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# Short Cruise Report

## METEOR M185

### Hamburg (Germany) – Lisbon (Portugal)

### 29.10. – 26.11.2022

Chief Scientist: Prof. Dr. Reinhold Hanel  
Master: Detlef Korte

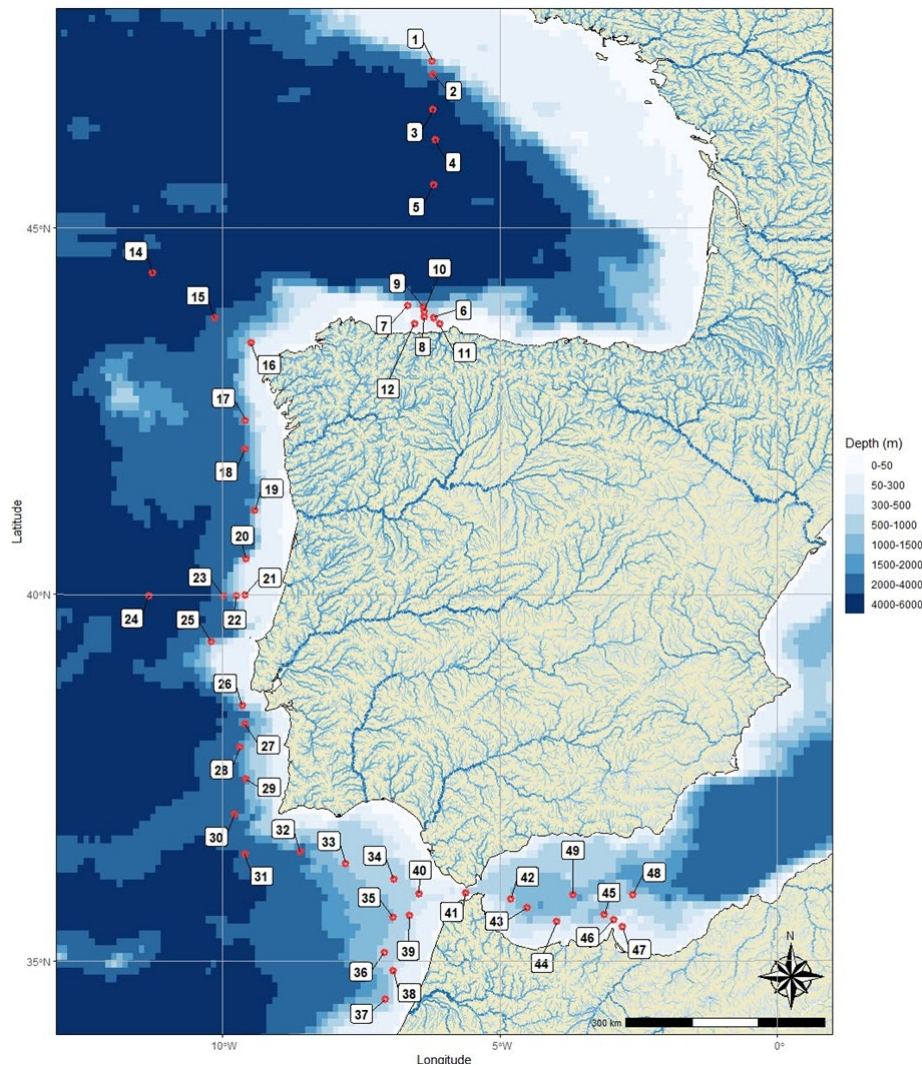


Figure 1: Cruise track of METEOR Cruise M185

## Objectives

Starting 50 years ago, a number of ichthyoplankton surveys mostly on board the German Research Vessel Friedrich Heincke were conducted in the Bay of Biscay and around the Iberian Peninsula to assess European eel (*Anguilla anguilla*) leptocephalus abundance, distribution and growth. The results of these surveys build a valuable baseline, providing reference points for a comparison of the present state with the situation prior to the severe recruitment collapse of this enigmatic species that started after the 1980s.

One of the main tasks of this interdisciplinary survey is to assess the occurrence and abundance of late stage European eel larvae in central parts of their distribution range, just before they complete their first metamorphosis for a life in fresh and brackish water areas. Stable isotope analyses, RNA-based disease analyses and state-of-the-art DNA metabarcoding gut content analyses will substantially increase our knowledge on health status, feeding ecology and diet composition of leptocephalus larvae at a pre-settlement stage. This will enable a better understanding of causes of larval mortality and potential changes in condition of eel larvae compared to the recent past.

The region around the Iberian Peninsula is a highly productive ecosystem with coastal upwelling off Galicia during summer. During the last 30 years, substantial changes in upwelling intensity and primary production have been recorded with higher values from 1989 till 1998 and from 2007 till 2016 and lower values in between. Relatively little is known about the role of zooplankton organisms for energy transfer in this region. Therefore, another major task is to increase our understanding about the entire pelagic food-web, which supports eel larvae arriving in Europe by documenting zooplankton distribution, predator-prey interactions and the energy flux through the pelagic food-web.

Investigations on the carbon pump, the recording of mesopelagic fish in this region using DNA traces in the water together with comparative net catches, the uptake of microplastics by vertically migrating fish species and evolutionary biological adaptations of certain mesopelagic species complete the research portfolio of this cruise.

## Cruise Narrative

Survey M185 started on Saturday, October 29, 2022 in Hamburg. The testing of all cruise participants for COVID-19 by the ship's doctor was without positive results and the subsequent tests in the following 5 days also confirmed the result of a COVID-19-free crew.

During our transit to the first working area in the Bay of Biscay, we travelled down the Elbe river into the North Sea and reached the White Cliffs of Dover on Tuesday, 01.11. The weather conditions were perfect for the first two days, but turned to the opposite when reaching the English Channel. Heavy winds and high waves caused by the low-pressure system "Martin" slowed us down and delayed the start of our station work.

Our station work started on the 4<sup>th</sup> of November at 4 p.m. with our standard sampling scheme of a CTD cast down to 1000 m followed by a Multinet cast down to 600 m and a 1500  $\mu\text{m}$  mesh size Isaacs-Kidd Midwater Trawl (IKMT-S) double oblique haul down to 200 m depth. From this first station at the continental slope off the French coast we ran a north-south-transect along 6°12'W longitude to Spanish waters. At station 5 we deployed our 4000  $\mu\text{m}$  mesh size Isaacs-Kidd Midwater Trawl (IKMT-L) in the centre of the Bay of Biscay, before the weather conditions prevented a continuation of our offshore work and forced us to seek shelter on the shelf of the Spanish Asturian coast, where we continued working at 8 stations northwest of the city of Gijón until November 8th. Plankton catches in the Bay of Biscay were dominated by gelatinous organisms of different taxonomic groups. No Anguilliform leptocephalus larvae were found.

Improved weather conditions allowed us to leave the shelf to our first offshore 24-hour-station of Galicia, being moved from the Bay of Biscay due to the bad weather, at sea bottom depth of >5000 m. The first of two 24-hour flux stations (Station 14) on 9<sup>th</sup>/10<sup>th</sup> of November saw the first deployments of the Marine Snow Catchers (MSCs) and the Red Camera Frame (RCF) carrying a number of in-situ cameras.

Marine Snow Catchers offer the opportunity to capture large volumes of water and associated sinking particles, to determine downward flux of particulate organic carbon (POC; the rate of sinking material in a given area). However, this approach only permits study of sinking particles at a limited number of discrete depths in the water column.

The RCF carries four imaging systems (LISST-Holo2; CPICS; UVP5; ECOTriplet) and a CTD logger (RBR Concerto) and affords continuous measurements throughout the water column. By pairing MSC measurements with novel, state-of-the-art camera systems on the RCF, we are able to study sinking particles in far greater resolution from the surface down to 600 m.

Depth-stratified water samples for eDNA filtration together with Multinet and IKMT-S casts completed the sampling protocol for measuring the biological carbon pump.

A second 24-hour flux station was set off the Portuguese coast off the city of Nazaré (Station 24), which we reached after a series of CTD, Multinet and IKMT-S stations on November 13<sup>th</sup>/14<sup>th</sup>. From there we continued our cruise track as originally planned along the Portuguese continental slope into Moroccan waters south to Kenitra, before we turned north again towards the western entrance of the Strait of Gibraltar. While the plankton community changed significantly compared to the Bay of Biscay with increasing numbers of crustacean and fish taxa, also the leptocephalus catches started. Low absolute numbers compared to historic catches seem to reflect the overall

population decline. Data from the ships Acoustic-Doppler-Current-Profiler (ADCP) will tell us more about current conditions at stations with verified European eel larvae occurrences.

Gibraltar Strait is the bottleneck for larval eels to enter the Mediterranean Sea. A 24-hour IKMT-S station starting at 20<sup>th</sup> of November in the centre of the Strait revealed unique oceanographic conditions and corresponding leptocephalus behaviour with obvious current- and light-triggered waves of immigration events.

From the 21<sup>st</sup> to the 23<sup>rd</sup> of November we continued our CTD and net sampling along the northern Moroccan coast east to the city of Nador, where our Moroccan observer said goodbye and was picked up by tugboat "Oriental"

With only two more stations left in Spanish waters of the western Alboran Sea, we sampled our last station in the night from 23<sup>rd</sup> to 24<sup>th</sup> November, before heading west through Gibraltar Strait and turning north to Lisbon. The remaining steaming time was used for demobilization of the equipment and data consolidation. In the morning of Saturday, the 26<sup>th</sup> of November the Meteor berthed in the port of Lisbon, terminating cruise M185.

### **Acknowledgements**

The international scientific crew of M185 gratefully acknowledges the very friendly and most effective cooperation with Captain Detlef Korte and his entire crew. Their great flexibility and their perfect assistance substantially contributed to making this cruise a scientific success. We also appreciate the valuable support of the German Research Fleet Coordination Centre (Leitstelle Deutsche Forschungsschiffe) at the University of Hamburg. The expedition was funded by the Deutsche Forschungsgemeinschaft – DFG.

## Participants list

|     |                          |                            |         |
|-----|--------------------------|----------------------------|---------|
| 1.  | Prof. Dr. Reinhold Hanel | Chief scientist            | Thünen  |
| 2.  | Dr. Lasse Marohn         | Fish biology               | Thünen  |
| 3.  | Dr. Klaus Wysujack       | Fish biology               | Thünen  |
| 4.  | Dr. Holger Auel          | Zooplankton food web       | BreMarE |
| 5.  | Dr. Marko Freese         | Fish biology               | Thünen  |
| 6.  | Jan-Dag Pohlmann         | Fish biology               | Thünen  |
| 7.  | Tina Blancke             | Fish biology technician    | Thünen  |
| 8.  | Dr. Luis Ferrer          | Physical oceanography      | AZTI    |
| 9.  | Cristina Claver          | Environmental DNA          | AZTI    |
| 10. | Dr. Maria Blažina        | Microbial community        | RudBos  |
| 11. | Zuzana Konvičková        | Fish biology/Genetics      | UniPra  |
| 12. | Alix Rommel              | Carbon flux/Hydroacoustics | UStA    |
| 13. | María Couret             | Carbon flux                | ULPGC   |
| 14. | Javier Diaz              | Carbon flux                | ULPGC   |
| 15. | Will Major               | Carbon Flux                | NOC     |
| 16. | Jack Williams            | Carbon Flux                | NOC     |
| 17. | Rui Monteiro             | Fish biology               | UniLis  |
| 18. | Silvia Blum              | Student assistant          | UniBre  |
| 19. | Kira Kremer              | Student assistant          | UniBre  |
| 20. | Benedikt Merk            | Student assistant          | UniBre  |
| 21. | Peter Müller             | Student assistant          | UniBre  |
| 22. | Greta Voss               | Student assistant          | UniBre  |
| 23. | Sebastian Weis           | Journalist                 | DocDays |
| 24. | Mostapha Benomar         | Observer Morocco           | INRH    |
| 25. | Anett Mieckoleit         | Meteorologist              | DWD     |
| 26. | Martin Stelzner          | Tecnician                  | DWD     |

|         |  |
|---------|--|
| Thünen  | Thünen Institute of Fisheries Ecology, Bremerhaven, Germany        |
| BreMarE | Bremen University's Centre for Marine Ecological Research, Germany |
| RudBos  | Ruđer Bošković Institute, Zagreb, Croatia                          |
| AZTI    | AZTI, Spain  |
| UniPra  | Charles University Prague, Czech Republic                          |
| UStA    | University St. Andrews, UK   |
| ULPGC   | Universidad de Las Palmas de Gran Canaria, Spain                   |
| NOC     | National Oceanography Centre Southampton, UK                       |
| UniLis  | University Lisbon, Portugal  |
| UniBre  | University Bremen, Germany   |
| DocDays | DocDays Productions, Berlin, Germany                               |
| INRH    | National Institute of Fisheries Research, Casablanca, Morocco      |
| DWD     | Deutscher Wetterdienst   |

## Station list

| Station   | Date/Time UTC    | Device              | Latitude      | Longitude      | Depth (m) |
|-----------|------------------|---------------------|---------------|----------------|-----------|
| M185_1-2  | 04.11.2022 15:51 | IKMT-S              | 47° 17,065' N | 006° 13,477' W | 500       |
| M185_1-3  | 04.11.2022 18:57 | CTD                 | 47° 16,027' N | 006° 11,963' W | 700       |
| M185_1-4  | 04.11.2022 20:11 | Multinet-Midi       | 47° 15,871' N | 006° 12,225' W | 600       |
| M185_2-1  | 04.11.2022 22:41 | CTD                 | 47° 06,012' N | 006° 11,963' W | 500       |
| M185_2-2  | 04.11.2022 23:20 | IKMT-S              | 47° 06,176' N | 006° 12,360' W | 600       |
| M185_3-1  | 05.11.2022 04:37 | CTD                 | 46° 36,088' N | 006° 11,926' W | 800       |
| M185_3-2  | 05.11.2022 05:57 | Multinet-Midi       | 46° 36,752' N | 006° 11,743' W | 600       |
| M185_3-3  | 05.11.2022 07:09 | IKMT-S              | 46° 36,842' N | 006° 12,414' W | 600       |
| M185_3-4  | 05.11.2022 09:46 | Marine snow catcher | 46° 35,818' N | 006° 16,894' W | 90        |
| M185_4-1  | 05.11.2022 13:36 | IKMT-S              | 46° 12,167' N | 006° 10,360' W | 600       |
| M185_4-2  | 05.11.2022 15:48 | CTD                 | 46° 09,239' N | 006° 13,342' W | 1100      |
| M185_4-3  | 05.11.2022 16:59 | Multinet-Midi       | 46° 09,019' N | 006° 13,611' W | 600       |
| M185_5-1  | 05.11.2022 21:39 | CTD                 | 45° 35,997' N | 006° 11,964' W | 1100      |
| M185_5-2  | 05.11.2022 22:43 | IKMT-S              | 45° 35,906' N | 006° 12,239' W | 200       |
| M185_5-3  | 06.11.2022 00:32 | IKMT-L              | 45° 34,059' N | 006° 14,802' W | 200       |
| M185_6-1  | 06.11.2022 12:54 | CTD                 | 43° 46,943' N | 006° 12,021' W | 500       |
| M185_6-2  | 06.11.2022 13:37 | IKMT-S              | 43° 46,978' N | 006° 12,115' W | 600       |
| M185_7-1  | 06.11.2022 19:39 | CTD                 | 43° 56,555' N | 006° 39,546' W | 150       |
| M185_7-2  | 06.11.2022 20:05 | IKMT-S              | 43° 56,934' N | 006° 39,677' W | 150       |
| M185_8-1  | 07.11.2022 01:58 | CTD                 | 43° 47,070' N | 006° 22,192' W | 210       |
| M185_8-2  | 07.11.2022 02:47 | IKMT-S              | 43° 47,804' N | 006° 22,091' W | 200       |
| M185_9-1  | 07.11.2022 08:22 | CTD                 | 43° 54,070' N | 006° 22,164' W | 600       |
| M185_9-2  | 07.11.2022 09:43 | IKMT-S              | 43° 55,759' N | 006° 23,488' W | 600       |
| M185_10-1 | 07.11.2022 15:00 | CTD                 | 43° 51,046' N | 006° 22,084' W | 650       |
| M185_10-2 | 07.11.2022 15:48 | Multinet-Midi       | 43° 51,152' N | 006° 21,824' W | 600       |
| M185_10-3 | 07.11.2022 16:59 | IKMT-S              | 43° 51,819' N | 006° 22,259' W | 400       |
| M185_11-1 | 07.11.2022 21:30 | CTD                 | 43° 41,241' N | 006° 05,384' W | 80        |
| M185_11-2 | 07.11.2022 21:58 | IKMT-S              | 43° 41,466' N | 006° 05,677' W | 100       |
| M185_11-3 | 07.11.2022 23:10 | CTD                 | 43° 43,142' N | 006° 08,250' W | 200       |
| M185_12-1 | 08.11.2022 01:58 | CTD                 | 43° 41,310' N | 006° 32,803' W | 80        |
| M185_12-2 | 08.11.2022 02:26 | IKMT-S              | 43° 41,749' N | 006° 32,755' W | 150       |
| M185_13-1 | 08.11.2022 07:02 | CTD                 | 43° 54,145' N | 007° 09,668' W | 140       |
| M185_14-1 | 09.11.2022 11:41 | IKMT-S              | 44° 23,189' N | 011° 16,121' W | 200       |
| M185_14-2 | 09.11.2022 13:07 | Multinet-Midi       | 44° 23,005' N | 011° 15,925' W | 600       |
| M185_14-3 | 09.11.2022 14:11 | IKMT-S              | 44° 23,427' N | 011° 15,828' W | 200       |
| M185_14-4 | 09.11.2022 15:42 | CTD                 | 44° 23,007' N | 011° 16,058' W | 1000      |
| M185_14-5 | 09.11.2022 17:38 | Marine snow catcher | 44° 22,874' N | 011° 16,143' W | 100       |
| M185_14-6 | 09.11.2022 18:32 | Marine snow catcher | 44° 22,876' N | 011° 16,203' W | 200       |
| M185_14-7 | 09.11.2022 19:07 | In Situ Camera      | 44° 22,759' N | 011° 16,292' W | 600       |
| M185_14-8 | 09.11.2022 20:40 | Multinet-Midi       | 44° 22,553' N | 011° 16,837' W | 600       |

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| M185_14-9  | 09.11.2022 21:46 | IKMT-S              | 44° 22,562' N | 011° 17,482' W | 200  |
| M185_14-10 | 09.11.2022 23:25 | CTD                 | 44° 22,979' N | 011° 15,970' W | 1000 |
| M185_14-11 | 10.11.2022 00:35 | Multinet-Midi       | 44° 23,397' N | 011° 15,636' W | 600  |
| M185_14-12 | 10.11.2022 02:08 | IKMT-S              | 44° 23,959' N | 011° 16,034' W | 200  |
| M185_14-13 | 10.11.2022 05:47 | Marine snow catcher | 44° 23,092' N | 011° 15,881' W | 100  |
| M185_14-14 | 10.11.2022 06:24 | Marine snow catcher | 44° 23,252' N | 011° 15,789' W | 200  |
| M185_14-15 | 10.11.2022 07:15 | In Situ Camera      | 44° 23,251' N | 011° 16,030' W | 600  |
| M185_14-16 | 10.11.2022 09:01 | Multinet-Midi       | 44° 23,015' N | 011° 15,953' W | 600  |
| M185_14-17 | 10.11.2022 09:53 | Multinet-Midi       | 44° 23,033' N | 011° 15,960' W | 600  |
| M185_15-1  | 10.11.2022 17:09 | CTD                 | 43° 47,038' N | 010° 09,101' W | 1000 |
| M185_15-2  | 10.11.2022 18:07 | Multinet-Midi       | 43° 46,995' N | 010° 09,017' W | 600  |
| M185_15-3  | 10.11.2022 19:09 | IKMT-S              | 43° 46,592' N | 010° 08,926' W | 200  |
| M185_16-1  | 11.11.2022 00:17 | CTD                 | 43° 26,622' N | 009° 29,878' W | 250  |
| M185_16-2  | 11.11.2022 00:47 | Multinet-Midi       | 43° 26,593' N | 009° 29,706' W | 600  |
| M185_16-3  | 11.11.2022 01:49 | IKMT-S              | 43° 26,526' N | 009° 29,511' W | 200  |
| M185_16-4  | 11.11.2022 03:42 | IKMT-L              | 43° 23,877' N | 009° 29,287' W | 300  |
| M185_17-1  | 11.11.2022 11:05 | CTD                 | 42° 22,990' N | 009° 35,978' W | 990  |
| M185_17-2  | 11.11.2022 12:16 | IKMT-S              | 42° 22,951' N | 009° 35,804' W | 600  |
| M185_18-1  | 11.11.2022 16:50 | CTD                 | 41° 59,037' N | 009° 35,974' W | 650  |
| M185_18-2  | 11.11.2022 17:30 | Multinet-Midi       | 41° 59,095' N | 009° 35,956' W | 600  |
| M185_18-3  | 11.11.2022 18:29 | IKMT-S              | 41° 59,169' N | 009° 36,250' W | 200  |
| M185_19-1  | 12.11.2022 01:27 | CTD                 | 41° 09,005' N | 009° 26,021' W | 1000 |
| M185_19-2  | 12.11.2022 02:33 | IKMT-S              | 41° 08,931' N | 009° 25,674' W | 200  |
| M185_20-1  | 12.11.2022 08:19 | CTD                 | 40° 29,057' N | 009° 35,939' W | 1000 |
| M185_20-2  | 12.11.2022 09:31 | IKMT-S              | 40° 29,528' N | 009° 34,828' W | 450  |
| M185_21-1  | 12.11.2022 14:37 | CTD                 | 39° 59,137' N | 009° 36,769' W | 150  |
| M185_21-2  | 12.11.2022 15:02 | Multinet-Midi       | 39° 59,480' N | 009° 36,516' W | 600  |
| M185_21-3  | 12.11.2022 15:34 | IKMT-S              | 39° 59,849' N | 009° 36,091' W | 150  |
| M185_22-1  | 12.11.2022 17:33 | CTD                 | 39° 59,028' N | 009° 46,344' W | 550  |
| M185_22-2  | 12.11.2022 18:14 | Multinet-Midi       | 39° 59,175' N | 009° 46,375' W | 600  |
| M185_22-3  | 12.11.2022 19:09 | IKMT-S              | 39° 59,172' N | 009° 45,455' W | 200  |
| M185_23-1  | 12.11.2022 22:30 | CTD                 | 39° 59,069' N | 010° 00,027' W | 600  |
| M185_23-2  | 12.11.2022 23:07 | Multinet-Midi       | 39° 59,167' N | 009° 59,839' W | 600  |
| M185_23-3  | 13.11.2022 00:07 | IKMT-S              | 39° 59,362' N | 009° 59,353' W | 200  |
| M185_24-1  | 13.11.2022 08:45 | Multinet-Midi       | 39° 59,002' N | 011° 20,036' W | 600  |
| M185_24-2  | 13.11.2022 09:45 | IKMT-L              | 39° 58,634' N | 011° 18,687' W | 1500 |
| M185_24-3  | 13.11.2022 17:02 | Marine snow catcher | 39° 58,997' N | 011° 19,908' W | 90   |
| M185_24-4  | 13.11.2022 17:29 | Marine snow catcher | 39° 58,948' N | 011° 20,061' W | 120  |
| M185_24-5  | 13.11.2022 18:04 | In Situ Camera      | 39° 58,966' N | 011° 20,088' W | 600  |
| M185_24-6  | 13.11.2022 20:27 | Multinet-Midi       | 39° 58,982' N | 011° 19,982' W | 600  |
| M185_24-7  | 13.11.2022 21:32 | CTD                 | 39° 59,028' N | 011° 19,983' W | 1000 |
| M185_24-8  | 13.11.2022 22:58 | IKMT-S              | 39° 59,090' N | 011° 20,119' W | 200  |
| M185_24-9  | 14.11.2022 00:42 | Multinet-Midi       | 39° 58,967' N | 011° 20,005' W | 600  |

|            |                  |                     |               |                |      |
|------------|------------------|---------------------|---------------|----------------|------|
| M185_24-10 | 14.11.2022 01:39 | IKMT-S              | 39° 59,169' N | 011° 20,171' W | 200  |
| M185_24-11 | 14.11.2022 05:42 | Marine snow catcher | 39° 58,926' N | 011° 19,884' W | 90   |
| M185_24-12 | 14.11.2022 06:07 | Marine snow catcher | 39° 59,005' N | 011° 19,640' W | 190  |
| M185_24-13 | 14.11.2022 06:45 | In Situ Camera      | 39° 59,111' N | 011° 19,377' W | 600  |
| M185_24-14 | 14.11.2022 08:59 | Multinet-Midi       | 39° 59,081' N | 011° 19,984' W | 600  |
| M185_24-15 | 14.11.2022 10:01 | IKMT-S              | 39° 59,013' N | 011° 19,718' W | 200  |
| M185_24-16 | 14.11.2022 11:48 | Multinet-Midi       | 39° 59,060' N | 011° 19,982' W | 600  |
| M185_24-17 | 14.11.2022 12:57 | IKMT-S              | 39° 59,283' N | 011° 19,712' W | 200  |
| M185_24-18 | 14.11.2022 14:34 | CTD                 | 39° 59,161' N | 011° 19,748' W | 1000 |
| M185_25-1  | 15.11.2022 01:54 | CTD                 | 39° 22,861' N | 010° 13,609' W | 300  |
| M185_25-2  | 15.11.2022 02:35 | IKMT-S              | 39° 21,896' N | 010° 12,645' W | 200  |
| M185_26-1  | 15.11.2022 16:54 | CTD                 | 38° 29,331' N | 009° 38,788' W | 1000 |
| M185_26-2  | 15.11.2022 17:53 | Multinet-Midi       | 38° 29,248' N | 009° 38,723' W | 600  |
| M185_26-3  | 15.11.2022 18:55 | IKMT-S              | 38° 29,217' N | 009° 39,114' W | 200  |
| M185_27-1  | 15.11.2022 22:43 | IKMT-S              | 38° 14,324' N | 009° 36,385' W | 200  |
| M185_28-1  | 16.11.2022 02:45 | CTD                 | 37° 55,049' N | 009° 41,825' W | 1000 |
| M185_28-2  | 16.11.2022 03:53 | IKMT-S              | 37° 55,242' N | 009° 41,380' W | 200  |
| M185_29-1  | 16.11.2022 08:10 | CTD                 | 37° 28,985' N | 009° 35,958' W | 620  |
| M185_29-2  | 16.11.2022 09:10 | IKMT-S              | 37° 29,128' N | 009° 35,475' W | 600  |
| M185_30-1  | 16.11.2022 15:20 | CTD                 | 36° 59,848' N | 009° 51,493' W | 1000 |
| M185_30-2  | 16.11.2022 16:22 | Multinet-Midi       | 37° 00,098' N | 009° 49,884' W | 600  |
| M185_30-3  | 16.11.2022 17:25 | IKMT-S              | 37° 00,003' N | 009° 47,613' W | 200  |
| M185_31-1  | 16.11.2022 22:09 | CTD                 | 36° 28,430' N | 009° 37,643' W | 1000 |
| M185_31-2  | 16.11.2022 23:07 | IKMT-S              | 36° 28,019' N | 009° 36,114' W | 200  |
| M185_31-3  | 17.11.2022 01:00 | IKMT-L              | 36° 24,981' N | 009° 31,104' W | 1000 |
| M185_32-1  | 17.11.2022 08:43 | CTD                 | 36° 29,921' N | 008° 37,448' W | 630  |
| M185_32-2  | 17.11.2022 09:30 | IKMT-S              | 36° 29,787' N | 008° 36,228' W | 600  |
| M185_33-1  | 17.11.2022 15:35 | CTD                 | 36° 20,349' N | 007° 46,903' W | 650  |
| M185_33-3  | 17.11.2022 19:00 | IKMT-S              | 36° 20,288' N | 007° 47,264' W | 200  |
| M185_34-1  | 18.11.2022 01:24 | CTD                 | 36° 06,974' N | 006° 55,016' W | 650  |
| M185_34-2  | 18.11.2022 02:05 | Multinet-Midi       | 36° 06,996' N | 006° 54,996' W | 600  |
| M185_34-3  | 18.11.2022 03:00 | IKMT-S              | 36° 07,069' N | 006° 55,227' W | 200  |
| M185_35-1  | 18.11.2022 07:49 | CTD                 | 35° 36,934' N | 006° 54,986' W | 820  |
| M185_35-2  | 18.11.2022 08:36 | Multinet-Midi       | 35° 36,598' N | 006° 55,208' W | 600  |
| M185_35-3  | 18.11.2022 09:14 | IKMT-S              | 35° 36,315' N | 006° 56,069' W | 600  |
| M185_35-4  | 18.11.2022 11:30 | Multinet-Midi       | 35° 37,924' N | 007° 03,050' W | 600  |
| M185_36-1  | 18.11.2022 16:20 | CTD                 | 35° 06,917' N | 007° 04,215' W | 600  |
| M185_36-2  | 18.11.2022 17:01 | Multinet-Midi       | 35° 06,905' N | 007° 04,403' W | 600  |
| M185_36-3  | 18.11.2022 18:01 | IKMT-S              | 35° 07,235' N | 007° 05,020' W | 200  |
| M185_37-1  | 18.11.2022 23:55 | CTD                 | 34° 28,997' N | 007° 03,983' W | 980  |
| M185_37-2  | 19.11.2022 00:52 | IKMT-S              | 34° 29,186' N | 007° 04,206' W | 200  |
| M185_37-3  | 19.11.2022 02:24 | IKMT-L              | 34° 31,795' N | 007° 06,625' W | 1000 |
| M185_38-1  | 19.11.2022 08:00 | CTD                 | 34° 52,726' N | 006° 54,907' W | 500  |



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| M185_38-2  | 19.11.2022 08:42 | IKMT-S         | 34° 52,375' N | 006° 55,448' W | 560  |
| M185_39-1  | 19.11.2022 15:47 | CTD            | 35° 36,757' N | 006° 37,263' W | 500  |
| M185_39-2  | 19.11.2022 16:33 | IKMT-S         | 35° 37,498' N | 006° 37,849' W | 550  |
| M185_40-1  | 19.11.2022 20:33 | CTD            | 35° 54,985' N | 006° 27,968' W | 370  |
| M185_40-2  | 19.11.2022 21:02 | IKMT-S         | 35° 55,069' N | 006° 28,181' W | 200  |
| M185_40-3  | 19.11.2022 23:01 | IKMT-L         | 35° 55,019' N | 006° 28,092' W | 400  |
| M185_41-1  | 20.11.2022 06:57 | CTD            | 35° 56,027' N | 005° 37,245' W | 600  |
| M185_41-2  | 20.11.2022 07:49 | Multinet-Midi  | 35° 56,076' N | 005° 37,252' W | 600  |
| M185_41-3  | 20.11.2022 08:42 | IKMT-S         | 35° 56,119' N | 005° 36,790' W | 200  |
| M185_41-4  | 20.11.2022 10:09 | IKMT-L         | 35° 56,161' N | 005° 36,978' W | 600  |
| M185_41-5  | 20.11.2022 13:18 | In Situ Camera | 35° 56,098' N | 005° 37,018' W | 100  |
| M185_41-6  | 20.11.2022 13:55 | IKMT-L         | 35° 56,115' N | 005° 36,970' W | 600  |
| M185_41-7  | 20.11.2022 16:19 | IKMT-S         | 35° 56,219' N | 005° 36,808' W | 200  |
| M185_41-8  | 20.11.2022 19:05 | IKMT-S         | 35° 56,156' N | 005° 37,154' W | 200  |
| M185_41-9  | 20.11.2022 21:12 | IKMT-S         | 35° 56,150' N | 005° 37,350' W | 100  |
| M185_41-10 | 21.11.2022 00:03 | CTD            | 35° 56,132' N | 005° 36,774' W | 600  |
| M185_41-11 | 21.11.2022 01:00 | IKMT-S         | 35° 56,092' N | 005° 36,758' W | 100  |
| M185_41-12 | 21.11.2022 02:41 | IKMT-S         | 35° 56,107' N | 005° 36,737' W | 100  |
| M185_41-13 | 21.11.2022 06:00 | CTD            | 35° 56,134' N | 005° 36,893' W | 600  |
| M185_41-14 | 21.11.2022 07:02 | IKMT-S         | 35° 56,090' N | 005° 36,971' W | 100  |
| M185_42-1  | 21.11.2022 13:15 | CTD            | 35° 51,029' N | 004° 48,205' W | 650  |
| M185_42-2  | 21.11.2022 13:54 | IKMT-S         | 35° 51,068' N | 004° 48,187' W | 600  |
| M185_42-3  | 21.11.2022 15:54 | IKMT-L         | 35° 52,672' N | 004° 46,639' W | 800  |
| M185_43-1  | 21.11.2022 21:28 | CTD            | 35° 41,407' N | 004° 24,887' W | 1000 |
| M185_43-2  | 21.11.2022 22:21 | IKMT-L         | 35° 41,746' N | 004° 24,967' W | 1000 |
| M185_43-3  | 22.11.2022 01:07 | IKMT-S         | 35° 43,953' N | 004° 30,768' W | 200  |
| M185_44-1  | 22.11.2022 07:09 | CTD            | 35° 32,879' N | 003° 57,991' W | 430  |
| M185_44-2  | 22.11.2022 07:42 | IKMT-S         | 35° 32,283' N | 003° 58,376' W | 470  |
| M185_44-3  | 22.11.2022 09:01 | IKMT-L         | 35° 33,382' N | 004° 00,339' W | 660  |
| M185_45-1  | 22.11.2022 15:54 | CTD            | 35° 38,652' N | 003° 06,852' W | 650  |
| M185_45-2  | 22.11.2022 16:33 | Multinet-Midi  | 35° 38,469' N | 003° 06,856' W | 600  |
| M185_45-3  | 22.11.2022 17:25 | IKMT-S         | 35° 38,232' N | 003° 07,030' W | 200  |
| M185_46-1  | 22.11.2022 20:05 | CTD            | 35° 33,685' N | 002° 57,125' W | 250  |
| M185_46-2  | 22.11.2022 20:29 | IKMT-S         | 35° 33,786' N | 002° 57,319' W | 200  |
| M185_47-1  | 23.11.2022 00:20 | CTD            | 35° 27,727' N | 002° 47,040' W | 150  |
| M185_47-2  | 23.11.2022 00:43 | IKMT-S         | 35° 28,120' N | 002° 47,199' W | 100  |
| M185_48-1  | 23.11.2022 13:46 | CTD            | 35° 55,007' N | 002° 31,935' W | 920  |
| M185_48-2  | 23.11.2022 14:41 | Multinet-Midi  | 35° 54,815' N | 002° 31,852' W | 600  |
| M185_48-3  | 23.11.2022 17:07 | IKMT-L         | 35° 54,836' N | 002° 30,353' W | 800  |
| M185_48-4  | 23.11.2022 19:33 | IKMT-S         | 35° 54,826' N | 002° 36,052' W | 200  |
| M185_49-1  | 24.11.2022 02:02 | CTD            | 35° 54,910' N | 003° 40,639' W | 1000 |
| M185_49-2  | 24.11.2022 03:00 | IKMT-S         | 35° 54,232' N | 003° 40,987' W | 200  |
| M185_49-3  | 24.11.2022 04:13 | IKMT-L         | 35° 54,130' N | 003° 42,618' W | 700  |