



PRELIMINARY REPORT

FOR YOKOSUKA

Cruise no. YK 13-04 leg 1

(QUELLE 2013)



Rio Grande Rise, São Paulo Ridge

Off Brazil

South Atlantic Ocean

April 13 – May 5, 2013

Japan Agency for Marine-Earth Science and Technology
(JAMSTEC)

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1. Cruise information

Cruise number: YK 13-04 leg1

Ship name: R/V Yokosuka

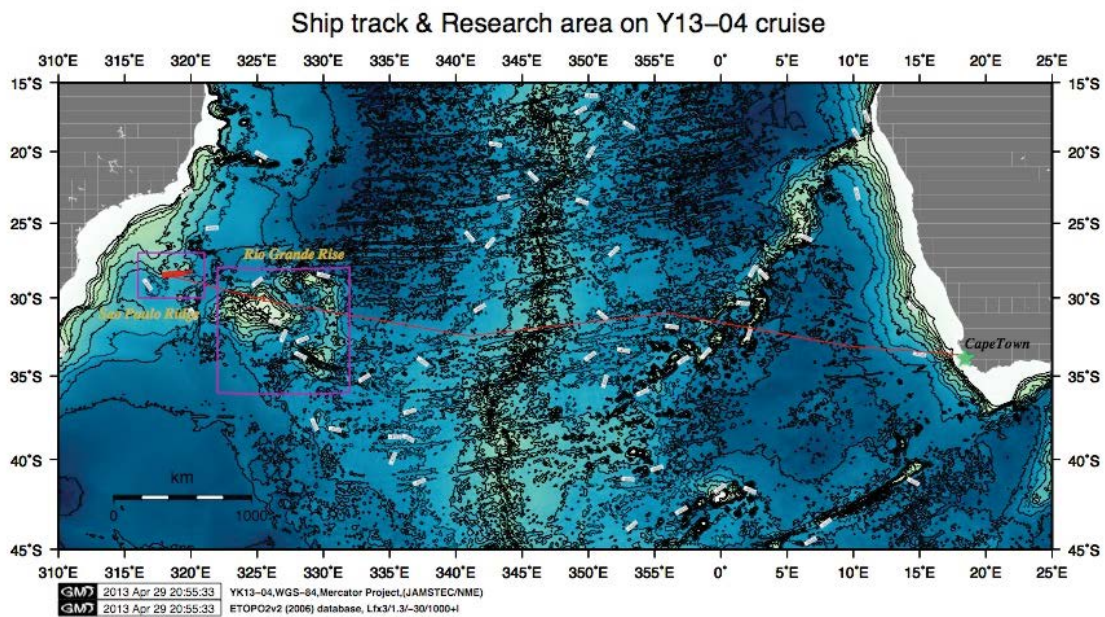
Title of the cruise: Iatá-piuna/QUELLE 2013

Cruise Period in original: April, 13, 2013 ~ May 5, 2013

Port call: Cape Town, South Africa ~ Rio de Janeiro, Brazil

Research area: Rio Grande Rise and São Paulo Ridge, off Brazil, South Atlantic Ocean

Research Map:



2. Onboard Researchers, crews and Shinkai 6500 operation team members

Onboard Researchers

Scientists

Brazilian Naval Officer

Public Relation's staff and TV crew

Crew of M/V Yokosuka

Shinkai 6500 operation team

Onboard Researchers

Scientists

Representative of Science Party:

Hiroshi Kitazato, Biogeos, JAMSTEC

José Angel Alvarez Perez , University of Vale do Itajaí

Science Party:

Yoshihiro Fujiwara , Biogeos, JAMSTEC

Paulo Y.G. Sumida , Institute of Oceanography, University of São Paulo

Koichi Ara, Nihon Univeristy

Abílio Soares Gomes, Fluminense Federal University

Eugenio Pires Frazão, Head of the Marine Geology Division of CPRM (Geological Survey of Brazil)

André Oliveira de Souza Lima, University of Vale do Itajaí Adolpho Augustine,
Pontifical Catholic University of Rio Grande Do Sul

Takashi Toyofuku, Biogeos, JAMSTEC.

On board technician

Masayuki Toizumi, Nippon Marine Enterprises Co. Ltd.

Brazilian Naval Officer

Bruno Neves Baptista

Diretoria de Hidrografia e Navegação (DHN). Marinha do Brasil.

Public Relation's staff and TV crew

Mai Funakubo, PR division, JAMSTEC. Nobuyoshi Fukuhara ,
KIN inc./NHK Hiroyuki Sasaki, Infinity Co./NHK

Crew of M/V Yokosuka

Captain	SHINYA RYONO
Chief Officer	TATSUO ADACHI
2nd Officer	TAKESHI EGASHIRA
3rd Officer	YUMIHIKO KOBAYASHI
Chief Engineer	EIJI SAKAGUCHI
1st Engineer	TAKASHI OTA
2nd Engineer	KENTA IKEGUCHI
3rd Engineer	SHOTA NAGANO
Chief Radio Off.	TOKINORI NASU
2nd Elect. Op.	SHUNSUKE FUKAGAWA
3rd Elect.Op	YOSHIKAZU KURAMOTO
BoatSwain	KAZUO ABE
Quarter Master	MASANORI OHATA
Quarter Master	NAOKI IWASAKI
Quarter Master	TAKUYA MIYASHITA
Sailor	HIROTAKA SHIGETA
Sailor	YUTA MOTOOKA
Sailor	KENTA NASU
No.1 Oiler	KOZO MIURA
Oiler	KEITA FUNAWATARI
Oiler	YUJI HIGASHIGAWA
Assistant Oiler	RYO SATO
Assistant Oiler	EIJI ARATAKE
Chief Steward	ISAO MATSUMOTO
Steward	HIDEO FUKUMURA
Steward	YOSHIO OKADA
Steward	SEIJI HONDA
Steward	NAKAMICHI KANDA

Shinkai 6500 operation team

Submersible Op. Manager	TOSHIAKI SAKURAI
Deputy Submersible Op. Manager	KAZUHIRO CHIBA
Deputy Submersible Op. Manager	YOSHITAKA SASAKI
1/Submersible Tec.Officer	KAZUKI IJIMA
1/Submersible Tec.Officer	SHINOBU OMIKA
1/Submersible Tec.Officer	MITSUHIRO UEKI
1/Submersible Tec.Officer	KEITA MATSUMOTO
2/Submersible Tec.Officer	HITOMI IKEDA
2/Submersible Tec.Officer	HIROFUMI UEKI
2/Submersible Tec.Officer	KEIGO SUZUKI
2/Submersible Tec.Officer	AKIHISA ISHIKAWA
2/Submersible Tec.Officer	TAKUMA ONISHI
2/Submersible Tec.Officer	MASAYA KATAGIRI
3/Submersible Tec.Officer	YUDAI TAYAMA



3. Research cruise

- 1) Purpose
- 2) Periods and areas
- 3) Coordinators
- 4) Description of dives
- 5) Instruments
- 6) Log of daily scientific activities

1) Purpose

The Rio Grande Rise is the largest seamount complex in the South Atlantic. The height gap reaches 5000m. The geologic background of the seamount is still unknown up to the present. The geologic evolution process of the Rio Grande Rise and uniqueness of biological fauna of the rise from the base to top will be analyzed. Among the Mid-Atlantic Ridge and their related seamounts, marine biodiversity and ecosystems has been making researches under the framework of international marine biodiversity project MARECO/CoML and its successful research project.

The São Paulo Ridge also has very steep slope. 1) The origin of the ridge, 2) finding of chemosymbiotic ecosystem what has been maintained by mantle originated serpentine and 3) biogeochemical cycles of seafloor would be studied. The steep slope is dropping from 2500m to 4200m suddenly. The ultramafic rocks must exposure in the outcrop. The biology of these areas should be highly interesting.

2) Periods and areas

Dive cruise was held on Rio Grande Rise and São Paulo Rise off Brazil during April 23 through May 2, 2013. In total seven Shinkai6K's dives and two YKDT deployments were held 9 sites.

3) Coordinators

Drs. Hiroshi Kitazato (executive director of Institute of Biogeosciences, Japan Agency for Marine-Earth Science and Technology) and Jose Angel Alvarez Perez (Professor of Centro de Ciências Tecnológicas da Terra e do Mar (CTTMar) University of Vale do Itajaí (UNIVALI)) are chief scientists. In total, 11 international scientists, Japan and Brazil took part in the cruise with 1 Brazilian naval officer, two tv crews and one administrative staff.

4) Description of dives

At each site, we plan to carry out a) observations of rock and sediment characters and

benthic biological communities and b) measurements of environmental variables with CTDO systems. Benthic animals are well recorded high definition tv camera systems and still cameras. Some interesting rocks, organisms and others are captured by manipulators and slurp gun sampler. Precise observations of SWI will be made with H-type push cores with 82mm inner diameter. Both faunal and DNA analyses plans to conduct using biological samples for understanding biodiversity changes off Brazil region. General oceanographic observations will also be carried out routinely during the cruise.

5) Instruments

Suction sampler (Slurp gun): Benthic animals and rocks sampling
(dimension: 210×210×580mm. weight-in-air: ca. 16.5kg)



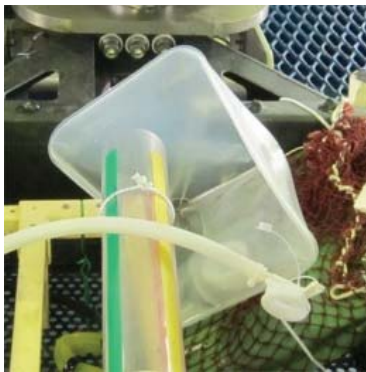
Push sediment corer (H type): Sediment sampling
(dimension: $\phi 82 \times 500$ mm, weight-in-air: ca. 3kg)



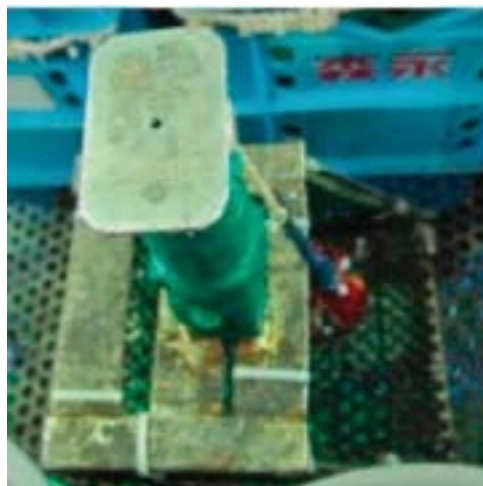
Niskin bottle water sampler($\phi 89 \times 851$ mm, weight-in-air 3.2 kg)



Bag water sampler (400 \times 200 \times 270mm, weight-in-air: ca 4kg)



Scoop sampler (300 \times 300 \times 300mm, weight-in-air: ca 5kg)



6) Log of daily scientific activities

12th, April, 2013

19:00 embarkation at E-Berth, Cape Town port, Cape Town, South Africa.

13th, April

9:40 Departure

11:00 laboratory setup

13:00 Shipboard education & training for scientists.

15:00 1st Science meeting – self introduction, Laboratory arrangement

16:40 Konpira-san, Pray to the Japanese God for Ocean Safety and drink Sake as aperitif of dinner

14th, April

1:00 Ship Standard Time Adjustment (-1h UTC+1)

9:25 Master Station Drill

10:00 Cruise meeting (Team, Crew and Scientist)

13:00 2nd Science meeting to decide diving points

15th, April

13:00 3rd Science meeting to decide “Plan B”

24:00 Ship Standard Time Adjustment (-1h UTC+0)

16th, April

13:00 4th Science meeting to make detailed dive plan with fine map

17th, April

9:00 Cruise Seminar by Hiroshi and Angel with 6K team and ship crews. Koichi kindly translated Angel’s talk into Japanese

13:00 5th Science meeting: Dive guidance by 6K team. Briefing has been held both at NO. 1 lab and Shinkai submersible. Fitting dive wear.

19:00 social gathering party. Second Konpira-san. Drank a lot.

24:00 Ship Standard Time Adjustment (-1h UTC-1)

18th, April

13:00 6th Science meeting with 6K team to discuss about dive plans. Aquanaut candidates for each site are decided tentatively.

19th, April

13:00 7th Science meeting: talking about dive plans, wish lists and payloads by every

aquanauts

24:00 Ship Standard Time Adjustment (-1h UTC-2)

20th, April

13:00 8th Science meeting: talking about dive plans for São Paulo Ridge by Adolpho

21st, April

9:30 In-house tour of engine room

10:00 Casual Tea Ceremony at Salon

13:00 9th Science meeting: Explanation about coming up plans for today and tomorrow.
Recording instruction for taking nicer video image during Shinkai 6K observation NHK crew.

14:00 XBT deployment @ pockmark site, Rio Grande Rise

15:00-18:00 Sub Bottom Profile

22nd, April

10:00 Briefing about dive #1333 by Paulo Sumida

13:00 10th Science meeting: Talking about daily schedule during 6K observation e.g. dive briefing, dive logs and science meeting.

14:30 laboratory setup

23rd, April

5:10 XBT then

6:00 Seabeam mapping at São Paulo Ridge

9:00 Shinkai6K dive #1333 (Aquanaut: Paulo Y.G. Sumida; Site: São Paulo Ridge. Horizontal observation)

17:30 Shinkai6K on deck

19:00 11th Science meeting: Talking about dive report of #1333 (Paulo) and dive plan of #1334 (Yoshi). Sample providing is discussed.

19:30 Sample processing till over midnight.

24th, April

9:00 Shinkai6K dive #1334 (Aquanaut: Yoshihiro Fujiwara; Site: São Paulo Ridge. Climbing the slope from the bottom to middle of hill)

17:00 Shinkai6K on deck

18:30 12th Science meeting: Talking about dive report of #1334 (Yoshi). We talk about the dive plan of #1335 (Adolpho). Sample providing is discussed.

19:30 Sample processing till over midnight.

25th, April

9:00 Shinkai6K dive #1335 (Aquanaut: Adolpho Augustine; Site: São Paulo Ridge. Climbing the slope from the middle to top of hill)

17:00 Shinkai6K on deck

18:00 13th Science meeting: Talking about dive report of #1335 (Adolpho). We talk about the dive plan of #1336 (Koichi). Sample providing is discussed.

20:00 Sample processing till over midnight.

26th, April

9:00 Shinkai6K dive #1336 (Aquanaut: Koichi Ara; Site: São Paulo Ridge. The unique site whale cemetery (tentative name. It should be named later.))

18:30 14th Science meeting: Dive report of #1336 by Koichi and dive plan of #1337 by Eugenio.

27th, April

9:00 Shikai6K dive #1337 (Aquanaut: Eugenio Pires Frazão; SP2, São Paulo Ridge.)

18:30 15th Science meeting: Dive report of #1337 by Eugenio and dive plan of #1338 by Takashi.

28th, April

8:00 Dive #1338 is canceled by high swell expectation.

9:00 YKDT dive #156

18:00 16th Science meeting: Dive report of YKDT #156 by Angel. R/V Yokosuka steams to Coral Garden site, Rio Grande Rise.

19:00 light Kompira at Salon.

29th, April

15:00 XBT then Seabeam mapping of Coral Garden site.

30th, April

10:00 Shikai6K dive #1338 (Aquanaut: José Angel Alvarez Perez; Coral garden, Rio Grande Rise)

18:30 17th Science meeting: Dive report of #1338 by Angel. Dive plan of #1339 by Abílio (Pockmark site).

1st, May

9:00 YKDT dive #157 at Pockmark site.

18:30 18th Science meeting: Dive report of YKDT #157 by Hiroshi. Dive plan of #1339 by Hiroshi (Granite site).

2nd, May

10:00 Shinkai6K dive #1339 (Aquanaut: Hiroshi Kitazato; Granite Site, Rio Grande Rise)

18:30 19th Science meeting: Dive report of #1339 by Hiroshi. Ship has been steaming to Rio de Janeiro.

3rd, May

13:00 20th Science meeting: General plan at Rio de Janeiro. How to study the whale fossil. How to prepare a document about origin of samples.

4th, May

13:00 Group photo

21st Science meeting: Confirmation of activity at Rio de Janeiro. How to summarize the cruise report.

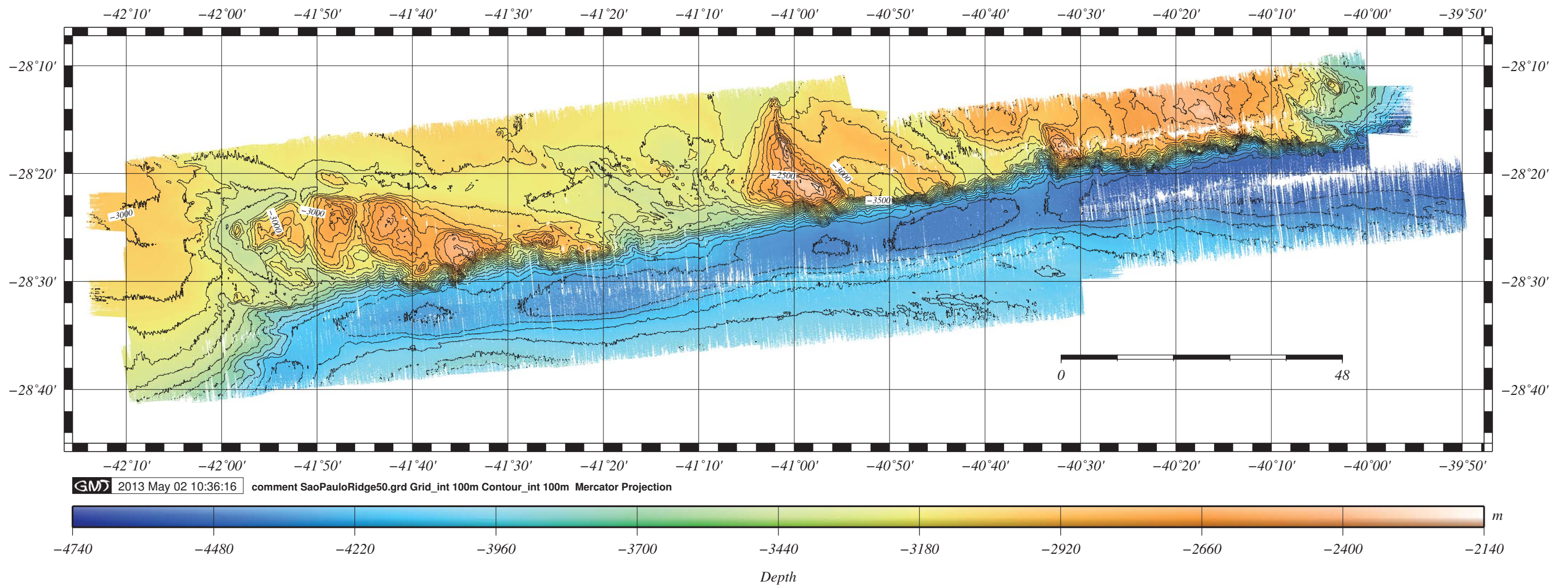
5th, May

Port of call: Pier Maua, Port of Rio de Janeiro

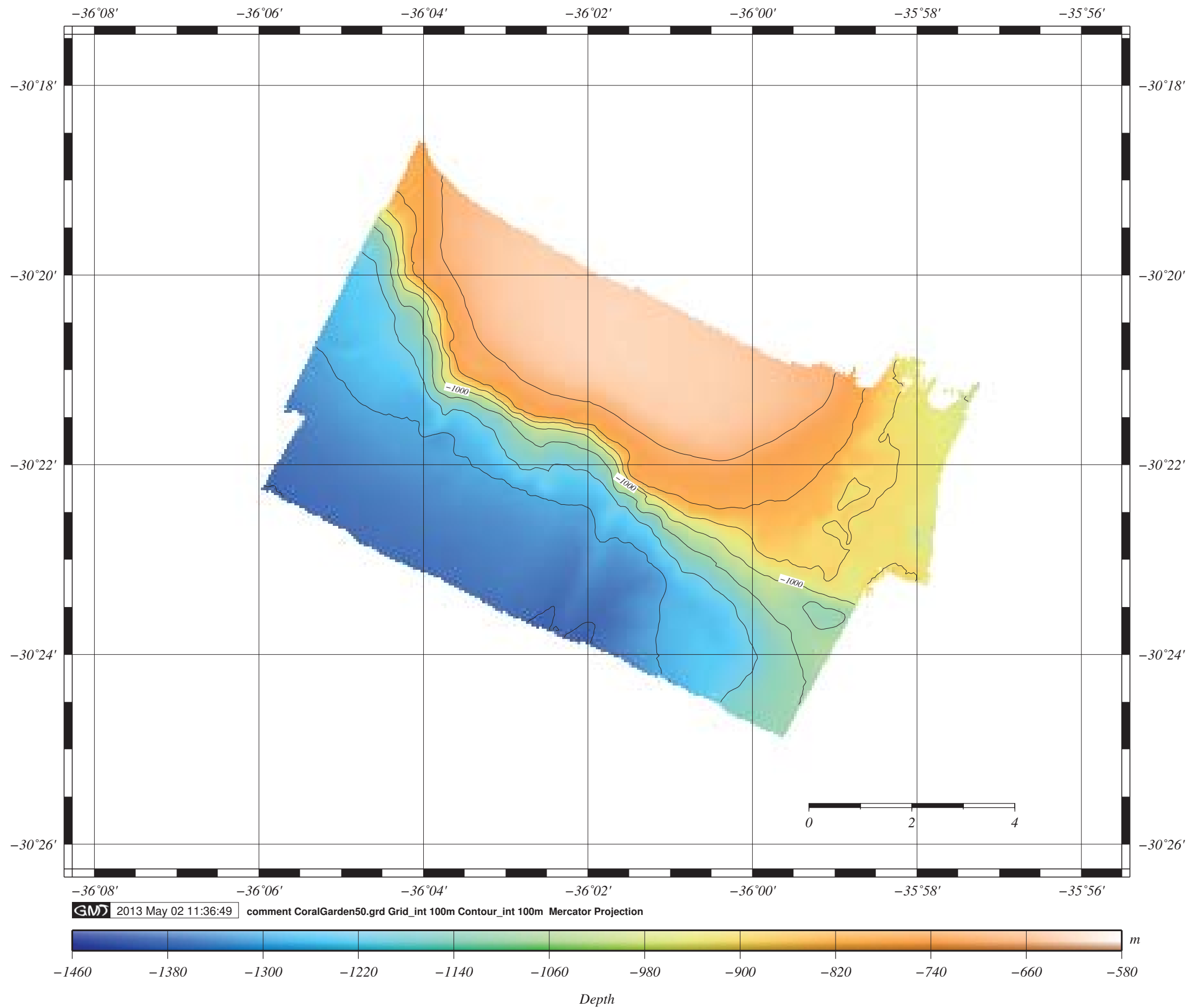
4. Seabeam Maps

- 1) São Paulo Ridge
- 2) Coral Garden, Rio Grande Rise
- 3) Pock mark, Rio Grande Rise
- 4) Granite, Rio Grande Rise

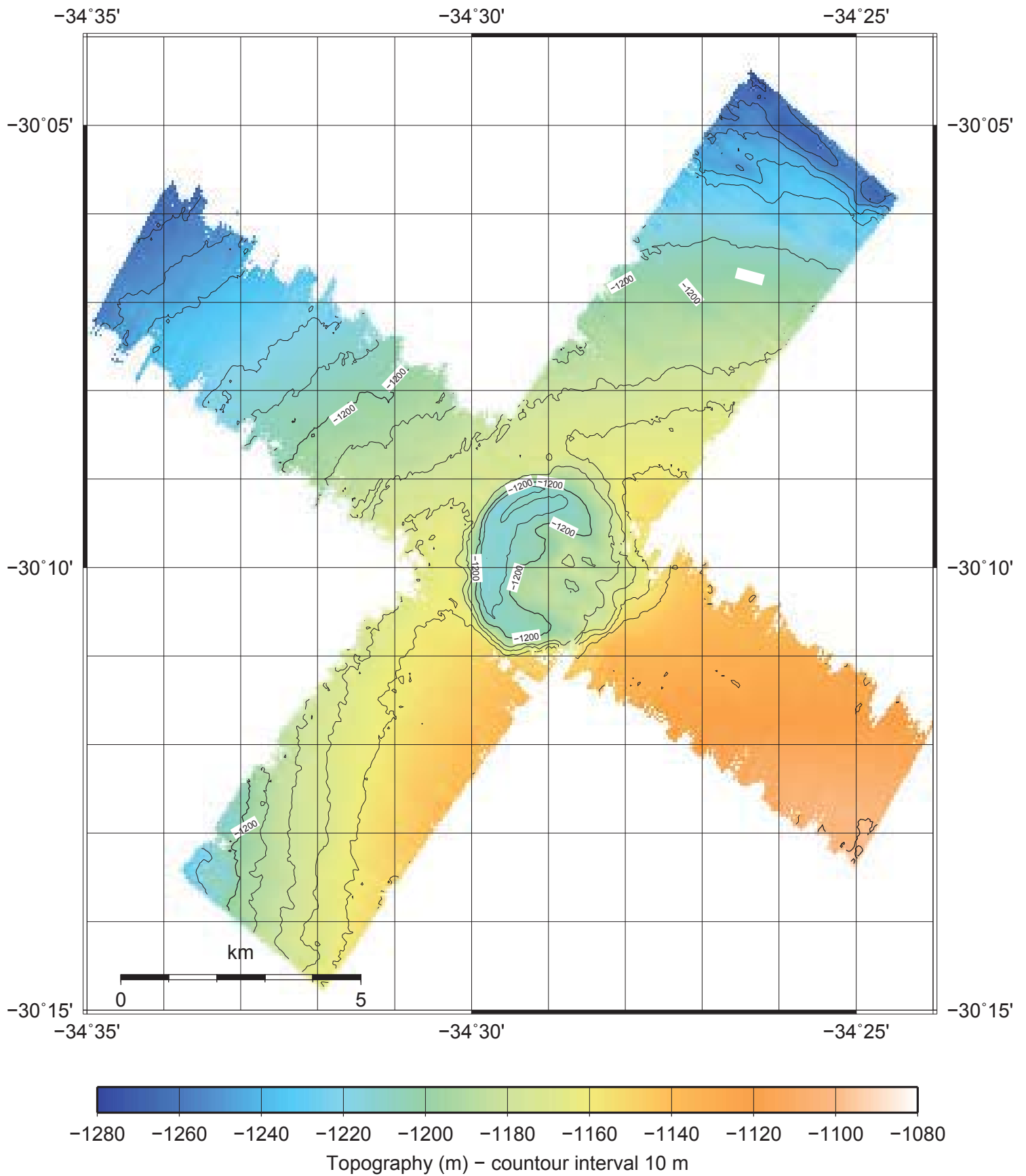
SaoPauloRidge50_cl100A3.ps



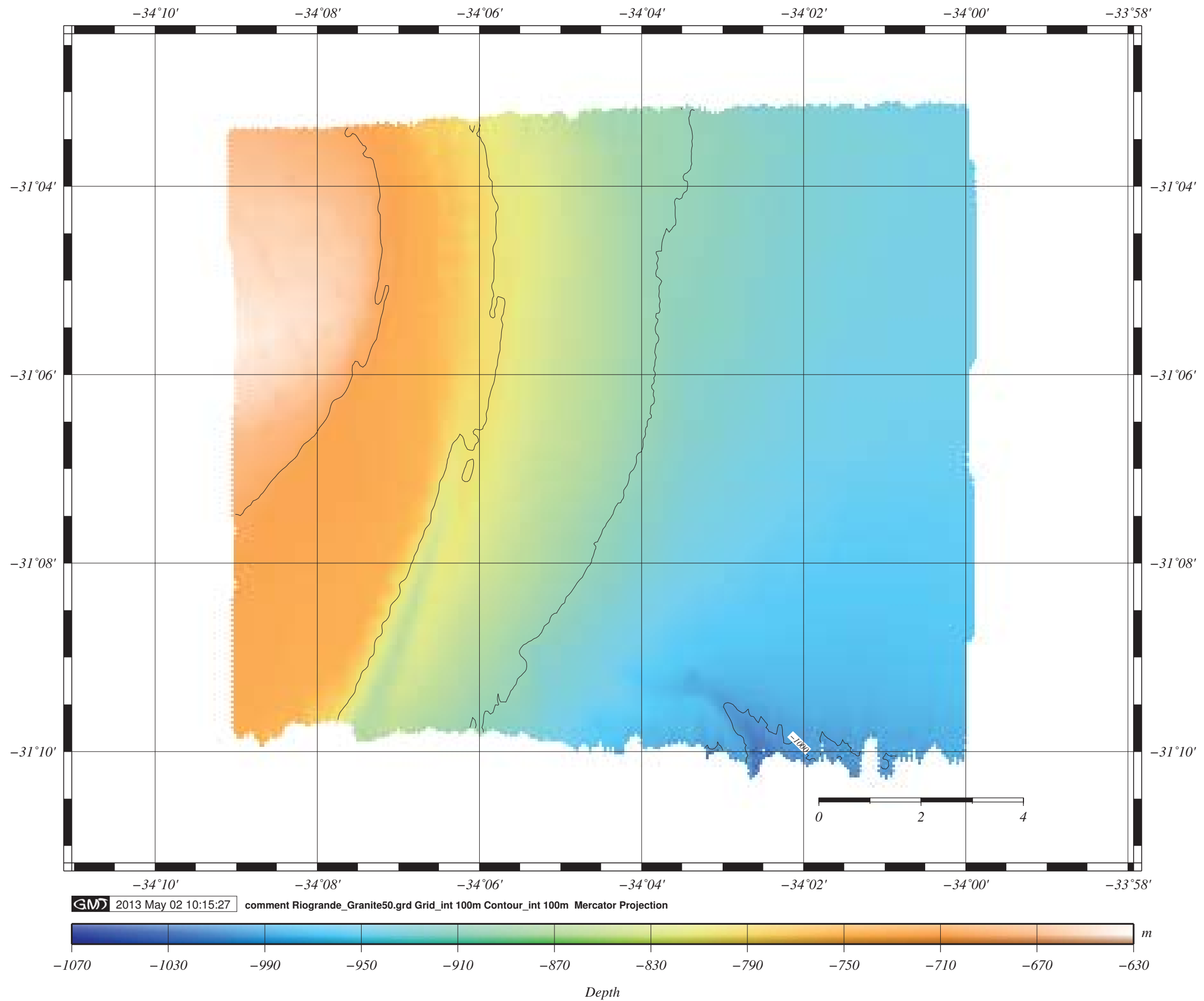
CoralGarden50_cl100A3.ps



File Pockmark50.grd – Topography Grid



Riogrande_Granite50_cl100A3.ps



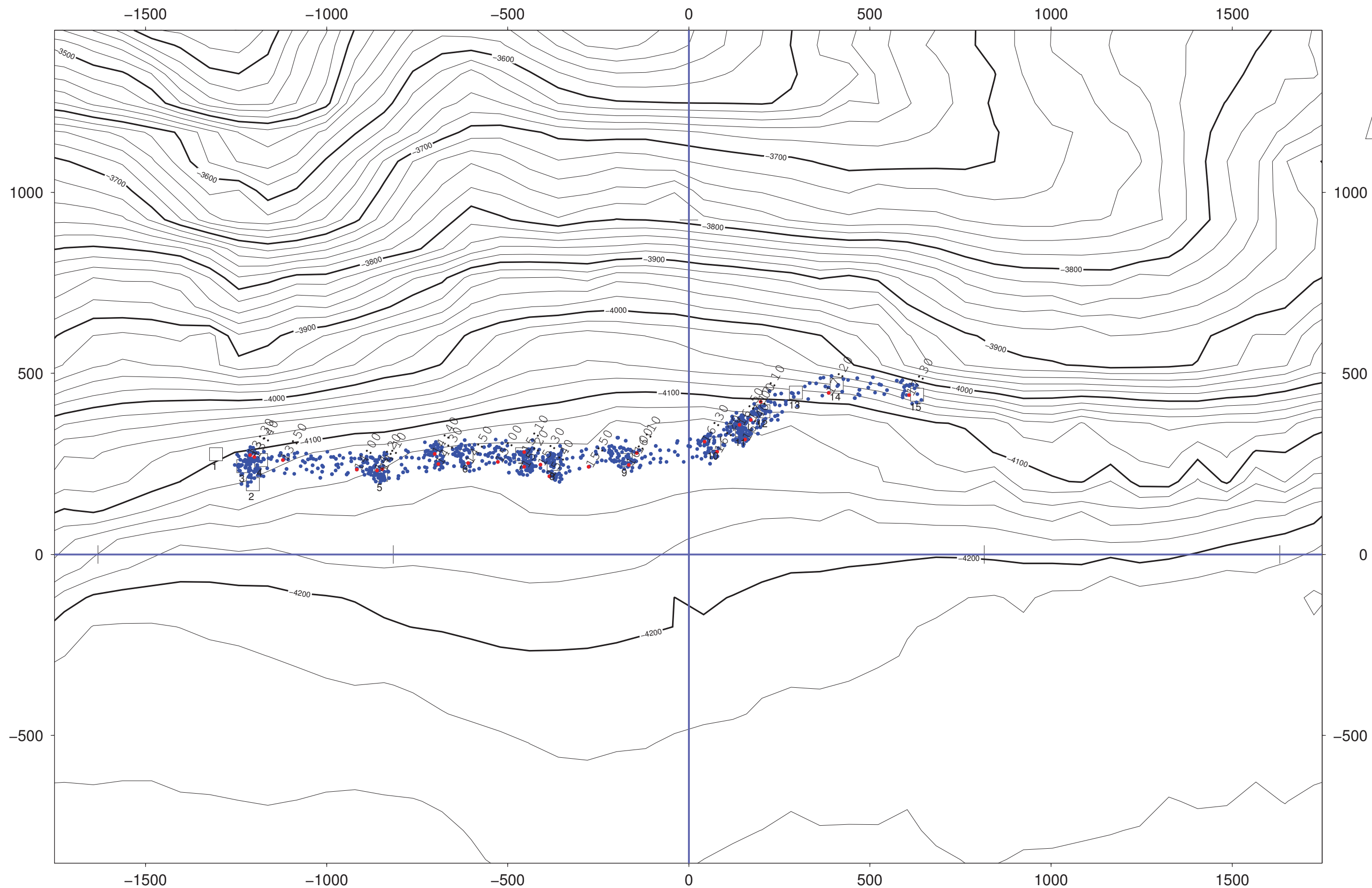
5. Dive records

All dives during YK13-04 leg 1

Dive Numbers	dive propose	Observer	affiliation	Depth (m)
1333	Discovery, observation and sampling of chemosynthetic fauna along the foot of Sao Paulo Ridge	Paulo Sumida	Univ. Sao Paulo	4100
1334	Discovery, observation and sampling of chemosynthetic community on the slope of the Sao Paulo Ridge	Yoshihiro Fujiwara	JAMSTEC	4200 - 3000
1335	Investigation on geology and biology at the slope of the Sao Paulo ridge	Adolpho Augustine	PUCRS/Petrobras	3000 - 2500
1336	Biological investigation of chemosynthetic community at Sao Paulo ridge	Koichi Ara	Nihon University /JAMSTEC	4100
1337	Geological and biological investigation at eastern Sao Paulo Ridge	Eugenio Frazao	CPRM	4200-3300
YKDT Dive 156	Geological and biological investigation at eastern Sao Paulo Ridge			3300-2500
1338	Biological investigation at Coral Garden area of Rio grande Rise	Jose Angel Perez	UNIVALI	1200-1000
YKDT Dive 157	Investigations of chemosynthetic fauna at pockmark area, rio Grande Rise			1200-1100
1339	Geological and Biological survey at "Granitic Rocks" area of Rio Grande rise	Hiroshi Kitazato	JAMSTEC	930-868

Dive# 1333

- i) Track chart
- ii) Event mark list
- iii) Dive log



XY Origin Lat 28-31.00000S Lon 041-38.50000W
Center Lat 28-30.83900S Lon 041-38.50100W
Grid_File:1333DIVE.grd ContourInt:20m

Datum WGS-84 Proj.LTM

(UR) Lat 28-30.21684S Lon 041-37.42889W
(LL) Lat 28-31.46216S Lon 041-39.57411W
(2013-04-23)

*** EVENT MARK LIST ***

2013-04-23 15:41:31

ORIGIN (XY<->LATLON CONVERT) LAT 28° 31.0000' S LON 41° 38.5000' W
 XY ORIGIN ((X,Y)=(0,0)) LAT 28° 31.0000' S LON 41° 38.5000' W

NO.	DAY	TIME	LAT	LON	X	Y
1	2013-04-23	09:00:00	28° 30.8500' S	41° 39.3000' W	277.0	-1305.0
						Landing Target
2	2013-04-23	11:12:00	28° 30.8950' S	41° 39.2381' W	193.9	-1204.0
						Sampling Niskin(3) D=4087m
3	2013-04-23	11:20:00	28° 30.8683' S	41° 39.2540' W	243.2	-1230.0
						Landing, Sampling Water(bag), Gravel D=4088m
4	2013-04-23	11:42:00	28° 30.8596' S	41° 39.2246' W	259.3	-1182.0
						Sampling Rock D=4092m
5	2013-04-23	12:17:00	28° 30.8816' S	41° 39.0219' W	218.6	-851.3
						Sampling Mud D=4123m
6	2013-04-23	12:51:00	28° 30.8535' S	41° 38.8768' W	270.5	-614.6
						Sampling Core(2) D=4130m
7	2013-04-23	13:22:00	28° 30.8506' S	41° 38.7820' W	275.9	-460.0
						Sampling Rocks D=4127m
8	2013-04-23	13:41:00	28° 30.8650' S	41° 38.7297' W	249.3	-374.7
						Sampling Animals(2), Rocks(2) D=4129m
9	2013-04-23	14:04:00	28° 30.8596' S	41° 38.6079' W	259.3	-176.0
						Sampling Core(3) D=4129m
10	2013-04-23	14:27:00	28° 30.8343' S	41° 38.4575' W	306.0	69.3
						Sampling Sea cucumber D=4125m
11	2013-04-23	14:57:00	28° 30.8148' S	41° 38.4101' W	342.0	146.6
						Sampling Core(4), Animal D=4117m
12	2013-04-23	15:08:00	28° 30.7867' S	41° 38.3741' W	393.9	205.3
						Sampling Octpuses D=4095m
13	2013-04-23	15:17:00	28° 30.7585' S	41° 38.3198' W	446.0	293.9
						Finding Rope D=4066m
14	2013-04-23	15:21:00	28° 30.7466' S	41° 38.2507' W	468.0	406.6
						Sampling Plankton D=4049m
15	2013-04-23	15:32:00	28° 30.7618' S	41° 38.1142' W	439.9	629.3
						Sampling Sponge, Left Bottom D=3993m, Alt=21m

16

17

18

19

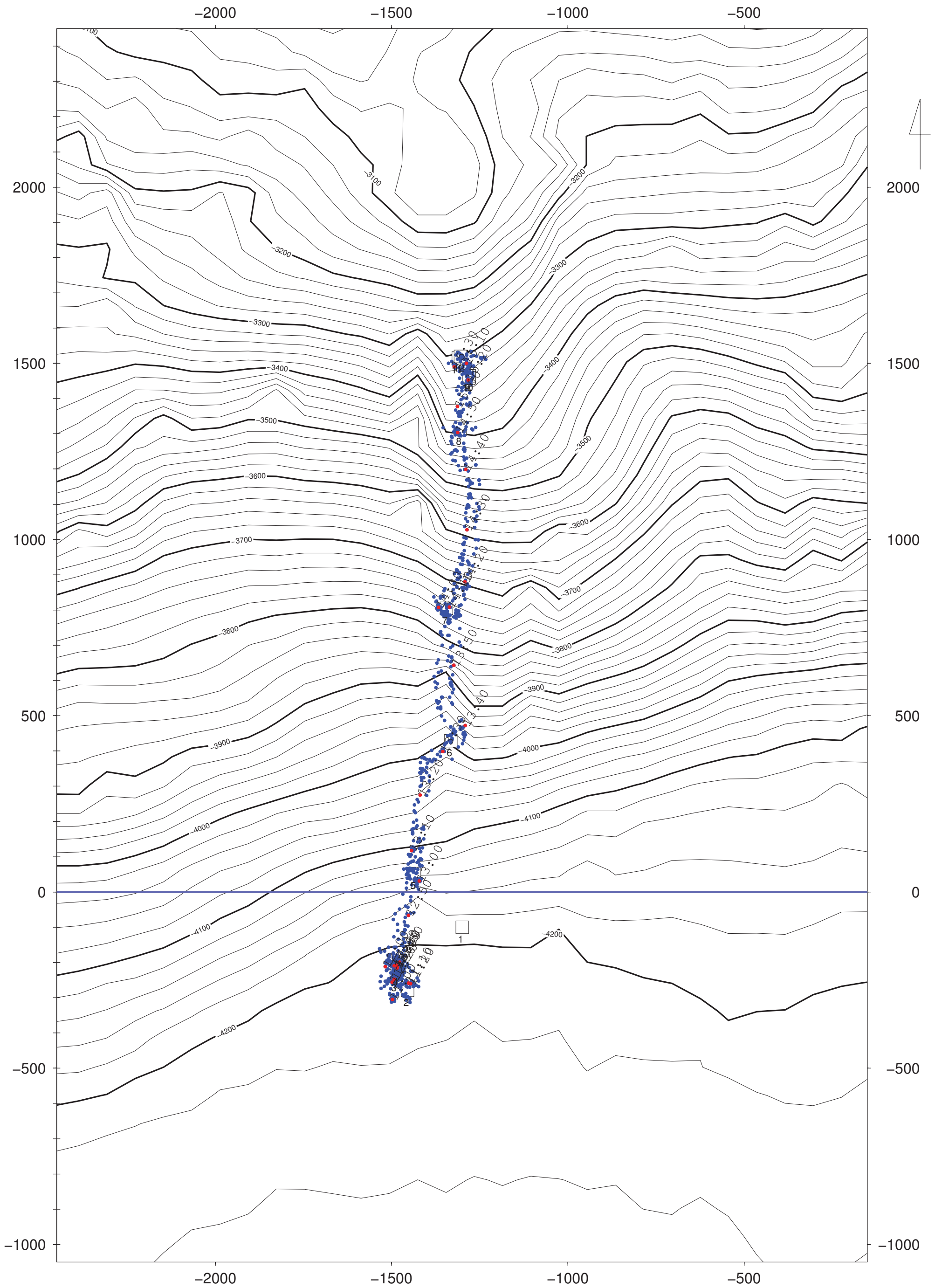
20

Dive Log of HPD Dive #1333		Off Brazil Sea, São Paulo Ridge					2013.04.23
Time (UTC)	Dep. (m)	Alt. (m)	Head (Deg)	Pos. Xm	Pos. Ym	Description	Remarks
09:25	0	0				vent open. Start of dive	WD:4,100m
09:59	1500						
10:10	2000						
10:22	2500						
10:33	3000						
10:39	3230		180	280	-1300	running	
10:42	3350					stop	
10:46	3500			170	-1250		
10:58	4000						
11:03	4035					neutral buoyancy. T=0.6, Sal=34.7	
11:09	4093	9				Niskin water sampling	
11:12	4083				-1200	three Niskins filled by water. Bag water sampling.	
11:14	4081					bag water sampling was failed	
11:16						YK to 6K: Keep turning on the power of sampling pump for 15 min.	
11:20	4088	10		240	-1230	Touching bottom. Rocky substrate. No current. T=0.6°C	
11:21	4088					bag water sampling was done	
11:23	4089					rocks sampling	
11:31	4084					rocks put into geobox 5	
11:33	4082					start to run	
11:37	4092					rock sampling	
11:42	4092			260	-1160	rocks put into geobox 5	
11:55	4117					a red squid	
12:00	4119					Ripple mark	Log: Masa
12:01	4117			240	-910		
12:03	4117					Star Fish	
12:06	4124					White methode, bacteria mat? under the rock	
12:10	4123					Landing. Start sampling rock or sediment. (Two scopes of it.)	
12:16	4122			220	-850	Finished sampling two scopes of rock or sedmient.	
12:17	4121					Start sailing with heading 90degree.	
12:29	4131					Try to sample KUMOHITODE under the shade of quadratic prism. However can not sampling.	
12:40	4127					Fish?	
12:44	4129					Start to push core sampling. Sampled three cores.	
12:46	4130					赤白帯 (Red+White tie), half.	
12:49	4130			270	-620	黒赤帯 (Black+Red tie), one-fifth. Finished to the push core sampling.	
12:52	4128					White fish, about 50cm. Macrouridae.	
12:58	4127					belt like arranged Small black pebbles. Wavy arrangement. Tilted belt crosses the monitor at H86.	
13:02	4126		90			Mud dome?	Log: Yoshi
13:04	4128		78			Ripple mark	
13:11	4127		41			Sponge?(white, large, mass)	
13:13	4127		125			Rock sampling	
13:15	4127		125			Rock sampled in #4 geobox	
13:21	4127		110			Altered serpentinite? Sampled using scoop in box#3	

13:22	4127		109	280	-460	Many rocks sampled in #3box	
13:28	4128		89			ripple mark	
13:30	4127					rocks	
13:31	4129		67			ophioroid	
13:32	4129		38			sea anemone	
13:34	4129		354			sea anemone?	
13:35	4129		359			ophioroid collected	
13:36	4129		2			sea anemone (attached to a rock) sampled	
13:38	4128					hydrozoa? Collected	
13:41	4129			250	-370	2 organisms in #1 box, 2 rocks in #3 box collected	
13:47	4128					cniderians(?) on a big rock	
13:48	4127					rocks and sediments	
13:50	4127		87			ripple mark	
13:52						red shrimp?	
13:54	4129		89			corrosion	
13:54	4129		82			Galatheid crab	
13:58	4129		30			3 core sampling	
13:59						sediment color: pale gray (blue-white)	
14:01	4129					sediment core (gree-white)	Log: Takashi
14:02	4129			260	-180	sediment core (yellow-blue)	
14:05	4127		64			fish (long Ophididae)	
14:07	4127					ripple mark	
14:13						ripple mark	
14:14				270	-10	position call	
14:22	4128		300	70		touch to bottom to take biology	
14:24	4128					sea cucumber	
14:29	4129					nice rock	
14:29	4129		70			detouch from the bottom to run	
14:33	4117					touch to bottom to take sediment cores	
14:36	4117					long long very long blue and striped some biology?	
14:38	4117					sediment core (blue, green, yellow-green, black) long recovery	
14:47						camera image stacked for 10 min caused by keypro	
14:52	4106			340	150	long something again. Try to recover. Stacked in hose.	
14:59	4108		74				
15:00							Koichi
15:07	4099					Octopus collected Cirrothauma sp. in canister No. 3	
15:17	4061			450	290	Find rope	
15:20	4052					Finish plankton sampling and put in canister No. 6	
15:21	4048					Shinkai wants to stay on sea-floor till 15:30	
15:25	4022			450	560		
15:30	4008			450	630	Try to take oragisms and put in canister No. 4	
15:32	3993					Start to leave see-floor	
15:32						Shinkai wii reach sea-surface at 17:10	
17:39						Shinkai was on deck.	

Dive# 1334

- i) Track chart
- ii) Event mark list
- iii) Dive log



XY Origin Lat 28-31.0000S Lon 041-38.5000W
Center Lat 28-30.6210S Lon 041-39.2970W
Grid_File:1334DIVE.grd ContourInt:20m

(UR) Lat 28-29.6739S Lon 041-38.5926W
(LL) Lat 28-31.5690S Lon 041-40.0023W
(2013-04-24)

Datum WGS-84 Proj.LTM

*** EVENT MARK LIST ***

2013-04-23 15:41:31

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NO.	DAY	TIME	LAT	LON	X	Y
1	2013-04-23	09:00:00	28° 30.8500' S	41° 39.3000' W	277.0	-1305.0
	Landing Target					
2	2013-04-23	11:12:00	28° 30.8950' S	41° 39.2381' W	193.9	-1204.0
	Sampling Niskin(3) D=4087m					
3	2013-04-23	11:20:00	28° 30.8683' S	41° 39.2540' W	243.2	-1230.0
	Landing, Sampling Water(bag), Gravel D=4088m					
4	2013-04-23	11:42:00	28° 30.8596' S	41° 39.2246' W	259.3	-1182.0
	Sampling Rock D=4092m					
5	2013-04-23	12:17:00	28° 30.8816' S	41° 39.0219' W	218.6	-851.3
	Sampling Mud D=4123m					
6	2013-04-23	12:51:00	28° 30.8535' S	41° 38.8768' W	270.5	-614.6
	Sampling Core(2) D=4130m					
7	2013-04-23	13:22:00	28° 30.8506' S	41° 38.7820' W	275.9	-460.0
	Sampling Rocks D=4127m					
8	2013-04-23	13:41:00	28° 30.8650' S	41° 38.7297' W	249.3	-374.7
	Sampling Animals(2), Rocks(2) D=4129m					
9	2013-04-23	14:04:00	28° 30.8596' S	41° 38.6079' W	259.3	-176.0
	Sampling Core(3) D=4129m					
10	2013-04-23	14:27:00	28° 30.8343' S	41° 38.4575' W	306.0	69.3
	Sampling Sea cucumber D=4125m					
11	2013-04-23	14:57:00	28° 30.8148' S	41° 38.4101' W	342.0	146.6
	Sampling Core(4), Animal D=4117m					
12	2013-04-23	15:08:00	28° 30.7867' S	41° 38.3741' W	393.9	205.3
	Sampling Octpuses D=4095m					
13	2013-04-23	15:17:00	28° 30.7585' S	41° 38.3198' W	446.0	293.9
	Finding Rope D=4066m					
14	2013-04-23	15:21:00	28° 30.7466' S	41° 38.2507' W	468.0	406.6
	Sampling Plankton D=4049m					
15	2013-04-23	15:32:00	28° 30.7618' S	41° 38.1142' W	439.9	629.3
	Sampling Sponge, Left Bottom D=3993m, Alt=21m					

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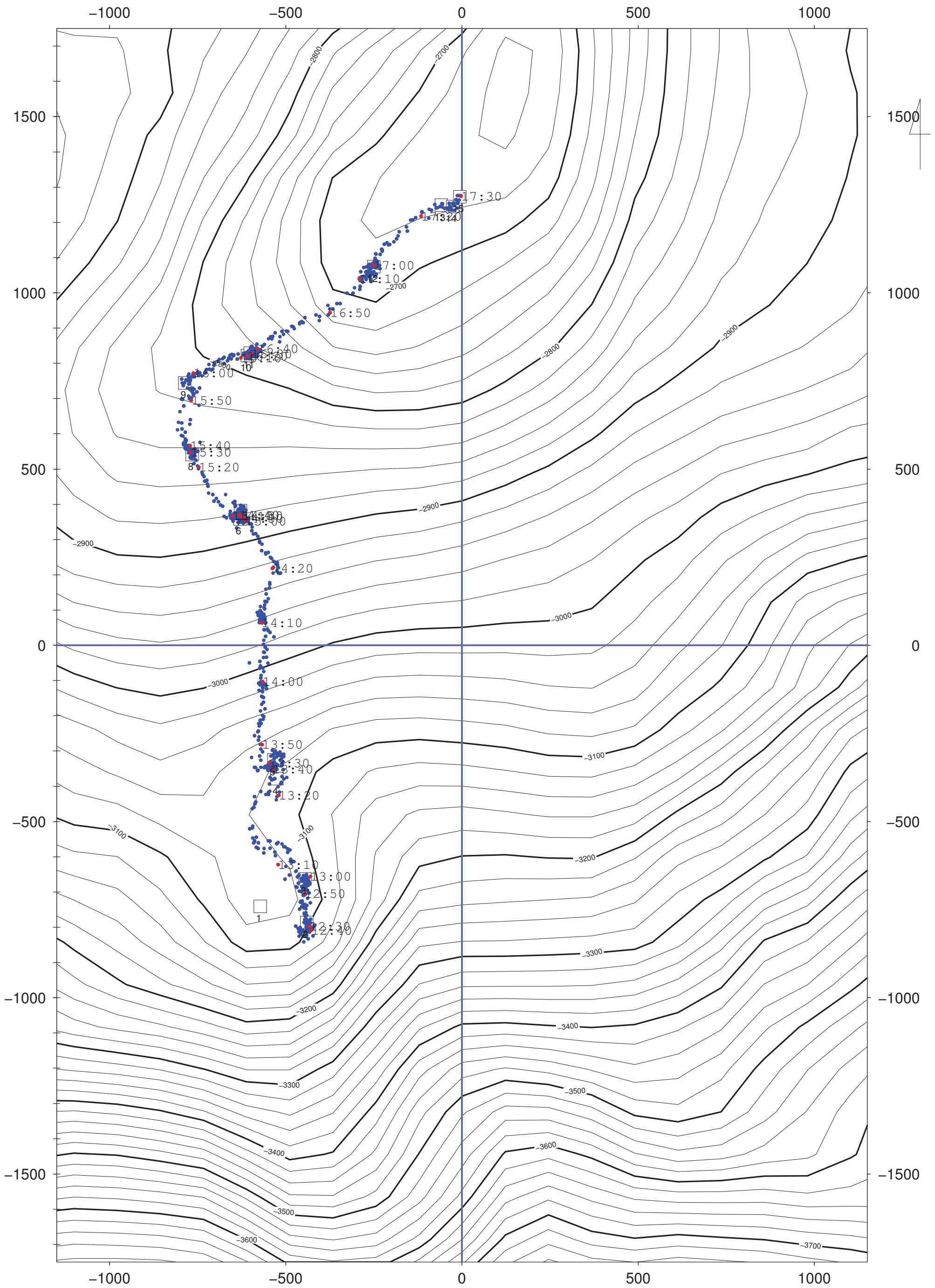
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Dive Log of HPD Dive #1333		Off Brazil Sea, São Paulo Ridge					2013.04.23
Time (UTC)	Dep. (m)	Alt. (m)	Head (Deg)	Pos. Xm	Pos. Ym	Description	Remarks
09:25	0	0				vent open. Start of dive	WD:4,100m
09:59	1500						
10:10	2000						
10:22	2500						
10:33	3000						
10:39	3230		180	280	-1300	running	
10:42	3350					stop	
10:46	3500			170	-1250		
10:58	4000						
11:03	4035					neutral buoyancy. T=0.6, Sal=34.7	
11:09	4093	9				Niskin water sampling	
11:12	4083				-1200	three Niskins filled by water. Bag water sampling.	
11:14	4081					bag water sampling was failed	
11:16						YK to 6K: Keep turning on the power of sampling pump for 15 min.	
11:20	4088	10		240	-1230	Touching bottom. Rocky substrate. No current. T=0.6°C	
11:21	4088					bag water sampling was done	
11:23	4089					rocks sampling	
11:31	4084					rocks put into geobox 5	
11:33	4082					start to run	
11:37	4092					rock sampling	
11:42	4092			260	-1160	rocks put into geobox 5	
11:55	4117					a red squid	
12:00	4119					Ripple mark	Log: Masa
12:01	4117			240	-910		
12:03	4117					Star Fish	
12:06	4124					White methode, bacteria mat? under the rock	
12:10	4123					Landing. Start sampling rock or sediment. (Two scopes of it.)	
12:16	4122			220	-850	Finished sampling two scopes of rock or sedmient.	
12:17	4121					Start sailing with heading 90degree.	
12:29	4131					Try to sample KUMOHITODE under the shade of quadratic prism. However can not sampling.	
12:40	4127					Fish?	
12:44	4129					Start to push core sampling. Sampled three cores.	
12:46	4130					赤白帯 (Red+White tie), half.	
12:49	4130			270	-620	黒赤帯 (Black+Red tie), one-fifth. Finished to the push core sampling.	
12:52	4128					White fish, about 50cm. Macrouridae.	
12:58	4127					belt like arranged Small black pebbles. Wavy arrangement. Tilted belt crosses the monitor at H86.	
13:02	4126		90			Mud dome?	Log: Yoshi
13:04	4128		78			Ripple mark	
13:11	4127		41			Sponge?(white, large, mass)	
13:13	4127		125			Rock sampling	
13:15	4127		125			Rock sampled in #4 geobox	
13:21	4127		110			Altered serpentinite? Sampled using scoop in box#3	

13:22	4127		109	280	-460	Many rocks sampled in #3box	
13:28	4128		89			ripple mark	
13:30	4127					rocks	
13:31	4129		67			ophioroid	
13:32	4129		38			sea anemone	
13:34	4129		354			sea anemone?	
13:35	4129		359			ophioroid collected	
13:36	4129		2			sea anemone (attached to a rock) sampled	
13:38	4128					hydrozoa? Collected	
13:41	4129			250	-370	2 organisms in #1 box, 2 rocks in #3 box collected	
13:47	4128					cniderians(?) on a big rock	
13:48	4127					rocks and sediments	
13:50	4127		87			ripple mark	
13:52						red shrimp?	
13:54	4129		89			corrosion	
13:54	4129		82			Galatheid crab	
13:58	4129		30			3 core sampling	
13:59						sediment color: pale gray (blue-white)	
14:01	4129					sediment core (gree-white)	Log: Takashi
14:02	4129			260	-180	sediment core (yellow-blue)	
14:05	4127		64			fish (long Ophididae)	
14:07	4127					ripple mark	
14:13						ripple mark	
14:14				270	-10	position call	
14:22	4128		300	70		touch to bottom to take biology	
14:24	4128					sea cucumber	
14:29	4129					nice rock	
14:29	4129		70			detouch from the bottom to run	
14:33	4117					touch to bottom to take sediment cores	
14:36	4117					long long very long blue and striped some biology?	
14:38	4117					sediment core (blue, green, yellow-green, black) long recovery	
14:47						camera image stacked for 10 min caused by keypro	
14:52	4106			340	150	long something again. Try to recover. Stacked in hose.	
14:59	4108		74				
15:00							Koichi
15:07	4099					Octopus collected Cirrothauma sp. in canister No. 3	
15:17	4061			450	290	Find rope	
15:20	4052					Finish plankton sampling and put in canister No. 6	
15:21	4048					Shinkai wants to stay on sea-floor till 15:30	
15:25	4022			450	560		
15:30	4008			450	630	Try to take oragisms and put in canister No. 4	
15:32	3993					Start to leave see-floor	
15:32						Shinkai wii reach sea-surface at 17:10	
17:39						Shinkai was on deck.	

Dive# 1335

- i) Track chart
 - ii) Event mark list
- Dive log



XY Origin Lat 28-29.5000S Lon 041-39.0000W
Center Lat 28-29.5000S Lon 041-39.0000W
Grid_File:1335DIVE.grd ContourInt:20m

(UR) Lat 28-28.55297S Lon 041-38.29581W
(LL) Lat 28-30.44803S Lon 041-39.70519W
(2013-04-25)

Datum WGS-84 Proj.LTM

*** EVENT MARK LIST ***

2013-04-25 15:33:21

ORIGIN (XY<->LATLON CONVERT) LAT 28° 29.5000' S LON 41° 39.0000' W
 XY ORIGIN ((X,Y)=(0,0)) LAT 28° 29.5000' S LON 41° 39.0000' W

NO.	DAY	TIME	LAT	LON	X	Y
1	2013-04-25	09:00:00	28° 29.9000' S	41° 39.3500' W	-738.7	-571.0
	Landing Target					
2	2013-04-25	10:35:00	28° 29.9259' S	41° 39.2697' W	-786.6	-440.0
	Landing D=3060m					
3	2013-04-25	11:01:00	28° 29.8584' S	41° 39.2725' W	-661.9	-444.6
	Sampling Sea cucumber D=3064m					
4	2013-04-25	11:24:00	28° 29.7050' S	41° 39.3211' W	-378.6	-523.9
	Sampling Plankton D=3078m					
5	2013-04-25	11:42:00	28° 29.6754' S	41° 39.3264' W	-323.9	-532.5
	Sampling Starfish, Rock D=3079m					
6	2013-04-25	12:37:00	28° 29.3051' S	41° 39.3853' W	359.9	-628.6
	Sampling Rock D=2871m					
7	2013-04-25	13:04:00	28° 29.2928' S	41° 39.3845' W	382.6	-627.3
	Sampling Born, Animals, Born associate D=2864m					
8	2013-04-25	13:37:00	28° 29.2069' S	41° 39.4690' W	541.3	-765.2
	Sampling Core(#6,#7,#8,#9) D=2833m					
9	2013-04-25	13:56:00	28° 29.0966' S	41° 39.4811' W	745.0	-785.0
	Sampling Octpuses D=2800m					
10	2013-04-25	14:26:00	28° 29.0548' S	41° 39.3722' W	822.2	-607.3
	Sampling Nereides, Sponge D=2777m					
11	2013-04-25	14:39:00	28° 29.0506' S	41° 39.3671' W	830.0	-599.0
	Sampling Rocks(2) D=2770m					
12	2013-04-25	15:08:00	28° 28.9171' S	41° 39.1528' W	1076.5	-249.3
	Sampling Core(#1,#2,#3,#4,#5) D=2660m					
13	2013-04-25	15:23:00	28° 28.8232' S	41° 39.0360' W	1250.0	-58.7
	Sampling NISKIN(3) D=2648m					
14	2013-04-25	15:27:00	28° 28.8250' S	41° 39.0151' W	1246.6	-24.6
	Sampling Water(bag) D=2646m					
15	2013-04-25	15:32:00	28° 28.8106' S	41° 39.0037' W	1273.2	-6.0
	Left Bottom D=2644m					

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**Dive Log of
6K Dive #1335**

Off Brazil Sea, São Paulo Ridge

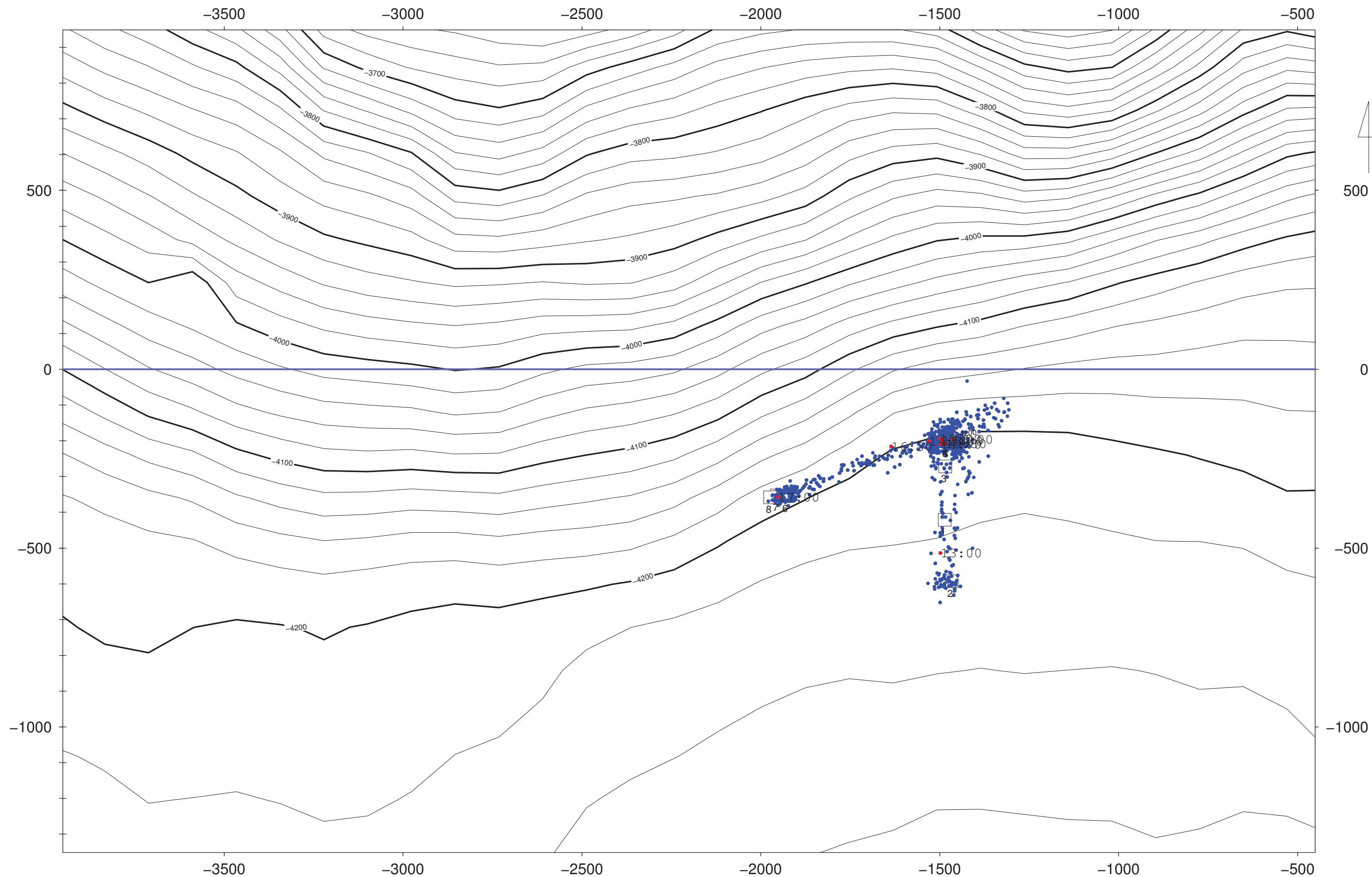
2013/04/25

Time (LCT)	Dep. (m)	Alt. (m)	Head (Deg)	Pos. Xm	Pos. Ym	Description	Remarks
09:08						Vent open. Start of DIVE.	Log:Masayuki
09:21	500					Start to send a image by sound from "6K" to "YK"	
09:32	1000						
09:44	1500			-750	-470		Masa Toizumi
09:50						Go ahead to Co260°	
09:53	1919			-820	-480		
09:55	2000			-850	-510		
10:07	2500		51				
10:23		71				SHINKAI is going to be landing to seafloor	
10:26	3002	53	353				
10:32	3057	6	277			just see seafloor	
10:35	3060			-790	-	SHINKAI was landing. Temp.2.6°C, no curent	
10:36	3060	1	309			like a stick. Like a coral.	
10:39						Star fish.	
10:40	3060	3	328			Start to run	Takashi
10:43	3059	3	2	-790	-440	Position call	
10:45	3059					the field of rounded rocks covered by thick Mn clust	
10:46	3060					Orange sponge	
10:46	3062		0			Heading to 330° (but not changed)	
10:49	3067	2	350			Orange sponge	
10:50	3066	3	351	-700	-450	Position call	
10:53	3064	1	350			Orange sponges	
10:53	3064	1	340			Sea cucumber and trail	
10:56	3064	2	295			long trail. Request to capture the animal	
10:59	3064					Capturing	
	3064						
11:00	3064		270			Sea cucumber in Canister No. 1	Koichi
11:02	3064		270			Plankton sampling for 20 min.	
11:11	3060		301			Find 1 orange sponge on roock	
11:13	3064		285			Rocy and steep	
11:14	3075		329			Sediment and trail	
11:15	3085		358	-520	-600	Position call	
11:21	3083		2			Sharp rock in sediment with ripple mark	
11:23	3080		2			Sea cucumber	
11:24	3079		0	-380	-530	Position call	
11:25	3080		359			Find 1 starfish	
11:28	3079		291			Try to take starfish	
11:32	3079		235	-320	-530	Position call	
11:37	3079		227			Starfish in Bio-Box 1	
11:41	3077		237			Rock in Geo-Box 5	
11:53	3023		0	-200	-560	Position call	
11:59	2988					Running to shallower	André
12:04	2960					many small sedimentary round rocks spread over the seafloor	

12:05	2959		40	-560		
12:06	2951				ripple marks	
12:07	2951				stop and observe - flat large rocks, small round rocks, also sediment at seafloor	
12:14	2952		80	-570	finish observation, position informed	
12:16	2935				field with lot of small round rocks... about 3 minutes of the same pattern	
12:19	2917				very large round rocks	
12:20	2914	335			information of heading (Deg) - 330	
12:21	2908				stip slope	
12:25	2885				some areas with sediments	
12:26	2879				around some rocks is white	
12:27	2872				sediment, and small rocks	
12:29	2871		360	-630	stop to check seafloor hardness, animal trails, position informed	
12:36	2871				one rock collect - deposited in GeoBox-5	
12:40	2863				large rocks, looks lava spreading between older rocks	
12:42	2862				hard seafloor, almost large round and flat rocks	
12:48	2864				try collect something seems bone - probably from a Whale skull	
12:51	2864				informed to be light, probably is not a rock, it is a whale fossil	
12:53	2864				collect the skull, between Geobox and Slurp Gun box	
12:53	2864		380	-630	position	
12:56	2864				using slurp gun to suck the sediments around the fossil	
13:00	2864					Log: Eugenio
13:01	2864	303			using slurp gun to suck the sediments around the fossil	
13:03	2864	303			using slurp gun to suck the sediments around the fossil - n. 03	
13:06	2864	303	360	-630	Position call	
13:07	2864	303			2.9 degrees temperature	
13:08	2864	303			change HD disk	
13:15	2857	320			many small sedimentary round rocks spread over the seafloor	
13:16	2855	323	390	-630	Position call	
13:17	2847	326			nodulos crust the seafloor	
13:22	2834	11			sediment, and small rocks	
13:26	2833	350			push core site	
13:27	2833	332			push core n.09 ~15 cm	
13:29	2832	311	540	-770	Position call	
13:31	2832	308			holoturian	
13:35	2832	308			collect push core n.06, 07 and 08	
13:39	2832	330	550	-770	Position call	
13:41	2830	314			many sediment	
13:42	2829	331			tripoid fish	
13:43	2827	338			mark starfish in the sediment	
13:48	2809	342	620	-810	Position call	
13:52	2800	66			plate-like crust	
13:42	2800	46			cirrate octopus	
13:45	2798	45			sample cirrate octopus - using slurp gun n.04	
13:56	2799	45	750	-780	Position call	
14:05	2791	280	810	-660	Position call. Stop at the locus. Flat sediment with biological mounds.	Log: Angel +Takashi

Dive# 1336

- i) Track chart
 - ii) Event mark list
- Dive log



XY Origin Lat 28-31.00000S Lon 041-38.50000W
Center Lat 28-31.10900S Lon 041-39.84900W
Grid_File:1336DIVE.grd ContourInt:20m

Datum WGS-84 Proj.LTM

(UR) Lat 28-30.48684S Lon 041-38.77689W
(LL) Lat 28-31.73216S Lon 041-40.92211W
(2013-04-26)

*** EVENT MARK LIST ***

2013-04-26 17:11:13

NO.	DAY	TIME	LAT	LON	X	Y
1	2013-04-26	09:00:00	28° 31.2271' S	41° 39.4097' W	-419.4	-1484.0
		Landing Target				
2	2013-04-26	10:51:00	28° 31.3209' S	41° 39.3991' W	-592.6	-1466.7
		Landing D=4219m				
3	2013-04-26	11:13:00	28° 31.1462' S	41° 39.4101' W	-270.0	-1484.6
		Sampling Niskin(3) D=4201m				
4	2013-04-26	12:18:00	28° 31.1083' S	41° 39.4081' W	-200.0	-1481.4
		Sampling Water(bag), Animals, Whalebone D=4203m				
5	2013-04-26	13:33:00	28° 31.1083' S	41° 39.4081' W	-200.0	-1481.4
		Sampling Core(#4,#8,#9), Bone associate, Rocks(2) D=4203m				
6	2013-04-26	15:06:00	28° 31.1913' S	41° 39.6815' W	-353.3	-1927.4
		Sampling Core(#1,#2,#3,#5,#6,#7) D=4197m				
7	2013-04-26	15:13:00	28° 31.1906' S	41° 39.6974' W	-352.0	-1953.3
		Sampling Rocks D=4197m				
8	2013-04-26	15:21:00	28° 31.1938' S	41° 39.7097' W	-357.9	-1973.4
		Left Bottom D=4193m				

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**Dive Log of
6K Dive #1336**

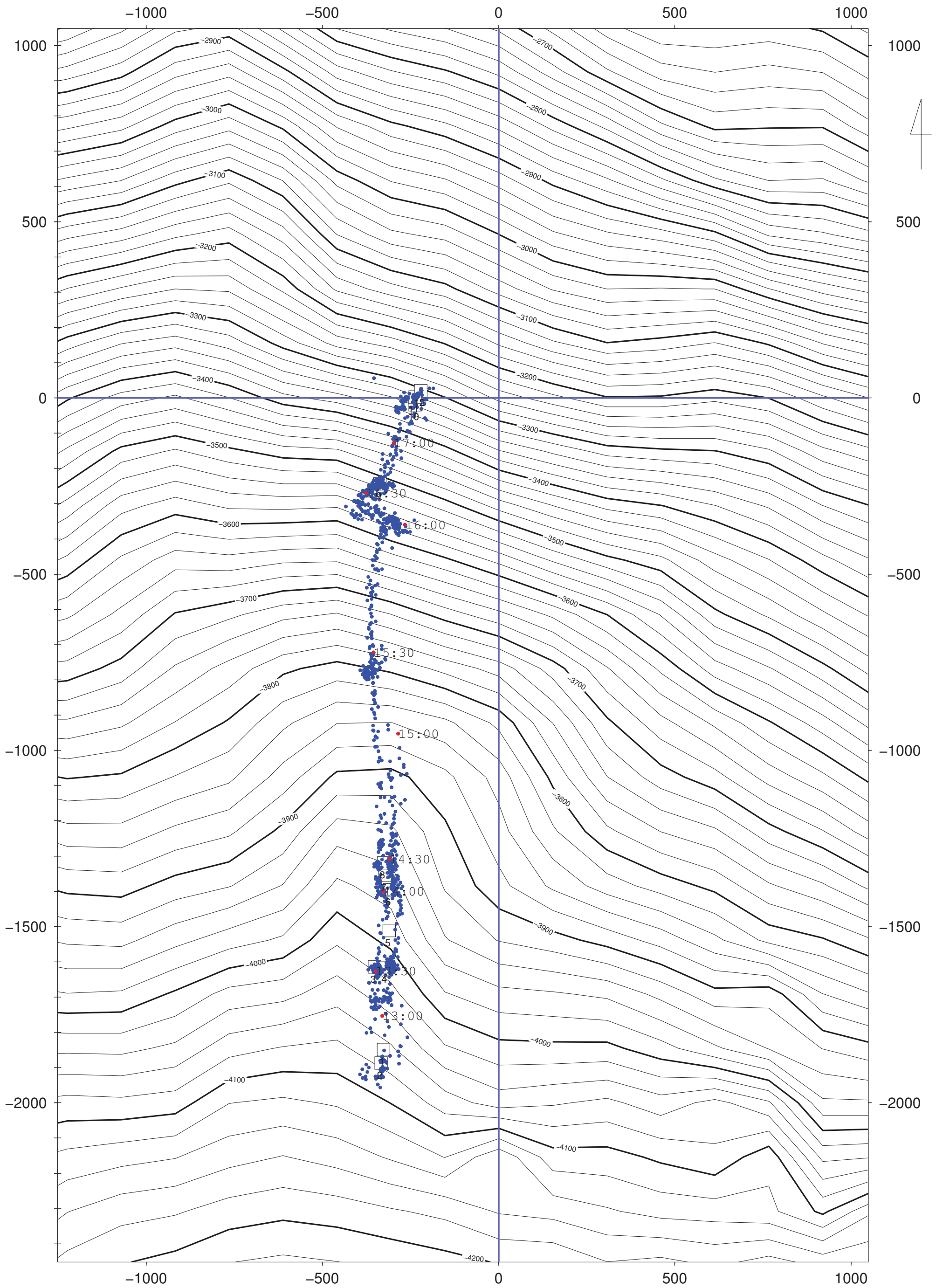
Off Brazil Sea, São Paulo Ridge

2013/04/26

Time (LCT)	Dep. (m)	Alt. (m)	Head (Deg)	Pos. Xm	Pos. Ym	Description	Remarks
09:05						Vent open. Start of DIVE.	
09:16						Start to send a image by sound from "6K" to "YK"	Masayuki
09:26	1000						
09:37	1500						
09:48	2000						
09:59	2500			-530	-1030		
10:11	3000			-580	-1230		
10:22	3500		300	-560	-1400		
10:26	3660		306	-580	-1470		
10:34	4000		226				
10:43	4145	71	98			SHINKAI is going to be landing seafloor.	
10:49		2	354			Just see seafloor	takashi
10:51	4219	1	317	-590	-1470	touching bottom. Mud with pebbles. T-0.4degree.	
10:53	4219		309			start to run	
10:56	4215	4	1			rock outcrops and bolders	sumida
10:58	4213	4	357			sediments	
11:01	4210	1	356			sediments and bolders	
11:02	4209	2	358	-440	-1470	position	
11:05	4210	2	359			scale worm	
11:07	4210	1	358			rock outcrops and bolders	
11:09	4209	1	11			visual observation of first marker	
11:10	4205	2	356			Niskin bottles	
11:13	4201	6	354			Finished collecting 3 niskins	
11:14	4002	6	359	-270	-1480	position at niskins	
11:20	4196	5	257	-190	-1460	visual of second marker	
11:24	4201	2	252			see second marker on screen	
11:26	4203	1	270			arrived Hitomi whale fall	
11:30	4203	0	285			Touch bottom at whale fall	
11:32	4203	0	285			Taking video footage and photos	
11:34	4203	0	285			Footage of tube worm???	
11:35	4203	0	285			Footage of isolated vertebra	
11:46	4203	0	306			Moved closer to carcass	
11:58	4203					other piece of bone with tube worm, gastropodes, barnacle(?)	Andre Log
12:01	4203					taking pictures of the bones, crabs and fauna	
12:06	4203					probably tube worm	
12:14	4203					Plastic bag collecting water	
12:19	4203					plastic bag filled with water	
12:23	4203					push core - no.4 about 20cm beside the bones, mixed the sediments on the top layer - quit the plann	
12:31	4203					vaccum around the bones with slurp gun to canister 6 (net 100um)	
12:35	4203					start collecting the bones with manipulators - to Bio-1 box (first bone -	
12:39	4203					tried push core 4 - below bone just collect - not possible	
12:43	4203					Hiroshi advised to use the scoop in that point (below bone)	
12:46	4203					two bone inside the Bio1 box	
12:49	4203					using the slurp gun collect the discs and deposited in Bio1 Box	
12:56	4203					put another disc in Bio1 box	
13:01	4203					put another vertebra in Bio1 box - total at this point= 3 vertebra+3 discs	
13:03	4204					next vertebra collected and saved in Bio1	Eugenio Log
13:05	4204					last vertebra collected and saved in Bio1	
13:07	4204		341			put another disc in Bio1 box	

Dive# 1337

- iv) Track chart
- v) Event mark list
- i) Dive log



XY Origin Lat 28-23.2000S Lon 040-58.7000W
Center Lat 28-23.5800S Lon 040-58.7620W
Grid_File:1337DIVE.grd ContourInt:20m

(UR) Lat 28-22.63296S Lon 040-58.05851W
(LL) Lat 28-24.52804S Lon 040-59.46649W
(2013-04-27)

Datum WGS-84 Proj.LTM

*** EVENT MARK LIST ***

2013-04-27 15:30:47

ORIGIN (XY<->LATLON CONVERT) LAT 28° 23.2000'S LON 40° 58.7000'W
 XY ORIGIN ((X,Y)=(0,0)) LAT 28° 23.2000'S LON 40° 58.7000'W

NO.	DAY	TIME	LAT	LON	X	Y
1	2013-04-27	09:00:00	28° 24.2000' S	40° 58.9000' W	-1846.9	-326.6
	Landing Target					
2	2013-04-27	10:53:00	28° 24.2219' S	40° 58.9041' W	-1887.3	-333.3
	Landing D=4061m					
3	2013-04-27	11:25:00	28° 24.0743' S	40° 58.9155' W	-1614.7	-351.9
	Sampling Core(#4,#8,#9) D=4014m					
4	2013-04-27	11:41:00	28° 24.0750' S	40° 58.8963' W	-1616.0	-320.6
	Sampling Animal D=4006m					
5	2013-04-27	11:50:00	28° 24.0183' S	40° 58.8902' W	-1511.3	-310.6
	Sampling NISKIN(red,green), Water(bag) D=3991m					
6	2013-04-27	12:07:00	28° 23.9559' S	40° 58.8898' W	-1396.0	-310.0
	Sampling Sea cucumber D=3979m					
7	2013-04-27	12:19:00	28° 23.9335' S	40° 58.8976' W	-1354.7	-322.7
	Sampling Sponge D=3969m					
8	2013-04-27	12:32:00	28° 23.9140' S	40° 58.8996' W	-1318.6	-326.0
	Sampling Sea cucumber, #3 Core D=3959m					
9	2013-04-27	14:48:00	28° 23.3318' S	40° 58.9061' W	-243.4	-336.6
	Sampling Rocks(2) D=3531m					
10	2013-04-27	15:07:00	28° 23.2105' S	40° 58.8453' W	-19.3	-237.3
	Sampling Plankton D=3366m					
11	2013-04-27	15:24:00	28° 23.1986' S	40° 58.8453' W	2.5	-237.3
	Sampling NISKIN(blue), Core(#1,#2,#5,#6,#7) D=3328m					
12	2013-04-27	15:29:00	28° 23.1888' S	40° 58.8355' W	20.6	-221.3
	Left bottom D=3304m, Alt=18m					

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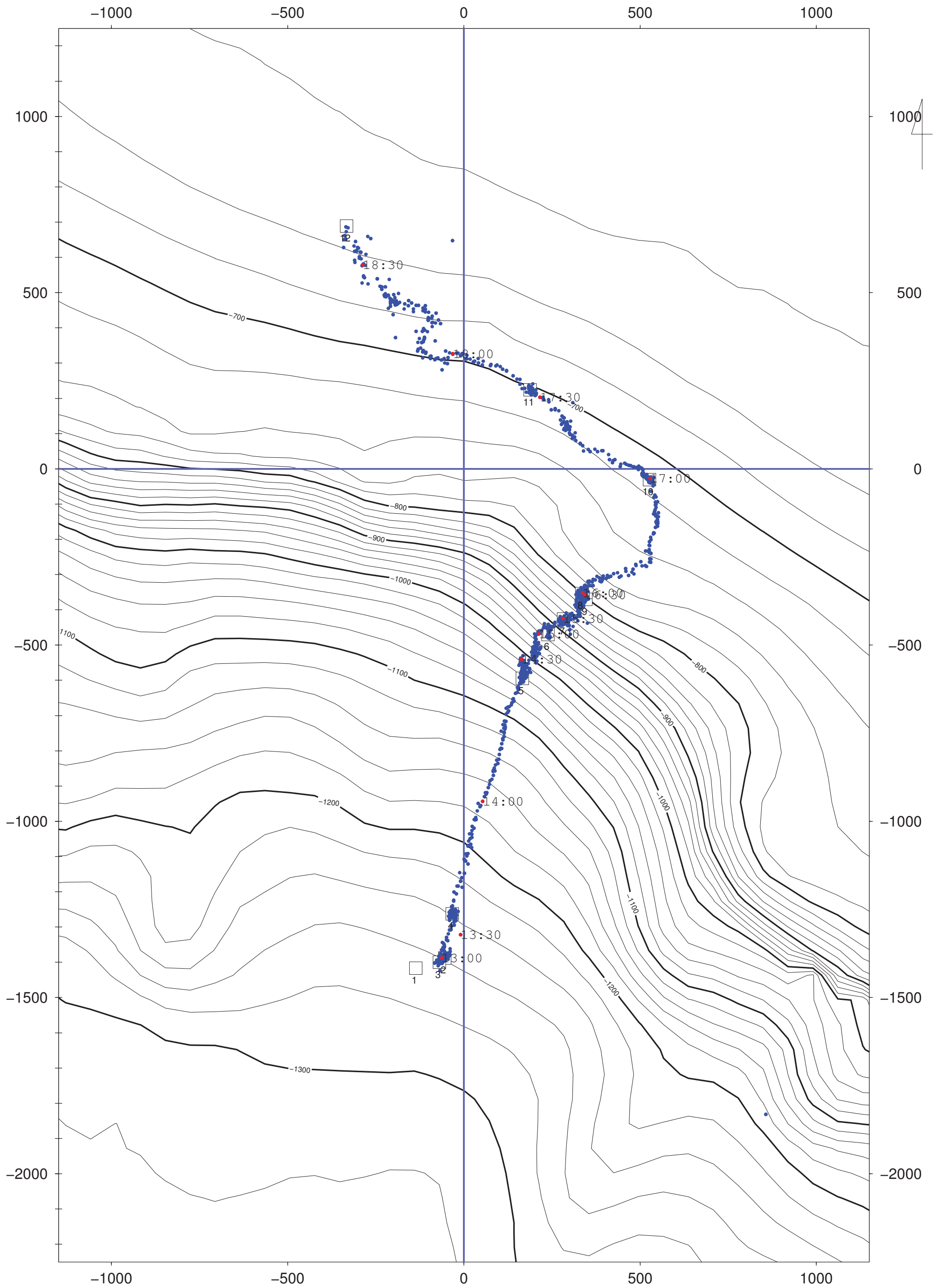
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Dive Log of 6K Dive #1337			Off Brazil Sea, São Paulo Ridge				2013/04/27
Time (LCT)	Dep. (m)	Alt. (m)	Head (Deg)	Pos. Xm	Pos. Ym	Description	Remarks
09:07						Vent open. Start of DIVE.	Toizumi
09:07						Start to send a image by sound from "6K" to "YK"	
09:29	1000						
09:40	1500						
09:52	2000						
10:05	2550			-1750	-270	position call	Takashi
10:09	2679		200			start to run	
10:17	3000		95	-1740	-340		Mai
10:31	3500						Takashi
10:44	4000		238				
10:47	4040	20				trim balanced. Try to landing	
10:50	4061	5	23				
10:52	4061	5	12				
10:53	4061			-1880	-330	Landing. Sediment: mud, 10m visible. Temperature=0.6degree. Current direction=160degree. verocity=6cm/sec	
10:56	4054	3	355			move to north	
10:58	4051					even the light lit, image is deep blue. Rocky outcrop like wall.	
11:00	4045	4	9			change shift	Sumida
11:02	4084	3	9			steep wall	
11:11	4028	5	55	-1710	-350	position call	
11:16	4017	3	57			sediments with ripples	
11:19	4014	2	98			isolated sea pen on the sediment with ripples	
11:22	4014	2	93			Push core samples (4, 8, 9) - sediment with ripples	
11:26	4013	3	119	-1610	-350	position call	
11:28	4010	4	100			Ophidiid fish	
11:31	4005	3	81			Scale worm	
11:33	4005	3	114			collect large scale worm	
11:41	4006	3	90	-1670	-320	position call	
11:46	3996	3	2			Collect 2 niskin bottles	
11:50	3390	4	3	-1510	-310	Sample plastic bag	
12:00	3977					try to catch sea cucumber	Andre log
12:04	3978					catch sea cucumber with slurp gun and deposited in canister 1	
12:06	3979					fish was observed	
12:07	3979			-1400	-310	position call	
12:09	3973					shark was seen	
12:19	3969					sponge collected with slurp gun - canister 2	
12:19	3967			-1360	-320	position call	
12:22	3961					collecting push cores -	
12:24	3960					sea cucumber collect using slurp gun - canister 3	
12:28	3959					many small monts at the seafloor	
12:29	3939					push core sample - no. 3, complete operation at 12:32	
12:30	3959					current=200, speed= 1,7cm/sec, temperatur= 0,7C	
12:32	3959			-1320	-330	position call	

12:40	3941		-1250	-310	sea cucumber was seen	
12:50	3916				some tracks were seen	
12:55	3899		-1060	-300	position call	
12:56	3894				fish was seen	
13:05	3826		-800	-340	T: 0.9 C	
13:09	3815				Rocky area. Observation.	
13:10	3815				Bernacles? Sea anemone	
13:11	3814				Fish	
13:14					Pterrapod deposit?	
13:16	3814				Mussels? on carbonates?	
13:18	3814				Sampling	
13:19					No bivalve observed (by pilot)	
13:22	3810				shrimp?	
13:25	3800				Ripple mark	
13:26	3793		-740	-340	Co. North	
13:28	3785				Sea cucumber	
13:30	3767				Muddy sediment	
13:38	3700		-530	-360	Small channel?	
13:45	3627				Observation of bottom	
13:48	3618		-360	-310	Trial of rock sampling	
14:03	3614				Failed to collect rock (very hard) - moved from there	Angel log
14:06	3597				Trial of rock sampling	
14:12	3585				Outcrop area	
14:27	3548				Sediments with large outcrops	
14:31	3544	69	-240	-330	Position call	
14:42	3535				Trying to collect rocks on a steep wall	
14:45	3532				Rock collected Geobox 2	
14:46	3532	49	-240	-340	Position call	
14:47	3531				Rock collected Geobox 2	
14:50	3518				Shinkai is climbing the slope	
14:56	3453				Fish observed	
14:59	3437	354				Abilio log
15:00	3436	355	-91	-252	plankton sampling	
15:04	3384	17	-50	-260	pump sampling canister 6	
15:07	3966	9	-20	-240	finish plankton sampling	
15:05	3349	77	-5	-240	niskin sampling no current T 34	
15:18	3331	67			push corer sampling starting	
15:24					1 2 5 6 7 push corer end	
15:28	3304	189	-30	-220	leaving bottom	
15:36	3000					
15:47	2500					
15:58	2000					
16:09	1500					
16:21	1000					
16:47					SHINKAI reached sea-surface.	
17:13					SINKAI was on deck.	

Dive# 1338

- vi) Track chart
- vii) Event mark list
- ii) Dive log



XY Origin Lat 30-21.50000S Lon 036-02.00000W
Center Lat 30-21.77100S Lon 036-02.00000W
Grid_File:1338DIVE.grd ContourInt:20m

(UR) Lat 30-20.82425S Lon 036-01.28262W
(LL) Lat 30-22.71875S Lon 036-02.71838W
(2013-04-30)

Datum WGS-84 Proj.LTM

*** EVENT MARK LIST ***

2013-04-30 16:39:39

ORIGIN (XY<->LATLON CONVERT) LAT 30° 21.5000' S LON 36° 02.0000' W
 XY ORIGIN ((X,Y)=(0,0)) LAT 30° 21.5000' S LON 36° 02.0000' W

NO.	DAY	TIME	LAT	LON	X	Y
1	2013-04-30	10:00:00	30° 22.2663' S	36° 2.0842' W	-1415.7	-134.8
	Landing Target					
2	2013-04-30	11:02:00	30° 22.2513' S	36° 2.0341' W	-1387.9	-54.6
	Sampling Niskin(3), Water(bag) D=1242m					
3	2013-04-30	11:21:00	30° 22.2578' S	36° 2.0433' W	-1399.9	-69.3
	Landing, Sampling Core(9) D=1251m					
4	2013-04-30	11:44:00	30° 22.1835' S	36° 2.0208' W	-1262.7	-33.3
	Sampling Animals(3) D=1235m					
5	2013-04-30	12:36:00	30° 21.8221' S	36° 1.8964' W	-595.0	165.9
	Sampling Rock, Animal D=1034m					
6	2013-04-30	13:11:00	30° 21.7544' S	36° 1.8510' W	-469.9	238.7
	Sampling Sediments D=907m					
7	2013-04-30	13:29:00	30° 21.7306' S	36° 1.8236' W	-426.0	282.6
	Sampling Animal D=877m					
8	2013-04-30	14:11:00	30° 21.6916' S	36° 1.7915' W	-353.9	334.0
	Sampling Animals(4) D=787m					
9	2013-04-30	14:26:00	30° 21.7003' S	36° 1.7840' W	-370.0	346.0
	Sampling Rock D=777m					
10	2013-04-30	15:07:00	30° 21.5166' S	36° 1.6713' W	-30.6	526.6
	Sampling Crab D=711m					
11	2013-04-30	15:50:00	30° 21.3788' S	36° 1.8827' W	223.9	187.9
	Sampling Animals D=696m					
12	2013-04-30	16:37:00	30° 21.1272' S	36° 2.2081' W	688.7	-333.3
	Left Bottom D=651m					

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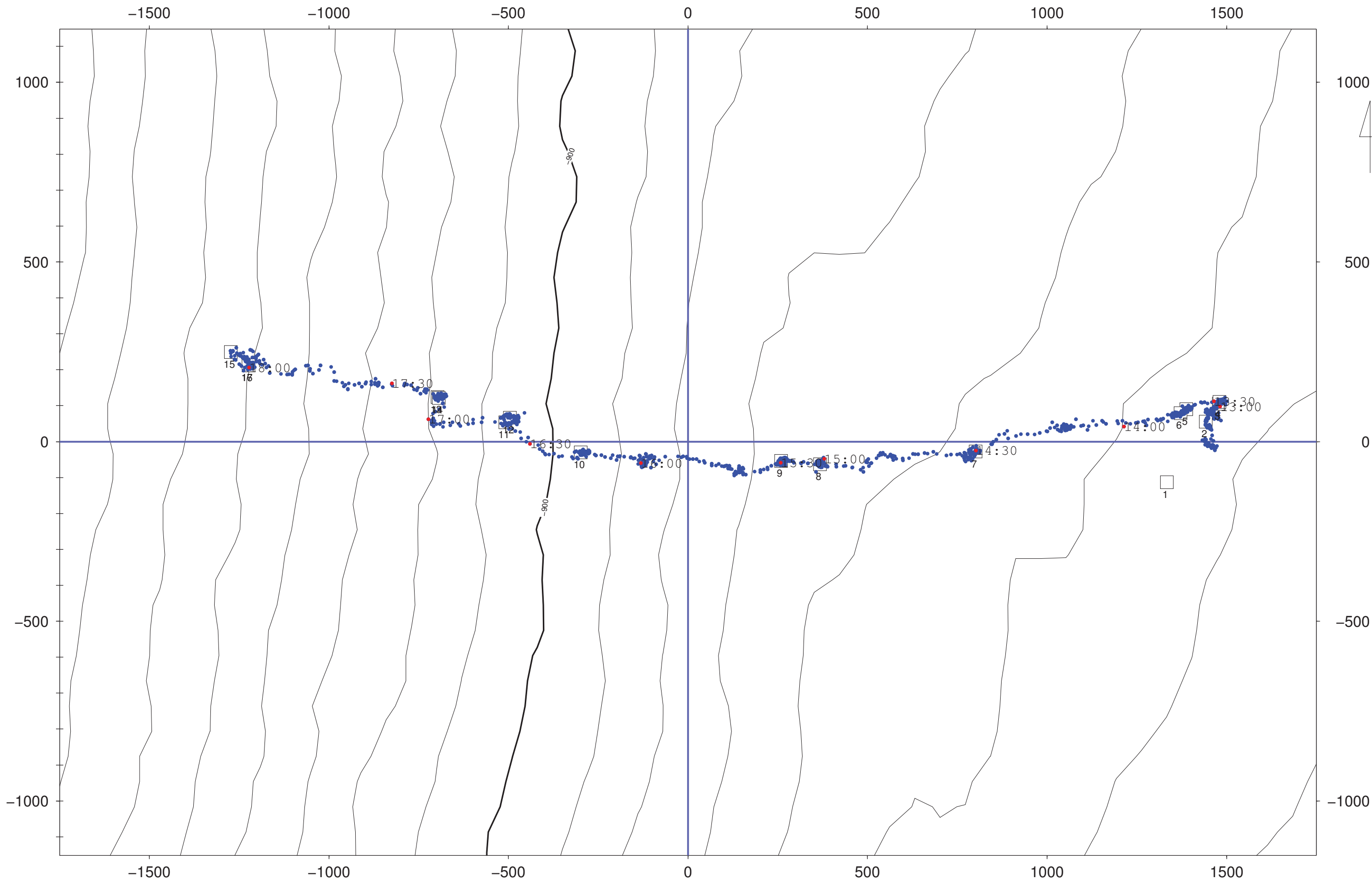
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Dive Log of 6K Dive #1338				Off Brazil Sea, Rio Grande Rise Coral garden			2013/04/30
Time (LCT)	Dep. (m)	Alt. (m)	Head (Deg)	Pos. Xm	Pos. Ym	Description	Remarks
10:10						Vent open. Start of DIVE.	Masa
10:24	500					Start to send a image by sound from "6K" to "YK"	
10:24						CTD trouble. CTD turned off during this	Toyo
10:26				-1390	-20	position	
10:30				-1410	-90	position	
10:32	829	417	75			image transferred again	
10:36	1000					CTD start to work again	
10:49	1166	84	134			trim balanced T=3.2°C, Sal=34.4	
10:58	1238	16				Niskin water sampling + 20L plastic bag	Sumida
11:03	1244	5	1			Finished water sampling	
11:04	1250	1	358			Sediment area	
11:06	1251	1	357			Sand; 10-m visibility; T=N/A; no current	
11:08	1252	1	357			CTD is not working	
11:12	1252	0	357			Collecting push cores (x9)	
11:21	1252	0	0			Finished coring	
11:23	1252	1	19			Fish - eel	
11:27	1242	1	25	-1340	-60	position	
11:29	1239	1	18			Sediment with strong ripple marks	
11:34	1235	6	72			Stop to observe organism (?)	
11:35	1234	1	88			Ripples marks with gravel on the bottom	
11:41	1234	0	101			Stop to collect anemone with slurp gun	
11:33	1235	0	71			Finished collecting 3 animals in canister 1	
11:45	1235	0	69	-1260	-30	position	
11:51	1215	1	15	-1160	-10	position	
11:56	1187	1	18			Sediments with ripple marks	
11:59	1163	1	20	-950	50	position - still sediments with ripples	
12:00	1147						Log Andre
12:05	1117			-790	-110	a ll position	
12:10	1081			-660	140	a ll position	
12:14	1041					observing outrocks	
12:20	1040					rock collected - geobox3	
12:22	1040					rock with coral attached	
12:26	1040					large rocks with coral - one very white	
12:27	1040					fish, coral	
12:29	1036					close up at coral	
12:30	1036					ophiuroids attached to coral, coral polyps visible	
12:33	1036					coral collected - biobox	
12:36	1034			-550	160	call position	
12:40	1024	4	20			move to course 20	
12:44	987					problems with camera image	
12:45	987	2	355	-500	200	call position	
12:52	980	3				move to course 20	
12:52	980	2	25			camera image is back	

12:56	953	6	20			some coral attached to rock	
12:58	936	2	48			some coral attached to rock, rock with fractures	
13:00	930	2	58	-450	220	call position	
13:03	914					outcrops	
13:05	907					Stop at this location, Coral sampling.	
13:08	908					Corals	
13:10	908			-480	240	Sediment sampling in #5 canister, plankton sampling during transect toward Co. 50 deg	
13:14	895					outcrops	
13:17	878					coral	
13:19	878					Biological sampling	
13:25	878					Coral sampling	
13:29				-430	290	Biological sampling in biobox, move toward co. 50	
13:34	860					corals	
13:36	837			-410	310	CTD problem fixed	
13:43	793					corals	
13:46	787					Coral garden, biological sampling	
13:52	787					colorful corals	
13:56						Start sampling of suctioning	
13:59	788					many corals on outcrops	
14:00	787		120			Collecting 3 cnidarians in Canister 2	Log: Koichi
14:05	787		151			Collecting 1 orange organism on coral in Canister 3	
14:09	786		145			Collecting small organisms in Canister 3	
14:11	786		123	-350	330	position	
14:12	786		102			Move changing head direction to 50°	
14:14	784		96			Find 1 large-eye fish	
14:18	776		72			Collecting rock in Geobox ? (not collected?)	
14:21	777		109			Find white bivalvs	
14:26	778		70			Collecting 1 rock in Geobox 2	
14:26	777		60	-370	350	position	
14:28	769		56			Start to move	
14:43	738		42	-260	520	position	
14:49	725		359			Large sediment bed without organism	
14:54	715		334	-70	540	position	
14:58	713		356			Find 1 large crab on sediment (Chaceon)	
15:00	712		9			Chaceon on video	Log: Abilio
15:07	711		351	-30	530	another Chaceon this one was taken by scoop and put in biobox	
15:09	709		300			fish	
15:23	707		324			long rock fracture	
15:33	696		9			sea urchin	
15:39	696		354			a different sea urchin with long spines	
15:51	694		309	220	190	urchin sampled and put in geobox. Biologic samples put in 4 canister	
16:01							log Masa
16:05	688	5	356			SHINKAI will leave bottom at 16:35.	
16:13	649		329	430	-90	position	
16:19	658					Stop at this location, and observation around here.	

Dive# 1339

- viii) Track chart
- ix) Event mark list
- iii) Dive log



XY Origin Lat 31-06.00000S Lon 034-03.60000W
Center Lat 31-06.00100S Lon 034-03.60000W
Grid_File:1339DIVE.grd ContourInt:5m

Datum WGS-84 Proj.LTM

(UR) Lat 31-05.37910S Lon 034-02.49947W
(LL) Lat 31-06.62390S Lon 034-04.70153W
(2013-05-02)

*** EVENT MARK LIST ***

2013-05-02 16:03:41

ORIGIN (XY<->LATLON CONVERT) LAT 31° 06.0000' S LON 34° 03.6000' W
 XY ORIGIN ((X,Y)=(0,0)) LAT 31° 06.0000' S LON 34° 03.6000' W

NO.	DAY	TIME	LAT	LON	X	Y
1	2013-05-02	10:00:00	31° 6.0600' S	34° 2.7600' W	-110.8	1335.5
	Landing Target					
2	2013-05-02	10:44:00	31° 5.9697' S	34° 2.6924' W	55.9	1443.0
	Sampling Niskin(3), Water(bag) D=907m					
3	2013-05-02	11:05:00	31° 5.9423' S	34° 2.6693' W	106.6	1479.7
	Sampling Plankton D=913m					
4	2013-05-02	11:11:00	31° 5.9397' S	34° 2.6687' W	111.4	1480.6
	Landing, Sampling Core(9) D=921m					
5	2013-05-02	11:40:00	31° 5.9506' S	34° 2.7268' W	91.2	1388.3
	Sampling Animal D=920m					
6	2013-05-02	11:48:00	31° 5.9567' S	34° 2.7364' W	80.0	1373.0
	Sampling Shrimp D=920m					
7	2013-05-02	12:33:00	31° 6.0141' S	34° 3.0954' W	-26.0	802.2
	Sampling Coral(2) D=914m					
8	2013-05-02	12:57:00	31° 6.0336' S	34° 3.3688' W	-62.0	367.5
	Sampling Rock D=911m					
9	2013-05-02	13:36:00	31° 6.0285' S	34° 3.4367' W	-52.6	259.6
	Sampling Rocks(4) D=910m					
10	2013-05-02	14:19:00	31° 6.0159' S	34° 3.7872' W	-29.3	-297.6
	Sampling Animal D=896m					
11	2013-05-02	14:35:00	31° 5.9708' S	34° 3.9197' W	53.9	-508.2
	Sampling Rock D=891m					
12	2013-05-02	14:51:00	31° 5.9636' S	34° 3.9118' W	67.2	-495.7
	Sampling Rocks(2) D=891m					
13	2013-05-02	15:14:00	31° 5.9325' S	34° 4.0384' W	124.7	-697.0
	Sampling Gastropod D=884m					
14	2013-05-02	15:22:00	31° 5.9336' S	34° 4.0367' W	122.6	-694.3
	Sampling Sea anemone D=884m					
15	2013-05-02	15:48:00	31° 5.8643' S	34° 4.3998' W	250.7	-1271.6
	Sampling Plankton D=868m					
16	2013-05-02	15:59:00	31° 5.8842' S	34° 4.3688' W	213.9	-1222.3
	Sampling Animal D=869m					
17	2013-05-02	16:02:00	31° 5.8842' S	34° 4.3688' W	213.9	-1222.3
	Left Bottom D=869m					

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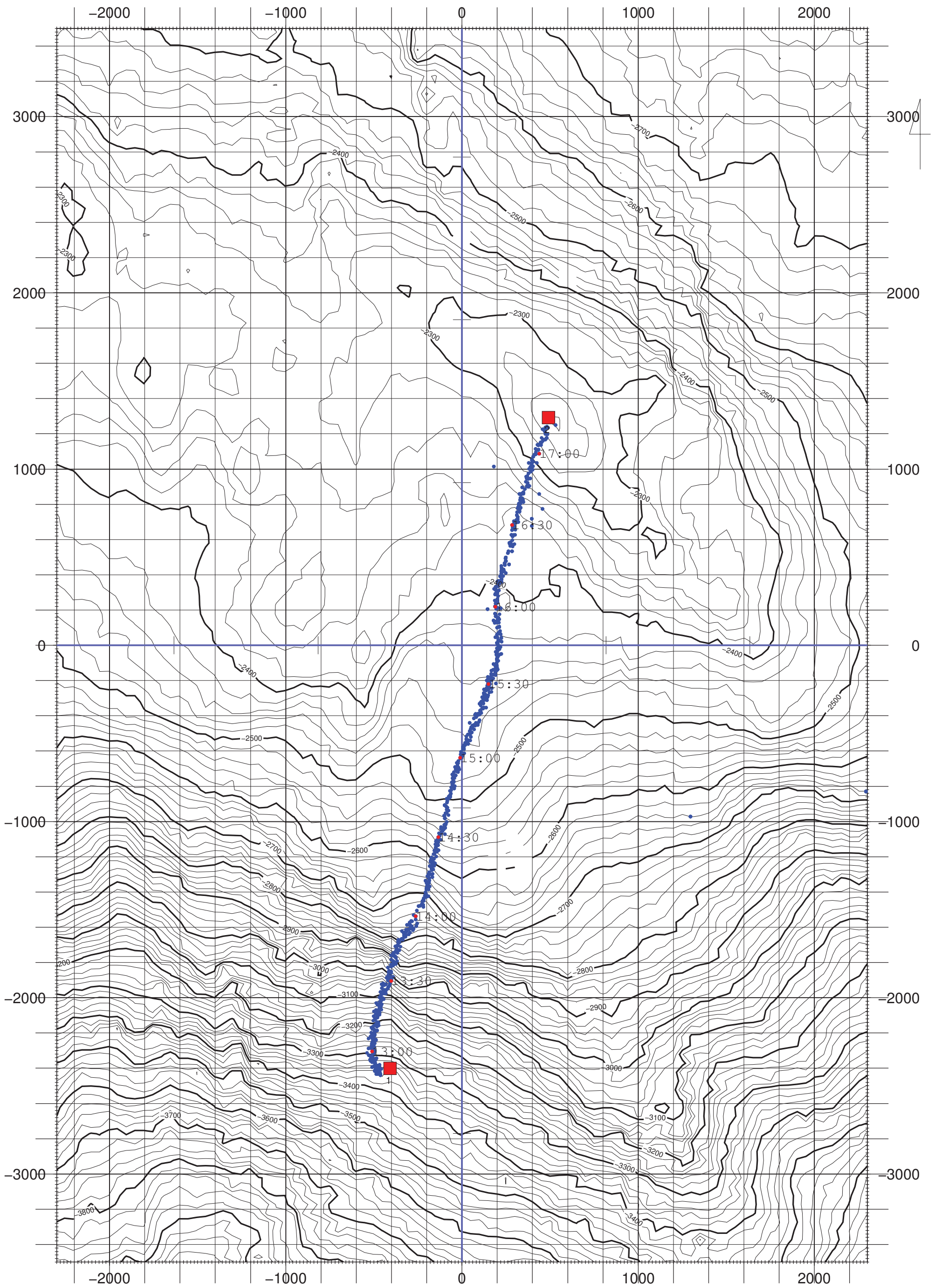
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Dive Log of 6K Dive #1339				Off Brazil Sea, Rio Grande Rise Granite			2013/05/02
Time (LCT)	Dep. (m)	Alt. (m)	Head (Deg)	Pos. Xm	Pos. Ym	Description	Remarks
10:08						Vent open. Start of DIVE.	Toizumi
10:20	500			40	1450	Start to send a image by sound from "6K" to "YK"	
10:31	830	74	39				
10:36	890	22	3	-20	1460	position call	
10:38	900	12	327			just see seafloor	
10:39						start to water sampling with NISKIN [red,green,blue] and 20l bag	
10:44	906	10	335	60	1440	Finished water sampling	
10:45	905	11	336			Start to sampling [plankton] with slurp gun [6] T=4.4°C Sal=34.3	
11:01	915	4	328			is possible to see the bottom floor and ripples marks	Adlpho
11:05	912	9	320	110	1480	Finished plankton sampling	
11:09	920	2	296			Bottom in view. Sediment irregularly rippled	Sumida
11:11	921	1	298	110	1480	Sandy bottom; temp. 4.5°C	
11:14	921	1	298			Push core samples (x9) in a line. Same as anterior position	
11:26	921	1	305			Finished push coring	
11:26	921	1	305			Fish observed. Change heading to 270°	
11:29	919	1	269			Started to move. Sand bottom with phytodetritus	
11:32	920	1	267			Large sea urchin (observation)	
11:40	920	1	269	90	1390	Urchin collected (biobox)	
11:42	920	1	269			Spherical sponge with shrimp (observation)	
11:47	920	1	279			Shrimp collected in canister 4 (sponge?)	
11:54	918	1	268			Altitude data not available or not functioning well	
11:56	915	3	269	60	1300	position call	
12:00	917	1	279				Log Andre
12:01	915	1	269	50	1130	position call	
12:03	915	2	268			ripple marks	
12:04	916		271			anemone and crab, eel appeared after a while	
12:16	915		258			clear ripple marks - brown and white	
12:18	914		254	20	860	position call	
12:23	915		239			coral	
12:27	915		240			scoop sediment with coral?	
12:33	915		247			2 corals	
12:34	914		256			sponge	
12:36	914		256			eel	
12:39	912		272			fish	
12:41	914	1	271			ripple marks	
12:42	913	1	270	-40	610	position call	
12:44	914	1	277			anemone	
12:56	911		258			collect rock with manipulator	
12:57	911		260	-60	360	position call	
13:05	910	2	250	-54	282	boundary between sediments and rocks	
13:06	910		250			coral on hard substrate	

13:07	910		254			crack on hard substrate	
13:11	910					coral	
13:12	910					large coral and crack, escarpment	
13:17	910			-50	260	2 rocks collected in #2 box	
13:18	910					Many organisms, photo session	
13:22	910	4	240			big rattail	
13:28	909	3	248			large outcrop	
13:30	910					cross section of outcrop	
13:36	910			-50	260	2 rocks in Geobox #3	
13:40	907					Move toward co. 270	
13:42	908	2	259			sand pool on hard substrate	
13:46	908	2	257			shark?	
13:47	908	2	257			observation finished. Move toward co. 270	
13:49	264	2	265	-67	108		
13:53	271	5	271	-50	0		
13:56	244	6	254			pavement	
14:00	902		246			anemone	Log: Koichi
14:01	902		246	-60	-130	position call	
14:05	900		265			start to move and change heading to co. 250	
14:09	896		267	-40	-250	position call	
14:11	895		264			find whip coral and observe it	
14:18	896		235			whip coral in Biobox	
14:19	896		234	-30	-300	position call	
14:24	896		234			start to move and change heading to co. 300	
14:27	896		290			eel	
14:32	891		246	-30	-510	position call	
14:32	891		243			1 rock sample in Geobox 3	
14:39	891		262			coral on hard substrate	
14:45	891		239			1 rock sample in right basket (outside of Geobox)	
14:52	889		278			start to move and change heading to co. 270	
15:00	884		306			pavement	Log: Eugenio
15:01	884		293			sponge	
15:06	884		258			observation gastropoda	
15:08	884		254			pavement	
15:12	884		241			collect gastropoda-slurp gun n.3	
15:17	884		253			observation sponge	
15:18	884		252			observation yellow anemone	
15:20	884		242			collect yellow anemone-slurp gun n.2	
15:24	884		268			start to move and change heading to co. 270	
15:24	882		273			Shinkai wants to leave bottom at 16:00	
15:25	882		274			coral	
15:27	880		268			pavement	
15:34	876		267			start plankton	
15:46	868		269			finish plankton sampling	
15:54						finish work in the bottom	
15:59						animal sample in #1 canister by slurp gun.	Log: Masayuki
16:00	869			210	-1220	position call	

YKDT Dive# 156

- x) Track chart
- xi) Event mark list
- iv) Dive log



XY Origin Lat 28-22.00000S Lon 040-58.00000W
Center Lat 28-22.00000S Lon 040-58.00000W
Grid_File:YKDT156.grd ContourInt:20m

(UR) Lat 28-20.10541S Lon 040-56.59279W
(LL) Lat 28-23.89559S Lon 040-59.40821W
(2013-04-28)

Datum WGS-84 Proj.LTM

*** EVENT MARK LIST ***

2013-04-28 15:11:54

ORIGIN (XY<->LATLON CONVERT) LAT 28° 22.0000' S LON 40° 58.0000' W
 XY ORIGIN ((X,Y)=(0,0)) LAT 28° 22.0000' S LON 40° 58.0000' W

NO.	DAY	TIME	LAT	LON	X	Y
1	2013-04-28	00:00:00	28° 23.3000' S	40° 58.2500' W	-2400.9	-408.4
						Start Point
2	2013-04-28	00:00:00	28° 21.3000' S	40° 57.7000' W	1292.8	490.0
						End Point
3	2013-04-28	10:30:00	28° 23.3049' S	40° 58.2877' W	-2410.0	-469.9
						Start Towing D=3311m
4	2013-04-28	14:35:00	28° 21.5939' S	40° 57.8025' W	750.0	322.6
						Released Dredger, #24YKDT_Marker D=2360m
5	2013-04-28	15:10:00	28° 21.3286' S	40° 57.7062' W	1240.0	479.9
						End Towing D=2212m

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**Dive Log of
YKDT Dive #156**

Off Brazil Sea, São Paulo Ridge

2013/04/28

Time (LCT)	Dep. (m)	Alt. (m)	Head (Deg)	Pos. Xm	Pos. Ym	Description	Remarks
09:13						Deployed YKDT, start of YKDT dive.	Masa
09:37	520			-2470	-470	wire out 500m	
09:48	953					jellyfish	
09:49	1012		1	-2440	-430	W.O. 1000m	
09:58	1501		290	-2430	-430	W.O. 1500m	
10:02	1765					like a rope? Or long fish?	
10:06	1995		93	-2420	-440	W.O. 2000m	
10:09	2167					shrimp?	
10:24	3000			-2420	-460		Takashi
10:27	3198	100				Alt=100	
10:29		30					
10:30						ocean bottom visible	
10:30						hit bottom. Some rocks (~30cm) are scattered in white sediment. Fluffy layer is blowing by water flow made by YKDT. Fluffy layer seems very thin.	
10:31				-2410	-470	position call	
10:34						shrimp	
10:38						pteropod shells	
10:39						trail? Of tumbling stone?	
10:39						coral fragments	
10:39						frontal view show the valley shape	
10:40	3305	7	343	-2400	-470	position	
10:40						tripod fish	
10:41						leaf?	
10:41						tripod fish	
10:42	3298					fish	
10:44	3292					shrimp	
10:44	3289					shrimp on ripple marked sediment	
10:46	3288					outcrop on frontal view	
10:47	3283					outcrop with shrimp	
10:49	3272					outcrop	
10:49	3268					shrimp	
10:50	3263			-2350	-510	position	
10:53	3256					fish, shrimp, shark	
10:55	3245					shrimp	
10:55	3244					shrimp	
10:55						~10m big rock	
10:57	3234					steep slope	
10:57	3232					trail	
11:00	3219			-2280	-500	position	
11:01	3211					fish, fish	
11:02	3206					fish, biological mound	
11:02	3204					crinoid	

11:03	3195				fish	
11:04	3195				shrimp	
11:04	3191				shrimp	
11:06	3179				shrimp	
11:06	3178				sedimentary slope is continued T=2.48, S=34.9	
11:08	3161				shrimp	
11:09	3157				shrimp	
11:09	3157				shrimp	
11:09	3156				bio mounds	
11:10	3154				shrimp	
11:10					fish	
11:11			-2180	-490	position	
11:13	3127				shrimp.	
11:14	3124				shrimp	
11:14	3121				rocks in frontal view	
11:15	3120				trail	
11:15	3116				fish crawling above the rock garden	
11:15	3113				shrimp	
11:16	3110				fish	
11:18	3093				trails	
11:19	3080				shrimp	
11:20	3074		-2050	-470	position	
11:21	3067				shrimp	
11:22	3060				fish	
11:23	3058				~20cm rocks. Sharpen edgiest	
11:24	3048				shrimp	
11:24	3043				rocks become minor	
11:26	3025				coral, species density increased	
11:27	3011				Tokagegisu	
11:28	2993				escarpment	
11:30	2960		-1900	-410	middle of escarpment	
11:33	2901				Sponge	
11:33	2899				Zoasid	
11:35	2882				coral	
11:36	2871				middle of escarpment	
11:37	2848				Sponge	
11:40	2780		-1780	-390	middle of escarpment, T: 3.03	
11:42	2751				Sponge. Top of the escarpment. Sedimented.	
11:48	2754				Sedimented floor	
11:49	2753				outcrops	
11:50			-1650	-320		
11:51	2753				shrimp?	
11:52	2749				outcrops	
11:54	2746				Sedimented floor	
11:56	2741				T: 3.03	
11:58	2734				sponge	
12:00	2723	2.9	25	-1540	-270	covered with pteroporda

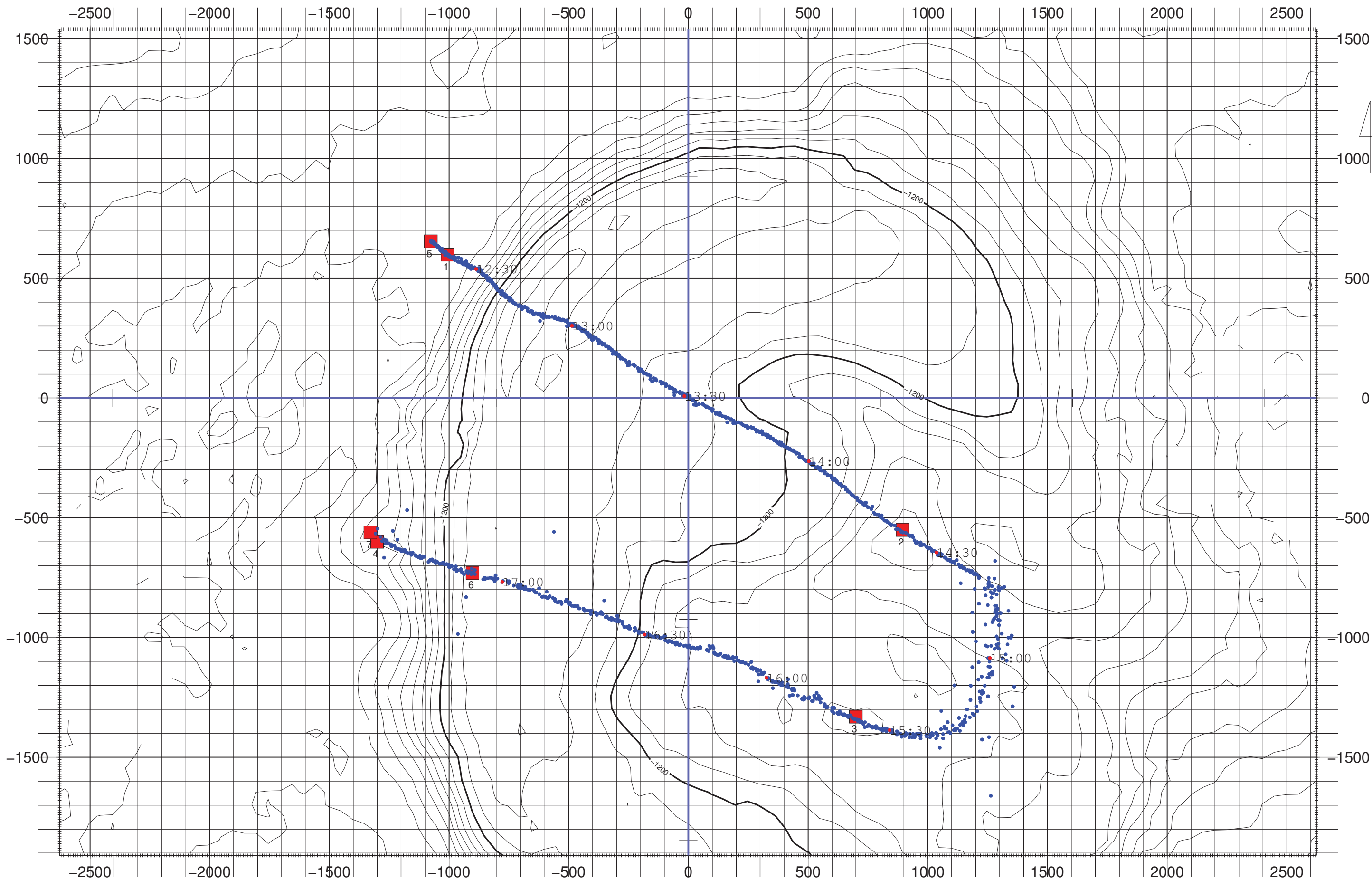
12:04	2698			shrimp.	Andre log
12:04	2696			fish	
12:05	2693			3 shrimps and a fish	
12:09	2656			ripple marks still present	
12:10	2652	-1380	-200	call position	
12:13	2628			long tracks in the seafloor	
12:15	2605			check black small triangle on seafloor ?	
12:17	2601			3 starfish	
12:19	2586			long and round track and a starfish	
12:20	2582	-1230	-170	call position	
12:22	2570			field with a lot of tracks, fish	
12:26	2551			starfish	
12:27	2546			fish	
12:28	2538			polychete	
12:30	2530	-1060	-120	call position	
12:31	2520			rocks, large rocks,, fracture	
12:34	2494			some round large rocks	
12:34	2493			fish	
12:35	2498			starfish	
12:37	2481			ripple marks, smaller but still present in some spots	
12:39	2473			shrimp	
12:40	2466	-910	-80	call position, shrimp	
12:41	2463			ripple marks	
12:42	2463			ophiuroid	
12:43	2461			fish	
12:44	2457			ophiuroid	
12:45	2454			fish - chimera	
12:47	2453			ophiuroid	
12:49	2448			ophiuroid, deposite of pteroporda	
12:50	2447	-750	-60	call position	
12:51	2445			shrimp	
12:52	2445			fish	
12:52	2445			shrimp	
12:55	2442			check mount or sponge?	
12:57	2440			fish	
12:58	2439			ophiuroid	
13:00	2434	-630	-10	call position	
13:04	2435			check seems to be a coral?	
13:06	2430			fish	
13:08	2433			fish	
13:09	2432			fish	
13:10	2432	-500	50	call position	
13:11	2429			ophiuroid	
13:11	2430			two large deposits of pteroporda	
13:12	2431			shrimp	
13:13	2428			fish	
13:13	2427			2 fishes	

13:15	2429			check seems to be a coral?	
13:15	2428			2 fishes	
13:16	2428			fish	
13:17	2427			ophiuroid	
13:18	2430			fish	
13:19	2428			fish	
13:19	2429			one small rock after meters and meters of sediment	
13:20	2428	-340	120	call position, fish , ophiuroid	
13:21	2427			2 fishes	
13:22	2425			2 fishes	
13:23	2426			ophiuroid, check also another structure around	
13:24	2427			2 fishes	
13:24	2425			fish	
13:27	2420			fish	
13:28	2421			ophiuroid, fish	
13:29	2420			changed the color of the sediment, seems washed rock	
13:30	2419			fish	
13:30	2421	-210	150	call position	
13:32	2418			Ophiuroid	Angel log
13:33	2418			Anemone and ophiuroid	
13:33	2416			Sponge	
13:34	2418			Ophiuroid	
12:35	2416			Ophiuroid	
13:35	2415			Ophiuroid	
13:37	2413			2 ophiuroids	
13:38	2411			Ophiuroid (red)	
13:40	2310	-60	200	Shrimp	
13:42	2406			Ophiuroid	
13:43	2406			shrimp	
13:44	2404			ophiuroid	
13:46	2404			Ophiuroid and shrimp	
13:47	2400			2 ophiuroids	
13:49	2397			sponge, ophiuroid , shrimp	
13:50	2393	60	210	position call	
13:52	2391			fish, shrimp, ophiuroid	
13:23	2391			ophiuroid	
13:54	2387			ophiuroid and fish	
13:56	2383			chimera, ophiuroid, fish	
13:57	2382			ophiuroid	
13:59	2377			ophiuroid	
14:00	2375	120	190	fish and ophiuroid	
14:01	2371			starfish and ophiuroid	
14:02	2373			ophiuroid	
14:03	2371			2 ophiuroid	
14:05	2368			2 ophiuroids	
14:06	2368			ophiuroid	
14:07	2363			ophiuroid and fish	
14:10	2361	360	210	ophiuroid	
14:11	2358			ophiuroid shrimp	
14:12	2358			shrimp	
14:13	2357			ophiuroid	
14:14	2356			fish and ophiuroid	
14:16	2354			shrimp	
14:17	2357			sponge and 2 ophiuroids	
14:20	2356	500	270	shrimp	
14:22	2359			ophiuroid and fish	
14:23	2365			ophiuroid	

14:24	2365			ophiuroid
14:25	2368			ophiuroid
14:27	2369			fish (eel)
14:28	2370			ophiuroid and fish
14:29	2373			2 shrimps
14:30	2372	680	300	2 ophiuroids
14:33	2373			fish, 3 ophiuroids
14:33	2368			2 ophiuroids
13:34	2367			round pebbles and sponge
14:35	2363			dredge was released
14:37	2362			ophiuroid and fish
14:38	2359			seapen and ophiuroid
14:39	2357			fish and ophiuroid
14:40	2351	810	340	eel
14:41	2346			rocky area covered by sediment and seapen
14:42	2342			2 shrimps and coral
14:43	2336			starfish
14:44	2333			sponge and whip coral
14:45	2328			sponge
14:46	2319			shrimp
14:47	2319			sponge and seapens
14:48	2315			whip coral
14:49	2303			seapen and ophiuroid
14:50	2302	950	370	seapns and ophiuroid
14:51	2297			sponge and many coral and seapens
14:52	2290			fish and seapens
14:53	2287			sponge and seapens
14:54	2284			ophiuroid
14:55	2284			whip coral
14:57	2273			sponge and corals
14:58	2270			large coral and sponge
14:59	2270			fish
15:00	2263	1090	420	many sea pens, corals and sponges
15:03	2256			ophiuroid
15:04	2534			ophiuroid
15:05	2246			crinoid - dredge caught it
15:06	2384			long whip coral and starfish
15:09	2216			large outcrops
15:10	2212	1240	490	END of operation

YKDT Dive# 157

- xii) Track chart
- xiii) Event mark list
- v) Dive log



XY Origin Lat 30-09.60000S Lon 034-29.30000W
Center Lat 30-09.70000S Lon 034-29.30100W
Grid_File:Pockmark50.grd ContourInt:5m

Datum WGS-84 Proj.LTM

(UR) Lat 30-08.76675S Lon 034-27.66624W
(LL) Lat 30-10.63425S Lon 034-30.93676W
(2013-05-01)

*** EVENT MARK LIST ***

2013-05-01 15:31:00

ORIGIN (XY<->LATLON CONVERT) LAT 30° 09.6000'S LON 34° 29.3000'W
XY ORIGIN ((X,Y)=(0,0)) LAT 30° 09.6000'S LON 34° 29.3000'W

NO.	DAY	TIME	LAT	LON	X	Y
1	2013-05-01	10:00:00	30° 9.2752' S	34° 29.9229' W	600.0	-999.9
	Start Point					
2	2013-05-01	10:00:00	30° 9.8977' S	34° 28.7394' W	-549.9	899.9
	WP1					
3	2013-05-01	10:00:00	30° 10.3199' S	34° 28.8640' W	-1329.9	699.9
	WP2					
4	2013-05-01	10:00:00	30° 9.9248' S	34° 30.1098' W	-600.0	-1299.9
	WP3					
5	2013-05-01	10:09:00	30° 9.2460' S	34° 29.9690' W	653.9	-1073.9
	Start Towing D=1150m					
6	2013-05-01	15:05:00	30° 9.9941' S	34° 29.8615' W	-728.0	-901.3
	Released Dredger D=1199m					
7	2013-05-01	15:29:00	30° 9.9035' S	34° 30.1272' W	-560.6	-1327.9
	End Towing D=1162m					
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**Dive Log of
YKDT Dive #157**

Off Brazil Sea, Rio Grande Rise, pockmark

2013/05/01

Time (LCT)	Dep. (m)	Alt. (m)	Head (Deg)	Pos. Xm	Pos. Ym	Description	Remarks
09:34						Deployed YKDT, start of YKDT dive.	Masa log
09:54	500		63	650	-1270	W.O. 500m	
10:04	1003	156	0	660	-1080	W.O. 1000m	
10:06	1100	50	160			W.O. 1100m	
10:09	1150	9.1	124	660	-1180	hit the bottom, and start obsavation. Seafloor caoverd with	
10:10						small fish	
10:12	1159	3	178			sediment: relatively thin	
10:15	1157	5	168			small fish	
10:17	1158	3	158			Sea anemone	
10:18	1159	0	160			crab?	
10:20	1158	3	140	590	-1000	shrimp	
10:21	1156	4	141			jellyfish	
10:25	1159	3	138			beginning of descent	
10:28	1159	4	140			rattail	
10:30	1160	4	142	540	-890	hard bottom with thin sediment	
10:34	1169	4	146			bkack fragments, coral??	
10:35	1171	4	161			rocks	
10:35	1175	5	158			rocks and coral fragments	
10:37	1182	5				eel	
10:39	1189	4	148			dead chimnies?	
10:39	1189	4	148			eel	
10:40	1193	4	141	430	-770		
10:41	1196	5	150			fish, sponge	
10:43	1199	4	140			fish	
10:44	1201	3	134			sea urchin	
10:45	1202	3	124			live corals	
10:46	1201	3	120			Tokagegizu	
10:48	1203	0	114			eel	
10:49	1202	4	107	350	-630	fishes	
10:52	1199	0	111			sea urchin	
10:52	1199	3	99			coral	
10:54	1198	4	116			flying pig	
10:55	1196	na	106			purple jellyfish	
10:57	1195	na	119			Sea anemone	
10:58	1194	na	122			benthic cthenophore? Fishes	
11:00	1192	5	110	300	-490	ascent	
11:04	1193	4	130			asteroid	
11:05	1197	na	130			many eels	
11:09	1198	na	135			malle? mound	
11:10	1198	5	139	210	-440		
11:14	1197	3	144			bubbling traits?	
11:20	1194	3	133	100	-190	many bubbling traits??	
11:23	1193	3	126			new bubbling traits?	

11:28	1191	3	129			nice fish with lantan fish	
11:30	1191	na	130	0	-10		
11:34	1190	5	125			big hole	
11:38	1189	3	130			large fish, carbonate rocks	
11:40	1188	4	124	-90	180		
11:50	1187	3	132	-170	350		
11:54	1185	5	134			siphonophore	
11:58	1185	5	121			large sea anemone	
12:00	1183	4	123	-270	500		
12:02	1184	0	136			fish	Log Andre
12:03	1182	7	135			eel	
12:05	1184	5	135			fish, jellyfish	
12:07	1184	5	142			animal track, bubbling traits? Sea urchin	
12:09	1179	3	136			some sea urchin	
12:10	1180	4	144			shrimp	
12:10	1177	3	139	-390	660	position call	
12:13	1175	4	142			fish, 2 eels, some jellyfish	
12:14	1174	3	141			some urchin, jellyfish and eel, as well structure like a small	
12:16	1172	4	145			fish,	
12:17	1170	3	142			red fish	
12:20	1165	4	141			2 fishes	
12:21	1166	3	140	-530	850	position call	
12:23	1165	4	143			eel, bubbling traits?, ramini	
12:24	1163	2	136			large hole, fish	
12:25	1165	2	139			many sea urchin	
12:26	1165					fish, jellyfishes	
12:27	1163	4	137			first transect is finished	
12:28	1166	6	137			fish, 5 urchin, bubbling traits? still present	
12:29	1166	5	133			2 shrimp	
12:31	1169	4	136	-660	1050	position call	
12:33	1168	3	141			many shrimp small fishes and jellyfishes	
12:34	1169	2	131			eel, fish	
12:38	1169	3	141			eels, fish	
12:40	1171	3	173	-770	1220	position call	
12:42	1169	6	171			jellyfish	
12:43	1169	0	183			2 fishes	
12:44	1167	0	194			eel	
12:45	1168	3	193			fish, sea orchin	
12:46	1166	0	197			eel	
12:47	1166	5	205			shrimp	
12:48	1166	3	207			eel, holoturia	
12:50	1165	0	206	-890	1280	position call	
12:51	1166	5	200			small mount with raising structure, fish	
12:52	1165	5	207			eel, bubbling traits?, small mount - raising structure, jellyfish	
12:54	1164	0	205			fish, turning Yokosuka, shrimp	
12:55	1166	6	218			2 eels	
12:57	1170	5	225			eel, jellyfish	

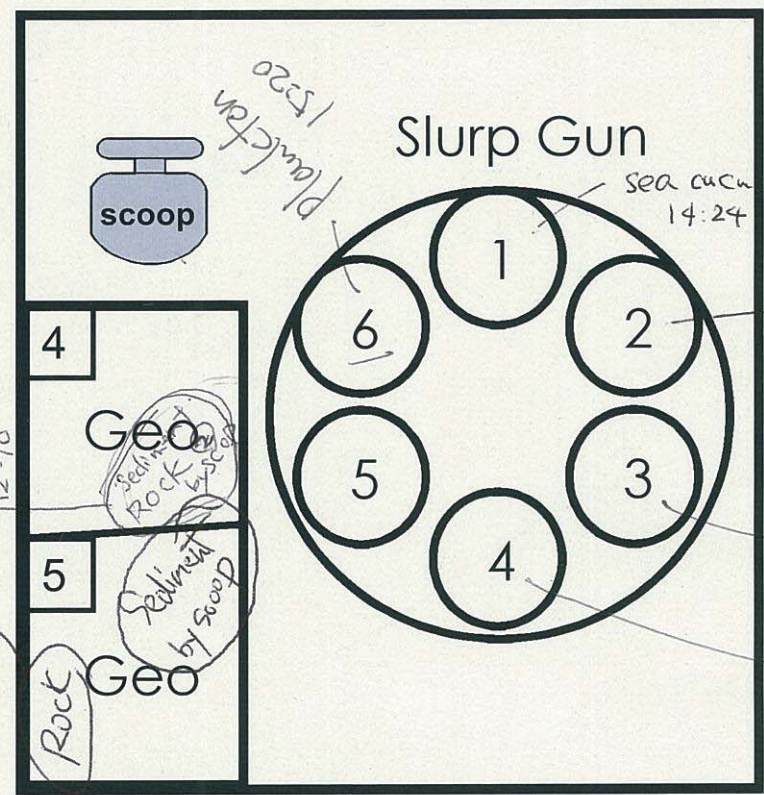
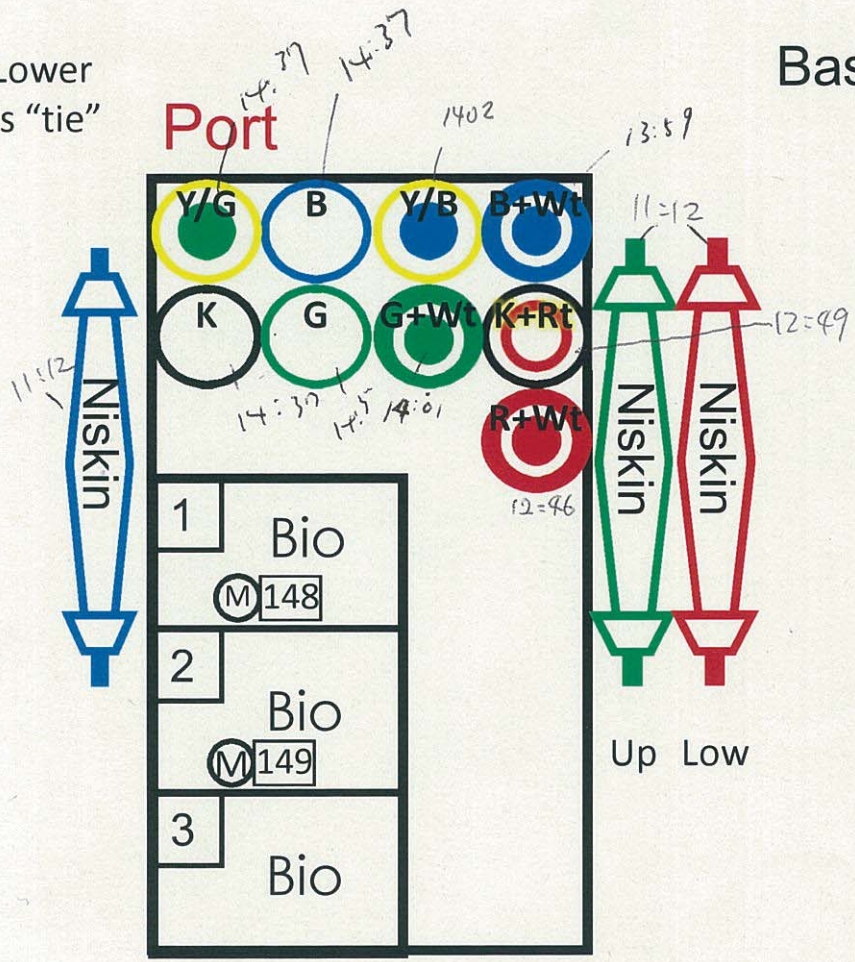
12:58	1169	5	229			eel,	
12:59	1174	3	234			eel, orchin	
13:00	1173	3	238	-1100	1260	position call	Log eugenio
13:02	1174	3	224			fish	
13:03	1172	3	242			orchin	
13:05	1173	3	239			fishes	
13:07	1173	3	242			eel	
13:07	1172	3	230			fish	
13:08	1175	3	236			fish	
13:10	1172	3	252			eel	
13:11	1172	3	263	-1340	1170	position call	
13:12	1172	3	262			eel	
13:14	1171	3	282			two eel	
13:14	1172	3	281			fish,	
13:15	1173	3	283			eel	
13:16	1174	3	288			eel	
13:18	1172	3	305			eel	
13:20	1173	3	312			fish	
13:21	1173	3	308	-1410	1020	position call	
13:22	1172	3	314			eel	
13:25	1172	3	311			fish	
13:26	1173	3	312			eel	
13:28	1173	3	320			eel	
13:29	1174	3	324			shrimp	
13:31	1173	3	326	-1390	840	position call	
13:32	1173	3	333			small fish	
13:38	1172	3	323			small fish	
13:41	1172	3	331	-1330	650	position call	
13:42	1171	3	328			eel	
13:43	1173	3	320			small fish	
13:44	1172	3	328			orchin	
13:48	1172	3	332			eel	
13:49	1173	3	330			fish	
13:49	1173	3	334			spider	
13:50	1175	3	329			eel	
13:51	1174	3	333	-1260	470	position call	
13:54	1172	3	335			small fish	
13:55	1174	3	333			purple jellyfish	
13:56	1173	3	333			eel	
13:57	1173	3	332			shrimp	
13:58	1173	3	338			eel	
14:00	1174	3	341			eel	
14:02	1176	3	340	-1160	300	position call	
14:03	1174	3	336			sea spider	
14:03	1173	3	333			eel	
14:09	1174	3	323			fish	
14:11	1175	3	317	-1080	170	Position call	

Color
 - Upper/Lower
 - small t is "tie"

Port

Basket map

Starboard



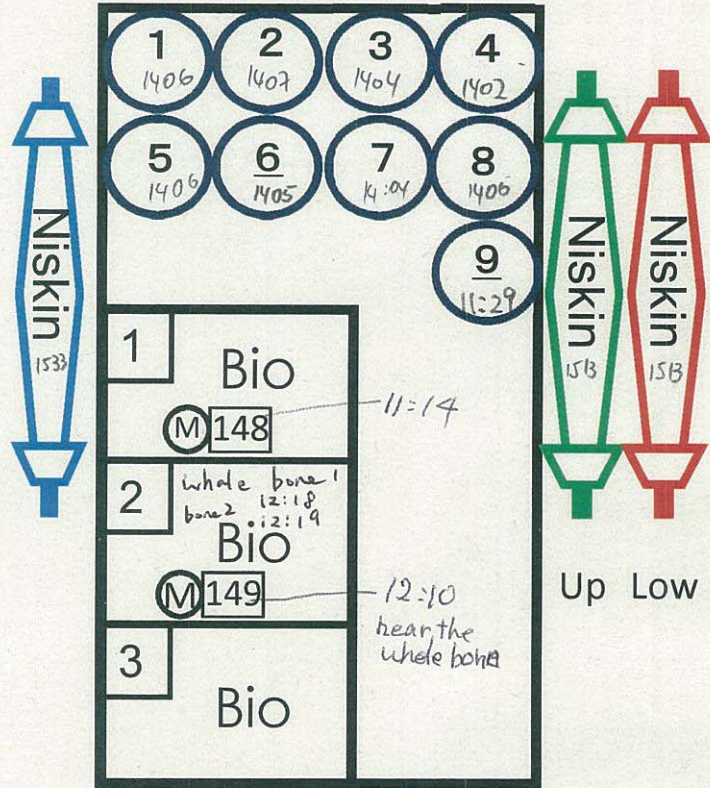
Plastic bag
 (20L)

6K Dive#1333 (23/04/2013)

Color

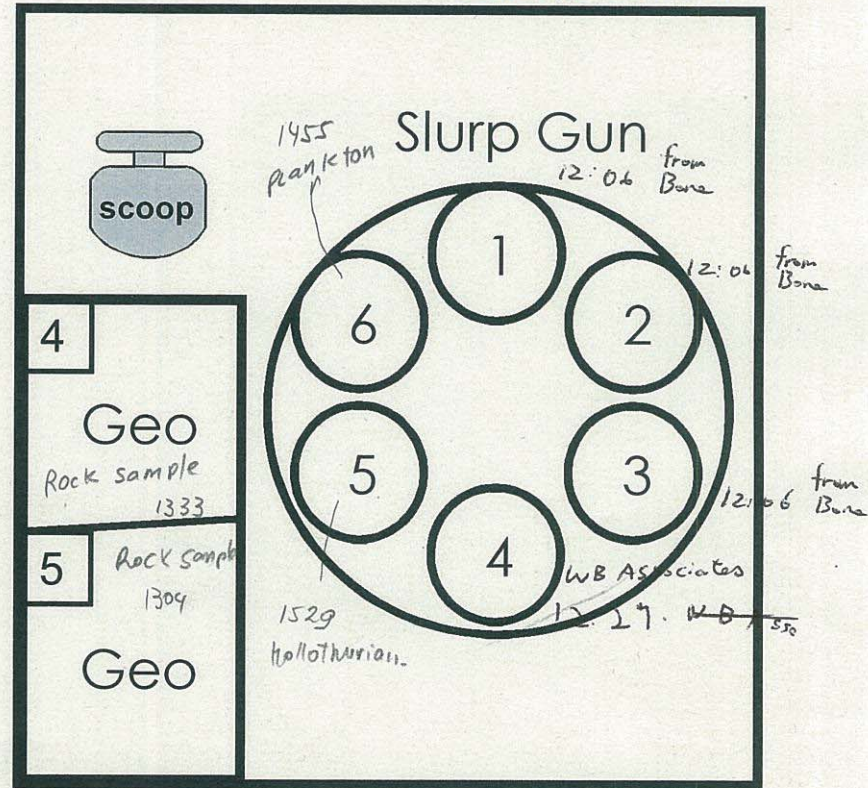
- Upper/Lower
- small t is "tie"

Port



Basket map

Starboard

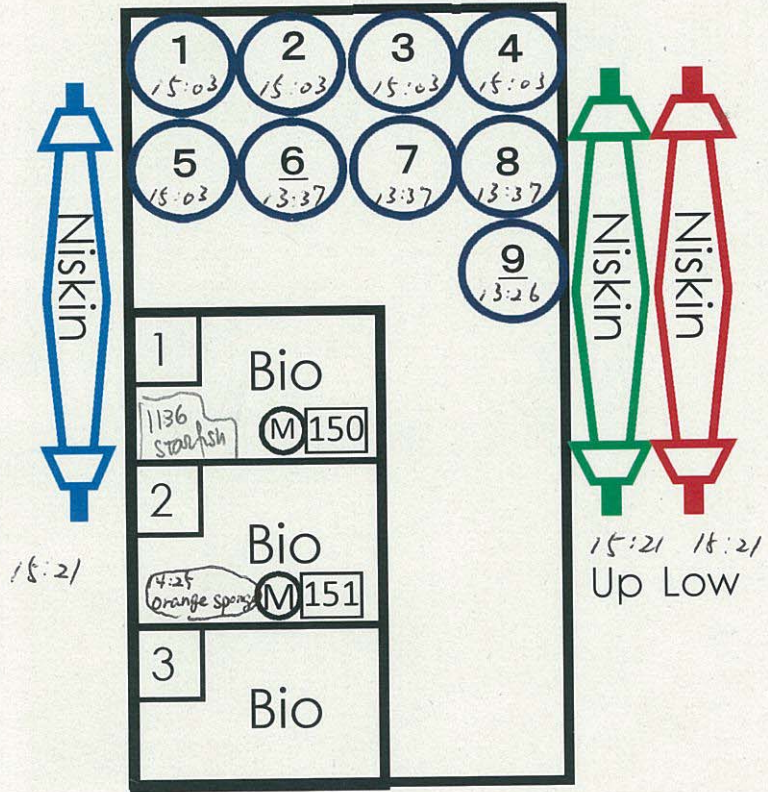


Plastic bag
1533 (20L)

6K Dive#1334 (24/04/2013)

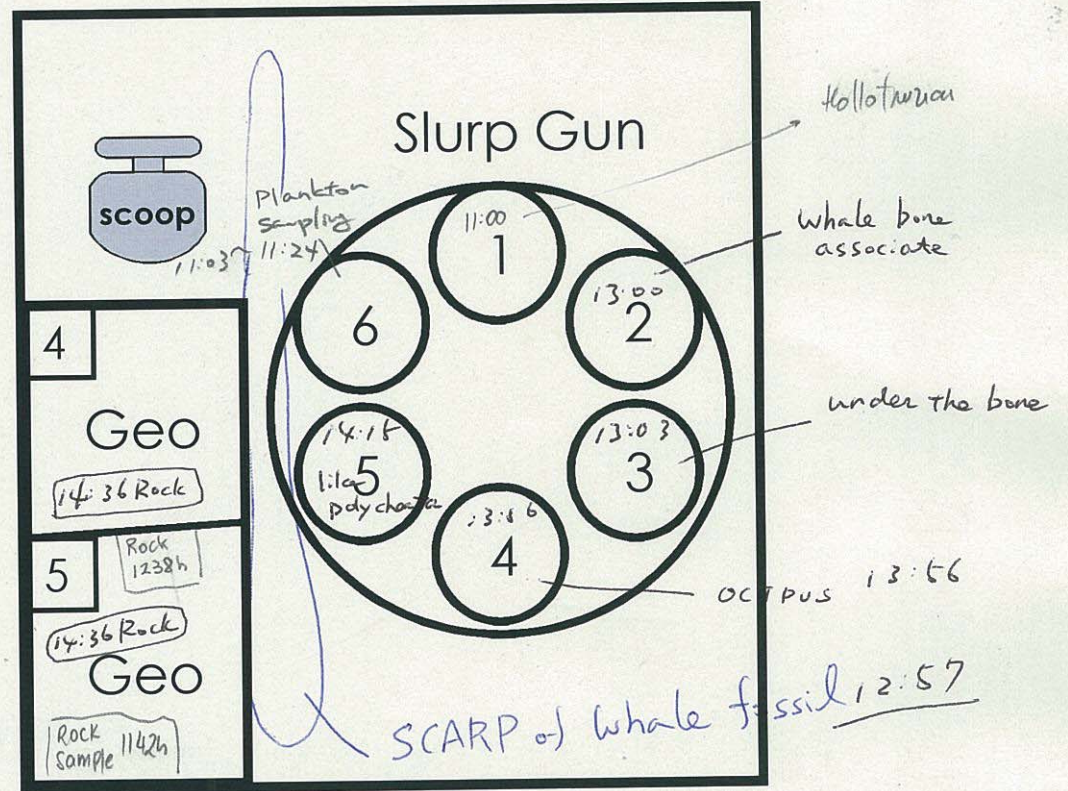
Color
 - Upper/Lower
 - small t is "tie"

Port



Basket map

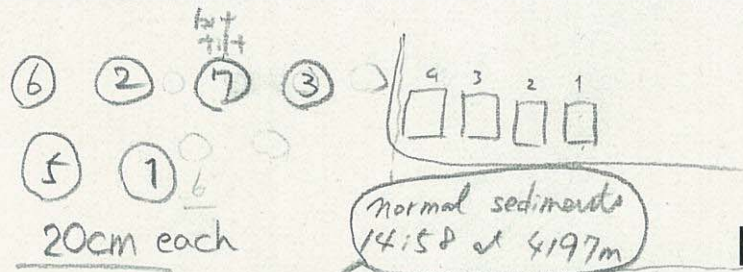
Starboard



Plastic bag (20L) 15:23 ~

6K Dive# 1335 (25/04/2013)

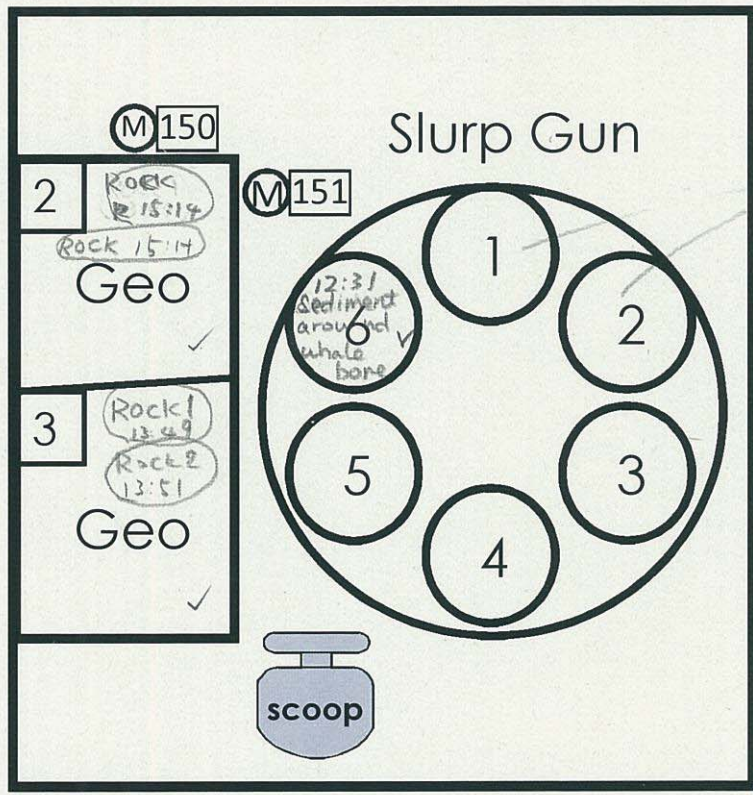
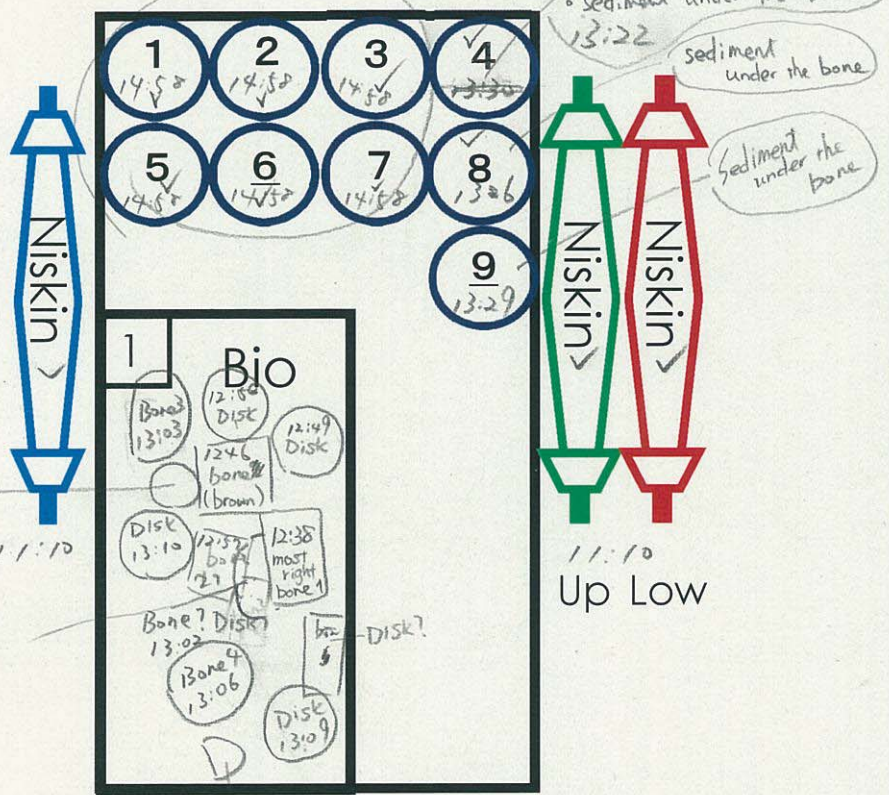
by Koichi Ara



Basket map

Port

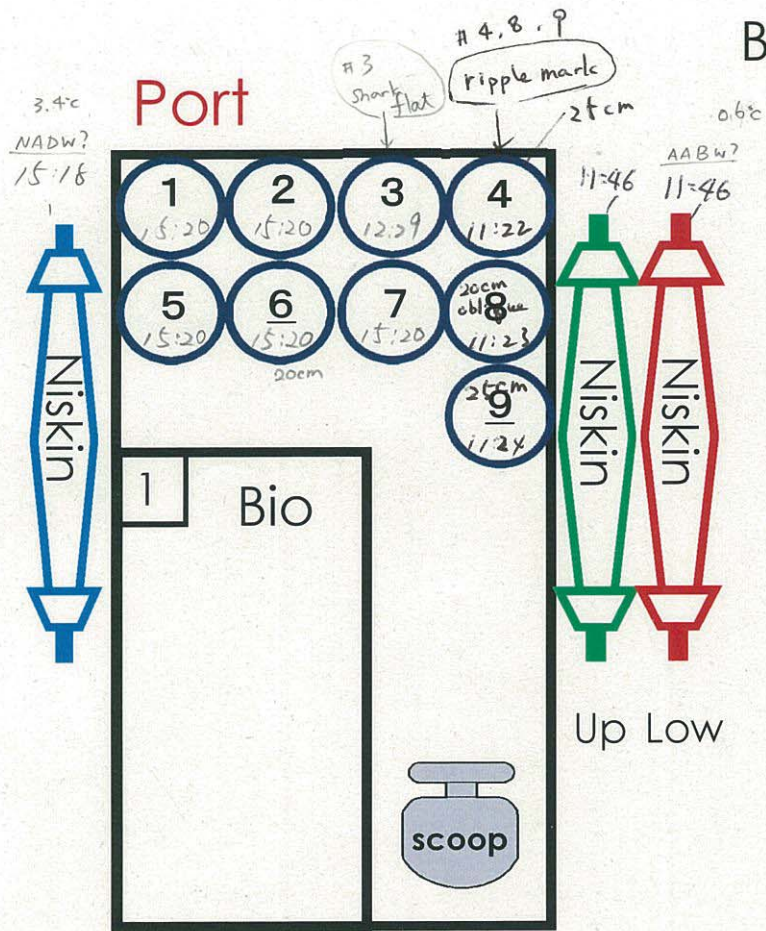
Starboard



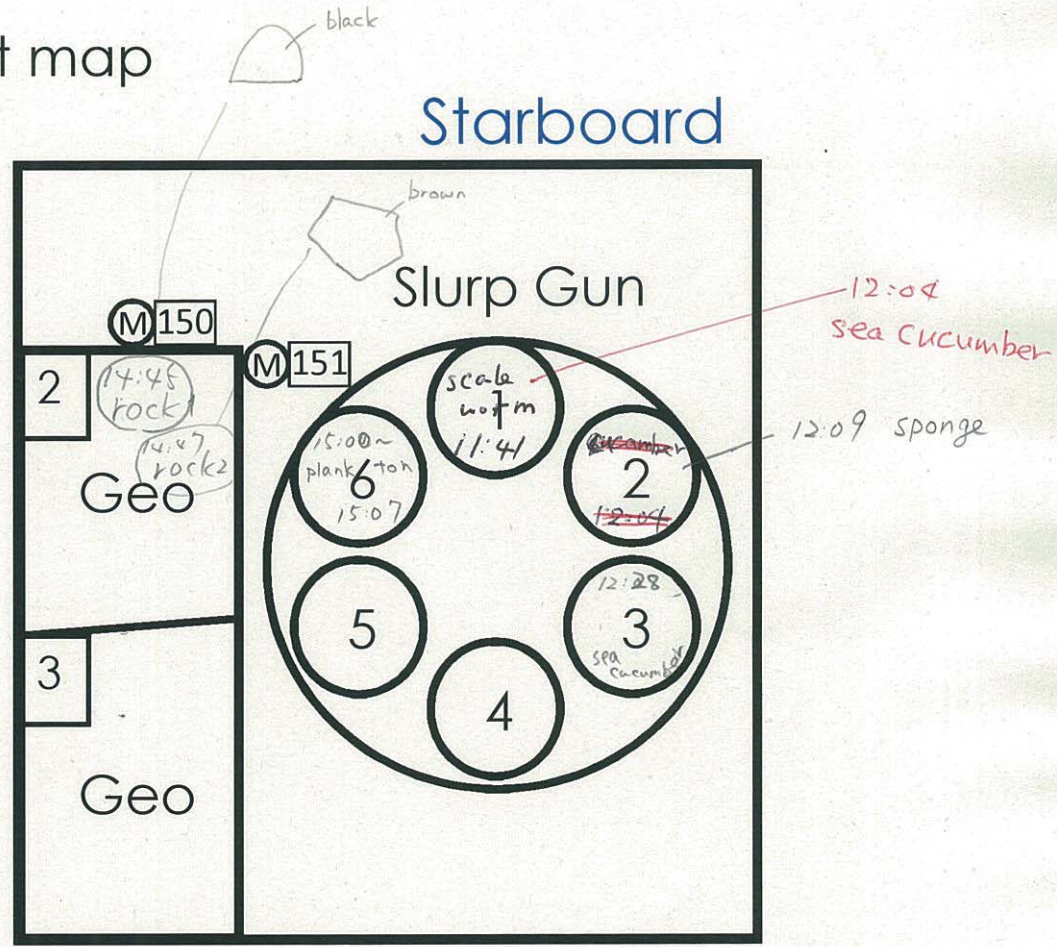
half part of disk?
fragmented 13:30

Plastic bag (20L) ✓
12:14
above the bone site

Whale bone site
6K Dive# 1336 (26/04/2013)
Site



Basket map



Plastic bag (20L)

11:50

6K Dive# 1337 (27/04/2013)

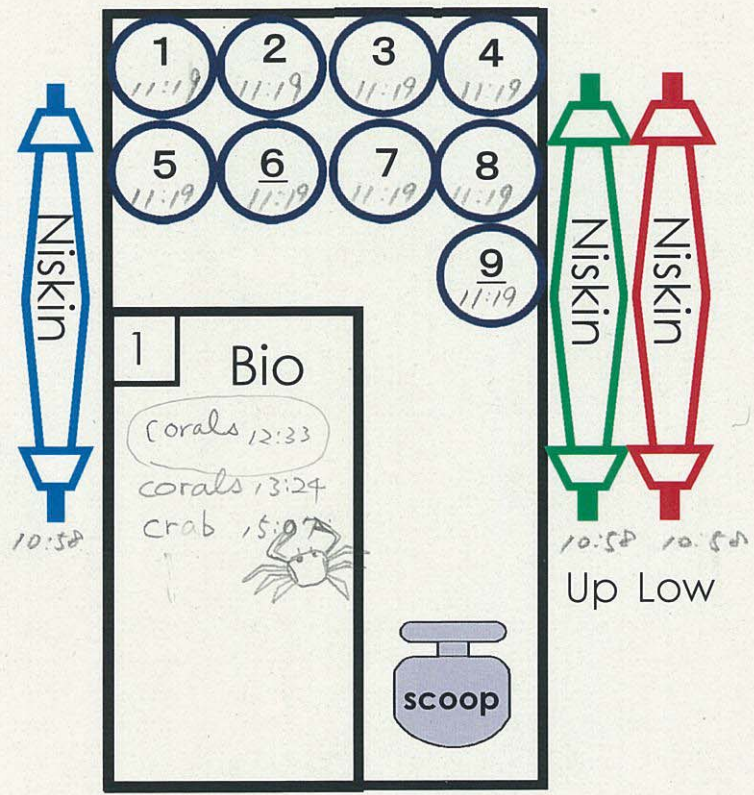
Eugenio
イウジニオ

Basket map

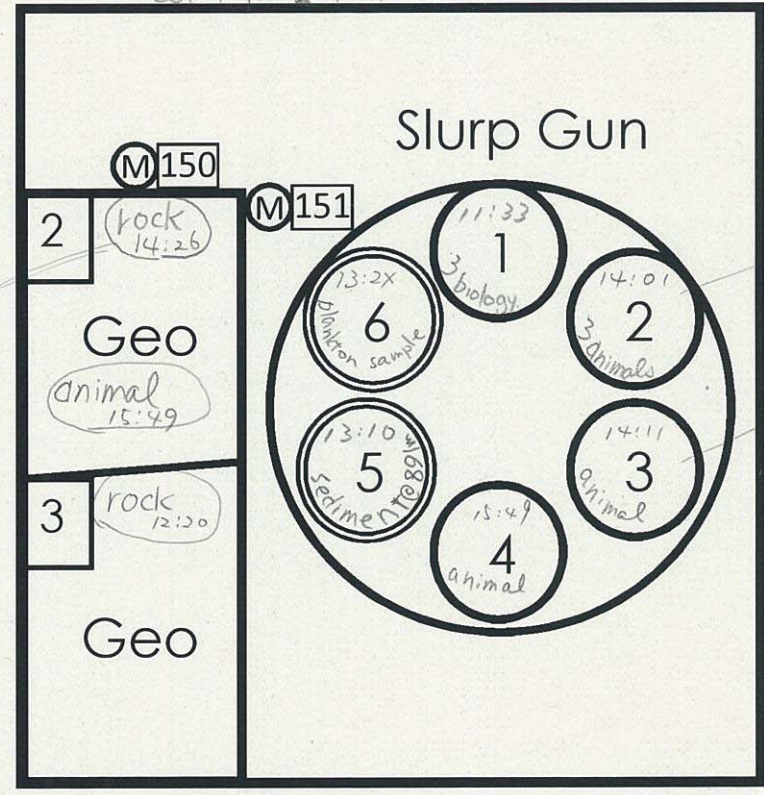


Port

L = 25cm each



Starboard



coral garden

Cnidarians etc.

vacume from coral stem?



Plastic bag (20L)

10:58 ~ 11:02

6K Dive # 1338 (30/04/2013)

José Angel Jh.

Rio Grande Rise

6. Notice on using

This cruise report is a preliminary documentation as of the end of the cruise. It may not be corrected even if changes on content (i.e. taxonomic classification) are found after publication. It may also be changed without notice. Data on the cruise report may be raw or not processed. Please ask the Chief Scientist for the latest information before using.

Users of data or results of this cruise are requested to submit their results to Data Integration and Analysis group (DIAG), JAMSTEC.