SHORT CRUISE REPORT

R. V. M E T E O R

cruise 50, Leg 2

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an der Universität Kiel

St. John's Newfoundland, Canada to
St. John's Newfoundland, Canada

June 2 to June 18, 2001

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Short cruise report of cruise METEOR M50/2

RV Meteor cruise M50/2 left St. John's in the morning of 2 June 2001. During the two-day transit to the tomography array north of Hamilton Bank it was mostly foggy and some ice was encountered, without causing delays, though. The first mooring position, K42 (Fig. 1), was reached in the early morning of 4 June. The weather was perfect with calm seas and mostly good visibility. The mooring and its three transponders were retrieved in good time and the first CTD/LADCP cast was taken (Table 1), with instructions for those CTD watch members that were unfamiliar with the system. After some CTD's along the WOCE AR7W line during the subsequent night, the retrieval of mooring K41 (Table 2) and its transponders was accomplished on 5 June. On 6 June followed the retrieval of the third tomography station, K43, with its transponders. „RV Meteor“ then had to hurry on to the cycling CTD mooring, position K40, located some 43 nm away. This station was retrieved in the evening of 6 June under quickly deteriorating visibility. Although close by the top float could only be located in by use of the 27 MHz buoy transmitter and „RV Meteor's direction finder.

The cruise then moved southward along the shelf edge toward the 53°N moored array with CTD casts taken along the way for calibration of the acoustic tomography ray paths. Further east, an extended ice field was encountered at the shelf edge, combined with poor visibility, forcing us to make a seaward detour. This resulted in a delayed arrival at 53°N where the intent was to drag for that boundary array mooring K29 which had not been acoustically located on the preceding cruise leg M50/1 and to redeploy three new moorings.

Due to the delay and rougher weather on 8 June it was decided to spend the rest of that day deploying the moorings K38 and K39, which was successfully accomplished on the evening of 8 June. Early in the morning of 9 June the dragging operation was prepared by deploying nearly 10 km of tow wire around the mooring and then dragging around it on various courses. Since the mooring location is known fairly precisely and it was held up by a lot of net buoyancy in the water, such dragging should cut the thin mooring wire and let the mooring float up to the surface. The operation was carried out a number of times but with no success, and the conclusion was that the mooring was no longer in its place.

After CTD/ADCP work along the 53°N array line during the following night, the third array mooring, K 37, was deployed on 9 June in the early morning. Then a northwesterly CTD line parallel to the Labrador Sea axis was started, running about normal to the WOCE AR7W line. In the course of the work, evaluation of the „Ocean Surveyor“ Phased Array was continued that had been started by the previous group on M50/1. The range and data quality of the instrument are superb, while the problems in feeding heading directions into the system continued. This problem can, however, be avoided by merging heading data with the raw ADCP data in the computer outside the RDI processing system.

On 13 June the northernmost tomography station, K53, was deployed smoothly. The transponders were deployed and tracks for determining their positions acoustically were run normal to the transponder triangle sides. Along the way westward toward position K51, a CTD cast on the connection line K51-K53 as well on the WOCE line north of K51 were taken. In the morning of 14 June deployment of mooring K51 started. This mooring is equipped with a flexible surface link, allowing satellite transfer of records from near-surface Microcat temperature and salinity recorders. After K51 and associated transponders were deployed, the Pegasus profiler was launched in order to obtain comparison profiles with the LADCP. In particular, we were interested in the near-bottom shear layer where bottom

reflections reduce LADCP data quality. However, the instrument stopped transmitting right after launch. Most likely it was damaged in the crash of the container when it was unloaded in Halifax before the leg M50/1. Fortunately, the Pegasus returned to the surface at about the expected time and could be recovered.

Continuing the WOCE line with CTD/LADCP stations toward the position of the last mooring to be deployed, station K52 was reached in the morning of 15 June. Mooring K52 and transponders were deployed, and simultaneously with the subsequent CTD/LADCP cast a Pegasus comparison profile was taken with the backup Pegasus instrument. In the evening of 15 June, station work around K52 was accomplished and the WOCE line was completed with two more stations toward the shelf edge off Hamilton Bank, where station work was terminated. In addition to the hydrographic and mooring work 4 profiling ALACE floats were launched during this cruise (Table 3).

Altogether, 4 moorings were retrieved and 7 redeployed on this cruise leg (Table 2), and 3 transponder sets had to be retrieved and redeployed, as well. 33 CTD/LADCP casts were taken (Table 1) with emphasis on our two repeat lines normal to the boundary current and a wealth of deep-reaching shipboard ADCP and rosette-mounted LADCP profiles were obtained. Most of the calibration and first processing could already be accomplished during the cruise and on the return voyage to St. John's. The port was reached in the morning of 18 June 2001.

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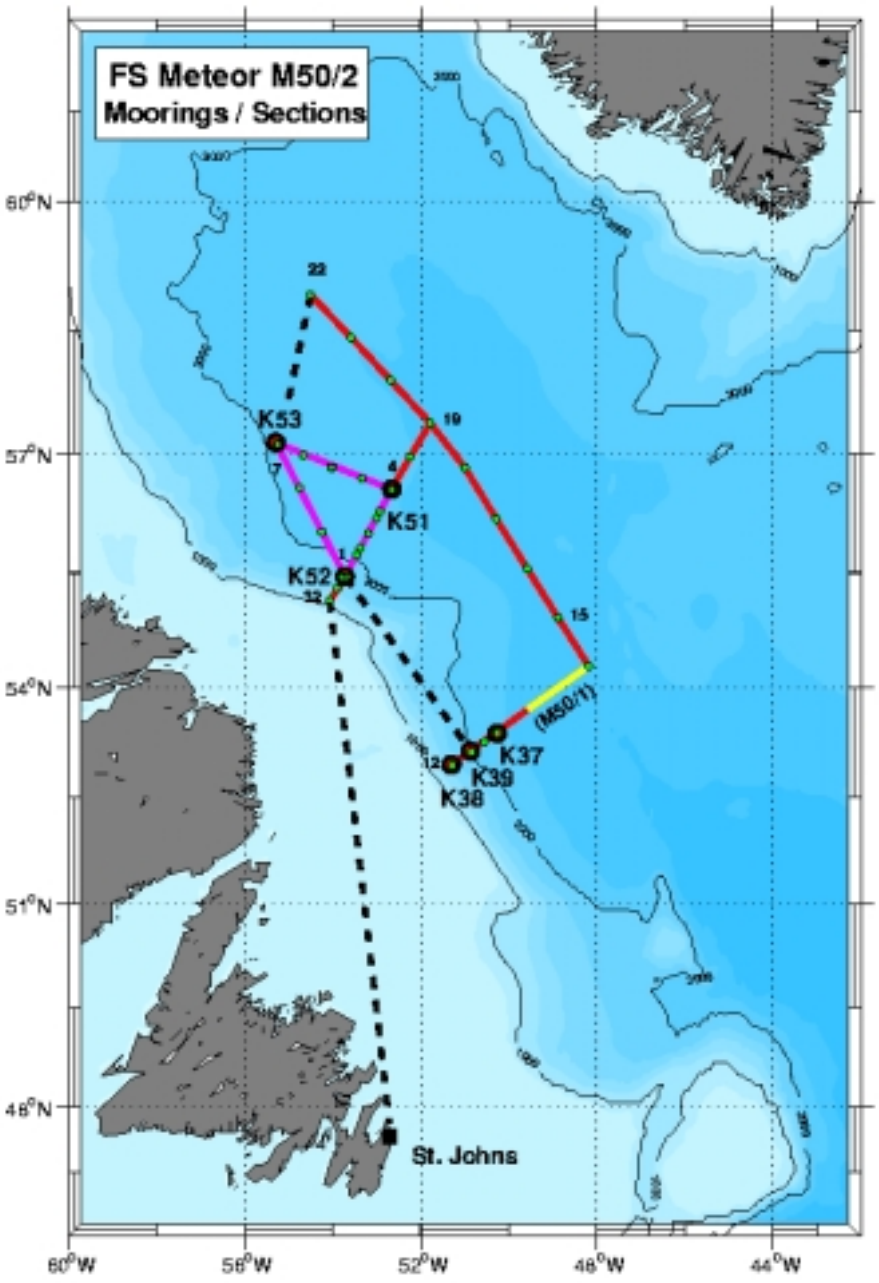
FS Meteor M50/2
Moorings / Sections
60°N
57°N
54°N
51°N
48°N
60°W
56°W
52°W
48°W
44°W
22
19
15
K53
K51
K52
K37
K39
K38
(M50/1)
St. Johns

Table 1: CTD station list

Meteor M50/2 CTD/LADCP Stations

Profile	Station	Date	Time	Latitude	Longitude	Water Depth	Profile Depth	Comment
1	127	04.06.01	13:50	55° 26.48' N	53° 46.25' W	2724	2723	K42
2	128	04.06.01	20:23	55° 49.35' N	53° 21.90' W	3117	3101	
3	129	05.06.01	00:50	56° 11.71' N	53° 0.56' W	3399	3381	
4	130	05.06.01	14:20	56° 33.41' N	52° 39.31' W	3489	3472	K41
5	131	05.06.01	19:07	56° 41.73' N	53° 20.17' W	3378	3361	
6	132	06.06.01	01:41	56° 58.98' N	54° 39.79' W	3207	3193	
7	133	06.06.01	06:04	57° 7.14' N	55° 15.12' W	3070	3067	K43
8	134	06.06.01	22:59	56° 50.06' N	54° 0.13' W	3328	3311	K40
9	135	07.06.01	04:30	56° 34.84' N	54° 45.89' W	3153	3145	
10	136	07.06.01	10:37	56° 1.18' N	54° 14.88' W	3190	3177	
11	138	08.06.01	21:17	53° 7.53' N	50° 50.53' W	2944	2937	K39
12	139	09.06.01	03:29	52° 56.51' N	51° 16.58' W	2293	2265	K38
13	141	10.06.01	01:23	53° 15.82' N	50° 33.37' W	3164	3145	
14	142	10.06.01	05:00	53° 22.82' N	50° 15.80' W	3358	3346	K37, no LADCP
15	143	10.06.01	19:45	54° 55.06' N	48° 52.94' W	3697	3681	
16	144	11.06.01	02:45	55° 33.02' N	49° 34.79' W	3663	3646	
17	145	11.06.01	09:24	56° 11.04' N	50° 16.97' W	3655	3640	
18	146	11.06.01	15:43	56° 49.93' N	50° 59.94' W	3596	3579	
19	147	12.06.01	00:52	57° 22.88' N	51° 47.07' W	3533	3517	
20	148	12.06.01	07:08	57° 53.93' N	52° 40.91' W	3482	3468	
21	149	12.06.01	13:26	58° 24.93' N	53° 34.90' W	3430	3415	
22	150	12.06.01	21:32	58° 55.00' N	54° 30.09' W	3371	3355	
23	151	13.06.01	14:48	57° 7.32' N	55° 14.68' W	3103	1493	K53
24	152	13.06.01	22:26	56° 50.04' N	54° 2.01' W	3342	1484	
25	153	14.06.01	05:46	56° 58.03' N	52° 14.22' W	3513	3497	
26	154	14.06.01	17:30	56° 32.98' N	52° 40.69' W	3488	3471	K51
27	155	14.06.01	23:52	56° 16.81' N	52° 55.54' W	3499	3482	
28	156	15.06.01	04:13	56° 0.30' N	53° 11.21' W	3235	3221	
29	157	15.06.01	08:22	55° 43.52' N	53° 27.49' W	3024	3013	
30	158	15.06.01	17:30	55° 26.56' N	53° 41.83' W	2744	605	K52
31	158	15.06.01	18:34	55° 26.26' N	53° 40.85' W	2753	2741	Pegasus
32	159	15.06.01	23:57	55° 17.94' N	53° 53.69' W	2299	2307	
33	160	16.06.01	02:44	55° 8.89' N	54° 4.12' W	1227	1208	

Table 2: Mooring activities during METEOR cruise M50/2

Mooring ID	Position	Date / time	Water depth	Deployed/retrieved	Mooring type
K38	52°N57,50 / 51°W18,10	08.06.2001 / 14:59 UTC	2464 m	Deployed	Boundary-Current-Mooring
K39	53°N08,50 / 50°W52,10	08.06.2001 / 20:46 UTC	2885 m	Deployed	Boundary-Current-Mooring
K37	53°N23,50 / 50°W15,40	10.06.2001 / 10:48 UTC	3380 m	Deployed	Boundary-Current-Mooring
K51	56°N33,50 / 52°W39,50	14.06.2001 / 15:13 UTC	3510 m	Deployed	Tomography/Convection-Mooring
K52	55°N27,20 / 53°W43,60	15.06.2001 / 15:49 UTC	2791 m	Deployed	Tomography/Convection-Mooring
K53	57°N08,00 / 55°W17,50	13.06.2001 / 14:00 UTC	3098 m	Deployed	Tomography/Convection-Mooring
K40	56°N49,68 / 54°W01,65	06.06.2001 / 21:49 UTC	3325 m	Retrieved	Boundary-Current-Mooring
K41	56°N33,60 / 52°W39,50	05.06.2001 / 11:15 UTC	3495 m	Retrieved	Tomography-Convection-Mooring
K42	55°N27,18 / 53°W43,55	04.06.2001 / 11:24 UTC	2775 m	Retrieved	Tomography/Convection-Mooring
K43	57°N08,08 / 55°W17,57	06.06.2001 / 11:05 UTC	~ 3075 m	Retrieved	Tomography/Convection-Mooring

Table. 3: Float deployment

S/N	Dec-Argos-ID	Hex-Argos-ID	start time	launch time	launch position
284	03837	3BF70	09.06.01 / 11:12	09.06.01 / 12:02	53°N04,95 / 50°W58,64
285	02194	2248F	09.06.01 / 20:38	09.06.01 / 23:33	53°N01,63 / 50°W55,53
286	02195	224DC	08.06.01 / 13:52	08.06.01 / 15:09	52°N57,63 / 51°W17,94
287	02196	22536	08.06.01 / 18:58	08.06.01 / 23:43	53°N06,99 / 50°W50,45