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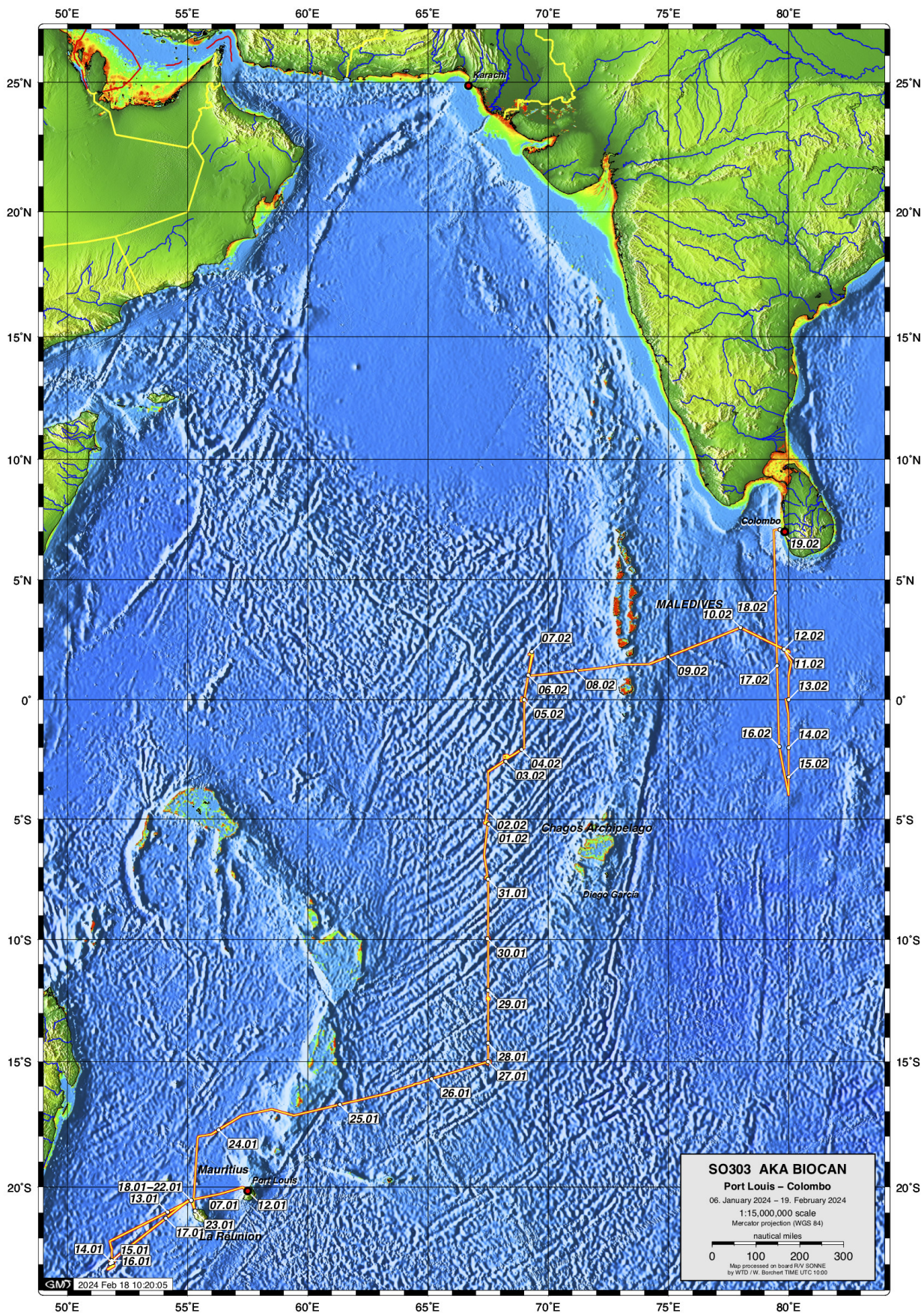


Short Cruise Report RV SONNE Cruise 303

**La Réunion (France) – Colombo
(Sri Lanka) 23.01. – 19.02.2024**

Chief Scientist: Birgit Gaye

Captain: Tilo Birnbaum



SO303 AKA BIOCAN
Port Louis – Colombo
06. January 2024 – 19. February 2024
1:15,000,000 scale
Mercator projection (WGS 84)
nautical miles
0 100 200 300
Map processed on board R/V SONNIE
by WTD / W. Borchert TIME UTC 10:00

Objectives

The influence of southern hemispheric and equatorial water masses on the extent of the oxygen minimum zone (OMZ) of the northern Indian Ocean was investigated on a profile along longitude 67,5° to 69°E from latitude 15°S to 2°N and on a profile along 78° to 80°E from 3°N to 4°S. The aim was to determine the southern extent of the northern Indian Ocean OMZ in order to evaluate whether it has expanded in the course of global warming in comparison with earlier studies.

Specific aims of the cruise were:

- (i) to investigate mixing processes between northern and southern hemisphere water masses and between water masses from the Arabian Sea and Bay of Bengal in the equatorial Indian Ocean and determine the isotopic signal transported with these water masses
- (ii) to quantify the production of climate relevant trace gases
- (iii) to quantify nitrification, nitrous oxide production and nitrogen fixation
- (iv) to characterize the impact of equatorial currents on productivity and export of sinking particles
- (v) to characterize the source and degradability of organic matter in different size classes from particulate to truly dissolved organic matter,
- (vi) to characterize the bacterial community by DNA and RDNA analyses
- (vii) to determine the fauna of planktic and benthic foraminifera in the present water column and in sediment samples to reconstruct productivity and carbonate preservation in the geological history from the Holocene to last glacial cycles.

Narrative

The previous research cruise SO 302 had to be canceled due to the security situation in the western Arabian Sea. As the research cruises SO 302 and 303 were combined both, logistically and in terms of personnel, the canceled cruise SO 302 could be taken over by SO 303 with relatively few organizational problems. This meant that all participants were able to board the ship in Mauritius on January 6 as planned and start on January 7. However, the complicated situation in the Red Sea and the western Arabian Sea had disrupted the container logistics, so that all seven containers for the SONNE 303 research cruise were initially unloaded on La Réunion and had been waiting there since 28.12.23 for their onward transport to Mauritius. Six of the containers reached Mauritius on January 6 and were loaded on January 7 and 12. The seventh container was the dangerous goods container and was transported with a different feeder vessel with the destination Mauritius supposed to touch port in Port Louis on January 11. As a tropical cyclone of the second highest intensity approached the region the SONNE had to seek shelter southwest of La Réunion in calmer waters. As we were in international waters the time could be used to test the sampling gear, and CTD and water sampling, coring gear and multineets could be successfully tested. Meanwhile the last container had been redirected to be unloaded in La Réunion as there was no scheduled port call of the feeder vessel in Mauritius. On January 19th the port in La Réunion was reopened after the island was heavily hit by the cyclone. On the same day the dangerous goods container was unloaded on La Réunion after the transport chain was interrupted by the shipper and the original destination Mauritius could be changed to La Réunion. The container could not pass customs on January 19 and after the weekend and a public holiday on 22 it had finally been cleared and was loaded on board during a short port call in La Réunion on January 23.

Meanwhile, on January 18, we had received the message from the German Research Fleet Coordination Centre (Leitstelle) in Hamburg that the SO 303 research cruise had been completely cancelled for safety reasons due to the tense situation in the Arabian Sea area. This means that we were neither able to work off Pakistan nor take our Pakistani colleagues on board. After the long period of preparation, this was a great disappointment for both sides. An alternative program, submitted to the BMBF and approved on January 22 started on January 23.

This program was named "BIOGeochemistry in the equatorial INdian Ocean and the northern Arabian Sea (BIOGIN)" and it was planned to sample a transect from 15°S to 9°N at 67°30'E to 69°E to study the southern extent of the Arabian Sea oxygen minimum zone. Transit to the first BIOGIN station started on the late afternoon of January 23 and the first station at 15°S was reached on January 27 at 00:30 UTC. Sampling of water, dissolved gases, suspended matter, sinking particles and plankton started at normal water stations as well as on so called focus stations where additional water sampling for incubation experiments and ultrafiltration of large volumes of water was carried out. Incubations were partly carried out on deck and in the laboratory to determine rates of nitrification, nitrogen fixation and nitrous oxide formation. Sediment sampling by multicorer and gravity corer were carried out at selected stations after a systematic hydroacoustic investigation of the prospected sampling area. As the transect crossed the Central Indian Ridge where fresh

oceanic crust forms, suitable sediment basins were selected by surface topography investigations by the multibeam system. The parasound allowed to identify suitable sediment cover where coring was inferred to be promising. On the way north, the southern Indian Ocean water masses disappeared while oxygen concentrations within the OMZ gradually declined. During our research activities in the equatorial region west of the Maldives we received the news on 31.01.24 that, contrary to the original plan, the profile section between 02° and 09°N could not be finished due to new incidents in the Arabian Sea. This reduced the opportunities to explore the southern edge of the oxygen minimum zone in the Arabian Sea.

A new alternative program was developed named "BIOGeochemistry in the equatorial Indian Ocean (BIOGIN)" with the aim of sampling the equatorial area east of the Maldives at approximately 80°E in order to explore an area of the equatorial Indian Ocean where data from previous research campaigns are available (WOCE, GEOTRACES). Sampling along the first transect terminated on February 6. On this transect 13 stations were occupied with CTD at all stations and water sampling at nine stations. Multinets were taken at eight stations and at five stations drifting sediment traps were deployed for about 24 hours. Nine multicorers were operated and six gravity cores of up to 9,80 m core length were collected.

The cruising time to the second transect took three days and we reached our northernmost station at 3°N and 78°E on February 10. This station was a focus station with 24 hours of water and plankton sampling. A suitable sediment station was selected during the hydroacoustic survey on the way to the second focus station at 2°N, 80°E. The southernmost station of the second transect was at 4°S on the 80°E profile and was reached on February 15. On the second transect we had two focus stations of eight water stations in total, plankton nets were taken at four stations, drifter deployments at three. Two gravity cores were taken in the northern part of the second transect while four multicores were taken along the cruise track with the deepest multicore taken at 4965 m water depth. The last station at 01°57,8'S, 79°37'E was the recovery of drifter #08 which had been deployed at 02°S, 80°E 48 hours earlier and had drifted straight to the west for almost 24 nautical miles. This station was terminated on February 16 at 14:00 hrs. ship time with the successful recovery of the drifter. During the entire journey in international waters the multibeam, parasound, thermosalinograph and ADCP were turned on collecting continuous data. We reached Colombo on February 19 in the early morning, looking back at a journey with many obstacles in the beginning related to the tense and uncertain situation in our intended working area. However, we could successfully carry out an alternative research program and have collected large amounts of samples and data for all working groups involved in the cruise.

Acknowledgements

The science team of the cruise SO303 thanks Captain Tilo Birnbaum, the officers and crew of RV SONNE for their continuous and very efficient support during our expedition, and for the pleasant working atmosphere onboard. Their expertise was one of the building blocks for our research. The Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung) is thanked for funding the cruise and the research through Grants 03G0303A, 03G0303B and 03G0303C. We thank the Director of the National Institute of Oceanography Dr. Samina Kidwai and her team for preparing the joint cruise, and the Pakistan Ministry of Defence (Maritime Affairs) and Ministry of Science and Technology for granting the working permit in the EEZ of Pakistan. The Leitstelle Deutsche Forschungsschiffe (German Research Fleet Coordination Centre) is thanked for logistical support.

List of Participants

1. Gaye, Birgit, Dr.	Chief Scientist	UniHH
2. Andersch, Tjark	Sediments	UniHH
3. Bartsch, Peggy.	DOC, Ultrafiltration	UniHH
4. Cosmus, Hannes	Hydroacoustics	UniHH
5. Gök, Irmak	N- and O-Isotopes	UniHH
6. Harms, Natalie, Dr.	Chlorophyll, Filtration	UniHH
7. Hubert-Huart, Raphaël	Sediments, Benthic Foraminifera	UniHH
8. Kretzschmann, Lisett	Ultrafiltration	UniHH
9. Lahajnar, Niko, Dr.	Co-Chief Scientist	UniHH
10. Lisitano, Luisa	Suspended Matter	UniHH
11. Meiritz, Luisa	Drifting Sediment Traps	UniHH
12. Oldhaver, Manja	Sediments, Benthic Foraminifera	UniHH
13. Penopp, Jan	Amino Acid Filtration	UniHH
14. Ruda, Luise	Oxygen	UniHH
15. Sorge, Yves	Hydracoustics	UniHH
16. Eisnecker, Paula	Trace Gases, Alkalinity	GEOMAR
17. Sommer, Marcel	Trace Gases	GEOMAR
18. Dähnke, Kirstin, Dr.	N-labelled incubations	Hereon
19. Keuter, Sabine, Dr.	DNA, RNA	Hereon
20. Sanders, Tina, Dr.	Nitrification	Hereon
21. Schulz, Gesa, Dr.	N ₂ O Incubations	Hereon
22. Markfort, Greta	CTD	IOW
23. Prien, Ralf, Dr.	CTD	IOW
24. Waniek, Joanna, Prof.	CTD	IOW
25. Siccha, Michael, Dr.	Multinet	MARUM
26. Schulz, Hartmut, Dr.	Gravity Cores, Multicorer	UniTüb
27. Dasbach, Dorothee	Nutrients	ZMT
28. Hüge, Fabian	Alkalinity, carbonate system	ZMT
29. John, Finn	Nutrients	ZMT
30. Rixen, Tim, Dr.	Underway Systems	ZMT

UniHH	Institut für Geologie, Universität Hamburg
GEOMAR	Helmholtz-Zentrum für Ozeanforschung Kiel
Hereon	Helmholtz-Zentrum Hereon, Geesthacht
IOW	Leibniz-Institut für Ostseeforschung, Warnemünde
MARUM	Zentrum für Marine Umweltwissenschaften der Universität Bremen
UniTüb	Eberhard Karls Universität Tübingen
ZMT	Leibniz-Zentrum für Marine Tropenforschung, Bremen

Stationslist

Abbreviation:

CTD: Stainless Steel CTD-Rosette 24 Bottles
 Drift: Drifting Sediment Trap Systems
 EM122: Multi Beam Echo Sounder EM122
 GC: Gravity Core
 MSN: Multiclosing Net
 MUC: Multicorer
 PLA: Apstein Planktonnet
 PS: Pump Systems
 VMADCP_38kHz: Vessel Mounted ADCP 38 kHz
 VMADCP_75kHz: Vessel Mounted ADCP 75 kHz
 UWS: Underway Systems

Station	Date&Time [UTC]	Latitude	Longitude	Depth [m]	Device
SO303_0	25.01.2024 22:40	16° 12.690' S	063° 30.277' E	3786.1	EM122
SO303_0	25.01.2024 22:40	16° 12.691' S	063° 30.274' E	3786.1	UWS
SO303_0	25.01.2024 22:40	16° 12.690' S	063° 30.277' E	3786.1	PS
SO303_0	25.01.2024 22:40	16° 12.690' S	063° 30.277' E	3786.1	VMADCP_38kHz
SO303_0	25.01.2024 22:40	16° 12.690' S	063° 30.277' E	3786.1	VMADCP_75kHz
SO303_1-1	27.01.2024 00:22	15° 00.826' S	067° 28.852' E	2873.9	EM122
SO303_1-2	27.01.2024 03:55	15° 01.216' S	067° 28.040' E	2410.2	DRIFT
SO303_1-3	27.01.2024 05:30	15° 00.015' S	067° 29.995' E	2976.4	CTD
SO303_1-4	27.01.2024 05:43	15° 00.001' S	067° 30.002' E	2965.1	PLA
SO303_1-5	27.01.2024 08:38	15° 00.003' S	067° 30.000' E	2974.6	CTD
SO303_1-6	27.01.2024 10:43	15° 00.000' S	067° 29.999' E	2978.7	CTD
SO303_1-7	27.01.2024 11:27	15° 00.000' S	067° 29.998' E	3155.1	MSN
SO303_1-8	27.01.2024 12:12	15° 00.001' S	067° 29.997' E	3140.7	MSN
SO303_1-9	27.01.2024 12:54	14° 59.995' S	067° 29.998' E	3176.5	MSN
SO303_1-10	27.01.2024 13:57	14° 59.998' S	067° 29.997' E	3120.8	MSN
SO303_1-11	27.01.2024 15:46	15° 01.328' S	067° 36.004' E	3599.1	MUC
SO303_1-12	27.01.2024 18:04	15° 01.316' S	067° 36.008' E	3588.0	GC
SO303_1-13	27.01.2024 22:11	15° 01.627' S	067° 25.290' E	3678.5	MUC
SO303_1-14	28.01.2024 02:06	15° 06.837' S	067° 28.926' E	2872.7	DRIFT
SO303_1-15	28.01.2024 03:35	15° 06.551' S	067° 28.688' E	2811.5	CTD
SO303_2-1	28.01.2024 20:30	12° 30.010' S	067° 30.000' E	3011.5	EM122
SO303_2-2	29.01.2024 00:04	12° 30.087' S	067° 29.968' E	3019.1	CTD
SO303_2-3	29.01.2024 03:21	12° 29.997' S	067° 30.002' E	2986.3	CTD
SO303_2-4	29.01.2024 03:37	12° 29.996' S	067° 30.002' E	2989.6	PLA
SO303_2-5	29.01.2024 03:42	12° 29.996' S	067° 29.998' E	2986.6	PLA
SO303_2-6	29.01.2024 03:46	12° 29.996' S	067° 29.996' E	2993.3	PLA
SO303_2-7	29.01.2024 03:49	12° 29.998' S	067° 29.994' E	2995.4	PLA

Station	Date&Time [UTC]	Latitude	Longitude	Depth [m]	Device
SO303_2-8	29.01.2024 05:34	12° 22.693' S	067° 28.413' E	3591.7	MUC
SO303_3-1	29.01.2024 22:24	10° 00.153' S	067° 29.999' E	3327.8	EM122
SO303_3-2	30.01.2024 01:29	10° 00.015' S	067° 30.001' E	3336.5	CTD
SO303_3-3	30.01.2024 04:22	10° 00.001' S	067° 30.003' E	3332.0	CTD
SO303_3-4	30.01.2024 04:37	10° 00.003' S	067° 29.996' E	3332.7	PLA
SO303_3-5	30.01.2024 06:12	10° 00.002' S	067° 29.997' E	3331.1	CTD
SO303_3-6	30.01.2024 06:56	10° 00.000' S	067° 30.002' E	3333.9	MSN
SO303_3-7	30.01.2024 07:36	10° 00.002' S	067° 30.001' E	3332.2	MSN
SO303_3-8	30.01.2024 08:35	09° 57.469' S	067° 28.317' E	3365.7	MUC
SO303_3-9	30.01.2024 11:03	09° 57.473' S	067° 28.251' E	3366.4	GC
SO303_4-1	31.01.2024 04:07	07° 30.166' S	067° 29.987' E	4193.4	EM122
SO303_4-2	31.01.2024 07:24	07° 29.992' S	067° 30.015' E	4192.3	CTD
SO303_4-3	31.01.2024 07:39	07° 30.001' S	067° 29.999' E	4189.9	PLA
SO303_4-4	31.01.2024 10:54	07° 30.002' S	067° 29.995' E	4193.0	CTD
SO303_4-5	31.01.2024 12:58	07° 24.802' S	067° 27.895' E	2888.6	MUC
SO303_5-1	01.02.2024 06:01	05° 09.940' S	067° 19.970' E	4084.7	DRIFT
SO303_5-2	01.02.2024 07:09	05° 09.925' S	067° 19.938' E	4066.8	EM122
SO303_5-3	01.02.2024 10:16	05° 12.830' S	067° 29.916' E	3102.0	CTD
SO303_5-4	01.02.2024 12:40	05° 12.825' S	067° 30.000' E	3081.6	PLA
SO303_5-5	01.02.2024 13:09	05° 12.865' S	067° 29.923' E	3072.3	CTD
SO303_5-6	01.02.2024 14:21	05° 12.866' S	067° 29.917' E	3072.5	CTD
SO303_5-7	01.02.2024 15:40	05° 12.860' S	067° 29.923' E	3080.6	MSN
SO303_5-8	01.02.2024 16:41	05° 12.860' S	067° 29.923' E	3083.4	MSN
SO303_5-9	01.02.2024 17:48	05° 12.783' S	067° 29.904' E	3153.7	MSN
SO303_5-10	01.02.2024 18:25	05° 12.786' S	067° 29.904' E	3138.4	MSN
SO303_5-11	01.02.2024 19:34	05° 10.477' S	067° 30.986' E	3105.0	MUC
SO303_5-12	01.02.2024 21:37	05° 10.460' S	067° 30.982' E	3104.1	GC
SO303_5-13	02.02.2024 00:52	05° 07.943' S	067° 24.750' E	4467.6	MUC
SO303_5-14	02.02.2024 04:42	05° 12.143' S	067° 22.181' E	3898.0	CTD
SO303_5-15	02.02.2024 05:27	05° 12.140' S	067° 22.181' E	3903.4	DRIFT
SO303_6-1	02.02.2024 14:08	04° 00.018' S	067° 30.001' E	3201.9	CTD
SO303_7-1	02.02.2024 21:50	03° 00.014' S	067° 29.905' E	3231.2	CTD
SO303_8-1	03.02.2024 04:44	02° 31.149' S	068° 13.312' E	2296.8	DRIFT
SO303_8-2	03.02.2024 06:36	02° 33.991' S	068° 14.001' E	2006.8	CTD
SO303_8-3	03.02.2024 08:16	02° 33.988' S	068° 14.000' E	2007.5	PLA
SO303_8-4	03.02.2024 08:37	02° 33.967' S	068° 13.959' E	1989.8	CTD
SO303_8-5	03.02.2024 09:46	02° 33.980' S	068° 13.995' E	2007.9	CTD

Station	Date&Time [UTC]	Latitude	Longitude	Depth [m]	Device
SO303_8-6	03.02.2024 11:06	02° 33.979' S	068° 14.001' E	2186.4	MSN
SO303_8-7	03.02.2024 12:04	02° 33.981' S	068° 14.002' E	2003.6	MSN
SO303_8-8	03.02.2024 13:10	02° 33.984' S	068° 14.001' E	2010.6	MSN
SO303_8-9	03.02.2024 13:46	02° 33.980' S	068° 13.999' E	2007.7	MSN
SO303_8-10	03.02.2024 15:32	02° 24.432' S	068° 15.268' E	3244.4	EM122
SO303_8-11	03.02.2024 17:57	02° 22.022' S	068° 17.710' E	3792.8	MUC
SO303_8-12	03.02.2024 20:39	02° 22.077' S	068° 17.655' E	3795.8	GC
SO303_8-13	03.02.2024 23:20	02° 22.080' S	068° 17.655' E	3794.7	EM122
SO303_8-14	04.02.2024 03:10	02° 28.132' S	068° 15.782' E	2325.5	CTD
SO303_8-15	04.02.2024 04:00	02° 28.130' S	068° 15.784' E	2329.5	DRIFT
SO303_9-1	04.02.2024 10:55	01° 59.963' S	068° 59.934' E	3855.8	CTD
SO303_10-1	04.02.2024 18:34	00° 59.977' S	068° 59.986' E	3295.9	CTD
SO303_11-1	05.02.2024 01:57	00° 03.962' S	068° 59.941' E	3474.3	DRIFT
SO303_11-2	05.02.2024 03:56	00° 00.003' S	068° 59.990' E	3886.2	CTD
SO303_11-3	05.02.2024 06:50	00° 00.003' N	068° 59.996' E	3889.0	PLA
SO303_11-4	05.02.2024 07:14	00° 00.027' N	068° 59.883' E	3889.0	CTD
SO303_11-5	05.02.2024 08:23	00° 00.026' N	068° 59.889' E	3884.2	CTD
SO303_11-6	05.02.2024 09:37	00° 00.023' N	068° 59.891' E	3888.7	MSN
SO303_11-7	05.02.2024 10:33	00° 00.019' N	068° 59.890' E	3886.5	MSN
SO303_11-8	05.02.2024 11:39	00° 00.024' N	068° 59.889' E	3886.1	MSN
SO303_11-9	05.02.2024 12:29	00° 00.021' N	068° 59.888' E	3886.5	MSN
SO303_11-10	05.02.2024 14:08	00° 03.573' S	068° 53.228' E	3549.0	EM122
SO303_11-11	05.02.2024 17:42	00° 00.581' N	069° 00.035' E	3917.6	MUC
SO303_11-12	05.02.2024 20:20	00° 00.595' N	069° 00.063' E	3920.6	GC
SO303_11-13	05.02.2024 23:15	00° 00.170' S	069° 01.039' E	3926.4	EM122
SO303_11-14	06.02.2024 01:18	00° 05.525' S	069° 00.440' E	3570.4	CTD
SO303_11-15	06.02.2024 02:04	00° 05.525' S	069° 00.441' E	3570.0	DRIFT
SO303_12-1	06.02.2024 15:30	01° 53.104' N	069° 18.734' E	4291.0	DRIFT
SO303_12-2	06.02.2024 17:10	02° 00.019' N	069° 19.981' E	3754.0	CTD
SO303_12-3	06.02.2024 19:50	01° 59.995' N	069° 20.002' E	3768.7	PLA
SO303_12-4	06.02.2024 20:11	02° 00.017' N	069° 19.883' E	3762.7	CTD
SO303_12-5	06.02.2024 21:43	02° 00.023' N	069° 19.883' E	3761.0	CTD
SO303_12-6	06.02.2024 22:34	02° 00.019' N	069° 19.884' E	3759.9	CTD
SO303_12-7	06.02.2024 23:49	02° 00.018' N	069° 19.885' E	3761.6	MSN
SO303_12-8	07.02.2024 00:48	02° 00.023' N	069° 19.882' E	3759.8	MSN
SO303_12-9	07.02.2024 01:58	02° 00.022' N	069° 19.881' E	3758.7	MSN
SO303_12-10	07.02.2024 02:31	02° 00.015' N	069° 19.885' E	3761.5	MSN

Station	Date&Time [UTC]	Latitude	Longitude	Depth [m]	Device
SO303_12-11	07.02.2024 04:00	01° 54.873' N	069° 14.524' E	4167.8	EM122
SO303_12-12	07.02.2024 05:54	01° 59.992' N	069° 19.151' E	3766.6	MUC
SO303_12-13	07.02.2024 08:35	02° 00.008' N	069° 19.173' E	3760.1	GC
SO303_12-15	07.02.2024 13:00	01° 48.835' N	069° 19.723' E	4114.5	DRIFT
SO303_12-16	07.02.2024 14:08	01° 49.103' N	069° 20.203' E	4135.7	CTD
SO303_13-1	07.02.2024 20:15	00° 59.928' N	069° 09.977' E	4394.2	CTD
SO303_14-1	10.02.2024 06:04	03° 00.035' N	078° 00.005' E	3234.2	CTD
SO303_14-2	10.02.2024 08:31	02° 59.998' N	078° 00.002' E	3239.0	PLA
SO303_14-3	10.02.2024 08:55	02° 59.998' N	078° 00.003' E	3239.6	CTD
SO303_14-4	10.02.2024 10:10	02° 59.999' N	078° 00.000' E	3238.8	CTD
SO303_14-5	10.02.2024 10:44	02° 59.997' N	078° 00.003' E	3237.7	CTD
SO303_14-6	10.02.2024 11:41	03° 00.000' N	078° 00.001' E	3238.1	CTD
SO303_14-7	10.02.2024 12:49	03° 00.006' N	077° 59.997' E	3235.9	MSN
SO303_14-8	10.02.2024 13:43	03° 00.019' N	077° 59.993' E	3236.1	MSN
SO303_14-9	10.02.2024 14:32	03° 00.227' N	077° 59.959' E	3223.7	MSN
SO303_15-1	10.02.2024 20:31	02° 36.625' N	078° 46.754' E	3358.2	EM122
SO303_15-2	10.02.2024 22:07	02° 35.972' N	078° 47.184' E	3347.6	MUC
SO303_15-3	11.02.2024 00:40	02° 35.970' N	078° 47.306' E	3347.1	GC
SO303_16-1	11.02.2024 11:38	01° 58.641' N	080° 02.742' E	4371.5	DRIFT
SO303_16-2	11.02.2024 13:06	02° 00.023' N	079° 59.994' E	3869.3	CTD
SO303_16-3	11.02.2024 16:12	02° 00.006' N	079° 59.998' E	3874.4	CTD
SO303_16-4	11.02.2024 17:14	02° 00.158' N	079° 59.722' E	3822.7	CTD
SO303_16-5	11.02.2024 18:12	01° 59.974' N	079° 59.987' E	3872.2	CTD
SO303_16-6	11.02.2024 19:47	01° 59.967' N	079° 59.824' E	3847.4	MSN
SO303_16-7	11.02.2024 20:49	02° 00.021' N	079° 59.827' E	3844.3	MSN
SO303_16-8	11.02.2024 22:04	02° 00.072' N	079° 59.829' E	3846.8	MSN
SO303_16-9	11.02.2024 22:45	02° 00.117' N	079° 59.823' E	3845.0	MSN
SO303_16-10	11.02.2024 23:46	02° 02.108' N	080° 00.001' E	3827.1	EM122
SO303_16-11	12.02.2024 01:34	02° 04.226' N	079° 53.703' E	3302.1	MUC
SO303_16-12	12.02.2024 03:52	02° 04.258' N	079° 53.697' E	3304.3	GC
SO303_16-13	12.02.2024 07:05	02° 05.968' N	079° 50.251' E	3458.6	DRIFT
SO303_16-14	12.02.2024 10:13	02° 06.759' N	079° 48.432' E	4161.8	CTD
SO303_16-15	12.02.2024 11:00	02° 06.785' N	079° 48.412' E	4170.4	EM122
SO303_17-1	12.02.2024 18:25	00° 59.997' N	079° 59.978' E	4619.1	CTD
SO303_18-1	13.02.2024 01:53	00° 00.010' S	079° 59.964' E	4673.5	DRIFT
SO303_18-2	13.02.2024 04:16	00° 00.017' N	080° 00.020' E	4650.5	CTD
SO303_18-3	13.02.2024 07:52	00° 00.051' N	080° 00.039' E	4673.0	CTD

Station	Date&Time [UTC]	Latitude	Longitude	Depth [m]	Device
SO303_18-4	13.02.2024 09:36	00° 00.095' N	079° 59.975' E	4673.3	MSN
SO303_18-5	13.02.2024 11:38	00° 00.908' N	079° 52.753' E	4678.4	DRIFT
SO303_18-6	13.02.2024 12:40	00° 01.196' N	079° 52.666' E	4678.2	MUC
SO303_19-1	13.02.2024 21:56	01° 00.015' S	079° 59.974' E	4707.4	CTD
SO303_19-2	14.02.2024 01:01	00° 59.991' S	080° 00.005' E	4706.1	CTD
SO303_20-1	14.02.2024 08:37	01° 59.094' S	079° 59.977' E	4901.8	DRIFT
SO303_20-2	14.02.2024 09:46	02° 00.066' S	079° 59.933' E	4900.8	CTD
SO303_20-3	14.02.2024 13:16	01° 59.991' S	079° 59.997' E	5150.7	CTD
SO303_20-4	14.02.2024 15:14	01° 59.988' S	079° 59.996' E	4899.0	CTD
SO303_20-5	14.02.2024 15:44	01° 59.995' S	079° 59.999' E	4897.9	MSN
SO303_20-6	14.02.2024 16:38	01° 59.989' S	079° 59.997' E	4900.0	MSN
SO303_20-7	14.02.2024 17:38	01° 59.984' S	079° 59.998' E	4899.8	MSN
SO303_20-8	14.02.2024 18:06	01° 59.992' S	079° 59.998' E	4900.4	MSN
SO303_21-1	15.02.2024 00:23	03° 00.001' S	080° 00.029' E	4963.9	CTD
SO303_21-2	15.02.2024 03:42	03° 00.000' S	080° 00.003' E	4966.9	CTD
SO303_21-3	15.02.2024 05:20	03° 00.002' S	080° 00.003' E	4960.8	MUC
SO303_22-1	15.02.2024 14:29	04° 00.006' S	080° 00.008' E	4628.1	CTD
SO303_22-2	15.02.2024 17:40	04° 00.004' S	080° 00.005' E	4634.0	CTD
SO303_22-3	15.02.2024 19:50	04° 00.003' S	080° 00.006' E	4621.4	MSN
SO303_22-4	15.02.2024 20:27	04° 00.006' S	080° 00.005' E	4626.9	MSN
SO303_23-1	16.02.2024 08:36	01° 58.076' S	079° 37.348' E	4945.1	DRIFT