Supplementary Table 1: Historical eruptions of volcanoes on Matua Island (Sarychev Peak) and Simushir Island (others) from the Global Volcanism Program Database

Volcano	**Date**	**VEI^**	**Description**
Sarychev Peak	10/2010	2?	mild ash eruption
Sarychev Peak	6/2009	4*	12-km high cloud of ash; pyroclastic flows; lava flows
Sarychev Peak	1/1989	1?	ash eruption
Sarychev Peak	10/1986	?	lava flow and gas emission
Sarychev Peak	10/1976	2	ash emission and lava flows
Sarychev Peak	12/1965	2	mild ash eruption
Sarychev Peak	8/1960	3	5-km high cloud of ash
Zavaritzki	11-12/1957	3	explosive eruption; lava flows; lava dome extrusion; mudflows
Sarychev Peak	8-10/1954	2	lava dome extrusion
Sarychev Peak	9/1946	4	ash; pyroclastic flows; lava flows; tsunami
Goriaschaia Sopka	1944	2	explosive eruption?
Sarychev Peak	2/1930	3	pyroclastic flows
Sarychev Peak	2/1928	2	explosive eruption
Sarychev Peak	?/1927	2?	*unknown*
Zavaritzki	1923 ± 8	1	explosive eruption; lava dome extrusion
Sarychev Peak	1/1923	2	explosive eruption
Goriaschaia Sopka	6/1914	2	explosive eruption
Goriaschaia Sopka	1883	1	lava dome extrusion
Goriaschaia Sopka	1881	2	explosive eruption; lava flow
Sarychev Peak	1879	0	lava flows
Goriaschaia Sopka	1849	2	explosive eruption
Goriaschaia Sopka	1842	3?	explosive eruption
Prevo Peak	1825 ± 25	2	explosive eruption
Sarychev Peak	1805	?	*unknown*
Prevo Peak	1765 ± 5	3	explosive eruption; pyroclastic flows
Sarychev Peak	1765 ± 5	2?	explosive eruption
Milne		*no historical eruptions*	
Uratman		*no historical eruptions*	

^VEI stands for the Volcanic Explosivity Index, a logarithmic scale accounting for the volume of material ejected during eruptions

? Indicates large error bars on the estimated VEI

* SVERT (Sakhalin Volcano Emergency Response Team) recently reduced the VEI of this eruption to 3

Supplementary Table 2: Estimated ages of volcanic tephra on Matua using radiocarbon ages from the upper portion of excavation 106.

Description	**Thickness (cm)**	**Peat thickness between tephra (cm)**	**Calibrated age from radiocarbon sample**	**Sedimentation rate (cm/yr) between known dates**	**Age (using standard deviation)**
C4	8.6		1655-1707 AD (18%) **1718-1826 AD (46%)** 1832-1886 AD (13%) 1912 AD-present (18%)	0.0094-0.0157	
tsunami deposit	0.4	0			
SC5	1				**n/a**
peat tsunami deposit peat	3 0.5 1	4			
C7	4.5				**1390-1480 AD**
peat*	1	1			
SC8	18		**1296-1400 AD**		

Supplementary Table 3: Estimated ages of volcanic tephra on Matua using radiocarbon ages and the assumption of steady peat accumulation rates from excavation 106.

Description	Thickness (cm)	Peat thickness between tephra (cm)	Calibrated age from radiocarbon sample	Sedimentation rate (cm/yr) between known dates			Estimated age using rates from:			Age (using standard deviation)
							SC8-S12	SC8-UsKr	SC8-CKr	
SC8	18		**1296-1400 AD**	0.0091-0.0116	0.0085-0.0098	0.0078-0.0087				
peat	0.5	0.5								
S9	0.7						1240-1350^ AD	1240-1350^ AD	1230-1340^ AD	**1240-1350 AD**
peat	1	5.5								
tsunami deposit	0.3									
peat	1									
tsunami deposit	0.5									
peat	1.5									
peat with some tsunami deposit lenses	1									
peat	1									
SC10	2.5						695-825 AD	595-790 AD	530-710 AD	**615-770 AD**
peat	0.8	1.3								
tsunami deposit	1.2									
peat	0.5									
possible tephra	0.5									
peat	0.5	0.5								
S11	1						515-655 AD	450-540 AD	360-450 AD	**410-590 AD**
peat	1.2	1.7								
tsunami deposit	0.8									
peat	0.5									
tsunami deposit	1									
possible tephra	1									
peat	1	1								
S12	1.5		**244-394 AD**							
peat	1.5	1.5								
UsKr	1		**4 BC-75 AD**							
possible tephra	0.5	2#								
sandy peat	2.5									
CKr	1		**386-311 BC**							

^ calculated only projecting downwards from SC8 tephra

 # subtracted 0.5 cm for sandiness

Supplementary Table 4: Estimated ages of volcanic tephra on Matua using radiocarbon ages and the assumption of steady peat accumulation rates from excavation 106.

Description	Thickness (cm)	Peat thickness between tephra (cm)	Calibrated age from radiocarbon sample	Sedimentation rate (cm/yr) between known dates	Age (using standard deviation)
Sar-1	19.5		**490-400 BC**	0.017-0.024	
possible tephra	1.5	5.7			
tsunami deposit	0.3				
peat	1.2				
sandy peat	5				
tsunami deposit	0.5				
C16	3.5				**780 to 690 BC**
sandy peat	7	11#			
rocky peat	5				
sand	1				
S17	1		**1395-1195 BC**		

 # subtracted 1 cm for rocks

Supplementary Table 5: Estimated ages of volcanic tephra on Simushir using radiocarbon ages and the assumption of steady peat accumulation rates from excavation 109.

Layer (tephra or peat)	Total peat thickness (cm)	Calibrated age from radiocarbon sample	Sedimentation rate (cm/yr) between known dates			Estimated age using rates from:			Age used for this study
						P-CKr	**CC-CKr**	**P-CC**	
peat	8								
P		1681-1738 AD (26%); **1803-1937 AD (69%)**$	0.0207-0.0227		0.0208-0.310				
peat	11								
CC		**1408-1448 AD (95%)**		0.0202-0.0215					
peat	8								
GT						1021-1096 AD	1020-1068 AD	1023-1190* AD	**1020-1100 AD**
peat	13								
FC						392-523 AD	390-450 AD	398-770* AD	**390-550 AD**
peat	16								
CKr		**386-311 BC (95%)**							

$ Only the younger age range is considered in this calculation

* The dates of 770 and 1190 are likely unreasonable considering the wide error range of the P date and the other solutions for the FC date.

Supplementary Table 6: Yuzhnaya Bay recurrence intervals of large tsunamis based on the modern elevation and distance inland of excavation. Analysis uses the maximum number of deposits and the average age for the tephra.

				elevation								
		all excavations		**> 5 m**			**> 7.5 m**		**Maximum # deposits**		***Average recurrence interval***	
tephra	**average date**	**max. deposits**	**average recurrence**	**P2**	**P216**	**P1**	**P216**	**P1**	**>5 m**	**>7.5 m**	***>5 m***	***>7.5 m***
C1	1945	2	32	2	0	1	0	1	2	1	*32*	*64*
C4	1775	3	57	2	0	1	0	0	2	0	*85*	-
C7	1435	3	113	2	1	3	0	2	3	2	*113*	*170*
SC8	1350	1	85	1	0	1	0	1	1	1	*85*	*85*
S11	500	2	425	0	0	2	0	2	2	2	*425*	*425*

				distance													
		all excavations		**>100 m**			**>200 m**			**>300 m**		**Maximum # deposits**			***Average recurrence***		
tephra	**average date**	**max. deposits**	**average recurrence**	**P2**	**P216**	**P1**	**P2**	**P216**	**P1**	**P216**	**P1**	**>100 m**	**>200 m**	**>300 m**	***>100 m***	***>200 m***	***>300 m***
C1	1945	2	32	2	0	1	0	0	1	0	1	2	1	1	*32*	*64*	*64*
C4	1775	3	57	2	1	3	2	1	0	0	0	3	2	0	*57*	*85*	-
C7	1435	3	113	2	3	3	2	3	3	1	2	3	3	2	*113*	*113*	*170*
SC8	1350	1	85	1	0	1	1	0	1	0	0	1	1	0	*85*	*85*	-
S11	500	2	425	0	0	2	0	0	2	0	0	2	2	0	*425*	*425*	-

Supplementary Table 7: Ainu Bay recurrence intervals of large tsunamis based on the modern elevation and distance inland of excavation. Analysis uses the maximum number of deposits and the average age for the tephra.

				elevation												**distance**									
		all excavations		**> 5 m**		**> 7.5 m**		**> 10m**		**Maximum # deposits**			***Average recurrence interval***			**>100 m**		**>200 m**	**>300 m**	**Maximum # deposits**			***Average recurrence interval***		
tephra	**average date**	**max. deposits**	**average recurrence**	**P2**	**P1**	**P2**	**P1**	**P2**	**P1**	**>5 m**	**>7.5 m**	**>10 m**	***>5 m***	***>7.5 m***	***>10 m***	**P2**	**P1**	**P2**	**P2**	**>100 m**	**>200 m**	**>300 m**	***>100 m***	***>200 m***	***>300 m***
C1	1945	2	32	2	2	2	2	2	2	2	2	2	*32*	*32*	*32*	2	2	0	0	2	0	0	*32*	-	-
C4	1773	2	86	4	2	4	2	2	2	4	4	2	*43*	*43*	*86*	4	2	2	2	4	2	2	*43*	*86*	*86*
C7	1435	3	113	3	3	3	3	3	3	3	3	3	*113*	*113*	*113*	3	3	3	2	3	3	2	*113*	*113*	*169*
SC8	1348	1	87	1	1	1	1	1	1	1	1	1	*87*	*87*	*87*	1	1	1	0	1	1	0	*87*	*87*	-
S11	500	4	212	4	4	4	4	4	4	4	4	4	*212*	*212*	*212*	4	4	4	4	4	4	4	*212*	*212*	*212*
S12	319	2	91	2	2	2	2	2	2	2	2	2	*91*	*91*	*91*	2	2	2	2	2	2	2	*91*	*91*	*91*
UsKr	36	1	284	0	1	0	1	0	1	1	1	1	*284*	*284*	*284*	0	1	0	0	1	0	0	*284*	-	-
CKr	349	0	-	0	0	0	0	0	0	0	0	0	-	-	-	0	0	0	0	0	0	0	-	-	-
Sar-1	445	0	-	0	0	0	0	0	0	0	0	0	-	-	-	0	0	0	0	0	0	0	-	-	-
S17	-1295	4	435	4	1	4	1	4	1	4	4	4	*435*	*435*	*435*	4	1	4	4	4	4	4	*435*	*435*	*435*

Supplementary Table 8: Dushnaya Bay recurrence intervals of large tsunamis based on the modern elevation and distance inland of excavation in Dushnaya Bay. Analysis uses the maximum number of deposits and the average age for the tephra.

				elevation														
		all excavations		> 5 m				> 7.5 m				> 10m	Maximum # deposits			*Average recurrence interval*		
tephra	average date	max. deposits	average recurrence	TKP4	TKP12	P2	Non-P	TKP 4	TKP12	P2	Non-P	P2	>5 m	>7.5 m	>10 m	*>5 m*	*>7.5 m*	*>10 m*
		4	35	3	3	3	4	3	3	1	2	1	4	3	1	*35*	*46*	*139*
P	1870	1																
		8	56	1	3	6	8	0	2	1	6	1	8	6	1	*56*	*74*	*445*
CC	1425																	
		7	52	0	0	3	7	0	0	1	4	1	7	4	1	*52*	*91*	*365*
GT	1060																	
		8	74	0	0	1	8	0	0	1	7	1	8	7	1	*74*	*84*	*590*
FC	470																	
		8	103	0	0	0	8	0	0	0	8	0	8	8	0	*103*	*103*	-
CKr	-350																	

				distance											
		all excavations		>100 m				>200 m	>300 m	Maximum # deposits			*Average recurrence*		
tephra	average date	max. deposits	average recurrence	TKP4	TKP12	P2	Non-P	P2	P2	>100 m	>200 m	>300 m	*>100 n*	*>200 m*	*>300 m*
		4	35	3	3	3	2	1	0	3	1	0	*46*	*139*	-
P	1870	1													
		8	56	1	2	6	6	1	1	6	1	1	*74*	*445*	*445*
CC	1425														
		7	52	0	0	3	7	1	0	7	1	0	*52*	*365*	-
GT	1060														
		8	74	0	0	1	7	1	0	7	1	0	*84*	*590*	-
FC	470														
		8	103	0	0	0	8	0	0	8	0	0	*103*	-	-
CKr	-350														

Supplementary Table 9: Comparison of farthest inland observation of a paleotsunami deposit with the 2006/2007 inland extent in Yuzhnaya Bay.

	Stratigraphic interval (based on tephra)	Farthest inland excavation with deposits			Paleoshoreline location estimate				Reconstructed distance			Distance x Elevation		Compared to 2006/2007 deposit
		I.D.	Current elevation (m)	Current distance (m)	Exc. without tephra	Current distance (m)	Exc. with tephra	Current distance (m)	Elevation[^] (m)	Distance Min. (m)	Distance Max. (m)	Min.	Max.	
Y.B. P2; dense vegetation at 50 m inland	2006/2007	-	6	175	-	-	-	-	-	-	-	1050		**n/a**
	above C1	053	5.2	110	n/a	0	053	110	5.2	50	110	260	572	**smaller**
		047	6.0	260	n/a	0	053	110	6.0	200	260	1200	1560	**larger**
	C1 to C2	047	6.0	260	n/a	0	053	110	6.0	200	260	1200	1560	**larger**
	C2 to C3	047	6.0	260	053	110	052	140	6.0	170	200	1020	1200	**larger[&]**
	C3 to C4	-	-	-	-	-	-	-	-	-	-	-	-	-
	C4 to SC5	-	-	-	-	-	-	-	-	-	-	-	-	-
	SC5 to S6	047	6.0	260	053	110	052	140	6.0	170	200	1020	1200	**larger[&]**
	S6 to C7	049	6.5	210	052	140	051	165	6.5	95	120	618	780	**smaller**
	C7 to SC8	049	6.5	210	051	165	050	180	6.5	80	95	520	618	**smaller**
	SC8 to S9	-	-	-	-	-	-	-	-	-	-	-	-	-
	S9 to SC10													
	SC10 to S11	-	-	-	-	-	-	-	-	-	-	-	-	-
Y.B. P216; dense vegetation at 40 m inland (pre-2006)	2006/2007	-	6	225	-	-	-	-	-	-	-	1350		**n/a**
	above C1	-	-	-	-	-	-	-	-	-	-	-	-	-
	C1 to C2	115	4.3	260	123	100	122	110	4.3	190	200	817	860	**smaller**
	C2 to C3	-	-	-	-	-	-	-	-	-	-	-	-	-
	C3 to C4	-	-	-	-	-	-	-	-	-	-	-	-	-
	C4 to SC5	115	4.3	260	124	120	120	140	4.3	160	180	688	774	**smaller**
	SC5 to S6	117 or 115	4.3	180 or 260	124	120	120	140	4.3	80	180	344	774	**smaller**
	S6 to C7	113	6	310	120	140	118	180	6	170	210	1020	1260	**similar**
	C7 to SC8	-	-	-	-	-	-	-	-	-	-	-	-	-
	SC8 to S9	-	-	-	-	-	-	-	-	-	-	-	-	-
Y.B. P1; dense vegetation at 40 m inland	2006/2007	-	5	175	-	-	-	-	-	-	-	875		**n/a**
	above C1	014	8	340	021	65	020	85	8	295	315	2360	2520	**larger[&]**
	C1 to C2	017	4.5	175	021	65	020	85	4.5	130	150	585	675	**smaller**
	C2 to C3	018	4.25	140	020	85	019	110	4.25	70	95	298	404	**smaller**
	C3 to C4	018	4.25	140	020	85	019	110	4.25	70	95	298	404	**smaller**
	C4 to SC5	016	7	225	020	85	019	110	6.6	155	180	1023	1188	**larger**
	SC5 to S6	014	8	340	020	85	019	110	8	270	295	2160	2360	**larger[&]**
	S6 to C7	014	8	340	019	110	018	140	8	240	270	1920	2160	**larger[&]**
	C7 to SC8	015	8	290	018	140	017	175	8	155	190	1240	1520	**larger**
	SC8 to S9	-	-	-	-	-	-	-	-	-	-	-	-	-
	S9 to SC10	015*	8	290	016	225	015	290	8	40	105	320	840	**smaller**
	SC10 to S11													

* two events

[&] deposit extends beyond profile

[^] elevation not reconstructed

Supplementary Table 10: Comparison of farthest inland observation of a paleotsunami deposit with the 2006/2007 inland extent in Dushnaya Bay (using profile data only).

	Deposits	Farthest inland excavation			Paleoshoreline location estimate				Reconstructed			Distance * Elevation		**Compared to 2006/2007 deposit**
		I.D.	Current elevation (m)	Current distance (m)	*Exc. without tephra*	Current distance (m)	*Exc. with tephra*	Current distance (m)	*Elevation (m)*	Distance Min. (m)	Distance Max. (m)	Min.	Max.	
D.B. P4; dense vegetation at 55 m inland	2006/2007	-	8.3	115	-	-	-	-	-	-	-	955		**n/a**
	above P	*410***	10	125	*A*	57	*B*	70	*10*	110	123	1100	1230	**larger**
	P to CC	*407*	7.4	110	*B*	70	*407*	110	*7.4*	55	95	407	703	**smaller**
	CC to GT	-	-	-	-	-	-	-	-	-	-	-	-	**-**
D.B. P2; dense vegetation at 50 m inland (pre-2006)	2006/2007	-	6	225	-	-	-	-	-	-	-	1350		**n/a**
	above P	*98**	8.4	150	*95*	70	*96*	90	*8.4*	115	135	966	1134	**smaller**
		100	22.6	210					*22.6*	175	195	3955	4407	**larger**
	P to CC	*98^*	8.4	150	*97*	110	*98*	150	*8.4*	55	95	462	798	**smaller**
		102	19.8	340					*19.8*	245	285	4851	5643	**larger[&]**
	CC to GT	*98**	8.4	150	*97*	110	*98*	150	*8.4*	55	95	462	798	**smaller**
		101	19	240					*19*	145	185	2755	3515	**larger**
	GT to FC	*101*	19	240	*98*	150	*100*	210	*19*	85	145	1615	2755	**larger**
	FC to CKr	-	-	-	-	-	-	-	-	-	-	-	-	**-**
D.B. P12; dense vegetation at 55 m inland	2006/2007	-	6.6	120	-	-	-	-	-	-	-	792		**n/a**
	above P	*424***	8	140	*95*	55	*96*	70	*8*	125	140	1000	1120	**larger**
	P to CC	*424**	8	140	*97*	95	*98*	135	*8*	60	100	480	800	**similar**
		423	6	95					*6*	15	55	360	600	**smaller**
	CC to GT	-	-	-	-	-	-	-	-	-	-	-	-	**-**

* two events

** three events

[&] deposit extends beyond profile

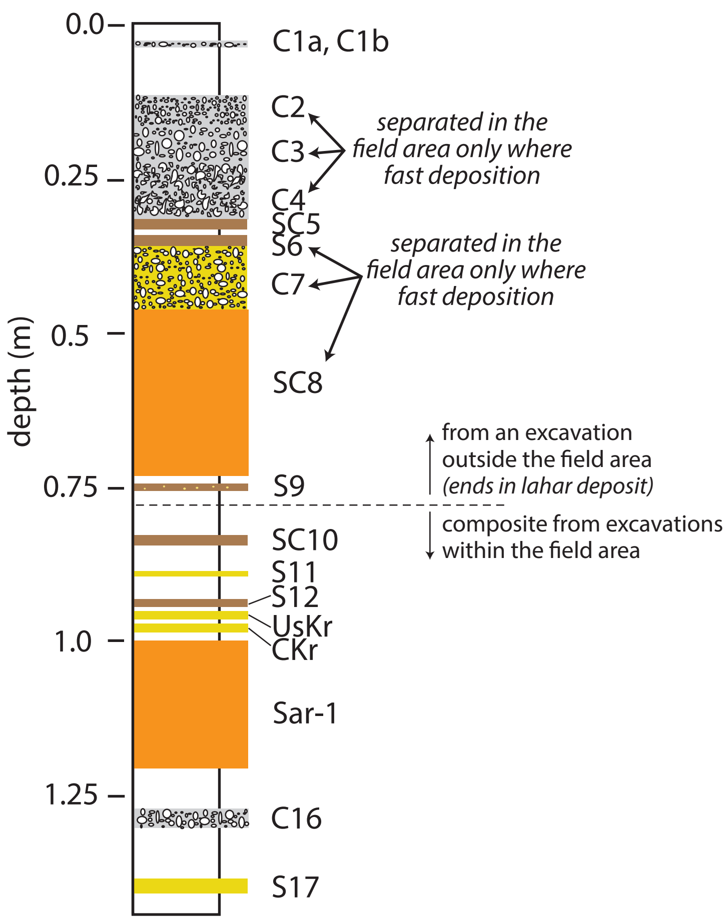
[&] deposit extends beyond profile

[^]elevation not reconstructed

Supplemental Figure 1: Descriptions and stratigraphy of tephra from Matua Island. Only the upper portion of the type-section was measured outside the field area; the lower part was compiled from many excavations within the field area.

Matua Island

Tephra type-section



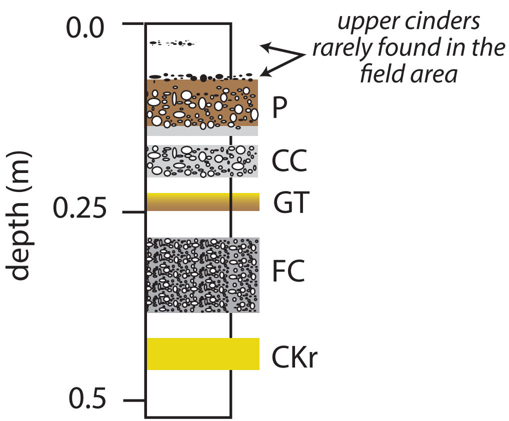
Tephra description

2009		dark gray silt to very fine sand
C1a		greenish gray cinders (1-2 mm) in brown silt
C1b		greenish gray cinders (0.5-1 cm), occasionally with brown silt
C2		inversely graded (3-5 mm on bottom to 1-3 cm on top) black cinders; rare in Ainu Bay
C3		dark colored-cinders (0.5-4 cm); coated in sand in all coastal excavations
C4		black to dark-colored cinders (a few mm-7 cm); angular and highly complicated shaped cinders; some lithics present
SC5		brown silt with gray cinders (1-3 mm); 10-50 % cinders
S6		brownish red silt with gray cinders (1 mm-1 cm); cinders occassionally absent; commonly not preserved
C7		yellow gray cinders (fine sand-1 cm)
SC8		thick light-colored tephra layer in 4 parts
	A	yellow brown muddy silt
	B	gray cinders and rocks (2 mm-2 cm) with some gray-yellow silt
	C	thin layer of gray-yellow silt
	D	fine to coarse sand
S9		brown silt with some white pumiceous fine-medium sand grains
SC10		brown silt with gray cinders (1-5 mm)
S11		light brown silt to medium sand with a few pumice grains (1-2 mm)
S12		medium brown silt to fine sand with cinders (coarse sand-2 mm)
UsKr		yellow very fine to medium sand (pumice rich)
CKr		yellow very fine to medium sand (mostly fine sand)
Sar-1		thick light-colored tephra layer in 4 parts
	A	brown silt with angular rocks and gray cinders (1 mm-1 cm)
	B	yellowish gray silt with few cinders (coarse sand-1 cm)
	C	light gray cinders (coarse sand-2 cm) with some silt
	D	sand and cinders (coarse sand-3 mm) with no silt
C16		black silt with cinders and rocks (0.5-3 cm)
S17		yellow gray silt with some coarse sand

Supplemental Figure 2: Descriptions and stratigraphy of tephra from northern Simushir Island. The type-section was compiled from excavations measured on stable surfaces outside the field area.

northern Simushir Island

Tephra type-section



Tephra description

P		mixed tephra layer in 3 parts
	A	brown-gray silt-very fine sand
	B	light gray cinders (1 mm-2 cm; 1-2 mm typical) with some brown silt
	C	gray silt-very fine sand
CC		angular dark gray cinders (medium sand -1 cm; 3-5 mm typical)
GT		mixed tephra layer in 3 parts
	A	light gray silt-very fine sand
	B	yellow tan silt
	C	light gray silt-fine sand with some pumiceous coarser grains
FC		reddish gray cinders (coarse sand-granule)
CKr		yellow very fine to medium sand (mostly fine sand)

Supplementary Figure 3:
Geochemistry of Matua tephra samples

Key

◆ Us-Kr ◇ CKr ◈ Sarychev
■ 106-47 ■ 106-40 □ 106-49 ■ 106-52
● 015-18 ● 047-21

See DRFig1 for sample locations

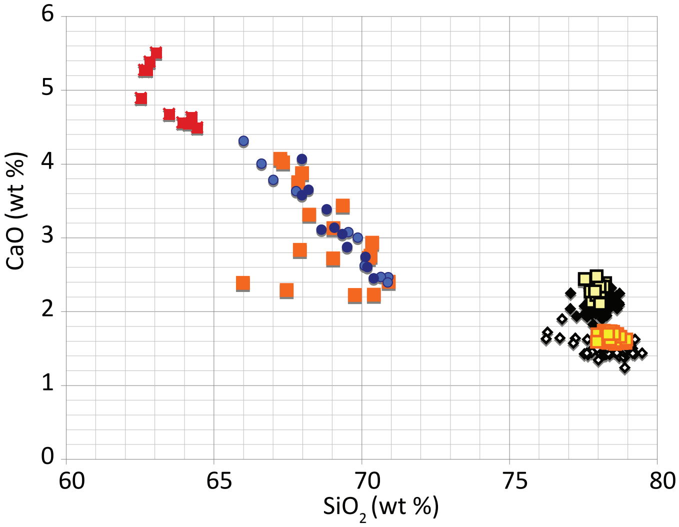
Notes:
Us-Kr marker tephra, CKr marker tephra, and "Sarychev" chemistry from Nakagawa et al., 2008.

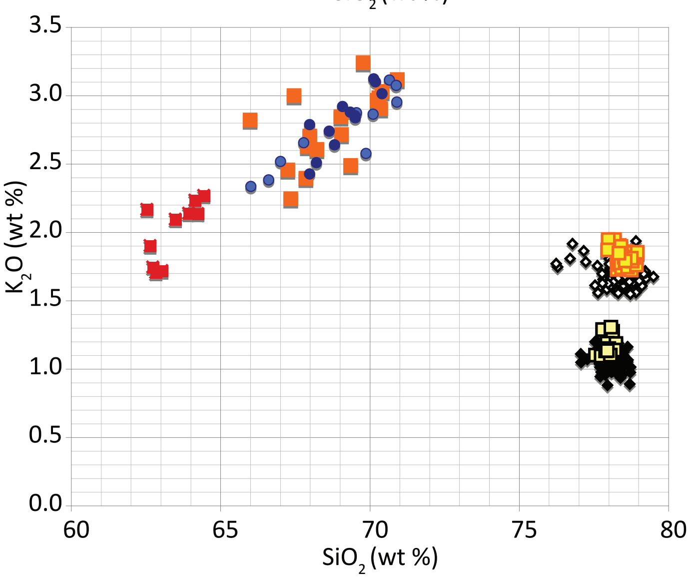
Us-Kr and **CKr** are marker tephra identified by M. Nakagawa

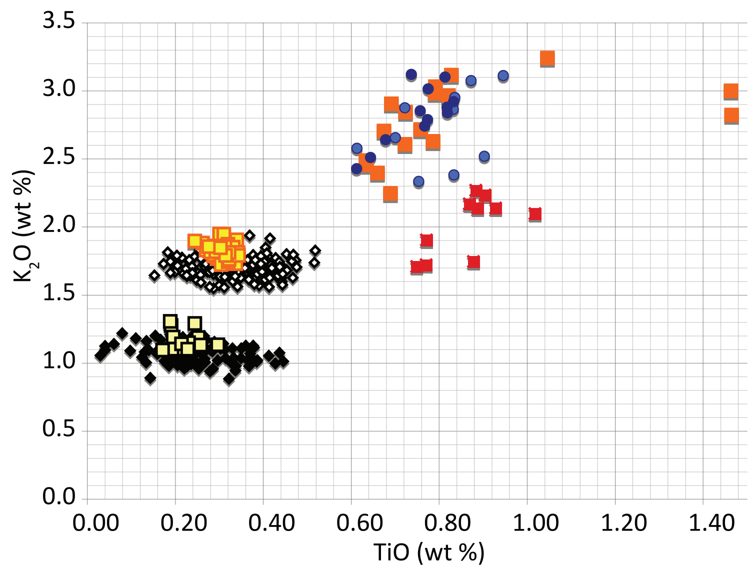
"**Sarychev**" indicates any tephra with Sarychev Peak as the hypothesized source volcano in Nakagawa et al., 2008

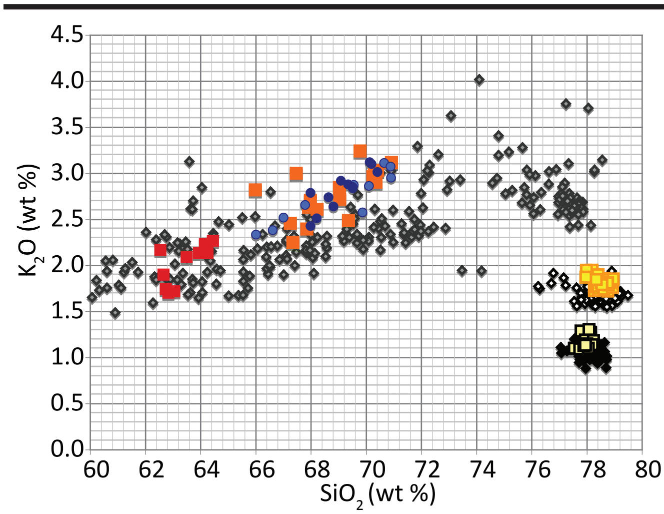
Conclusions:

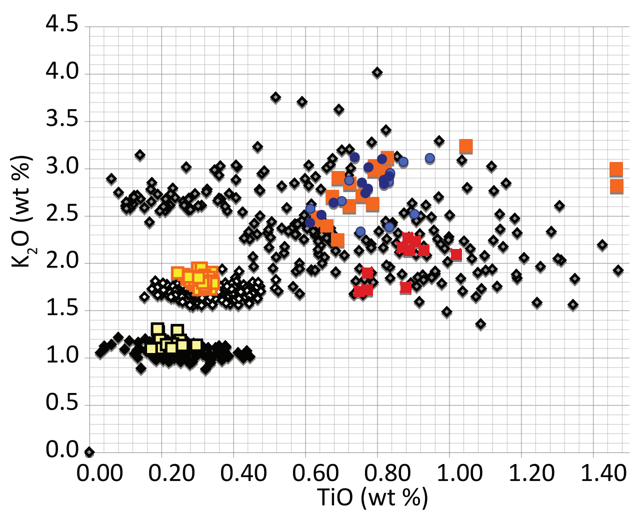
- Sample 106-52 matches the chemistry of CKr
- Sample 106-49 matches the chemistry of Us-Kr
- Samples 106-40, 047-21 and 015-18 have similar chemistry, and, due also to lithologic description and stratigraphic position, likely correlate. Considering their chemistry, these samples are most likely sourced from Sarychev Peak









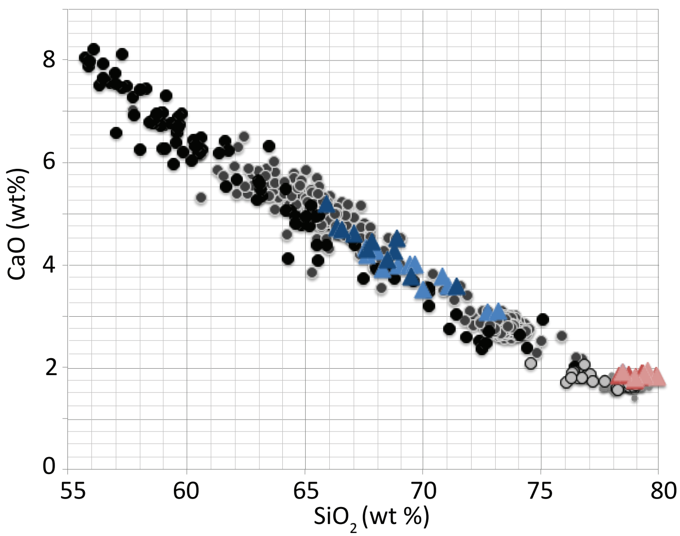


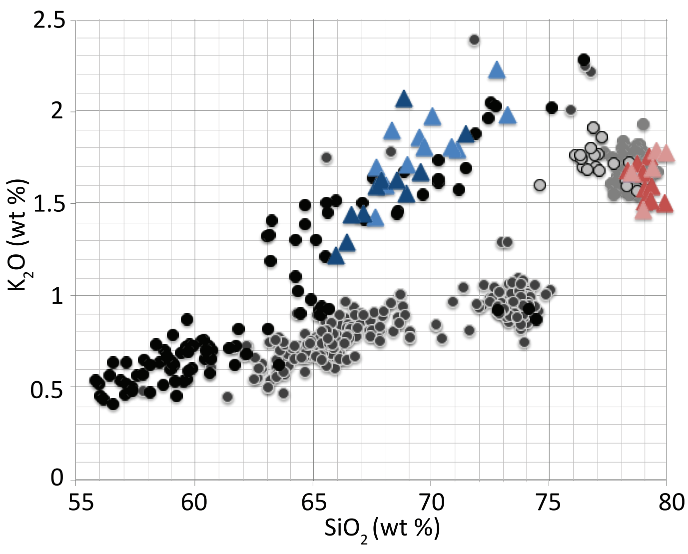
Supplementary Figure 4:
Geochemistry of Simushir tephra samples

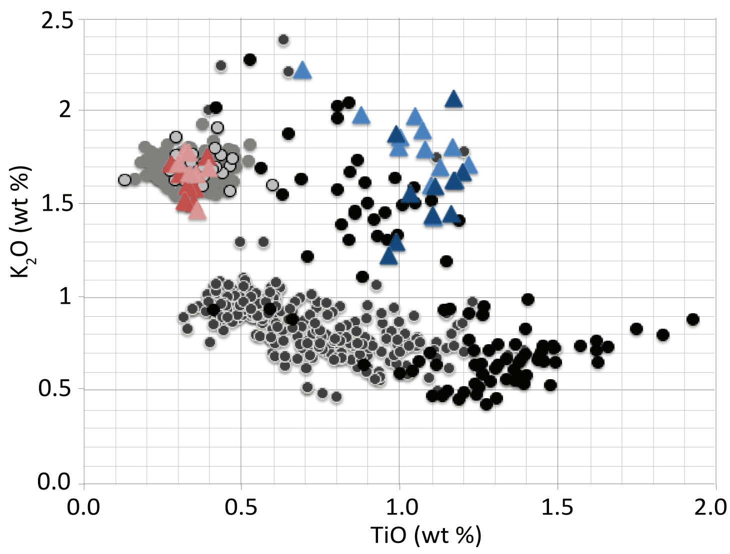
Key

- CKr
- Uratman
- Prevo Peak
- Zavaritsky
- 106peat129
- 109peat95.5
- 110peat105
- 106peat45

See DRFig1 for sample locations







Notes:

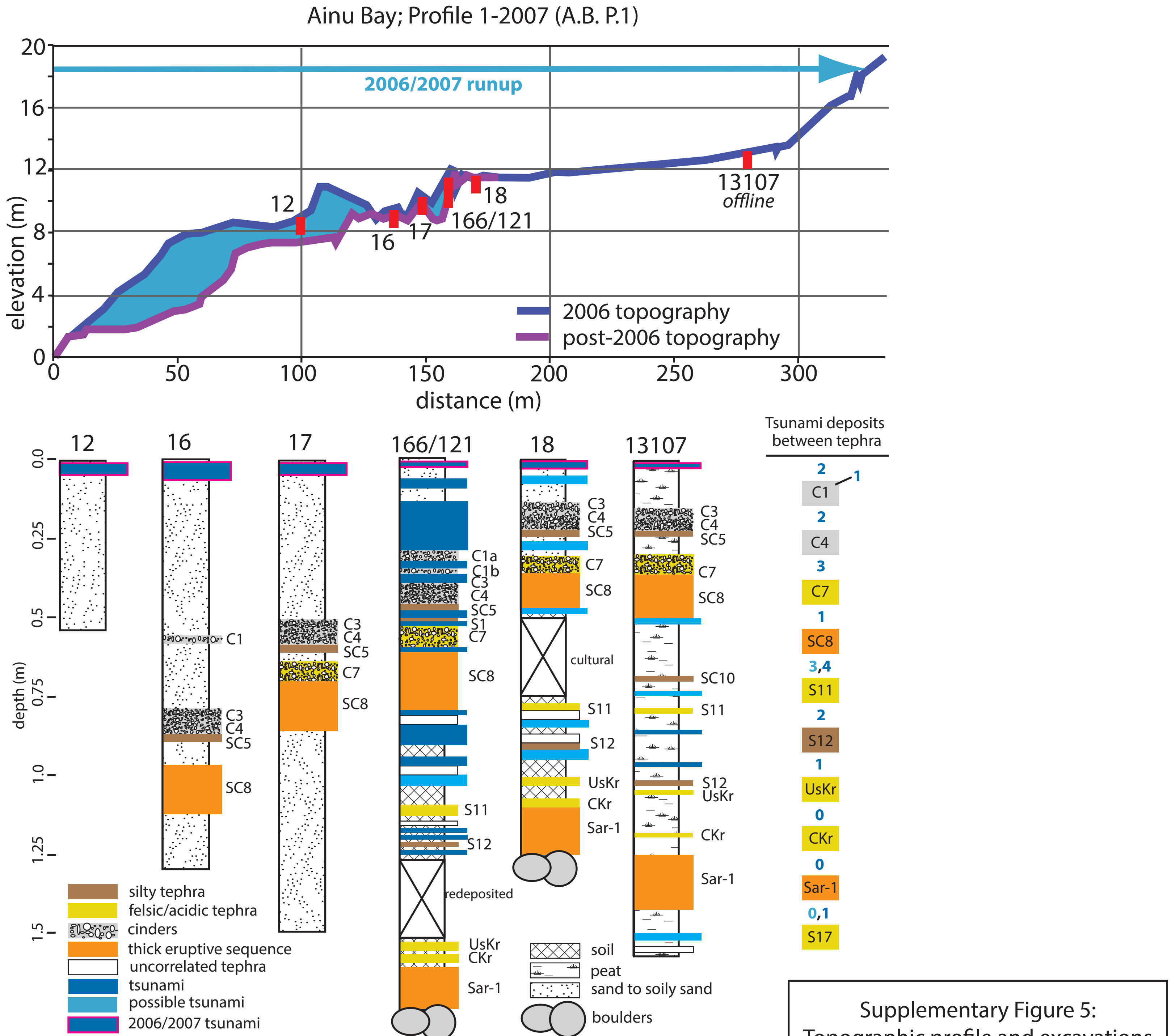
CKr marker tephra, "Uratman", "Prevo Peak", and "Zavaritsky" chemistry from Nakagawa et al., 2008.

CKr is a marker tephra identified by M. Nakagawa
"Uratman" indicates any tephra with Uratman as the hypothesized source volcano in Nakagawa et al., 2008
"Prevo Peak" indicates any tephra with Prevo Peak as the hypothesized source volcano in Nakagawa et al., 2008
"Zavaritsky" indicates any tephra with Zavaritsky as the hypothesized source volcano in Nakagawa et al., 2008

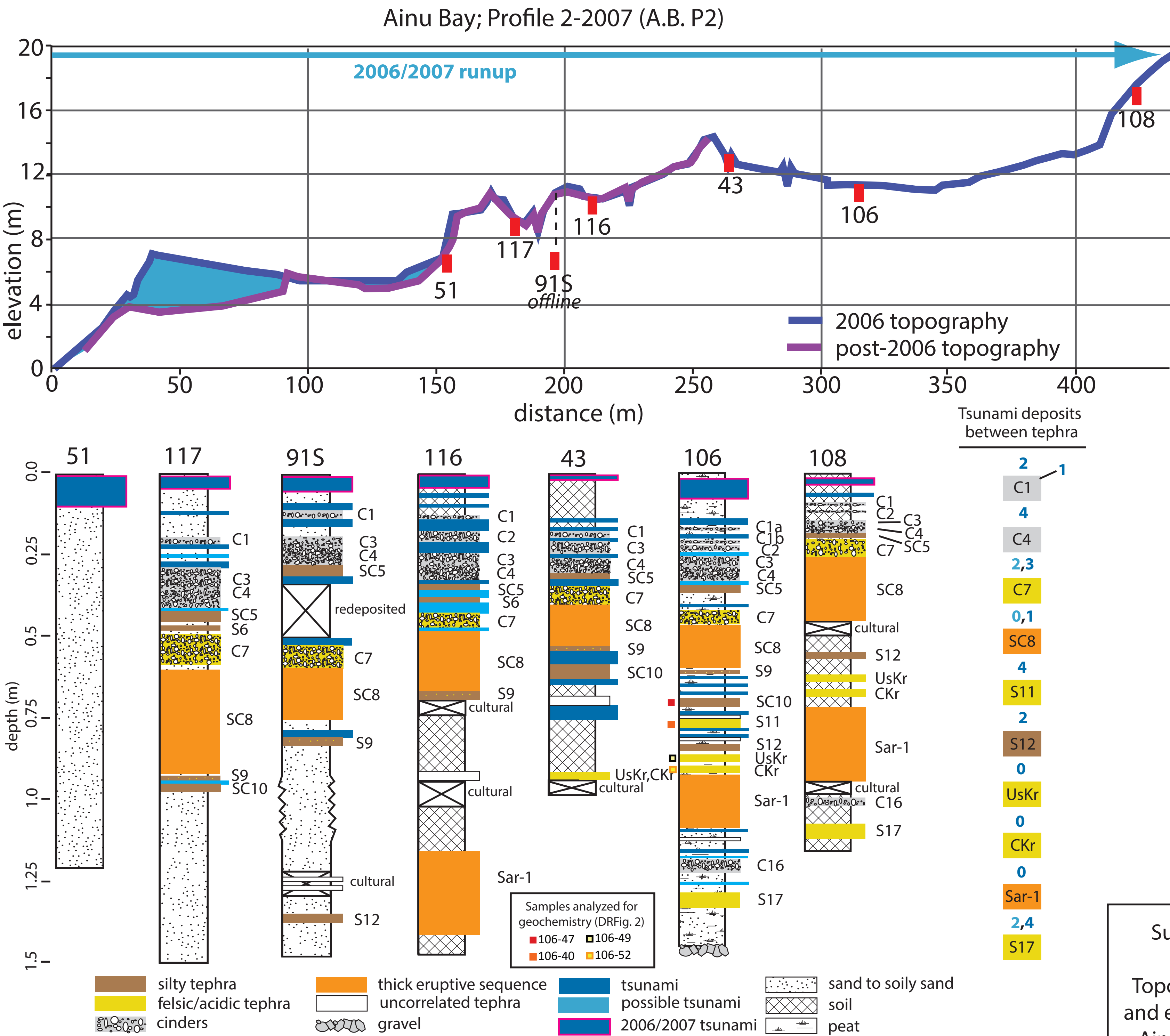
Conclusions:

- Samples *106peat129* and *109peat95.5* match the chemistry of CKr.

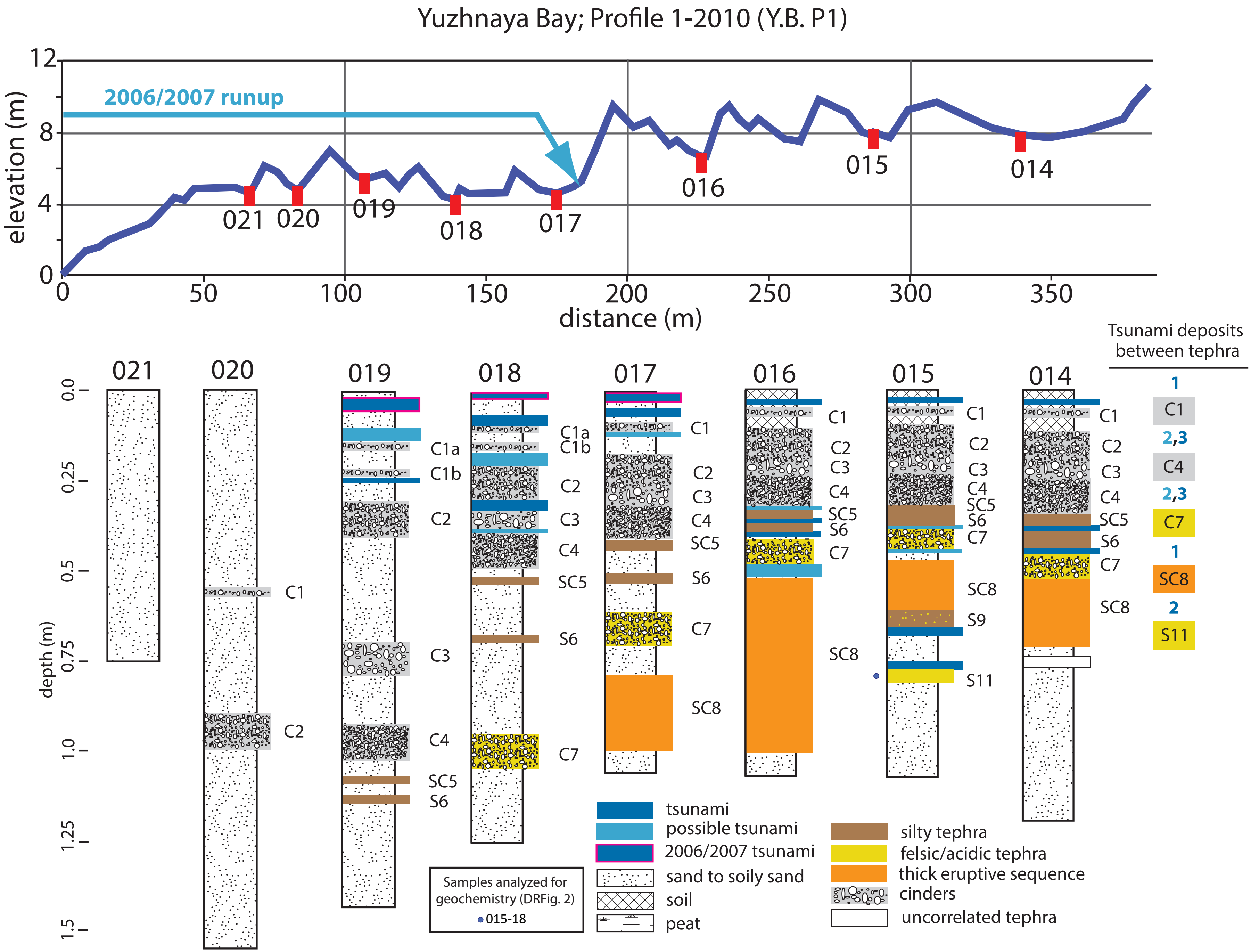
- Samples *110peat105* and *106peat45* have similar chemistry, and, due also to lithologic description and stratigraphic position, likely correlate. Considering their chemistry, these samples are most likely sourced from Prevo Peak.



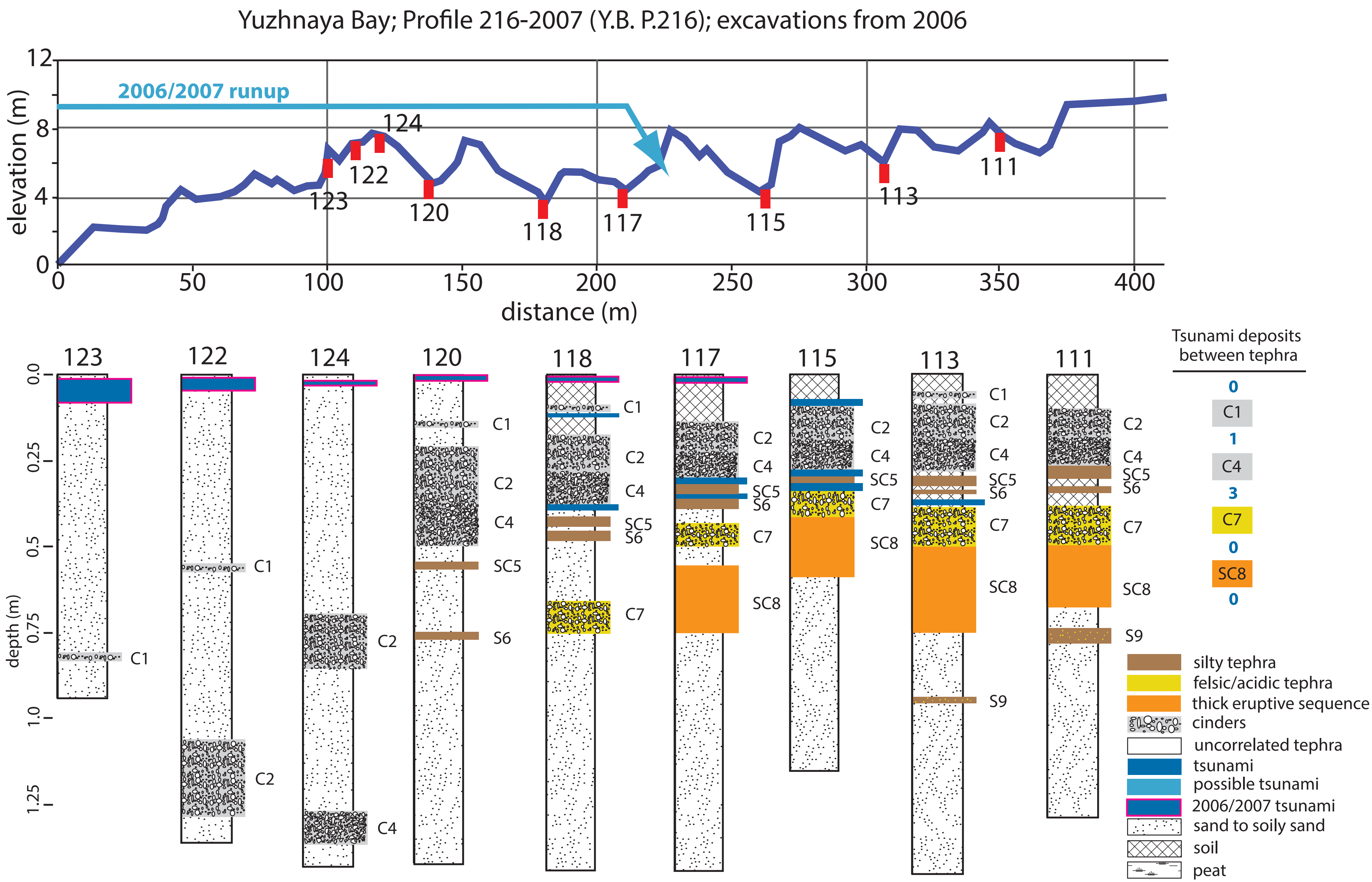
Supplementary Figure 5: Topographic profile and excavations from Ainu Bay, Profile 1.



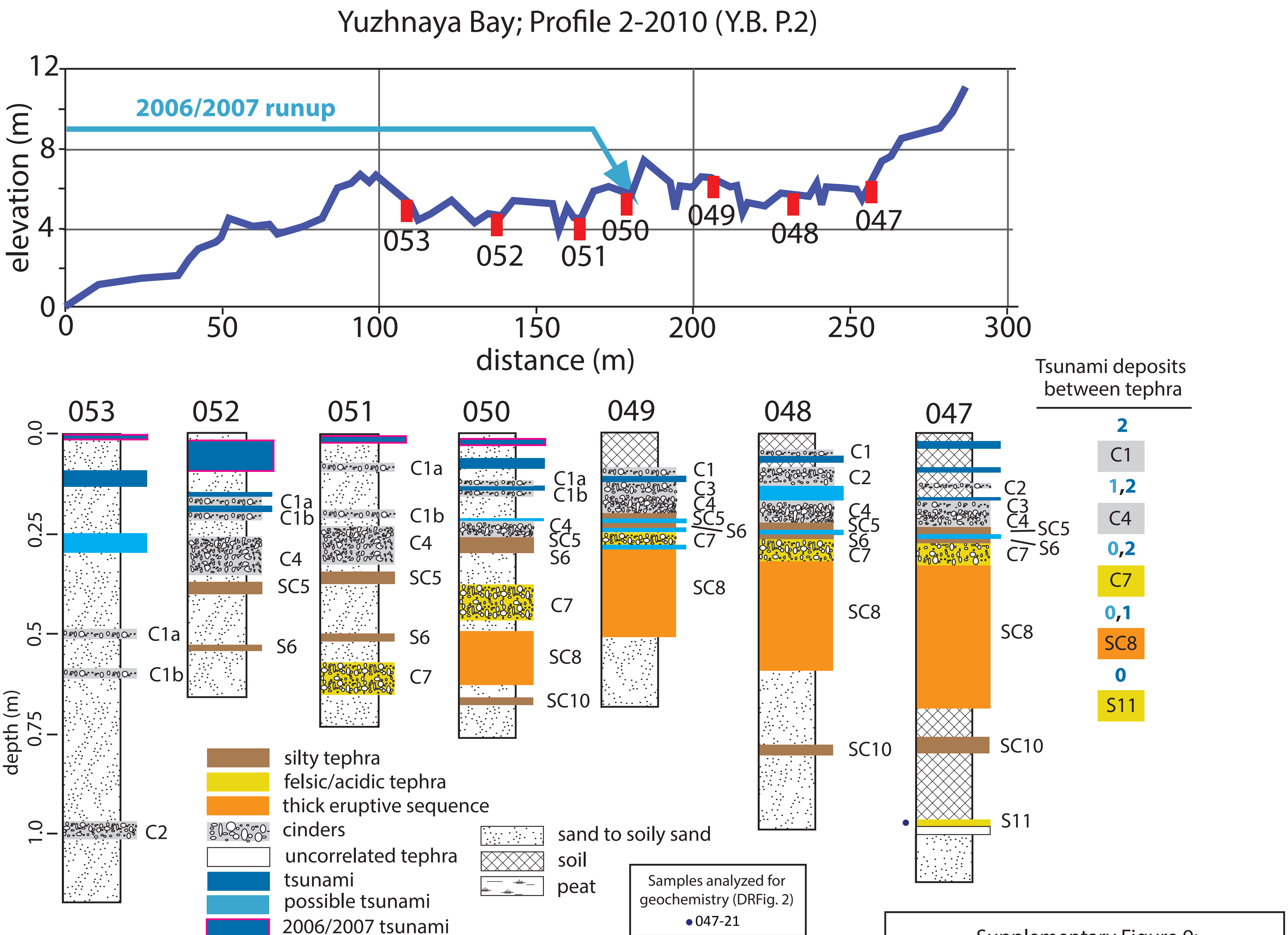
Supplementary Figure 6: Topographic profile and excavations from Ainu Bay, Profile 2.



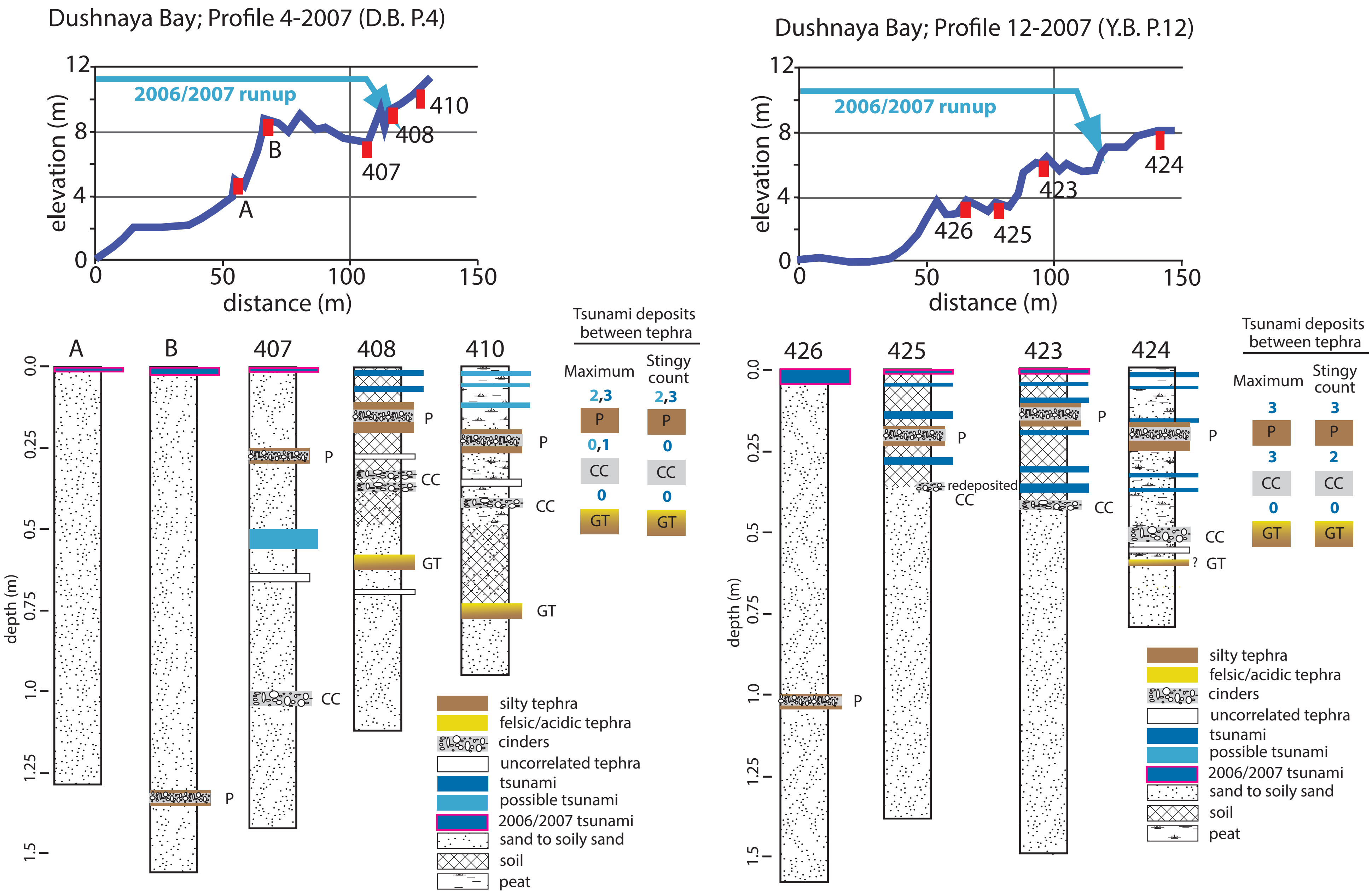
Supplementary Figure 7:
Topographic profile and excavations from Yuzhnaya Bay, Profile 1.



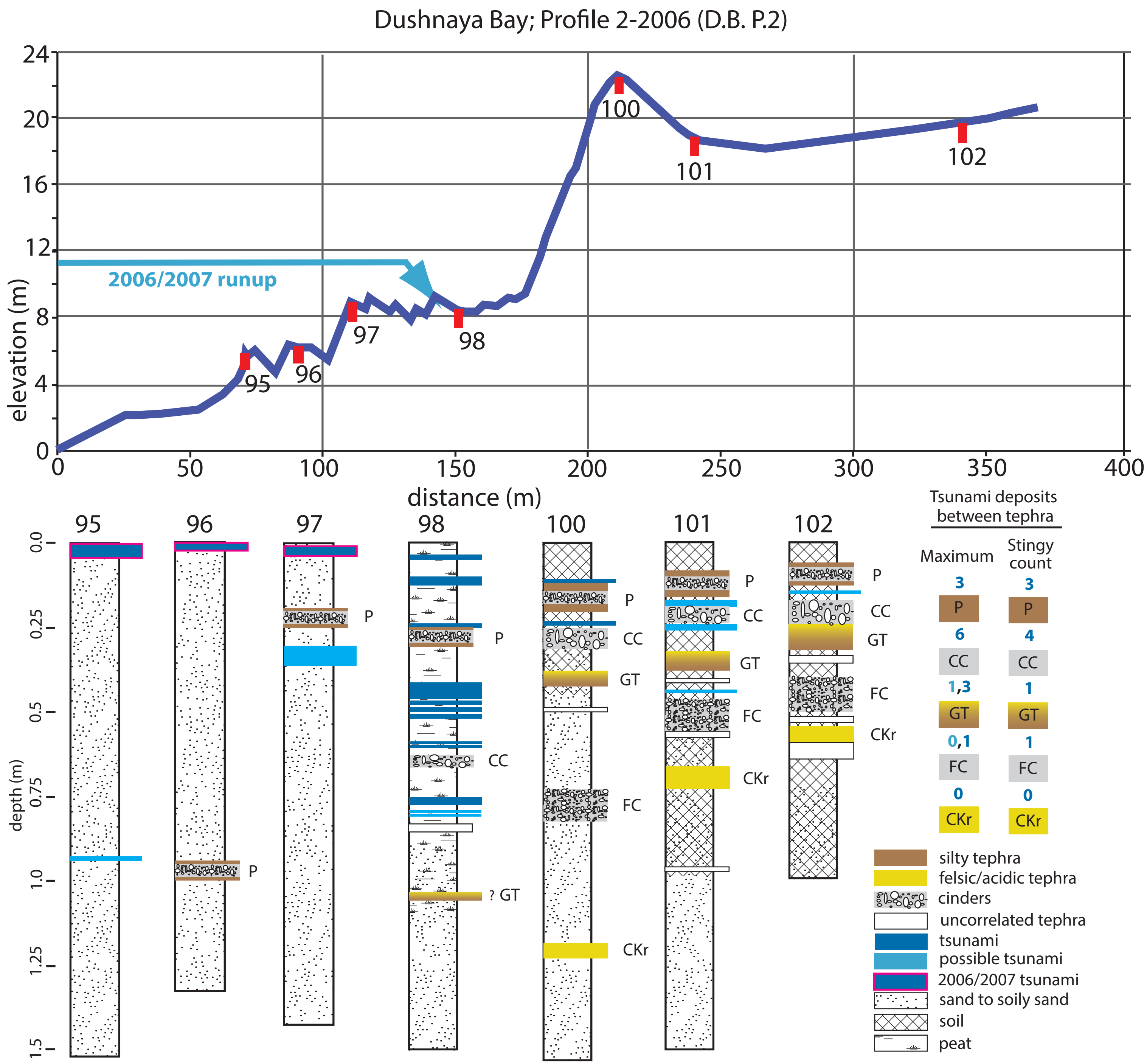
Supplementary Figure 8:
Topographic profile and excavations from Yuzhnaya Bay, Profile 216.



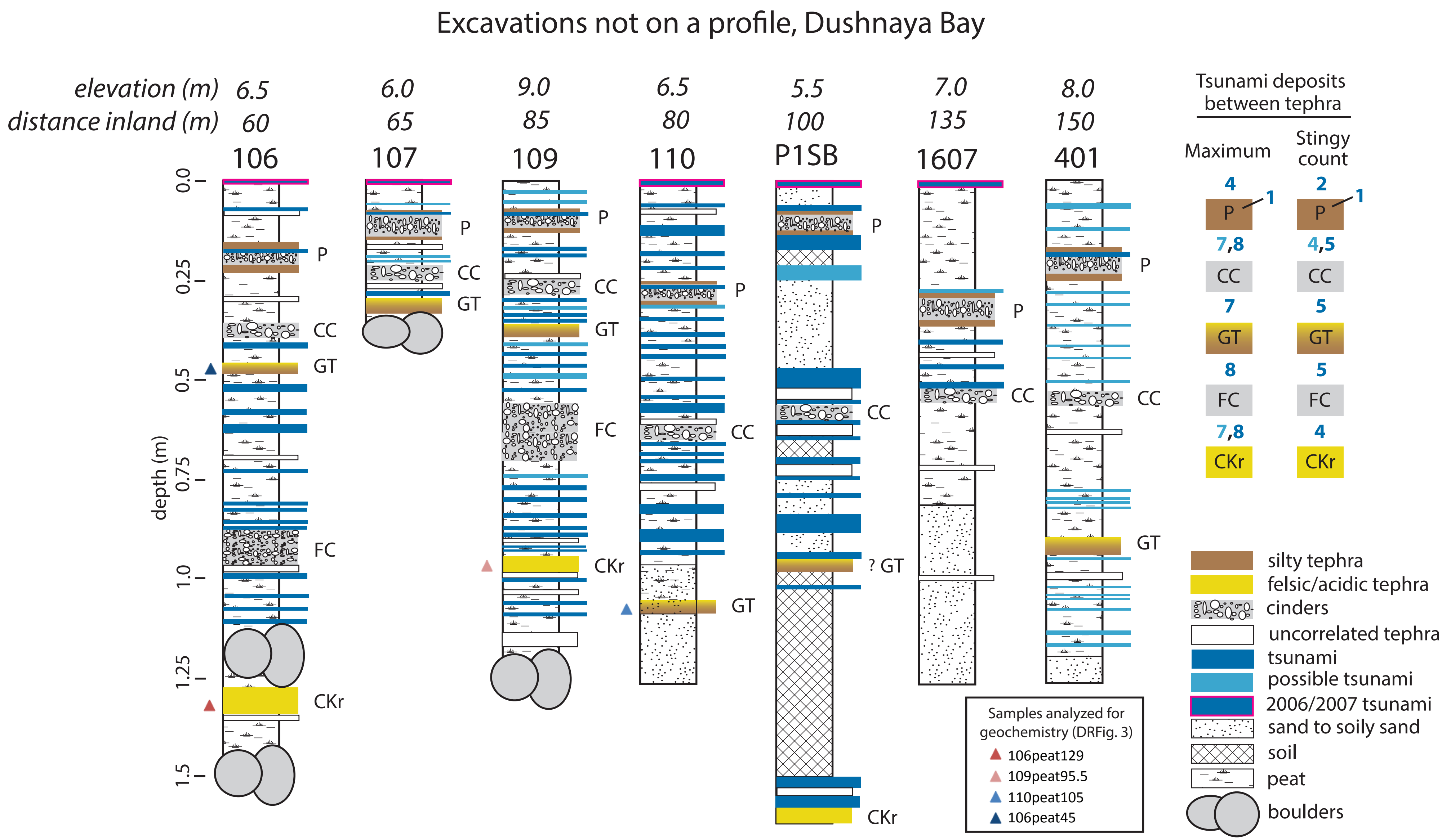
Supplementary Figure 9: Topographic profile and excavations from Yuzhnaya Bay, Profile 2.



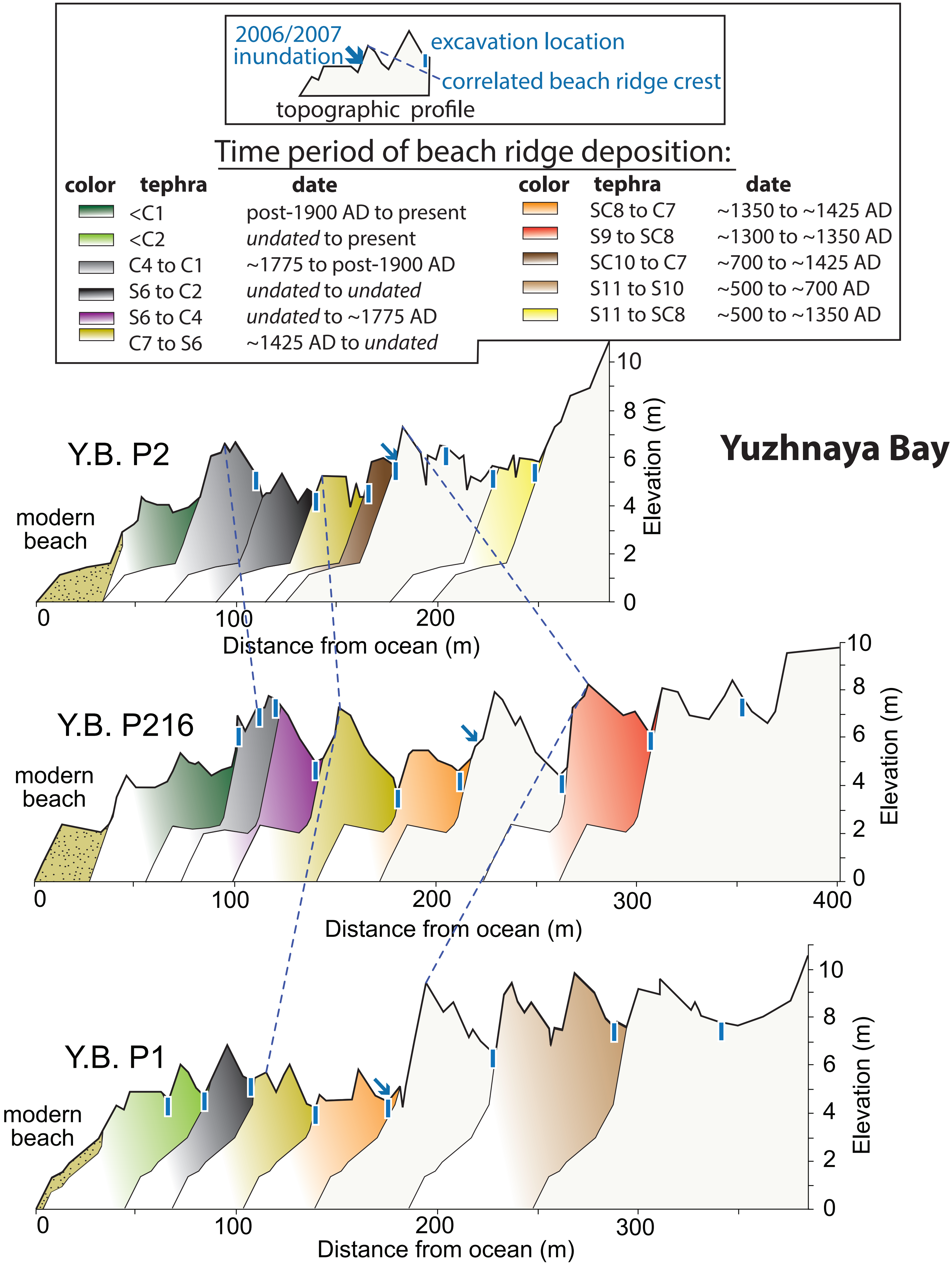
Supplementary Figure 10:
Topographic profile and excavations from Dushnaya Bay, Profiles 4 and 12.



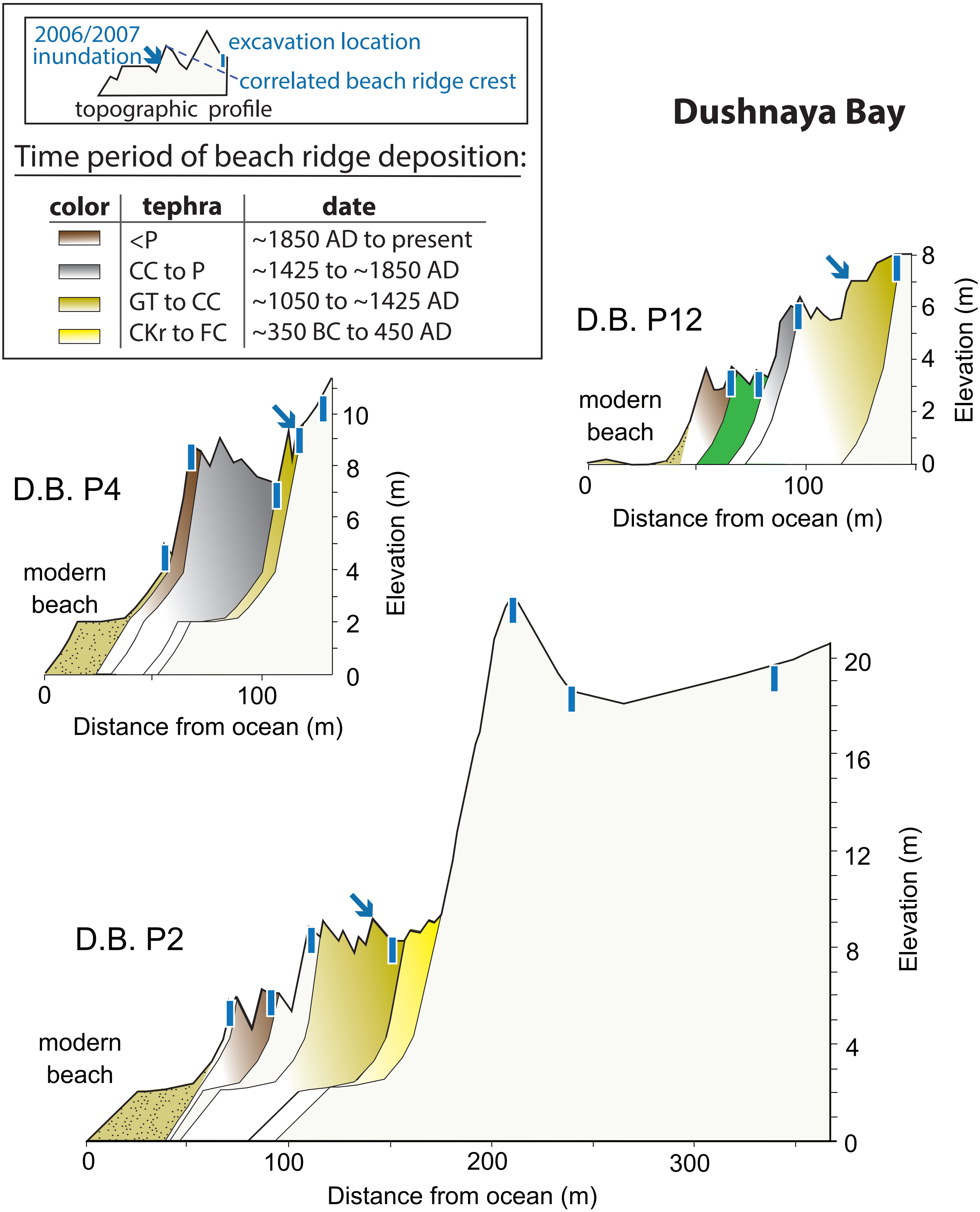
Supplementary Figure 11:
Topographic profile and excavations from Dushnaya Bay, Profile 2.



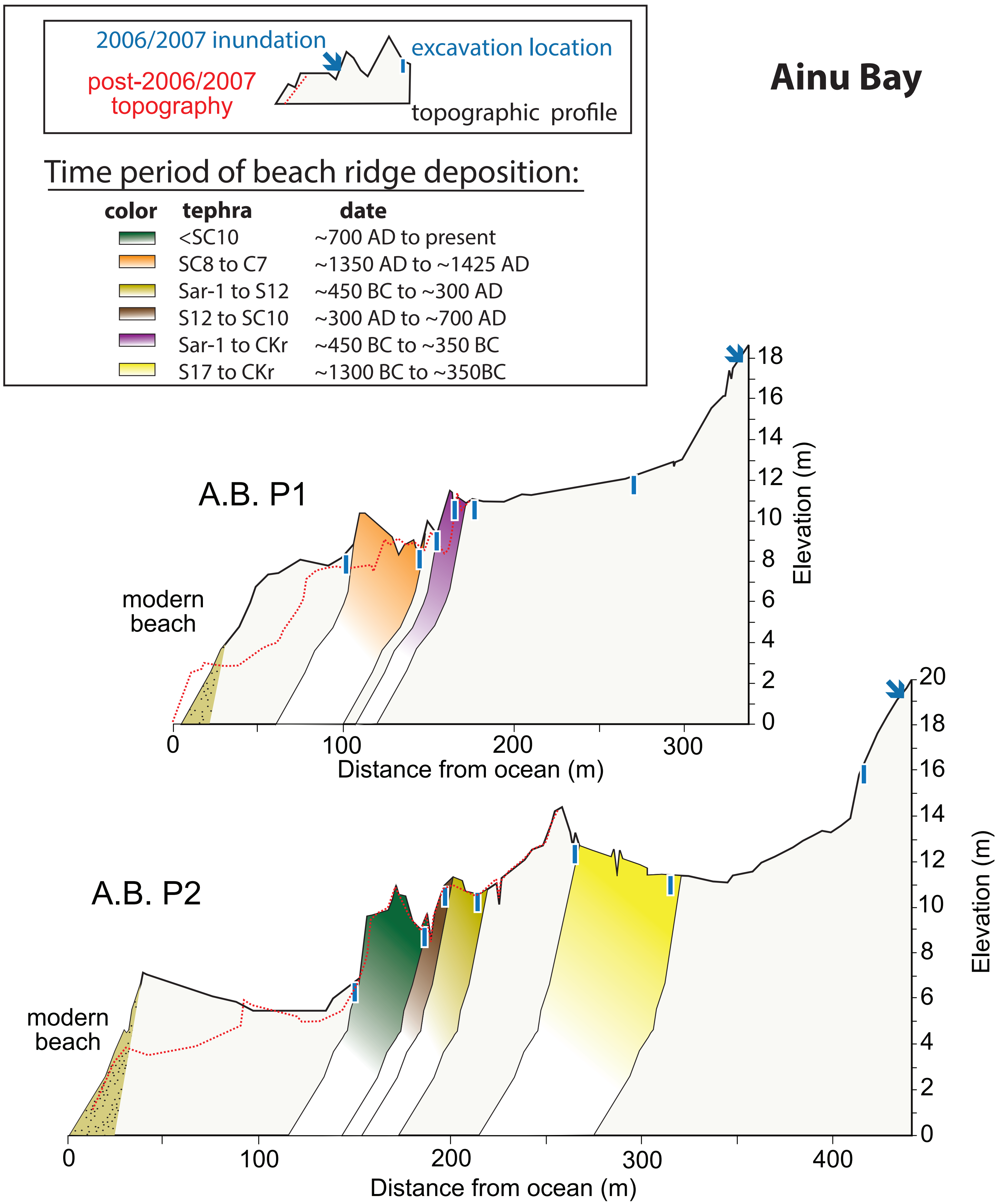
Supplementary Figure 12:
Excavation stratigraphy from Dushnaya Bay for off-profile excavations
See Figure 2 for locations.



Supplementary Figure 13: Shoreline reconstructions for Yuzhnaya Bay profiles based on tephra presence/absence in excavations.



Supplementary Figure 14: Shoreline reconstructions for Dushnaya Bay profiles based on tephra presence/absence in excavations.



Supplementary Figure 15: Shoreline reconstructions for Ainu Bay profiles based on tephra presence/absence in excavations. Ainu Bay does not show steady progradation through time.