

東京大学機関リポジトリ

**Title:** Preliminary Report of The Hakuho Maru Cruise KH-05-1 Leg 2,4

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**Additional information(追加情報) :**

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p. 26

The article was published in “Tsukamoto, K. : Spawning of eels near a seamount. Nature, 439, p. 929, 2006.”

DOI: 10.1038/439929a

**Preliminary Report  
of  
The Hakuho Maru Cruise  
KH-05-1 Leg 2,4**

Leg 1: May 29, 2005 - June 13, 2005  
Leg 2: June 30, 2005 - July 15, 2005  
(Eel Cruise XII)

Atmosphere and Ocean Research Institute  
The University of Tokyo  
2012



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By  
The Scientific Members of the Expeditions

Edited by  
Shun Watanabe, Kazuki Yokouchi  
and Katsumi Tsukamoto

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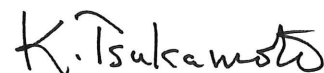
## Preface

The KH-05-1 research cruise of the R/V *Hakuho Maru* (Leg 2 and Leg 4) was the first research effort to increase our understanding of the spawning ecology and migration behavior of the Japanese eel using the newly developed large ORI net (so-called "Big Fish" or ORI-BF). The cruise was separated into two legs, Leg 2 (from 29 May, Naha, Okinawa to 13 June, Guam) and Leg 4 (from 30 June, Guam to 15 July, Guam). The main objectives of this cruise were (1) to confirm spawning events, and their timing and location by collecting small larvae of the Japanese eel using the ORI-BF. Because of the calm sea during the cruise, we made almost 100% of the sampling and observations that were scheduled. In addition to this, other research was successfully done during the cruise, such as (2) the oceanic environmental condition during the transportation of eel larvae, (3) distribution of the oceanic larvae and juveniles, (4) the role of olfactory sense in the migration mechanism of the adult eel, (5) microflora in a digestive organ of the eel, and (5) experimental estimation of upwelling flow in a pipe induced by a "perpetual salt fountain".

As a result of the net sampling, we could successfully collect *Anguilla japonica* preleptocephali (4 – 5 mm TL), confirming a spawning event of the Japanese eel along the southern West Mariana Ridge around the day of new moon of June 2005. This collection is the first major historical achievement since the big catch of 10 mm leptocephali during the KH-91-4 cruise, in the year 1991. A few of the small larvae that were collected were aged and estimated as 2 – 4 days old after hatching by a brief otolith aging method. Real-time PCR method was employed for species identification of collected *A. japonica* preleptocephali. It will be required to do additional age estimation to increase the sample size and to conduct more detailed genetic identification with DNA sequences after this cruise. The result of the additional experiments would help to better determine the spawning sites of the Japanese eel in combination with oceanographic current data and hydrographic conditions around the area surveyed by this cruise.

On behalf of all the scientists on board, we acknowledge the captain and his crew of the R/V *Hakuho Maru*, and the administrative staff of JAMSTEC for their heartfelt cooperation during the intensive sampling.

In the cabin of *Hakuho Maru*, July 14, 2005



Katsumi Tsukamoto  
Chief Scientist of KH-05-1

Station and working log.

No.1

2005	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
29-May (Sun.)																								
30-May (Mon.)						5:30 Sun Rise															Sun Set 19:10			
31-May (Tue.)						6:16 Sun Rise															Sun Set 18:49			Put clocks 1 hour GMT+10
01-Jun (Wed.)						6:17 Sun Rise																		
02-Jun (Thu.)						6:19 Sun Rise																		
03-Jun (Fri.)						6:09 Sun Rise																		
04-Jun (Sat.)						6:14 Sun Rise																		
05-Jun (Sun.)						6:13 Sun Rise																		
06-Jun (Mon.)						6:05 Sun Rise																		
07-Jun (Tue.)						6:03 Sun Rise																		
08-Jun (Wed.)						5:58 Sun Rise																		
09-Jun (Thu.)						6:02 Sun Rise																		
10-Jun (Fri.)						6:02 Sun Rise																		
11-Jun (Sat.)						6:01 Sun Rise																		
12-Jun (Sun.)						6:00 Sun Rise																		
13-Jun (Mon.)						5:55 Sun Rise																		

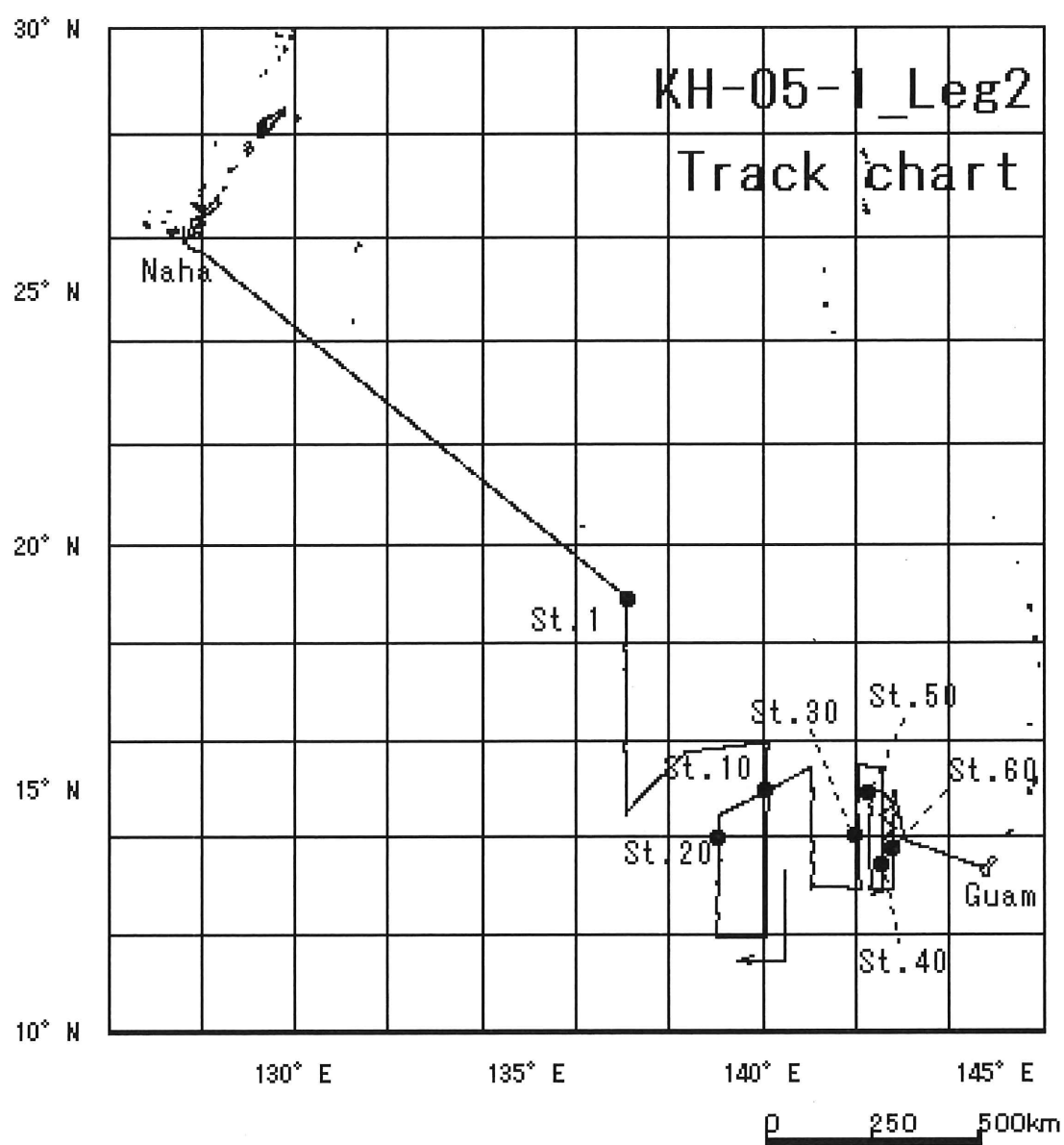
Station and working log.

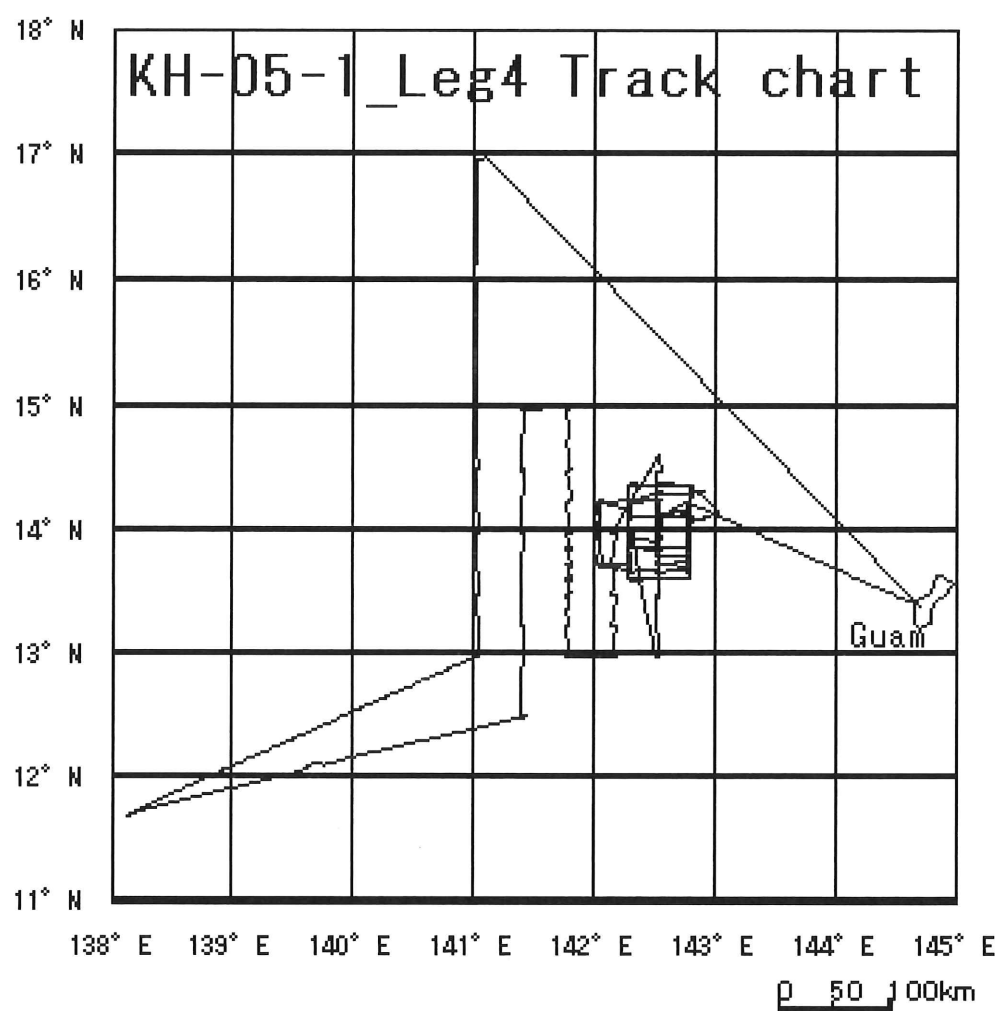
No.2

2005	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Sun Rise Sun Set
30-Jun (Thu.)	SL6814-0.0N 142-45E 3mORI**	SL6913-45N 142-45E 3mORI**	SL7014-0.0N 142-30E 3mORI**	SL7114-0.0N 142-30E 3mORI**	SL7214-15N 142-30E 3mORI**	SL7313-52.5N 142-30E 3mORI**	SL7414-0.0N 142-15E 3mORI**	SL7513-45NSL 142-15E 3mORI**	SL7613-37.5N 142-15E 3mORI**	SL7713-37.5N 142-30E 3mORI**	SL7814-15N 142-45E 3mORI**														
01-Jul (Fri.)	SL375NSL7913-52.5NSL 142-45E 3mORI**	SL8014-7.5N 142-45E 3mORI**	SL8114-7.5N 142-30E 3mORI**	SL8213-52.5N 142-30E 3mORI**	SL8313-52.5N 142-15E 3mORI**	SL8414-7.5N 142-15E 3mORI**	SL8514-22.5NSL 142-15E 3mORI**	SL8614-22.5NSL 142-30E 3mORI**	SL8714-22.5NSL 142-30E 3mORI**	SL8814-22.5NSL 142-30E 3mORI**	SL8914-0.0N 142-45E 3mORI**														6:05 19:03
02-Jul (Sat.)	SL75NSL8913-52.5NSL 142-45E 3mORI**	SL9013-52.5N 142-45E 3mORI**	SL9114-15N 142-30E 3mORI**	SL9214-7.5NSL 142-15E 3mORI**	SL9314-7.5N 142-15E 3mORI**	SL9413-52.5N 142-30E 3mORI**	SL9514-0.0N 142-45E 3mORI**	SL9613-45N 142-45E 3mORI**	SL9713-45N 142-30E 3mORI**	SL9814-0.0N 142-30E 3mORI**	SL9914-0.0N 142-30E 3mORI**														6:05 19:03
03-Jul (Sun.)	SL9914-15N 142-30E 3mORI**	SL10014-15N 142-15E 3mORI**	SL10114-7.5NSL 142-15E 3mORI**	SL10213-45NSL 142-15E 3mORI**	SL10313-37.5N 142-15E 3mORI**	SL10413-37.5NSL 142-30E 3mORI**	SL10513-37.5NSL 142-30E 3mORI**	SL10613-52.5NSL 142-45E 3mORI**	SL10714-7.5NSL 142-45E 3mORI**	SL10814-7.5NSL 142-45E 3mORI**	SL10914-0.0N 142-30E 3mORI**														6:06 19:01
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07-Jul (Thu.)	SL14812-59.9N 142-30E 3mORI**	SL14913-30.0N 142-30E 3mORI**	SL15014-0.1N 142-30E 3mORI**	SL15114-30.0N 142-32E 3mORI**	SL15214-3.8NSL 142-30E 3mORI**	SL15313-37.5NSL 142-45E 3mORI**	SL15413-30.0NSL 142-07E 3mORI**	SL15513-15.0N 142-07E 3mORI**	SL15613-0.0N 142-07E 3mORI**	SL15713-0.6N 142-07E 3mORI**	SL15814-19.9N 142-51E 3mORI**														6:07 19:04
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13-Jul (Fri.)	SL17312-30N 141-22.5E 3mORI**	SL17411-42.5N 138-7E 3mORI**	SL17513-0.1N 141-00E 3mORI**	SL17613-29.8N 141-00E 3mORI**	SL17714-0.0N 141-00E 3mORI**	SL17814-30.2N 141-00E 3mORI**	SL17915-0.1N 141-00E 3mORI**	SL18016-0.0N 141-00E 3mORI**	SL18117-0.0N 141-0.2E 3mORI**	SL18217-0.0N 141-0.2E 3mORI**	SL18317-0.0N 141-0.2E 3mORI**														6:16
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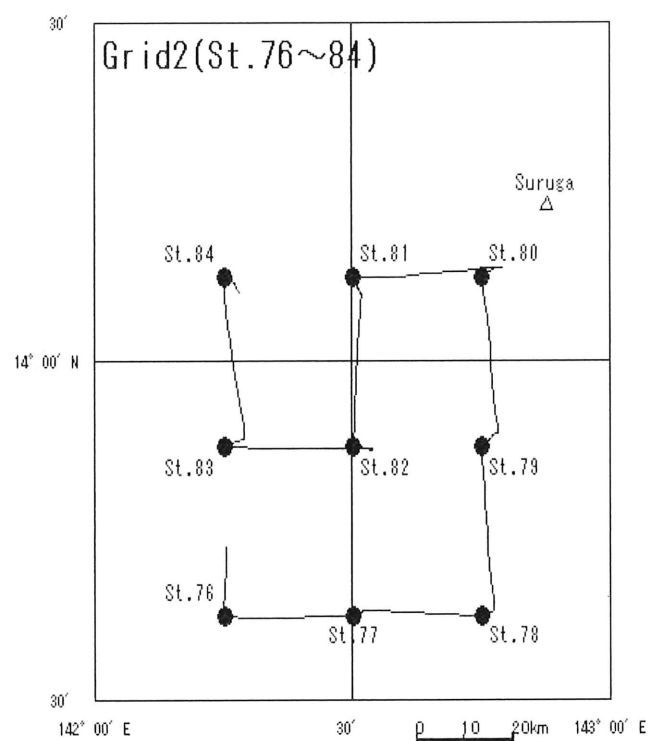
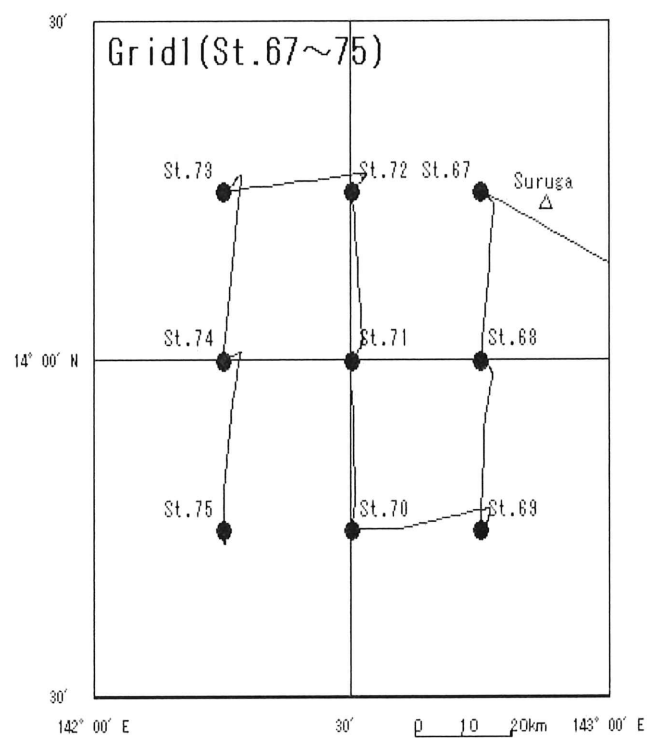
## Scientists on board HAKUHO-MARU (KH-05-1)

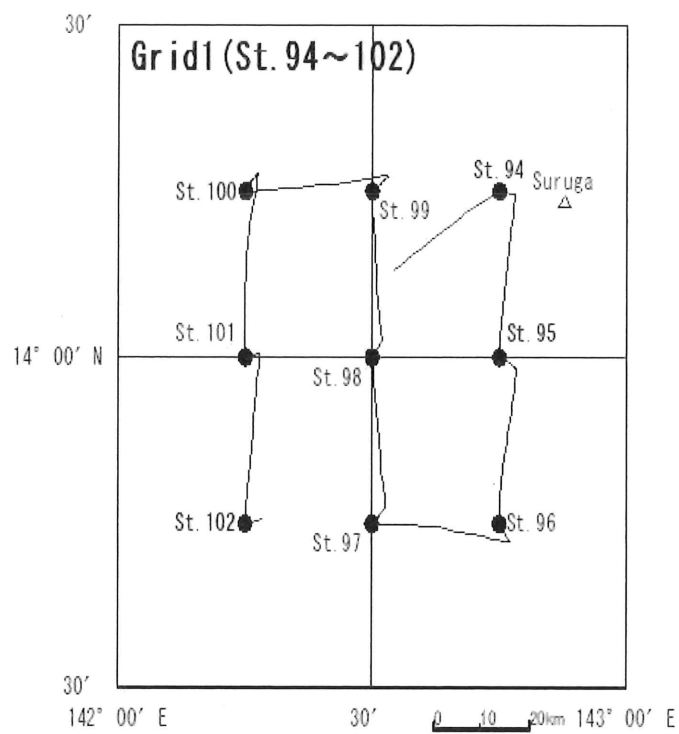
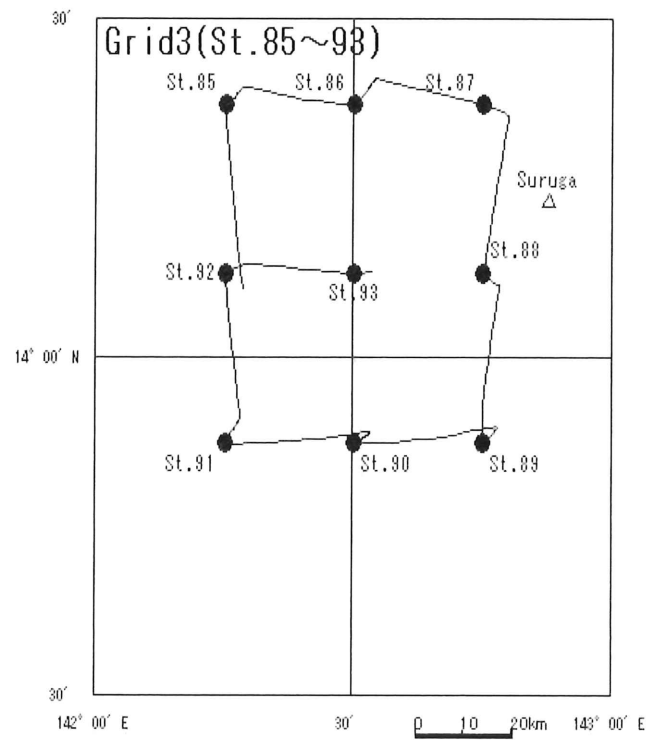
No.	Leg. 2	Leg.4	Name	Affiliation	Position
1	○	○	TSUKAMOTO Katsumi	Ocean Research Institute, The University of Tokyo	Proffesor
2	○		OTAKE Tsuguo	Ocean Research Institute, The University of Tokyo	Proffesor
3	○		KIMURA Shingo	Ocean Research Institute, The University of Tokyo	Associate Proffesor
4	○	○	AOYAMA Jun	Ocean Research Institute, The University of Tokyo	Research Associate
5	○	○	OYA Machiko	Ocean Research Institute, The University of Tokyo	Technician
6	○	○	MILLER Michael J.	Ocean Research Institute, The University of Tokyo	Research Fellow
7	○	○	WATANABE Shun	Ocean Research Institute, The University of Tokyo	Research Fellow
8	○	○	SHINODA Akira	Ocean Research Institute, The University of Tokyo	Research Fellow
9	○	○	KIM Hee-Yong	Ocean Research Institute, The University of Tokyo	Research Fellow
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13	○	○	YOKOUCHI Kazuki	Ocean Research Institute, The University of Tokyo	Graduate Student
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16	○	○	FUKUDA Nobuto	Ocean Research Institute, The University of Tokyo	Graduate Student
17	○		KATO Yoshiki	Ocean Research Institute, The University of Tokyo	Graduate Student
18		○	INOUE Takashi	Ocean Research Institute, The University of Tokyo	Graduate Student
19		○	MIYAKE Yoichi	Ocean Research Institute, The University of Tokyo	Graduate Student
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21		○	MATSUMOTO Asako	The University of Tokyo	Research Fellow
22		○	FUKUI Atsushi	Tokai University	Associate Proffesor
23		○	ETOH Nozomu	Tokai University	Graduate Student
24		○	TOMIYAMA Shinichi	Tokai University	Graduate Student
25	○	○	WAKI Yasutoshi	Mie University	Graduate Student
26		○	MOCHIOKA Noritaka	Kyushu University	Research Associate
27		○	YAMADA Yoshiaki	IRAGO Institute	Researcher
28	○		HORIE Noriyuki	IRAGO Institute	Sinior Researcher
29	○	○	AI Bunpei		Journalist
30		○	LEE Tae-Won	Chungnam National University	Proffesor
31		○	HWANG Hak-Bin	Chungnam National University	Graduate Student
32	○	○	TSUBAKI Koutaro	Tohoku University	Graduate Student
33	○	○	SATOH Tetsuya	Tohoku University	Student
34	○		NAKAI Yuki	Tohoku University	Graduate Student
35		○	TAKEDA Hiroki	Tohoku University	Graduate Student
36	○		OGUMA Kenji	Ocean Research Institute, The University of Tokyo	Technician
37		○	ISHIGAKI Hideo	Ocean Research Institute, The University of Tokyo	Technician
38	○		TAGUCHI Masaki	MARINE WORKS JAPAN LTD.	Engineer
39		○	YOKOKAWA Shinichiro	MARINE WORKS JAPAN LTD.	Engineer

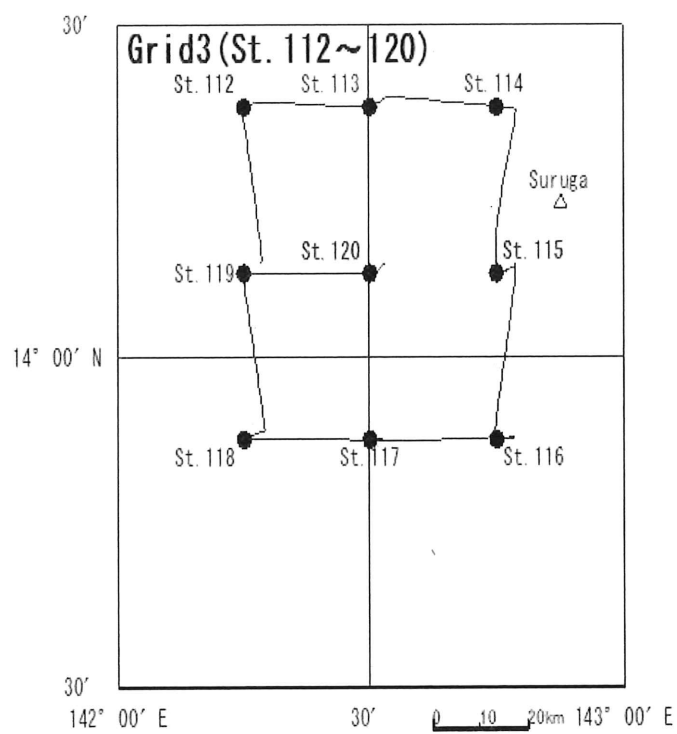
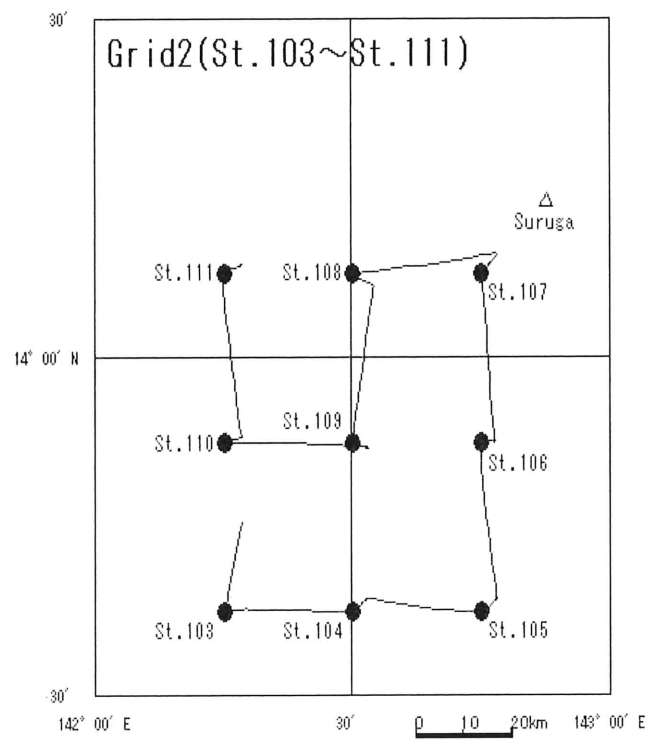


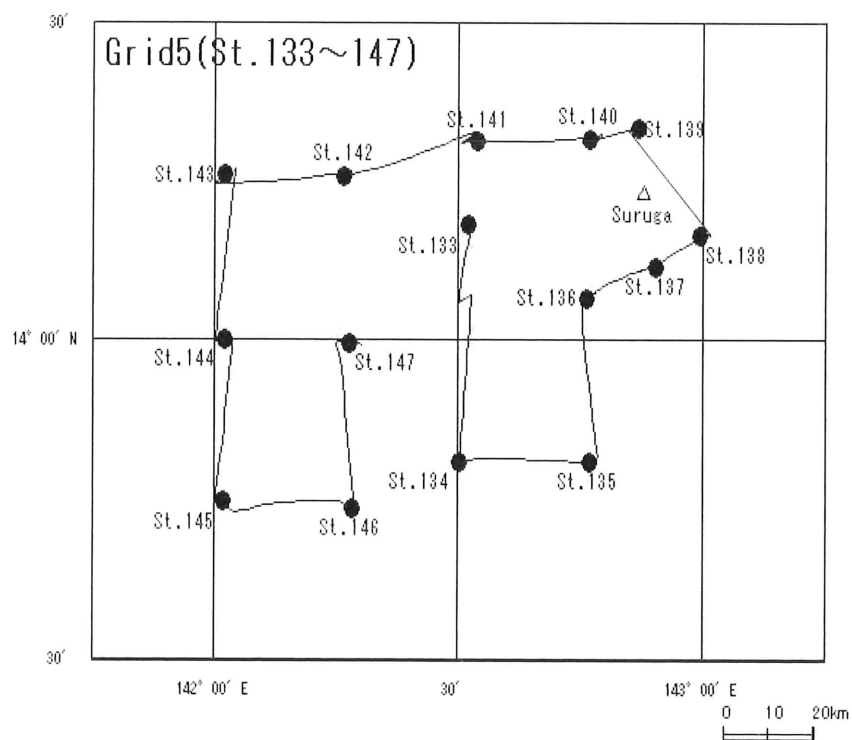
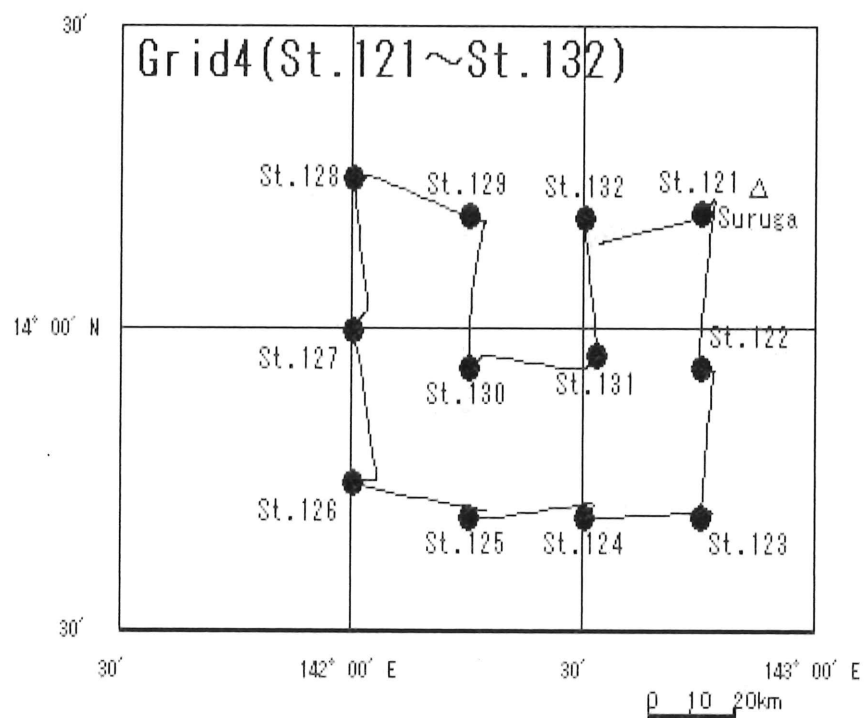


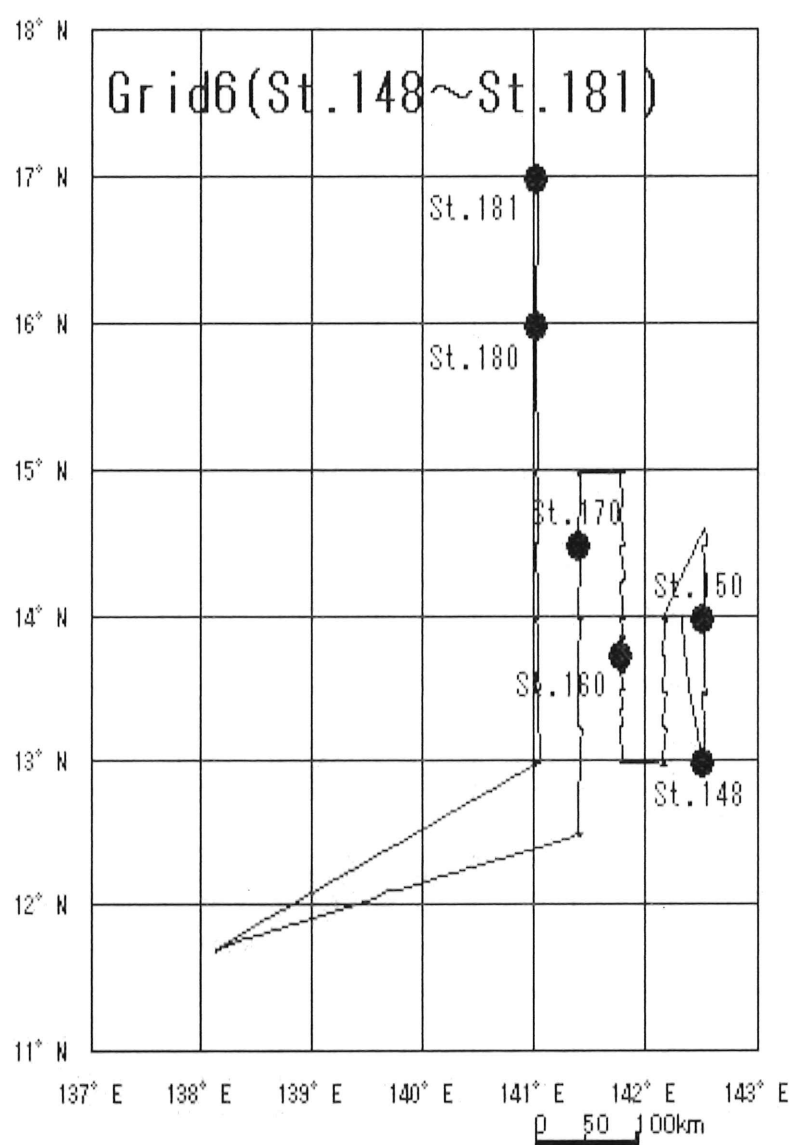


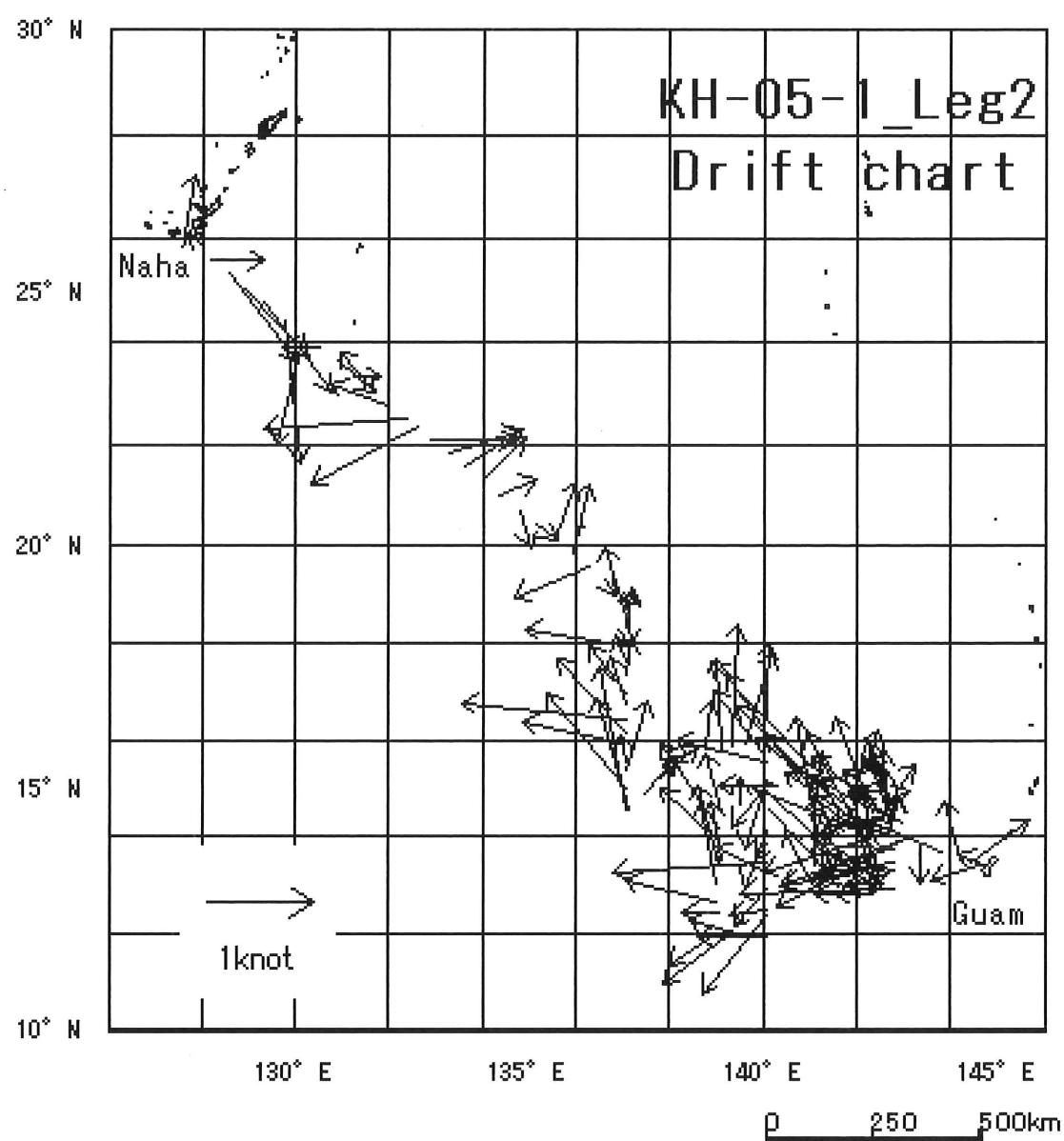


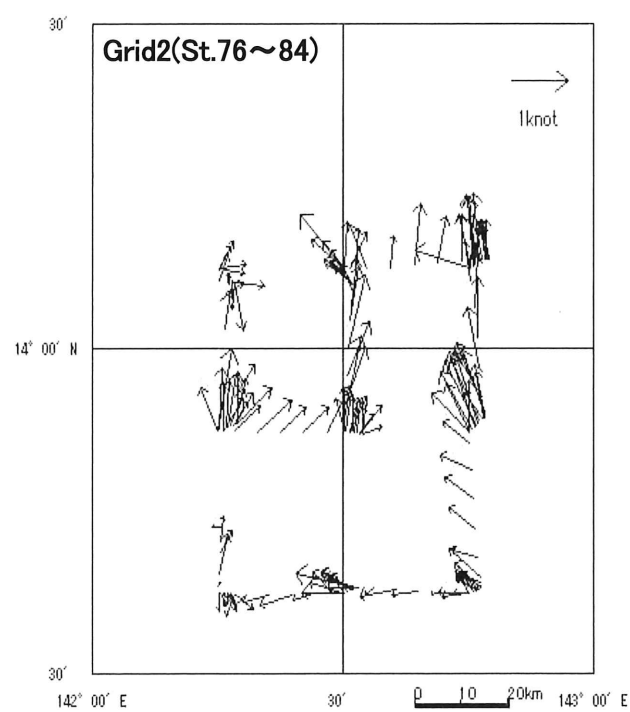
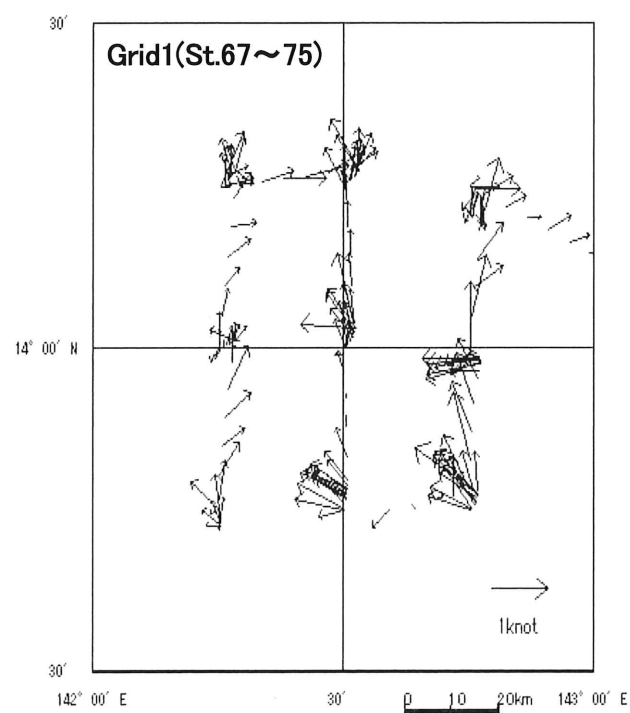


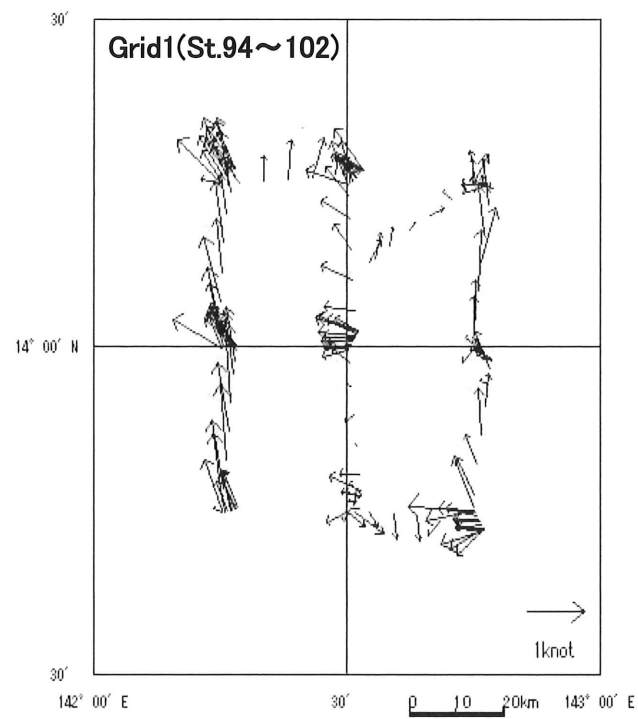
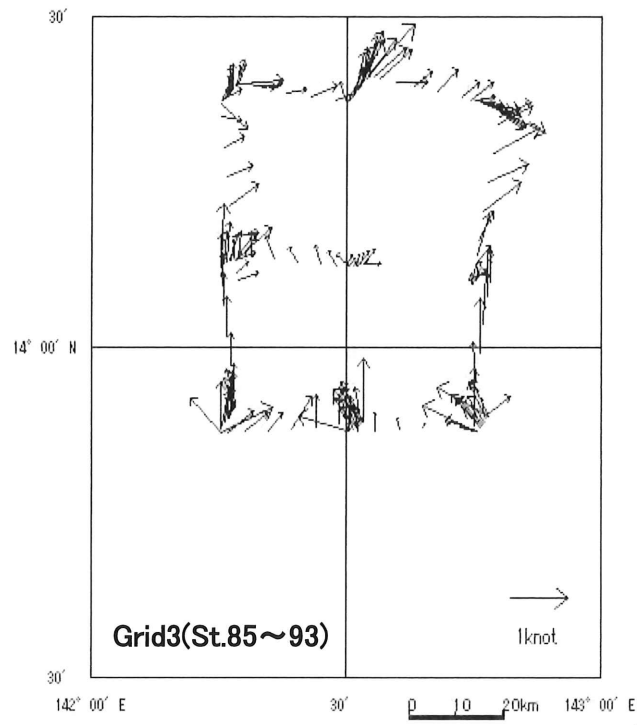




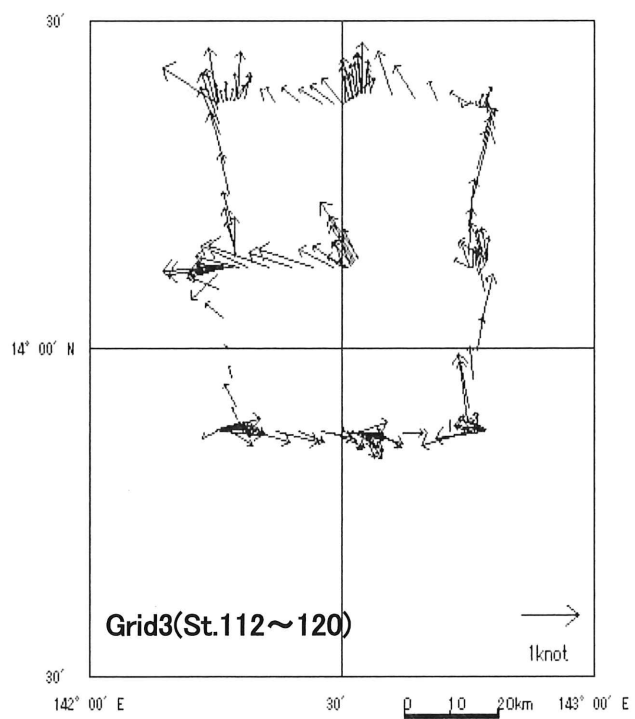
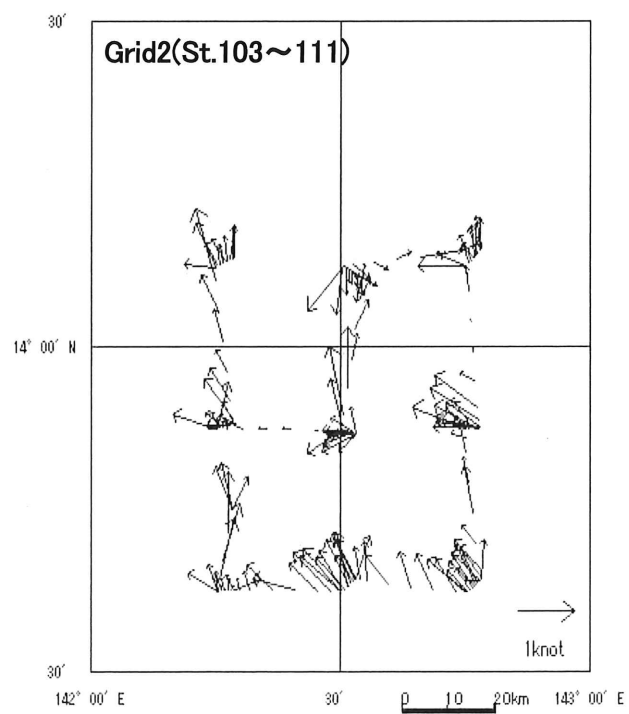


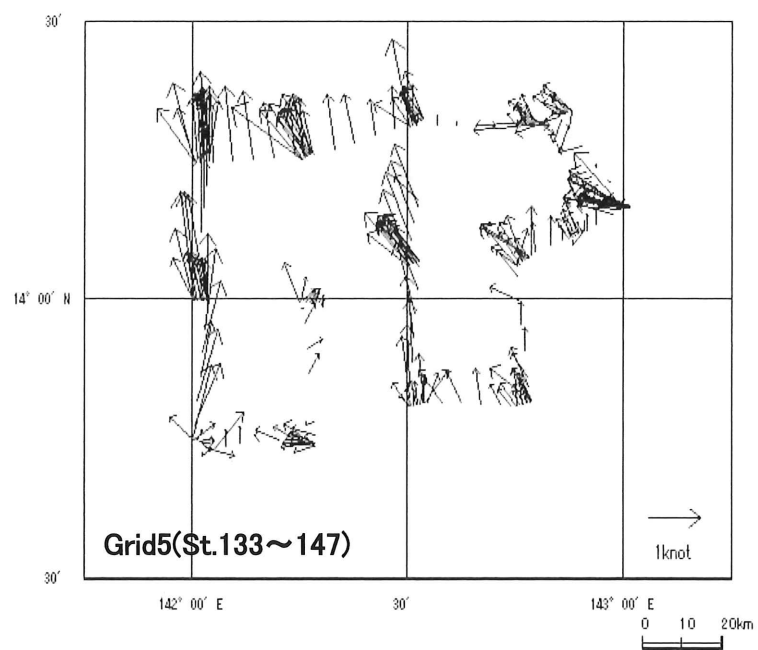
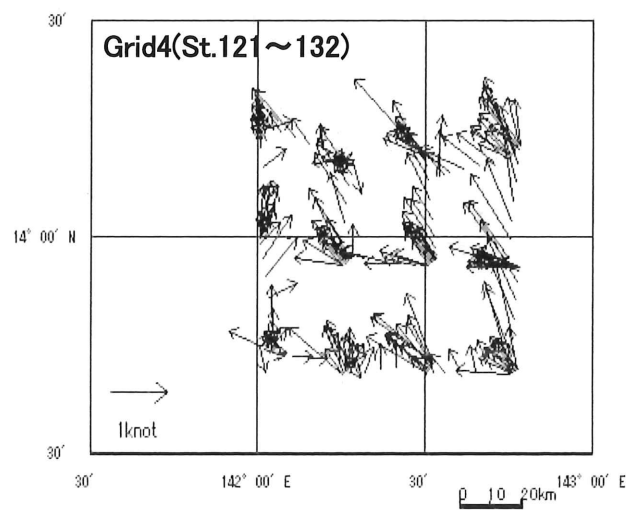












## Leptocephali Collected During the KH-05-1 Cruise in the North Equatorial Current Region

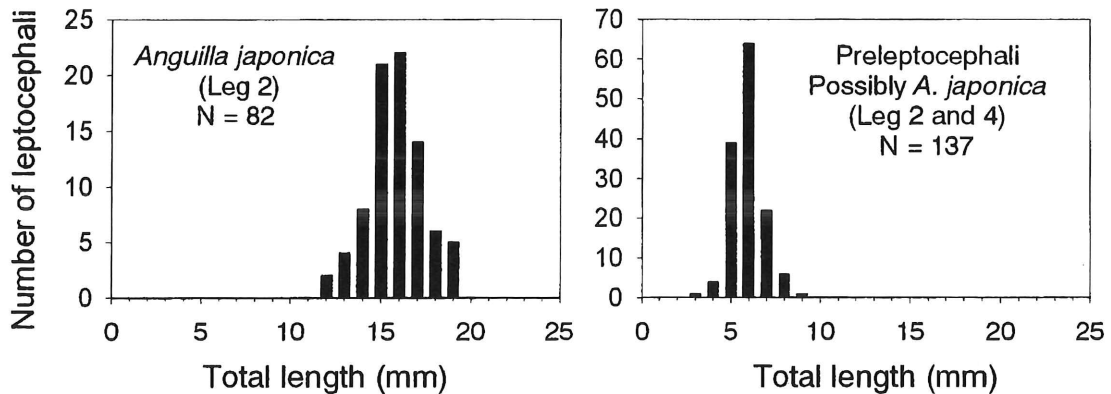
All Scientists onboard

A total of 1,007 leptocephali and 11 juvenile eels of 14 families eels and their close relatives were collected between 31 May June and 12 June during Leg 2 and 1 and 14 July during Leg 4 of the KH-05-1 cruise (Table 1). These leptocephali were mostly collected in the 181 stations, using the newly designed 3-m ORI net, or when the seas were rough the Isaacs Kidd Midwater Trawl (IKMT). The 3-m ORI net had a mouth opening of 7.1 m<sup>2</sup> and the IKMT mouth opening was 8.7 m<sup>2</sup>. Both nets had 0.5 mm mesh and were fished in oblique tows to depths of 500 m during both daytime and nighttime. During Leg 2 the sampling started in the western region and moved eastward until likely *Anguilla japonica* preleptocephali were collected to the west of the Suruga Seamount and then continued in north-south lines to the west of the seamount. In Leg 4, sampling began to the west of the Suruga Seamount and then expanded out to the west.

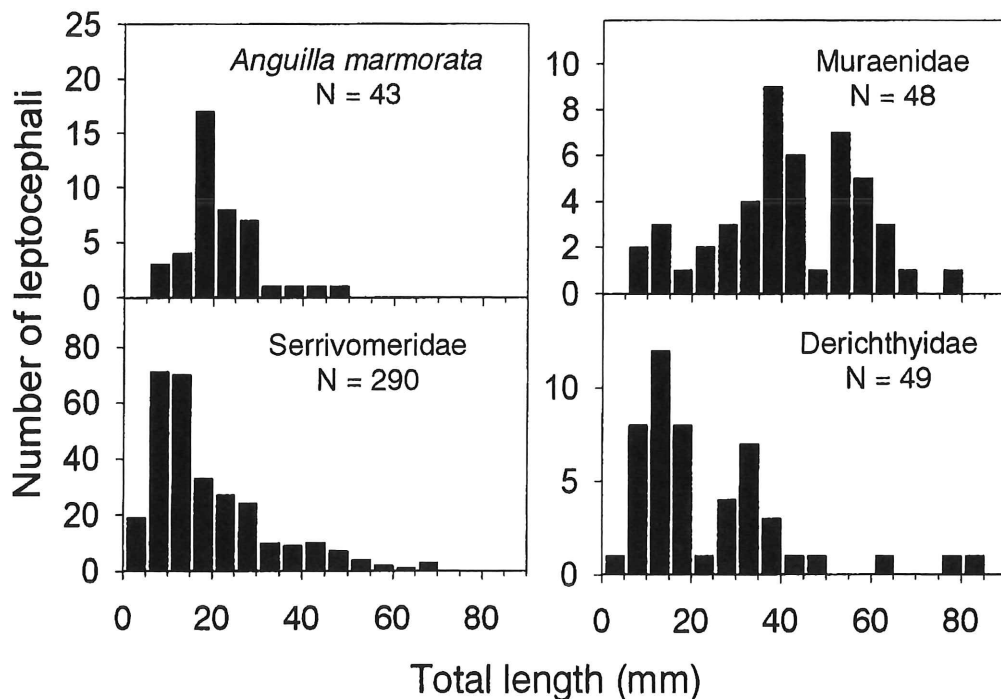
**Table 1.** Number and total length of leptocephali collected with the 3-m ORI net and the IKMT during the KH-05-1 cruise.

Taxa	Number of leptocephali	TL range (mm)
Anguilliformes		
Anguillidae or possible <i>Anguilla</i>	353	4.4 - 47.0
Chlopsidae	13	39.0 - 75.7
Congridae		
<i>Ariosoma</i> spp.	49	98.0 - 360.0
Congridae spp.	28	8.3 - 72.0
Derichthyidae	49	5.4 - 80.4
Moringuidae	2	58.0 - 60.8
Muraenidae	50	6.8 - 80.0
Nemichthyidae	46	17.5 - 256.8
Nettastomatidae	3	9.6 - 109.4
Ophichthidae	7	11.8 - 87.0
Serrivomeridae	324	3.7 - 68.3
Synphobranchidae	13	18.6 - 68.0
Saccopharyngiformes		
Cyematidae	7	19.0 - 34.0
Eurypharyngidae	3	7.9 - 29.0
<i>Thalassenchelys foliaceus</i>	3	65.0 - 251.0
Notacanthiformes	5	21.8 - 157.2
Identification uncertain	52	3.5 - 13.1
Total catch	1007	3.5 - 360.0

The leptocephali of the mesopelagic eel family Serrivomeridae (N = 324) were the most abundant family, followed by the Anguillidae, for which 82 *Anguilla japonica* leptocephali that were spawned during the previous month were collected in Leg 2, and 43 *Anguilla marmorata* leptocephali were collected during both legs (Fig. 1, 2). In addition, 137 recently hatched preleptocephali with poorly developed morphological features, many of which may have been *A. japonica*, were also collected (Fig. 1). Other preleptocephali with characteristics more similar to Serrivomeridae were classified tentatively with that family in this report.



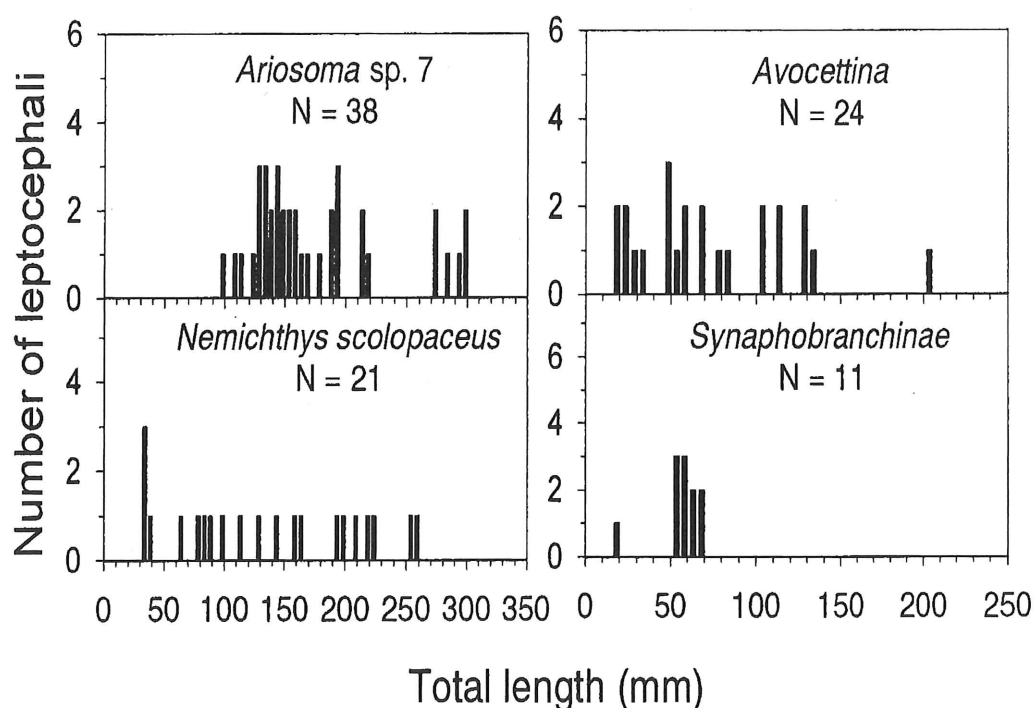
**Figure 1.** Length frequency plots of the approximately one month old *Anguilla japonica* leptocephali collected during Leg 2, and the recently spawned preleptocephali that may be *A. japonica*, which were collected during both Leg 2 and 4 of the KH-05-1 cruise.



**Figure 2.** Length frequency plots of leptocephali of *Anguilla marmorata* and three other families of leptocephali collected during the KH-05-1 cruise.

The leptocephali of the family Congridae were the next most abundant, with those of *Ariosoma* sp. 7 being collected mostly at large sizes up to 360 mm TL (Fig. 3). Other congrid taxa such as *Gorgasia*, *Heteroconger*, *Conger* and other Congrinae were collected in smaller numbers. The leptocephali of the mesopelagic eels of the family Nemichthyidae (N = 46) were also collected, which included both *Nemichthys scolopaceus* and *Avocettina*, with most of the latter probably being *Avocettina infans*. Other leptocephali of mesopelagic eels included 49 specimens of the family Derichthyidae, which included both *Derichthys serpentinus* and *Nessorhamphus danae*, some of which were as small as 5.4 mm TL. Seven leptocephali of the meso- or bathy-pelagic eel *Cyema atrum* were also collected during the cruise (19.0 - 34.0 mm TL) as were three *Eurypharynx pelecanoides* (7.9 - 29.0 mm TL). In addition to the leptocephali of these mesopelagic eel families, 10 serrivomerid juveniles were collected and one *Nessorhamphus* elver was caught.

The leptocephali of the other families collected during the cruise included leptocephali of the shallow water eel families of the Chlopsidae (N = 12) and the Muraenidae (N = 50), but only a few specimens of the families Moringuidae (N = 2) and Ophichthidae (N = 7) were collected (Table 1). The leptocephali of the families of eels that live primarily in slope habitats included those of the subfamily Synphobranchinae (N = 12) of the family Synphobranchidae, as well as three leptocephali of the family Nettastomatidae. One small nettastomatid (9.6 mm TL) was collected near the Surga Seamount suggesting it may have resulted from spawning at the seamount. Some small congrids, muraenids and ophichthids were also collected, which may have been spawned at the seamount and then drifted offshore.



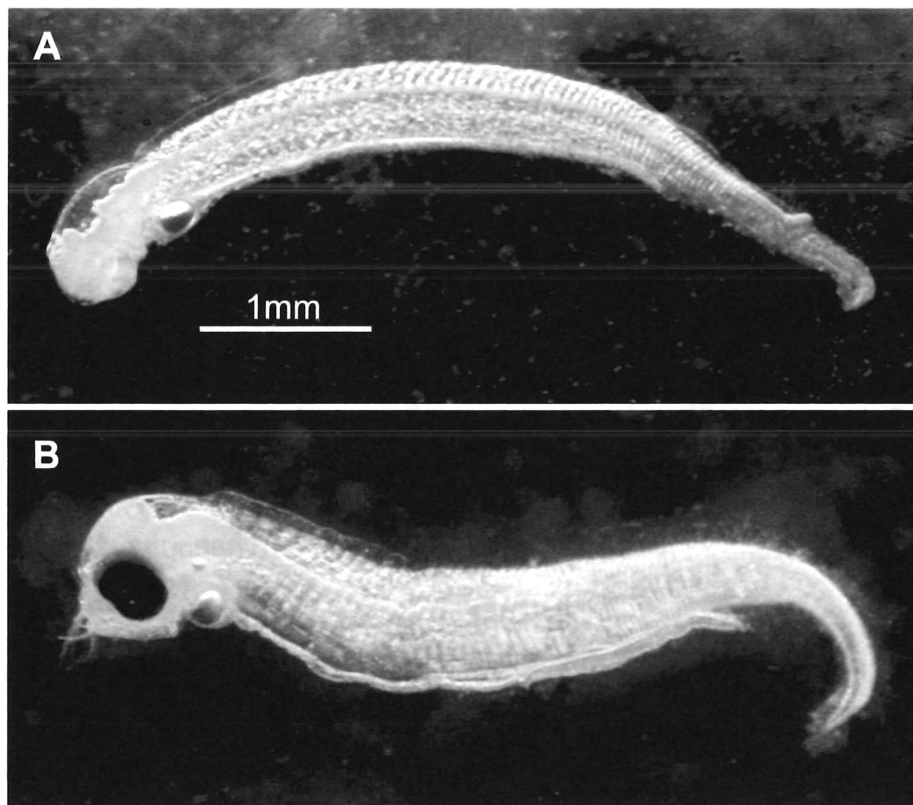
**Figure 3.** Length frequency plots of the most abundant taxa of leptocephali of the family Congridae, *Ariosoma* sp. 7, of the Nemichthyidae (*Nemichthys* and *Avocettina*), and of the Synphobranchinae, collected during KH-05-1.

## Characteristics of *Anguilla japonica* preleptocephali Collected During the KH-05-1 Cruise

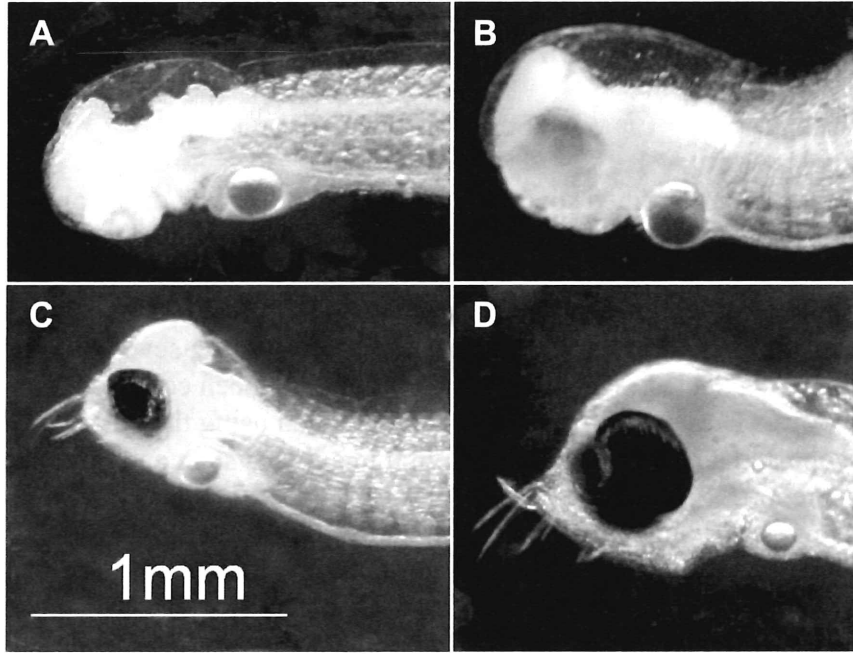
All Scientists onboard

Several developmental stages of preleptocephali that appear to be *Anguilla japonica* were collected during Leg 2 and Leg 4 of the KH-05-1 cruise in the North Equatorial Current (NEC) region of the western North Pacific. Subsamples of these larvae were genetically confirmed to be *A. japonica* on board with realtime PCR and back in the laboratory after Leg 2 with DNA sequencing, but further analysis is needed to confirm the genetic identifications of all the specimens during both Leg 2 and 4 to distinguish between the preleptocephali of *A. japonica* and other closely related species such as of the Serrivomeridae that also spawn in the NEC region.

Several early development stages of these leptocephali were collected that ranged from very poorly developed larvae with almost no head features to others with the head almost fully developed. The youngest larvae had no teeth, a poorly developed eye without pigmentation, and a large oil globule (Fig. 1A, 2A). Older larvae had teeth and jaws and the eye was fully pigmented (Fig. 1B, 2D).

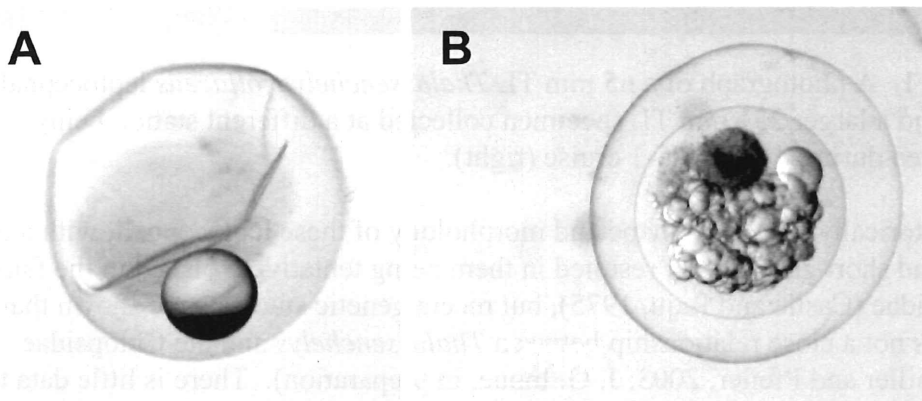


**Figure 1.** An early stage preleptocephalus larvae (No. 191, 5.0 mm TL) with no teeth or jaws, no eye pigmentation and a large oil globule (A), and a more developed one (No. 319, 4.2 mm TL) with teeth and a pigmented eye and a smaller oil globule (B), which were collected during Leg 2 of the KH-05-1 cruise in the North Equatorial Current region.



**Figure 2.** The head region of a 5.0 mm TL (No. 191) early stage preleptocephalus larva with no teeth or jaws, no eye pigmentation (A), a 4.7 mm TL (No. 189) larva with early eye pigmentation (B), a 5.2 mm TL larva (No. 366) with early teeth but no jaws (C), and a 4.2 mm TL (No. 319) larva with more developed teeth and early jaws (D), which were collected during Leg 2 of the KH-05-1 cruise in the North Equatorial Current region.

During Leg 2 the first preleptocephali collected were in the earlier developmental stages and then older stages were collected in subsequent days in transects just to the east of where the first larvae were collected. Several eggs that resemble *A. japonica* eggs obtained from artificially fertilized females in captivity were also collected (Fig. 3), but PCR analyses were unable to confirm if any of them were Japanese eel eggs or not. Further analyses will examine the morphology of these early stage larvae in relation to the genetic species identification results to learn more about the morphology and development of early stage Japanese eel larvae, which has previously only been known from artificially hatched and reared leptocephali.



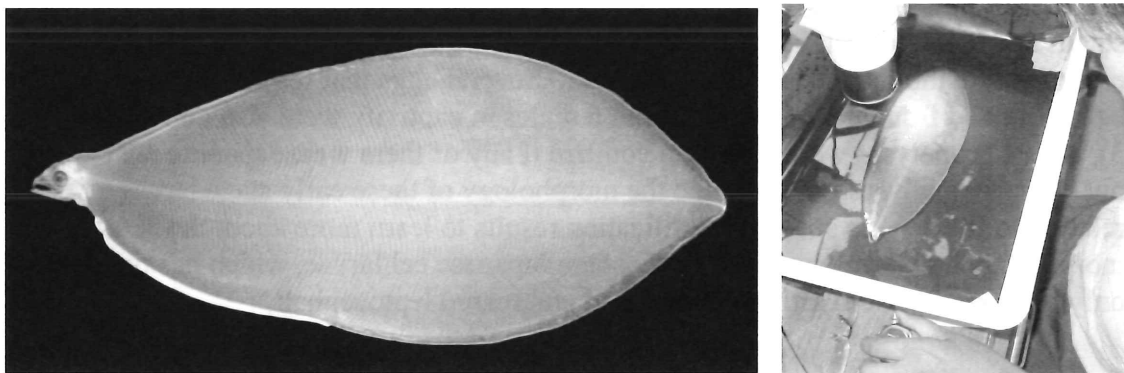
**Figure 3.** Two eggs that were collected in the same area as the preleptocephali, which had features that are similar to *Anguilla japonica* eggs from artificially fertilized females.

## Rare Species of Leptocephali Collected in the North Equatorial Current Region During the KH-05-1 Cruise

All Scientists onboard

A variety of rare or undescribed species or types of leptocephali of the anguilliform families Chlopsidae, Muraenidae, Ophichthidae, Synphobranchidae, and the larval genus *Thalassenchelys* were collected in the North Equatorial Current (NEC) region of the western North Pacific (WNP) during the KH-05-1 cruise. This region has been sampled during several previous cruises, but during this cruise, several species of leptocephali were collected that are very rare or have not been collected in previous sampling surveys. These specimens were photographed using the Nikon SMZ 1500 dissecting scope and a Nikon DMX1200 digital imaging system and are described briefly in this report.

The most unusual species collected were three specimens of *Thalassenchelys foliaceus*, which is a type of leptocephalus that reaches much larger sizes than most leptocephali and has no known adult form because it may reproduce shortly after metamorphosis (Castle and Raju, 1975). Two leptocephali of this species have been reported from the WNP (Castle and Raju, 1975), and the leptocephali of the other known species, *Thalassenchelys coheni*, have been reported from the offshore region of the WNP and in the eastern North Pacific (Castle and Raju, 1975; Shimokawa et al., 1995). Three specimens of *T. foliaceus* were collected during Leg 2 that were 65.0, 69.4, and 251.0 mm TL. What is unusual about the collection of these specimens is that they have not been collected in the North Equatorial Current region of the WNP during previous surveys for the leptocephali and eggs of the Japanese eel.

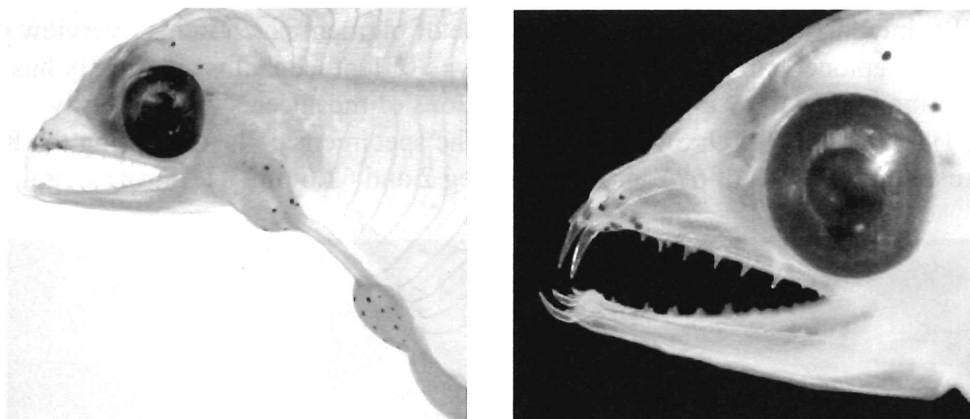


**Figure 1.** A photograph of a 65 mm TL *Thalassenchelys foliaceus* leptocephalus (left) and a larger 251 mm TL specimen collected at a different station being examined during the KH-05-1 cruise (right).

Historically, the body shape and morphology of these leptocephali, with a deep body and short gut (Fig. 1), resulted in them being tentatively placed in the family Chlopsidae (Castle and Raju, 1975), but recent genetic studies have shown that there likely is not a close relationship between *Thalassenchelys* and the Chlopsidae (Obermiller and Pfeiler, 2003; J. G. Inoue, in preparation). There is little data to confirm the species composition of this genus throughout the eastern Pacific, Indo-Pacific, and Indian Ocean, but the meristic data of our specimens appear to fit more closely with the species defined as *T. foliaceus* by Castle and Raju (1975). They

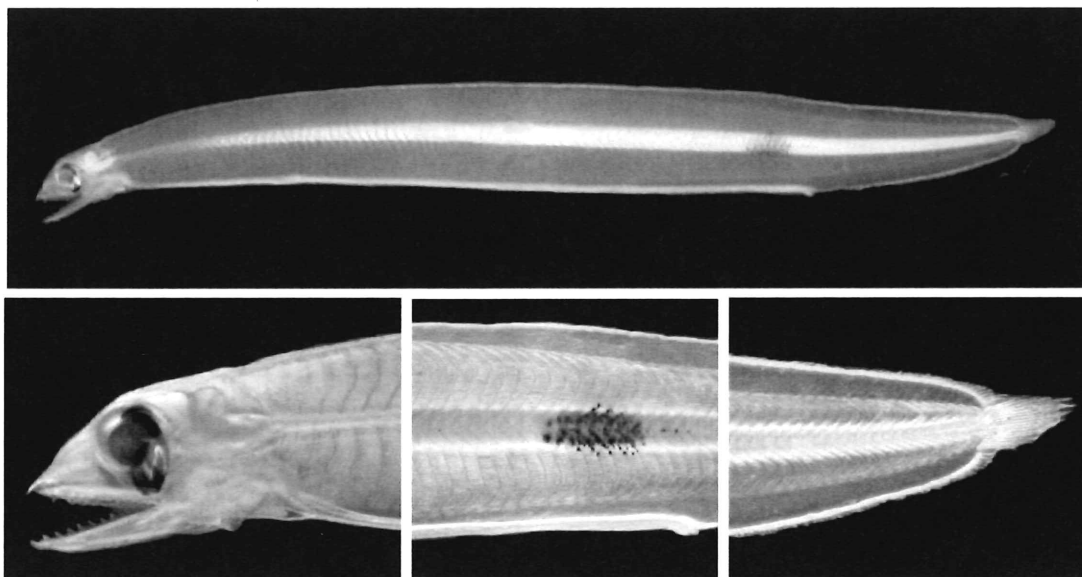


reported that this species had total myomeres (TM) of: 142 – 153, preanal myomeres (PAM) of: 55 – 62, and a last vertical blood vessel (LVBV) of: 50 - 58 (n = 17 - 24).



**Figure 2.** The anterior body region and head of an 65.0 mm TL *Thalassenchelys foliaceus* leptocephalus collected during the KH-05-1 cruise.

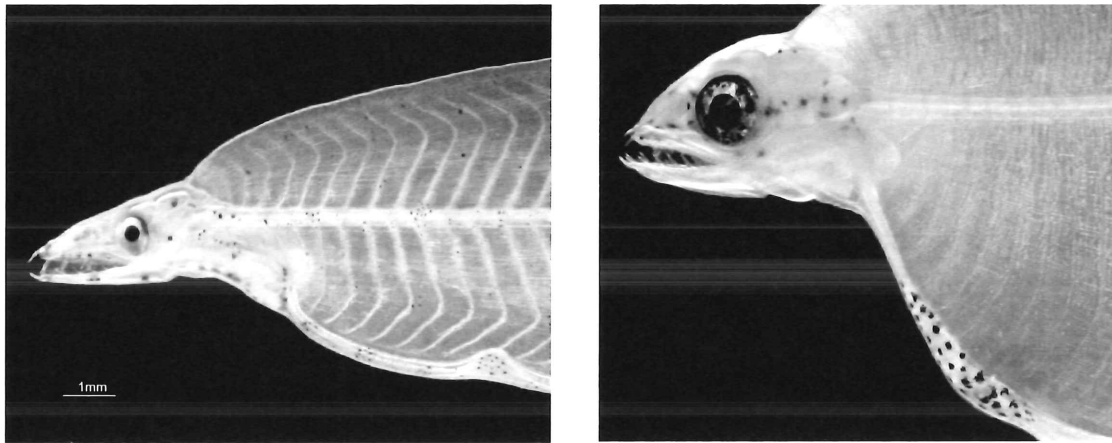
The other species *T. coheni* had TM: 152 – 163, PAM: 67 – 74, LVBV: 55 - 67 (n = 11 - 18). Our specimens fit best with *T. foliaceus*. These leptocephali are different from apparently all other species of leptocephali because of their combination of large size (Fig. 1), very deep body with a short gut, and much larger anterior teeth on the upper jaw (Fig. 2).



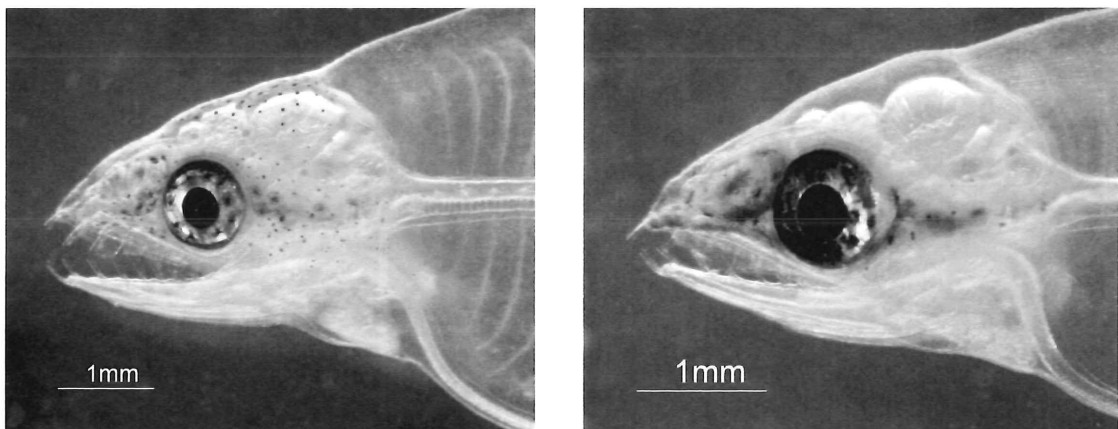
**Figure 3.** Photographs of a rare species of leptocephali of the family Synphobranchidae (67.3 mm TL) collected during the KH-05-1 cruise, which had an unusual large patch of pigmentation on the lateral surface of the body.

Another rarely collected type of leptocephalus is a species of the subfamily Synphobranchinae of the deep slope and abyssal plane family of marine eels, the Synphobranchidae. The leptocephali of this subfamily are distinctive in that they have a telescopic eye (Fig. 3), and a lateral band of thickened muscle tissue along the midline of the body (Tabeta and Mochioka, 1988; Smith, 1989a; Miller and

Tsukamoto, 2004). However, the rare species that was collected for the first time in the NEC region during both Leg 2 and Leg 4, had a large pigment patch near the caudal region (Fig. 3). This species has been collected before, because Castle (1984) included a drawing of a specimen with this type of pigment patch in his overview of anguilliform leptocephalus diversity, but this type of leptocephalus apparently has not been described in detail or in previous descriptions of the species of this family (Castle, 1965; Blache, 1979; Smith, 1989a). The specimens collected during the KH-05-1 cruise were at sizes of 67.3 mm during Leg 2 and 61.6 mm TL during Leg 4.



**Figure 4.** Photographs of a 55.0 mm TL Ophichthidae leptocephalus with pigment spots scattered all over the body (left), and a 45.0 mm TL Chlopsidae leptocephalus with unique pigment on the head and gut (right).



**Figure 5.** Photographs of a 53.1 mm TL Muraenidae leptocephalus with yellow and black pigment spots scattered all over the head (left), and a 42.3 mm TL Muraenidae leptocephalus with pigment on the middle part of the head (right).

Several other distinctive and undescribed leptocephali were collected during the cruise. A 55.0 mm TL ophichthid leptocephalus with pigment spots all over its body was collected, which has not been described in the WNA or WNP (Fig. 4). Very few of the many species of ophichthid leptocephali in the WNP have been described, but the different types of chlopsid leptocephali in the region around Japan, which includes larvae transported into the region by the Kuroshio Current, have been clearly described (Tabeta and Mochioka, 1988). This makes the collection of a 45.0 mm TL chlopsid leptocephalus with a new pattern of pigmentation an important finding (Fig.

4). This specimen had head pigmentation similar to a WNA species *Kaupichthys nuchalis*, but it also had a distinctive patch of pigmentation on the anterior portion of the gut, which has never been reported before. Therefore, it is likely that this specimen is a previously unreported species of the family Chlopsidae and is the 12<sup>th</sup> species of leptocephalus known from the WNP.

The species identification of the leptocephali of the family Muraenidae is especially difficult because of the similar features of most of their leptocephali and the overlapping number of vertebrae in most of their adults (Smith, 1989b). This has resulted in relatively few species being distinguished in regions such as around Japan (Tabeta and Mochioka, 1988), and even the WNA where the eel fauna and species identifications of most taxa of leptocephali are well known (Bohlke et al., 1989; Smith, 1989b). During the KH-05-1 cruise several species of muraenid leptocephali with distinctive head pigment were collected and photographed (Fig. 5). Similar pigment patterns are known in the genus *Muraena* in the WNA (Smith, 1989b), but one specimen in the collections during this cruise had yellow pigment spots on the head as well as the typical black spots (Fig. 5), which made it distinctive among the muraenid leptocephali that have been previously documented in the NEC region.

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DOI: 10.1038/439929a

St.	Location		Date	Time		Net Type	Mesh size (mm)	Towing Method	Wire out (m)	Sampl. layer (m)	Reel. speed (m/s)	Ship speed (kt)	Filt. volume (m³)	Flow-meter Revol.	Flow-meter No.	Sea Depth (m)
	Net in	Net out		Net in	Net out											
01	N 18-59.7 E137.00.3	N 18-57.8 E137-01.2	050531	11:32	12:42	ORIBF	0.5	Obl.	1158	0-520	1.0~0.5	2.5~1.5	29282	44830	2719	4663-4825
02	N 18-30.1 E137-00.0	N 18-29.1 E137-00.2	050531	15:09	16:05	ORIBF	0.5	Obl.	841	0-540	1.0~0.5	2.5~1.5	25402	38890	2719	4847-4942
03	N 17-60.0 E137-00.0	N 17-58.3 E136-59.1	050531	20:45	21:51	ORIBF	0.5	Obl.	974	0-510	1.0~0.5~0.2	2.5~1.5	23226	35558	2719	4791-4970
04	N 17-30.1 E136-59.4	N 17-30.4 E137-01.3	050601	00:58	02:05	ORIBF	0.5	Obl.	1052	0-493	1.0~0.5~0.2	2.5~1.5	23435	35878	2719	4603-4925
05	N 17-00.0 E137-00.1	N 17-00.3 E137-02.4	050601	04:52	06:04	ORIBF	0.5	Obl.	1158	0-500	1.0~0.5~0.2	2.5~1.5	28212	43192	2719	4743-4972
06	N 16-30.3 E137-00.0	N 16-30.4 E137-01.0	050601	10:12	11:08	ORIBF	0.5	Obl.	1003	0-560	1.0~0.5	2.5~1.5	17652	27025	2719	5515-5526
08	N 14-31.0 E136-59.9	N 14-34.3 E137-02.3	050601	23:03	24:40	ORIBF	0.5	Obl.	1440	0-505	1.0~0.5~0.2	2.5~1.5	49027	75060	2719	4378-4450
09	N 15-59.9 E140-00.5	N 15-59.3 E140-02.5	050602	20:04	21:19	ORIBF	0.5	Obl.	988	0-500	1.0~0.5	2.5~1.5	29171	44660	2719	4993-5118
10	N 14-59.8 E140-00.5	N 14-57.5 E140-04.8	050603	03:15	05:12	IKMT	0.5	Step	1811	0-557	1.0~0.5	2.5~2.0	78053	97522	2719	4871-4943
11	N 13-59.9 E140-00.2	N 13-57.6 E140-02.4	050603	09:24	10:43	IKMT	0.5	Obl.	1477	0-506	1.0~0.5	2.5~2.0	44500	55600	2719	4883-4976
12	N 13-30.1 E139-59.4	N 13-29.5 E140-00.7	050603	14:57	16:02	IKMT	0.5	Obl.	1167	0-553	1.0~0.5	2.5~2.0	29109	36370	2719	4823
13	N 13-00.3 E139-59.5	N 12-59.9 E140-02.6	050603	19:10	20:44	IKMT	0.5	Obl.	1383	0-517	1.0~0.5~0.2	2.5~2.0	58375	72935	2719	4753-4816
14	N 12-30.1 E139-59.4	N 12-25.9 E139-59.9	050603	23:45	25:25	IKMT	0.5	Obl.	1487	0-474	1.0~0.5~0.2	2.5~2.0	74540	93132	2719	4164-4284
15	N 11-59.9 E140-00.0	N 11-56.7 E139-59.0	050604	03:24	04:52	IKMT	0.5	Obl.	1337	0-481	1.0~0.5~0.2	2.5~2.0	63878	79811	2719	3555-3670
16	N 12-00.1 E138-59.4	N 12-00.5 E138-57.3	050604	10:38	11:40	ORIBF	0.5	Obl.	1071	0-509	1.0~0.5	2.5~1.5	26575	40686	2719	5712-5814
17	N 12-30.1 E138-59.4	N 12-30.6 E138-56.1	050604	15:01	16:21	ORIBF	0.5	Obl.	1179	0-493	1.0~0.5	2.5~1.5	38330	58682	2719	4595-4667
18	N 13-01.3 E138-59.8	N 13-04.6 E138-58.1	050604	19:44	21:13	ORIBF	0.5	Obl.	1333	0-498	1.0~0.5~0.2	2.5~1.5~2.0	46281	70855	2719	4560-4825
19	N 13-31.3 E139-00.3	N 13-34.5 E139-01.7	050605	00:08	01:39	ORIBF	0.5	Obl.	1270	0-497	1.0~0.5~0.2	2.5~1.5~2.0	45949	70348	2719	4456-4602
20	N 14-00.1 E138-59.9	N 14-02.4 E139-00.3	050605	03:40	04:55	ORIBF	0.5	Obl.	975	0-500	1.0~0.5~0.2	2.5~1.5~2.0	32763	50160	2719	5090-5103
21	N 14-30.9 E139-00.1	N 14-32.3 E139-02.2	050605	09:05	10:21	ORIBF	0.5	Obl.	1024	0-501	1.0~0.5	2.5~1.5	39027	59750	2719	4671-5254
22	N 15-31.5 E140-59.3	N 15-30.4 E140-58.5	050605	20:01	21:04	ORIBF	0.5	Obl.	956	0-506	1.0~0.5~0.2	2.5~1.5~2.0	23217	35545	2719	4761-4764
23	N 15-01.1 E140-59.9	N 15-02.5 E141-02.0	050606	00:32	01:54	ORIBF	0.5	Obl.	1079	0-502	1.0~0.5~0.2	2.5~1.5~2.0	36444	55796	2719	4702-4732

St.	Location		Date	Time		Net Type	Mesh size (mm)	Towing Method	Wire out (m)	Sampl. layer (m)	Reel. speed (m/s)	Ship speed (kt)	Filt. volume (m <sup>3</sup> )	Flow-meter Revol.	Flow-meter No.	Sea Depth (m)
	Net in	Net out		Net in	Net out											
24	N 14-30.1 E140-59.9	N 14-28.9 E140-58.6	050606	04:40	05:49	ORIBF	0.5	Obl.	951	0-496	1.0~0.5~0.2	2.5~1.5~2.0	27502	42105	2719	4860-4864
25	N 14-00.3 E141-00.2	N 13-58.8 E141-01.3	050606	10:07	11:07	ORIBF	0.5	Obl.	988	0-503	1.0~0.5	2.5~1.5	31378	48040	2719	4799-4821
26	N 13-30.6 E141-00.1	N 13-30.8 E141-02.3	050606	14:14	14:25	ORIBF	0.5	Obl.	1097	0-521	1.0~0.5	2.5~1.5	29322	44892	2719	4642-4674
27	N 13-01.1 E140-59.8	N 13-03.3 E141-01.4	050606	18:59	20:18	ORIBF	0.5	Obl.	1093	0-496	1.0~0.5~0.2	2.5~1.5~2.0	38928	59598	2719	3961-4140
28	N 13-00.1 E142-00.0	N 13-00.1 E142-02.7	050607	01:18	02:46	ORIBF	0.5	Obl.	1205	0-535	1.0~0.5~0.2	2.5~1.5~2.0	38975	59670	2719	2915-3006
29	N 13-30.0 E141-59.9	N 13-31.8 E141-59.0	050607	05:07	06:15	ORIBF	0.5	Obl.	1100	0-547	1.0~0.5	2.5~1.5	26819	41060	2719	2371-2844
30	N 14-00.1 E141-59.1	N 13-59.5 E141-60.0	050607	10:17	11:12	ORIBF	0.5	Obl.	833	0-493	1.0~0.5	2.5~1.5	17566	26894	2719	4229-4240
31	N 14-30.7 E141-59.3	N 14-33.0 E141-57.0	050607	14:38	15:56	ORIBF	0.5	Obl.	1339	0-551	1.0~0.5	2.5~1.5	38753	59330	2719	4249-4360
32	N 15-00.7 E141-59.6	N 15-04.0 E141-58.7	050607	18:59	21:22	ORIBF	0.5	Obl.	1290	0-506	1.0~0.5~0.2	2.5~1.5~2.0	42010	64317	2719	4475-4508
33	N 15-30.8 E141-59.6	N 15-32.3 E142-01.8	050607	23:15	24:36	ORIBF	0.5	Obl.	1082	0-501	1.0~0.5~0.2	2.5~1.5~2.0	36692	56175	2719	3919-4277
34	N 15-29.9 E142-30.3	N 15-28.5 E142-32.7	050608	02:49	04:20	ORIBF	0.5	Obl.	1232	0-500	1.0~0.5~0.2	2.5~1.5~2.0	40967	62720	2719	3943-4045
35	N 15-00.2 E142-29.9	N 14-59.4 E142-31.4	050608	08:31	09:33	ORIBF	0.5	Obl.	1045	0-500	1.0~0.5	2.5~1.5	25309	38748	2719	4065-4166
36	N 14-45.5 E142-44.6	N 14-45.1 E142-45.2	050608	11:57	12:42	ORIBF	0.5	Obl.	669	0-481	1.0~0.5	2.5~1.5	15941	24405	2719	3580-3632
37	N 14-30.5 E142-30.3	N 14-30.1 E142-29.0	050608	15:29	16:16	ORIBF	0.5	Obl.	697	0-494	1.0~0.5	2.5~2.0	15497	23725	2719	3480-3539
38	N 14-15.2 E142-44.8	N 14-13.9 E142-46.4	050608	19:00	20:16	ORIBF	0.5	Obl.	1133	0-497	1.0~0.5~0.2	2.5~1.5~2.0	30981	47432	2719	2023-2048
39	N 14-00.1 E142-30.0	N 13-58.4 E142-31.0	050608	22:51	24:07	ORIBF	0.5	Obl.	994	0-506	1.0~0.5~0.2	2.5~1.5~2.0	30644	46915	2719	2705-2788
40	N 13-29.7 E142-30.2	N 13-28.2 E142-31.6	050609	02:22	03:28	ORIBF	0.5	Obl.	1057	0-503	1.0~0.5	2.5~1.5	27786	42540	2719	2228-2467
41	N 13-00.1 E142-30.1	N 12-59.3 E142-30.9	050609	06:37	07:23	ORIBF	0.5	Obl.	666	0-293	1.0~0.5	2.5~1.5	17453	26720	2719	2636-3187
42	N 13-00.3 E142-14.9	N 13-00.8 E142-17.7	050609	14:36	15:54	ORIBF	0.5	Obl.	1281	0-500	1.0~0.5	2.5~2.0	37737	57775	2719	2367-2429
43	N 13-30.5 E142-14.9	N 13-33.3 E142-14.4	050609	19:05	20:21	ORIBF	0.5	Obl.	1320	0-496	1.0~0.5	2.5~1.5	36264	55520	2719	3154-3278
44	N 13-45.3 E142-14.8	N 13-48.3 E142-12.9	050609	21:29	22:54	ORIBF	0.5	Obl.	1402	0-491	1.0~0.5	2.5~1.5	43692	66892	2719	3066-3432
45	N 14-00.5 E142-14.2	N 14-03.7 E142-13.3	050610	00:56	02:19	ORIBF	0.5	Obl.	1340	0-494	1.0~0.5	2.5~1.5	39752	60860	2719	3496-3595

St.	Location		Date	Time		Net Type	Mesh size (mm)	Towing Method	Wire out (m)	Sampl. layer (m)	Reel. speed (m/s)	Ship speed (kt)	Filt. volume (m <sup>3</sup> )	Flow-meter Revol.	Flow-meter No.	Sea Depth (m)
	Net in	Net out		Net in	Net out											
46	N 13-45.3 E142-15.0	N 13-48.7 E142-14.4	050610	04:20	05:41	ORIBF	0.5	Obl.	1391	0-495	1.0~0.5	2.5~1.5	41408	63395	2719	3073-3438
47	N 14-15.3 E142-14.9	N 14-19.2 E142-14.5	050610	07:39	09:02	ORIBF	0.5	Obl.	1521	0-501	1.0~0.5	2.5~1.5	45531	69707	2719	3981-4084
48	N 14-30.7 E142-14.8	N 14-33.3 E142-16.2	050610	10:56	12:10	ORIBF	0.5	Obl.	1275	0-494	1.0~0.5	2.5~1.5	38970	59662	2719	4018-4078
49	N 14-45.2 E142-15.1	N 14-47.1 E142-16.7	050610	13:17	14:29	ORIBF	0.5	Obl.	1150	0-502	1.0~0.5	2.5~1.5	33352	51062	2719	4302-4337
50	N 15-00.2 E142-15.2	N 15-01.9 E142-16.1	050610	16:49	17:58	ORIBF	0.5	Obl.	1263	0-613	1.0~0.5	2.5~1.5	28557	43720	2719	4342-4391
51	N 14-59.9 E142-29.7	N 14-58.3 E142-31.1	050610	19:12	20:17	ORIBF	0.5	Obl.	1061	0-493	1.0~0.5	2.5~1.5	27082	41462	2719	4092-4168
52	N 14-29.9 E142-30.1	N 14-28.1 E142-30.6	050610	22:26	23:29	ORIBF	0.5	Obl.	996	0-501	1.0~0.5	2.5~1.5	25595	39185	2719	3464-3566
53	N 14-14.8 E142-29.9	N 14-13.1 E142-30.5	050611	00:41	01:47	ORIBF	0.5	Obl.	1095	0-497	1.0~0.5	2.5~1.5	32051	49070	2719	3382-3488
54	N 13-59.8 E142-30.0	N 13-57.8 E142-30.5	050611	03:05	04:09	ORIBF	0.5	Obl.	1103	0-501	1.0~0.5	2.5~1.5	27156	41575	2719	2739-2820
55	N 13-44.9 E142-30.0	N 13-43.3 E142-30.2	050611	05:22	06:20	ORIBF	0.5	Obl.	978	0-493	1.0~0.5	2.5~1.5	21996	33675	2719	2443-2532
56	N 13-30.1 E142-29.9	N 13-28.5 E142-29.5	050611	07:32	08:30	ORIBF	0.5	Obl.	991	0-503	1.0~0.5	2.5~1.5	22219	34017	2719	2124-2294
57	N 13-00.0 E142-30.0	N 12-58.2 E142-30.0	050611	10:43	11:45	ORIBF	0.5	Obl.	1004	-	1.0~0.5	2.5~1.5	23269	35625	2719	2713-3200
58	N 13-00.8 E142-43.9	N 13-03.1 E142-43.8	050611	19:29	20:31	ORIBF	0.5	Obl.	1058	0-497	1.0~0.5	2.5~1.5	27237	41700	2719	3342-3443
59	N 13-29.8 E142-44.5	N 13-29.9 E142-46.0	050611	23:23	24:24	ORIBF	0.5	Obl.	954	0-507	1.0~0.5	2.5~1.5	21480	32885	2719	3094-3226
60	N 13-45.3 E142-44.2	N 13-47.1 E142-44.9	050612	02:43	03:52	ORIBF	0.5	Obl.	1117	0-501	1.0~0.5	2.5~1.5	29223	44740	2719	3011-3260
61	N 14-00.1 E142-44.9	N 14-01.7 E142-45.4	050612	05:04	06:06	ORIBF	0.5	Obl.	1041	0-495	1.0~0.5	2.5~1.5	26910	41199	2719	1592-1906
62	N 14-15.1 E142-45.0	N 14-17.0 E142-45.7	050612	08:13	09:21	ORIBF	0.5	Obl.	1161	0-501	1.0~0.5	2.5~1.5	29197	44700	2719	2036-2347
63	N 14-30.6 E142-44.8	N 14-31.6 E142-46.7	050612	12:30	13:32	ORIBF	0.5	Obl.	1075	-	1.0~0.5	2.5~1.5	29435	45065	2719	2972-3041
64	N 14-45.1 E142-45.1	N 14-46.2 E142-47.1	050612	14:48	15:55	ORIBF	0.5	Obl.	1132	-	1.0~0.5	2.5~1.5	29567	45267	2719	3490-3580
65	N 14-59.9 E142-44.5	N 15-01.0 E142-45.8	050612	18:08	19:15	ORIBF	0.5	Obl.	1088	-	1.0~0.5	2.5~1.5	26681	40848	2719	3069-3275
67	N 14-15.0 E142-45.2	N 14-14.1 E142-46.4	050630	21:55	22:48	ORIBF	0.5	Obl.	835	0-497	1.0~0.5	2.5~1.5	25084	39957	1307	2006-2195
68	N 14-00.0 E142-45.3	N 13-58.8 E142-46.3	050701	00:11	01:13	ORIBF	0.5	Obl.	1017	0-537	1.0~0.5	2.5~1.5	21187	33750	1307	1507-1636



St.	Location		Date	Time		Net Type	Mesh size (mm)	Towing Method	Wire out (m)	Sampl. layer (m)	Reel. speed (m/s)	Ship speed (kt)	Filt. volume (m³)	Flow-meter Revol.	Flow-meter No.	Sea Depth (m)
	Net in	Net out		Net in	Net out											
69	N 13-45.1 E142-45.1	N 13-46.5 E142-46.1	050701	02:36	03:38	ORIBF	0.5	Obl.	1034	0-521	1.0~0.5	2.5~1.5	25245	38650	2719	3271-3455
70	N 13-45.3 E142-29.8	N 13-47.0 E142-30.3	050701	05:08	06:09	ORIBF	0.5	Obl.	1034	0-502	1.0~0.5	2.5~1.5	22910	35075	2719	2283-2458
71	N 14-00.2 E142-30.2	N 14-01.9 E142-31.3	050701	07:24	08:27	ORIBF	0.5	Obl.	1075	0-502	1.0~0.5	2.5~1.5	24220	37080	2719	2710-2862
72	N 14-15.1 E142-30.0	N 14-16.4 E142-31.6	050701	09:38	10:38	ORIBF	0.5	Obl.	1029	0-501	1.0~0.5	2.5~1.5	26616	40748	2719	3430-3492
73	N 14-15.0 E142-15.3	N 14-16.4 E142-16.8	050701	12:05	13:09	ORIBF	0.5	Obl.	1103	0-494	1.0~0.5	2.5~1.5	21312	32629	2719	3931-4093
74	N 14-00.0 E142-15.1	N 14-00.8 E142-17.0	050701	14:38	15:39	ORIBF	0.5	Obl.	1050	0-501	1.0~0.5	2.5~1.5	24500	37509	2719	3145-3538
75	N 13-45.0 E142-15.1	N 13-43.8 E142-15.1	050701	17:06	17:58	ORIBF	0.5	Obl.	873	0-497	1.0~0.5	2.5~1.5	24130	36942	2719	3094-3133
76	N 13-37.5 E142-15.1	N 13-37.3 E142-16.9	050701	18:47	19:47	ORIBF	0.5	Obl.	1037	0-495	1.0~0.5	2.5~1.5	24575	37624	2719	3156-3196
77	N 13-37.6 E142-30.0	N 13-38.0 E142-31.3	050701	20:59	21:52	ORIBF	0.5	Obl.	899	0-506	1.0~0.5	2.5~1.5	25044	38342	2719	2640-2742
78	N 13-37.5 E142-45.0	N 13-37.9 E142-46.3	050701	23:08	24:01	ORIBF	0.5	Obl.	890	0-498	1.0~0.5	2.5~1.5	16994	26018	2719	3490-3967
79	N 13-52.6 E142-45.0	N 13-53.7 E142-46.6	050702	01:27	02:25	ORIBF	0.5	Obl.	1000	0-496	1.0~0.5	2.5~2.0	27378	41915	2719	2043-2246
80	N 14-07.6 E142-45.1	N 14-08.4 E142-47.3	050702	03:45	04:52	ORIBF	0.5	Obl.	1182	0-497	1.0~0.5	2.5~2.0	33073	50635	2719	1194-1956
81	N 14-07.5 E142-29.8	N 14-06.1 E142-30.9	050702	06:22	07:29	ORIBF	0.5	Obl.	1166	0-520	1.0~0.5	2.5~2.0	26165	40058	2719	3119-3180
82	N 13-52.6 E142-30.1	N 13-52.3 E142-32.2	050702	08:45	09:45	ORIBF	0.5	Obl.	989	0-497	1.0~0.5	2.5~2.0	26962	41279	2719	2525-2633
83	N 13-52.5 E142-14.9	N 13-53.1 E142-17.1	050702	11:14	12:16	ORIBF	0.5	Obl.	1095	0-499	1.0~0.5	2.5~2.0	22033	33732	2719	3496-3533
84	N 14-07.5 E142-15.1	N 14-06.2 E142-16.9	050702	13:36	14:36	ORIBF	0.5	Obl.	1042	0-495	1.0~0.5	2.5~2.0	27457	42036	2719	3667-3910
85	N 14-22.5 E142-15.1	N 14-24.0 E142-16.9	050702	16:04	17:06	ORIBF	0.5	Obl.	1106	0-492	1.0~0.5	2.5~2.0	29099	44550	2719	3990-4028
86	N 14-22.6 E142-30.2	N 14-24.6 E142-32.2	050702	18:14	19:26	ORIBF	0.5	Obl.	1263	0-491	1.0~0.5	2.5~2.0	36049	55190	2719	3554-3635
87	N 14-22.5 E142-45.3	N 14-21.6 E142-47.6	050702	20:35	21:42	ORIBF	0.5	Obl.	1114	0-494	1.0~0.5	2.5~2.0	37999	58176	2719	2428-2657
88	N 14-07.4 E142-45.2	N 14-06.6 E142-46.6	050702	23:00	23:55	ORIBF	0.5	Obl.	904	0-495	1.0~0.5	2.5~2.0	23155	35450	2719	1428-1958
89	N 13-52.5 E142-45.1	N 13-53.8 E142-46.6	050703	01:18	02:19	ORIBF	0.5	Obl.	980	0-497	1.0~0.5	2.5~2.0	32822	50250	2719	2032-2237
90	N 13-52.6 E142-30.0	N 13-53.3 E142-31.8	050703	03:49	04:49	ORIBF	0.5	Obl.	1073	0-503	1.0~0.5	2.5~2.0	38844	59470	2719	2530-2673



St.	Location		Date	Time		Net Type	Mesh size (mm)	Towing Method	Wire out (m)	Sampl. layer (m)	Reel speed (m/s)	Ship speed (kt)	Filt. volume (m³)	Flow-meter Revol.	Flow-meter No.	Sea Depth (m)
	Net in	Net out		Net in	Net out											
91	N 13-52.7 E142-15.0	N 13-54.6 E142-16.6	050703	06:16	07:21	ORIBF	0.5	Obl.	1074	0-500	1.0~0.5	2.5~2.0	37625	57604	2719	3524-3640
92	N 14-07.6 E142-15.0	N 14-08.3 E142-17.1	050703	08:33	09:32	ORIBF	0.5	Obl.	971	0-499	1.0~0.5	2.5~2.0	26949	41258	2719	3893-3949
93	N 14-07.5 E142-30.0	N 14-07.7 E142-32.1	050703	10:40	11:38	ORIBF	0.5	Obl.	962	0-501	1.0~0.5	2.5~2.0	26714	40899	2719	3023-3279
94	N 14-15.1 E142-45.0	N 14-14.7 E142-46.8	050703	12:56	13:53	ORIBF	0.5	Obl.	981	0-506	1.0~0.5	2.5~2.0	24913	38142	2719	2039-2162
95	N 14-00.0 E142-45.1	N 13-59.0 E142-46.9	050703	15:16	16:19	ORIBF	0.5	Obl.	1078	0-501	1.0~0.5	2.5~2.0	27862	42657	2719	1561-1986
96	N 13-45.0 E142-45.0	N 13-43.4 E142-45.1	050703	17:36	18:35	ORIBF	0.5	Obl.	984	0-492	1.0~0.5	2.5~2.0	25864	39597	2719	3273-3951
97	N 13-45.0 E142-29.9	N 13-46.4 E142-31.5	050703	19:59	21:00	ORIBF	0.5	Obl.	1030	0-496	1.0~0.5	2.5~2.0	27235	41696	2719	2272-2442
98	N 14-00.0 E142-30.1	N 14-01.3 E142-31.1	050703	22:13	23:12	ORIBF	0.5	Obl.	926	0-502	1.0~0.5	2.5~2.0	30070	46037	2719	2713-2824
99	N 14-15.1 E142-30.1	N 14-16.3 E142-31.7	050704	00:22	01:24	ORIBF	0.5	Obl.	1081	0-498	1.0~0.5	2.5~2.0	28534	43685	2724	3420-3488
100	N 14-15.1 E142-14.9	N 14-16.5 E142-16.4	050704	02:56	03:58	ORIBF	0.5	Obl.	1070	0-498	1.0~0.5	2.5~2.0	27953	42795	2719	4012-4092
101	N 14-00.0 E142-15.0	N 14-00.2 E142-16.7	050704	05:26	06:25	ORIBF	0.5	Obl.	994	0-505	1.0~0.5	2.5~2.0	23348	35745	2719	3341-3529
102	N 13-45.0 E142-15.1	N 13-45.4 E142-17.0	050704	07:47	08:47	ORIBF	0.5	Obl.	1019	0-508	1.0~0.5	2.5~2.0	24170	37004	2719	3067-3151
103	N 13-37.5 E142-15.1	N 13-37.7 E142-17.1	050704	09:41	10:41	ORIBF	0.5	Obl.	1009	0-509	1.0~0.5	2.5~2.0	24992	38263	2719	3166-3197
104	N 13-37.6 E142-29.9	N 13-38.6 E142-31.6	050704	11:50	12:48	ORIBF	0.5	Obl.	918	0-498	1.0~0.5	2.5~2.0	23293	35662	2719	2618-2748
105	N 13-37.6 E142-45.1	N 13-38.5 E142-46.7	050704	14:05	15:02	ORIBF	0.5	Obl.	937	0-510	1.0~0.5	2.5~2.0	22781	34877	2719	3605-3938
106	N 13-52.6 E142-45.1	N 13-52.6 E142-46.5	050704	16:17	17:10	ORIBF	0.5	Obl.	829	0-504	1.0~0.5	2.5~2.0	18796	28777	2719	2036-2110
107	N 14-07.6 E142-45.0	N 14-09.0 E142-46.7	050704	18:27	19:29	ORIBF	0.5	Obl.	1048	0-500	1.0~0.5	2.5~2.0	22089	33818	2719	1740-1967
108	N 14-07.3 E142-30.1	N 14-06.6 E142-32.3	050704	20:55	21:58	ORIBF	0.5	Obl.	1089	0-495	1.0~0.5	2.5~2.0	28853	44173	2719	3186-3249
109	N 13-52.5 E142-30.0	N 13-52.1 E142-31.7	050704	23:15	24:14	ORIBF	0.5	Obl.	931	0-506	1.0~0.5	2.5~2.0	23086	35345	2719	2532-2602
110	N 13-52.5 E142-15.0	N 13-53.0 E142-16.9	050705	01:43	02:45	ORIBF	0.5	Obl.	1112	0-501	1.0~0.5	2.5~2.0	28585	43763	2719	3490-3521
111	N 14-07.6 E142-15.0	N 14-08.4 E142-17.0	050705	04:05	05:09	ORIBF	0.5	Obl.	1100	0-501	1.0~0.5	2.5~2.0	29630	45363	2719	3891-3954
112	N 14-22.7 E142-15.1	N 14-22.9 E142-17.3	050705	06:24	07:29	ORIBF	0.5	Obl.	1082	0-504	1.0~0.5	2.5~2.0	36044	55183	2719	3971-4033

St.	Location		Date	Time		Net Type	Mesh size (mm)	Towing Method	Wire out (m)	Sampl. layer (m)	Reel. speed (m/s)	Ship speed (kt)	Filt. volume (m³)	Flow-meter Revol.	Flow-meter No.	Sea Depth (m)
	Net in	Net out		Net in	Net out											
113	N 14-22.6 E142-30.0	N 14-23.5 E142-32.1	050705	08:39	09:43	ORIBF	0.5	Obl.	1114	0-503	1.0~0.5	2.5~2.0	29650	45394	2719	3577-3637
114	N 14-22.5 E141-45.0	N 14-22.3 E142-47.2	050705	10:53	11:56	ORIBF	0.5	Obl.	1099	0-508	1.0~0.5	2.5~2.0	27805	42569	2719	2628-2657
115	N 14-07.5 E142-45.1	N 14-08.2 E142-47.2	050705	13:19	14:21	ORIBF	0.5	Obl.	1087	0-505	1.0~0.5	2.5~2.0	27695	42401	2719	1199-1968
116	N 13-52.5 E142-45.1	N 13-52.7 E142-46.9	050705	15:48	16:45	ORIBF	0.5	Obl.	938	0-494	1.0~0.5	2.5~2.0	29108	44564	2719	2035-2685
117	N 13-52.5 E142-30.1	N 13-52.4 E142-32.6	050705	18:09	19:15	ORIBF	0.5	Obl.	1101	0-496	1.0~0.5	2.5~2.0	28900	44245	2719	2532-2641
118	N 13-52.6 E142-15.1	N 13-53.3 E142-17.4	050705	20:47	21:50	ORIBF	0.5	Obl.	1060	0-497	1.0~0.5	2.5~2.0	28847	44165	2719	3468-3562
119	N 14-07.5 E142-15.0	N 14-07.5 E142-16.5	050705	23:07	24:05	ORIBF	0.5	Obl.	941	0-505	1.0~0.5	2.5~2.0	21227	32499	2719	3856-3914
120	N 14-07.6 E142-30.1	N 14-08.5 E142-31.7	050705	01:23	02:24	ORIBF	0.5	Obl.	1087	0-503	1.0~0.5	2.5~2.0	27842	42625	2719	3011-3303
121	N 14-11.3 E142-45.0	N 14-12.9 E142-46.5	050706	03:41	04:48	ORIBF	0.5	Obl.	1161	0-501	1.0~0.5	2.5~2.0	30169	46189	2719	1929-2122
122	N 13-56.2 E142-45.0	N 14-00.0 E142-46.8	050706	06:17	07:28	ORIBF	0.5	Obl.	1201	-	1.0~0.5	2.5~2.0	24922	38155	2719	1635-2126
123	N 13-41.3 E142-45.0	N 13-42.0 E142-46.5	050706	08:49	09:45	ORIBF	0.5	Obl.	856	0-515	1.0~0.5	2.5~2.0	20632	31588	2719	3941-4358
124	N 13-41.4 E142-29.9	N 13-42.6 E142-31.3	050706	11:07	12:02	ORIBF	0.5	Obl.	885	0-508	1.0~0.5	2.5~2.0	21607	33080	2719	2500-2599
125	N 13-41.3 E142-15.0	N 13-42.2 E142-17.2	050706	13:24	14:29	ORIBF	0.5	Obl.	1116	0-511	1.0~0.5	2.5~2.0	28505	43641	2719	3144-3229
126	N 13-45.0 E142-00.1	N 13-45.2 E142-02.9	050706	15:57	17:08	ORIBF	0.5	Obl.	1225	0-499	1.0~0.5	2.5~2.0	31578	48346	2719	3788-3866
127	N 14-00.1 E142-00.2	N 14-01.9 E142-01.8	050706	18:30	19:36	ORIBF	0.5	Obl.	1115	0-494	1.0~0.5	2.5~2.0	27303	41800	2719	4221-4239
128	N 14-15.1 E142-00.1	N 14-15.3 E142-02.1	050706	20:48	21:51	ORIBF	0.5	Obl.	1043	0-498	1.0~0.5	2.5~2.0	25944	39720	2719	4316-4346
129	N 14-11.2 E142-15.0	N 14-10.8 E142-16.9	050706	23:03	24:06	ORIBF	0.5	Obl.	1060	0-500	1.0~0.5	2.5~2.0	27727	42450	2719	4068-4103
130	N 13-56.3 E142-15.0	N 13-57.4 E142-16.7	050707	01:26	02:31	ORIBF	0.5	Obl.	1106	0-542	1.0~0.5	2.5~2.0	28001	42869	2719	3617-3730
131	N 13-56.3 E142-30.0	N 13-57.2 E142-31.7	050707	03:47	04:49	ORIBF	0.5	Obl.	1032	0-512	1.0~0.5	2.5~2.0	25904	39659	2719	2731-2881
132	N 14-11.3 E142-30.0	N 14-10.9 E142-31.2	050707	06:05	07:02	ORIBF	0.5	Obl.	942	0-508	1.0~0.5	2.5~2.0	21529	32960	2719	2956-3377
133	N 14-03.9 E142-29.9	N 14-04.5 E142-31.3	050707	07:58	08:53	ORIBF	0.5	Obl.	906	0-504	1.0~0.5	2.5~2.0	21164	32402	2719	2901-2965
134	N 13-48.7 E142-30.1	N 13-49.1 E142-32.1	050707	10:19	11:18	ORIBF	0.5	Obl.	988	0-500	1.0~0.5	2.5~2.0	26165	40059	2719	2153-2280

St.	Location		Date	Time		Net Type	Mesh size (mm)	Towing Method	Wire out (m)	Sampl. layer (m)	Reel. speed (m/s)	Ship speed (kt)	Filt. volume (m <sup>3</sup> )	Flow-meter Revol.	Flow-meter No.	Sea Depth (m)
	Net in	Net out		Net in	Net out											
135	N 13-48.8 E142-45.1	N 13-49.2 E142-47.0	050707	12:27	13:25	ORIBF	0.5	Obl.	961	0-502	1.0~0.5	2.5~2.0	23820	36468	2719	3071-3573
136	N 14-03.9 E142-45.0	N 14-04.7 E142-46.7	050707	14:43	15:41	ORIBF	0.5	Obl.	959	0-500	1.0~0.5	2.5~2.0	24514	37530	2719	1737-2180
137	N 14-06.8 E142-52.2	N 14-07.5 E142-54.2	050707	16:30	17:33	ORIBF	0.5	Obl.	1072	0-527	1.0~0.5	2.5~2.0	27759	42498	2719	1658-2129

KH-05-1		St.02		Depth	4932 m		KH-05-1		St.03		Depth	4713 m	
Date:	2005.5.31			Lat.	18 29.40N		Date:	2005.5.31			Lat.	18 00.04N	
Time:	06:50			Long.	137 00.25E		Time:	10:01			Long.	136 59.94E	
CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC	CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC
		db	°C	(psu)	ml·l <sup>-1</sup>				db	°C	(psu)	ml·l <sup>-1</sup>	
		2	30.124	34.685	4.19	0.01			1	29.902	34.694	4.19	0.01
		3	30.039	34.683	4.19	0.01			2	29.891	34.695	4.20	0.01
		4	29.942	34.681	4.20	0.01			3	29.729	34.691	4.21	0.02
		5	29.845	34.683	4.20	0.02			4	29.535	34.693	4.22	0.02
		10	29.687	34.682	4.22	0.02			5	29.534	34.695	4.23	0.02
		20	28.750	34.701	4.34	0.01			10	28.687	34.709	4.33	0.02
		30	27.809	34.664	4.48	0.02			20	28.243	34.671	4.38	0.03
		40	27.354	34.704	4.52	0.02			30	27.877	34.641	4.46	0.03
		50	26.775	34.717	4.56	0.03			40	27.256	34.634	4.52	0.03
		75	25.862	34.731	4.54	0.04			50	26.849	34.660	4.54	0.04
		100	25.139	34.848	4.47	0.07			75	26.111	34.708	4.55	0.04
		125	24.127	34.880	4.38	0.10			100	25.012	34.832	4.49	0.07
		150	22.791	34.978	4.17	0.16			125	23.511	34.966	4.33	0.11
		175	21.128	34.947	4.20	0.06			150	22.043	35.042	4.12	0.13
		200	20.018	34.925	4.11	0.03			175	20.664	35.000	4.21	0.03
		250	17.819	34.794	4.23	0.01			200	19.487	34.917	4.21	0.03
		300	16.394	34.692	4.22	0.01			250	17.160	34.748	4.23	0.01
		400	12.317	34.387	3.68	0.01			300	15.942	34.656	4.21	0.01
500	9.279	34.259	2.74	0.02	400	12.093	34.360	3.80	0.01				
510	9.002	34.241	2.71	0.02	500	9.031	34.250	2.59	0.02				
						518	8.663	34.255	2.37	0.02			
CTD data (BTL)							CTD data (BTL)						
BTL	Depth	Pres.	Temp.	Sal	DO	FLC	BTL	Depth	Pres.	Temp.	Sal	DO	FLC
No.	m	db	°C	(psu)	ml·l <sup>-1</sup>		No.	m	db	°C	(psu)	ml·l <sup>-1</sup>	
Sur.	0	***	30.3	***	***	***	Sur.	0	***	29.5	***	***	***
1	497	500	9.286	34.259	2.71	0.02	1	507	511	8.763	34.253	2.38	0.02
2	497	501	9.287	34.259	2.71	0.02	2	499	503	8.859	34.252	2.43	0.02
4	497	501	9.293	34.259	2.72	0.02	4	485	489	9.182	34.248	2.59	0.02
5	497	501	9.297	34.259	2.72	0.02	5	474	477	9.490	34.252	2.70	0.02
6	497	501	9.299	34.259	2.73	0.02	6	462	465	9.772	34.257	2.86	0.02
7	497	501	9.301	34.259	2.73	0.01	7	449	452	10.095	34.267	3.00	0.02
8	301	303	16.355	34.684	4.21	0.01	8	437	440	10.406	34.272	3.15	0.01
10	301	303	16.349	34.684	4.21	0.01	10	424	427	10.732	34.286	3.26	0.01
11	301	303	16.343	34.685	4.21	0.01	11	412	415	11.217	34.305	3.44	0.01
12	302	304	16.340	34.685	4.21	0.01	12	401	404	11.543	34.322	3.62	0.01
13	200	201	19.771	34.920	4.15	0.02	13	200	201	19.271	34.893	4.18	0.02
14	199	201	19.822	34.924	4.14	0.02	14	386	388	12.277	34.367	3.79	0.01
16	200	202	19.740	34.917	4.15	0.02	16	370	373	13.054	34.418	3.85	0.01
17	101	102	24.881	34.853	4.44	0.07	17	99	99	25.015	34.826	4.49	0.06
18	101	101	24.893	34.854	4.45	0.07	18	357	360	13.536	34.452	3.94	0.01
19	101	102	24.886	34.855	4.44	0.07	19	347	349	14.097	34.498	3.96	0.01
20	101	102	24.884	34.856	4.44	0.07	20	335	337	14.524	34.533	3.92	0.01
22	50	50	26.831	34.704	4.57	0.03	22	323	325	15.065	34.573	4.05	0.01
23	50	50	26.840	34.706	4.57	0.03	23	311	314	15.265	34.592	4.09	0.01
24	50	50	26.829	34.704	4.57	0.03	24	49	50	26.916	34.653	4.53	0.03

[illegible]

[illegible]

KH-05-1		St.08		Depth	4410 m		KH-05-1		St.11		Depth	4882 m	
Date:	2005.6.1			Lat.	14 30.26N		Date:	2005.6.3			Lat.	13 57.53N	
Time:	12:16			Long.	136 59.93E		Time:	01:17			Long.	140 02.21E	
CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC	CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC
		db	°C	(psu)	ml·l <sup>-1</sup>				db	°C	(psu)	ml·l <sup>-1</sup>	
		2	30.033	34.384	4.14	0.02			2	29.211	34.338	4.16	0.02
		3	30.035	34.385	4.14	0.02			3	29.212	34.338	4.17	0.02
		4	30.036	34.385	4.14	0.02			4	29.211	34.338	4.16	0.02
		5	30.035	34.385	4.14	0.02			5	29.209	34.337	4.16	0.02
		10	30.038	34.385	4.15	0.02			10	29.203	34.337	4.16	0.02
		20	29.903	34.510	4.15	0.03			20	29.164	34.337	4.17	0.03
		30	29.087	34.579	4.30	0.03			30	29.160	34.337	4.17	0.03
		40	28.136	34.575	4.41	0.03			40	29.150	34.338	4.17	0.04
		50	27.563	34.602	4.46	0.04			50	29.025	34.348	4.21	0.06
		75	26.599	34.718	4.38	0.07			75	28.290	34.324	4.27	0.06
		100	25.786	34.832	4.31	0.10			100	26.945	34.533	4.18	0.11
		125	24.532	34.974	4.13	0.16			125	26.207	34.783	4.25	0.12
		150	22.748	35.080	3.98	0.07			150	24.820	34.936	4.03	0.08
		175	21.189	35.011	4.02	0.04			175	22.646	35.078	3.84	0.04
		200	19.899	34.939	4.14	0.02			200	20.107	34.955	3.68	0.02
		250	17.561	34.778	4.26	0.01			250	16.541	34.688	3.15	0.02
		300	16.022	34.658	4.16	0.01			300	13.332	34.456	3.51	0.01
		400	11.006	34.296	3.66	0.01			400	9.305	34.323	2.29	0.02
		500	7.850	34.270	1.97	0.02			500	7.328	34.359	1.63	0.02
		503	7.811	34.272	0.00	0.02			509	7.236	34.362	1.60	0.02
CTD data (BTL)							CTD data (BTL)						
BTL	Depth	Pres.	Temp.	Sal	DO	FLC	BTL	Depth	Pres.	Temp.	Sal	DO	FLC
No.	m	db	°C	(psu)	ml·l <sup>-1</sup>		No.	m	db	°C	(psu)	ml·l <sup>-1</sup>	
Sur.	0	***	30.1	***	***	***	Sur.	0	***	29.4	***	***	***
1	500	504	7.812	34.271	1.90	0.02							
2	500	504	7.811	34.271	1.90	0.02							
4	500	504	7.809	34.271	1.90	0.02							
5	501	504	7.806	34.271	1.90	0.02							
6	501	504	7.803	34.271	1.90	0.02							
7	501	505	7.802	34.271	1.90	0.02							
8	297	299	16.017	34.650	4.12	0.01							
10	298	300	16.033	34.654	4.15	0.01							
11	298	300	16.028	34.654	4.14	0.01							
12	298	300	16.023	34.655	4.13	0.01							
13	199	200	19.861	34.926	4.14	0.02							
14	199	201	19.833	34.924	4.14	0.02							
16	200	201	19.778	34.919	4.15	0.02							
17	98	99	25.893	34.809	4.30	0.11							
18	98	99	25.900	34.808	4.33	0.09							
19	98	99	25.900	34.808	4.33	0.09							
20	98	99	25.900	34.810	4.33	0.09							
22	49	49	27.808	34.565	4.46	0.04							
23	49	49	27.811	34.564	4.45	0.04							
24	49	49	27.812	34.563	4.45	0.04							

KH-05-1		St.12		Depth	4823 m		KH-05-1		St.13		Depth	4816 m	
Date:	2005.6.3			Lat.	13 30.00N		Date:	2005.6.3			Lat.	13 00.06N	
Time:	04:07			Long.	139 59.81E		Time:	08:19			Long.	139 59.84E	
CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC	CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC
		db	°C	(psu)	ml·l <sup>-1</sup>				db	°C	(psu)	ml·l <sup>-1</sup>	
		10	29.261	34.303	4.15	0.01			4	29.203	34.362	4.15	0.02
		20	29.207	34.303	4.16	0.02			5	29.203	34.362	4.15	0.02
		30	29.191	34.308	4.16	0.02			10	29.206	34.361	4.16	0.02
		40	29.184	34.316	4.16	0.04			20	29.126	34.359	4.17	0.03
		50	29.027	34.332	4.21	0.04			30	29.120	34.359	4.17	0.03
		75	28.379	34.299	4.26	0.06			40	29.117	34.359	4.17	0.03
		100	28.157	34.383	4.33	0.08			50	29.113	34.359	4.17	0.03
		125	26.995	34.608	4.25	0.12			75	28.535	34.312	4.28	0.05
		150	24.299	34.874	3.88	0.10			100	28.172	34.312	4.26	0.07
		175	21.330	34.902	3.50	0.04			125	27.266	34.507	4.23	0.11
		200	19.570	34.877	3.49	0.03			150	24.749	35.052	4.10	0.11
		250	15.822	34.636	3.60	0.02			175	21.994	34.987	3.70	0.06
		300	12.445	34.394	3.86	0.01			200	18.688	34.821	3.31	0.03
		400	9.215	34.365	2.11	0.02			250	15.089	34.581	4.09	0.01
		500	7.824	34.417	1.64	0.02			300	12.352	34.389	3.63	0.01
		512	7.366	34.370	1.67	0.02			400	9.079	34.414	1.84	0.02
									500	7.692	34.482	1.56	0.02
									510	7.594	34.480	1.56	0.02



[illegible]

KH-05-1		St.16		Depth	5710 m		KH-05-1		St.17		Depth	4691 m	
Date:	2005.6.3			Lat.	12 00.05N		Date:	2005.6.4			Lat.	12 30.07N	
Time:	23:46			Long.	138 59.99E		Time:	04:04			Long.	138 59.87E	
CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC	CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC
		db	°C	(psu)	ml·l <sup>-1</sup>				db	°C	(psu)	ml·l <sup>-1</sup>	
		10	29.005	34.330	4.16	0.02			1	29.310	34.342	4.14	0.01
		20	29.007	34.330	4.15	0.02			2	29.337	34.344	4.15	0.01
		30	29.006	34.330	4.15	0.03			3	29.334	34.344	4.15	0.01
		40	29.000	34.329	4.16	0.02			4	29.344	34.344	4.14	0.01
		50	28.975	34.327	4.16	0.03			5	29.343	34.344	4.14	0.01
		75	28.594	34.303	4.21	0.04			10	29.213	34.340	4.14	0.01
		100	27.667	34.415	4.19	0.09			20	29.175	34.340	4.15	0.02
		125	26.236	34.841	4.20	0.16			30	29.163	34.340	4.14	0.02
		150	24.937	35.077	4.07	0.12			40	29.132	34.337	4.16	0.03
		175	23.022	35.129	3.90	0.08			50	29.019	34.329	4.19	0.03
		200	20.227	34.975	3.70	0.05			75	28.379	34.312	4.27	0.05
		250	14.858	34.562	3.35	0.02			100	28.185	34.312	4.24	0.07
		300	12.220	34.400	3.27	0.02			125	27.234	34.566	4.25	0.15
		400	9.045	34.371	1.87	0.02			150	24.660	35.028	4.08	0.11
		500	7.456	34.451	1.50	0.02			175	22.458	35.026	3.74	0.06
		516	7.282	34.476	1.44	0.02			200	19.360	34.875	3.55	0.03
									250	15.278	34.594	3.29	0.02
									300	12.000	34.372	3.38	0.01
					400	8.770	34.444	1.63	0.03				
					500	7.342	34.466	1.65	0.02				
					515	7.215	34.475	1.66	0.02				
CTD data (BTL)							CTD data (BTL)						
BTL	Depth	Pres.	Temp.	Sal	DO	FLC	BTL	Depth	Pres.	Temp.	Sal	DO	FLC
No.	m	db	°C	(psu)	ml·l <sup>-1</sup>		No.	m	db	°C	(psu)	ml·l <sup>-1</sup>	
Sur.	0	***	29.2	***	***	***	Sur.	0	***	29.6	***	***	***
1	193	195	20.340	34.981	3.68	0.04	1	198	200	18.819	34.847	3.58	0.02
4	194	196	20.082	34.974	3.69	0.04	3	397	400	8.824	34.446	1.62	0.03
7	194	195	20.089	34.974	3.69	0.04	4	199	200	18.783	34.848	3.59	0.02
10	100	101	27.955	34.350	4.22	0.07	7	197	198	18.838	34.849	3.59	0.02
13	100	100	27.968	34.349	4.22	0.07	9	198	199	18.824	34.850	3.59	0.02
16	100	101	27.970	34.350	4.22	0.07	10	98	99	28.170	34.308	4.25	0.06
19	50	50	28.974	34.324	4.16	0.03	13	98	98	28.167	34.308	4.25	0.06
22	50	50	28.971	34.323	4.16	0.03	15	99	99	28.160	34.313	4.24	0.06
							16	98	98	28.170	34.309	4.25	0.06
							19	50	50	28.661	34.311	4.23	0.03
							21	50	50	28.884	34.318	4.20	0.03
							22	50	50	28.896	34.318	4.20	0.03

KH-05-1		St.18		Depth	5288 m		KH-05-1		St.19		Depth	4268m	
Date:	2005.6.4			Lat.	13 00.21N		Date:	2005.6.4			Lat.	13 30.29N	
Time:	08:41			Long.	138 59.96E		Time:	13:15			Long.	138 59.99E	
CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC	CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC
		db	°C	(psu)	ml·l <sup>-1</sup>				db	°C	(psu)	ml·l <sup>-1</sup>	
		4	29.344	34.274	4.14	0.02			3	29.434	34.294	4.12	0.02
		5	29.335	34.274	4.14	0.02			4	29.432	34.294	4.12	0.02
		10	29.208	34.272	4.15	0.02			5	29.435	34.294	4.12	0.02
		20	29.168	34.294	4.15	0.03			10	29.439	34.294	4.11	0.02
		30	29.100	34.305	4.17	0.03			20	29.267	34.292	4.13	0.02
		40	28.895	34.317	4.21	0.04			30	29.252	34.292	4.13	0.02
		50	28.742	34.315	4.23	0.05			40	29.229	34.301	4.14	0.03
		75	28.194	34.288	4.26	0.05			50	28.879	34.328	4.22	0.04
		100	27.959	34.395	4.31	0.10			75	28.238	34.362	4.29	0.06
		125	26.407	34.767	4.26	0.13			100	27.770	34.448	4.30	0.08
		150	24.643	34.993	4.04	0.09			125	26.198	34.797	4.23	0.14
		175	21.502	34.970	3.63	0.05			150	24.228	34.932	3.88	0.09
		200	18.957	34.913	3.87	0.03			175	23.063	35.061	3.81	0.06
		250	14.808	34.560	3.76	0.02			200	20.048	34.913	3.51	0.03
		300	11.517	34.389	2.80	0.02			250	16.439	34.685	3.61	0.02
		400	8.634	34.437	1.66	0.03			300	12.947	34.430	3.33	0.02
		500	7.292	34.455	1.62	0.02			400	9.452	34.454	1.80	0.02
		506	7.195	34.454	1.65	0.02			500	7.738	34.454	1.59	0.03
						503	7.726	34.455	1.60	0.02			
CTD data (BTL)							CTD data (BTL)						
BTL	Depth	Pres.	Temp.	Sal	DO	FLC	BTL	Depth	Pres.	Temp.	Sal	DO	FLC
No.	m	db	°C	(psu)	ml·l <sup>-1</sup>		No.	m	db	°C	(psu)	ml·l <sup>-1</sup>	
Sur.	0	***	29.4	***	***	***	Sur.	0	***	29.6	***	***	***
1	198	199	19.033	34.921	3.83	0.03	1	198	199	19.892	34.895	3.49	0.03
4	199	200	19.006	34.918	3.85	0.03	4	199	200	19.811	34.891	3.52	0.03
7	198	199	19.018	34.918	3.86	0.03	7	198	199	19.933	34.900	3.50	0.03
10	100	100	27.989	34.367	4.28	0.09	10	99	100	27.871	34.416	4.29	0.09
13	100	100	27.985	34.369	4.28	0.09	13	100	100	27.876	34.417	4.30	0.07
16	100	100	27.985	34.370	4.28	0.09	16	99	100	27.875	34.418	4.30	0.07
19	52	52	28.754	34.313	4.24	0.04	19	50	50	29.025	34.313	4.19	0.04
22	52	52	28.757	34.314	4.24	0.04	22	49	49	29.061	34.311	4.18	0.04

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KH-05-1		St.22		Depth	4756 m		KH-05-1		St.23		Depth	4732 m	
Date:	2005.6.5			Lat.	15 30.54N		Date:	2005.6.5			Lat.	15 00.32N	
Time:	09:06			Long.	140 59.68E		Time:	13:35			Long.	140 59.80E	
CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC	CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC
		db	°C	(psu)	ml·l <sup>-1</sup>				db	°C	(psu)	ml·l <sup>-1</sup>	
		3	29.217	34.330	4.10	0.02			2	29.216	34.315	4.09	0.02
		4	29.216	34.330	4.10	0.02			3	29.216	34.315	4.09	0.02
		5	29.216	34.331	4.10	0.02			4	29.213	34.315	4.09	0.02
		10	29.222	34.332	4.10	0.02			5	29.214	34.315	4.09	0.02
		20	29.011	34.389	4.13	0.03			10	29.214	34.315	4.09	0.02
		30	28.983	34.409	4.12	0.04			20	29.220	34.315	4.09	0.02
		40	28.978	34.409	4.12	0.03			30	29.160	34.361	4.11	0.03
		50	28.884	34.400	4.14	0.04			40	29.144	34.367	4.11	0.03
		75	28.138	34.461	4.24	0.06			50	29.131	34.365	4.12	0.03
		100	27.674	34.569	4.27	0.09			75	28.295	34.305	4.19	0.04
		125	26.871	34.733	4.25	0.09			100	27.708	34.413	4.24	0.10
		150	25.096	35.001	4.10	0.09			125	26.915	34.637	4.19	0.15
		175	23.383	35.114	3.89	0.06			150	25.846	34.890	4.12	0.10
		200	21.690	35.076	3.73	0.05			175	23.327	35.019	3.80	0.06
		250	17.259	34.742	3.43	0.02			200	21.111	34.977	3.59	0.04
		300	14.216	34.542	3.07	0.02			250	17.042	34.719	3.45	0.02
		400	9.831	34.300	2.58	0.02			300	13.428	34.496	3.05	0.02
		500	7.904	34.356	1.71	0.02			400	10.039	34.421	2.15	0.02
501	7.894	34.357	1.71	0.02	500	7.733	34.357	1.72	0.02				
						502	7.703	34.359	1.71	0.02			
CTD data (BTL)							CTD data (BTL)						
BTL	Depth	Pres.	Temp.	Sal	DO	FLC	BTL	Depth	Pres.	Temp.	Sal	DO	FLC
No.	m	db	°C	(psu)	ml·l <sup>-1</sup>		No.	m	db	°C	(psu)	ml·l <sup>-1</sup>	
Sur.	0	***	29.2	***	***	***	Sur.	0	***	29.3	***	***	***
1	201	202	21.645	35.071	3.75	0.04	1	498	502	7.703	34.359	1.70	0.02
4	201	202	21.618	35.073	3.75	0.04	2	497	501	7.711	34.359	1.71	0.02
7	199	201	21.710	35.073	3.74	0.04	3	398	400	10.114	34.398	2.15	0.02
10	101	102	27.708	34.553	4.28	0.10	4	497	501	7.728	34.358	1.70	0.02
13	101	102	27.713	34.552	4.28	0.09	5	498	501	7.714	34.359	1.71	0.02
16	101	101	27.716	34.551	4.28	0.09	6	499	503	7.699	34.359	1.71	0.02
19	49	50	28.890	34.393	4.15	0.05	7	499	502	7.703	34.359	1.71	0.02
22	50	50	28.885	34.391	4.15	0.05	8	297	299	13.583	34.495	2.98	0.02
							9	201	202	20.155	34.933	3.56	0.03
							10	298	300	13.559	34.496	3.07	0.02
							11	298	300	13.565	34.498	3.06	0.02
							12	200	201	20.348	34.945	3.54	0.03
							13	200	201	20.324	34.944	3.54	0.03
							14	200	202	20.254	34.937	3.56	0.03
							15	99	99	27.830	34.392	4.25	0.10
							16	200	202	20.278	34.940	3.55	0.03
21	51	52	29.125	34.358	4.12	0.04	17	100	100	27.806	34.397	4.25	0.10
22	50	50	29.125	34.359	4.13	0.05	18	100	100	27.820	34.396	4.25	0.10
23	50	50	29.125	34.359	4.13	0.04	19	100	100	27.789	34.401	4.26	0.10
24	51	51	29.126	34.359	4.13	0.04	20	100	100	27.838	34.394	4.25	0.10

KH-05-1		St.24		Depth		4863 m		KH-05-1		St.25		Depth		4799 m	
Date:	2005.6.5			Lat.		14 29.08N		Date:	2005.6.5			Lat.		14 00.04N	
Time:	20:16			Long.		140 58.36E		Time:	23:16			Long.		141 00.00E	
CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC	CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC		
		db	°C	(psu)	ml·l <sup>-1</sup>				db	°C	(psu)	ml·l <sup>-1</sup>			
		3	29.230	34.339	4.11	0.02			1	29.156	34.334	4.09	0.02		
		4	29.230	34.339	4.12	0.02			2	29.155	34.334	4.09	0.02		
		5	29.229	34.339	4.12	0.02			3	29.156	34.335	4.10	0.01		
		10	29.228	34.338	4.09	0.02			4	29.156	34.335	4.09	0.02		
		20	29.227	34.337	4.09	0.02			5	29.158	34.335	4.09	0.02		
		30	29.231	34.339	4.10	0.02			10	29.159	34.335	4.09	0.02		
		40	29.232	34.338	4.10	0.02			20	29.160	34.335	4.09	0.02		
		50	29.152	34.321	4.12	0.03			30	29.157	34.334	4.10	0.02		
		75	28.368	34.348	4.27	0.05			40	29.155	34.334	4.10	0.02		
		100	27.831	34.457	4.27	0.07			50	29.114	34.324	4.11	0.02		
		125	26.618	34.740	4.24	0.12			75	28.587	34.302	4.23	0.04		
		150	25.531	34.892	4.13	0.10			100	28.260	34.299	4.18	0.04		
		175	23.747	35.033	3.87	0.05			125	27.918	34.377	4.21	0.08		
		200	21.567	35.015	3.64	0.04			150	26.495	34.763	4.22	0.12		
		250	17.773	34.777	3.31	0.03			175	24.734	34.979	3.97	0.08		
		300	14.429	34.531	3.64	0.01			200	21.624	34.998	3.62	0.04		
		400	10.238	34.368	2.55	0.02			250	16.637	34.694	3.50	0.02		
		500	8.143	34.365	1.77	0.02			300	13.678	34.491	3.18	0.02		
504	8.139	34.369		0.02	400	9.993	34.388	2.22	0.02						
						500	8.159	34.399	1.70	0.02					
						511	8.147	34.414	1.67	0.02					
CTD data (BTL)							CTD data (BTL)								
BTL	Depth	Pres.	Temp.	Sal	DO	FLC	BTL	Depth	Pres.	Temp.	Sal	DO	FLC		
No.	m	db	°C	(psu)	ml·l <sup>-1</sup>		No.	m	db	°C	(psu)	ml·l <sup>-1</sup>			
Sur.	0	***	29.4	***	***	***	Sur.	0	***	29.3	***	***	***		
1	501	504	8.155	34.371	1.75	0.02	8	195	197	21.883	34.995	3.65	0.04		
2	502	505	8.151	34.373	1.76	0.02	12	101	102	28.210	34.300	4.19	0.04		
4	501	505	8.155	34.372	1.76	0.02	13	196	197	21.981	34.996	3.64	0.04		
5	501	505	8.155	34.371	1.75	0.02	17	100	101	28.212	34.300	4.19	0.05		
6	502	505	8.145	34.373	1.75	0.02	18	51	51	29.087	34.318	4.12	0.03		
7	502	505	8.142	34.373	1.75	0.02	24	51	51	29.086	34.317	4.11	0.03		
8	286	287	14.773	34.552	3.56	0.01									
10	286	288	14.769	34.553	3.56	0.01									
11	286	288	14.775	34.553	3.56	0.01									
12	286	288	14.764	34.553	3.55	0.02									
13	199	201	21.418	35.006	3.61	0.04									
14	200	201	21.481	35.010	3.63	0.04									
16	199	201	21.555	35.014	3.62	0.03									
17	100	100	27.789	34.467	4.26	0.08									
18	101	101	27.774	34.476	4.27	0.07									
19	101	101	27.782	34.473	4.27	0.08									
20	101	101	27.788	34.471	4.27	0.07									
22	51	51	28.769	34.343	4.24	0.04									
23	51	51	28.970	34.333	4.18	0.04									
24	51	51	29.036	34.331	4.17	0.04									

KH-05-1		St.26		Depth	4681 m		KH-05-1		St.27		Depth	3835 m	
Date:	2005.6.6			Lat.	13 30.17N		Date:	2005.6.6			Lat.	13 00.17N	
Time:	03:25			Long.	141 00.00E		Time:	07:58			Long.	141 00.14E	
CTD data (LAY)	Pres.	Temp.	Sal	DO	FLC		CTD data (LAY)	Pres.	Temp.	Sal	DO	FLC	
	db	°C	(psu)	ml·l <sup>-1</sup>				db	°C	(psu)	ml·l <sup>-1</sup>		
	1	29.220	34.251	4.09	0.02			2	29.155	34.210	4.09	0.02	
	2	29.222	34.251	4.09	0.01			3	29.158	34.210	4.09	0.02	
	3	29.225	34.251	4.09	0.01			4	29.157	34.211	4.10	0.02	
	4	29.221	34.251	4.09	0.01			5	29.166	34.211	4.10	0.03	
	5	29.238	34.251	4.09	0.01			10	29.077	34.208	4.10	0.02	
	10	29.172	34.255	4.09	0.01			20	29.037	34.219	4.10	0.02	
	20	29.153	34.263	4.09	0.01			30	29.017	34.219	4.10	0.02	
	30	29.111	34.316	4.11	0.02			40	29.006	34.227	4.11	0.02	
	40	28.923	34.322	4.13	0.02			50	28.963	34.233	4.12	0.03	
	50	28.705	34.306	4.17	0.03			75	28.290	34.324	4.22	0.04	
	75	28.172	34.345	4.26	0.06			100	27.875	34.348	4.21	0.08	
	100	27.654	34.447	4.26	0.10			125	25.884	34.825	4.15	0.18	
	125	26.405	34.771	4.16	0.12			150	24.397	35.061	4.00	0.11	
	150	24.529	35.019	3.97	0.08			175	21.866	35.110	3.83	0.06	
	175	21.933	34.995	3.66	0.04			200	19.982	35.006	3.86	0.03	
	200	20.073	34.937	3.55	0.03			250	16.455	34.700	4.14	0.01	
	250	15.253	34.592	3.37	0.02			300	13.648	34.470	3.79	0.01	
	300	13.106	34.460	3.13	0.02			400	9.662	34.346	2.27	0.02	
	400	9.630	34.362	2.11	0.02			500	7.636	34.437	1.61	0.02	
	500	7.807	34.436	1.64	0.02			500	7.636	34.437	1.61	0.02	
	518	7.497	34.417	1.67	0.03								
	CTD data (BTL)							CTD data (BTL)					
BTL	Depth	Pres.	Temp.	Sal	DO	FLC	BTL	Depth	Pres.	Temp.	Sal	DO	FLC
No.	m	db	°C	(psu)	ml·l <sup>-1</sup>		No.	m	db	°C	(psu)	ml·l <sup>-1</sup>	
Sur.	0	***	29.4	***	***	***	Sur.	0	***	29.3	***	***	***
8	199	200	20.011	34.937	3.56	0.03	1	500	503	7.592	34.437	1.61	0.02
12	99	100	27.732	34.417	4.27	0.08	2	500	503	7.585	34.437	1.61	0.02
13	198	200	20.012	34.938	3.56	0.03	4	500	504	7.570	34.437	1.61	0.02
17	100	101	27.731	34.421	4.27	0.08	5	501	504	7.566	34.437	1.61	0.02
18	50	50	28.689	34.302	4.18	0.03	6	501	505	7.561	34.437	1.61	0.02
24	50	50	28.705	34.303	4.17	0.03	7	501	505	7.569	34.436	1.61	0.02
							8	298	300	13.543	34.457	3.73	0.01
							10	299	301	13.547	34.459	3.74	0.01
							11	300	302	13.542	34.460	3.74	0.01
							12	300	302	13.548	34.461	3.74	0.01
							13	199	200	20.003	35.001	3.88	0.03
							14	199	200	20.008	35.002	3.88	0.03
							16	199	201	20.010	35.003	3.88	0.03
							17	100	100	27.857	34.347	4.22	0.07
							18	100	101	27.855	34.348	4.22	0.07
							19	101	102	27.842	34.351	4.22	0.07
							20	101	102	27.835	34.353	4.22	0.07
							22	50	50	28.872	34.247	4.16	0.04
							23	50	51	28.862	34.250	4.15	0.05
							24	50	51	28.860	34.250	4.16	0.04



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[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]



KH-05-1		St.45		Depth	3575 m		KH-05-1		St.48		Depth	4089 m	
Date:	2005.6.9			Lat.	13 59.96N		Date:	2005.6.10			Lat.	14 30.13N	
Time:	14:06			Long.	142 14.85E		Time:	00:05			Long.	142 15.03E	
CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC	CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC
		db	°C	(psu)	ml·l <sup>-1</sup>				db	°C	(psu)	ml·l <sup>-1</sup>	
		1	29.306	34.327	4.02	0.04			2	29.288	34.217	4.01	0.01
		2	29.309	34.326	4.02	0.03			3	29.311	34.217	4.02	0.01
		3	29.309	34.326	4.02	0.04			4	29.325	34.217	4.01	0.01
		4	29.308	34.326	4.02	0.02			5	29.328	34.217	4.01	0.01
		5	29.306	34.327	4.02	0.02			10	29.182	34.211	4.02	0.01
		10	29.244	34.352	4.03	0.02			20	28.900	34.255	4.05	0.01
		20	29.170	34.388	4.06	0.03			30	28.838	34.268	4.06	0.02
		30	29.024	34.401	4.10	0.04			40	28.849	34.295	4.06	0.02
		40	28.859	34.427	4.11	0.07			50	28.714	34.355	4.09	0.02
		50	28.703	34.444	4.12	0.04			75	27.948	34.432	4.14	0.04
		75	27.749	34.483	4.18	0.06			100	26.827	34.707	4.14	0.10
		100	26.913	34.671	4.15	0.09			125	25.923	34.857	4.10	0.17
		125	26.104	34.878	4.14	0.13			150	23.667	35.051	3.86	0.06
		150	25.352	34.997	4.07	0.15			175	22.580	35.129	3.78	0.04
		175	23.691	35.077	3.85	0.07			200	21.483	35.075	3.78	0.03
		200	21.951	35.111	3.80	0.05			250	18.291	34.858	3.97	0.01
		250	18.022	34.834	3.97	0.01			300	15.194	34.581	3.99	0.01
		300	15.145	34.583	4.03	0.01			400	10.845	34.317	3.17	0.01
		400	9.987	34.298	2.69	0.02			500	7.909	34.349	1.67	0.02
		500	7.806	34.352	1.62	0.03			514	7.747	34.367		0.02
		503	7.806	34.353	0.00	0.02							
CTD data (BTL)							CTD data (BTL)						
BTL	Depth	Pres.	Temp.	Sal	DO	FLC	BTL	Depth	Pres.	Temp.	Sal	DO	FLC
No.	m	db	°C	(psu)	ml·l <sup>-1</sup>		No.	m	db	°C	(psu)	ml·l <sup>-1</sup>	
Sur.	0	***	29.4	***	***	***	Sur.	0	***	29.5	***	***	***
1	197	198	22.067	35.107	3.79	0.04	1	199	200	21.459	35.066	3.80	0.03
4	197	198	22.119	35.117	3.80	0.04	4	199	200	21.462	35.067	3.80	0.03
7	197	198	22.108	35.118	3.80	0.04	7	199	200	21.450	35.066	3.80	0.03
10	99	99	26.931	34.663	4.16	0.07	10	100	101	26.736	34.705	4.16	0.09
13	99	100	26.924	34.667	4.16	0.08	13	100	101	26.765	34.708	4.15	0.09
16	99	100	26.928	34.667	4.16	0.08	16	100	100	26.856	34.701	4.16	0.09
19	49	50	28.578	34.434	4.13	0.04	19	51	51	28.629	34.348	4.10	0.02
22	49	50	28.655	34.436	4.12	0.04	22	51	51	28.632	34.350	4.10	0.02



[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

KH-05-1_Leg4		St.138		Depth		3420 m		KH-05-1_Leg4		St.148		Depth		2715m	
Date:	2005.7.7			Lat.		14 10.06N		Date:	2005.7.8			Lat.		12 59.89N	
Time:	09:05			Long.		142 59.54E		Time:	12:52			Long.		142 29.80E	
CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC	CTD data (LAY)		Pres.	Temp.	Sal	DO	FLC		
		db	°C	(psu)	ml·l <sup>-1</sup>				db	°C	(psu)	ml·l <sup>-1</sup>			
		3	29.660	34.194	3.77	N.D			1	29.629	34.272	3.80	0.03		
		4	29.660	34.195	3.77	N.D			2	29.627	34.272	3.81	0.02		
		5	29.661	34.195	3.77	N.D			3	29.630	34.272	3.81	0.02		
		10	29.659	34.194	3.78	N.D			4	29.632	34.272	3.81	0.02		
		20	29.666	34.194	3.78	N.D			5	29.630	34.272	3.81	0.02		
		30	29.541	34.188	3.79	N.D			10	29.635	34.272	3.81	0.02		
		40	29.511	34.250	3.82	N.D			20	29.591	34.275	3.82	0.02		
		50	29.547	34.407	3.87	N.D			30	29.500	34.278	3.85	0.03		
		75	29.057	34.470	3.94	N.D			40	29.344	34.305	3.87	0.03		
		100	27.969	34.567	4.01	N.D			50	29.245	34.301	3.88	0.03		
		125	27.349	34.660	3.97	N.D			75	28.787	34.343	3.92	0.04		
		150	26.483	34.823	3.87	N.D			100	28.101	34.427	3.97	0.05		
		175	25.295	34.998	3.77	N.D			125	27.253	34.587	3.97	0.09		
		200	22.984	35.074	3.60	N.D			150	25.402	34.901	3.84	0.16		
		250	17.317	34.756	3.27	N.D			175	21.932	35.051	3.53	0.07		
		300	14.233	34.551	2.73	N.D			200	19.065	34.914	3.40	0.04		
		400	10.241	34.341	2.32	N.D			250	15.507	34.618	3.08	0.02		
		500	8.166	34.354	1.64	N.D			300	12.631	34.412	2.99	0.02		
502	8.130	34.350	1.64	N.D	400	9.408	34.415	1.59	0.02						
CTD data (BTL)							CTD data (BTL)								
BTL	Depth	Pres.	Temp.	Sal	DO	FLC	BTL	Depth	Pres.	Temp.	Sal	DO	FLC		
No.	m	db	°C	(psu)	ml·l <sup>-1</sup>		No.	m	db	°C	(psu)	ml·l <sup>-1</sup>			
Sur.	0	***	29.7	***	***	***	Sur.	0	***	29.6	***	***	***		
1	498	501	8.134	34.351	1.64	N.D	1	499	503	7.788	34.503	1.37	0.02		
2	498	501	8.132	34.351	1.64	N.D	2	499	502	7.788	34.503	1.38	0.02		
3	397	400	10.214	34.337	2.33	N.D	3	396	399	9.235	34.419	1.52	0.03		
4	300	302	14.197	34.545	2.73	N.D	4	297	299	11.997	34.372	2.96	0.02		
5	300	302	14.164	34.544	2.73	N.D	5	297	299	12.094	34.379	2.98	0.01		
6	199	201	22.414	35.077	3.62	N.D	6	199	200	18.957	34.898	3.41	0.03		
7	200	201	22.313	35.079	3.62	N.D	7	199	200	18.918	34.899	3.42	0.03		
8	200	201	22.371	35.078	3.61	N.D	8	199	200	18.931	34.899	3.42	0.03		
9	99	100	28.088	34.549	4.03	N.D	9	99	100	28.099	34.421	3.99	0.04		
10	99	100	28.085	34.550	4.03	N.D	10	99	100	28.096	34.422	3.99	0.04		
11	100	100	28.078	34.551	4.03	N.D	11	99	100	28.144	34.415	3.99	0.04		
12	99	100	28.092	34.549	4.03	N.D	12	100	100	28.202	34.406	3.99	0.04		
13	99	100	28.089	34.549	4.03	N.D	13	100	101	28.205	34.406	3.98	0.04		
14	50	50	29.547	34.426	3.88	N.D	14	49	49	29.268	34.299	3.89	0.03		
15	50	50	29.547	34.426	3.88	N.D	15	49	49	29.264	34.299	3.88	0.03		
16	50	50	29.544	34.424	3.88	N.D	16	49	49	29.259	34.300	3.89	0.03		
17	50	50	29.542	34.424	3.88	N.D	17	49	49	29.270	34.300	3.88	0.03		
18	50	50	29.545	34.423	3.88	N.D	18	49	49	29.270	34.300	3.88	0.03		
19	50	50	29.544	34.422	3.88	N.D	19	49	49	29.264	34.300	3.88	0.03		
20	50	50	29.544	34.420	3.89	N.D	20	49	50	29.269	34.300	3.88	0.04		
21	50	51	29.545	34.420	3.88	N.D	21	50	50	29.267	34.300	3.88	0.03		
22	50	51	29.545	34.421	3.89	N.D	22	49	49	29.267	34.300	3.88	0.03		
23	50	50	29.545	34.418	3.88	N.D	23	49	50	29.267	34.300	3.88	0.03		
24	50	50	29.545	34.416	3.89	N.D	24	49	50	29.270	34.300	3.88	0.03		

KH-05-1_Leg4		St.150		Depth		2710m		KH-05-1_Leg4		St.157		Depth		3300m	
Date:	2005.7.8			Lat.		14 00.12N		Date:	2005.7.9			Lat.		13 00.65N	
Time:	20:38			Long.		142 29.86E		Time:	19:03			Long.		141 46.80E	
CTD data (LAY)	Pres.	Temp.	Sal	DO	FLC		CTD data (LAY)	Pres.	Temp.	Sal	DO	FLC			
	db	°C	(psu)	ml·l <sup>-1</sup>				db	°C	(psu)	ml·l <sup>-1</sup>				
	3	29.642	34.234	3.81	0.02			2	29.567	34.397	3.84	0.02			
	4	29.645	34.240	3.81	0.02			3	29.566	34.397	3.84	0.02			
	5	29.643	34.235	3.81	0.02			4	29.566	34.396	3.84	0.02			
	10	29.648	34.241	3.81	0.02			5	29.566	34.396	3.84	0.02			
	20	29.652	34.246	3.81	0.02			10	29.566	34.397	3.84	0.02			
	30	29.560	34.256	3.83	0.02			20	29.553	34.401	3.85	0.02			
	40	29.351	34.264	3.87	0.03			30	29.521	34.404	3.85	0.02			
	50	28.619	34.361	3.97	0.02			40	29.499	34.404	3.86	0.02			
	75	28.200	34.398	4.00	0.03			50	29.188	34.387	3.93	0.03			
	100	27.713	34.477	4.00	0.04			75	28.299	34.415	3.98	0.03			
	125	26.972	34.669	3.96	0.08			100	27.714	34.479	4.00	0.05			
	150	25.426	34.909	3.84	0.16			125	27.303	34.569	3.99	0.09			
	175	23.515	35.028	3.66	0.07			150	26.563	34.742	3.95	0.16			
	200	19.835	34.893	3.30	0.03			175	23.946	35.030	3.72	0.10			
	250	14.606	34.562	2.83	0.02			200	21.383	35.049	3.51	0.06			
	300	12.567	34.410	3.33	0.01			250	16.804	34.715	3.29	0.02			
	400	9.190	34.272	2.35	0.02			300	12.275	34.417	2.64	0.02			
	500	7.548	34.341	1.54	0.02			400	9.223	34.460	1.59	0.02			
	502	7.504	34.337	1.53	0.02			500	7.748	34.505	1.31	0.02			
								502	7.732	34.505	1.31	0.03			
	CTD data (BTL)							CTD data (BTL)							
	BTL	Depth	Pres.	Temp.	Sal	DO		FLC	BTL	Depth	Pres.	Temp.	Sal	DO	FLC
No.	m	db	°C	(psu)	ml·l <sup>-1</sup>		No.	m	db	°C	(psu)	ml·l <sup>-1</sup>			
Sur.	0	***	29.7	***	***	***	Sur.	0	***	29.6	***	***	***		
1	494	498	7.595	34.343	1.54	0.02	1	497	501	7.772	34.505	1.31	0.02		
2	494	498	7.599	34.344	1.54	0.02	2	497	501	7.777	34.504	1.31	0.02		
3	399	401	9.120	34.270	2.33	0.02	3	399	402	9.232	34.458	1.59	0.02		
4	298	300	12.625	34.414	3.34	0.01	4	298	300	12.477	34.424	2.66	0.02		
5	299	301	12.623	34.414	3.33	0.01	5	297	299	12.462	34.425	2.66	0.01		
6	198	199	20.481	34.929	3.36	0.04	6	199	200	21.136	35.023	3.50	0.04		
7	198	199	20.531	34.934	3.37	0.03	7	199	200	21.166	35.032	3.52	0.04		
8	198	199	20.489	34.932	3.37	0.03	8	199	200	21.174	35.036	3.52	0.04		
9	99	99	27.615	34.494	4.02	0.04	9	99	100	27.458	34.521	4.03	0.06		
10	99	99	27.639	34.490	4.02	0.04	10	100	101	27.465	34.520	4.03	0.06		
11	99	100	27.637	34.490	4.02	0.04	11	99	100	27.472	34.517	4.03	0.06		
12	99	99	27.634	34.492	4.02	0.04	12	99	100	27.467	34.518	4.03	0.06		
13	99	100	27.642	34.490	4.02	0.04	13	100	101	27.469	34.518	4.03	0.06		
14	50	50	28.693	34.351	3.96	0.03	14	50	50	29.076	34.393	3.93	0.03		
15	50	50	28.698	34.351	3.96	0.03	15	50	50	29.066	34.394	3.94	0.03		
16	50	50	28.709	34.350	3.96	0.03	16	51	51	29.055	34.394	3.93	0.03		
17	50	50	28.709	34.350	3.96	0.02	17	49	50	29.075	34.394	3.93	0.03		
18	50	51	28.707	34.351	3.96	0.04	18	51	51	29.069	34.394	3.93	0.03		
19	50	50	28.715	34.350	3.96	0.02	19	50	51	29.068	34.394	3.93	0.03		
20	50	51	28.721	34.350	3.96	0.03	20	50	50	29.077	34.394	3.93	0.03		
21	50	50	28.720	34.350	3.96	0.03	21	51	51	29.044	34.395	3.94	0.03		
22	50	50	28.729	34.349	3.96	0.03	22	50	51	29.072	34.394	3.93	0.03		
23	50	50	28.719	34.350	3.96	0.02	23	50	50	29.080	34.394	3.93	0.03		
24	50	50	28.712	34.351	3.96	0.02	24	50	51	29.075	34.395	3.93	0.03		

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KH-05-1_Leg4		St.174		Depth		4901m		KH-05-1_Leg4		St.175		Depth		3738m	
Date:	2005.7.12	Lat.		11	42.15N	Date:	2005.7.12	Lat.		13	01.15N	Long.		141	02.20E
Time:	06:28	Long.		138	06.43E	Time:	20:33	Long.		141	02.20E				
CTD data (LAY)	Pres.	Temp.	Sal	DO	FLC	CTD data (LAY)	Pres.	Temp.	Sal	DO	FLC				
	db	°C	(psu)	ml·l <sup>-1</sup>			db	°C	(psu)	ml·l <sup>-1</sup>					
	1	30.164	34.226	3.80	0.01		2	29.793	34.424	3.81	0.02				
	2	30.190	34.228	3.81	0.01		3	29.793	34.424	3.81	0.02				
	3	30.170	34.226	3.81	0.01		4	29.792	34.424	3.80	0.01				
	4	30.161	34.225	3.81	0.01		5	29.794	34.424	3.80	0.01				
	5	29.972	34.211	3.82	0.01		10	29.797	34.423	3.82	0.02				
	10	29.781	34.199	3.83	0.01		20	29.726	34.420	3.84	0.02				
	20	29.680	34.239	3.83	0.02		30	29.657	34.417	3.84	0.02				
	30	29.531	34.292	3.85	0.02		40	29.538	34.414	3.86	0.02				
	40	29.371	34.294	3.88	0.02		50	29.282	34.419	3.90	0.02				
	50	28.946	34.347	3.98	0.02		75	28.293	34.394	4.00	0.03				
	75	28.220	34.417	4.02	0.03		100	27.798	34.445	3.98	0.04				
	100	27.421	34.582	4.01	0.06		125	26.797	34.775	4.00	0.11				
	125	26.144	34.855	3.92	0.17		150	25.494	34.912	3.85	0.12				
	150	24.304	35.025	3.73	0.12		175	23.529	35.073	3.67	0.07				
	175	22.210	34.998	3.53	0.06		200	21.600	35.030	3.47	0.05				
	200	18.604	34.878	3.66	0.02		250	17.245	34.751	3.17	0.03				
	250	15.260	34.586	3.83	0.01		300	14.110	34.520	3.22	0.02				
	300	12.101	34.411	3.03	0.01		400	9.440	34.259	2.57	0.02				
	400	8.544	34.412	1.63	0.02		500	7.854	34.446	1.49	0.02				
	500	6.879	34.367	1.46	0.02		501	7.807	34.443	1.50	0.02				
	502	6.870	34.367	1.45	0.02										
CTD data (BTL)						CTD data (BTL)									
BTL	Depth	Pres.	Temp.	Sal	DO	FLC	BTL	Depth	Pres.	Temp.	Sal	DO	FLC		
No.	m	db	°C	(psu)	ml·l <sup>-1</sup>		No.	m	db	°C	(psu)	ml·l <sup>-1</sup>			
Sur.	0	***	29.7	***	***	***	Sur.	0	***	29.8	***	***	***		
1	0						1	498	502	7.694	34.430	1.52	0.02		
2	0						2	498	501	7.699	34.429	1.53	0.02		
3	0						3	397	400	9.431	34.262	2.52	0.02		
4	0						4	298	300	13.554	34.471	3.42	0.01		
5	0						5	298	300	13.584	34.476	3.42	0.01		
6	0						6	198	199	21.697	35.038	3.52	0.04		
7	0						7	198	199	21.882	35.042	3.52	0.04		
8	0						8	198	200	21.887	35.045	3.52	0.04		
9	0						9	99	100	27.744	34.449	4.00	0.04		
10	0						10	99	100	27.793	34.439	4.00	0.03		
11	0						11	99	100	27.772	34.447	4.00	0.03		
12	0						12	99	100	27.781	34.445	3.99	0.03		
13	0						13	99	100	27.773	34.447	3.99	0.03		
14	0						14	49	49	29.245	34.416	3.90	0.02		
15	0						15	49	50	29.256	34.415	3.89	0.02		
16	0						16	49	50	29.262	34.416	3.90	0.02		
17	0						17	49	49	29.269	34.417	3.89	0.03		
18	0						18	49	49	29.249	34.418	3.90	0.02		
19	0						19	49	49	29.270	34.416	3.89	0.02		
20	0						20	49	49	29.274	34.417	3.89	0.02		
21	0						21	49	49	29.275	34.417	3.89	0.02		
22	0						22	49	50	29.281	34.417	3.89	0.02		
23	0						23	49	50	29.281	34.417	3.89	0.03		
24	0						24	49	49	29.284	34.417	3.89	0.02		

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# Working Log

## 29.May.05

10:10	25	27.710N	128	25.529E	5559m	SUNSET
20:30	23	42.799N	130	47.174E	5146m	SUNRISE

## 30.May.05

09:49	21	33.983N	133	38.670E	5432m	SUNSET
12:02	21	11.157N	134	08.673E	5756m	PUT CLOCKS AN HOUR AHEAD IN150-00E
20:16	19	46.477N	135	59.601E	4077m	SUNRISE

## 31.May.05

ST-1	01:38	18	59.412N	137	00.425E	4852m	3M ORI NET STARTED
ST-1	01:58	18	58.643N	137	00.742E	4655m	3M ORI NET DEEPEST
ST-1	02:49	18	57.639N	137	01.215E	4702m	3M ORI NET FINISHED
ST-2	05:03	18	30.193N	136	59.910E	4882m	3M ORI NET STARTED
ST-2	05:37	18	29.399N	137	00.128E	4932m	3M ORI NET DEEPEST
ST-2	06:12	18	29.104N	137	00.113E	4943m	3M ORI NET FINISHED
ST-2	06:44	18	29.353N	137	00.222E	4935m	CTD STARTED
ST-2	07:08	18	29.571N	137	00.260E	4925m	CTD DEEPEST
ST-2	07:30	18	29.796N	137	00.192E	4903m	CTD FINISHED
	09:24	18	05.634N	136	59.993E	4884m	SUNSET
ST-3	09:59	18	00.035N	136	59.947E	4724m	CTD STARTED
ST-3	10:19	18	00.074N	136	59.971E	4713m	CTD DEEPEST
ST-3	10:34	18	00.121N	136	59.865E	4733m	CTD FINISHED
ST-3	10:40	18	00.083N	136	59.793E	4805m	3M ORI NET STARTED
ST-3	11:12	17	58.991N	136	59.538E	4971m	3M ORI NET DEEPEST
ST-3	11:57	17	58.225N	136	59.032E	4748m	3M ORI NET FINISHED
ST-4	14:08	17	29.909N	136	59.797E	4826m	CTD STARTED
ST-4	14:30	17	30.012N	136	59.521E	4850m	CTD DEEPEST
ST-4	14:43	17	30.066N	136	59.477E	4855m	CTD FINISHED
ST-4	14:50	17	30.096N	136	59.398E	4905m	3M ORI NET STARTED
ST-4							3M ORI NET DEEPEST
ST-4	16:12	17	30.415N	137	01.368E	4594m	3M ORI NET FINISHED
ST-5	18:40	16	59.996N	136	59.948E	4700m	3M ORI NET STARTED
ST-5	19:15	17	00.022N	137	01.127E	4954m	3M ORI NET DEEPEST
ST-5	20:11	17	00.280N	137	02.445E	5008m	3M ORI NET FINISHED
	20:17	17	00.302N	137	02.502E	5005m	SUNRISE
ST-5	20:21	17	00.330N	137	02.523E	4995m	CTD STARTED
ST-5	20:43	17	00.414N	137	02.509E	5001m	CTD DEEPEST
ST-5	21:03	17	00.474N	137	02.374E	5007m	CTD FINISHED
ST-6	23:27	16	30.003N	136	59.800E	5510m	CTD STARTED
ST-6	23:46	16	30.136N	136	59.695E	5512m	CTD DEEPEST
ST-6	23:58	16	30.218N	136	59.635E	5514m	CTD FINISHED

## 1.Jun.05

ST-6	00:10	16	30.279N	136	59.718E	5513m	3M ORI NET STARTED
ST-6	00:34	16	30.281N	137	00.477E	5515m	3M ORI NET DEEPEST
ST-6	01:11	16	30.470N	137	00.964E	5527m	3M ORI NET FINISHED

ST-7	03:36	16 00.129N	136 59.737E	5154m	CTD STARTED
ST-7					CTD DEEPEST
ST-7	03:59	16 00.252N	136 59.485E	5122m	CTD FINISHED
ST-7	06:58	15 30.369N	136 59.848E	5196m	CTD STARTED
ST-7	07:27	15 30.623N	136 59.785E	5198m	CTD DEEPEST
ST-7	07:49	15 30.717N	136 59.671E	5196m	CTD FINISHED
	09:18	15 12.194N	136 59.941E	4885m	SUNSET
ST-8	12:16	14 30.264N	136 59.937E	4410m	CTD STARTED
ST-8	12:33	14 30.527N	136 59.890E	4403m	CTD DEEPEST
ST-8	12:53	14 30.774N	136 59.853E	4370m	CTD FINISHED
ST-8	12:59	14 30.920N	136 59.887E	4366m	3M ORI NET STARTED
ST-8	13:38	14 32.453N	137 01.216E	4425m	3M ORI NET DEEPEST
ST-8	14:47	14 34.467N	137 02.361E	4454m	3M ORI NET FINISHED
	20:19	15 30.403N	137 58.744E	4108m	SUNRISE
<b>2.Jun.05</b>					
	09:15	16 00.301N	140 01.538E	5181m	SUNSET
ST-9	09:57	15 59.892N	140 00.414E	5110m	3M ORI NET STARTED
ST-9	10:46	15 59.401N	140 01.839E	5096m	3M ORI NET DEEPEST
ST-9	11:26	15 59.354N	140 02.511E	4715m	3M ORI NET FINISHED
ST-10	17:13	14 59.769N	140 00.470E	4870m	IKMT NET STARTED
ST-10	18:00	14 58.868N	140 02.366E	4914m	IKMT NET DEEPEST
ST-10	19:14	14 57.499N	140 04.857E	4947m	IKMT NET FINISHED
	20:09	14 48.275N	140 04.123E	4574m	SUNRISE
ST-11	23:22	13 59.941N	140 00.167E	4972m	IKMT NET STARTED
ST-11	23:55	13 58.877N	140 01.215E	4932m	IKMT NET DEEPEST
<b>3.Jun.05</b>					
ST-11	00:44	13 57.542N	140 02.432E	4879m	IKMT NET FINISHED
ST-11	01:16	13 57.531N	140 02.225E	4883m	CTD STARTED
ST-11	01:40	13 57.450N	140 02.044E	4875m	CTD DEEPEST
ST-11	01:50	13 57.397N	140 02.038E	4873m	CTD FINISHED
	04:06	13 29.992N	139 59.834E	4823m	CTD STARTED
ST-12	04:29	13 30.100N	139 59.621E	4862m	CTD DEEPEST
ST-12	04:41	13 30.095N	139 59.562E	4863m	CTD FINISHED
ST-12	04:55	13 30.154N	139 59.345E	4827m	IKMT NET STARTED
ST-12	05:27	13 29.682N	140 00.110E	4756m	IKMT NET DEEPEST
ST-12	06:02	13 29.502N	140 00.746E	4816m	IKMT NET FINISHED
ST-13	08:17	13 00.060N	139 59.848E	4815m	CTD STARTED
ST-13	08:42	13 00.193N	139 59.686E	4818m	CTD DEEPEST
ST-13	08:56	13 00.282N	139 59.607E	4818m	CTD FINISHED
ST-13	09:07	13 00.353N	139 59.515E	4817m	IKMT NET STARTED
	09:07	13 00.353N	139 59.516E	4816m	SUNRISE
ST-13	09:46	12 59.813N	140 00.668E	4770m	IKMT NET DEEPEST
ST-13	10:46	12 59.902N	140 02.593E	4754m	IKMT NET FINISHED
ST-14	12:59	12 30.016N	139 59.807E	4146m	CTD STARTED
ST-14	13:19	12 30.029N	139 59.599E	4150m	CTD DEEPEST

ST-14	13:30	12 30.068N	139 59.527E	4154m	CTD FINISHED
ST-14	13:43	12 30.094N	139 59.362E	4165m	IKMT NET STARTED
ST-14	14:17	12 28.685N	139 59.542E	4160m	IKMT NET DEEPEST
ST-14	15:28	12 25.849N	139 59.888E	4288m	IKMT NET FINISHED
ST-15	17:20	11 59.945N	139 59.962E	3671m	IKMT NET STARTED
ST-15	17:53	11 58.670N	139 59.763E	3642m	IKMT NET DEEPEST
ST-15	18:55	11 56.658N	139 58.998E	3558m	IKMT NET FINISHED
ST-15	19:11	11 56.586N	139 58.784E	3734m	CTD STARTED
ST-15	19:32	11 56.763N	139 58.502E	3736m	CTD DEEPEST
ST-15	19:45	11 56.897N	139 58.281E	3725m	CTD FINISHED
	20:14	11 57.435N	139 54.611E	3198m	SUNRISE
ST-16	23:43	12 00.055N	139 00.001E	5694m	CTD STARTED
4.Jun.05					
ST-16	00:03	12 00.062N	138 59.801E	5784m	CTD DEEPEST
ST-16	00:21	12 00.058N	138 59.727E	5688m	CTD FINISHED
ST-16	00:34	12 00.068N	138 59.480E	5708m	3M ORI NET STARTED
ST-16					3M ORI NET DEEPEST
ST-16	01:44	12 00.489N	138 57.155E	5778m	3M ORI NET FINISHED
ST-17	04:02	12 30.063N	138 59.883E	4701m	CTD STARTED
ST-17	04:21	12 30.085N	138 59.764E	4692m	CTD DEEPEST
ST-17	04:42	12 30.050N	138 59.645E	4694m	CTD FINISHED
ST-17	04:55	12 30.124N	138 59.542E	4696m	3M ORI NET STARTED
ST-17	05:42	12 30.262N	138 57.386E	4580m	3M ORI NET DEEPEST
ST-17	06:26	12 30.595N	138 55.985E	4587m	3M ORI NET FINISHED
ST-18	08:38	13 00.165N	138 59.954E	5324m	CTD STARTED
ST-18	09:02	13 00.464N	138 59.914E	5218m	CTD DEEPEST
	09:08	13 00.507N	138 59.933E	5277m	SUNSET
ST-18	09:23	13 00.774N	138 59.878E	5181m	CTD FINISHED
ST-18	09:35	13 01.013N	138 59.820E	4857m	3M ORI NET STARTED
ST-18	10:15	13 02.615N	138 59.082E	4753m	3M ORI NET DEEPEST
ST-18	11:19	13 04.705N	138 58.073E	4517m	3M ORI NET FINISHED
ST-19	13:14	13 30.266N	138 59.984E	4311m	CTD STARTED
ST-19	13:31	13 30.522N	138 59.999E	4256m	CTD DEEPEST
ST-19	13:44	13 30.616N	139 00.012E	4267m	CTD FINISHED
ST-19	13:55	13 30.820N	139 00.000E	4296m	3M ORI NET STARTED
ST-19	14:41	13 32.602N	139 01.067E	4642m	3M ORI NET DEEPEST
ST-19	15:45	13 34.657N	139 01.780E	3979m	3M ORI NET FINISHED
ST-20	17:34	14 00.002N	138 59.919E	5133m	3M ORI NET STARTED
ST-20	18:12	14 01.133N	139 00.390E	5176m	3M ORI NET DEEPEST
ST-20	19:02	14 02.523N	139 00.273E	5084m	3M ORI NET FINISHED
ST-20	19:17	14 02.663N	139 00.097E	5065m	CTD STARTED
ST-20	19:43	14 02.895N	138 59.887E	5058m	CTD DEEPEST
ST-20	20:03	14 03.013N	138 59.798E	4980m	CTD FINISHED
	20:14	14 03.124N	138 59.715E	4985m	SUNRISE
ST-21	22:07	14 30.139N	139 00.021E	5002m	CTD STARTED

ST-21	22:33	14 30.425N	139 00.032E	5016m	CTD DEEPEST
ST-21	22:49	14 30.632N	139 00.024E	4949m	CTD FINISHED
ST-21	22:59	14 30.809N	139 00.028E	5387m	3M ORI NET STARTED
ST-21	23:46	14 31.681N	139 01.565E	4902m	3M ORI NET DEEPEST

#### 5.Jun.05

ST-21	00:32	14 32.482N	139 02.427E	4574m	3M ORI NET FINISHED
ST-22	09:02	15 30.447N	140 59.729E	4756m	CTD STARTED
	09:04	15 30.476N	140 59.715E	4742m	SUNSET
ST-22	09:25	15 31.001N	140 59.489E	4757m	CTD DEEPEST
ST-22	09:43	15 31.187N	140 59.517E	4758m	CTD FINISHED
ST-22	09:56	15 31.509N	140 59.362E	4757m	3M ORI NET STARTED
ST-22	10:25	15 30.853N	140 58.963E	4760m	3M ORI NET DEEPEST
ST-22	11:09	15 30.397N	140 58.551E	4764m	3M ORI NET FINISHED
ST-23	13:32	15 00.277N	140 59.822E	4732m	CTD STARTED
ST-23	13:55	15 00.593N	140 59.775E	4733m	CTD DEEPEST
ST-23	14:16	15 00.834N	140 59.770E	4732m	CTD FINISHED
ST-23	14:26	15 01.021N	140 59.777E	4732m	3M ORI NET STARTED
ST-23	15:05	15 01.524N	141 00.999E	4718m	3M ORI NET DEEPEST
ST-23	15:59	15 02.587N	141 02.127E	4702m	3M ORI NET FINISHED
ST-24	18:34	14 30.098N	141 00.025E	4854m	3M ORI NET STARTED
ST-24	19:07	14 29.373N	140 59.400E	4860m	3M ORI NET DEEPEST
ST-24	19:56	14 28.894N	140 58.473E	4871m	3M ORI NET FINISHED
	20:05	14 28.957N	140 58.385E	4864m	SUNRISE
ST-24	20:10	14 29.038N	140 58.370E	5030m	CTD STARTED
ST-24	20:33	14 29.277N	140 58.432E	4863m	CTD DEEPEST
ST-24	20:55	14 29.441N	140 58.529E	4862m	CTD FINISHED
ST-25	23:14	14 00.032N	141 00.003E	4797m	CTD STARTED
ST-25	23:34	14 00.089N	141 00.119E	4799m	CTD DEEPEST
ST-25	23:51	14 00.209N	141 00.196E	4800m	CTD FINISHED

#### 6.Jun.05

ST-25	00:02	14 00.304N	141 00.197E	4798m	3M ORI NET STARTED
ST-25	00:34	13 59.411N	141 00.822E	4813m	3M ORI NET DEEPEST
ST-25	01:13	13 58.709N	141 01.357E	4826m	3M ORI NET FINISHED
ST-26	03:23	13 30.146N	141 00.007E	4682m	CTD STARTED
ST-26	03:41	13 30.312N	141 00.046E	4679m	CTD DEEPEST
ST-26	03:59	13 30.440N	141 00.043E	4676m	CTD FINISHED
ST-26	04:09	13 30.582N	141 00.028E	4679m	3M ORI NET STARTED
ST-26	04:48	13 30.721N	141 01.462E	4668m	3M ORI NET DEEPEST
ST-26	05:29	13 30.799N	141 02.354E	4641m	3M ORI NET FINISHED
ST-27	07:53	13 00.144N	141 00.060E	3836m	CTD STARTED
ST-27	08:18	13 00.532N	140 59.894E	3858m	CTD DEEPEST
ST-27	08:40	13 00.784N	140 59.864E	3906m	CTD FINISHED
ST-27	08:52	13 00.992N	140 59.725E	3959m	3M ORI NET STARTED
	09:00	13 01.138N	140 59.764E	3962m	SUNSET
ST-27	09:26	13 01.724N	141 00.595E	4130m	3M ORI NET DEEPEST



ST-27	10:24 13 03.387N	141 01.488E	4201m	3M ORI NET FINISHED
	11:23 13 02.272N	141 14.550E	4207m	ENTERD IN EEZ OF USA
ST-28	14:26 12 59.929N	141 59.983E	2953m	CTD STARTED
ST-28	14:46 13 00.013N	141 59.984E	2962m	CTD DEEPEST
ST-28	15:01 13 00.060N	141 59.975E	2968m	CTD FINISHED
ST-28	15:12 13 00.132N	141 59.923E	2977m	3M ORI NET STARTED
ST-28				3M ORI NET DEEPEST
ST-28	16:53 13 00.122N	142 02.849E	2903m	3M ORI NET FINISHED
ST-29	19:01 13 29.970N	141 59.956E	2843m	3M ORI NET STARTED
ST-29	19:36 13 31.021N	141 59.431E	2372m	3M ORI NET DEEPEST
	20:03 13 31.542N	141 59.112E	2464m	SUNRISE
ST-29	20:20 13 31.820N	141 58.933E	2695m	3M ORI NET FINISHED
ST-29	20:33 13 31.820N	141 58.829E	2698m	CTD STARTED
ST-29	20:54 13 31.861N	141 58.831E	2706m	CTD DEEPEST
ST-29	21:14 13 31.986N	141 58.686E	2765m	CTD FINISHED
ST-30	23:23 13 59.962N	141 59.761E	4225m	CTD STARTED
ST-30	23:42 14 00.036N	141 59.465E	4228m	CTD DEEPEST

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ST-30	00:01 14 00.023N	141 59.338E	4227m	CTD FINISHED
ST-30	00:13 14 00.094N	141 59.148E	4235m	3M ORI NET STARTED
ST-30	00:45 13 59.684N	141 59.745E	4222m	3M ORI NET DEEPEST
ST-30	01:18 13 59.478N	141 59.969E	4230m	3M ORI NET FINISHED
ST-31	03:35 14 30.098N	142 00.050E	4249m	CTD STARTED
ST-31	03:53 14 30.224N	141 59.924E	4241m	CTD DEEPEST
ST-31	04:11 14 30.297N	141 59.858E	4241m	CTD FINISHED
ST-31	04:28 14 30.504N	141 59.557E	4258m	3M ORI NET STARTED
ST-31	05:12 14 31.854N	141 58.029E	4331m	3M ORI NET DEEPEST
ST-31	06:01 14 33.076N	141 56.927E	4368m	3M ORI NET FINISHED
ST-32	08:01 15 00.071N	141 59.900E	4512m	CTD STARTED
ST-32	08:25 15 00.304N	141 59.815E	4513m	CTD DEEPEST
ST-32	08:42 15 00.371N	141 59.771E	4515m	CTD FINISHED
ST-32	08:53 15 00.542N	141 59.686E	4509m	3M ORI NET STARTED
	08:59 15 00.708N	141 59.608E	4511m	SUNSET
ST-32	09:25 15 01.951N	141 59.354E	4490m	3M ORI NET DEEPEST
ST-32	10:28 15 04.168N	141 58.667E	4479m	3M ORI NET FINISHED
ST-33	12:23 15 30.145N	141 59.886E	4046m	CTD STARTED
ST-33	12:41 15 30.352N	141 59.795E	4219m	CTD DEEPEST
ST-33	12:58 15 30.542N	141 59.677E	4276m	CTD FINISHED
ST-33	13:10 15 30.707N	141 59.587E	4280m	3M ORI NET STARTED
ST-33	13:45 15 31.558N	142 00.611E	4191m	3M ORI NET DEEPEST
ST-33	14:41 15 32.306N	142 01.929E	4000m	3M ORI NET FINISHED
ST-34	16:40 15 30.000N	142 30.121E	4044m	3M ORI NET STARTED
ST-34	17:25 15 29.143N	142 31.647E	4041m	3M ORI NET DEEPEST
ST-34	18:26 15 28.409N	142 32.781E	3939m	3M ORI NET FINISHED
ST-34	18:40 15 28.485N	142 32.670E	3948m	CTD STARTED

ST-34	19:02 15 28.550N	142 32.554E	3956m	CTD DEEPEST
ST-34	19:21 15 28.567N	142 32.477E	3957m	CTD FINISHED
	19:58 15 22.616N	142 31.654E	3996m	SUNRISE
ST-35	21:36 15 00.041N	142 29.960E	4158m	CTD STARTED
ST-35	21:59 15 00.057N	142 30.026E	4158m	CTD DEEPEST
ST-35	22:17 15 00.159N	142 29.887E	4159m	CTD FINISHED
ST-35	22:26 15 00.223N	142 29.819E	4166m	3M ORI NET STARTED
ST-35	22:58 14 59.744N	142 30.784E	4130m	3M ORI NET DEEPEST
ST-35	23:38 14 59.410N	142 31.520E	4066m	3M ORI NET FINISHED
8.Jun.05				
ST-36	01:13 14 45.148N	142 44.838E	3584m	CTD STARTED
ST-36	01:34 14 45.308N	142 44.781E	3595m	CTD DEEPEST
ST-36	01:43 14 45.379N	142 44.743E	3603m	CTD FINISHED
ST-36	01:51 14 45.491N	142 44.666E	3620m	3M ORI NET STARTED
ST-36	02:19 14 45.061N	142 44.733E	3597m	3M ORI NET DEEPEST
ST-36	02:46 14 45.102N	142 45.220E	3581m	3M ORI NET FINISHED
ST-37	04:31 14 29.955N	142 30.264E	3459m	CTD STARTED
ST-37	04:50 14 30.100N	142 30.310E	3454m	CTD DEEPEST
ST-37	05:09 14 30.233N	142 30.277E	3450m	CTD FINISHED
ST-37	05:23 14 30.428N	142 30.317E	3453m	3M ORI NET STARTED
ST-37	05:52 14 30.155N	142 29.593E	3506m	3M ORI NET FINISHED
ST-37	06:21 14 30.102N	142 28.922E	3534m	3M ORI NET FINISHED
ST-38	08:04 14 15.137N	142 44.935E	2031m	CTD STARTED
ST-38	08:26 14 15.164N	142 44.867E	2036m	CTD DEEPEST
ST-38	08:44 14 15.199N	142 44.816E	2046m	CTD FINISHED
ST-38	08:56 14 15.247N	142 44.777E	2060m	3M ORI NET STARTED
ST-38	09:27 14 14.587N	142 45.608E	2031m	3M ORI NET DEEPEST
ST-38	10:21 14 13.854N	142 46.473E	2056m	3M ORI NET FINISHED
ST-39	12:00 14 00.076N	142 30.175E	2604m	CTD STARTED
ST-39	12:20 14 00.191N	142 30.011E	2702m	CTD DEEPEST
ST-39	12:36 14 00.157N	142 29.959E	2703m	CTD FINISHED
ST-39	12:46 14 00.185N	142 29.866E	2703m	3M ORI NET STARTED
ST-39	13:25 13 59.193N	142 30.583E	2788m	3M ORI NET DEEPEST
ST-39	14:13 13 58.317N	142 30.988E	2782m	3M ORI NET FINISHED
ST-40	16:15 13 29.855N	142 30.134E	2313m	3M ORI NET STARTED
ST-40	16:52 13 28.851N	142 31.093E	2469m	3M ORI NET DEEPEST
ST-40	17:34 13 28.063N	142 31.634E	2254m	3M ORI NET FINISHED
ST-40	17:46 13 28.062N	142 31.549E	2269m	CTD STARTED
ST-40	18:09 13 28.067N	142 31.409E	2308m	CTD DEEPEST
ST-40	18:27 13 28.092N	142 31.341E	2341m	CTD FINISHED
	20:02 13 06.562N	142 30.246E	3848m	SUNRISE
ST-41	20:31 13 00.211N	142 30.049E	2622m	3M ORI NET STARTED
ST-41	21:00 12 59.608N	142 30.646E	3183m	3M ORI NET DEEPEST
ST-41	21:28 12 59.225N	142 30.940E	2745m	3M ORI NET FINISHED
ST-41	21:42 12 59.292N	142 30.796E	2981m	CTD STARTED

ST-41	22:02	12 59.424N	142 30.622E	3026m	CTD DEEPEST
ST-41	22:17	12 59.368N	142 30.608E	3011m	CTD FINISHED
ST-41	23:39	12 59.425N	142 29.720E	2871m	STARTED SETTING OF UPWELLING SYSTEM

#### 9.Jun.05

ST-41	02:03	12 59.503N	142 29.000E	3271m	FINISHED SETTING OF UPWELLING SYSTEM
ST-42	03:41	13 00.066N	142 14.918E	2275m	CTD STARTED
ST-42	04:01	13 00.181N	142 14.821E	2296m	CTD DEEPEST
ST-42	04:17	13 00.288N	142 14.774E	2332m	CTD FINISHED
ST-42	04:30	13 00.313N	142 14.831E	2360m	3M ORI NET STARTED
ST-42	05:12	13 00.515N	142 16.485E	2425m	3M ORI NET DEEPEST
ST-42	05:58	13 00.807N	142 17.757E	2398m	3M ORI NET FINISHED
ST-43	08:06	13 30.006N	142 14.966E	3160m	CTD STARTED
ST-43	08:30	13 30.150N	142 15.038E	3162m	CTD DEEPEST
ST-43	08:49	13 30.276N	142 14.999E	3160m	CTD FINISHED
	08:57	13 30.342N	142 14.984E	3152m	SUNSET
ST-43	08:59	13 30.380N	142 14.974E	3152m	3M ORI NET STARTED
ST-43	09:36	13 31.885N	142 14.754E	3182m	3M ORI NET DEEPEST
ST-43	10:27	13 33.466N	142 14.391E	3302m	3M ORI NET FINISHED
ST-44	11:25	13 45.144N	142 14.888E	3074m	3M ORI NET STARTED
ST-44	12:09	13 46.998N	142 13.838E	3420m	3M ORI NET DEEPEST
ST-44	13:00	13 48.479N	142 12.832E	3442m	3M ORI NET FINISHED
ST-45	14:01	13 59.913N	142 14.919E	3577m	CTD STARTED
ST-45	14:23	14 00.131N	142 14.646E	3564m	CTD DEEPEST
ST-45	14:38	14 00.213N	142 14.520E	3568m	CTD FINISHED
ST-45	14:51	14 00.388N	142 14.312E	3557m	3M ORI NET STARTED
ST-45	15:33	14 02.232N	142 13.860E	3498m	3M ORI NET DEEPEST
ST-45	16:24	14 03.848N	142 13.203E	3676m	3M ORI NET FINISHED
ST-46	18:18	13 45.185N	142 15.001E	3079m	3M ORI NET STARTED
ST-46	18:55	13 47.044N	142 14.801E	3177m	3M ORI NET DEEPEST
ST-46	19:47	13 48.905N	142 14.293E	3398m	3M ORI NET FINISHED
	20:02	13 50.703N	142 14.171E	3177m	SUNRISE
ST-47	21:33	14 15.058N	142 14.984E	4092m	3M ORI NET STARTED
ST-47	22:12	14 17.214N	142 14.862E	4035m	3M ORI NET DEEPEST
ST-47	23:08	14 19.341N	142 14.396E	3997m	3M ORI NET FINISHED

#### 10.Jun.05

ST-48	00:03	14 30.089N	142 15.039E	4092m	CTD STARTED
ST-48	00:23	14 30.309N	142 14.957E	4086m	CTD DEEPEST
ST-48	00:39	14 30.469N	142 14.873E	4084m	CTD FINISHED
ST-48	00:51	14 30.611N	142 14.816E	4088m	3M ORI NET STARTED
ST-48	01:27	14 31.984N	142 15.612E	4029m	3M ORI NET DEEPEST
ST-48	02:15	14 33.382N	142 16.303E	4025m	3M ORI NET FINISHED
ST-49	03:12	14 45.117N	142 15.039E	4303m	3M ORI NET STARTED
ST-49	03:51	14 46.209N	142 16.059E	4334m	3M ORI NET DEEPEST
ST-49	04:35	14 47.155N	142 16.745E	4326m	3M ORI NET FINISHED
ST-50	05:48	15 00.101N	142 15.135E	4336m	CTD STARTED

ST-50	06:13	15 00.156N	142 15.203E	4340m	CTD DEEPEST
ST-50	06:32	15 00.143N	142 15.186E	4340m	CTD FINISHED
ST-50	06:43	15 00.162N	142 15.162E	4343m	3M ORI NET STARTED
ST-50	07:16	15 01.032N	142 15.772E	4392m	3M ORI NET DEEPEST
ST-50	08:03	15 01.963N	142 16.126E	4340m	3M ORI NET FINISHED
	08:59	15 00.122N	142 28.943E	4164m	SUNSET
ST-51	09:07	14 59.994N	142 29.651E	4168m	3M ORI NET STARTED
ST-51	09:41	14 59.034N	142 30.456E	4148m	3M ORI NET DEEPEST
ST-51	10:23	14 58.198N	142 31.133E	4094m	3M ORI NET FINISHED
ST-52	12:20	14 30.004N	142 30.044E	3462m	3M ORI NET STARTED
ST-52					3M ORI NET DEEPEST
ST-52	13:34	14 27.955N	142 30.617E	3554m	3M ORI NET FINISHED
ST-53	14:36	14 14.919N	142 29.899E	3502m	3M ORI NET STARTED
ST-53	15:09	14 13.817N	142 30.305E	3426m	3M ORI NET DEEPEST
ST-53	15:52	14 13.007N	142 30.554E	3372m	3M ORI NET FINISHED
ST-54	16:59	13 59.888N	142 30.037E	2732m	3M ORI NET STARTED
ST-54	17:31	13 58.782N	142 30.345E	2801m	3M ORI NET DEEPEST
ST-54	18:14	13 57.760N	142 30.451E	2817m	3M ORI NET FINISHED
ST-55	19:15	13 45.003N	142 29.978E	2436m	3M ORI NET STARTED
ST-55	19:47	13 44.043N	142 30.222E	2452m	3M ORI NET DEEPEST
	20:01	13 43.752N	142 30.214E	2505m	SUNRISE
ST-55	20:25	13 43.271N	142 30.142E	2583m	3M ORI NET FINISHED
ST-56	21:26	13 30.197N	142 29.971E	2267m	3M ORI NET STARTED
ST-56	21:58	13 29.151N	142 29.862E	2282m	3M ORI NET DEEPEST
ST-56	22:36	13 28.361N	142 29.513E	2140m	3M ORI NET FINISHED
<b>11.Jun.05</b>					
ST-57	00:36	13 00.081N	142 29.976E	2637m	3M ORI NET STARTED
ST-57	01:12	12 58.982N	142 30.164E	3198m	3M ORI NET DEEPEST
ST-57	01:52	12 58.077N	142 29.904E	3049m	3M ORI NET FINISHED
	03:23	12 51.764N	142 18.397E	3754m	STARTED RETRIEVING OF UPWELLING SYSTEM
	04:00	12 51.765N	142 18.211E	3715m	BUOY ON DECK
	05:42	12 52.015N	142 17.950E	3781m	STARTED SETTING OF UPWELLING SYSTEM
	06:12	12 52.124N	142 17.961E	3792m	FINISHED SETTING OF UPWELLING SYSTEM
ST-58	08:34	13 00.142N	142 44.670E	3453m	CTD STARTED
	08:55	13 00.412N	142 44.336E	3460m	SUNSET
ST-58	09:00	13 00.478N	142 44.269E	3455m	CTD DEEPEST
ST-58	09:14	13 00.621N	142 44.196E	3441m	CTD FINISHED
ST-58	09:23	13 00.690N	142 44.010E	3450m	3M ORI NET STARTED
ST-58	09:56	13 01.926N	142 43.983E	3399m	3M ORI NET DEEPEST
ST-58	10:37	13 03.243N	142 43.764E	3424m	3M ORI NET FINISHED
ST-59	12:35	13 29.870N	142 44.889E	3100m	CTD STARTED
ST-59	12:53	13 29.834N	142 44.766E	3115m	CTD DEEPEST
ST-59	13:06	13 29.820N	142 44.744E	3164m	CTD FINISHED
ST-59	13:16	13 29.798N	142 44.589E	3142m	3M ORI NET STARTED
ST-59	13:51	13 29.958N	142 45.412E	3096m	3M ORI NET DEEPEST

ST-59	14:29	13 29.911N	142 46.037E	3208m	3M ORI NET FINISHED
ST-60	15:46	13 44.961N	142 44.800E	3208m	CTD STARTED
ST-60	16:08	13 45.100N	142 44.512E	3054m	CTD DEEPEST
ST-60	16:23	13 45.160N	142 44.406E	3028m	CTD FINISHED
ST-60	16:36	13 45.220N	142 44.213E	3066m	3M ORI NET STARTED
ST-60	17:15	13 46.239N	142 44.804E	3260m	3M ORI NET DEEPEST
ST-60	17:57	13 47.111N	142 44.868E	3157m	3M ORI NET FINISHED
ST-61	18:58	13 59.956N	142 44.923E	1591m	3M ORI NET STARTED
ST-61	19:32	14 00.894N	142 45.296E	1682m	3M ORI NET DEEPEST
	20:00	14 01.536N	142 45.387E	1815m	SUNRISE
ST-61	20:12	14 01.804N	142 45.399E	1929m	3M ORI NET FINISHED
ST-61	20:26	14 01.834N	142 45.177E	1952m	CTD STARTED
ST-61	20:48	14 01.890N	142 44.924E	1992m	CTD DEEPEST
ST-61	21:00	14 01.910N	142 44.812E	2026m	CTD FINISHED
ST-62	22:09	14 14.983N	142 44.977E	2053m	3M ORI NET STARTED
ST-62					3M ORI NET DEEPEST
ST-62	23:25	14 17.098N	142 45.661E	2303m	3M ORI NET FINISHED
ST-62	23:56	14 15.158N	142 44.827E	2042m	CTD STARTED
12.Jun.05					
ST-62	00:15	14 15.318N	142 44.597E	2184m	CTD DEEPEST
ST-62	00:26	14 15.379N	142 44.444E	2146m	CTD FINISHED
ST-63	01:44	14 30.083N	142 44.968E	2972m	CTD STARTED
ST-63	02:03	14 30.320N	142 44.919E	3004m	CTD DEEPEST
ST-63	02:14	14 30.419N	142 44.881E	3038m	CTD FINISHED
ST-63	02:24	14 30.535N	142 44.774E	3034m	3M ORI NET STARTED
ST-63	02:56	14 31.073N	142 45.879E	2979m	3M ORI NET DEEPEST
ST-63	03:37	14 31.621N	142 46.793E	2972m	3M ORI NET FINISHED
ST-64	04:42	14 45.004N	142 45.050E	3581m	3M ORI NET STARTED
ST-64	05:17	14 45.538N	142 46.353E	3490m	3M ORI NET DEEPEST
ST-64	05:59	14 46.296N	142 47.191E	3528m	3M ORI NET FINISHED
ST-65	07:12	14 59.809N	142 44.888E	3010m	CTD STARTED
ST-65	07:38	14 59.833N	142 44.766E	3037m	CTD DEEPEST
ST-65	07:51	14 59.839N	142 44.675E	3051m	CTD FINISHED
ST-65	08:03	14 59.810N	142 44.543E	3057m	3M ORI NET STARTED
ST-65	08:38	15 00.499N	142 45.289E	3213m	3M ORI NET DEEPEST
	08:59	15 00.789N	142 45.556E	3273m	SUNSET
ST-65	09:20	15 01.084N	142 45.789E	3276m	3M ORI NET FINISHED
ST-66	13:30	13 59.962N	142 59.875E	4284m	CTD STARTED
ST-66	13:49	13 59.957N	142 59.811E	4286m	CTD DEEPEST
ST-66	14:04	13 59.964N	142 59.706E	4288m	CTD FINISHED
	19:55	13 32.979N	144 18.101E	3156m	SUNRISE

# 30.Jun.05

	08:58	13°57.109N	143°26.206E	3458m	SUNSET
ST-67	11:50	14°15.073N	142°45.147E	2064m	3M ORI NET STARTED
ST-67	12:20	14°14.516N	142°45.864E	2000m	3M ORI NET DEEPEST
ST-67	12:54	14°14.008N	142°46.459E	1996m	3M ORI NET FINISHED
ST-68	14:03	13°59.964N	142°45.093E	1546m	3M ORI NET STARTED
ST-68	14:43	13°59.285N	142°46.075E	1637m	3M ORI NET DEEPEST
ST-68	15:19	13°58.697N	142°46.258E	1578m	3M ORI NET FINISHED
ST-69	16:29	13°45.081N	142°45.086E	3277m	3M ORI NET STARTED
ST-69	17:02	13°45.757N	142°45.758E	3293m	3M ORI NET DEEPEST
ST-69	17:43	13°46.619N	142°46.044E	3428m	3M ORI NET FINISHED
ST-70	19:01	13°45.136N	142°29.794E	2469m	3M ORI NET STARTED
ST-70	19:34	13°46.218N	142°30.163E	2331m	3M ORI NET DEEPEST
ST-70	20:15	13°47.079N	142°30.270E	2280m	3M ORI NET FINISHED
ST-71	21:18	14°00.147N	142°30.207E	2708m	3M ORI NET STARTED
ST-71	21:50	14°01.059N	142°30.908E	2753m	3M ORI NET DEEPEST
ST-71	22:33	14°01.972N	142°31.248E	2868m	3M ORI NET FINISHED
ST-72	23:34	14°14.997N	142°29.983E	3490m	3M ORI NET STARTED

# 1.Jul.05

ST-72	00:04	14°15.738N	142°30.896E	3484m	3M ORI NET DEEPEST
ST-72	00:43	14°16.493N	142°31.641E	3434m	3M ORI NET FINISHED
ST-73	02:00	14°14.936N	142°15.202E	4090m	3M ORI NET STARTED
ST-73	02:31	14°15.626N	142°16.165E	4078m	3M ORI NET DEEPEST
ST-73	03:13	14°16.456N	142°16.910E	3976m	3M ORI NET FINISHED
ST-74	04:32	14°00.058N	142°15.073E	3529m	3M ORI NET STARTED
ST-74	05:03	14°00.406N	142°16.118E	3381m	3M ORI NET DEEPEST
ST-74	05:45	14°00.820N	142°16.977E	3122m	3M ORI NET FINISHED
ST-75	07:01	13°45.070N	142°15.018E	3087m	3M ORI NET STARTED
ST-75	07:29	13°44.248N	142°15.185E	3131m	3M ORI NET DEEPEST
ST-75	08:04	13°43.607N	142°15.174E	3134m	3M ORI NET FINISHED
ST-76	08:42	13°37.545N	142°14.963E	3210m	3M ORI NET STARTED
	09:03	13°37.510N	142°15.681E	3200m	SUNSET
ST-76	09:12	13°37.486N	142°16.078E	3178m	3M ORI NET DEEPEST
ST-76	09:52	13°37.319N	142°16.937E	3163m	3M ORI NET FINISHED
ST-77	10:54	13°37.539N	142°29.925E	2747m	3M ORI NET STARTED
ST-77	11:22	13°37.814N	142°30.777E	2684m	3M ORI NET DEEPEST
ST-77	11:58	13°38.047N	142°31.288E	2639m	3M ORI NET FINISHED
ST-78	13:03	13°37.498N	142°44.918E	3973m	3M ORI NET STARTED
ST-78	13:30	13°37.734N	142°45.766E	3754m	3M ORI NET DEEPEST
ST-78	14:06	13°37.979N	142°46.329E	3491m	3M ORI NET FINISHED
ST-79	15:18	13°52.530N	142°44.989E	2046m	3M ORI NET STARTED
ST-79	15:52	13°53.098N	142°45.808E	2088m	3M ORI NET DEEPEST
ST-79	16:30	13°53.724N	142°46.722E	2263m	3M ORI NET FINISHED
ST-80	17:38	14°07.523N	142°45.045E	1974m	3M ORI NET STARTED
ST-80	18:11	14°08.117N	142°46.098E	1760m	3M ORI NET DEEPEST
ST-80	18:57	14°08.411N	142°47.344E	1177m	3M ORI NET FINISHED

	20:05	14°07.560N	142°31.332E	3209m	SUNRISE
ST-81	20:16	14°07.535N	142°29.849E	3178m	3M ORI NET STARTED
ST-81	20:49	14°06.707N	142°30.494E	3180m	3M ORI NET DEEPEST
ST-81	21:34	14°06.049N	142°30.948E	3114m	3M ORI NET FINISHED
ST-82	22:40	13°52.587N	142°30.035E	2526m	3M ORI NET STARTED
ST-82	23:11	13°52.450N	142°31.101E	2588m	3M ORI NET DEEPEST
ST-82	23:50	13°52.334N	142°32.248E	2632m	3M ORI NET FINISHED

## 2.Jul.05

ST-83	01:09	13°52.486N	142°14.936E	3495m	3M ORI NET STARTED
ST-83	01:39	13°52.846N	142°15.929E	3527m	3M ORI NET DEEPEST
ST-83	02:22	13°53.157N	142°17.203E	3534m	3M ORI NET FINISHED
ST-84	03:30	14°07.510N	142°15.057E	3912m	3M ORI NET STARTED
ST-84	04:01	14°07.055N	142°16.115E	3815m	3M ORI NET DEEPEST
ST-84	04:43	14°06.050N	142°16.934E	3665m	3M ORI NET FINISHED
ST-85	06:00	14°22.485N	142°15.019E	4033m	3M ORI NET STARTED
ST-85	06:29	14°23.077N	142°15.978E	4026m	3M ORI NET DEEPEST
ST-85	07:11	14°24.024N	142°17.012E	3984m	3M ORI NET FINISHED
ST-86	08:09	14°22.538N	142°30.048E	3636m	3M ORI NET STARTED
ST-86	08:44	14°23.566N	142°31.204E	3617m	3M ORI NET DEEPEST
	09:03	14°24.037N	142°31.641E	3597m	SUNSET
ST-86	09:32	14°24.703N	142°32.334E	3549m	3M ORI NET FINISHED
ST-87	10:30	14°22.507N	142°45.044E	2641m	3M ORI NET STARTED
ST-87	11:04	14°22.081N	142°46.431E	2537m	3M ORI NET DEEPEST
ST-87	11:47	14°21.575N	142°47.774E	2481m	3M ORI NET FINISHED
ST-88	12:55	14°07.503N	142°45.065E	1978m	3M ORI NET STARTED
ST-88	13:25	14°06.936N	142°45.929E	1746m	3M ORI NET DEEPEST
ST-88	14:01	14°06.561N	142°46.757E	1353m	3M ORI NET FINISHED
ST-89	15:12	13°52.516N	142°45.014E	2043m	3M ORI NET STARTED
ST-89	15:45	13°53.042N	142°45.853E	2086m	3M ORI NET DEEPEST
ST-89	16:24	13°53.829N	142°46.610E	2295m	3M ORI NET FINISHED
ST-90	17:44	13°52.516N	142°29.995E	2534m	3M ORI NET STARTED
ST-90	18:16	13°52.911N	142°31.009E	2650m	3M ORI NET DEEPEST
ST-90	18:54	13°53.380N	142°31.819E	2682m	3M ORI NET FINISHED
	20:06	13°52.371N	142°15.051E	3476m	SUNRISE
ST-91	20:10	13°52.562N	142°14.897E	3509m	3M ORI NET STARTED
ST-91	20:45	13°53.646N	142°15.893E	3586m	3M ORI NET DEEPEST
ST-91	21:28	13°54.698N	142°16.713E	3640m	3M ORI NET FINISHED
ST-92	22:29	14°07.548N	142°15.003E	3915m	3M ORI NET STARTED
ST-92	23:00	14°07.971N	142°16.047E	3892m	3M ORI NET DEEPEST
ST-92	23:38	14°08.353N	142°17.224E	3948m	3M ORI NET FINISHED

## 3.Jul.05

ST-93	00:36	14°07.532N	142°29.955E	3183m	3M ORI NET STARTED
ST-93	01:06	14°07.593N	142°31.005E	3239m	3M ORI NET DEEPEST
ST-93	01:44	14°07.684N	142°32.190E	3016m	3M ORI NET FINISHED
ST-94	02:51	14°15.028N	142°44.981E	2045m	3M ORI NET STARTED
ST-94	03:20	14°14.902N	142°45.835E	2163m	3M ORI NET DEEPEST

ST-94	03:58	14°14.742N	142°46.823E	2040m	3M ORI NET FINISHED
ST-95	05:10	14°00.022N	142°45.011E	1568m	3M ORI NET STARTED
ST-95	05:43	13°59.517N	142°46.021E	1646m	3M ORI NET DEEPEST
ST-95	06:25	13°58.965N	142°46.944E	1985m	3M ORI NET FINISHED
ST-96	07:31	13°45.069N	142°44.975E	3276m	3M ORI NET STARTED
ST-96	08:03	13°44.259N	142°45.479E	3479m	3M ORI NET DEEPEST
ST-96	08:42	13°43.369N	142°46.148E	3964m	3M ORI NET FINISHED
	09:01	13°43.702N	142°43.359E	2987m	SUNSET
ST-97	09:55	13°44.963N	142°29.893E	2454m	3M ORI NET STARTED
ST-97	10:26	13°45.658N	142°30.785E	2348m	3M ORI NET DEEPEST
ST-97	11:05	13°46.475N	142°31.583E	2258m	3M ORI NET FINISHED
ST-98	12:09	13°59.993N	142°30.035E	2719m	3M ORI NET STARTED
ST-98	12:41	14°00.719N	142°30.668E	2748m	3M ORI NET DEEPEST
ST-98	13:17	14°01.448N	142°31.129E	2850m	3M ORI NET FINISHED
ST-99	14:17	14°15.011N	142°30.049E	3489m	3M ORI NET STARTED
ST-99	14:48	14°15.601N	142°30.906E	3482m	3M ORI NET DEEPEST
ST-99	15:31	14°16.277N	142°31.777E	3346m	3M ORI NET FINISHED
ST-100	16:50	14°15.049N	142°14.909E	4089m	3M ORI NET STARTED
ST-100	17:22	14°15.783N	142°15.680E	4066m	3M ORI NET DEEPEST
ST-100	18:03	14°16.561N	142°16.506E	4005m	3M ORI NET FINISHED
ST-101	19:21	14°00.011N	142°15.000E	3564m	3M ORI NET STARTED
ST-101	19:51	14°00.146N	142°15.870E	3434m	3M ORI NET DEEPEST
	20:06	14°00.185N	142°16.245E	3350m	SUNRISE
ST-101	20:30	14°00.240N	142°16.730E	3294m	3M ORI NET FINISHED
ST-102	21:42	13°44.953N	142°15.004E	3095m	3M ORI NET STARTED
ST-102	22:13	13°45.123N	142°16.067E	3067m	3M ORI NET DEEPEST
ST-102	22:52	13°45.444N	142°17.029E	3152m	3M ORI NET FINISHED
ST-103	23:37	13°37.523N	142°15.032E	3198m	3M ORI NET STARTED
<b>4.Jul.05</b>					
ST-103	00:08	13°37.647N	142°16.079E	3180m	3M ORI NET DEEPEST
ST-103	00:45	13°37.755N	142°17.161E	3171m	3M ORI NET FINISHED
ST-104	01:45	13°37.562N	142°29.889E	2750m	3M ORI NET STARTED
ST-104	02:17	13°37.994N	142°30.788E	2689m	3M ORI NET DEEPEST
ST-104	02:54	13°38.659N	142°31.645E	2614m	3M ORI NET FINISHED
ST-105	04:00	13°37.508N	142°45.029E	3960m	3M ORI NET STARTED
ST-105	04:30	13°38.009N	142°45.917E	3638m	3M ORI NET DEEPEST
ST-105	05:07	13°38.584N	142°46.737E	3615m	3M ORI NET FINISHED
ST-106	06:12	13°52.558N	142°45.004E	2048m	3M ORI NET STARTED
ST-106	06:42	13°52.675N	142°45.918E	2066m	3M ORI NET DEEPEST
ST-106	07:15	13°52.585N	142°46.562E	2118m	3M ORI NET FINISHED
ST-107	08:22	14°07.556N	142°45.004E	1988m	3M ORI NET STARTED
ST-107	08:54	14°08.292N	142°45.892E	1829m	3M ORI NET DEEPEST
	09:01	14°08.437N	142°46.046E	1780m	SUNSET
ST-107	09:34	14°09.126N	142°46.783E	1717m	3M ORI NET FINISHED
ST-108	10:50	14°07.357N	142°30.005E	3219m	3M ORI NET STARTED
ST-108	11:22	14°06.924N	142°31.174E	3246m	3M ORI NET DEEPEST



ST-108	12:04	14°06.523N	142°32.411E	3025m	3M ORI NET FINISHED
ST-109	13:11	13°52.551N	142°29.993E	2530m	3M ORI NET STARTED
ST-109	13:42	13°52.283N	142°30.946E	2539m	3M ORI NET DEEPEST
ST-109	14:20	13°52.024N	142°31.724E	2601m	3M ORI NET FINISHED
ST-110	15:37	13°52.517N	142°14.941E	3494m	3M ORI NET STARTED
ST-110	16:09	13°52.796N	142°15.963E	3517m	3M ORI NET DEEPEST
ST-110	16:51	13°53.005N	142°16.991E	3521m	3M ORI NET FINISHED
ST-111	17:59	14°07.581N	142°14.954E	3922m	3M ORI NET STARTED
ST-111	18:32	14°07.985N	142°15.996E	3890m	3M ORI NET DEEPEST
ST-111	19:14	14°08.451N	142°17.125E	3958m	3M ORI NET FINISHED
	20:08	14°20.754N	142°15.189E	3968m	SUNRISE
ST-112	20:19	14°22.621N	142°15.026E	4032m	3M ORI NET STARTED
ST-112	20:53	14°22.802N	142°16.204E	4012m	3M ORI NET DEEPEST
ST-112	21:35	14°22.944N	142°17.347E	3972m	3M ORI NET FINISHED
ST-113	22:34	14°22.534N	142°29.963E	3640m	3M ORI NET STARTED
ST-113	23:06	14°22.980N	142°31.100E	3609m	3M ORI NET DEEPEST
ST-113	23:48	14°23.543N	142°32.176E	3573m	3M ORI NET FINISHED
<b>5.Jul.05</b>					
ST-114	00:48	14°22.516N	142°44.973E	2633m	3M ORI NET STARTED
ST-114	01:19	14°22.375N	142°46.034E	2629m	3M ORI NET DEEPEST
ST-114	02:01	14°22.247N	142°47.245E	2698m	3M ORI NET FINISHED
ST-115	03:14	14°07.503N	142°45.030E	1977m	3M ORI NET STARTED
ST-115	03:45	14°07.753N	142°46.082E	1680m	3M ORI NET DEEPEST
ST-115	04:26	14°08.212N	142°47.190E	1219m	3M ORI NET FINISHED
ST-116	05:49	13°52.515N	142°45.141E	2023m	3M ORI NET STARTED
ST-116	06:13	13°52.563N	142°46.061E	2071m	3M ORI NET DEEPEST
ST-116	06:50	13°52.675N	142°46.954E	2314m	3M ORI NET FINISHED
ST-117	08:06	13°52.503N	142°30.016E	2534m	3M ORI NET STARTED
ST-117	08:38	13°52.434N	142°31.427E	2605m	3M ORI NET DEEPEST
	09:02	13°52.387N	142°32.220E	2639m	SUNSET
ST-117	09:20	13°52.317N	142°32.717E	2644m	3M ORI NET FINISHED
ST-118	10:42	13°52.626N	142°15.042E	3477m	3M ORI NET STARTED
ST-118	11:14	13°52.945N	142°16.212E	3474m	3M ORI NET DEEPEST
ST-118	11:55	13°53.267N	142°17.466E	3568m	3M ORI NET FINISHED
ST-119	13:02	14°07.502N	142°14.999E	3916m	3M ORI NET STARTED
ST-119	13:32	14°07.536N	142°15.816E	3857m	3M ORI NET DEEPEST
ST-119	14:10	14°07.480N	142°16.468E	3859m	3M ORI NET FINISHED
ST-120	15:18	14°07.552N	142°30.028E	3232m	3M ORI NET STARTED
ST-120	15:48	14°07.806N	142°30.938E	3303m	3M ORI NET DEEPEST
ST-120	16:30	14°08.569N	142°31.732E	2994m	3M ORI NET FINISHED
ST-121	17:36	14°11.288N	142°44.986E	2097m	3M ORI NET STARTED
ST-121	18:09	14°12.100N	142°45.758E	1950m	3M ORI NET DEEPEST
ST-121	18:53	14°12.981N	142°46.545E	1977m	3M ORI NET FINISHED
	20:08	13°56.519N	142°44.921E	1640m	SUNRISE
ST-122	20:12	13°56.208N	142°44.975E	1631m	3M ORI NET STARTED
ST-122	20:47	13°56.074N	142°46.014E	1940m	3M ORI NET DEEPEST

ST-122	21:33	13°55.981N	142°46.763E	2124m	3M ORI NET FINISHED
ST-123	22:44	13°41.281N	142°44.985E	3938m	3M ORI NET STARTED
ST-123	23:16	13°41.596N	142°45.801E	4190m	3M ORI NET DEEPEST
ST-123	23:50	13°41.987N	142°46.525E	4359m	3M ORI NET FINISHED
<b>6.Jul.05</b>					
ST-124	01:03	13°41.331N	142°29.934E	2601m	3M ORI NET STARTED
ST-124	01:32	13°41.915N	142°30.585E	2534m	3M ORI NET DEEPEST
ST-124	02:08	13°42.674N	142°31.233E	2507m	3M ORI NET FINISHED
ST-125	03:20	13°41.248N	142°14.977E	3229m	3M ORI NET STARTED
ST-125	03:51	13°41.855N	142°15.928E	3166m	3M ORI NET DEEPEST
ST-125	04:34	13°42.219N	142°17.220E	3142m	3M ORI NET FINISHED
ST-126	05:52	13°45.002N	142°00.097E	3873m	3M ORI NET STARTED
ST-126	06:27	13°45.090N	142°01.542E	3920m	3M ORI NET DEEPEST
ST-126	07:12	13°45.215N	142°03.022E	3779m	3M ORI NET FINISHED
ST-127	08:27	14°00.058N	142°00.183E	4230m	3M ORI NET STARTED
ST-127	08:59	14°01.172N	142°00.822E	4239m	3M ORI NET DEEPEST
	09:05	14°01.305N	142°00.942E	4242m	SUNSET
ST-127	09:41	14°01.959N	142°01.816E	4219m	3M ORI NET FINISHED
ST-128	10:43	14°15.024N	142°00.029E	4345m	3M ORI NET STARTED
ST-128	11:16	14°15.150N	142°01.122E	4324m	3M ORI NET DEEPEST
ST-128	11:56	14°15.299N	142°02.149E	4315m	3M ORI NET FINISHED
ST-129	12:58	14°11.262N	142°14.912E	4102m	3M ORI NET STARTED
ST-129	13:30	14°10.960N	142°15.969E	4096m	3M ORI NET DEEPEST
ST-129	14:12	14°10.733N	142°16.913E	4054m	3M ORI NET FINISHED
ST-130	15:22	13°56.277N	142°15.023E	3732m	3M ORI NET STARTED
ST-130	15:53	13°56.769N	142°15.832E	3704m	3M ORI NET DEEPEST
ST-130	16:36	13°57.501N	142°16.659E	3620m	3M ORI NET FINISHED
ST-131	17:42	13°56.263N	142°29.999E	2884m	3M ORI NET STARTED
ST-131	18:12	13°56.730N	142°30.808E	2766m	3M ORI NET DEEPEST
ST-131	18:55	13°57.211N	142°31.715E	2734m	3M ORI NET FINISHED
ST-132	20:00	14°11.241N	142°29.938E	3381m	3M ORI NET STARTED
	20:07	14°11.242N	142°29.988E	3371m	SUNRISE
ST-132	20:30	14°11.101N	142°30.681E	3149m	3M ORI NET DEEPEST
ST-132	21:07	14°10.924N	142°31.251E	2909m	3M ORI NET FINISHED
ST-133	21:53	14°03.824N	142°29.903E	2900m	3M ORI NET STARTED
ST-133	22:23	14°04.122N	142°30.647E	2927m	3M ORI NET DEEPEST
ST-133	22:59	14°04.523N	142°31.339E	2971m	3M ORI NET FINISHED
<b>7.Jul.05</b>					
ST-134	00:14	13°48.693N	142°30.029E	2210m	3M ORI NET STARTED
ST-134	00:45	13°48.856N	142°31.064E	2146m	3M ORI NET DEEPEST
ST-134	01:23	13°49.118N	142°32.145E	2285m	3M ORI NET FINISHED
ST-135	02:23	13°48.780N	142°45.037E	3040m	3M ORI NET STARTED
ST-135	02:52	13°48.965N	142°46.007E	3419m	3M ORI NET DEEPEST
ST-135	03:30	13°49.209N	142°46.966E	3573m	3M ORI NET FINISHED
ST-136	04:38	14°03.818N	142°44.990E	2182m	3M ORI NET STARTED
ST-136	05:08	14°04.305N	142°45.769E	2024m	3M ORI NET DEEPEST

ST-136	05:47	14°04.720N	142°46.682E	1738m	3M ORI NET FINISHED
ST-137	06:24	14°06.767N	142°52.164E	1652m	3M ORI NET STARTED
ST-137	06:57	14°07.130N	142°53.290E		3M ORI NET DEEPEST
ST-137	07:39	14°07.487N	142°54.286E	2161m	3M ORI NET FINISHED
ST-138	09:01	14°10.071N	142°59.524E	3397m	CTD STARTED
	09:01	14°10.071N	142°59.524E	3379m	SUNSET
ST-138	09:22	14°10.200N	142°59.371E	3368m	CTD DEEPEST
ST-138	09:45	14°10.303N	142°59.277E	3285m	CTD FINISHED
ST-138	09:57	14°10.368N	142°59.088E	3211m	3M ORI NET STARTED
ST-138	10:28	14°10.240N	142°59.944E	3582m	3M ORI NET DEEPEST
ST-138	11:03	14°10.114N	143°00.716E	3973m	3M ORI NET FINISHED
ST-139	12:07	14°19.894N	142°50.758E	2133m	3M ORI NET STARTED
ST-139	12:38	14°20.189N	142°51.724E	2245m	3M ORI NET DEEPEST
ST-139	13:16	14°20.507N	142°52.590E	2158m	3M ORI NET FINISHED
ST-140	13:57	14°18.695N	142°45.031E	2437m	3M ORI NET STARTED
ST-140	14:29	14°19.015N	142°46.168E	2420m	3M ORI NET DEEPEST
ST-140	15:19	14°19.426N	142°47.439E	2424m	3M ORI NET FINISHED
ST-141	16:38	14°18.785N	142°30.008E	3559m	3M ORI NET STARTED
ST-141	17:09	14°19.159N	142°30.919E	3523m	3M ORI NET DEEPEST
ST-141	17:53	14°19.670N	142°31.953E	3526m	3M ORI NET FINISHED
ST-142	19:13	14°15.201N	142°14.936E	4096m	3M ORI NET STARTED
ST-142	19:43	14°15.586N	142°15.751E	4068m	3M ORI NET DEEPEST
	20:08	14°15.857N	142°16.310E	4061m	SUNRISE
ST-142	20:21	14°16.042N	142°16.553E	4021m	3M ORI NET FINISHED
ST-143	21:35	14°15.121N	141°59.989E	4347m	3M ORI NET STARTED
ST-143	22:13	14°15.561N	142°01.248E	4321m	3M ORI NET DEEPEST
ST-143	22:57	14°16.239N	142°02.345E	4322m	3M ORI NET FINISHED
<b>8.Jul.05</b>					
ST-144	00:14	14°00.079N	142°00.053E	4237m	3M ORI NET STARTED
ST-144	00:48	14°00.057N	142°01.160E	4204m	3M ORI NET DEEPEST
ST-144	01:24	14°00.107N	142°02.055E	4184m	3M ORI NET FINISHED
ST-145	02:36	13°45.037N	142°00.076E	3873m	3M ORI NET STARTED
ST-145	03:07	13°44.661N	142°01.234E	3896m	3M ORI NET DEEPEST
ST-145	03:49	13°43.984N	142°02.328E	3774m	3M ORI NET FINISHED
ST-146	04:51	13°45.010N	142°15.003E	3090m	3M ORI NET STARTED
ST-146	05:24	13°44.661N	142°16.022E	3080m	3M ORI NET DEEPEST
ST-146	06:02	13°44.319N	142°16.996E	3129m	3M ORI NET FINISHED
ST-147	07:15	14°00.014N	142°14.992E	3536m	3M ORI NET STARTED
ST-147	07:52	13°59.910N	142°16.536E	3445m	3M ORI NET DEEPEST
ST-147	08:38	13°59.774N	142°18.003E	3247m	3M ORI NET FINISHED
	09:08	13°54.053N	142°18.981E	3456m	SUNSET
ST-148	12:47	12°59.913N	142°29.854E	2715m	CTD-CMS STARTED
ST-148	13:06	12°59.854N	142°29.674E	2727m	CTD-CMS DEEPEST
ST-148	13:27	12°59.888N	142°29.656E	2769m	CTD-CMS FINISHED
ST-148	13:37	12°59.842N	142°29.524E	2896m	3M ORI NET STARTED
ST-148	14:09	13°00.252N	142°30.227E	2745m	3M ORI NET DEEPEST

ST-148	14:47	12°59.821N	142°30.937E	3241m	3M ORI NET FINISHED
ST-149	16:58	13°29.980N	142°29.994E	2376m	3M ORI NET STARTED
ST-149	17:32	13°29.191N	142°30.752E	2505m	3M ORI NET DEEPEST
ST-149	18:12	13°28.249N	142°31.400E	2369m	3M ORI NET FINISHED
	20:07	13°56.601N	142°29.940E	2858m	SUNRISE
ST-150	20:32	14°00.086N	142°29.903E	2710m	CTD STARTED
ST-150	21:00	14°00.349N	142°29.596E	2712m	CTD DEEPEST
ST-150	21:27	14°00.609N	142°29.394E	2729m	CTD FINISHED
ST-150	21:39	14°00.669N	142°29.223E	2740m	3M ORI NET STARTED
ST-150	22:11	14°00.688N	142°30.221E	2706m	3M ORI NET DEEPEST
ST-150	22:48	14°00.766N	142°31.082E	2757m	3M ORI NET FINISHED

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ST-151	00:46	14°30.033N	142°29.984E	3465m	3M ORI NET STARTED
ST-151	01:21	14°30.207N	142°31.140E	3412m	3M ORI NET DEEPEST
ST-151	02:02	14°30.381N	142°32.167E	3377m	3M ORI NET FINISHED
ST-152	05:30	13°59.963N	142°07.693E	4010m	3M ORI NET STARTED
ST-152	05:56	13°59.780N	142°08.750E	3976m	3M ORI NET DEEPEST
ST-152	06:35	13°59.538N	142°09.766E	3921m	3M ORI NET FINISHED
ST-153	07:44	13°44.977N	142°07.441E	3428m	3M ORI NET STARTED
ST-153	08:15	13°44.722N	142°08.441E	3490m	3M ORI NET DEEPEST
ST-153	08:51	13°44.443N	142°09.486E	3202m	3M ORI NET FINISHED
ST-154	10:04	13°29.959N	142°07.580E	3073m	3M ORI NET STARTED
ST-154	10:38	13°29.826N	142°08.750E	3124m	3M ORI NET DEEPEST
ST-154	11:15	13°29.675N	142°09.904E	3092m	3M ORI NET FINISHED
ST-155	12:23	13°14.993N	142°07.544E	2717m	3M ORI NET STARTED
ST-155	12:55	13°14.893N	142°08.649E	2649m	3M ORI NET DEEPEST
ST-155	13:31	13°14.756N	142°09.771E	2636m	3M ORI NET FINISHED
ST-156	14:40	12°59.950N	142°07.495E	1911m	3M ORI NET STARTED
ST-156	15:10	12°59.780N	142°08.506E	2156m	3M ORI NET DEEPEST
ST-156	15:49	12°59.566N	142°09.517E	2006m	3M ORI NET FINISHED
ST-157	17:34	13°00.050N	141°44.950E	3350m	3M ORI NET STARTED
ST-157	18:05	13°00.232N	141°45.945E	3314m	3M ORI NET DEEPEST
ST-157	18:45	13°00.581N	141°46.986E	3294m	3M ORI NET FINISHED
ST-157	18:58	13°00.628N	141°46.827E	3314m	CTD STARTED
ST-157	19:22	13°00.779N	141°46.660E	3314m	CTD DEEPEST
ST-157	19:48	13°00.972N	141°46.487E	3329m	CTD FINISHED
	20:10	13°02.279N	141°46.164E	3381m	SUNRISE
ST-158	21:05	13°14.979N	141°44.991E	3618m	3M ORI NET STARTED
ST-158	21:39	13°15.426N	141°45.813E	3604m	3M ORI NET DEEPEST
ST-158	22:15	13°15.789N	141°46.448E	3589m	3M ORI NET FINISHED
ST-159	22:53	13°22.429N	141°45.001E	3654m	3M ORI NET STARTED
ST-159	23:26	13°23.077N	141°45.805E	3635m	3M ORI NET DEEPEST

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ST-159	00:02	13°23.787N	141°46.479E	3580m	3M ORI NET FINISHED
ST-160	00:37	13°29.951N	141°45.060E	2983m	3M ORI NET STARTED
ST-160	01:09	13°30.372N	141°46.043E	2964m	3M ORI NET DEEPEST

ST-160	01:45	13°30.634N	141°46.993E	3129m	3M ORI NET FINISHED
ST-161	02:27	13°37.530N	141°44.978E	4206m	3M ORI NET STARTED
ST-161	02:58	13°37.364N	141°46.122E	4206m	3M ORI NET DEEPEST
ST-161	03:39	13°37.032N	141°47.386E	4183m	3M ORI NET FINISHED
ST-162	04:25	13°45.009N	141°45.083E	4325m	3M ORI NET STARTED
ST-162	04:57	13°44.765N	141°46.334E	4300m	3M ORI NET DEEPEST
ST-162	05:41	13°44.040N	141°47.492E	4303m	3M ORI NET FINISHED
ST-163	06:28	13°52.497N	141°44.939E	4491m	3M ORI NET STARTED
ST-163	07:03	13°52.280N	141°46.060E		3M ORI NET DEEPEST
ST-163	07:42	13°51.993N	141°47.077E	4412m	3M ORI NET FINISHED
ST-164	08:30	14°00.076N	141°44.998E	4606m	3M ORI NET STARTED
ST-164	09:04	13°59.812N	141°46.032E	4517m	3M ORI NET DEEPEST
	09:06	13°59.798N	141°46.066E	4520m	SUNSET
ST-164	09:43	13°59.512N	141°46.861E	4476m	3M ORI NET FINISHED
ST-164	09:50	13°59.570N	141°46.924E	4474m	CTD STARTED
ST-164	10:12	13°59.695N	141°46.848E	4477m	CTD DEEPEST
ST-164	10:34	13°59.804N	141°46.761E	4481m	CTD FINISHED
ST-165	11:48	14°15.021N	141°45.070E	4492m	3M ORI NET STARTED
ST-165	12:21	14°15.492N	141°46.246E	4212m	3M ORI NET DEEPEST
ST-165	13:02	14°15.894N	141°47.504E	4472m	3M ORI NET FINISHED
ST-166	14:05	14°30.034N	141°44.997E	4550m	3M ORI NET STARTED
ST-166	14:37	14°30.284N	141°46.004E	4532m	3M ORI NET DEEPEST
ST-166	15:18	14°30.462N	141°47.093E	4532m	3M ORI NET FINISHED
ST-167	16:28	14°45.064N	141°45.019E	4552m	3M ORI NET STARTED
ST-167	16:59	14°45.808N	141°45.808E	4540m	3M ORI NET DEEPEST
ST-167	17:43	14°46.652N	141°46.566E	4541m	3M ORI NET FINISHED
ST-168	18:52	15°00.020N	141°44.929E	4554m	3M ORI NET STARTED
ST-168	19:25	15°00.248N	141°46.119E	4547m	3M ORI NET DEEPEST
	20:09	15°00.397N	141°47.303E	4547m	SUNRISE
ST-168	20:11	15°00.398N	141°47.353E	4546m	3M ORI NET FINISHED
ST-168	20:19	15°00.435N	141°47.393E	4547m	CTD STARTED
ST-168	20:42	15°00.554N	141°47.367E	4546m	CTD DEEPEST
ST-168	21:09	15°00.533N	141°47.161E	4549m	CTD FINISHED
ST-169	23:01	14°59.912N	141°22.490E	4327m	3M ORI NET STARTED
ST-169	23:34	14°59.011N	141°22.987E	4645m	3M ORI NET DEEPEST
11.Jul.05					
ST-169	00:12	14°58.073N	141°23.403E	4658m	3M ORI NET FINISHED
ST-170	02:07	14°29.973N	141°22.502E	4705m	3M ORI NET STARTED
ST-170	02:41	14°30.538N	141°23.366E	4700m	3M ORI NET DEEPEST
ST-170	03:24	14°31.338N	141°23.825E	4701m	3M ORI NET FINISHED
ST-171	05:42	14°00.023N	141°22.562E	4726m	3M ORI NET STARTED
ST-171	06:11	14°00.624N	141°23.511E	4738m	3M ORI NET DEEPEST
ST-171	06:54	14°01.376N	141°24.480E	4751m	3M ORI NET FINISHED
	09:06	13°28.697N	141°22.440E	4375m	SUNSET
ST-172	10:04	13°15.027N	141°22.517E	4296m	3M ORI NET STARTED
ST-172	10:36	13°14.817N	141°23.544E	4234m	3M ORI NET DEEPEST

ST-172	11:13	13°14.599N	141°24.307E	4061m	3M ORI NET FINISHED
ST-173	14:13	12°30.005N	141°22.509E	2013m	3M ORI NET STARTED
ST-173	14:46	12°30.621N	141°23.478E	2095m	3M ORI NET DEEPEST
ST-173	15:30	12°31.416N	141°24.451E	2188m	3M ORI NET FINISHED
	20:20	12°12.833N	140°06.910E	3983m	SUNRISE
<b>12.Jul.05</b>					
	03:54	11°42.521N	138°07.134E	4531m	STARTED RETRIEVING OF UPWELLING SYSTEM
	05:55	11°42.233N	138°06.527E	4784m	FINISHED RETRIEVING OF UPWELLING SYSTEM
ST-174	06:22	11°42.162N	138°06.422E	4909m	CTD STARTED
ST-174	06:43	11°42.177N	138°06.295E	4900m	CTD DEEPEST
ST-174	06:57	11°42.224N	138°06.240E	4898m	CTD FINISHED
	09:15	11°56.009N	138°34.887E	4836m	SUNSET
ST-175	19:04	13°00.060N	141°00.034E	3834m	3M ORI NET STARTED
ST-175	19:42	13°00.635N	141°01.197E	4038m	3M ORI NET DEEPEST
	20:16	13°01.067N	141°02.118E	3804m	SUNRISE
ST-175	20:21	13°01.117N	141°02.216E	3718m	3M ORI NET FINISHED
ST-175	20:28	13°01.151N	141°02.233E	4020m	CTD STARTED
ST-175	20:50	13°01.199N	141°02.097E	3844m	CTD DEEPEST
ST-175	21:12	13°01.293N	141°02.047E	4009m	CTD FINISHED
ST-176	23:27	13°29.783N	140°59.930E	4688m	CTD STARTED
ST-176	23:47	13°29.718N	140°59.936E	4688m	CTD DEEPEST
<b>13.Jul.05</b>					
ST-176	00:07	13°29.615N	140°59.878E	4686m	CTD FINISHED
ST-176	00:16	13°29.536N	140°59.822E	4686m	3M ORI NET STARTED
ST-176	00:47	13°29.975N	141°00.621E	4690m	3M ORI NET DEEPEST
ST-176	01:22	13°30.451N	141°01.407E	4675m	3M ORI NET FINISHED
ST-177	03:30	14°00.037N	140°59.934E	4799m	CTD STARTED
ST-177	03:54	14°00.085N	140°59.816E	4802m	CTD DEEPEST
ST-177	04:17	14°00.075N	140°59.655E	4807m	CTD FINISHED
ST-177	04:25	14°00.041N	140°59.530E	4815m	3M ORI NET STARTED
ST-177	04:54	14°00.172N	141°00.217E	4798m	3M ORI NET DEEPEST
ST-177	05:33	14°00.417N	141°01.182E	4813m	3M ORI NET FINISHED
ST-178	07:37	14°30.164N	140°59.891E	4860m	CTD STARTED
ST-178	07:59	14°30.452N	140°59.689E	4858m	CTD DEEPEST
ST-178	08:19	14°30.638N	140°59.462E	4858m	CTD FINISHED
ST-178	08:24	14°30.687N	140°59.401E	4858m	3M ORI NET STARTED
ST-178	08:56	14°30.969N	141°00.147E	4861m	3M ORI NET DEEPEST
	09:08	14°31.050N	141°00.393E	4861m	SUNSET
ST-178	09:31	14°31.106N	141°00.873E	4831m	3M ORI NET FINISHED
ST-179	11:41	15°00.053N	140°59.898E	4731m	CTD STARTED
ST-179	12:00	15°00.128N	140°59.686E	4732m	CTD DEEPEST
ST-179	12:22	15°00.183N	140°59.449E	4681m	CTD FINISHED
ST-179	12:31	15°00.206N	140°59.346E	4672m	3M ORI NET STARTED
ST-179	13:02	15°01.085N	140°59.805E	4732m	3M ORI NET DEEPEST
ST-179	13:57	15°02.481N	141°00.586E	4721m	3M ORI NET FINISHED
ST-180	17:43	16°00.016N	140°59.957E	4666m	3M ORI NET STARTED

ST-180	18:20	16°01.132N	140°59.585E	4692m	3M ORI NET DEEPEST
ST-180	18:59	16°02.099N	140°59.338E	4708m	3M ORI NET FINISHED
ST-180	19:10	16°02.094N	140°59.281E	4709m	CTD STARTED
ST-180	19:33	16°02.072N	140°59.116E	4710m	CTD DEEPEST
ST-180	19:55	16°02.060N	140°59.048E	4711m	CTD FINISHED
	20:11	16°02.310N	140°58.911E	4714m	SUNRISE
ST-181	23:57	16°59.872N	141°00.154E	4744m	CTD STARTED
<b>14.Jul.05</b>					
ST-181	00:18	16°59.709N	141°00.274E	4741m	CTD DEEPEST
ST-181	00:40	16°59.566N	141°00.347E	4741m	CTD FINISHED
ST-181	00:45	16°59.506N	141°00.417E	4743m	3M ORI NET STARTED
ST-181	01:16	16°59.163N	141°01.541E	4806m	3M ORI NET DEEPEST
ST-181	01:54	16°58.774N	141°02.717E	4722m	3M ORI NET FINISHED