Cruise Report 64PE475*

IceAGE_KR 2021

Reykjavik -Reykjavik

1st to 15th of July 2021

Chief scientist: Sabine Gollner

Co-chief scientist: Nina Dombrowski

Pelagia & ROV & science crew (from left to right)

Rick Hennekam (OCS, NIOZ, NL), Sydney Gosepa (chief engineer, Pelagia), Stephan Haanstra (deck personel, Pelagia), Bert Puyman (master, Pelagia), Fred Hiemstra (ships electrician, Pelagia), Torge Matthiessen (ROV team, GEOMAR, DE), Lise Klunder (OCS, NIOZ, NL), Kelly Kat (second mate, Pelagia), James Taylor (Senckenberg, DE), Leon Wuis (NMF, NIOZ, NL), Tanja Stratmann (UU, NL), Martin Pieper (ROV team, GEOMAR, DE), Sabine Gollner (OCS, NIOZ, NL), Matthias Bodendorfer (ROV team, GEOMAR, DE), Nina Dombrowski (MMB, NIOZ, NL), Aleksandr Popov (Steward, Pelagia), Patrick Cuno (ROV team, GEOMAR, DE), Inno Meijer (second engineer, Pelagia), Alex Ruhland (cook, Pelagia), Martin de Vries (deck personel, Pelagia), Peter van Maurik (deck personel, Pelagia), Hronn Egilsdottir (Marine and Freshwater Research Institute, Iceland), Cor Stevens (deck personel, Pelagia), Ruud Coppens (first mate, Pelagia)

*expedition of 2021 was preliminary listed under number 64PE490; final numbering of 64PE475 refers to number of expedition that was planned for July 2020 but was postponed to July 2021. Note: some pre-printed labels for samples indicate 64PE490, but refer to this expedition 64PE475.

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1.Scientific crew

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2.Summary

64PE475: IceAGE_KR expedition to hydrothermal vents North of Iceland

Chief-scientist: Sabine Gollner, NIOZ, NL

During RV Pelagia expedition 64PE475 to Kolbeinsey, Grimsey, and Strytan vent fields, North of Iceland, we collected samples to study (1) the ecological connectivity at vent field scale (PI Gollner), including distribution of vent faunae and their adaptations to extreme environmental conditions, (2) the role of archaeal symbionts on host evolution and ecology, as well as nutrient cycling (PI Spang), (3) paleoenvironmental records (PI Hennekam), and (4) aided in establishing a potential Icelandic long-term monitoring site (PI Egilsdottir). Our projects are in cooperation with the international project IceAGE (Icelandic marine Animals: Genetics and Ecology, PI Brix) (www.iceage-project.org) that has the mission to explore the diversity of animals that live in deep waters around Iceland. We aim to understand the response and adaptation to extremes that will help us to predict resilience and biodiversity in our changing oceans.

The remotely operated vehicle (ROV) Phoca (GEOMAR) was used to (1) take pictures/videos from vent fields, (2) take biological samples (rocks and sediments with associated microbial and faunal communities), (3) deploy/recover faunal settlement substrates and (4) deploy/recover hydrophones at and near hydrothermal vents. In addition, we used CTDs to collect water at different depths above and near venting areas, boxcorers to collect sediment near the Kolbeinsey vents, and multicorers to collect sediments near Grimsey vent. To study paleoenvironmental conditions, we used gravity corers, piston corers and multicorers at five additional locations. To aid establishing an Icelandic monitoring site, an epibenthic sledge was used to collect epifauna during one day dedicated to the monitoring program. Multibeaming was performed to create seafloor maps.

The use of ROV Phoca on RV Pelagia was very successful, and a total of 13 dives (6 at Kolbeinsey, 6 at Grimsey, 1 at Stryan) over the span of 10 days could be made. Kolbeinsey vent field is at ~100 m depth and is characterized by a central venting area (up to 160°C) that is surrounded by dense bacterial mats, sponges, and polychaetes. There were no chimneys detected at Kolbeninsey and the area is dominated by hard substrate (Figure 1). Grimsey vent field is at ~400 m depth and is characterized by numerous white chimneys (nine chimneys ranging from 50 cm to several meters in height were observed during our dives), with sedimented areas between chimneys. Maximal temperatures were ~250°C, and bacterial mats, krill, amphipods, fish, anemones, and snails were present at and in close vicinity to vents (Figure 1). At Strytan vent, a 40 m high chimney in 60 meters water depth, a vertical ROV video transect was carried out. At Kolbeinsey and Grimsey vent sites the following sampling was performed: 3 hydrophones deployed/recovered; 8 settlement substrates deployed/recovered; multiple rock and sediment collections to study biodiversity of associated microbes and fauna (at and in close vicinity to vents); CTDs at vent, at 1 km, and 3 km distance to vent; boxcorer/multicorer deployment at 1 and 3 km distance to vent.

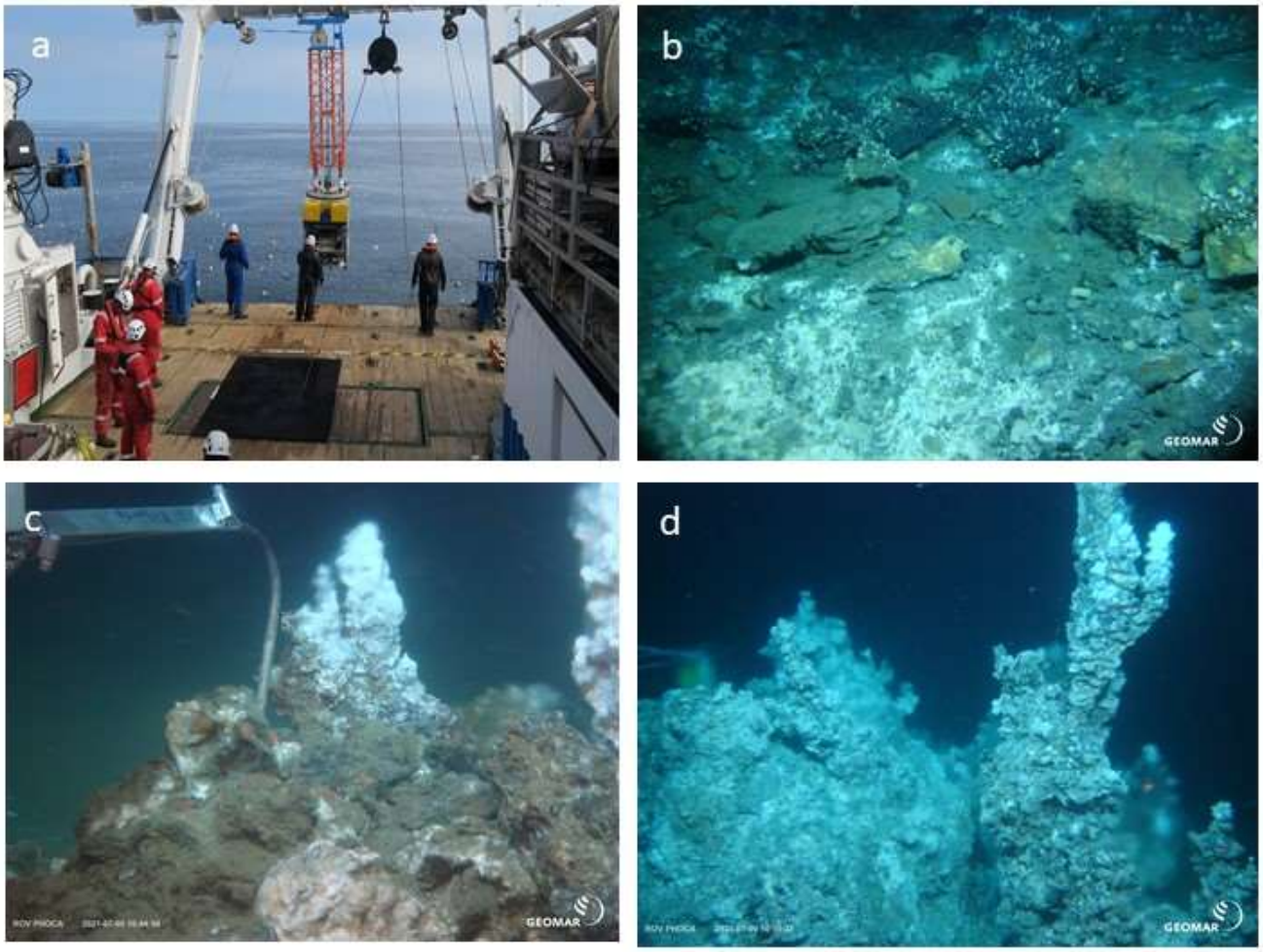


Figure 1. (a) Deployment of ROV Phoca from RV Pelagia. (b) Kolbeinsey vent field. (c) Temperature measurement at a small chimney at Grimsey vent field. (d) Large chimney at Grimsey vent field.

3.Station overview

Areas: KR – Kolbeinsey vent field, G – Grimsey vent field, M – monitoring station, S – Strytan vent field

Date	Heure	Latitude	Longitude	Area	Device	Action	Station
03/07/2021	8:05:15	N 67° 05' 27.010''	W 18° 42' 34.625''	K	CTD	Begin	1
03/07/2021	8:10:45	N 67° 05' 27.348''	W 18° 42' 37.595''	K	CTD	Bottom	1
03/07/2021	8:37:28	N 67° 05' 27.395''	W 18° 42' 37.829''	K	CTD	End	1
03/07/2021	10:13:56	N 67° 05' 26.232''	W 18° 42' 58.788''	K	ROV1	Begin	2
03/07/2021	17:29:44	N 67° 05' 26.740''	W 18° 42' 30.877''	K	ROV1	End	2
03/07/2021	20:24:45	N 67° 05' 25.728''	W 18° 44' 44.693''	K	Multibeam	Begin	3
04/07/2021	0:33:03	N 67° 08' 03.098''	W 18° 41' 50.093''	K	Multibeam	Course Change	3
04/07/2021	3:00:34	N 66° 55' 30.140''	W 18° 43' 29.831''	K	Multibeam	Course Change	3
04/07/2021	5:17:20	N 67° 08' 21.966''	W 18° 40' 31.087''	K	Multibeam	Course Change	3
04/07/2021	7:35:43	N 67° 05' 47.166''	W 18° 43' 16.126''	K	Multibeam	End	3
04/07/2021	8:03:56	N 67° 06' 00.119''	W 18° 42' 45.256''	K	CTD	Begin	4
04/07/2021	8:12:21	N 67° 05' 59.928''	W 18° 42' 45.112''	K	CTD	Bottom	4
04/07/2021	8:34:26	N 67° 05' 59.809''	W 18° 42' 45.101''	K	CTD	End	4
04/07/2021	10:18:47	N 67° 05' 22.204''	W 18° 42' 32.144''	K	ROV2	Begin	5
04/07/2021	11:57:01	N 67° 05' 26.722''	W 18° 42' 33.376''	K	ROV2	End	5
04/07/2021	13:19:38	N 67° 05' 27.388''	W 18° 42' 32.695''	K	ROV3	Begin	6
04/07/2021	17:29:24	N 67° 05' 26.866''	W 18° 42' 29.981''	K	ROV3	End	6
04/07/2021	21:16:52	N 66° 52' 13.814''	W 17° 33' 07.841''	K	Multibeam	Begin	7
05/07/2021	1:13:50	N 66° 51' 20.714''	W 17° 34' 16.918''	K	Multibeam	Course Change	7
05/07/2021	3:03:03	N 66° 44' 20.558''	W 17° 14' 21.235''	G	Multibeam	Course Change	7
05/07/2021	6:29:54	N 66° 44' 13.294''	W 17° 16' 42.553''	G	Multibeam	End	7
05/07/2021	8:04:36	N 66° 36' 33.606''	W 17° 39' 06.527''	G	CTD	Begin	8
05/07/2021	8:14:53	N 66° 36' 33.462''	W 17° 39' 06.998''	G	CTD	Bottom	8
05/07/2021	8:39:29	N 66° 36' 33.412''	W 17° 39' 06.923''	G	CTD	End	8
05/07/2021	9:07:43	N 66° 36' 35.870''	W 17° 39' 08.845''	G	ROV4	Begin	9
05/07/2021	17:23:52	N 66° 36' 27.760''	W 17° 39' 15.005''	G	ROV4	End	9
05/07/2021	19:24:59	N 66° 49' 59.621''	W 17° 30' 00.518''	G	Multi Corer	Bottom	10
05/07/2021	19:53:27	N 66° 49' 59.794''	W 17° 30' 00.187''	G	Gravity Corer	Begin	11
05/07/2021	21:28:53	N 66° 45' 40.108''	W 17° 13' 17.803''	G	Multibeam	Begin	12
06/07/2021	6:21:09	N 66° 40' 02.172''	W 17° 10' 17.778''	G	Multibeam	End	12
06/07/2021	8:00:29	N 66° 37' 05.452''	W 17° 38' 58.884''	G	CTD	Begin	13
06/07/2021	8:10:24	N 66° 37' 05.005''	W 17° 38' 58.438''	G	CTD	Bottom	13
06/07/2021	8:34:02	N 66° 37' 05.272''	W 17° 38' 58.348''	G	CTD	End	13
06/07/2021	9:15:38	N 66° 36' 35.183''	W 17° 39' 05.760''	G	ROV5	Begin	14
06/07/2021	17:29:17	N 66° 36' 28.267''	W 17° 39' 12.589''	G	ROV5	End	14
06/07/2021	19:57:20	N 66° 54' 13.810''	W 17° 52' 22.166''	G	Multi Corer	Bottom	15
06/07/2021	20:22:42	N 66° 54' 13.752''	W 17° 52' 22.699''	G	Multi Corer	Bottom	16
06/07/2021	20:48:45	N 66° 54' 13.684''	W 17° 52' 22.415''	G	Gravity Corer	Begin	17
06/07/2021	20:55:48	N 66° 54' 13.770''	W 17° 52' 22.865''	G	Gravity Corer	Bottom	17
06/07/2021	21:46:50	N 66° 51' 00.796''	W 17° 55' 14.239''	G	Multibeam	Begin	18
07/07/2021	5:15:00	N 66° 58' 56.240''	W 17° 49' 04.224''	G	Multibeam	End	18
07/07/2021	8:04:06	N 67° 05' 25.336''	W 18° 44' 10.982''	K	CTD	Begin	19
07/07/2021	8:10:45	N 67° 05' 25.314''	W 18° 44' 10.698''	K	CTD	Bottom	19
07/07/2021	8:29:27	N 67° 05' 25.228''	W 18° 44' 10.399''	K	CTD	End	19
07/07/2021	9:03:50	N 67° 05' 22.819''	W 18° 42' 39.334''	K	ROV6	Begin	20

07/07/2021	10:51:00	N 67° 05' 21.530''	W 18° 42' 41.587''	K	ROV6	End	20
07/07/2021	13:16:51	N 67° 05' 25.400''	W 18° 44' 11.623''	K	Box corer	Bottom	21
07/07/2021	13:47:57	N 67° 05' 25.861''	W 18° 44' 12.023''	K	Box corer	Bottom	22
07/07/2021	14:40:01	N 67° 05' 25.404''	W 18° 44' 11.252''	K	Box corer	Bottom	23
07/07/2021	15:48:52	N 67° 05' 15.310''	W 18° 46' 42.726''	K	Box corer	Bottom	24
07/07/2021	16:19:11	N 67° 05' 15.403''	W 18° 46' 42.391''	K	Box corer	Bottom	25
07/07/2021	17:12:29	N 67° 04' 35.022''	W 18° 49' 20.096''	K	Box corer	Bottom	26
07/07/2021	19:57:41	N 66° 51' 26.204''	W 19° 22' 17.396''	K	Multibeam	Begin	27
08/07/2021	6:03:55	N 66° 51' 28.577''	W 19° 25' 05.041''	K	Multibeam	End	27
08/07/2021	8:43:45	N 66° 49' 05.250''	W 18° 46' 23.232''	M	Box corer	Bottom	28
08/07/2021	9:52:02	N 66° 49' 05.455''	W 18° 46' 23.005''	M	Multi Corer	Bottom	29
08/07/2021	11:07:34	N 66° 49' 05.444''	W 18° 46' 22.962''	M	Gravity Corer	Bottom	30
08/07/2021	13:45:19	N 67° 05' 46.532''	W 18° 43' 06.931''	M	Epibenthic sledge	Begin	31
08/07/2021	13:51:31	N 67° 05' 46.597''	W 18° 43' 06.974''	M	Epibenthic sledge	Bottom	31
08/07/2021	14:10:21	N 67° 05' 36.485''	W 18° 43' 33.492''	M	Epibenthic sledge	Start Heave	31
08/07/2021	14:32:45	N 67° 05' 36.539''	W 18° 43' 31.782''	M	Epibenthic sledge	End	31
08/07/2021	15:13:38	N 67° 05' 12.642''	W 18° 46' 20.201''	M	Epibenthic sledge	Begin	32
08/07/2021	15:31:03	N 67° 05' 06.162''	W 18° 46' 30.464''	M	Epibenthic sledge	Bottom	32
08/07/2021	15:42:24	N 67° 05' 00.614''	W 18° 46' 40.915''	M	Epibenthic sledge	Start Heave	32
08/07/2021	16:15:04	N 67° 05' 01.068''	W 18° 46' 39.850''	M	Epibenthic sledge	End	32
08/07/2021	19:14:49	N 66° 58' 43.698''	W 17° 46' 14.509''	M	Multibeam	Begin	33
08/07/2021	21:20:40	N 66° 47' 23.762''	W 17° 44' 45.316''	M	Multibeam	Course Change	33
08/07/2021	23:21:25	N 66° 58' 47.482''	W 17° 43' 03.169''	M	Multibeam	Course Change	33
09/07/2021	5:33:14	N 66° 47' 16.073''	W 17° 39' 41.044''	M	Multibeam	Course Change	33
09/07/2021	6:10:03	N 66° 50' 37.878''	W 17° 38' 28.064''	M	Multibeam	End	33
09/07/2021	8:06:23	N 66° 36' 25.625''	W 17° 37' 51.834''	G	CTD	Begin	34
09/07/2021	8:16:29	N 66° 36' 25.556''	W 17° 37' 52.187''	G	CTD	Bottom	34
09/07/2021	8:37:35	N 66° 36' 25.636''	W 17° 37' 51.838''	G	CTD	End	34
09/07/2021	9:06:32	N 66° 36' 26.341''	W 17° 39' 06.397''	G	ROV7	Begin	35
09/07/2021	11:48:44	N 66° 36' 27.461''	W 17° 39' 18.389''	G	ROV7	End	35
09/07/2021	13:22:57	N 66° 36' 24.829''	W 17° 39' 06.858''	G	ROV8	Begin	36
09/07/2021	17:35:40	N 66° 36' 25.193''	W 17° 38' 54.046''	G	ROV8	End	36
09/07/2021	19:15:19	N 66° 41' 29.620''	W 17° 08' 07.447''	G	Multi Corer	Bottom	37
09/07/2021	20:54:02	N 66° 45' 41.270''	W 17° 11' 55.982''	G	Multibeam	Begin	39
09/07/2021	23:24:58	N 66° 33' 41.807''	W 16° 51' 59.432''	G	Multibeam	Course Change	39
10/07/2021	2:07:47	N 66° 46' 22.796''	W 17° 10' 07.442''	G	Multibeam	Course Change	39
10/07/2021	4:41:06	N 66° 33' 48.895''	W 16° 50' 55.428''	G	Multibeam	Course Change	39
10/07/2021	5:56:11	N 66° 39' 49.097''	W 16° 58' 36.955''	G	Multibeam	End	39
10/07/2021	9:09:22	N 66° 36' 17.078''	W 17° 39' 13.626''	G	ROV9	Begin	40
10/07/2021	13:58:48	N 66° 36' 23.450''	W 17° 39' 28.710''	G	ROV9	End	40
10/07/2021	14:53:15	N 66° 36' 34.477''	W 17° 39' 07.495''	G	Box corer	Bottom	41
10/07/2021	15:36:40	N 66° 36' 34.409''	W 17° 39' 09.122''	G	Box corer	Bottom	42
10/07/2021	16:19:15	N 66° 36' 34.258''	W 17° 39' 08.363''	G	Multi Corer	Bottom	43

10/07/2021	16:57:30	N 66° 36' 34.470''	W 17° 39' 08.366''	G	Multi Corer	Bottom	44
10/07/2021	17:28:15	N 66° 36' 34.549''	W 17° 39' 08.136''	G	Multi Corer	Bottom	45
10/07/2021	18:03:56	N 66° 36' 08.809''	W 17° 40' 30.468''	G	Multibeam	Begin Course	46
10/07/2021	19:34:25	N 66° 45' 02.308''	W 17° 40' 25.558''	G	Multibeam	Change Course	46
10/07/2021	21:28:19	N 66° 36' 01.562''	W 17° 37' 30.666''	G	Multibeam	Change Course	46
10/07/2021	23:14:44	N 66° 44' 45.816''	W 17° 35' 44.200''	G	Multibeam	Change Course	46
11/07/2021	0:54:02	N 66° 36' 05.227''	W 17° 34' 10.034''	G	Multibeam	Change Course	46
11/07/2021	2:39:21	N 66° 44' 59.165''	W 17° 32' 39.246''	G	Multibeam	Change	46
11/07/2021	3:22:27	N 66° 40' 32.131''	W 17° 32' 50.392''	G	Multibeam	End	46
11/07/2021	8:02:04	N 67° 05' 27.370''	W 18° 42' 38.563''	K	CTD	Bottom	47
11/07/2021	8:06:05	N 67° 05' 27.506''	W 18° 42' 38.952''	K	CTD	Bottom	47
11/07/2021	8:28:57	N 67° 05' 27.960''	W 18° 42' 38.772''	K	CTD	End	47
11/07/2021	8:55:21	N 67° 05' 28.846''	W 18° 42' 36.407''	K	ROV10	Begin	48
11/07/2021	10:47:39	N 67° 05' 29.180''	W 18° 42' 32.713''	K	ROV10	End	48
11/07/2021	13:30:44	N 67° 05' 23.294''	W 18° 42' 33.581''	K	ROV11	Begin	49
11/07/2021	17:20:03	N 67° 05' 30.415''	W 18° 42' 39.640''	K	ROV11	End	49
12/07/2021	1:31:24	N 66° 36' 03.060''	W 17° 43' 31.300''	K	Multibeam	Begin Course	50
12/07/2021	2:43:40	N 66° 29' 58.852''	W 17° 41' 50.978''	K	Multibeam	Change Course	50
12/07/2021	3:57:12	N 66° 36' 05.587''	W 17° 40' 09.732''	K	Multibeam	Change Course	50
12/07/2021	5:00:00	N 66° 29' 56.375''	W 17° 40' 02.320''	K	Multibeam	Change Course	50
12/07/2021	6:16:38	N 66° 36' 16.060''	W 17° 37' 44.382''	K	Multibeam	Change	50
12/07/2021	7:12:18	N 66° 31' 28.214''	W 17° 36' 32.731''	K	Multibeam	End	50
12/07/2021	9:00:43	N 66° 36' 27.162''	W 17° 39' 07.585''	G	ROV12	Begin	51
12/07/2021	12:08:45	N 66° 36' 26.759''	W 17° 38' 59.384''	G	ROV12	End	51
12/07/2021	13:28:28	N 66° 36' 25.794''	W 17° 37' 52.961''	G	Box corer	Bottom	52
12/07/2021	14:10:16	N 66° 36' 25.610''	W 17° 37' 53.605''	G	Multi Corer	Bottom	53
12/07/2021	15:05:52	N 66° 34' 40.642''	W 17° 37' 23.794''	G	Multi Corer	Bottom	54
12/07/2021	15:50:33	N 66° 34' 11.827''	W 17° 42' 18.623''	G	Multi Corer	Bottom	55
12/07/2021	16:52:03	N 66° 34' 12.349''	W 17° 42' 18.414''	G	Piston Corer	Bottom	56
12/07/2021	17:33:18	N 66° 34' 11.726''	W 17° 42' 19.868''	G	Multibeam	Begin Course	57
13/07/2021	0:08:31	N 66° 21' 20.272''	W 18° 21' 18.936''	G	Multibeam	Change Course	57
13/07/2021	0:56:09	N 66° 18' 23.407''	W 18° 17' 13.020''	G	Multibeam	Change Course	57
13/07/2021	1:46:34	N 66° 20' 53.909''	W 18° 21' 59.944''	G	Multibeam	Change	57
13/07/2021	8:09:49	N 65° 49' 22.807''	W 18° 06' 47.203''	G	Multibeam	End	57
13/07/2021	9:09:26	N 65° 49' 41.444''	W 18° 06' 51.466''	S	ROV13	Begin	58
13/07/2021	13:51:11	N 65° 49' 36.646''	W 18° 06' 55.652''	S	ROV13	End	58
13/07/2021	13:52:54	N 65° 49' 42.701''	W 18° 07' 10.690''	S	Multibeam	Begin	59
13/07/2021	16:14:40	N 66° 09' 08.546''	W 18° 28' 48.673''	S	Multibeam	End	59

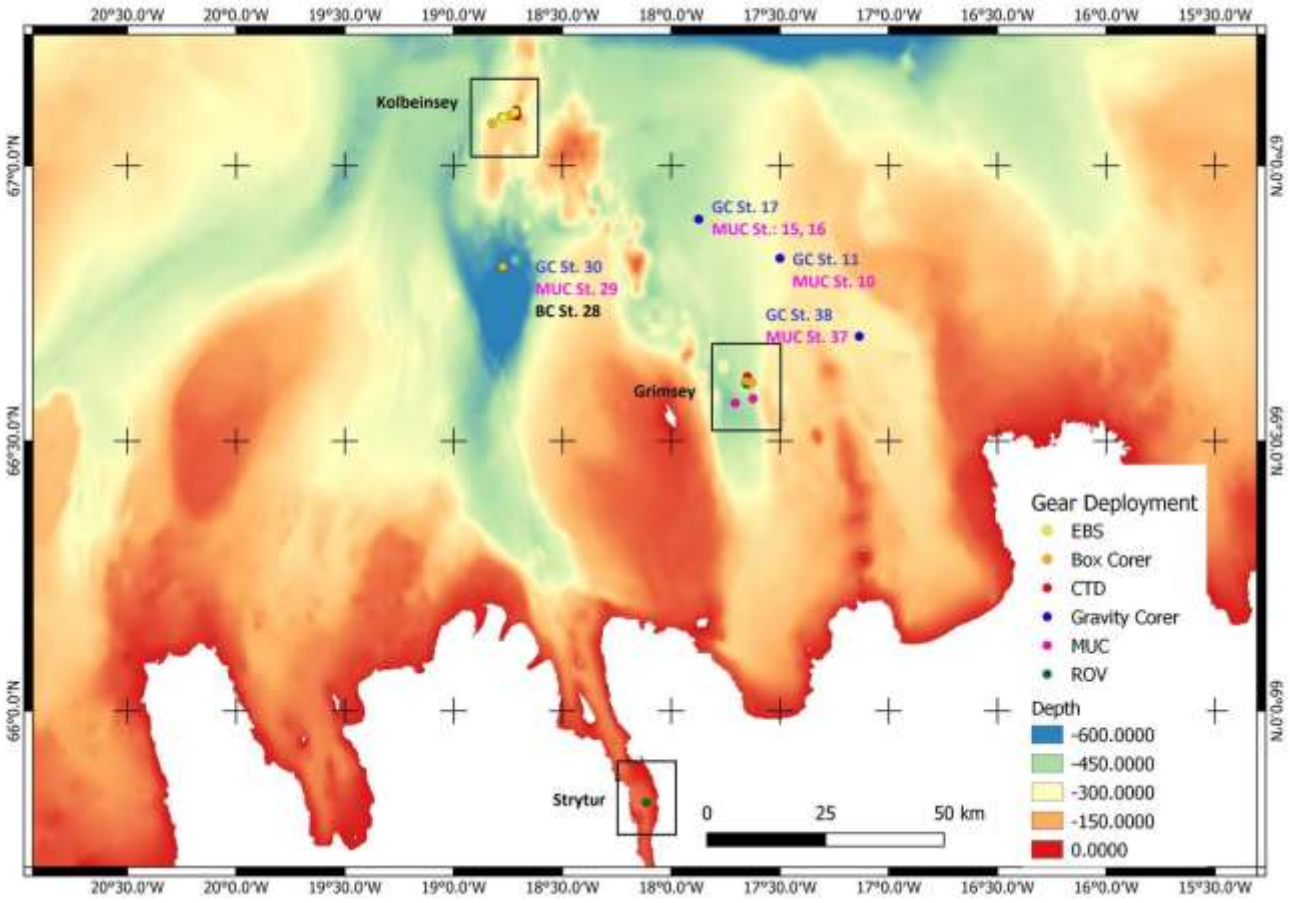


Figure 2. Overview of Areas and Gear Deployment during 64PE475.

4. ROV dives

4.1. ROV Phoca on RV Pelagia:

ROV Phoca (GEOMAR) was operated for the first time from onboard Pelagia. A LARS-adaptor for the Pelagia A-frame had to be constructed to allow deployment/recovery of ROV (see Appendix). USBL for shallow areas (dives planned in 20-400 meters depth) needed to be installed on Pelagia as well. On the deck of Pelagia, the ROV-winch and the ROV-control room were installed. A harbor test was performed in Reykavik before heading towards the sampling locations North of Iceland.

For dive planning, maps were created to allow navigation on the sea-floor. Travel-direction of ROV should be up-slope, as HD camera is directed towards front. To plan ROV dives, we referred to geographical locations mentioned in Fricke et al. 1989, who gave an overview on the Kolbeiney vent field, to Hannington et al. 2001, who described the geological setting at Grimsey vent, and to the cruise report Poseidon 229a/b from Stoffers et al. who visted Kolbeinsey and Grimsey in 1997. Maps for ROV dives were created from multibeam-data provided by Hronn Egilsdottir/Iceland. In addition, ROV-porch plan (how many bioboxes, pushcores etc. on porch) was provided prior each dive. GEOMAR further provided a temperature sensor (measurement accuracy 1°C; sensor by Sven Petersen), bioboxes, pushcores, and sampling nets for the ROV operations.

The use of ROV Phoca on Pelagia was very successful and a total of 13 dives over 10 days could be made.

Figure 3. ROV Phoca and Winch on Pelagia deck.

Figure 4. Deployment ROV Phoca.

Figure 5. Deployment ROV Phoca.

Figure 6. Deployment ROV Phoca.

Figure 7. View from winch (during ROV dive).

Figure 8. ROV Phoca Control Room.

Figure 9. ROV Phoca Control Room.

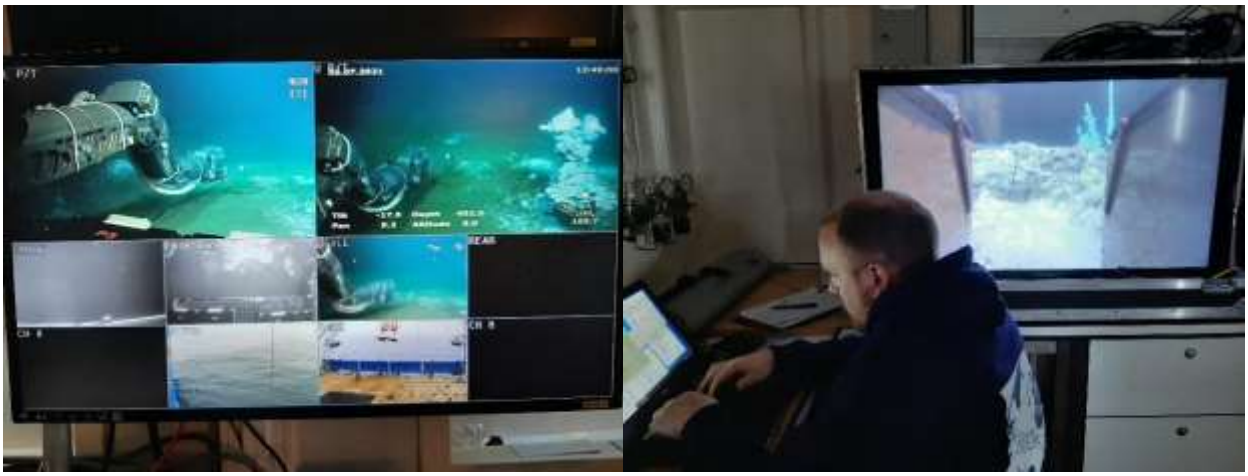


Figure 10. ROV showroom (Pelagia lab that is otherwise used for Hopper-dives) with GEOMAR latop, GEOMAR TV-screen for HD-video (right), and Pelagia screens to view all ROV-cameras (left).

Figure 11. Sample recovery after dive (left). Boxes on porch can be removed and transferred to wet-lab (right).

4.2. Description of Kolbeinsey Vent field:

Active venting at Kolbeinsey was found at the same locations where Jago dives were made in 1997 during PO229. We observed one central venting area in the north of the region, approximately 6m^2, with a max temperature of 160 °C between the rocks. Temperature drops rather quickly around the area, with small solitary sponges nearby. When measuring at the base of sponges and in fissures, temperature is variable between 6 and 7 °C. The ambient temperature is 5.5 °C. When looking at sampled rocks, first species to occur nearest to venting are Spirorbis, followed by the solitary and colonial white sponges. Inside the porous rocks lived diverse polychaetes (including polynoids and ophyrotrocha), a few gastropods, and relatively abundant amphipods).

A few meters to the West of the central venting area, there are extensive white bacterial mats on rocks (area to be calculated ~>100 m2). Behind this area of diffuse flow at the vent periphery there are small sponges and lots of hydroids. 15 meters to the South of the central venting area, there are also bacterial mats on the rocks. At the site where the hydrophone was deployed there was some sediment (a further 10 m South). Inside sediments with bacterial mats on top the temperature was 50-80C at ~10 cm penetrative depth. No chimneys are present

at this vent field. When descending to the next plateau (at 110-120m) sponges are larger, with communities likely more diverse. The majority of the region is mainly hard substrate (basalts).

Collections: 3 hydrophones deployed/recovered, 8 settlement substrates deployed/recovered, multiple rock and sediment collections to study biodiversity of microbes & fauna (at vent and in periphery), CTD at vent, at 1 km and 3 km distance to vent; box corers in 1 and 3 km distance to vent.

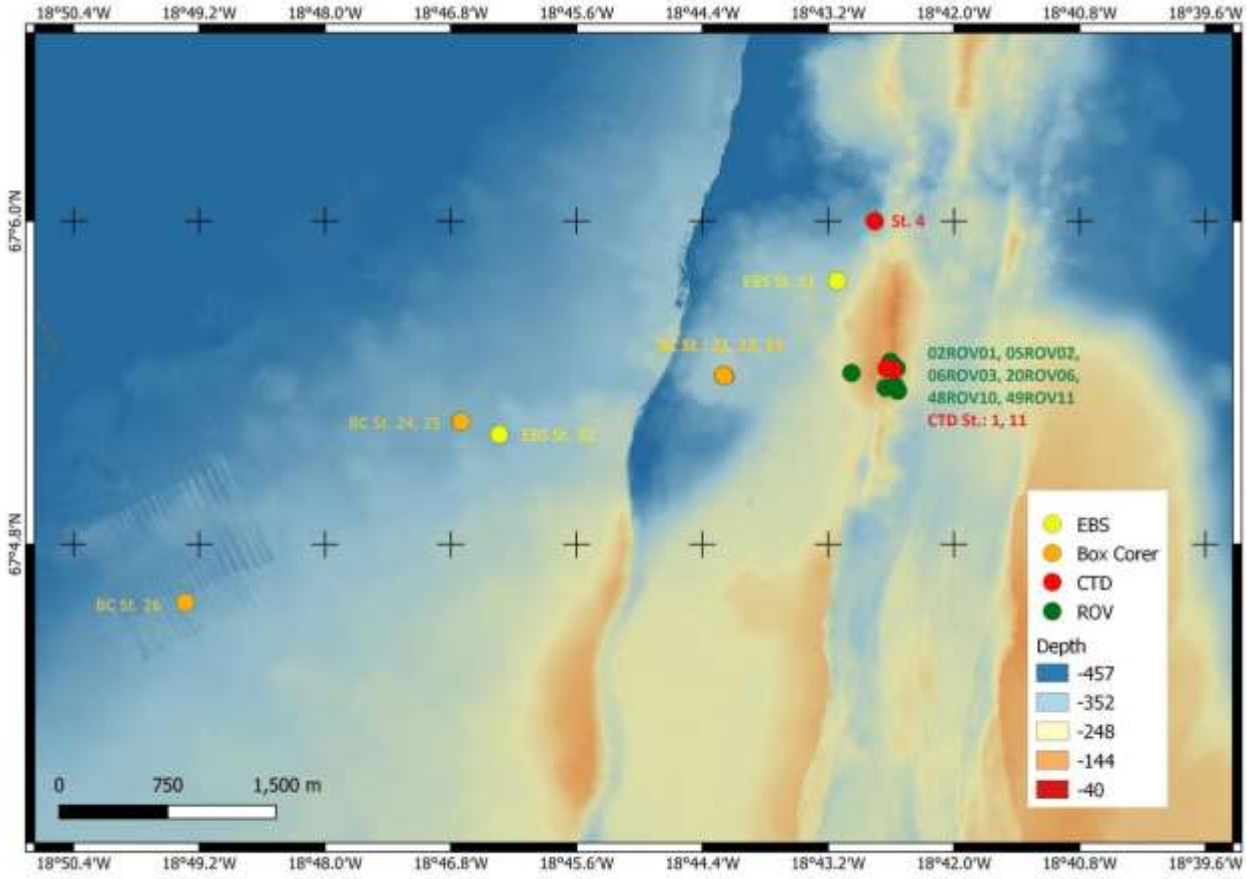


Figure 12. Overview of Stations at and near Kolbeinsey Vent Field

4.3. Description of Grimsey Vent Field:

Active venting at Grimsey was found at the same locations where Jago dives were made in 1997 during PO229. Main localities of chimneys observed in 1997 were still present, although we also encountered additional chimneys. A total of 9 chimneys were observed. Chimneys had variable sizes, from several centimeters (20-100 cm) with soft anhydrates, to several meters (up to 12 m wide deposit size, chimney ~6 m high) and typically of a hard substrate nature. Fauna on chimneys included snails (especially on the smaller chimneys), abundant krill, and diverse smaller associated fauna (e.g. amphipods, copepods,..). In the periphery were anemones with potential episymbionts (white bacteria).

Between the anhydrate chimneys were sedimented plains. Several m^2 of sediments were covered with bacterial mats. In the sediments, across the entire area, were holes, likely originating from venting or seeping. Multi corer

collections at these sediments revealed that sediments inside that were retrieved bubbled for 3.5 hours, were cold, and smelled badly (sulfide, rotten eggs).

Collections: 3 hydrophones deployed/recovered, 8 settlement substrates deployed/recovered, multiple rock and sediment collections to study biodiversity of microbes & fauna (at vent and periphery), CTD at vent, at 1 km and 3 km distance to vent; 3 multi corers between chimneys (2 normal, 1 bubbling), 1 multi corers at 1 km, and 1 multicore in 3.5 km distance;

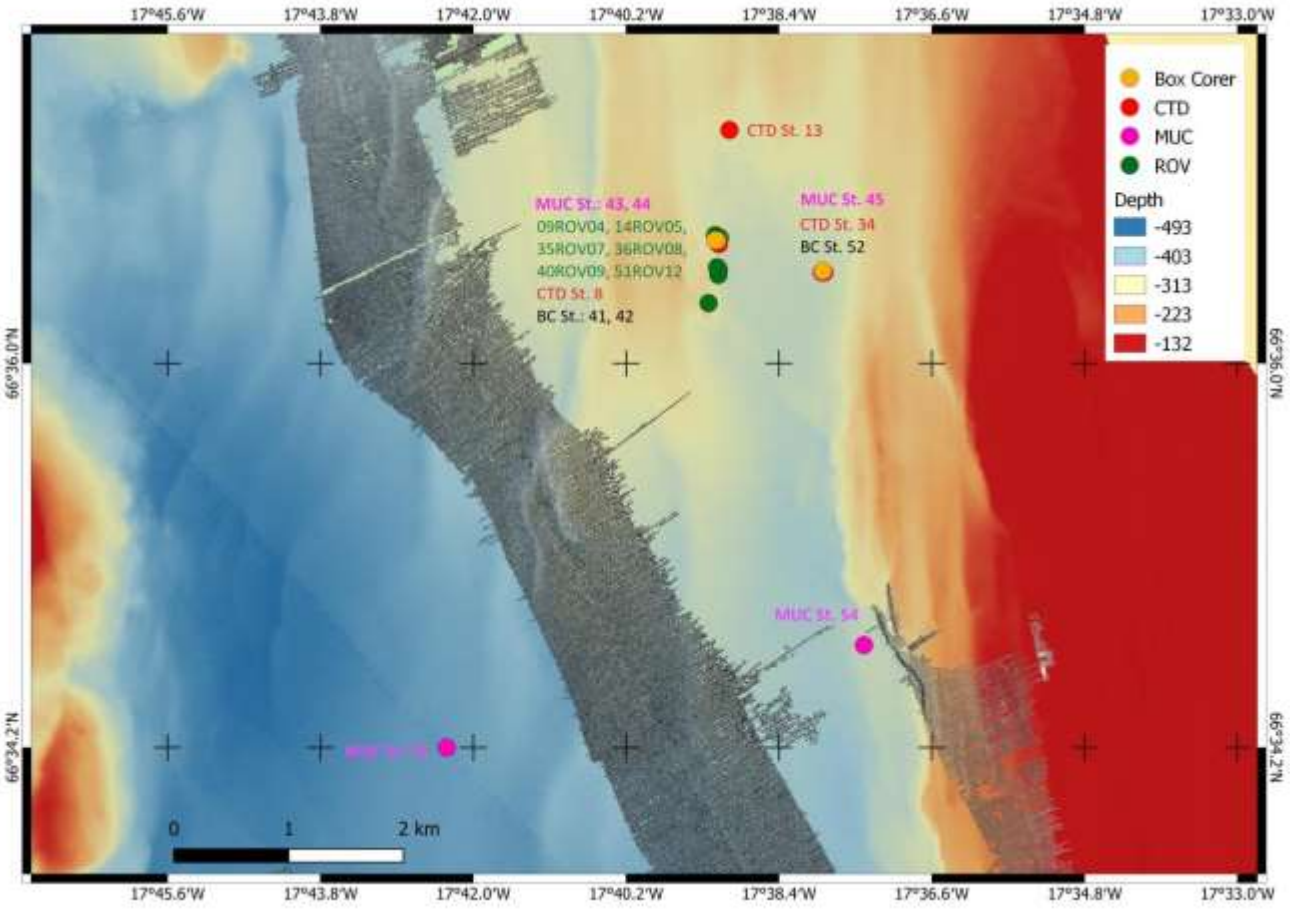


Figure 13. Overview of Stations at and near Grimsey Vent Field.

date	time	depth	sub long	sub lat	waypoint	height
5/7/2021	10:07	399	-17.6522	66.6099	chimney 1	80 cm
5/7/2021	11:59	399	-17.652	66.6092	bacterial mat 1	
5/7/2021	12:55	409.8	-17.652	66.6091	chimney 2	50 cm
5/7/2021	14:12	402.3	-17.6531	66.6086	bacterial mat 2	
5/7/2021	14:16	401.9	-17.6532	66.6085	chimney 3	3.5 m
5/7/2021	15:44	387.6	-17.6546	66.607	chimney 4	a few m?

6/7/2021	14:39	393.6	-17.6533	66.607	chimney 5	~20 cm ?
6/7/2021	15:59	394.8	-17.6538	66.6071	chimney 6	~6m
9/7/2021	14:26	385.4	-17.6532	66.60622	small chimney	
9/7/2021	15:52	387.6	-17.6549	66.60483	chimney 7	~4m
10/7/2021	9:59	387.6	-17.6542	66.6044	bacterial mat 3	
10/7/2021	10:06	386.1	-17.6534	66.6042	chimney 8	~5m
10/7/2021	11:51	380.1	-17.6541	66.6042	bacterial mat	
10/7/2021	12:24	379.4	-17.6545	66.6038	chimney 9	~2 m ???

Table2: Locations of chimneys at Grimsey vent field

4.4.Description of Strytan vent field

Strytan is characterized by one ~40 m high chimney at 60 to 20 m depth, and two smaller chimneys to the South. One short video-transect dive was made at Strytan. See 58ROV13 below.

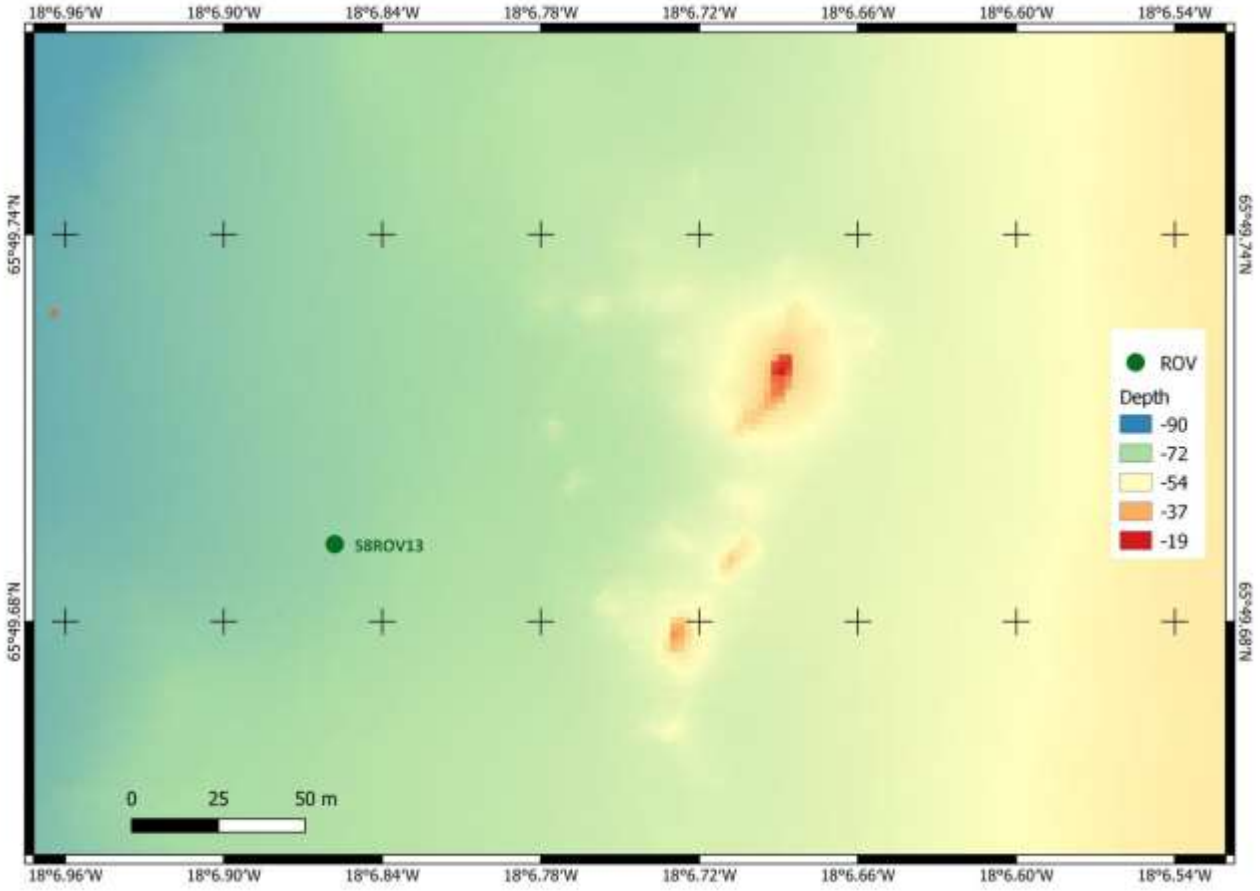


Figure 14. ROV station at Strytan Vent.

4.5.Short Description of the 13 ROV dives

02ROV01: Kolbeinsey (03.07.2021; 10:36 – 17:30)

The goal of the dive was to find the venting area, sample bacterial mats, sample animals for respiration experiments and for identification of Icelandic fauna, deploy colonization substrates (plastic kitchen sponges) at the venting site, and sample control collections (rocks with fauna) at the deployment site.

The dive was started at the western side of the ridge (WP1), moving north on the ridge (WP2). During transit, dense sponge grounds (with cod and Sebastes) on hard substrates on the flanks of ridge were observed. On the top of the ridge, different community compositions were present (with smaller sized sponges); at hard substrate venting areas white bacterial mats/solitary sponges/colonial sponges (order with decreasing influence of venting); ambient temperature was 5.5 °C, temperature at natural sponges ranged from 6.5 – 10 °C; temperature range at colonization substrates 6-7 °C; maximum temperatures inside rock formations were up to 162C in the central venting area.

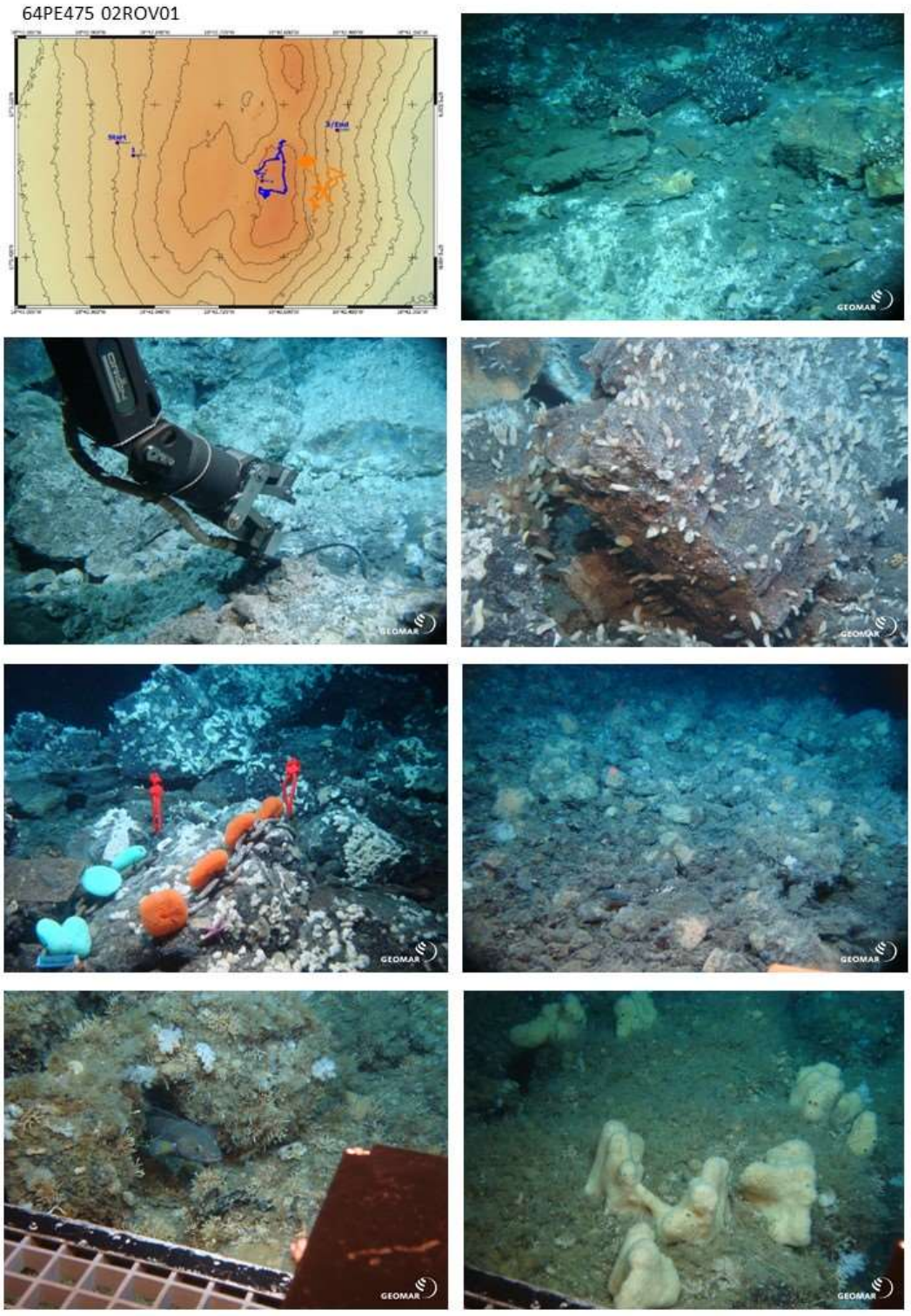


Figure 15 (from top left to bottom right): ROV map, central venting area, temperature measurement at central venting area, solitary sponges at diffuse flow, colonization substrates deployed at colonial sponges at diffuse flow, non-venting peripheral areas on top of the ridge.

05ROV02: Kolbeinsey (04.07.2021; 10:25 – 12:00)

Three hydrophones were deployed (~100 m, 10 m, and 0 m distance to active venting), with a maximum temperature at the venting site of 13 °C. During transit from WP1 to WP2 (100 m distance), it was observed that the venting area extends several meters to the south of the central venting area. We also observed a hot (maximum 53 °C at 10 cm penetrative depth; 7 °C at 1 cm from seafloor) sediments ~10 m south of the central venting area, which we sampled with a net.

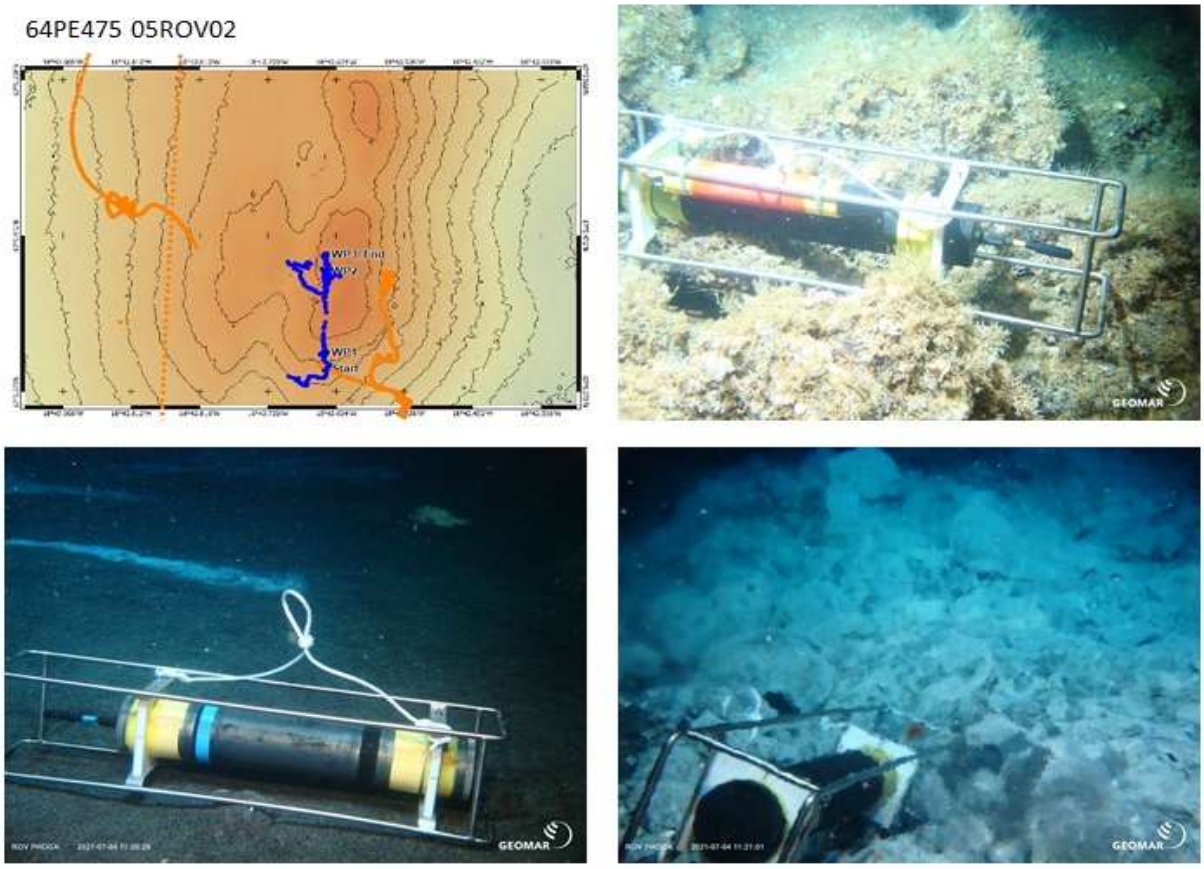


Figure 16 (from top left to bottom right): ROV map, hydrophone deployed 100 m from venting area, hydrophone ~10 m from venting area, hydrophone at venting area (diffuse flow).

06ROV03 Kolbeinsey (04.07.2021; 13:19 – 17:28)

Colonization substrates were deployed at the vent periphery (ambient temperature was 5 to 6 °C), and control collections (rocks with fauna) were sampled. Animals for respiration experiments, and bacterial mats on sediments were collected. Temperature at ~15 cm penetrative depth reached a maximum of 90°C.

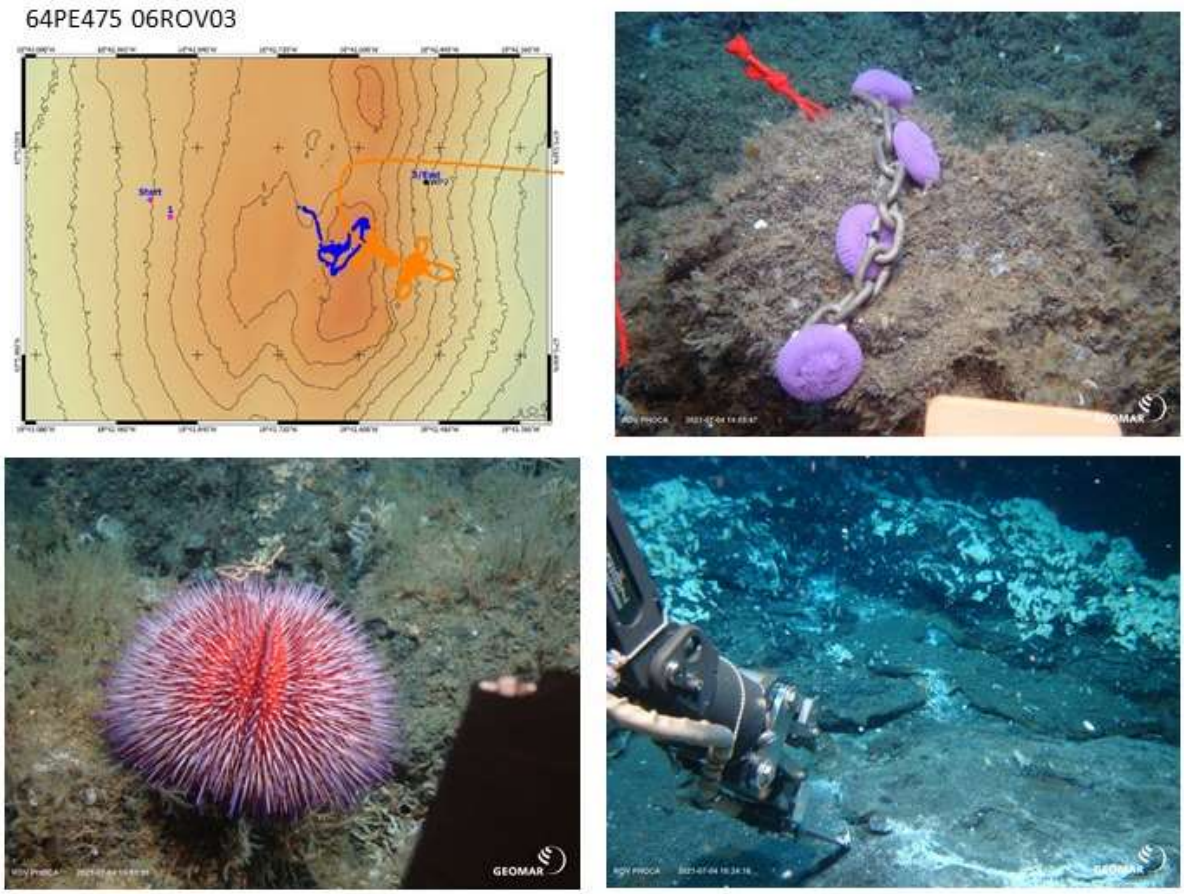


Figure 17 (from top left to bottom right): ROV map, colonization substrate deployed at vent periphery, sea-urchin, area with hot sediments (next to venting area with sponges)

09ROV04: Grimsey (05.07,2021; 9:11 – 17:23)

The first dive at Grimsey vent field to explore the known anhydrite chimneys. We observed 4 chimneys (of different sizes) and 2 bacterial mats; between the chimneys were soft sediments with many holes. Diverse specimens were sampled, along with chimney pieces and sediments. Colonization substrates were deployed at chimney 4.

Chimney 1 is ~80 cm in height with snails, ophiuroids, sabellids, hydrozoans, krill; ambient temperature was 1.4 °C; at 0.5 cm from chimney the temperature was 2 °C; at ~10 cm penetrative depth the temperature was 9 °C (the material of chimney is very soft); the base at chimney 1 is sedimented (at ~10 cm depth the temperature was 25 °C); megafauna on the chimney predominantly exposed to temperatures of 2 - 5 °C; maximum temperature in the chimney was 169 °C. A diverse array of specimens were collected.

Bacterial mat 1 had a temperature of 95 °C in 1 cm sediment depth. Sediments were collected.

Chimney 2 was ~50 cm in height; Maximum temperature was 251 °C; temperature was 2.5 °C close to brown surface 5 °C in brown substrate; diverse specimens were collected. The material of chimney is very soft.

Bacterial mat 2 had its location noted, but was not further observed.

Chimney 3 was ~3.5 m in height; due to delicate nature of the chimney it was not possible to sample, location was noted.

Chimney 4 had a base ~15 m wide, with a hard white surface (much harder than the smaller chimneys 1 and 2); no obvious megafauna were observed apart from abundant krill; the temperature 5 cm from the base was 2 - 6 °C, 1 cm from the base the temperature was 4 - 7 °C, at the base the temperature was 10 - 32 °C, in 1 cm penetrative depth there was a temperature of 76 °C; the temperatures at the settlement substrates were: yellow 4 °C, pink 6 °C, blue 9 °C, and red 7C (heading 225).

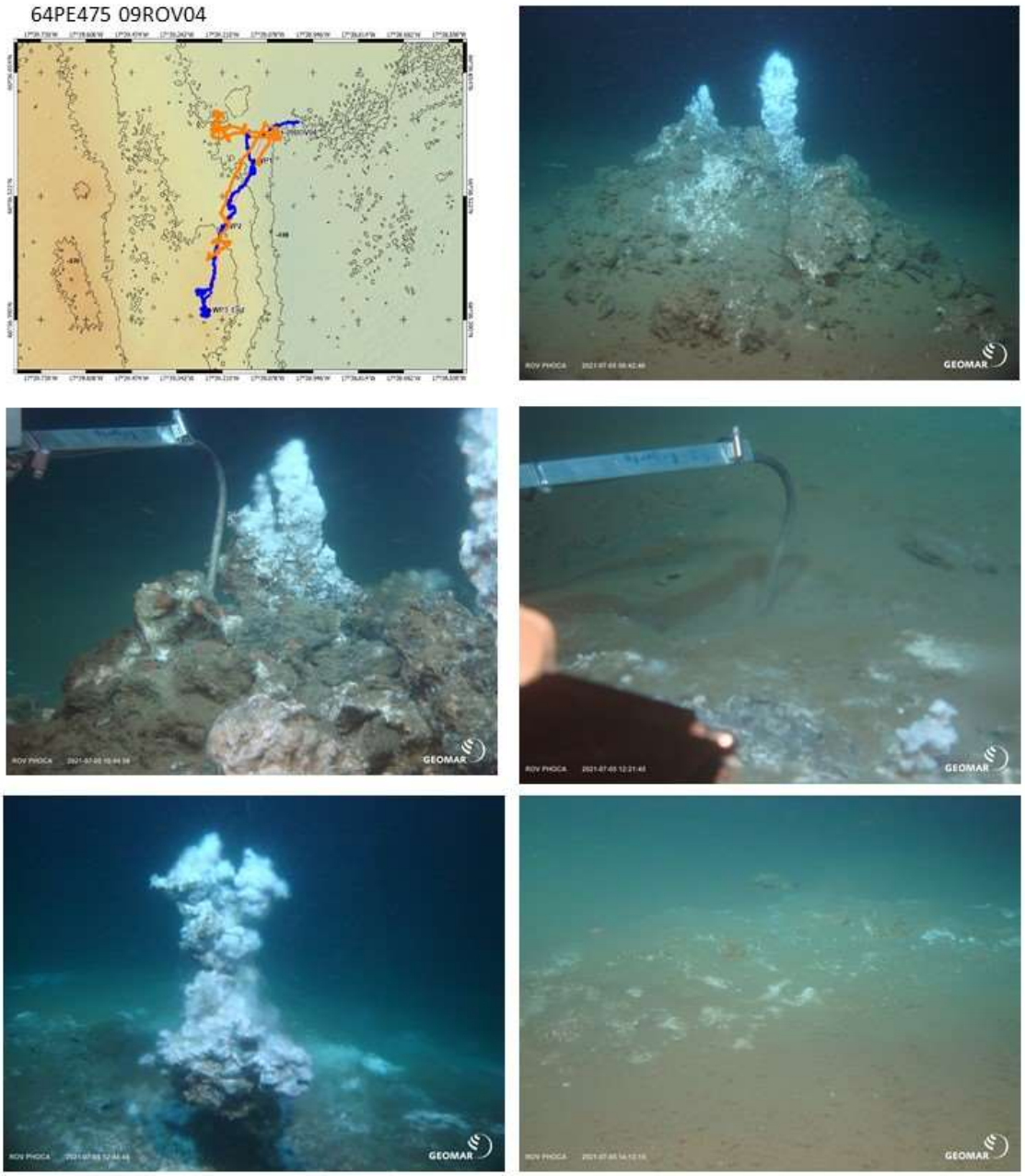


Figure 18 (from top left to bottom right): ROV map, chimney 1 overview, chimney 1 with snails, hot sediments, chimney 2, hot sediments.

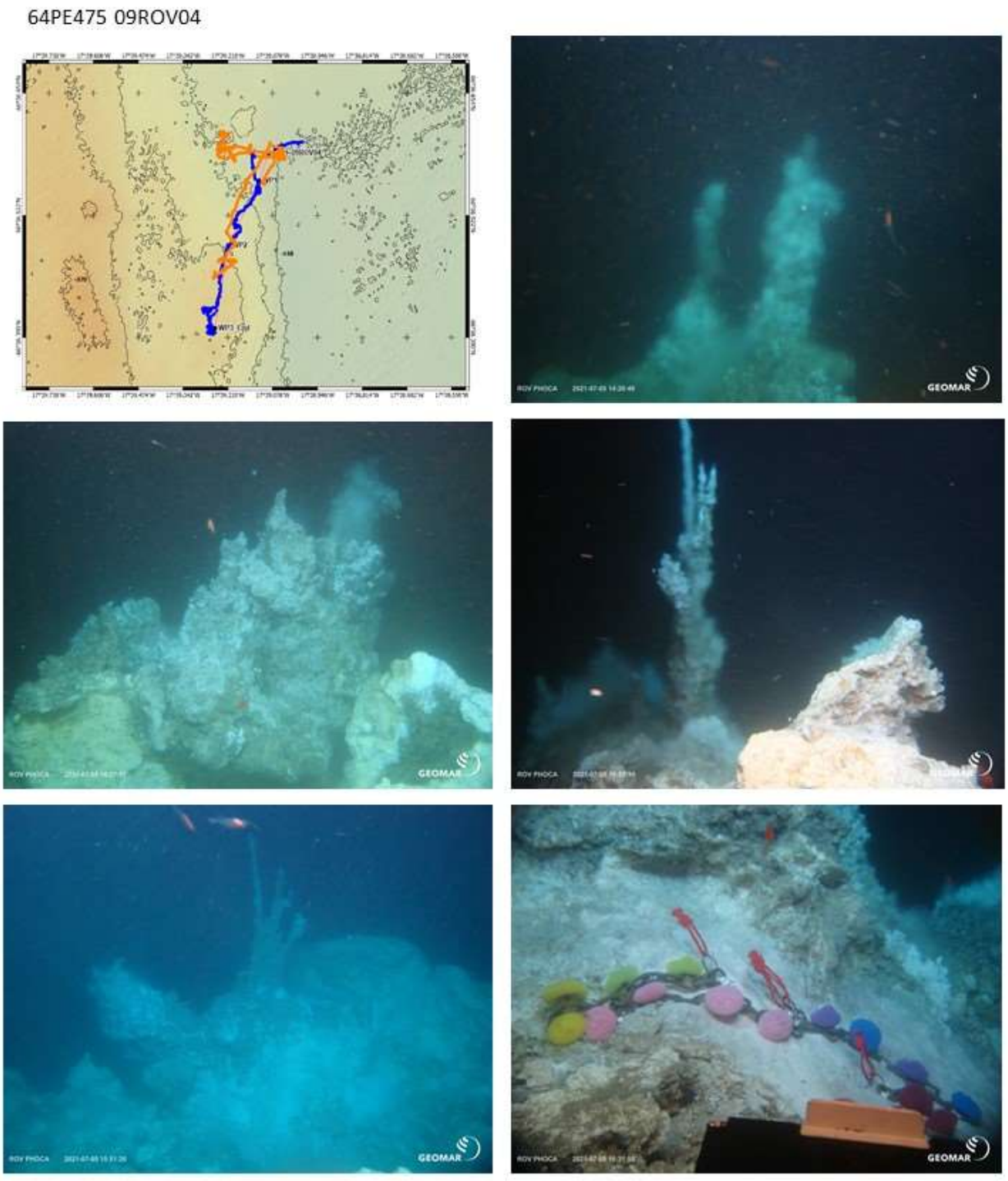


Figure 19 (from top left to bottom right): ROV map, chimney 3, chimney 3, chimney 4, chimney 4, settlement substrates at chimney 4.

14ROV05: Grimsey (06.07.2021; 9:19-17:27)

Sediment samples were collected near chimney 1 (13 °C at 10 cm sediment depth) and chimney 2 (85 °C at 9 cm sediment depth; 104 °C at 6cm); settlement substrates were deployed at the vent periphery of chimney 4 (2 °C); animals for respiration experiment collected (anemones). A smaller chimney 5 and large chimney 6 was discovered during the dive.

Chimney 5 is ~20 cm in height with temperature of up to 67 °C. Sediments at the base of the chimney had a temperature of 130 °C at 10 cm penetrative sediment depth. Visible megafauna included snails and anemones.

Chimney 6. The whole structure is ~12 m in height; active part of chimney is ~4 m in height with a maximum temperature of 186 °C; long bacterial filaments were visible with crustaceans feeding on bacterial mats, many krill and Atlantic cod were observed around the vent site; blackish structures in addition to white anhydrites were visible, these structures have also been observed at other chimneys at Grimsey vent field.

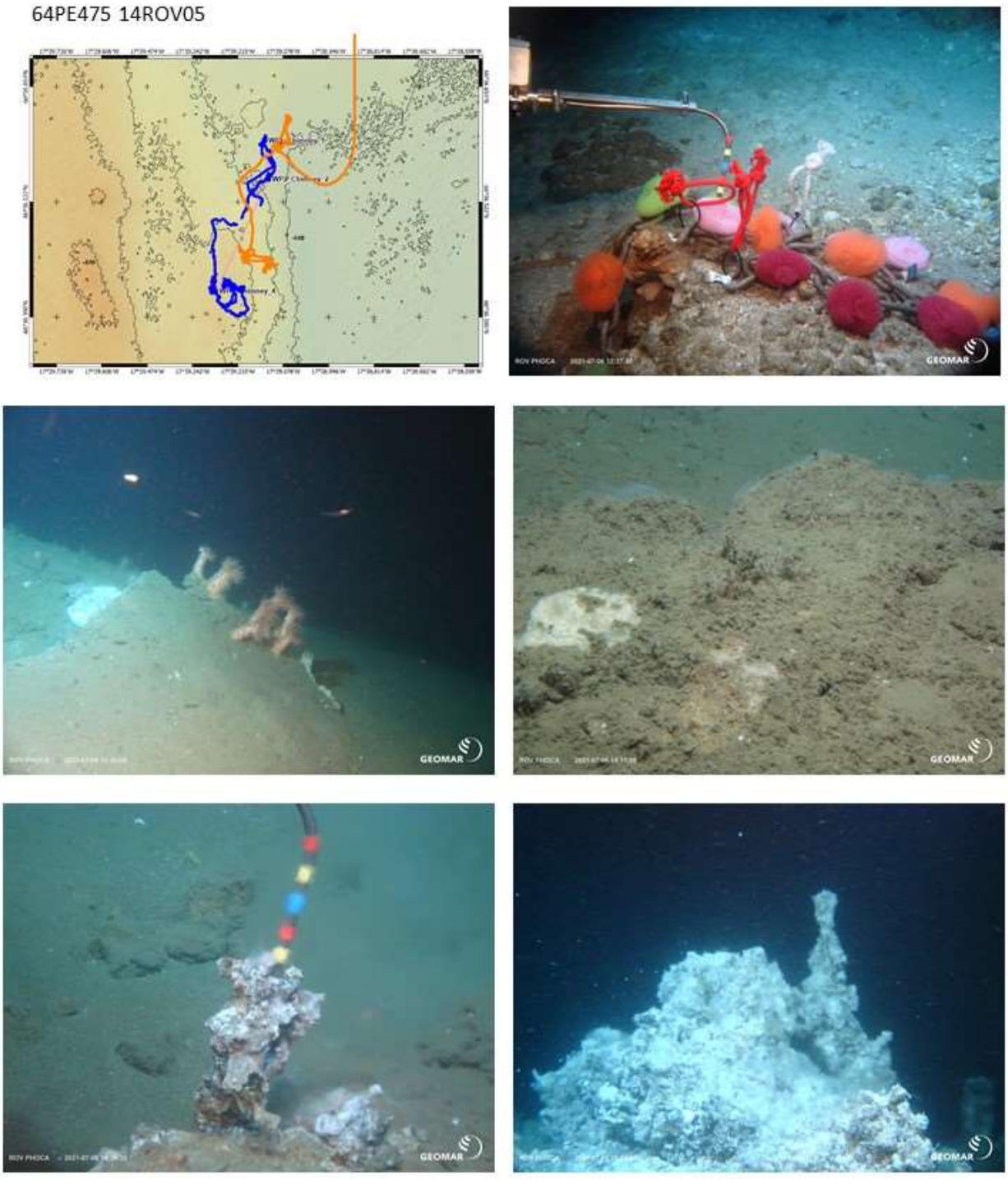


Figure 20 (from top left to bottom right): ROV map, settlement substrates at periphery of chimney 4, anemones, sediments near anemones, small chimney 5, large chimney 6.

20ROV06: Kolbeinsey (07.07.2021; 9:07-10:50)

Short dive to recover hydrophones. Strong currents were present leading to a difficult recovery. The decision was made to end dive immediately after recovery and postpone planned afternoon dive due to these strong currents.

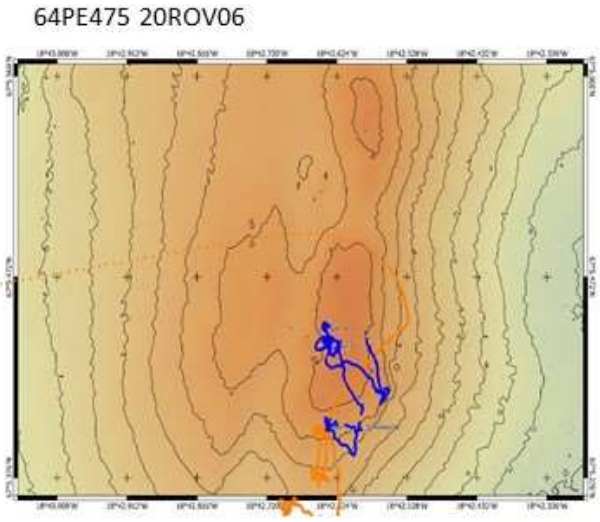


Figure 21: ROV map.

35ROV07: Grimsey (09.07.2021 9:08-11:49)

Three hydrophones were deployed (~100, 10m, and 0m distance to active venting at chimney 6), maximum temperature at deployment site was 10 °C. In addition rocks with biological communities were collected from chimney 6 and hot sediments (106 °C at 10 cm sediment depth) near chimney 6.

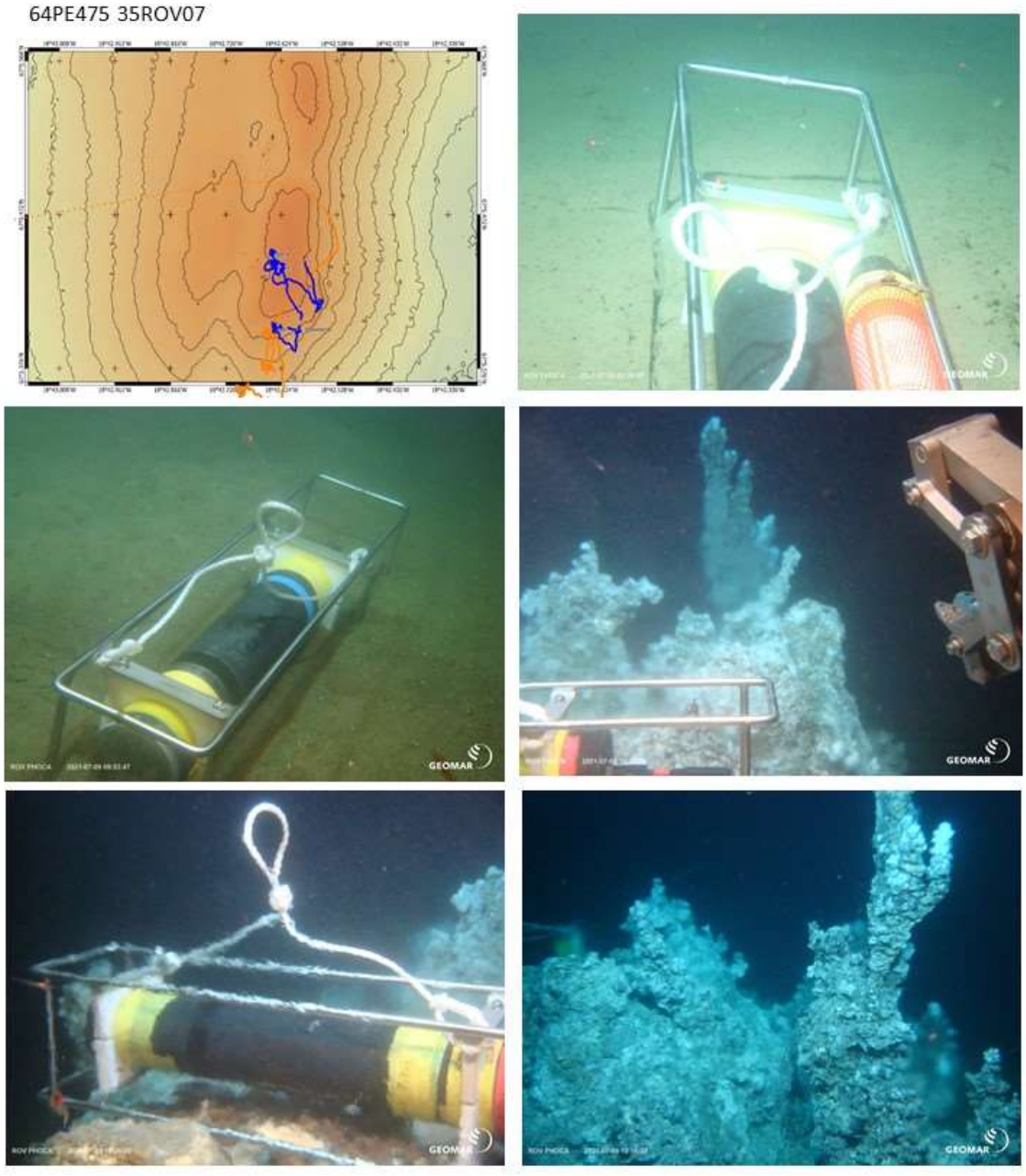


Figure 22 (from top left to bottom right): ROV map, hydrophone - yellow at 100 m distance, hydrophone - blue at 10 cm distance, hydrophone - red at chimney 6, diffuse flow at hydrophone - red, chimney 6 overview.

36ROV08: Grimsey (09.07.2021 13:22-17:25)

Further exploration of the Grimsey vent field; collection of rocks with bacterial mats (200 °C at 7 cm depth); temperature taken at rock with stalks (3 °C); anemones for respiration experiments collected (temperature 2.8 °C near anemones); pieces of chimney and hot sediments from chimney 7 collected

Chimney 7: ~4 m height; temperature measured at 250 °C; sediments in front of chimney 7 measured at 160 °C in 15cm penetrative sediment depth.

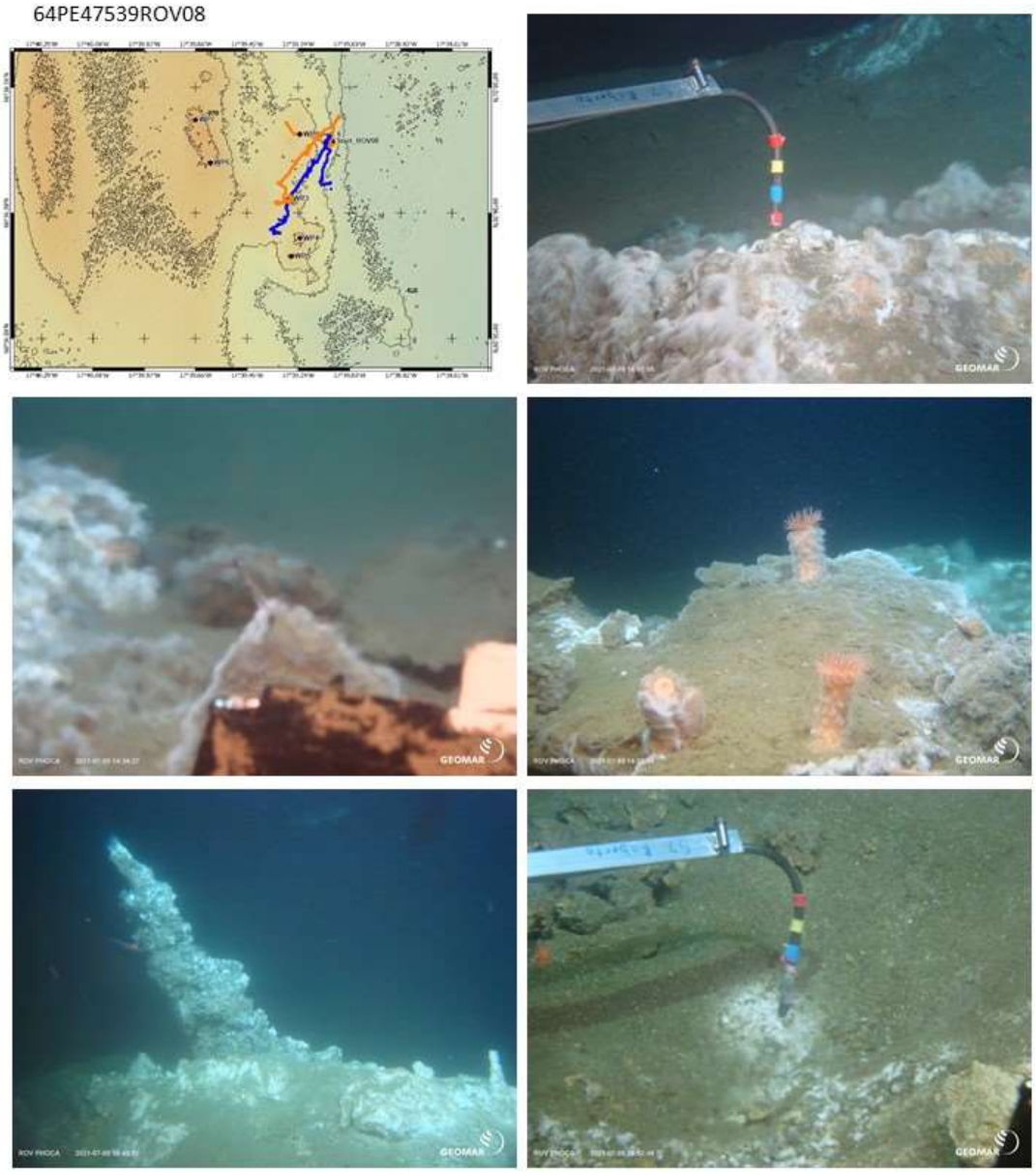


Figure 23 (from top left to bottom right): ROV map, rocks with bacterial mats, stalk in diffuse flow, anemone with white filamentous bacteria, chimney 7, sediment near chimney 7.

40ROV09: Grimsey (10.07.2021; 09:08 – 14:00)

Exploration of chimney 7 and small crater-like structure near chimney 7 (diameter of chimney 7 is ~12m); further exploration of area: many holes in sediments, lots of krill and cod, ball-like sponges in sediment; chimney 8 and chimney 9 were discovered as well as 3 additional bacterial mats. During the dive approaching waypoint 6, the area seemed to be older with no venting activity, but hard substrate with Actinaria, sponges, hydrozoans was present.

Chimney 8: ~5m height in total from base to top, base diameter ~230 cm, chimney ~1 m diameter, temperature in chimney 28 °C, temperature at 7 cm sediment depth 4 °C, temperature on surface on surface 3 °C); sediments in front of chimney has a temperature of 16 °C at 8 cm depth.

Chimney 9: temperature measured at 250 °C

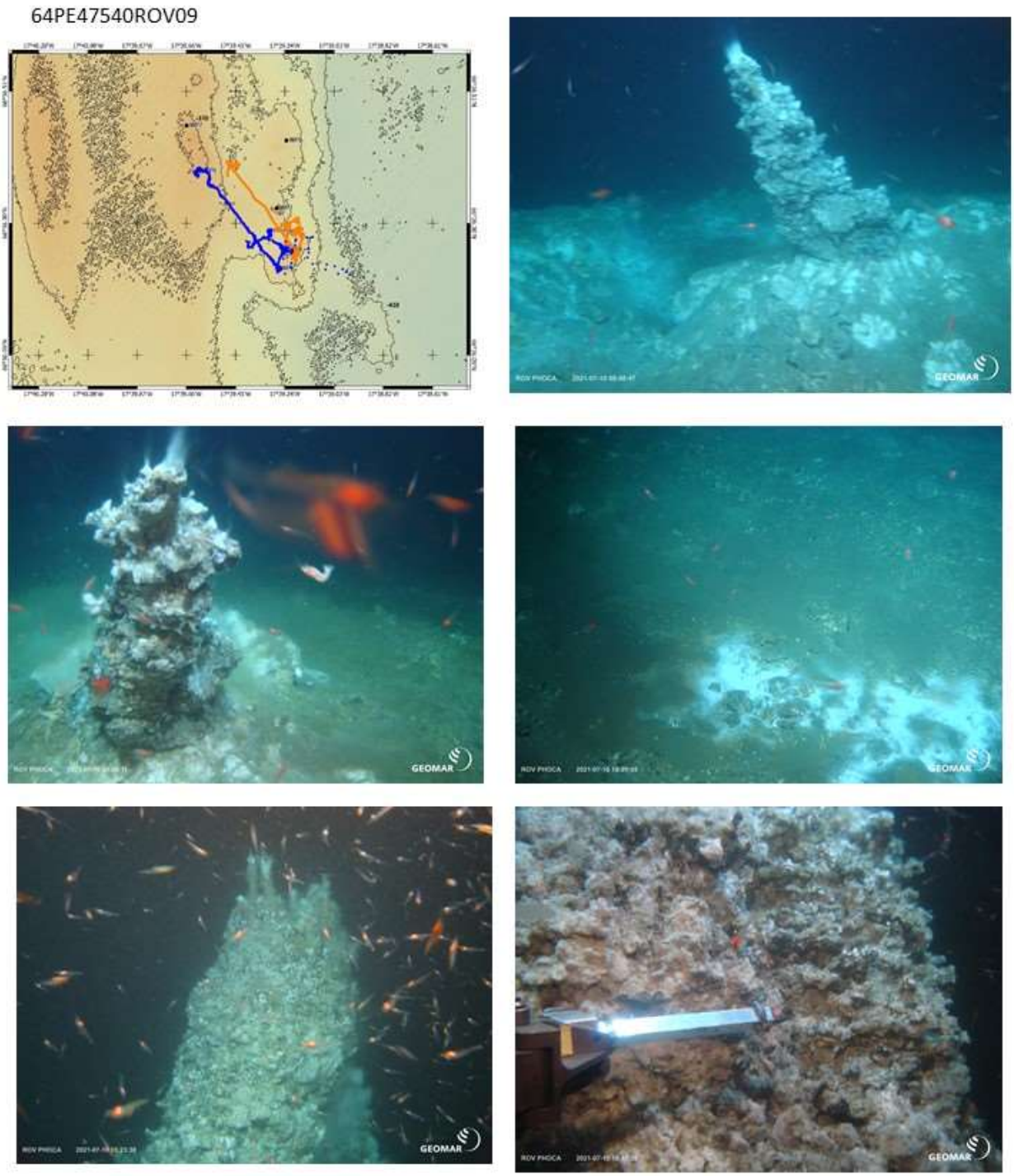


Figure 24(from top left to bottom right): ROV map, chimney 7, chimney 7 close-up, bacterial mat, chimney 8, chimney 8 close-up.

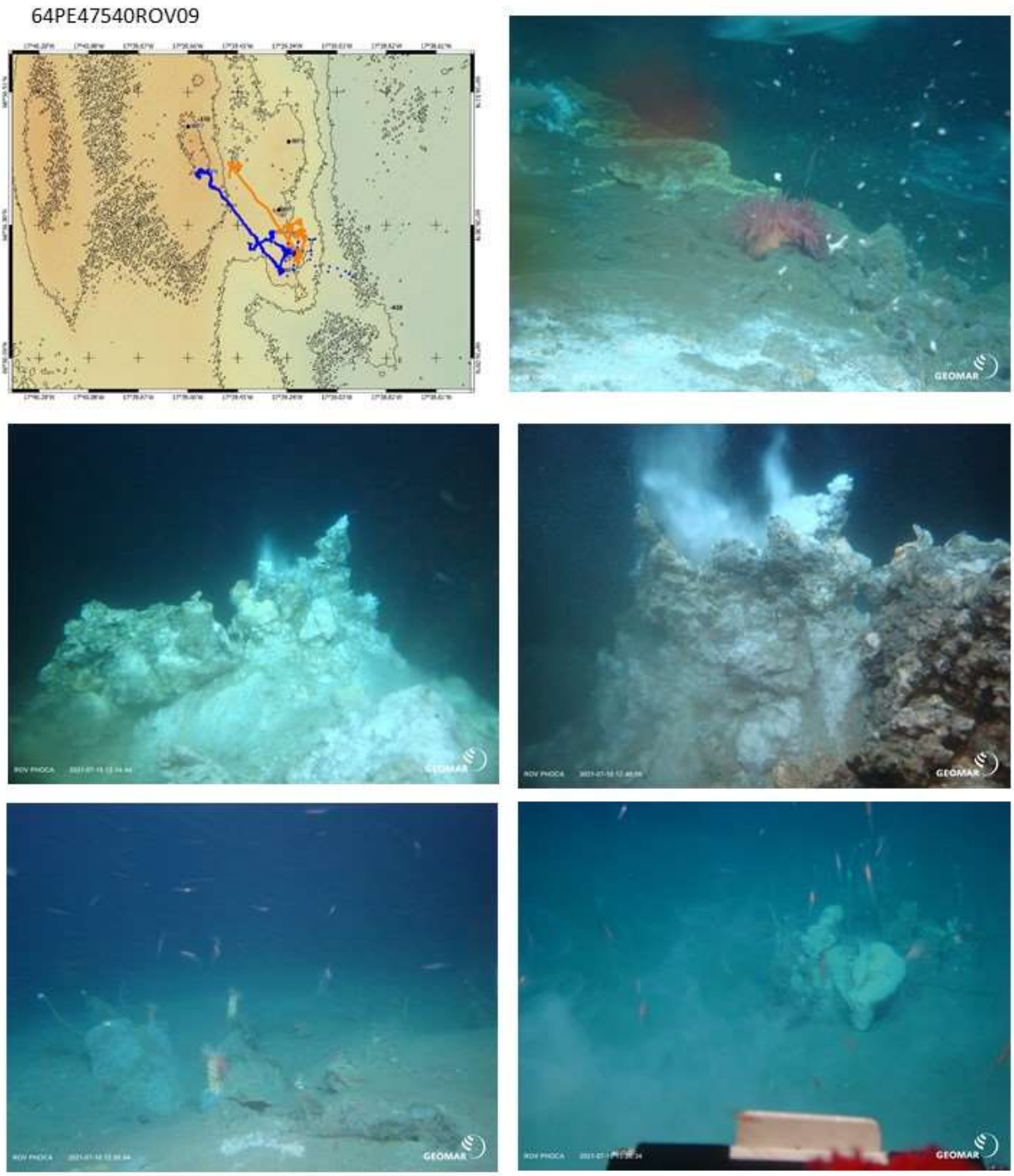


Figure 25 (from top left to bottom right): ROV map, anemones near bacterial mat, chimney 9, chimney 9 close-up, anemones, sponges.

48ROV10: Kolbeinsey (11.07.2021; 08:58 – 10:47)

Recovery of settlement substrates at Kolbeinsey (vent and periphery), 1 rock collection at vent (sponges), and 3 rock collections with bacterial mats.

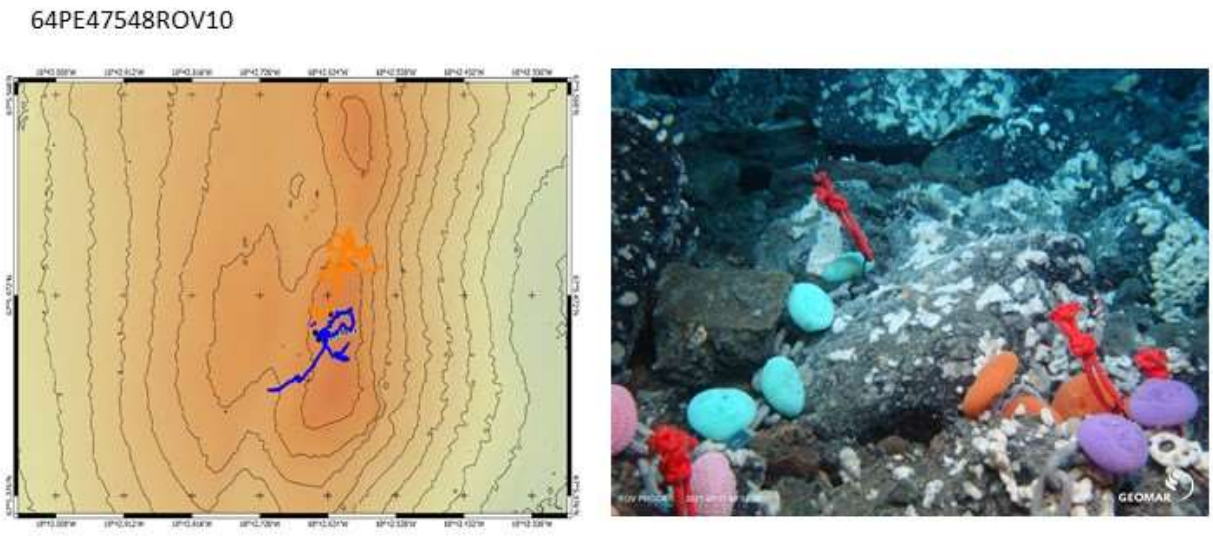


Figure 26 (from top left to bottom right): ROV map, settlement substrates at vent before recovery.

49ROV11: Kolbeinsey (11.07.2021; 13:30 – 17:19)

Transect along and off the ridge, hot sediment sample, rock collections with fauna alongside ridge.

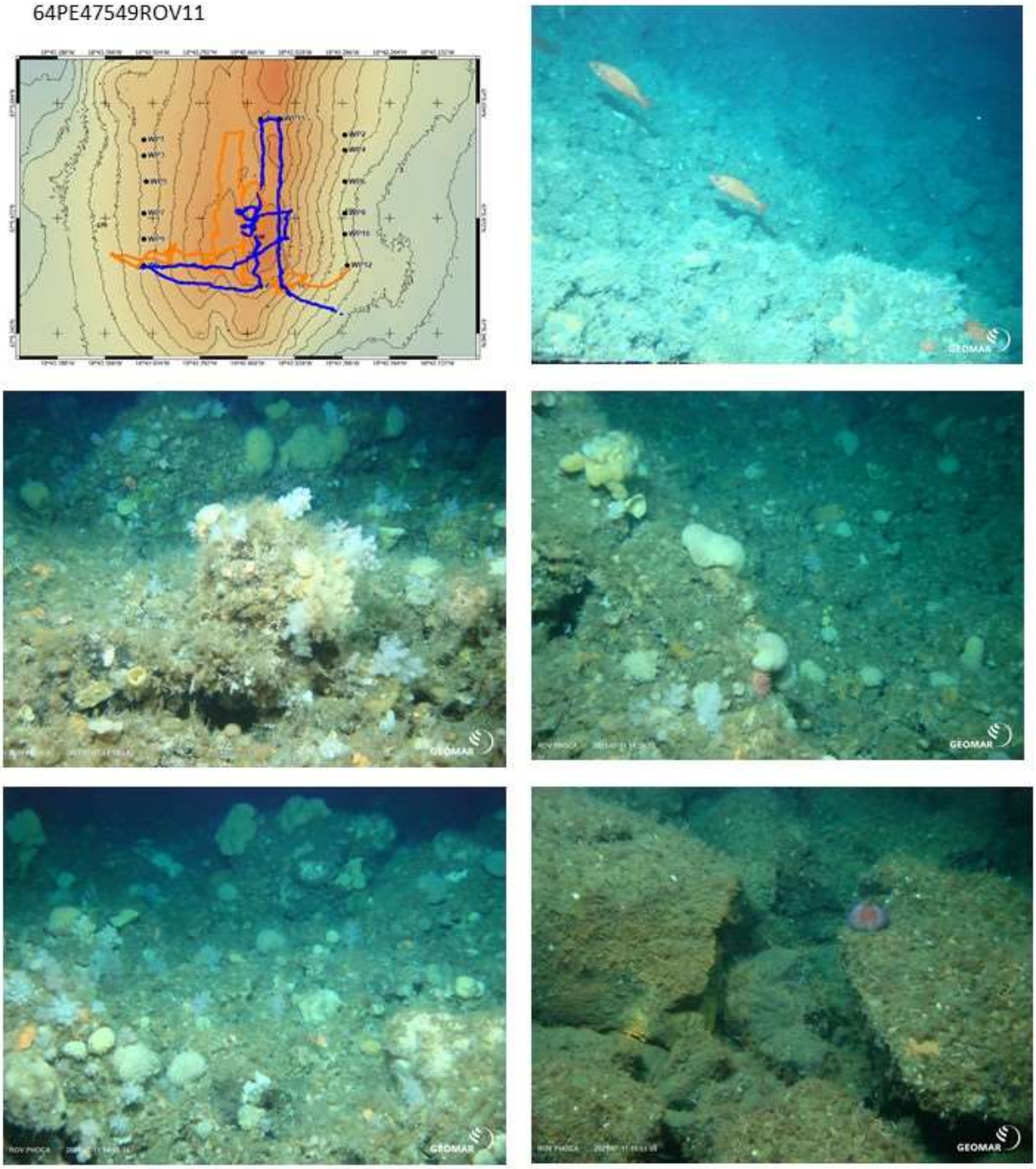


Figure 27 (from top left to bottom right): ROV map, communities along top of the ridge without active venting.

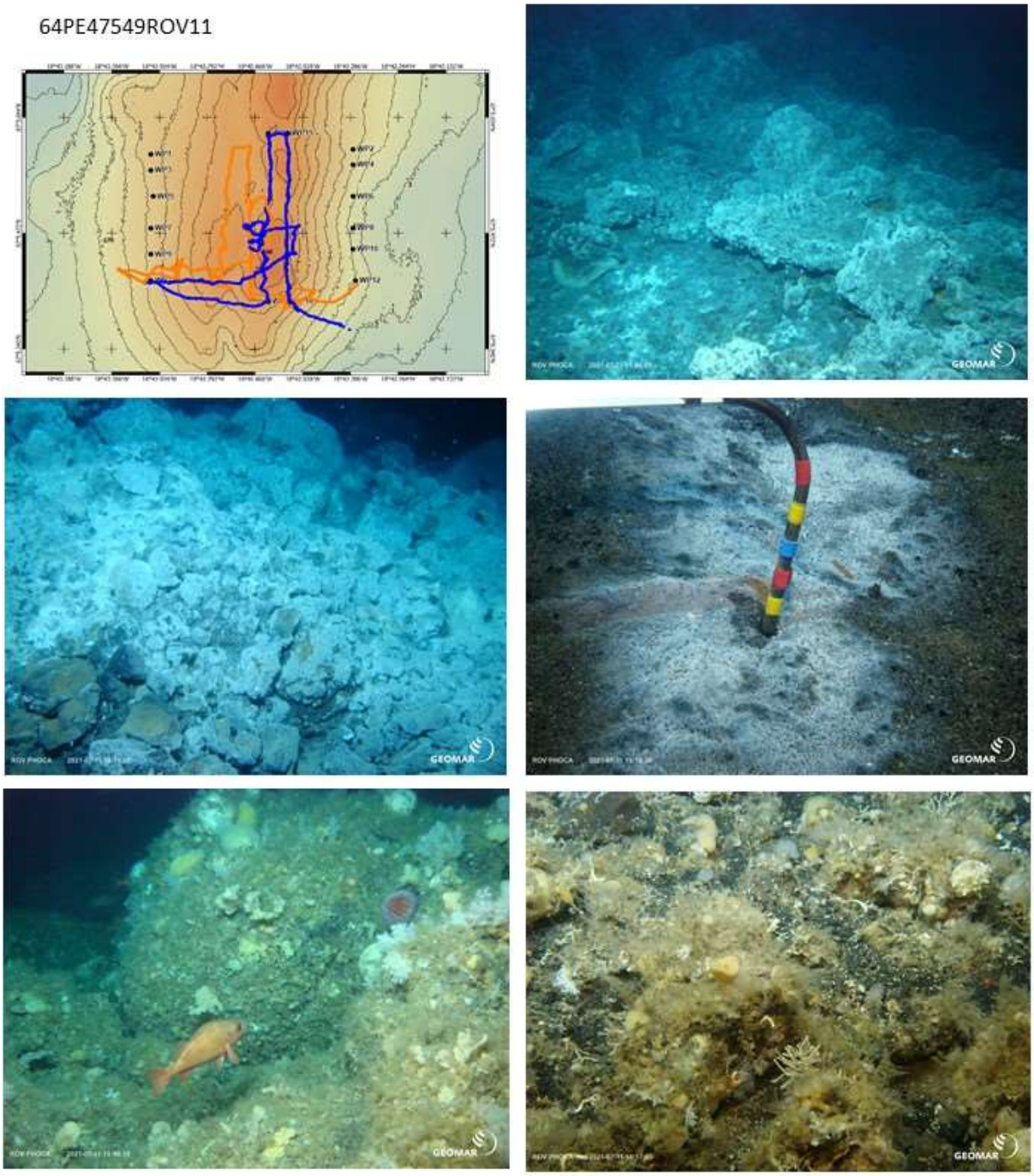


Figure 28 (from top left to bottom right): ROV map, bacterial mats along the ridge on rock, bacterial mats on rocks, bacterial mats in sediments, communities on side of ridge

51ROV12: Grimsey (12.07.2021; 9:23-12:07)

Recovery of settlement substrates at chimney 4 (at vent and periphery), recovery of hydrophones at and near chimney 6. Settlement substrates had become densely covered with white bacterial mats. It seems that a small part of the chimney had collapsed (Hangrutschung), covering a few of the sponges. From two experiments, two sponges were lost (P4B, P4A) likely due to high temperature causing melting of cable ties which were used to attach plastic sponges to chains. The temperature stickers attached to experiments were melted as well. Some of the remaining plastic sponges were slightly melted. This shows high temporal variability of venting temperature within a week: from 10 °C to ~ >100 °C (point were plastic is melted) to 12 °C on surface (25 °C at 0.5 cm depth, 88 °C at 4 cm sediment depth), as well as physical instability of chimneys.

Small rocks were encountered as well inside (all) settlement substrates. Frequently encountered animals included amphipods and copepods.

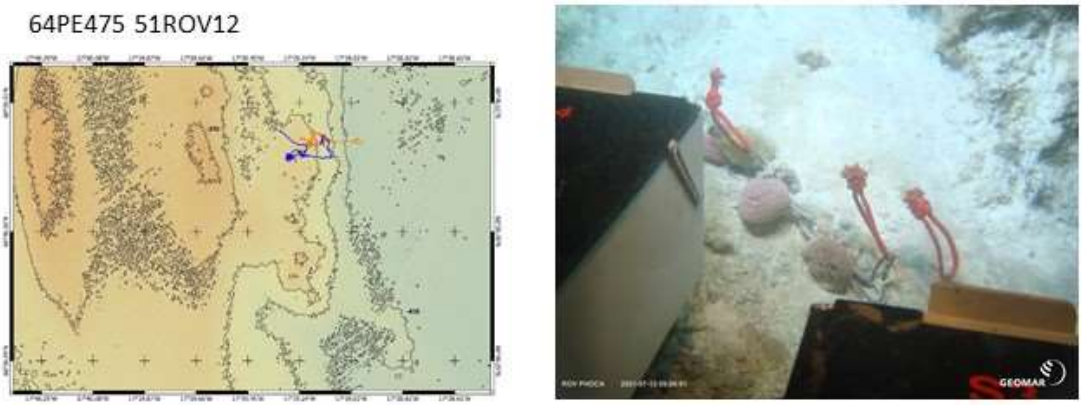


Figure 29 (from top left to bottom right): ROV map, settlement substrates at vent (covered by white bacterial mats?)

58ROV13: Strytan (13.07.2021; 9:12 – 13:46)

Video transect at Strytan vent from bottom to top. First attempted from the West side of the chimney but was aborted due to high abundance of old fishing lines and nets. Moved on water surface towards south point of the big Strytan chimney, were (almost) no fishing lines were encountered and the ROV was protected from currents. After 2 vertical transects at the “big chimney” (~40 m height), ROV moved towards the two smaller chimneys to the south. At each chimney one rock from the base (~60 m depth) was collected.

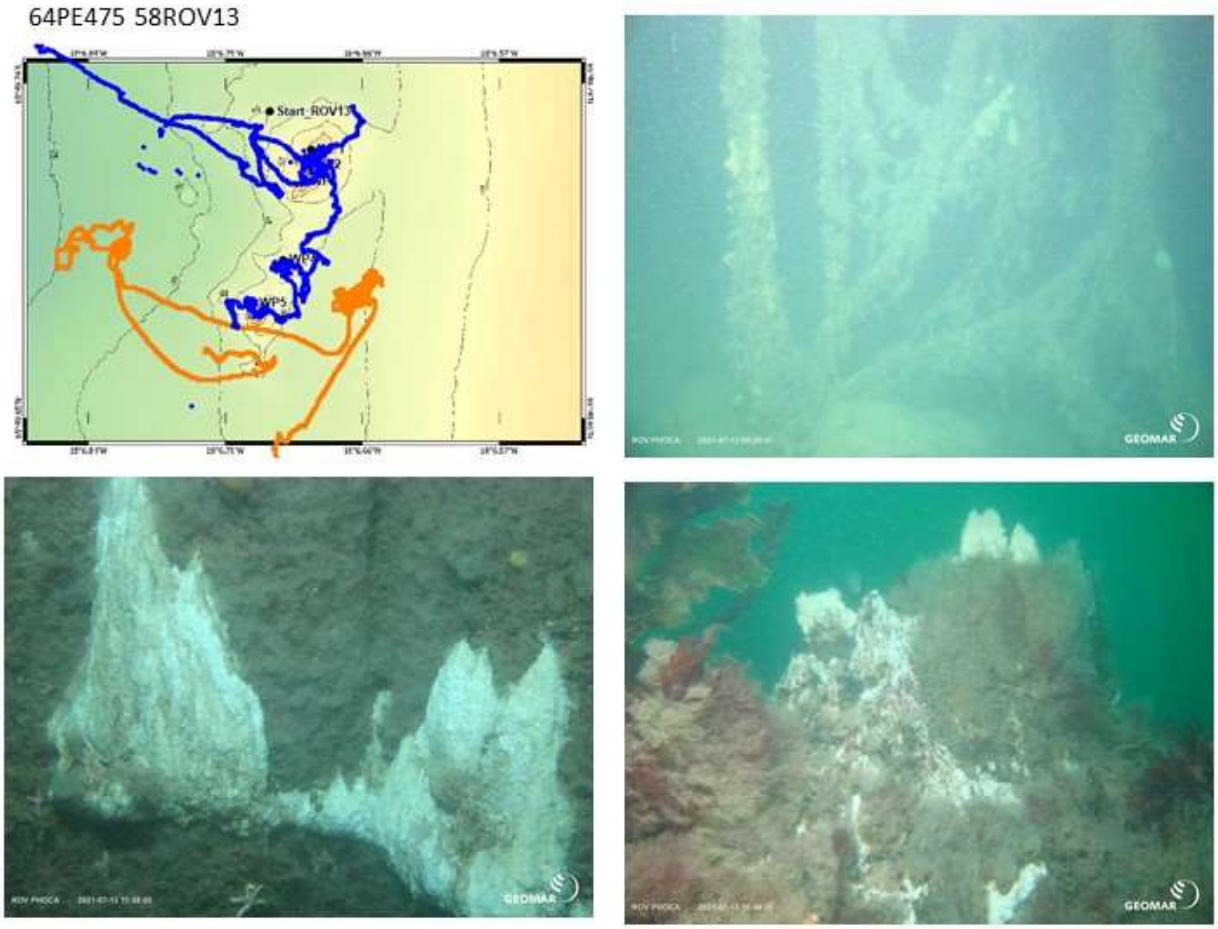


Figure 30 (from top left to bottom right): ROV map, net, middle section of big chimney, top section of big chimney.

5. CTD sampling (Lise Klunder)

The CTD was deployed in waters above the active vent fields of Kolbeinsey and Grimsey as well as at locations further away from the fields (~1 km & ~3 km). Water was collected using 12 L Niskin bottles, which were closed at depths.
At Kolbeinsey, bottles were closed at the bottom (~96 meters depth), ~60 meters, ~30 meters and the Chlorophyll max layer (~10 meters). For Grimsey bottles were closed at the bottom (~240 meters depth), ~150 meters, ~60 meters, ~30 meters and Chlorophyll max layer (~10 meters). At each depth, triplicate Niskin bottles were closed for collection of eDNA, SPOM, and nutrient samples.

5.1.CTD sampling protocol

- From each of the Niskin bottles, draw off ~100 ml water in clean plastic beaker and measure temperature with infrared thermometer. Record the measured temperature in CTD sampling list. When temperature measured on deck differs more than 1-2 °C from temperature measured in-situ, reject Niskin water sample for further use. After measuring temperature on-deck, water in beaker may be discarded.
- Silicone tubes (~50 cm long) may be used for draining water from Niskins into sample bottles. Make sure that tubes are clean, flushing both inside and outside with milli-Q water before every use. Connect the tube to the drainage tap of the Niskin, open tap and let water flow out for a second to rinse the tube, then insert the tube in the neck of the sample bottle but not deeper than strictly necessary.
- While draining samples from Niskin bottles, always be aware of contamination sources: airborne dust, water dripping from CTD frame or A-frame overhead, contact of draining tubes with deck.
- All filtrations afterwards were executed in a cold room at 4°C.

Figure 31. CTD on Pelagia

5.2.SPOM protocol

- Draw two 5-L samples from two Niskin bottles.
- Flush filtration cups liberally with milli-Q water using squeeze bottle.
- Place cups on filter holders. Keep valve closed. Use squeeze bottle to flush inside of cups liberally with milli-Q water. Switch on pump, open valve, and drain off the water.
- Take cup from holder and place pre-weighed GFF filter in filter holder using stainless steel blade pincers and put filtration cup back in place.
- Switch on pump, open valve, and carefully pour water from 5-L sample bottle in cup, avoiding to pour directly on the filter. Fill up before cup is empty, and continue until 5-L sample bottle is empty. To prevent settling of particles on the bottom of the 5-L sample bottle, swirl water around in bottle before pouring out.
- When entire water sample has passed through filter, rinse inside of cup with a dash of milli-Q water from squeeze bottle, avoiding to direct the jet on the filter itself. Then close valve of filter cup, carefully take filter cup from holder, and take filter from holder using stainless steel blade pincers and transfer to labeled petri dish. Store petri dish with filter in -20°C freezer.

5.3.eDNA filtration protocol

Preparation:

- Fill a styrofoam box with ice
- Sterilize the pincers with ethanol and a flame
- Spray a bit of filtered sea water on the filters holders
- Apply the DNA filter (0,22 µm; nuclepore track-etch membrame) with clean pincers!

Filtration:

- Fill the filtration cups. Always shake the bottles before pouring! Start with a low quantity and go up slowly to prevent clogging of the filter and long filtration times. Depending on the turbidity, filter between 0,5 liters (Chl. Max layer) and 5 liters (bottom) of water.
- Open the taps
- When water is nearly gone: rinse once with filtered seawater; close the tap when all water is gone
- Role the filter directly (DNA of dry filters degrade extremely fast!) and put it in the numbered tubes; Put the tubes on ice directly and move to the -80°C as quickly as possible afterwards

Cleaning:

- Rinse cups, holders and measuring cylinders with hot water and MilliQ, let them air-dry
- Empty the collection bottle into the small bottle for filtered seawater to make sure filtered seawater is available for next week and rinse with warm water.

Figure 32. Filtration unit.

5.4. Sampling protocol for Nutrient (phosphate, ammonium, nitrate, nitrite), Silicate measurements using <u>150ml sampling bottles</u> (provided by Nutrient lab, NIOZ)

Needed:

- Crate with 24 x 150 ml sampling bottles (to collect water samples from the CTD).
- 20 / 30 ml syringe.
- Acrodisc 0.8/0.2µm PF Syringe Filter, Supor Membrane (VWR order no. 514-4136).
- Gloves (optional).
- Ponyvials and click-on lids.
- White Sample Trays for pony vial sampling and storage.
- Use of a Refrigerator (+4°C) and a Freezer (-20°C).

Sampling Method:

- On deck, take a bottle with the corresponding number of the CTD Niskin bottle from the crate and empty it. Make sure you don't touch the inside, top or lid of the bottle!
- Rinse the bottle and lid three times with water from the CTD. The lid does not need to be completely closed onto the bottle while rinsing.
- Fill the bottle completely, screw on the lid and put it back into the crate until all Niskin bottles are sampled.

Sub-sampling for DIC, Nutrients, Silicate.

- In a clean area, pre-label the ponyvials in the white sample trays.
- One ponyvial for nutrients and another ponyvial for silicate needs to be taken.
- Start with the shallowest depth (highest CTD Niskin bottle number).
- Rinse the outside of the 20/30ml syringe with Milli-Q water. Doing this, keep the syringe with the opening up. Shake off excess Milli-Q from the outside of the syringe.
- Rinse the syringe with a small amount of water from the sample bottle and move the piston up and down to clean the entire inside of the syringe and then discard. Repeat three times.
- Fill the syringe completely with water and press any air out, while having the opening up.
- Screw an acrodisc filter onto the syringe. Do not touch the tip of the filter.
- Press ~2 ml water through the acrodisc filter to clean it and to remove air and dead volume. This acrodisc can be used for all samples taken during the same CTD cast.

- Rinse the ponyvial three times with ~1ml water from the syringe and the lid once to clean the inside of the ponyvials and lids. Make sure you don't touch the inside of the ponyvial or the inside of the lid.
- Fill the nutrient ponyvial with ~4ml sample to under the shoulder rim, leaving at least a 1cm headspace. Fill the Nutrient ponyvial first and click on the lid.
- Fill the Silicate ponyvial following the same procedure as the nutrient sample. Note: Skip cleaning ponyvial and fill with only ~2.5-3ml for Si if the volume left in the syringe is limited.
- Repeat the whole sub-sampling procedure for the next Niskin bottle sample ensuring that at least 2ml of new sample is pressed through the acrodisc filter to ensure that the dead volume of the previous sample is rinsed out before filling the two ponyvial samples.
- If the filter feels like it is clogging, use a new acrodisc filter and push through ~2ml of sample.
- Store Silicate samples dark, both preferably cooled in the fridge (+4 °C to +7°C). Store Nutrient (N,P) ponyvial samples in the freezer at -20˚C. Note: Water in the freezer will expand so always leave a headspace and don't fill the ponyvials completely full!

After sampling, rinse the bottles and syringe with some Milli-Q and store in a clean place.

5.5. CTD profiles (screenshots)

Station #1

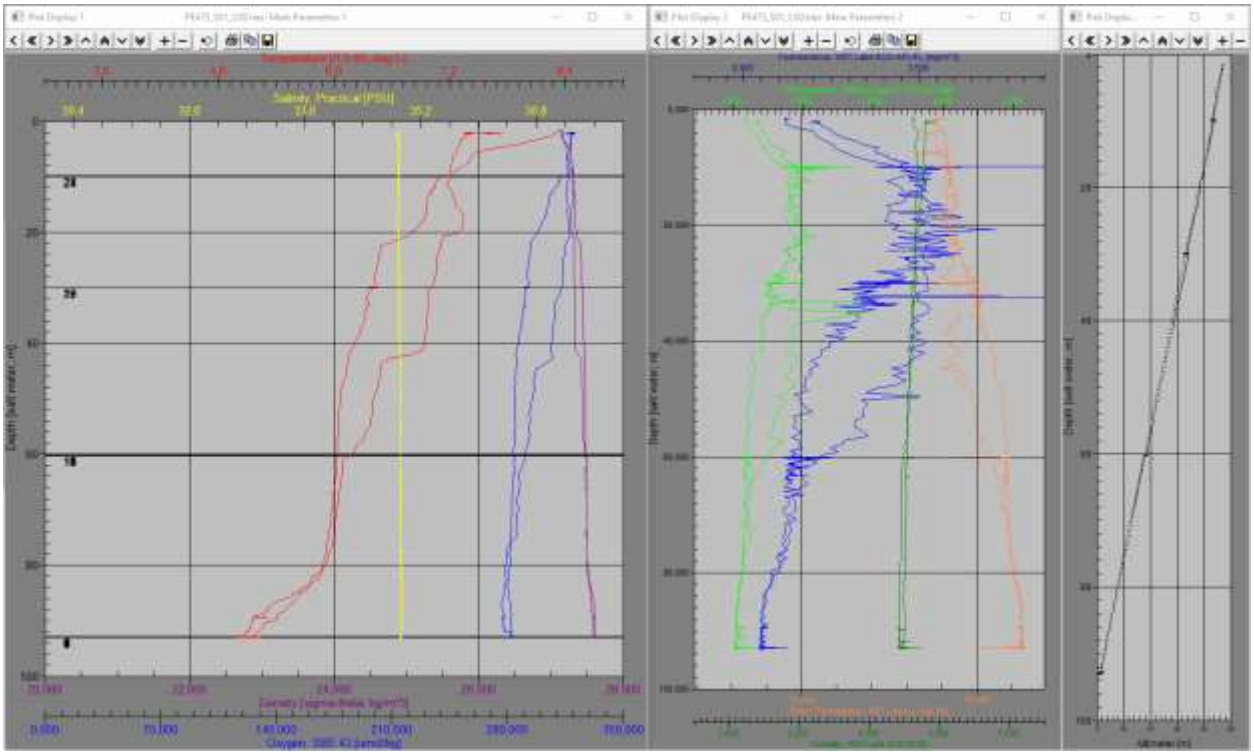


Figure 33. CTD screen shot Station 1

Station #4

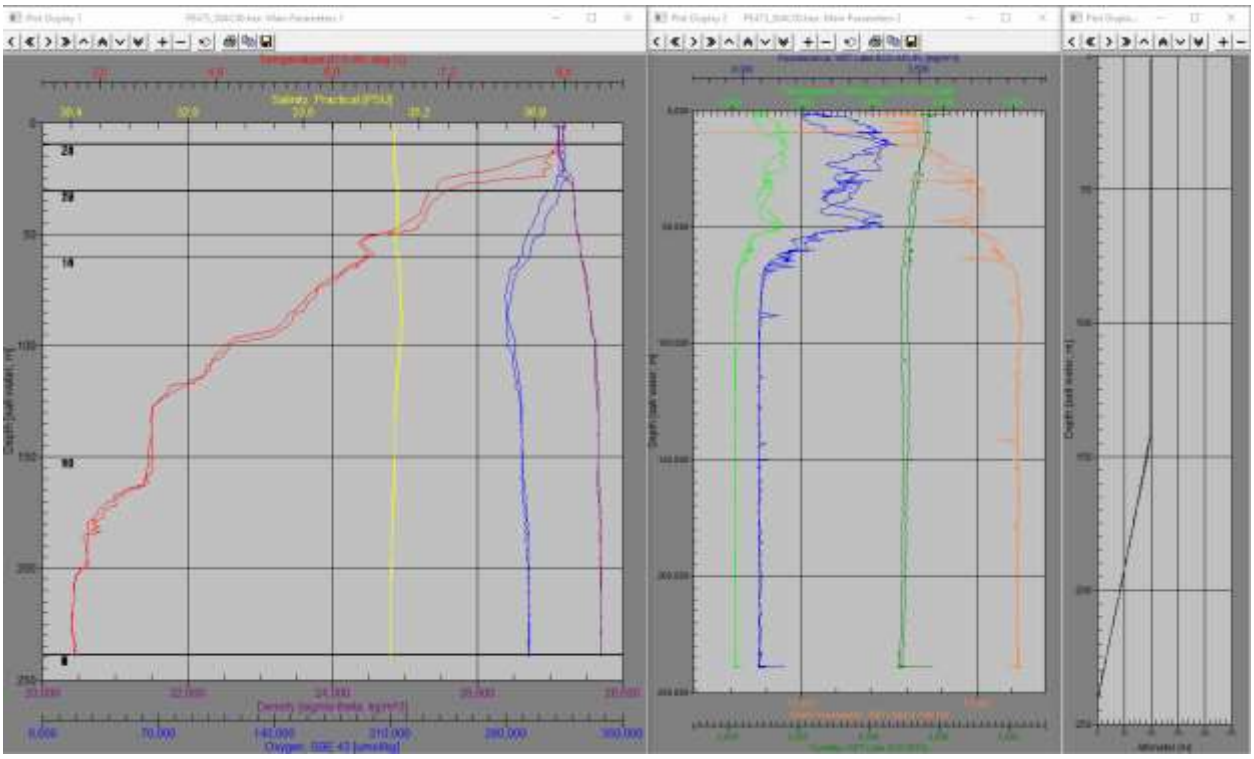


Figure 34. CTD screen shot Station 4

Station #8

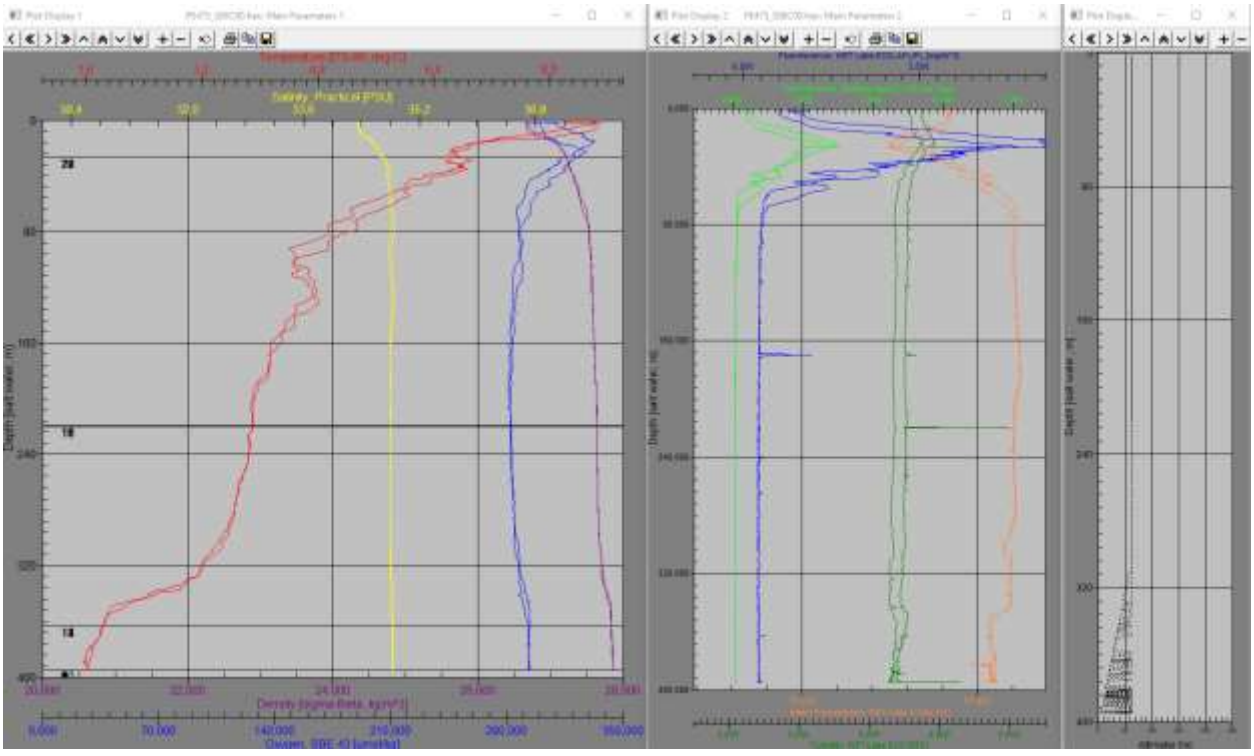


Figure 35. CTD screen shot Station 8

Station #13

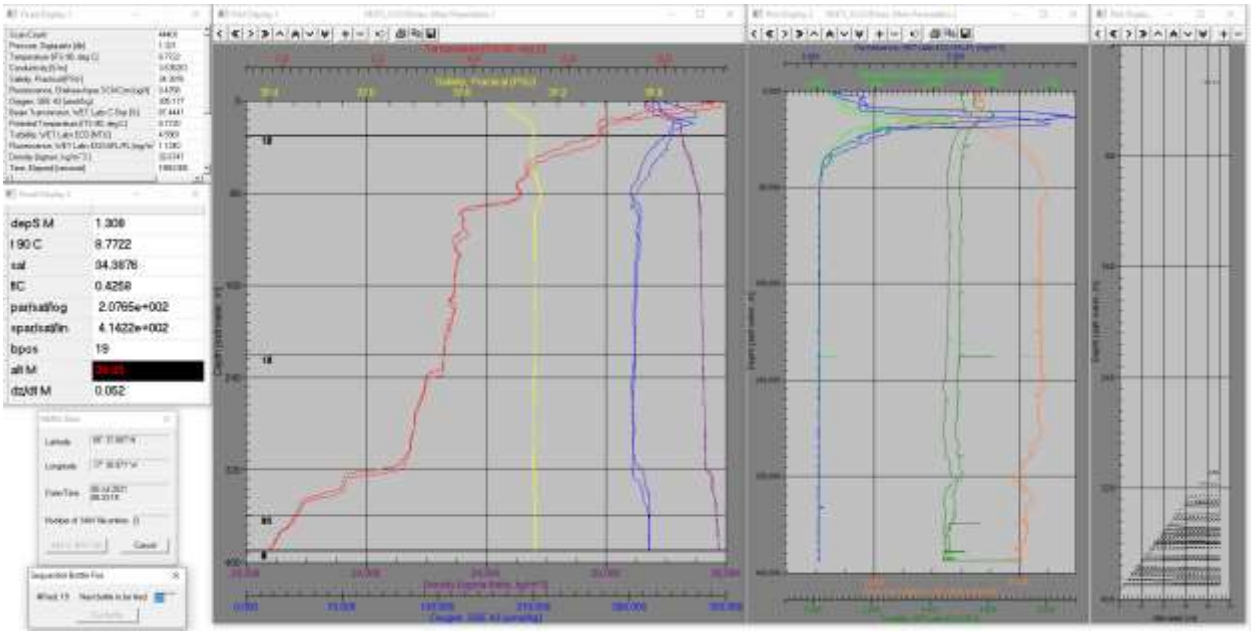


Figure 36. CTD screen shot Station 13

Station #19

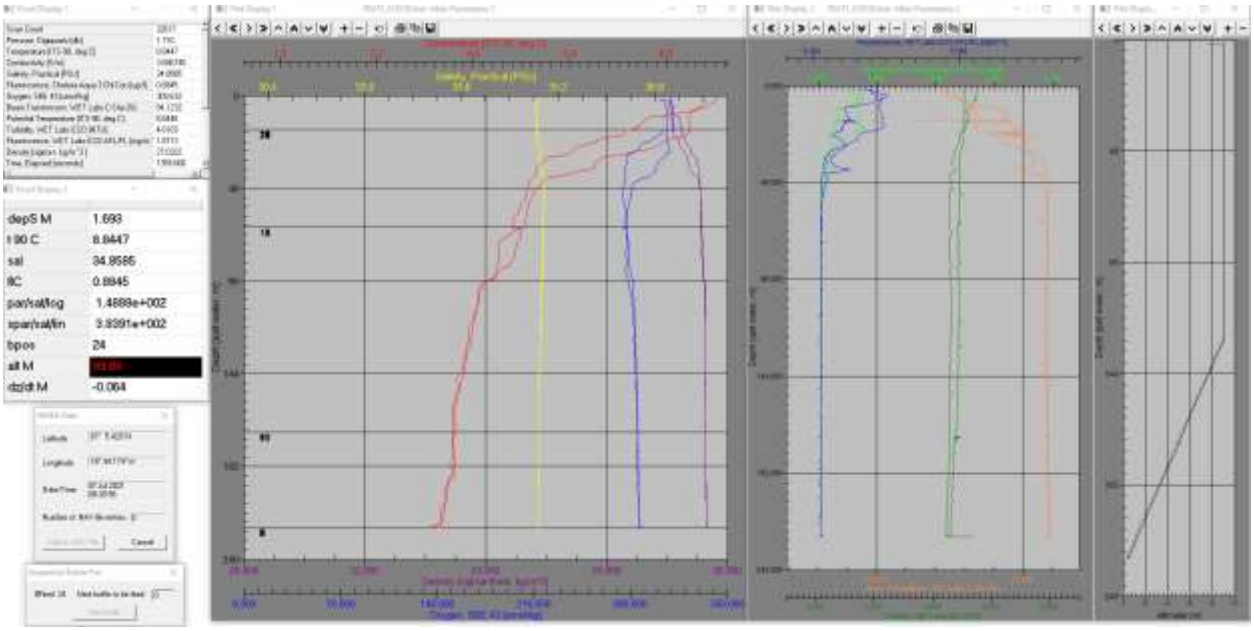


Figure 37. CTD screen shot Station 19

Station #34

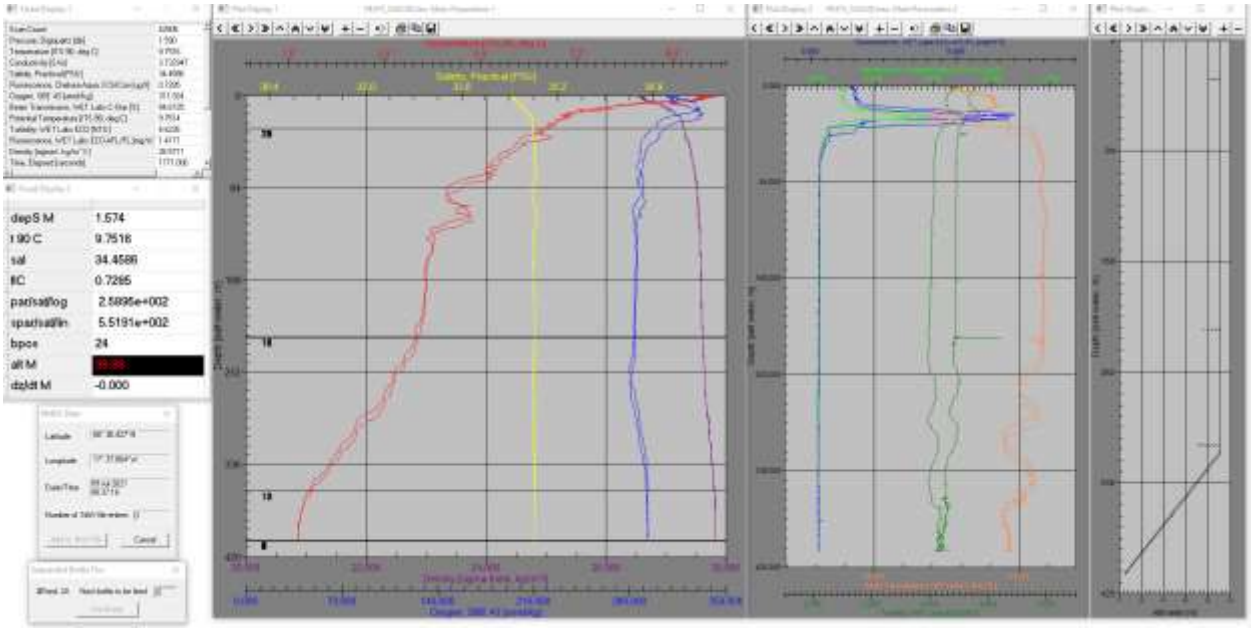


Figure 38. CTD screen shot Station 34

Station #47

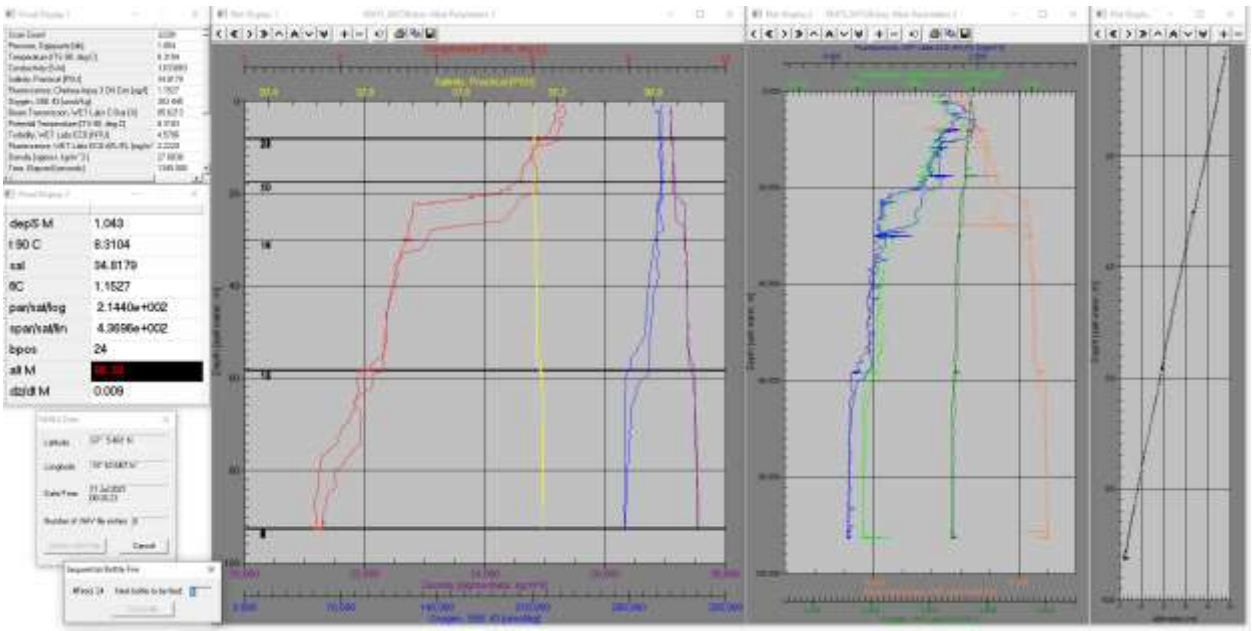


Figure 39. CTD screen shot Station 47

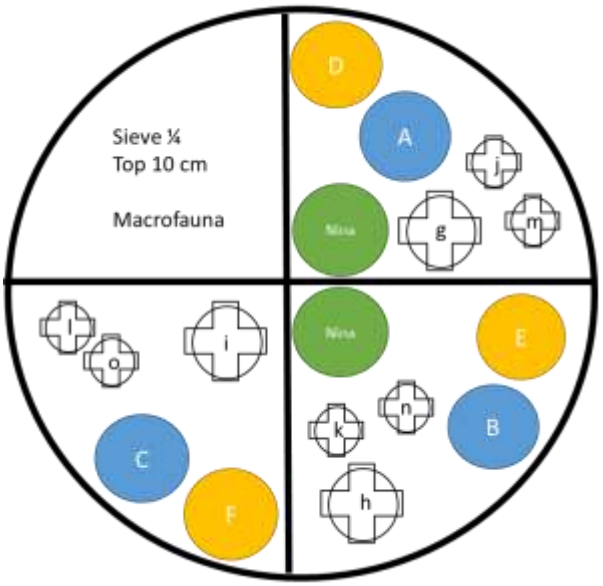
6.Boxcorer / multicorer for biological samples (Lise Klunder)

Biological sediment samples were collected using the video-guided NIOZ boxcorer or the multicorer. Although the boxcorer was the preferred gear, not all locations were suitable for boxcoring, mainly due to too soft sediments. Two boxcorers were deployed successfully in the Kolbeinsey area, either ~1 or ~3km West/South-West of the vent site. At the Grimsey area, sampling only succeeded using the multicorer. Here, three multicorers were collected within the chimney area, and two multicores either ~1 km or ~3.5 km East/South-East of the vent site.

Date	Station	Lat/Lon	Location	Depth	BC#	Gear	DB #	Fail/Success	Comment
07/07/2021	21	67 05 42N; 18 44 19W	1km west KB	220		BC		Fail	Little sediment, problem with camera
07/07/2021	22	67 05 42N; 18 44 19W	1km west KB	220		BC		Fail	Empty
07/07/2021	23	67 05 42N; 18 44 19W	1km west KB	220	1	BC	69	Succes	Black sediments
07/07/2021	24	67 05 25N; 18 46 70W	3km SW KB	245		BC		Fail	Rock
07/07/2021	25	67 05 25N; 18 46 70W	3km SW KB	245	2	BC	70	Succes	Black sediments, stones, sponges, corals, brittle stars
07/07/2021	26	67 04 57N; 18 49 33W	5km SW KB	255		BC		Fail	Empty, substrate too hard
10/07/2021	41	66 36 57N; 17 39 13W	Between C1 & C2 Grimsey			BC		Fail	Too full, remove weights for next BC
10/07/2021	42	66 36 57N; 17 39 13W	Between C1 & C2 Grimsey			BC		Fail	Too full, change to MC
10/07/2021	43	66 36 57N; 17 39 13W	Between C1 & C2 Grimsey		3	MC	130	Succes	MC, pots & syringes labeled as BC3
10/07/2021	44	66 36 57N; 17 39 13W	Between C1 & C2 Grimsey		4	MC	131	Succes	MC, syringes labeled as BC4
10/07/2021	45	66 36 57N; 17 39 13W	Between C1 & C2 Grimsey			MC	132	Succes	MC, bubbels, no syringes etc.
12/07/2021	52	66 36 43N; 17 37 88W	1 km east of Grimsey			BC		Fail	Too full, change to MC
12/07/2021	53	66 36 43N; 17 37 88W	1 km east of Grimsey			MC	133	Succes	All samples labeled as St53
12/07/2021	54	66 34 68N; 17 37 38W	3,5 km SE of Grimsey			MC	134	Succes	All samples labeled as St54

Table 3. Overview Box- and mulicorer for biological samples

6.1.Kolbeinsey – boxcorers



1. Remove water, sieve over 32micron, fix in EtOH
2. Picture boxcore
3. Place cores
4. Picture boxcore
5. Remove ¼ to bucket & sieve later
6. Remove syringes, close with pot & yellow tape
7. Remove cores & slice

2 cores Nina, next to each other
3 cores sliced to 10 cm, Formal (a, b, c)
3 cores sliced to 10 cm, EtOH (d, e, f)
3 large syringes (-20C, isotope, fauna) (g, h, i)
3 small syringes (-20C, isotope, sed) (j, k, l)
3 small syringes (-80C, eDNA) (m, n, o)
¼ stored at -20 for sieving later

Slicing 6 cores Sabine/Lise: 0-1, 1-2, 2-3, 3-4, 4-5, 5-10cm
Formal: 0-1, 1-2, 2-3, 3-4, 4-5, 5-10cm
EtOH: 0-5, 5-10cm

Figure 40. Sampling scheme boxcorer.

6.1.1.Boxcorer 1 – station 23 - 1 km west of KB

This boxcore is the closest to the KB vent site, no suitable sediment substrates for boxcoring were found closer. After 2 failed attempts, either due to rocks/hard substrates and struggles of how to take a boxcore while using the bc-camera, the 3rd attempt gave a nice box.

The box was about ¾ filled with black sediments and a tiny layer of fine brown/grey sediments. Some small fauna was visible on top: brittle star, polychaete, gorgonian/hydrozoan. No hard substrates like rocks visible. The boxcore was sampled following the schematic. The cores went in with some pressure. No layering of the sediments was visible, with black slightly coarse sediment up to the bottom.

Figure 41. Photos from BC.

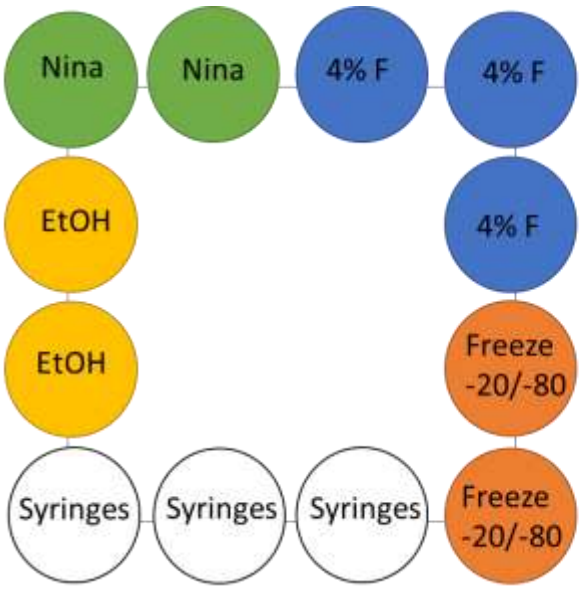
6.1.2.Boxcorer 2 – station 25 - 3 km west of KB

One failed attempt due to a large rock. The boxcorer video showed a mosaic of rocky/sediment patches. The second attempt was a success.
The box was filled to about ½ capacity. On the top was a layer of fine brown/grey sediments. Under this layer was coarse black sediment
The top layer of the box was full with visible life. Different species of brittle stars, polychaetes, a large sponge, hydrozoans. The top included a large rock.
The sediments were coarse, the subsampling cores had to be hammered in. Sampling followed the normal boxcore-schematic. No layering was visible, all black sediments.

Figure 42. Photos from BC.

6.2.Grimsey – multicorers

Many of the locations around Grimsey have very soft sediments. At each location, we tried to use the boxcorer first. Although all weights were removed after the first attempt and the boxcorer was lowered to the bottom slowly, the boxcorer was still too full. In order to still obtain sediment samples from these locations, the multicorer was used instead. The figure shows the sampling scheme for the multicorer. The proposed sampling set-up differs slightly between stations, depending on specific needs and the obtained cores. The sampling lists depicts the correct collections for each station.



2 cores Nina, next to each other
3 cores sliced to 10 cm, Formal (a, b, c)
2 cores sliced to 10 cm, EtOH (d, e, f)
3 syringes per core: 1 large, 2 small
- isotope fauna, isotope sed, eDNA
2 stored at -20C for fauna/sieving

Figure 41. Sampling scheme multicorer.

6.2.1.Station 43, 44, & 45 – Between chimney 1 & 2

Three multicorers were deployed at the same location between chimney 1 & 2 at the Grimsey vent field. This area was observed as a sedimentary area from the ROV dives and suitable for coring.

The first two cores (st 43 & 44) were ‘normal’ with grey/brown fine sediments without any visible layering. While slicing the cores, tubes from polychaetes were observed. One of the cores from station 43 fell during the slicing process and was discarded.

The cores from station 45 were filled with bubbles and smelled like rotten eggs. As we have no certainty about the processes that produce these bubbles, two cores were sealed directly and stored at -80°C.
The others were left on the deck until the bubbles disappeared before they were stored/sliced. The bubbling was still visible after 3.5 hours. No syringes were taken from the cores (the cores were too disturbed due to the bubbles), instead the complete core was stored at -20°C.

Figure 42. Photo from bubbling sediments in multicorer.

6.2.2.Station 53 & 54 – ~1km E & ~3,5km SE of Grimsey vent field

Again, the multicorer was deployed as the sediments were too soft for boxcoring. Sampling followed the schematic above. Same as at Grimsey, the sediments were fine grey/brown sediments without visible layering. Again, some polychaete tubes were visible. Also, during slicing, Nereididae and Capitellidae could be observed in/on the top layer.

Figure 43. Photo from multicore

7. Multibeam and 3.5 kHz echosounder (Rick Hennekam, Hrönn Egilsdóttir)

Several parts of the Icelandic shelf were mapped using the Kongsberg EM 302 multibeam echosounder available on R/V Pelagia. The system has a 30 kHz echo sounder with a one degree opening angle for the transmitter and a two degree angle for the receiver. The intended multibeam grids (see Figure, including station numbers) were reported at the bridge of R/V Pelagia. Subsequently, they ssurveyed these grids with active multibeam logging at night time with ~5-6 knots. As we had to be on time for the next station the morning, these grids could not always be completely ssurveyed, and should therefore be taken as indicative. We focused multibeaming on parts of the Icelandic shelf that (I) did not have detailed multibeam data available yet (Stations 7, 12, 18, 27, 33, 39, 46, 57), and (II) parts of the vent fields that were multibeamed around ~2005, to observe potential changes that occurred within these grids during the last 2 decades (Stations 3 and 50). Sound velocity profiles collected using CTD data in the morning were generally fed into the multibeam software for data corrections during seafloor mapping on the shelf. Post-processing of the data will be done at the Icelandic Marine and Freshwater Research Institute (MFRI) in collaboration with NIOZ.

We also once used the 3.5 kHz echosounder available on R/V Pelagia, which potentially can be used to observe layering in the sub-surface. This recording was started at 66° 50.89'N 17°29.05'W and stopped at 66° 45.77'N 17°13.70'W. We did not find the right settings to observe the layering and/or the seafloor was not suitable for this device. Hence we refrained from using this device the rest of the cruise.

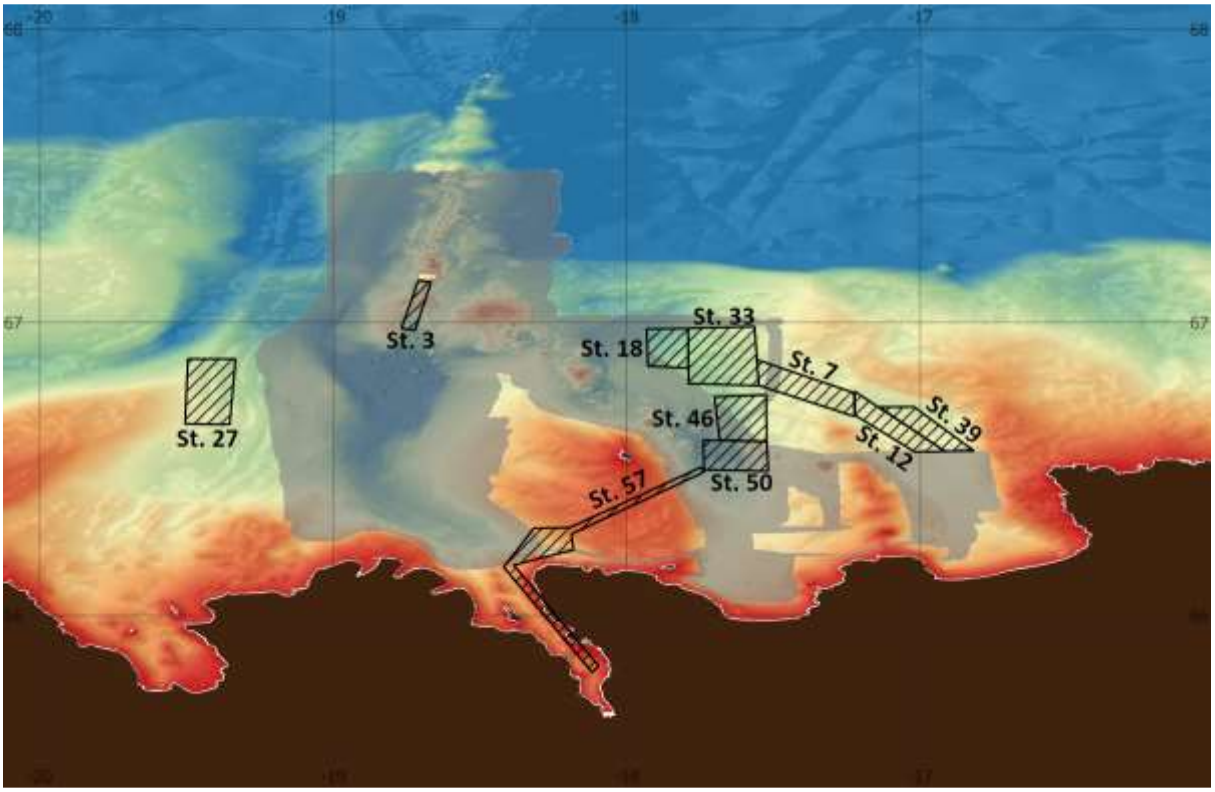


Figure 44. Multibeam grids and their station numbers plotted on available multibeam and EMODNET data.

8. Multicorer (Rick Hennekam, Lise Klunder, Nina Dombrowski) for Palaeclimate

Multicores with a diameter of approximately 10 cm were collected with an Oktopus multicoring apparatus (www.oktopus-mari-tech.de) during the expedition. The weighting system of the multicorer was adjusted at each site to achieve optimum sediment recovery. With this device, 12 cores are recovered per cast. Each core contains in general ~25-50 cm of sediment plus overlying water, but for station 16 this was a bit less (~15 cm) because the sediment was stiff. After core collection, the multicores were either stored (at 4 °C and/or -80 °C) or sampled using the hydraulic push-up device in appropriate resolution. See the following Table 4 for multicore locations and core designations, and Figure 45 for showing the multicorer

Figure 45. Mulicorer on board of Pelagia.

Table 4. Multicore locations and multicore designation. Note that most multicores were numbered (MC-1, MC-2 etc.), which is required for the NIOZ DAS system. The table indicates which numbers were assigned to which department, whom, and/or project.

Station	Date	Long.	Lat.	Depth (m)	NIOZ-OCS (Rick Hennekam)	NIOZ-OCS (Peter Kraal)	Ice Age project	NIOZ-MMB (Nina Dombrowski / Anja Spang)	MFRI (Hrönn Egilsdóttir)	NIOZ-OCS (Lise Klunder / Sabine Gollner)
St. 10	05-07-2021	-17.4997	66.8332	288	1 (4 °C) 2 (4 °C)	3 (4 °C)	4 (4 °C)	5 (4 °C) 6 (sliced)	-	7 (sliced)
St. 16	06-07-2021	-17.8728	66.9038	392	1 (4 °C) 2 (4 °C)	3 (4 °C)	4 (4 °C)	5 (4 °C) 6 (sliced)	-	7 (sliced)
St. 29	08-07-2021	-18.773	66.8181	650	1 (4 °C) 2 (4 °C)	-	6 (4 °C)	5 (4 °C) 10 (sliced) 11 (4 °C)	3 (-80 °C) 4 (-80 °C) 7 (sliced) 8 (sliced) 9 (sliced)	-
St. 37	09-07-2021	-17.1354	66.6916	270	1 (4 °C) 2 (4 °C)	7 (4 °C)	5 (4 °C) 6 (4 °C)	4 (4 °C) 9 (sliced)	3 (4 °C) 10 (sliced) 11 (sliced)	8 (sliced)
St. 55	12-07-2021	-17.7056	66.5700	462	1 (4 °C) 2 (4 °C)	5 (4 °C)	4 (4 °C)	3 (4 °C) 6 (sliced)	-	7 (sliced)

One multicorer deployment “failed” because the obtained sediment amount was too little (Station 15). The locations of the multicorers taken for paleo-environmental reconstructions (among other things) overlap with the gravity- and piston corer locations. Hence, that section indicates the locations of these cores (stations 10, 16, 29, 37, and 55) on the map.

9. Gravity- and Piston Cores for palaeclimate (Rick Hennekam)

Figure 46. Piston-corer on board of Pelagia.

Five long cores were recovered for the purpose of paleo-reconstructions in this region, using the multibeam data to find an appropriate flat surface to do so. Four cores (Stations 11, 17, 30, and 38) were recovered using the gravity corer; where the long steel tube (here with 12-m long liner) is lowered into the sediment using the winch at a speed of about ~50m/minute. One core (Station 56) was recovered using the piston core device (15-m long liner); where the core is brought into free fall for several meters when the trigger/trip core touches the sediment. We generally opted for the gravity corer instead of piston corer, as these type of cores have a lower chance to result in a bent steel tube ('banana'), which is a potential risk within this region with abundant larger rock fragments (e.g. drop stones from past ice sheets). On deck, the cores were split into 1-m sections. Syringes were used to take a sample for NIOZ-MMB (Nina Dombrowski / Anja Spang) at the bottom of each core section. After cutting the core sections, the top sections were filled up with foam and paper until the sediment surface, to avoid movement of the sediment material when transported in a horizontal position. The core sections were stored in 4°C storage together with the core catcher material in aluminium bags. The trip core of the piston core was not recovered and stored, as it clearly penetrated deep into the sediment and we have multicores from the same location. Further processing, such as XRF-core-scanning, will be organized once the samples arrive at the NIOZ. At NIOZ, the core sections will first be opened, photographed in high resolution with the XRF core scanner ("linescanning"), and described.

Table 5. Gravity- and piston cores.

Station	Date	Long.	Lat.	Depth (m)	Core Name	Approx. core length (cm)	Sections	Core catcher	Notes
St. 11	05-07-2021	-17.4999	66.8333	288	64PE475-11GC	367	4	yes	Section 3 is somewhat pushed up at bottom due to sampling with syringe
St. 17	06-07-2021	-17.8730	66.9038	392	64PE475-17GC	460	5	yes	-
St. 30	08-07-2021	-18.773	66.8183	650	64PE475-30GC	675	7	yes	-
St. 38	09-07-2021	-17.1353	66.6917	270	64PE475-38GC	580	6	no	Core catcher material was not present (washed away)
St. 56	12-07-2021	-17.7051	66.5700	462	64PE475-56PC	1200	12	yes	Seemed to have been a couple of cm more on top, but too much water to sample at section break

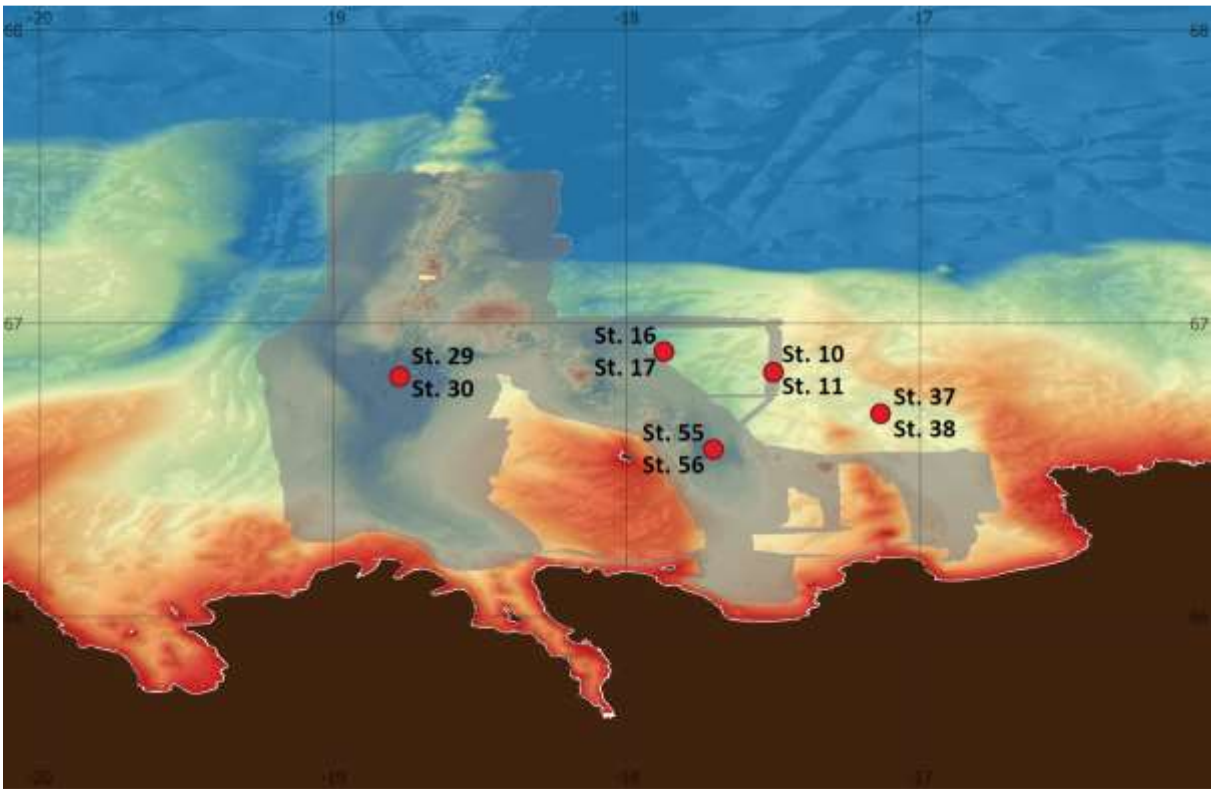
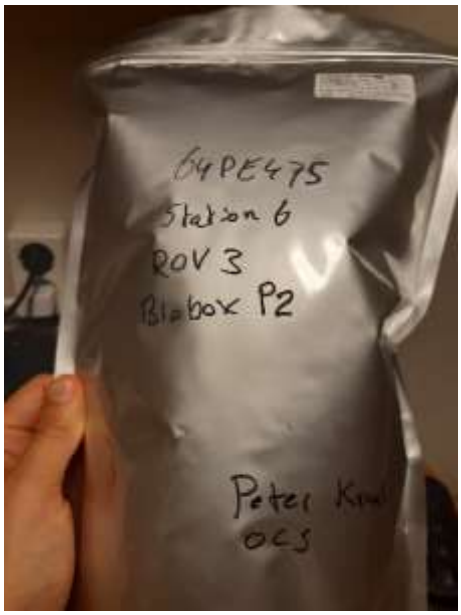


Figure 47. Multicore and gravity/piston core locations.

10. Sediment inorganic geochemistry at, near, and away from vents (Peter Kraal, sampled by Rick Hennekam)



Additional samples were taken to obtain solid-phase material from Icelandic vents for a project of Peter Kraal (NIOZ-OCS). We specifically focused on vent fragments collected by ROV, sediments around vents collected by ROV, and sediments away from vents collected by box/multi coring. The material from and near vents were generally obtained by the ROV with the net. This material was treated as a bulk sample and transferred into aluminium laminate bags with ziplocks, purged with N_2, and immediately frozen (-80 °C; 11 samples). We did not manage to obtain push cores with the ROV because the sediment surface was generally too hard. Some box core material (Station 23, 1 km west of Kolbeinsey; and Station 25, 3 km southwest of Kolbeinsey) were obtained by pressing a small diameter PVC tube into the box corer and these samples were stored frozen (-20 °C). Also several multi cores were taken for Peter Kraal from sites away from vents (Stations 10, 16, 37, and 55). Moreover, we did take several multicores at/near the Grimsey vents (Stations 43-45, between chimney 1 and 2 at Grimsey; Station 53, 1 km south of Grimsey; and Station 54, 3 km south of Grimsey), because the sediment were too fluffy to sample with the box corer. Note that sediments of the latter cores were limited and were all needed for the project of Lise Klunder / Sabine Gollner. Yet, potentially material can be shared, but this should be discussed post-cruise.

Figure 48. Sample in aluminium bag.

Table 6. Summary of samples for Peter Kraal (NIOZ-OCS). Detailed information on the coordinates are reported at the cruise report sections that discuss these sample types.

Station	Sample	Biobox	Stored	Package
St. 2	ROV-1	S1	-80 °C	Al bag
St. 5	ROV-2	P2	-80 °C	Al bag
St. 6	ROV-3	P2	-80 °C	Al bag
St. 10	MC-3	-	4 °C	MC liner
St. 14	ROV-5	P2	-80 °C	Al bag
St. 14	ROV-5	S1	-80 °C	Al bag
St. 16	MC-3	-	4 °C	MC liner
St. 23	BC	-	-20 °C	PVC small diameter
St. 25	BC	-	-20 °C	PVC small diameter
St. 35	ROV-7	S1	-80 °C	Al bag
St. 35	ROV-7	S2	-80 °C	Al bag
St. 36	ROV-8	S1	-80 °C	Al bag
St. 37	MC-7	-	4 °C	MC liner
St. 40	ROV-9	P2	-80 °C	Al bag
St. 40	ROV-9	S1	-80 °C	Al bag
St. 49	ROV-11	S1	-80 °C	Al bag
St. 55	MC-5	-	4 °C	MC liner

11. Microbial collections (Nina Dombrowski)

CRUISE RATIONALE

1. Samples for microbial enrichments (E)

Rocks and sediments surrounding the Kolbeinsey, Grimsey and Stryta vent field will be sampled in order to enrich for archaea of interest in the lab. In brief, *Ignicoccus hospitalis,* the host of the DPANN archaeum *Nanoarchaeum equitans*, was previously sampled in hydrothermal vents in Iceland at Kolbeinsey vent, thus making this the ideal location to collect fresh material to establish new cultures in the lab. In order to enrich for more DPANN hosts and symbionts, additional samples will be taken from the Grimsey and Stryta vent field.

2. Samples for DNA (D)

During this part of the project sediments and rocks close to the vent and in the periphery of the vent will be sampled with an ROV and box core/multicore with the goal to study microbial diversity around vents using 16S rRNA gene sequencing and metagenomics. The goal of this project is to describe the diversity of microbes using 16S rRNA gene sequencing. In case sediments with a higher diversity of DPANN archaea will be found, these samples will be used for metagenomic sequencing.

3. Samples for imaging (F)

During this part of the project sediments and rocks close to the vent and in the periphery of the vent will be sampled with an ROV and boxcore/multicore with the goal to study microbial diversity using FISH (Fluorescent In Situ Hybridization). The aim is design probes targeting DPANN archaea and their hosts based on the samples taken above and confirm potential interactions.

SAMPLING INFORMATION

Materials for enrichments:

- Geochemical sampling bags
- Staplers
- Spoons
- Cryo-pen
- Storage boxes
- N2
- Liners and caps for liners
- 4C fridge

Materials for DNA:

- Geochemical sampling bags
- Staplers
- Spoons
- Cryo-pen
- Storage boxes
- Core slicer
- Spatulas
- -80C freezer

Materials for FISH:

- 2 ml Eppendorf tubes
- Spoon
- 1 ml pipette
- 1 ml pipette tips
- formaldehyde 4% in PBS
- mini-centrifuge
- PBS 1× pH 7.6
- 1:1 mix PBS:ethanol

Starting waypoints

A) Kolbeinsey vent, WP 2 = Jago sampling location in 1997

Comments on observations from the area. One major venting area found at WP2, without chimneys. The vent was surrounded by rocky low diversity region with bacterial mats. Further from the venting area we saw an increase in animal diversity the further from the mat. All areas around the vent were pretty rocky, with hard substrates and little sediment-like material that would be suitable for a push core.

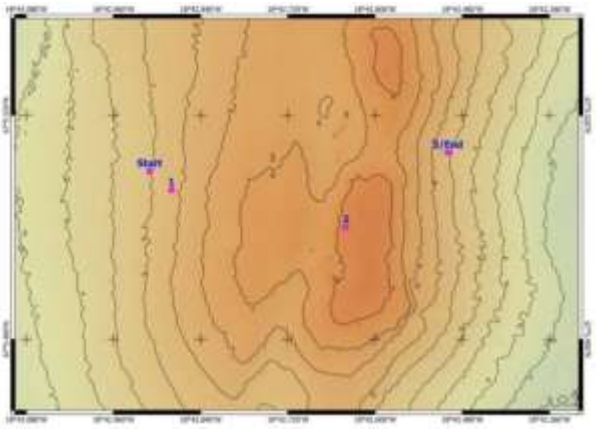


Figure 49. map for ROV-dive.

B) Grimsey vent field; Waypoints taken from the Jago cruise

Compared to Kolbeinsey, this area had more variable areas. We found several vents with variable sizes in short distances. In between the vents we had large areas with fine sediment. Compared to Kolbeinsey animal diversity also seemed lower.

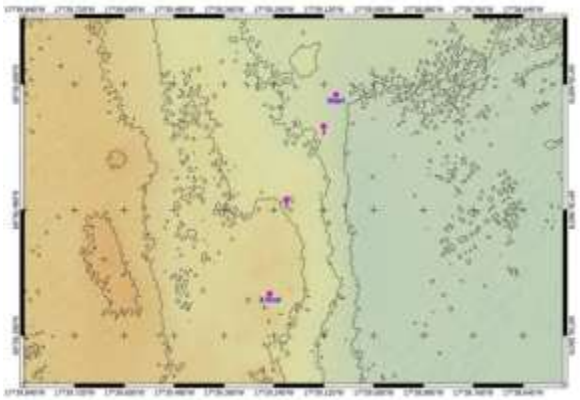


Figure 50. map for ROV-dive.

C) Strytan vent field

Larger vent north of island. No microbial work done here and mainly did some transect to visualize the three main vent formations with the ROV. All the vents showed signs of venting and fauna growing on vents.

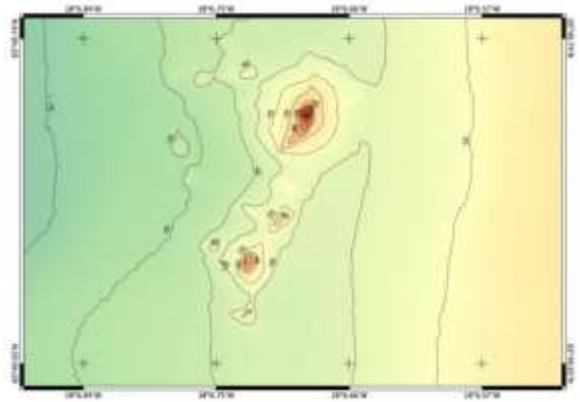


Figure 51. map for ROV-dive.

Protocol for FISH (sediment)

- 0.5 g sediment (approximately, we will use 2 ml eppendorfs and add to the 0.5 ml line, we will do this with a spatula in oxic conditions rapidly)
- Add 1 ml formaldehyde 4% in PBS (prepared fresh every day from 36% of FA)
- Samples will be homogenized at kept 1 to 2 h at 4C
- Centrifuge 5 min with a mini-centrifuge
- Pipette out supernatant
- Resuspend the sample in PBS 1× pH 7.6
- Repeat previous step

- Store sediment sample in 1:1 mix PBS:ethanol at -20C or -80C until further processing
- Back in the lab:
    - Sediments are diluted in 1:20 v/v in PBS 1× to a final volume of 0.5 ml, sonicated on ice for 20s at an amplitude setting of 30 and overlaid on top of a percoll gradient for separation of the cells (*protocol by Sigrid van Grinsven) or alternatively treated for FISH or CARD-FISH

Protocol for sampling material

- Samples were taken with the Phoca ROV
- Key spots for sampling were bacterial mats close to chimneys or on the sediment as well as rocky areas in front of the vent
- Temperature in mats was measured with a temperature stick that could at max penetrate the sediment to 15 cm
- Ideal temperature for target organism is 90C, so sediment around that temperature was preferentially chosen
- Target sediment was collected with either a 250 or 500 uM net. Sampling with a pushcore was tried but failed since the sediment was too fine and did not stay in the core
- The mesh was stored in a biobox until the ROV was taken on deck
- The mesh was immediately put in a bucket and stored at 4C but sampled immediately after the ROV was back on bord
- 3-5 samples were taken into geochemical bags (3-4 table spoons/bag), flushed with N2 5-10x and tightly closed and stored at 4C. This material will be used for enrichments (E)
- 3-5 samples were taken into geochemical bags (3-4 table spoons/bag), closed and stored at -80C. These samples will be used for DNA sequencing (D).
- 3-5 samples were taken into 2 ml Eppendorf tubes (ca. 500mg, until the 0.5ml line) and then the FISH protocol was used to prepare the samples on bord (F).

All samples taken are listed in a separated excel sheet

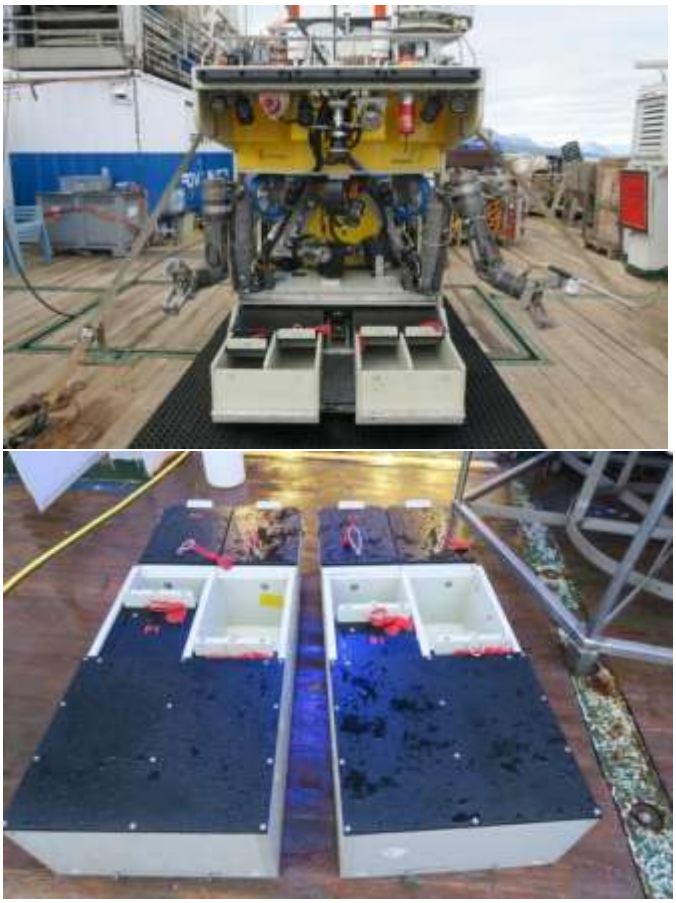


Figure 52. Phoca ROV and used bioboxes incl. biobox numbers

Figure 53. Temperature stick used and image of sampling of sediments with a net

CRUISE SAMPLING NOTES

General notes

- Notice, only stations were samples were taken for microbial work are listed below.

- Longitude/Latitude were taken from the ROV position if not noted otherwise.
- Under the impressions some representative pictures from the ROV dives were added. For each picture the time was noted below to easier cross-reference it with the additional ROV data.
- For the ROVs a map is shown with the ROV path in blue and ship path in orange.
- The first ROV dives, the T stick did not have any colored markers, so the depth will not be 100% accurate.
- For samples taken with a net: After samples for microbial work was taken, additional samples were taken for animal work (Sabine Gollner) and chemistry (Rick for Peter Kraal)

<u>Notes 03.07.2021, Kolbeinsey vent field:</u>

Station 2, Rov01:

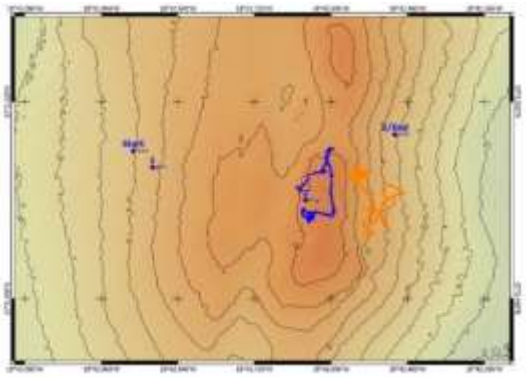


Figure 54. dive track.

- Exploration are around Area 1 (Jargo cruise dates) to find venting site → start ROV dive at waypoint bacterial mat 1.
- Ambient temperature 6 C
- Detected dense bacterial mats, pillow lava and soft corals
- Measured temperature at one mat → T between 148 - 161.79C

- Sample taken:
  - 13:48:19 time
  - -18.7106365 67.0908051 (Lon/Lat ROV, waypoint Sample area)
  - 102.7 m
  - Biobox P1
  - 4 rocks, stored at 4C. Samples immediately stored in 1 autoclaving bag (1 large rock) and 2 aluminium bags (2 and 1 rock, each). The aluminium bags were flushed 5x with nitrogen, sealed and stored at 4C.
  - Samples for E

Figure 55. Area around Kolbeinsey venting site. Area was very rocky, with bacterial mats on rocks. Very little sediment. However, quite a high number of sponges on the rocks in the area as well as anemones. Took samples from one high T area

An active venting site was found and the temperature measured with a temperature stick. The max temperature at the site was ~160C. Originally, we planned to take sediment/gravel with pushcores. However, at the area with the active vent and all sites close to the vent no suitable area was found. Instead of sediment, the surface was covered with a rocky substrate. Most of the rocks at the site were covered with a white bacterial mat and 4 (2 small and 2 large rocks) were taken and stored in biobox **P1** (Cast 1).

Figure 56.Largest rock sample taken *Smallest Rock sample taken*

Impressions:

Figure 57. 12:31:18 ; 12:32:00; 13:54:20

Figure 58. 14:18:40 ; 14:45:13 ; 15:33:52

Figure 59. 16:39:49 ; 17:13:25

Notes for 04.07.2021 (Kolbeinsey):

Station 5: ROV dive 2

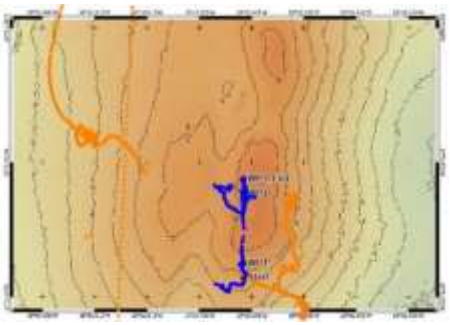


Figure 60. dive track.

Samples:

- 18.7106451/67.0906263 (Lon/Lat ROV)
- 11:40:19 time
- 102.4 m depth
- Sampled in biobox P2
- Samples for D/F/E

1. Temperature was taken: Ambient temperature in the water column at ~ 1C above the sediment was 5-6C, and at the sediment ~8C. An increase in temperature in the sediment was detected and the temperature was around ~50C measured at ca. 10-15 cm depth.
2. Sediment was taken with a mesh (~300 um net, 20 cm depth) and filled into biobox P2 at the end of the dive.
3. Samples were then directly taken up and the net taken out of P2 into bucket at ~ 11.30 and sampled as follows:
   - 6x 5 big table spoons were filled into geochemical bags. Bags were flushed 5x with N2 and sealed tightly with stablers and yellow tape and stored at 4C for enrichments at NIOZ.
   - 6x 5 big table spoons were filled into geochemical bags and sealed tightly with stablers stored at 4C for the day and then moved to -80 during the evening for DNA isolation at NIOZ.
   - 6x 500 mg sediment were filled into 2 ml Eppendorf tubes (at around -.5 ml line) and stored at 4C until further processing for FISH (see protocol)

Impressions:

Figure 61. 11:26:28 (sampling area = white mat behind the hydrophone) ; 11:42:43

Station 6: ROV dive 3

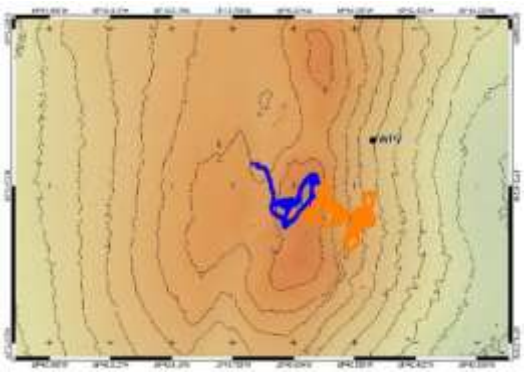


Figure 62. dive track.

Sample info:

- -18.7105622; 67.0909916 (Lon/Lat ROV)
- 16:35:48 time
- 112.6m
- Biobox P2
- Samples for D/E/F

1. Temperature was taken at 3 bacterial mats around WP1 (-18.71066667 67.091):
    a. Mat 1: Ambient T at 6C (same for all locations). Sediment next to the mat with 8C with T stick 1 cm into the mat. Measuring at ca. 15 cm into the mat at ca. 86C.
    b. Mat 2: touching sediment at 12C; 1 cm into the sediment at 45C, 5 cm into the sediment 86C an 15-20 cm into the mat 90C
    c. Mat 3: touching the sediment at 24C; T at around 10 cm at 78C, T at 15-20 cm at 85 C.
2. Sediment was taken with a mesh (same as above) from Mat1 and filled into biobox P2 at around 16.22 and samples were taken up at 17.10 and immediately put into a bucket and moved to 4C. And samples were taken as above but only 5 samples were taken for each sampling.

Figure 63.Example of mats around Station 6

Example of structure of sediments taken

Impressions:

Figure 64. 13:42:57 ; 15:07:38 ; 15:14:17

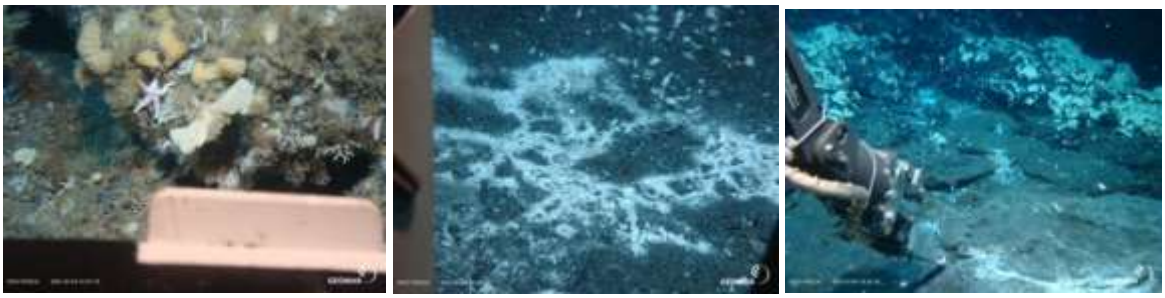


Figure 65. 15:37:18; 16:20:41 ; 16:24: 16 (pic of sampled area)

Figure 66. 16:49:47 ; 17:05:46 ;

Notes for 05.07.2021 (Grimsey):

Change position to Grimsey, start close to WP1

- Start close to WP1 (-17.652 66.60933333)
- Found microbial mat at WP GM1 (-17.65206667 66.60921)
-

Station08

- CTD, Water sample from bottom water of Grimsey, Taken bottles 1 and 2
- Out of water: 08:39:29
- 66.6093 -17.6519 (ship position)
- 403.97 Sonde (m)
- Samples stored in 20l container at 4C

Station09Rov04

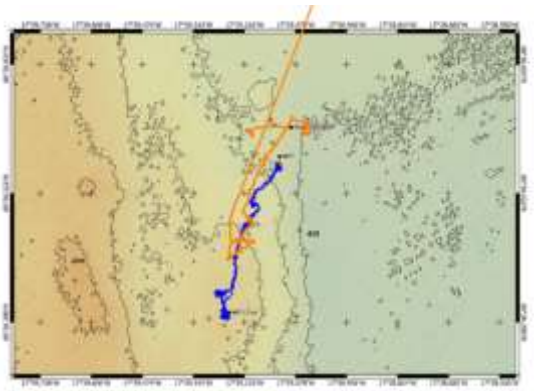


Figure 67. dive track.

Measuring temperature at mat at GM1 (-17.65206667 66.60921) before sampling

- Ambient T around 1.8C
- 1 cm in sediment 85C
- 3-4 cm in sediment 85C
- 5-10 cm in sediment 110 C
- Hitting rocky surface after, not suitable for net, therefore we tried to get T next in front of mat

Measuring at sediment in periphery of mat but without any signs of a bacterial mat

- 1 cm above sediment around 2C
- 2-3 cm into the sediment at 23 C
- 15-20 cm in sediment at 50-60C

- We first tried taking sediment directly from the mat, however, it was not possible to get the mat into the sediment due to the surface being too hard. Therefore, a sediment was taken in the periphery in front of the mat and pushing the net towards the mat area even though the T was slightly lower at this point. The sediment was stored in **P2**.

    - Biobox P2
    - 12:38:50
    - 410.6 m depth
    - -17.6520707; 66.6091834 (ROV)
    - Sediment in front of mat
    - Samples for D/E/F

Figure 68. in situ picture.

Sample 2:

Measuring temperature at mat at marker Chimney_2 (-17.65202167 / 66.60913667; Sample 2 from Station 9)

Chimney with ca 80cm height, T in chimney at 235C

Figure 69. Chimey 2 and sampled area (P1) in front of chimney.

In contrast to the previous area, samples were collected in front of a white chimney

Measuring temperature in sediment without a bacterial mat as a reference point:

- 1 cm in sediment at 10C
- 10 cm in the sediment at 60C
- Stick all in at 100C

Get temperature in sediment in front of the white smoker at a white bacterial mat:

- 5 cm in sediment at 80C
- 10 cm in sediment at 93C

- Sediment was taken from the white mat area exactly in front of the chimney and stored in **P1**.

- Biobox P1
- 13:09:19
- 410.2 m
- -17.6520423; 66.6091443
- Samples for D/E/F

Impressions:

Figure 70. 9:42:46 ; 10:42:17 ; 10:44:54

Figure 71. 12:44:48 ; 12:49:48 ; 12:59:12

Figure 72. 14:13:15 ; 15:51:26 ; 16:03:11

<u>Notes first 1st multicore (Station 10, 05.07.2021):</u>

- S smell in deeper layers (start around 18 cm)
- 19:24:59

- 66.8332 -17.5001 (Ship position)
- 288.58 Sonde (m)
- 0-30 cm cut in 2cm pieces and stored for D

Figure 73. Multicore setup and example of a core before slicing

Notes first 1st gravity core (Station 11, 05.07.2021):

- Ca 3.6 m taken
- 4 samples taken with a 25 ml syringe (ca. 5 ml of syringe) for D
- 19:53:27
- 66.8333 -17.5001
- 288.38 Sonde (m)

Figure 74. Gravity core setup

Notes from 06.07.2021 (Grimsey):

Station 14 ROV05

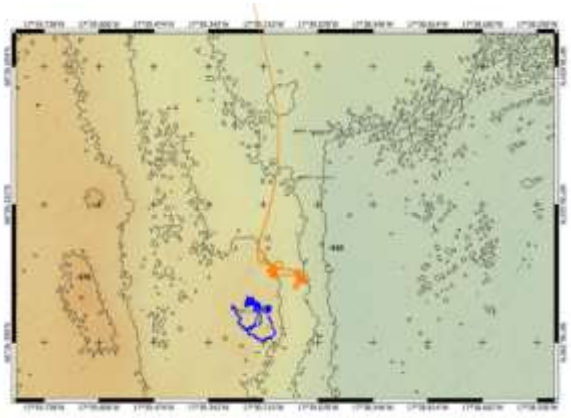


Figure 75. dive track

- Sample stored in **S1,** high animal density, lower T around 10C, Location = Chimney_1
    - 10:09:02
    - 409.8 m
    - -17.6524214; 66.6098142
    - Samples stored for D/F/E

Figure 76. in situ pictures.

- Sample description for samples stored in **S2**
    - Tried pushcore, which failed. Since we had no additional net samples were scooped up with the pushcore into S2. Location = Chimney_2
        - 11:13:36
        - 410.2 m
        - -17.6520772 66.6091542
        - Biobox S2

- Samples stored for D/F/E

- Sample description for samples stored in pushcore **PC61**

  - Chimney 6
  - Temperature at outflow is ca. 186 C
  - Chimney pieces collected with arm and put into pushcore tube. 2 samples stored in bags and at 4C. One bag treated aerobically and anaerobically, respectively. Samples for E

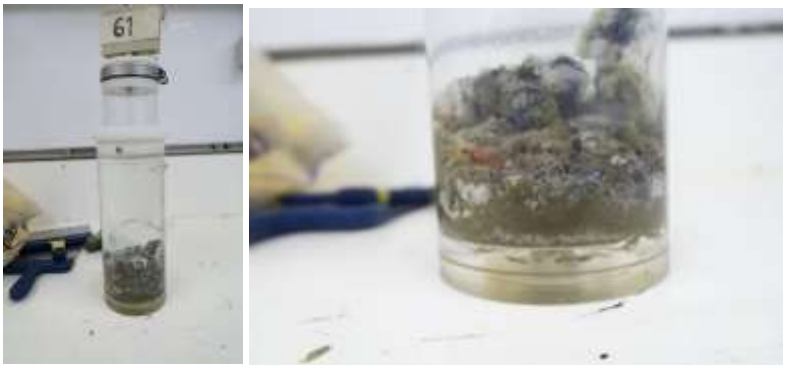


Figure 77. Pictures PC61.

Impressions from dive:

Figure 78. 9:55:29 ; 10:02:05 ; 10:42:19

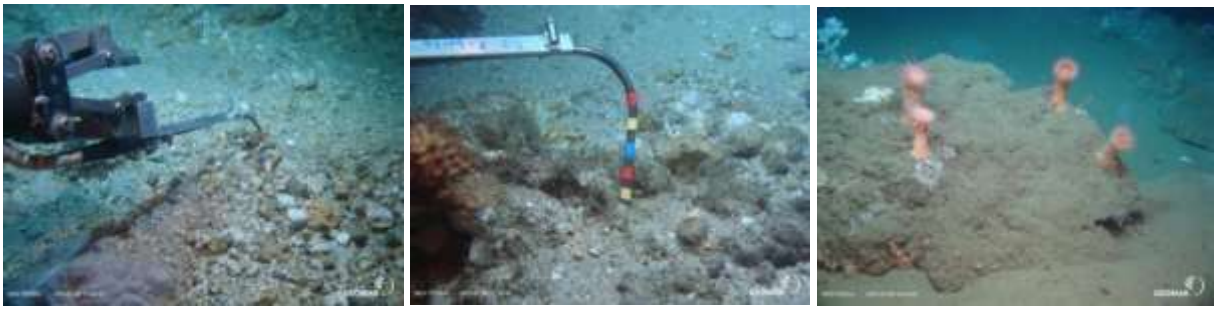


Figure 79. 11:59:55 ; 12:18:40 ; 13:44:56

Figure 80. 14:34:06 ; 16:33:28 ; 16:55:08

Station 16

- Multicore, Station 16, 0-12 cm, no smell. Samples taken for D
- 19:57:20
- 66.9038 -17.8728

Station 17 Gravity core

- Ca 4.6 m taken
- 5 samples taken with a 25 ml syringe (ca. 5 ml of syringe)
- 20:55:48
- 66.9038 -17.873

Notes for 07.07.2021:

Back to Kolbeinsey

Boxcore 1 , Station 23

- → one core for enrichments, closed and stored at 4C
- one core for slicing and D. Sampled 0-30 cm, no smell, homogenous/grainy material. Foraminifera in sediment
- 14:40:01
- 67.0904 -18.7365
- 230.4 m

Figure 81. Boxcore setup

Boxcore 2, Station 25

- → one core for enrichments
- → one core for slicing, 0-22 cm, first half very rock/cement like afterwards more grainy. No smell (forgot to take foto)
- 16:19:11
- 67.0876 -18.7784
- 247.38 m

Figure 81. Boxcore setup

<u>Notes for 08.07.2021:</u>

Multicore, S29

- 0-30 cm taken for DNA; watery first 0-5 cm afterwards fine/sticky sediment throughout the core
- One large core taken for enrichments and stored at 4C
- 09:52:02
- 66.8182 -18.7731
- 648.31 m

Figure 82. multicorer.

Gravity core, S30

- 7 samples taken for DNA
- Estimated total length 6.75
- 11:07:34
- 66.8182 -18.773
- 648.64 m

Notes for 09.07.2021 (Grimsey):

S35ROV07

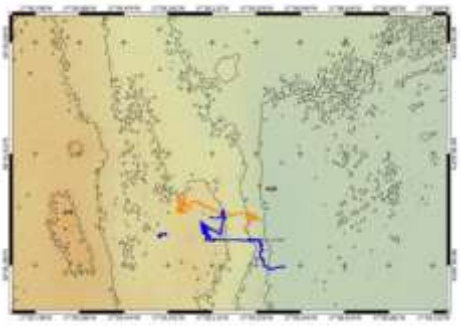


Figure 83. dive track

- → 3 rock samples from chimney_6 (grimsey) were stored in biobox **S6** and stored at 4C
    - 10:36:59
    - 389.5 m
    - -17.6538503 66.6072043
    - Biobox S2
    - Samples for E

Figure 84. In situ pcitures

- Went to base of the chimney_6 and measured T. Afterwards sample collected into **S1**, strong sulfur smell, grainy sediment

    - 2C ambient water T
    - 1 cm at 45C
    - 5cm at 96C
    - 10 cm at 106C

    - 11:08:04
    - 388.8 m
    - -17.6539052 66.6072675
    - Biobox **S1**
    - Samples for D/E/F

Figure 85. in situ temperature measurement.

- Went around chinmney_6 and measured T at another spot and collected a net into **S2**. More sandy, not black, S smell

    - 1 cm at 2.5C
    - 4 cm at 2.6C
    - 7 cm at 2.5C

- 15C at 7 C

- 11:25:02
- 388.8 m
- -17.6539164 66.6072
- Biobox S2
- Samples for D/F/E

S36ROV08

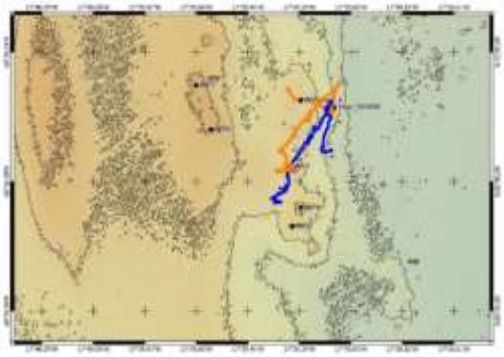


Figure 86. dive track

- measure T at chimney_7 (grimsey) and collect net into box **S1**. Sediment usually looks like basalt, is grainy and with a rich dark color. However, this sediment seemed more sandy and had a greyish coloring. Smelled of sulfur.
  - Ambient at 2.6C
  - Surface at 3.7C
  - 2 cm at 21C
  - 6 cm at 43C
  - 8 cm at 50C
  - 10 cm at 60C
  - 15 cm at 155C

  - 17:04:53
  - 383.9
  - -17.6549676 66.6047738
  - Sample in biobox S1
  - Samples for D/E/F

Figure 87. in situ

Impressions:

Figure 88. 14:07:05 ; 14:54:33 ; 16:18:38

S37

- Multicore
- 1 large liner stored for enrichments at 4C
- 1 larger liner cut (0-20 cm) and stored at -80C.
- 19:15:19
- 66.6916 -17.1354
- 268.72 m

Figure 89. multicorer

S38

- Gravity Core
- 6 syringes for D
- Estimated length of 5.80 m

Notes for 10.07.2021 (Grimsey):

S40ROV09

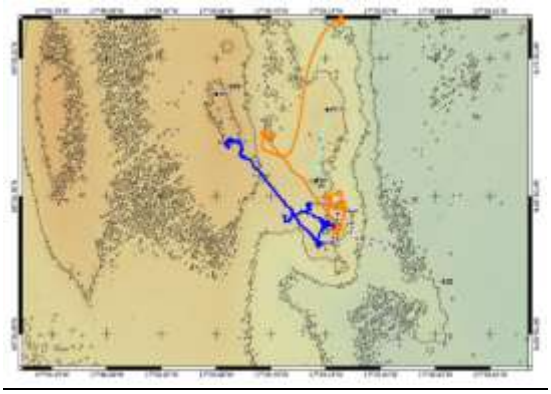


Figure 90. dive track

Start at WP4 at large chimney structure (WP Chimney_8) found on the end of the last dive.

Figure 91. in situ.

- Sample 1: scrapping part of the chimney structure of with net and store it in **P2**. Surface of chimney had a temperature of around 28C. Prepared samples for enrichments (anoxic and oxic), DNA and FISH.

    - 11:05:57
    - 388.4 m
    - -17.6539358 66.6043043
    - Biobox P2
    - Samples for D/E/F

- Measured temperature in front of the mat. At this spot there were no real visible bacterial mats. Due to cold T no samples were taken.

    - Surface at 3.2C
    - 2 cm at 3.2C
    - 7 cm at 4C

- Temperature measurement at a second spot, again no increase in temperature, so no sample was taken

- Go to point a bit in distance of Chimney_8. Again, no strong increase in T, so no samples taken.

    - 1 cm in 5C
    - 2 cm in at 11C
    - 5 cm at 11C
    - 6 cm at 15C
    - 8 cm at 16C

- Went to a mat point we saw earlier before reaching Chimney_8 (at a distance of ca. 10 m). Here, we saw shimmering in the water and decided to collect sediment for enrichments, DNA and FISH. A net was collected in **S1**.

    - Surface at 18C
    - 3 cm at 81C
    - 5 cm at 91C
    - 7 cm at 95C

- 15 cm at 96C

- 12:08:32
- 378.2 m
- -17.6541316 66.6042234
- Sample into Biobox S1
- Samples for D/E/F

Figure 92. Chimney samples

Impressions:

Figure 93. 09:37:16 ; 10:09:50 ; 10:09:51

Figure 94. 10:24:57 ; 10:28:40 ; 11:17:30

Figure 95. 11:21:40 ; 11:52:38 ; 12:17:00

Figure 96. 12:43:52 ; 12:50:31 ;

S43, Multicore

- Taken Multicore in between two Grimsey vents
- Homogenous sediment, became more gummy like lower in the sediment, black stripes in the lower half of sediment, no smell

  - 66.6095 -17.6523
  - 405.16 m
  - Cut 0-30 cm, stored for DNA, took samples for DNA
  - one core for enrichments

Figure 97. mulicorer

S45, Multicore

- Taken from same location as S43. However, very different sediment. Strong bubbles when core came up and continued bubbling for several hours. Additionally, strong sulfur smell. Due to the bubbles the sediment was quite disturbed

- 66.6095 -17.6523
- 403.38 m
- Took samples (not sliced, just took some scoops with the spoon) and took triplicates for DNA, enrichments and FISH

Figure 98. bubbling sediment in multicorer

Movie of bubbles:

Figure 99. bubbling sediment in mulitcorer

Notes for 11.07.2021 (Kolbeinsey):

S47 CTD

- Took water samples from the surface (close to chimney) and sampled 20l from bottles 4 and 5. Stored bottles at 4C
- 08:28:57
- 67.0911 -18.7108
- 97.78 m

S49 ROV11

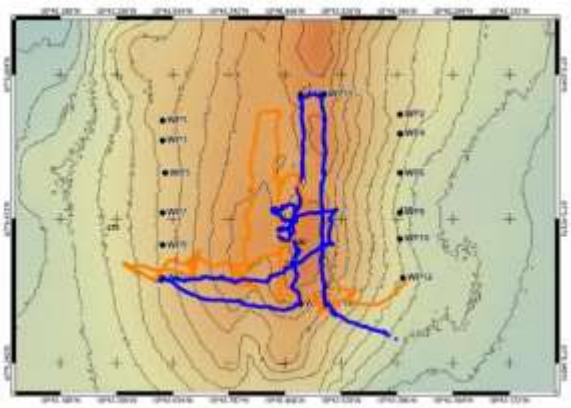


Figure 100. dive track

Transect across the Kolbeinsey area. When returned to venting area looked for areas with white mats and shimmering.

- Surface at 7.6C
- 1 cm in at 16C
- 5 cm in at 25C
- 10 cm in at 35C
- 15C at 35C

Moved stick a bit to an area with a little shimmering (not seen in the area measured before)

- 15 cm in at 40C

Took sample from this mat area with the net and stored in biobox **S1**.

- 15:33:31
- 110.7 m
- -18.7105505 67.0906572
- Sample in biobox S1
- Collected samples for F/D/E

Figure 101. in situ.

Impressions from Kolbeinsey transect:

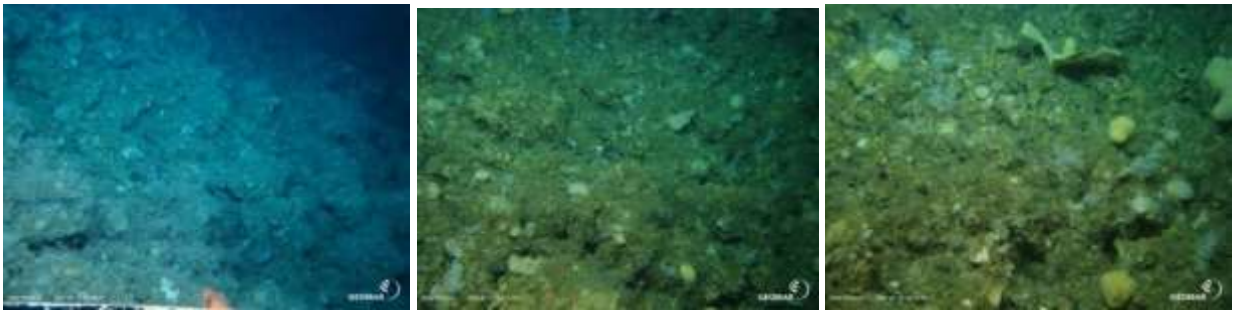


Figure 102. 14:00:01 ; 14:11:25; 14:12:20

Figure 103. 14:14:40 ; 14:43:44 ; 14:48:44

Figure 104. 14:54:07 ; 14:56:12 ; 15:00:07

Figure 105. 15:06:32 ; 15:08:29 ; 15:11:55 (vent)

Figure 106. 15:17:07 ; 15:43:33 ; 15:49:18

Figure 107. 15:57:44 ; 16:17:03; 16:49:12

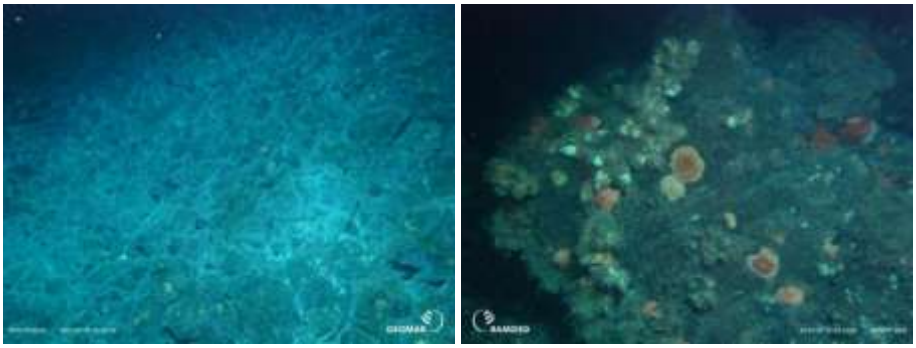


Figure 108. 16:50:58; 16:53:05;

Notes for 120721 (Grimsey)

S53 Multicore

- Multicore, ca. 1.5 km from Grimsey
- Collected DNA from sediment, from 0-30 cm. No smell, hydrozoans/polychetes (?) on top. Relatively homogenous, black streaks (organic matter?) in the lower part of sediment.
- Stored one closed core at 4C for enrichments
- 14:10:16
- 66.6071 -17.6316
- 414.13

Figure 109. Photo from mulicore

S54 Multicore

- Multicore, ca 3 km from Grimsey
- Collected DNA from sediment, from 0-30 cm. No smell, hydrozoans on top. Relatively homogenous, black streaks (organic matter?) in the lower part of sediment. No S smell
- Stored one closed core at 4C for enrichments
- 15:05:52
- 66.578 -17.6233
- 415.92 m

Figure 110. multicore

S55 Multicore

- Multicore, same location as piston core (see below)
- Collected DNA from sediment, from 0-30 cm. No smell, hydrozoans on top. Relatively homogenous, black streaks (organic matter?) in the lower part of sediment. No S smell
- Stored one closed core at 4C for enrichments
- 15:50:33
- 66.57 -17.7052
- 463.06 m

Figure 111. multicore

S56 Pistoncore

- Piston core, same location as S55
- Ca. 12 m in total
- Collected 11 syringes for DNA. Stored at -80C
- 16:52:03
- 66.5701 -17.7051

- 462.64 m

12. Megafauna collections for respiration experiments (Tanja Stratmann)

Megafauna sampling

Megafauna specimens for the incubation experiments (Fig. 1, Table 1) were collected directly at the vent site and in the periphery of the Kolbeinsy vent field by ROV Phoca (Geomar, Kiel, Germany) and stored in the bioboxes attached to the ROV. Furthermore, specimens were taken in the periphery and at the direct vent site of the Grimsey vent field. Back on deck, the bioboxes were carefully carried to the wet lab, where the specimens were transferred from the water-filled bioboxes to the incubation cores without limited to no air exposure. Several specimens of each incubated taxon were immediately frozen at -20°C and will serve as background samples for stable isotope analysis (D, ^{15}N, ^{13}C).

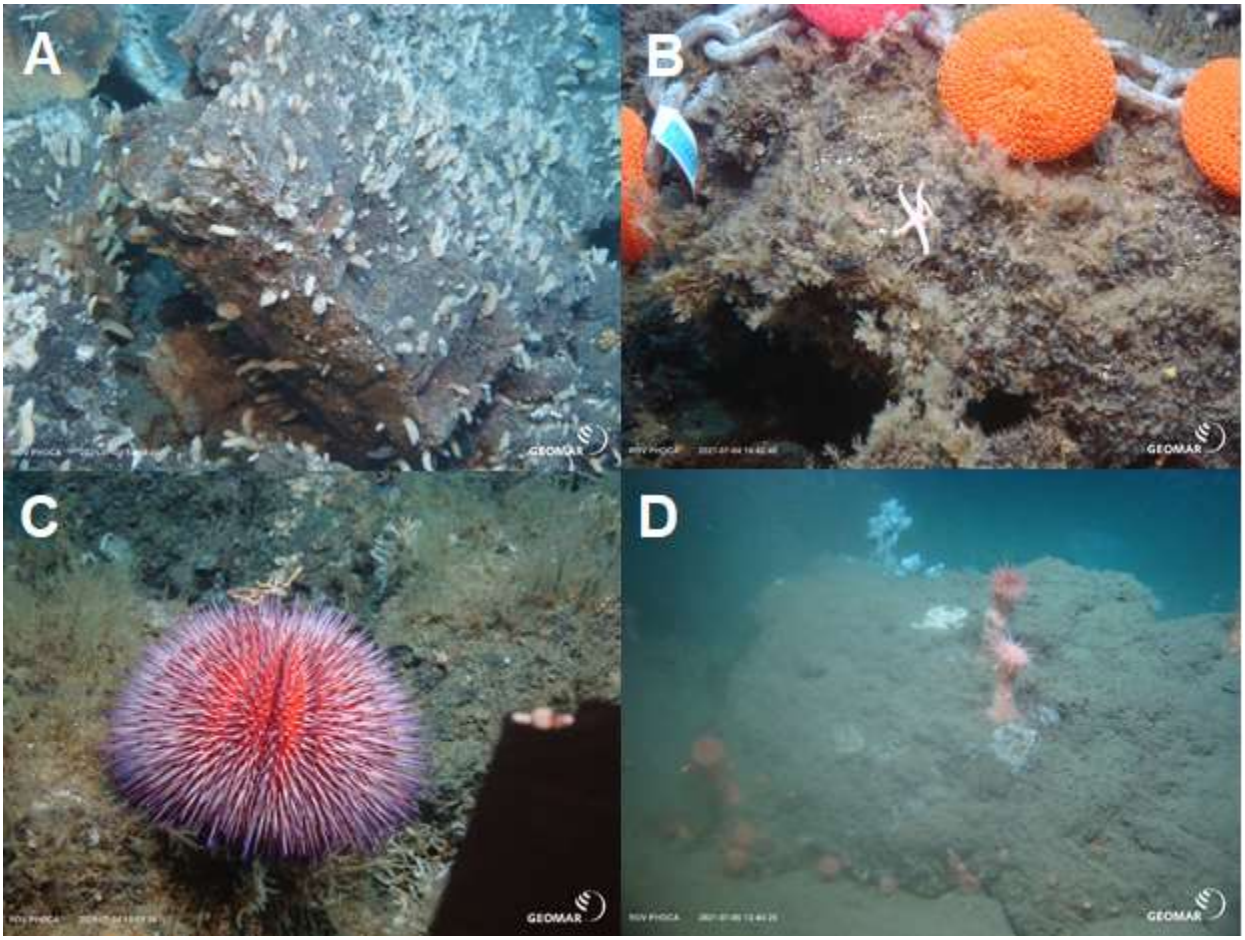


Figure 112: *In-situ* images of (A) Ascidiacea, (B) Asteroidea, (C) Echinoidea, and (D) *Hormathia nodosa* collected for the incubation experiments.

Table 7: Locations of megafauna collection for incubation experiments.
*No enrichment with 1% D_2O.

Station/ ROV dive	Date	Latitude (°N)	Longitude (°E)	Depth (m)	Taxa (n)	Incubation experiment #
2/ ROV 1	03.07.2021	67.091	-18.289	103	Ascidiacea, Anthozoa (n = 2)*	1
6/ ROV 3	04.07.2021	67.091	-18.710	118	Asteroidea (n = 4)	2
6/ ROV 3	04.07.2021	67.091	-18.710	114	Echinoidea (n = 5)	2
9/ ROV 4	05.07.2021	66.608	-17.654	391	*Hormathia nodosa* (n = 4)	3
14/ ROV 5	06.07.2021	66.607	-17.655	388	*Hormathia nodosa* (n = 10)	4
36/ ROV 8	09.07.2021	66.606	-17.653	385	*Hormathia nodosa* (n = 8)	5

Incubation experiments

Per incubation round and temperature regime (4°C, 20°C), minimum three specimens per taxon were incubated for 12 h in the presence of deuterium oxide (D_2O). Parallel, one incubation core filled with unfiltered seawater served as background control for nutrient and oxygen flux measurements.

Figure 113: Small incubation core with Anthozoa from incubation experiment 1.

Protocol – faunal incubations

Incubation start

- Close incubation core air-tight with bottom lid
- Fill incubation core a finger-width with seawater and check that the core is not leaking.
- Fill core half with seawater, and transfer faunal specimen from ROV biobox to incubation core with limited air exposure
- Add 85 mL D_2O-water for large core/ 14 mL D_2O-water for small core to fauna core (results in ~1% D labelling)
- Fill core completely with seawater
- Close incubation core with top lid (with magnetic stirrer and fire sting O_2 optode attached), but leave 1 stopper open (in large incubation core)
- Measure salinity in incubation water
- Filter ~6 mL syringe content through filter into nutrient vial, close nutrient vial (sample for inorganic N + P nutrients), store frozen (-21˚C) → **sample T0**
- Filter ~6 mL syringe content through filter into nutrient vial, close nutrient vial (sample for silicate), store cold (4˚C) → **sample T0**
- Refill the incubation core, close top lid completely with stoppers
- Connect magnetic stirrer with electric circuit and start them

- Start O_2 measurements with FireSting O_2 optodes (*name for saving*: Core_XX_ROV dive_YYYY_MM_DD)
- Check that FireSting logs data on file
- Cover incubation setting with lid → **dark incubations**
- Write down exact time when incubation was started

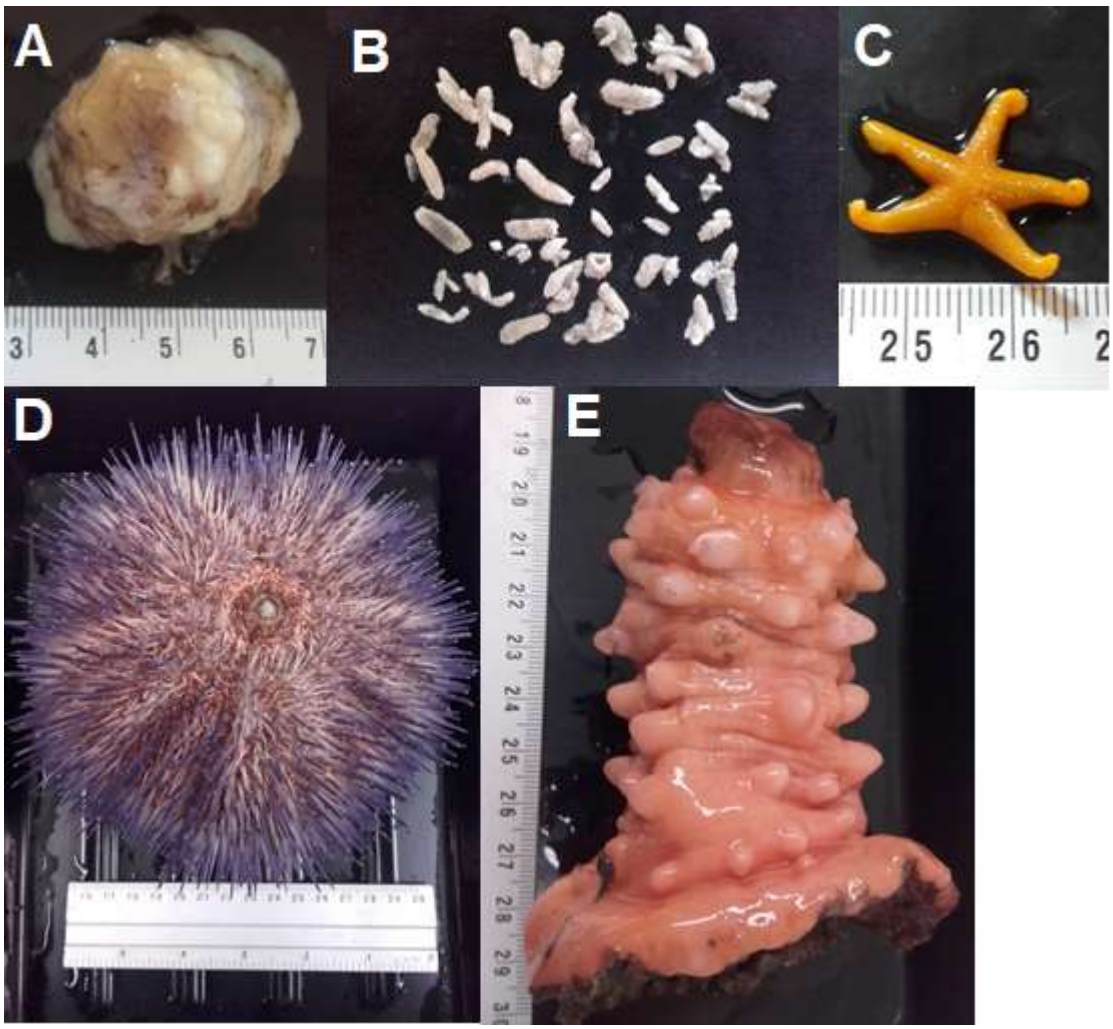


Figure 114. Specimen that were incubated in (A, B) incubation experiment 1, (C) experiment 2, (D) experiment 3, and (E) experiment 4.

consumption measurement end (<70% O_2 saturation)

- When O_2 saturation is <70%, O_2 measurements will be stopped (stop incubations of all fauna parallel)
- Write down exact time when O_2 consumption measurement was stopped
- Retrieve O_2 FireSting optode
- Open carefully 1 stopper from top lid
- Insert syringe as deep as possible to take water sample
- Filter ~6 mL syringe content through filter into nutrient vial, close nutrient vial (sample for inorganic N + P nutrients), store frozen (-21˚C) → **sample T1**
- Filter ~6 mL syringe content through filter into nutrient vial, close nutrient vial (sample for silicate), store cold (4˚C) → **sample T1**
- Connect aeration equipment and aerate incubation cores

Incubation end (12 h after Start)

- Write down exact time when incubation was stopped
- Stop magnetic stirrer
- Disconnect aeration equipment
- Insert syringe as deep as possible to take water sample
- Filter ~6 mL syringe content through filter into nutrient vial, close nutrient vial (sample for inorganic N + P nutrients), store frozen (-21˚C) → **sample T2**
- Filter ~6 mL syringe content through filter into nutrient vial, close nutrient vial (sample for silicate), store cold (4˚C) → **sample T2**
- Take picture from fauna inside the incubation core
- Retrieve fauna from the core, take picture of it on dark background
- Freeze complete specimen (-20˚C)

Protocol – water incubations (control for nutrient fluxes and O_2 fluxes)

Incubation start

- Close 1 small incubation core (per incubation setting) air-tight with bottom lid
- Fill core with seawater
- Measure salinity in incubation water
- Filter ~6 mL syringe content through filter into nutrient vial, close nutrient vial (sample for inorganic N + P nutrients), store frozen (-21˚C) → **sample T0**
- Filter ~6 mL syringe content through filter into nutrient vial, close nutrient vial (sample for silicate), store cold (4˚C) → **sample** T0
- Fill incubation core to the top with seawater
- Close top lid completely with stoppers
- Connect magnetic stirrer with electric circuit and start them
- Start O_2 measurements with FireSting O_2 optodes
- (name for saving: Core_XX_ROV dive_YYYY_MM_DD)
- Check that FireSting logs data on file
- Cover incubation setting with lid → **dark incubations**
- Write down exact time when incubation was started

O_2 consumption measurement end (<70% O_2 saturation)

- Stop O_2 consumption measurements in water incubation when O_2 measurements in fauna incubations are stopped
- Write down exact time when O_2 consumption measurement was stopped
- Retrieve O_2 FireSting optode
- Open carefully 1 stopper from top lid
- Insert syringe as deep as possible to take water sample
- Take 2 samples for inorganic nutrients
- Filter ~6 mL syringe content through filter into nutrient vial, close nutrient vial (sample for inorganic N + P nutrients), store frozen (-21˚C) → **sample T1**
- Filter ~6 mL syringe content through filter into nutrient vial, close nutrient vial (sample for silicate), store cold (4˚C) → **sample T1**
- Connect aeration equipment and aerate incubation cores

Incubation end (12 h after Start)

- Write down exact time when incubation was stopped
- Stop magnetic stirrer
- Disconnect aeration equipment
- Insert syringe as deep as possible to take water sample

- Take 2 samples for inorganic nutrients
- Filter ~6 mL syringe content through filter into nutrient vial, close nutrient vial (sample for inorganic N + P nutrients), store frozen (-21˚C) → sample T2
- Filter ~6 mL syringe content through filter into nutrient vial, close nutrient vial (sample for silicate), store cold (4˚C) → sample T2

13. Monitoring project (Hronn Egilsdottir)

13.1.Establishing a long-term biological monitoring project in relation to large scale environmental changes north of Iceland

Large-scale environmental changes, most predominantly ocean warming and acidification, are occurring at a more rapid rate in high latitude marine regions than in other marine regions on Earth. Long-term monitoring of the ocean environment north of Iceland has revealed that ocean acidification is occurring at a rapid rate in this area and not only occurring in upper layers of the water column but is also observed in the deep-sea . To better understand how large-scale changes will shape biodiversity patterns and ecosystems in this region, the Marine and Freshwater Research Institute in Iceland (MFRI) is setting up a long-term monitoring project, focusing on benthic communities. The reason for monitoring benthic fauna is the greater stability of benthic communities compared to pelagic communities and the prevalence of heavily calcified structures among benthic fauna, but ocean acidification is considered an especially great threat to calcifying fauna. This project is led by Hrönn Egilsdóttir, a marine ecologist at MFRI, who participated in the cruise. One of the cruise objectives was to collect data to inform decisions on which methods and locations are most suitable for long-term monitoring of benthic fauna in relation to ocean warming and acidification in the study region. On the 8th of July benthic sampling was conducted on three locations.

Soft sediment sampling (box-corer/multi-corer)

To collect a quantitative sample of soft sediment habitat at a selected location of interest at a depth of 600 m, a box-corer was lowered to the seafloor (st. 28). The sediment was very soft, causing the box-corer to sink too deep into the sediment and overflow, resulting in the sample being discarded. Subsequently, a multi-corer, with reduced weight was used at the same location with success (st. 29). A total of 12 cores were obtained. For the purpose of establishing long-term biological monitoring 5 cores were retrieved.

Sample processing

Three cores were sliced into 6 sub-samples representing different depth in the sediment: 0-1 cm (sediment surface), 1-2 cm, 2-3 cm, 3-4 cm, 4-5 cm and 5-10 cm. These samples were preserved in > 4% formaldehide for later identification of fauna. Two whole cores were stored at -80°C for analysis of eDNA in the sediment at a later date. At the same location, a core of seafloor sediment was collected using a gravity-corer to use in the study of paleo-oceanography, work lead by Rick Hennekam (st. 30)).

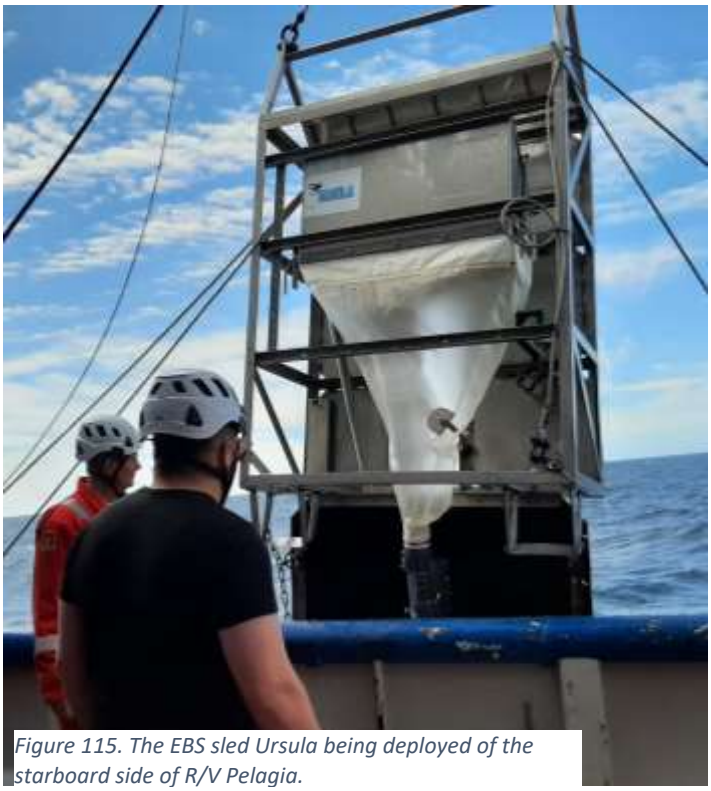


Figure 115. The EBS sled Ursula being deployed of the starboard side of R/V Pelagia.

Coarse sediment sampling (EBS sled)

With the goal of sampling macro on more coarse (sand/gravel) type of sediment and at a shallower depth, two sampling locations near the Kolbeinsey hydrothermal vent were selected at a depth of 200

m (st. 31 and 32). These locations were sampled using a modified Rothlisberg and Pearson sled (Rothlisberg and Pearson, 1977), an epibenthic sled (EBS) Ursula owned by Senckenberg am Meer that collects mainly epibenthic organisms. The mesh size of the net was 500 µm and the cod-end had a bucket and a "window" with a mesh size of 300 µm. To avoid sampling of pelagic organisms during the ascent or descent of the sled, the opening of the sampling unit on the sled is equipped with a hatch which keeps the box closed until the sled reaches the seafloor.

Figure 116 Sample retrieved from EBS sled deployment at station 31.

The sled was operated successfully at stations 31 and 32. The sled was deployed from the starboard side of the vessel via the following protocol: Vessel stopped. EBS raised vertical, and winch stopped to remove safety pin under EBS (which secures the hatch opening system). The sled was lowered into the sea and toward the seafloor at a rate of 0.7 m/s until it was 100 m above seafloor at which time the winch was stopped for 1 minute (to unwind the cable if needed). Vessel is then sailed at the speed of 1 kn while the sled is lowered at 0.5 m/s until the cable length is double the depth. Then the winch is stopped, and the sled towed on the seafloor by the vessel at a speed of 1 kn for 5 minutes. At the end of the deployment the vessel is stopped and the winch is used to recover the gear at a speed of 0.5 m/s. Upon arrival to the surface the safety-pin is placed in the appropriate position and the sled lowered onto the deck. At station 31 the cod-end bucket was full indicating that a tow time of 5 minutes is more than sufficient for this location. The cod-end bucket was less than half-full at station 32 but enough material was collected.

Sample processing

Due to time constraints, limited sample-processing was performed during the cruise. Several amphipods were collected by hand from the sample with the goal of collecting 6 individuals of the same species, placing three in 96% ethanol and three in RNA-later in Eppendorf tubes at the request of Dr. Saskia Brix at the Senckenberg am Meer, German Center for Marine Biodiversity Research. Six individuals were obtained for one species, but fewer individuals were sampled for 5 other species. The sample from station 31 was divided into three parts for different storage, ~1/2 of the sample was stored in > 4% Formaldehide solution, ~1/4 was stored in 96% ethanol and ~1/4 was placed at -80°C. The full sample collected at station 32 was placed in a > 4% Formaldehide solution.

13.2. EBS-Operation Protocol

EBS Operation

On Deck Prep

- Tension springs and secure with screw.

Deployment

- Vessel Stopped
- Raise EBS Vertical and stop winch to remove safety pin under EBS
- Lower EBS 0.7 m/s until 100m above seafloor. Stop winch for 1 min.
- Vessel at 1 kn while cable lowered at 0.5 m/s until cable length is double the depth.
- Winch stopped. Time 5 mins from this moment - vessel still travelling at 1 kn
- Vessel Stopped, Raise winch at 0.3 m/s until EBS leaves the seafloor. Then raise winch with 0.7 m/s

On Deck

- Keep EBS raised over side of ship. Photo. Wash net down into cod end
- Bring EBS on deck - put in safety pin.
- Lower EBS - remove COD end & fix sample.

14. Hydrophone deployments during ROV dives

Sampling design

Figure 117. Schema for deployment hydrophones

Cage-design for hydrophones

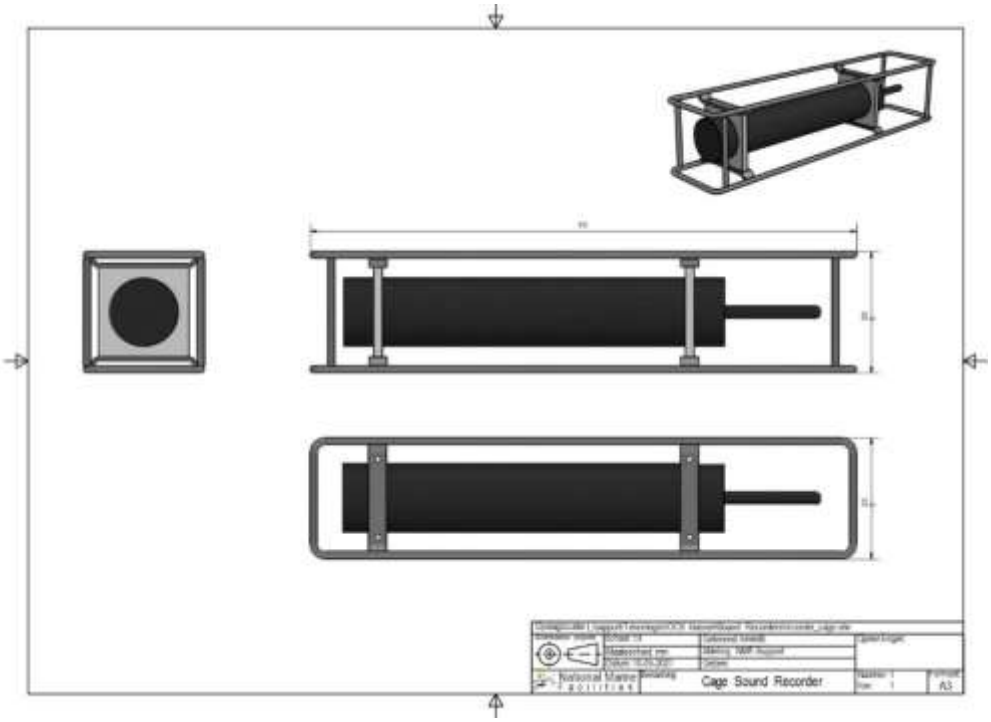


Figure 118. Cages for hydrophone deployment.

Hydrophones were deployed during 05ROV2 and recovered during 10ROV6 at Kolbeinsey.

Hydrophones were deployed during 35ROV7 and recovered during 51 ROV12 at Grimsey.

Please see Appendix for ROV-casts and ROV-dive-Protocols

15. Faunal collections during ROV dives (diversity, connectivity, life-traits)

At Kolbeinsey and Grimsey a total of 16 settlement substrates (each with 4 plastic kitchen sponges) were deployed (4 each at active vent and in vent periperhy) and recovered after one week. In addition, at least 3 natural control collections (rocks with associated fauna) were taken at the same location were settlement substrates have been deployed. At Kolbeinsey, also 3 rocks with bacterial mats were collected to study faunal diversity in this habitat type. Additional collections are single samples from diverse habitats (e.g. from additional chimneys, from hot sediments).

Please see Appendix for ROV Casts for rocks/sediments with animal collections.

Please see Appendix for total collected samples for method of fixation for casts (extracted from database) (IceAGE Database) (4% buffered Formaldehyde, 96% EtOH, -20C, -80C).

Settlement substrates and control collections were put to MgCl solution to extract all fauna.

All samples were sieved over 1 mm and 32 micrometer sieves.

Settlement substrates (4 per site): 3 x in 4% buffered formaldehyde, 1 x in 96% EtOH (at -20C)

Natural control collections in 96% EtOH or 4% buffered formaldehyde.

Rocks frozen at -20C.

Samples labeled according to ROV dive and CAST.

In addition, a unique sample number (from 1 onwardswas given for each sample in the IceAGE database.

APPENDICES:

16. LARS-Adapter ROV Phoca for Pelagia

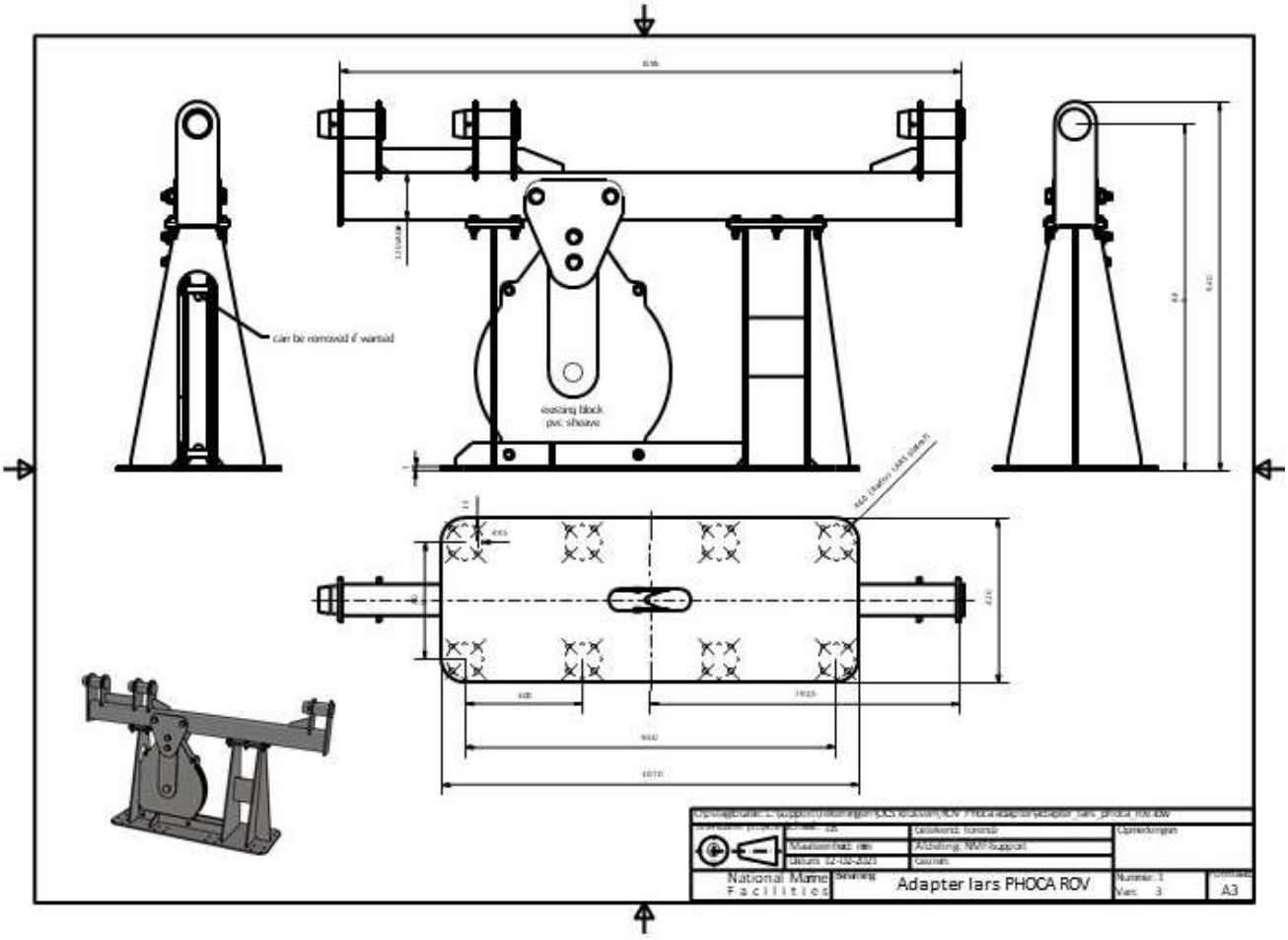


Figure 118. LARS adapter

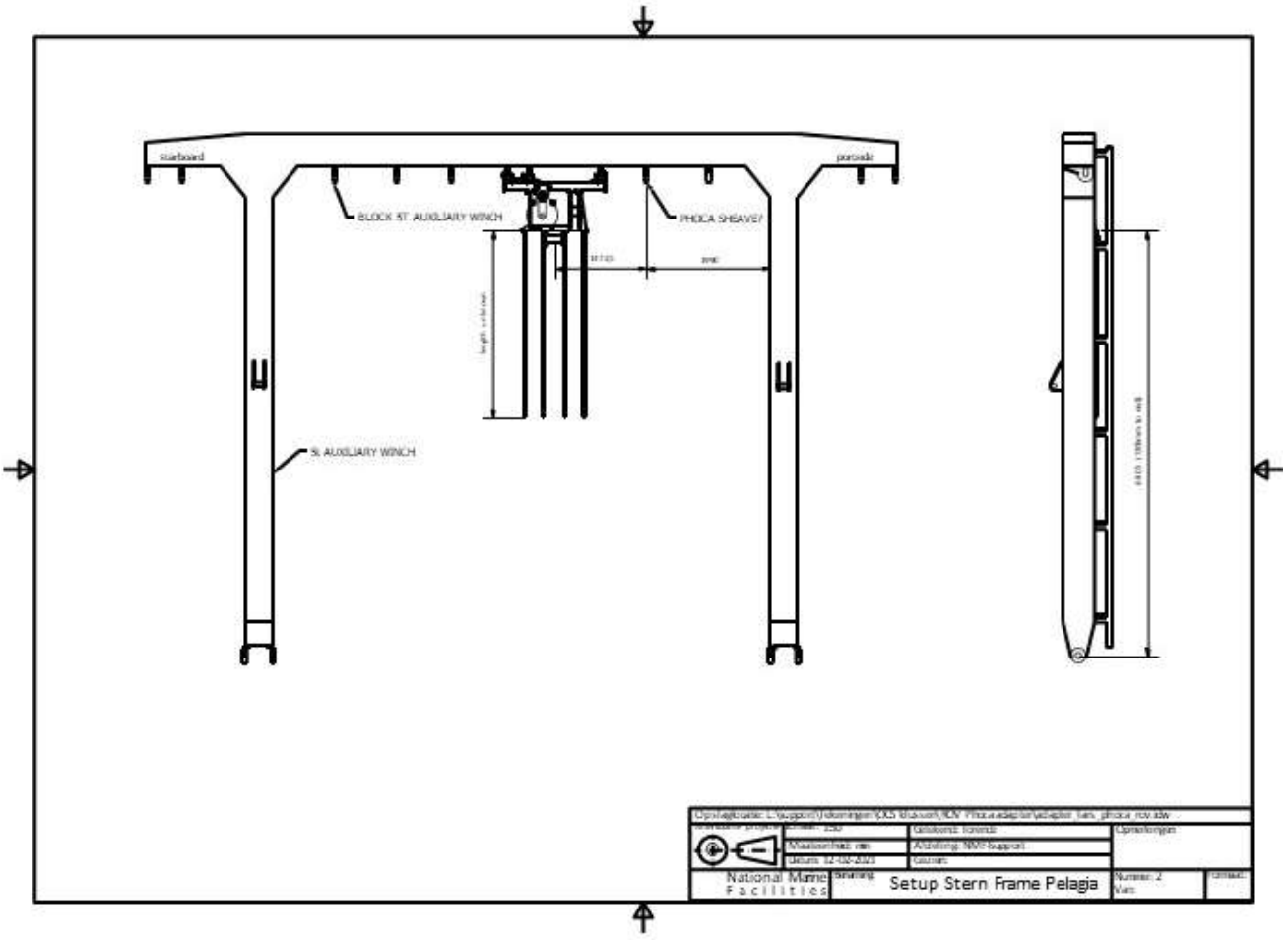


Figure 119. LARS adapter

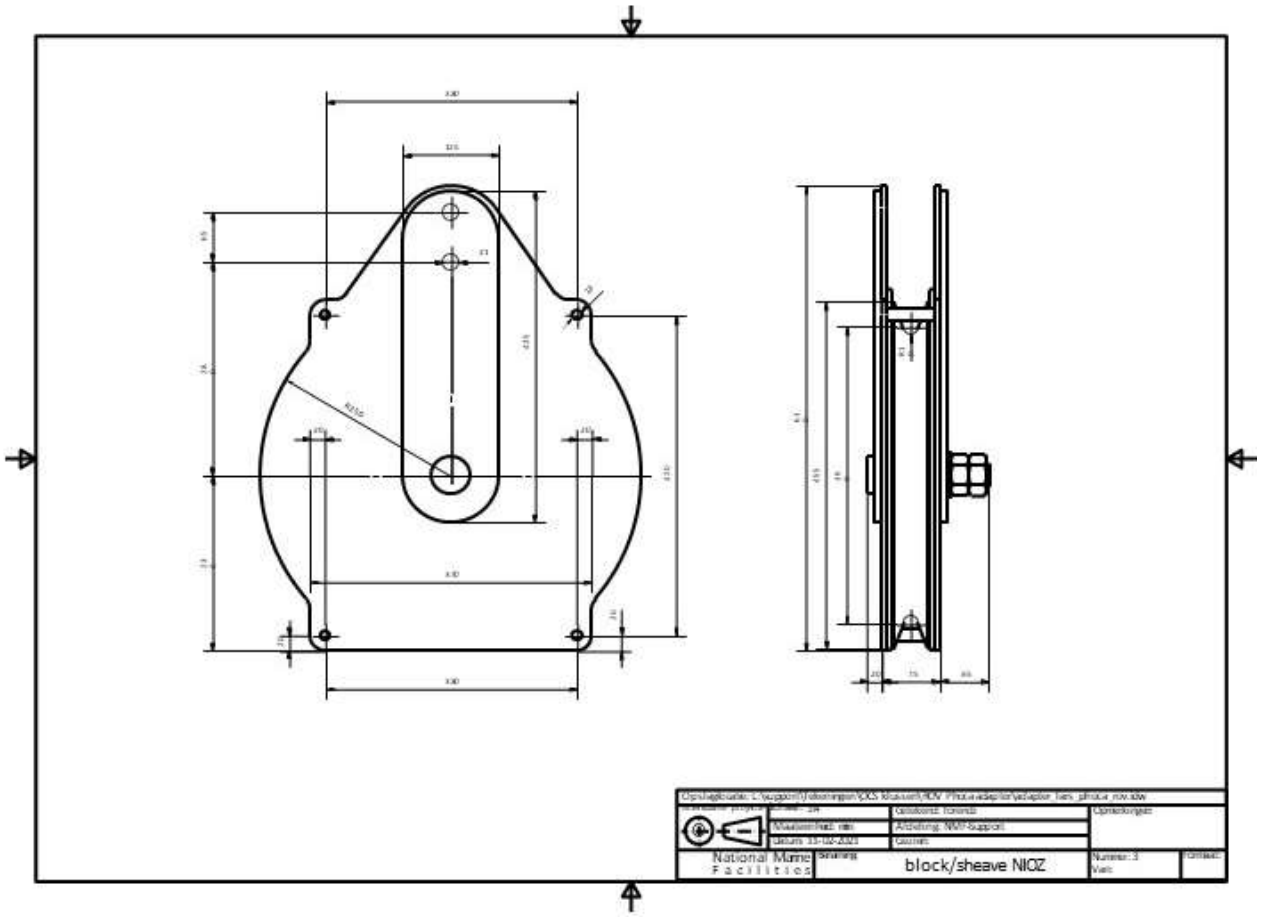


Figure 120. LARS adapter

17. Pelagia Daily Program

Saturday 3 July 2021
Kolbeinsey Vent
CTD 67°05.46N 18°42.64W
ROV seafloor start point: 67°05.49N 18°42.91W

Programme:
8:00 CTD
9:00 ROV#1 in
5:30 pm ROV#1 out

Sunday 4 July 2021
Kolbeinsey Vent
CTD 67°06.00N 18°42.75W (1km north of vent site)
ROV seafloor start point: 67°05.49N 18°42.91W

Programme:
8:00 CTD
10:00 ROV#2 in
11: 30 or 13:00 ROV#2 out
13:00 or 14:00 ROV#3 in
5:30 pm ROV#3 out

Monday 5 July 2021
Grimsey
CTD at 66°36.56N 17°39.12W
ROV Sea Floor Start Point: 66°36.59N 17°39.09W

Programme:
8:00 CTD
9:00 ROV#4 in
17:30 pm ROV#4 out

Tuesday 6 July 2021
Grimsey
CTD at 66°37.09N 17°38.97W (1km north of vent site)
ROV Sea Floor Start Point: 66°36.59N 17°39.09W
Multicore (near grimsey, tbd by Rick)
Gravity Core (near grimsey, tbd, same location as multicore))

Programme:
8:00 CTD

9:00 ROV#5 in
17:30 ROV#5 out
19:00 Multicore
20:00 Gravity core

Wednesday 7 July 2021
Kolbeinsey Vent
CTD 67°05.42N 18°44.19W (~1 km west of Kolbeinsey Vent)
ROV seafloor start point 1: 67°05.401N 18°42.641W (Vent, hydrophone recovery)
Skipped due to high currents: ROV seafloor start point 2: 67°05.56N 18°42.95W (video transect)
Instead Boxcore sampling

Programme:
8:00 CTD
9:00 ROV#6 in
11:30 ROV#6 out

Skipped: 13: 00 ROV in
Instead: Boxcore sampling

Thursday 8 July 2021
Monitoring station
Monitoring 18°46.39W 66°49.09N (BC & Gravity)
Monitoring 18°45.90W 67°05.53N (EBS – Epibenthic sledge)
Monitoring 18°43.76W 67°05.51N (EBS – Epibenthic sledge)

Programme:
8:00 Boxcore
10:00 Gravity Core
13:00 Epibenthic sledge (James giving instructions)
16:00 Epibenthic sledge (James giving instructions)

Friday 9 July 2021
Grimsey Vent
CTD (1 km east of chimney 6) 66°36.43N 17°37.88W
ROV seafloor start point 1(120 m east of Chimney6) 66°36.42N 17°39.07W
ROV seafloor start point 2 (100 m east of Chimney6) 66°36.42N 17°39.10W
Multicore (tbd by Rick)
Gravity Core (tbd by Rick)

Programme:
8:00 CTD
9:00 ROV#7 in
11:30 ROV#7 out

13: 00 ROV#8 in
17:30 ROV#8 out
19:00 multicore
20:00 gravity core

Saturday 10 July 2021
Grimsey Vent
Seafloor starting point ROV: 66°36.289N 17°39.299W
Waypoint BC: 17°39.13'W 66°36.57'N

Programme:
9:00 ROV#9 in
13:30 ROV#9 out
14:30 BC (between C1 and C2) (total of 3 BC)

Sunday 11 July 2021
Kolbeinsey Vent
Waypoint CTD 67°05.46N 18°42.64W
Waypoint Seafloor starting point ROV10: 67°05.454N 18°42.642W
(recovery settlement substrates)
Waypoint Seafloor starting point ROV11: 67°05.562N 18°42.948W
(transect)

Programme:
8:00 CTD
9:00 ROV#10 in
11:30 ROV#10 out
13:00 ROV#11 in
17:30 ROV#11 out

Monday 12 July 2021
Grimsey vent
Waypoint Seafloor starting point ROV12: 66°36.44N 17°39.21W
(recovery settlement substrates at Chimney 4 & hydrophones at C6)
Waypoint BC (1 km east of chimney 6): 66°36.43N 17°37.88W
Waypoint BC (3,5 km SE of chimney6): 66°34.68N 17°37.38W
Waypoint MC and Pistoncore: tbd by Rick

Programme:
9:00 ROV#12 in
13:00 ROV#12 out
13:30 BC 1 km east of Grimsey (instead multicore)
15:00 BC 3.5 km southeast of Grimsey (instead muticore)
19:00 Multicore
20:00 Pistoncore

Tuesday 13 July 2021
Strytan vent
Waypoint Seafloor starting point ROV13:
65°49.7325N 18°06.7211W (25 m away from vent, coming from west)
Please note: Strytan Chimney is reaching from 60m to 20m water depth.
Transect from bottom to top of chimney
Transects are on the western side of the chimney

Programme:
9:00 ROV#13 in
14:00 ROV#14 out
14:00 start transit to Reykavik

18. Dive Plans

ROV PHOCA **Dive Plan 01**

Area Name: Kolbeinsey

Station Name: 64PE475_05_ROV01

Station name needs to be checked with bridge;

Approx Water depth: 140m - 104m

Required Tools: 4 pushcores, 2x biobox back, 1 x biobox front, 4 x settlement substrate

Deployment Position: Pelagia (communicated with ROV team)

Sea Floor Start Point: 67°05.49N 18°42.91W

Waypoint 1: 67°05.48N 18°42.88W

Waypoint 2: 67°05.46N 18°42.64W

Waypoint 3: 67°05.50N 18°42.50W

Sea Floor End Point: 67°05.50N 18°42.50W

Responsible Scientists from until: Sabine (will be joined by Nina/Tanja/Hronn for specific sampling)

Protocol Scientists from until: James (will be joined by Nina, Hronn)

Bathymetric Map has been delivered/will be delivered until: 12:00 on 2 July

Deployment Time: 0900GMT = 0900UTC

Descent: 15 min

Orientation at the seafloor: 20 min

Action 1: exploring waypoint 1 – vent activity (2 m large hole with vent fluids)?

If yes, start sampling

Action 2: no venting? Move towards waypoint 2 (~180 meters; ~30 meters upwards; 30 min)

Action 3: exploring waypoint 2 – vent activity?

If yes, start sampling

Action 4: no venting? Move towards waypoint 3 (~120 meters; ~30 downwards); explore area;

Sampling (all at active venting; at one site)

(1) 4 pushcores (portside) (Nina)
-always take temp before each collection!

(2) collection of min.10 megafauna specimens from sp.1 (e.g. anemone, solitary sponge, encrusting sponge, polyps) (into back 2 bioboxes; starbord) (Tanja)

(3) -4 deployments of settlement substrates (from 4 front compartments biobox; starbord) (Sabine)
-take temp after deployment at all 4 settlement substrates

-photo after deployment

-4 rock collections (with fauna) into biobox (into 4 front compartments biobox; starbord) (Sabine)

-take temp before collection of all 4 rocks (with fauna)

-take photo before collection of all 4 rocks (with fauna)

-immediately close the lid after collection! Do not open the lids any more.

(4) Collection of megafauna (into back 2 bioboxes; port) (Hronn)

Ascent: 15 min

Time On Deck: 1730GMT

Note: dive finished if porch full; start ascent and on surface either before 11:30 GMT or after 13:00 GMT

ROV PHOCA **Dive Plan 02**

Area Name: Kolbeinsey

Station Name: 64PE475_06_ROV02

Station name needs to be checked with bridge;

Approx Water depth: 140m - 104m

Required Tools: 3 hydrophones; 2x biobox back, 1 net

Deployment Position: Pelagia (communicated with ROV team)

Sea Floor Start Point: 67°05.49N 18°42.91W

Waypoint 1: 67°05.48N 18°42.88W

Waypoint 2: 67°05.46N 18°42.64W

Waypoint 3: 67°05.50N 18°42.50W

Sea Floor End Point: 67°05.50N 18°42.50W

Responsible Scientists from until: Sabine

Protocol Scientists from until: James

Bathymetric Map has been delivered/will be delivered until: 12:00 on 2 July

Deployment Time: 0900 GMT (=0900UTC)

Descent: 15 min

Orientation at the seafloor: 20 min

Action 1: go to waypoint that was sampled during dive 1

(1) Deployment of 3 hydrophones at vent sites “at vent”, 10 m distance, 100 m distance (going either North of South along contour)

-take temp near each hydrophone

-photo after deployment

(2) Collection of bacterial mat with net (only if time allows)

Ascent: 15 min

Time On Deck: 1730GMT

Note: dive finished if porch full; start ascent and on surface either before 11:30 GMT or after 13:00 GMT

ROV PHOCA **Dive Plan 03**

Area Name: Kolbeinsey

Station Name: 64PE475_06_ROV03

Station name needs to be checked with bridge;

Approx Water depth: 140m - 104m

Required Tools: 2x biobox back, 2 x biobox front, 4 x settlement substrate, 1 x marker, 1 net

Deployment Position: Pelagia (communicated with ROV team)

Waypoint 1: 67°05.46N 18°42.64W

Waypoint 2: 67°05.50N 18°42.50W

Responsible Scientists from until: Sabine (will be joined by Nina/Tanja/Hronn for specific sampling)

Protocol Scientists from until: James (will be joined by Nina, Hronn)

Bathymetric Map has been delivered/will be delivered until: same map as from dive1

Deployment Time: 1400GMT (after lunch)

Descent: 15 min

Orientation at the seafloor: 20 min

Action 1: go to waypoint that was sampled during dive 1

Sampling (in the vent periphery at one site; in ~10-30 m distance to active venting)

(1) Sabine:

4 deployments of settlement substrates (from 4 front compartments biobox; starbord) (Sabine)

-take temp after deployment at all 4 settlement substrates (has to be ambient)

-photo after deployment

-4 rock collections into biobox (into 4 front compartments biobox; starbord) (Sabine)

-take temp before collection of all 4 rocks (with fauna) (has to be ambient)

-take photo before collection of all 4 rocks (with fauna)

-immediately close the lid after collection! Do not open the lids any more.

(2) Collection of bacteria into front bioboxes (port) (Nina)

(3) 10 specimens from vent periphery into S1 and S2 box (Tanja)

(4) megafauna (into back 2 bioboxes; port) (Hronn)

if there is time explore waypoint 2

Ascent: 15 min

Time On Deck: 1730GMT

ROV PHOCA **Dive Plan 4**

Area Name: Grimsey

Station Name: 64PE475_06_ROV04

Station name needs to be checked with bridge

Approx Water depth: 400 m

Required Tools: 2x biobox back, 2 x biobox front, 4 x settlement substrate

Deployment Position: Pelagia (communicated with ROV team)

Sea Floor Start Point: 66°36.59N 17°39.09W

Waypoint 1: 66°36.56N 17°39.12W

Waypoint 2: 66°36.49N 17°39.21W

Waypoint 3: 66°36.40N 17°39.25W

Sea Floor End Point: 66°36.40N 17°39.25W

Start to W1: 50m

W1-W2: 150 m (height 10 m)

W2-W3: 430 m (height 5 m)

Responsible Scientists from until: Sabine (will be joined by Nina/Tanja/Hronn for specific sampling)

Protocol Scientists from until: James (will be joined by Nina, Hronn)

Bathymetric Map has been delivered/will be delivered until: 4/7/

Deployment Time: 0900GMT

Descent: 15 min

Orientation at the seafloor: 20 min

Action 1: explore the area from W1 to W2; search for active venting (anhydrate chimneys)

->In case venting is found, start sampling between W1 and W2 at diffuse flow

->in case venting is not found, transit to W3

Sampling at diffuse flow:

(1) 4 pushcores (portside) at the active venting! (Nina)
-always take temp before each collection!

(2) Collection of megafauna (into back 2 bioboxes; starboard) (Tanja)

(3) -4 deployments of settlement substrates (from 4 front compartments biobox; starbord) (Sabine)
-take temp after deployment at all 4 settlement substrates (diffuse)

-photo after deployment

-4 rock collections into biobox (into 4 front compartments biobox; starbord) (Sabine)

-take temp before collection of all 4 rocks (with fauna) (diffuse)

-take photo before collection of all 4 rocks (with fauna)

-immediately close the lid after collection! Do not open the lids any more.

(4) Collection of megafauna (into back 2 bioboxes; port) (Hronn)

If there is time after sampling, explore the area

Ascent: 15 min

Time On Deck: 1730GMT

Note: dive finished if porch full; start ascent and on surface either before 11:30 GMT or after 13:00 GMT

ROV PHOCA **Dive Plan 5**

Area Name: Grimsey

Station Name: 64PE475_06_ROV04

Station name needs to be checked with bridge

Approx Water depth: 400 m

Required Tools: 4 x pushcores, 2x biobox back, 1 x biobox front, 4 x settlement substrate

Deployment Position: Pelagia (communicated with ROV team)

Sea Floor Start Point: 66°36.59N 17°39.09W

Waypoint 1: 66°36.59N 17°39.13W (chimney 1)

Waypoint 2: chimney 2

Waypoint 3: chimney4

Responsible Scientists from until: Nina, Sabine, Hronn, Tanja

Protocol Scientists from until: James (will be joined by Nina, Hronn)

Bathymetric Map has been delivered/will be delivered until: use from dive 4

Deployment Time: 0900GMT

Descent: 15 min

Orientation at the seafloor: 20 min

Action 1: sample bacterial mats near chimney 1 with net (Nina, into S1&S2)

Action 2: samples bac mats near chimney 2 with pushcore (Nina)

Action 3: chimney 4 (Sabine)

- Deploy settlement substrates in periperhy (from S3A, S3B, S4A, S4B)
- Measure temp
- Collect 4 rocks and immediately close lid (do not open lids any more)

Action 4: explore area and megafauna sampling (Tanja, Hronn)

Ascent: 15 min

Time On Deck: 1730GMT

Note: dive finished if porch full; start ascent and on surface either before 11:30 GMT or after 13:00 GMT

ROV PHOCA **Dive Plan 6 (7 July)**

Area Name: Kolbeinsey

Station Name: 64PE475_06_ROV06

Approx Water depth: 100 m

Required Tools: 2x biobox back, 1 net

Deployment Position: Pelagia

Sea Floor Start Point: 67°05.401N 18°42.641W

Waypoint 1: 67°05.401N 18°42.641W(Hydrophone 100 m south K vent)

Waypoint 2: 67°05.447N 18°42.641W (Hydrophone 10 m south K vent)

Waypoint 3: 67°05.440N 18°42.639W (Hydrophone at K vent)

Responsible Scientists from until: Sabine, Nina

Protocol Scientists from until: James (will be joined by Nina, Hronn)

Bathymetric Map has been delivered/will be delivered until: use from dive 4

Deployment Time: 0090GMT

Descent: 15 min

Orientation at the seafloor: 20 min

Action 1: recover Hydrophone in 100 m south K vent (transponder)

Action 2: sample bac mats 10 m sout K vent with net

Action 3: recover hydrophone 10 m south K vent

Action 4: recovery hydrophone at K vent

Ascent: 15 min

Time On Deck: 1130GMT

ROV PHOCA **Dive Plan 7 (9 July)**

Area Name: Grimsey

Station Name: 64PE475_06_ROV07

Station name needs to be checked with bridge;

Approx Water depth: 400 m

Required Tools: 2 x biobox back, 3 Hydrophones, 2 nets

Seafloor starting point: 66°36.42N 17°39.07W

Waypoint 1(100 m east of chimney 6): 66°36.42N 17°39.10W

Waypoint 2 (10 away from chimney 6): 66°36.42N 17°39.22W

Waypoint 3 (at chimney 6): 66°36.42N 17°39.23W

Responsible Scientists from until: Sabine, Nina

Protocol Scientists from until: James

Bathymetric Map has been delivered/will be delivered until: use from ROV5 dive

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Deployment Time: 0900UTC

Descent: 15 min

Orientation at the seafloor: 20 min

Action 1: Deploy hydrophone with transponder in 100 m distance to chimney 6

Action 2: deploy hydrophone in 10 m distance to chimney 6

Action 3: deploy hydrophone at chimney (base)

Action 4: measure temperatures at chimney 6 (on chimney)

Action 2: sample chimney rocks into S1, S2 (active)

Action 3: measure temperature at chimney base (sediments)

Action 4: sample sediments with nets into P1 and P2

Ascent: 15 min

Time On Deck: 1130 (at latest at 1200 UTC before lunch)

ROV PHOCA **Dive Plan 8 (9 July)**

Area Name: Grimsey

Station Name: 64PE475_06_ROV0X

Station name needs to be checked with bridge;

Approx Water depth: 400 m

Required Tools: 2 x biobox back, 2 x biobox front, 2 nets

Seafloor starting point (100 m east of chimney 6): 66°36.42N 17°39.10W

Waypoint 1 (chimney 6): 66°36.42N 17°39.23W

Responsible Scientists from until: Nina, Sabine, Tanja

Protocol Scientists from until: James, Hroenn

Bathymetric Map has been delivered/will be delivered until: use from ROV7 dive

Deployment Time: 1330UTC

Descent: 15 min

Orientation at the seafloor: 20 min

Action 1: transit to chimney 6 and further explore chimney 6

Action 2: measure t at chimney base rocks (inactive)

Action 3: sample 2 rocks (inactive) into S3A and S3B

Action 2: explore area, going south (and later NW)

Action 3: sample rocks/sediments/animals during exploration

Nets with sediments P1 and P2

Animals for Tanja into S2

Ascent: 15 min

Time On Deck: 1730 UTC

ROV PHOCA **Dive Plan 9 (10 July)**

Area Name: Grimsey

Station Name: 64PE475_06_ROV9

Station name needs to be checked with bridge;

Approx Water depth: 400 m

Required Tools: 2 x biobox back, 2 bioboxes front, 2 nets

Seafloor starting point: 66°36.289N 17°39.299W (chimney 7)

Waypoints: as from dive 8

Responsible Scientists from until: Sabine, Nina, Hronn

Protocol Scientists from until: James

Bathymetric Map has been delivered/will be delivered until: use from dive 8

Deployment Time: 1300UTC

Descent: 15 min

Orientation at the seafloor: 20 min

Action 1: explore the area following up from ROV8, start in at waypoint, move towards the south, at the end NW.

When a vent site is found:

Measure temp, make photos, collect a rock, ev. collect bacterial mats.

Ascent: 15 min

Time On Deck: 1330UTC

ROV PHOCA **Dive Plan 10 (11 July)**

Area Name: Kolbeinsey

Station Name: 64PE475_06_ROV10

Station name needs to be checked with bridge;

Approx Water depth: 100 m

Required Tools: 2x biobox back, 2 biobox front

Deployment Position: Pelagia

Sea Floor Start Point: 67°05.454N 18°42.642W

Waypoint 1 (at settlement substrates at vent): 67°05.454N 18°42.642W

Waypoint 2 (at settlement substrates near vent): 67°05.463N 18°42.621W

Waypoint 3 (bacterial mats) e.g.: 67°05.451N 18°42.637W

Responsible Scientists from until: Sabine, Nina

Protocol Scientists from until: James (will be joined by Nina, Hronn)

Bathymetric Map has been delivered/will be delivered until: use from dive 1

Deployment Time: 0090UTC

Descent: 15 min

Orientation at the seafloor: 20 min

Action 1: recover 4 settlement substrates at vent into S3A, S3B, S4A, S4B

Action 2: recover 1 rock with small sponges from the active vent area (into S2)

Action 3: recover 4 settlement substrates near vent into P3A, P3B, P4A, P4B

Action 4: sample 3 rocks with bacterial mats (P1, P2, S1)

Ascent: 15 min

Time On Deck: 1200GMT (at latest; before lunch)

ROV PHOCA **Dive Plan 11 (11 July)**

Area Name: Kolbeinsey

Station Name: 64PE475_06_ROV11

Station name needs to be checked with bridge

Sea Floor Start Point: 67°05.562N 18°42.948W

Waypoints for ROV transect:

NOTE: start backwards, at 16 (first along ridge)

id	Dec Lat	Dec Long	Lat	Long
1	67.0927	-18.7158	67°5.56200'N	18°42.94800'W
2	67.0928	-18.7065	67°5.56800'N	18°42.39000'W
3	67.0924	-18.7158	67°5.54400'N	18°42.94800'W
4	67.0925	-18.7065	67°5.55000'N	18°42.39000'W
5	67.0919	-18.7157	67°5.51400'N	18°42.94200'W
6	67.0919	-18.7065	67°5.51400'N	18°42.39000'W
7	67.0913	-18.7158	67°5.47800'N	18°42.94800'W
8	67.0913	-18.7065	67°5.47800'N	18°42.39000'W
9	67.0908	-18.7158	67°5.44800'N	18°42.94800'W
10	67.0909	-18.7065	67°5.45400'N	18°42.39000'W
11	67.0903	-18.7158	67°5.41800'N	18°42.94800'W
12	67.0903	-18.7064	67°5.41800'N	18°42.38400'W
13	67.0931	-18.7104	67°5.58600'N	18°42.62400'W
14	67.0899	-18.7104	67°5.39400'N	18°42.62400'W
15	67.0931	-18.7095	67°5.58600'N	18°42.57000'W
16	67.0899	-18.7095	67°5.39400'N	18°42.57000'W

Approx Water depth: 100 m

Required Tools: 2 x biobox back

Responsible Scientists from until: James, Hronn, Sabine

Protocol Scientists from until: Hronn (James, Sabine)

Bathymetric Map has been delivered/will be delivered until: use from dive 1

Deployment Time: 1300UTC

Descent: 15 min

Orientation at the seafloor: 20 min

Action 1: Transect

Action 2: Collection of sponge grounds (3 rock samples from 1 location) (into P1, P2, S1)

Action 3: opportunistic sampling of fauna (into S2)

Ascent: 15 min

Time On Deck: 1730UTC

ROV PHOCA **Dive Plan 12 (12 July)**

Area Name: Grimsey

Station Name: 64PE475_06_ROV12

Station name needs to be checked with bridge;

Approx Water depth: 400 m

Required Tools: 2x biobox back, 2 x biobox front

Deployment Position: Pelagia

Sea Floor Start Point: 66°36.44N 17°39.21W

Waypoint 1: recover settlement substrates near Chimney 4 (periphery) (from 6 july)

66°36.424N 17°39.283W

Waypoint 2: recover settlement substrates at Chimney 4 (from 5 July)

66°36.420N 17°39.274W

Waypoint 3: recover hydrophone at Chimney 6 (from 9 July)

66°36.431N 17°39.233W

Waypoint 4: recover hydrophone near Chimney 6

66°36.424N 17°39.225W

Waypoint 5: recover hydrophone 100 m east of Chimney 6 (with transponder)

66°36.421N 17°39.099W

Responsible Scientists from until: Sabine

Protocol Scientists from until: James

Bathymetric Map has been delivered/will be delivered until: use from dive 9

Deployment Time: 0090UTC

Descent: 15 min

Orientation at the seafloor: 20 min

Action 1: recover settlement substrates near Chimney 4 (periphery S3A, S3B, S4A, S4B)

Action 2: recover settlement substrates at Chimney 4 (activePS3A, P3B, P4A, P4B)

Action 3: recover hydrophone at Chimney 6

Action 4: recover hydrophone near Chimney 6

Action 5: recover hydrophone 100 m east of Chimney 6 (with transponder)

Ascent: 15 min

Time On Deck: 1300GMT (as soon as substrates and hydrophones are recovered, before or after lunch)

ROV PHOCA **Dive Plan 13 (13 July)**

Area Name: Strytan

Strytan is a big (~40 m high) chimney starting at ~60 m water depth.

Station Name: 64PE475_06_ROV13

Station name needs to be checked with bridge;

Approx Water depth: 60 m

Required Tools: 2x biobox back,

Deployment Position: Pelagia

Sea Floor Start Point: 65°49.7325N 18°06.7211W (25 m away from vent, coming from west)

Waypoint 1: 65°49.7222N 18°06.6941W

transect 1 from bottom of big Strytan chimney (60 m) to top of big Strytan chimney (22 m)

Waypoint 2: 65°49.7182N 18°06.6962W (48 m depth)

transect 2 from bottom of big Strytan chimney (65 m) to top of big Strytan chimney (20 m)

Waypoint 3: 65°49.7138N 18°06.6989W

transect 3 from bottom of big Strytan chimney (65 m) to top of big Strytan chimney (20 m)

Waypoint 4: 65°49.6927N 18°06.7124W

transect from bottom of medium Strytan chimney (65 m) to top of medium Strytan (chimney (35 m)

Waypoint 5: 65°49.6809N 18°06.7323W

transect from bottom of small Strytan chimney (65 m) to top of small Strytan chimney (40 m)

Responsible Scientists from until: Sabine, Hroenn

Protocol Scientists from until: James

Bathymetric Map has been delivered/will be delivered until: use from dive 9

Deployment Time: 0090UTC

Descent: 15 min

Orientation at the seafloor: 20 min

Action 1: transect 1 from bottom of big Strytan chimney (65 m) to top of big Strytan chimney (20 m);

Action 2: transect 2 from bottom of big Strytan chimney (65 m) to top of big Strytan chimney (20 m)

During Action 2: collect specimens from ~60 m (P1), ~35m (P2), and ~20 m (P3) depth into 3 separate bioboxes according to depth

During Action 2: measuring temp

Action 3: transect 3 from bottom of big Strytan chimney (65 m) to top of big Strytan chimney (20 m)

Action 4: transect from bottom of medium Strytan chimney (65 m) to top of medium Strytan (chimney (35 m)

During Action 4: collect specimens from ~60 m depth into S2

Action 5: transect from bottom of small Strytan chimney (65 m) to top of small Strytan chimney (40 m)

Ascent: 15 min

Time On Deck: 1400UTC

19. ROV-CASTS

Table 8. ROV-CASTS 64PE475.

expedition	Station#R	date	(UTC)/+2hours	NLlat (N)	long (W)	depth	box/cast	area	comment
64PE475	02ROV01	03.07.202	11:48	67°06.451	18°42.637	104.6	P1/1	K	Rock with Bacteria
64PE475	02ROV01	03.07.202	14:22	67°05.448	18°42.637	102.7	S1/2	K	respiration sponges on rocks
64PE475	02ROV01	03.07.202	14:51	67°05.449	18°42.629	101.6	S2/3	K	excrusting sponge on rock
64PE475	02ROV01	03.07.202	15:43	67°05.454	18°42.642	110.6	deployment/4	K	S4Apink sponge deployed
64PE475	02ROV01	03.07.202	15:45	67°05.454	18°42.642	110.6	deployment/5	K	S4B green sponge deployed
64PE475	02ROV01	03.07.202	15:49	67°05.454	18°42.642	110.6	deployment/6	K	S3A orange sponge deployed
64PE475	02ROV01	03.07.202	15:51	67°05.454	18°42.642	110.6	deployment/7	K	S3B purple sponge deployed
64PE475	02ROV01	03.07.202	16:12	67°05.454	18°42.644	110.6	S3A/8	K	rock with animal (sponge)
64PE475	02ROV01	03.07.202	16:14	67°05.442	18°42.642	111	S3B/9	K	rock with animal (sponge)
64PE475	02ROV01	03.07.202	16:18	67°05.454	18°42.642	110.6	S4A/10	K	rock with animal (sponge)
64PE475	02ROV01	03.07.202	16:23	67°05.454	18°42.642	110.6	S4B/11	K	rock with animal (sponge)
64PE475	02ROV01	03.07.202	16:42	67°05.455	18°42.59	117.8	P2/12	K	rock for Hronn
64PE475	02ROV01	03.07.202	16:58	67°05.475	18°42.600	110.6	P2/13	K	sponge for Hronn
64PE475	02ROV01	03.07.202	17:09	67°05.492	18°42.600	110.6	P2/14	K	sponge for Hronn
64PE475	05ROV02	04.07.202	10:43	67°05.401	18°42.641	120.5	deployment/1	K	deployment yellow Hydrophone in 100 m distance t vent
64PE475	05ROV02	04.07.202	11:15	67°05.447	18°42.641	107.7	deployment/2	K	deployment red Hydrophone at vent
64PE475	05ROV02	04.07.202	11:25	67°05.440	18°42.639	114.4	deployment/3	K	deployment blue Hydrophone in 10 m distance to vent
64PE475	05ROV02	04.07.202	11:39	67°05.401	18°42.641	120.5	P2/4	K	bacterial mat net sample
64PE475	06ROV03	04.07.202	13:57	67°05.463	18°42.621	118.2	deployment/1	K	green sponge deployed
64PE475	06ROV03	04.07.202	14:05	67°05.463	18°42.621	118.2	deployment/2	K	purple sponge deployed
64PE475	06ROV03	04.07.202	14:08	67°05.463	18°42.621	118.2	deployment/3	K	pink sponge deployed
64PE475	06ROV03	04.07.202	14:11	67°05.463	18°42.621	118.2	deployment/4	K	orange sponge deployed
64PE475	06ROV03	04.07.202	14:35	67°05.463	18°42.621	118.2	S4A/5	K	rock with animals from periphery
64PE475	06ROV03	04.07.202	14:37	67°05.463	18°42.621	118.2	S4B/6	K	rock with animals from periphery
64PE475	06ROV03	04.07.202	14:38	67°05.463	18°42.621	118.2	S3A/7	K	rock with animals from periphery
64PE475	06ROV03	04.07.202	14:40	67°05.463	18°42.621	118.2	S3B/8	K	rock with animals from periphery
64PE475	06ROV03	04.07.202	14:42	67°05.463	18°42.621	118.2	S2/9	K	rock with animals from periphery
64PE475	06ROV03	04.07.202	14:53	67°05.463	18°42.621	118.2	P3A/10	K	starfish
64PE475	06ROV03	04.07.202	14:42	67°05.471	18°42.614	116	P3B/11	K	sea urchin
64PE475	06ROV03	04.07.202	15:19	67°05.476	18°42.603	114.4	P4A/12	K	sponge Mycata
64PE475	06ROV03	04.07.202	15:59	67°05.466	18°42.596	116.4	P4B/13	K	sea urchin
64PE475	06ROV03	04.07.202	16:07	67°05.466	18°42.596	116.4	P4A/14	K	sea urchin
64PE475	06ROV03	04.07.202	16:39	67°05.459	18°42.634	112.2	P2/15	K	bacteral mat sediment
64PE475	09ROV04	05.07.202	11:18	66°36.592	17°39.133	401.9	P3A/1	G	rock with fauna, gastropods, hydrooids, sponge
64PE475	09ROV04	05.07.202	12:40	66°36.549	17°39.124	410.2	P2/2	G	sediment sample net
64PE475	09ROV04	05.07.202	13:09	66°36.549	17°39.124	410.2	P1/3	G	sediment sample net
64PE475	09ROV04	05.07.202	13:25	66°36.549	17°39.124	410.2	P4A/4	G	chimney pieces and animals (Chimney 1)
64PE475	09ROV04	05.07.202	13:33	66°36.549	17°39.124	410.2	P4B/5	G	chimney pieces
64PE475	09ROV04	05.07.202	15:23	66°36.457	17°39.236	391	S2/6	G	anemones for respiration
64PE475	09ROV04	05.07.202	16:20	66°36.420	17°39.274	388.8	deployment/7	G	pink sponge deployed
64PE475	09ROV04	05.07.202	16:28	66°36.420	17°39.274	388.8	deployment/8	G	green sponge deployed
64PE475	09ROV04	05.07.202	16:29	66°36.420	17°39.274	388.8	deployment/9	G	red sponge deployed
64PE475	09ROV04	05.07.202	16:30	66°36.420	17°39.274	388.8	deployment/1	G	blue/red sponge deployed
64PE475	09ROV04	05.07.202	16:49	66°36.419	17°39.276	387.6	S4A/11	G	chimney with (small) animals
64PE475	09ROV04	05.07.202	16:51	66°36.419	17°39.276	387.6	S4B/12	G	chimney with (small) animals
64PE475	09ROV04	05.07.202	16:56	66°36.419	17°39.276	387.6	S3B/13	G	chimney with (small) animals
64PE475	14ROV05	06.07.202	10:15	66°36.588	17°39.142	409.8	S1/1	G	sediment sample base chimney
64PE475	14ROV05	06.07.202	11:10	66°36.549	17°39.126	410.2	S2/2	G	sediment sample base chimney

64PE475	14ROV05	06.07.202	12:26	66°36.424	17°39.283	388	deployment/3	G	yellow sponge
64PE475	14ROV05	06.07.202	12:28	66°36.424	17°39.283	388	deployment/4	G	pink sponge
64PE475	14ROV05	06.07.202	12:31	66°36.424	17°39.283	388	deployment/5	G	purple sponge
64PE475	14ROV05	06.07.202	12:32	66°36.424	17°39.283	388	deployment/6	G	orange sponge
64PE475	14ROV05	06.07.202	12:56	66°36.424	17°39.283	388	S3B/7	G	rock with fauna
64PE475	14ROV05	06.07.202	12:58	66°36.424	17°39.283	388	S3A/8	G	rock with fauna
64PE475	14ROV05	06.07.202	13:01	66°36.424	17°39.283	388	S4B/9	G	rock with fauna
64PE475	14ROV05	06.07.202	13:03	66°36.424	17°39.283	388	S4A/10	G	rock with fauna
64PE475	14ROV05	06.07.202	13:47				P1/11	G	Tanja sampling respiration
64PE475	14ROV05	06.07.202	15:04				P1/12	G	Snails & Rocks with anemone?
64PE475	14ROV05	06.07.202	16:44	66°36.428	17°39.237	395.5	Pushcore/13	G	chimney pieces
64PE475	20ROV06	07.07.202	9:35	67°05.448	18°42.641	106.2	recovery/1	K	recovery blue hydrophone 10 m south of vent
64PE475	20ROV06	07.07.202	9:49	67°05.442	18°42.637	106.2	recovery/2	K	recovery red hydrophone at vent
64PE475	20ROV06	07.07.202	10:10	67°05.403	18°42.638	106.2	recovery/3	K	recovery yellow hydrophone in ~100 m distance to vent
64PE475	35ROV07	09.07.202	9:36	66°36.421	17°39.099	389.9	deployment/1	G	yellow hydrophone in 100 m distance (east of chimney)
64PE475	35ROV07	09.07.202	9:51	66°36.424	17°39.125	387.3	deployment/2	G	blue hydrophone in 10 m distance (east of chimney)
64PE475	35ROV07	09.07.202	10:24	66°36.431	17°39.233	388.4	deployment/3	G	red hydrophone at chimney 6
64PE475	35ROV07	09.07.202	10:32	66°36.431	17°39.233	388.4	P2/4	G	rock collections chimney 6
64PE475	35ROV07	09.07.202	10:36	66°36.431	17°39.233	388.4	P1/5	G	rock collections chimney 6
64PE475	35ROV07	09.07.202	11:09	66°36.435	17°39.234	388.8	S1/6	G	sediment samples Nina
64PE475	35ROV07	09.07.202	11:24	66°36.432	17°39.234	388.4	S2/7	G	sediment samples Nina
64PE475	36ROV08	09.07.202	14:22	66°36.389	17°39.173	387.6	S3A/1	G	rock-bacterial mat
64PE475	36ROV08	09.07.202	14:43	66°36.372	17°39.195	383.1	S3B/2	G	rock-bacterial mat
64PE475	36ROV08	09.07.202	15:02	66°36.363	17°39.209	389.1	P1/3	G	anemones for respiration
64PE475	36ROV08	09.07.202	15:10	66°36.363	17°39.209	389.1	P3B/4	G	rock-bacterial mat
64PE475	36ROV08	09.07.202	16:31	66°36.287	17°39.300	388	P4B/5	G	chimney piece
64PE475	36ROV08	09.07.202	16:40	66°36.287	17°39.300	388	P4A/6	G	rock-bacterial mat
64PE475	36ROV08	09.07.202	17:04	66°36.288	17°39.299	390	S1/7	G	hot sediment
64PE475	40ROV09	10.07.202	10:15	66°36.259	17°39.243	386.5	P3A/1	G	rock samples
64PE475	40ROV09	10.07.202	11:05	66°36.256	17°39.238	386.5	S2/2	G	chimney sample with net
64PE475	40ROV09	10.07.202	11:28	66°36.260	17°39.233	383.1	P3B/3	G	ophiuroid
64PE475	40ROV09	10.07.202	12:09	66°36.252	17°39.246	378.2	S1/4	G	bacterial mat with net
64PE475	48ROV10	11.07.202	9:18	67°05.453	18°42.635	104.3	S4A/1	K	purple sponge recovered at vent
64PE475	48ROV10	11.07.202	9:19	67°05.453	18°42.635	104.3	S4B/2	K	orange sponge recovered at vent
64PE475	48ROV10	11.07.202	9:21	67°05.453	18°42.635	104.3	S3A/3	K	pink sponge recovered at vent
64PE475	48ROV10	11.07.202	9:29	67°05.453	18°42.635	104.3	S3B/4	K	green sponge recovered at vent
64PE475	48ROV10	11.07.202	9:34	67°05.453	18°42.635	104.3	S2/5	K	rock with sponges
64PE475	48ROV10	11.07.202	9:53	67°05.462	18°42.612	104.3	P3A/6	K	orange sponge recovered at periphery
64PE475	48ROV10	11.07.202	9:54	67°05.462	18°42.612	104.3	P3B/7	K	purple sponge recovered at periphery
64PE475	48ROV10	11.07.202	9:56	67°05.462	18°42.612	104.3	P4A/8	K	pink sponge recovered at periphery
64PE475	48ROV10	11.07.202	9:57	67°05.462	18°42.612	104.3	P4B/9	K	green sponge recovered at periphery
64PE475	48ROV10	11.07.202	10:24	67°05.451	18°42.629	99.8	P1/10	K	rock with bacterial mat
64PE475	48ROV10	11.07.202	10:28	67°05.451	18°42.629	99.8	P2/11	K	rock with bacterial mat
64PE475	48ROV10	11.07.202	10:29	67°05.451	18°42.629	99.8	S1/12	K	rock with bacterial mat
64PE475	49ROV11	11.07.202	14:25	67°05.516	18°42.571	112.6	P1/1	K	large rock with many animals
64PE475	49ROV11	11.07.202	15:30	67°05.440	18°42.632	112.2	S2/2	K	bacterial mat on sediments with net
64PE475	49ROV11	11.07.202	14:25	67°05.419	18°42.809	127.8	P2/3	K	large rock with many animals
64PE475	51ROV12	12.07.202	9:57	66°36.422	17°39.284	385.4	P3A/1	G	yellow sponge recovered at vent
64PE475	51ROV12	12.07.202	9:58	66°36.422	17°39.284	385.4	P3B/2	G	pink sponge recovered at vent
64PE475	51ROV12	12.07.202	10:00	66°36.422	17°39.284	385.4	P4A/3	G	blue sponge recovered at vent

64PE475	51ROV12	12.07.202	10:02	66°36.422	17°39.284	385.4	P4B/4	G	red sponge recovered at vent
64PE475	51ROV12	12.07.202	10:54	66°36.426	17°39.284	385.4	S3A/5	G	yellow sponge recovered at vent
64PE475	51ROV12	12.07.202	10:55	66°36.426	17°39.284	385.4	S3B/6	G	orange sponge recovered at vent
64PE475	51ROV12	12.07.202	10:57	66°36.426	17°39.284	385.4	S4A/7	G	red sponge recovered at vent
64PE475	51ROV12	12.07.202	10:59	66°36.426	17°39.284	385.4	S4B/8	G	pink sponge recovered at vent
64PE475	51ROV12	12.07.202	11:09	66°36.431	17°39.243	391.4	recovery/9	G	red hydrophone at chimney 6
64PE475	51ROV12	12.07.202	11:25	66°36.429	17°39.236	391.4	recovery/10	G	blue hydrophone near chimney 6
64PE475	51ROV12	12.07.202	11:37	66°36.422	17°39.107	404.4	recovery/11	G	yellow hydrophone in 100 m distance to chimney6

64PE475	58ROV13	13.07.202	11:04	65°49.716	18°06.687	63.1	P2/1	S	rock with fauna
64PE475	58ROV13	13.07.202	12:50	65°49.689	18°06.721	63.6	P1/2	S	rock with fauna
64PE475	58ROV13	13.07.202	13:10	65°49.680	18°06.723	69.6	S1/3	S	rock with fauna

21.CTD sheets

Casino 1
CTD # 1
Date 7/3/2021
Area KB
Station_ID senckenberg: 64
Lat/Lon 67 05 46N; 18 42 64W
Depth 96m

ROV: water used for pushcores
Tanja: water used for experimental environment

Bottle	Sampling Depth	Layer	T CTD	T deck	User	Comment	eDNA Liters	Label	Comment	SPOM Liters	Filter	Label	Comment	Nuts Silicate	NUTS	Comment
1	93	Bottom	5.0	5.9	ROV											
2	93	Bottom	5.0	6.0	ROV											
3	93	Bottom	5.0	5.5	Tanja											
4	93	Bottom	5.0	6.2	Tanja											
5	93	Bottom	5.0	5.7	Lise		4	eDNA_CTD1_5		5	21_ICE_LK_1	SPOM_CTD1_5		CTD1_SI_5	CTD1_NUTS_5	
6	93	Bottom	5.0	5.6	Lise		3.5	eDNA_CTD1_6		5	21_ICE_LK_2	SPOM_CTD1_6		CTD1_SI_6	CTD1_NUTS_6	
7	93	Bottom	5.0	5.7	Lise		3.6	eDNA_CTD1_7						CTD1_SI_7	CTD1_NUTS_7	
8	93	Bottom	5.0	5.6	ROV											
9	93	Bottom	5.0	5.8	ROV											
10	60		6.0	6.5	ROV											
11	60		6.0	6.5	ROV											
12	60		6.0	6.7	Lise		1.6	eDNA_CTD1_12		5	21_ICE_LK_3	SPOM_CTD1_12		CTD1_SI_12	CTD1_NUTS_12	
13	60		6.0	6.6	Lise		1.7	eDNA_CTD1_13		5	21_ICE_LK_4	SPOM_CTD1_13		CTD1_SI_13	CTD1_NUTS_13	
14	60		6.0	6.8	Lise		1.3	eDNA_CTD1_14						CTD1_SI_14	CTD1_NUTS_14	
15	60		6.0	7.4	Tanja											
16	60		6.0	7.0	Tanja											
17	30		6.4	7.1	Lise		1	eDNA_CTD1_17		5	21_ICE_LK_5	SPOM_CTD1_17		CTD1_SI_17	CTD1_NUTS_17	
18	30		6.4	7.0	Lise		1	eDNA_CTD1_18		5	21_ICE_LK_6	SPOM_CTD1_18		CTD1_SI_18	CTD1_NUTS_18	
19	30		6.4	7.1	Lise		1	eDNA_CTD1_19						CTD1_SI_19	CTD1_NUTS_19	
20	30		6.4	7.2	x											
21	9.9	Chl. Max	7.1	7.3	Lise		0.5	eDNA_CTD1_21		5	21_ICE_LK_7	SPOM_CTD1_21		CTD1_SI_21	CTD1_NUTS_21	
22	9.9	Chl. Max	7.1	7.5	Lise		0.5	eDNA_CTD1_22		5	21_ICE_LK_8	SPOM_CTD1_22		CTD1_SI_22	CTD1_NUTS_22	
23	9.9	Chl. Max	7.1	7.5	Lise		0.5	eDNA_CTD1_23						CTD1_SI_23	CTD1_NUTS_23	
24	9.9	Chl. Max	7.1	7.3	x											

Nutrient vials are stored in plastic bags, 1 bag per CTD. Si in 4C fridge, NUTS in -20C freezer
SPOM filters stored in petridishes, in plastic bag, 1 bag per CTD. Stored in -20C freezer
eDNA filters stored in screw-cap tubes in plastic rack in -80C freezer

Casino 4
CTD # 2
Date 7/4/2021
Area KB
Station_ID senckenberg: 65
Lat/Lon 67 6 00 N; 18 42 75W
Depth 243

ROV: water used for pushcores
Tanja: water used for experimental environment

Bottle	Sampling Depth	Layer	T CTD	T deck	User	Comment	eDNA Liters	Label	Comment	SPOM Liters	Filter	Label	Comment	Nuts Silicate	NUTS	Comment
1	238	Bottom	3.3	4.3	Tanja											
2	238	Bottom	3.3	4.5	Tanja											
3	238	Bottom	3.3	4.5	Tanja											
4	238	Bottom	3.3	4.4	Tanja											
5	238	Bottom	3.3	4.5	Lise		2	eDNA_CTD2_5		5	21_ICE_LK_9	SPOM_CTD2_5		CTD2_SI_5	CTD2_NUTS_5	
6	238	Bottom	3.3	4.6	Lise		2	eDNA_CTD2_6		5	21_ICE_LK_10	SPOM_CTD2_6		CTD2_SI_6	CTD2_NUTS_6	
7	238	Bottom	3.3	4.4	Lise		2	eDNA_CTD2_7						CTD2_SI_7	CTD2_NUTS_7	
8	238	Bottom	3.3	4.5	x											
9	150		4.1	5.0	Lise		2	eDNA_CTD2_9		5	21_ICE_LK_11	SPOM_CTD2_9		CTD2_SI_9	CTD2_NUTS_9	
10	150		4.1	5.0	Lise		2	eDNA_CTD2_10		5	21_ICE_LK_12	SPOM_CTD2_10		CTD2_SI_10	CTD2_NUTS_10	
11	150		4.1	4.9	Lise		2	eDNA_CTD2_11						CTD2_SI_11	CTD2_NUTS_11	
12	150		4.1	4.7	x											
13	60		6.3	6.7	Lise		1	eDNA_CTD2_13		5	21_ICE_LK_13	SPOM_CTD2_13		CTD2_SI_13	CTD2_NUTS_13	
14	60		6.3	6.7	Lise		1	eDNA_CTD2_14		5	21_ICE_LK_14	SPOM_CTD2_14		CTD2_SI_14	CTD2_NUTS_14	
15	60		6.3	6.4	Lise		1	eDNA_CTD2_15						CTD2_SI_15	CTD2_NUTS_15	
16	60		6.3	6.4	x											
17	30		7.1	7.0	Lise		0.6	eDNA_CTD2_17		5	21_ICE_LK_15	SPOM_CTD2_17		CTD2_SI_17	CTD2_NUTS_17	
18	30		7.1	7.0	Lise		0.6	eDNA_CTD2_18		5	21_ICE_LK_16	SPOM_CTD2_18		CTD2_SI_18	CTD2_NUTS_18	
19	30		7.1	6.9	Lise		0.6	eDNA_CTD2_19						CTD2_SI_19	CTD2_NUTS_19	
20	30		7.1	7.0	x											
21	10	Chl. Max	8.3	8.0	Lise		0.5	eDNA_CTD2_21		5	21_ICE_LK_17	SPOM_CTD2_21		CTD2_SI_21	CTD2_NUTS_21	
22	10	Chl. Max	8.3	8.0	Lise		0.5	eDNA_CTD2_22		5	21_ICE_LK_18	SPOM_CTD2_22		CTD2_SI_22	CTD2_NUTS_22	
23	10	Chl. Max	8.3	8.3	Lise		0.35	eDNA_CTD2_23						CTD2_SI_23	CTD2_NUTS_23	
24	10	Chl. Max	8.3	8.2	x											

Nutrient vials are stored in plastic bags, 1 bag per CTD. Si in 4C fridge, NUTS in -20C freezer
SPOM filters stored in petridishes, in plastic bag, 1 bag per CTD. Stored in -20C freezer
eDNA filters stored in screw-cap tubes in plastic rack in -80C freezer

Casino 8
CTD # 3
Date 7/5/2021
Area Grimsey
Station_ID senckenberg: 66
Lat/Lo 66 36 56N; 17 39 12W
Depth 400

ROV: water used for pushcores
Tanja: water used for experimental environment

	Sampling						eDNA			SPOM				Nuts		
Bottle	Depth	Layer	T CTD	T deck	User	Comment	Liters	Label	Comment	Liters	Filter	Label	Comment	Silicate	NUTS	Comment
1	395	Bottom	1.6	1.6	Nina											
2	395	Bottom	1.6	2.1	Nina											
3	395	Bottom	1.6	1.9	Tanja											
4	395	Bottom	1.6	1.7	Tanja											
5	395	Bottom	1.6	1.2	ROV											
6	395	Bottom	1.6	1.5	ROV											
7	395	Bottom	1.6	1.6	Lise		2.5	eDNA_CTD3_7		5	21_ICE_LK_19	SPOM_CTD3_7		CTD3_SI_7	CTD3_NUTS_7	
8	395	Bottom	1.6	1.8	Lise		2.5	eDNA_CTD3_8		5	21_ICE_LK_20	SPOM_CTD3_8		CTD3_SI_8	CTD3_NUTS_8	
9	395	Bottom	1.6	1.7	Lise		2.5	eDNA_CTD3_9								
10	395	Bottom	1.6	1.6	x											
11	360		2.0	1.5	Lise		2	eDNA_CTD3_11		5	21_ICE_LK_21	SPOM_CTD3_11		CTD3_SI_11	CTD3_NUTS_11	
12	360		2.0	1.6	Lise		2	eDNA_CTD3_12		5	21_ICE_LK_22	SPOM_CTD3_12		CTD3_SI_12	CTD3_NUTS_12	
13	360		2.0	1.6	Lise		2	eDNA_CTD3_13								
14	360		2.0	1.7	x											
15	220		3.9	3.5	Lise		2	eDNA_CTD3_15		5	21_ICE_LK_23	SPOM_CTD3_15		CTD3_SI_15	CTD3_NUTS_15	
16	220		3.9	3.5	Lise		2	eDNA_CTD3_16		5	21_ICE_LK_24	SPOM_CTD3_16		CTD3_SI_16	CTD3_NUTS_16	
17	220		3.9	3.6	Lise		2	eDNA_CTD3_17								
18	220		3.9	3.6	x											
19	30	Chl. Max		6.1	Lise		0.5	eDNA_CTD3_19		5	21_ICE_LK_25	SPOM_CTD3_19		CTD3_SI_19	CTD3_NUTS_19	
20	30	Chl. Max		6.1	Lise		0.4	eDNA_CTD3_20		5	21_ICE_LK_26	SPOM_CTD3_20		CTD3_SI_20	CTD3_NUTS_20	
21	30	Chl. Max		6.2	Lise		0.4	eDNA_CTD3_21								
22	30	Chl. Max		6.2	x											
23	x				x											
24	x				x											

Nutrient vials are stored in plastic bags, 1 bag per CTD. Si in 4C fridge, NUTS in -20C freezer
SPOM filters stored in petridishes, in plastic bag, 1 bag per CTD. Stored in -20C freezer
eDNA filters stored in screw-cap tubes in plastic rack in -80C freezer

Casino 13
CTD # 4
Date 7/6/2021
Area Grimsey
Station_ID senckenberg: 67
Lat/Lo 66 37 09N 17 38 97W
Depth 396

ROV: water used for pushcores
Tanja: water used for experimental environment

Bottle	Sampling Depth	Layer	T CTD	T deck	User	Comment	eDNA Liters	Label	Comment	SPOM Liters	Filter	Label	Comment	Nuts Silicate	NUTS	Comment
1	389	Bottom	1.4	1.7	Lise		2.5	eDNA_CTD4_1		5	21_ICE_LK_27	SPOM_CTD4_1		CTD4_SI_1	CTD4_NUTS_1	
2	389	Bottom	1.4	1.6	Lise		2.5	eDNA_CTD4_2		5	21_ICE_LK_28	SPOM_CTD4_2		CTD4_SI_2	CTD4_NUTS_2	
3	389	Bottom	1.4	1.4	Lise		2.5	eDNA_CTD4_3						CTD4_SI_3	CTD4_NUTS_3	
4	389	Bottom	1.4	1.4	Tanja											
5	389	Bottom	1.4	1.4	Tanja											
6	389	Bottom	1.4	1.1	Tanja											
7	389	Bottom	1.4	1.2	Tanja											
8	360		1.8	1.6	Lise		2	eDNA_CTD4_8		5	21_ICE_LK_29	SPOM_CTD4_8		CTD4_SI_8	CTD4_NUTS_8	
9	360		1.8	1.5	Lise		2	eDNA_CTD4_9		5	21_ICE_LK_30	SPOM_CTD4_9		CTD4_SI_9	CTD4_NUTS_9	
10	360		1.8	1.3	Lise		2	eDNA_CTD4_10	Copepod?							
11	360		1.8	1.6	x											
12	220		4.3	3.8	Lise		2	eDNA_CTD4_12		5	21_ICE_LK_31	SPOM_CTD4_12		CTD4_SI_12	CTD4_NUTS_12	
13	220		4.3	3.9	Lise		2	eDNA_CTD4_13		5	21_ICE_LK_32	SPOM_CTD4_13		CTD4_SI_13	CTD4_NUTS_13	
14	220		4.3	4.0	Lise		2	eDNA_CTD4_14								
15	220		4.3	4.0	x											
16	30	Chl. Max	6.9	6.5	Lise		0.5	eDNA_CTD4_16		5	21_ICE_LK_33	SPOM_CTD4_16		CTD4_SI_16	CTD4_NUTS_16	
17	30	Chl. Max	6.9	6.6	Lise		0.43	eDNA_CTD4_17		5	21_ICE_LK_34	SPOM_CTD4_17		CTD4_SI_17	CTD4_NUTS_17	
18	30	Chl. Max	6.9	6.6	Lise		0.5	eDNA_CTD4_18						CTD4_SI_18	CTD4_NUTS_18	
19	30	Chl. Max	6.9	6.6	x											
20	x				x											
21	x				x											
22	x				x											
23	x				x											
24	x				x											

Nutrient vials are stored in plastic bags, 1 bag per CTD. Si in 4C fridge, NUTS in -20C freezer
SPOM filters stored in petridishes, in plastic bag, 1 bag per CTD. Stored in -20C freezer
eDNA filters stored in screw-cap tubes in plastic rack in -80C freezer

Casino	19
CTD #	5
Date	7/7/2021
Area	KB
Station_ID	senckenberg: 68
Lat/Lo	67 5 42N 18 44 18W
Depth	230

ROV: water used for pushcores
Tanja: water used for experimental environment

	Sampling						eDNA			SPOM				Nuts		
Bottle	Depth	Layer	T CTD	T deck	User	Comment	Liters	Label	Comment	Liters	Filter	Label	Comment	Silicate	NUTS	Comment
1	230	Bottom	4.0	4.5	Lise		2	eDNA_CTD5_1		5	21_ICE_LK_35	SPOM_CTD5_1		CTD5_SI_1	CTD5_NUTS_1	
2	230	Bottom	4.0	4.2	Lise		2	eDNA_CTD5_2		5	21_ICE_LK_36	SPOM_CTD5_2		CTD5_SI_2	CTD5_NUTS_2	
3	230	Bottom	4.0	4.3	Lise		2	eDNA_CTD5_3								
4	230	Bottom	4.0	4.3	x											
5	230	Bottom	4.0	4.3	Nina											
6	230	Bottom	4.0	4.5	Nina											
7	230	Bottom	4.0	4.2	x											
8	170		4.4	4.2	Lise		2	eDNA_CTD5_8		5	21_ICE_LK_37	SPOM_CTD5_8		CTD5_SI_8	CTD5_NUTS_8	
9	170		4.4	4.1	Lise		2	eDNA_CTD5_9		5	21_ICE_LK_38	SPOM_CTD5_9		CTD5_SI_9	CTD5_NUTS_9	
10	170		4.4	4.3	Lise		2	eDNA_CTD5_10								
11	170		4.4	5.4	x											
12	70		6.0	6.4	Lise		1.5	eDNA_CTD5_12		5	21_ICE_LK_39	SPOM_CTD5_12		CTD5_SI_12	CTD5_NUTS_12	
13	70		6.0	6.4	Lise		1.5	eDNA_CTD5_13		5	21_ICE_LK_40	SPOM_CTD5_13		CTD5_SI_13	CTD5_NUTS_13	
14	70		6.0	6.4	Lise		1.5	eDNA_CTD5_14								
15	70		6.0	6.4	x											
16	10	Chl. Max	7.5	7.7	x	Bottles closed without waiting 1 min										
17	10	Chl. Max	7.5	7.5	x	Bottles closed without waiting 1 min										
18	10	Chl. Max	7.5	7.4	x	Bottles closed without waiting 1 min										
19	10	Chl. Max	7.5	7.6	x	Bottles closed without waiting 1 min										
20	10	Chl. Max	7.5	8.2	Lise		0.45	eDNA_CTD5_20		5	21_ICE_LK_41	SPOM_CTD5_20		CTD5_SI_20	CTD5_NUTS_20	
21	10	Chl. Max	7.5	8.0	Lise		0.5	eDNA_CTD5_21		5	21_ICE_LK_42	SPOM_CTD5_21		CTD5_SI_21	CTD5_NUTS_21	
22	10	Chl. Max	7.5		Lise		0.5	eDNA_CTD5_22								
23	10	Chl. Max	7.5		x											
24	x		x		x											

Nutrient vials are stored in plastic bags, 1 bag per CTD. Si in 4C fridge, NUTS in -20C freezer SPOM filters stored in petridishes, in plastic bag, 1 bag per CTD. Stored in -20C freezer eDNA filters stored in screw-cap tubes in plastic rack in -80C freezer

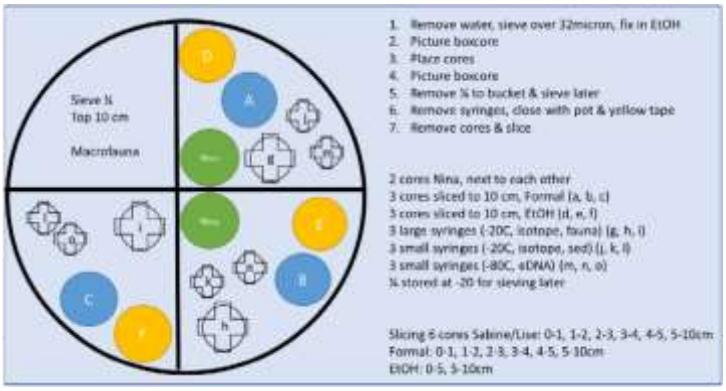
22. Boxcore/Muticore-Lists (biology)

Date	Station	Lat/Lon	Location	Depth	BC#	Gear	DB #	Fail/Success	Comment
7/7/2021	21	67 05 42N; 18 44 19W	1km west KB	220		BC		Fail	Little sediment, problem with camera
7/7/2021	22	67 05 42N; 18 44 19W	1km west KB	220		BC		Fail	Empty
7/7/2021	23	67 05 42N; 18 44 19W	1km west KB	220	1	BC	69	Succes	Black sediments
7/7/2021	24	67 05 25N; 18 46 70W	3km SW KB	245		BC		Fail	Rock
7/7/2021	25	67 05 25N; 18 46 70W	3km SW KB	245	2	BC	70	Succes	Black sediments, stones, sponges, corals, brittle stars
7/7/2021	26	67 04 57N; 18 49 33W	5km SW KB	255		BC		Fail	Empty, substrate too hard
7/10/2021	41	66 36 57N; 17 39 13W	Between C1 & C2 Grimsey			BC		Fail	Too full, remove weights for next BC
7/10/2021	42	66 36 57N; 17 39 13W	Between C1 & C2 Grimsey			BC		Fail	Too full, change to MC
7/10/2021	43	66 36 57N; 17 39 13W	Between C1 & C2 Grimsey		3	MC	130	Succes	MC, pots & syringes labeled as BC3
7/10/2021	44	66 36 57N; 17 39 13W	Between C1 & C2 Grimsey		4	MC	131	Succes	MC, syringes labeled as BC4
7/10/2021	45	66 36 57N; 17 39 13W	Between C1 & C2 Grimsey			MC	132	Succes	MC, bubbels, no syringes etc.
7/12/2021	52	66 36 43N; 17 37 88W	1 km east of Grimsey			BC		Fail	Too full, change to MC
7/12/2021	53	66 36 43N; 17 37 88W	1 km east of Grimsey			MC	133	Succes	All samples labeled as St53
7/12/2021	54	66 34 68N; 17 37 38W	3,5 km SE of Grimsey			MC	134	Succes	All samples labeled as St54

Overview:

43 2x Nina, 3x Formaldehyde, 3x Syringes, 2x EtOH, 1x -80C. 1x fail
44 2x Nina, 3x Formaldehyde, 3x Syringes, 2x EtOh, 1x -80C, 3x -20C
45 2x Nina, 3x Formaldehyde, 2x EtOH, 2x -80C, rest at -20C; cores for syringes put at -20C (cutting was impossible with bubbles/soft sediment)

53 2x Nina, 3x Formaldehyde, 2x EtOH, 3x Syringes, 2x -20C
54 2x Nina, 3x Formaldehyde, 2x EtOH, 3x Syringes, 2x -20C



Cruise	Cruisename	Year	Sample type	Purpose	Station	BC #	Subsampli	Slicing	Fixation	Jar	Storage	Sediment	Diameter	Comments
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	A	0-1cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	A	1-2cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	A	2-3cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	A	3-4cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	A	4-5cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	A	5-10cm	4% Formal	180ml pot	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	B	0-1cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	B	1-2cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	B	2-3cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	B	3-4cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	B	4-5cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	B	5-10cm	4% Formal	180ml pot	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	C	0-1cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	C	1-2cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	C	2-3cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	C	3-4cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	C	4-5cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	23	1	C	5-10cm	4% Formal	180ml pot	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_DNA	23	1	D	0-5cm	EtOH	0,5l pot, re	-20C	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_DNA	23	1	D	5-10cm	EtOH	0,5l pot, re	-20C	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_DNA	23	1	E	0-5cm	EtOH	0,5l pot, re	-20C	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_DNA	23	1	E	5-10cm	EtOH	0,5l pot, re	-20C	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_DNA	23	1	F	0-5cm	EtOH	0,5l pot, re	-20C	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_DNA	23	1	F	5-10cm	EtOH	0,5l pot, re	-20C	> 10cm	53mm	
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	23	1	G				-20C			
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	23	1	H				-20C			
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	23	1	I				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	23	1	J				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	23	1	K				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	23	1	L				-20C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	23	1	M				-80C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	23	1	N				-80C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	23	1	O				-80C			
64PE475	ICEage_Kr	2021	1/4_top10cm	Fauna_DNA	23	1		0-10cm		Bucket	-20C			

Other samples: 2 large cores for Nina, 1 small core for Peter Kraal

Cruise	Cruisename	Year	Sample type	Purpose	Station	BC #	Subsampli	Slicing	Fixation	Jar	Storage	Sediment	Diameter	Comments
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	A	0-1cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	A	1-2cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	A	2-3cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	A	3-4cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	A	4-5cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	A	5-10cm	4% Formal	180ml pot	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	B	0-1cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	B	1-2cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	B	2-3cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	B	3-4cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	B	4-5cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	B	5-10cm	4% Formal	180ml pot	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	C	0-1cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	C	1-2cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	C	2-3cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	C	3-4cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	C	4-5cm	4% Formal	60ml pot,	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_morph	25	2	C	5-10cm	4% Formal	180ml pot	Outside, b	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_DNA	25	2	D	0-5cm	EtOH	0,5l pot, re	-20C	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_DNA	25	2	D	5-10cm	EtOH	0,5l pot, re	-20C	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_DNA	25	2	E	0-5cm	EtOH	0,5l pot, re	-20C	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_DNA	25	2	E	5-10cm	EtOH	0,5l pot, re	-20C	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_DNA	25	2	F	0-5cm	EtOH	0,5l pot, re	-20C	> 10cm	53mm	
64PE475	ICEage_KR	2021	Pushcore	Fauna_DNA	25	2	F	5-10cm	EtOH	0,5l pot, re	-20C	> 10cm	53mm	
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	25	2	G				-20C			
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	25	2	H				-20C			
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	25	2	I				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	25	2	J				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	25	2	K				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	25	2	L				-20C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	25	2	M				-80C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	25	2	N				-80C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	25	2	O				-80C			
64PE475	ICEage_Kr	2021	1/4_top10cm	Fauna_DNA	25	2		0-10cm		Bucket	-20C			

Other samples: 1 large & 1 small cores for Nina, 1 small for Peter Kraal

Cruise	Cruisename	Year	Sample type	Purpose	Station	Core#	BC #	Subsampli	Slicing	Fixation	Jar	Storage	Sediment	Diameter	Comments
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	43	1		A	0-1cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	43	1		A	1-2cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	43	1		A	2-3cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	43	1		A	3-4cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	43	1		A	4-5cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	43	1		A	5-10cm	4% Formal	0,5l pot, re	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	43	2		B	0-1cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	43	2		B	1-2cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	43	2		B	2-3cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	43	2		B	3-4cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	43	2		B	4-5cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	43	2		B	5-10cm	4% Formal	0,5l pot, re	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	43	3		C	0-1cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	43	3		C	1-2cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	43	3		C	2-3cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	43	3		C	3-4cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	43	3		C	4-5cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	43	3		C	5-10cm	4% Formal	0,5l pot, re	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_4	Fauna_DNA	43	4		D	0-5cm	EtOH	1l pot, red	-20C	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_4	Fauna_DNA	43	4		D	5-10cm	EtOH	1l pot, red	-20C	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_5	Fauna_DNA	43	5		E	0-5cm	EtOH	1l pot, red	-20C	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_5	Fauna_DNA	43	5		E	5-10cm	EtOH	1l pot, red	-20C	> 10cm	100mm	
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	43	6	3	G				-20C			
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	43	7	3	H				-20C			
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	43	8	3	I				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	43	6	3	J				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	43	7	3	K				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	43	8	3	L				-20C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	43	6	3	M				-80C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	43	7	3	N				-80C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	43	8	3	O				-80C			
64PE475	ICEage_Kr	2021	Multicore_9	Other	23	9						-80C			

Other samples: 2 cores for Nina (10&11), 1 core failed

Cruise	Cruisename	Year	Sample type	Purpose	Station	Core#	BC #	Subsampli	Slicing	Fixation	Jar	Storage	Sediment	Diameter	Comments
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	44	1		A	0-5cm	4% Formal	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	44	1		A	5-10cm	4% Formal	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	44	2		B	0-5cm	4% Formal	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	44	2		B	5-10cm	4% Formal	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	44	3		C	0-5cm	4% Formal	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	44	3		C	5-10cm	4% Formal	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_4	Fauna_DNA	44	4		D	0-5cm	EtOH	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_4	Fauna_DNA	44	4		D	5-10cm	EtOH	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_5	Fauna_DNA	44	5		E	0-5cm	EtOH	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_5	Fauna_DNA	44	5		E	5-10cm	EtOH	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	44	6	4	G				-20C			
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	44	7	4	H				-20C			
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	44	8	4	I				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	44	6	4	J				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	44	7	4	K				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	44	8	4	L				-20C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	44	6	4	M				-80C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	44	7	4	N				-80C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	44	8	4	O				-80C			
64PE475	ICEage_Kr	2021	Multicore_9	Other	44	9						-80C			
64PE475	ICEage_Kr	2021	Multicore_10	Other	44	10						-80C			

Other samples: 2 cores for Nina (11&12)

Cruise	Cruisename	Year	Sample type	Purpose	Station	Core#	BC #	Subsampli	Slicing	Fixation	Jar	Storage	Sediment	Diameter	Comments
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	45	1		A	0-5cm	4% Formal	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	45	1		A	5-10cm	4% Formal	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	45	2		B	0-5cm	4% Formal	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	45	2		B	5-10cm	4% Formal	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	45	3		C	0-5cm	4% Formal	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	45	3		C	5-10cm	4% Formal	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_4	Fauna_DNA	45	4		D	0-5cm	EtOH	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_4	Fauna_DNA	45	4		D	5-10cm	EtOH	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_5	Fauna_DNA	45	5		E	0-5cm	EtOH	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_5	Fauna_DNA	45	5		E	5-10cm	EtOH	Bucket	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_6	Isotope/eDNA	45	6						-20C			Cores for syringes
64PE475	ICEage_KR	2021	Multicore_7	Isotope/eDNA	45	7						-20C			Cores for syringes
64PE475	ICEage_KR	2021	Multicore_8	Isotope/eDNA	45	8						-20C			Cores for syringes
64PE475	ICEage_Kr	2021	Multicore_9	Other	45	9						-80C			
64PE475	ICEage_Kr	2021	Multicore_10	Other	45	10						-80C			

Other samples: 2 cores for Nina (11&12)

Cruise	Cruisename	Year	Sample type	Purpose	Station	Core#	BC #	Subsampli	Slicing	Fixation	Jar	Storage	Sediment	Diameter	Comments
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	53	1		A	0-1cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	53	1		A	1-2cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	53	1		A	2-3cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	53	1		A	3-4cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	53	1		A	4-5cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	53	1		A	5-10cm	4% Formal	0,5l pot, re	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	53	2		B	0-1cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	53	2		B	1-2cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	53	2		B	2-3cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	53	2		B	3-4cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	53	2		B	4-5cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	53	2		B	5-10cm	4% Formal	0,5l pot, re	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	53	3		C	0-1cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	53	3		C	1-2cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	53	3		C	2-3cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	53	3		C	3-4cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	53	3		C	4-5cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	53	3		C	5-10cm	4% Formal	0,5l pot, re	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_4	Fauna_DNA	53	4		D	0-3cm	EtOH	0,5l pot, re	-20C	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_4	Fauna_DNA	53	4		D	3-6cm	EtOH	0,5l pot, re	-20C	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_4	Fauna_DNA	53	4		D	6-10cm	EtOH	0,5l pot, re	-20C	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_5	Fauna_DNA	53	5		E	0-3cm	EtOH	0,5l pot, re	-20C	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_5	Fauna_DNA	53	5		E	3-6cm	EtOH	0,5l pot, re	-20C	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_5	Fauna_DNA	53	5		E	6-10cm	EtOH	0,5l pot, re	-20C	> 10cm	100mm	
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	53	6	3	G				-20C			
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	53	7	3	H				-20C			
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	53	8	3	I				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	53	6	3	J				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	53	7	3	K				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	53	8	3	L				-20C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	53	6	3	M				-80C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	53	7	3	N				-80C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	53	8	3	O				-80C			
64PE475	ICEage_Kr	2021	Multicore_9	Other	53	9						-20C			
64PE475	ICEage_Kr	2021	Multicore_10	Other	53	10						-20C			

Other samples: 2 cores for Nina (11&12)

Cruise	Cruisename	Year	Sample type	Purpose	Station	Core#	BC #	Subsampli	Slicing	Fixation	Jar	Storage	Sediment	Diameter	Comments
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	54	1		A	0-1cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	54	1		A	1-2cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	54	1		A	2-3cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	54	1		A	3-4cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	54	1		A	4-5cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_1	Fauna_morph	54	1		A	5-10cm	4% Formal	0,5l pot, re	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	54	2		B	0-1cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	54	2		B	1-2cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	54	2		B	2-3cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	54	2		B	3-4cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	54	2		B	4-5cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_2	Fauna_morph	54	2		B	5-10cm	4% Formal	0,5l pot, re	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	54	3		C	0-1cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	54	3		C	1-2cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	54	3		C	2-3cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	54	3		C	3-4cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	54	3		C	4-5cm	4% Formal	180ml pot	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_3	Fauna_morph	54	3		C	5-10cm	4% Formal	0,5l pot, re	Outside	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_4	Fauna_DNA	54	4		D	0-3cm	EtOH	0,5l pot, re	-20C	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_4	Fauna_DNA	54	4		D	3-6cm	EtOH	0,5l pot, re	-20C	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_4	Fauna_DNA	54	4		D	6-10cm	EtOH	0,5l pot, re	-20C	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_5	Fauna_DNA	54	5		E	0-3cm	EtOH	0,5l pot, re	-20C	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_5	Fauna_DNA	54	5		E	3-6cm	EtOH	0,5l pot, re	-20C	> 10cm	100mm	
64PE475	ICEage_KR	2021	Multicore_5	Fauna_DNA	54	5		E	6-10cm	EtOH	0,5l pot, re	-20C	> 10cm	100mm	
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	54	6	3	G				-20C			
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	54	7	3	H				-20C			
64PE475	ICEage_KR	2021	Large syringe	Isotope_fauna	54	8	3	I				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	54	6	3	J				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	54	7	3	K				-20C			
64PE475	ICEage_Kr	2021	Small syringe	Isotope_sed	54	8	3	L				-20C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	54	6	3	M				-80C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	54	7	3	N				-80C			
64PE475	ICEage_Kr	2021	Small syringe	eDNA	54	8	3	O				-80C			
64PE475	ICEage_Kr	2021	Multicore_9	Other	54	9						-20C			
64PE475	ICEage_Kr	2021	Multicore_10	Other	54	10						-20C			

Other samples: 2 cores for Nina (11&12)

23. Samples (IceAGE database)

Kautexe

Bord_kautex_ID	Bord_sampling_ID	gear	number of	jar	volum	comment_kautex	station	cast	sample unit1	sample unit2	fixed first
1	2	ROV	1 von 3	Bag		Bacterial Mat Rock	2	1	P1		dry
2	2	ROV	2 von 3	Bag		Bacterial Mat Rock	2	1	P1		dry
3	2	ROV	3 von 3	Bag		Bacterial Mat Rock	2	1	P1		dry
4	2	ROV	1 von 1	Kautex	200 ml	Uberstand	2	1	P1		96% EtOH undenatured
5	3	ROV	1 von 1	Kautex	50 ml	Community from rock	2	2	S1	sep. animals	4% Formaldehyd
6	3	ROV	1 von 1	Kautex	50 ml	10x Sponges	2	2	S1	sep. animals	-80°C
7	3	ROV	1 von 2	Kautex	200 ml	Uberstand	2	2	S1	1000µm	96% EtOH undenatured
8	3	ROV	2 von 2	Kautex	200 ml	Uberstand	2	2	S1	1000µm	96% EtOH undenatured
9	3	ROV	1 von 1	Kautex	200 ml	Uberstand	2	2	S1	32µm	96% EtOH undenatured

10	4	ROV	1 von 1	Kautex	50 ml	Sample Community from rock	2	3	S2	sep. animals	96% EtOH undenatured
11	4	ROV	1 von 1	Kautex	200 ml	Uberstand	2	3	S2	32µm	96% EtOH undenatured
12	4	ROV	1 von 2	Kautex	200 ml	Uberstand	2	3	S2	1000µm	96% EtOH undenatured
13	4	ROV	2 von 2	Kautex	200 ml	Uberstand	2	3	S2	1000µm	96% EtOH undenatured
14	5	ROV	1 von 2	Bag		Rock - much bio removed	2	8	S3-A		-20°C
15	5	ROV	2 von 2	Bag		Rock - much biology removed	2	8	S3-A		-20°C
16	5	ROV	1 von 2	Kautex	200 ml	Sponges (1)	2	8	S3-A	sep. animals	4% Formaldehyd
17	5	ROV	2 von 2	Kautex	200 ml	Sponges (2)	2	8	S3-A	sep. animals	4% Formaldehyd
18	5	ROV	1 von 1	Kautex	1000 ml	Uberstand	2	8	S3-A	1000µm	4% Formaldehyd

19	5	ROV	1 von 1	Kautex	200 ml	Uberstand	2	8	S3-A	32µm	4% Formaldehyd
20	6	ROV	1 von 1	Kautex	250 ml	Uberstand	2	10	S4-A	32µm	4% Formaldehyd
21	6	ROV	1 von 1	Kautex	250 ml	Uberstand	2	10	S4-A	1000µm	4% Formaldehyd
22	6	ROV	1 von 1	Kautex	100 ml	Sponges	2	10	S4-A	sep. animals	4% Formaldehyd
23	6	ROV	1 von 1	Bag		Rock	2	10	S4-A		-20°C
24	7	ROV	1 von 1	Bag		2x Rocks + community	2	12	P2		-20°C
25	7	ROV	1 von 2	Kautex	100 ml	Rock Community	2	12	P2	sep. animals	4% Formaldehyd
26	7	ROV	2 von 2	Kautex	100 ml	Rock Community	2	12	P2	sep. animals	4% Formaldehyd
27	8	ROV	1 von 1	Kautex	200 ml	Uberstand	2	14	P2	32µm	96% EtOH undenatured
28	3	ROV	1 von 1	Bag		Anthozoans - 2 ind.	2	2	S1	sep. animals	-20°C
29	3	ROV	1 von 1	Bag		Ascidians	2	2	S1	sep. animals	-20°C

30	3	ROV	1 von 1	Alu Bag		2x Rock	2	2	S1		-80°C
31	9	ROV	1 von 6	Epi	2ml	Bac mat sed	5	4	P2	Net	4% Formaldehyd
32	9	ROV	2 von 6	Epi	2ml	Bac mat sed	5	4	P2	Net	4% Formaldehyd
33	9	ROV	3 von 6	Epi	2ml	Bac mat sed	5	4	P2	Net	4% Formaldehyd
34	9	ROV	4 von 6	Epi	2ml	Bac mat sed	5	4	P2	Net	4% Formaldehyd
35	9	ROV	5 von 6	Epi	2ml	Bac mat sed	5	4	P2	Net	4% Formaldehyd
36	9	ROV	6 von 6	Epi	2ml	Bac mat sed	5	4	P2	Net	4% Formaldehyd
38	9	ROV	1 von 6	Bag		Bac mat sed	5	4	P2	Net	4
39	9	ROV	2 von 6	Bag		Bac mat sed	5	4	P2	Net	4
40	9	ROV	3 von 6	Bag		Bac mat sed	5	4	P2	Net	4
41	9	ROV	4 von 6	Bag		Bac mat sed	5	4	P2	Net	4
42	9	ROV	5 von 6	Bag		Bac mat sed	5	4	P2	Net	4

43	9	ROV	6 von 6	Bag		Bac mat sed	5	4	P2	Net	4
44	9	ROV	1 von 6	Bag		Bac mat sed	5	4	P2	Net	-80°C
45	9	ROV	2 von 6	Bag		Bac mat sed	5	4	P2	Net	-80°C
46	9	ROV	3 von 6	Bag		Bac mat sed	5	4	P2	Net	-80°C
47	9	ROV	4 von 6	Bag		Bac mat sed	5	4	P2	Net	-80°C
48	9	ROV	5 von 6	Bag		Bac mat sed	5	4	P2	Net	-80°C
49	9	ROV	6 von 6	Bag		Bac mat sed	5	4	P2	Net	-80°C
50	9	ROV	1 von 1	Kautex	200 ml	Uberstand	5	4	P2	32µm	96% EtOH undenatured
51	9	ROV	1 von 3	Kautex	200 ml	Sediment	5	4	P2	Net	96% EtOH undenatured
52	9	ROV	2 von 3	Kautex	200 ml	Sediment	5	4	P2	Net	96% EtOH undenatured
53	9	ROV	3 von 3	Kautex	200 ml	Sediment	5	4	P2	Net	96% EtOH undenatured
54	9	ROV	1 von 3	Kautex	200 ml	Sediment	5	4	P2	Net	4% Formaldehyd

55	9	ROV	2 von 3	Kautex	200 ml	Sediment	5	4	P2	Net	4% Formaldehyd
56	9	ROV	3 von 3	Kautex	200 ml	Sediment	5	4	P2	Net	4% Formaldehyd
57	9	ROV	1 von 1	Alu Bag		Bac Mat Sed	5	4	P2	Net	-80°C
58	10	ROV	1 von 1	Bag		Rock	6	5	S4-A		-20°C
59	10	ROV	1 von 1	Kautex	200 ml	Uberstand	6	5	S4-A	1000µm	4% Formaldehyd
60	10	ROV	1 von 1	Kautex	200 ml	Uberstand	6	5	S4-A	32µm	4% Formaldehyd
61	11	ROV	1 von 1	Bag		Rock	6	6	S4-B		-20°C
62	11	ROV	1 von 1	Kautex	200 ml	Uberstand	6	6	S4-B	1000µm	96% EtOH undenatured
63	11	ROV	1 von 1	Kautex	200 ml	Uberstand	6	6	S4-B	32µm	96% EtOH undenatured
64	12	ROV	1 von 1	Bag		Rock	6	7	S3-A		-20°C
65	12	ROV	1 von 1	Kautex	200 ml	Uberstand	6	7	S3-A	1000µm	4% Formaldehyd
66	12	ROV	1 von 1	Kautex	200 ml	Uberstand	6	7	S3-A	32µm	4% Formaldehyd
68	14	ROV	1 von 1	Bag		Rock	6	8	S3-B		-20°C

69	14	ROV	1 von 1	Kautex	200 ml	Uberstand	6	8	S3-B	1000µm	4% Formaldehyd
70	14	ROV	1 von 1	Kautex	200 ml	Uberstand-	6	8	S3-B	32µm	4% Formaldehyd
71	15	ROV	1 von 1	Kautex	800 ml	Whole Sample	6	9	S2		96% EtOH undenatured
72	16	ROV	1 von 1	Bag		Sponge	6	12	P4-A		-80°C
73	17	ROV	1 von 2	Kautex	200 ml	Sediment	6	15	P2	1000µm	4% Formaldehyd
74	17	ROV	2 von 2	Kautex	200 ml	Sediment	6	15	P2	1000µm	4% Formaldehyd
75	17	ROV	1 von 2	Kautex	200 ml	Sediment	6	15	P2	1000µm	96% EtOH undenatured
76	17	ROV	2 von 2	Kautex	200 ml	Sediment	6	15	P2	1000µm	96% EtOH undenatured
77	17	ROV	1 von 1	Kautex	50 ml	Uberstand	6	15	P2	32µm	96% EtOH undenatured
78	17	ROV	1 von 1	Alu Bag		Sediment/gravel	6	15	P2		-80°C
79	17	ROV	1 von 5	Bag		Sediment	6	15	P2		4

80	17	ROV	2 von 5	Bag		Sediment	6	15	P2		4
81	17	ROV	3 von 5	Bag		Sediment	6	15	P2		4
82	17	ROV	4 von 5	Bag		Sediment	6	15	P2		4
83	17	ROV	5 von 5	Bag		Sediment	6	15	P2		4
84	17	ROV	1 von 5	Bag		Sediment	6	15	P2		-80°C
85	17	ROV	2 von 5	Bag		Sediment	6	15	P2		-80°C
86	17	ROV	3 von 5	Bag		Sediment	6	15	P2		-80°C
87	17	ROV	4 von 5	Bag		Sediment	6	15	P2		-80°C
88	17	ROV	5 von 5	Bag		Sediment	6	15	P2		-80°C
89	17	ROV	1 von 5	Epi	2ml	Sediment	6	15	P2		-20°C
90	17	ROV	2 von 5	Epi	2ml	Sediment	6	15	P2		-20°C
91	17	ROV	3 von 5	Epi	2ml	Sediment	6	15	P2		-20°C
92	17	ROV	4 von 5	Epi	2ml	Sediment	6	15	P2		-20°C
93	17	ROV	5 von 5	Epi	2ml	Sediment	6	15	P2		-20°C

94	18	ROV	1 von 1	Kautex	250 ml	1mm Assorted Animals	9	1	P3-A	sep. animals	96% EtOH undenatured
95	18	ROV	1 von 1	Kautex	50 ml	32 micro Assorted Animals	9	1	P3-A	sep. animals	96% EtOH undenatured
96	19	ROV	1 von 5	Epi	2 ml	Sediment	9	2	P2		4
97	19	ROV	2 von 5	Epi	2 ml	Sediment	9	2	P2		4
98	19	ROV	3 von 5	Epi	2 ml	Sediment	9	2	P2		4
99	19	ROV	4 von 5	Epi	2 ml	Sediment	9	2	P2		4
100	19	ROV	5 von 5	Epi	2 ml	Sediment	9	2	P2		4
101	19	ROV	1 von 3	Bag		Sediment	9	2	P2		4
102	19	ROV	2 von 3	Bag		Sediment	9	2	P2		4
103	19	ROV	3 von 3	Bag		Sediment	9	2	P2		4
104	19	ROV	1 von 3	Bag		Sediment	9	2	P2		-80°C
105	19	ROV	2 von 3	Bag		Sediment	9	2	P2		-80°C
106	19	ROV	3 von 3	Bag		Sediment	9	2	P2		-80°C

107	19	ROV	1 von 1	Kautex	50 ml	Uberstand	9	2	P2	1000µm	96% EtOH undenatured
108	19	ROV	1 von 1	Kautex	200 ml	Uberstand	9	2	P2	32µm	96% EtOH undenatured
109	19	ROV	1 von 1	Kautex	1000 ml	Sediment Uberstand	9	2	P2		4% Formaldehyd
110	19	ROV	1 von 1	Kautex	1000 ml	Sediment Uber	9	2	P2		96% EtOH undenatured
111	19	ROV	1 von 1	Alu Bag		Sediment	9	2	P2		-80°C
112	18	ROV	1 von 1	Bag		Rock Hydrothermal	9	1	P3-A		-20°C
113	18	ROV	1 von 1	Kautex	200 ml	Uberstand	9	1	P3-A	1000µm	4% Formaldehyd
114	18	ROV	1 von 1	Kautex	200 ml	Uberstand	9	1	P3-A	32µm	4% Formaldehyd
115	18	ROV	1 von 1	Kautex	200 ml	Uberstand	9	1	P3-A	1000µm	96% EtOH undenatured
116	18	ROV	1 von 1	Kautex	200 ml	Uberstand	9	1	P3-A	32µm	96% EtOH undenatured

117	20	ROV	1 von 5	Epi	2 ml	Sediment	9	3	P1		4
118	20	ROV	2 von 5	Epi	2 ml	Sediment	9	3	P1		4
119	20	ROV	3 von 5	Epi	2 ml	Sediment	9	3	P1		4
120	20	ROV	4 von 5	Epi	2 ml	Sediment	9	3	P1		4
121	20	ROV	5 von 5	Epi	2 ml	Sediment	9	3	P1		4
122	20	ROV	1 von 3	Bag		Sediment	9	3	P1		4
123	20	ROV	2 von 3	Bag		Sediment	9	3	P1		4
124	20	ROV	3 von 3	Bag		Sediment	9	3	P1		4
125	20	ROV	1 von 3	Bag		Sediment	9	3	P1		-80°C
126	20	ROV	2 von 3	Bag		Sediment	9	3	P1		-80°C
127	20	ROV	3 von 3	Bag		Sediment	9	3	P1		-80°C
128	20	ROV	1 von 1	Kautex	50 ml	Uberstand	9	3	P1	1000µm	96% EtOH undenatured
129	20	ROV	1 von 1	Kautex	50 ml	Uberstand	9	3	P1	32µm	96% EtOH undenatured

130	20	ROV	1 von 1	Kautex	1000 ml	Sediment Uberstand	9	3	P1		4% Formaldehyd
131	20	ROV	1 von 1	Kautex	1000 ml	Sediment Uberstand	9	3	P1		96% EtOH undenatured
132	20	ROV	1 von 1	Alu Bag		Sediment	9	3	P1		-80°C
133	21	ROV	1 von 1	Kautex	200 ml	Uberstand	9	4	P4-A	1000µm	4% Formaldehyd
134	21	ROV	1 von 1	Kautex	200 ml	Uberstand	9	4	P4-A	32µm	4% Formaldehyd
135	21	ROV	1 von 1	Kautex	200 ml	Uberstand	9	4	P4-A	1000µm	96% EtOH undenatured
136	21	ROV	1 von 1	Kautex	200 ml	Uberstand	9	4	P4-A	32µm	96% EtOH undenatured
137			1 von 1	Bag		Rock - Hydrothermal			P4-B		-20°C
138	22	ROV	1 von 1	Kautex	50 ml	Uberstand	9	5	P4-B	1000µm	4% Formaldehyd

139	22	ROV	1 von 1	Kautex	50 ml	Uberstand	9	5	P4-B	32µm	4% Formaldehyd
140	22	ROV	1 von 1	Kautex	50 ml	Uberstand	9	5	P4-B	1000µm	96% EtOH undenatured
141	22	ROV	1 von 1	Kautex	50 ml	Uberstand	9	5	P4-B	32µm	96% EtOH undenatured
142	23	ROV	1 von 1	Kautex	50 ml	Uberstand	9	6	S2	1000µm	96% EtOH undenatured
143	23	ROV	1 von 1	Kautex	50 ml	Uberstand	9	6	S2	32µm	96% EtOH undenatured
144	24	ROV	1 von 1	Bag		Rock - Hydrothermal	9	7	S3-B		-20°C
145	24	ROV	1 von 1	Kautex	50 ml	Uberstand	9	7	S3-B	32µm	96% EtOH undenatured
146	24	ROV	1 von 1	Kautex	200 ml	Uberstand	9	7	S3-B	1000µm	96% EtOH undenatured
147	25	ROV	1 von 1	Bag		Rocks - Hydrothermal	9	9	S4-B		-20°C
148	25	ROV	1 von 1	Kautex	50 ml	Uberstand	9	9	S4-B	1000µm	4% Formaldehyd

149	25	ROV	1 von 1	Kautex	50 ml	Uberstand	9	9	S4-B	32µm	4% Formaldehyd
150	26	ROV	1 von 1	Bag		Rock - Hydrothermal	9	10	S4-A		-20°C
151	26	ROV	1 von 1	Kautex	50 ml	Uberstand	9	10	S4-A	1000µm	4% Formaldehyd
152	26	ROV	1 von 1	Kautex	50 ml	Uberstand	9	10	S4-A	32µm	4% Formaldehyd
153	27	ROV	1 von 1	Kautex	250 ml	Uberstand Water	6	4	S3-B		96% EtOH undenatured
157	29	ROV	1 von 2	Kautex	200 ml	Sediment	14	1	S1		4% Formaldehyd
158	29	ROV	2 von 2	Kautex	200 ml	Sediment	14	1	S1		4% Formaldehyd
159	29	ROV	1 von 2	Kautex	200 ml	Sediment	14	1	S1		96% EtOH undenatured
160	29	ROV	2 von 2	Kautex	200 ml	Sediment	14	1	S1		96% EtOH undenatured
161	29	ROV	1 von 4	Bag		Sed Bac Mat	14	1	S1		4

162	29	ROV	2 von 4	Bag		Sed Bac Mat	14	1	S1		4
163	29	ROV	3 von 4	Bag		Sed Bac Mat	14	1	S1		4
164	29	ROV	4 von 4	Bag		Sed Bac Mat	14	1	S1		4
165	29	ROV	1 von 4	Bag		Sed Bac Mat	14	1	S1		-80°C
166	29	ROV	2 von 4	Bag		Sed Bac Mat	14	1	S1		-80°C
167	29	ROV	3 von 4	Bag		Sed Bac Mat	14	1	S1		-80°C
168	29	ROV	4 von 4	Bag		Sed Bac Mat	14	1	S1		-80°C
169	29	ROV	1 von 5	Epi		Sed Bac Mat	14	1	S1		-20°C
170	29	ROV	2 von 5	Epi		Sed Bac Mat	14	1	S1		-20°C
171	29	ROV	3 von 5	Epi		Sed Bac Mat	14	1	S1		-20°C
172	29	ROV	4 von 5	Epi		Sed Bac Mat	14	1	S1		-20°C
173	29	ROV	5 von 5	Epi		Sed Bac Mat	14	1	S1		-20°C
174	30	ROV	1 von 3	Bag		Sed bac mat close to chimney	14	2	S2		4

175	30	ROV	2 von 3	Bag		Sed bac mat close to chimney	14	2	S2		4
176	30	ROV	3 von 3	Bag		Sed bac mat close to chimney	14	2	S2		4
177	30	ROV	1 von 5	Epi		Sed bac mat close to chimney	14	2	S2		-20°C
178	30	ROV	2 von 5	Epi		Sed bac mat close to chimney	14	2	S2		-20°C
179	30	ROV	3 von 5	Epi		Sed bac mat close to chimney	14	2	S2		-20°C
180	30	ROV	4 von 5	Epi		Sed bac mat close to chimney	14	2	S2		-20°C
181	30	ROV	5 von 5	Epi		Sed bac mat close to chimney	14	2	S2		-20°C

183	30	ROV	1 von 1	Kautex	50 ml	Uberstand	14	2	S2	1000µm	4% Formaldehyd
184	30	ROV	1 von 1	Kautex	50 ml	Uberstand	14	2	S2	32µm	4% Formaldehyd
185	30	ROV	1 von 1	Kautex	50 ml	Uberstand	14	2	S2	1000µm	96% EtOH undenatured
186	30	ROV	1 von 1	Kautex	50 ml	Uberstand	14	2	S2	32µm	96% EtOH undenatured
187	31	ROV	1 von 1	Bag		Rocks	14	7	S3-B		-20°C
188	31	ROV	1 von 1	Kautex	200 ml	Uberstand	14	7	S3-B	1000µm	4% Formaldehyd
189	31	ROV	1 von 1	Kautex	200 ml	Uberstand	14	7	S3-B	32µm	4% Formaldehyd
190	32	ROV	1 von 1	Bag		Rock	14	8	S3-A		-20°C
191	32	ROV	1 von 1	Kautex	200 ml	Uberstand	14	8	S3-A	1000µm	4% Formaldehyd
192	32	ROV	1 von 1	Kautex	200 ml	Uberstand	14	8	S3-A	32µm	4% Formaldehyd
193	33	ROV	1 von 1	Bag		Rock	14	9	S4-B		-20°C
194	33	ROV	1 von 1	Kautex	200 ml	Uberstand	14	9	S4-B	1000µm	96% EtOH undenatured

195	33	ROV	1 von 1	Kautex	200 ml	Uberstand	14	9	S4-B	32µm	96% EtOH undenatured
196	34	ROV	1 von 1	Bag		Rocks	14	10	S4-A		-20°C
197	34	ROV	1 von 1	Kautex	200 ml	Uberstand	14	10	S4-A	1000µm	4% Formaldehyd
198	34	ROV	1 von 1	Kautex	200 ml	Uberstand	14	10	S4-A	32µm	4% Formaldehyd
199	35	ROV	1 von 1	Kautex	50 ml	Larger Animals	14	11	P1	sep. animals	96% EtOH undenatured
200	35	ROV	1 von 1	Kautex	50 ml	Uberstand	14	11	P1	1000µm	96% EtOH undenatured
201	35	ROV	1 von 1	Kautex	50 ml	Uberstand	14	11	P1	32µm	96% EtOH undenatured
202	35	ROV	1 von 1	Kautex	50 ml	Uberstand	14	11	P1	1000µm	4% Formaldehyd
203	35	ROV	1 von 1	Kautex	50 ml	Uberstand	14	11	P1	32µm	4% Formaldehyd
204	35	ROV	1 von 1	Bag		Craniliella Sponge	14	11	P1	sep. animals	-80°C
205	36	ROV	1 von 1	Bag		Large Animals	14	12	P2		-20°C

206	36	ROV	1 von 1	Kautex	200 ml	Uberstand	14	12	P2	1000µm	4% Formaldehyd
207	36	ROV	1 von 1	Kautex	200 ml	Uberstand	14	12	P2	32µm	4% Formaldehyd
208	36	ROV	1 von 1	Kautex	200 ml	Uberstand	14	12	P2	1000µm	96% EtOH undenatured
209	36	ROV	1 von 1	Kautex	200 ml	Uberstand	14	12	P2	32µm	96% EtOH undenatured
210	37	ROV	1 von 1	Kautex	200 ml	Push core leftovers	14	13	push core		96% EtOH undenatured
211	37	ROV	1 von 2	Bag		Rocks - hydrothermal	14	13	push core		4
212	37	ROV	2 von 2	Bag		Rocks - hydrothermal	14	13	push core		4
213	29	ROV	1 von 1	Alu Bag		Sediment	14	1	S1		-80°C
214	36	ROV	1 von 1	Alu Bag		Sediment	14	12	P2		-80°C
215	38	ROV	1 von 1	Kautex	200 ml	Uberstand	35	4	S2	1000µm	4% Formaldehyd

216	38	ROV	1 von 1	Kautex	200 ml	Uberstand	35	4	S2	32µm	4% Formaldehyd
217	38	ROV	1 von 1	Kautex	50 ml	Uberstand	35	4	S2	1000µm	-20°C
218	38	ROV	1 von 1	Kautex	50 ml	Uberstand	35	4	S2	32µm	-20°C
219	38	ROV	1 von 1	Kautex	200 ml	Uberstand	35	4	S2	1000µm	96% EtOH undenatured
220	38	ROV	1 von 1	Kautex	200 ml	Uberstand	35	4	S2	32µm	96% EtOH undenatured
221	39	ROV	1 von 1	Kautex	50 ml	Uberstand	35	5	P1	1000µm	-20°C
222	39	ROV	1 von 1	Kautex	50 ml	Uberstand	35	5	P1	32µm	-20°C
223	39	ROV	1 von 1	Kautex	200 ml	Uberstand	35	5	P1	1000µm	4% Formaldehyd
224	39	ROV	1 von 1	Kautex	200 ml	Uberstand	35	5	P1	32µm	4% Formaldehyd
225	39	ROV	1 von 1	Kautex	200 ml	Uberstand	35	5	P1	1000µm	96% EtOH undenatured
226	39	ROV	1 von 1	Kautex	200 ml	Uberstand	35	5	P1	32µm	96% EtOH undenatured
227	39	ROV	1 von 1	Bag		2x rocks	35	5	P1		4

228	39	ROV	1 von 1	Bag		Rock	35	5	P1		4
229	40	ROV	1 von 1	Kautex	200 ml	Uberstand	35	6	S1	sieved rest	96% EtOH undenatured
230	40	ROV	1 von 1	Alu Bag		Sediment	35	6	S1		-80°C
231	40	ROV	1 von 3	Kautex	200 ml	Sediment	35	6	S1		-20°C
232	40	ROV	2 von 3	Kautex	200 ml	Sediment	35	6	S1		-20°C
233	40	ROV	3 von 3	Kautex	200 ml	Sediment	35	6	S1		-20°C
234	40	ROV	1 von 3	Kautex	200 ml	Sediment	35	6	S1		4% Formaldehyd
235	40	ROV	2 von 3	Kautex	200 ml	Sediment	35	6	S1		4% Formaldehyd
236	40	ROV	3 von 3	Kautex	200 ml	Sediment	35	6	S1		4% Formaldehyd
237	40	ROV	1 von 3	Kautex	200 ml	Sediment	35	6	S1		96% EtOH undenatured
238	40	ROV	1 von 3	Kautex	200 ml	Sediment	35	6	S1		96% EtOH undenatured
239	40	ROV	1 von 3	Kautex	200 ml	Sediment	35	6	S1		96% EtOH undenatured

240	40	ROV	1 von 3	Bag		Sediment	35	6	S1		4
241	40	ROV	2 von 3	Bag		Sediment	35	6	S1		4
242	40	ROV	3 von 3	Bag		Sediment	35	6	S1		4
243	40	ROV	1 von 3	Bag		Sediment	35	6	S1		-80°C
244	40	ROV	2 von 3	Bag		Sediment	35	6	S1		-80°C
245	40	ROV	3 von 3	Bag		Sediment	35	6	S1		-80°C
246	40	ROV	1 von 5	Epi		Sediment	35	6	S1		4
247	40	ROV	2 von 5	Epi		Sediment	35	6	S1		4
248	40	ROV	3 von 5	Epi		Sediment	35	6	S1		4
249	40	ROV	4 von 5	Epi		Sediment	35	6	S1		4
250	40	ROV	5 von 5	Epi		Sediment	35	6	S1		4
251	41	ROV	1 von 1	Kautex	200 ml	Uberstand	35	7	S2	sieved rest	96% EtOH undenatured
252	41	ROV	1 von 1	Alu Bag		Uberstand	35	7	S2		-80°C
253	41	ROV	1 von 3	Kautex	200 ml	Sediment	35	7	S2		-20°C

254	41	ROV	2 von 3	Kautex	200 ml	Sediment	35	7	S2		-20°C
255	41	ROV	3 von 3	Kautex	200 ml	Sediment	35	7	S2		-20°C
256	41	ROV	1 von 3	Kautex	200 ml	Sediment	35	7	S2		4% Formaldehyd
257	41	ROV	2 von 3	Kautex	200 ml	Sediment	35	7	S2		4% Formaldehyd
258	41	ROV	3 von 3	Kautex	200 ml	Sediment	35	7	S2		4% Formaldehyd
259	41	ROV	1 von 3	Kautex	200 ml	Sediment	35	7	S2		96% EtOH undenatured
260	41	ROV	2 von 3	Kautex	200 ml	Sediment	35	7	S2		96% EtOH undenatured
261	41	ROV	3 von 3	Kautex	200 ml	Sediment	35	7	S2		96% EtOH undenatured
262	41	ROV	1 von 3	Bag		Sediment	35	7	S2		4
263	41	ROV	2 von 3	Bag		Sediment	35	7	S2		4
264	41	ROV	3 von 3	Bag		Sediment	35	7	S2		4
265	41	ROV	1 von 3	Bag		Sediment	35	7	S2		-80°C

266	41	ROV	2 von 3	Bag		Sediment	35	7	S2		-80°C
267	41	ROV	3 von 3	Bag		Sediment	35	7	S2		-80°C
268	41	ROV	1 von 5	Epi		Sediment	35	7	S2		4
269	41	ROV	2 von 5	Epi		Sediment	35	7	S2		4
270	41	ROV	3 von 5	Epi		Sediment	35	7	S2		4
271	41	ROV	4 von 5	Epi		Sediment	35	7	S2		4
272	41	ROV	5 von 5	Epi		Sediment	35	7	S2		4
273	43	ROV	1 von 1	Bag		Rock	36	1	S3-A		-20°C
274	43	ROV	1 von 1	Kautex	200 ml	Uberstand	36	1	S3-A	1000µm	96% EtOH undenatured
275	43	ROV	1 von 3	Kautex	50 ml	Uberstand	36	1	S3-A	32µm	-20°C
276	43	ROV	2 von 3	Kautex	50 ml	Uberstand	36	1	S3-A	32µm	4% Formaldehyd
277	43	ROV	3 von 3	Kautex	50 ml	Uberstand	36	1	S3-A	32µm	96% EtOH undenatured
278	44	ROV	1 von 1	Bag		Rock	36	2	S3-B		-20°C
279	44	ROV	1 von 1	Kautex	50 ml	Uberstand	36	2	S3-B	1000µm	96% EtOH undenatured

280	44	ROV	1 von 2	Kautex	50 ml	Uberstand	36	2	S3-B	32µm	96% EtOH undenatured
281	44	ROV	2 von 2	Kautex	50 ml	Uberstand	36	2	S3-B	32µm	4% Formaldehyd
282	45	ROV	1 von 1	Bag		Rock	36	4	P3-B		-20°C
283	45	ROV	1 von 1	Kautex	50 ml	Uberstand	36	4	P3-B	1000µm	96% EtOH undenatured
284	45	ROV	1 von 2	Kautex	50 ml	Uberstand	36	4	P3-B	32µm	4% Formaldehyd
285	45	ROV	2 von 2	Kautex	50 ml	Uberstand	36	4	P3-B	32µm	96% EtOH undenatured
286	46	ROV	1 von 1	Bag		Uberstand	36	5	P4-B		-20°C
287	46	ROV	1 von 1	Kautex	50 ml	Uberstand	36	5	P4-B	1000µm	96% EtOH undenatured
288	46	ROV	1 von 2	Kautex	50 ml	Uberstand	36	5	P4-B	32µm	4% Formaldehyd
289	46	ROV	2 von 2	Kautex	50 ml	Uberstand	36	5	P4-B	32µm	96% EtOH undenatured
290	47	ROV	1 von 1	Bag		Rock	36	6	P4-A		-20°C

291	47	ROV	1 von 1	Kautex	200 ml	Uberstand	36	6	P4-A	1000µm	96% EtOH undenatured
292	47	ROV	1 von 3	Kautex	50 ml	Uberstand	36	6	P4-A	32µm	96% EtOH undenatured
293	47	ROV	2 von 3	Kautex	50 ml	Uberstand	36	6	P4-A	32µm	-20°C
294	47	ROV	3 von 3	Kautex	50 ml	Uberstand	36	6	P4-A	32µm	4% Formaldehyd
295	48	ROV	1 von 1	Kautex	200 ml	Uberstand	36	7		1000µm	96% EtOH undenatured
296	48	ROV	1 von 1	Kautex	200 ml	Uberstand	36	7	S1	32µm	96% EtOH undenatured
297	48	ROV	1 von 2	Kautex	200 ml	Sediment	36	7	S1		-20°C
298	48	ROV	2 von 2	Kautex	200 ml	Sediment	36	7	S1		-20°C
299	48	ROV	1 von 2	Kautex	200 ml	Sediment	36	7	S1		4% Formaldehyd
300	48	ROV	2 von 2	Kautex	200 ml	Sediment	36	7	S1		4% Formaldehyd
301	48	ROV	1 von 2	Kautex	200 ml	Sediment	36	7	S1		96% EtOH undenatured

302	48	ROV	2 von 2	Kautex	200 ml	Sediment	36	7	S1		96% EtOH undenatured
303	48	ROV	1 von 3	Bag		Sediment	36	7	S1		4
304	48	ROV	2 von 3	Bag		Sediment	36	7	S1		4
305	48	ROV	3 von 3	Bag		Sediment	36	7	S1		4
306	48	ROV	1 von 3	Bag		Sediment	36	7	S1		-80°C
307	48	ROV	2 von 3	Bag		Sediment	36	7	S1		-80°C
308	48	ROV	3 von 3	Bag		Sediment	36	7	S1		-80°C
309	48	ROV	1 von 5	Epi		Sediment	36	7	S1		4
310	48	ROV	2 von 5	Epi		Sediment	36	7	S1		4
311	48	ROV	3 von 5	Epi		Sediment	36	7	S1		4
312	48	ROV	4 von 5	Epi		Sediment	36	7	S1		4
313	48	ROV	5 von 5	Epi		Sediment	36	7	S1		4
314	50	EBS	1 von 3	Bucket	3 l	1/4 Sample	31	1	Epi		4% Formaldehyd

315	50	EBS	2 von 3	Bucket	3 l	1/2 Sample	31	1	Epi		96% EtOH undenatured
316	50	EBS	3 von 3	Kautex	1000 ml	1/4 Sample	31	1	Epi		-80°C
317	51	EBS	1 von 1	Bucket	3 l	Whole Sample	32	1	Epi		4% Formaldehyd
318	52	ROV	1 von 1	Bag		Rocks (gravel)	40	1	P3-A		-20°C
319	52	ROV	1 von 2	Kautex	200 ml	Uberstand	40	1	P3-A	1000µm	96% EtOH undenatured
320	52	ROV	2 von 2	Kautex	200 ml	Uberstand	40	1	P3-A	1000µm	96% EtOH undenatured
321	52	ROV	1 von 3	Kautex	50 ml	Uberstand	40	1	P3-A	32µm	-20°C
322	52	ROV	2 von 3	Kautex	50 ml	Uberstand	40	1	P3-A	32µm	4% Formaldehyd
323	52	ROV	3 von 3	Kautex	50 ml	Uberstand	40	1	P3-A	32µm	96% EtOH undenatured
324	53	ROV	1 von 1	Kautex	50 ml	Uberstand	40	2	P2	32µm	96% EtOH undenatured
325	53	ROV	1 von 2	Kautex	200 ml	Sediment	40	2	P2		-20°C

326	53	ROV	2 von 2	Kautex	200 ml	Sediment	40	2	P2		-20°C
327	53	ROV	1 von 2	Kautex	200 ml	Sediment	40	2	P2		4% Formaldehyd
328	53	ROV	2 von 2	Kautex	200 ml	Sediment	40	2	P2		4% Formaldehyd
329	53	ROV	1 von 2	Kautex	200 ml	Sediment	40	2	P2		96% EtOH undenatured
330	53	ROV	2 von 2	Kautex	200 ml	Sediment	40	2	P2		96% EtOH undenatured
331	53	ROV	1 von 2	Alu Bag		Sediment	40	2	P2		-80°C
332	53	ROV	2 von 2	Alu Bag		Sediment	40	2	P2		-80°C
333	53	ROV	1 von 2	Bag		Piece of Chimney 8	40	2	P2		+4 oxic
334	53	ROV	2 von 2	Bag		Piece of Chimney 8	40	2	P2		+4 anoxic
335	53	ROV	1 von 2	Bag		Piece of Chimney 8	40	2	P2		-80°C
336	53	ROV	2 von 2	Bag		Piece of Chimney 8	40	2	P2		-80°C

337	53	ROV	1 von 5	Epi		Piece of Chimney 8	40	2	P2		4
338	53	ROV	2 von 5	Epi		Piece of Chimney 8	40	2	P2		4
339	53	ROV	3 von 5	Epi		Piece of Chimney 8	40	2	P2		4
340	53	ROV	4 von 5	Epi		Piece of Chimney 8	40	2	P2		4
341	53	ROV	5 von 5	Epi		Piece of Chimney 8	40	2	P2		4
342	54	ROV	1 von 2	Kautex	200 ml	Sediment	40	4	S1		-20°C
343	54	ROV	2 von 2	Kautex	200 ml	Sediment	40	4	S1		-20°C
344	54	ROV	1 von 2	Kautex	200 ml	Sediment	40	4	S1		4% Formaldehyd
345	54	ROV	2 von 2	Kautex	200 ml	Sediment	40	4	S1		4% Formaldehyd
346	54	ROV	1 von 2	Kautex	200 ml	Sediment	40	4	S1		96% EtOH undenatured

347	54	ROV	2 von 2	Kautex	200 ml	Sediment	40	4	S1		96% EtOH undenatured
348	54	ROV	1 von 2	Alu Bag		Sediment	40	4	S1		-80°C
349	54	ROV	2 von 2	Alu Bag		Sediment	40	4	S1		-80°C
350	54	ROV	1 von 1	Kautex	200 ml	Uberstand	40	4	S1	1000µm	96% EtOH undenatured
351	54	ROV	1 von 3	Bag		Mat close to Chimney 8	40	4	S1		4
352	54	ROV	2 von 3	Bag		Mat close to Chimney 8	40	4	S1		4
353	54	ROV	3 von 3	Bag		Mat close to Chimney 8	40	4	S1		4
354	54	ROV	1 von 3	Bag		Mat close to Chimney 8	40	4	S1		-80°C
355	54	ROV	2 von 3	Bag		Mat close to Chimney 8	40	4	S1		-80°C

356	54	ROV	3 von 3	Bag		Mat close to Chimney 8	40	4	S1		-80°C
357	54	ROV	1 von 5	Epi		Mat close to Chimney 8	40	4	S1		-80°C
358	54	ROV	2 von 5	Epi		Mat close to Chimney 8	40	4	S1		-80°C
359	54	ROV	3 von 5	Epi		Mat close to Chimney 8	40	4	S1		-80°C
360	54	ROV	4 von 5	Epi		Mat close to Chimney 8	40	4	S1		-80°C
361	54	ROV	5 von 5	Epi		Mat close to Chimney 8	40	4	S1		-80°C
362	49	ROV	1 von 1	Alu Bag		Sediment	36	7	S1		-80°C

363	55	ROV	1 von 1	Kautex	200 ml	Purple colonisation sponge - near vent	48	1	S4-A	1000µm	4% Formaldehyd
364	55	ROV	1 von 1	Kautex	200 ml	Purple colonisation sponge - near vent	48	1	S4-A	32µm	4% Formaldehyd
365	55	ROV	1 von 1	Kautex	200 ml	Orange colonisation sponge - near vent	48	2	S4-B	1000µm	4% Formaldehyd
366	55	ROV	1 von 1	Kautex	200 ml	Orange colonisation sponge - near vent	48	2	S4-B	32µm	4% Formaldehyd
367	55	ROV	1 von 1	Kautex	200 ml	Pink colonisation sponge - near vent	48	3	S3-A	1000µm	4% Formaldehyd
368	55	ROV	1 von 1	Kautex	200 ml	Pink colonisation sponge - near vent	48	3	S3-A	32µm	4% Formaldehyd

369	55	ROV	1 von 1	Kautex	200 ml	Green colonisation sponge - near vent	48	4	S3-B	1000µm	96% EtOH undenatured
370	55	ROV	1 von 1	Kautex	200 ml	Green colonisation sponge - near vent	48	4	S3-B	32µm	96% EtOH undenatured
371	55	ROV	1 von 1	Kautex	200 ml	Orange colonisation sponge - periphery	48	6	P3-A	1000µm	4% Formaldehyd
372	55	ROV	1 von 1	Kautex	200 ml	Orange colonisation sponge - periphery	48	6	P3-B	32µm	4% Formaldehyd
373	55	ROV	1 von 1	Kautex	200 ml	Purple colonisation sponge - periphery	48	7	P3-B	1000µm	96% EtOH undenatured

374	55	ROV	1 von 1	Kautex	200 ml	Purple colonisation sponge - periphery	48	7	P3-B	32µm	96% EtOH undenatured
375	59	ROV	1 von 1	Bag		Rock	48	5	S2		-20°C
376	59	ROV	1 von 1	Kautex	200 ml	Uberstand	48	5	S2	1000µm	96% EtOH undenatured
377	59	ROV	1 von 1	Kautex	200 ml	Uberstand	48	5	S2	32µm	96% EtOH undenatured
378	62	ROV	1 von 1	Kautex	200 ml	Pink colonisation sponge - periphery	48	8	P4-A	1000µm	4% Formaldehyd
379	62	ROV	1 von 1	Kautex	200 ml	Pink colonisation sponge - periphery	48	8	P4-A	32µm	4% Formaldehyd

380	62	ROV	1 von 1	Kautex	200 ml	Green colonisation sponge - periphery	48	9	P4-B	1000µm	4% Formaldehyd
381	62	ROV	1 von 1	Kautex	200 ml	Green colonisation sponge - periphery	48	9	P4-B	32µm	4% Formaldehyd
382	64	ROV	1 von 1	Bag		Rock	48	10	P1		-20°C
383	64	ROV	1 von 1	Kautex	200 ml	Uberstand	48	10	P1	1000µm	96% EtOH undenatured
384	64	ROV	1 von 1	Kautex	200 ml	Uberstand	48	10	P1	32µm	96% EtOH undenatured
385	64	ROV	1 von 1	Bag		Rock	48	11	P2		-20°C
386	64	ROV	1 von 1	Kautex	200 ml	Uberstand	48	11	P2	1000µm	4% Formaldehyd
387	64	ROV	1 von 1	Kautex	200 ml	Uberstand	48	11	P2	32µm	4% Formaldehyd
388	66	ROV	1 von 1	Bag		Rock	48	12	S1		-20°C
389	66	ROV	1 von 1	Kautex	50 ml	Uberstand	48	12	S1	1000µm	96% EtOH undenatured

390	66	ROV	1 von 1	Kautex	200 ml	Uberstand	48	12	S1	32µm	96% EtOH undenatured
391	67	ROV	1 von 1	Bucket		Whole Alive Sample	49	1	P1		Seawater
392	68	ROV	1 von 1	Kautex	200 ml	Uberstand	49	2	S1	32µm	96% EtOH undenatured
393	68	ROV	1 von 3	Kautex	200 ml	Sediment	49	2	S1		-20°C
394	68	ROV	2 von 3	Kautex	200 ml	Sediment	49	2	S1		4% Formaldehyd
395	68	ROV	3 von 3	Kautex	200 ml	Sediment	49	2	S1		96% EtOH undenatured
396	68	ROV	1 von 1	Alu Bag		Sediment	49	2	S1		-80°C
397	68	ROV	1 von 3	Bag		Bacterial mat sediment close to vent	49	2	S1		4
398	68	ROV	2 von 3	Bag		Bacterial mat sediment close to vent	49	2	S1		4

399	68	ROV	3 von 3	Bag		Bacterial mat sediment close to vent	49	2	S1		4
400	68	ROV	1 von 3	Bag		Bacterial mat sediment close to vent	49	2	S1		-80°C
401	68	ROV	2 von 3	Bag		Bacterial mat sediment close to vent	49	2	S1		-80°C
402	68	ROV	3 von 3	Bag		Bacterial mat sediment close to vent	49	2	S1		-80°C
403	68	ROV	1 von 5	Epi		Bacterial mat sediment close to vent	49	2	S1		4
404	68	ROV	2 von 5	Epi		Bacterial mat sediment close to vent	49	2	S1		4

405	68	ROV	3 von 5	Epi		Bacterial mat sediment close to vent	49	2	S1		4
406	68	ROV	4 von 5	Epi		Bacterial mat sediment close to vent	49	2	S1		4
407	68	ROV	5 von 5	Epi		Bacterial mat sediment close to vent	49	2	S1		4
408	69	ROV	1 von 1	Bucket		Whole Alive Sample	49	3	P2		Seawater
409	70	ROV	1 von 1	Kautex	50 ml	Sieved Sponge	51	1	P3-A	1000µm	4% Formaldehyd
410	70	ROV	1 von 1	Kautex	200 ml	Sieved Sponge	51	1	P3-A	32µm	4% Formaldehyd
411	71	ROV	1 von 1	Kautex	50 ml	Sieved Sponge	51	2	P3-B	1000µm	
412	71	ROV	1 von 1	Kautex	200 ml	Sieved Sponge	51	2	P3-B	32µm	

413	72	ROV	1 von 1	Kautex	50 ml	Sieved Sponge	51	3	P4-A	1000µm	4% Formaldehyd
414	72	ROV	1 von 1	Kautex	200 ml	Sieved Sponge	51	3	P4-B	32µm	4% Formaldehyd
415	73	ROV	1 von 1	Kautex	50 ml	Sieved Sponge	51	4	P4-B	1000µm	4% Formaldehyd
416	73	ROV	1 von 1	Kautex	200 ml	Sieved Sponge	51	4	P4-B	32µm	4% Formaldehyd
417	74	ROV	1 von 1	Kautex	50 ml	Sieved Sponge	51	5	S3-A	1000µm	4% Formaldehyd
418	74	ROV	1 von 1	Kautex	200 ml	Sieved Sponge	51	5	S3-A	32µm	4% Formaldehyd
419	75	ROV	1 von 1	Kautex	50 ml	Sieved Sponge	51	6	S3-B	1000µm	4% Formaldehyd
420	75	ROV	1 von 1	Kautex	200 ml	Sieved Sponge	51	6	S3-B	32µm	4% Formaldehyd
421	76	ROV	1 von 1	Kautex	50 ml	Sieved Sponge	51	7	S4-A	1000µm	4% Formaldehyd
422	76	ROV	1 von 1	Kautex	200 ml	Sieved Sponge	51	7	S4-A	32µm	4% Formaldehyd

423	77	ROV	1 von 1	Kautex	50 ml	Sieved Sponge	51	8	S4-B	1000µm	96% EtOH undenatured
424	77	ROV	1 von 1	Kautex	200 ml	Sieved Sponge	51	8	S4-B	32µm	96% EtOH undenatured
425	78	ROV	1 von 1	Bucket		Whole Sample	58	1	P2		96% EtOH undenatured
426	79	ROV	1 von 1	Bucket		Whole Sample	58	2	P1		96% EtOH undenatured
427	80	ROV	1 von 1	Bucket		Whole Sample	58	3	S1		96% EtOH undenatured

Inventar

Bord_sample_ID	Taxa1	Taxa2	Taxa3	Taxa4	genus	N_Sample	comment_specimen	ship	cruise	project	Station	cast	gear	sampleunit1	comment_station
1	Porifera					1		Pelagia	64PE475	IceAGE KR	2	13	ROV	P2	
2	Porifera					1	Funnel Sponge	Pelagia	64PE475	IceAGE KR	2	14	ROV	P2	
3	Cnidaria	Hydrozoa				1	Calcifying Hydrozoa	Pelagia	64PE475	IceAGE KR	2	12	ROV	P2	
4	Cnidaria	Hydrozoa				1	Calcifying	Pelagia	64PE475	IceAGE KR	2	12	ROV	P2	
5	Mollusca	Gastropoda				1		Pelagia	64PE475	IceAGE KR	2	12	ROV	P2	
6	Cnidaria	Hydrozoa				1		Pelagia	64PE475	IceAGE KR	2	12	ROV	P2	
7	Chordata	Tunicata	Ascidiacea			1		Pelagia	64PE475	IceAGE KR	2	12	ROV	P2	
8	Porifera					1	white sponge	Pelagia	64PE475	IceAGE KR	2	12	ROV	P2	
9	Porifera					1		Pelagia	64PE475	IceAGE KR	2	12	ROV	P2	
10	Porifera					1	Small Sponge on vent site	Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	

11	Porifera					1	Small Sponge on vent site	Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
12	Mollusca	Gastropoda				1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
13	Porifera					1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
14	Mollusca	Gastropoda				1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
15	Mollusca	Gastropoda				1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
16	Annelida	Polychaeta				1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
17	Porifera					1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
18	Crustacea	Amphipoda				1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
19	Crustacea	Amphipoda				1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
20	Crustacea	Amphipoda				1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
21	Porifera					1	small sponge at vent	Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
22	Porifera					1	small sponge at vent	Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	

23	Porifera					1	small sponge at vent	Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
24	Porifera					1	Small Sponge from vent	Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
25	Annelida	Polychaeta				1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
26	Mollusca	Gastropoda				1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
27	Mollusca	Gastropoda				1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
28	Crustacea	Amphipoda						Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
29	Porifera							Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
30	Annelida	Polychaeta				1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
31	Crustacea	Amphipoda				1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
32	Crustacea	Amphipoda				1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
33	Crustacea	Amphipoda				1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
34	Porifera					1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
35	Porifera					1	encrusting	Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	

36	Porifera					1	encrusting	Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
37	Porifera					1		Pelagia	64PE475	IceAGE KR	2	2	ROV	S1	
38	Echinodermata	Asteroidea				1		Pelagia	64PE475	IceAGE KR	6	10	ROV	P3-A	Respiration starfish Tanja
39	Echinodermata	Asteroidea				1		Pelagia	64PE475	IceAGE KR	6	10	ROV	P3-A	Respiration starfish Tanja
40	Echinodermata	Asteroidea				1		Pelagia	64PE475	IceAGE KR	6	10	ROV	P3-A	Respiration starfish Tanja
41	Echinodermata	Asteroidea				1		Pelagia	64PE475	IceAGE KR	6	12	ROV		Sponge
42	Echinodermata	Echinoidea	Echinidae		Echinus	1		Pelagia	64PE475	IceAGE KR	6	11	ROV	P3-B	Respiration Sea Urchins
43	Echinodermata	Echinoidea	Echinidae		Echinus	1		Pelagia	64PE475	IceAGE KR	6	11	ROV	P3-B	Respiration Sea Urchins
44	Echinodermata	Echinoidea	Echinidae		Echinus	1		Pelagia	64PE475	IceAGE KR	6	12	ROV	P4-A	Sponge
45	Echinodermata	Echinoidea	Echinidae		Echinus	1		Pelagia	64PE475	IceAGE KR	6	13	ROV	P4-B	Respiration sea urchin

46	Echinodermata	Echinoidea	Echinidae		Echinus	1		Pelagia	64PE475	IceAGE KR	6	13	ROV	P4-B	Respiration sea urchin
47	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	9	6	ROV	S2	Anemones for respiration
48	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	9	6	ROV	S2	Anemones for respiration
49	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	9	6	ROV	S2	Anemones for respiration
50	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	9	6	ROV	S2	Anemones for respiration
51	Mollusca	Gastropoda	Caenogastropoda	Buccinidae		1	Buccinum finmarkianum(?)	Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
52	Mollusca	Gastropoda	Caenogastropoda	Buccinidae		1		Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
53	Mollusca	Gastropoda	Caenogastropoda	Buccinidae		1		Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
54	Mollusca	Gastropoda	Caenogastropoda	Buccinidae		1		Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals

55	Mollusca	Gastropoda	Caenogastropoda	Buccinidae		1		Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
56	Mollusca	Gastropoda	Caenogastropoda	Buccinidae		1		Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
57	Mollusca	Gastropoda	Caenogastropoda	Buccinidae		1		Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
58	Mollusca	Gastropoda	Caenogastropoda	Buccinidae		1		Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
59	Mollusca	Gastropoda	Caenogastropoda	Buccinidae		1		Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
60	Porifera					1		Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
61	Porifera					1		Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
62	Porifera					1		Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
63	Crustacea	Amphipoda	Caprellidea			1	half of specimen	Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
64	Crustacea	Amphipoda	Caprellidea			1	half of specimen	Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
65	Crustacea	Amphipoda	Caprellidea			1	half of specimen	Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
66	Crustacea	Amphipoda	Caprellidea			1	half of specimen	Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals

67	Crustacea	Amphipoda	Caprellidea			1	half of specimen	Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
68	Crustacea	Amphipoda	Caprellidea			1	Half of specimen	Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
69	Crustacea	Amphipoda	Caprellidea			5		Pelagia	64PE475	IceAGE KR	9	1	ROV	P3-A	Assorted Animals
70	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	14	11	ROV	P1	Tanja respiration sampling
71	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	14	11	ROV	P1	Tanja respiration sampling
72	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	14	11	ROV	P1	Tanja respiration sampling
73	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	14	11	ROV	P1	Tanja respiration sampling
74	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	14	11	ROV	P1	Tanja respiration sampling

75	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	14	11	ROV	P1	Tanja respiration sampling
76	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	14	11	ROV	P1	Tanja respiration sampling
77	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	14	11	ROV	P1	Tanja respiration sampling
78	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	14	11	ROV	P1	Tanja respiration sampling
79	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	14	11	ROV	P1	Tanja respiration sampling
80	Mollusca	Gastropoda	Caenogastropoda	Buccinidae		1	Buccinum cf. finmarkianum - found on vent	Pelagia	64PE475	IceAGE KR	14	12	ROV	P2	Assorted Animals, anemones
81	Mollusca	Gastropoda	Caenogastropoda	Buccinidae		1		Pelagia	64PE475	IceAGE KR	14	12	ROV	P2	Assorted Animals, anemones

82	Mollusca	Gastropoda	Caenogastropoda	Buccinidae		1		Pelagia	64PE475	IceAGE KR	14	12	ROV	P2	Assorted Animals, anemones
83	Mollusca	Gastropoda	Caenogastropoda	Buccinidae		1	Buccinum cf. finmarkianum - found on vent	Pelagia	64PE475	IceAGE KR	14	12	ROV	P2	Assorted Animals, anemones
84	Mollusca	Gastropoda	Caenogastropoda	Buccinidae		1		Pelagia	64PE475	IceAGE KR	14	12	ROV	P2	Assorted Animals, anemones
85	Mollusca	Gastropoda	Caenogastropoda	Buccinidae		1		Pelagia	64PE475	IceAGE KR	14	12	ROV	P2	Assorted Animals, anemones
86	Cnidaria	Anthozoa	Actiniaria			1	Near vent	Pelagia	64PE475	IceAGE KR	14	12	ROV	P2	Assorted Animals, anemones
87	Cnidaria	Anthozoa	Actiniaria			1		Pelagia	64PE475	IceAGE KR	14	12	ROV	P2	Assorted Animals, anemones
88	Cnidaria	Anthozoa	Actiniaria			1	Near vent	Pelagia	64PE475	IceAGE KR	14	12	ROV	P2	Assorted Animals, anemones

89	Cnidaria	Anthozoa	Actiniaria			1		Pelagia	64PE475	IceAGE KR	14	12	ROV	P2	Assorted Animals, anemones
90	Cnidaria	Anthozoa	Actiniaria			1	Near vent	Pelagia	64PE475	IceAGE KR	14	12	ROV	P2	Assorted Animals, anemones
91	Cnidaria	Anthozoa	Actiniaria			1		Pelagia	64PE475	IceAGE KR	14	12	ROV	P2	Assorted Animals, anemones
92	Crustacea	Euphausiacea				1		Pelagia	64PE475	IceAGE KR	9	6	ROV	S2	Anemones for respiration
93	Mollusca	Gastropoda				1		Pelagia	64PE475	IceAGE KR	6	9	ROV	S2	Rock + Animals
94	Mollusca	Gastropoda				1		Pelagia	64PE475	IceAGE KR	6	9	ROV	S2	Rock + Animals
95	Nemertea					1		Pelagia	64PE475	IceAGE KR	6	9	ROV	S2	Rock + Animals
96	Cnidaria	Hydrozoa				2	with bacterial filaments	Pelagia	64PE475	IceAGE KR	36	2	ROV	S3-B	Rock with larger animals and bac mat

97						1	Bacterial filaments	Pelagia	64PE475	IceAGE KR	36	2	ROV	S3-B	Rock with larger animals and bac mat
98	Crustacea	Amphipoda				1	sp. 1	Pelagia	64PE475	IceAGE KR	31	1	EBS	Epi	Good deployment
99	Crustacea	Amphipoda				1	sp.1	Pelagia	64PE475	IceAGE KR	31	1	EBS	Epi	Good deployment
100	Crustacea	Amphipoda				1	sp.1	Pelagia	64PE475	IceAGE KR	31	1	EBS	Epi	Good deployment
101	Crustacea	Amphipoda				1	sp. 1	Pelagia	64PE475	IceAGE KR	31	1	EBS	Epi	Good deployment
102	Crustacea	Amphipoda				1	sp. 1	Pelagia	64PE475	IceAGE KR	31	1	EBS	Epi	Good deployment
103	Crustacea	Amphipoda				1	sp. 1	Pelagia	64PE475	IceAGE KR	31	1	EBS	Epi	Good deployment
104	Crustacea	Amphipoda				1	sp. 2	Pelagia	64PE475	IceAGE KR	31	1	EBS	Epi	Good deployment
105	Crustacea	Amphipoda				1	sp. 3	Pelagia	64PE475	IceAGE KR	31	1	EBS	Epi	Good deployment

106	Crustacea	Amphipoda				1	sp. 4	Pelagia	64PE475	IceAGE KR	31	1	EBS	Epi	Good deployment
107	Crustacea	Amphipoda				1	sp. 5	Pelagia	64PE475	IceAGE KR	31	1	EBS	Epi	Good deployment
108	Crustacea	Amphipoda				1	sp. 3	Pelagia	64PE475	IceAGE KR	31	1	EBS	Epi	Good deployment
109	Crustacea	Amphipoda				1	sp. 2	Pelagia	64PE475	IceAGE KR	31	1	EBS	Epi	Good deployment
110	Crustacea	Amphipoda				1	sp. 5	Pelagia	64PE475	IceAGE KR	31	1	EBS	Epi	Good deployment
111	Crustacea	Amphipoda				1	sp. 2	Pelagia	64PE475	IceAGE KR	31	1	EBS	Epi	Good deployment
112	Chordata					1	Fish	Pelagia	64PE475	IceAGE KR	31	1	EBS	Epi	Good deployment
113	Crustacea	Amphipoda				1	sp. 2	Pelagia	64PE475	IceAGE KR	31	1	EBS	Epi	Good deployment
114	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	36	3	ROV	P1	8 Respiration anemones

115	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	36	3	ROV	P1	8 Respiration anemones
116	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	36	3	ROV	P1	8 Respiration anemones
117	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	36	3	ROV	P1	8 Respiration anemones
118	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	36	3	ROV	P1	8 Respiration anemones
119	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	36	3	ROV	P1	8 Respiration anemones
120	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	36	3	ROV	P1	8 Respiration anemones

121	Cnidaria	Anthozoa				1		Pelagia	64PE475	IceAGE KR	36	3	ROV	P1	8 Respiration anemones
122	Echinodermata	Ophiuroidea				1		Pelagia	64PE475	IceAGE KR	40	3	ROV	P3-B	Ophiuroid
123	Echinodermata	Ophiuroidea				1		Pelagia	64PE475	IceAGE KR	40	3	ROV	P3-B	Ophiuroid
124	Crustacea	Euphausiacea	Euphausiidae			1		Pelagia	64PE475	IceAGE KR	40	3	ROV	P3-B	Ophiuroid

24. Permits

- Diplomatic clearance by ministry of foreign affairs - Ref.: UTN21020192/34.R.001
- Export permit by Icelandic Institute for Natural History – Ref.: 202101-0015/43-0
- Permit to perform research at Strytan Vent by Environment Agency - Ref.: UST202105-210