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Late Quaternary glacial dynamics and sedimentation variability in the Bering Trough, Gulf of Alaska

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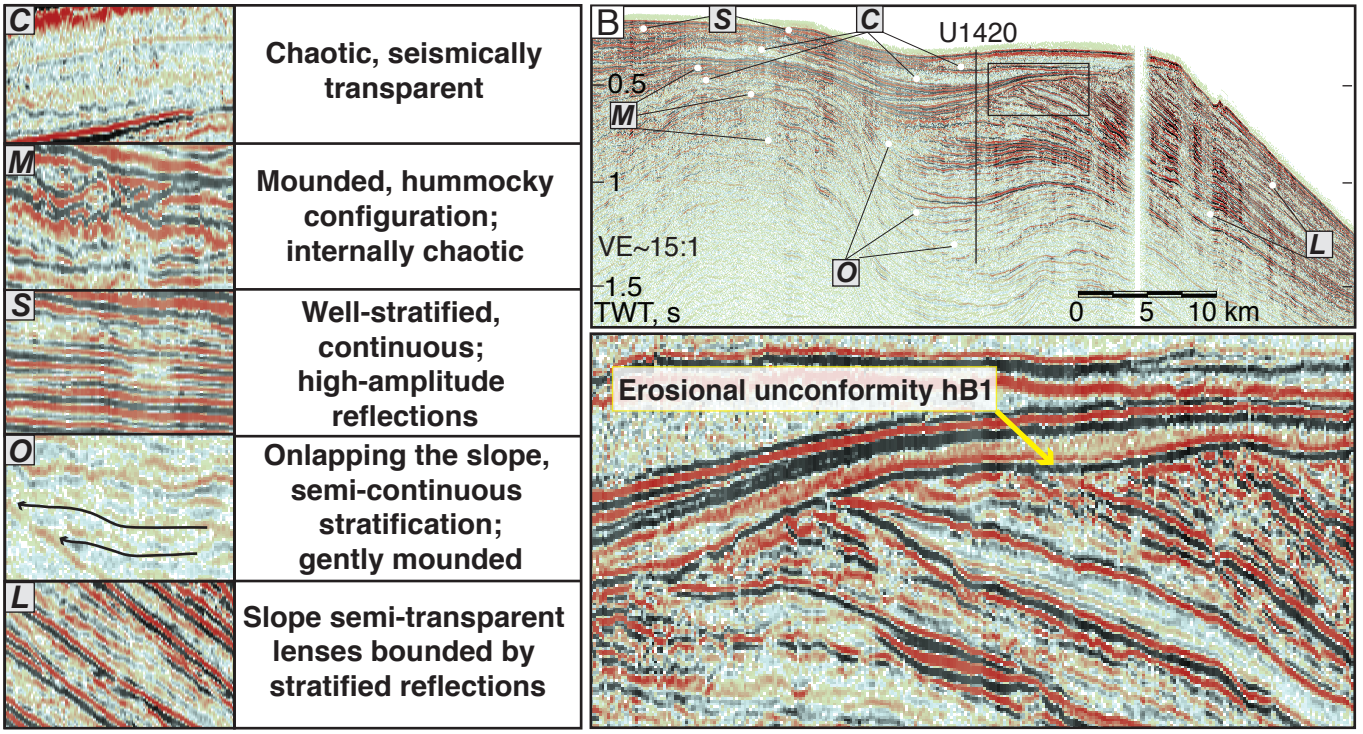

Supplementary figure. To the left: Enlarged version of the Fig. 2.A with descriptions of seismic facies found in the Bering Trough and their seismic character. To the right: Enlarged version of the Fig. 2.B and zoom-in of the outer shelf part of the Bering Trough showing the truncating character of the erosional unconformity hB1.

Table DR1. Time-depth model for Site U1421 used in this study to calibrate borehole depths to corresponding two-way travel time (TWT) values on the seismic section. Vertical seismic profile (VSP) and check-shot data were used separately as independent sources of time-depth models. VSP is a measurement procedure in which a seismic source on or near the earth's surface transmits energy to a vertically positioned geophone secured at a desired depth to the wall of a borehole. Depth of each sample location was converted into TWT value using linear interpolation algorithm for time-depth models. The final values used in this study were averaged between the two models. Residual uncertainies do not exceed ±10 ms assuming check-shot and vertical seismic profile time-depth models provide bounding values.

		Vertical seismic profile data			Check-shot data			
		Depth CCSF-	**Sea-level depth U1421 (m)**	**Two-way travel time (ms)**	**Depth CCSF-**	**Sea-level depth U1421 (m)**	**Two-way travel time (ms)**	
Time versus depth data values		-729.7	0	0	-729.7	0	0	
		-67.7	662	883	-0.7	729.7	973	
		0.3	730	973.7	285.3	1015	1278	
		90.3	820	1056	467.82	1197.52	1445.3	
		219.3	949	1192	531.84	1261.54	1508.72	
		345.3	1075	1316	571.71	1301.41	1541.68	
		433.3	1163	1398	637.78	1367.48	1601.78	
		456.3	1186	1423	687.82	1417.52	1641.38	
		477.3	1207	1443				
		498.3	1228	1467				
		525.3	1255	1491				
		566.3	1296	1526				
		611.3	1341	1570				
		673.3	1403	1622				
		737.3	1467	1685				
Analysis	**Sample**	**Depth CCSF-**	**Sea-level depth U1421 (m)**	**TWT (ms)[2]**	**Depth CCSF-U1421**	**Sea-level depth U1421**	**TWT (ms)[2]**	**Average TWT (ms)**
^{14}C samples U1421A	01H CC 12-17cm	6.84	736.54	**974.51**	6.84	736.54	**980.07**	**977.29** ±7[1]
	02H 1W 2-4cm	6.41	736.11	**974.37**	6.41	736.11	**979.60**	**976.99** ±3[1]
	03H 5W 2-4cm	21.91	751.61	**979.54**	21.91	751.61	**996.19**	**987.86** ±9[1]
	07H 4W 0-4cm	57.09	786.79	**1018.33**	57.09	786.79	**1033.83**	**1026.08** ±7[1]
	22X 2W 5-9cm	115.44	845.14	**1082.50**	115.44	845.14	**1096.26**	**1089.38** ±7[1]
	22X CC 23-28cm	116.34	846.04	**1083.45**	116.34	846.04	**1097.22**	**1090.34** ±7[1]
	33X CC 22-27cm	221.31	951.01	**1193.98**	221.31	951.01	**1209.54**	**1201.76** ±8[1]
	41X 1W 55-60cm	297.24	1026.94	**1268.70**	297.24	1026.94	**1288.94**	**1278.82** ±10[1]
$d^{18}O$ samples U1421A	57X CC 27cm	451.46	1181.16	**1417.74**	451.46	1181.16	**1430.31**	**1424.02** ±6[1]
	62X 2W 31 cm	493.11	1222.81	**1461.07**	493.11	1222.81	**1470.35**	**1465.71** ±5[1]
	73X 1W 71cm	577.33	1307.03	**1537.25**	577.33	1307.03	**1546.74**	**1542.02** ±4[1]

[1]Uncertainty in depth estimation assuming check-shot and vertical seismic profile velocity models provide bounding values.
[2]Linear interpolation algorithm was used to convert depths of each sample location into corresponding TWT (ms) values.

Table DR2. Age model for Site U1421 based on accelerator radiocarbon dating of planktonic foraminifera and correlation of oxygen isotopes to the LR04 reference record (Lisiecki and Raymo 2005). Composite depths are corrected for drilling-induced core expansion. Minimum and maximum age models were calculated based on Bayesian interpolation and full uncertainty propagation using the Bacon method for the radiocarbon-dated interval. For the interval dated by d18O correlation, 1-sigma uncertainties are assumed to be +/- 5 kyr.

Sample	Material	Analysis	Lab ID	Mean Depth (m drilling)	Mean Depth (m composite)	Raw ^{14}C (years)	Raw $^{14}C \pm$ (1-s)	Calendar Age (yr)[1]	Calendar Age $\pm$ (1-s)[1]
U1421A 01H CC 12-17cm	Mixed Planktonic foraminifera	^{14}C	ANU-39931	6.8	6.84	13875	40	15540[1]	160
U1421A 02H 1W 2-4cm	Mixed Planktonic foraminifera	^{14}C	ANU-39932	6.83	6.41	12610	35	13590[1]	110
U1421A 03H 5W 2-4cm	Mixed Planktonic foraminifera	^{14}C	ANU-39933	22.33	21.91	15175	40	17420[1]	140
U1421A 07H 4W 0-4cm	Mixed Planktonic foraminifera	^{14}C	ANU-42535	55.32	57.09	18540	50	21370[1]	170
U1421A 22X 2W 5-9cm	Mixed Planktonic foraminifera	^{14}C	ANU-42536	113.67	115.44	23400	90	26850[1]	200
U1421A 22X CC 23-28cm	Mixed Planktonic foraminifera	^{14}C	ANU-39937	114.58	116.34	24650	110	27830[1]	120
U1421A 33X CC 22-27cm	Mixed Planktonic foraminifera	^{14}C	ANU-39938	219.55	221.31	34230	310	37680[1]	540
U1421A 41X 1W 55-60cm	Mixed Planktonic foraminifera	^{14}C	ANU-42539	295.48	297.24	45490	1210	47920[1]	1220
U1421A 57X CC 27cm	N. pachyderma (L) 150-250mm	$d^{18}O$	OSU-141108-13	449.74	451.46	n/a	n/a	65000[2]	5000[2]
U1421A 62X 2W 31 cm	N. pachyderma (L) 150-250mm	$d^{18}O$	OSU-141108-14	491.34	493.11	n/a	n/a	75000[2]	5000[2]
U1421A 73X 1W 71cm	N. pachyderma (L) 150-250mm	$d^{18}O$	OSU-141108-16	575.54	577.33	n/a	n/a	130000[2]	5000[2]
U1421A 07H 3W 2-4cm	Mixed Planktonic foraminifera	^{14}C	ANU-39935	53.83	55.6	23140[3]	90	26470[3]	200
U1421A 07H 3W 2-4cm	Mixed Planktonic foraminifera	^{14}C	ANU-42533	53.83	55.6	23360[3]	90	26810[3]	200
U1421A 22X 2W 2-4cm	Mixed Planktonic foraminifera	^{14}C	ANU-39936	113.63	115.398	17130[3]	50	19630[3]	140
U1421A 22X 2W 2-4cm	Mixed Planktonic foraminifera	^{14}C	ANU-40238	113.63	115.398	17100[3]	60	19590[3]	150

[1]Calendar ages from radiocarbon are calculated based on Marine13 database, DR=470 ± 80 yr.
[2]Calendar ages from $d^{18}O$ are based on correlation to LR04 chronology, rounded to nearest 5000 yr. Uncertainties of 5000 yr are assumed.

[3]Not included in age model –label error suspected during sampling. U1421A 07H 3W 2-4cm likely swapped for U1421A 22X 2W 2-4cm, but unproven.