04	13.14	3.86	0.66	0.65	1.01	0.66	1.76	0.28	8.84	98.6	
02T24	35	18	30	137	12	32	223	65.0	0.92	14.91	4.26	0.08	0.60	1.06	2.06	2.70	0.05	6.99	98.6	
02T25	35	18	48	137	12	10	223	74.4	3.18	8.10	5.55	0.09	0.58	0.50	0.70	1.72	0.04	3.53	98.4	
02T26	35	18	48	137	11	40	210	63.2	1.58	14.05	5.16	0.11	0.78	1.20	1.42	2.31	0.14	8.44	98.4	
02T27	35	18	15	137	12	6	910	65.5	0.26	15.95	2.25	0.08	0.30	0.89	2.78	3.61	0.07	6.68	98.4	
02T28	35	18	18	137	12	11	223	68.3	0.51	14.71	2.64	0.05	0.29	0.65	1.65	4.32	0.04	5.30	98.5	
02T29	35	18	29	137	11	25	210	68.6	1.89	11.80	4.14	0.18	0.51	1.12	2.01	2.89	0.11	3.20	96.5	
02T30	35	17	45	137	10	46	210	80.4	0.55	8.75	2.11	0.06	0.69	0.23	0.16	1.71	0.03	4.09	98.8	
02T31	35	17	50	137	10	59	210	82.5	0.36	6.86	2.20	0.11	0.63	0.36	0.49	1.48	0.04	3.96	99.0	
02T32	35	17	45	137	11	30	434	67.8	0.21	15.87	1.67	0.13	0.21	1.14	5.43	3.15	0.04	2.47	98.1	
02T33	35	17	10	137	12	11	434	64.9	0.30	17.01	2.43	0.11	0.34	1.00	2.61	4.05	0.05	4.76	97.5	
02T34	35	18	6	137	14	36	110	73.2	0.36	10.38	3.93	0.11	1.05	0.67	0.61	1.74	0.09	7.28	99.4	
02T35	35	18	19	137	13	27	223	76.8	0.29	10.76	1.77	0.06	0.24	0.46	1.49	3.27	0.05	2.78	98.0	
02T36	35	18	34	137	14	16	440	78.0	0.61	8.05	3.24	0.15	0.68	0.45	0.28	1.47	0.06	5.14	98.2	
02T37	35	18	43	137	14	2	440	70.0	0.82	12.58	3.89	0.09	0.55	0.52	1.03	2.06	0.05	6.95	98.6	
02T38	35	19	13	137	13	44	910	64.5	0.47	15.19	3.81	0.11	0.57	0.95	1.39	2.55	0.30	9.43	99.3	
02T39	35	19	16	137	13	25	210	69.3	0.62	12.76	3.15	0.05	0.52	0.62	0.77	2.04	0.15	8.82	98.7	
02T40	35	19	10	137	14	4	910	76.7	0.58	9.49	3.21	0.13	0.65	0.45	0.55	1.81	0.06	5.42	99.0	

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
02T41	35	19	10	137	14	44	910	68.2	0.66	10.09	3.73	0.14	0.91	0.59	0.81	1.89	0.11	11.86	99.0
02T42	35	19	12	137	14	32	910	75.4	0.67	8.99	3.20	0.11	0.75	0.36	0.32	1.46	0.08	7.20	98.5
02T43	35	20	3	137	10	48	210	80.6	0.41	7.49	1.90	0.07	0.35	0.16	0.28	1.87	0.04	5.60	98.7
02T44	35	20	6	137	11	59	210	81.0	0.42	7.71	1.34	0.06	0.22	0.23	0.28	2.28	0.03	5.88	99.5
02T45	35	19	53	137	12	54	210	79.9	0.59	7.88	2.27	0.08	0.38	0.24	0.42	1.98	0.04	5.90	99.7
02T46	35	17	11	137	12	25	434	70.9	0.34	13.63	2.09	0.08	0.30	0.44	0.92	4.24	0.06	5.73	98.7
Mashizume																			
03A01	35	15	44	137	15	51	440	69.5	0.21	14.57	2.38	0.08	0.67	2.20	2.93	3.74	0.03	2.15	98.4
03A02	35	15	23	137	15	57	440	65.9	0.57	13.13	5.21	0.17	1.70	3.68	2.26	2.48	0.04	1.81	97.0
03A03	35	15	37	137	15	17	440	71.0	0.14	14.37	1.56	0.05	0.35	1.32	2.45	4.68	0.02	2.13	98.1
03A04	35	16	55	137	14	51	210	69.8	0.30	13.03	3.61	0.11	1.02	2.98	2.58	2.77	0.03	1.64	97.9
03A05	35	16	21	137	15	57	440	64.8	0.32	15.40	3.60	0.12	0.71	1.60	1.77	4.03	0.04	6.90	99.2
03A06	35	16	9	137	16	45	440	66.8	0.26	15.17	2.91	0.08	0.77	2.16	2.23	3.78	0.04	4.38	98.5
03A07	35	15	37	137	17	18	440	60.1	0.37	17.56	4.58	0.13	1.30	2.31	1.80	3.46	0.05	6.58	98.2
03A08	35	15	35	137	16	35	440	65.2	0.30	15.82	3.97	0.13	1.28	3.43	3.05	2.99	0.04	2.74	99.0
03A09	35	15	35	137	18	13	440	62.8	0.36	16.33	4.79	0.14	1.55	3.24	2.38	3.26	0.05	3.94	98.8
03A10	35	16	7	137	18	1	440	62.8	0.54	15.32	5.18	0.22	1.17	2.33	2.37	3.30	0.09	5.74	99.1
03A11	35	16	57	137	16	7	440	59.8	0.38	17.34	4.18	0.13	0.96	2.88	2.71	2.67	0.07	8.27	99.4
03A12	35	16	43	137	16	41	440	65.1	0.39	14.50	4.60	0.16	1.23	3.16	2.44	2.88	0.06	3.61	98.1
03A13	35	17	4	137	16	43	440	64.4	0.40	15.95	4.10	0.12	1.03	2.93	2.68	3.09	0.06	3.63	98.4
03A14	35	16	37	137	17	24	440	64.4	0.32	16.43	3.66	0.12	0.91	2.69	2.56	3.27	0.06	4.30	98.7
03B01	35	15	48	137	21	34	431	66.6	0.30	16.41	3.54	0.06	0.37	3.19	4.55	1.98	0.06	1.60	98.6
03B02	35	16	9	137	20	29	110	66.2	0.19	17.38	2.23	0.05	0.30	3.07	5.06	1.80	0.04	1.48	97.8
03B03	35	15	49	137	19	22	434	59.7	0.34	18.59	4.33	0.13	1.02	3.12	3.52	2.39	0.08	6.04	99.3
03B04	35	16	33	137	20	32	434	65.9	0.65	16.56	2.71	0.08	0.36	3.35	4.48	1.74	0.04	2.28	98.1
03B05	35	16	41	137	19	11	434	70.2	0.50	14.52	2.07	0.07	0.34	2.38	4.59	1.94	0.02	1.07	97.7
03B06	35	16	34	137	22	1	431	69.0	0.25	15.46	2.29	0.06	0.38	2.60	3.47	2.85	0.04	2.18	98.5
03B07	35	17	14	137	20	6	434	66.7	0.40	17.09	2.21	0.07	0.32	2.62	4.08	2.34	0.04	2.39	98.3
03B08	35	17	25	137	20	40	431	68.1	0.42	15.82	1.78	0.06	0.19	1.39	3.26	3.63	0.03	3.23	97.9
03C01	35	15	18	137	21	6	431	60.4	0.42	18.46	3.52	0.08	0.55	2.02	3.28	2.84	0.09	8.03	99.6
Akechi																			
04A01	35	18	54	137	23	32	431	60.6	0.45	16.73	3.79	0.08	0.77	2.05	2.34	3.18	0.10	8.58	98.7
04A02	35	18	48	137	23	27	431	56.8	0.61	15.67	5.27	0.13	0.68	1.21	1.08	2.72	0.32	14.56	99.0
04A03	35	18	41	137	22	37	431	54.4	0.62	16.61	4.94	0.11	0.66	1.06	0.89	2.53	0.52	17.39	99.7
04A04	35	17	51	137	23	47	431	57.9	0.61	15.75	4.25	0.11	0.66	2.89	2.08	2.39	0.30	12.27	99.2
04A05	35	17	16	137	23	39	431	58.3	0.84	16.80	4.92	0.15	0.58	1.61	1.66	2.37	0.11	11.13	98.5
04A06	35	17	13	137	23	27	431	57.9	0.63	17.57	4.35	0.10	0.76	2.19	2.52	2.57	0.10	9.86	98.5
04A07	35	17	2	137	23	56	431	61.6	0.51	15.81	3.79	0.09	0.59	2.23	2.26	2.58	0.10	9.28	98.8
04A08	35	16	49	137	24	35	431	61.6	0.53	15.93	3.70	0.09	0.44	1.61	2.00	3.07	0.12	10.59	99.7
04A09	35	16	31	137	23	45	431	62.7	0.54	15.22	3.71	0.08	0.43	2.14	2.64	2.51	0.07	9.12	99.1
04A10	35	17	12	137	25	17	431	61.8	0.55	17.97	3.64	0.09	0.47	2.01	2.51	2.91	0.07	6.18	98.2
04A11	35	17	46	137	25	16	431	62.7	0.63	20.20	3.62	0.07	0.54	2.74	2.73	2.27	0.10	12.88	108.5
04A12	35	18	6	137	25	14	431	52.2	0.65	21.32	4.54	0.10	0.59	2.64	2.08	1.78	0.17	13.85	99.9
04A13	35	18	41	137	25	3	431	52.8	0.47	19.22	3.67	0.05	0.62	2.77	3.23	2.02	0.11	14.29	99.2
04A14	35	18	55	137	25	4	431	58.3	0.39	19.38	3.70	0.06	0.58	2.24	3.22	2.16	0.07	7.98	98.1
04A15	35	18	55	137	24	18	431	60.6	0.59	17.83	4.73	0.09	0.72	2.36	3.01	2.66	0.08	6.13	98.8
04A16	35	18	23	137	23	46	431	59.7	0.42	19.43	2.84	0.06	0.34	2.46	3.30	2.18	0.06	8.26	99.0
04A17	35	18	21	137	24	31	431	55.7	0.47	20.91	4.04	0.08	0.41	1.35	1.89	3.27	0.05	10.27	98.4
04A18	35	17	57	137	24	39	223	63.8	0.71	17.05	3.50	0.08	0.50	2.48	2.55	2.68	0.04	4.32	97.7
04A19	35	17	34	137	24	54	223	64.0	0.53	15.51	2.93	0.06	0.35	1.55	2.21	2.80	0.07	8.60	98.6
04A20	35	17	17	137	24	51	431	65.0	1.51	13.53	4.26	0.13	0.49	1.25	1.37	3.10	0.39	7.57	98.7
04A21	35	17	1	137	22	47	431	58.6	0.82	19.17	3.77	0.09	0.51	2.32	2.53	2.77	0.05	7.68	98.3
04B01	35	16	54	137	22	45	431	60.3	0.76	18.12	4.35	0.11	0.62	3.85	4.25	1.78	0.06	3.72	97.9
04B02	35	16	14	137	22	45	431	63.2	0.33	18.41	3.05	0.06	0.36	3.42	4.71	1.96	0.03	2.56	98.1
04B03	35	15	52	137	22	50	431	70.4	0.18	14.96	2.00	0.04	0.28	2.63	3.97	2.63	0.02	1.18	98.3
04B04	35	18	57	137	25	7	431	60.2	0.42	18.45	3.72	0.07	0.56	2.59	3.82	2.31	0.06	5.93	98.1
04B05	35	18	32	137	25	32	431	57.8	0.53	19.31	3.79	0.07	0.52	2.85	2.92	2.46	0.09	8.50	98.8
04B06	35	18	1	137	25	56	431	60.7	1.09	18.07	3.86	0.09	0.55	2.79	2.75	2.38	0.07	6.02	98.3
04B07	35	17	53	137	26	51	223	65.5	0.26	16.83	1.85	0.05	0.35	1.76	3.51	2.83	0.05	3.86	96.9

Appendix I-3

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
04B08	35	18	0	137	26	49	223	65.5	0.35	16.98	1.84	0.05	0.33	1.78	4.43	2.85	0.08	3.70	97.9
04B09	35	18	32	137	26	36	420	68.1	0.50	15.50	1.59	0.07	0.20	1.26	3.65	3.20	0.04	3.55	97.7
04B10	35	18	40	137	26	56	223	69.5	0.57	14.63	1.69	0.07	0.22	1.18	3.34	3.37	0.04	3.04	97.6
04B11	35	18	57	137	26	49	420	66.2	0.22	15.25	1.66	0.05	0.31	1.13	2.74	3.30	0.07	7.43	98.3
04B12	35	19	3	137	27	0	420	64.6	0.94	14.92	3.38	0.11	0.39	1.27	1.63	3.43	0.16	7.64	98.4
04B13	35	19	12	137	27	4	420	61.8	0.72	16.30	3.82	0.12	0.48	2.06	2.37	2.84	0.09	7.54	98.2
04B14	35	17	34	137	26	25	431	62.2	0.59	16.65	4.33	0.10	0.66	2.05	2.05	3.01	0.17	7.22	99.0
04B15	35	17	35	137	26	54	431	62.1	0.58	16.66	4.70	0.10	0.83	3.54	3.06	2.08	0.08	4.52	98.2
04B16	35	17	47	137	27	52	431	66.4	0.40	15.59	3.59	0.08	0.66	3.05	3.27	2.32	0.07	2.95	98.3
04B17	35	17	43	137	28	26	431	62.3	0.36	18.26	3.54	0.07	0.64	2.66	3.25	2.55	0.12	4.74	98.5
04B18	35	17	29	137	28	36	120	64.5	0.73	15.38	4.41	0.12	0.78	3.11	3.10	2.24	0.10	2.56	97.0
04B19	35	17	53	137	29	0	120	63.6	0.41	15.79	3.37	0.14	0.63	2.46	3.14	2.80	0.14	3.96	96.4
04B20	35	18	6	137	29	13	120	62.3	0.44	16.77	4.25	0.10	0.88	3.41	3.55	2.10	0.12	4.33	98.2
04B21	35	18	48	137	28	49	431	65.0	0.41	15.75	3.61	0.09	0.65	2.84	3.39	2.52	0.08	2.58	96.9
04B22	35	17	18	137	29	19	431	63.8	0.63	15.37	5.32	0.12	0.84	3.79	3.29	1.67	0.12	3.66	98.6
04B23	35	17	9	137	29	39	431	60.7	0.60	18.04	4.37	0.10	0.66	3.23	3.28	2.25	0.08	5.48	98.8
04B24	35	16	49	137	29	14	431	63.5	0.54	17.01	4.17	0.09	0.60	2.56	2.77	2.67	0.07	4.71	98.6
04B25	35	16	44	137	29	19	431	62.7	0.61	17.42	4.18	0.09	0.60	2.63	3.59	2.42	0.06	3.96	98.3
04C01	35	15	27	137	26	34	431	60.6	0.45	18.27	4.17	0.12	0.72	3.17	4.34	2.57	0.09	2.83	97.4
04C02	35	17	2	137	26	40	431	62.6	0.49	17.65	3.70	0.08	0.52	3.55	3.89	2.13	0.04	2.60	97.3
04C03	35	16	52	137	26	34	431	62.6	1.52	15.56	4.63	0.16	0.51	2.82	3.46	2.55	0.06	1.86	95.7
04C04	35	17	27	137	26	37	431	61.8	0.56	16.74	4.30	0.09	0.73	3.36	3.24	2.21	0.06	3.36	96.4
04C05	35	16	57	137	28	7	120	63.0	1.33	14.67	5.70	0.16	0.81	4.05	3.28	1.51	0.06	1.58	96.1
04C06	35	16	7	137	28	40	120	65.9	0.79	15.51	2.92	0.07	0.26	1.11	2.71	4.25	0.09	2.94	96.5
04C07	35	15	47	137	28	6	431	66.7	0.52	14.75	3.56	0.10	0.55	2.32	3.44	2.85	0.05	1.95	96.8
04C08	35	15	48	137	28	24	431	67.9	0.33	14.66	3.43	0.09	0.62	2.67	3.44	2.24	0.06	1.99	97.4
04C09	35	15	45	137	28	39	431	69.2	0.31	13.91	3.19	0.08	0.57	2.66	3.40	1.85	0.06	1.83	97.1
04C10	35	16	15	137	29	11	431	64.3	0.97	14.57	5.42	0.13	0.73	2.97	2.99	2.26	0.07	2.01	96.4
04C11	35	16	13	137	29	15	431	67.7	0.59	13.76	4.13	0.09	0.57	2.69	3.07	1.95	0.05	2.22	96.8
04E01	35	15	24	137	29	42	431	62.8	0.50	16.86	4.65	0.09	0.74	3.71	3.88	1.74	0.11	2.80	97.9
04E02	35	15	37	137	29	24	120	66.9	0.46	14.68	4.08	0.09	0.85	3.14	3.36	2.42	0.15	1.70	97.9
04F01	35	15	51	137	24	42	420	60.8	0.38	18.91	3.16	0.08	0.49	1.37	2.76	4.38	0.12	6.05	98.5
04F02	35	16	50	137	25	18	431	52.8	0.34	17.63	3.23	0.07	0.52	2.76	3.05	2.25	0.15	18.16	101.0
04F03	35	16	40	137	24	29	431	55.6	0.55	19.05	4.77	0.08	0.60	2.49	2.84	2.32	0.11	12.40	100.8
04F04	35	16	51	137	25	44	431	60.3	0.27	18.51	2.83	0.07	0.36	2.30	4.11	2.58	0.08	8.20	99.6
04F05	35	16	56	137	26	18	431	63.1	0.60	16.71	4.53	0.10	0.69	3.53	3.41	2.42	0.05	3.30	98.4
04F06	35	17	5	137	25	42	431	51.6	0.50	18.55	4.70	0.10	0.64	3.65	3.32	1.72	0.14	14.16	99.1
04F07	35	16	4	137	26	43	431	60.3	0.30	18.45	2.94	0.07	0.29	2.20	3.73	2.73	0.06	8.83	99.9
04F08	35	15	55	137	24	13	420	62.3	0.35	17.52	3.26	0.14	0.51	1.64	3.71	3.82	0.12	5.36	98.7
04F09	35	16	13	137	24	18	431	66.4	0.40	21.26	3.57	0.12	0.50	1.57	3.29	4.24	0.20	7.24	108.8
04F10	35	15	54	137	25	43	420	57.8	0.34	19.50	2.85	0.07	0.41	1.33	3.32	3.68	0.19	9.90	99.4
04F11	35	15	37	137	25	17	420	63.6	0.29	17.10	2.13	0.05	0.34	1.08	2.86	4.78	0.16	7.22	99.6
04F12	35	17	50	137	29	16	431	60.8	0.64	15.31	5.97	0.14	1.13	4.02	2.98	1.41	0.12	6.49	99.0
04F13	35	17	53	137	29	32	120	60.0	0.48	16.83	4.75	0.11	0.89	3.54	3.26	1.90	0.17	5.81	97.7
04F14	35	18	29	137	29	27	431	60.5	0.58	15.97	5.38	0.13	1.21	4.40	3.30	1.53	0.12	5.30	98.4
04F15	35	18	4	137	29	38	120	50.8	0.64	17.32	5.68	0.12	1.09	3.63	2.47	1.56	0.24	16.77	100.3
Yokomichi																			
05B01	35	16	55	137	30	10	431	64.3	0.69	16.33	4.52	0.10	0.63	2.62	3.25	2.38	0.05	2.99	97.8
05B02	35	16	52	137	30	7	431	66.7	0.52	16.14	3.04	0.07	0.44	2.06	3.12	2.53	0.04	2.90	97.6
05B03	35	17	8	137	29	53	431	58.8	0.78	18.03	4.85	0.12	0.66	3.18	3.16	2.16	0.08	6.30	98.1
05B04	35	16	9	137	30	22	431	65.3	0.43	16.14	4.01	0.08	0.59	3.33	3.77	1.94	0.08	2.24	97.9
05B05	35	16	39	137	30	35	431	66.9	0.53	15.22	3.56	0.09	0.53	2.32	3.22	2.21	0.07	3.46	98.1
05B06	35	16	42	137	30	40	431	66.7	0.69	14.18	4.56	0.11	0.68	3.30	2.97	1.55	0.07	2.65	97.5
05B07	35	16	28	137	31	16	431	64.8	0.41	15.92	3.90	0.09	0.63	3.95	3.74	1.38	0.06	3.48	98.4
05B08	35	16	32	137	31	32	431	63.2	0.51	16.47	4.07	0.10	0.67	3.71	3.54	1.54	0.08	3.42	97.3
05B09	35	16	28	137	31	39	431	59.4	1.85	14.36	7.98	0.23	1.02	4.14	2.96	1.72	0.07	1.78	95.5
05B10	35	16	40	137	33	19	431	63.2	0.67	16.67	4.59	0.09	0.50	2.08	2.72	3.31	0.06	3.87	97.7
05B11	35	16	37	137	32	55	431	61.4	0.52	17.20	4.58	0.10	0.69	4.69	4.14	1.29	0.07	2.00	96.7
05B12	35	16	39	137	32	49	431	63.1	0.55	16.02	4.46	0.10	0.62	3.63	3.31	1.54	0.07	4.82	98.2
05B13	35	15	55	137	31	48	431	64.3	0.80	14.35	5.35	0.14	0.75	4.32	3.36	1.16	0.06	1.56	96.2

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
05B14	35	15	54	137	32	18	431	62.9	0.75	15.32	5.72	0.14	0.84	4.45	3.53	1.22	0.07	2.64	97.5
05B15	35	15	59	137	32	36	431	61.2	0.78	16.36	5.88	0.14	0.83	4.43	3.86	1.52	0.08	2.14	97.2
05B16	35	15	57	137	32	59	431	61.8	0.75	16.15	5.40	0.13	0.74	4.26	3.80	1.43	0.08	2.94	97.4
05B17	35	15	51	137	33	54	431	60.8	0.74	16.02	6.32	0.11	1.84	4.52	3.68	1.48	0.08	2.32	97.9
05C01	35	15	17	137	34	15	110	67.9	0.44	14.69	3.19	0.09	0.81	2.95	3.81	1.97	0.14	1.73	97.7
05C02	35	15	23	137	33	56	420	61.2	0.62	16.93	5.30	0.11	1.05	3.82	3.76	1.62	0.14	3.50	98.0
05C03	35	15	26	137	33	23	620	63.8	0.56	15.54	5.42	0.11	0.94	3.69	3.46	1.72	0.13	2.37	97.7
05E01	35	15	35	137	29	56	431	61.4	0.51	15.52	4.78	0.12	0.63	3.27	3.65	1.53	0.16	5.10	96.7
05E02	35	15	44	137	30	19	431	61.3	0.58	15.96	4.82	0.09	0.62	3.91	3.75	1.21	0.10	5.53	97.9
05E03	35	15	16	137	31	41	431	62.7	0.66	16.52	3.94	0.08	0.53	3.71	3.97	1.41	0.08	2.60	96.2
05E04	35	15	22	137	31	49	110	65.5	0.41	15.61	3.64	0.08	0.89	3.15	3.64	2.14	0.10	2.45	97.6
05E05	35	15	30	137	32	19	431	68.4	0.40	14.28	3.17	0.10	0.74	2.57	3.73	2.33	0.11	1.48	97.3
05E06	35	15	51	137	32	45	431	58.5	0.76	17.95	5.71	0.11	0.92	3.64	3.43	2.05	0.11	4.46	97.7
05F01	35	17	49	137	30	12	431	61.0	0.58	16.03	5.48	0.12	0.80	3.62	3.43	1.78	0.08	5.12	98.0
05F02	35	17	53	137	30	38	120	60.5	0.85	17.12	5.14	0.14	0.72	3.41	3.14	2.05	0.12	4.48	97.7
05F03	35	17	54	137	30	51	120	61.2	1.94	14.29	6.98	0.23	0.88	4.34	3.20	1.42	0.08	1.18	95.8
05F04	35	17	30	137	31	7	431	60.2	0.44	18.73	4.08	0.09	0.52	2.92	3.34	1.97	0.09	6.39	98.8
05F05	35	17	53	137	31	24	431	63.6	0.50	16.53	4.33	0.09	0.78	3.30	3.47	2.06	0.08	2.77	97.6
05F06	35	17	56	137	31	28	431	60.6	0.46	16.76	4.28	0.09	0.69	2.68	3.41	2.11	0.11	7.65	98.8
05F07	35	17	28	137	32	13	620	61.6	0.41	15.05	3.82	0.09	0.56	3.05	2.98	1.71	0.11	8.98	98.4
05F08	35	17	18	137	32	31	431	59.3	0.40	17.87	3.87	0.08	0.58	3.27	3.30	1.60	0.11	8.76	99.1
05F09	35	17	22	137	32	44	431	58.8	0.46	17.81	4.67	0.10	0.78	4.48	3.73	1.26	0.10	5.72	97.9
05F10	35	17	15	137	32	43	431	61.5	0.35	17.91	3.35	0.08	0.59	3.95	3.44	1.25	0.11	5.83	98.3
05F11	35	17	0	137	32	26	431	57.0	0.62	17.92	5.39	0.11	0.79	4.28	3.58	1.53	0.09	6.97	98.3
05F12	35	16	54	137	32	42	431	58.1	0.47	18.23	4.72	0.09	0.67	4.22	3.85	1.24	0.12	6.28	97.9
05F13	35	17	12	137	32	3	431	61.6	0.43	16.59	3.31	0.07	0.49	2.09	2.75	2.04	0.08	9.65	99.1
05F14	35	17	26	137	31	38	431	59.7	0.59	18.59	3.93	0.11	0.58	3.23	3.14	1.57	0.09	6.79	98.3
05F15	35	18	20	137	29	59	120	61.8	0.86	14.15	7.17	0.18	1.55	5.09	3.09	1.49	0.07	1.41	96.8
05F16	35	18	38	137	30	5	120	55.1	0.55	17.62	5.81	0.12	1.08	4.05	3.05	1.64	0.18	9.83	99.0
05F17	35	18	45	137	30	24	431	64.0	0.87	15.09	5.36	0.14	0.88	3.82	3.49	1.74	0.08	1.91	97.3
05F18	35	18	24	137	30	16	431	62.6	0.52	15.34	5.25	0.11	0.96	3.93	3.29	2.10	0.14	2.68	96.9
05F19	35	18	14	137	30	54	431	67.2	0.32	15.32	3.05	0.11	0.47	2.19	3.18	2.19	0.08	3.36	97.5
05F20	35	18	15	137	31	44	662	65.1	0.52	14.39	4.37	0.14	1.46	2.13	2.59	2.57	0.17	4.42	97.9
05F21	35	18	14	137	32	8	620	64.4	0.42	15.89	3.64	0.10	0.78	2.32	3.23	2.71	0.14	2.99	96.6
05F22	35	18	23	137	32	59	120	62.7	0.41	15.79	4.03	0.08	0.66	2.88	3.32	2.13	0.09	5.96	98.0
Seto																			
07A01	35	15	3	137	4	56	110	66.0	0.49	12.13	4.21	0.12	0.78	1.10	0.89	2.28	0.35	11.40	99.7
07A02	35	15	6	137	4	34	110	79.6	0.34	8.46	2.51	0.05	0.50	0.28	0.16	1.42	0.16	5.31	98.8
07A03	35	10	59	137	4	11	110	74.8	1.62	9.09	3.79	0.20	0.50	0.78	0.66	2.05	0.17	1.90	95.6
07A04	35	10	47	137	2	43	110	81.3	0.67	8.17	2.34	0.05	0.32	0.53	0.53	2.21	0.08	0.95	97.2
07A05	35	10	30	137	2	59	210	71.1	1.23	11.48	4.41	0.07	0.59	1.10	1.17	2.38	0.18	1.59	95.3
07A06	35	12	52	137	3	45	110	85.2	0.64	6.28	1.36	0.04	0.17	0.43	0.55	2.35	0.04	0.63	97.7
07A07	35	13	15	137	4	12	110	75.7	7.41	4.88	8.10	0.24	0.32	0.40	0.52	1.89	0.07	1.45	101.0
07A08	35	12	32	137	3	37	110	71.3	9.25	4.65	9.93	0.31	0.41	0.40	0.37	1.77	0.07	1.58	100.0
07C01	35	10	23	137	6	31	110	75.6	0.36	10.08	2.29	0.05	0.52	1.20	1.44	2.45	0.14	3.73	97.9
07C02	35	10	24	137	6	27	110	77.2	0.48	8.84	2.22	0.06	0.49	0.89	1.02	2.16	0.17	5.18	98.7
07C03	35	10	31	137	6	18	210	77.9	3.06	6.13	4.69	0.15	0.41	0.17	0.11	1.38	0.06	5.38	99.4
07C04	35	11	51	137	7	7	410	72.9	0.47	12.35	1.85	0.07	0.45	1.37	2.23	3.10	0.03	2.50	97.3
07C05	35	11	47	137	7	4	410	69.6	3.59	9.31	5.59	0.24	0.82	1.61	1.73	2.49	0.05	1.05	96.1
07C06	35	11	48	137	5	57	110	75.6	0.72	8.73	2.85	0.08	0.58	0.91	1.03	2.12	0.29	6.68	99.6
07C07	35	11	50	137	3	58	210	81.9	0.31	6.99	1.80	0.05	0.66	0.82	0.93	2.13	0.05	2.14	97.8
07D01	35	11	43	137	6	8	110	76.9	0.39	11.15	1.25	0.04	0.34	1.37	2.76	2.52	0.03	0.94	97.7
07D02	35	10	17	137	6	26	110	84.7	1.81	5.26	2.44	0.08	0.32	0.35	0.40	1.86	0.04	1.32	98.6
07D03	35	10	15	137	6	37	110	71.6	0.67	13.36	2.57	0.08	0.61	2.08	2.52	2.59	0.03	2.06	98.1
07D04	35	11	47	137	6	36	410	75.5	0.29	11.60	1.74	0.04	0.47	1.09	1.83	2.70	0.07	3.01	98.3
07D05	35	12	13	137	6	40	410	90.2	0.25	4.44	0.84	0.02	0.31	0.33	0.48	1.58	0.02	1.07	99.5
07D06	35	11	42	137	5	50	110	81.3	0.39	8.75	1.37	0.04	0.71	0.77	0.63	1.95	0.09	2.39	98.4
07D07	35	11	44	137	5	42	110	82.6	0.32	7.35	1.32	0.03	0.46	0.51	0.77	2.06	0.07	3.88	99.4
07D08	35	11	7	137	3	47	110	79.0	1.20	7.86	3.23	0.21	0.50	0.37	0.64	2.13	0.14	4.93	100.2
07E01	35	12	26	137	3	50	110	79.1	0.37	9.96	1.35	0.06	0.38	1.00	2.20	2.59	0.07	2.25	99.3

Appendix I-4

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total	
07E02	35	11	44	137	5	42	110	87.2	0.31	5.76	0.95	0.03	0.37	0.32	0.36	1.85	0.05	2.72	100.0	[2]
07E03	35	11	42	137	5	50	110	35.1	0.25	6.16	1.51	0.04	0.46	0.48	0.30	1.20	0.17	8.84	54.5	[2]
07E04	35	11	46	137	5	4	110	58.7	0.59	17.43	5.59	0.06	0.75	0.58	0.31	2.14	0.42	15.41	102.0	[2]
07E05	35	10	55	137	4	38	210	79.9	0.41	8.10	2.01	0.05	0.59	0.77	0.82	2.63	0.09	3.61	99.0	[2]
07E06	35	11	2	137	4	24	210	62.3	0.75	13.67	7.03	0.18	0.66	0.51	0.32	2.42	0.15	13.29	101.3	[2]
07E07	35	11	0	137	4	11	110	71.8	0.46	11.04	2.93	0.12	0.62	0.63	3.04	2.60	0.17	8.07	101.5	[2]
07E08	35	11	37	137	3	6	120	65.1	0.50	14.74	3.53	0.04	0.66	0.68	1.23	2.71	0.36	10.48	100.0	[2]
07E09	35	10	16	137	4	48	110	67.9	0.72	16.39	3.56	0.05	0.68	0.28	0.27	2.22	0.04	7.84	99.9	[2]
07E10	35	10	27	137	4	0	210	83.6	0.52	7.31	1.41	0.03	0.42	0.54	0.70	2.44	0.03	1.93	99.0	[2]
07E11	35	10	27	137	3	53	210	67.9	0.67	10.75	3.50	0.06	1.19	1.23	1.16	2.18	0.50	12.44	101.6	[2]
07G01	35	15	8	137	6	13	210	83.2	0.80	6.63	1.86	0.07	0.39	0.40	0.45	1.93	0.07	2.66	98.4	[1]
07G02	35	14	46	137	5	35	110	87.1	0.20	5.50	0.79	0.03	0.32	0.47	0.37	2.16	0.03	1.57	98.6	[1]
07G03	35	14	51	137	5	26	110	77.6	0.57	10.06	1.96	0.06	0.46	0.55	0.52	2.21	0.11	4.40	98.4	[1]
07G04	35	14	44	137	5	14	110	84.5	0.45	5.81	1.48	0.04	0.56	0.81	0.69	1.82	0.05	1.83	98.0	[1]
07G05	35	15	9	137	3	58	110	82.7	0.41	7.27	1.29	0.04	0.38	0.50	0.69	1.80	0.07	3.04	98.2	[1]
07G06	35	14	53	137	4	16	110	73.2	0.46	10.96	2.47	0.07	0.79	1.01	0.88	2.25	0.22	6.29	98.6	[1]
07G07	35	13	8	137	6	28	210	80.1	0.22	10.33	0.50	0.01	0.20	0.13	0.30	4.46	0.02	2.32	98.6	[1]
07G08	35	13	39	137	6	53	410	87.3	0.23	4.66	0.68	0.02	0.29	0.41	0.33	2.01	0.03	2.23	98.2	[1]
07G09	35	13	40	137	7	1	410	73.6	0.96	10.72	2.70	0.06	0.38	0.81	1.19	2.57	0.16	5.34	98.5	[1]
07G10	35	13	53	137	6	52	410	84.7	0.25	6.85	0.61	0.02	0.26	0.52	0.89	3.40	0.03	0.71	98.2	[1]
07G11	35	13	47	137	6	58	410	73.8	2.34	9.04	4.32	0.16	0.47	0.81	1.68	2.40	0.09	4.67	99.8	[1]
07G12	35	13	20	137	6	5	210	82.7	0.34	7.90	1.69	0.04	0.62	1.15	1.06	1.96	0.08	2.44	100.0	[1]
07G13	35	13	28	137	5	23	110	90.2	0.14	4.18	0.37	0.01	0.20	0.19	0.30	2.70	0.02	0.47	98.7	[1]
07G14	35	13	38	137	5	15	110	85.1	0.20	6.92	0.60	0.02	0.42	0.41	0.31	2.76	0.03	2.10	98.8	[1]
07G15	35	14	44	137	4	9	210	80.1	0.33	7.71	2.20	0.06	0.64	1.36	1.11	2.13	0.11	2.61	98.4	[1]
07G16	35	13	37	137	3	58	210	73.5	0.42	10.84	2.44	0.09	0.59	0.92	0.77	2.76	0.37	7.54	100.2	[1]
07G17	35	12	51	137	3	43	110	82.7	0.67	7.44	1.24	0.03	0.32	0.44	0.65	2.94	0.07	2.18	98.6	[1]
07G18	35	12	53	137	4	56	110	68.0	0.45	11.57	2.45	0.04	1.12	0.97	0.68	2.32	0.59	12.40	100.6	[1]
Sanageyama																				
08A01	35	11	13	137	8	55	433	72.2	0.10	14.68	1.21	0.05	0.33	1.68	3.78	3.07	0.02	1.49	98.6	[1]
08A02	35	11	32	137	8	52	433	72.9	0.10	14.41	1.12	0.05	0.29	1.66	3.76	2.95	0.02	1.12	98.4	[1]
08A03	35	11	31	137	8	49	433	69.5	0.21	15.95	1.42	0.06	0.35	2.00	4.14	2.51	0.03	2.02	98.2	[1]
08A04	35	10	46	137	9	50	433	66.6	0.15	16.11	1.82	0.06	0.52	2.82	4.53	1.87	0.03	3.64	98.1	[1]
08A05	35	11	25	137	9	30	433	70.1	0.12	14.92	1.39	0.05	0.43	2.18	4.48	2.13	0.02	2.09	98.0	[1]
08A06	35	11	42	137	10	35	433	67.8	0.19	15.61	2.18	0.08	0.67	3.27	4.08	1.74	0.03	1.36	97.0	[1]
08A07	35	11	40	137	10	33	433	65.2	0.22	16.41	2.66	0.10	0.78	3.26	4.19	1.77	0.04	3.77	98.4	[1]
08A08	35	10	53	137	10	28	433	71.1	0.10	13.55	1.38	0.06	0.38	1.85	3.63	2.06	0.03	4.39	98.5	[1]
08A09	35	11	2	137	10	27	433	69.7	0.40	14.60	2.15	0.07	0.58	1.97	3.59	2.52	0.03	2.22	97.8	[1]
08A10	35	10	40	137	9	9	433	68.4	0.19	15.34	2.08	0.06	0.63	2.36	3.54	2.54	0.02	2.51	97.6	[1]
08A11	35	15	6	137	7	37	110	68.6	0.44	10.81	2.35	0.04	0.67	0.78	2.21	2.28	0.41	12.60	101.2	[2]
08B01	35	10	40	137	7	53	433	69.0	0.20	15.30	2.23	0.08	0.68	2.61	3.75	2.49	0.04	1.65	98.0	[1]
08B02	35	10	41	137	7	59	433	65.0	0.30	15.79	3.10	0.10	0.85	2.88	3.40	2.15	0.10	4.76	98.5	[1]
08B03	35	10	46	137	8	2	433	68.4	0.22	15.24	2.42	0.08	0.76	2.85	3.81	2.25	0.02	1.46	97.6	[1]
08B04	35	11	2	137	8	12	433	66.1	0.16	16.52	1.94	0.06	0.57	2.71	4.10	2.19	0.03	2.20	96.6	[1]
08B05	35	11	8	137	9	40	433	68.7	0.18	15.41	1.93	0.06	0.57	2.36	4.13	2.39	0.03	3.62	99.4	[1]
08B06	35	11	51	137	9	33	433	68.0	0.11	16.73	1.51	0.05	0.45	2.45	4.33	2.40	0.02	1.85	97.9	[1]
08B07	35	11	52	137	9	30	433	72.3	0.06	14.52	0.96	0.04	0.30	1.98	4.39	2.19	0.02	0.84	97.6	[1]
08B08	35	11	48	137	9	45	433	65.4	0.22	16.71	2.10	0.08	0.64	2.81	4.15	2.27	0.03	2.98	97.4	[1]
08B09	35	11	45	137	9	47	433	66.1	0.16	17.04	1.95	0.07	0.61	2.92	4.10	2.14	0.03	2.67	97.8	[1]
08B10	35	11	9	137	10	26	433	65.1	0.16	15.31	2.21	0.11	0.55	2.22	3.39	2.37	0.05	7.48	98.9	[1]
08B11	35	11	14	137	10	26	433	68.4	0.13	15.81	1.69	0.05	0.46	2.21	3.93	2.22	0.03	4.12	99.0	[1]
08B12	35	11	18	137	10	29	433	67.0	0.18	16.17	2.17	0.07	0.67	3.00	4.01	2.04	0.03	2.63	97.9	[1]
08B13	35	10	44	137	9	10	433	64.8	0.19	16.86	2.46	0.08	0.56	2.31	3.70	2.55	0.04	5.29	98.8	[1]
08B14	35	14	46	137	10	11	410	62.7	0.15	18.21	1.78	0.08	0.37	1.20	3.23	3.35	0.05	8.43	99.5	[2]
08B15	35	14	49	137	10	12	410	65.0	0.46	15.82	3.58	0.11	0.97	2.10	2.33	2.74	0.09	5.54	98.7	[2]
08C01	35	13	2	137	10	8	433	72.2	0.07	12.78	1.03	0.06	0.32	1.50	3.63	2.20	0.03	5.10	99.0	[1]
08C02	35	13	11	137	9	53	410	74.2	0.16	12.61	1.77	0.06	0.52	1.71	3.23	2.85	0.03	1.45	98.6	[1]
08C03	35	13	10	137	8	54	410	68.2	0.08	16.06	1.21	0.05	0.28	1.47	4.34	2.76	0.03	3.96	98.5	[1]
08C04	35	13	35	137	8	28	410	61.9	0.23	18.96	3.03	0.08	0.49	1.83	3.38	2.69	0.04	6.75	99.4	[1]
08C05	35	13	9	137	7	55	210	73.2	0.52	12.58	1.60	0.06	0.31	1.45	3.31	2.63	0.07	1.66	97.4	[1]

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
08C06	35	12	25	137	8	1	410	67.3	0.44	16.41	2.83	0.06	0.54	1.00	1.63	2.95	0.06	5.70	98.9
08C07	35	11	46	137	7	53	410	71.9	0.12	13.41	1.59	0.05	0.48	1.56	2.58	3.70	0.02	2.14	97.6
08C08	35	12	45	137	7	23	410	79.2	0.62	9.48	1.33	0.05	0.33	1.08	2.20	2.61	0.04	1.05	98.0
08C09	35	12	48	137	7	27	410	66.2	9.84	5.58	9.83	0.33	0.45	0.34	0.59	2.14	0.14	0.65	96.0
08C10	35	11	19	137	12	41	434	72.7	0.24	12.27	2.17	0.10	0.50	1.46	2.43	2.53	0.10	3.95	98.5
08C11	35	11	19	137	12	37	434	77.5	0.51	9.43	1.83	0.05	0.41	0.86	1.27	2.48	0.09	3.30	97.8
08C12	35	14	29	137	12	12	440	68.3	0.20	15.72	2.23	0.07	0.71	2.72	3.20	2.86	0.04	1.82	97.9
08C13	35	14	16	137	12	21	440	63.2	0.30	17.88	3.26	0.09	0.90	2.43	2.86	2.70	0.09	5.07	98.8
08C14	35	14	46	137	13	21	440	67.8	0.14	16.46	1.44	0.05	0.34	0.91	2.34	4.79	0.03	4.37	98.7
08C15	35	14	14	137	12	20	440	67.3	0.27	15.38	3.13	0.09	0.92	2.81	3.28	2.63	0.06	2.81	98.7
08C16	35	14	46	137	13	33	440	72.5	0.16	13.63	1.60	0.06	0.47	1.34	2.56	3.79	0.04	2.29	98.4
08C17	35	13	59	137	13	25	440	65.3	0.39	14.08	4.87	0.27	1.23	2.22	1.70	3.67	0.15	5.14	99.0
08C18	35	14	49	137	14	24	440	67.6	0.26	15.28	3.08	0.10	0.98	2.22	2.25	3.95	0.05	2.90	98.7
08C19	35	13	32	137	13	36	434	63.6	0.29	16.47	3.61	0.19	0.78	2.02	2.73	2.80	0.12	6.99	99.6
08C20	35	14	52	137	14	42	440	67.7	0.23	15.46	2.83	0.08	0.89	2.18	2.44	3.66	0.04	2.84	98.4
08C21	35	14	38	137	14	19	440	65.2	0.37	15.74	4.79	0.14	1.44	2.43	1.69	4.47	0.05	2.77	99.1
08C22	35	13	0	137	13	14	434	69.1	0.48	15.46	1.70	0.11	0.40	1.55	3.79	2.99	0.04	2.01	97.6
08C23	35	13	51	137	14	39	410	71.2	0.04	14.97	1.04	0.03	0.21	0.71	3.38	4.59	0.04	2.01	98.3
08C24	35	10	13	137	12	48	210	71.4	1.35	11.72	3.63	0.09	0.90	1.95	1.95	1.85	0.04	3.69	98.5
08C25	35	12	26	137	13	45	434	67.7	0.18	16.16	2.43	0.12	0.42	1.71	3.16	3.19	0.08	4.08	99.3
08C26	35	10	16	137	12	48	210	74.2	0.33	12.00	2.14	0.08	0.46	1.52	2.73	2.52	0.04	2.51	98.5
08C27	35	10	31	137	13	6	210	67.4	1.19	14.57	4.00	0.13	0.50	1.32	2.26	3.43	0.05	4.36	99.3
08C28	35	10	36	137	14	18	434	67.3	0.93	13.74	4.54	0.16	1.02	3.31	2.76	2.48	0.03	1.41	97.7
08C29	35	11	17	137	14	5	434	75.9	1.21	10.61	2.36	0.12	0.33	0.86	1.71	3.56	0.04	1.71	98.4
08D01	35	12	59	137	9	58	433	74.7	0.07	13.29	0.94	0.04	0.32	1.68	3.88	2.36	0.02	1.04	98.3
08D02	35	13	5	137	9	39	410	72.5	0.11	14.32	1.27	0.05	0.35	1.80	4.11	2.39	0.03	1.46	98.3
08D03	35	13	12	137	7	52	210	76.3	0.10	11.99	1.12	0.04	0.36	1.50	3.39	2.53	0.02	0.89	98.2
08D04	35	13	34	137	8	39	410	68.9	0.12	17.21	1.22	0.04	0.30	1.94	5.06	2.71	0.03	1.68	99.2
08D05	35	12	38	137	7	36	410	72.0	0.23	13.90	2.17	0.15	0.35	1.08	3.11	3.53	0.05	3.29	99.8
08D06	35	11	50	137	7	53	410	79.7	0.14	9.82	1.37	0.05	0.44	1.04	1.85	3.06	0.03	1.16	98.7
08D07	35	11	35	137	7	34	410	76.3	0.15	11.54	1.34	0.05	0.46	1.45	2.45	3.59	0.02	1.09	98.4
08E01	35	12	56	137	10	51	433	76.0	0.18	11.25	1.62	0.05	0.45	1.59	2.73	2.57	0.04	2.63	99.1
08E02	35	13	10	137	11	52	433	70.5	0.15	14.77	1.79	0.07	0.42	2.12	4.06	1.93	0.04	2.40	98.3
08E03	35	12	55	137	11	18	433	70.4	0.12	13.71	1.68	0.05	0.41	2.24	4.00	1.44	0.04	5.45	99.5
08E04	35	12	52	137	11	56	210	70.6	0.14	14.88	1.70	0.06	0.46	1.93	3.68	2.54	0.05	2.25	98.3
08E05	35	13	6	137	12	11	433	61.9	0.20	15.73	2.11	0.12	2.68	5.09	2.70	2.19	0.11	5.94	98.8
08E06	35	12	12	137	12	8	110	73.3	0.13	13.18	1.80	0.07	0.55	2.33	3.51	1.93	0.04	1.47	98.3
08E07	35	12	26	137	10	56	433	71.8	0.18	13.32	2.07	0.09	0.65	2.57	3.50	1.79	0.05	2.29	98.3
08E08	35	11	3	137	12	32	434	64.9	0.34	16.50	3.51	0.11	0.75	2.18	3.28	2.43	0.09	5.88	99.9
08E09	35	14	33	137	11	32	440	63.6	0.31	16.07	3.66	0.11	0.96	2.91	3.39	2.31	0.08	5.79	99.2
08E10	35	13	51	137	11	30	433	63.4	0.28	17.00	3.39	0.10	1.01	3.99	3.98	1.95	0.07	3.94	99.1
08E11	35	14	32	137	13	3	440	60.5	0.38	17.46	4.82	0.19	1.09	2.36	2.35	2.97	0.16	7.48	99.7
08E12	35	14	18	137	12	31	440	63.5	0.24	17.58	2.99	0.13	0.64	1.69	2.79	3.41	0.08	7.06	100.1
08E13	35	14	38	137	13	25	434	68.6	0.16	15.31	1.76	0.05	0.45	1.25	2.67	3.92	0.06	4.91	99.1
08E14	35	13	29	137	13	43	434	61.3	0.21	18.68	2.53	0.11	0.49	1.15	2.22	3.87	0.08	10.09	100.7
08E15	35	13	5	137	14	15	434	65.9	0.11	16.24	2.79	0.11	0.33	1.22	3.76	3.17	0.04	6.03	99.7
08E16	35	12	4	137	14	8	434	51.8	0.23	18.33	10.66	0.44	0.42	1.40	3.09	2.60	0.08	14.35	103.4
08E17	35	11	46	137	14	29	110	71.7	0.23	13.42	2.01	0.09	0.50	0.88	1.09	4.15	0.09	5.55	99.7
08F01	35	12	57	137	10	54	433	68.8	0.32	13.78	3.36	0.11	0.97	3.09	3.34	1.86	0.05	2.58	98.3
08F02	35	13	10	137	11	49	433	71.5	0.16	13.68	1.58	0.05	0.43	2.08	3.80	1.78	0.07	2.99	98.1
08F03	35	12	51	137	11	47	433	73.6	0.13	13.44	1.52	0.05	0.44	2.08	3.67	1.81	0.04	1.79	98.6
08F04	35	12	21	137	12	25	434	60.0	0.44	14.91	9.69	0.44	1.04	1.19	2.03	2.58	0.19	8.53	101.0
08F05	35	12	9	137	12	7	110	68.3	0.16	14.43	2.76	0.14	0.50	2.03	3.35	1.90	0.16	5.58	99.3
08F06	35	12	24	137	10	56	433	71.3	0.16	14.00	1.95	0.07	0.61	2.57	3.43	1.82	0.04	2.26	98.2
08F07	35	11	50	137	12	24	110	59.6	0.33	13.28	4.76	0.15	0.77	1.49	1.64	2.17	0.70	16.74	101.6
08F08	35	14	37	137	11	34	440	68.7	0.21	15.64	2.23	0.06	0.63	2.44	4.04	2.23	0.04	2.08	98.3
08F09	35	13	47	137	11	28	433	67.6	0.16	17.04	1.47	0.05	0.40	2.55	5.18	1.74	0.03	1.87	98.1
08F10	35	14	46	137	12	56	440	71.3	0.14	14.55	1.19	0.05	0.31	0.78	1.98	5.08	0.05	2.80	98.2
08F11	35	14	26	137	11	53	440	66.6	0.33	15.08	3.85	0.11	1.32	3.41	3.02	2.39	0.05	2.62	98.7
08F12	35	14	3	137	13	30	440	68.8	0.27	13.14	3.70	0.14	1.20	2.79	2.19	2.95	0.07	2.58	97.9
08F13	35	14	19	137	13	27	440	68.2	0.29	14.98	2.65	0.10	0.82	2.03	2.87	3.68	0.06	2.48	98.2

Appendix I-5

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total	
08F14	35	13	4	137	12	51	434	66.2	0.33	16.33	1.39	0.07	0.28	1.24	3.63	3.87	0.04	3.08	96.4	[1]
08F15	35	13	2	137	12	49	434	74.2	0.13	13.01	1.48	0.05	0.37	1.22	3.09	2.75	0.03	1.96	98.2	[1]
08F16	35	12	37	137	13	42	434	66.0	0.18	16.54	2.68	0.14	0.43	1.36	3.13	2.80	0.07	5.06	98.4	[1]
08F17	35	11	38	137	14	24	110	64.4	0.21	16.57	2.89	0.14	0.54	1.81	3.09	2.83	0.09	5.79	98.3	[1]
08G01	35	14	17	137	8	57	410	69.2	0.14	15.17	1.72	0.12	0.34	1.68	4.26	2.64	0.05	2.18	97.5	[1]
08G02	35	14	22	137	9	2	410	70.0	0.20	14.70	1.53	0.05	0.37	1.64	3.69	2.67	0.04	2.10	97.0	[1]
08G03	35	14	25	137	8	36	410	64.4	0.15	16.49	2.21	0.12	0.37	1.54	4.42	2.87	0.06	6.91	99.5	[1]
08G04	35	14	39	137	7	51	110	74.4	0.25	10.22	2.61	0.05	1.17	1.45	1.53	2.49	0.10	3.82	98.1	[1]
08G05	35	15	4	137	7	38	110	68.9	0.53	13.38	3.04	0.09	0.73	1.57	1.97	2.74	0.13	5.71	98.7	[1]
08G06	35	15	0	137	7	35	110	63.7	0.35	15.05	3.53	0.10	0.73	1.31	1.98	2.59	0.38	10.48	100.2	[1]
Odo																				
09A01	35	10	56	137	15	52	434	68.1	0.11	16.55	1.62	0.04	0.30	2.14	4.36	2.74	0.02	2.34	98.3	[3]
09A02	35	11	15	137	15	31	434	69.5	0.05	16.39	1.17	0.02	0.23	1.88	4.09	2.60	0.01	2.60	98.5	[3]
09A03	35	10	57	137	15	54	434	70.7	0.30	15.26	1.65	0.06	0.31	2.31	3.37	2.39	0.02	2.33	98.7	[3]
09A04	35	11	33	137	16	10	434	73.7	0.16	13.64	1.06	0.04	0.27	2.13	3.56	2.54	0.02	0.94	98.1	[3]
09A05	35	11	46	137	15	55	434	72.4	0.06	13.68	1.02	0.04	0.27	1.82	4.05	2.84	0.03	1.85	98.1	[3]
09A06	35	12	18	137	16	55	434	70.8	0.32	15.10	0.98	0.05	0.22	2.28	3.80	2.92	0.02	0.97	97.5	[3]
09A07	35	12	18	137	16	57	434	69.2	0.18	15.83	1.58	0.06	0.45	2.45	3.92	2.92	0.02	1.64	98.3	[3]
09A08	35	11	56	137	16	59	433	70.5	0.15	16.07	1.16	0.04	0.34	2.57	3.87	2.82	0.02	1.25	98.8	[3]
09A09	35	11	45	137	16	20	434	65.9	0.23	17.80	1.77	0.05	0.42	3.16	4.59	2.14	0.02	2.67	98.7	[3]
09A10	35	12	2	137	15	49	434	70.1	0.06	16.10	0.92	0.04	0.22	1.59	3.84	4.07	0.02	1.80	98.7	[3]
09A11	35	12	14	137	16	2	434	74.1	0.20	13.31	1.08	0.04	0.33	1.76	3.14	2.99	0.04	1.06	98.1	[3]
09A12	35	11	36	137	15	0	434	71.2	0.07	15.67	1.42	0.03	0.20	1.89	4.81	2.45	0.01	1.80	99.6	[3]
09A13	35	15	4	137	17	39	440	64.6	0.52	14.03	5.98	0.19	2.27	3.86	2.42	2.75	0.06	2.32	98.9	
09A14	35	14	29	137	16	30	440	66.0	0.37	14.92	4.73	0.16	1.68	3.63	2.73	2.86	0.06	2.18	99.3	
09A15	35	14	43	137	16	40	440	66.1	0.43	14.26	4.95	0.16	1.84	3.41	3.19	3.09	0.06	2.23	99.8	
09A16	35	13	55	137	15	21	434	67.6	0.44	14.33	3.85	0.16	1.19	2.63	3.06	3.56	0.06	1.76	98.6	
09A17	35	14	25	137	15	22	410	60.6	0.43	17.86	4.95	0.18	1.31	2.94	2.38	3.47	0.11	5.25	99.5	
09A18	35	14	56	137	15	33	440	67.1	0.30	15.32	3.47	0.13	1.07	2.52	2.36	3.86	0.06	2.97	99.2	
09A19	35	15	2	137	15	8	440	62.3	0.32	15.49	5.22	0.18	0.98	2.55	5.79	3.15	0.09	7.04	103.1	
09C01	35	13	33	137	15	56	434	71.6	0.16	14.62	1.40	0.05	0.35	1.95	3.95	2.76	0.03	2.24	99.1	[2]
09C02	35	12	48	137	15	18	410	72.2	0.16	14.28	1.91	0.07	0.55	1.39	2.53	3.27	0.04	2.74	99.2	[2]
09C03	35	13	50	137	16	20	434	64.9	0.47	14.71	5.04	0.18	1.82	3.63	2.52	3.05	0.07	2.55	98.9	[2]
09C04	35	13	21	137	15	35	434	71.8	0.15	13.84	1.83	0.10	0.55	1.77	3.49	3.62	0.04	1.60	98.8	[2]
09C05	35	13	46	137	16	23	434	66.3	0.36	14.54	4.45	0.14	1.64	3.75	5.37	2.85	0.06	2.07	101.6	[2]
09C06	35	14	48	137	15	46	440	66.9	0.33	14.21	3.45	0.13	1.01	2.23	1.95	3.87	0.06	3.16	97.3	[2]
09C07	35	14	6	137	16	18	440	62.8	0.40	15.64	4.72	0.16	1.62	3.21	2.56	3.27	0.06	3.48	97.9	[2]
09C08	35	14	51	137	15	47	440	66.0	0.36	14.40	3.94	0.14	1.35	3.30	3.11	2.98	0.06	1.93	97.6	[2]
09C09	35	14	42	137	16	5	440	63.8	0.49	15.10	4.84	0.15	1.67	3.40	2.43	3.00	0.06	2.66	97.6	[2]
09C10	35	10	22	137	16	8	433	65.6	0.24	17.16	2.13	0.11	0.44	3.27	5.58	1.64	0.04	3.76	100.0	[5]
09C11	35	10	18	137	16	8	433	66.7	0.25	16.93	2.14	0.07	0.44	3.80	3.55	1.56	0.04	2.59	98.0	[5]
09C12	35	10	51	137	16	21	433	51.5	0.28	19.26	2.88	0.06	0.51	2.95	3.14	1.44	0.11	19.45	101.6	[5]
09C13	35	10	41	137	15	48	433	70.7	0.10	15.05	1.17	0.03	0.24	2.33	4.02	2.04	0.02	2.39	98.1	[5]
09C14	35	10	59	137	16	41	433	65.6	0.10	17.59	1.25	0.03	0.31	3.17	4.24	1.70	0.03	4.93	98.9	[5]
09C15	35	11	3	137	17	25	433	74.1	0.33	19.16	1.80	0.06	0.40	3.63	4.23	2.16	0.03	2.22	108.1	[5]
09C16	35	10	58	137	16	54	433	66.9	0.14	16.76	1.75	0.04	0.32	2.67	4.46	2.14	0.04	4.41	99.6	[5]
09C17	35	11	1	137	16	29	433	63.6	0.13	18.76	1.51	0.04	0.32	3.22	4.48	1.67	0.03	5.29	99.1	[5]
09C18	35	10	50	137	16	38	433	67.4	0.25	17.12	1.78	0.05	0.39	3.77	4.12	1.49	0.02	1.55	97.9	[5]
09C19	35	10	34	137	16	58	433	49.8	0.16	15.26	9.69	4.42	0.43	3.20	2.34	1.40	0.58	14.11	101.3	[5]
09C20	35	10	28	137	16	50	433	59.4	0.24	14.17	8.26	0.38	0.63	4.66	3.11	1.71	0.31	7.93	100.7	[5]
09C21	35	10	32	137	16	52	433	63.9	0.18	18.64	1.95	0.05	0.41	4.19	4.38	1.35	0.03	3.29	98.4	[5]
09C22	35	10	38	137	16	50	433	63.5	0.51	17.73	3.63	0.09	1.06	5.38	3.62	1.45	0.06	1.57	98.5	[5]
09C23	35	11	2	137	17	30	433	66.7	0.34	17.37	2.03	0.06	0.45	3.80	4.11	1.82	0.03	1.65	98.4	[5]
09C24	35	11	4	137	18	16	433	65.4	0.38	17.81	2.33	0.06	0.53	4.38	3.81	1.63	0.05	1.62	98.0	[5]
09C25	35	11	14	137	19	4	433	60.5	1.57	18.28	3.73	0.14	0.59	4.88	3.82	1.35	0.04	1.45	96.4	[5]
09C26	35	10	49	137	17	41	433	60.4	0.29	19.29	2.59	0.05	0.54	3.97	3.50	1.61	0.05	7.04	99.4	[5]
09C27	35	10	47	137	17	48	433	60.3	0.32	20.08	2.63	0.06	0.54	4.34	3.96	1.69	0.05	5.64	99.6	[5]
09C28	35	10	48	137	17	54	433	63.8	0.39	18.79	2.48	0.06	0.54	4.83	4.60	1.62	0.04	1.74	98.9	[5]
09C29	35	10	29	137	18	15	433	63.5	0.23	19.58	2.13	0.07	0.48	4.59	4.06	1.61	0.04	2.32	98.6	[5]
09C30	35	13	14	137	19	21	440	61.6	0.55	14.85	6.35	0.18	2.76	5.86	2.66	1.94	0.06	1.56	98.3	

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
09C31	35	13	12	137	19	59	440	58.3	0.68	16.60	6.42	0.17	2.70	5.51	2.53	2.20	0.07	3.68	98.9
09C32	35	13	28	137	20	8	440	60.8	0.67	14.92	6.84	0.19	2.93	5.71	2.46	2.18	0.06	1.91	98.7
09C33	35	14	58	137	19	12	440	64.1	0.32	16.52	4.09	0.14	1.42	2.76	2.71	3.78	0.05	3.64	99.5
09C34	35	14	49	137	19	44	440	61.8	0.51	15.03	6.40	0.23	2.42	4.21	2.23	3.14	0.06	2.55	98.5
09C35	35	14	45	137	19	52	440	59.1	0.46	18.23	5.65	0.16	1.95	3.86	2.42	3.21	0.10	5.08	100.2
09C36	35	13	47	137	20	43	440	59.3	0.54	15.67	7.05	0.18	2.76	4.74	2.21	2.48	0.06	4.92	99.9
09C37	35	13	43	137	20	11	440	60.4	0.71	14.05	7.35	0.21	3.17	5.87	2.31	2.14	0.09	2.14	98.4
09C38	35	13	59	137	20	38	440	63.1	0.47	14.35	6.10	0.18	2.58	5.34	2.47	2.14	0.07	1.74	98.5
09C39	35	13	12	137	20	41	440	57.9	0.88	15.47	7.61	0.26	3.13	5.74	2.23	2.06	0.09	3.01	98.4
09C40	35	12	48	137	21	31	440	60.4	0.66	17.06	5.56	0.13	2.17	5.64	2.82	1.90	0.08	2.05	98.5
09C41	35	13	5	137	22	7	440	60.3	0.56	17.16	5.79	0.15	2.19	5.02	2.45	2.39	0.09	3.10	99.2
09C42	35	13	0	137	21	59	440	58.3	0.65	16.82	6.68	0.27	2.46	5.03	2.39	2.34	0.12	4.19	99.2
09C43	35	13	31	137	22	13	440	62.5	0.54	17.08	4.75	0.12	1.43	4.02	2.81	2.36	0.11	3.28	99.0
09C44	35	13	26	137	21	38	440	60.2	0.61	16.54	5.98	0.15	2.44	5.66	2.73	1.80	0.08	2.14	98.3
09D01	35	13	49	137	17	13	440	65.8	0.38	14.22	4.77	0.15	1.87	3.72	2.40	2.64	0.04	2.34	98.3
09D02	35	13	53	137	17	15	440	65.0	0.43	14.70	4.95	0.18	1.78	3.53	2.30	2.88	0.06	2.75	98.6
09D03	35	13	26	137	17	1	434	63.7	0.31	15.27	5.56	0.26	1.33	3.64	2.74	2.60	0.12	3.18	98.7
09D04	35	12	53	137	17	28	434	62.4	0.27	17.34	3.61	0.10	1.31	3.76	4.17	2.98	0.05	2.90	98.9
09D05	35	12	55	137	17	22	434	63.1	0.24	17.65	3.42	0.14	1.01	3.45	3.36	2.65	0.06	3.36	98.5
09D06	35	12	20	137	17	7	434	70.4	0.39	15.27	1.08	0.06	0.22	1.91	3.84	3.24	0.02	1.20	97.6
09D07	35	12	38	137	16	37	434	68.7	0.19	16.49	1.06	0.04	0.25	1.79	3.45	3.73	0.01	2.52	98.2
09D08	35	12	37	137	16	33	434	68.1	0.26	16.46	1.14	0.06	0.24	1.87	4.04	3.41	0.03	1.99	97.6
09D09	35	11	45	137	16	47	433	68.2	0.18	16.71	1.50	0.06	0.34	2.90	3.87	2.16	0.03	2.86	98.8
09D10	35	11	45	137	17	30	433	67.8	0.10	17.59	1.03	0.02	0.29	3.33	4.48	2.25	0.03	1.70	98.6
09D11	35	12	0	137	19	13	433	58.0	3.55	14.39	8.84	0.23	3.04	5.44	2.58	1.06	0.06	1.79	98.9
09D12	35	12	0	137	19	16	433	57.6	1.60	14.95	8.48	0.19	3.98	5.84	2.20	1.00	0.07	2.92	98.8
09D13	35	12	4	137	19	32	433	54.6	2.23	12.69	12.00	0.28	5.74	6.12	1.15	0.85	0.11	4.11	99.9
09D14	35	12	3	137	19	32	433	52.9	3.44	13.35	12.01	0.31	5.04	5.93	2.16	0.91	0.11	3.91	100.1
09D15	35	12	2	137	19	31	433	56.4	2.15	12.93	10.47	0.23	4.94	6.15	3.18	0.90	0.07	5.32	102.8
09D16	35	12	0	137	19	25	433	53.4	2.43	14.23	11.28	0.28	5.04	5.86	1.61	0.93	0.12	2.70	97.9
09D17	35	12	0	137	19	26	433	55.7	2.30	13.02	11.13	0.24	5.45	6.38	1.75	0.84	0.08	2.76	99.6
09D18	35	12	2	137	19	30	433	53.3	1.62	15.67	10.59	0.21	5.36	5.80	1.30	0.95	0.09	5.10	100.0
09D19	35	12	16	137	21	33	433	59.9	0.44	19.34	4.19	0.11	1.01	4.36	3.21	1.73	0.11	5.06	99.4
09D20	35	11	27	137	22	1	433	61.9	0.61	16.76	4.93	0.12	1.87	5.60	2.77	1.69	0.08	2.19	98.5
09D21	35	11	3	137	21	48	110	65.4	0.85	13.29	6.24	0.20	2.24	5.40	2.44	1.63	0.13	1.30	99.1
09D22	35	11	12	137	22	4	433	60.1	0.73	19.04	4.27	0.11	1.03	5.99	3.83	1.21	0.05	2.12	98.5
09D23	35	10	27	137	20	4	433	61.0	0.70	17.72	4.51	0.12	1.48	5.58	6.38	1.57	0.08	1.56	100.7
09D24	35	10	18	137	19	45	433	55.4	0.55	20.92	4.52	0.08	0.79	4.26	3.01	1.37	0.12	9.40	100.4
09D25	35	11	21	137	20	44	433	60.0	1.01	18.74	4.36	0.11	0.92	5.49	4.23	1.31	0.06	1.92	98.2
09D26	35	11	24	137	19	49	433	59.6	0.90	17.85	5.00	0.13	1.86	6.06	3.50	1.25	0.06	1.49	97.7
09D27	35	11	22	137	19	35	433	59.8	0.80	19.50	3.74	0.10	0.77	5.53	3.93	1.39	0.06	1.67	97.3
09D28	35	11	10	137	19	24	433	60.9	0.47	20.46	2.82	0.07	0.59	5.15	3.96	1.48	0.03	2.03	98.0
09D29	35	11	5	137	19	4	433	59.4	1.99	16.63	5.71	0.18	0.92	5.32	5.50	1.36	0.05	1.06	98.1
09D30	35	11	0	137	18	37	433	63.0	0.64	18.33	2.56	0.07	0.52	4.73	3.93	1.57	0.03	2.08	97.5
09E01	35	11	45	137	17	30	433	66.2	0.11	18.07	1.15	0.03	0.30	3.33	4.17	2.19	0.03	2.49	98.0
09E02	35	12	0	137	17	54	433	65.8	0.42	17.40	1.98	0.06	0.40	3.94	4.34	1.75	0.02	1.33	97.4
09E03	35	12	2	137	18	23	433	65.4	0.22	18.49	1.97	0.04	0.47	4.11	5.14	1.70	0.03	2.00	99.5
09E04	35	12	44	137	18	9	433	65.9	0.35	17.17	2.37	0.08	0.54	2.72	3.62	2.71	0.04	2.70	98.2
09E05	35	13	31	137	18	5	440	65.4	0.36	13.96	5.06	0.15	2.09	4.58	2.65	2.50	0.04	1.45	98.3
09E06	35	13	8	137	18	21	433	52.1	0.58	18.84	6.89	0.20	1.77	3.35	2.09	2.08	0.22	9.84	98.0
09E07	35	13	30	137	18	37	440	63.5	0.41	15.14	5.06	0.15	1.74	3.84	3.46	2.68	0.14	3.97	100.1
09E08	35	14	37	137	18	17	440	66.4	0.38	14.51	4.49	0.13	1.70	3.59	2.30	2.74	0.07	2.81	99.1
09E09	35	13	57	137	18	28	440	62.1	0.41	15.88	5.30	0.14	2.14	4.30	2.55	3.28	0.04	2.38	98.5
09E10	35	14	6	137	18	4	440	50.5	0.62	20.82	6.22	0.11	1.66	2.64	1.55	2.42	0.17	15.25	102.0
09E11	35	14	50	137	17	44	440	63.3	0.40	15.78	4.85	0.15	1.68	3.32	2.29	3.15	0.08	3.79	98.8
09F01	35	14	11	137	19	22	440	60.9	0.47	16.39	5.40	0.14	2.19	5.08	2.93	2.24	0.07	2.81	98.6
09F02	35	14	21	137	19	25	440	63.8	0.35	16.36	4.50	0.13	1.66	3.46	2.41	3.43	0.05	2.93	99.1
09F03	35	14	19	137	19	39	440	60.1	0.41	17.54	4.78	0.12	1.85	4.33	2.91	2.90	0.06	3.90	98.9
09F04	35	14	21	137	19	35	440	60.6	0.44	17.15	5.35	0.15	2.15	4.74	2.98	2.78	0.07	2.70	99.1
09F05	35	14	17	137	19	45	440	62.0	0.40	16.24	5.23	0.15	2.01	4.10	2.50	3.26	0.06	2.60	98.5
09F06	35	14	13	137	19	44	440	64.1	0.44	15.38	4.95	0.14	2.03	4.59	3.31	2.21	0.07	2.49	99.7

Appendix I-6

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total	
09F07	35	13	42	137	19	38	440	64.3	0.50	13.33	6.14	0.17	2.71	5.25	2.47	2.07	0.07	1.47	98.4	[5]
09F08	35	13	41	137	19	46	440	62.8	0.42	16.33	4.88	0.13	1.94	4.29	2.69	2.60	0.06	3.00	99.1	[5]
09F09	35	12	53	137	19	39	433	58.5	2.57	13.67	8.59	0.23	3.32	5.67	2.56	1.27	0.08	1.55	98.0	[5]
09F10	35	12	29	137	19	11	433	52.5	1.47	15.86	9.76	0.18	5.48	7.00	1.62	0.83	0.17	5.22	100.0	[5]
09F11	35	12	11	137	18	46	433	62.6	0.65	17.54	4.10	0.09	1.58	4.78	3.32	1.54	0.05	2.44	98.6	[5]
09F12	35	12	21	137	20	18	433	62.5	0.62	18.73	3.41	0.09	0.87	5.08	5.85	1.56	0.06	1.90	100.6	[5]
09F13	35	12	18	137	20	17	433	60.8	0.74	18.58	4.64	0.15	0.95	4.83	3.69	1.67	0.08	2.66	98.8	[5]
09F14	35	12	21	137	20	14	433	62.1	0.34	19.27	3.05	0.07	0.82	5.00	3.65	1.53	0.06	2.35	98.2	[5]
09F15	35	12	51	137	20	42	440	63.5	0.78	16.58	4.05	0.13	1.19	4.27	3.50	1.81	0.04	2.11	98.0	[5]
09F16	35	12	38	137	20	2	433	58.3	2.45	13.97	8.80	0.22	3.64	4.78	1.86	1.57	0.04	2.77	98.4	[5]
Kawagase																				
10A01	35	10	40	137	27	42	420	65.4	0.27	17.31	2.80	0.07	0.71	1.97	2.38	3.27	0.10	3.61	97.9	
10A02	35	10	54	137	27	36	420	69.9	0.27	14.95	2.19	0.10	0.63	1.99	3.02	3.19	0.14	2.38	98.8	
10A03	35	10	41	137	27	28	420	70.6	0.21	14.66	1.99	0.07	0.53	1.81	3.15	2.84	0.11	2.82	98.7	
10A04	35	11	41	137	27	53	420	67.4	0.37	15.73	2.55	0.09	0.64	1.77	2.74	3.87	0.11	2.61	97.9	
10A05	35	13	5	137	29	39	431	56.7	1.68	14.99	7.80	0.15	1.89	2.74	1.78	2.05	0.17	8.12	98.1	
10A06	35	13	29	137	29	37	431	50.9	3.11	17.16	10.04	0.20	1.68	4.14	2.22	1.35	0.30	7.46	98.6	
10A07	35	12	46	137	29	47	120	60.1	0.69	15.52	4.82	0.10	0.92	2.80	2.73	2.21	0.18	7.19	97.3	
10C01	35	14	24	137	22	20	431	69.6	0.44	14.02	3.22	0.09	0.69	2.85	3.62	2.20	0.03	1.03	97.8	
10C02	35	14	38	137	22	30	431	62.6	0.56	15.32	4.59	0.13	0.94	1.86	1.99	2.44	0.30	8.51	99.2	
10C03	35	14	53	137	23	1	431	65.1	0.47	15.77	4.14	0.10	1.16	3.71	3.08	2.33	0.07	2.22	98.1	
10C04	35	14	17	137	22	46	432	65.2	0.47	15.34	3.91	0.11	1.03	2.89	2.73	2.39	0.08	3.76	97.9	
10C05	35	13	22	137	22	27	440	58.4	0.60	18.49	5.63	0.13	1.77	4.42	2.50	2.43	0.11	4.05	98.5	
10C06	35	12	46	137	22	46	440	58.7	0.63	17.22	5.96	0.16	2.10	5.25	2.42	2.09	0.13	3.12	97.8	
10C07	35	13	12	137	23	24	432	63.9	2.82	12.46	7.31	0.30	0.93	3.06	2.84	2.33	0.09	1.00	97.1	
10C08	35	12	36	137	23	49	432	52.3	0.58	15.22	4.89	0.11	1.32	3.86	2.45	1.91	0.10	4.07	86.9	
10C09	35	12	52	137	23	27	432	57.6	0.67	18.06	5.82	0.13	1.59	3.96	3.02	2.57	0.12	4.56	98.1	
10C10	35	14	9	137	23	32	431	66.5	0.59	14.35	4.32	0.11	1.42	2.45	2.53	2.27	0.08	3.81	98.5	
10C11	35	14	3	137	24	17	431	62.1	0.42	16.74	4.28	0.09	0.77	2.40	3.59	2.42	0.10	5.06	97.9	
10D01	35	11	56	137	24	16	432	70.1	0.41	13.46	3.13	0.08	0.95	2.23	2.41	2.86	0.08	2.79	98.5	
10D02	35	11	46	137	24	29	432	74.9	0.55	11.92	1.65	0.06	0.36	1.12	2.77	3.29	0.03	1.63	98.3	
10D03	35	11	47	137	24	37	432	68.3	0.50	13.75	3.56	0.08	1.10	2.32	2.15	2.95	0.07	3.14	97.9	
10D04	35	11	20	137	24	40	432	74.3	0.35	11.43	2.31	0.07	0.80	1.14	1.78	3.39	0.07	2.50	98.1	
10D05	35	11	3	137	22	44	110	59.0	0.93	14.71	6.72	0.19	2.62	5.69	2.26	1.63	0.12	2.17	96.0	
10D06	35	10	44	137	24	4	432	53.7	0.60	18.36	4.92	0.13	1.37	2.01	1.78	2.54	0.19	14.64	100.2	
10D07	35	11	25	137	24	2	432	65.3	0.56	14.86	4.22	0.11	1.20	3.32	2.44	2.34	0.09	2.79	97.2	
10D08	35	11	33	137	23	34	440	58.4	0.66	18.12	5.86	0.24	1.39	4.03	2.59	2.35	0.18	4.66	98.5	
10D09	35	12	37	137	23	59	432	71.7	0.41	12.25	3.44	0.14	0.81	2.31	2.01	1.84	0.07	3.59	98.5	
10D10	35	12	16	137	24	18	432	76.2	0.44	10.02	3.16	0.14	0.72	2.15	1.80	1.29	0.08	2.24	98.2	
10D11	35	11	59	137	24	43	432	72.2	0.35	12.56	2.69	0.05	0.68	1.49	2.34	2.89	0.06	2.92	98.2	
10D12	35	11	59	137	25	22	662	76.1	0.38	10.21	2.92	0.12	0.69	0.68	0.96	2.53	0.06	4.14	98.8	
10D13	35	11	41	137	25	26	662	69.5	0.33	12.92	2.56	0.05	0.70	0.92	1.64	3.56	0.06	5.67	97.9	
10D14	35	10	57	137	25	16	662	76.2	0.49	8.76	3.71	0.36	0.78	0.32	0.40	1.61	0.09	6.43	99.1	
10D15	35	12	54	137	26	32	420	58.5	0.90	16.86	5.80	0.13	1.75	3.34	2.50	2.31	0.15	5.63	97.9	
10D16	35	12	52	137	25	10	662	76.7	0.32	9.72	2.60	0.18	0.59	0.72	1.10	2.08	0.09	4.57	98.7	
10D17	35	13	31	137	24	56	432	65.8	0.55	14.78	4.66	0.10	0.70	2.75	3.29	2.17	0.07	2.42	97.3	
10D18	35	13	3	137	25	6	662	82.5	0.35	6.79	2.60	0.18	0.77	0.31	0.59	1.46	0.09	3.22	98.9	
10D19	35	13	15	137	25	56	420	63.5	0.35	17.94	2.90	0.05	0.65	2.73	4.20	2.87	0.09	3.05	98.4	
10D20	35	13	29	137	26	21	420	69.7	0.23	14.75	2.06	0.06	0.48	1.31	3.08	3.80	0.10	2.37	97.9	
10D21	35	13	44	137	26	51	420	69.2	0.23	15.14	1.77	0.06	0.35	1.52	2.86	4.18	0.10	2.02	97.4	
10D22	35	14	18	137	27	31	420	70.7	0.29	14.73	1.79	0.10	0.36	1.34	3.34	3.48	0.15	1.98	98.3	
10D23	35	14	28	137	27	53	420	66.2	0.24	17.11	2.00	0.05	0.41	1.50	3.78	3.94	0.09	2.38	97.7	
10D24	35	14	55	137	27	51	431	58.9	0.67	17.16	6.24	0.12	1.18	3.68	3.38	2.02	0.16	4.95	98.5	
10D25	35	15	0	137	26	58	420	71.9	0.36	13.50	1.68	0.05	0.32	1.25	2.49	4.41	0.10	1.48	97.6	
10D26	35	15	8	137	26	53	420	66.2	0.30	15.77	2.70	0.09	0.49	1.85	3.43	3.17	0.13	3.78	97.9	
10D27	35	14	35	137	27	16	420	69.9	0.19	15.01	1.43	0.05	0.30	1.79	3.94	2.67	0.12	2.53	97.9	
10D28	35	15	5	137	27	23	431	66.6	0.40	15.25	3.63	0.08	0.64	2.55	3.60	2.28	0.17	2.44	97.7	
10D29	35	14	9	137	26	30	420	69.1	0.22	15.21	1.68	0.04	0.33	1.29	3.10	4.38	0.09	2.28	97.7	
10D30	35	14	17	137	26	51	420	65.9	0.46	16.59	2.10	0.06	0.38	1.96	3.77	3.13	0.12	3.36	97.8	
10E01	35	10	31	137	26	3	662	76.1	0.30	10.91	2.41	0.11	0.80	0.94	2.01	3.10	0.07	3.31	100.0	

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
10E02	35	10	44	137	25	36	662	78.2	0.38	8.99	2.77	0.15	0.92	0.53	0.84	1.89	0.07	2.61	97.3
10E03	35	11	10	137	25	54	662	77.8	0.36	9.68	2.82	0.11	1.00	0.36	0.83	2.92	0.05	4.34	100.3
10E04	35	11	5	137	26	40	420	62.9	0.38	17.83	3.13	0.07	0.78	2.40	2.73	2.79	0.10	4.20	97.3
10E05	35	11	38	137	26	38	662	65.3	0.39	15.95	3.19	0.10	0.92	1.88	3.18	3.28	0.11	3.78	98.1
10E06	35	12	15	137	26	38	432	62.2	1.29	16.66	5.19	0.16	1.32	2.48	2.12	2.77	0.11	2.95	97.3
10E07	35	11	57	137	26	8	432	62.5	0.37	18.48	2.83	0.06	0.83	3.55	3.96	2.35	0.11	5.43	100.5
10E08	35	12	22	137	26	10	432	58.6	0.86	18.18	5.94	0.12	1.58	3.42	3.07	2.24	0.14	2.78	97.0
10E09	35	12	42	137	26	30	432	56.6	2.35	13.04	8.58	0.22	5.34	5.26	2.14	1.52	0.13	2.79	98.0
10E10	35	12	21	137	25	43	432	61.6	0.84	16.43	5.46	0.12	1.21	3.93	6.75	2.21	0.10	26.23	124.8
10E11	35	11	33	137	27	6	420	44.4	0.62	17.37	4.73	0.12	1.06	2.29	2.23	2.00	0.32	4.57	79.8
10E12	35	12	7	137	27	5	420	68.9	0.51	13.55	3.23	0.25	0.72	1.30	1.81	3.35	0.09	4.27	98.0
10E13	35	12	3	137	27	52	420	64.2	0.51	16.13	3.29	0.10	0.72	2.70	3.45	2.17	0.15	6.87	100.2
10E14	35	12	24	137	28	14	420	55.9	0.82	20.25	5.04	0.15	1.02	2.85	3.19	2.32	0.15	4.40	96.1
10E15	35	12	49	137	29	13	420	64.3	0.31	17.68	2.40	0.07	0.47	1.81	3.63	3.14	0.12	2.46	96.4
10E16	35	13	4	137	29	41	431	57.0	7.78	11.16	11.52	0.30	1.68	2.49	1.63	1.87	0.13	2.99	98.5
10E17	35	13	17	137	29	22	420	69.7	0.34	14.31	2.07	0.05	0.60	1.64	3.00	3.05	0.06	3.16	98.0
10E18	35	13	25	137	29	26	420	65.2	0.69	15.74	3.43	0.09	0.64	2.86	3.65	2.23	0.07	2.34	96.9
10E19	35	13	22	137	29	46	431	54.0	5.37	14.22	11.74	0.26	1.89	4.85	2.42	1.03	0.19	3.00	99.0
10E20	35	14	37	137	29	23	431	58.2	1.10	17.38	6.45	0.11	1.06	3.83	4.06	1.74	0.16	3.22	97.3
10E21	35	14	55	137	28	2	431	62.1	0.55	16.95	5.00	0.09	0.92	3.24	3.64	2.05	0.11	2.06	96.7
10E22	35	14	37	137	28	19	431	63.3	0.37	17.69	3.41	0.06	0.49	2.96	5.03	1.59	0.07	3.02	98.0
10E23	35	14	41	137	28	30	431	60.1	0.76	17.25	5.78	0.09	0.97	3.79	3.89	1.76	0.13	2.62	97.2
10E24	35	14	44	137	28	25	431	60.6	0.93	16.34	5.83	0.11	0.92	3.98	3.81	1.63	0.17	4.19	98.5
10E25	35	14	49	137	29	7	431	59.0	0.71	16.65	6.30	0.11	1.01	3.59	3.46	1.82	0.15	3.37	96.2
10E26	35	15	1	137	29	32	431	59.4	0.71	17.08	6.42	0.10	1.05	3.55	3.37	2.11	0.14	1.79	95.7
10E27	35	14	11	137	29	36	431	62.2	1.12	14.81	6.32	0.14	1.25	4.81	3.41	1.38	0.15	2.21	97.8
10E28	35	14	14	137	29	33	431	62.6	0.60	16.78	4.26	0.08	0.72	3.58	4.11	1.62	0.11	1.96	96.4
10E29	35	13	44	137	29	28	420	60.6	1.03	17.14	5.14	0.11	0.97	4.79	4.12	1.41	0.09	1.16	96.6
10E30	35	13	36	137	29	41	431	52.6	7.90	12.05	13.62	0.34	1.82	4.53	2.23	1.13	0.16	1.98	98.4
10F01	35	15	7	137	23	35	431	52.2	0.44	18.52	5.37	0.23	0.94	1.50	2.23	3.18	0.26	16.34	101.2
10F02	35	14	6	137	25	25	420	57.6	0.34	16.13	3.07	0.10	0.65	1.84	2.85	3.23	0.18	13.65	99.6
10F03	35	13	34	137	25	48	420	62.4	0.39	18.84	3.33	0.08	0.70	2.02	3.88	3.60	0.17	14.84	110.3
10F04	35	14	27	137	25	2	420	56.9	0.39	15.85	4.10	0.08	0.70	2.78	3.66	2.06	0.12	13.45	100.1
10F05	35	14	32	137	24	27	420	67.0	0.26	16.17	2.16	0.06	0.50	1.11	2.97	4.57	0.11	3.30	98.2
10F06	35	14	30	137	23	34	431	67.2	0.27	14.71	2.10	0.05	0.51	1.20	3.31	3.88	0.14	5.27	98.7
10F07	35	15	5	137	24	5	420	62.9	0.34	17.00	3.14	0.11	0.63	1.18	2.45	4.17	0.17	6.57	98.7
10F08	35	15	1	137	24	28	420	55.8	0.35	19.45	3.28	0.12	0.64	1.14	2.71	3.93	0.19	12.72	100.3
Nebu																			
11A02	35	12	53	137	30	25	120	66.0	0.63	15.22	3.24	0.09	0.68	2.84	3.42	2.20	0.11	1.73	96.1
11A03	35	12	29	137	30	16	420	64.0	0.92	15.64	3.38	0.11	0.67	2.20	2.95	2.30	0.13	4.39	96.6
11A04	35	12	29	137	30	35	120	57.8	2.35	16.13	6.34	0.15	1.21	3.08	2.80	1.58	0.19	5.26	96.9
11A05	35	12	17	137	31	57	420	63.2	0.38	16.56	3.70	0.10	0.54	3.67	3.68	1.53	0.11	2.99	96.5
11A06	35	12	33	137	31	38	420	61.7	0.31	17.15	2.66	0.06	0.50	2.31	3.70	2.72	0.09	5.29	96.5
11A07	35	12	35	137	31	21	420	62.5	0.23	18.17	1.89	0.05	0.40	2.72	4.13	2.33	0.11	3.75	96.2
11A08	35	13	0	137	30	44	420	60.7	2.91	14.77	5.75	0.26	0.81	2.44	2.74	2.12	0.21	4.43	97.2
11A09	35	13	1	137	31	2	420	58.5	1.59	16.74	4.98	0.14	0.83	2.05	2.52	2.40	0.19	7.64	97.6
11A11	35	13	20	137	31	51	420	62.6	0.28	17.75	2.41	0.07	0.44	2.86	4.06	1.82	0.11	4.70	97.1
11A12	35	13	17	137	31	13	420	62.5	0.50	17.06	3.26	0.12	0.57	3.09	3.72	1.99	0.10	3.65	96.5
11A13	35	13	53	137	30	46	640	54.5	2.15	15.37	8.77	0.60	1.27	4.22	2.74	1.54	0.18	4.99	96.4
11A14	35	13	25	137	30	54	431	44.6	9.46	13.04	17.32	0.40	2.40	5.46	1.58	0.79	0.46	1.99	97.5
11A15	35	13	34	137	31	19	120	64.8	0.47	16.34	3.36	0.09	0.61	3.21	3.66	1.75	0.08	2.24	96.6
11A16	35	13	37	137	31	17	431	59.8	2.47	15.13	6.64	0.16	1.10	4.29	3.32	1.46	0.10	1.69	96.1
11A17	35	13	14	137	30	19	431	53.1	4.06	14.79	10.99	0.27	1.87	5.35	2.72	1.41	0.26	2.10	96.9
11A18	35	13	57	137	30	19	431	54.9	1.17	16.29	7.92	0.16	1.49	4.67	2.93	1.62	0.22	5.71	97.0
11A19	35	14	10	137	30	4	431	57.6	0.84	16.46	6.72	0.28	1.05	3.85	3.21	1.93	0.17	4.47	96.6
11C01	35	12	4	137	36	20	431	69.1	0.39	14.05	2.60	0.10	0.50	1.85	2.96	2.20	0.18	2.96	96.9
11C02	35	11	53	137	36	17	431	59.4	0.67	17.47	5.33	0.10	0.94	3.15	3.28	1.66	0.11	5.59	97.7
11C03	35	12	26	137	36	19	223	51.4	1.19	18.21	7.24	0.14	0.63	1.96	1.90	1.58	0.16	15.91	100.3
11C04	35	12	54	137	35	56	431	59.9	0.96	15.86	6.95	0.13	1.18	3.23	2.68	1.85	0.19	4.59	97.6
11C05	35	13	2	137	36	1	431	71.0	0.64	12.07	3.85	0.13	0.97	1.37	1.77	2.20	0.11	3.24	97.4

Appendix I-7

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total	
11C06	35	13	33	137	35	43	431	62.4	0.78	15.92	4.37	0.13	0.92	3.29	3.43	1.55	0.11	3.53	96.5	
11C07	35	13	30	137	35	28	431	60.5	0.62	17.06	5.06	0.12	1.09	3.73	3.53	1.77	0.13	3.64	97.2	
11C08	35	13	17	137	35	33	431	61.2	0.52	16.62	4.79	0.09	1.07	3.85	3.72	1.54	0.10	3.05	96.6	
11C09	35	13	8	137	35	13	431	57.9	0.78	15.85	7.23	0.16	2.28	4.92	3.10	1.37	0.13	3.27	97.0	
11C10	35	13	0	137	35	8	431	59.6	0.65	17.48	4.64	0.08	0.89	4.00	3.95	1.50	0.09	3.30	96.2	
11C11	35	13	19	137	34	49	431	58.5	0.72	17.17	5.63	0.12	1.35	3.52	3.35	1.78	0.10	4.98	97.2	
11C12	35	14	5	137	35	25	431	58.1	0.61	17.91	4.94	0.11	0.86	3.85	3.63	1.66	0.14	4.80	96.6	
11C13	35	14	14	137	35	12	431	59.5	1.21	15.52	8.06	0.17	2.67	5.19	2.97	1.26	0.09	4.02	100.7	
11C14	35	14	37	137	35	11	420	62.0	0.23	18.61	2.06	0.07	0.42	3.07	5.11	1.85	0.11	2.99	96.5	
11C15	35	14	50	137	35	5	110	63.8	0.57	15.53	4.16	0.10	0.89	3.21	3.38	1.80	0.11	2.91	96.4	
11C16	35	14	48	137	34	59	110	62.7	1.78	14.17	5.94	0.19	1.46	3.81	3.20	1.59	0.19	1.69	96.7	
11C17	35	14	21	137	34	24	420	63.9	0.82	15.87	3.93	0.11	1.53	2.49	2.93	2.42	0.09	3.49	97.6	
11C18	35	13	57	137	34	20	431	52.7	3.04	16.06	9.21	0.23	2.69	3.38	2.18	1.25	0.14	7.39	98.2	
11C19	35	15	6	137	34	28	420	63.0	0.25	18.78	2.13	0.06	0.47	2.82	4.48	2.03	0.13	3.62	97.8	
11C20	35	14	58	137	33	51	420	54.8	0.73	17.42	9.44	0.13	1.62	3.55	2.81	1.98	0.16	8.66	101.3	
11D01	35	14	22	137	32	9	420	56.8	3.48	14.47	9.15	0.19	1.52	4.17	3.03	1.37	0.15	3.12	97.4	
11D02	35	14	18	137	32	18	420	60.1	0.45	17.86	4.82	0.14	0.56	3.29	4.06	1.64	0.08	4.25	97.2	
11D03	35	14	18	137	32	51	420	56.7	0.59	17.36	5.65	0.11	1.19	3.90	3.64	1.39	0.13	7.32	98.0	
11D04	35	14	2	137	32	27	420	57.0	0.52	18.78	5.27	0.16	0.62	3.45	3.87	1.71	0.11	6.57	98.1	
11D05	35	14	1	137	33	0	420	58.8	1.43	16.03	5.73	0.15	2.15	3.64	3.23	1.46	0.14	5.15	97.9	
11D06	35	13	57	137	32	25	420	63.9	0.90	16.08	4.22	0.25	0.56	3.25	3.97	1.68	0.08	2.68	97.6	
11D07	35	13	33	137	33	33	420	56.7	1.70	16.88	7.19	0.15	2.25	3.57	2.41	1.58	0.20	5.56	98.2	
11D08	35	13	47	137	33	10	420	51.9	6.38	13.05	11.82	0.31	3.82	3.84	2.00	1.24	0.14	3.31	97.8	
11D10	35	12	52	137	34	23	431	64.8	0.45	15.80	3.25	0.09	0.74	2.38	3.17	2.49	0.05	3.57	96.8	
11D11	35	13	50	137	32	47	420	66.0	0.21	16.09	1.72	0.05	0.35	1.70	3.52	3.20	0.10	4.82	97.8	
11D12	35	13	29	137	32	39	420	65.4	0.64	16.11	3.17	0.09	0.87	2.74	3.56	2.37	0.10	2.37	97.4	
11D13	35	13	7	137	32	13	420	64.9	0.21	16.99	1.67	0.04	0.28	1.25	3.14	4.22	0.11	4.61	97.4	
11D14	35	13	19	137	32	21	420	64.9	0.23	17.46	1.97	0.05	0.39	2.51	4.03	2.67	0.09	3.61	97.9	
11D15	35	12	47	137	32	21	420	68.9	0.15	15.49	1.41	0.04	0.26	1.32	3.22	4.06	0.10	2.59	97.5	
11D16	35	12	50	137	32	45	420	61.9	0.51	17.18	4.27	0.10	0.84	2.92	3.18	2.37	0.08	3.68	97.0	
11D17	35	12	32	137	33	19	420	59.7	0.69	17.67	5.69	0.11	1.08	3.32	3.11	2.06	0.08	4.43	97.9	
11D18	35	12	15	137	33	18	431	58.9	0.45	18.31	4.94	0.10	0.71	3.95	4.20	1.74	0.06	4.11	97.5	
11D19	35	12	17	137	34	4	431	57.9	0.51	18.56	4.80	0.10	0.91	3.54	4.07	1.83	0.10	6.09	98.4	
11D20	35	12	22	137	34	3	431	58.5	0.62	17.46	5.51	0.11	1.27	4.20	3.75	1.74	0.10	3.87	97.1	
11E01	35	14	45	137	30	29	431	58.7	0.52	17.45	5.06	0.16	0.63	3.32	3.89	1.90	0.13	6.63	98.3	
11E02	35	14	36	137	30	22	431	49.4	0.81	17.12	7.32	0.13	1.13	3.01	2.56	2.09	0.18	14.28	98.0	
11E03	35	14	40	137	30	46	431	74.5	0.53	11.77	1.83	0.06	0.33	1.33	2.63	2.70	0.03	1.75	97.4	
11E04	35	15	6	137	30	2	431	57.2	0.65	17.49	6.38	0.37	1.00	3.48	3.59	2.07	0.13	5.08	97.5	
11E05	35	14	27	137	32	8	431	61.9	0.71	15.52	4.92	0.11	0.58	3.40	4.65	1.45	0.10	3.68	97.0	
11E06	35	14	50	137	32	18	431	63.5	0.75	15.77	3.96	0.09	0.59	3.61	4.12	1.37	0.06	2.58	96.3	
11E07	35	14	50	137	32	43	420	62.0	0.43	15.61	3.83	0.07	0.48	3.14	4.65	1.37	0.08	6.55	98.3	
11E08	35	14	47	137	32	44	420	59.8	1.44	15.93	5.97	0.12	1.02	4.12	4.13	1.37	0.12	2.95	96.9	
11E09	35	14	54	137	32	28	431	61.4	0.79	14.96	5.56	0.12	0.64	3.60	3.45	1.23	0.09	1.14	93.0	
11E10	35	15	6	137	32	9	431	57.4	0.62	15.96	5.57	0.11	0.62	3.41	3.25	1.26	0.13	8.99	97.3	
11E11	35	15	5	137	31	53	431	61.8	1.45	15.02	5.61	0.16	0.61	3.94	4.57	1.32	0.06	1.43	95.9	
11K01	35	10	51	137	35	3	431	58.0	0.88	15.59	7.21	0.13	1.34	3.31	2.80	1.80	0.25	6.90	98.2	[4]
11K02	35	10	44	137	35	5	431	56.9	0.74	16.67	6.82	0.12	1.29	3.87	4.03	1.74	0.19	6.16	98.5	[4]
11K03	35	10	40	137	35	15	431	57.2	0.79	16.66	6.94	0.13	1.39	4.52	3.37	1.65	0.20	4.77	97.6	[4]
11K04	35	10	38	137	35	20	431	59.0	0.62	16.87	5.78	0.10	0.91	2.98	3.15	1.98	0.15	7.94	99.5	[4]
11K05	35	10	27	137	36	0	223	60.8	0.62	15.35	4.20	0.09	0.93	2.56	2.76	2.05	0.16	9.61	99.1	[4]
11K06	35	11	0	137	35	57	661	56.7	2.39	15.46	7.61	0.18	1.50	3.36	2.53	1.35	0.13	6.38	97.6	[4]
11K07	35	11	0	137	35	52	661	58.2	0.76	15.67	6.41	0.16	1.32	2.82	2.30	1.53	0.15	7.37	96.7	[4]
11K08	35	10	38	137	35	46	661	58.0	1.01	15.96	6.55	0.13	1.25	3.11	3.03	1.45	0.16	8.85	99.5	[4]
11K09	35	11	10	137	36	29	661	70.8	0.49	11.29	3.12	0.07	0.70	1.00	1.69	2.27	0.12	7.16	98.7	[4]
11K10	35	11	11	137	36	33	661	69.4	0.66	12.30	4.26	0.09	1.30	1.53	1.75	2.19	0.09	4.32	97.9	[4]
11K11	35	11	6	137	36	39	431	69.9	0.41	12.82	3.11	0.07	0.81	1.45	2.42	2.33	0.10	4.32	97.7	[4]
11K12	35	10	52	137	37	4	431	53.7	0.59	18.05	5.47	0.21	0.49	1.12	2.19	2.53	0.16	15.62	100.1	[4]
11K13A	35	10	51	137	36	46	223	62.6	0.41	17.52	3.74	0.10	0.59	2.20	3.42	2.61	0.10	4.15	97.4	[4]
11K13B	35	10	51	137	36	46	223	64.7	0.39	16.45	3.50	0.12	0.59	2.26	3.34	2.40	0.14	4.41	98.3	[4]
11K13C	35	10	51	137	36	46	223	65.6	0.38	16.29	3.21	0.11	0.56	2.24	3.32	2.38	0.14	4.31	98.5	[4]
11K14	35	10	52	137	37	18	431	55.6	0.64	19.89	5.15	0.15	0.52	1.39	2.24	3.05	0.15	12.57	101.4	[4]

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
11K15	35	11	47	137	33	54	431	63.2	0.58	15.72	4.89	0.09	0.99	3.20	3.40	2.12	0.10	3.80	98.1
11K16	35	11	46	137	33	52	431	61.5	0.55	17.09	4.06	0.09	0.80	4.03	4.19	1.56	0.11	2.92	96.9
11K17	35	11	49	137	33	4	420	64.7	0.36	16.78	3.03	0.08	0.56	2.90	3.63	2.33	0.05	3.22	97.6
11K18	35	11	42	137	32	43	420	63.3	0.27	18.02	2.47	0.07	0.44	2.92	4.01	2.02	0.04	2.84	96.4
11K19	35	12	31	137	31	1	120	64.3	0.43	16.29	3.31	0.08	0.67	3.10	5.27	2.14	0.11	2.62	98.3
11K20	35	11	48	137	30	56	120	66.6	0.39	16.03	2.97	0.13	0.62	1.73	2.58	3.46	0.17	3.98	98.6
11K21	35	11	58	137	31	11	120	64.0	0.70	16.77	3.49	0.08	0.75	3.32	3.47	1.99	0.13	2.72	97.4
11K22	35	11	38	137	31	7	120	65.0	0.33	16.23	3.19	0.10	0.57	3.13	3.69	2.26	0.07	1.48	96.0
11K23	35	11	24	137	31	4	120	66.9	0.59	15.30	3.16	0.14	0.58	3.28	3.56	1.94	0.07	2.53	98.0
11K24	35	10	23	137	31	8	120	66.4	0.53	15.07	3.95	0.08	1.10	1.35	2.08	2.45	0.10	5.96	99.0
11K25	35	10	22	137	30	55	120	71.0	0.41	12.98	3.04	0.13	1.01	1.42	2.56	2.36	0.08	3.85	98.8
11K26	35	10	24	137	30	49	120	70.0	0.40	13.68	3.06	0.25	0.72	1.36	3.00	2.49	0.10	2.62	97.7
11K27	35	10	29	137	30	44	120	72.0	0.26	12.92	2.54	0.20	0.61	1.11	2.52	2.94	0.09	3.30	98.5
11K28	35	10	56	137	30	49	120	67.4	0.34	15.54	2.56	0.07	0.70	1.67	3.04	2.79	0.10	4.21	98.4
11K29	35	10	54	137	32	17	420	67.4	0.52	14.77	3.64	0.10	0.64	2.54	3.04	1.86	0.06	2.95	97.5
11K30	35	10	56	137	32	17	420	63.0	0.68	15.63	5.37	0.10	1.17	3.70	3.08	1.61	0.13	3.21	97.7
11K31	35	10	21	137	33	38	431	63.5	0.23	17.93	2.70	0.07	0.42	3.15	4.42	1.87	0.05	3.47	97.8
11K32	35	10	25	137	33	37	431	61.7	0.66	16.08	5.28	0.10	1.10	3.44	2.87	1.89	0.12	1.05	94.3
11K33	35	10	14	137	32	54	120	63.3	0.57	16.26	4.56	0.10	0.90	3.54	3.24	1.80	0.10	3.23	97.6
11K34	35	10	14	137	32	31	110	66.8	0.43	15.05	3.70	0.14	0.74	3.02	3.26	2.09	0.09	2.69	98.0
11K35	35	10	25	137	32	0	110	67.1	0.40	15.02	3.40	0.11	0.66	2.64	3.08	1.97	0.11	4.30	98.8
11K36	35	11	58	137	35	26	431	68.8	0.49	14.16	3.13	0.06	0.75	2.14	3.05	2.13	0.08	3.95	98.7
11K37	35	11	56	137	35	28	431	59.7	0.73	16.37	5.75	0.12	1.35	3.37	2.97	1.72	0.13	6.12	98.3
11K38	35	12	41	137	35	39	431	61.8	0.54	17.97	3.99	0.07	0.69	3.18	3.98	1.89	0.10	4.69	98.9
11K39	35	12	26	137	35	38	431	64.4	0.38	16.68	3.47	0.07	0.65	2.98	4.37	1.74	0.07	2.70	97.5
11K40	35	12	14	137	35	31	431	61.4	0.79	17.37	3.60	0.07	0.71	2.98	4.06	1.33	0.06	4.11	96.5
11K41	35	12	4	137	35	30	431	61.1	0.52	18.05	3.63	0.07	0.61	2.59	4.58	1.79	0.08	4.16	97.2
11K42	35	12	42	137	35	50	431	73.4	0.53	11.39	3.10	0.10	0.66	1.53	2.12	1.99	0.10	2.45	97.4
11K43	35	11	48	137	36	30	431	72.8	0.73	11.07	3.53	0.09	0.97	1.18	1.51	2.31	0.07	3.17	97.5
11K44	35	11	47	137	36	35	431	63.5	0.48	16.49	4.40	0.17	0.72	2.13	3.11	2.26	0.17	5.06	98.5
11K45	35	12	23	137	30	50	120	62.2	0.63	16.20	4.21	0.13	0.86	2.58	2.76	2.29	0.14	6.31	98.3
11K46	35	10	27	137	33	10	431	64.2	0.35	17.57	3.22	0.07	0.55	3.55	4.02	1.74	0.07	2.55	97.8
11K47	35	12	44	137	35	48	431	64.6	0.52	16.50	3.88	0.09	0.76	2.93	3.89	1.86	0.08	2.89	98.0
Chausuyama																			
12K01	35	11	31	137	38	18	661	61.6	0.44	15.50	3.98	0.10	0.73	2.08	3.06	2.14	0.15	8.97	98.8
12K02	35	11	13	137	37	50	431	62.2	0.33	18.20	3.11	0.07	0.83	3.24	4.20	2.03	0.09	4.03	98.3
12K03	35	11	25	137	38	0	223	56.7	0.50	17.35	5.10	0.21	0.71	2.78	3.78	2.09	0.22	9.99	99.4
12K04	35	11	17	137	38	26	223	61.0	0.70	15.28	4.65	0.09	0.97	2.41	1.98	2.01	0.16	9.39	98.7
12K05	35	11	12	137	38	20	223	57.2	1.40	17.85	4.63	0.09	1.15	3.90	2.65	1.55	0.11	8.26	98.8
12K06	35	11	10	137	38	6	223	59.2	0.98	17.64	3.87	0.09	0.85	3.58	2.65	1.67	0.11	8.47	99.1
12K07	35	11	5	137	38	0	431	48.5	2.45	16.95	8.53	0.22	0.96	2.31	1.38	1.13	0.28	17.87	100.6
12K08	35	10	55	137	37	26	431	62.8	0.39	16.79	3.48	0.10	0.59	2.69	3.60	2.25	0.16	5.45	98.3
12K09	35	10	51	137	37	31	223	53.1	1.04	17.17	5.55	0.12	0.94	2.94	2.02	1.51	0.15	13.64	98.2
12K10	35	10	54	137	38	38	223	55.3	1.55	16.36	5.66	0.13	1.46	3.51	2.15	1.48	0.15	11.61	99.4
12K11	35	10	54	137	38	41	223	59.0	0.87	16.06	4.85	0.11	1.26	2.78	1.85	1.71	0.14	10.44	99.0
12K12	35	10	35	137	38	19	223	55.0	1.11	16.32	5.61	0.13	1.62	2.79	1.62	1.58	0.17	14.19	100.2
12K14	35	10	26	137	39	57	920	71.1	1.62	10.28	6.41	0.19	1.49	1.02	0.83	1.39	0.10	4.37	98.8
12K15	35	10	31	137	40	12	920	64.0	1.90	13.65	7.17	0.16	1.70	1.19	1.27	1.61	0.15	6.42	99.2
12K16	35	10	27	137	40	41	920	64.6	1.04	14.32	6.05	0.12	1.32	1.78	1.58	1.70	0.14	5.90	98.6
12K17	35	11	7	137	41	24	640	59.2	0.89	16.53	6.74	0.12	1.88	4.18	3.36	1.44	0.12	3.68	98.2
12K18	35	11	46	137	39	32	223	71.5	1.00	11.63	5.11	0.08	1.02	1.52	1.50	2.06	0.13	3.57	99.1
12K19	35	11	45	137	39	30	223	63.6	0.91	14.36	5.81	0.11	1.32	2.23	1.67	2.19	0.13	5.85	98.2
12K20	35	11	28	137	39	40	630	63.5	1.08	14.81	5.80	0.10	1.33	2.52	2.06	1.64	0.13	5.51	98.5
12K21A	35	11	13	137	40	29	650	66.1	0.72	14.50	4.97	0.09	0.95	1.97	2.17	2.07	0.14	4.21	97.9
12K21B	35	11	13	137	40	29	650	66.9	0.73	14.17	5.17	0.11	0.94	2.02	2.21	2.04	0.15	3.90	98.3
12K21C	35	11	13	137	40	29	650	63.8	0.79	14.61	5.61	0.13	1.11	2.03	2.09	2.02	0.16	5.60	98.0
12K22	35	11	8	137	40	44	920	66.3	0.79	14.16	5.26	0.08	1.16	1.78	1.69	2.29	0.13	4.92	98.5
12K23	35	13	13	137	40	58	661	62.4	0.74	15.90	5.15	0.10	1.29	1.24	1.72	2.93	0.12	6.94	98.5
12K24	35	13	12	137	41	7	661	54.2	1.31	16.09	7.90	0.16	3.97	5.11	2.63	1.45	0.21	4.91	98.0
12K25	35	13	7	137	41	38	661	55.8	0.95	16.54	7.79	0.17	2.47	3.76	2.29	1.74	0.22	6.52	98.2

Appendix I-8

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total	
12K26	35	13	24	137	41	39	630	61.9	0.64	16.59	5.04	0.09	1.72	3.71	2.97	1.74	0.15	3.51	98.0	[4]
12K27	35	12	56	137	40	22	661	61.5	0.93	13.80	6.79	0.14	2.86	3.65	2.17	1.70	0.10	4.89	98.5	[4]
12K28	35	12	38	137	40	37	661	54.0	1.04	13.66	10.11	0.17	4.68	6.21	2.66	1.02	0.10	4.49	98.2	[4]
12K29	35	12	20	137	37	38	431	63.5	0.36	17.19	3.30	0.10	0.51	2.64	3.76	2.36	0.12	4.91	98.7	[4]
12K30	35	12	43	137	37	40	431	69.3	0.58	13.63	3.20	0.08	0.54	1.40	2.26	2.47	0.09	4.39	97.9	[4]
12K31	35	13	5	137	37	24	431	72.0	0.61	12.75	2.87	0.07	0.50	1.45	2.36	2.45	0.09	2.87	98.0	[4]
12K32	35	12	12	137	41	4	920	65.6	0.60	14.88	4.58	0.11	0.97	1.88	2.49	2.18	0.13	5.26	98.7	[4]
12K33	35	12	9	137	41	33	920	53.5	0.98	18.44	7.85	0.16	2.53	3.50	2.05	1.60	0.17	8.02	98.8	[4]
12K34	35	11	53	137	41	16	920	57.3	0.90	17.32	7.32	0.15	2.46	3.62	2.28	1.60	0.16	5.98	99.1	[4]
12K35	35	11	41	137	41	16	920	60.9	0.93	15.73	6.42	0.15	2.07	2.24	1.89	1.66	0.12	6.72	98.9	[4]
12K36	35	11	48	137	41	13	920	66.1	0.90	14.03	5.43	0.12	1.97	3.34	2.57	1.64	0.15	2.69	98.9	[4]
12K37	35	10	28	137	41	36	640	58.3	1.33	15.90	7.93	0.16	2.34	5.14	2.62	1.05	0.13	3.35	98.3	[4]
12K38	35	10	26	137	41	36	640	55.4	1.20	17.01	8.03	0.14	2.40	4.57	2.48	1.22	0.16	6.21	98.8	[4]
12K39	35	10	19	137	40	32	920	63.4	1.79	13.58	6.91	0.16	1.13	1.34	1.28	1.83	0.18	7.53	99.1	[4]
Hirabari																				
13A01	35	8	23	137	2	25	110	82.3	2.87	6.44	4.37	0.14	0.39	0.47	0.46	1.94	0.07	2.14	101.6	
13A02	35	7	50	137	1	7	110	82.5	0.41	7.62	1.47	0.04	0.26	0.45	0.60	2.37	0.07	2.89	98.7	
13C01	35	8	56	137	3	7	110	82.3	3.67	4.49	4.50	0.14	0.31	0.32	0.36	1.57	0.09	1.35	99.1	
13C02	35	7	51	137	3	41	110	82.4	0.88	6.91	1.80	0.06	0.28	0.39	0.51	2.22	0.15	3.28	98.9	
13C03	35	6	50	137	3	56	110	73.2	0.54	9.71	3.59	0.12	0.73	1.57	1.71	2.44	0.29	6.26	100.2	
13C04	35	6	22	137	3	39	110	78.1	0.40	10.88	1.70	0.02	0.28	0.48	1.13	2.64	0.04	3.40	99.0	
13C05	35	6	43	137	4	29	110	76.0	0.59	9.04	3.13	0.07	0.76	1.74	1.36	2.24	0.08	2.97	98.0	
13C06	35	6	42	137	5	10	110	70.5	0.69	12.32	3.17	0.12	0.34	0.42	1.85	2.53	0.10	7.95	99.9	
13C07	35	5	34	137	3	29	110	74.5	0.88	9.83	2.97	0.08	0.43	0.70	0.76	2.25	0.37	6.69	99.5	
13D01	35	6	12	137	6	24	210	80.7	0.80	7.57	2.98	0.14	0.34	0.66	0.65	1.81	0.08	2.97	98.6	
13E01	35	9	59	137	6	44	110	63.2	3.76	15.52	5.83	0.28	0.40	0.36	0.37	2.01	0.08	7.72	99.5	[2]
13E02	35	9	46	137	7	4	110	66.6	0.24	16.33	2.51	0.11	0.55	2.53	3.99	2.42	0.06	2.95	98.3	[2]
13E03	35	9	22	137	6	56	210	88.6	1.54	2.96	2.41	0.07	0.14	0.17	0.15	1.22	0.06	0.91	98.2	[2]
13E04	35	9	35	137	3	13	210	81.7	0.45	8.03	1.61	0.06	0.36	0.47	0.72	2.57	0.15	3.60	99.7	[2]
13E05	35	9	35	137	3	15	210	89.3	0.40	4.71	0.83	0.02	0.25	0.27	0.36	1.82	0.04	1.28	99.3	[2]
13E06	35	8	43	137	5	4	210	80.1	0.50	7.59	2.33	0.09	0.32	0.55	0.53	1.79	0.23	5.69	99.7	[2]
13E07	35	8	58	137	4	28	210	38.8	0.39	9.56	38.53	0.50	0.34	0.26	0.04	1.26	0.08	17.42	107.2	[2]
13E08	35	7	40	137	5	27	210	79.3	0.66	8.10	3.15	0.11	0.47	0.95	0.83	2.14	0.21	3.32	99.3	[2]
13E09	35	8	31	137	4	52	210	68.6	0.53	9.91	3.56	0.13	0.50	0.71	0.43	1.86	0.63	13.14	100.0	[2]
13E10	35	7	49	137	6	33	210	74.3	0.53	12.04	2.97	0.04	0.49	0.59	1.03	2.56	0.05	4.44	99.0	[2]
13E11	35	7	12	137	5	42	210	76.6	0.48	9.73	2.48	0.06	0.48	0.58	0.72	2.34	0.19	5.53	99.2	[2]
13E12	35	8	33	137	6	39	110	59.8	0.62	18.92	4.27	0.08	0.49	0.56	0.43	2.21	0.18	12.73	100.3	[2]
13E13	35	7	44	137	6	30	210	54.9	0.52	13.75	14.62	0.13	0.49	0.41	0.30	2.03	0.46	13.66	101.3	[2]
13E14	35	8	58	137	7	12	110	64.8	0.27	16.49	2.78	0.09	0.36	1.86	3.31	2.46	0.19	6.80	99.4	[2]
13E15	35	7	49	137	6	39	210	79.7	0.70	8.58	2.51	0.06	0.30	0.37	0.62	2.54	0.04	2.97	98.4	[2]
13E16	35	8	59	137	7	5	210	71.3	3.46	10.29	3.62	0.32	0.17	1.32	2.32	2.28	0.04	0.95	96.0	[2]
13E17	35	9	16	137	7	10	110	71.5	0.47	12.90	2.24	0.08	0.35	1.63	2.62	2.65	0.10	3.82	98.4	[2]
13E18	35	9	53	137	5	10	210	77.8	0.46	10.51	2.32	0.06	0.49	0.74	1.22	1.84	0.05	3.44	98.9	[2]
13E19	35	10	5	137	5	4	210	77.7	0.40	9.26	2.26	0.04	0.42	0.78	0.74	1.85	0.21	5.79	99.4	[2]
13E20	35	10	8	137	5	1	210	78.2	0.37	8.42	3.42	0.06	0.37	0.70	0.96	2.27	0.24	3.88	98.9	[2]
Toyota hokubu																				
14A01	35	10	14	137	7	34	433	69.3	0.23	14.92	2.16	0.10	0.68	2.68	3.83	2.34	0.03	1.48	97.7	[1]
14A02	35	10	7	137	11	20	110	70.8	0.31	10.46	2.31	0.05	0.56	1.53	1.68	2.07	0.45	9.41	99.6	[1]
14A03	35	9	52	137	10	4	110	69.0	0.14	14.96	1.58	0.06	0.43	2.14	4.89	2.34	0.04	2.59	98.1	[1]
14A04	35	10	4	137	9	16	433	71.9	0.17	13.53	1.46	0.04	0.39	1.80	3.29	2.61	0.06	8.21	103.4	[1]
14A05	35	9	30	137	9	48	110	71.9	0.17	13.53	1.46	0.04	0.39	1.80	3.29	2.61	0.06	2.22	97.4	[1]
14A06	35	8	9	137	9	46	110	75.9	0.62	10.96	1.63	0.07	0.39	1.44	2.73	2.45	0.05	1.70	97.9	[1]
14A07	35	8	56	137	9	10	110	77.8	0.85	9.14	2.16	0.08	0.43	1.16	1.44	2.39	0.10	2.01	97.6	[1]
14A08	35	8	28	137	7	25	433	74.1	1.43	10.26	2.92	0.20	0.44	1.06	1.66	2.18	0.09	3.50	97.8	[1]
14A09	35	9	17	137	7	41	433	68.8	2.61	11.56	4.14	0.42	0.35	1.28	2.30	2.30	0.13	4.29	98.2	[1]
14A10	35	9	15	137	7	43	433	66.4	0.21	15.74	2.29	0.30	0.41	2.10	3.74	2.53	0.08	3.72	97.5	[1]
14A11	35	6	54	137	9	15	120	75.2	0.62	10.11	2.73	0.07	0.49	1.04	0.92	2.42	0.22	6.94	100.7	
14A12	35	6	45	137	9	0	120	75.0	1.47	10.37	3.56	0.12	0.44	0.79	0.76	2.38	0.18	4.85	99.9	
14A13	35	6	26	137	8	43	110	78.9	1.55	8.05	2.73	0.10	0.28	0.72	0.74	2.54	0.08	2.34	98.1	

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
14B01	35	10	11	137	11	19	110	57.6	0.49	14.06	4.14	0.06	0.89	1.62	0.83	2.06	0.77	18.81	101.4
14B02	35	9	49	137	10	8	110	69.1	0.28	13.35	2.35	0.09	0.54	1.74	2.65	2.14	0.21	7.44	99.9
14B03	35	9	3	137	9	53	110	79.0	0.79	8.33	1.62	0.07	0.35	0.77	3.81	2.74	0.08	2.45	100.0
14B04	35	8	11	137	9	34	110	73.6	0.63	10.58	2.74	0.25	0.44	0.92	1.40	2.39	0.18	5.21	98.3
14B05	35	8	58	137	9	12	110	69.0	0.20	13.50	2.56	0.14	0.45	1.60	2.87	2.25	0.22	5.14	98.0
14B06	35	8	43	137	7	25	110	79.2	0.24	8.58	1.77	0.06	0.53	1.40	1.55	2.16	0.05	2.64	98.1
14B07	35	9	12	137	10	45	210	72.8	0.27	11.47	1.91	0.06	0.49	1.31	1.63	2.75	0.17	5.05	97.9
14C01	35	9	47	137	13	14	434	64.6	0.34	16.39	2.99	0.08	0.48	2.81	3.41	2.72	0.05	4.05	97.9
14C02	35	10	3	137	11	52	210	88.7	0.54	2.52	3.08	0.28	0.26	0.19	1.27	0.79	0.08	2.59	100.3
14C03	35	8	46	137	12	34	432	71.2	0.28	12.08	3.33	0.07	1.01	2.15	2.32	1.92	0.06	2.62	97.0
14C04	35	9	59	137	11	49	210	88.2	1.68	3.25	1.84	0.07	0.31	0.24	0.17	1.04	0.03	1.20	98.0
14C05	35	9	31	137	12	54	434	68.0	1.20	13.66	3.76	0.10	0.62	2.39	2.62	1.68	0.06	3.80	97.9
14C06	35	9	59	137	13	58	434	66.2	0.49	14.74	3.62	0.11	0.90	3.47	3.18	2.17	0.04	1.50	96.4
14C07	35	9	25	137	13	6	434	75.2	1.14	10.50	2.42	0.09	0.46	1.62	2.47	2.27	0.04	1.11	97.3
14C08	35	9	52	137	13	53	434	70.4	0.38	13.58	2.25	0.09	0.61	2.27	3.04	2.90	0.04	1.46	97.0
14C09	35	9	38	137	13	55	432	66.5	0.41	14.86	3.19	0.11	0.90	2.99	3.00	2.62	0.08	2.24	96.9
14D01	35	9	32	137	14	11	433	57.8	0.44	19.37	4.58	0.13	1.04	2.87	3.03	2.38	0.14	8.08	99.8
14D02	35	9	28	137	14	8	433	61.0	0.38	15.64	5.14	0.47	0.94	3.47	2.79	1.72	0.20	7.24	99.0
14D03	35	9	32	137	13	53	432	68.8	0.87	14.07	2.66	0.77	0.48	1.34	1.92	2.73	0.05	4.16	97.8
14D04	35	8	38	137	13	39	433	62.8	0.67	14.38	5.74	0.23	1.09	3.62	3.92	1.96	0.14	4.71	99.2
14D05	35	8	21	137	14	3	433	65.1	0.32	15.82	3.38	0.11	0.66	2.31	2.29	2.70	0.06	4.30	97.1
14D06	35	8	10	137	14	26	433	61.2	0.32	18.03	4.36	0.16	0.63	2.15	2.52	2.92	0.06	6.79	99.2
14D07	35	8	12	137	14	29	433	57.9	0.31	16.00	7.42	0.62	0.58	1.98	2.33	2.48	0.26	10.48	100.4
14D08	35	8	7	137	14	9	433	62.6	0.36	17.93	4.08	0.12	0.60	1.85	2.22	2.88	0.09	6.49	99.2
14D09	35	8	11	137	13	9	432	60.4	0.41	18.41	4.60	0.17	0.86	2.62	2.12	2.70	0.09	6.06	98.4
14D10	35	7	51	137	12	39	432	65.5	0.34	15.95	3.37	0.11	0.71	2.83	2.68	2.11	0.09	4.69	98.4
14D11	35	8	28	137	12	38	432	66.6	0.45	14.28	3.34	0.11	0.66	1.80	1.79	2.67	0.23	6.62	98.5
14D12	35	9	6	137	13	9	432	57.9	0.43	19.62	4.52	0.12	1.02	2.81	3.12	2.44	0.13	7.72	99.8
14D13	35	7	30	137	12	34	432	64.3	0.42	16.74	3.80	0.08	0.80	2.70	2.39	2.53	0.04	3.68	97.4
14D14	35	6	59	137	13	10	432	60.5	0.42	16.96	4.37	0.17	0.98	3.60	2.90	2.11	0.21	4.86	97.1
14D15	35	7	7	137	13	15	432	66.2	0.27	15.10	3.42	0.08	0.85	3.65	3.10	2.09	0.04	1.47	96.3
14D16	35	6	53	137	12	56	432	59.0	0.55	18.19	5.25	0.16	1.06	3.53	8.36	2.42	0.10	5.58	104.2
14D17	35	6	37	137	11	38	110	63.9	0.71	14.82	4.68	0.08	0.69	1.81	1.68	2.71	0.11	5.13	96.3
14D18	35	6	27	137	11	41	110	62.0	0.61	16.88	5.01	0.26	0.78	2.31	2.14	2.39	0.15	6.60	99.1
14D19	35	6	32	137	11	49	110	70.3	0.39	13.11	3.79	0.18	0.83	2.44	2.21	2.48	0.08	3.56	99.4
14D20	35	6	29	137	11	59	120	67.3	0.43	15.54	3.64	0.13	0.72	2.21	2.03	2.82	0.09	4.15	99.0
14D21	35	7	55	137	12	48	432	66.4	0.48	15.35	3.84	0.10	0.69	1.93	1.65	3.02	0.04	5.40	98.9
14D22	35	6	49	137	8	52	120	85.4	0.36	5.89	1.10	0.15	0.28	0.27	0.35	2.33	0.15	3.18	99.5
14D23	35	6	45	137	8	58	120	74.7	0.97	10.75	2.94	0.09	0.47	0.66	0.83	2.82	0.26	4.70	99.1
14D24	35	5	59	137	8	12	110	82.3	0.49	7.79	1.97	0.06	0.38	0.76	1.05	2.37	0.05	1.87	99.1
14E01	35	8	25	137	7	25	433	68.9	0.31	14.79	2.67	0.13	0.83	2.86	5.06	2.34	0.05	1.83	99.8
14E02	35	7	50	137	13	23	432	59.7	0.34	20.35	4.21	0.05	0.58	1.46	1.43	3.29	0.04	9.04	100.4
14E03	35	7	54	137	13	31	433	63.6	0.53	16.16	4.98	0.14	1.15	3.30	2.34	2.76	0.05	3.26	98.3
14E04	35	6	53	137	13	45	433	64.2	0.49	16.51	4.02	0.12	0.87	3.35	2.87	2.57	0.03	2.49	97.5
14E05	35	7	8	137	13	45	433	62.4	0.89	15.64	5.28	0.16	1.20	4.47	5.49	1.90	0.04	1.47	98.9
14E06	35	5	45	137	13	46	433	66.3	0.22	16.98	2.44	0.07	0.58	4.41	3.51	1.71	0.05	1.42	97.7
14E07	35	6	18	137	14	18	440	66.9	0.35	17.09	2.77	0.06	0.65	2.33	2.43	2.67	0.05	3.71	99.0
14E08	35	6	52	137	14	49	433	68.7	0.17	15.76	1.85	0.08	0.33	2.08	2.37	3.29	0.03	3.70	98.3
14E09	35	5	18	137	14	18	433	59.0	0.58	18.48	4.94	0.09	1.40	5.26	2.82	1.66	0.14	3.83	98.2
14E10	35	8	39	137	11	28	110	83.9	0.65	6.85	1.46	0.04	0.41	0.58	0.66	2.34	0.07	2.25	99.2
14E11	35	8	45	137	10	58	110	88.6	0.43	5.15	0.74	0.03	0.29	0.25	0.28	2.19	0.03	1.26	99.2
14E12	35	7	51	137	10	34	120	73.3	0.23	12.31	1.75	0.04	0.46	2.17	2.58	2.27	0.17	3.19	98.4
14G01	35	5	43	137	11	12	110	64.5	0.47	17.34	3.83	0.07	1.08	2.39	2.40	2.81	0.08	3.99	98.9
14G02	35	5	37	137	12	16	432	65.7	0.34	16.13	4.28	0.13	0.88	2.74	2.16	2.62	0.06	4.14	99.1
14G03	35	6	7	137	12	27	432	64.5	0.60	15.32	4.61	0.12	1.14	3.53	2.54	2.27	0.11	2.91	97.6
14G04	35	6	3	137	12	33	432	66.6	0.33	16.35	3.22	0.09	0.70	2.28	2.07	2.72	0.08	4.47	98.9
14G05	35	6	23	137	13	14	432	66.5	0.31	15.13	3.79	0.11	0.97	3.85	3.54	1.99	0.04	1.89	98.1
14G06	35	6	8	137	13	20	433	64.7	0.32	15.62	3.39	0.08	0.73	3.64	3.55	1.36	0.06	4.39	97.8
14G07	35	5	46	137	13	6	432	57.6	0.33	20.44	5.58	0.12	0.63	2.29	1.73	2.58	0.10	8.88	100.3
14T01	35	9	8	137	12	46	432	66.3	0.62	14.73	3.79	0.11	0.95	3.48	3.19	2.30	0.07	1.69	97.2
14T02	35	6	30	137	10	12	110	76.1	0.43	11.54	1.46	0.05	0.26	1.50	2.73	2.51	0.03	1.34	97.9

Appendix I-9

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total	
14T03	35	7	22	137	10	17	120	66.9	0.91	13.00	3.71	0.07	0.57	1.26	1.09	2.91	0.31	8.04	98.8	
14T04	35	8	7	137	8	13	120	66.3	0.46	13.71	3.81	0.09	0.48	1.90	2.32	2.29	0.32	6.45	98.1	
14T05	35	7	3	137	7	57	110	75.0	1.42	9.38	3.22	0.08	0.37	0.73	0.80	2.26	0.22	4.33	97.8	
14T06	35	7	27	137	9	19	110	73.4	1.78	10.33	2.99	0.12	0.37	1.29	2.02	2.14	0.06	2.00	96.5	
Asuke																				
15A01	35	9	57	137	15	9	433	66.2	0.33	15.86	3.32	0.10	0.80	3.20	3.28	2.40	0.06	2.78	98.4	[3]
15A02	35	5	57	137	16	16	432	60.7	0.60	17.99	4.54	0.10	1.24	4.68	3.28	1.76	0.09	3.47	98.4	[5]
15A03	35	5	53	137	16	14	432	62.5	0.80	16.55	5.07	0.13	1.33	4.45	3.46	1.88	0.12	2.55	98.8	[5]
15A04	35	5	51	137	16	41	432	60.0	0.68	17.88	5.41	0.18	1.22	4.70	3.33	1.82	0.11	3.17	98.5	[5]
15A05	35	6	7	137	16	48	432	62.5	0.80	16.93	4.20	0.11	1.15	4.97	3.46	1.86	0.13	2.03	98.2	[5]
15A06	35	6	19	137	16	54	432	62.1	0.95	15.57	6.08	0.16	1.58	5.12	3.05	1.81	0.11	1.78	98.3	[5]
15A07	35	6	17	137	16	47	432	53.4	0.62	22.07	6.05	0.16	1.28	4.19	3.12	1.95	0.22	6.98	100.0	[5]
15A08	35	6	0	137	17	41	432	62.3	0.50	18.28	4.54	0.11	1.04	3.24	2.49	2.45	0.07	4.33	99.3	[5]
15A09	35	5	59	137	18	8	432	62.9	0.61	17.92	4.97	0.10	1.07	1.96	1.47	2.75	0.09	5.75	99.6	[5]
15A10	35	6	16	137	18	33	432	58.8	0.77	18.51	5.85	0.17	1.23	2.91	2.04	2.23	0.13	6.67	99.3	[5]
15A11	35	6	37	137	18	24	432	57.1	0.60	20.03	5.85	0.14	1.26	3.55	2.81	1.99	0.10	7.09	100.6	[5]
15A12	35	6	53	137	18	2	432	61.6	0.75	16.70	5.22	0.13	1.39	4.82	4.12	1.94	0.09	2.16	98.9	[5]
15A13	35	6	52	137	18	6	432	60.6	0.68	18.05	5.21	0.16	1.36	4.63	3.06	1.91	0.10	2.92	98.7	[5]
15A14	35	7	2	137	18	1	432	59.0	0.59	19.05	5.24	0.12	1.11	2.79	2.01	2.78	0.09	6.76	99.5	[5]
15A15	35	7	7	137	18	7	432	59.9	0.79	17.07	5.50	0.11	1.48	4.75	3.34	1.80	0.11	3.12	98.0	[5]
15A16	35	7	22	137	17	52	440	57.0	0.75	18.57	5.71	0.13	1.50	4.95	3.46	1.84	0.14	5.41	99.5	[5]
15A17	35	7	47	137	18	26	440	59.3	0.78	17.55	5.90	0.13	2.10	5.58	2.83	1.90	0.10	2.94	99.1	[5]
15A18	35	7	8	137	18	56	432	60.1	0.83	17.05	5.65	0.12	1.56	5.23	3.45	1.55	0.11	2.64	98.3	[5]
15A19	35	7	7	137	18	56	432	58.0	0.76	17.97	6.30	0.12	1.58	4.61	2.79	1.89	0.10	5.74	99.8	[5]
15A20	35	7	8	137	18	58	432	60.9	0.89	16.70	5.78	0.13	1.59	5.45	3.17	1.56	0.10	2.11	98.4	[5]
15A21	35	7	42	137	19	23	432	60.1	0.62	18.58	5.19	0.11	1.36	4.35	3.29	1.82	0.08	3.87	99.4	[5]
15B01	35	9	27	137	15	31	433	68.2	0.69	14.10	3.77	0.12	0.82	3.71	3.52	1.38	0.04	1.39	97.7	[5]
15B02	35	9	26	137	15	30	433	72.6	0.21	13.67	1.79	0.05	0.46	2.86	3.63	1.62	0.02	0.96	97.9	[5]
15B03	35	9	42	137	15	4	433	61.8	0.70	16.64	5.14	0.16	1.24	4.53	3.60	1.84	0.07	2.45	98.2	[5]
15B04	35	9	55	137	15	25	433	71.8	0.44	12.94	2.43	0.10	0.40	2.56	3.34	1.51	0.04	2.02	97.5	[5]
15B05	35	7	55	137	18	3	433	62.3	0.39	19.31	2.75	0.06	0.71	5.54	3.93	1.34	0.04	1.55	97.9	[5]
15B06	35	9	46	137	18	2	433	64.5	0.24	18.84	2.27	0.05	0.56	4.84	4.08	1.58	0.03	1.85	98.8	[5]
15B07	35	9	45	137	18	1	433	65.8	0.48	16.88	3.97	0.08	0.67	4.87	3.51	1.37	0.04	1.42	99.1	[5]
15B08	35	10	6	137	18	44	433	62.6	0.84	17.53	4.03	0.12	0.87	5.20	3.35	1.42	0.06	1.91	97.9	[5]
15B09	35	10	1	137	19	18	433	62.1	0.49	19.11	3.52	0.08	0.80	5.33	3.87	1.38	0.05	2.14	98.9	[5]
15B10	35	8	14	137	20	3	440	60.9	0.69	17.99	5.04	0.11	1.40	4.99	3.24	1.70	0.09	2.60	98.7	[5]
15B11	35	8	58	137	20	50	440	60.7	1.09	16.24	5.52	0.13	2.19	6.73	2.66	1.18	0.10	1.54	98.1	[5]
15B12	35	8	56	137	21	11	110	61.6	0.88	16.28	5.53	0.14	1.48	5.17	3.07	1.49	0.10	2.32	98.0	[5]
15B13	35	8	25	137	21	26	432	68.4	0.46	14.31	3.13	0.08	1.14	3.18	2.94	1.90	0.11	1.77	97.4	[5]
15B14	35	8	20	137	21	25	432	63.3	0.41	17.96	3.39	0.08	0.84	3.10	3.09	2.07	0.10	4.45	98.8	[5]
15B15	35	8	10	137	21	11	432	61.1	0.65	17.91	4.73	0.10	1.22	4.06	2.87	1.73	0.09	4.16	98.6	[5]
15B16	35	9	11	137	21	47	110	64.4	0.63	16.14	4.36	0.10	1.19	4.89	3.22	1.36	0.10	1.67	98.0	[5]
15B17	35	9	37	137	22	7	440	65.3	0.49	15.89	3.66	0.17	0.91	3.47	2.89	1.85	0.09	2.80	97.5	[5]
15B18	35	9	41	137	22	7	440	62.2	0.54	17.45	4.42	0.11	1.55	4.51	2.88	2.12	0.10	3.09	99.0	[5]
15B19	35	9	38	137	22	4	440	64.5	0.51	16.19	3.94	0.11	1.32	4.21	2.91	2.10	0.07	2.11	97.9	[5]
15B20	35	9	46	137	21	5	433	59.2	1.32	16.43	5.64	0.16	1.87	6.02	2.70	1.31	0.10	1.87	96.6	[5]
15B21	35	9	36	137	20	17	440	61.6	0.75	17.00	4.79	0.12	1.63	5.78	2.97	1.31	0.07	1.76	97.7	[5]
15B22	35	9	8	137	18	50	433	65.1	0.25	18.08	2.42	0.06	0.75	5.16	3.60	1.41	0.04	1.49	98.3	[5]
15B23	35	9	8	137	20	4	433	63.9	0.56	16.74	3.71	0.10	1.13	5.18	3.26	1.38	0.07	1.92	97.9	[5]
15B24	35	8	30	137	19	34	433	62.6	0.66	17.16	4.21	0.10	1.47	5.81	3.08	1.34	0.08	1.69	98.2	[5]
15B25	35	8	39	137	22	8	432	63.1	0.60	16.77	4.22	0.09	1.21	4.58	3.32	1.48	0.10	3.30	98.7	
15B26	35	8	31	137	22	15	662	63.5	0.32	17.65	3.16	0.06	0.70	3.91	3.68	1.21	0.09	5.32	99.6	
15B27	35	8	4	137	21	54	432	68.2	0.33	15.88	2.74	0.09	0.71	2.63	2.95	2.24	0.09	2.85	98.7	
15B28	35	8	31	137	22	9	662	63.0	0.63	16.77	4.08	0.09	1.41	3.89	3.00	1.65	0.10	4.25	98.9	
15B29	35	8	14	137	21	27	432	64.3	0.56	17.32	4.32	0.11	1.03	2.80	2.56	2.37	0.07	4.28	99.7	
15B30	35	8	16	137	21	41	432	67.9	0.41	15.38	2.97	0.07	0.85	3.61	3.08	1.60	0.10	2.25	98.2	
15B31	35	7	55	137	21	29	432	63.3	0.51	18.08	4.29	0.13	0.94	1.82	1.91	2.74	0.10	5.90	99.7	
15B32	35	8	2	137	21	25	432	66.0	0.52	16.63	3.88	0.11	0.89	2.08	1.96	2.71	0.08	4.31	99.1	
15B33	35	8	6	137	20	58	432	62.7	0.75	16.03	5.47	0.12	1.47	4.74	2.84	1.50	0.06	2.48	98.1	
15B34	35	7	56	137	20	59	432	64.1	0.57	16.72	4.24	0.10	1.08	3.79	4.06	2.02	0.07	2.93	99.6	

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
15B35	35	7	34	137	21	37	432	65.4	0.45	16.91	3.71	0.11	0.90	1.84	2.29	2.58	0.07	4.35	98.6
15B36	35	7	42	137	21	40	432	64.3	0.47	17.80	3.85	0.09	0.82	1.48	1.49	2.87	0.08	5.73	99.0
15B37	35	7	42	137	20	6	432	58.5	0.70	18.67	5.58	0.13	1.42	4.66	3.01	1.80	0.12	4.30	98.9
15B38	35	7	55	137	20	16	432	61.1	0.65	17.60	4.92	0.11	1.32	4.71	3.09	1.69	0.07	2.61	97.8
15B39	35	6	19	137	20	10	432	63.9	0.48	16.44	3.82	0.08	0.92	3.62	3.07	1.68	0.08	3.57	97.6
15B40	35	6	36	137	19	59	432	67.6	0.33	14.47	2.66	0.06	0.76	3.34	2.53	2.17	0.07	3.54	97.5
15B41	35	6	18	137	20	1	432	66.1	0.37	16.00	2.49	0.07	0.67	2.67	3.59	2.14	0.09	2.89	97.1
15B42	35	6	0	137	20	22	432	58.7	0.48	18.85	4.06	0.08	0.89	3.14	2.67	1.66	0.13	7.19	97.9
15B43	35	5	31	137	20	31	432	64.0	0.42	16.86	3.40	0.05	0.84	0.87	1.05	3.30	0.10	7.77	98.6
15B44	35	5	56	137	20	17	432	62.4	0.45	18.00	3.42	0.07	0.78	3.20	2.91	1.85	0.11	3.89	97.1
15B45	35	5	40	137	20	28	432	68.1	0.30	15.10	2.82	0.07	0.62	1.39	1.90	2.85	0.09	4.28	97.5
15B46	35	5	46	137	20	37	432	66.6	0.23	16.81	2.23	0.05	0.54	2.27	2.51	2.49	0.05	3.57	97.4
15B47	35	6	26	137	19	8	432	58.7	0.61	19.00	4.50	0.08	1.17	4.72	3.51	1.69	0.08	3.51	97.5
15B48	35	6	43	137	19	10	432	59.4	0.70	18.11	4.82	0.10	1.26	4.69	3.19	1.78	0.09	3.17	97.3
15B49	35	5	36	137	19	5	432	64.9	0.32	16.82	2.84	0.06	0.69	3.38	3.50	1.81	0.06	2.67	97.0
15B50	35	6	1	137	19	11	432	63.7	0.48	16.85	3.46	0.08	0.93	3.10	2.82	2.27	0.08	3.98	97.7
15B51	35	7	2	137	19	24	432	59.7	0.74	17.37	5.33	0.11	1.35	4.64	3.08	1.73	0.07	3.05	97.2
15B52	35	5	22	137	19	22	432	66.3	0.20	16.91	2.07	0.05	0.53	1.61	2.49	3.04	0.08	4.92	98.2
15B53	35	7	26	137	19	50	432	63.3	0.72	15.12	5.29	0.14	1.38	4.72	2.93	1.61	0.07	1.70	96.9
15B54	35	7	13	137	19	35	432	60.1	0.64	17.62	5.17	0.11	1.31	4.66	3.17	1.65	0.05	2.82	97.3
15D01	35	6	52	137	17	2	440	58.2	0.65	19.11	4.65	0.09	1.23	4.99	3.67	1.64	0.19	2.73	97.1
15D02	35	6	37	137	16	30	440	54.5	0.69	18.86	5.64	0.11	1.31	4.57	3.34	1.70	0.14	8.44	99.3
15D03	35	6	45	137	15	59	433	58.3	0.47	20.31	3.46	0.08	0.77	6.25	3.78	1.31	0.07	2.04	96.8
15D04	35	5	47	137	15	49	432	53.1	0.85	18.95	7.92	0.21	1.39	4.06	2.65	1.93	0.21	7.98	99.3
15D05	35	5	57	137	16	13	432	62.9	0.63	16.73	4.61	0.10	1.11	4.03	2.75	1.94	0.08	2.76	97.7
15D06	35	5	57	137	16	16	432	59.0	0.72	17.58	5.19	0.12	1.28	4.71	3.02	1.71	0.10	4.08	97.5
15D07	35	6	3	137	15	12	433	64.3	0.30	17.53	2.31	0.06	0.52	4.43	3.34	1.84	0.04	1.70	96.4
15D08	35	5	53	137	15	10	440	60.3	0.48	17.44	4.00	0.11	1.09	4.91	2.84	1.66	0.10	3.81	96.8
15D09	35	6	35	137	15	15	433	60.2	0.39	19.32	3.17	0.10	0.62	4.79	3.21	1.66	0.06	3.32	96.8
15D10	35	6	45	137	15	27	433	58.8	0.35	19.92	3.03	0.06	0.61	5.32	3.67	1.36	0.09	3.34	96.6
15D11	35	7	20	137	15	18	433	65.3	0.21	17.43	2.28	0.05	0.45	3.25	2.65	2.63	0.02	2.78	97.1
15D12	35	6	39	137	20	19	432	62.0	0.43	17.79	3.68	0.08	0.88	3.17	3.08	2.09	0.08	5.09	98.4
15D13	35	6	27	137	21	17	432	66.4	0.17	16.19	1.74	0.04	0.47	2.03	3.24	2.57	0.09	4.98	97.9
15D14	35	6	29	137	21	14	432	66.9	0.31	15.98	2.74	0.06	0.65	2.75	3.07	2.01	0.07	2.83	97.4
15D15	35	6	5	137	21	34	662	62.4	0.39	17.17	3.51	0.16	0.96	2.33	2.59	2.42	0.11	6.07	98.0
15D16	35	6	20	137	20	47	432	62.7	0.34	16.81	2.95	0.06	0.72	2.69	2.84	2.22	0.08	6.68	98.1
15D17	35	5	22	137	21	50	662	72.5	0.31	12.64	2.17	0.06	0.76	1.32	2.20	2.71	0.07	2.87	97.6
15D18	35	6	46	137	22	7	420	72.4	0.30	12.90	1.98	0.08	0.68	1.36	2.35	2.72	0.08	3.17	98.0
15D19	35	6	46	137	21	53	420	69.4	0.20	14.95	1.90	0.05	0.49	2.14	2.84	2.26	0.06	2.80	97.1
15D20	35	6	41	137	21	31	432	67.4	0.35	15.27	2.75	0.07	0.71	1.92	2.19	2.48	0.08	4.34	97.5
15D21	35	6	45	137	21	17	432	64.9	0.42	16.65	3.51	0.15	0.76	2.81	2.65	2.15	0.09	3.67	97.7
15D22	35	7	16	137	21	8	432	59.9	0.51	16.65	4.22	0.08	1.02	3.42	2.77	2.02	0.09	8.02	98.7
15D23	35	6	45	137	20	3	432	70.4	0.33	13.53	2.61	0.08	0.76	2.40	2.56	2.15	0.08	2.02	96.9
15D24	35	5	25	137	22	15	420	69.3	0.43	13.51	2.46	0.05	0.79	1.20	2.05	2.87	0.08	4.27	97.0
15E01	35	8	13	137	15	19	433	63.4	0.16	17.58	2.73	0.11	0.37	2.22	2.26	2.77	0.06	6.08	97.8
15E02	35	7	42	137	16	7	433	61.2	0.70	16.81	4.38	0.10	0.75	4.69	3.00	1.68	0.04	2.69	96.0
15E03	35	7	28	137	16	49	433	60.5	0.37	19.02	3.25	0.06	0.79	5.48	3.34	1.41	0.06	2.85	97.2
15E04	35	7	47	137	17	17	433	62.9	0.92	16.18	3.66	0.10	0.67	4.68	3.39	1.37	0.05	1.31	95.2
15E05	35	7	37	137	17	25	433	63.6	0.36	17.61	2.63	0.08	0.58	4.62	4.71	1.52	0.07	2.53	98.3
15E06	35	8	57	137	17	24	433	65.1	0.53	16.87	2.43	0.07	0.49	4.55	3.64	1.47	0.04	1.33	96.5
15E07	35	9	13	137	17	25	433	31.4	0.25	11.90	44.79	0.83	0.46	3.08	1.37	0.83	0.18	15.02	110.1
15E08	35	8	52	137	17	18	433	64.9	0.53	15.75	2.69	0.07	0.50	4.32	3.85	1.28	0.03	1.13	95.0
15E09	35	9	37	137	17	10	433	62.6	0.15	17.78	3.83	0.20	0.40	4.24	3.74	1.44	0.05	3.01	97.5
15E10	35	9	40	137	17	11	433	63.3	0.56	17.15	3.13	0.12	0.62	4.54	3.39	1.48	0.07	2.71	97.1
15E11	35	9	43	137	16	52	433	72.6	0.11	13.53	0.93	0.02	0.27	2.62	3.15	1.69	0.02	1.35	96.3
15E12	35	10	5	137	16	18	433	69.9	0.16	14.87	1.74	0.09	0.39	3.54	3.48	1.56	0.03	1.28	97.0
15E13	35	9	55	137	16	44	433	53.3	0.35	13.82	9.43	1.44	0.60	4.35	2.31	1.22	0.51	12.44	99.8
15E14	35	5	51	137	19	19	432	65.7	0.45	14.21	4.13	0.12	2.12	3.25	2.51	2.21	0.90	2.91	98.5
15E15	35	5	27	137	17	23	432	61.6	0.52	17.28	4.39	0.11	1.01	3.46	2.54	2.01	0.11	4.27	97.3
15E16	35	5	21	137	16	2	432	58.1	0.72	18.45	5.14	0.12	1.26	4.63	3.05	1.83	0.14	3.46	96.8
15E17	35	6	25	137	20	7	432	63.2	0.37	17.91	3.28	0.07	0.79	2.59	2.64	2.30	0.09	4.57	97.8

Appendix I-10

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
15E18	35	8	34	137	15	41	433	71.8	0.10	15.19	1.20	0.03	0.32	2.81	4.00	1.28	0.02	1.67	98.4
Nebisodake																			
16A01	35	10	2	137	27	45	420	74.3	0.43	10.64	2.95	0.09	0.92	1.25	1.32	2.32	0.07	2.77	97.0
16A02	35	8	37	137	23	2	662	64.1	0.31	17.10	2.56	0.08	0.79	3.59	3.56	1.45	0.11	3.52	97.2
16A03	35	8	43	137	23	5	662	70.3	0.28	13.64	2.27	0.08	0.78	2.06	2.92	2.28	0.08	1.95	96.7
16A04	35	8	58	137	23	42	662	69.8	0.84	11.44	4.20	0.14	1.36	1.54	1.73	2.05	0.08	4.25	97.4
16A05	35	9	19	137	24	7	662	69.0	0.40	13.24	3.16	0.07	1.14	1.43	2.29	2.75	0.09	3.04	96.6
16A06	35	9	25	137	24	46	662	72.7	0.43	11.79	3.06	0.09	1.06	1.75	2.03	2.34	0.08	1.93	97.3
16A07	35	9	42	137	24	20	662	71.4	0.34	12.10	2.46	0.09	0.93	1.23	2.54	2.68	0.07	1.94	95.8
16A08	35	8	55	137	25	24	662	65.0	0.52	13.39	4.19	0.10	1.17	0.78	1.08	2.43	0.11	10.47	99.2
16A09	35	8	51	137	25	24	662	74.1	0.42	10.76	2.87	0.09	1.01	0.70	1.14	2.58	0.06	3.90	97.6
16A10	35	9	40	137	25	17	662	73.7	0.32	11.49	2.62	0.11	0.88	1.18	1.90	2.53	0.08	2.70	97.5
16A11	35	9	26	137	25	38	662	71.1	0.39	12.35	3.12	0.08	1.04	0.81	1.40	3.04	0.07	4.16	97.6
16A12	35	9	16	137	26	13	662	75.1	0.31	10.80	2.60	0.07	0.82	0.66	1.00	3.11	0.05	2.97	97.4
16A13	35	10	6	137	25	32	662	71.3	0.37	12.63	2.85	0.06	0.99	1.43	2.12	2.65	0.08	2.79	97.3
16B01	35	7	57	137	22	34	662	66.3	0.22	15.40	2.10	0.08	0.60	1.39	2.78	2.92	0.11	5.77	97.7
16B02	35	8	0	137	23	3	420	67.5	0.17	15.50	1.64	0.05	0.49	1.07	2.80	3.56	0.10	4.54	97.4
16B03	35	7	42	137	23	20	420	66.9	0.13	15.56	1.39	0.05	0.36	1.23	3.13	3.66	0.13	4.37	96.9
16B04	35	7	44	137	23	41	420	70.7	0.21	13.48	1.90	0.06	0.63	1.13	2.39	2.99	0.08	3.25	96.8
16B05	35	7	42	137	26	7	662	75.7	0.33	9.44	2.46	0.08	1.03	0.88	1.38	2.56	0.07	2.95	96.9
16B06	35	7	44	137	26	4	420	74.1	0.42	10.77	2.92	0.10	1.05	1.17	1.71	2.24	0.07	2.87	97.4
16B07	35	8	40	137	25	39	420	67.2	0.59	13.26	4.45	0.14	1.60	1.22	1.64	2.56	0.08	4.92	97.7
16B08	35	8	42	137	25	27	662	68.3	0.59	13.26	4.32	0.10	1.56	1.11	1.29	2.59	0.08	4.92	98.1
16B09	35	9	8	137	26	39	420	71.0	0.36	12.52	2.88	0.09	0.97	1.36	1.93	2.61	0.07	3.33	97.1
16B10	35	9	11	137	27	1	420	72.4	0.34	12.23	2.60	0.07	0.82	1.96	2.19	1.98	0.07	2.31	97.0
16B11	35	7	53	137	24	49	420	71.8	0.49	11.53	3.56	0.13	1.10	1.06	1.59	2.32	0.08	4.98	98.6
16B12	35	8	3	137	24	40	420	67.4	0.57	11.94	4.75	0.35	1.41	0.79	1.46	2.32	0.09	7.92	99.0
16B13	35	7	47	137	25	11	662	70.2	0.51	12.02	3.57	0.11	1.07	1.09	1.52	2.41	0.10	5.69	98.3
16B14	35	7	44	137	25	13	662	72.4	0.39	11.19	2.96	0.09	0.98	0.86	1.43	2.68	0.08	3.85	97.0
16B15	35	8	0	137	27	36	662	77.9	0.27	9.32	2.01	0.07	0.60	0.79	1.45	2.15	0.07	2.79	97.4
16B16	35	8	0	137	27	22	662	77.5	0.27	9.10	2.19	0.09	0.75	0.73	1.24	2.39	0.06	3.18	97.5
16B17	35	8	6	137	28	2	420	72.6	0.21	12.60	2.00	0.05	0.57	1.20	2.10	2.58	0.10	3.79	97.8
16B18	35	8	14	137	28	5	420	75.7	0.37	9.46	2.56	0.06	0.86	0.83	1.23	2.64	0.06	2.58	96.4
16B19	35	7	30	137	28	46	420	87.7	0.16	3.66	1.36	0.11	0.50	0.30	0.44	1.00	0.04	1.43	96.7
16B20	35	7	17	137	28	30	420	75.1	0.25	11.05	1.93	0.12	0.60	1.27	2.03	1.94	0.06	2.81	97.1
16B21	35	8	0	137	28	30	420	71.0	0.47	11.08	3.29	0.06	1.14	0.69	1.06	3.05	0.07	5.79	97.6
16B22	35	8	51	137	27	44	420	72.3	0.43	11.74	2.93	0.12	0.98	1.59	2.04	2.18	0.08	2.97	97.4
16C01	35	9	45	137	28	12	420	66.7	0.23	16.61	2.56	0.06	0.60	0.90	1.79	4.95	0.07	3.54	98.0
16C02	35	9	24	137	28	36	662	74.5	0.41	10.41	3.04	0.08	1.19	0.89	1.42	2.52	0.07	3.44	98.0
16C03	35	9	43	137	29	7	420	71.8	0.46	11.29	3.55	0.09	1.22	0.88	1.25	2.47	0.09	5.10	98.2
16C04	35	10	5	137	29	30	662	68.8	0.49	13.72	3.38	0.08	1.03	0.41	0.71	3.57	0.08	5.26	97.6
16C05	35	8	9	137	29	26	662	72.9	0.52	10.30	3.36	0.07	1.23	0.58	0.83	2.67	0.08	4.84	97.4
16C06	35	7	14	137	29	22	662	89.3	0.16	3.05	1.72	0.13	0.56	0.19	0.22	0.70	0.04	2.49	98.5
16D01	35	9	57	137	22	59	432	66.8	0.77	13.94	4.31	0.13	1.14	3.49	2.53	1.94	0.16	2.56	97.7
16D02	35	10	10	137	24	8	432	69.6	0.39	13.32	3.18	0.09	1.04	1.47	2.12	2.91	0.09	3.34	97.5
16E01	35	6	58	137	25	44	662	76.2	0.38	9.60	2.33	0.05	0.97	0.84	1.28	3.03	0.06	2.69	97.4
16E02	35	6	49	137	25	42	662	75.0	0.47	9.81	3.04	0.06	1.10	0.89	1.26	2.78	0.07	2.25	96.7
16E03	35	7	15	137	25	25	662	73.2	0.38	11.08	2.85	0.06	1.13	1.09	1.83	2.76	0.07	2.67	97.1
16E04	35	7	8	137	25	39	662	74.3	0.35	10.88	2.58	0.08	1.01	1.00	1.86	2.65	0.07	3.13	97.9
16E05	35	6	57	137	24	22	420	68.3	0.35	11.74	2.83	0.06	1.02	1.16	1.79	2.77	0.10	8.28	98.4
16E06	35	7	0	137	25	1	662	74.7	0.35	10.32	2.49	0.06	0.94	0.98	1.61	2.64	0.07	2.96	97.1
16E07	35	6	59	137	23	22	420	63.8	0.15	16.33	1.72	0.04	0.43	1.89	3.22	2.47	0.10	8.08	98.2
16E08	35	7	5	137	24	1	420	72.7	0.33	11.98	2.44	0.11	0.76	1.31	2.17	2.44	0.08	2.53	96.8
16E09	35	6	23	137	23	39	420	61.7	0.38	16.00	4.32	0.14	0.90	1.23	1.95	2.66	0.10	9.08	98.5
16E10	35	6	9	137	23	25	420	71.6	0.18	13.69	1.64	0.07	0.48	1.17	2.71	3.24	0.08	2.30	97.1
16E11	35	6	10	137	23	48	420	75.9	0.41	9.87	2.48	0.06	0.90	0.96	3.84	2.57	0.07	2.44	99.5
16E12	35	6	18	137	24	28	662	79.9	0.29	8.08	2.16	0.05	0.81	0.41	0.69	2.52	0.05	2.63	97.6
16E13	35	6	8	137	24	44	662	72.6	0.55	10.03	3.51	0.08	1.11	0.69	0.95	2.39	0.07	5.99	98.0
16E14	35	5	15	137	25	23	420	77.0	0.45	9.25	2.86	0.08	1.07	0.74	1.06	2.24	0.06	3.45	98.3
16E15	35	5	56	137	23	54	420	77.7	0.39	9.00	2.24	0.08	0.75	0.71	1.01	2.61	0.06	3.03	97.6

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
16F01	35	6	37	137	28	37	662	88.6	0.21	3.66	1.70	0.06	0.98	0.46	0.29	1.12	0.03	1.44	98.5
16F02	35	6	35	137	28	49	662	79.9	0.30	5.81	2.45	0.08	1.96	0.94	0.43	1.99	0.05	4.10	98.0
16F03	35	6	17	137	29	3	661	79.3	0.31	7.43	1.80	0.10	0.66	0.38	0.57	3.06	0.06	4.46	98.2
16F04	35	6	9	137	29	2	661	73.9	0.42	9.03	2.82	0.08	1.13	0.67	0.92	2.68	0.07	6.06	97.8
16F05	35	5	59	137	29	27	661	81.8	0.30	6.33	1.88	0.08	0.76	0.47	0.59	2.22	0.05	3.02	97.4
16F06	35	6	1	137	29	29	661	78.6	0.36	8.58	2.42	0.06	0.91	0.91	1.39	2.04	0.06	1.73	97.0
16F07	35	5	16	137	29	9	661	77.7	0.55	7.91	2.78	0.09	1.25	1.03	0.86	2.37	0.06	1.99	96.6
Taguchi																			
17C01	35	9	46	137	30	5	920	71.3	0.29	13.43	2.79	0.07	0.67	0.82	1.72	3.10	0.05	4.23	98.5
17C02	35	9	12	137	30	1	920	80.1	0.40	7.84	2.94	0.05	1.00	0.39	0.66	1.86	0.04	2.78	98.1
17C03	35	7	55	137	30	43	662	84.9	0.33	6.08	2.54	0.13	0.85	0.36	0.46	1.53	0.05	2.32	99.5
17C04	35	7	16	137	30	53	662	74.4	0.38	10.83	2.28	0.05	0.77	0.81	1.28	3.46	0.05	4.29	98.6
17C05	35	7	42	137	29	50	920	89.4	0.22	4.13	1.96	0.08	0.78	0.21	0.26	0.98	0.04	1.83	99.9
17C06	35	6	40	137	37	1	223	58.6	1.18	17.44	7.19	0.12	0.56	3.64	3.11	1.63	0.16	6.443	100.0
17C07	35	6	47	137	37	12	221	68.7	1.00	11.46	7.40	0.34	0.56	1.24	2.10	1.80	0.15	5.365	100.1
17C08	35	6	26	137	37	11	222	70.0	1.12	12.42	5.66	0.10	0.53	1.21	1.77	1.85	0.14	4.714	99.5
17F01	35	6	21	137	30	9	920	75.8	0.39	9.73	2.70	0.11	0.91	0.94	1.68	1.83	0.07	5.51	99.7
17F02	35	6	15	137	30	31	920	79.3	0.28	6.88	2.45	0.19	0.77	0.63	0.92	1.28	0.07	7.59	100.4
17F03	35	6	14	137	31	2	661	80.7	0.31	8.31	2.13	0.06	0.75	0.63	1.03	2.50	0.05	2.17	98.7
17F04	35	5	49	137	32	13	661	79.8	0.44	8.52	2.66	0.11	0.98	0.87	1.41	2.07	0.07	1.62	98.6
17F05	35	6	30	137	34	52	223	67.1	0.70	14.35	3.85	0.16	0.66	1.96	2.35	2.01	0.13	7.31	100.6
17F06	35	6	14	137	34	47	223	66.8	0.93	14.34	3.96	0.09	0.54	1.78	2.12	2.01	0.12	7.35	100.0
17F07	35	5	58	137	34	57	223	69.2	0.51	12.68	3.02	0.05	0.49	0.92	0.99	1.88	0.09	11.06	100.8
17F08	35	6	31	137	35	40	223	56.5	1.22	15.76	6.04	0.15	0.82	2.75	2.07	1.53	0.22	13.70	100.8
17F09	35	5	38	137	35	59	223	53.5	1.64	17.25	7.89	0.15	0.73	3.72	2.78	1.28	0.20	11.77	100.9
17F10	35	5	19	137	35	34	120	65.7	0.76	14.95	3.77	0.09	0.80	2.50	2.67	1.67	0.09	6.97	100.0
17F11	35	5	21	137	35	6	223	75.6	0.57	10.55	2.66	0.07	0.35	0.87	1.92	1.78	0.09	6.44	100.9
17F12	35	5	51	137	35	5	223	65.8	1.23	14.12	4.30	0.11	0.65	1.81	2.04	1.94	0.12	6.36	98.5
17K01	35	10	11	137	36	14	661	63.1	1.13	13.84	6.32	0.11	1.24	1.67	1.69	0.84	0.12	7.79	97.8
17K02	35	10	10	137	36	14	661	65.8	1.11	13.58	5.87	0.09	0.92	0.68	1.14	2.10	0.12	7.70	99.1
17K03	35	8	36	137	35	38	920	68.7	0.80	9.77	6.07	0.54	2.57	2.73	1.19	1.00	0.12	5.65	99.1
17K04	35	6	25	137	34	26	223	71.8	0.57	12.17	3.80	0.13	0.64	1.73	2.06	1.76	0.11	4.36	99.1
17K05	35	6	38	137	34	8	920	65.5	1.33	13.07	6.28	0.16	2.28	1.95	1.34	1.75	0.11	5.88	99.6
17K06	35	6	49	137	33	55	661	66.4	0.84	13.17	5.49	0.10	1.67	1.47	1.36	2.49	0.09	5.27	98.4
17K07	35	6	58	137	34	13	661	63.2	1.33	13.33	6.79	0.13	2.21	3.05	1.81	1.79	0.14	5.40	99.2
17K08	35	7	35	137	35	14	110	61.1	0.94	14.61	6.24	0.13	1.08	2.51	1.96	1.74	0.22	8.01	98.6
17K09	35	6	56	137	36	16	223	58.7	1.01	15.88	4.67	0.12	1.02	3.23	1.88	1.11	0.15	10.50	98.3
17K10	35	7	46	137	36	7	223	60.6	0.97	14.07	6.07	0.17	1.07	1.71	1.49	2.07	0.22	11.00	99.4
17K11	35	7	52	137	36	3	223	65.0	0.84	12.60	5.45	0.15	0.79	1.15	1.03	1.88	0.15	11.29	100.3
17K12	35	7	49	137	35	45	223	64.2	0.78	13.71	4.85	0.12	0.91	1.53	1.49	2.07	0.16	9.79	99.6
17K13	35	7	51	137	35	30	110	64.5	0.78	12.77	5.27	0.16	0.86	1.34	1.26	1.92	0.24	10.62	99.7
17K14	35	8	3	137	35	43	920	71.4	0.61	11.87	3.71	0.10	0.90	1.22	1.65	2.09	0.09	5.09	98.7
17K15	35	8	56	137	36	32	223	55.3	1.13	15.55	6.37	0.13	0.99	1.88	1.70	1.64	0.19	14.21	99.1
17K16	35	9	1	137	36	34	223	67.2	0.64	13.10	4.49	0.11	0.69	1.54	1.32	1.97	0.16	7.80	99.0
17K17	35	9	16	137	36	21	920	71.8	0.71	11.60	4.05	0.08	0.79	1.00	1.08	2.11	0.12	5.67	99.0
17K18	35	9	26	137	36	45	223	68.7	0.75	13.20	4.34	0.12	0.65	0.63	0.30	1.99	0.15	8.30	99.1
17K19	35	8	41	137	33	42	420	67.6	0.78	14.45	4.56	0.08	1.08	1.82	1.84	2.91	0.07	3.58	98.7
17K20	35	8	23	137	33	22	110	66.7	0.92	13.87	5.81	0.10	1.43	1.14	0.79	2.08	0.09	5.39	98.3
17K21	35	8	11	137	32	59	420	58.8	7.60	10.39	12.11	0.35	1.54	2.19	1.02	1.93	0.12	1.98	98.1
17K22	35	8	16	137	32	33	420	56.6	3.17	16.09	8.72	0.22	1.67	2.63	2.58	2.49	0.08	4.12	98.3
17K23	35	9	0	137	33	28	431	60.2	0.88	16.70	6.22	0.11	1.49	3.16	2.16	2.28	0.10	5.47	98.8
17K24	35	8	17	137	32	48	420	49.0	12.89	10.83	16.64	0.49	1.29	2.37	1.27	1.98	0.16	1.13	98.0
17K25	35	7	57	137	33	47	920	87.9	0.28	5.00	1.73	0.05	0.47	0.14	0.19	0.96	0.03	2.27	99.1
17K26	35	8	56	137	37	4	920	66.2	0.95	13.56	5.79	0.16	0.78	1.10	0.93	2.09	0.18	7.53	99.3
17K27	35	8	44	137	37	18	221	68.7	1.24	10.77	7.30	0.20	1.10	1.07	0.77	1.31	0.15	5.98	98.6
17K28	35	9	35	137	36	49	223	64.4	1.19	13.38	7.48	0.22	0.44	0.55	0.50	2.35	0.20	6.74	97.4
17K29	35	6	30	137	33	52	920	60.4	1.51	13.61	8.06	0.18	2.29	3.26	1.96	1.67	0.12	4.68	97.8
17K30	35	10	10	137	32	24	110	61.3	0.56	17.22	4.64	0.10	0.85	3.52	3.36	1.85	0.10	4.28	97.7
17K31	35	9	40	137	32	12	120	70.7	1.63	11.14	5.37	0.21	0.98	1.68	1.64	1.88	0.12	3.58	98.9
17K32	35	9	28	137	33	49	431	58.1	0.76	16.76	6.33	0.12	1.34	3.15	2.51	2.11	0.15	7.24	98.6

Appendix I-11

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total	
17K33	35	8	40	137	32	31	431	60.0	1.62	14.36	9.00	0.28	1.76	2.50	1.20	1.43	0.24	6.66	99.1	[4]
17K34	35	9	3	137	32	19	110	69.9	0.64	12.82	4.05	0.09	1.05	1.50	1.70	2.15	0.13	4.79	98.8	[4]
17K35	35	7	31	137	31	30	661	82.9	0.36	6.70	2.39	0.11	0.86	0.64	0.80	1.66	0.06	1.69	98.1	[4]
17K36	35	6	36	137	32	39	661	73.7	0.98	10.17	3.82	0.13	1.14	1.27	1.37	2.34	0.10	3.95	98.9	[4]
17K37	35	6	3	137	33	48	661	65.8	0.77	13.11	5.39	0.15	1.48	1.85	1.81	2.03	0.13	6.21	98.8	[4]
17K38	35	5	57	137	33	5	661	78.2	0.41	9.05	2.77	0.10	1.06	0.88	1.21	2.23	0.07	2.10	98.0	[4]
17K39	35	7	42	137	34	34	920	77.1	0.39	9.86	2.94	0.14	0.98	1.35	1.62	1.78	0.08	2.53	98.8	[4]
17K40	35	9	11	137	35	1	661	61.6	0.55	16.71	4.52	0.09	0.97	2.76	2.89	2.29	0.13	6.86	99.3	[4]
17K41	35	8	7	137	34	48	920	72.7	0.74	10.20	5.18	0.27	1.59	0.84	0.64	1.32	0.07	4.97	98.5	[4]
17K42	35	7	40	137	34	25	920	70.6	0.71	9.94	5.78	0.34	2.34	1.95	1.12	1.28	0.13	4.58	98.8	[4]
17K43	35	10	5	137	32	16	110	66.4	0.85	13.62	5.14	0.20	1.11	2.32	2.18	2.00	0.13	5.15	99.1	[4]
17K44	35	7	20	137	33	12	920	50.9	4.92	13.37	14.17	0.31	3.52	4.56	1.37	1.17	0.12	3.76	98.2	[4]
17K45	35	7	21	137	33	23	920	68.2	1.31	12.12	5.78	0.20	1.46	1.76	1.19	2.29	0.09	3.77	98.2	[4]
17K46	35	5	48	137	33	36	661	77.0	0.52	9.03	3.67	0.10	1.32	1.80	1.43	1.71	0.09	1.68	98.4	[4]
17K47	35	6	17	137	31	54	920	76.0	0.40	9.93	2.45	0.11	0.89	0.87	1.32	2.87	0.08	3.73	98.6	[4]
17K48	35	6	23	137	31	54	661	78.3	0.33	9.44	2.02	0.05	0.70	0.52	0.91	3.26	0.05	2.41	97.9	[4]
17K49	35	7	12	137	32	22	661	43.9	7.68	12.50	18.31	0.42	4.43	7.24	1.70	0.63	0.20	1.70	98.7	[4]
17K50	35	6	14	137	34	36	223	74.3	0.82	10.72	3.51	0.20	0.69	1.70	1.87	1.74	0.12	2.86	98.6	[4]
17K51	35	7	9	137	34	57	661	69.8	0.69	12.08	4.39	0.11	1.50	2.06	1.93	2.12	0.14	3.05	97.9	[4]
17K52	35	8	45	137	36	0	920	64.5	1.01	12.87	5.77	0.25	1.61	2.31	1.63	1.64	0.14	6.58	98.3	[4]
Midashi																				
18A01	35	10	4	137	43	2	640	57.2	1.76	16.08	8.72	0.17	2.98	5.26	2.41	0.99	0.10	3.67	99.3	
18A02	35	10	10	137	42	38	640	59.4	1.31	16.22	7.31	0.14	2.50	4.87	2.69	1.16	0.10	3.32	99.0	
18A03	35	10	0	137	43	44	640	59.3	1.14	16.79	7.38	0.22	1.73	3.11	2.20	1.36	0.13	6.54	99.9	
18A04	35	10	5	137	42	34	640	57.4	1.90	15.84	8.88	0.17	2.55	4.28	2.09	1.05	0.12	5.07	99.4	
18A05	35	9	48	137	43	16	640	57.4	1.27	18.03	7.27	0.14	2.09	4.86	3.02	1.25	0.12	4.16	99.6	
18A06	35	9	21	137	43	29	661	59.1	1.39	16.78	7.65	0.14	2.14	4.36	2.62	1.22	0.12	4.03	99.6	
18A07	35	9	28	137	43	16	640	51.9	1.40	15.33	7.48	0.13	2.09	4.36	2.31	1.07	0.11	4.14	90.3	
18A08	35	8	48	137	43	54	640	59.3	1.04	17.66	6.59	0.11	1.81	4.35	2.99	1.34	0.10	4.14	99.4	
18A09	35	8	44	137	44	8	640	60.0	0.83	17.30	6.18	0.11	2.02	4.66	3.25	1.33	0.11	3.67	99.4	
18A10	35	8	29	137	43	32	661	57.7	1.06	17.55	7.49	0.12	2.20	4.33	2.73	1.03	0.09	5.65	100.0	
18A11	35	8	16	137	43	15	661	58.0	0.96	16.68	7.44	0.14	2.50	3.90	2.85	1.45	0.13	5.97	100.0	
18A12	35	8	49	137	42	55	661	55.6	1.43	17.64	8.41	0.14	2.12	4.80	2.72	1.14	0.14	5.94	100.1	
18A13	35	8	38	137	43	1	661	56.9	1.22	17.44	8.23	0.14	2.49	4.38	2.71	1.13	0.13	5.25	100.0	
18A14	35	8	52	137	43	2	661	57.0	1.20	17.87	7.59	0.12	1.95	4.24	2.97	1.38	0.13	5.65	100.1	
18A15	35	8	30	137	42	33	640	56.7	1.11	17.23	8.17	0.14	2.63	4.19	2.66	1.32	0.13	5.78	100.0	
18A16	35	8	44	137	42	22	640	58.0	2.41	14.97	9.75	0.20	2.49	4.00	2.15	0.94	0.12	4.47	99.5	
18A17	35	8	48	137	41	59	221	57.4	1.38	18.30	7.33	0.14	1.70	4.69	3.01	1.22	0.19	4.73	100.1	
18A18	35	8	13	137	42	12	640	59.0	1.98	14.79	8.28	0.14	1.93	3.34	2.46	1.70	0.17	6.62	100.4	
18A19	35	8	47	137	42	6	920	55.7	1.73	16.39	9.20	0.14	2.00	3.74	2.46	1.13	0.17	7.89	100.5	
18A20	35	7	57	137	41	45	221	66.1	0.96	13.66	5.68	0.12	1.18	1.93	2.48	1.75	0.14	6.32	100.3	
18B01	35	8	15	137	38	3	222	67.3	0.94	11.46	7.75	0.27	0.86	0.77	1.34	1.84	0.23	7.68	100.4	
18B02	35	6	59	137	39	23	222	56.8	1.55	16.09	9.99	0.14	0.86	0.98	1.95	2.06	0.26	9.77	100.4	
18B03	35	6	43	137	39	37	222	52.9	1.45	16.22	8.19	0.23	0.57	0.81	2.03	1.84	0.42	17.52	102.1	
18B04	35	6	49	137	40	3	630	58.7	2.68	15.23	8.47	0.22	1.94	3.38	2.58	1.63	0.13	4.49	99.5	
18B05	35	6	35	137	38	36	222	65.8	1.14	13.39	5.76	0.11	1.34	1.32	1.30	1.55	0.22	8.69	100.6	
18B06	35	6	42	137	38	42	222	64.2	1.10	13.00	6.39	0.12	0.66	0.72	1.93	2.10	0.18	10.15	100.6	
18B07	35	6	5	137	39	22	630	59.1	1.18	13.53	6.03	0.12	0.56	0.72	1.69	2.31	0.23	14.27	99.7	
18B08	35	5	57	137	40	0	223	62.5	1.35	15.67	6.73	0.11	1.56	2.93	2.70	1.46	0.15	4.43	99.6	
18B09	35	5	33	137	40	18	223	72.8	1.38	15.90	6.38	0.12	0.61	0.56	1.93	2.53	0.19	6.90	109.3	
18B10	35	5	38	137	40	41	223	61.6	1.41	14.07	7.37	0.11	0.69	0.78	1.59	2.04	0.21	12.38	102.2	
18B11	35	6	5	137	43	49	223	65.8	0.83	14.82	5.99	0.11	1.44	2.26	2.29	2.19	0.13	6.09	102.0	
18B12	35	5	58	137	44	5	223	61.1	1.12	15.80	7.52	0.13	2.29	3.41	2.61	1.89	0.17	5.20	101.3	
18B13	35	5	43	137	44	21	223	55.5	1.76	13.84	10.90	0.21	5.79	4.85	1.78	1.01	0.17	5.58	101.4	
18B14	35	5	34	137	44	28	223	51.0	1.31	13.53	10.42	0.19	6.01	5.28	1.63	0.91	0.18	10.94	101.4	
18B15	35	5	26	137	44	31	223	62.6	1.75	14.28	8.07	0.15	2.59	3.58	2.72	1.81	0.17	3.34	101.0	
18C01	35	6	33	137	38	1	222	57.0	2.48	16.48	7.94	0.14	0.75	3.92	3.45	1.19	0.14	5.21	98.7	
18C02	35	6	25	137	37	51	223	72.2	0.53	12.56	4.01	0.07	0.40	0.92	1.97	2.63	0.13	3.70	99.1	
18C03	35	5	16	137	38	14	222	75.0	0.60	10.87	3.82	0.06	0.27	0.49	0.99	2.29	0.10	4.94	99.4	
18C04	35	5	25	137	37	54	222	66.8	1.02	13.13	6.52	0.12	0.81	1.33	1.32	1.96	0.14	6.15	99.3	

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
18C05	35	5	37	137	39	8	223	66.2	1.24	14.66	6.27	0.12	0.47	0.68	2.23	1.99	0.14	5.24	99.2
18C06	35	6	8	137	38	23	620	65.1	1.48	14.24	7.43	0.11	0.46	0.40	1.61	2.19	0.17	6.35	99.6
18D01	35	7	10	137	41	37	661	51.8	4.19	13.40	11.87	0.19	2.97	4.03	2.09	1.33	0.16	7.73	99.8
18D02	35	6	48	137	41	42	661	58.3	1.61	14.24	7.36	0.13	1.18	1.60	1.85	1.85	0.17	13.49	101.7
18D03	35	7	4	137	41	32	661	66.3	1.17	13.52	6.79	0.14	0.98	1.47	2.97	1.80	0.14	4.99	100.2
18D04	35	6	57	137	41	27	661	57.9	1.11	13.98	7.50	0.16	1.43	1.80	2.35	1.73	0.22	12.55	100.7
18D05	35	6	18	137	40	49	630	62.4	0.95	15.57	6.60	0.11	1.89	2.52	2.81	2.13	0.12	4.45	99.5
18D06	35	6	27	137	40	53	221	64.3	0.82	13.96	5.81	0.12	1.60	2.13	2.97	1.86	0.15	5.75	99.5
18D07	35	6	19	137	40	44	223	62.7	0.97	15.77	6.71	0.12	1.96	2.57	2.48	2.15	0.14	4.56	100.1
18D08	35	6	5	137	41	19	223	61.8	1.28	13.67	6.73	0.11	0.64	0.56	1.36	2.23	0.18	9.40	98.0
18D09	35	5	51	137	41	29	223	67.0	1.33	13.47	6.83	0.10	0.58	0.68	2.69	1.87	0.16	5.44	100.1
18D10	35	6	7	137	41	48	223	64.0	0.85	14.41	4.84	0.10	0.78	1.06	2.14	2.31	0.14	10.46	101.0
18D11	35	7	19	137	43	16	223	62.6	0.81	13.36	5.27	0.11	0.97	1.75	1.38	1.72	0.34	11.94	100.3
18D12	35	7	7	137	43	0	223	63.8	0.85	14.70	5.69	0.12	1.19	2.09	2.64	1.89	0.15	7.21	100.3
18D13	35	7	6	137	42	27	223	61.4	1.84	15.04	6.70	0.11	1.14	1.89	2.42	1.93	0.15	6.69	99.3
18D14	35	6	30	137	42	13	223	59.5	0.65	14.09	3.95	0.10	0.63	0.99	1.28	2.32	0.15	14.94	98.6
18D15	35	6	33	137	42	21	223	66.1	0.81	13.82	4.87	0.09	0.62	0.90	1.60	2.21	0.13	8.26	99.4
18D16	35	6	13	137	42	29	223	60.6	0.76	14.20	5.20	0.11	0.56	0.82	1.25	2.23	0.17	15.37	101.3
18D17	35	5	54	137	42	22	223	66.3	0.77	14.18	5.28	0.09	0.58	0.75	1.85	2.33	0.12	7.15	99.4
18E01	35	5	27	137	41	5	223	63.9	1.02	13.67	5.52	0.09	0.58	0.67	1.74	2.24	0.16	10.60	100.2
18E02	35	5	55	137	43	35	221	63.1	0.89	14.70	5.09	0.21	0.88	1.72	2.01	2.09	0.17	9.94	100.8
18K01	35	10	2	137	37	25	223	60.7	0.97	13.36	6.03	0.17	2.45	1.88	1.06	1.68	0.15	10.42	98.9
18K02	35	9	59	137	38	34	661	68.5	0.65	12.01	4.22	0.08	0.65	1.00	1.52	2.07	0.12	7.76	98.6
18K03	35	9	59	137	38	32	661	67.5	0.85	13.21	5.36	0.11	0.75	0.97	1.42	1.98	0.14	7.23	99.6
18K04	35	10	5	137	38	59	920	63.0	0.74	14.05	5.39	0.11	0.72	1.03	1.52	2.06	0.17	10.15	99.0
18K05	35	10	0	137	39	20	920	68.3	0.69	12.71	5.18	0.10	0.78	0.81	1.33	2.17	0.12	7.34	99.5
18K06	35	9	11	137	40	34	640	58.8	1.44	14.02	8.00	0.14	1.70	1.62	1.44	1.61	0.15	9.79	98.7
18K07	35	9	26	137	39	43	120	72.9	0.81	10.72	4.83	0.19	0.74	0.45	0.57	1.97	0.11	5.27	98.6
18K08	35	9	35	137	40	0	920	68.2	0.76	11.78	5.50	0.77	1.13	0.87	0.83	2.38	0.17	6.04	98.5
18K09	35	9	32	137	39	36	120	70.3	0.68	12.01	4.47	0.13	0.68	0.68	1.36	2.23	0.12	6.07	98.7
18K10	35	8	55	137	41	0	431	56.9	1.17	17.37	7.89	0.14	1.78	3.54	2.56	1.36	0.10	5.97	98.7
18K11	35	8	42	137	41	8	431	55.9	0.89	17.84	6.78	0.12	1.95	3.90	2.91	1.28	0.10	6.18	97.9
18K12	35	8	13	137	41	21	661	65.4	0.83	13.32	5.94	0.15	1.33	1.66	1.84	1.74	0.15	6.14	98.5
18K13	35	9	44	137	41	22	640	52.7	1.15	17.25	7.89	0.14	2.11	3.98	2.48	1.29	0.19	9.13	98.3
18K14	35	9	36	137	41	19	640	56.7	1.11	17.01	7.68	0.16	1.74	4.04	2.53	1.28	0.16	5.61	98.0
18K15A	35	9	56	137	41	2	640	56.8	0.89	18.10	6.76	0.11	2.02	5.01	3.00	1.19	0.13	3.84	97.9
18K15B	35	9	56	137	41	2	640	54.8	1.84	16.92	8.72	0.18	2.50	5.30	2.79	1.15	0.19	3.95	98.4
18K15C	35	9	56	137	41	2	640	56.8	1.51	16.35	8.00	0.16	2.30	4.84	2.57	1.14	0.16	3.94	97.8
18K16	35	9	45	137	38	3	661	71.1	0.71	11.93	4.67	0.08	0.67	0.66	1.19	2.21	0.11	3.95	97.2
18K17	35	8	49	137	37	51	920	75.0	1.15	9.28	5.60	0.14	0.46	0.41	0.57	1.19	0.11	3.94	97.8
18K18	35	8	44	137	38	7	920	77.0	0.75	8.17	5.02	0.16	0.46	0.33	0.40	1.14	0.12	6.07	99.6
18K19	35	8	38	137	38	21	222	62.0	1.42	14.32	8.17	0.14	0.59	0.75	2.49	2.25	0.21	4.85	97.2
18K20	35	8	35	137	38	23	222	57.9	1.83	15.18	9.67	0.17	0.45	0.57	2.79	2.21	0.25	5.78	96.8
18K21	35	8	22	137	38	22	222	57.6	1.44	15.56	9.23	0.16	0.67	0.94	3.59	2.50	0.22	6.20	98.1
18K22	35	8	6	137	38	18	222	56.4	1.79	15.81	10.56	0.16	0.62	0.69	3.05	2.39	0.29	8.47	100.3
18K23	35	8	6	137	38	13	222	73.8	0.84	10.32	5.33	0.15	0.57	0.71	1.28	1.57	0.14	6.67	101.3
18K24	35	9	15	137	41	23	640	57.8	1.43	16.94	7.77	0.14	2.06	3.85	2.55	1.72	0.11	7.25	101.6
18K25	35	8	6	137	38	11	222	70.1	0.69	12.58	5.28	0.13	0.69	1.32	1.87	2.10	0.16	4.39	99.3
18K26	35	9	45	137	37	24	223	83.6	0.42	7.28	2.31	0.06	0.35	0.34	0.41	1.28	0.08	3.92	100.1
18K27	35	9	16	137	38	46	120	62.0	0.86	15.07	5.83	0.15	1.20	2.09	2.20	2.07	0.17	4.17	95.9
18K28	35	9	10	137	41	31	640	56.7	1.29	16.39	8.47	0.15	2.23	3.64	2.17	1.49	0.16	3.22	95.9
18K29	35	8	16	137	41	33	640	64.6	0.85	14.00	4.89	0.14	1.03	1.90	1.93	1.97	0.16	7.20	98.7
18K30	35	7	28	137	38	59	222	55.3	1.96	15.51	11.42	0.16	0.84	0.60	2.83	2.00	0.25	6.32	97.2
18K31	35	7	10	137	39	20	222	70.2	0.95	11.43	6.04	0.15	0.58	0.71	1.54	1.74	0.17	6.62	100.1
18K32	35	7	3	137	40	11	630	68.4	0.68	12.62	5.30	0.14	1.26	1.64	1.80	1.90	0.17	9.40	103.3
18K33	35	8	2	137	40	47	661	63.6	0.96	11.86	9.92	0.19	0.80	0.76	1.30	1.84	0.14	5.27	96.6
18K34	35	8	8	137	40	17	222	62.8	1.09	13.96	6.84	0.14	1.12	1.34	1.81	1.76	0.22	4.04	95.1
18K35	35	8	7	137	40	15	222	59.1	1.19	14.91	6.92	0.14	1.05	1.19	1.72	1.75	0.28	7.60	95.9
18K36	35	7	34	137	40	41	630	60.8	0.82	17.66	6.22	0.12	1.60	1.38	2.40	2.56	0.09	8.73	102.4
18K37	35	6	57	137	40	3	630	68.6	0.08	12.66	5.53	0.12	1.03	1.29	1.83	1.90	0.16	11.22	104.4
18K38	35	7	4	137	40	1	222	58.4	1.09	14.15	7.06	0.14	0.94	1.22	2.07	1.91	0.37	5.67	93.0

Appendix I-12

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total	
18K39	35	8	14	137	42	0	640	62.3	1.19	14.81	6.45	0.15	1.77	3.26	2.38	1.59	0.15	4.40	98.5	[4]
18K40	35	9	3	137	40	39	640	64.8	1.17	14.51	6.29	0.12	0.81	0.93	1.72	2.15	0.16	12.96	105.6	[4]
Mikawako																				
23C01	35	2	26	137	36	29	222	54.6	1.35	15.30	7.20	0.16	1.64	1.74	2.18	1.34	0.25	17.40	103.1	
23C02	35	2	51	137	36	47	222	66.1	0.35	13.17	2.92	0.12	0.31	0.64	1.27	2.99	0.10	14.83	102.8	
23C03	35	2	19	137	36	2	222	55.3	2.21	17.61	6.62	0.13	1.21	3.30	2.87	1.58	0.14	10.63	101.6	
23C04	35	2	46	137	36	37	222	69.5	0.72	13.31	4.15	0.09	0.44	1.04	1.85	2.72	0.11	7.49	101.5	
23C05	35	2	10	137	36	13	222	61.7	0.69	16.74	3.14	0.08	0.59	1.94	2.13	3.17	0.09	11.54	101.8	
23C06	35	2	18	137	36	57	222	76.2	0.46	12.28	3.69	0.06	0.25	0.27	2.07	3.17	0.07	3.90	102.4	
23C07	35	2	13	137	36	23	222	71.5	0.35	13.45	2.51	0.05	0.28	0.86	1.94	3.63	0.06	6.26	100.9	
23C08	35	2	6	137	36	54	222	74.3	0.26	12.16	2.63	0.08	0.26	0.35	2.81	3.20	0.06	5.48	101.5	
23C09	35	1	35	137	37	4	222	72.5	0.38	12.70	2.73	0.06	0.27	0.56	1.65	3.26	0.06	6.93	101.1	
23C10	35	1	33	137	37	5	222	73.3	0.29	12.54	2.10	0.04	0.23	0.64	1.76	3.46	0.04	6.39	100.8	
23D01	35	3	41	137	37	0	222	75.8	0.40	12.55	3.03	0.07	0.26	0.28	0.98	3.35	0.05	4.83	101.6	
23D02	35	3	34	137	37	14	222	70.5	0.35	11.96	3.34	0.11	0.33	0.51	1.30	3.08	0.11	10.88	102.4	
23D03	35	3	53	137	36	26	222	62.0	0.44	12.57	2.67	0.06	0.48	1.13	1.05	2.61	0.15	20.31	103.4	
23D04	35	3	17	137	36	6	222	54.7	4.01	17.08	8.73	0.17	1.77	4.71	3.01	1.38	0.12	5.24	100.9	
23D05	35	3	8	137	35	58	222	53.2	0.93	16.86	5.73	0.15	1.08	3.46	2.60	1.59	0.21	16.77	102.6	
23D06	35	3	12	137	35	59	222	54.8	3.75	17.56	8.41	0.16	1.84	4.94	3.09	1.34	0.11	5.05	101.0	
22E01	35	4	57	137	24	35	420	72.6	0.60	10.60	3.89	0.10	2.06	1.73	1.25	2.18	0.06	3.85	98.9	
23F01	35	5	11	137	37	5	222	60.7	1.21	15.27	5.81	0.11	0.57	1.64	2.22	1.87	0.18	11.76	101.4	
23F02	35	5	6	137	36	54	222	61.1	0.86	15.62	5.35	0.11	0.51	2.26	2.19	1.70	0.17	9.73	99.6	
23F03	35	4	28	137	37	7	222	66.8	1.15	14.50	5.23	0.10	0.55	1.57	1.98	1.94	0.13	6.07	100.0	
23F04	35	4	28	137	36	31	222	70.6	0.36	12.54	2.34	0.07	0.21	0.39	3.88	2.84	0.07	9.84	103.1	
23F05	35	4	14	137	36	14	222	52.6	1.51	16.12	5.55	0.14	1.05	3.34	2.76	1.47	0.18	15.79	100.5	
23F06	35	4	14	137	36	29	222	66.5	0.57	14.38	2.92	0.05	0.45	1.03	2.08	2.53	0.10	10.24	100.9	
23F07	35	5	11	137	36	34	222	55.1	1.38	17.31	7.02	0.13	0.54	2.79	2.42	1.58	0.19	12.26	100.7	
23F08	35	4	59	137	36	29	222	62.3	0.95	16.48	4.37	0.19	0.83	2.47	2.93	1.69	0.14	8.02	100.3	
23F09	35	5	10	137	35	14	223	71.4	0.54	11.94	3.10	0.08	0.60	1.06	1.08	1.80	0.14	8.39	100.1	
23F10	35	5	7	137	34	28	661	82.6	0.31	8.00	1.89	0.08	0.28	0.71	1.18	1.83	0.07	2.79	99.8	
23F11	35	4	39	137	34	35	661	63.6	0.80	13.08	5.18	0.30	1.20	1.72	1.39	1.85	0.17	11.35	100.6	
23F12	35	4	29	137	34	47	223	58.3	1.04	19.65	4.84	0.10	0.69	4.88	4.19	1.39	0.09	4.05	99.2	
23F13	35	4	32	137	34	24	661	71.1	1.06	13.07	3.21	0.08	0.52	1.86	1.81	1.91	0.08	5.26	99.9	
23F14	35	4	5	137	33	36	610	66.6	0.85	14.10	4.01	0.08	1.02	2.05	1.85	2.16	0.11	6.65	99.4	
Mikawahongo																				
24A01	35	3	8	137	44	44	630	71.8	0.46	9.92	3.47	0.16	0.97	0.63	0.94	2.10	0.12	11.13	101.7	
24A02	35	2	42	137	44	39	743	61.5	0.84	13.91	6.84	0.13	2.62	1.75	2.43	2.13	0.17	8.67	101.0	
24A03	35	2	2	137	43	39	630	69.8	0.51	11.38	3.89	0.10	0.81	0.95	1.61	2.27	0.13	9.72	101.2	
24A04	35	2	54	137	44	27	630	64.3	0.48	10.51	4.43	0.27	1.07	1.07	1.01	2.15	0.23	17.50	103.0	
24A05	35	1	25	137	44	13	745	57.9	0.72	12.81	7.27	0.15	8.37	0.69	1.71	2.28	0.09	8.57	100.5	
24A06	35	1	20	137	44	9	745	57.0	0.94	14.56	8.72	0.18	4.05	2.91	2.60	1.98	0.15	7.96	101.1	
24A07	35	0	41	137	43	4	630	64.0	0.46	14.54	3.41	0.08	0.66	0.79	2.43	2.43	0.13	12.85	101.7	
24A08	35	0	16	137	42	58	630	56.4	1.14	15.23	8.58	0.13	4.59	3.10	2.24	2.02	0.13	6.83	100.4	
24A09	35	3	2	137	42	48	223	62.9	0.70	13.36	4.95	0.10	0.59	0.56	1.25	2.21	0.18	15.23	102.0	
24A10	35	2	48	137	42	38	223	63.2	0.84	13.77	4.46	0.10	1.02	1.09	2.17	2.22	0.19	12.25	101.3	
24A11	35	2	46	137	43	28	223	69.0	0.63	13.97	4.50	0.12	0.84	0.45	2.44	2.29	0.12	6.49	100.9	
24A12	35	2	33	137	43	31	661	68.1	0.45	13.91	3.60	0.09	0.70	0.57	3.03	2.61	0.12	8.42	101.6	
24A13	35	2	27	137	43	8	223	68.1	0.65	12.93	4.28	0.10	0.66	0.55	2.27	1.82	0.13	10.34	101.9	
24A14	35	1	42	137	43	7	222	58.6	1.01	14.55	7.14	0.12	3.49	2.68	2.35	2.35	0.15	9.45	101.9	
24A15	35	2	12	137	42	24	223	66.0	0.80	14.44	4.77	0.12	1.58	1.93	3.21	2.09	0.15	5.87	101.0	
24A16	35	2	12	137	42	39	223	63.6	0.69	13.74	4.34	0.10	0.82	0.75	1.75	2.18	0.21	13.35	101.5	
24B01	35	5	0	137	44	48	223	58.7	1.06	14.66	6.93	0.13	1.74	2.63	2.07	2.02	0.22	9.28	99.4	
24B02	35	4	19	137	44	31	223	70.7	0.48	13.24	3.46	0.07	0.66	0.91	2.16	2.40	0.09	6.26	100.4	
24B03	35	3	40	137	43	49	221	63.1	0.63	14.16	4.44	0.12	0.85	0.66	1.88	2.34	0.16	11.41	99.7	
24B04	35	4	10	137	41	49	221	69.2	0.68	12.82	4.94	0.10	0.74	0.62	1.51	2.19	0.12	6.98	99.9	
24B05	35	3	35	137	42	38	223	68.0	0.67	12.89	4.86	0.07	0.46	0.37	1.20	2.40	0.12	8.34	99.4	
24B06	35	3	25	137	42	21	223	60.5	0.64	13.24	5.15	0.11	0.59	0.63	0.90	2.23	0.19	16.31	100.5	
24B07	35	3	8	137	40	52	222	70.4	0.44	13.00	3.19	0.06	0.56	0.55	1.54	2.52	0.09	8.09	100.5	
24B08	35	3	5	137	40	48	222	58.6	1.00	14.56	5.15	0.13	1.33	1.63	2.24	1.90	0.18	13.26	100.0	

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
24B09	35	2	51	137	40	54	222	67.1	0.37	14.93	3.10	0.06	0.54	0.79	1.90	3.15	0.09	8.82	100.9
24B10	35	2	51	137	40	45	222	63.9	0.79	14.82	3.94	0.08	0.84	1.34	2.23	2.51	0.11	10.19	100.7
24B11	35	3	3	137	41	17	223	66.5	0.75	14.68	4.30	0.09	0.89	0.99	2.53	2.63	0.12	6.25	99.8
24B12	35	3	17	137	42	0	223	60.5	0.68	13.73	4.39	0.09	0.70	0.77	1.25	2.38	0.17	16.71	101.4
24B13	35	3	42	137	41	59	223	66.5	0.65	12.85	4.86	0.10	0.55	0.50	1.20	2.13	0.16	11.60	101.1
24C01	35	1	32	137	38	32	222	64.8	0.23	12.77	1.68	0.11	0.17	0.55	2.24	3.05	0.07	16.19	101.9
24C02	35	1	45	137	37	55	222	75.5	0.48	12.64	1.91	0.03	0.18	0.23	2.03	3.41	0.03	4.02	100.4
24C03	35	2	40	137	38	18	222	69.9	0.98	14.27	4.24	0.08	0.42	0.40	2.18	2.69	0.08	4.91	100.1
24C04	35	2	41	137	38	24	222	63.0	1.48	15.70	5.24	0.12	1.09	1.19	2.97	1.93	0.09	6.69	99.5
24C05	35	2	28	137	38	12	222	62.2	0.39	11.74	2.30	0.11	0.24	0.64	1.17	2.70	0.10	19.57	101.1
24C06	35	2	4	137	38	40	222	71.4	0.50	12.29	1.88	0.07	0.14	0.29	2.24	2.87	0.04	6.05	97.8
24C07	35	1	59	137	38	44	222	69.2	0.86	12.75	3.45	0.05	0.46	0.55	2.38	2.43	0.05	4.67	96.9
24C08	35	0	47	137	38	46	222	71.8	0.37	11.04	1.76	0.08	0.22	0.26	1.13	2.93	0.03	8.41	98.0
24C09	35	0	38	137	39	15	222	59.6	0.27	11.35	1.60	0.08	0.20	0.61	1.18	2.62	0.09	24.32	101.9
24D01	35	4	46	137	41	53	223	70.9	0.56	11.98	4.24	0.07	1.88	2.09	2.15	1.95	0.07	3.30	99.2
24D02	35	4	50	137	42	2	223	70.8	0.48	12.24	2.87	0.06	0.33	0.38	1.98	2.24	0.08	9.26	100.8
24D03	35	4	0	137	37	20	222	71.1	0.36	12.67	2.81	0.07	0.23	0.28	0.77	3.16	0.05	5.79	97.3
24D04	35	3	37	137	37	21	222	64.4	0.51	13.40	3.38	0.17	0.29	0.35	1.07	3.06	0.08	11.77	98.4
24D05	35	4	32	137	37	37	222	62.3	1.00	13.71	6.06	0.18	0.50	0.75	1.06	2.21	0.18	9.91	97.8
24D06	35	4	37	137	37	40	222	66.3	0.97	13.13	5.26	0.12	0.54	0.63	1.55	1.95	0.12	6.76	97.3
24D07	35	4	18	137	38	2	222	63.7	0.66	14.17	4.65	0.13	0.41	0.40	1.11	2.89	0.12	10.10	98.3
24D08	35	3	59	137	38	32	222	65.1	1.15	13.75	4.96	0.12	0.49	0.46	1.97	1.97	0.10	7.19	97.2
24D09	35	4	5	137	38	37	222	65.7	1.24	13.97	4.62	0.08	0.33	0.30	1.74	2.28	0.08	7.58	97.9
24D10	35	4	52	137	38	30	222	50.0	0.86	14.39	4.85	0.15	0.58	1.07	1.86	1.65	0.24	25.74	101.4
24D11	35	4	27	137	39	7	223	62.4	1.19	15.10	5.37	0.09	0.43	0.43	2.16	1.88	0.14	8.75	97.9
24D12	35	4	17	137	39	14	223	68.7	0.47	13.32	3.15	0.06	0.30	0.32	1.86	2.69	0.09	6.39	97.3
24D13	35	4	27	137	39	38	223	62.8	0.78	14.73	4.69	0.11	0.61	0.61	2.03	2.34	0.14	9.50	98.3
24E01	35	4	45	137	39	50	223	64.7	1.12	14.59	5.55	0.10	0.62	0.69	1.76	1.79	0.20	8.93	100.0
24E02	35	4	43	137	40	0	120	64.6	1.31	13.91	5.42	0.08	0.41	0.53	2.13	1.98	0.17	9.39	100.0
24E03	35	4	41	137	40	36	223	67.5	0.77	13.84	4.80	0.10	0.59	0.47	1.99	2.30	0.13	6.90	99.4
24E04	35	4	55	137	40	29	223	66.3	0.96	15.18	5.22	0.12	0.74	1.45	2.10	2.45	0.14	6.44	101.0
24E05	35	4	37	137	41	0	223	71.7	0.72	13.82	4.84	0.10	0.61	0.51	2.10	2.17	0.14	8.14	104.9
24E06	35	4	13	137	41	7	223	68.1	0.63	12.81	4.03	0.06	0.53	0.46	2.05	1.99	0.14	9.91	100.7
24E07	35	3	56	137	40	7	222	71.7	0.69	13.51	3.82	0.06	0.51	0.51	2.66	2.60	0.10	3.52	99.7
24E08	35	3	43	137	40	29	223	62.9	0.66	14.79	4.30	0.13	0.78	0.65	1.96	2.46	0.15	11.53	100.3
24E09	35	4	46	137	41	53	223	68.2	0.61	13.08	4.64	0.09	1.72	1.89	2.13	2.21	0.09	4.72	99.4
24E10	35	4	50	137	42	42	223	70.0	0.42	13.53	4.00	0.08	0.38	0.46	1.51	3.01	0.08	7.39	100.8
24E11	35	5	2	137	43	12	223	65.8	0.64	13.72	4.09	0.08	0.75	1.08	1.71	2.48	0.12	9.85	100.3
24E12	35	4	9	137	43	42	223	66.5	0.54	13.07	3.57	0.07	0.53	0.56	2.40	2.41	0.12	9.53	99.3
24E13	35	4	33	137	43	50	223	67.3	0.78	14.05	4.25	0.08	0.75	1.37	2.00	2.12	0.17	7.99	100.8
24E14	35	2	2	137	40	59	222	63.0	0.29	13.62	2.69	0.07	0.35	0.66	1.48	2.86	0.09	13.30	98.4
24E15	35	2	7	137	40	44	222	63.2	0.77	13.28	3.51	0.08	0.67	0.81	2.06	2.29	0.09	10.52	97.2
24E16	35	2	9	137	40	45	222	61.8	0.50	13.25	3.27	0.13	0.58	0.67	1.50	2.37	0.13	12.78	96.9
24E17	35	1	22	137	40	46	222	59.3	0.20	13.02	1.95	0.18	0.19	0.38	1.53	2.99	0.09	22.13	102.0
24E18	35	1	11	137	40	41	222	62.7	0.24	11.81	1.80	0.09	0.18	0.27	1.26	3.06	0.07	19.69	101.1
24E19	35	0	43	137	41	36	222	64.5	0.96	14.73	4.49	0.10	1.03	0.72	1.76	1.81	0.11	7.65	97.8
24E20	35	0	41	137	41	24	222	56.2	1.07	14.44	4.16	0.12	0.79	0.86	1.64	1.65	0.17	18.98	100.1
24E21	35	1	49	137	42	29	223	63.3	0.76	14.56	4.49	0.09	1.15	1.02	2.20	2.03	0.12	10.86	100.6
24E22	35	1	31	137	42	24	222	67.8	0.55	13.99	3.15	0.10	0.69	0.70	1.78	2.28	0.09	9.00	100.1
24E23	35	1	22	137	42	5	222	64.0	0.77	14.90	4.26	0.10	1.08	0.95	1.99	2.04	0.18	10.29	100.5
24E24	35	1	28	137	42	4	222	64.4	1.10	14.11	4.80	0.10	1.03	0.86	1.90	1.86	0.13	9.94	100.3
24E25	35	0	54	137	41	56	222	61.4	1.02	15.08	4.85	0.11	1.19	1.15	1.62	1.73	0.11	11.79	100.1
24E26	35	0	21	137	40	8	110	68.5	0.22	12.69	1.84	0.05	0.15	0.27	1.06	3.36	0.06	11.99	100.2
Toki																			
VA01	35	24	32	137	11	28	410	50.5	0.81	12.76	5.95	0.41	0.66	1.06	0.89	1.19	0.22	27.64	102.1
VA02	35	24	29	137	11	41	410	70.5	0.98	12.98	3.07	0.06	0.34	0.80	2.18	2.60	0.05	4.89	98.5
VA03	35	24	45	137	11	17	223	52.8	1.88	16.24	7.54	0.16	2.37	3.90	2.20	1.11	0.09	12.05	100.3
VA04	35	24	46	137	11	26	223	56.4	0.75	16.05	5.23	0.12	1.54	2.67	1.90	1.59	0.08	15.14	101.5
VA05	35	24	31	137	11	14	410	61.5	0.30	14.24	5.56	0.52	0.40	1.49	3.14	2.15	0.54	10.70	100.5
VA06	35	24	28	137	10	57	410	69.7	0.60	12.38	3.21	0.22	0.44	1.13	2.42	2.53	0.15	6.06	98.8

Appendix I-13

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
VA07	35	24	46	137	10	51	223	56.4	2.19	14.90	7.40	0.14	1.67	2.87	2.34	1.40	0.07	11.16	100.6
VA08	35	24	39	137	10	30	223	58.2	0.91	14.65	6.61	0.26	1.47	2.50	1.42	1.58	0.19	13.03	100.8
VA09	35	24	46	137	10	7	910	64.4	0.71	11.46	5.99	0.54	0.99	1.69	0.89	1.38	0.20	11.94	100.1
VA10	35	24	46	137	9	51	223	61.0	2.25	11.76	7.91	0.51	1.59	2.03	1.16	1.28	0.12	10.42	100.0
VA11	35	25	3	137	9	42	120	53.1	2.43	13.54	9.21	0.35	1.96	2.85	1.30	1.24	0.16	13.43	99.6
VA12	35	25	7	137	9	32	120	57.5	3.64	13.18	9.17	0.20	3.04	3.45	1.98	1.29	0.04	4.47	97.9
VA13	35	25	1	137	10	30	223	61.4	3.82	13.55	6.80	0.18	0.87	1.47	2.67	2.64	0.11	4.28	97.8
VA14	35	22	54	137	11	34	410	75.4	0.95	9.97	3.10	0.12	0.35	0.61	1.13	2.38	0.11	4.97	99.1
VA15	35	22	6	137	11	35	110	70.7	0.87	11.42	3.59	0.08	0.75	1.20	1.51	2.19	0.10	6.47	98.8
VA16	35	22	13	137	10	56	120	68.1	0.66	10.66	3.65	0.11	0.78	1.21	1.34	2.00	0.32	11.44	100.2
VA17	35	22	26	137	11	6	223	69.5	0.83	12.66	3.76	0.10	0.46	0.72	1.44	2.66	0.07	7.16	99.4
VA18	35	21	24	137	9	53	920	72.6	1.32	10.35	4.24	0.12	0.68	1.37	1.76	2.24	0.12	4.29	99.1
VA19	35	21	28	137	10	59	110	64.7	1.03	13.33	4.91	0.12	0.81	1.20	1.26	2.03	0.13	9.35	98.9
VA20	35	21	20	137	10	6	410	89.3	0.21	5.14	1.40	0.13	0.21	0.20	0.46	1.33	0.04	1.99	100.4
VA21	35	21	36	137	9	50	920	95.2	0.14	2.65	0.94	0.05	0.20	0.13	0.15	0.61	0.02	0.96	101.1
VA22	35	21	57	137	10	34	223	62.1	0.67	14.32	5.43	0.53	0.66	1.26	1.37	2.24	0.27	11.65	100.5
VA23	35	22	15	137	9	44	910	81.3	0.36	6.38	3.62	1.50	0.26	0.21	0.25	0.83	0.13	5.55	100.4
VA24	35	22	38	137	9	30	920	79.0	0.28	6.76	3.41	0.11	0.29	0.17	0.36	0.99	0.19	9.01	100.5
VA25	35	22	44	137	9	45	920	88.1	0.20	3.88	1.79	0.21	0.21	0.08	0.17	0.57	0.05	4.88	100.1
VA26	35	20	56	137	14	45	223	53.1	3.70	15.90	9.84	0.15	2.81	4.29	1.87	1.04	0.07	7.19	100.0
VA27	35	20	52	137	14	29	223	54.0	10.24	10.40	14.54	0.23	1.15	1.47	0.96	1.34	0.06	4.58	99.0
VA28	35	23	30	137	14	20	223	76.0	1.28	10.97	2.89	0.06	0.36	0.80	1.34	3.08	0.03	3.85	100.6
VB01	35	24	27	137	11	43	410	70.1	1.00	13.17	3.28	0.07	0.40	0.84	2.61	2.57	0.07	5.33	99.5
VB02	35	24	38	137	12	27	210	71.5	4.81	8.97	6.67	0.19	0.23	0.18	0.32	1.81	0.04	4.65	99.4
VB03	35	24	53	137	12	32	210	74.8	1.57	9.74	3.10	0.06	0.18	0.28	0.50	1.99	0.04	7.58	99.9
VB04	35	25	0	137	12	41	410	70.8	2.49	11.62	3.91	0.12	0.19	0.48	1.47	2.72	0.05	5.14	99.0
VB05	35	23	52	137	13	12	410	75.7	1.65	10.12	3.06	0.10	0.35	0.76	1.48	2.99	0.06	4.53	100.8
VB06	35	24	32	137	13	28	210	67.2	0.90	12.64	3.95	0.09	0.38	0.49	1.07	2.80	0.07	10.12	99.7
VB07	35	23	29	137	14	5	110	73.2	1.55	11.54	3.39	0.07	0.24	0.48	1.01	2.84	0.03	2.69	97.1
VB08	35	24	36	137	13	40	210	68.7	1.91	12.00	4.22	0.10	0.41	0.61	1.03	2.90	0.08	7.12	99.1
VB09	35	23	31	137	14	19	223	71.0	1.70	11.46	3.66	0.09	0.46	1.23	1.80	2.87	0.04	4.51	98.8
VB10	35	24	44	137	14	13	110	61.0	1.89	13.98	5.70	0.16	1.09	2.00	1.91	2.08	0.12	8.95	98.8
VB11	35	23	12	137	13	52	110	68.6	0.89	14.27	3.44	0.08	0.99	1.94	1.73	2.05	0.07	4.07	98.1
VB12	35	24	19	137	14	43	110	61.4	1.92	13.38	5.32	0.17	0.67	1.40	1.24	2.25	0.18	11.04	99.0
VB13	35	22	45	137	13	35	410	64.0	3.23	13.02	6.00	0.14	1.00	2.12	2.04	2.10	0.07	4.60	98.3
VB14	35	24	3	137	14	24	110	64.7	3.04	12.53	5.68	0.14	0.83	1.83	1.99	2.12	0.07	5.95	98.8
VB15	35	22	30	137	13	43	410	62.1	5.64	11.16	8.51	0.23	1.20	1.98	1.91	2.16	0.09	3.52	98.5
VB16	35	22	48	137	14	26	223	64.0	0.93	13.79	4.41	0.07	0.81	1.44	1.54	2.29	0.07	9.25	98.6
VB17	35	22	34	137	14	39	223	60.9	2.13	12.63	5.58	0.21	0.78	1.36	1.69	2.22	0.07	10.45	98.0
VB18	35	22	2	137	14	10	110	63.7	1.62	13.53	5.41	0.15	1.66	2.80	2.50	1.97	0.08	4.64	98.1
VB19	35	22	23	137	12	55	410	71.4	2.90	11.20	4.43	0.13	0.38	0.67	1.80	2.98	0.05	2.85	98.8
VB20	35	23	4	137	12	41	410	68.1	3.15	11.65	5.54	0.11	0.49	0.71	1.05	2.42	0.05	5.47	98.7
VB21	35	23	12	137	12	32	223	75.5	1.42	10.38	2.92	0.06	0.34	0.62	1.06	2.72	0.04	4.03	99.1
VB22	35	23	7	137	11	58	410	78.2	1.06	9.32	2.55	0.04	0.27	0.27	0.75	2.68	0.03	3.91	99.1
VB23	35	22	31	137	12	20	410	69.5	0.60	14.24	3.14	0.04	0.39	0.52	1.27	3.25	0.04	6.15	99.1
VB24	35	21	20	137	13	32	223	76.1	0.68	10.73	3.02	0.03	0.35	0.31	0.87	2.29	0.03	4.49	98.9
VB25	35	21	22	137	13	38	210	73.3	0.91	11.13	3.43	0.05	0.44	0.67	1.16	2.29	0.05	5.61	99.0
VB26	35	22	59	137	14	34	223	66.1	1.08	13.33	4.37	0.07	0.62	0.87	0.97	2.44	0.04	8.53	98.4
VB27	35	22	57	137	14	35	223	70.9	2.03	11.44	4.74	0.12	0.59	0.78	0.89	2.43	0.04	6.67	100.6
VB28	35	22	34	137	14	11	223	66.6	1.43	12.89	5.01	0.13	1.52	2.05	1.74	2.12	0.06	5.60	99.2
VT01	35	23	16	137	12	52	223	63.1	1.38	15.01	4.92	0.05	0.42	0.60	0.70	2.25	0.08	11.00	99.6
VT02	35	23	20	137	12	51	223	59.9	1.12	13.49	7.62	0.19	0.46	0.62	1.76	2.14	0.12	13.76	101.2
VT03	35	23	8	137	13	21	223	58.0	2.28	14.04	7.10	0.14	0.84	1.61	1.39	1.04	0.16	12.16	98.8
VT04	35	24	3	137	14	31	223	54.5	3.68	14.05	8.46	0.24	1.03	1.68	0.89	1.58	0.33	13.77	100.2
VT05	35	23	51	137	13	11	410	68.3	0.90	12.60	4.13	0.19	0.47	0.90	1.34	3.09	0.17	6.66	98.8
VT06	35	23	57	137	13	40	410	64.0	1.05	13.49	4.57	0.09	0.54	0.81	0.88	2.49	0.16	11.71	99.8
VT07	35	20	46	137	7	46	910	66.1	1.12	9.79	4.49	0.26	0.58	1.26	0.34	1.42	0.56	14.29	100.2
VT08	35	21	1	137	8	19	910	73.4	0.63	11.73	2.59	0.08	0.47	1.13	1.69	2.72	0.10	4.15	98.7
VT09	35	20	16	137	8	31	210	74.9	3.28	7.19	6.05	0.22	0.48	0.45	0.32	1.44	0.15	4.25	98.7

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
Mizunami																			
WA01	35	22	53	137	15	44	110	53.3	5.16	14.50	9.63	0.25	2.53	3.82	2.49	1.19	0.06	4.88	97.8
WA02	35	22	44	137	15	34	110	54.9	4.32	13.21	10.89	0.32	4.36	4.31	2.52	1.12	0.06	2.89	98.9
WA03	35	24	15	137	16	47	410	68.2	3.04	10.82	4.76	0.16	0.42	0.52	0.96	3.02	0.03	5.14	97.1
WA04	35	20	31	137	14	59	120	75.9	0.76	10.93	2.63	0.06	0.44	1.26	1.48	2.74	0.05	2.67	98.9
WH01	35	22	20	137	14	57	223	58.1	1.09	13.21	5.91	0.16	1.22	2.71	2.07	1.80	0.25	14.23	100.7
WH02	35	22	41	137	15	24	223	62.3	1.53	14.03	5.93	0.15	1.44	2.25	1.84	1.99	0.10	9.18	100.7
WH03	35	22	46	137	15	35	110	55.7	3.40	13.60	9.39	0.26	3.19	3.52	2.36	1.29	0.11	7.05	99.9
WH04	35	22	57	137	15	56	110	65.3	1.13	13.21	4.77	0.10	0.78	1.64	1.50	2.46	0.10	9.01	100.0
WH05	35	23	27	137	15	28	223	63.1	0.97	13.95	5.24	0.09	0.69	1.10	0.87	2.38	0.08	12.43	100.9
WH06	35	23	49	137	15	32	223	59.3	0.68	12.27	4.60	0.10	0.60	0.89	0.85	2.45	0.11	19.25	101.1
WH07	35	23	47	137	15	39	223	61.0	2.14	13.39	5.85	0.13	0.60	0.98	1.18	2.47	0.09	12.86	100.7
WH08	35	23	23	137	15	58	223	58.3	1.23	17.54	6.29	0.09	1.56	3.74	1.80	1.28	0.13	17.59	109.6
WH09	35	23	29	137	16	9	110	55.7	0.91	15.33	6.71	0.10	2.04	3.14	1.28	1.67	0.13	14.47	101.5
WH10	35	23	46	137	16	20	410	58.9	0.67	13.74	5.37	0.11	0.73	0.92	0.77	2.19	0.12	18.26	101.8
WH11	35	23	54	137	16	21	223	63.8	1.29	13.93	5.46	0.07	0.61	0.80	0.84	2.55	0.09	10.59	100.1
WH12	35	24	1	137	16	35	410	64.8	0.93	12.68	4.84	0.14	0.61	1.06	1.00	2.62	0.13	11.61	100.4
WH13	35	24	34	137	17	47	110	59.1	0.62	15.53	4.61	0.27	0.25	0.60	1.22	3.45	0.30	14.53	100.5
WH14	35	24	47	137	18	4	110	71.7	0.23	14.50	1.71	0.03	0.14	0.39	1.62	5.38	0.04	3.65	99.4
WH15	35	24	31	137	15	20	223	62.3	0.67	13.82	4.47	0.07	0.77	1.42	1.24	2.28	0.20	13.75	101.0
WH16	35	24	49	137	15	30	223	61.0	2.84	12.73	7.16	0.24	0.45	0.69	0.71	2.22	0.16	12.34	100.5
WH17	35	24	44	137	15	31	223	65.9	2.29	12.18	5.35	0.15	0.55	1.17	1.14	2.42	0.11	8.29	99.6
WH18	35	24	57	137	18	19	110	60.0	0.51	15.27	4.31	0.16	0.40	0.41	0.52	3.27	0.08	16.96	101.9
WH19	35	24	16	137	17	24	410	61.5	0.53	15.32	3.79	0.10	0.30	0.46	1.05	2.78	0.07	14.18	100.1
WH20	35	20	44	137	15	3	223	60.6	2.11	14.25	6.47	0.10	0.79	1.52	0.91	1.94	0.12	10.99	99.8
WH21	35	21	55	137	16	3	410	65.2	0.63	15.07	4.22	0.09	0.68	1.40	1.55	2.32	0.17	9.34	100.7
WH22	35	22	4	137	15	56	223	62.3	0.50	13.25	3.66	0.08	0.80	1.90	2.08	2.37	0.16	13.40	100.5
WH23	35	22	19	137	16	19	223	59.6	0.76	13.86	4.96	0.15	0.84	2.30	1.52	1.85	0.15	14.74	100.7
WH24	35	22	56	137	17	11	223	63.7	0.67	14.55	5.74	0.16	0.50	0.81	0.51	2.44	0.10	12.31	101.5
WH25	35	22	55	137	16	56	223	63.4	0.87	14.74	5.81	0.13	0.48	1.16	1.10	2.19	0.11	10.00	100.0
WH26	35	23	29	137	17	21	223	62.2	0.70	13.91	5.76	0.13	0.67	1.10	1.14	2.48	0.12	13.32	101.5
WH27	35	23	18	137	17	32	223	64.4	0.59	15.12	4.45	0.08	0.78	1.69	1.85	2.32	0.07	8.57	99.9
WH28	35	23	8	137	17	41	210	69.9	0.34	7.52	4.45	3.45	0.38	0.41	0.15	1.14	0.22	12.42	100.3
WH29	35	23	6	137	17	40	210	64.4	0.57	10.66	5.32	0.49	0.44	0.57	0.24	1.45	0.29	15.78	100.2
WH30	35	23	52	137	17	32	223	63.8	0.72	13.36	5.09	0.13	0.58	1.25	1.38	2.69	0.11	11.06	100.2
WH31	35	23	45	137	18	13	223	65.8	0.55	12.19	4.98	0.26	0.79	1.05	0.61	1.79	0.18	12.68	100.8
WH32	35	24	2	137	17	48	223	65.0	0.61	13.42	4.39	0.11	0.69	1.23	1.04	2.12	0.14	12.43	101.2
WH33	35	23	50	137	18	58	920	71.1	0.32	12.49	2.43	0.07	0.37	1.42	2.47	2.47	0.07	5.67	98.8
WH34	35	23	55	137	18	59	920	72.2	0.36	11.28	3.43	0.15	0.45	0.55	0.77	2.42	0.16	6.96	98.7
WH35	35	24	3	137	18	59	465	70.5	0.62	13.40	2.65	0.09	0.32	1.82	2.89	2.48	0.08	3.90	98.7
WH36	35	21	30	137	17	29	210	68.5	0.52	13.49	2.91	0.09	0.43	1.40	2.02	2.32	0.12	8.30	100.1
WH37	35	21	5	137	17	2	223	66.8	0.60	12.89	3.35	0.06	0.53	0.72	0.84	2.52	0.21	10.96	99.5
WH38	35	21	21	137	15	53	223	69.9	0.56	13.03	3.26	0.08	0.63	1.33	1.67	2.07	0.08	6.56	99.2
WH39	35	23	4	137	16	26	223	57.2	0.77	14.38	6.40	0.16	0.87	1.44	0.83	2.02	0.33	17.14	101.5
WH40	35	23	18	137	16	34	223	64.5	1.07	12.83	4.90	0.10	0.73	1.57	1.43	2.31	0.10	8.96	98.5
WH41	35	23	38	137	16	43	120	57.3	0.81	13.74	6.17	0.44	1.07	1.71	1.19	1.90	0.24	14.79	99.4
WH42	35	24	20	137	18	9	110	65.7	0.39	14.23	3.12	0.08	0.46	1.51	2.22	2.63	0.16	9.05	99.5
WH43	35	20	32	137	15	43	223	62.4	0.96	15.59	4.97	0.12	0.62	1.24	0.95	2.19	0.20	11.22	100.5
WH44	35	20	28	137	15	45	210	64.1	0.57	15.16	4.66	0.13	0.72	1.39	1.96	2.22	0.16	9.70	100.8
WH45	35	20	44	137	16	3	210	61.2	0.68	16.36	5.10	0.12	0.90	1.81	1.52	1.97	0.25	12.27	102.2
WH46	35	20	44	137	16	40	223	62.7	0.82	15.43	3.91	0.10	0.40	1.25	2.19	2.50	0.24	10.77	100.3
WH47	35	21	19	137	16	54	410	63.7	0.48	16.70	3.54	0.10	0.50	1.50	2.19	2.11	0.18	9.85	100.9
WH48	35	21	36	137	17	28	920	70.5	0.61	11.24	4.00	0.34	0.41	0.96	1.58	2.00	0.27	8.26	100.2
WH49	35	21	59	137	17	30	920	67.7	0.81	12.26	4.49	0.19	0.52	0.65	0.39	1.86	0.24	12.59	101.7
WH50	35	21	59	137	17	34	920	66.0	0.37	11.11	6.30	0.27	0.49	0.87	1.26	1.90	0.29	12.42	101.2
WH51	35	21	25	137	17	30	223	63.4	0.41	16.30	3.30	0.08	0.48	1.81	2.85	2.16	0.16	10.04	101.0
WH52	35	21	29	137	18	3	210	63.8	0.39	16.49	3.12	0.09	0.55	2.40	3.72	1.83	0.08	8.22	100.7
WH53	35	22	17	137	18	18	920	78.1	0.24	10.70	1.52	0.04	0.24	0.91	2.28	2.42	0.05	3.58	100.1
WH54	35	22	20	137	18	18	920	74.0	0.39	10.33	3.06	0.14	0.42	0.35	0.45	1.97	0.08	10.63	101.8
WH55	35	24	6	137	20	11	500	65.9	0.32	14.57	3.39	0.12	0.44	1.48	2.14	2.62	0.17	9.93	101.1
WH56	35	24	16	137	20	50	465	53.4	0.69	18.82	6.28	0.27	0.85	1.58	0.71	2.09	0.39	17.84	102.9

Appendix I-14

Sample No.	N1	N2	N3	E1	E2	E3	ID	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total
WH57	35	24	12	137	20	54	500	60.5	0.42	15.48	3.96	0.14	0.51	1.70	2.07	2.43	0.21	14.23	101.6
WH58	35	23	27	137	21	35	465	64.7	0.47	15.20	3.54	0.09	0.50	1.73	2.32	2.63	0.16	9.85	101.1
WH59	35	23	29	137	21	34	465	66.3	0.36	16.85	2.77	0.08	0.37	2.51	4.23	2.00	0.06	4.91	100.4
WH60	35	23	4	137	21	51	431	62.2	0.49	17.80	3.87	0.08	0.51	2.43	3.60	2.21	0.07	7.93	101.2
WH61	35	23	7	137	21	54	431	64.0	0.50	14.63	3.90	0.11	0.51	1.47	1.67	2.95	0.17	11.30	101.2
WH62	35	22	55	137	21	24	431	62.6	0.35	18.74	3.33	0.07	0.46	2.79	4.39	1.86	0.07	6.99	101.6
WH63	35	22	56	137	21	17	431	61.0	0.36	17.65	3.71	0.12	0.44	2.30	3.85	1.87	0.11	9.14	100.6
WH64	35	22	38	137	21	10	431	62.2	0.45	18.87	3.77	0.11	0.47	2.53	4.03	2.06	0.07	6.90	101.5
WH65	35	22	39	137	21	2	431	61.9	0.27	18.01	2.88	0.07	0.43	2.37	4.26	1.94	0.07	8.57	100.8
WH66	35	22	40	137	20	49	431	68.1	0.51	16.58	2.29	0.07	0.34	2.49	4.55	1.85	0.03	3.12	99.9
WH67	35	22	19	137	20	36	431	61.9	0.26	18.12	2.76	0.05	0.42	2.19	4.28	2.06	0.06	8.55	100.6
WH68	35	22	21	137	20	36	431	65.4	0.47	16.45	2.42	0.07	0.32	2.26	4.16	2.18	0.04	5.58	99.4
WH69	35	22	18	137	21	4	431	63.9	0.44	18.15	2.99	0.06	0.38	2.90	4.53	1.92	0.04	5.49	100.8
WH70	35	22	12	137	20	53	431	52.7	0.34	19.17	3.88	0.09	0.55	2.31	3.36	1.78	0.14	18.28	102.6
WH71	35	21	56	137	20	20	431	65.2	0.24	19.02	2.41	0.05	0.34	3.19	5.37	1.86	0.04	2.62	100.3
WH72	35	21	58	137	20	20	431	68.5	0.37	16.61	2.25	0.06	0.36	2.50	4.45	2.03	0.03	2.93	100.1
WH73	35	20	58	137	21	40	431	54.5	0.45	18.99	4.46	0.14	0.48	1.82	2.36	2.40	0.14	15.26	101.0
WH74	35	21	16	137	21	24	431	62.9	0.36	18.24	3.42	0.09	0.41	2.33	3.68	2.39	0.07	7.81	101.7
WH75	35	20	44	137	22	3	210	77.0	0.58	10.29	2.38	0.09	0.32	0.97	1.26	2.79	0.08	3.77	99.6
WH76	35	20	56	137	22	1	223	60.7	0.75	17.43	4.81	0.11	0.70	1.92	2.54	2.58	0.26	9.85	101.6
WH77	35	20	26	137	18	17	431	57.9	0.38	17.35	5.20	0.40	0.50	2.06	2.99	2.22	0.19	12.90	102.1
WH78	35	20	26	137	19	48	431	61.6	0.40	17.02	3.73	0.13	0.53	1.99	3.07	2.36	0.16	10.92	101.9
WH79	35	21	52	137	15	52	223	64.7	0.87	14.59	3.99	0.12	0.62	1.35	1.77	2.48	0.19	10.16	100.8
WH80	35	25	2	137	19	3	223	58.4	1.16	14.42	5.61	0.23	0.62	1.07	0.75	2.50	0.27	14.77	99.8
WH81	35	20	33	137	21	5	431	52.3	0.56	20.39	7.02	0.92	0.75	1.66	1.65	1.99	0.48	14.83	102.5

1) N1, N2, and N3 represent degree, minute, and second of the north latitude, respectively. The latitude is referred to the International Terrestrial Reference Frame (ITRF).
2) E1, E2, and E3 represent degree, minute, and second of the east longitude, respectively. The longitude is referred to the International Terrestrial Reference Frame (ITRF).
3) The ID number is referred to Table 1.
4) Loss on ignition
5) Name of geological map
6) The sediment samples were already analyzed by the ICP-AES and AAS methods in [1] (Tanaka et al., 1994), [2] (Tanaka et al., 1995), [3] (Tanaka et al., 1996), [4] (Togami et al., 1997), and [5] (Yamamoto et al., 1998).

Appendix II Analytical results of 53 stream sediments collected from the same site of 07D01 (35° 11' 43" N, 137° 6' 8" E). The sample of d94D01 is the same as 07D01 in Tanaka et al. (1994).

Sample No.	SiO_2	TiO_2	Al_2O_3	total-Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	LOI	Total	
d94D01	76.9	0.39	11.15	1.25	0.04	0.34	1.37	2.76	2.52	0.03	0.94	97.7	[1]
d95A01	68.2	0.27	14.39	2.12	0.10	0.49	1.36	2.66	2.67	0.12	4.34	96.7	[2]
d95A02	72.1	1.12	11.50	2.14	0.07	0.39	1.30	2.46	2.55	0.08	2.14	95.9	[2]
d95A03	70.6	1.59	11.61	2.60	0.09	0.42	1.32	2.43	2.68	0.08	2.10	95.5	[2]
d95B01	73.3	0.43	11.62	1.54	0.06	0.37	1.27	2.62	2.88	0.06	2.00	96.1	[2]
d95C01	73.0	0.20	12.48	1.34	0.04	0.38	1.38	2.69	2.93	0.06	2.00	96.5	[2]
d95D01	71.9	0.23	12.79	1.51	0.06	0.39	1.35	2.68	2.76	0.07	2.46	96.1	[2]
d95E01	71.4	0.37	12.95	1.81	0.08	0.42	1.33	2.61	2.66	0.08	3.01	96.7	[2]
d96C01	73.3	0.14	12.48	1.19	0.03	0.35	1.43	2.74	3.07	0.04	1.40	96.2	[3]
d96F01	71.1	0.19	13.33	1.70	0.05	0.43	1.42	2.81	3.07	0.06	2.51	96.7	[3]
d96F02	69.0	0.23	14.48	2.18	0.06	0.50	1.48	2.87	3.39	0.08	3.43	97.7	[3]
d96F03	71.6	0.21	12.89	1.58	0.04	0.41	1.40	2.70	2.89	0.06	2.24	96.0	[3]
d97C01	71.6	0.48	13.01	1.87	0.07	0.47	1.87	2.38	3.08	0.07	1.99	96.9	
d98E01	72.8	0.71	11.47	1.52	0.05	0.31	1.70	2.24	2.94	0.03	0.85	94.6	
d99A01	68.7	0.12	14.99	1.58	0.04	0.32	1.23	3.86	2.74	0.02	2.76	96.4	
d99B01	74.6	0.29	11.81	1.31	0.04	0.33	1.14	3.21	2.47	0.03	1.36	96.5	
d99C01	69.3	0.26	14.69	1.86	0.06	0.39	1.35	3.33	2.61	0.04	3.21	97.1	
d99D01	66.9	0.47	14.17	3.50	0.08	0.87	1.96	2.91	2.09	0.08	4.27	97.3	
d99E01	71.3	0.14	14.22	1.52	0.04	0.34	1.15	3.93	2.68	0.02	2.32	97.6	
d99F01	71.5	0.08	13.49	1.19	0.03	0.28	1.03	4.30	2.41	0.02	1.94	96.3	
d00A01	75.7	1.37	9.32	2.68	0.10	0.56	1.34	2.65	1.96	0.03	0.87	96.6	
d00B01	73.2	0.31	12.01	1.77	0.05	0.46	1.35	3.03	2.31	0.03	1.86	96.4	
d00C01	73.3	0.90	11.29	2.34	0.07	0.53	1.35	2.92	2.19	0.04	1.71	96.6	
d00D01	75.3	0.69	10.65	2.06	0.07	0.52	1.38	2.89	2.22	0.03	1.18	97.0	
d00E01	74.1	0.30	12.13	1.80	0.05	0.50	1.41	3.07	2.42	0.03	1.81	97.7	
d00E02	73.5	0.20	12.58	1.70	0.04	0.49	1.40	3.20	2.90	0.03	1.93	98.0	
d00F01	74.2	1.15	10.69	2.33	0.08	0.49	1.43	2.92	2.21	0.03	1.24	96.8	
d01A01	60.6	0.74	17.12	4.21	0.20	0.59	1.31	2.48	2.12	0.18	8.97	98.5	
d01A02	57.4	0.35	18.43	3.92	0.30	0.60	1.22	2.54	2.12	0.20	10.81	97.9	
d01B01	68.2	0.68	13.67	3.06	0.15	0.59	1.56	2.60	2.36	0.09	4.48	97.4	
d01C01	72.1	0.33	12.53	2.42	0.10	0.55	1.54	2.64	2.32	0.07	3.33	97.9	
d01D01	62.2	0.35	16.42	3.36	0.23	0.58	1.36	2.55	2.18	0.17	8.43	97.9	
d01D02	60.6	0.36	17.17	3.58	0.24	0.61	1.34	2.54	2.20	0.18	9.29	98.1	
d01E01	60.8	0.34	16.74	3.72	0.11	0.60	1.32	2.52	2.12	0.23	9.59	98.1	
d02A01	68.7	0.41	14.99	2.41	0.07	0.39	1.49	2.80	2.99	0.05	3.79	98.1	
d02B01	65.8	0.25	16.28	2.60	0.07	0.41	1.55	2.85	3.12	0.06	4.70	97.7	
d02B02	68.6	0.22	14.91	2.20	0.06	0.38	1.48	2.91	2.98	0.04	3.61	97.4	
d02C01	76.2	0.40	11.38	1.53	0.05	0.28	1.29	2.74	2.59	0.02	1.67	98.1	
d02C02	66.4	0.34	15.62	2.58	0.07	0.40	1.51	2.77	3.18	0.06	4.53	97.5	
d02D01	74.1	0.33	12.63	1.63	0.05	0.29	1.38	2.87	2.90	0.03	1.76	97.9	
d02E01	59.8	0.73	16.22	6.20	0.11	1.08	3.66	1.70	3.22	0.15	4.56	97.4	
d02F01	72.9	0.36	13.05	1.87	0.06	0.32	1.39	2.81	2.86	0.03	2.45	98.1	
d03B01	76.4	0.13	12.66	1.30	0.03	0.23	1.24	3.22	2.83	0.02	1.55	99.6	
d03C01	67.7	0.18	16.94	2.25	0.05	0.35	1.44	3.28	3.09	0.03	4.12	99.4	
d04A01	76.3	0.24	12.22	1.36	0.04	0.25	1.27	3.17	2.45	0.02	1.15	98.5	
d04A02	72.0	0.12	14.62	1.37	0.04	0.25	1.46	3.24	3.08	0.02	1.84	98.0	
d04B01	75.4	0.30	12.46	1.38	0.04	0.24	1.30	3.24	2.54	0.02	1.20	98.1	
d04B02	75.6	0.67	11.56	1.78	0.06	0.29	1.24	3.15	2.29	0.02	1.05	97.7	
d04C01	75.9	0.36	11.84	1.44	0.05	0.24	1.24	3.21	2.37	0.02	1.12	97.8	
d04C02	75.7	0.69	11.28	1.79	0.06	0.27	1.23	3.11	2.28	0.02	1.09	97.5	
d04D01	75.7	0.40	11.68	1.59	0.05	0.28	1.25	3.16	2.32	0.02	1.12	97.6	
d04D02	74.9	0.23	12.74	1.34	0.04	0.22	1.31	3.26	2.63	0.02	1.47	98.2	
d04E01	75.9	0.24	12.54	1.31	0.04	0.22	1.30	3.24	2.60	0.02	1.30	98.7	