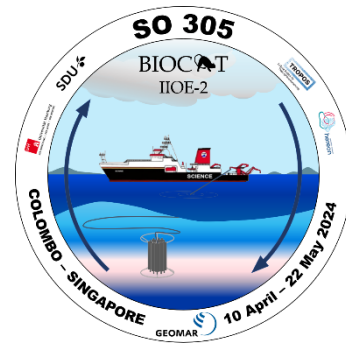


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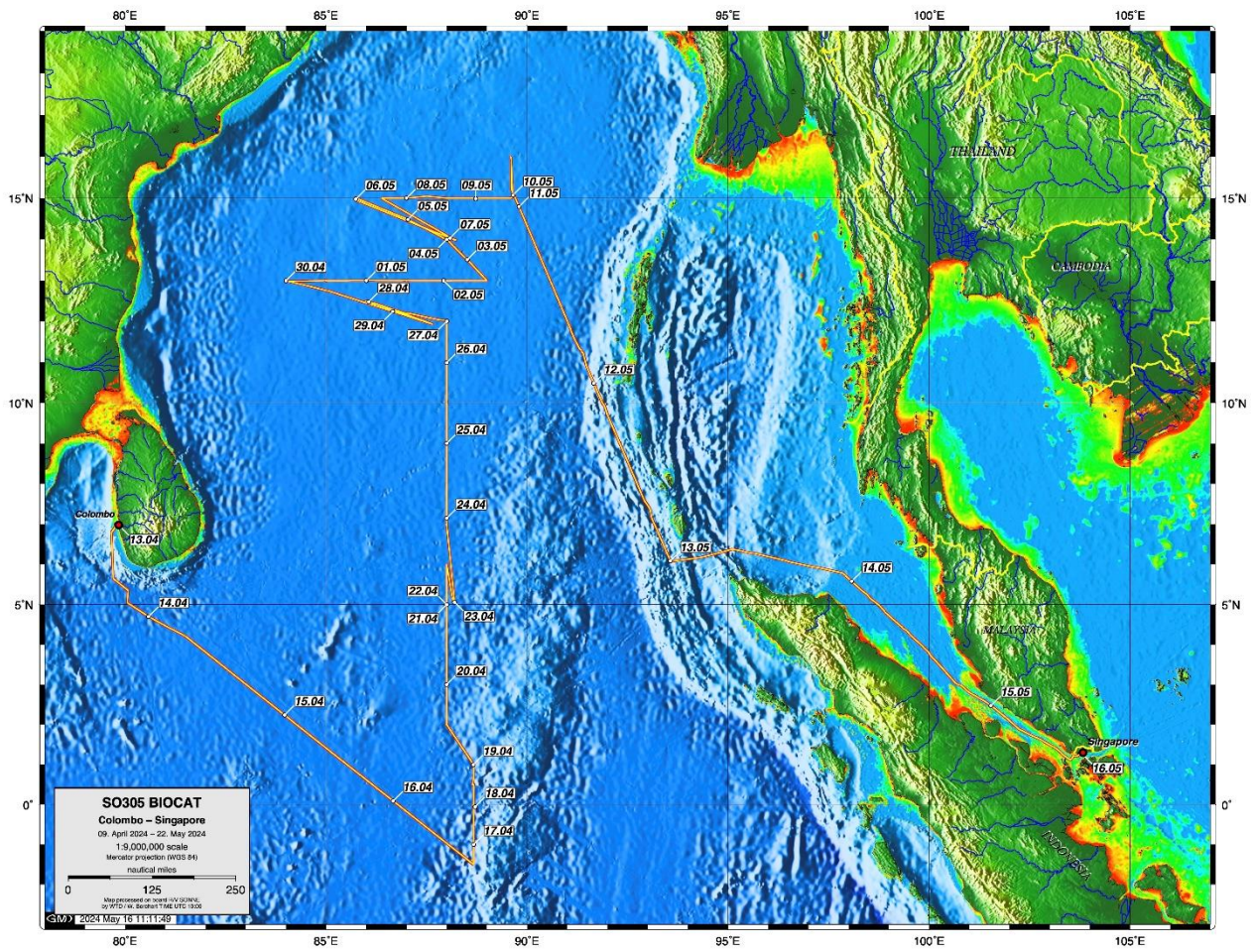


Short Cruise Report
R/V Sonne cruise SO305

Colombo (Sri Lanka) – Singapore
13 April – 16 May 2024

Chief Scientist: Prof. Dr. Hermann W. Bange
Captain: Tilo Birnbaum

Map showing the cruise track of SO305 BIOCAT-IIOE2:



Objectives

Biogeochemistry/atmosphere processes in the Bay of Bengal: A contribution to the '2nd International Indian Ocean Expedition' program (BIOCAT-IIOE2)

Climate change and pollution are current changes in the Earth system that also strongly affect the sensitive ecosystems of the ocean. Oceanic areas such as the Bay of Bengal are particularly vulnerable to the effects of human activities such as widespread air pollution, warming, and increased inputs of nutrients (eutrophication). The resulting consequences for ecosystems and associated microbiological processes in the Bay of Bengal are unpredictable, in part because appropriate measurements have been lacking. The Bay of Bengal also has a unique, distinct oxygen minimum zone (OMZ) in water depths of 100-500m, which exists comparably only in a few other oceanic regions.

The overarching goal of BIOCAT-IIOE2 is therefore *to quantify key (micro)biological processes in the water column and ocean/atmosphere exchanges to assess their impact on the OMZ of the Bay of Bengal.*

The specific goals of the cruise are:

- To decipher the physical and biogeochemical setting of the water column,
- To identify the physical and biogeochemical/microbial processes which are crucial for the development and maintenance of the OMZ,
- To assess the efficiency of the biological pump,
- To quantify the fluxes of climate-relevant trace gases across the ocean/atmosphere interface,
- To estimate the fluxes of trace metals and nutrients to the ocean from the ocean boundaries (i.e. atmosphere, continent and sediments) and
- To characterize the species and amount of natural and anthropogenic constituents (incl. trace gases and aerosols) in the marine boundary layer of the Asian outflow and their effects on the self-cleaning capacity (i.e. oxidizing efficiency) of the atmosphere.

To this end, we conducted a measurement campaign with the research vessel (R/V) Sonne in April/May 2024 (SO305) as part of BIOCAT-IIOE2 project, covering the main carbon and nitrogen cycle processes and physical processes in the water column. The oceanic measurements were complemented by an intensive atmospheric measurement program to investigate the effects of atmospheric inputs on water column processes.

In BIOCAT-IIOE2, the GEOMAR Helmholtz Centre for Ocean Research Kiel, the University of Hamburg, the Leibniz Institute for Tropospheric Research (TROPOS, Leipzig), the University of Southern Denmark (SDU, Odense, DK), the Helmholtz Centre Hereon (Geesthacht) and the Univ. of Oldenburg are collaborating. A team of 39 scientists, students and technicians made measurements in the water column and in the atmosphere at 38 stations and five 24-hour stations along the cruise track -from the eastern equatorial Indian Ocean to the central Bay of Bengal during the cruise SO305. The results of BIOCAT-IIOE2 will contribute to a significantly improved assessment of the future impacts of global climate change and pollution for the ecosystems and the OMZ of the Bay of Bengal. BIOCAT-IIOE2 is funded by the German Federal Ministry of Education and Research (BMBF) and is coordinated by Prof. Dr. Hermann W. Bange (GEOMAR, Kiel). It is a contribution to both the MARE:N program of the German Federal Government and the international programs IIOE2 (iioe-2.incois.gov.in) and SOLAS (www.solas-int.org).

Narrative

We left the port of Colombo (Sri Lanka) at 20:30 LT on 13 April with a delay of about 3.5 days because the delivery of our six transport containers was significantly delayed.

Underway measurements in the surface water and the atmosphere started after leaving the EEZ of Sri Lanka on 15 April at around 05:00 LT (= UTC + 5.5h). After a transit of 2.5 days we performed a test station (stat #01) close to the equator at 0°27.4'N 86°10.7'E on 16 April to test the CTD/Ro and to optimize seawater sampling from the Niskin bottles.

The regular, repetitive station work included the use of the CTD/Rosette (CTD/Ro, from the water surface to the sea floor at a maximum water depth of 4500 m), microstructure measurements (with a free-falling microstructure probe up to 200 m water depth) and the use of Go-Flo water samplers (up to a water depth of 500 m). At five 24-hour stations, the regular station program was supplemented by zodiac deployments to sample the uppermost meter of the water column, the use of a submersible pump (up to a water depth of 150 m) and the deployment of drifting sediment traps (which are collected again after 48 hours). In addition to the station work, continuous measurements are carried out in the atmosphere (trace gases, aerosols) and in the surface water (dissolved trace gases and sampling for trace metals with a towfish).

The first regular station (stat #02) was performed at 1.5°S 88°40'E on 17 April. It was followed by a series of four stations (stat #03 - #06) on a south to north section crossing the equator along 88°40'E up to 1°N with a latitudinal spacing of 0.5°. At station #04, located at equator (0°N 88°40'E), a long-term deep-sea mooring (with ADCP, oxygen sensors and CTD devices) was deployed in about 4500 m water depth. We then steamed a little further west to 88°E, to the start of our main south to north section through the Bay of Bengal. Stations #07 to #10 were spaced 1° apart from 2°N to 5°N along 88°E. On 21 April we had the first 24h-station (stat #10 at 5°N 88°E). At this station we deployed a first set of drifting particle traps and an Argo float. We continued the section along 88°E with station #11 (sampled at 6°N 88°E on 23 April). After completing station #11 we steamed back south to pick up the drifting traps at 5°0.3'N 88°10.8'E (= stat #12 on 23 April in the afternoon). Between 24 April and 26 April, stations #13 (7°N) to #18 (12°N) located in 1° intervals along 88°E were sampled. At station #18, which was the second 24h-station, we deployed both a second set of drifting particle traps and an Argo float. After completing station #18 we followed a diagonal section to the northwest with stations #19 (12°12.3'N 87°1.5'E on 28 April in the morning) and #20 (12°30'N 86°0'E on 28 April in the afternoon). After station #20 we steamed back to pick up the drifting traps at 11°55.7'N 87°43.9'E (= stat #21). We completed the diagonal section with stations #22 (at 12°44.5'N 85°4.5'E on 30 April) and #23 (13°N 84°E on 30 April in the afternoon). This was followed by stations #24 (13°N 85°E on 01 May) to #28 (13°N 89°E on 03 May) which were located in 1° intervals along the west to east section at 13°N. A second diagonal section to the northwest was started with stations #29 (13°30.7'N 88°30.6'E) and #30 (at 14°N 88°E on 04 May). Station #30 was the third 24-hour station. At this station we deployed the third set of drifting particle traps. The diagonal section was completed with station #31 (14°30'N 87°E on 05 May) and #32 (15°N 85°45'E on 06

May). Station #32 was the fourth 24h-station. After station #32 we steamed back to pick up the drifting traps at 13°59.11'N 88°11.7'E on 07 May (= stat #33). This was followed by stations #34 (15°N 88°E on 08 May) to #37 (15°N 89°36'E on 09 May) which were located along a west to east section at 15°N. Station #37 was the fifth 24h-station. The last station (#38) was performed at 16°N 89°36'E on 11 May. Due to a medical emergency caused by an accident at work on 06 May, the cruise was terminated prematurely at 10h on 11 May after the station work at station #38 had been completed. All underway measurements in the atmosphere and in the water were stopped on 11 May at 14:00 LT (= UTC + 6h) with the entry into the EEZ of India. We arrived at the pier in Singapore at 11:00 LT (= UTC + 8h) on 16 May, six days earlier as originally planned.

Acknowledgements

We acknowledge the financial support of SO305 BIOCAT-IIOE2 by the German Federal Ministry for Education and Research (BMBF) with grants FKZ 03G0305A (GEOMAR) and FKZ 03G0305B (University of Hamburg). TROPOS and the University of Oldenburg received funding for SO305 from the German Science Foundation (DFG). Hereon (Geesthacht) generously supported the participation of Leon Schmidt in SO305 BIOCAT-IIOE2. Last but not least, the University of Southern Denmark generously supported the participation of the four colleagues from Odense (DK). The Leitstelle Deutsche Forschungsschiffe (German Research Fleet Coordination Centre) at the University of Hamburg provided excellent support during the preparation of SO305 BIOCAT-IIOE2. We thank Cpt. Tilo Birnbaum and the crew of R/V Sonne for their never-ending excellent support during SO305 which made SO305 such a success.

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25.	Ploschke, Jule	Halocarbons	GEOMAR
26.	Mickenbecker, Julia	Halocarbons	GEOMAR
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31.	Andersch, Tjark	¹⁵ N isotopes, suspended matter	Univ. Hamburg
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33.	Schlangen, Isabell	Microbial processes, meta genomics	SDU
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35.	Nielsen, Lubrina	Microbial processes, meta genomics	SDU
36.	Fernandez Juarez, Victor	Microbial processes, meta genomics	SDU
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38.	Babu Suja, Arun	Aerosols, atm. trace gases	TROPOS
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List of stations

Station	Device	Date & Time, UTC	Latitude	Longitude	Depth, m
SO305_0_Underway-4	VMADCP_75kHz	2024/04/15 02:30:00	03° 02,115' N	082° 58,218' E	0.0
SO305_0_Underway-5	PS	2024/04/15 02:30:00	03° 02,115' N	082° 58,218' E	0.0
SO305_0_Underway-3	VMADCP_38kHz	2024/04/15 02:30:00	03° 02,115' N	082° 58,218' E	0.0
SO305_0_Underway-6	FBOX	2024/04/15 02:30:00	03° 02,115' N	082° 58,218' E	0.0
SO305_0_Underway-2	EM122	2024/04/15 02:30:00	03° 02,115' N	082° 58,218' E	0.0
SO305_1-1	CTD	2024/04/16 02:59:39	00° 25,947' N	086° 13,861' E	4495.3
SO305_1-2	TMF	2024/04/16 06:28:07	00° 25,946' N	086° 13,890' E	4494.6
SO305_2-1	CTD	2024/04/17 04:22:43	00° 59,971' S	088° 40,211' E	4311.8
SO305_2-2	MSS	2024/04/17 08:26:25	00° 59,992' S	088° 40,211' E	4334.9
SO305_2-3	CTD	2024/04/17 09:25:18	00° 59,932' S	088° 40,217' E	4308.8
SO305_2-5	WS	2024/04/17 11:10:02	00° 59,933' S	088° 40,214' E	4307.8
SO305_2-6	CTD	2024/04/17 13:47:13	00° 59,935' S	088° 40,209' E	4307.2
SO305_3-1	CTD	2024/04/17 18:43:35	00° 30,001' S	088° 40,195' E	4486.8
SO305_4-1	CTD	2024/04/18 00:51:03	00° 01,531' S	088° 40,214' E	4515.8
SO305_4-2	CTD	2024/04/18 04:47:25	00° 01,543' S	088° 40,184' E	4517.7
SO305_4-3	CTD	2024/04/18 05:47:15	00° 01,537' S	088° 40,193' E	4516.5
SO305_4-4	MOOR	2024/04/18 07:22:57	00° 01,458' S	088° 39,926' E	4521.5
SO305_4-5	WS	2024/04/18 15:00:44	00° 00,463' S	088° 39,997' E	4518.4
SO305_4-6	TMF	2024/04/18 16:20:59	00° 00,445' S	088° 40,154' E	4517.9
SO305_5-1	CTD	2024/04/18 19:53:03	00° 29,996' N	088° 40,210' E	4835.7
SO305_5-2	MSS	2024/04/18 23:16:41	00° 30,030' N	088° 40,193' E	4479.4
SO305_6-1	CTD	2024/04/19 04:22:10	01° 00,066' N	088° 40,313' E	4384.7
SO305_6-2	MSS	2024/04/19 07:22:48	01° 00,075' N	088° 40,326' E	4382.0
SO305_6-3	CTD	2024/04/19 08:18:58	00° 59,877' N	088° 39,737' E	4380.6
SO305_6-4	CTD	2024/04/19 09:33:41	00° 59,875' N	088° 39,736' E	4381.2
SO305_6-5	WS	2024/04/19 10:49:07	00° 59,869' N	088° 39,742' E	4380.5
SO305_7-1	CTD	2024/04/19 19:22:07	02° 00,004' N	088° 00,004' E	4281.7
SO305_7-2	MSS	2024/04/19 22:24:02	02° 00,002' N	088° 00,006' E	4279.7
SO305_7-3	WS	2024/04/19 23:17:29	02° 00,025' N	087° 59,891' E	4282.2
SO305_8-1	CTD	2024/04/20 06:45:48	02° 59,998' N	088° 00,002' E	4221.3
SO305_8-2	MSS	2024/04/20 09:46:09	02° 59,999' N	087° 59,998' E	4223.1
SO305_8-3	CTD	2024/04/20 10:34:57	02° 59,782' N	087° 59,736' E	4222.0
SO305_8-4	WS	2024/04/20 11:50:01	02° 59,780' N	087° 59,737' E	4222.8
SO305_9-1	CTD	2024/04/20 19:14:54	03° 59,998' N	088° 00,003' E	4008.8
SO305_9-2	MSS	2024/04/20 22:03:17	03° 59,994' N	087° 59,994' E	4010.7
SO305_9-3	WS	2024/04/20 22:51:14	03° 59,926' N	087° 59,921' E	4007.9
SO305_10-1	CTD	2024/04/21 06:21:51	04° 59,977' N	088° 00,159' E	3976.5
SO305_10-2	DF	2024/04/21 06:43:46	04° 59,974' N	088° 00,157' E	3976.3
SO305_10-3	CTD	2024/04/21 08:45:42	04° 59,996' N	087° 59,998' E	3976.5
SO305_10-4	MSS	2024/04/21 11:32:27	05° 00,000' N	087° 59,999' E	3979.4
SO305_10-5	CTD	2024/04/21 12:35:49	04° 59,996' N	087° 59,914' E	3977.9
SO305_10-6	CTD	2024/04/21 13:54:40	04° 59,987' N	087° 59,915' E	3975.9
SO305_10-7	WS	2024/04/21 16:01:19	04° 59,990' N	087° 59,921' E	3976.5
SO305_10-8	CTD	2024/04/21 18:35:47	04° 59,985' N	087° 59,918' E	3977.2
SO305_10-9	MSS	2024/04/21 19:46:12	04° 59,995' N	087° 59,919' E	3978.3

SO305_10-10	BOAT	2024/04/22 00:26:36	04° 59,997' N	087° 59,911' E	3976.6
SO305_10-11	MSS	2024/04/22 01:37:45	05° 00,271' N	088° 00,130' E	3977.7
SO305_10-12	CTD	2024/04/22 03:01:29	04° 59,927' N	087° 59,779' E	3979.4
SO305_10-13	CTD	2024/04/22 04:31:47	04° 59,926' N	087° 59,774' E	3976.4
SO305_10-14	PUMP	2024/04/22 05:41:25	04° 59,807' N	087° 59,990' E	3976.7
SO305_10-15	MSS	2024/04/22 08:46:06	04° 59,803' N	087° 59,992' E	3977.9
SO305_10-16	CTD	2024/04/22 09:40:38	04° 59,804' N	087° 59,992' E	3978.1
SO305_10-17	FLOAT	2024/04/22 10:49:18	04° 59,804' N	087° 59,995' E	3976.4
SO305_10-18	TMF	2024/04/22 11:01:53	05° 00,184' N	087° 59,835' E	3976.8
SO305_0_Underway-8	uCTD	2024/04/22 12:43:54	05° 14,277' N	087° 59,995' E	3958.9
SO305_11-2	CTD	2024/04/22 18:28:59	05° 59,990' N	088° 00,002' E	3898.3
SO305_11-3	MSS	2024/04/22 21:18:55	05° 59,995' N	087° 59,998' E	3899.3
SO305_11-4	CTD	2024/04/22 22:13:57	05° 59,987' N	088° 00,007' E	3902.4
SO305_11-5	WS	2024/04/22 23:18:42	05° 59,989' N	088° 00,002' E	3898.2
SO305_12-1	DF	2024/04/23 07:11:07	05° 02,717' N	088° 11,104' E	3965.3
SO305_12-2	CTD	2024/04/23 09:30:37	05° 03,350' N	088° 11,803' E	3967.9
SO305_12-3	TMF	2024/04/23 10:22:33	05° 04,287' N	088° 11,712' E	3965.5
SO305_0_Underway-9	uCTD	2024/04/23 11:00:24	05° 07,777' N	088° 11,347' E	3960.0
SO305_13-1	CTD	2024/04/24 01:02:36	07° 00,031' N	087° 59,973' E	3761.9
SO305_13-2	MSS	2024/04/24 01:55:02	07° 00,031' N	087° 59,978' E	3769.2
SO305_13-3	CTD	2024/04/24 02:49:04	07° 00,605' N	088° 00,398' E	3770.1
SO305_13-4	CTD	2024/04/24 06:19:20	07° 00,602' N	088° 00,400' E	3788.7
SO305_13-5	WS	2024/04/24 07:39:34	07° 00,606' N	088° 00,398' E	3775.2
SO305_14-1	CTD	2024/04/24 15:14:50	07° 59,972' N	087° 59,959' E	3658.4
SO305_14-2	MSS	2024/04/24 17:57:09	07° 59,965' N	087° 59,963' E	3657.3
SO305_14-3	CTD	2024/04/24 18:59:05	07° 59,964' N	087° 59,960' E	3656.6
SO305_14-4	WS	2024/04/24 20:18:18	07° 59,971' N	087° 59,958' E	3657.9
SO305_15-1	CTD	2024/04/25 03:36:19	09° 00,075' N	088° 00,043' E	3531.6
SO305_15-2	MSS	2024/04/25 06:23:28	09° 00,072' N	088° 00,048' E	3535.2
SO305_15-3	CTD	2024/04/25 07:27:00	09° 00,077' N	088° 00,043' E	3538.0
SO305_15-4	CTD	2024/04/25 08:49:27	09° 00,075' N	088° 00,047' E	3534.9
SO305_15-5	WS	2024/04/25 10:00:40	09° 00,075' N	088° 00,038' E	3532.3
SO305_16-1	CTD	2024/04/25 17:16:03	10° 00,077' N	088° 00,040' E	3423.3
SO305_16-2	MSS	2024/04/25 19:49:15	10° 00,102' N	088° 00,060' E	3421.5
SO305_16-3	CTD	2024/04/25 20:39:54	10° 00,536' N	088° 00,534' E	3423.5
SO305_16-4	WS	2024/04/25 21:32:37	10° 00,537' N	088° 00,534' E	3422.1
SO305_17-1	MSS	2024/04/26 04:44:37	10° 59,957' N	088° 00,033' E	3332.0
SO305_17-2	CTD	2024/04/26 05:31:02	10° 59,439' N	088° 00,034' E	3335.6
SO305_17-3	WS	2024/04/26 09:27:10	10° 59,477' N	088° 00,046' E	3330.7
SO305_18-1	DF	2024/04/26 16:18:51	11° 58,949' N	087° 59,991' E	3229.7
SO305_18-2	CTD	2024/04/26 18:49:36	11° 59,983' N	087° 59,983' E	3226.7
SO305_18-3	MSS	2024/04/26 21:11:47	11° 59,984' N	087° 59,991' E	3226.4
SO305_18-4	CTD	2024/04/26 21:55:29	12° 00,241' N	088° 00,283' E	3227.5
SO305_18-5	WS	2024/04/26 23:18:52	12° 00,241' N	088° 00,285' E	3224.4
SO305_18-6	BOAT	2024/04/27 00:32:23	12° 00,146' N	087° 59,934' E	3224.3
SO305_18-7	PUMP	2024/04/27 02:50:10	12° 00,144' N	087° 59,939' E	3226.2
SO305_18-8	CTD	2024/04/27 06:32:29	12° 00,143' N	087° 59,937' E	3224.0
SO305_18-9	CTD	2024/04/27 07:40:33	12° 00,139' N	087° 59,933' E	3224.3

SO305_18-10	MSS	2024/04/27 08:51:35	12° 00,188' N	087° 59,977' E	3227.2
SO305_18-11	CTD	2024/04/27 09:43:49	12° 00,501' N	088° 00,220' E	3224.1
SO305_18-12	CTD	2024/04/27 11:49:11	12° 00,501' N	088° 00,210' E	3223.9
SO305_18-13	CTD	2024/04/27 13:00:47	12° 00,502' N	088° 00,215' E	3224.0
SO305_18-14	MSS	2024/04/27 14:04:10	12° 00,558' N	088° 00,190' E	3223.8
SO305_18-15	CTD	2024/04/27 15:13:37	12° 00,838' N	088° 01,101' E	3192.6
SO305_18-16	CTD	2024/04/27 16:35:49	12° 00,834' N	088° 01,100' E	3225.5
SO305_18-17	MSS	2024/04/27 17:47:36	12° 00,836' N	088° 01,106' E	3221.4
SO305_18-18	FLOAT	2024/04/27 18:40:24	12° 00,919' N	088° 01,502' E	3224.2
SO305_18-19	TMF	2024/04/27 18:42:45	12° 00,933' N	088° 01,531' E	3223.6
SO305_19-1	CTD	2024/04/28 00:55:16	12° 12,330' N	087° 01,567' E	3234.5
SO305_19-2	MSS	2024/04/28 03:28:31	12° 12,322' N	087° 01,556' E	3232.6
SO305_20-1	CTD	2024/04/28 10:28:32	12° 30,009' N	085° 59,988' E	3249.3
SO305_20-2	MSS	2024/04/28 12:49:32	12° 30,008' N	085° 59,990' E	3249.0
SO305_20-3	CTD	2024/04/28 13:40:34	12° 30,153' N	085° 59,579' E	3248.8
SO305_20-4	CTD	2024/04/28 14:54:37	12° 30,154' N	085° 59,583' E	3248.8
SO305_21-1	DF	2024/04/29 01:10:28	11° 56,823' N	087° 37,324' E	3227.7
SO305_21-2	CTD	2024/04/29 03:05:40	11° 56,730' N	087° 37,442' E	3228.2
SO305_21-3	TMF	2024/04/29 04:01:36	11° 56,728' N	087° 37,441' E	3227.6
SO305_22-1	CTD	2024/04/29 19:43:07	12° 44,521' N	085° 04,508' E	3255.9
SO305_22-2	MSS	2024/04/29 22:11:32	12° 44,535' N	085° 04,503' E	3255.3
SO305_22-3	WS	2024/04/29 23:18:50	12° 44,535' N	085° 04,502' E	3255.9
SO305_23-1	CTD	2024/04/30 07:09:03	13° 00,016' N	084° 00,010' E	3304.8
SO305_23-2	MSS	2024/04/30 09:50:52	12° 59,999' N	084° 00,003' E	3304.1
SO305_23-3	CTD	2024/04/30 10:53:09	12° 59,037' N	083° 59,847' E	3308.3
SO305_23-4	CTD	2024/04/30 12:24:00	12° 59,031' N	083° 59,841' E	3306.5
SO305_23-5	CTD	2024/04/30 13:24:37	12° 59,036' N	083° 59,848' E	3306.8
SO305_23-6	WS	2024/04/30 14:25:52	12° 59,035' N	083° 59,845' E	3307.7
SO305_24-1	CTD	2024/04/30 21:45:42	13° 00,097' N	085° 00,062' E	3238.6
SO305_24-2	MSS	2024/05/01 00:16:53	13° 00,088' N	085° 00,058' E	3238.9
SO305_24-3	CTD	2024/05/01 01:13:24	12° 59,461' N	084° 59,479' E	3238.7
SO305_24-4	CTD	2024/05/01 02:25:07	12° 59,459' N	084° 59,478' E	3240.5
SO305_25-1	CTD	2024/05/01 09:07:44	13° 00,077' N	086° 00,015' E	3199.4
SO305_25-2	MSS	2024/05/01 11:27:23	13° 00,072' N	086° 00,012' E	3200.0
SO305_25-3	CTD	2024/05/01 12:20:51	13° 00,025' N	085° 59,890' E	3199.4
SO305_25-4	CTD	2024/05/01 13:41:53	13° 00,019' N	085° 59,886' E	3198.0
SO305_25-5	WS	2024/05/01 14:30:43	13° 00,025' N	085° 59,889' E	3199.3
SO305_26-1	CTD	2024/05/01 21:38:48	13° 00,097' N	087° 00,002' E	3141.4
SO305_26-2	MSS	2024/05/02 00:05:07	13° 00,094' N	086° 59,996' E	3138.6
SO305_26-3	CTD	2024/05/02 01:04:37	12° 59,776' N	086° 59,729' E	3140.2
SO305_26-4	CTD	2024/05/02 02:08:49	12° 59,775' N	086° 59,738' E	3140.7
SO305_26-5	WS	2024/05/02 03:33:10	12° 59,775' N	086° 59,733' E	3138.3
SO305_27-1	CTD	2024/05/02 10:31:51	13° 00,006' N	088° 00,056' E	3083.6
SO305_27-2	CTD	2024/05/02 10:59:11	12° 59,996' N	088° 00,059' E	3084.5
SO305_27-3	MSS	2024/05/02 13:10:11	12° 59,997' N	088° 00,051' E	3081.0
SO305_27-4	CTD	2024/05/02 14:11:28	12° 59,586' N	087° 59,853' E	3085.7
SO305_27-5	CTD	2024/05/02 15:38:19	12° 59,579' N	087° 59,857' E	3084.2
SO305_27-6	WS	2024/05/02 16:26:01	12° 59,578' N	087° 59,851' E	3083.3

SO305_28-1	CTD	2024/05/02 23:22:09	12° 59,984' N	089° 00,097' E	3041.8
SO305_28-2	CTD	2024/05/03 02:06:34	12° 59,994' N	089° 00,095' E	3040.5
SO305_28-3	WS	2024/05/03 03:23:06	12° 59,989' N	089° 00,094' E	3044.1
SO305_29-1	CTD	2024/05/03 08:44:57	13° 30,657' N	088° 30,724' E	3022.7
SO305_29-2	MSS	2024/05/03 10:59:02	13° 30,657' N	088° 30,711' E	3017.8
SO305_30-1	CTD	2024/05/04 03:01:52	14° 00,000' N	087° 59,998' E	2972.1
SO305_30-2	CTD	2024/05/04 04:21:02	13° 59,998' N	088° 00,001' E	2971.5
SO305_30-3	CTD	2024/05/04 05:42:56	13° 59,999' N	087° 59,999' E	2970.0
SO305_30-4	CTD	2024/05/04 07:35:20	13° 59,998' N	088° 00,003' E	2970.2
SO305_30-5	CTD	2024/05/04 10:00:22	13° 59,996' N	088° 00,004' E	2970.4
SO305_30-6	DF	2024/05/04 12:00:11	14° 00,006' N	088° 00,000' E	2970.3
SO305_30-7	PUMP	2024/05/04 14:14:24	13° 59,650' N	087° 59,123' E	2972.3
SO305_30-8	CTD	2024/05/04 17:21:53	13° 59,655' N	087° 59,124' E	2969.5
SO305_30-9	CTD	2024/05/04 19:13:02	13° 59,643' N	087° 59,125' E	2969.7
SO305_30-10	CTD	2024/05/04 21:59:24	13° 59,646' N	087° 59,124' E	2970.1
SO305_30-11	MSS	2024/05/04 23:11:55	13° 59,649' N	087° 59,123' E	2969.9
SO305_30-12	CTD	2024/05/05 00:03:47	13° 59,653' N	087° 59,119' E	2970.6
SO305_30-13	BOAT	2024/05/05 00:59:47	13° 59,650' N	087° 59,124' E	2972.0
SO305_30-14	WS	2024/05/05 02:37:06	13° 59,643' N	087° 59,122' E	2972.2
SO305_30-15	TMF	2024/05/05 03:31:48	13° 59,643' N	087° 59,122' E	2972.2
SO305_31-1	CTD	2024/05/05 10:21:20	14° 29,934' N	087° 00,037' E	2981.3
SO305_31-2	MSS	2024/05/05 12:42:14	14° 29,942' N	087° 00,023' E	2979.5
SO305_32-1	CTD	2024/05/05 21:31:03	15° 00,025' N	085° 45,032' E	2940.8
SO305_32-2	CTD	2024/05/05 23:11:47	14° 59,996' N	085° 45,007' E	2851.3
SO305_32-3	MSS	2024/05/06 00:01:32	15° 00,001' N	085° 44,999' E	2941.2
SO305_32-4	CTD	2024/05/06 02:24:29	14° 59,439' N	085° 44,731' E	2934.3
SO305_32-5	CTD	2024/05/06 05:31:11	14° 59,434' N	085° 44,738' E	2932.0
SO305_32-6	MSS	2024/05/06 06:33:14	14° 59,405' N	085° 44,726' E	2931.2
SO305_32-7	PUMP	2024/05/06 07:25:24	14° 58,652' N	085° 44,285' E	2936.4
SO305_32-8	CTD	2024/05/06 11:14:13	14° 58,645' N	085° 44,290' E	2938.4
SO305_32-9	MSS	2024/05/06 12:26:27	14° 58,650' N	085° 44,283' E	2937.8
SO305_32-10	CTD	2024/05/06 13:21:49	14° 58,147' N	085° 43,919' E	2937.5
SO305_32-11	CTD	2024/05/06 14:44:43	14° 58,151' N	085° 43,920' E	2938.9
SO305_32-12	WS	2024/05/06 15:41:06	14° 58,153' N	085° 43,916' E	2937.0
SO305_32-13	CTD	2024/05/06 16:53:29	14° 58,143' N	085° 43,919' E	2935.7
SO305_32-14	MSS	2024/05/06 18:17:24	14° 58,142' N	085° 43,923' E	2934.9
SO305_32-15	CTD	2024/05/06 19:07:53	14° 57,712' N	085° 43,606' E	2934.6
SO305_33-1	DF	2024/05/07 10:48:55	13° 59,145' N	088° 12,752' E	2970.1
SO305_33-2	CTD	2024/05/07 12:51:34	13° 59,279' N	088° 13,754' E	2975.0
SO305_33-3	TMF	2024/05/07 13:35:29	13° 59,215' N	088° 13,644' E	2973.1
SO305_34-1	CTD	2024/05/08 05:41:57	15° 00,020' N	086° 59,958' E	2888.5
SO305_34-2	MSS	2024/05/08 08:13:47	15° 00,025' N	086° 59,954' E	2901.0
SO305_34-3	CTD	2024/05/08 09:07:21	15° 00,120' N	086° 59,932' E	2894.5
SO305_34-4	WS	2024/05/08 10:14:24	15° 00,118' N	086° 59,932' E	2887.4
SO305_35-1	CTD	2024/05/08 16:53:05	15° 00,019' N	087° 59,852' E	2834.3
SO305_35-2	CTD	2024/05/08 18:10:15	15° 00,017' N	087° 59,850' E	2832.9
SO305_35-3	MSS	2024/05/08 20:22:14	15° 00,013' N	087° 59,851' E	2834.9
SO305_35-4	CTD	2024/05/08 21:12:06	15° 00,025' N	087° 59,850' E	2834.4

SO305_35-5	WS	2024/05/08 22:06:25	15° 00,022' N	087° 59,848' E	2832.0
SO305_36-1	CTD	2024/05/09 03:28:32	14° 59,985' N	088° 44,749' E	2844.7
SO305_36-2	MSS	2024/05/09 06:21:39	14° 59,954' N	088° 44,758' E	2843.9
SO305_36-3	CTD	2024/05/09 07:21:44	14° 59,862' N	088° 44,543' E	2847.8
SO305_36-4	CTD	2024/05/09 08:49:26	14° 59,090' N	088° 43,406' E	2841.9
SO305_36-5	WS	2024/05/09 09:58:47	14° 59,093' N	088° 43,405' E	2841.2
SO305_37-1	CTD	2024/05/09 15:56:25	15° 00,016' N	089° 36,018' E	2713.9
SO305_37-2	MSS	2024/05/09 18:03:54	15° 00,016' N	089° 36,022' E	2718.5
SO305_37-3	CTD	2024/05/09 18:55:02	15° 00,145' N	089° 36,139' E	2712.8
SO305_37-4	CTD	2024/05/09 21:27:36	15° 00,142' N	089° 36,135' E	2710.4
SO305_37-5	MSS	2024/05/09 22:46:15	15° 00,142' N	089° 36,133' E	2712.9
SO305_37-6	BOAT	2024/05/09 23:58:09	15° 00,148' N	089° 36,130' E	2713.8
SO305_37-7	PUMP	2024/05/10 02:28:08	15° 00,142' N	089° 36,144' E	2714.6
SO305_37-8	CTD	2024/05/10 06:01:49	15° 02,129' N	089° 37,896' E	2704.8
SO305_37-9	MSS	2024/05/10 07:22:55	15° 02,255' N	089° 37,946' E	2722.7
SO305_37-10	CTD	2024/05/10 08:29:05	15° 04,356' N	089° 38,853' E	2724.6
SO305_37-11	CTD	2024/05/10 10:31:53	15° 04,344' N	089° 38,859' E	2747.4
SO305_37-12	CTD	2024/05/10 11:31:20	15° 04,353' N	089° 38,852' E	2722.4
SO305_37-13	CTD	2024/05/10 13:10:34	15° 04,352' N	089° 38,855' E	2722.8
SO305_37-14	WS	2024/05/10 14:14:18	15° 04,354' N	089° 38,860' E	2723.0
SO305_38-1	WS	2024/05/10 19:57:17	16° 00,018' N	089° 35,980' E	2561.5
SO305_38-2	CTD	2024/05/10 21:02:07	15° 59,998' N	089° 36,004' E	2591.0
SO305_38-3	MSS	2024/05/10 23:10:31	15° 59,999' N	089° 35,998' E	2577.4
SO305_38-4	CTD	2024/05/11 00:08:28	15° 59,998' N	089° 35,999' E	2574.8
SO305_38-5	CTD	2024/05/11 01:12:54	16° 00,001' N	089° 35,993' E	2556.1
SO305_38-6	CTD	2024/05/11 02:20:24	15° 59,998' N	089° 36,000' E	2561.3
SO305_38-7	CTD	2024/05/11 03:20:32	16° 00,008' N	089° 36,006' E	2560.3

Abbreviations:

VMADCP_38kHz: Vessel-mounted ADCP 38 kHz

VMADCP_75kHz: Vessel-mounted ADCP 75 kHz

PS: Sub bottom profiler

FBOX: FerryBox

EM122: Multi Beam Echo Sounder EM122

CTD: CTD/Rosette with 22 Bottles

TMF: Towfish

MSS: Microstructure probe

WS: Go-Flo bottles

MOOR: Mooring

DF: Drifting particle (sediment) traps

BOAT: Zodiac

PUMP: Submersible pump

FLOAT: Argo float

uCTD: underway CTD