Table S1. Occurrence chart of diatoms from the Holocene sediments exposed on the Shinjima Island.

Location (Columnar section)	Location 1														Location 2						Location 3		Location 4				
Unit	Southern Shinjima Pumice			Upper Shinjima Silt Bed											Shinjima Pumice						Lower Shinjima Silt Bed		Shinjima Pumice			Up.Shinjima Silt Bed	
						Sz-13																				Sz-13	
Type of diatom assemblage	*F*			*M*		*FM*		*M*							*F*						*M*		*F*			*M*	*FM*
Sample number	15012010	15012009	15012007	15012005	12071608	12071607	12071606	12070401-1	12070401-2	12070401-3	12070401-4	12070401-5	12070401-6		12050401	12050402	12050403	12050404	12050405	12050406	12070402	12050411	SJ12-01	SJ12-09	12050409	12071602	12071603
Preservation	P	P	P	G	G	P	P	G	P	P	P	M	M		P	P	P	P	P	P	M	G	P	P	P	G	P
Abundance	C	R	R	A	A	C	C	A	C	R	R	C	R		R	R	R	R	R	R	A	A	C	R	R	C	R
Volcanic glasses	A	A	A	R	R	A	R	R	R	A	R	R	R		A	A	A	A	A	A	R	R	A	A	A	R	A
Marine (pelagic, planktonic)	**0**	**4**	**3**	**25**	**16**	**18**	**24**	**18**	**9**	**27**	**18**	**11**	**14**		**3**	**1**	**7**	**3**	**4**	**1**	**22**	**16**	**5**	**0**	**0**	**23**	**9**
Actinocyclus cf. *curvatulus* C.Janisch	-	-	-	-	-	-	2	4	1	-	-	-	-		-	-	-	1	-	-	-	+	-	-	-	-	-
Coscinodiscus radiatus Ehrenb.	+	2	-	1	3	5	-	1	4	12	8	3	2		1	1	2	-	1	1	3	3	-	+	-	1	1
Coscinodiscus spp.	-	-	-	-	-	-	-	-	-	1	-	2	1		-	-	-	-	-	-	-	-	1	-	-	-	-
Fragilariopsis doliolus (G.C.Wall.) Medlin & P.A.Sims	-	-	-	-	-	-	-	-	-	-	-	+	-		-	-	-	-	-	-	-	-	-	-	-	-	-
Alveus marinus (Grunow) Kaczmarska & G.A.Fryxell	-	-	-	-	-	-	-	-	-	1	+	-	-		-	-	-	-	-	-	-	+	-	-	-	-	-
Nitzschia bicaptata Cleve	-	-	-	-	-	-	+	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
N. sicula (Castracane) Hustedt	-	-	-	-	1	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	+	-	-	-	+	-
Rhizosolenia bergonii Perag.	-	-	-	-	-	-	-	-	-	-	-	-	1		-	-	-	-	-	-	1	-	-	-	-	-	1
R. sp.	-	-	-	9	9	12	7	2	-	9	4	4	1		-	-	-	-	-	-	9	7	-	-	-	12	3
R. styliformis Brightw.	-	-	-	-	-	-	-	+	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
Shionodiscus oestrupii (Ostenf.) A.J.Alverson et al.	-	-	-	4	-	-	-	3	1	-	-	-	5		-	+	-	-	2	-	4	1	-	-	-	3	-
Thalassiosira eccentrica (Ehrenb.) Cleve	+	2	3	10	3	1	7	8	3	4	6	2	3		2	-	3	1	1	-	5	5	2	-	-	5	4
T. sp. 2	-	-	-	-	-	-	8	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	1	-
T. spp.	-	-	-	1	-	-	-	-	-	-	-	-	1		-	-	2	1	-	-	-	-	2	-	-	1	-
Marine (transitional, planktonic)	**0**	**2**	**0**	**43**	**64**	**47**	**26**	**67**	**81**	**64**	**70**	**76**	**64**		**6**	**2**	**5**	**2**	**2**	**0**	**35**	**54**	**4**	**1**	**1**	**62**	**15**
Thalassionema bacillaris (Heiden) Kolbe	-	+	-	5	3	5	-	2	1	1	1	+	1		-	-	-	-	-	-	1	12	-	+	-	6	2
T. nitzschioides (Grunow) Merekoschkowsky s. l.	+	2	-	38	61	42	26	65	80	63	69	76	63		6	2	5	2	2	+	34	42	4	1	1	56	13
Thalassiothrix longissima Cleve & Grunow	-	-	-	-	+	+	+	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
Marine (shelf, planktonic to benthic)	**0**	**3**	**0**	**27**	**15**	**3**	**9**	**2**	**3**	**4**	**6**	**1**	**6**		**0**	**2**	**4**	**1**	**0**	**0**	**28**	**24**	**0**	**1**	**1**	**9**	**4**
Actinocyclus octonarius Ehrenb.	-	3	-	2	1	-	2	-	-	-	-	-	-		-	2	-	-	-	-	2	5	-	1	1	2	3
Actinoptychus senarius (Eherenb.) Ehrenb.	-	-	-	2	3	3	3	2	1	2	2	1	4		+	-	1	-	-	-	3	8	-	-	-	4	1
A. vulgaris Schum.	-	-	-	-	8	-	1	+	-	-	-	-	-		-	-	3	1	-	-	1	4	-	-	-	+	-
Paralia sulcata (Ehrenb.) Cleve	-	-	-	18	3	-	-	-	1	2	4	-	-		-	-	-	-	-	-	22	6	-	-	-	3	-
Delphineis surirella (Ehrenb.) G.W.Andrews	-	-	-	-	-	-	1	-	-	-	-	-	-		-	-	-	-	-	-	-	+	-	-	-	-	-
Diploneis bombus Ehrenb.	-	-	-	5	+	-	2	-	1	-	-	-	1		-	-	-	-	-	-	+	1	-	-	-	+	-
Tetracyclus aspera (Ehrenb.) Cleve	-	-	-	-	+	-	-	-	-	-	-	-	1		-	-	-	-	-	-	-	-	-	-	-	+	-
Brackish to marine (planktonic)	**0**	**0**	**0**	**0**	**2**	**0**	**3**	**8**	**4**	**2**	**6**	**4**	**4**		**0**	**0**	**0**	**1**	**1**	**1**	**2**	**3**	**0**	**0**	**2**	**2**	**1**
Cyclotella cf. *litoralis* Lamge & Syvertsen	-	-	+	-	2	-	3	8	4	2	6	4	4		-	-	-	1	1	1	2	3	-	-	2	2	1
Brackish to freshwater (planktonic)	**12**	**6**	**10**	**2**	**0**	**16**	**13**	**3**	**2**	**1**	**0**	**7**	**7**		**14**	**10**	**12**	**6**	**7**	**13**	**5**	**1**	**8**	**12**	**4**	**0**	**21**
Cyclostephanos dubius (Fricke) Round	-	-	-	-	-	-	-	-	1	1	-	2	2		-	-	-	-	-	-	1	1	-	-	-	-	-
Cyclotella meneghiniana Kütz.	-	-	2	1	-	10	6	-	1	-	-	3	1		1	2	4	3	-	2	2	-	-	1	-	-	3
Cyclotella ocellata Pant.	2	2	-	-	-	-	2	1	-	-	-	-	-		4	3	3	3	-	1	-	-	1	+	-	-	3
Cyclotella radiosa (Grun.) Lemmermann	10	4	8	1	-	6	5	2	-	-	-	2	4		9	5	5	-	7	10	2	+	7	11	4	-	15
Freshwater (planktonic)	**88**	**85**	**87**	**1**	**3**	**16**	**25**	**2**	**1**	**2**	**0**	**1**	**5**		**77**	**85**	**71**	**87**	**85**	**85**	**8**	**2**	**82**	**86**	**92**	**3**	**49**
Aulacoseira spp.	87	84	87	1	1	13	25	-	1	1	+	-	4		77	83	70	87	84	85	6	2	81	86	92	-	46
Discostella sp.	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	1	-	-	-	-	-	-	-	-	-	-
Stephanodiscus sp.	1	1	-	-	2	3	-	2	-	1	-	1	1		-	2	-	-	1	-	2	-	1	+	-	3	3
Freshwater (benthic)	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**		**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**1**
Achnanthes sp.	-	-	-	1	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	1	-	-	1	-
Amphora sp.	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	1	-	-	-	-	-	-	-	-
Cymbella sp.	-	-	-	1	-	+	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	1
Epithemia sp.	-	-	+	-	-	-	-	+	-	-	-	-	-		-	-	1	-	-	-	-	-	-	+	-	-	-
Synedra sp.	-	-	-	-	-	+	-	-	-	-	-	-	-		+	-	-	-	-	+	-	-	-	-	-	-	-
Total number of valves counted	100	100	100	100	100	100	100	100	100	100	100	100	100		100	100	100	100	100	100	100	100	100	100	100	100	100
Resting spore of *Chaetoceros* (marine)	0	1	0	16	9	7	30	7	16	61	36	16	27		0	1	3	0	0	0	18	4	+	0	0	14	5

Occurrence, +: present, -: not encountered. **Preservation**, G: good, M: moderate, P: poor. Abundance, A: abundant, C: common, R: rare.

Volcanic glasses, A: abundat, R: rare.

Type of diatom assemblage

F: Freshwater diatom assemblage with very rare marine diatoms.

FM: Mixed assemblage of freshwater and marine diatoms.

M: Marine diatom assemblage with rare brackish to freshwater diatoms.

Table S2. List of molluscan fossils collected from the Moeshima Shell Bed, location 1 and the Lower Shinjima Silt Bed, location 3.

Moeshima Shell Bed (Location 1)	
Adamnestia japonica (A. Adaams) クダマキガイ	*Meiocardia tetragona* (A. Adams)　コウホネガイ
Anachis cf. *amirantium* (Smith) ベニシワマツムシガイ？	*Mitrella burcardi* (Dunker)　コウダカマツムシロガイ
Anisocorbula scaphoides (Hinds) ツマベニガイ	*Nebularia inquinata* (Reeve)　フデガイ
Antalis weinkauffi (Dunker) ツノガイ	*Nemocardium bechei* (Reeve)　キンギョガイ
Baryspira rubiginosa albocallosa (Lischke) リュウグウボタルガキ	*Neopycnodonta musashiana* (Yokoyama)　ベッコウガキ
Bathyliotina armata (A. Adams) ミヒカリヒメカタベガイ	*Paphia schnellina* (Dunker)　オオスダレガイ
Benimakia cf. *fastiginda* (Reeve) ベニマキガイ	*Paraclathurella gracilent* a (Smith)　ヌノメツブ
Cancilla Isabella (Swainson) カラフデガイ	*Pecten sinens* is Sowerby　ハナイタヤ
Cardita nodulosa Lamarck モモイロトマヤガイ	*Phlyctiderm japonicum* (Pilsbry)　ヤエウメノハナガイ
Cerithium kobelt i Dunker　コオロギガイ	*Phos hirasei* Sowerby　ヒメトクサバイ
Chlamys irregularis (Sowerby)　ナデシコガイ	*Pitar noguchii* Home　シロウネハマグリ
Cleobula quercina (Solander)　ロウソクガイ	*Pteropurpura ploraton* (A. Adams)　タカノハヨウラクガイ
Cryptopecten vesiculosus (Dunker）ヒヨクガイ	*Reticunassa fratercula* (Dunker)　クロスジムシロガイ
Ctenocardia victor (Angas)　アサヒザルガイ	*Sarepta speciose* A. Adams　ヒラソデガイ
Elaeocyma (*Splendrillia*) *braunsi* (Yokoyama)　リンドウクダマキガイ	*Semele zubuensis* (Hanley)　アサジガイ
Emarginula fragilis (Yokoyama)　バグタエスソキレガイ	*Serpulobis xenophora* Habe　リュウグウカズラ
Euspira plicispira (Kuroda)　キザミタマツメタガイ	*Spinearca fausta* (Habe)　モエシマミミガイ
Inqusitor cf. flavidula (Lamarck)　タケノコシャジクガイ？	*Syrnola* (*Colsyrnola*) *toshiman* a (Yokoyama)　トシマホソクチキレ
Limaria hakodatensis (Tokunaga)　フクレユキミノガイ	*Telasco sufflatus* (Gould)　ヨフバイの幼形
Lucinoma annulata (Reeve)　ツキガイモドキ	*Tonna luteostoma* (Kuster)　ヤツシロガイ
Lutraria sieboldii Deshayes　ヒラカモジイガイ	*Turbonilla* (*Paramornula*) *semicolorata* Yokoyama　ソメワケイトカゲギリ
Macoma nipponica (Tokunaga)　ニホンシラトリガイ	*Xenoroturris millepunctata* (Sowerby)　カスリクダマキガイ
Meiocardia lamarcki (Reeve)　テリコウボネガイ	
Collected by Azusa Uryu of Kagoshima University and identified by Prof. Emeritus Kenshiro Ogasawara of Tsukuba University	

Lower Shinjima Silt Bed (Location 3)	
Acteon sibaldii (Reeve) オオシイノミガイ	*Myadora* sp.
Anomia chinensis Philippi ナミマガシワガイ	*Nemocardium* cf. *bechei* (Reeve) キンギョガイ
Cf. *Bathyamussium jeffreysi* (Smith) ハナヤツキヒガイの幼形？	*Neverita reiniana* (Dunker) ハナツメタガイ
Boreotrophon canlabrum (Reeve) ツノオリイレガイ	*Omniglypta cerina* (Pilsbry) ハリツオガイ
Crenulilimopsis oblonga (A. Adams) ナミジワシラスナガイ	*Placamen tiara* (Dillwyn) ハナガイ
Cf. *Cryptopecten vesiculosus* (Dunker) ヒヨクガイの幼生	*Phos* ? sp. トクサバイの仲間？
Euspira plispira (Kuroda) キザミタマツメタガイ	*Portlandia* cf. japonica (A. Adam) ベッコウキララガイ
Hiatella orientalis (Yokoyama) キムマトイガイ	*Sarepta japonica* A. Adams ヒラソデガイ
Lunella sp. スガイの仲間	*Tucetilla pilsbryi* (Yokoyama) ビロウドタマキガイ
Myadora fluctuosa (Golud) ミツカドカタビラガイ	*Tucetilla* sp.
Collected by Kimihiro Uchimura and Kazuhiko Kano of Kagoshima University and identified by Prof. Emeritus Kenshiro Ogasawara of Tsukuba University	

Table S3. Refractive indices of constituent minerals in the tephras from Shinjima Island.

Rock or unit name	Locality no. and name		Sample no.	Material	Orthopyroxene			Volcanic glass		
					Range	Average	n	Range	Average	n
Southern Shinjima Pumice	1	East coast of southern Shinjima Island	15012008	Pumice lapilli	1.743–1.751	1.747	5	1.499–1.504	1.501	51
					1.753–1.762	1.759	55	1.506–1.507	1.506	7
								1.509–1.512	1.511	2
				Ash	1.704–1.708	1.706	17	1.495–1.497	1.496	2
					1.709–1.712	1.710	21	1.498–1.501	1.500	25
					1.714–1.717	1.715	2	1.502–1.506	1.504	19
								1.507–1.510	1.508	14
								1.516–1.542	1.528	3
			15012009	Pumice lapilli	1.729–1.731	–	2	1.500–1.504	1.502	60
					1.746–1.756	1.752	20			
					1.757–1.763	1.761	38			
	2	East coast of middle Shinjima Island	12050408	Single pumice	1.743–1.761	1.755	60	1.498–1.511	1.506	68
	4	West coast of northern Shinjima Island	13082003	Ash	1.706–1.710	1.708	44	1.492		1
					1.717–1.718	1.717	3	1.497–1.501	1.500	37
					1.732–1.733	1.733	2	1.502–1.507	1.504	18
					1.747–1.760	1.756	11	1.508–1.510	1.509	6
			12071601	Ash	1.702–1.703	1.702	2	1.491		1
					1.706–1.712	1.708	38	1.496–1.501	1.500	32
					1.732–1.733	1.732	2	1.502–1.507	1.504	17
					1.747–1.760	1.757	18	1.508–1.510	1.509	12
Shinjima Pumice	–	Shinjima Island	–	Pumice lapilli	1.759–1.761[1)]			1.500–1.501[1)]		
					1.740–1.760[2)]			1.499–1.503[2)]		
Sz-14		–	–	Pumice lapilli	1.706–1.712[2)]			1.509–1.513[2)]		

* Refractive indices were measured by Kyoto Fission Track Co,, Ltd. according to the method of Danhara (2003) other than reported by 1) Kano et al. (1996) and 2) Machida and Arai (2003).

** Refractive indices identical to those of Sz-14 are colored in blue and those of Southern Shinjima Pumice and Shinjima Pumice are colored in red.

Table S4. Bulk chemical compositions of pumice samples collected from the Moeshima Shell Bed and Sz-12 and Sz-13 tephras at location 1.

XRF analyses in weight %

Geologic unit	Sz-13	Sz-12	Moeshima Shell Bed							
			Lower			Uppermost Lower		Middle		Upper
Material	Pumice	Pumice	Pumice	Pumice	Pumice	Pumice	Pumice	Pumice	Pumice	Pumice
Sample no.	12071607	120704-3B	16121101-01	16121101-02	16121101-03	16121101-04	16121101-05	16121101-06	16121101-07	16121101-08
SiO_2	65.48	64.08	63.64	63.47	62.91	63.49	64.95	65.28	63.13	65.00
TiO_2	0.54	0.61	0.59	0.60	0.61	0.59	0.65	0.70	0.61	0.56
Al_2O_3	15.52	14.83	15.38	15.33	15.73	15.84	15.34	15.14	15.94	15.44
FeO	4.46	5.30	4.51	5.18	5.74	5.25	5.25	5.74	5.17	4.30
MnO	0.13	0.13	0.12	0.13	0.13	0.13	0.13	0.14	0.13	0.11
MgO	1.30	1.43	1.47	1.53	1.85	1.70	1.30	1.38	1.88	1.28
CaO	4.28	4.35	4.45	4.44	5.08	5.09	4.29	4.20	5.06	4.21
Na_2O	3.69	3.47	3.53	3.57	3.47	3.53	3.81	3.88	3.46	3.66
K_2O	2.35	2.26	2.22	2.21	2.08	2.14	2.28	2.29	2.08	2.30
P_2O_5	0.13	0.15	0.13	0.14	0.14	0.14	0.16	0.19	0.14	0.14
Total	97.89	96.61	96.04	96.60	97.74	97.91	98.16	98.94	97.60	97.00
L.O.I.	1.87	2.18	2.52	2.25	1.92	1.90	1.22	1.30	1.83	3.21

Note: XRF analysis was made by Activation Lanoratories Ltd. according to a conventional glass bead method.

Bulk chemical compositions calculated to 100 weight %

Geologic unit	Sz-13	Sz-12	Moeshima Shell Bed							
			Lower			Uppermost Lower		Middle		Upper
Material	Pumice	Pumice	Pumice	Pumice	Pumice	Pumice	Pumice	Pumice	Pumice	Pumice
Sample no.	12071607	120704-3B	16121101-01	16121101-02	16121101-03	16121101-04	16121101-05	16121101-06	16121101-07	16121101-08
SiO_2	66.89	66.33	66.26	65.70	64.36	64.85	66.17	65.98	64.68	67.01
TiO_2	0.55	0.63	0.61	0.62	0.62	0.60	0.66	0.71	0.62	0.58
Al_2O_3	15.86	15.35	16.01	15.87	16.09	16.18	15.63	15.30	16.33	15.92
FeO	4.56	5.49	4.69	5.37	5.87	5.37	5.35	5.80	5.30	4.43
MnO	0.14	0.14	0.13	0.13	0.13	0.13	0.13	0.14	0.13	0.12
MgO	1.33	1.48	1.53	1.58	1.89	1.74	1.32	1.39	1.93	1.32
CaO	4.37	4.50	4.63	4.60	5.20	5.20	4.37	4.25	5.18	4.34
Na_2O	3.77	3.59	3.68	3.70	3.55	3.61	3.88	3.92	3.54	3.77
K_2O	2.40	2.34	2.31	2.29	2.13	2.19	2.32	2.31	2.13	2.37
P_2O_5	0.13	0.16	0.14	0.14	0.14	0.14	0.16	0.19	0.14	0.14

<table>
<tr><th>Geologic Unit</th><th>Yamaguchi (1915)</th><th colspan="2">Shikama (1955)</th><th>Kino et al. (1976)</th><th>Kano et al. (1996)</th><th>Okuno et al. (1998)</th><th>Kameyama et al. (2005)</th><th>Moriwaki et al. (2017)</th><th>This study</th></tr>
<tr><td rowspan="3">Post-uplifting succession</td><td rowspan="2">(not described)</td><td colspan="2" rowspan="2">(not described)</td><td>Beach sand and others</td><td>Sandy to gravelly beach sediments</td><td>Soil</td><td rowspan="3">Beach sand, soil and Sakurajima eruption products</td><td>Beach sand and gravels, and others</td><td>Beach sand and others</td></tr>
<tr><td>Fallout from Sakurajima Taisho eruption</td><td>Fallout from Sakurajima Taisho eruption</td><td>Fallout from Sakurajima Taisho eruption</td><td>Sakurajima Taisho tephra Sz-1</td><td>Sakurajima Taisho Pumice Sz-1</td></tr>
<tr><td colspan="4">Volcanic blocks from Anei submarine eruption (VB)</td><td>(not described)</td><td>(not described)</td><td>(not described)</td><td>(VB)</td></tr>
<tr><td rowspan="7">Pre-uplifting succession</td><td rowspan="3">Shell Bed</td><td rowspan="7">Moeshima Formation</td><td>Shinjima Sirasu Bed</td><td rowspan="3">Shell and Pumice Bed</td><td rowspan="2">Moeshima Shell Bed</td><td rowspan="3">Moeshima Shell Bed</td><td>Shinjima Shirasu</td><td rowspan="2">Moeshima Shell Bed</td><td rowspan="3">Moeshima Shell Bed</td></tr>
<tr><td>Moeshima Shell Bed</td><td>Moeshima Shell Bed</td></tr>
<tr><td>Moeshima Shirasu Bed</td><td>Shell-bearing pumice lapilli tuff</td><td>Moeshima Shirasu</td><td>Sz-11</td></tr>
<tr><td rowspan="3">Tuff</td><td rowspan="2"></td><td rowspan="3">Mudstone Bed</td><td>Mudstone</td><td rowspan="3">Silt with pumice beds S-AP and S-BP</td><td rowspan="3">Moeshima Silt</td><td>Dark grey silt with tephras Sz-14, Sz-13, Sz-12 and Yn</td><td>Upper Shinjima Silt Bed with tephras Sz-14, Sz-13, Sz-12 and Yn</td></tr>
<tr><td>Tuffaceous siltstone</td><td rowspan="2">Grey silt and pumice (reworked)</td><td rowspan="2">Southern Shinjima Pumice</td></tr>
<tr><td>Moeshima Shirasu Bed</td><td>Interbedded pumice lapilli tuff and tuff</td></tr>
<tr><td>Pumice Bed</td><td>Massive sandy pumice Bed</td><td>Shinjima Pumice</td><td>Shinjima Pumice</td><td>Susaki Pumice</td><td>Shinjima pyroclastic flow deposit</td><td>Shinjima Pumice</td></tr>
<tr><td>Tuff</td><td>Moeshima Silt Bed</td><td>Mudstone and pumice Bed</td><td>Pumice lapilli tuff and tuff, tuffaceous sandstone-mudstone turbidites</td><td>(not described)</td><td>Moeshima Silt</td><td>Silt and others</td><td>Lower Shinjima Silt Bed</td></tr>
</table>

Fig. S1. Comparison of previously proposed stratigraphy with the newly proposed stratigraphy

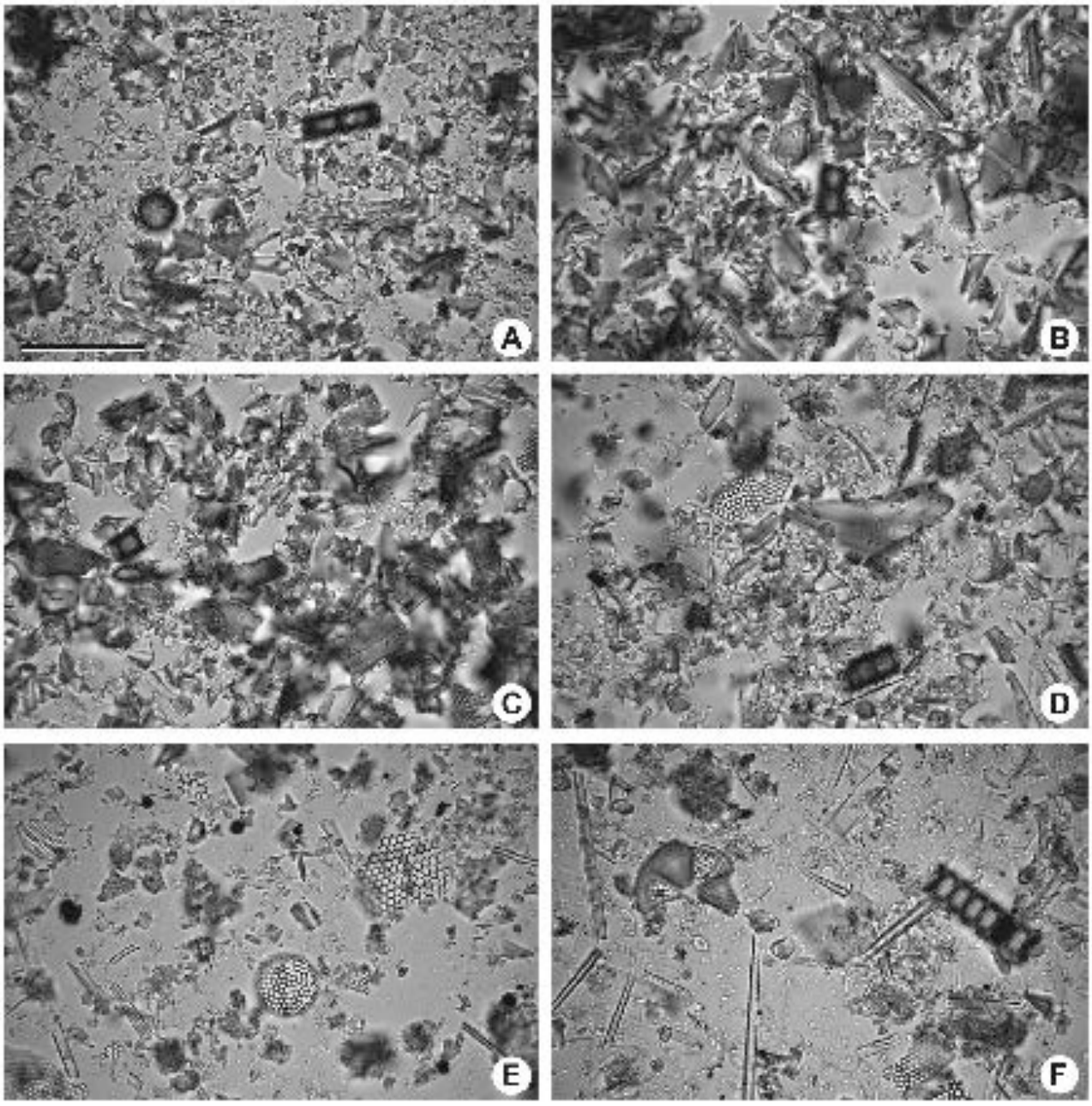

Fig. S2. Photomicrographs of diatom slides. Scale bar = 50 μm.

A = Assemblage *F* (Sample 12050402, Shinjima Pumice, Loc. 2)
B = Assemblage *F* (Sample SJ12-01, Shinjima Pumice, Loc. 4),
C = Assemblage *F* (Sample 15012009, Southern Shnjima Pumice, Loc. 1)
D = Assemblage *FM* (Sample 12071607, Sz-13 tephra, Loc. 1)
E = Assemblage M (Sample 12070401-1, Upper Shinjima Silt Bed, Loc. 1)
F = Assemblage *M* (Sample 12050411, Lower Shinjima Silt Bed, Loc. 4).

Assemblage *F* = Freshwater diatom assemblage with very rare marine diatoms,
Assemblage *FM* = Mixed assemblage of freshwater and marine diatoms,
Assemblage *M* = Marine diatom assemblage with rare brackish to freshwater diatoms.

Fig. S3. A: A photo taken on August 20, 2013, showing the succession from the Shinjima Pumice to the Moeshima Shell Bed exposed at location 4. Gravelly tuffaceous deposits is c. 2.8 m thickness. This outcrop has been also almost covered with vegetation. B: A photo taken in 1975, showing a normal fault displacing the same succession exposed at the same location. Photo coutesy of Kimihiko Oki.

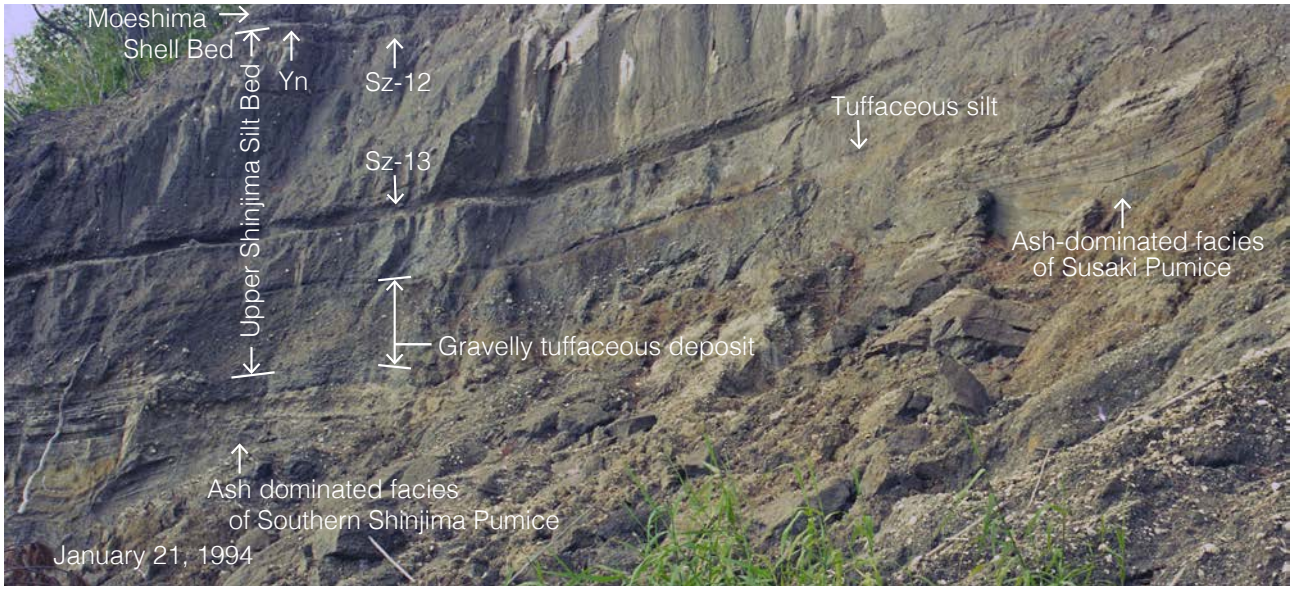

Fig. S4. A photo taken on January 21, 1994, showing the succession from the Southern Shinjima Pumice to the Moeshima Shell Bed exposed around location 1. Gravelly tuffaceous deposits is c. 1.8 m thickness. This large outcrop has been covered with embankment, talus and thick vegetation.

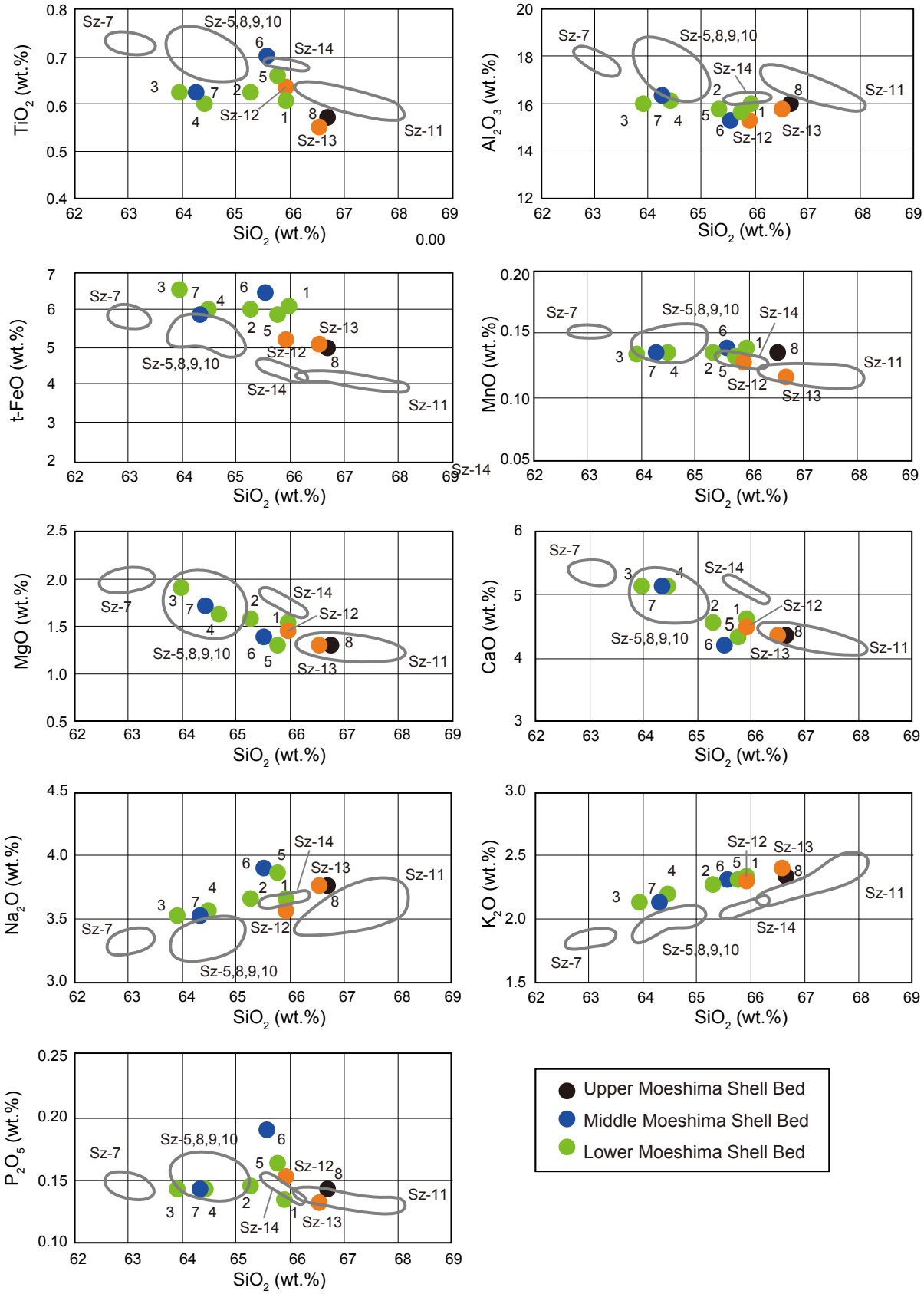

Fig. S5. Harker diagrams for the pumices from the Moeshima Shell Bed and Sz-12 and Sz-13 tephras. Numerals 1 to 8 corresponds to the last digit of sample numbers shown in Table S4. The major element compositions of Sz-5, 7, 8, 9, 10 and 11 and those of Sz-14 are adopted from Takahashi et al. (2011) and Yamamoto et al. (2013).