MR05-01 Cruise Summary

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1. Outline

Main mission of this cruise was test of mooring system for certification of its safety and deployment of mooring system for time-series observation for biogeochemistry.
Since one of our mooring systems was lost in October 2003, time-series observation using mooring system has been suspended. During this period, cause of accident (partition of mooring system) and its prevention countermeasure have been investigated. Thanks to much effort by all concerned, every preparation was completed before this cruise and our cruise could start on 28 February. However during this 24 days' winter cruise, deployment, recovery and re-deployment of two mooring systems should be conducted. In addition, short-term mooring for test should be conducted longer than ten days. The above works looked impossible in winter.

Fortunately, we could deployment PO mooring system and BGC mooring system on 3 March and 5 March, respectively, without critical delay at station K2. After deployment and during short-term mooring for test, we conducted the following observation at respective stations.

(Station K2)
- Hydrocasting for basic components' analysis (routine) such as DO, Nuts, carbonate chemistry
- Hydrocasting for trace elements' analysis
- In situ pumping for collection of suspended materials
- Measurements of primary productivity
- Optical observation

(Station K1)
- Hydrocasting routine
- Hydrocasting for trace elements' analysis
- In situ pumping
- Measurements of primary productivity
- Optical observation

(Station 35N)
- Hydrocasting routine
- Hydrocasting for trace elements' analysis
- In situ pumping
- Measurements of primary productivity
- Optical observation

However rough sea condition forced us to give up observation at station K3. In addition, only hydrocasting for routine and trace elements could be conducted at station KNOT.

During the above observation and short-term mooring, several low pressure masses attacked station K2 and, based on weather chart, significant wave height was expected to be higher than 8 m. Due to rough sea, we could not be back to station K2 by 16 March. After two mooring systems were recovered on board successfully, tension during mooring period and

damage of mooring system were investigated. Fortunately there was no problem and valuable dynamical data for mooring system were obtained. Right after the above investigation, preparation for re-deployment was quickly conducted and BGC mooring system with automatic sample collectors was deployed successfully on 18 March. Unfortunately, sea condition did never permit us to re-deploy PO mooring by the time limit. However success of redeployment of BGC mooring, which is our main mooring system, enabled us to restart time-series observatory for biogeochemistry. This BGC mooring system will be recovered during MIRAI autumn cruise (MR05-04).

2. Track and log

2.1 Cruise track

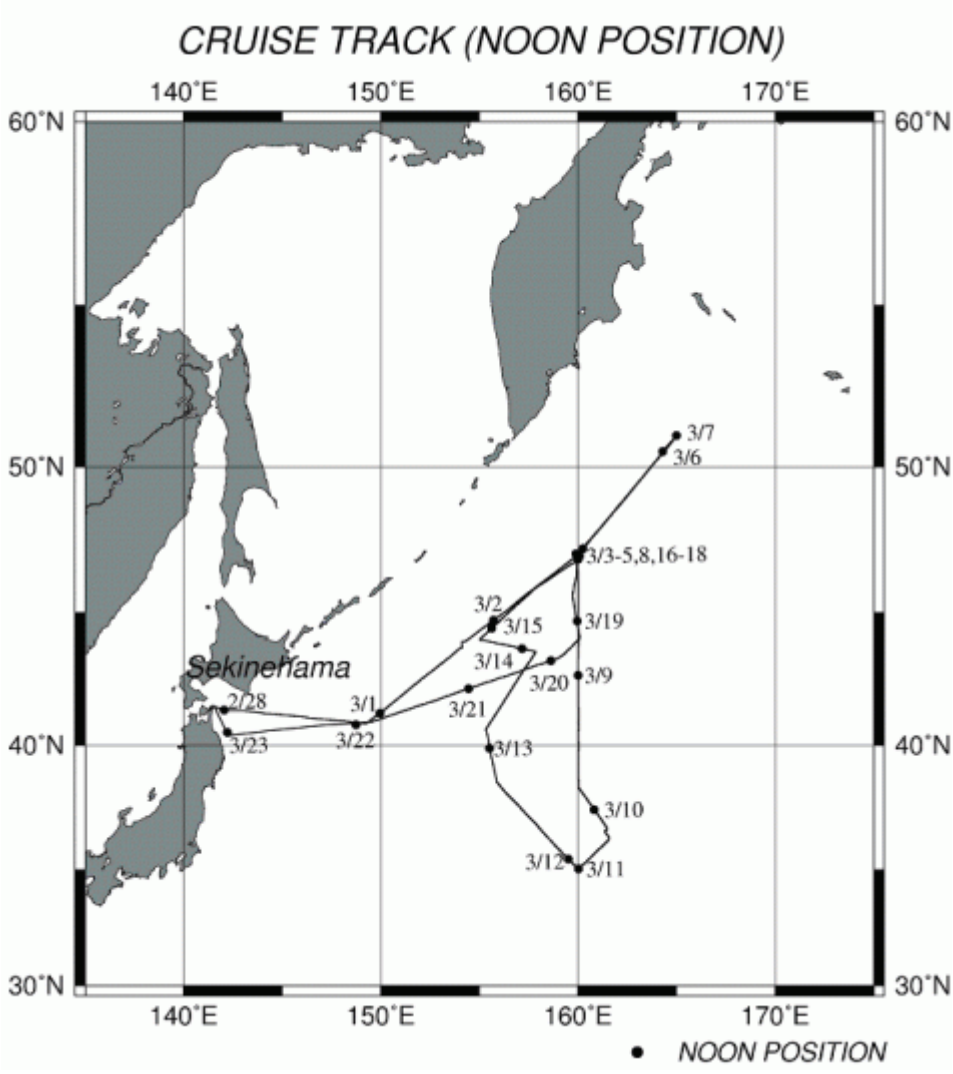

Figure 1.2.1-1 Cruise track

2.2 Cruise log

U.T.C.		S.M.T.		Position		Events
Date	Time	Date	Time	Lat.	Lon.	
2.28	00:00	2.28	09:00	41-21.97N	141-14.38E	Departure from Sekinehama
3.1	13:00	3.1	22:00	-	-	Time adjustment +1 hours (SMT=UTC+10h)
3.2	01:21	3.2	11:21	44-41.61N	155-40.73E	Free Fall
	12:00		22:00	-	-	Time adjustment +1 hours (SMT=UTC+11h)
	17:12	3.3	04:12	47-00N	160-00E	Arrival at Station K2
	21:16		08:16	46-51.30N	159-59.06E	PO mooring deployment
	-		-	46-52.382N	159-58.958E	PO mooring Fixed position
3.3	04:27	3.3	15:27	46-52.63N	159-59.68E	CTD cast (300m)
	07:56		18:56	46-53.78N	159-58.72E	Calibration for magnetometer
3.4	06:51	3.4	17:51	47-01.39N	160-00.31E	CTD cast (5,139m)
	19:30	3.5	06:30	46-56.16N	160-10.30E	CTD cast (200m)
	21:25		08:25	46-55.05N	160-10.14E	BGC mooring deployment
	-		-	47-00.477N	159-57.967E	BGC mooring Fixed position
3.5	06:30	3.5	17:30	-	-	Departure from Station K2
3.6	00:24	3.6	11:24	50-28.06N	164-16.51E	Free Fall
	03:36		14:36	51-00N	165-00E	Arrival at Station K1
	06:28		17:28	50-59.31N	165-00.68E	CTD cast (400m)
	17:58	3.7	04:58	51-00.12N	164-59.81E	CTD cast (200m)
	19:02		06:02	51-00.16N	164-59.26E	CTD cast (2000)
	21:22		08:22	50-59.09N	165-00.02E	Large Volume Pump (LVP) cast (800m, 2 hour)
3.7	00:53	3.7	11:53	50-59.91N	164-59.62E	CTD cast (4,860m)
	04:30		15:30	-	-	Departure from Station K1
3.8	00:22	3.8	11:22	47-16.76N	160-17.95E	Free Fall
	02:00		13:00	47-00N	160-00E	Arrival at Station K2
	02:03		13:03	47-05.18N	159-59.66E	LVP cast (800m, 2 hours)
	06:28		17:28	-	-	Checked BGC moomig position
	07:38		18:38	-	-	Checked PO moornig position
	07:54		18:54	-	-	Departure from Station K2
3.9	01:55	3.9	12:55	49-29.50N	159-59.33E	Free Fall
3.10	20:30	3.11	07:30	35-00N	160-00E	Arrival at Station 35N
	21:02		08:02	34-59.47N	159-59.23E	CTD cast (4,582m)

U.T.C.		S.M.T.		Position		Events
Date	Time	Date	Time	Lat.	Lon.	
3.11	02:08	3.11	13:08	35-00.09N	160-00.34E	Free Fall
	02:36		13:36	34-59.84N	159-59.34E	CTD cast(3,000m)
	17:54	3.12	04:54	34-59.99N	160-00.01E	CTD cast(200m)
	18:45		05:45	35-00.07N	160-00.07E	LVP cast(800m, 2 hours)
	22:30		09:30	-	-	Departure from Station 35N
3.14	16:30	3.15	03:30	44-00N	155-00E	Arrival at Station KNOT
	17:03		04:03	43-59.84N	155-00.17E	CTD cast(300m)shallow
	18:34		05:34	44-00.81N	155-00.18E	CTD cast(5,263m)deep
	22:30		09:30	-	-	Departure from Station KNOT
3.15	16:54	3.16	03:54	47-00N	160-00E	Arrival at Station K2
	21:38		08:38	46-52.40N	159-59.22E	PO mooring recovery
3.16	20:03	3.17	07:03	47-00.52N	159-58.18E	BGC mooring recovery
3.17	21:06	3.18	08:06	47-04.90N	159-51.73E	BGC mooring deployment
3.18	03:35	3.18	14:35	47-00.468N	159-58.057E	BGC mooring Fixed position
	04:42		15:42	-	-	Departure from Station K2
3.21	11:00	3.21	22:00	-	-	Time adjustment -1 hours (SMT=UTC+10h)
3.22	12:00	3.22	22:00	-	-	Time adjustment -1 hours (SMT=UTC+9h)
3.24	00:00	3.24	09:00	41-21.97N	141-14.21E	Arrival at Sekirehama

3. List of participants

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