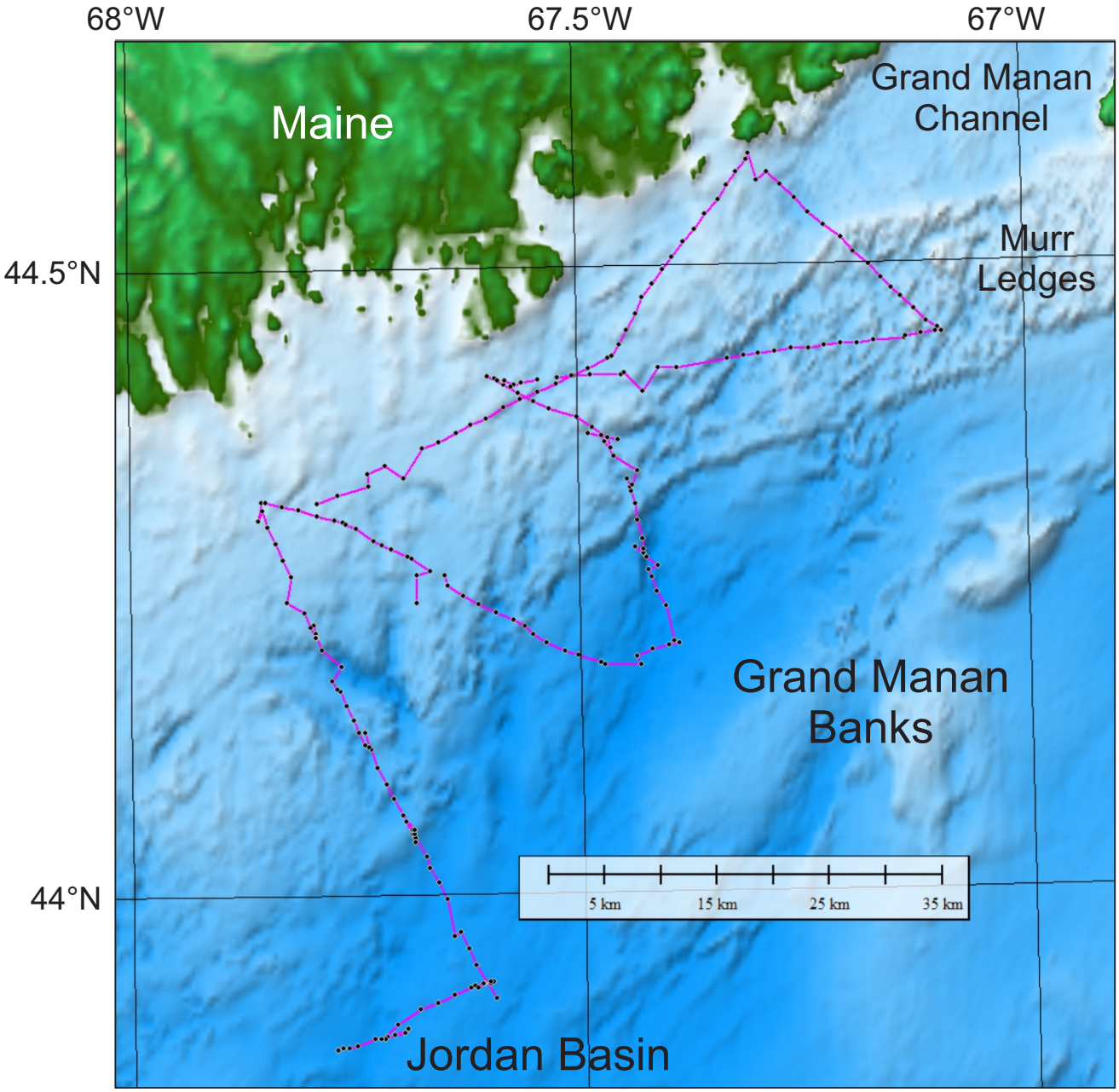
Appendix 1: 88ARGO

Contents

1. Track plot of expedition 88ARGO in the Gulf of Maine
2. Expedition notes
3. Original navigation
4. GSCA formatted navigation
5. Seismic data inventory
6. Seismic profiles
7. Seismic profile detailed location maps showing start and end times

88ARGO

Seismic profiles in the Gulf of Maine



ARGO Maine – UM-MGS-DMR Gulf of Maine Cruise 1988

Joseph T. Kelley, Stephan M. Dickson, Daniel F. Belknap, and Bruce Joule, Co-PI's –
US Minerals Management Service, in-kind from UM, MGS, and MDMR
(compiled and corrected by DFB Sept. 2021 from logs and data rolls)

R/V ARGO MAINE – Maine Maritime Academy, Castine, ME
Depart: Boothbay Harbor, ME, 7/25/88, return 07/28/88

Ship's Crew:	Captain	Don Bradford
	Chief Engineer	Kip
	First Mate	Jeff
	Second Mate	Matt
	Cook	Chris
Scientists:	Daniel Belknap	Univ. Maine – co-PI
	Steve Dickson	Maine Geological Survey – co-PI
	Mike Kelley	UM
	Bruce Joule	Maine Dept. Marine Resources
	Peter -	Maine Dept. Marine Resources
	Mary Morrison	Maine Dept. Marine Resources
	Eric Shott	Maine Dept. Marine Resources
	Carol Schneier	Earth Watch

Purposes of cruise: 1) geologic mapping of Maine shallow marine environment, 2) Smith-MacIntyre grab samples for sediments and infaunal collection. Funded by U.S. Minerals Management Service, Maine Geological Survey, Maine DMR. ORE Geopulse boomer seismic system, EG&G SMS-260 sidescan sonar, Smith-MacIntyre grab sampler. Navigation from UMaine equipment, Loran-C. Latitude-Longitude listed here estimated from hand plot to navigation chart, require more sophisticated conversion of Loran-C raw data.

SOL = Start of Line, EOL = End of Line, C/C = course change

ALL: Local Time: EDT Eastern Daylight Time

25 July, Monday @ 0400 Departure from Boothbay Harbor

Eastern Maine coastline, start SE of Mt. Desert Rock

SOL GM-88-28	@ 1356	@ 43° 52.8'N	67° 47.3'W
EOL GM-88-28	@ 1440	@ 43° 53.6'N	67° 43.4'W

Reverse course for grab sampling (SM Grab Station #'s)

SOL GM-88-29	@ 1450
EOL GM-88-29	@ 1510

Station #1 Jordan Basin , too deep to sample

SOL GM-88-30	@ 1726	@ 43° 54.0'N	67° 42.5'W
EOL GM-88-30	@ 1822	@ 43° 56.1'N	67° 37.2'W

Reverse course for grab sampling

SOL GM-88-31	@ 1835
EOL GM-88-31	@ 1843

(mix-up on original roll, no GM-88-32)

SOL GM-88-33	@ 1855	@ 43° 55.8'N	67° 38.2'W
Station #2 Jones Ground	@ 1850	@ 43° 56.0'N	67° 37.5'W
EOL GM-88-33	@ 1843	@ 43° 56.3'N	67° 37.4'W

Multiple sample attempts at Station #2, 2 successful

Break overnight

26 July, Tuesday

SOL GM-88-34	@ 0613	@ 43° 56.2'N	67° 37.8'W
Station #3 South Outer Schoodic Ridge	@ 1850	@ 44° 03.2'N	67° 42.0'W
EOL GM-88-34	@ 0753	@ 44° 08.1'N	67° 45.4'W

Reverse course for grab sampling

SOL GM-88-35	@ 0805
EOL GM-88-35	@ 0815

SM Grab Sampling at Station #3

SOL GM-88-36	@ 0959	@ 44° 03.5'N	67° 42.3'W
Station #4 North Outer Schoodic Ridge	@ 1051		
EOL GM-88-36	@ 1100	@ 44° 08.1'N	67° 45.4'W

Reverse course for grab sampling

SOL GM-88-37	@ 1110
EOL GM-88-37	@ 1120

SM Grab Sampling at Station #4

SOL GM-88-38	@ 1303	@ 44° 07.5'N	67° 45.6'W
EOL GM-88-38	@ 1425	@ 44° 13.2'N	67° 48.9'W

Reverse course for grab sampling

SOL GM-88-39	@ 1435		
Station #5 “Joules Reward”	@ 1442	@ 44° 12.7'N	67° 48.2'W

EOL GM-88-39	@ 1445		
SM Grab Sampling at Station #5 – offshore Gouldsboro			
SOL GM-88-40	@ 1635	@ 44° 13.0'N	67° 48.3'W
EOL GM-88-40	@ 1755	@ 44° 14.2'N	67° 52.5'W
SOL GM-88-41	@ 1756	toward Station #6	
EOL GM-88-41 at Station #6	@ 1845	@ 44° 18.2'N	67° 46.5'W
Station #6 North Joe Ray Ground (sample later)			
SOL GM-88-42	@ 1850	@ 44° 18.4'N	67° 46.8'W
EOL GM-88-42	@ 1947	@ 44° 15.5'N	67° 42.4'W
SOL GM-88-43	@ 1957		
Reverse course for grab sampling			
Station #10	@ 1958	@ 44° 15.7'N	67° 41.7'W
South Inner Mt. Desert Ground			
Station #09	@ 2007	@ 44° 16.4'N	67° 42.0'W
Inner Mt. Desert Ground			
Station #08	@ 2028	@ 44° 17.2'N	67° 44.0'W
North Inner Mt. Desert Ground			
Station #07	@ 2045	@ 44° 17.9'N	67° 45.6'W
Joe Ray Ground			
EOL GM-88-43	@ 2053		
at Station #6, Offshore Great Wass Island			
SM Grab Sampling at Stations #6, #7, #8, #9, #10 overnight by DMR crew			

27 July, Wednesday

SOL GM-88-44 at Sta. #10	@ 0624	@ 44° 15.6'N	67° 42.1'W
EOL GM-88-44, SOL GM-88-45	@ 0812	@ 44° 11.3'N	67° 29.2'W
At Station #12 – NOTE course NOT reversed			
EOL GM-88-45, SOL GM-88-46	@ 0856	@ 44° 12.1'N	67° 24.2'W
EOL GM-88-46	@ 1008	@ 44° 16.7'N	67° 27.4'W
SOL GM-88-47	@ 1019		
Reverse course for grab sampling			
Station #13	@ 1021	@ 44° 16.5'N	67° 26.7'W
North Puzzling Rock, 193 m depth			
C/C Station #12	@ 1139	@ 44° 11.3'N	67° 29.2'W
Outer Mt. Desert Ground, 192 m depth			

Station #11	@ 1203	@ 44° 11.7'N	67° 31.3'W
North Outer Mt. Desert Ground, 192 m depth			
EOL GM-88-47	@ 1205		
SM Grab Sampling at Stations #11, #12, #13			
SOL GM-88-48	@ 1805	@ 44° 15.8'N	67° 26.0'W
EOL GM-88-48	@ 1845	@ 44° 20.2'N	67° 27.6'W
SOL GM-88-49	@ 1854		
Reverse course for grab sampling			
Station #14	@ 1905	@ 44° 19.5'N	67° 27.5'W
The Ridges Ground			
EOL GM-88-49	@ 1908		
SM Grab Sampling at Station #14			
SOL GM-88-50	@ 2102	@ 44° 20.2'N	67° 27.6'W
EOL GM-88-50	@ 2134	@ 44° 22.3'N	67° 29.5'W
SOL GM-88-51	@ 2242		
Reverse course for grab sampling			
Station #15 North Ridges	@ 2244	@ 44° 22.0'N	67° 29.3'W
EOL GM-88-51	@ 2247		
SM Grab Sampling at Station #15, South of Great Wass Island			

28 July, Thursday

SOL GM-88-52	@ 0559	@ 44° 21.7'N	67° 28.6'W
EOL GM-88-52	@ 0720	@ 44° 25.0'N	67° 37.2'W
SOL GM-88-53	@ 0727		
Reverse course for grab sampling			
Station #16 South Egg Rock	@ 0740	@ 44° 24.7'N	67° 36.0'W
EOL GM-88-53	@ 0747		
SM Grab Sampling at Station #16			
SOL GM-88-54	@ 0954	@ 44° 21.7'N	67° 28.6'W
EOL GM-88-54, Station #17	@ 1415	@ 44° 27.1'N	67° 06.9'W
SM Grab Sampling at Station #17		@ 44° 27.1'N	67° 06.9'W
Machias Seal Island (Final SM grab sample)			
SOL GM-88-55 – NW toward coast	@ 1545	@ 44° 24.8'N	67° 34.7'W

Machias Bay to Great Wass Island offshore

EOL GM-88-55, SOL GM-88-56	@ 1806	@ 44° 35.7'N	67° 19.8'W
0.7 nm SW Cross Island, Outer Machias Bay			
EOL GM-88-56, SOL GM-88-57	@ 2027	@ 44° 25.8'N	67° 28.9'W
BW “MP” whistle			
EOL GM-88-57	@ 2320	@ 44° 19.3'N	67° 48.5'W

END OF GEOPHYSICAL DATA

29 July, Friday - return to Boothbay Harbor

Daniel F. Belknap, Stephan M. Dickson, Joseph T. Kelley						
University of Maine and Maine Geological Survey						
Bruce Joule et al., Department of Marine Resources					(No navigation log	
R/V ARGO-Maine				**Offshore central coast of Maine to**	sheets found for	
Maine Maritime Academy				**Jordan Basin**	GM-88-08 to 18,	
ORE Geopulse and EG&G SMS-260 sidescan sonar (SSS in notes)					perhaps at MGS?)	
Smith-MacIntyre grab sampler for surface sediments and biota (SM)						
				compiled and corrected, D.F. Belknap, 2021	**Latitude**	**Longitude**
DATE	**TIME:**	**LORAN-C**	**LORAN-C**	**Notes**	(approximate: need	
	EDT	**9960-W**	**9960-X**	(Earlier lines were previous cruise 7/19-21)	Loran conversions)	
07/25/88	13:56:03	12397.2	25626.3	SOL GM-88-28 *(SOL = Start of Line)*	43° 52.8'N	67° 47.3'W
	14:00:51	12395.0	25625.9	SE of Mt. Desert Rock		
	14:05:04	12392.9	25625.4			
	14:10:11	12390.0	25624.9			
	14:21:00	12383.6	25623.6			
	14:28:10	12379.4	25622.6	at Site #(1) Jordan Basin - too deep	43° 53.5'N	67° 44.4'W
	14:40:02	12372.9	25621.1	EOL GM-88-28 *(EOL = End of Line)*	43° 53.6'N	67° 43.4'W
	14:50:33	12370.2	25621.7	SOL GM-88-29		
	15:00:06	12376.2	25621.9		(note duplicate	
	15:07:50	12380.0	25622.5	Site #1(A) SM	reversed course)	
	15:10:25	12381.1	25622.9	EOL GM-88-29		
	17:26:34	12371.7	25624.1	SOL GM-88-30	43° 54.0'N	67° 42.5'W
	17:40:20	12361.1	25623.7			
	17:50:00	12353.5	25623.0	C 066°, 5.4 knts		
	18:00:00	12346.4	25622.5	C 063°, 5.4 knts		
	18:10:00	12339.3	25621.7	C 064°, 4.4 knts		
	18:16:49	12335.0	25620.7	C 075°, 4.5 knts		
	18:20:00	12332.9	25620.2	C 076°, 5.0 knts		
	18:22:04	12331.8	25619.9	EOL GM-88-30 C 070°, 5.7 knts	43° 56.1'N	67° 37.2'W
	18:35:00	12334.8	25620.6	SOL GM-88-31 C 047°, 2.9 knts		
	18:43:00	12338.1	25621.2	EOL GM-88-31	(note duplicate	
				(mixup on roll - no line 88-32)	reversed course)	
	18:46:56	12337.8	25620.6	SOL GM-88-33	43° 55.8'N	67° 38.2'W
	18:50:00	12335.6	25620.8	C 063°; 5.5 knts Station #2 Jones Ground	43° 56.0'N	67° 37.5'W
	18:55:00	12332.2	25620.7	EOL GB-88-33 East of Mt. Desert Rock	43° 56.3'N	67° 37.4'W
				multiple SM grab attempts - 2 successful		
07/26/90	6:13:00	12333.6	25622.2	SOL GM-88-34	43° 56.2'N	67° 37.8'W
	6:20:00	12330.7	25625.6			
	6:30:00	12327.1	25630.1	C 339°, 4.8 knts		
	6:40:00	12323.6	25634.5			
	6:50:00	12319.9	25638.9			
	7:00:00	12315.9	25643.4			
	7:10:00	12312.7	25647.8			
	7:20:26	12309.8	25652.2	C 339°, 4.8 knts		
	7:30:00	12307.2	25655.0			
	7:40:00	12304.3	25660.0			
	7:43:22	12303.4	25661.3	Station #3 S. Outer Schoodic Ridge	44° 03.2'N	67° 42.0'W
	7:53:00	12300.9	25665.1	EOL GM-88-34	44° 03.4'N	67° 42.8'W
	8:05:05	12301.9	25662.5	SOL GM-88-35 ORE + SSS		
	8:09:16	12303.3	25661.2		(note duplicate	
	8:15:06	12305.2	25659.4	EOL GM-88-35	reversed course	
				SM Grab sampling	with SSS)	
	9:59:04	12301.1	25662.3	SOL GM-88-36	44° 03.5'N	67° 42.3'W
	10:10:00	12299.3	25666.8			
	10:19:59	12296.8	25671.1	C 322°, 5.0 knts		
	10:30:03	12293.5	25675.6			
	10:40:05	12290.0	25680.4			

	10:50:03	12285.6	25685.0			
	10:51:07	12285.2	25685.6	Station #4		
	10:59:59	12281.2	25689.4	EOL GM-88-36	44° 08.1'N	67° 45.4'W
	11:10:00	12284.2	25687.7	SOL GM-88-37		
	11:17:34	12284.2	25685.8	Station #4 N. Outer Schoodic Ridge	(note duplicate	
	11:20:01	12283.8	25685.2	EOL GM-88-37	reversed course	
				SM Grab sampling; Jordan Basin margin	with SSS)	
	13:03:16	12285.6	25686.6	SOL GM-88-38	44° 07.5'N	67° 45.6'W
	13:12:01	12283.4	25690.1			
	13:19:59	12280.5	25693.3			
	13:30:00	12277.2	25697.4	Excellent strat., abundant gas		
	13:39:45	12274.1	25701.4	Ship stopped		
	13:43:43	12273.8	25702.4	Ship resume course		
	13:50:06	12272.3	25704.8	C 326°, 4.7 knts		
	14:00:03	12268.8	25708.8			
	14:10:06	12264.7	25713.0			
	14:17:38	12261.5	25716.0	Station #5		
	14:20:03	12260.5	25717.1			
	14:25:04	12258.1	25719.2	EOL GM-88-38	44° 13.2'N	67° 48.9'W
	14:35:13	12260.8	25717.8	SOL GM-88-39	(reversed course	
	14:40:04	12261.9	25716.3		with SSS)	
	14:42:27	12262.1	25715.5	Station #5 "Joules Reward"	44° 12.7'N	67° 48.2'W
	14:45:01	12262.2	25714.6	EOL GM-88-39		
				SM Grab sampling; Off Gouldsboro		
	16:35:20	12262.0	25716.5	SOL GM-88-40	44° 13.0'N	67° 48.3'W
	16:42:02	12259.4	25719.4			
	16:49:54	12256.1	25723.2			
	17:00:32	12257.5	25727.9	C 342°, 5.0 knts		
	17:10:07	12247.9	25732.7	Full strat., local scour to bedrock		
	17:20:08	12244.3	25737.0			
	17:30:02	12240.7	25741.7			
	17:40:11	12236.3	25746.3			
	17:50:06	12232.0	25750.7			
	17:55:34	12230.1	25753.2	EOL GM-88-40	44° 14.2'N	67° 52.5'W
	17:56:45	12229.5	25752.7	SOL GM-88-41 Toward Station #6		
	18:00:13	12228.5	25751.6	C 105°, 4.0 knts		
	18:10:00	12225.4	25748.2			
	18:20:00	12222.3	25744.7			
	18:30:00	12219.0	25741.1			
	18:40:00	12215.7	25737.5			
	18:45:19	12214.4	25736.0	EOL GM-88-41 Station #6 N. Joe Ray Grd	44° 18.2'N	67° 46.5'W
	18:50:38	12213.9	25735.3	SOL GM-88-42	44° 18.4'N	67° 46.8'W
	18:58:12	12212.7	25732.4	Station #7		
	19:10:04	12211.6	25727.4			
	19:14:03	12211.2	25725.7	Station #8		
	19:20:05	12210.2	25723.3			
	19:30:01	12209.0	25719.2			
	19:32:49	12208.5	25718.0	Station #9		
	19:40:06	12211.8	25715.0	C 167°, 5.3 knts		
	19:41:38	12212.6	25714.4	Station #10		
	19:46:59	12215.4	25712.7	EOL GM-88-42	44° 15.5'N	67° 42.4'W
	19:57:08	12212.6	25714.2	SOL GM-88-43	(reversed course)	
	19:58:47	12211.7	25714.8	Station #10 S. Inner Mt. Desert Ground	44° 15.7'N	67° 41.7'W
	20:07:35	12208.5	25718.3	Station #9 Inner Mt. Desert Ground	44° 16.4'N	67° 42.0'W
	20:15:11	12209.3	25721.1			
	20:20:18	12209.9	25723.0			
	20:28:22	12211.1	25726.2	Station #8 N. Inner Mt. Desert Ground	44° 17.2'N	67° 44.0'W

	20:30:00			Large pockmark? Or gas destabilizing sediment allowing more erosion		
	20:41:08	12212.0	25731.0			
	20:45:28	12212.6	25732.6	Station #7 Joe Ray Ground	44° 17.9'N	67° 45.6'W
	20:53:59	12214.2	25735.8	EOL GM-88-43 Station #6		
				Offshore of Great Wass Island		
				SM Grab Sampling #6, #7, #8, #9, #10		
07/27/88	6:24:15	12210.0	25714.0	SOL GM-88-44, Sta. 10 underway to 11	44° 15.6'N	67° 42.1'W
	6:30:00	12209.2	25712.0	C 117°, 4.5 knts		
	6:40:06	12208.0	25707.6			
	6:50:21	12207.2	25703.3			
	6:59:59	12206.1	25699.3			
	7:10:01	12204.6	25695.1			
	7:20:00	12203.0	25690.9			
	7:26:29	12202.0	25688.3	C/C 140° to avoid radar targets (gear?)	(C/C = Change Course)	
	7:31:59	12203.1	25685.5	C/C 117°, 4.8 knts, back on course to #11		
	7:40:03	12201.9	25682.3			
	7:50:02	12200.1	25678.2			
	7:58:02	12198.1	25675.2	C/C 109°, 5.4 knts Station #11		
	8:10:02	12194.9	25670.8	C 105°, 5.5 knts		
	8:12:40	12194.4	25669.9	EOL GM-88-44, SOL GM-88-45, Sta. #12	44° 11.3'N	67° 29.2'W
	8:20:28	12189.2	25666.8		(note NOT reversed)	
	8:30:04	12183.3	25667.4	C 077°, 4.9 knts Tr-Jr dipping bedrock		
	8:40:11	12177.2	25666.3	C 078°, 4.1 knts		
	8:50:43	12171.4	25665.1			
	8:56:40	12168.4	25664.0	EOL GM-88-45; SOL GM-88-46	44° 12.1'N	67° 24.2'W
	9:10:33	12162.3	25669.5	C 336°, 4.7 knt		
	9:20:04	12159.5	25673.3			
	9:30:01	12156.3	25677.6	Offshore Petit Manan to Jordan Basin		
	9:40:03	12152.5	25681.2			
	9:44:20	12150.9	25682.7	C/C 065° radar targets		
	9:50:02	12147.5	25682.3	C/C 310° back on course		
	10:00:02	12146.7	25685.4			
	10:01:31	12146.7	25686.4	Station #13		
	10:08:23	12146.7	25688.9	EOL GM-88-46	44° 16.7'N	67° 27.4'W
	10:19:06	12147.6	25686.6	SOL GM-88-47		
	10:20:04	12147.6	25686.3		(reversed course)	
	10:21:24	12147.3	25685.9	Station #13 N. Puzzling Rock 193 m	44° 16.5'N	67° 26.7'W
	10:30:04	12150.2	25685.6			
	10:40:03	12156.9	25683.3	C 203°, 4.7 knts		
	10:50:04	12163.7	25681.0			
	11:00:02	12170.2	25678.7			
	11:10:02	12176.8	25676.9			
	11:20:15	12182.9	25674.7			
	11:30:07	12188.8	25672.4			
	11:39:51	12194.5	25669.9	C/C Sta. #12- Outer Mt. Desert Grd 205 m	44° 11.3'N	67° 29.2'W
	11:50:04	12196.4	25671.3	C 297°, 4.1 knts		
	12:00:11	12198.4	25674.2			
	12:03:29	12198.4	25675.2	Sta #11 N. Outer Mt. Desert Ground 192 m	44° 11.7'N	67° 31.3'W
	12:05:17	12199.2	25675.7	EOL GM-88-47		
				SM Grab sampling #11, #12, #13		
	18:05:00	12144.9	25687.5	SOL GM-88-48	44° 15.8'N	67° 26.0'W
	18:09:59	12142.2	25689.7			
	18:20:01	12136.5	25693.9			
	18:29:58	12131.2	25697.8			
	18:36:32	12128.1	25700.4	Station #14		
	18:40:01	12126.4	25701.7			

	18:44:59	12124.0	25703.7	EOL GM-88-48	44° 20.2'N	67° 27.6'W
	18:54:03	12125.0	25702.9	SOL GM-88-49	(reversed course)	
	19:05:13	12128.0	25700.0	Station #14 The Ridges Ground	44° 19.5'N	67° 27.5'W
	19:08:04	12128.6	25699.4	EOL GM-88-49		
				SM Grab sampling Station #14		
	21:02:07	12125.4	25701.8	SOL GM-88-50	44° 20.2'N	67° 27.6'W
	21:10:27	12122.7	25705.7			
	21:20:00	12119.9	25709.9			
	21:29:58	12116.9	25714.3			
	21:34:00	12115.6	25715.9	EOL GM-88-50	44° 22.3'N	67° 29.5'W
	22:42:10	12118.5	25718.0	SOL GM-88-51		
	22:44:07	12118.1	25718.1	Station #15 - North Ridges	44° 22.0'N	67° 29.3'W
	22:47:05	12112.7	25712.7	EOL GM-88-51		
				SM Grab sampling Station #15		
				South of Great Wass Island		
07/28/88	5:59:04	12118.0	25711.9	SOL GM-88-52	44° 21.7'N	67° 28.6'W
	6:10:15	12118.5	25716.6	C 302°, 4.9 knts, Underway #15 to #16		
	6:20:00	12119.0	25720.6			
	6:30:00	12119.3	25724.6			
	6:40:00	12120.0	25728.3			
	6:50:00	12120.9	25732.2			
	7:00:06	12121.6	25736.2			
	7:09:39	12122.9	25739.7	Station #16		
	7:20:05	12124.4	25743.6	EOL GM-88-52	44° 25.0'N	67° 37.2'W
				1.4 nm SE of Egg Rock Bell R"6"		
	7:27:55	12123.0	25742.3	SOL GM-88-53	(note duplicate	
	7:30:26	12122.7	25741.6	SSS towfish snagged buoy line, stop	reversed course	
	7:38:37	12121.1	25740.8	Resume line	with SSS)	
	7:40:35	12120.8	25740.2	Station #16 South Egg Rock	44° 24.7'N	67° 36.0'W
	7:47:04	12119.9	25738.4	EOL GM-88-53		
				SM Grab sampling Station #16		
	9:54:02	12121.3	25738.4	SOL GM-88-54	44° 24.8'N	67° 34.7'W
	10:00:54	12117.4	25737.6	C 080°, 5.2 knts		
	10:10:03	12112.4	25735.7			
	10:20:44	12106.5	25733.3			
	10:30:01	12101.7	25731.4			
	10:40:03	12097.0	25729.3			
	10:50:04	12092.7	25727.1			
	11:00:05	12087.8	25725.0			
	11:10:04	12083.1	25722.8			
	11:19:59	12078.0	25720.9			
	11:30:00	12073.3	25718.8	C 080°, 5.2 knts		
	12:00:04	12058.7	25713.4			
				South of Machias Bay, offshore		
	12:10:08	12054.1	25711.6	C 087°, 4.4 knts		
	12:20:02	12049.7	25710.1			
	12:30:04	12044.9	25708.2			
	12:40:06	12040.1	25706.5			
	12:50:36	12035.3	25704.6			
	13:00:08	12031.3	25702.9			
	13:10:06	12027.2	25701.0			
	13:20:04	12023.1	25699.3			
	13:30:04	12018.5	25697.5			
	13:40:02	12014.3	25695.7			
	13:50:42	12009.8	25694.1			
	14:00:01	12005.8	25692.8			
	14:10:02	12002.1	25691.2			

	14:15:04	12000.1	25690.5	EOL GM-88-54 ; Station #17	44° 27.1'N	67° 06.9'W
				SM Grab Sample - Machias Seal Island	44° 27.7'N	67° 06.7'W
	15:45:04	12000.5	25691.7	SOL GM-88-55; NW toward coast	44° 27.1'N	67° 06.9'W
	15:51:03	12000.2	25694.3	C 310°, 6.1 knts	(NOT a rerun)	
	16:00:02	11998.7	25698.2	No more stops for grab samples		
	16:10:32	11997.6	25702.1			
	16:20:02	11996.4	25704.9			
	16:30:02	11995.1	25708.4			
	16:40:07	11993.0	25712.5			
	16:50:02	11991.9	25716.9			
				Machias Bay to Great Wass Island offshore		
	17:00:07	11989.7	25721.0			
	17:10:04	11989.4	25726.1			
	17:19:57	11988.1	25730.4			
	17:30:03	11986.3	25735.1	C 319°, 6.0 knts		
	17:40:02	11984.6	25739.3			
	17:50:01	11983.2	25743.8			
	18:00:01	11981.3	25747.5			
	18:06:29	11980.8	25749.6	EOL GM-88-55; SOL GM-88-56; C/C 217°	44° 35.7'N	67° 19.8'W
				0.7 nm SW Cross Is., outer Machias Bay		
	18:10:27	11983.3	25749.0			
	18:20:03	11990.2	25748.0	5.3 knts		
	18:30:03	11997.1	25746.6			
	18:40:03	12004.3	25745.0			
	18:50:01	12012.2	25744.2			
	19:00:02	12020.1	25742.9	C 214°, 5.0 knts		
	19:10:02	12028.0	25741.8			
	19:20:02	12035.4	25740.8			
	19:30:00	12042.2	25739.4			
	19:40:01	12049.5	25738.2			
	19:48:58	12056.8	25736.8			
	20:00:08	12064.5	25734.9			
	20:10:32	12072.1	25732.8			
	20:20:03	12079.4	25731.0			
	20:27:44	12085.3	25729.7	EOL GM-88-56; SOL GM-88-57	44° 25.8'N	67° 28.9'W
				BW "MP" whistle	(NOT a rerun)	
	20:30:20	12087.3	25730.0	C 245°		
	20:40:09	12095.0	25730.8			
	20:50:06	12102.3	25731.5			
	21:00:15	12109.4	25732.3	C 245°		
	21:10:05	12116.4	25733.2			
	21:20:02	12123.5	25734.2	5.0 knts		
	21:30:16	12130.8	25735.0			
	21:40:25	12138.5	25735.7			
	21:50:01	12144.8	25736.5			
	22:00:02	12152.1	25737.2			
	22:10:02	12159.8	25738.1			
	22:19:17	12166.6	25739.0			
	22:30:01	12174.8	25740.0	Outstanding summary stratigraphy		
	22:40:08	12182.5	25741.0			
	22:50:01	12190.0	25742.0			
	23:00:01	12198.3	25741.4	C 220, 5.2 knts		
	23:10:01	12206.3	25742.1			
	23:20:03	12214.5	25743.5	EOL GM-88-57	44° 19.3'N	67° 48.5'W
				SE Rock off Petit Manan Island		
				END OF GEOPHYSICAL DATA		

Year	Day of Year	Hour	Minute	Second	Latitude	Longitude	Pen 1 down 0 up
1988	207	17	56	0	43.87667	-67.776670	1
1988	207	18	0	0	43.87833	-67.770000	
1988	207	18	5	0	43.87833	-67.763330	
1988	207	18	10	0	43.88000	-67.755000	
1988	207	18	21	0	43.88500	-67.735000	
1988	207	18	28	0	43.88667	-67.721670	
1988	207	18	40	0	43.89000	-67.701670	
1988	207	18	50	0	43.89333	-67.698330	
1988	207	19	0	0	43.88833	-67.713330	
1988	207	19	7	0	43.88500	-67.723330	
1988	207	19	10	0	43.88500	-67.728330	
1988	207	21	26	0	43.89667	-67.710000	
1988	207	21	40	0	43.90833	-67.685000	
1988	207	21	50	0	43.91333	-67.665000	
1988	207	22	0	0	43.92000	-67.646670	
1988	207	22	10	0	43.92500	-67.628330	
1988	207	22	16	0	43.92833	-67.613330	
1988	207	22	20	0	43.92833	-67.606670	
1988	207	22	22	0	43.93000	-67.603330	
1988	207	22	35	0	43.92833	-67.613330	
1988	207	22	43	0	43.92667	-67.623330	
1988	207	22	46	0	43.92500	-67.620000	
1988	207	22	50	0	43.92833	-67.615000	
1988	207	22	55	0	43.93000	-67.606670	0
1988	208	10	13	0	43.91667	-67.600000	1
1988	208	10	20	0	43.94333	-67.621670	
1988	208	10	30	0	43.95667	-67.630000	
1988	208	10	40	0	43.97000	-67.638330	
1988	208	10	50	0	43.96667	-67.645000	
1988	208	11	0	0	43.99667	-67.653330	
1988	208	11	10	0	44.01000	-67.661670	
1988	208	11	20	0	44.02167	-67.671670	
1988	208	11	30	0	44.03000	-67.675000	
1988	208	11	40	0	44.04500	-67.686670	
1988	208	11	43	0	44.04833	-67.690000	
1988	208	11	53	0	44.05833	-67.696670	
1988	208	12	5	0	44.05167	-67.690000	
1988	208	12	9	0	44.04833	-67.688330	
1988	208	12	15	0	44.04167	-67.686670	
1988	208	13	59	0	44.05167	-67.688330	
1988	208	14	10	0	44.06333	-67.700000	
1988	208	14	19	0	44.07667	-67.710000	
1988	208	14	30	0	44.08833	-67.718330	

1988	208	14	40	0	44.10167	-67.728330	
1988	208	14	50	0	44.11667	-67.735000	
1988	208	14	51	0	44.11833	-67.736670	
1988	208	14	59	0	44.13000	-67.741670	0
1988	208	17	3	0	44.12000	-67.741670	1
1988	208	17	12	0	44.13000	-67.748330	
1988	208	17	19	0	44.14000	-67.753330	
1988	208	17	30	0	44.15167	-67.761670	
1988	208	17	39	0	44.16333	-67.768330	
1988	208	17	43	0	44.16500	-67.771670	
1988	208	17	50	0	44.17167	-67.776670	
1988	208	18	0	0	44.18333	-67.766670	
1988	208	18	10	0	44.19667	-67.788330	
1988	208	18	17	0	44.20667	-67.793330	
1988	208	18	20	0	44.21000	-67.795000	
1988	208	18	25	0	44.21667	-67.796670	0
1988	208	20	35	0	44.20667	-67.795000	1
1988	208	20	42	0	44.21500	-67.800000	
1988	208	20	49	0	44.22667	-67.806670	
1988	208	21	0	0	44.23500	-67.826670	
1988	208	21	10	0	44.25500	-67.821670	
1988	208	21	20	0	44.26833	-67.830000	
1988	208	21	30	0	44.28167	-67.838330	
1988	208	21	40	0	44.29500	-67.846670	
1988	208	21	50	0	44.30833	-67.851670	
1988	208	21	55	0	44.30000	-67.856670	
1988	208	21	56	0	44.31500	-67.853330	
1988	208	22	0	0	44.31500	-67.848330	
1988	208	22	10	0	44.31167	-67.830000	
1988	208	22	20	0	44.30833	-67.811670	
1988	208	22	30	0	44.30333	-67.791670	
1988	208	22	40	0	44.30000	-67.771670	
1988	208	22	45	0	44.29833	-67.763330	
1988	208	22	50	0	44.29667	-67.760000	
1988	208	22	58	0	44.29333	-67.748330	
1988	208	23	10	0	44.28333	-67.728330	
1988	208	23	14	0	44.28000	-67.720000	
1988	208	23	20	0	44.27667	-67.710000	
1988	208	23	30	0	44.27000	-67.691670	
1988	208	23	32	0	44.26833	-67.686670	
1988	208	23	40	0	44.25833	-67.666670	
1988	208	23	41	0	44.25500	-67.681670	
1988	208	23	46	0	44.23333	-67.681670	0
1988	209	10	30	0	44.25500	-67.650000	1
1988	209	10	40	0	44.24667	-67.646670	
1988	209	10	50	0	44.23833	-67.630000	
1988	209	10	59	0	44.23167	-67.613330	
1988	209	11	10	0	44.22500	-67.593330	

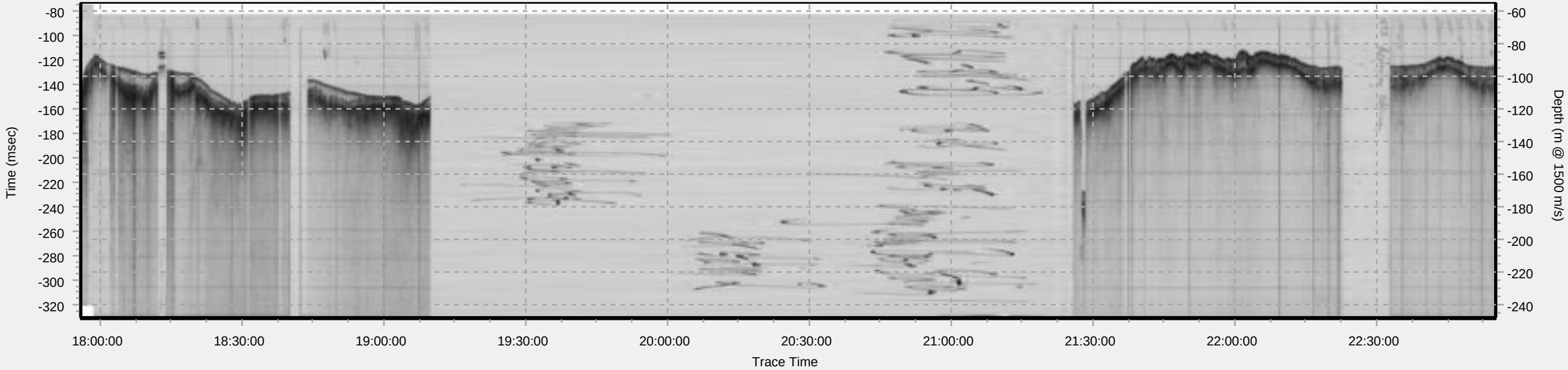
1988	209	11	20	0	44.21833	-67.575000	
1988	209	11	26	0	44.21333	-67.561670	
1988	209	11	31	0	44.20667	-67.553330	
1988	209	11	40	0	44.20000	-67.538330	
1988	209	11	50	0	44.19333	-67.518330	
1988	209	11	58	0	44.19000	-67.503330	
1988	209	12	10	0	44.18333	-67.478330	
1988	209	12	12	0	44.18167	-67.473330	
1988	209	12	20	0	44.18167	-67.433330	
1988	209	12	30	0	44.18833	-67.438330	
1988	209	12	40	0	44.19333	-67.420000	
1988	209	12	50	0	44.19667	-67.401670	
1988	209	12	56	0	44.19833	-67.390000	
1988	209	13	10	0	44.20000	-67.396670	
1988	209	13	20	0	44.22833	-67.405000	
1988	209	13	30	0	44.24000	-67.415000	
1988	209	13	40	0	44.25167	-67.420000	
1988	209	13	44	0	44.25667	-67.423330	
1988	209	13	50	0	44.26000	-67.413330	
1988	209	14	0	0	44.26667	-67.425000	
1988	209	14	1	0	44.27000	-67.428330	
1988	209	14	8	0	44.27500	-67.438330	0
1988	209	22	5	0	44.27333	-67.428330	1
1988	209	22	9	0	44.28167	-67.430000	
1988	209	22	20	0	44.29667	-67.435000	
1988	209	22	29	0	44.31000	-67.436670	
1988	209	22	36	0	44.32000	-67.441670	
1988	209	22	40	0	44.32333	-67.441670	
1988	209	22	44	0	44.33000	-67.445000	0
1988	210	1	2	0	44.32500	-67.440000	1
1988	210	1	10	0	44.33667	-67.433330	
1988	210	1	20	0	44.34833	-67.460000	
1988	210	1	29	0	44.36000	-67.470000	
1988	210	1	34	0	44.36500	-67.473330	
1988	210	2	42	0	44.36667	-67.488330	
1988	210	2	44	0	44.36667	-67.488330	
1988	210	2	47	0	44.36167	-67.455000	0
1988	210	9	54	0	44.35500	-67.463330	1
1988	210	10	10	0	44.36333	-67.466670	
1988	210	10	20	0	44.37167	-67.483330	
1988	210	10	30	0	44.38000	-67.500000	
1988	210	10	40	0	44.38667	-67.531670	
1988	210	10	50	0	44.39333	-67.548330	
1988	210	11	0	0	44.40000	-67.565000	
1988	210	11	9	0	44.40667	-67.581670	
1988	210	11	20	0	44.41333	-67.600000	
1988	210	11	27	0	44.41167	-67.591670	
1988	210	11	30	0	44.41000	-67.588330	

1988	210	11	38	0	44.41000	-67.581670	
1988	210	11	40	0	44.41000	-67.580000	
1988	210	11	47	0	44.40667	-67.570000	
1988	210	13	54	0	44.40500	-67.573330	
1988	210	14	0	0	44.40833	-67.561670	
1988	210	14	10	0	44.41000	-67.543330	0
1988	210	14	20	0	44.41167	-67.521670	1
1988	210	14	30	0	44.41333	-67.503330	
1988	210	14	40	0	44.41333	-67.485000	
1988	210	14	50	0	44.41333	-67.450000	
1988	210	15	0	0	44.41500	-67.446670	
1988	210	15	10	0	44.40000	-67.426600	
1988	210	15	19	0	44.41833	-67.408330	
1988	210	15	30	0	44.41833	-67.388330	
1988	210	16	0	0	44.42500	-67.331670	
1988	210	16	10	0	44.42667	-67.313330	
1988	210	16	20	0	44.42833	-67.296670	
1988	210	16	30	0	44.43000	-67.278330	
1988	210	16	40	0	44.43167	-67.260000	
1988	210	16	50	0	44.43167	-67.240000	
1988	210	17	0	0	44.43333	-67.223330	
1988	210	17	10	0	44.43500	-67.205000	
1988	210	17	20	0	44.43500	-67.186670	
1988	210	17	30	0	44.43667	-67.168330	
1988	210	17	40	0	44.43833	-67.133330	
1988	210	17	50	0	44.44000	-67.131670	
1988	210	18	0	0	44.44167	-67.115000	
1988	210	18	10	0	44.44333	-67.098330	
1988	210	18	15	0	44.44333	-67.091670	
1988	210	19	45	0	44.44667	-67.096670	
1988	210	19	51	0	44.45167	-67.108330	
1988	210	20	0	0	44.46167	-67.121670	
1988	210	20	10	0	44.47167	-67.136670	
1988	210	20	20	0	44.47833	-67.146670	
1988	210	20	30	0	44.48667	-67.158330	
1988	210	20	40	0	44.49833	-67.171670	
1988	210	20	50	0	44.50833	-67.188330	
1988	210	21	0	0	44.52000	-67.201670	
1988	210	21	10	0	44.53000	-67.221670	
1988	210	21	19	0	44.54000	-67.238330	
1988	210	21	30	0	44.55167	-67.253330	
1988	210	21	40	0	44.56333	-67.268330	
1988	210	21	50	0	44.57333	-67.283330	
1988	210	22	0	0	44.56667	-67.295000	
1988	210	22	6	0	44.58833	-67.303330	
1988	210	22	10	0	44.58333	-67.306670	
1988	210	22	20	0	44.57333	-67.318330	
1988	210	22	30	0	44.56333	-67.328330	

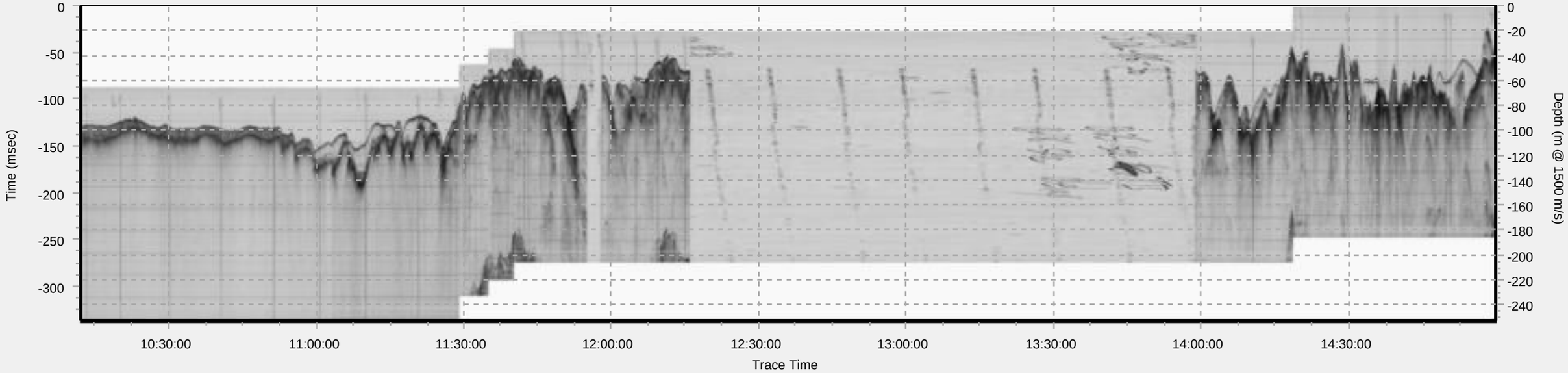
1988	210	22	40	0	44.55167	-67.338330	
1988	210	22	50	0	44.54000	-67.353330	
1988	210	23	0	0	44.52833	-67.365000	
1988	210	23	10	0	44.51833	-67.378330	
1988	210	23	20	0	44.50667	-67.391670	
1988	210	23	30	0	44.49667	-67.401670	
1988	210	23	40	0	44.48500	-67.413330	
1988	210	23	48	0	44.47500	-67.425000	
1988	211	0	0	0	44.46167	-67.433330	
1988	211	0	10	0	44.44833	-67.443330	
1988	211	0	20	0	44.43667	-67.451670	
1988	211	0	27	0	44.42833	-67.460000	
1988	211	0	30	0	44.42667	-67.465000	
1988	211	0	40	0	44.41833	-67.486670	
1988	211	0	50	0	44.41333	-67.505000	
1988	211	1	0	0	44.40667	-67.523330	
1988	211	1	10	0	44.40000	-67.543330	
1988	211	1	20	0	44.39500	-67.563330	
1988	211	1	30	0	44.38833	-67.581670	
1988	211	1	40	0	44.38000	-67.601670	
1988	211	1	50	0	44.37500	-67.618330	
1988	211	2	0	0	44.36833	-67.635000	
1988	211	2	10	0	44.36167	-67.655000	
1988	211	2	19	0	44.35667	-67.673330	
1988	211	2	30	0	44.33333	-67.695000	
1988	211	2	40	0	44.34333	-67.715000	
1988	211	2	50	0	44.33667	-67.735000	
1988	211	3	0	0	44.32667	-67.733330	
1988	211	3	10	0	44.32000	-67.768330	
1988	211	3	20	0	44.31333	-67.791670	0

	SEISMIC DATA INVENTORY			
GULF OF MAINE - off central and northeast Maine coast				
	R/V ARGO Maine	**CRUISE GM-88**		
Maine Geological Survey/ University of Maine/ Maine Dept. Marine Resources				
			Compiled by Daniel F. Belknap, 2021	
	Note: Lines before GM-88-28 are sidescan sonar only,			
	or Geopulse lacking navigation log sheets (see MGS for navigation?)			
ORE Geopulse - 9" Rolls				
Roll - 01	GM-88-28 to	07/25/88		Offshore EC Maine Coast to
	GM-88-54 (partial)	07/28/88		Jordan Basin
Roll - 02	GM-88-54 (cont'd)	07/28/88	10:16 - 14:15	Offshore Machias Bay W - E
	GM-88-55	07/28/88	14:15 - 18:06	Offshore to Cross Is. SE - NW
	GM-88-56	07/28/88	18:06 - 20:28	Shore parallel NE - SW
	GM-88-57	07/28/88	20:28 - 23:20	to Great Wass Is. ENE - WSW

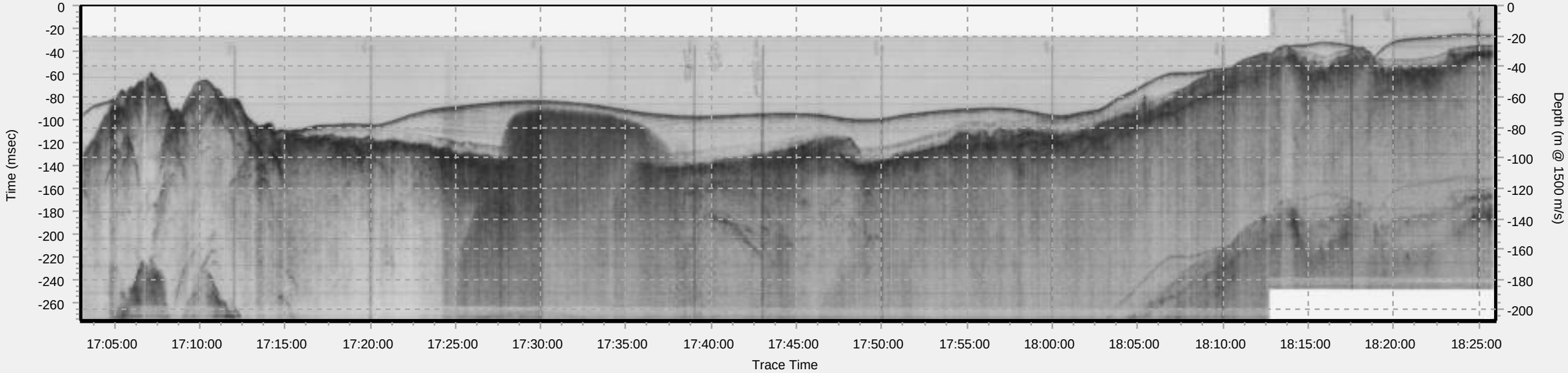
F:\3__DATA\18_UoM_Gulf of Maine expeditions\88ARGO\jp2\88ARGO_ORE_SEISMIC_GEOPULSE_207_1756_to_207_2254_halfwave.jp2



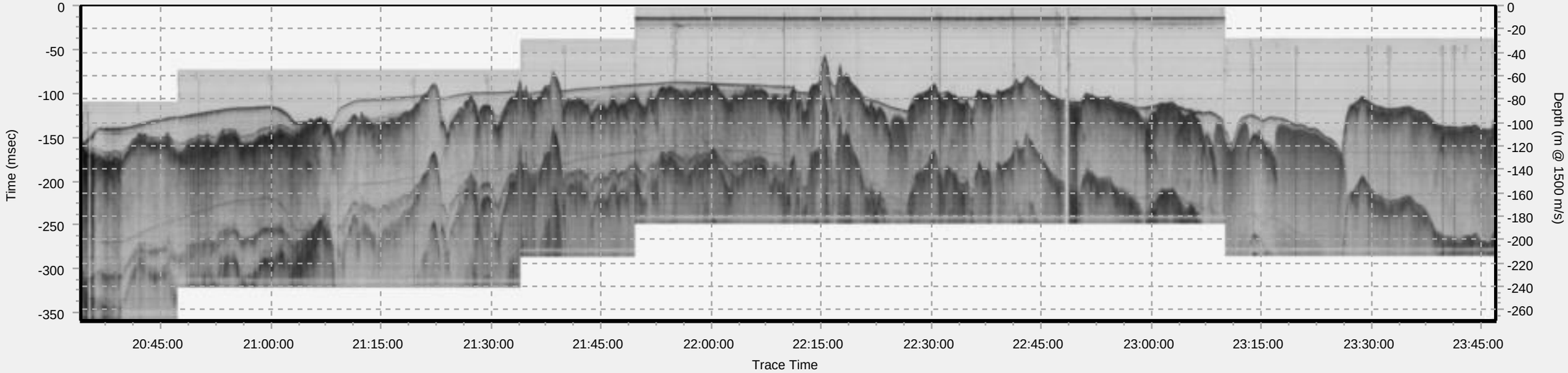
F:\3__DATA\18_UoM_Gulf of Maine expeditions\88ARGO\jp2\88ARGO_ORE_SEISMIC_GEOPULSE_208_1012_to_208_1459_halfwave.jp2



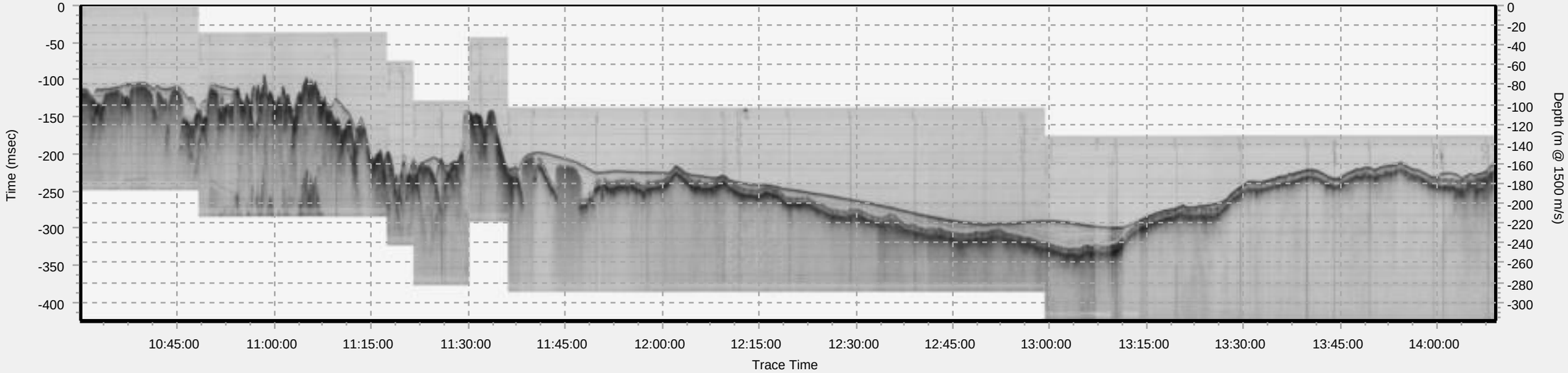
F:\3__DATA\18_UoM_Gulf of Maine expeditions\88ARGO\jp2\88ARGO_ORE_SEISMIC_GEOPULSE_208_1703_to_208_1826_halfwave.jp2



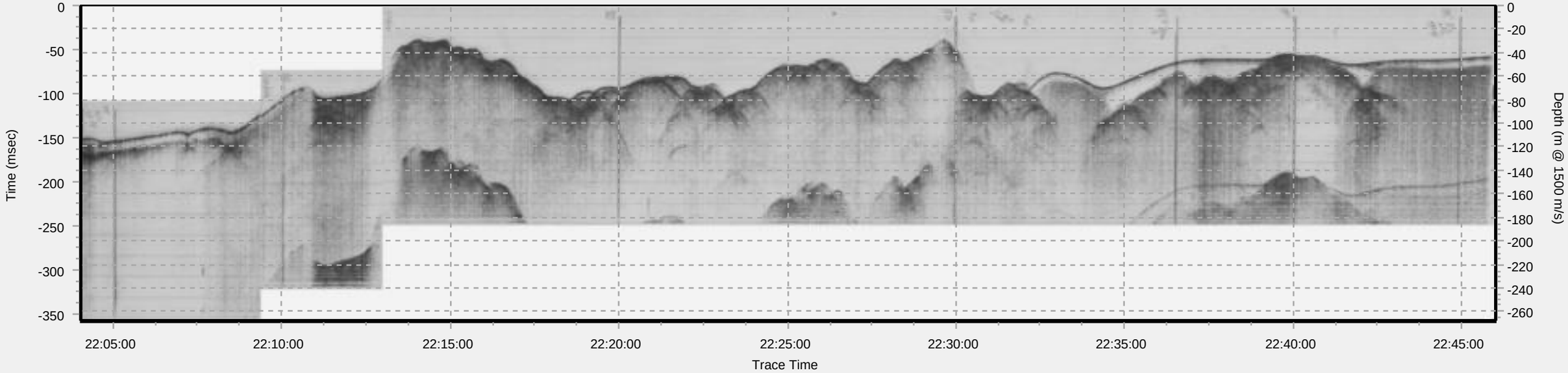
F:\3__DATA\18_UoM_Gulf of Maine expeditions\88ARGO\jp2\88ARGO_ORE_SEISMIC_GEOPULSE_208_2034_to_208_2346_halfwave.jp2



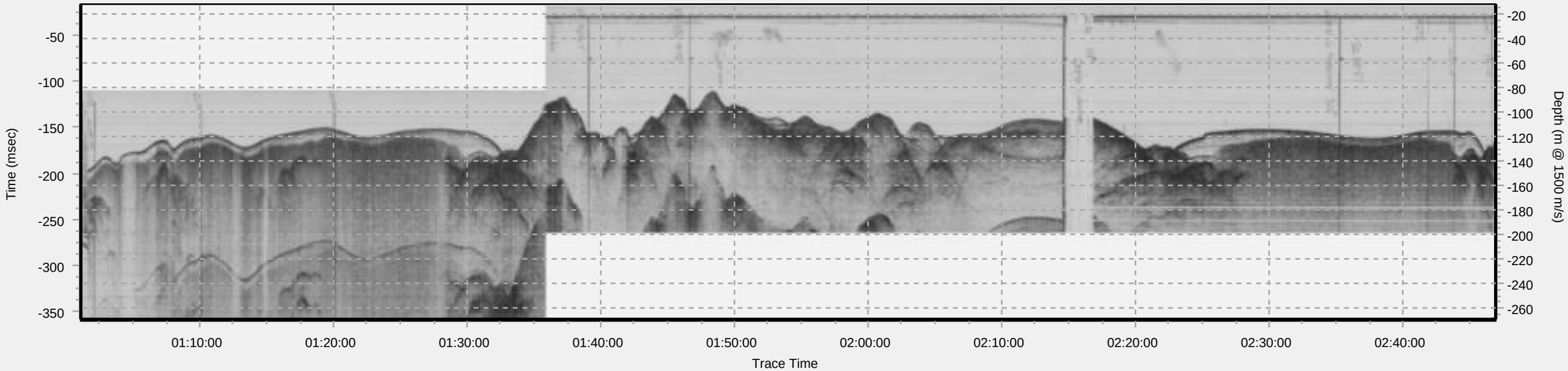
F:\3__DATA\18_UoM_Gulf of Maine expeditions\88ARGO\jp2\88ARGO_ORE_SEISMIC_GEOPULSE_209_1030_to_209_1408_halfwave.jp2



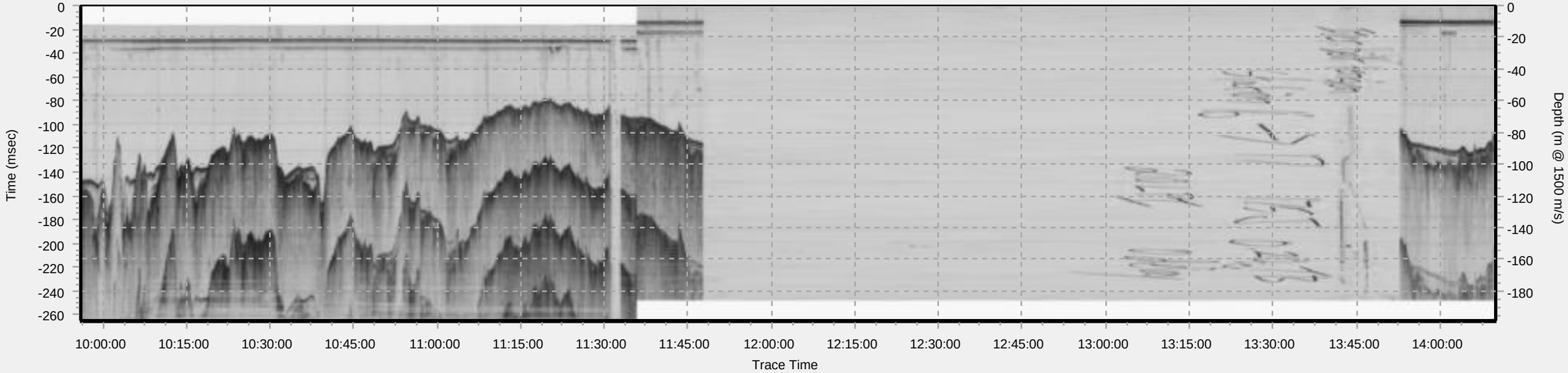
F:\3__DATA\18_UoM_Gulf of Maine expeditions\88ARGO\jp2\88ARGO_ORE_SEISMIC_GEOPULSE_209_2204_to_209_2246_halfwave.jp2



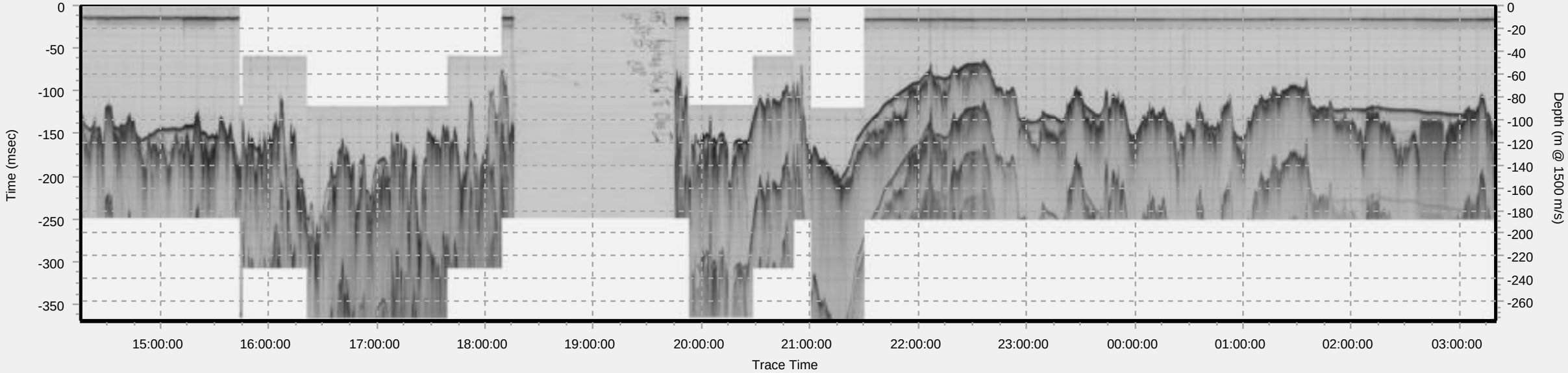
F:\3__DATA\18_UoM_Gulf of Maine expeditions\88ARGO\jp2\88ARGO_ORE_SEISMIC_GEOPULSE_210_0101_to_210_0246_halfwave.jp2



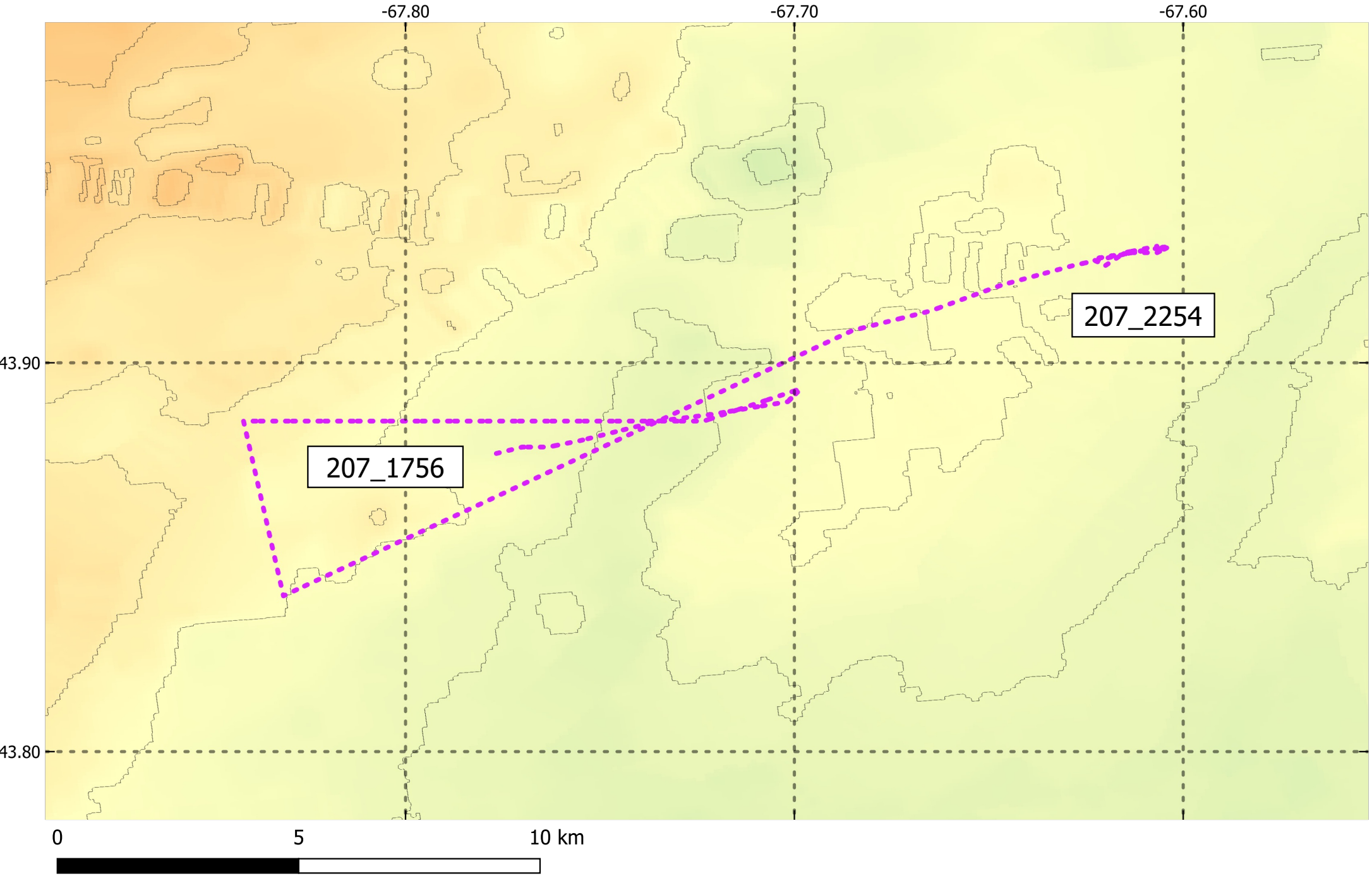
F:\3__DATA\18_UoM_Gulf of Maine expeditions\88ARGO\jp2\88ARGO_ORE_SEISMIC_GEOPULSE_210_0956_to_210_1409_halfwave.jp2



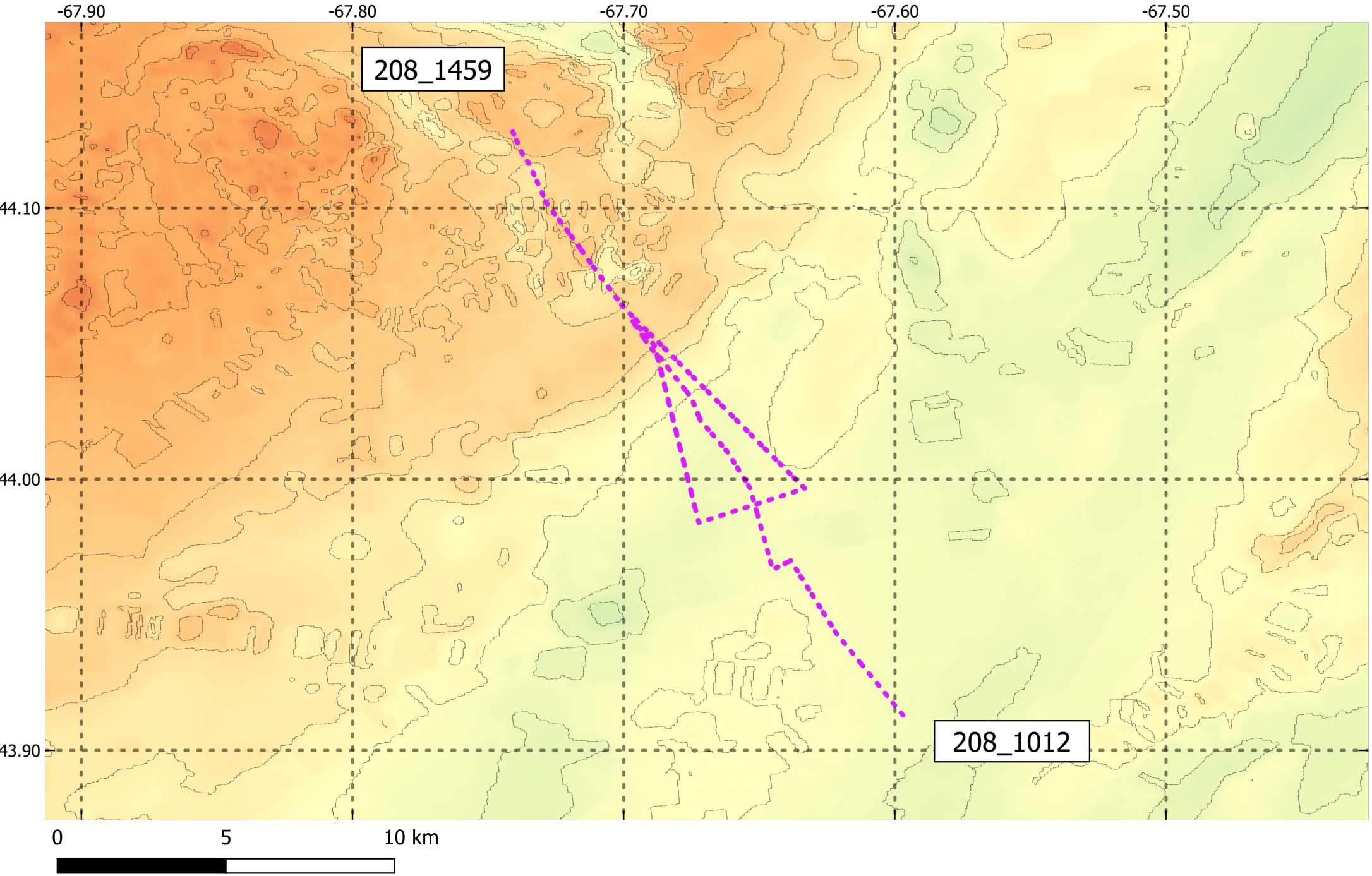
F:\3__DATA\18_UoM_Gulf of Maine expeditions\88ARGO\jp2\88ARGO_ORE_SEISMIC_GEOPULSE_210_1416_to_211_0319_halfwave.jp2



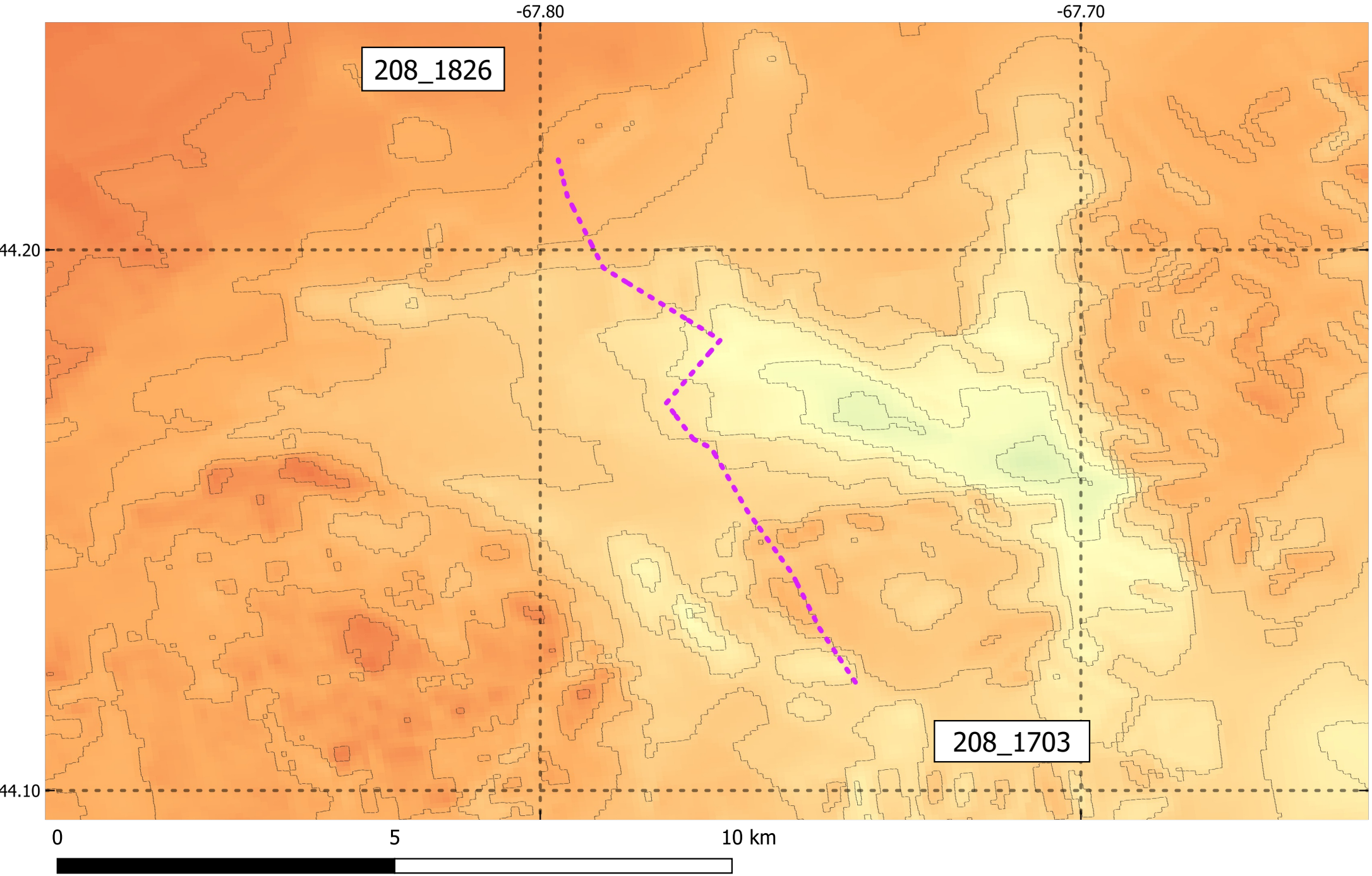
88ARGO_ORE_SEISMIC_GEOPULSE_207_1756_to_207_2254



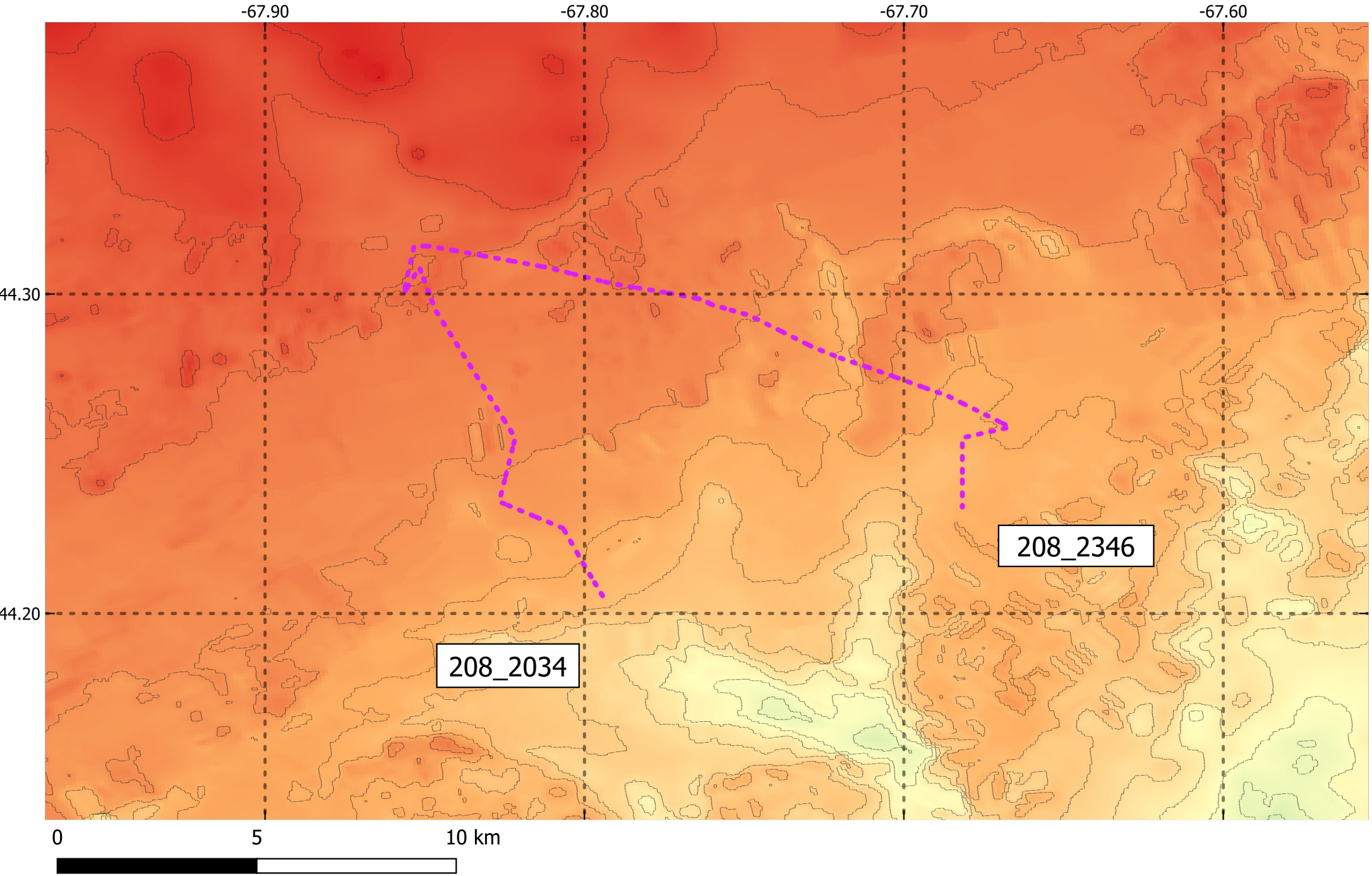
88ARGO_ORE_SEISMIC_GEOPULSE_208_1012_to_208_1459



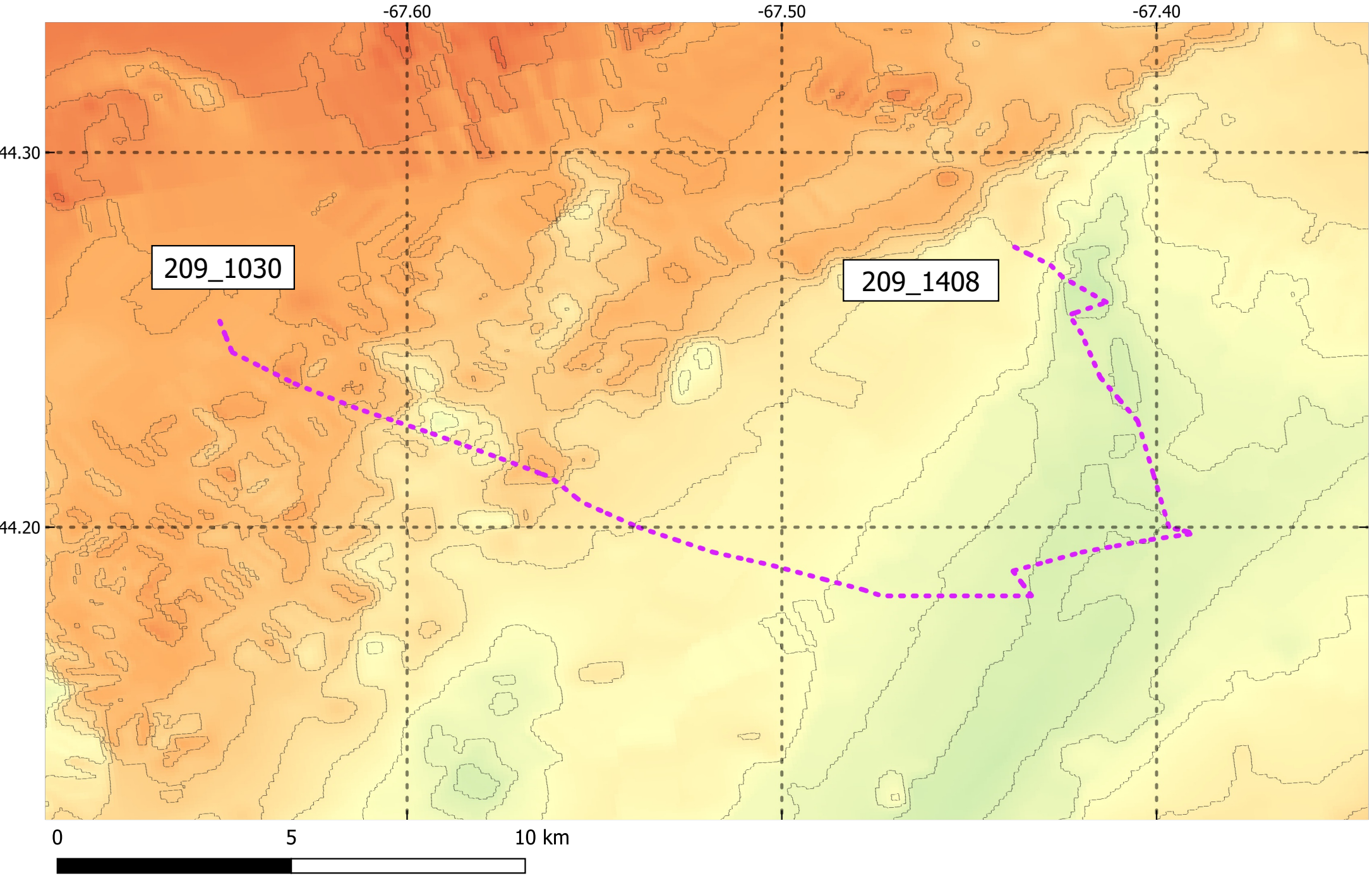
88ARGO_ORE_SEISMIC_GEOPULSE_208_1703_to_208_1826



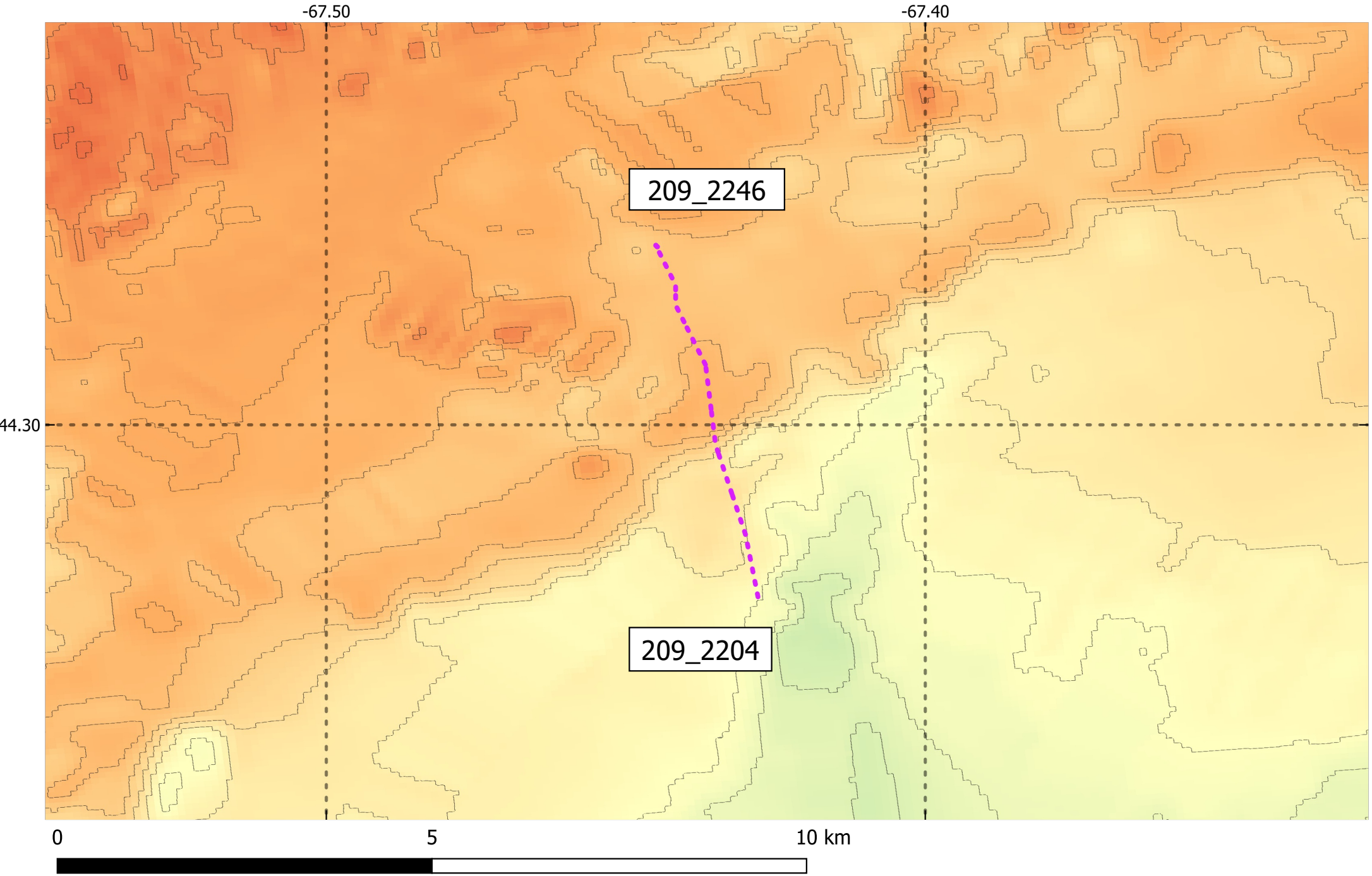
88ARGO_ORE_SEISMIC_GEOPULSE_208_2034_to_208_2346



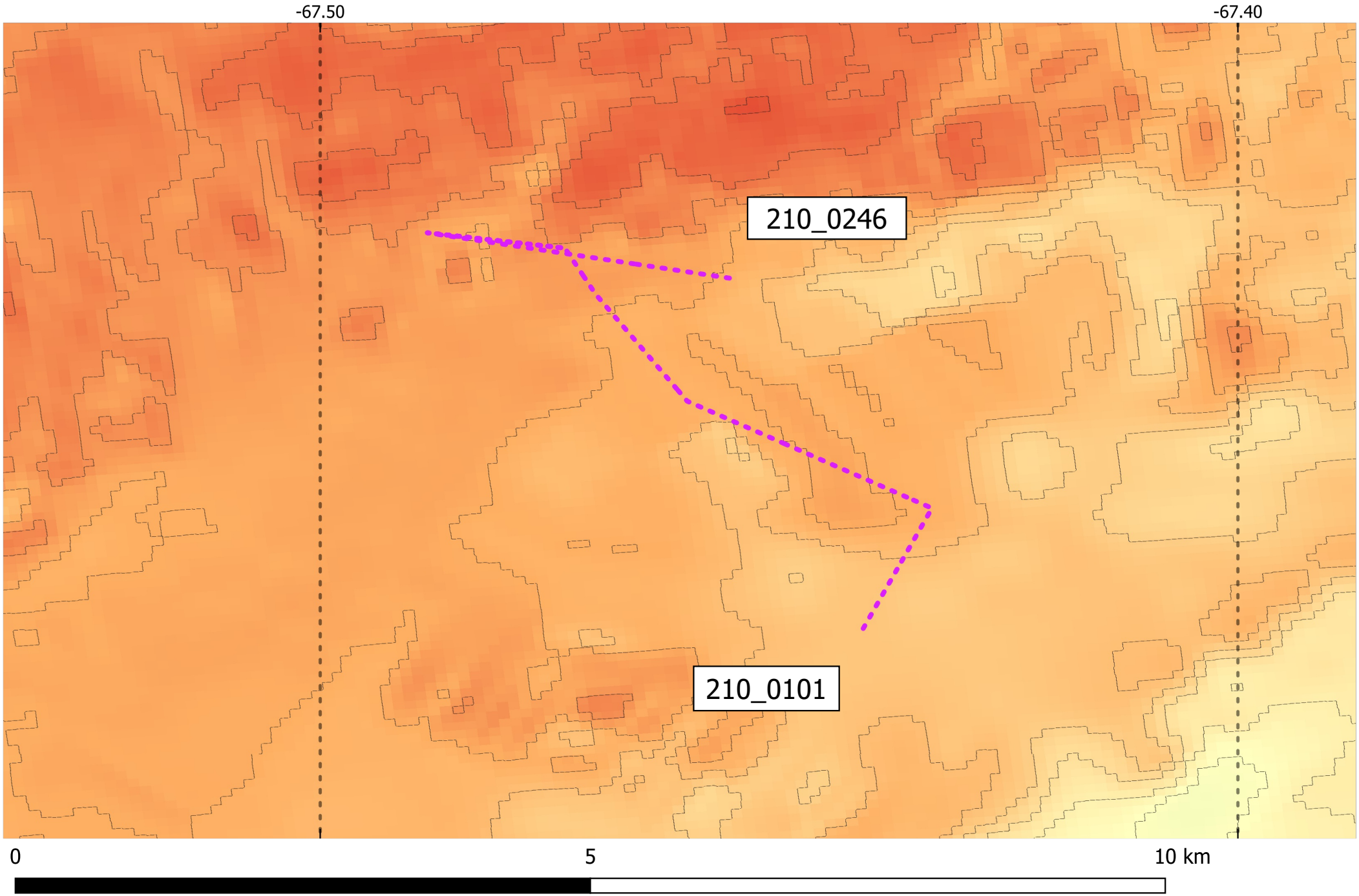
88ARGO_ORE_SEISMIC_GEOPULSE_209_1030_to_209_1408



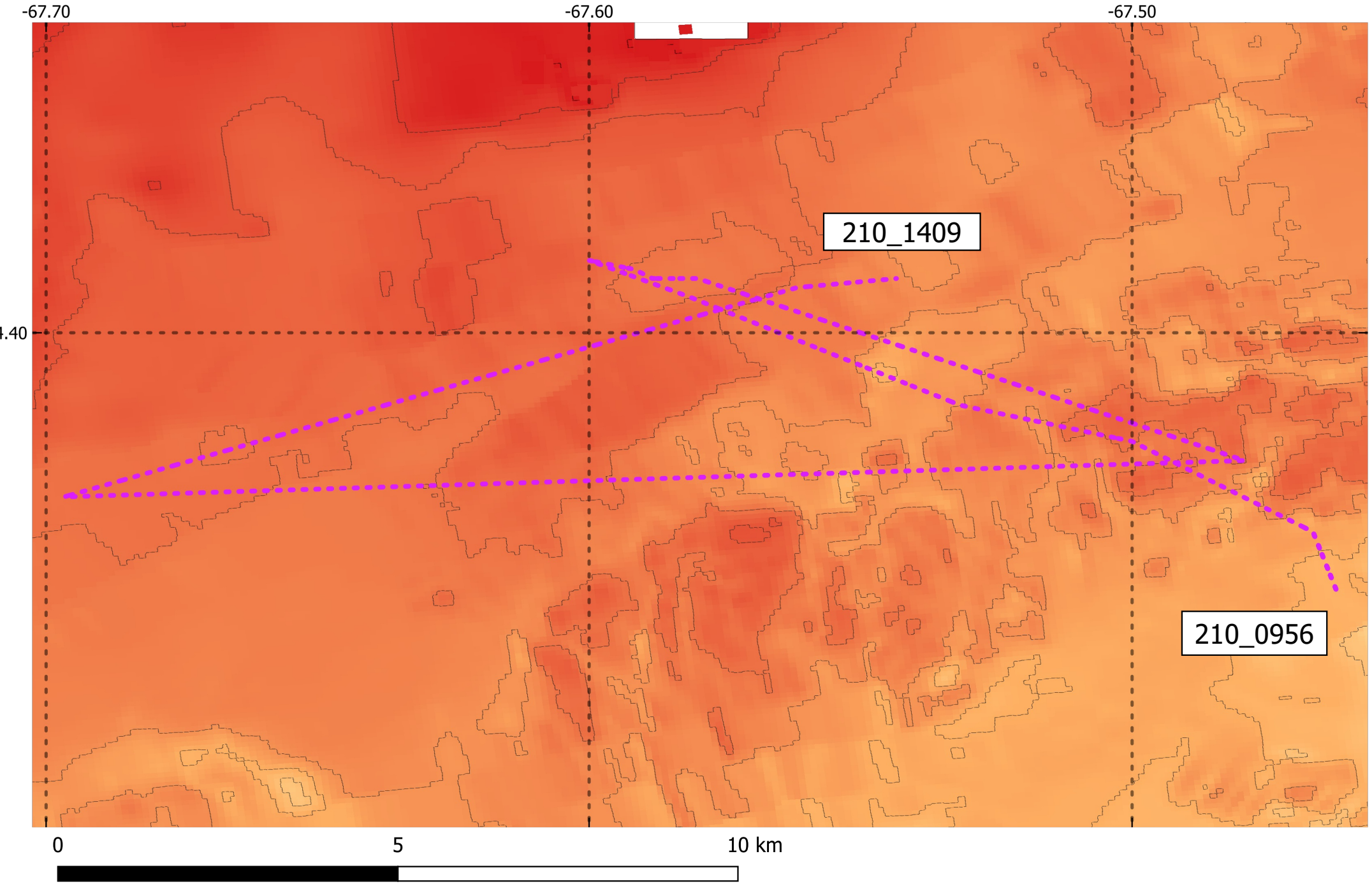
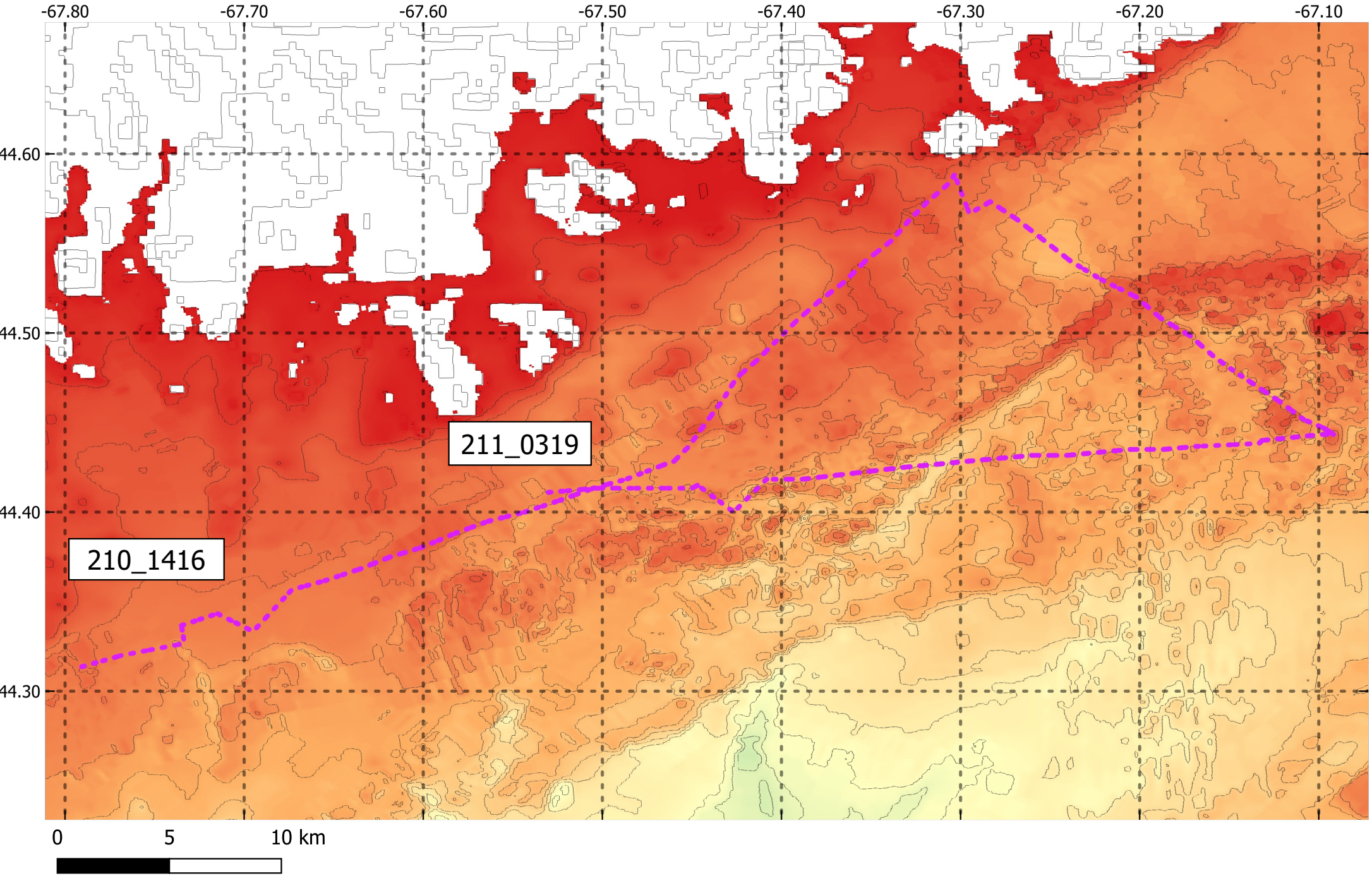
88ARGO_ORE_SEISMIC_GEOPULSE_209_2204_to_209_2246



88ARGO_ORE_SEISMIC_GEOPULSE_210_0101_to_210_0246



88ARGO_ORE_SEISMIC_GEOPULSE_210_0956_to_210_1409



88ARGO_ORE_SEISMIC_GEOPULSE_210_1416_to_211_0319