Southeast Asian Fisheries Development Center

Training Department

CRUISE REPORT ON RESEARCH ACTIVITIES

M.V.SEAFDEC 2 Cruise No. 16-10/2005

18 – 26 November 2005

National Fisheries Resource Survey of Cambodia

TD/RP/93

This report is base on preliminary data

For readers who may need data in the report, please contact to:

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Cruise Report on Research Activity

1. Cruise Summary

Vessel name: M.V. SEAFDEC 2
Cruise no.: 16-10/2005 **Leg no:** -
Project Title: National Research Survey of Cambodia Waters
Duration: 18 - 26 November 2005 (9 days)
Covered water: Cambodia waters
Latitude 09°14'.93 N-10°45'.00 N
Longitude 102°05'.05 E-103°45'.00 E
Port of call: Sihanoukville port, Cambodia
Objective: 1. Oceanographic survey by ICTD, Larvae bongo net by Oblique plane, Salino-Fluorometer, etc.
2. Acoustic survey by FQ 80
3. Fish sampling by bottom trawl
4. Biological Data collection; Benthos

2. List of personal on board

Ship personnel

No.	Position	Name
1	Captain	Mr. Tossaporn Sukhapindha
2	Chief engineer	Mr. Veerachai Chettasumon
3	Second officer	Mr. Suren Pruksarat
5	Third officer	Mr. Somphote Vudthipanyo
6	Second engineer	Mr. Komson Sangphuek
7	Third engineer	Mr. Montien Peawsakun
8	Boatswain	Mr. Vudthirat Vudthipanyo
9	Steerman	Mr. Pradit Kui-prasert
10	Steerman	Mr. Tana Rungjoy
11	Able seaman	Mr. Jaroon Po-U
12	Fitter	Mr. Vallop Phimroom
13	Oiler	Mr. Plew Shodok
14	Oiler	Mr. Boontarin Wara-in
15	Oiler	Mr. Watchara Panasri
16	Cook	Mr. Saichol Kornnoom
17	Ship's boy	Mr. Somsak Phangkumhuk

SEAFDEC Researchers

No.	Position	Name	E-mail
16	Chief/Scientist	Mr. Pratakphol Prajakjitt	pratakphol@seafdec.org
17	Researcher	Mr. Narong Ruangsivakul	narong@seafdec.org
18	Researcher	Mr. Sukchai Arnupapboon	sukchai@seafdec.org
19	Researcher	Mr. Nakaret Yasook	nakaret@seafdec.org
20	Researcher	Ms. Ms. Sukanya Obromwan	sukanya@seafdec.org

Thai Researchers

No.	Position	Name	E-mail
21	Researcher	Mr. Kanit Chuapun	kanit09@yahoo.com
22	Researcher	Mr. Santi Poungcharean	poomanz@hotmail.com
23	Researcher	Mr. Tachanat Bhatrasataponkul	tsunami_kitt@hotmail.com

Cambodian researchers

No.	Position	Name	E-mail
24	Researcher	Mr. Tim Savuth	tim_savuth@yahoo.com
25	Researcher	Mr. Sin Satharath	
26	Researcher	Mr. Sin Phalkun	
27	Researcher	Mr. Hout Vuthy	
28	Researcher	Mr. Ket Kea	
29	Researcher	Mr. Kann Hong	
30	Researcher	Mr. Soun Savorn	

3. Observation Summary

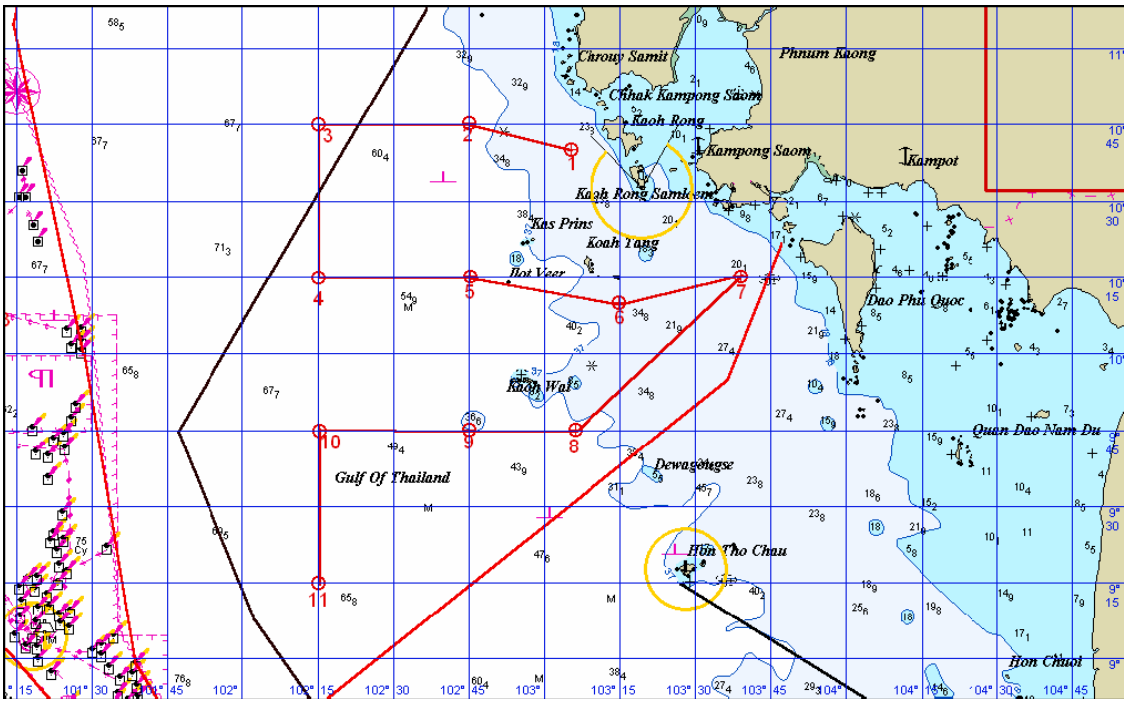


Fig. 1 Survey station

Oceanographic survey summary

Eleven oceanographic stations along Cambodia waters were conducted throw this cruise. Each station conducted with 2 main activities including physical and biological oceanographic survey. The equipments used in each station and data file name are shown in **Table 1.**

iCTD (SeaBird 911)

M.V. SEAFDEC 2, iCTD systems equipped with three main sensors for conductivity, temperature and depth and four auxiliary sensors for dissolved oxygen, pH, fluorometer and light intensity. The iCTD was deployed from the surface to approximately 10 m. above sea bottom with constant velocity 0.5 m/s and retrieved to the surface at a similar speed.

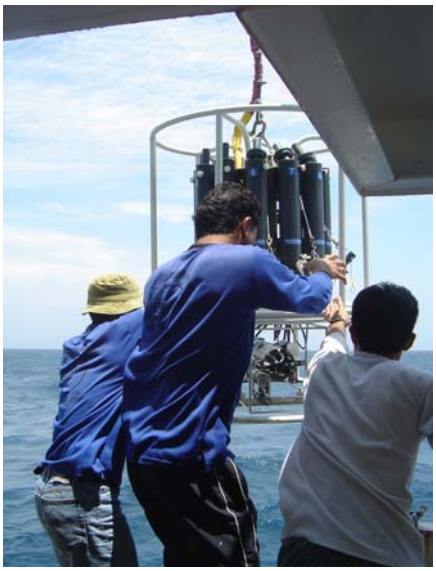


Fig. 1 iCTD operation

All iCTD data were average into every 1 meter interval. Data in each station were divided into down cast and upper cast.

During retrieving iCTD, Carousel water samples (Niskin Bottles) which is a part of iCTD system were used to collect water samples from the standard depth. Water sample in each depth was filtered through Whatman GFC filter paper and stored in the freezer at -40 ºC for nutrient analysis (nitrite, nitrate, phosphate and silicate) at SEAFDEC/Training Department laboratory later; all samples will be analyzed as soon as possible, then the result will be sent to Cambodia national coordinator.

Remark 1*: TD was operated at some stations where sea condition was unfavorable and the iCTD was unable to be operated.*

Thermosalinograph with Fluorometer (TSG-Fluorometer)

TSG – Fluorometer was operated when M.V. SEAFDEC2 cruising along the cruise track. Its system was designed to continuously record three parameters including temperature, salinity and fluorescence chlorophyll-a from underway vessel at approximately 5 meters below the surface. The data were average every 6 second.

Bongo net equipped with flowmeter

Plankton net consisted of zoo plankton and larvae net with mesh size of 330 µm and 500 µm, respectively. They were attached to 60 cm. diameter bongo frames. A flow meter was attached at the aperture of net to measure the water volume passing through the net.

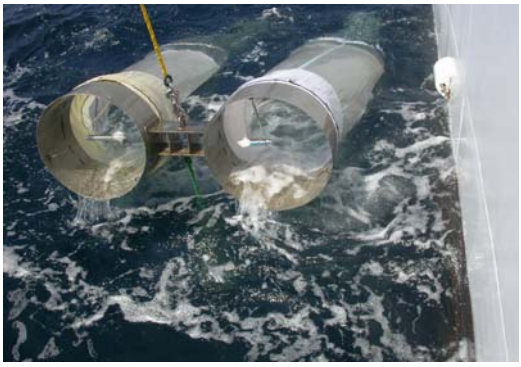


Fig. 2 Bongo net operation

Quality of water (m^3) per one flowmeter revolution in front of zooplankton at station number was 0.02467 rpm^3, and Quality of water (m^3) per one flowmeter revolution in front of larvae was 0.00965 rpm^3

At each station a 10 minutes oblique tow of the bongo net was operated with the ship speed 1.5-2 knots approximately. Angel of towing cable was maintained at 60^o angle. This could be achieved by regulating the speed of vessel speed. (FAO manual recommended that cable angle must be kept at 45^o but SEAFDEC's bongo net cannot followed this manual as the centre part casing of SEAFDEC's bongo net do not have swivel mechanism).The depth of haul was from surface to 10-15 maters above the sea bottom. The samples were preserved in 10% formalin-seawater immediately.

Piston core sample

Piston core is used for collecting a depth profile of sediment in plastic tube. It is a kind of free gravity type drop system core sampler that were freely release from 10 m above for penetrating into bottom. Then, Surface sediment samples of about 1 cm in thickness each were cut and kept in plastic bags with a small amount of seawater above the sediment and preserved in 1 ml. of formalin.

Fig. 3 Typical sediment sampler

PRR 2600

With regard to the optical survey, the underwater light was characterized using the Profiling Reflectance Radiometer (PRR), that provides profiles of the downwelling irradiance (Ed) and the upwelling radiance (Lu) at wavelengths coincident with the visible wavebands of satellite ocean colour sensors. PRR2600 is consisted of two sensors, underwater sensor and surface sensor. During operation, underwater was lowered from surface to bottom with 0.5m/s. While surface was exposed to sunlight on deck for measuring reference irradiance data to eliminate errors, because of variability in the surface light conditions.

Fig. 4 PRR2006 operation

At each station, the seawater samples were obtained at some reference depths using Vandorn Sampler, then subsequently filtered for the duplicate determinations of concentrations on three optically active constituents: chlorophyll-a, total suspended sediment and coloured dissolved organic matter. In addition, ancillary measurements for other oceanographic parameters such data as nutrients, salinity, temperature, density, dissolved oxygen, transparency depth and water colour level were obtained using basic onboard oceanographic instruments

Vandorn water sampler

This equipment was selected to collect water sampler for study of phytoplankton species and abundance in this cruise. Each station was decided to collect water sampler in three levels at surface, mid depth, and bottom. Thirty liters of water samples was filtered by 20 µm mesh phytoplankton net. The sample was preserved in 1-2% formalin immediately.

Fig. 4 Vandorn operation

Fishing survey summary

In this survey, bottom trawl was used for fish sampling.

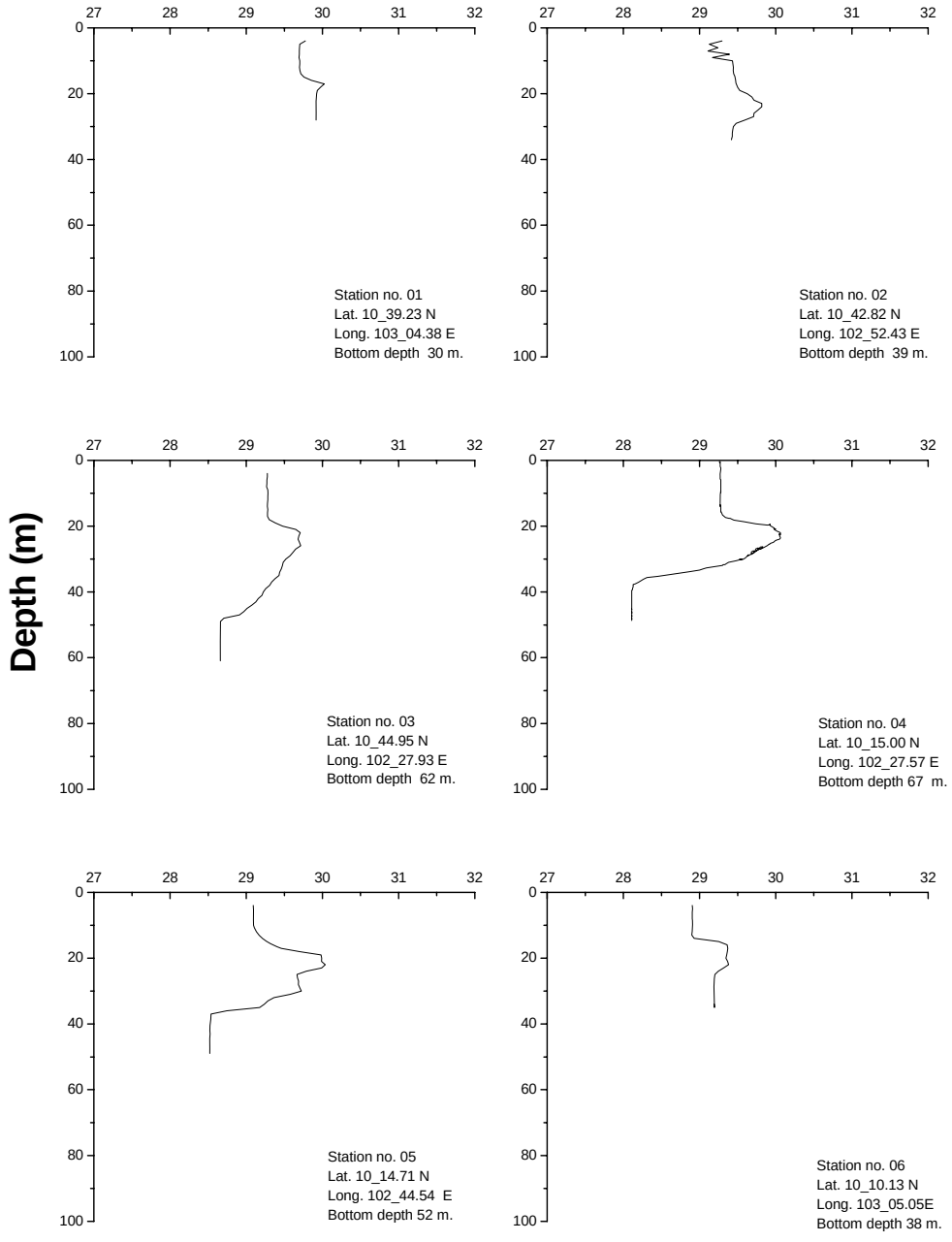
Bottom Trawl

This survey was operated bottom trawl total 10 stations. The maximum catch was about 27.137 kg. at operation no.07 (station no.07).

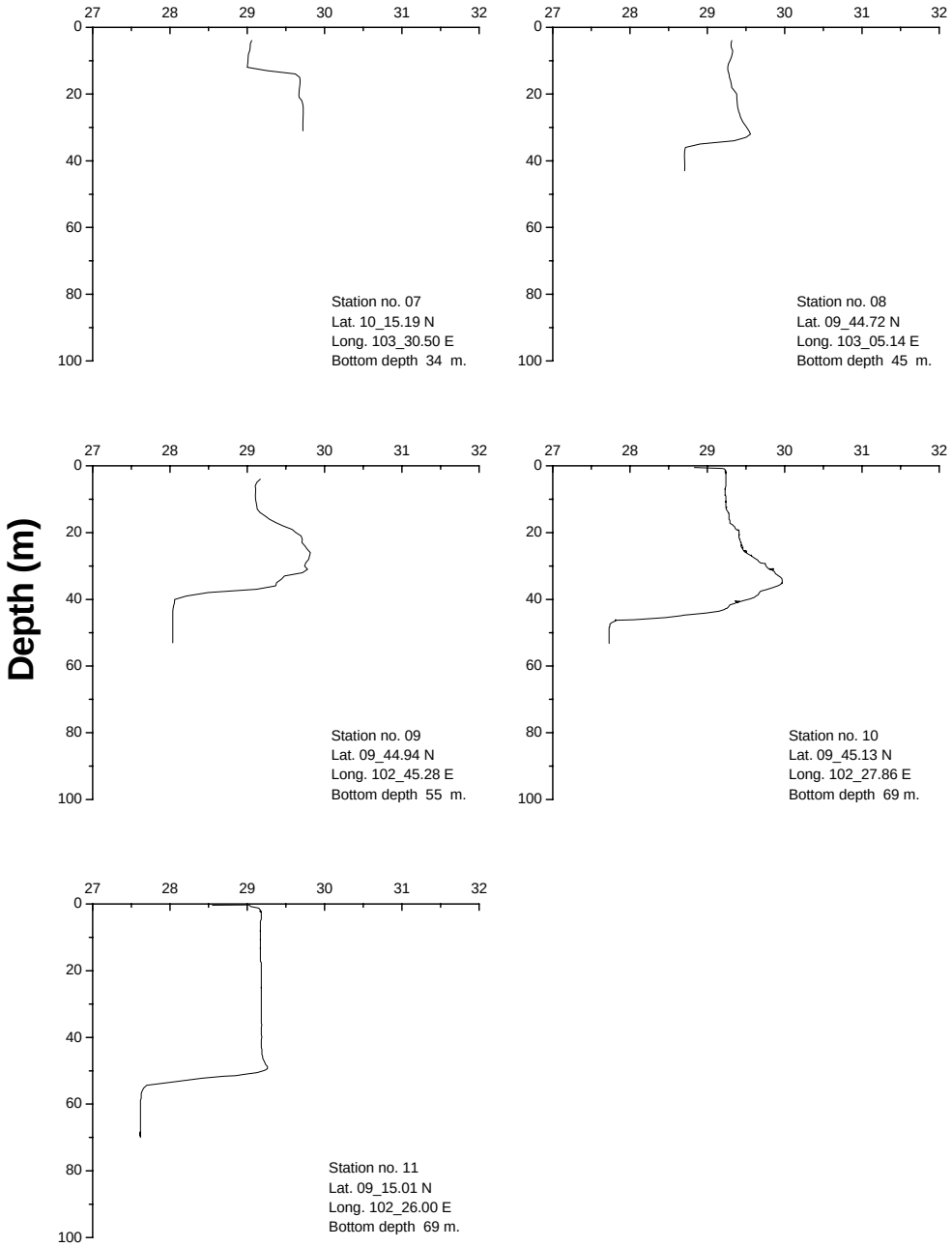
The detail of fishing operation had shown in Trawl fishing logsheet.

Table 1. Partial detail of oceanographic survey station of cruise no.16-10/2005

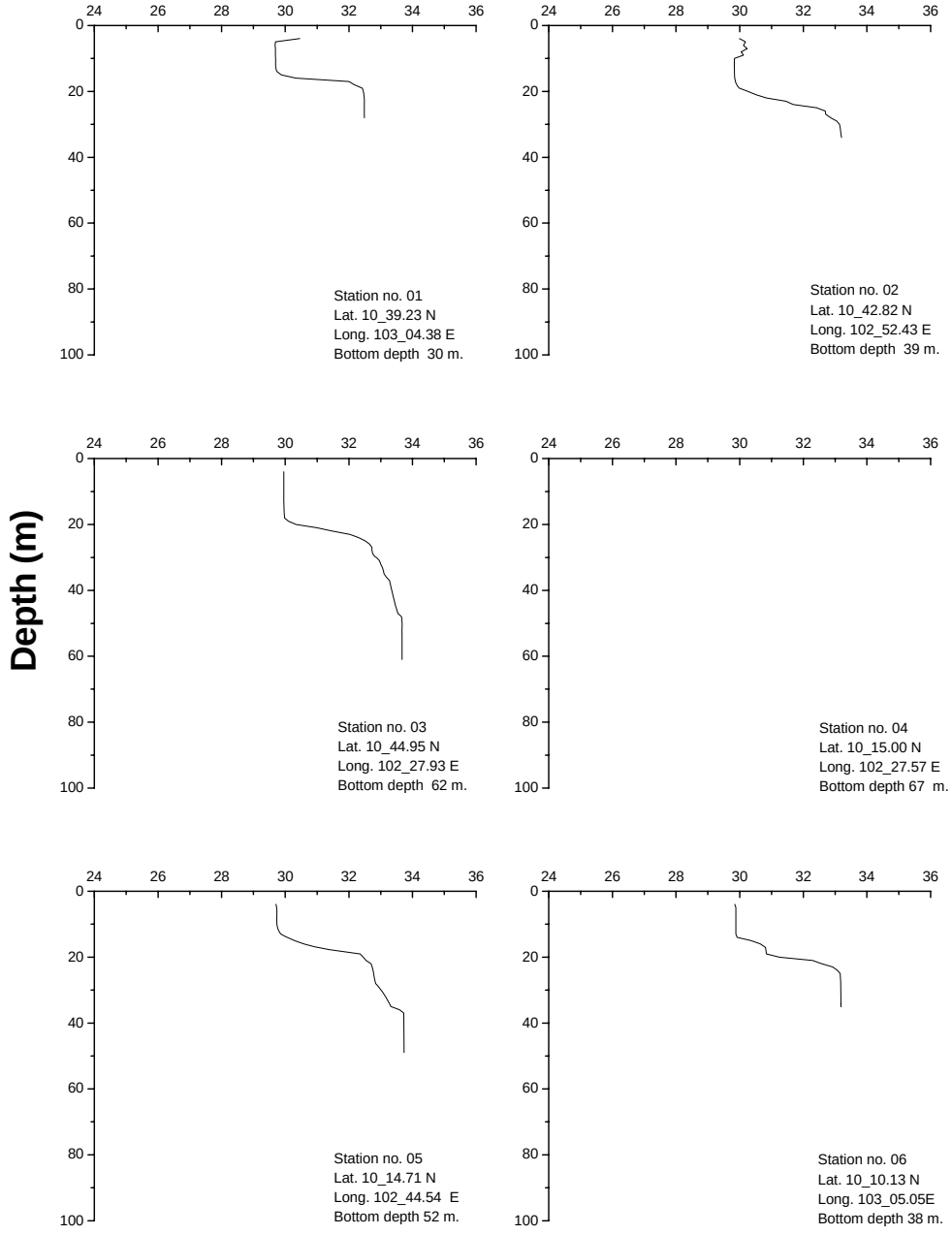
St. No.	Date	Time (Local)	Lat	Long	Oceanographic instruments						Filename		
					CTD	TSG	PRR	Vandorn	Core	Bongo	CTD	PRR	TD
1	20/11/05	12:13	10_39.98 N	103_05.40 E	✔	✔	✔	✔	-	✔	s2d16001	2005_11_20_1334	-
2	20/11/05	17:22	10_43.23 N	102_52.67 E	✔	✔	-	✔	-	✔	s2d16002	-	-
3	21/11/05	05:27	10_44.95 N	102_27.93 E	✔	✔	✔	✔	✔	✔	s2d16003	2005_11_21_0842	-
4	21/11/05	12:48	10_14.98 N	102_28.20 E	-	✔	✔	✔	✔	✔	-	2005_11_21_1346	TD001
5	21/11/05	18:00	10_15.04 N	102_45.16 E	✔	✔	-	✔	✔	✔	s2d16005	-	-
6	22/11/05	05:27	10_10.13 N	102_05.05 E	✔	✔	✔	✔	-	✔	s2d16006	2005_11_22_0802	-
7	22/11/05	11:30	10_15.00 N	103_30.40 E	✔	✔	✔	✔	✔	✔	s2d16007	2005_11_22_1217	-
8	22/11/05	18:24	09_45.02 N	103_05.14 E	✔	✔	-	✔	✔	✔	s2d16008	-	-
9	23/11/05	05:30	09_44.94 N	102_45.28 E	✔	✔	✔	✔	✔	✔	s2d16009	2005_11_23_0759	-
10	23/11/05	10:49	09_45.00 N	102_28.10 E	-	✔	✔	✔	✔	✔	-	2005_11_23_1150	TD002
11	23/11/05	17:43	09_14.93 N	102_28.25 E	-	-	-	✔	✔	✔	-	-	TD003


Temperature (°C)
Depth (m)
27 28 29 30 31 32
0 20 40 60 80 100
Station no. 01
Lat. 10_39.23 N
Long. 103_04.38 E
Bottom depth 30 m.
Station no. 02
Lat. 10_42.82 N
Long. 102_52.43 E
Bottom depth 39 m.
Station no. 03
Lat. 10_44.95 N
Long. 102_27.93 E
Bottom depth 62 m.
Station no. 04
Lat. 10_15.00 N
Long. 102_27.57 E
Bottom depth 67 m.
Station no. 05
Lat. 10_14.71 N
Long. 102_44.54 E
Bottom depth 52 m.
Station no. 06
Lat. 10_10.13 N
Long. 103_05.05E
Bottom depth 38 m.

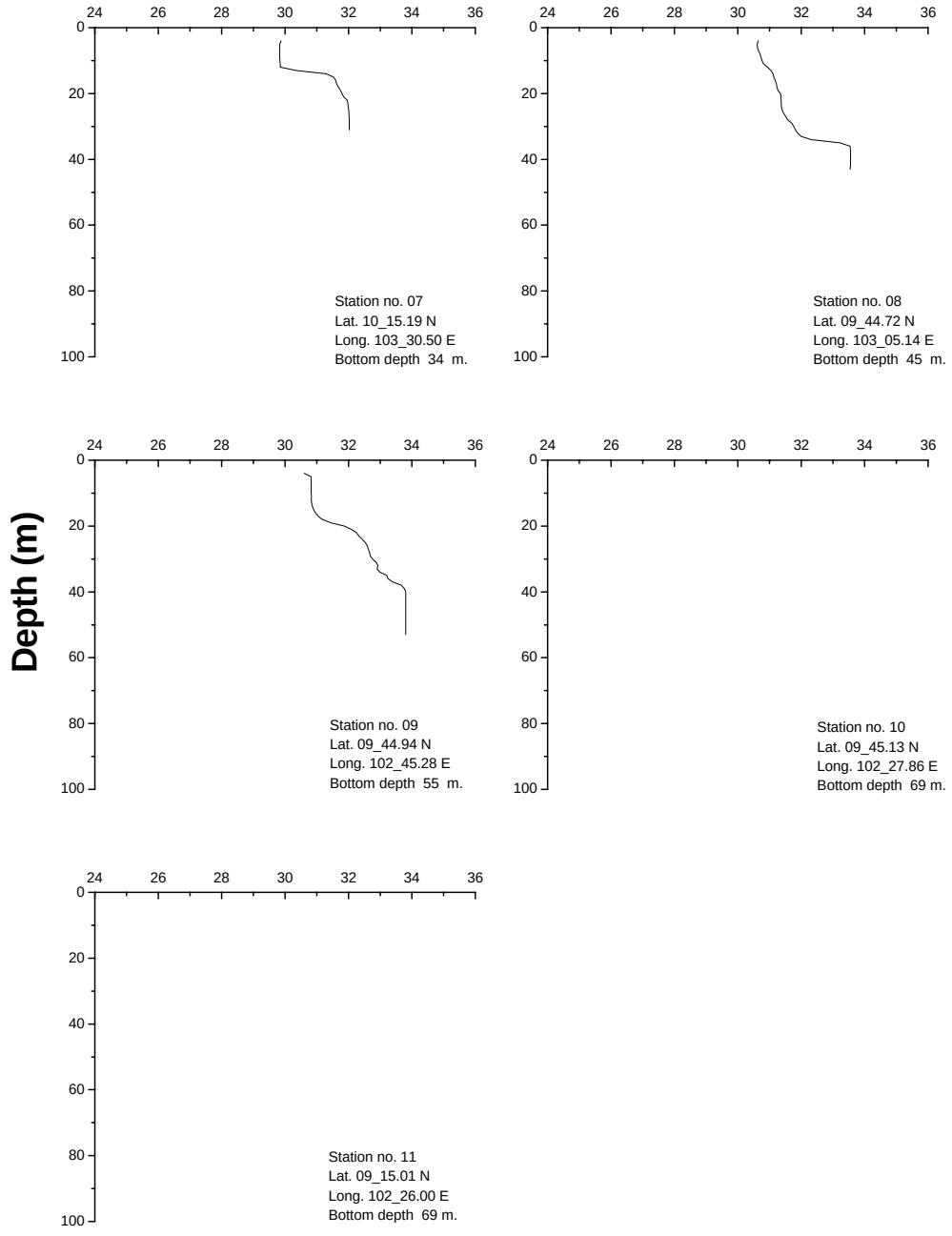
Temperature (^{o}C)



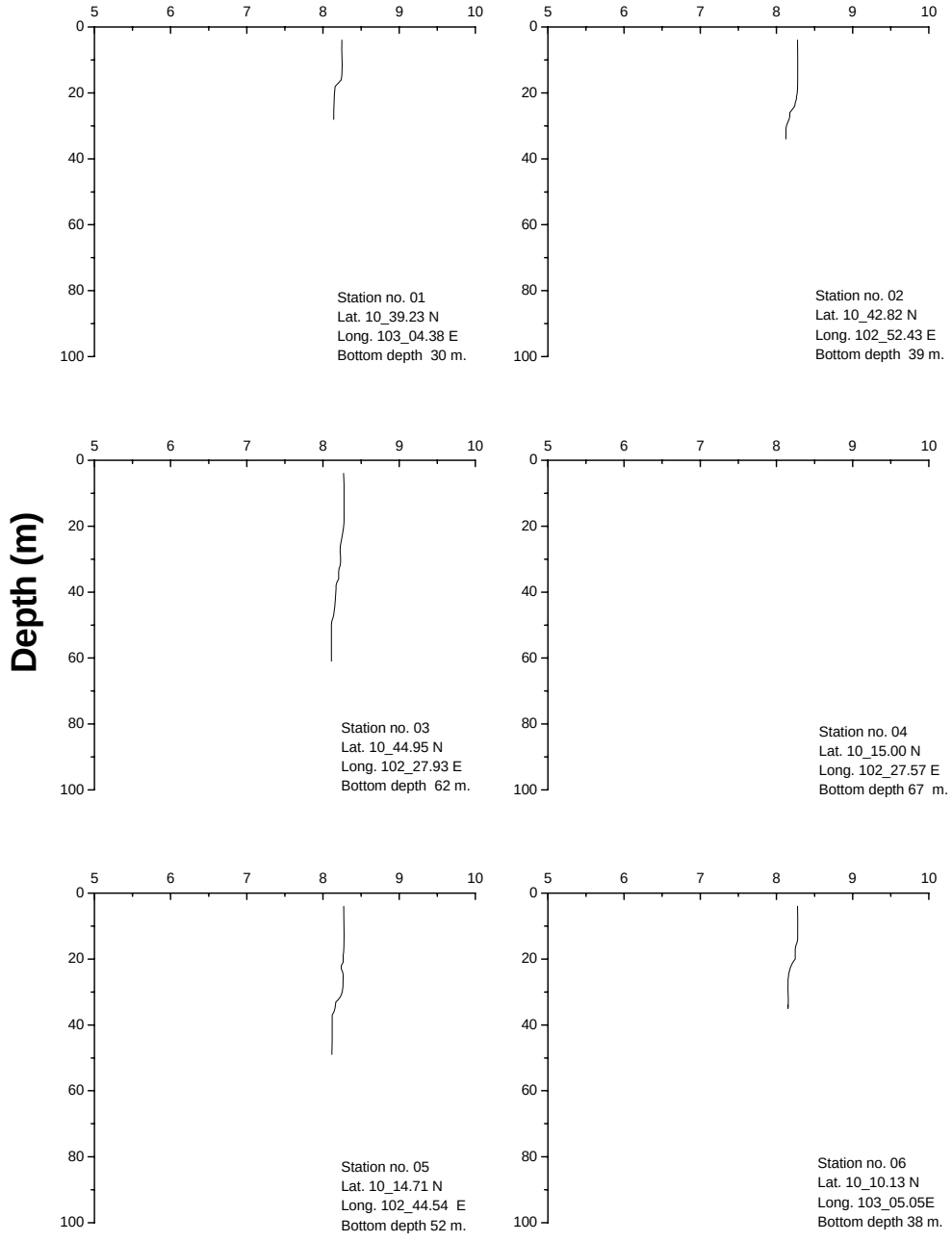
Salinity (PSU)



Salinity (PSU)



pH


Depth (m)
5 6 7 8 9 10
0 20 40 60 80 100
Station no. 01
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Long. 103_04.38 E
Bottom depth 30 m.
Station no. 02
Lat. 10_42.82 N
Long. 102_52.43 E
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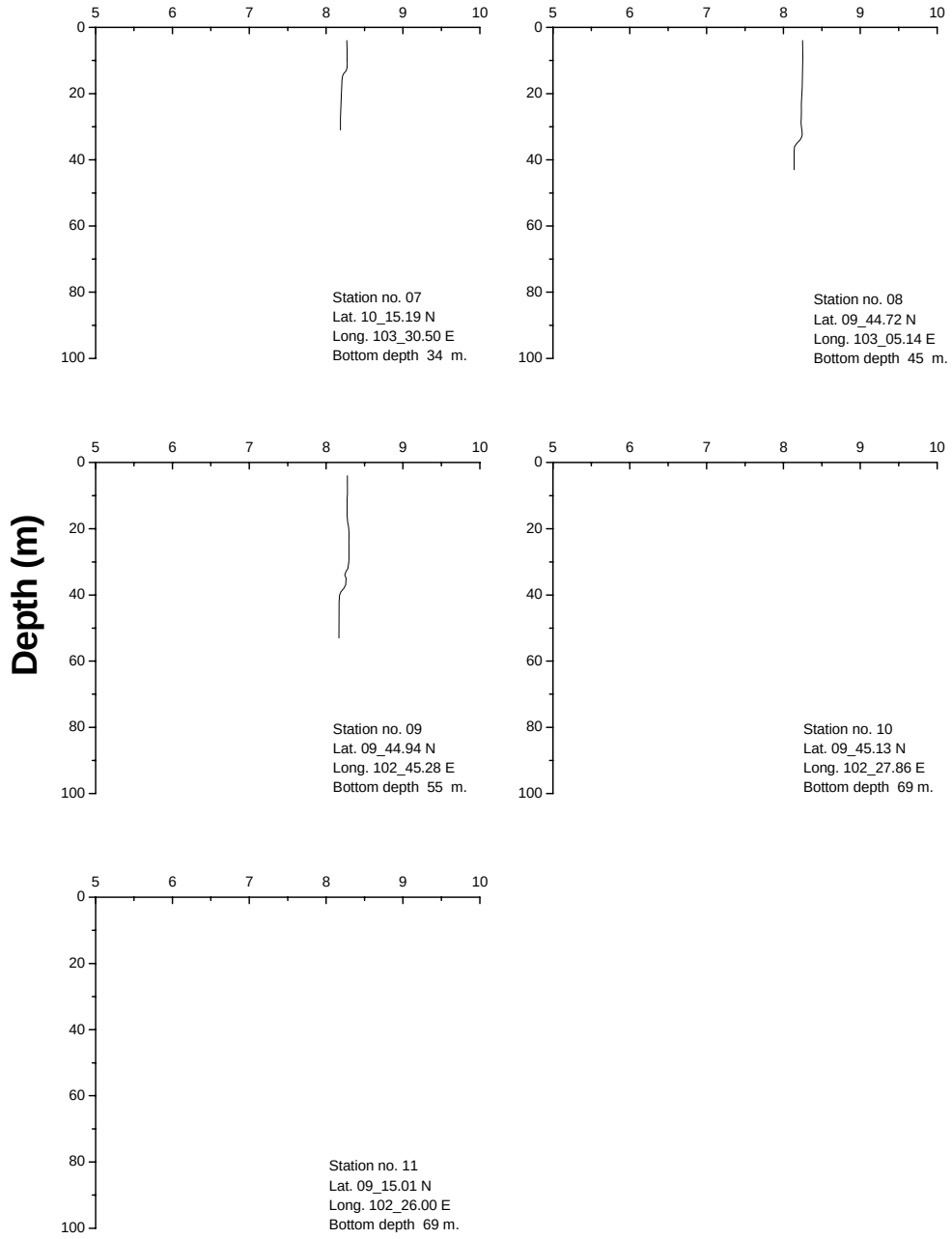
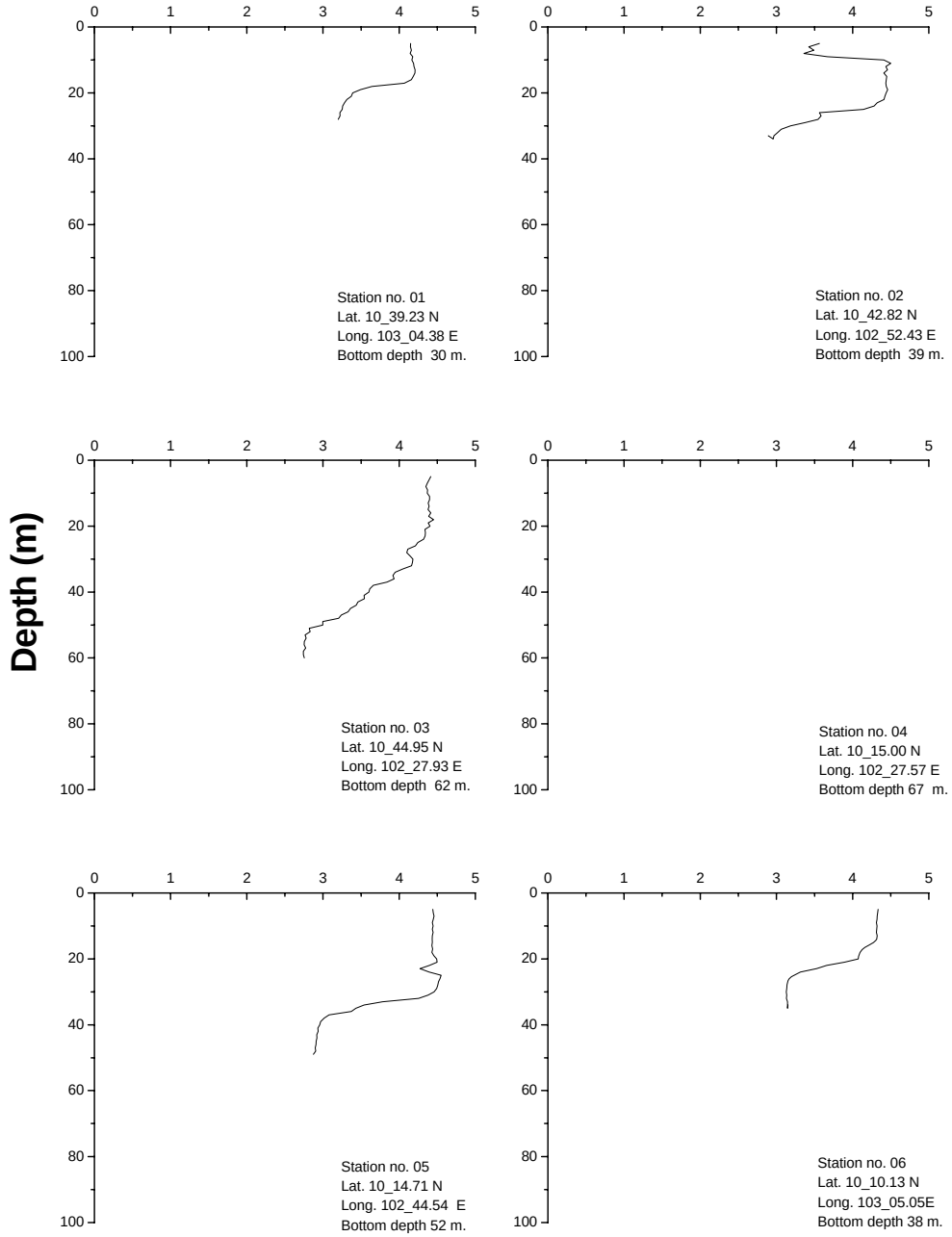
Bottom depth 38 m.

pH


Depth (m)
5 6 7 8 9 10
0 20 40 60 80 100
Station no. 07
Lat. 10_15.19 N
Long. 103_30.50 E
Bottom depth 34 m.
Station no. 08
Lat. 09_44.72 N
Long. 103_05.14 E
Bottom depth 45 m.
Station no. 09
Lat. 09_44.94 N
Long. 102_45.28 E
Bottom depth 55 m.
Station no. 10
Lat. 09_45.13 N
Long. 102_27.86 E
Bottom depth 69 m.
Station no. 11
Lat. 09_15.01 N
Long. 102_26.00 E
Bottom depth 69 m.

Oxygen


Depth (m)
0 1 2 3 4 5
0 20 40 60 80 100
Station no. 01
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Long. 103_04.38 E
Bottom depth 30 m.
Station no. 02
Lat. 10_42.82 N
Long. 102_52.43 E
Bottom depth 39 m.
Station no. 03
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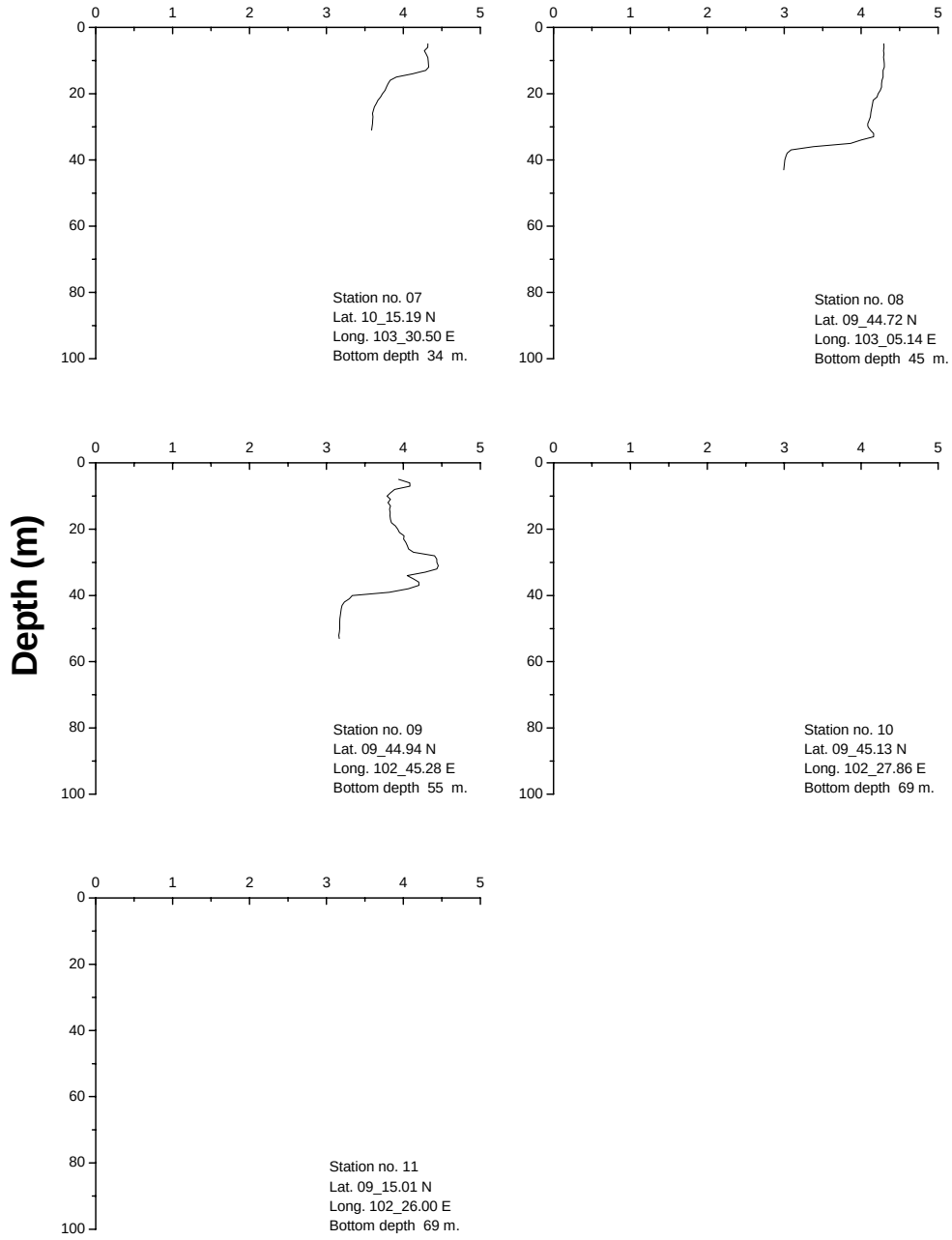
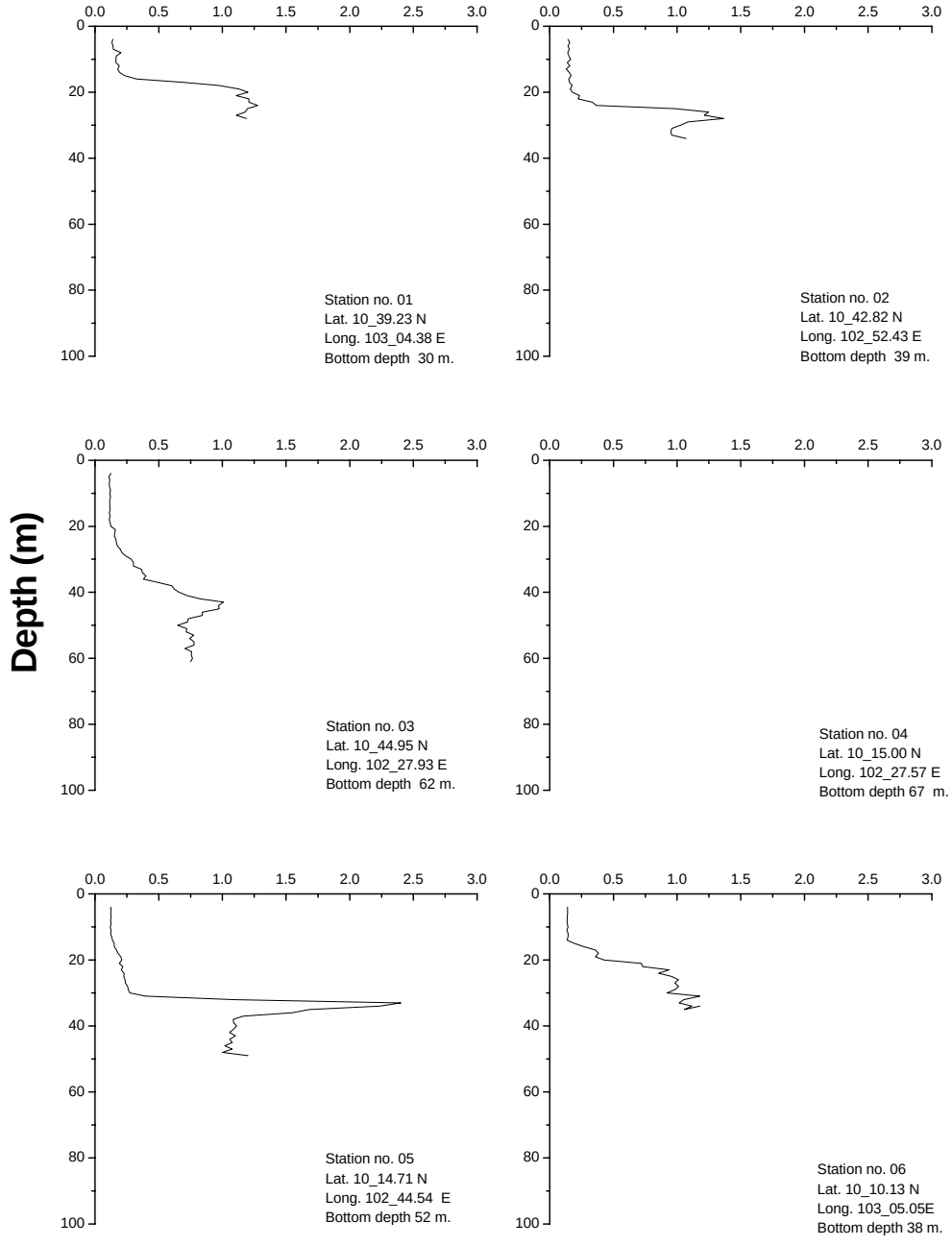
Lat. 10_10.13 N
Long. 103_05.05E
Bottom depth 38 m.

Oxygen


Depth (m)
0
1
2
3
4
5
0
20
40
60
80
100
Station no. 07
Lat. 10_15.19 N
Long. 103_30.50 E
Bottom depth 34 m.
Station no. 08
Lat. 09_44.72 N
Long. 103_05.14 E
Bottom depth 45 m.
Station no. 09
Lat. 09_44.94 N
Long. 102_45.28 E
Bottom depth 55 m.
Station no. 10
Lat. 09_45.13 N
Long. 102_27.86 E
Bottom depth 69 m.
Station no. 11
Lat. 09_15.01 N
Long. 102_26.00 E
Bottom depth 69 m.

Fluorescence



Fluorescence