

Short cruise report – Research vessel Maria S. Merian
Cruise MSM07/3 Walvis Bay – Mindelo
22 March – 17 April 2008

The days in the port of Walvis Bay were used to present the ship and its research programme to the public. On 20 March a reception onboard the vessel could be celebrated where the German ambassador in Windhoek and the mayor of Walvis Bay were present.

Maria S. Merian sailed on 22nd of March at 10 am from Walvis Bay heading the first working station at 23°S and about 100 miles offshore.

This third cruise leg was dedicated especially to the implementation of physiological experiments on board of the ship. Based on the more large scale hydrographical and planktological station work of the cruise legs 2a and 2b as well as on real-time satellite images of sea surface temperature and chlorophyll-a distribution, live organisms in good condition were to be caught for the experiments on board. In selected areas, short transects perpendicular to the coast were planned to follow upwelling events and -communities.

The first transect worked up was the Walvis-Bay monitoring line at 23°S. All equipment was tested: CTD, water bottles, Apstein net, vertical and towed Multinet, Single and Double MOCNESS, Tucker Trawl, Ring trawl and WP2 as well as the undulating plankton recorder LOKI. Following transects were located on base of satellite Sea Surface Temperature images at 22°, 19°30' and 19°S. Only weak upwelling was found near the coast and the plankton communities showed a mature state.

Upwelling areas are highly productive regions in the ocean and are normally characterised by short food chains (Diatoms - herbivorous zooplankton - fish). However, climatic influences and/or high fishing pressure may transfer these systems into long-chained, dino-flagellate-based food-nets with sometimes high proportions of gelatinous organisms. The order and clarity of the participating processes in coastal upwelling regions predestine these systems to detect and investigate the history of external drivers (such as climate, hydrography) on these ecosystems, to identify the mechanisms responsible for the transmission of physical forcing to higher trophic levels, and to analyse how the structure and efficiency of food nets are influenced by these processes. The transects and the sampling strategy were designed to assess this pattern.

A 24h-station south of the Angola-Benguela Front was carried out at 19°57'S 11°12'E, the position being selected as a compromise between water depth and surface temperature: we needed about 1000 m water depth at the slope for vertical migration of e.g. euphausiids and Benguela current influenced water. A CTD cast at the beginning and at the end provided the hydrographical set-up at the station, regular vertical and towed Multinet and MOCNESS samples will give a detailed picture on diurnal migration patterns of plankton groups such as copepods, euphausiids and fish larvae.

The ship headed northeast towards Cape Frio to research on the very nearcoast water bodies where we identified recent upwelling. The area was also providing valuable material for the experimental work onboard, e.g. respiratory work on copepods, euphausiids and fish larvae as well as physiological work on copepods. Samples could be collected for genetic studies in the framework of the international programme CENSUS of MARINE LIFE and blood physiological parameters to elucidate life strategies in copepods.

Already during the legs 2a and 2b, work had been done off the Cunene river estuary at 17°15'S. It could be noticed in the hydrographical data and also in the plankton composition, that during this transect we crossed the Angola-Benguela Front, which in this year showed a mostly longitudinal extension and was much closer to the coast than during former cruises. The warm surface water originating from the Angola current was pushing much further south than expected from former years. Another 24h station was placed in this frontal area at

17°45'S 11°15'E and hydrographical and plankton samples collected, this time mainly with the single and double MOCNESS. The samples will provide new information on the vertical distribution and migration of euphausiids and mesopelagic fishes.

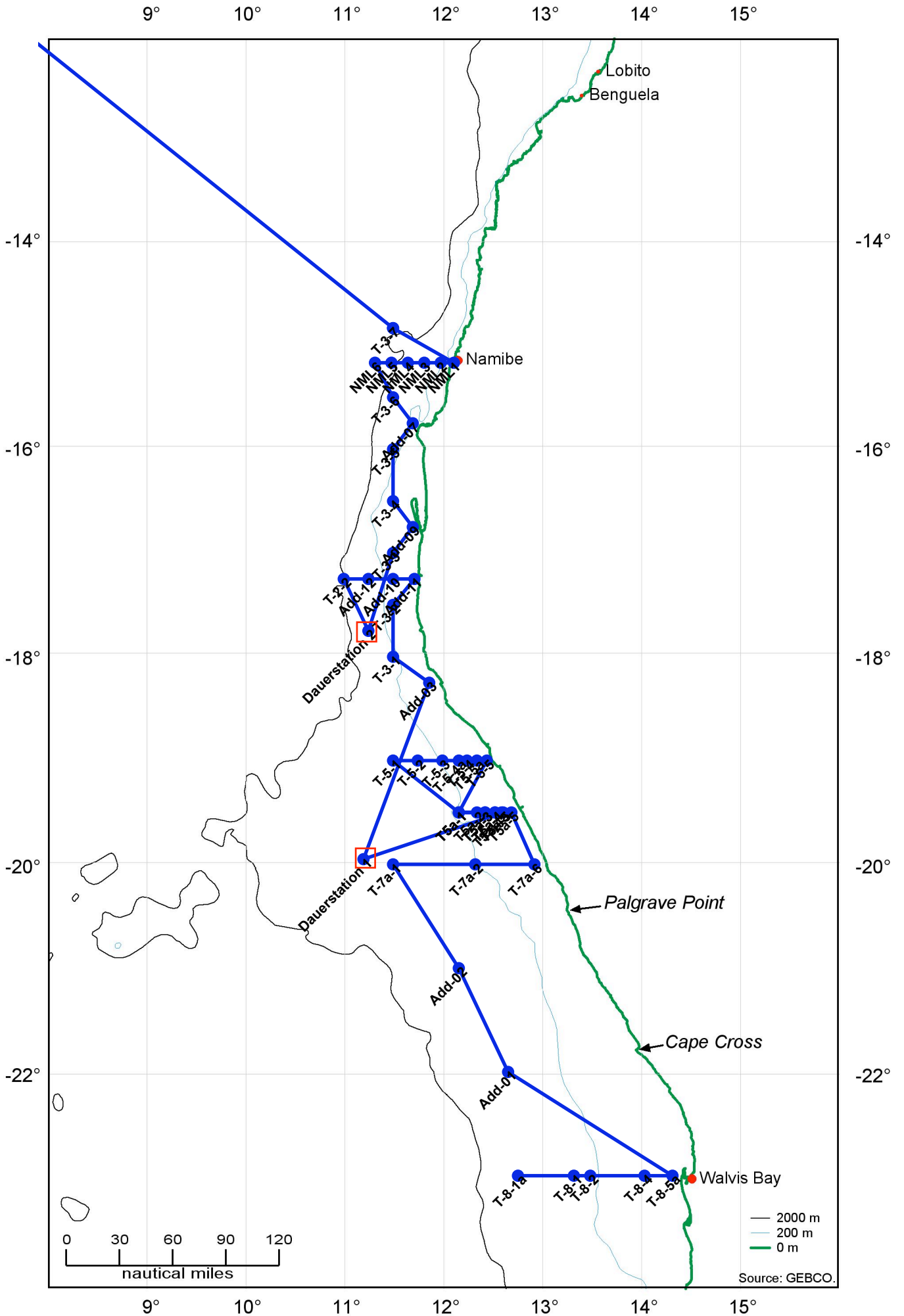
In continuation of the hydrographical and planktological work done in the area since many years, a South-North transect at 11°30'E was performed with CTD, vertical and towed multinet as routine gears at each station and a double MOCNESS at the last and northern most station of this transect at 14°50'S. Several side trips towards the coast and shallow water were performed to do some casts with the Ring trawl in order to fill the aquaria catch with life material for experiments. These stations were the last opportunity for the scientists before the long passage across the equator.

Before finishing this longitudinal transect, we worked up another monitoring line by sampling 6 stations at 15°10'S, the so called "Namibe-line". This set of stations is a monitoring line set up by Angolan scientists from INIP perpendicular to the coast off Namibe. As Angola only recently got an own research vessel ("Tombua"), they were very much relying on ships of opportunity to work at these monitoring stations.

Maria S. Merian finished it's regular station work on 4 April 2008 at 1800 hours and headed northwest for the long passage to Mindelo at the Canary Islands.

The passage from the investigation area to Mindelo was used to continue the physiological experiments. It turned out that especially the horse mackerel larvae and juveniles were very tolerant against onboard conditions and could be kept in aquaria until the last day. Preliminary sorting of plankton samples and analysis of hydrographical data allowed a first discussion of the results of this cruise.

The ship entered the port of Mindelo on 17 April at 1200 hours and finished with this the third leg of cruise MSM07.



Ship stat. no.	CTD-no.	old stat no.	Lat	Long	Water Depth	Dist. from last station	CTD	MSNV	MNo	APSN	MOC-1	MOC-D	RT	TT	WP2	LOKI
							45	49	35	30	12	8	13	5	9	20
CTD calibration station at 22.3.08 14:00 h																
22.03.2008																
MSM07/3-75	201	T-8-1a	23°00'	12°46'	986	95,80	1	1		1		1				
23.03.2008																
MSM07/3-76	202	T-8-1	23°00'	13°20'	353	31,30	1	1		1		1				
MSM07/3-77	203	T-8-2	23°00'	13°30'	237	9,21	1	1		1						
MSM07/3-78	204	T-8-4	23°00'	14°03'	132	30,38	1	1		1						
MSM07/3-79	205	T-8-5a	23°00'	14°20'	73	15,65	1		1	1						
24.03.2008																
MSM07/3-80	206	Add-01	22°00'	12°40'	512	110,16	1	1	1	1	1					
MSM07/3-81	207	Add-02	21°00'	12°10'	808	66,17	1	1	1	1	1					
25.03.2008																
MSM07/3-82	208	T-7a-1	20°00'	11°30'	777	70,74	1		1	1		1				1
MSM07/3-83	209	T-7a-2	20°00'	12°20'	213	46,98	1		1	1			1			1
MSM07/3-84	210	T-7a-6	20°00'	12°56'	68	33,83	1		1	1					1	
MSM07/3-85	211	T5a-5	19°30'	12°42'	62	32,77	1	1	1	1						
26.03.2008																
MSM07/3-86	212	T5a-4a	19°30'	12°36'	89	5,66	1	1	1	1					1	
MSM07/3-87	213	T5a-4	19°30'	12°32'	117	3,77	1	1	1	1			1			
MSM07/3-88	214	T5a-3	19°30'	12°26'	134	5,66	1	1	1	1			1			1
MSM07/3-89	215	T5a-2	19°30'	12°21'	143	4,71	1	1	1	1						
MSM07/3-90	216	T5a-1	19°30'	12°10'	234	10,37	1	1	1	1			1			1
MSM07/3-91	217	T-5-5	19°00'	12°27'	39	34,02	1	1	1	1						
27.03.2008																
MSM07/3-92	218	T5-5a	19°00'	12°21'	92	5,67	1	1	1	1						
MSM07/3-93	219	T-5-4	19°00'	12°15'	111	5,67	1	1	1	1			1			
MSM07/3-94	220	T-5-4a	19°00'	12°10'	125	4,73	1	1	1	1					1	1
MSM07/3-95	221	T-5-3	19°00'	12°00'	211	9,46	1	1	1	1						
MSM07/3-96	222	T-5-2	19°00'	11°45'	302	14,18	1	1	1	1					1	
MSM07/3-97	223	T-5-1	19°00'	11°30'	297	14,18	1	1	1	1	1	1				
28.03.2008																
MSM07/3-98		T5a-1	19°30'	12°10'	240	48,23			1				1			
MSM07/3-99		T5a-3	19°30'	12°26'	135	15,08			1				1			
MSM07/3-100		T5a-4	19°30'	12°32'	117	5,66			1				1	1		
MSM07/3-101		T5a-5	19°30'	12°37'	91	4,71							1	1		
29.03.2008																
MSM07/3-102	228a,b	Dauerstation 1	19°57'	11°12'	1100	84,45	2	14		1	3	1			1	6
30.03.2008																
MSM07/3-103	229	Add-03	18°15'	11°52'	42	108,78	1		1	1				2	1	
31.03.2008																
MSM07/3-104	230	T-3-1	18°00'	11°30'	242	25,73	1	1	1	1	1					
MSM07/3-105	231	T-3-2	17°30'	11°30'	163	30,00	1	1	1	1						1
MSM07/3-106	232	Add-11	17°15'	11°43'	39	19,47	1	1	1					1	1	1
MSM07/3-107	233	Add-10	17°15'	11°30'	140	12,42	1		1	1			1			
MSM07/3-108	234	Add-12	17°15'	11°15'	597	14,33	1	1	1							1
01.04.2008																
MSM07/3-109	235	T-2-2	17°15'	11°00'	2117	14,33	1	1	1	1						
MSM07/3-110	236a,b	Dauerstation 2	17°45'	11°15'	790	33,24	2		2		5	2				5

Ship stat. no.	CTD-no.	old stat no.	Lat	Long	Water Depth	Dist. from last station	CTD	MSNV	MNo	APSN	MOC-1	MOC-D	RT	TT	WP2	LOKI
02.04.2008																
MSM07/3-111	237	T-3-3	17°00'	11°30'	106	47,22	1	1	1	1					1	1
03.04.2008																
MSM07/3-112		Add-09	16°45'	11°42'	31	18,89							1			
MSM07/3-113	240	T-3-4	16°30'	11°30'	103	18,90	1	1	1							
MSM07/3-114	242	T-3-5	16°00'	11°30'	1246	30,00	1	1	1							
MSM07/3-115		Add-07	15°45'	11°42'	180	18,93							1		1	
MSM07/3-116	243	T-3-6	15°30'	11°30'	1719	18,94	1	1								
MSM07/3-117	244	NML6	15°10'	11°19'	2430	22,64	1	1								
MSM07/3-118	246	NML5	15°10'	11°29'	2342	9,65	1	1								
MSM07/3-119	247	NML4	15°10'	11°39'	1745	9,65	1	1								
04.04.2008																
MSM07/3-120	248	NML3	15°10'	11°49'	1115	9,65	1	1								
MSM07/3-121	249	NML2	15°10'	11°59'	421	9,65	1	1								
MSM07/3-122	250	NML1	15°10'	12°07,5'	227	7,72	1	1					1			
MSM07/3-123	251	T-3-7	14°50'	11°30'	2577	40,95	1	1	1			1				

Ende Stationsarbeiten
(Bordzeit)

04.04.2008
18:00