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Short Cruise Report
RV MARIA S. MERIAN – Cruise MSM114/2

Mindelo – Punta Arenas
23.01.2023 –22.02.2023
Chief Scientist: Dr. Frank Nitsche
Captain: Ralf Schmidt



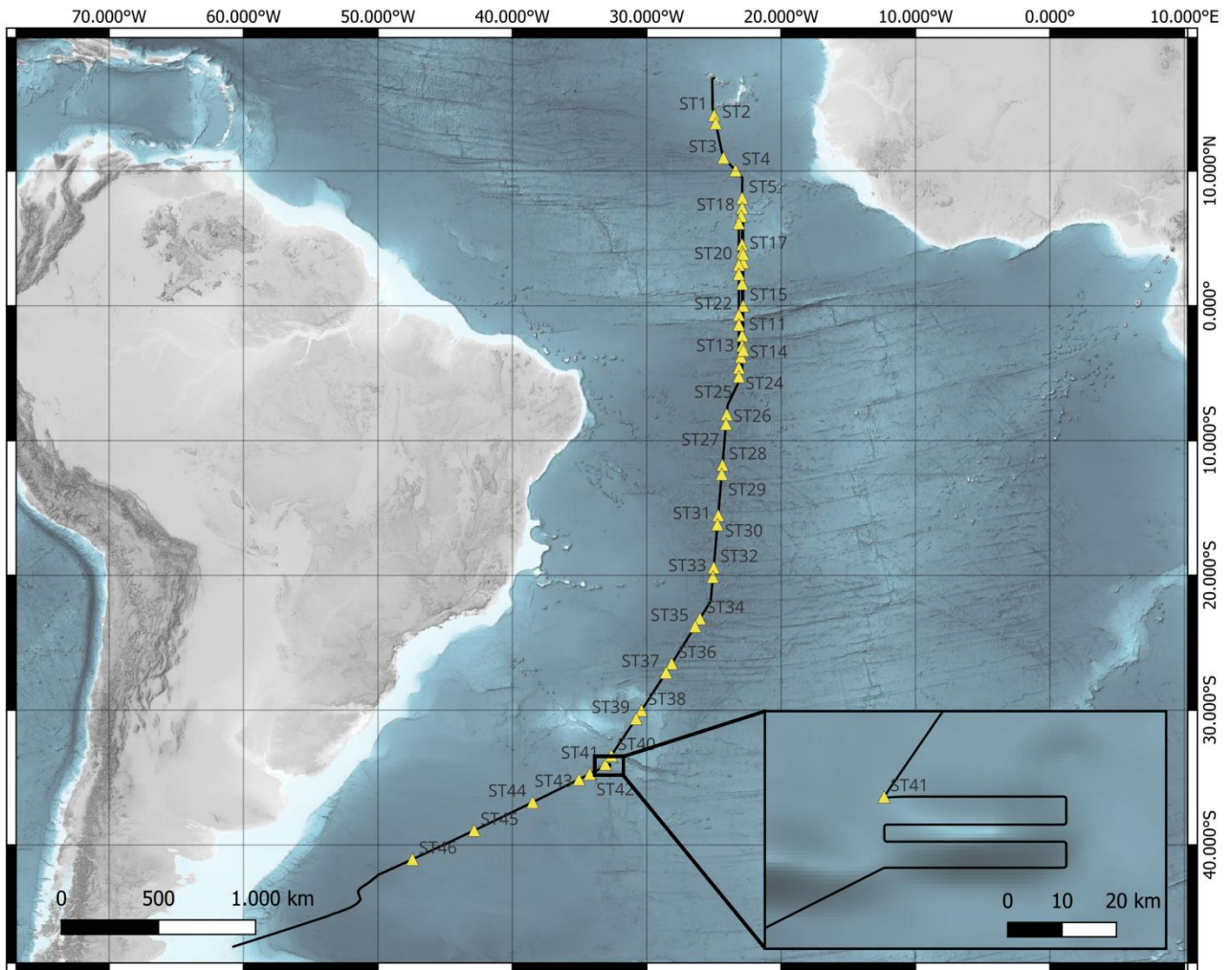


Fig 1: Track chart of Cruise MSM114-2, (Mindelo – Punta Arenas), triangles represent stations.

Objectives

The MSM114/2 cruise served three major goals. As the topic “Atlantic References and Convection” (ARC) already suggests, the main activities centered around (1) to collection of atmospheric and oceanic references across the Atlantic, (2) the investigation of tropical convection near the equator and (3) the protist diversity along this transect

The ship’s regular underway measurements of wind speed and direction, humidity, temperature, pressure and radiative fluxes were enhanced by additional instruments. On the atmospheric side, these were (1) a microwave radiometer (to capture vertically the integrated condensed water and water vapor), (2) a ceilometer (to capture cloud-base altitude and aerosol vertical distributions in the lower atmosphere), (3) a cloud camera (for regular images of the sky and cloud base altitude distributions), (4) several sun-photometers and (5) an in-situ size-stratified particle samples (to capture the properties of atmospheric aerosol). On the oceanic side an extra effort involved the analysis of automatically recorded bathymetry data for a subsequent delivery into the SEABED 2030 database. This analysis also included the detailed investigation of a volcanic seamount in the southern Atlantic.

With a side focus on air-sea interactions, these underway measurements were interrupted twice daily (usually at 9am and 2pm) to simultaneously sample profiles of the upper ocean and the lower atmosphere. During more than 40 station stops, CTD casts down to 500m explored upper ocean properties and protist diversity, and more than 110 drone flights up to 500m in altitude with different instrumentations (i.e. to address particle size or atmospheric state) sampled the upper atmosphere.

The CTD casts automatically provided water samples from different depths which were analyzed to inform on the biodiversity and biogeography of protists (single celled organisms). Despite the importance of protists in the microbial food web, little is known about the biodiversity and biogeography of protists, single celled eukaryotes. Applying high-throughput sequencing, we want to answer the question, if certain species, found only in surface waters of the South Atlantic during one of the last cruises, are also present in the North Atlantic or if the equatorial counter current is forming a physical barrier. The South Atlantic is still an understudied region regarding protist diversity. The aim of this project is to enhance the dataset for protist from understudied areas and to contribute to

The meteorological program during MSM114-2 focused on the thermodynamic and dynamic state of the Atlantic Intertropical Convergence Zone (ITCZ) in boreal winter. The measurement program complements measurements of the boreal summer Atlantic ITCZ taken during SO284. The key question addressed is how convective scale processes in the atmosphere, and their coupling to the ocean, shape the large-scale structure of the ITCZ and the regions of low wind speed therein. To this end, the ITCZ was crossed three times along 23°W longitude. During these crossings the ITCZ was sampled using continuous underway measurements and regular radiosonde launches. The underway measurements were used to obtain detailed measurements at the surface of key atmospheric parameters such as wind speed and direction, humidity, temperature, pressure as well as vertically integrated quantities of condensed water and water vapor. All underway measurements ran from the time we left the Cape Verde Islands EEZ until we re-entered the Argentine EEZ. In addition to the underway measurements, 92 radiosondes were launched to obtain vertical profiles extending from the surface to the lower stratosphere with high vertical resolution. Radiosonde launches were mostly limited to the deep tropics and were conducted at a frequency of about every 3 hours.

Narrative

As scientists and crew were already complete, the MSM114/2 research cruise on

Atmospheric References and Convection (ARC) left Mindelo already during the early afternoon of Jan 23. The extra half day helped to recover a small fraction of station time lost to the imposed maximum speed of 10kn. About three hours after leaving the harbor all instruments could be turned on for continued sampling (until Argentine waters were reached after mid-Feb). The entire cruise was regularly interrupted by brief (45min) station stops, each day at 9am and 2pm. During these stops, in parallel, profiles were sampled for upper ocean (down to 500m with a CTD) and lower atmospheric (with small sensors on several drone flights up to 500m in altitude). In total, more than 50 upper ocean and more than 120 lower atmosphere profiles were collected, covering different climate zones between 16N and 45S. In conjunction with the regular upper profiling, including two deep profiles at the equator and near 30S, water collected at different ocean depth were filtered and analyzed for simple life forms (protist colonies). With a special focus on tropical convection the Inter-Tropical Convection Zone (ITCZ) was crossed three times near 23W. At this longitude during late January the ITCZ was found between 6.7N and 4.8S in latitude. The first (a N→S) leg lasted from Jan 26, 19UTC to Jan 30, 01UTC, the second (a S→N) leg from Jan 30, 02UTC to Feb2, 09UTC and the third (a N→S) leg from Feb 2, 10UTC to Feb 5, 11UTC. Over these 10 days every three hours a radiosonde was released to yield atmospheric profiles on more than 80 ascents and 80 descents. Wind profiles of from some of these and extra radiosondes, in addition, helped to validate wind data interpretations by a space-based doppler-lidar (of AEOLUS). Along the transect at selected station, CTD water samples from different depths focusing on the surface, DCM and 500m were collected for DNA analysis of protistan community and cultivation. Water samples were concentrated based on size fractions of 10, 5 and 1µm filters and DNA was extracted direct on board for further processing in the home lab. One aim was to find the equatorial counter current (ECC), which is thought to act as a natural barrier for the distribution of protists in surface water, which was successfully reached by the use of ADCP data. Bathymetrical analyses along the entire route culminated in shape and altitude characterizations of seamounts close to 34S/33W. The observations stopped when national water of Argentina was reached and MSM114/2 arrived in Punta Arenas in the morning of Feb 22.

Acknowledgements

The scientific party of RV MARIA S. MERIAN Cruise MSM114-2 gratefully acknowledges the very friendly and most effective cooperation with Captain Schmidt and his crew. Their great flexibility and their perfect technical assistance substantially contributed to make this cruise a scientific success. We also appreciate the valuable support by the Leitstelle Deutsche Forschungsschiffe (German Research Fleet Coordination Centre) at the University of Hamburg.

List of Participants

| Name | Discipline | Institution |
|--------------------------|---------------------------|-------------|
| Frank Nitsche, PhD | Chief Scientist / Biology | UoC |
| Wagenhofer, Julian, M.Sc | Biology (protistology) | UoC |
| Daria Paul, M.Sc | Atmosphere (rem.sensing) | UoC |
| Lennéa Hayo, B. Sc. | Atmosphere (rem.sensing) | UoC |

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|-----------------------|---------------------------|--------|
| Julia Windmiller, PhD | Atmosphere (rem.sensing) | MPI-M |
| Laura Köhler, PhD | Atmosphere (rem.sensing) | MPI-M |
| Stefan Kinne, PhD | Atmosphere (rem.sensing) | MPI.M |
| Mechtild Attias-Kinne | Atmsosphere (rem.sensing) | MPI-M |
| Piet Stammes, PhD | Atmosphere (rem.sensing) | KNMI |
| Olaf Tuinder, PhD | Atmsosphere (rem.sensing) | KNMI |
| Beata Latos M. Sc. | Oceanograghy (air/sea) | IG-PAS |
| Daniel Kepski, PhD | Oceanography (air/sea) | IG-PAS |
| Michal Brennek M. Sc. | Oceanography (air/sea) | IG-PAS |
| Bertrand Lobo M.Sc. | Oceanography (GIS) | HCU |
| Timo Nischik B. Sc. | Oceanography (GIS) | HCU |

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| UoC | University of Cologne, Inst. of Zoology, Dep of General Ecology, Cologne |
| KNMI | Koninklijk Nederlands Meteorologisch Instituut, De Bilt |
| MPI-M | Max-Planck-Institut für Meteorologie, Hamburg |
| HCU | Hafen City Universität, Hamburg |
| IG-PAS | Institute of Geophysics Polish Academy of Sciences, Warsaw |

Stationlist

| Station | Device | Time | Action | Latitude | Longitude | Depth | Rope |
|---------------|--------|------------------|---------------------|---------------|----------------|-------|------|
| MSM114/2_1-1 | CTD | 24.01.2023 10:14 | max depth/on ground | 14° 08,461' N | 024° 59,840' W | 4436 | 500 |
| MSM114/2_1-2 | UAV | 24.01.2023 10:07 | UAV (drone) started | 14° 08,461' N | 024° 59,840' W | 4435 | |
| MSM114/2_2-1 | UAV | 24.01.2023 15:23 | UAV (drone) started | 13° 32,380' N | 024° 51,904' W | 4571 | |
| MSM114/2_2-2 | CTD | 24.01.2023 15:30 | max depth/on ground | 13° 32,380' N | 024° 51,903' W | 4571 | 500 |
| MSM114/2_3-1 | CTD | 25.01.2023 09:26 | max depth/on ground | 10° 59,064' N | 024° 17,872' W | 5291 | 500 |
| MSM114/2_3-2 | UAV | 25.01.2023 09:42 | UAV (drone) started | 10° 59,064' N | 024° 17,872' W | 5293 | |
| MSM114/2_3-3 | UAV | 25.01.2023 09:28 | UAV (drone) started | 10° 59,064' N | 024° 17,872' W | 5293 | |
| MSM114/2_4-1 | UAV | 25.01.2023 17:31 | UAV (drone) started | 10° 02,764' N | 023° 24,243' W | 5333 | |
| MSM114/2_4-2 | CTD | 25.01.2023 17:44 | max depth/on ground | 10° 02,764' N | 023° 24,242' W | 5335 | 500 |
| MSM114/2_4-3 | UAV | 25.01.2023 17:37 | UAV (drone) started | 10° 02,764' N | 023° 24,242' W | 5336 | |
| MSM114/2_5-1 | CTD | 26.01.2023 09:15 | max depth/on ground | 07° 59,939' N | 022° 54,367' W | 4369 | 500 |
| MSM114/2_5-2 | UAV | 26.01.2023 09:25 | UAV (drone) started | 07° 59,939' N | 022° 54,367' W | 4366 | |
| MSM114/2_5-3 | UAV | 26.01.2023 09:35 | UAV (drone) started | 07° 59,939' N | 022° 54,367' W | 4371 | |
| MSM114/2_6-1 | UAV | 26.01.2023 14:52 | UAV (drone) started | 07° 15,463' N | 022° 54,235' W | 4131 | |
| MSM114/2_6-2 | CTD | 26.01.2023 15:06 | max depth/on ground | 07° 15,462' N | 022° 54,235' W | 4131 | 500 |
| MSM114/2_6-3 | UAV | 26.01.2023 15:02 | UAV (drone) started | 07° 15,462' N | 022° 54,235' W | 4131 | |
| MSM114/2_6-4 | UAV | 26.01.2023 15:20 | UAV (drone) started | 07° 15,463' N | 022° 54,235' W | 4135 | |
| MSM114/2_6-5 | UAV | 26.01.2023 15:28 | UAV (drone) started | 07° 15,463' N | 022° 54,235' W | 4131 | |
| MSM114/2_7-1 | CTD | 27.01.2023 10:15 | max depth/on ground | 04° 33,032' N | 022° 54,399' W | 4089 | 500 |
| MSM114/2_7-2 | UAV | 27.01.2023 10:24 | UAV (drone) started | 04° 33,032' N | 022° 54,400' W | 4092 | |
| MSM114/2_7-3 | UAV | 27.01.2023 10:37 | UAV (drone) started | 04° 33,032' N | 022° 54,399' W | 4093 | |
| MSM114/2_8-1 | UAV | 27.01.2023 15:48 | UAV (drone) started | 04° 01,858' N | 022° 58,699' W | 4215 | |
| MSM114/2_8-2 | UAV | 27.01.2023 15:03 | UAV (drone) started | 04° 01,851' N | 022° 58,681' W | 4216 | |
| MSM114/2_9-1 | CTD | 27.01.2023 17:06 | max depth/on ground | 03° 59,995' N | 022° 54,412' W | 4202 | 500 |
| MSM114/2_9-2 | UAV | 27.01.2023 16:55 | UAV (drone) started | 03° 59,995' N | 022° 54,411' W | 4202 | |
| MSM114/2_9-3 | UAV | 27.01.2023 16:58 | UAV (drone) started | 03° 59,995' N | 022° 54,412' W | 4204 | |
| MSM114/2_10-1 | CTD | 28.01.2023 10:13 | max depth/on ground | 01° 38,094' N | 022° 54,150' W | 4247 | 500 |
| MSM114/2_11-1 | CTD | 29.01.2023 10:16 | max depth/on ground | 02° 12,352' S | 022° 53,718' W | 4711 | |
| MSM114/2_11-2 | UAV | 29.01.2023 10:03 | UAV (drone) started | 02° 12,352' S | 022° 53,718' W | 4687 | |
| MSM114/2_11-3 | UAV | 29.01.2023 10:10 | UAV (drone) started | 02° 12,352' S | 022° 53,718' W | 4730 | |
| MSM114/2_12-1 | UAV | 29.01.2023 15:43 | UAV (drone) started | 02° 58,382' S | 022° 53,631' W | 5542 | |
| MSM114/2_12-2 | CTD | 29.01.2023 15:36 | max depth/on ground | 02° 58,382' S | 022° 53,630' W | 5547 | 500 |
| MSM114/2_13-1 | CTD | 30.01.2023 10:18 | max depth/on ground | 03° 48,039' S | 022° 59,976' W | 5255 | 500 |
| MSM114/2_13-2 | UAV | 30.01.2023 10:10 | UAV (drone) started | 03° 48,040' S | 022° 59,975' W | 6362 | |
| MSM114/2_14-1 | CTD | 30.01.2023 15:14 | max depth/on ground | 03° 17,983' S | 022° 49,564' W | 4920 | 500 |
| MSM114/2_14-2 | UAV | 30.01.2023 15:03 | UAV (drone) started | 03° 17,984' S | 022° 49,565' W | 4919 | |
| MSM114/2_14-3 | UAV | 30.01.2023 15:12 | UAV (drone) started | 03° 17,984' S | 022° 49,565' W | 4915 | |
| MSM114/2_14-4 | UAV | 30.01.2023 15:21 | UAV (drone) started | 03° 17,984' S | 022° 49,564' W | 4923 | |
| MSM114/2_14-5 | UAV | 30.01.2023 15:35 | UAV (drone) started | 03° 17,984' S | 022° 49,565' W | 4921 | |
| MSM114/2_15-1 | CTD | 31.01.2023 13:47 | max depth/on ground | 00° 00,001' S | 022° 49,700' W | 3699 | 3600 |
| MSM114/2_15-2 | UAV | 31.01.2023 13:16 | UAV (drone) started | 00° 00,001' S | 022° 49,700' W | 3698 | |
| MSM114/2_15-3 | UAV | 31.01.2023 13:45 | UAV (drone) started | 00° 00,002' S | 022° 49,700' W | 3699 | |
| MSM114/2_16-1 | UAV | 01.02.2023 10:50 | UAV (drone) started | 03° 12,773' N | 022° 49,691' W | 4497 | |

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|---------------|-----|------------------|---------------------|---------------|----------------|------|-----|
| MSM114/2_16-2 | CTD | 01.02.2023 10:36 | max depth/on ground | 03° 12,774' N | 022° 49,692' W | 4498 | 500 |
| MSM114/2_16-4 | UAV | 01.02.2023 10:30 | UAV (drone) started | 03° 12,773' N | 022° 49,692' W | 4498 | |
| MSM114/2_17-1 | CTD | 01.02.2023 15:15 | max depth/on ground | 03° 49,806' N | 022° 49,692' W | 4042 | 500 |
| MSM114/2_17-2 | UAV | 01.02.2023 15:03 | UAV (drone) started | 03° 49,806' N | 022° 49,692' W | 4040 | |
| MSM114/2_17-3 | UAV | 01.02.2023 15:23 | UAV (drone) started | 03° 49,805' N | 022° 49,692' W | 4040 | |
| MSM114/2_18-1 | CTD | 02.02.2023 10:14 | max depth/on ground | 06° 39,202' N | 022° 58,410' W | 3579 | 500 |
| MSM114/2_18-2 | UAV | 02.02.2023 10:00 | UAV (drone) started | 06° 39,202' N | 022° 58,410' W | 3578 | |
| MSM114/2_18-3 | UAV | 02.02.2023 10:09 | UAV (drone) started | 06° 39,201' N | 022° 58,410' W | 3575 | |
| MSM114/2_19-1 | CTD | 02.02.2023 15:13 | max depth/on ground | 06° 07,040' N | 023° 08,870' W | 3888 | 500 |
| MSM114/2_19-2 | UAV | 02.02.2023 15:04 | UAV (drone) started | 06° 07,039' N | 023° 08,869' W | 3890 | |
| MSM114/2_19-3 | UAV | 02.02.2023 15:21 | UAV (drone) started | 06° 07,040' N | 023° 08,870' W | 3888 | |
| MSM114/2_20-1 | CTD | 03.02.2023 10:16 | max depth/on ground | 03° 02,154' N | 023° 08,982' W | 4652 | 500 |
| MSM114/2_20-2 | UAV | 03.02.2023 10:02 | UAV (drone) started | 03° 02,155' N | 023° 08,983' W | 0 | |
| MSM114/2_20-3 | UAV | 03.02.2023 10:03 | UAV (drone) started | 03° 02,154' N | 023° 08,983' W | 4655 | |
| MSM114/2_20-3 | UAV | 03.02.2023 10:28 | UAV (drone) started | 03° 02,155' N | 023° 08,982' W | 4654 | |
| MSM114/2_21-1 | UAV | 03.02.2023 14:58 | UAV (drone) started | 02° 20,642' N | 023° 08,871' W | 4383 | |
| MSM114/2_21-2 | CTD | 03.02.2023 15:14 | max depth/on ground | 02° 20,642' N | 023° 08,871' W | 4384 | 500 |
| MSM114/2_21-3 | UAV | 03.02.2023 15:03 | UAV (drone) started | 02° 20,643' N | 023° 08,871' W | 4383 | |
| MSM114/2_22-1 | CTD | 04.02.2023 10:13 | max depth/on ground | 00° 40,039' S | 023° 09,003' W | 3613 | 500 |
| MSM114/2_22-2 | UAV | 04.02.2023 10:01 | UAV (drone) started | 00° 40,039' S | 023° 09,003' W | 3635 | |
| MSM114/2_22-3 | UAV | 04.02.2023 10:05 | UAV (drone) started | 00° 40,039' S | 023° 09,003' W | 3610 | |
| MSM114/2_23-1 | CTD | 04.02.2023 15:14 | max depth/on ground | 01° 24,962' S | 023° 08,985' W | 5328 | 500 |
| MSM114/2_23-2 | UAV | 04.02.2023 15:00 | UAV (drone) started | 01° 24,961' S | 023° 08,985' W | 5329 | |
| MSM114/2_23-3 | UAV | 04.02.2023 15:10 | UAV (drone) started | 01° 24,961' S | 023° 08,985' W | 5330 | |
| MSM114/2_24-1 | CTD | 05.02.2023 10:13 | max depth/on ground | 04° 36,064' S | 023° 08,994' W | 5536 | 500 |
| MSM114/2_24-2 | UAV | 05.02.2023 10:02 | UAV (drone) started | 04° 36,064' S | 023° 08,993' W | 5532 | |
| MSM114/2_25-1 | CTD | 05.02.2023 15:13 | max depth/on ground | 05° 15,367' S | 023° 08,984' W | 5223 | 500 |
| MSM114/2_25-2 | UAV | 05.02.2023 14:59 | UAV (drone) started | 05° 15,367' S | 023° 08,984' W | 5220 | |
| MSM114/2_26-1 | CTD | 06.02.2023 10:14 | max depth/on ground | 08° 03,681' S | 024° 03,076' W | 5707 | 500 |
| MSM114/2_26-2 | UAV | 06.02.2023 10:05 | UAV (drone) started | 08° 03,681' S | 024° 03,076' W | 5708 | |
| MSM114/2_27-1 | CTD | 06.02.2023 15:15 | max depth/on ground | 08° 46,599' S | 024° 06,648' W | 5388 | 500 |
| MSM114/2_27-2 | UAV | 06.02.2023 15:01 | UAV (drone) started | 08° 46,599' S | 024° 06,648' W | 5393 | |
| MSM114/2_27-3 | UAV | 06.02.2023 15:14 | UAV (drone) started | 08° 46,599' S | 024° 06,648' W | 5387 | |
| MSM114/2_28-1 | CTD | 07.02.2023 10:21 | max depth/on ground | 11° 49,110' S | 024° 22,032' W | 5151 | 500 |
| MSM114/2_28-2 | UAV | 07.02.2023 10:04 | UAV (drone) started | 11° 49,110' S | 024° 22,032' W | 5152 | |
| MSM114/2_29-1 | CTD | 07.02.2023 15:15 | max depth/on ground | 12° 29,835' S | 024° 25,503' W | 5466 | 500 |
| MSM114/2_29-2 | UAV | 07.02.2023 15:00 | UAV (drone) started | 12° 29,835' S | 024° 25,503' W | 5475 | |
| MSM114/2_29-3 | UAV | 07.02.2023 15:15 | UAV (drone) started | 12° 29,835' S | 024° 25,503' W | 5466 | |
| MSM114/2_30-1 | CTD | 08.02.2023 10:18 | max depth/on ground | 15° 33,051' S | 024° 41,147' W | 5032 | 500 |
| MSM114/2_31-1 | CTD | 08.02.2023 15:15 | max depth/on ground | 16° 14,175' S | 024° 44,665' W | 4363 | 500 |
| MSM114/2_32-1 | UAV | 09.02.2023 10:00 | UAV (drone) started | 19° 24,946' S | 025° 01,287' W | 5563 | |
| MSM114/2_32-2 | CTD | 09.02.2023 10:20 | max depth/on ground | 19° 24,946' S | 025° 01,286' W | 5564 | 500 |
| MSM114/2_32-3 | UAV | 09.02.2023 10:14 | UAV (drone) started | 19° 24,946' S | 025° 01,286' W | 5565 | |
| MSM114/2_33-1 | UAV | 09.02.2023 14:59 | UAV (drone) started | 20° 07,037' S | 025° 04,957' W | 5300 | |
| MSM114/2_33-2 | CTD | 09.02.2023 15:19 | max depth/on ground | 20° 07,038' S | 025° 04,957' W | 5293 | 500 |
| MSM114/2_33-3 | UAV | 09.02.2023 15:29 | UAV (drone) started | 20° 07,038' S | 025° 04,957' W | 5290 | |

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|---------------|-----|------------------|---------------------|---------------|----------------|------|------|
| MSM114/2_34-1 | UAV | 10.02.2023 10:38 | UAV (drone) started | 23° 12,787' S | 026° 02,828' W | 5735 | |
| MSM114/2_34-2 | CTD | 10.02.2023 10:50 | max depth/on ground | 23° 12,770' S | 026° 02,851' W | 5734 | 500 |
| MSM114/2_34-3 | UAV | 10.02.2023 10:48 | UAV (drone) started | 23° 12,770' S | 026° 02,851' W | 5734 | |
| MSM114/2_35-1 | UAV | 10.02.2023 14:59 | UAV (drone) started | 23° 47,312' S | 026° 24,242' W | 5125 | |
| MSM114/2_35-2 | CTD | 10.02.2023 15:11 | max depth/on ground | 23° 47,312' S | 026° 24,243' W | 5126 | 500 |
| MSM114/2_35-3 | UAV | 10.02.2023 15:27 | UAV (drone) started | 23° 47,312' S | 026° 24,242' W | 5125 | |
| MSM114/2_36-1 | CTD | 11.02.2023 10:13 | max depth/on ground | 26° 33,214' S | 028° 08,892' W | 5051 | 500 |
| MSM114/2_36-2 | UAV | 11.02.2023 10:01 | UAV (drone) started | 26° 33,214' S | 028° 08,893' W | 5034 | |
| MSM114/2_36-3 | UAV | 11.02.2023 10:12 | UAV (drone) started | 26° 33,214' S | 028° 08,892' W | 5037 | |
| MSM114/2_37-1 | CTD | 11.02.2023 15:16 | max depth/on ground | 27° 12,736' S | 028° 34,146' W | 4975 | 500 |
| MSM114/2_37-2 | UAV | 11.02.2023 15:01 | UAV (drone) started | 27° 12,736' S | 028° 34,144' W | 4956 | |
| MSM114/2_38-1 | CTD | 12.02.2023 11:17 | max depth/on ground | 30° 01,446' S | 030° 23,820' W | 3912 | 500 |
| MSM114/2_38-2 | UAV | 12.02.2023 11:18 | UAV (drone) started | 30° 01,446' S | 030° 23,820' W | 3912 | |
| MSM114/2_39-1 | CTD | 12.02.2023 16:13 | max depth/on ground | 30° 37,971' S | 030° 47,875' W | 4005 | 500 |
| MSM114/2_39-2 | UAV | 12.02.2023 16:13 | UAV (drone) started | 30° 37,970' S | 030° 47,875' W | 4006 | |
| MSM114/2_40-1 | CTD | 13.02.2023 11:13 | max depth/on ground | 33° 21,840' S | 032° 38,368' W | 3559 | 500 |
| MSM114/2_41-1 | CTD | 13.02.2023 17:09 | max depth/on ground | 34° 01,113' S | 033° 05,357' W | 4028 | 3800 |
| MSM114/2_41-2 | UAV | 13.02.2023 16:40 | UAV (drone) started | 34° 01,113' S | 033° 05,358' W | 4034 | |
| MSM114/2_41-3 | UAV | 13.02.2023 16:53 | UAV (drone) started | 34° 01,113' S | 033° 05,358' W | 3930 | |
| MSM114/2_43-1 | CTD | 14.02.2023 11:13 | max depth/on ground | 34° 44,620' S | 034° 15,048' W | 4550 | 500 |
| MSM114/2_43-2 | UAV | 14.02.2023 11:01 | UAV (drone) started | 34° 44,620' S | 034° 15,048' W | 4560 | |
| MSM114/2_43-3 | UAV | 14.02.2023 11:14 | UAV (drone) started | 34° 44,620' S | 034° 15,048' W | 4562 | |
| MSM114/2_44-1 | CTD | 14.02.2023 16:12 | max depth/on ground | 35° 08,648' S | 035° 03,190' W | 4496 | 500 |
| MSM114/2_44-2 | UAV | 14.02.2023 16:00 | UAV (drone) started | 35° 08,649' S | 035° 03,190' W | 4502 | |
| MSM114/2_44-3 | UAV | 14.02.2023 16:15 | UAV (drone) started | 35° 08,649' S | 035° 03,190' W | 4502 | |
| MSM114/2_45-1 | CTD | 15.02.2023 11:16 | max depth/on ground | 36° 50,371' S | 038° 29,822' W | 4842 | 500 |
| MSM114/2_46-1 | CTD | 16.02.2023 11:14 | max depth/on ground | 38° 55,988' S | 042° 50,810' W | 5113 | 500 |
| MSM114/2_46-2 | UAV | 16.02.2023 11:05 | UAV (drone) started | 38° 55,959' S | 042° 50,827' W | 6913 | |
| MSM114/2_46-3 | UAV | 16.02.2023 11:17 | UAV (drone) started | 38° 56,009' S | 042° 50,797' W | 5115 | |
| MSM114/2_47-1 | CTD | 17.02.2023 11:13 | max depth/on ground | 41° 04,228' S | 047° 26,574' W | 5210 | 500 |