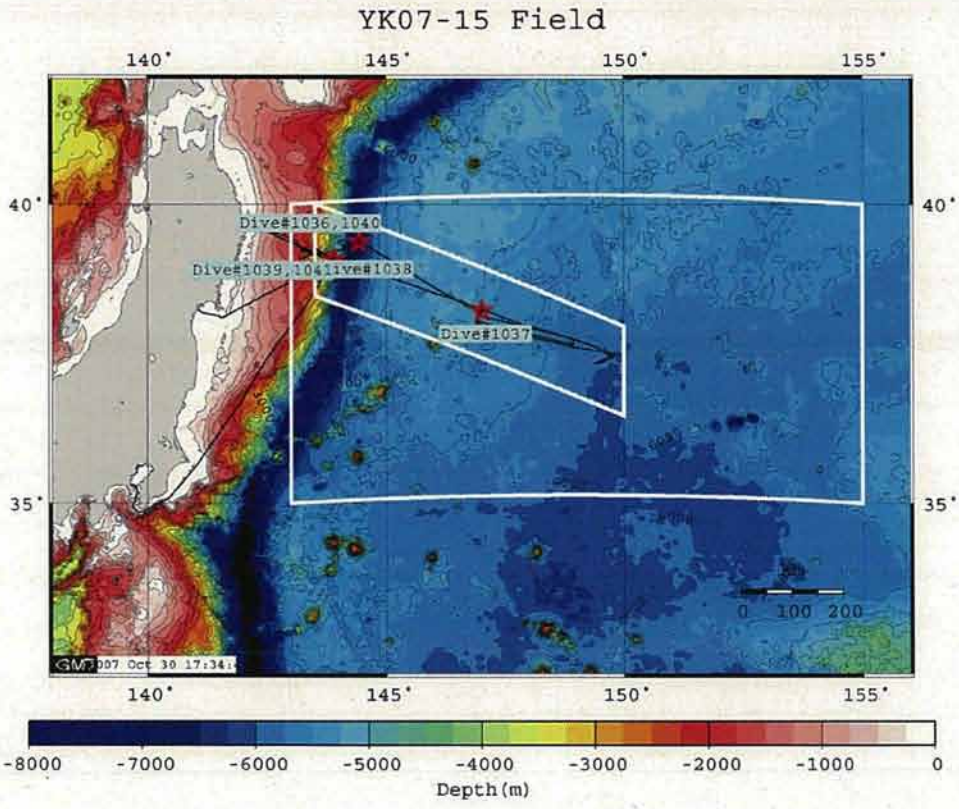
doi : 10.17596/0003531

YK07-15 Cruise, Onboard Report

Outer-rise in NW Pacific & Japan Trench
11-27 October 2007: Sendai – Yokosuka



課題名:「超深海性近底層性クシクラゲ類:新目で生きた化石の可能性について」
課題名:「超深海性近底層性ゼラチン質生物の群集構造・多様性・機能について」
課題提案者:Dhugal LINDSAY(海洋研究開発機構)
課題名:「メタンシープに生息する謎のシンカイスナギンチャクの調査:極限環境(深海)に生息するスナギンチャクの理解に向けて」
課題提案者:James Davis Reimer(海洋研究開発機構)
課題名:「北西太平洋の新種火山「プチスポット」の成因解明:海洋プレート熱物質構造調査」
課題提案者:阿部 なつ江(海洋研究開発機構)

Dhugal J. Lindsay, James D. Reimer, 森美由貴 (XBR, JAMSTEC), 阿部なつ江, 土屋正史 (地球内部変動研究センター), 三宅裕志 (北里大学), Jan Pawlowski, Frederic Sinniger (U. Geneva), 高橋亜夕 (東京大学), 北田貢 (新江ノ島水族館), 藤井琢磨, 伊礼由佳, 城間枝里子 (琉球大学) & 岡田聡 (NME)

Appendix

Table of Contents

「SHINKAI 6500」 Operation Team

Operation Manager	Yoshiji.Imai
Assistant Operation Manager	Toshiaki.Sakurai
1st Submersible Staff	Yoshitaka.Sasaki
1st Submersible Staff	Tetsuji.Maki
1st Submersible Staff	Itaru.Kawama
1st Submersible Staff	Tetsuya.Komuku
1st Submersible Staff	Kazuhiro.Chiba
2nd Submersible Staff	Keita Matsumoto
2nd Submersible Staff	Hirohumi Ueki
3rd Submersible Staff	Yosuke Chida
3rd Submersible Staff	Fumitaka Saitoh
3rd Submersible Staff	Takuma Ohnishi
3rd Submersible Staff	Atsushi Takenouchi

R/V YOKOSUKA Crew

Captain	Eikou Ukekura
Chief Officer	Koji SAMESHIMA
2nd Officer	Seiichi Nakano
3rd Officer	Shouzou Fujii
Chief Engineer	Eiji Sakaguchi
1st Engineer	Kazuhiko Kaneda
Junior 1st Engineer	Kouji Funae
2nd Engineer	Yoshinobu HIRATSUKA
3rd Engineer	Naoyuki Takahara
Chief Radio Operator	Fukuo Suda
2nd Radio Operator	Yohei Yamamoto
Boat Swain	Seiichi Abe
Able Seamen	Hideo Isobe
Able Seamen	Takao Kubota
Able Seamen	Katsumi Shimizu
Able Seamen	Yukito Hujimura
Sailer	Takumi Yoshida
Sailer	Kaito Murata
No.1 Oiler	Kouzou Miura
Oiler	Hiroyuki Ohishi
Oiler	Yoshinori Kawai
Assistant Oiler	Tatsuomi Chino
Assistant Oiler	Masaki Tanaka
Chief Steward	Tomihisa Morita
Steward	Ryuei Takemura
Steward	Hiroyuki Ohba
Steward	Sasaki Wataru
Steward	Norihito Izumi

Executive Summary

「しんかい６５００」を用いた日本海溝ゼラチン質生物調査: YK07-15航海の概要と成果

○Dhugal J. Lindsay, James D. Reimer, 森　美由貴 (XBR, JAMSTEC), 阿部　なつ江、土屋　正史 （地球内部変動研究センター）, 三宅　裕志 （北里大学）、Jan Pawlowski, Frederic Sinniger （University of Geneva）、 高橋　亜夕 （東京大学）、 北田　貢 （新江ノ島水族館）、藤井　琢磨、伊礼　由佳、城間　枝里子 （琉球大学） & 岡田　聡 （NME）

State-of-the-art survey techniques and tools have recently shed light on many aspects of gelatinous midwater animals. Taxonomic work, including new species descriptions, benefit greatly from both specimens sampled in pristine condition (eg Pugh, 2006; Haddock et al., 2005; Kitamura et al., 2005) and from the in situ imagery that can be obtained of fragile gelatinous forms (eg Hopcroft & Robison, 2005; Matsumoto et al., 2003; Harbison et al., 2001). Aspects of their ecology such as interspecies interactions are often also only able to be characterised due to in situ observations with cutting edge technologies (eg Pagès et al., 2007; Drazen & Robison, 2004; Lindsay et al., 2001). Recognising this need, submersible platforms designed specifically for in situ surveys of fragile planktonic organisms are now under development (Yoshida & Lindsay, 2007).

The eastern seaboard of Japan off the Sanriku Coast and above the Japan Trench is an extremely productive oceanic area with Oyashio-derived cold water masses, Kuroshio-derived warm water masses and eddies, and frontal and mixing zones. The variety of water masses ensures that planktonic diversity is high. The species composition and distribution patterns of robust organisms such as krill, shrimps, fish and copepods, which are able to be sampled with conventional plankton nets and midwater trawls, has been studied in this area to a certain extent (Nishikawa, 1995). Much attention has focused on the physical and biological properties of these water masses in recent years with a special edition of the Journal of Oceanography (Vol. 54, No. 5, 1998) devoted to the topic. Information on the gelatinous zooplankton community is still sparse, with some submersible-based surveys concentrated in the far northern reaches where cold water masses predominate (Vinogradov & Shushkina, 2002 and references therein), a dive with the French bathyscaphe F.N.R.S.III off the Boso Peninsula (Peres, 1959), a dive with the Japanese submersible Shinkai 6500 off the Sanriku Coast at 39°53'N 144°11'E (Lindsay, 2005), and a series of dives with the ROVHyper Dolphin (Lindsay et al., 2004), also off the Sanriku Coast.

Vertical transects were made on all dives during this cruise using the NTSC cameras aboard the Shinkai 6500. Transects were also recorded on the external HDV camera on dives 1037-1041. This data is being analyzed back in the land laboratory. Transects based on counting by eye were made on dives 1037 and 1039 (observer: Dhugal Lindsay) and data recorded on the audio track of the video tape with additional information from visual counts during dives 1038 (observer: James Reimer) and 1041 (observer: Frederic Sinniger) recorded as sketches with descriptional notes. The distributions of the narcomedusa *Solmissus incisa* and the lobate ctenophore genus *Bathocyroe* will be characterized on the basis of these combined dives. Dives 1037 and 1039 will be further analyzed in detail to assess community structure vs depth and the factors determining distribution in key species.

Two undescribed species of the genus *Sigiweddelia* were sampled, their morphology when fresh recorded, samples taken and stored in 99.5% ethanol at -80°C for DNA analysis, and the voucher specimens preserved in 5% formalin. Species descriptions of these animals will be done and their position in the cnidarian tree of life determined through collaboration with the Tree of Life Project at the Smithsonian Museum. One undescribed species of benthic/benthopelagic ctenophore was videotaped, photographed, and tissue fragments recovered. It appears to be a relative of the ctenophore described by Lindsay and Miyake (2007). Its phylogenetic position within the Phylum Ctenophora will be investigated in collaboration with Dr. James Reimer, University of the Ryukyus.

The recently described doliolid *Doliolula equus* Robison, Raskoff & Sherlock, 2005 was captured for the first time outside of Monterey Bay, and we plan to publish this occurrence in the relevent literature.

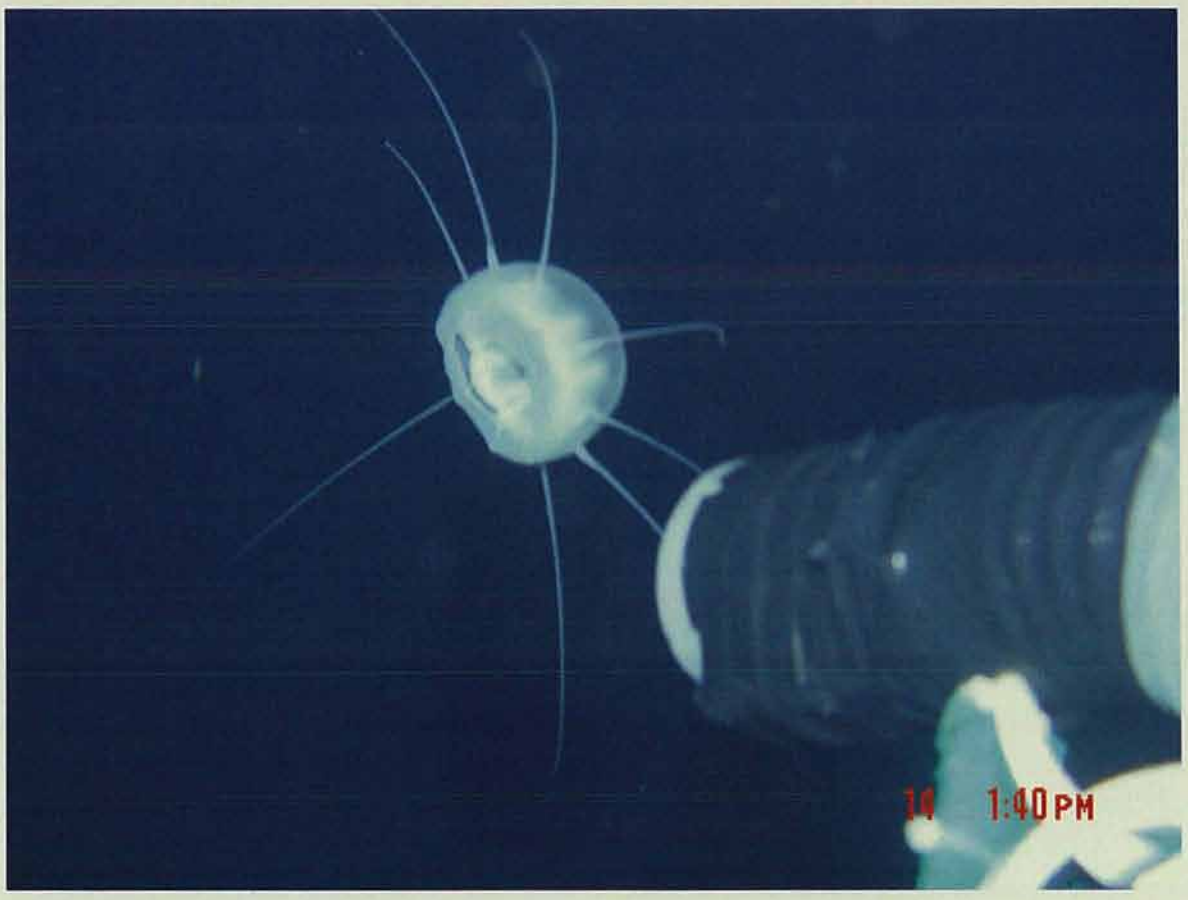


Fig. 1 Undescribed species of *Sigiweddellia* photographed during Shinkai 6500 Dive 1039.

Preliminary results of YK07-15: Discovery of the world's deepest populations of deep-sea zoanthids (Hexacorallia: Abyssoanthidae) at the Japan Trench

○REIMER James Davis (琉球大学理学部・海洋研究開発機構), SINNIGER Frederic, IREI Yuka, SHIROMA Eriko, FUJII Takuma (琉球大学理学部)

Until recently, very little was known about zoanthids (Cnidaria: Hexacorallia) from deep-sea environments, with all known specimens assigned to the family Epizoanthidae. However, in June 2005 a small number of unusual samples of a zoanthid-like species where inadvertently sampled during deep-sea submersible dives (Shinkai 6500 dive # 884) at a methane cold seep at 3259 m in the Nankai Trench off Muroto, Japan (32°34.945'N, 134°41.545'E). Specimens were different in ecology, morphology and molecular phylogeny from all known families of zoanthids, and were thus classified as the new species *Abyssoanthus nankaiensis* Reimer & Fujiwara 2007 belonging to the newly erected family Abyssoanthidae. *A. nankaiensis* is distinguished by its unitary polyps, presence at methane cold seeps at extreme depths, and divergent phylogenetic status from other zoanthids. Unfortunately, due difficulties conducting morphological examinations due to the presence of encrusted sand, and the small number of specimens, the internal structure of mesenteries were not able to be obtained. Similarly, no detailed *in situ* images were available from Dive 884, and many questions remain on the ecology and morphology of *A. nankaiensis.*

After characterization of *A. nankaiensis*, it was learned from images taken during Shinkai 6500 dive # 959 that there were other potential Abyssoanthidae populations a non-methane seep site at the Japan Trench (39°06.50'N, 143°53.4'E). In October 2007, cruise YK07-15 and the Shinkai 6500 dove to a depth of 5347-5360 m (dives # 1038, 1041) at this site to confirm the presence of zoanthids. Our initial findings show a large population of an unknown *Abyssoanthus* sp. living on mudstone in an "ecological hotspot" characterized by large amounts of marine snowfall. Specimen polyps *in situ* were approximately 15-25 mm in height, 5-15 mm in diameter, and had 20-30 tentacles. While phylogenetic studies are still being conducted on collected specimens to assess whether this is a new *Abyssoanthus* species or *A. nankaiensis*, from our results it is now clear that *Abyssoanthus* is not limited to methane cold seeps. This population of zoanthids represents the deepest ever recorded zoanthid population, and further investigations at other hadal sites will help increase our knowledge of this unique family of benthic cnidarians.

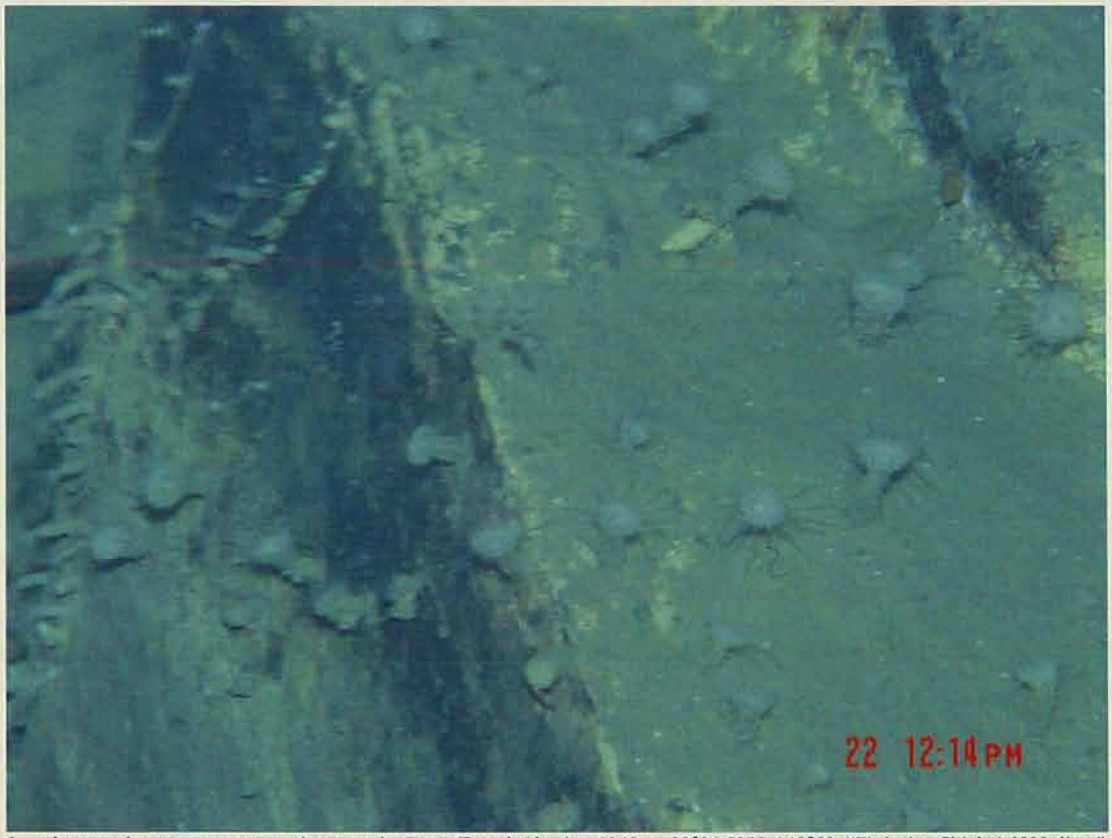
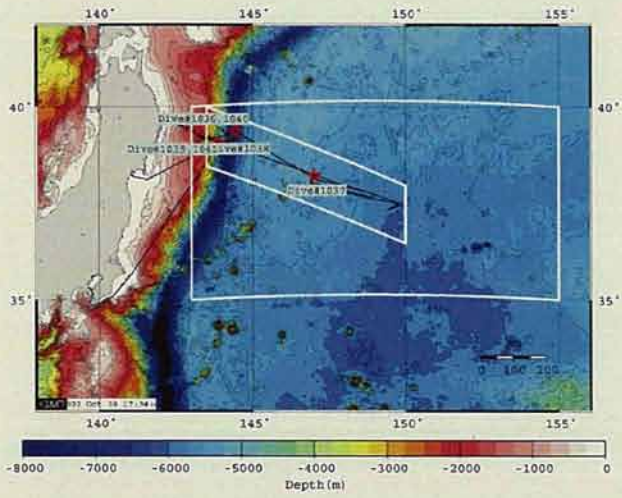


Figure 1 – *Abyssoanthus* sp. *in situ* on mudstone at the Japan Trench (depth = 5348 m, 39°06.50'N, 143°53.4'E) during Shinkai 6500 dive # 1038 on October 22, 2007. Note expanded polyps and visible tentacles. Polyp diameters are approximately 1 cm.



「しんかい６５００」を用いた日本海溝ゼラチン質生物調査: YK07-15航海の概要と成果

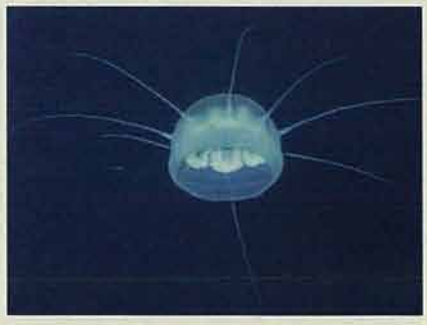
A Research Cruise aboard the R/V *Yokosuka* using the crewed submersible *Shinkai 6500* was held between 11-27 October 2007 to survey various aspects of the biology and geology off the eastern seaboard of Japan.

乗船研究者：Dhugal J. Lindsay, James D. Reimer, 森　美由貴　(XBR, JAMSTEC), 阿部　なつ江、土屋　正史　（地球内部変動研究センター）, 三宅　裕志　（北里大学）、Jan Pawlowski, Frederic Sinniger（University of Geneva）、　高橋　亜夕　（東京大学）、　北田　貢　（新江ノ島水族館）、藤井　琢磨、伊礼　由佳、城間　枝里子（琉球大学）　& 岡田　聡　（NME）

超深海性近底層性クシクラゲ類：新目で生きた化石の可能性について

An undescribed species of benthic ctenophore was videotaped, photographed, and tissue fragments recovered. It appears to be a relative of the ctenophore described by Lindsay and Miyake (2007). Its phylogenetic position within the Phylum Ctenophora will be investigated in collaboration with Dr. James Reimer, University of the Ryukyus. Two further individuals have since been identified at 6987m depth during ROV *Kaiko 7000-2* Dive 400 at 40°01.8'N, 144°12.96'E, suggesting this group may actually be quite abundant at abyssal depths.

超深海性近底層性ゼラチン質生物の群集構造・多様性・機能について



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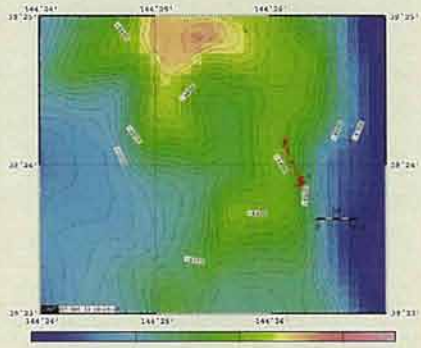
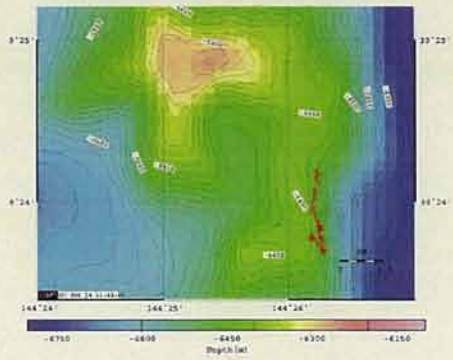
北西太平洋の新種火山「プチスポット」の成因解明：海洋プレート熱物質構造調査

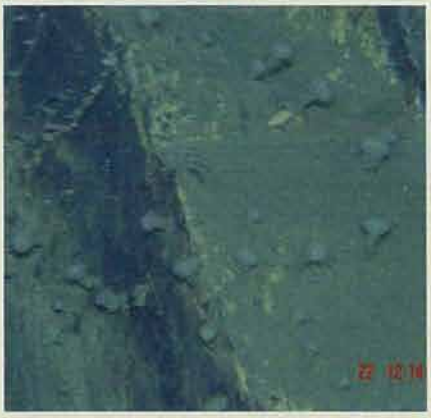


Two dives for geological research were made. On 12 October 2007 during Dive 6K#1036, a transect was made from 39°23.873N, 144°26.2762E, 6457m to 39°24.1603N, 144°26.1275E, 6406m. Eight rock samples and two core samples were retrieved.

On 24 October 2007 during Dive 6K#1040, a transect was made from 39°23.7664N, 144°26.1828E, 6379m to 39°24.1894N, 144°26.2222E, 6440m. Five rock samples and three MBARI core samples were retrieved.



メタンシープに生息する謎のシンカイスナギンチャクの調査：極限環境（深海）に生息するスナギンチャクの理解に向けて



Abyssoanthus **sp. in situ on mudstone at the Japan Trench (depth = 5348 m, 39°06.50'N, 143°53.4'E) during Shinkai 6500 dive # 1038 on October 22, 2007. Note expanded polyps and visible tentacles. Polyp diameters are approximately 1 cm.**

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超深海性有孔虫について

A large xenophyophore from 1037 dive

Foraminifera are a significant but often overlooked component of deep-sea benthic fauna. These organisms are usually of size smaller than 0.5 mm and include numerous species of organic-walled allogromiids, finely agglutinated saccaminids and more coarsely agglutinated astrorhizids and textulariids. The tests of many of these species do not fossilize and do not preserve well in geological samples. Therefore, they have been usually overlooked and comprise a large number of unknown and undescribed species.

Inside view of xenophyophore tube with 2 kinds of canal systems, white and black.

This is also the case of foraminifera-like xenophyophoreans and komokiaceans. These large, macrofaunal size organisms are common in many deep-sea settings, but their diversity is poorly known. Their skeleton is often built of extremely fragile agglutinated tubes and it is difficult to collect them intact by classical boxcore or multicore sampling.

Close-up, containing blackish particles (stercomata?) inside the tube.

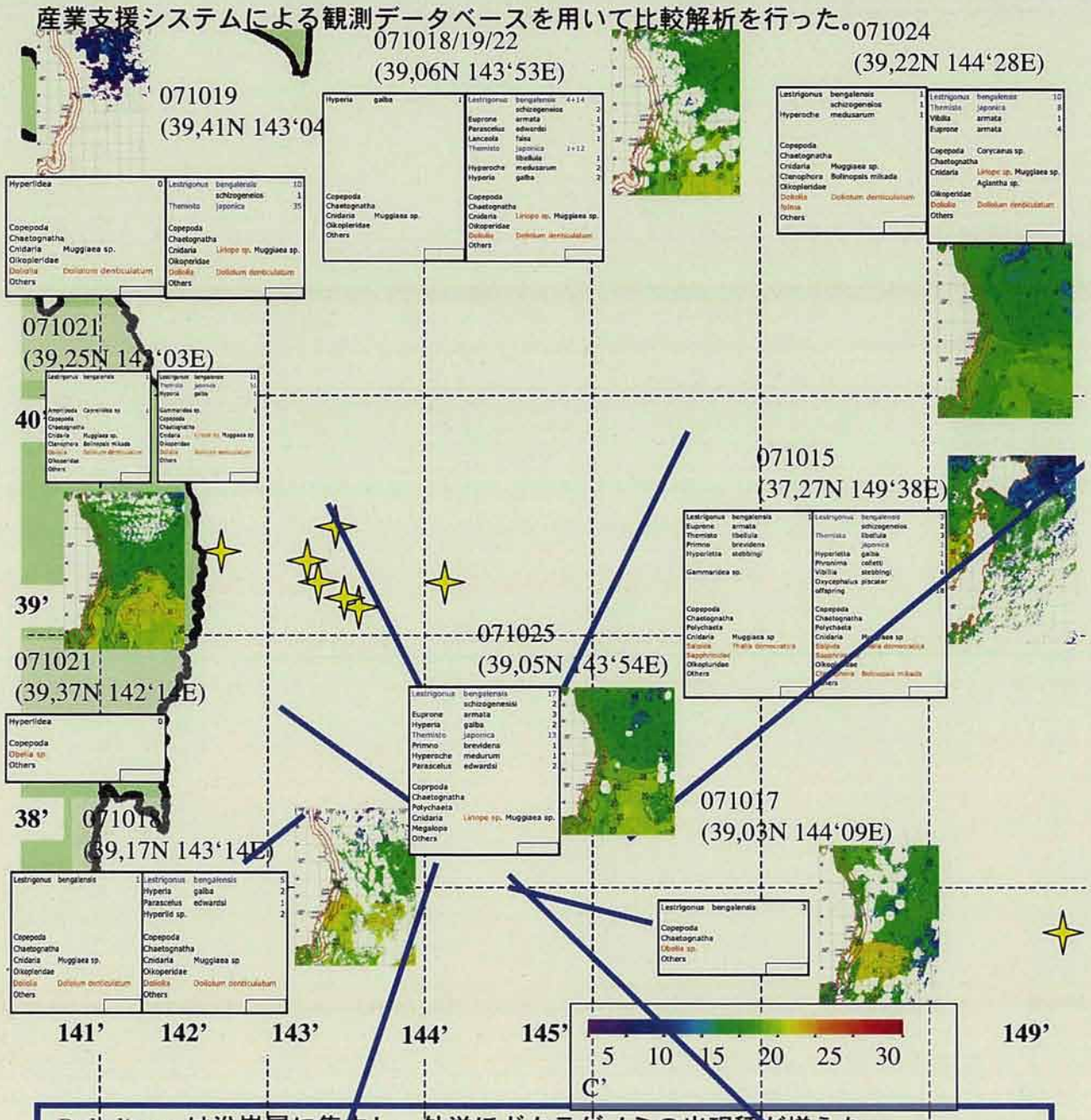
Methodology and Proposed Improvements to *Shinkai 6500* System

Video footage was recorded by an HDV video camera (Sony HVR-A1J) with a 1/3 inch CMOS sensor (2.97 megapixels, minimum sensitivity 15lux) and saved to hard disk in HDV1080i streaming format (.m2t files) in real time. This camera was deployed inside an aluminium (7075-T6) pressure housing (170mm diameter, 360mm length) on a specially constructed stand that hung off the sample basket such that the camera recorded the scene observable from the central (pilot's) porthole. Zoom was set on lowest setting (wide) and focus adjusted to 3m distance with RS232C connection. A second video camera (Sony HDR-SR8) with a 1/2.9 inch CMOS sensor (2.28 megapixels, minimum sensitivity 5 lux) was set flush to the pilot's porthole during the free-fall descent (28m/min) and recorded HDV NTSC video saved to hard disk in HDV1080i streaming format (.m2t files) in real time. Observations made with the naked eye were recorded on the audio track of the DV-Cam tapes through a microphone set next to the scientist's viewport.

Several important design flaws exist in all serving manned submersibles (see Armstrong et al. 2004). The ballast system on every single manned submersible in the world fleet, including the *Shinkai 6500*, only allows one horizontal transect, of maximum thickness 1000m, to be made in a single dive. Once the main ballast that is used for descent has been jettisoned and the sub trimmed to neutral buoyancy, the sub can no longer descend at the same speed as before once a transect is done. Descent is only possible through filling the ballast tanks with water and sinking extremely slowly or by using the thrusters to descend. Although a typical midwater dive involves horizontal (or oblique) transects at various depths in the water column to contrast and compare the communities living at different depths, in the former case it would take too long to descend to depths over 5000m once a transect had been made at 1000m (and 2000m, 3000m, 4000m), while in the latter case the batteries would run out before a full set of transects could be made.The "New Alvin", which is scheduled to begin operations in 2008, has been designed specifically to overcome this flaw and make midwater research more competitive in terms of science per unit dive time, in a large part because a recent NSF-sponsored study on "Future needs in deep submergence science" identified midwater research as one of the major fields of future expansion in deep sea research due to scientific drivers outlined in the report (Armstrong et al. 2004).

Hyperiidea Species
~Surface of Japan Trench and off Sanriku~

YK07-15の北太平洋・三陸沖しんかい6500調査潜航にて、07年10月15～25日の期間にR/V「よこすか」の移動に沿って、mini-netを用いて表層プランクトンの採取を行った。3min×3～5回、水深0～10の範囲で曳網を行い、観察後10％ホルマリン固定したのち、種同定を行い、39‘N沿いに計測したXCTDデータ、母船計測によるSOJデータ、岩手県水
産業支援システムによる観測データベースを用いて比較解析を行った。



Dolliolia sp. は沿岸層に集中し、外洋ほどクラゲノミの出現種が増えた。
*Themisto japonica*及び*Lestrigonus bengalensis*の日周鉛直移動が観察された。
15日夜間採取*Vibilia stebbingi*は、Salpida かCtenophoraに寄生していた可能性がある。

Cruise Plan

平成19年度　深海調査研究

「しんかい6500」調査潜航

実施要領書
（案）

北西太平洋・三陸沖
（YK07-15）

平成19年10月

研究船運航部

1.目　的

平成19年度深海調査研究の一般公募に基づいて採択された以下の課題について、「よこすか」及び「しんかい6500」による調査を実施する。

課題提案者：Dhugal LINDSAY（海洋研究開発機構）
課　題　名：「超深海性近底層性クシクラゲ類：新目で生きた化石の可能性について」

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課　題　名：「超深海性近底層性ゼラチン質生物の群集構造・多様性・機能について」

課題提案者：James Davis Reimer（海洋研究開発機構）
課　題　名：「メタンシープに生息する謎のシンカイスナギンチャクの調査：極限環境（深海）に生息するスナギンチャクの理解に向けて」

課題提案者：阿部　なつ江（海洋研究開発機構）
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2. 期　間（別表-1調査日程表　参照）

平成19年10月11日（木）～ 平成19年10月28日（日）までの18日間
（仙台港 ～ JAMSTEC　予定潜航回数：　9潜航）

3. 使用船舶等

（1）名称　「よこすか」 4,439G/T
「しんかい6500」

（2）船舶電話　：
：
インマルサット（F）　：
：
信号符字　：　JCOY
IMO船舶識別番号　：　IMO8711019
：

4. 調査海域（別図-1　調査海域図参照）

北西太平洋　三陸沖（水深：1000～6500m）
35° 00.0'N　143° 00.0'E
40° 00.0'N　155° 00.0'Eの緯線・経線で囲まれる範囲

5. 調査チームの編成(別表-2　組織図　参照)

(1)統括責任者:調査研究全般に関すること。

(2)首席研究者:調査の具体計画・調整・まとめ等に関すること。

(3)潜航調査研究者

:「しんかい6500」による潜航調査及び得られたサンプル・データ等を用いた調査研究を実施に関すること。

(4)乗船研究者

:潜航調査等によって得られた試料・データ等を用いて調査研に関すること。

(5)観測技術員:データ・サンプルの取得及び調査作業の支援に関すること。

(6)「しんかい6500」司令及び運航チーム

:「しんかい6500」システムの運航及び調査作業の支援に関すること。

(7)「よこすか」船長及び乗組員

:「よこすか」の運航及び調査作業の支援に関すること。

6. 調査研究の概要

【超深海性近底層性クシクラゲ類:新目で生きた化石の可能性について】

2001年から2010年にかけて全海洋の生物多様性に関する知見を整備・拡充することを目的としたCensus of Marine Lifeの一環として、2004年にCensus of Marine Zooplankton(CMarZ)が開始されたが、この中でゼラチン質プランクトン及び深海生物系の調査は絶対的に少なく、集中的に行うべきであることが認識されている。

2002年4月5日の無人探査機「かいこう」第233潜航において、新たな目に属されるべきであろうと思われる新科新属新種のクシクラゲが確認された。形態的な情報からはクシクラゲの中では最も原始的なものである可能性が指摘されたが、標本が採集されていないために詳細な形態調査や分子を用いた系統的な調査を行うことも現状では不可能である。

2006年6月16日「しんかい6500」第959潜航において39° 6.2189'N, 143° 53.5308' E, 水深5351mにおいて同じ仲間と思われる個体が2個体観察されており、吸引式生物採集器がペイロードとして搭載できる「しんかい6500」ではこれらの採集が可能である。

本調査では、以上の成果と現状をふまえ、このクシクラゲの仲間について知見を得ることを目的とし、以下の点について研究を行う。

①分類学的研究:形態を詳細に記録し記載する。また、分子による系統学的な調査を行い、クシクラゲ門の進化やその中でこの(原始的な?)クシクラゲの系統的な位置を明らかにする。

②生態的研究:現場における生態や環境を明らかにする。

【超深海性近底層性ゼラチン質生物の群集構造・多様性・機能について】

日本海溝から外洋にかけての0～6500mの中・深層に棲息するクシクラゲ類、クラゲ類、サルパなどの半索動物類といった、ゼラチン質プランクトンの鉛直分布や行動などが水塊構造によってどう変動するかについて知見を得て、温室効果研究に応用する。

詳細な潜航地点を決めるためには人工衛星による表面水温海域図や葉緑素濃度海域図を参考にする。また、各潜航予定地点に移動する回航中にXCTD−2による観測を行い、全体的な場としての水塊構造を把握し、潜航地点の決定に反映させる。
それぞれの潜航地点における水塊構造でゼラチン質プランクトンの群集構造、多様性、機能について目視及びHDVカメラ記録によって観察すると共に、吸引式生物採集器やゲートサンプラーで生物を採集し、船上のラボにて詳細に調査する。
海底付近で近底層性ゼラチン質プランクトンの群集構造や多様性の調査を行いながら、クラゲのポリプを探しコアサンプラーなどで採集する。その後、船上で実験生物としての飼育を試みる。

【メタンシープに生息する謎のシンカイスナギンチャクの調査：極限環境（深海）に生息するスナギンチャクの理解に向けて】

最近まで、極限環境からのスナギンチャク類の報告がなかったが、「しんかい6500」第884潜航において、南海トラフのメタンシープからスナギンチャク類のサンプルを採取した。このサンプルは、新属新種のスナギンチャク類（Abyssoanthus nankaiensis）で、これまで同定されてきたスナギンチャク類とは異なり単体性の自由生活者で、メタンシープに特異的に存在することが明らかとなった。さらに、遺伝子の塩基配列（ミトコンドリアコードの16S ribosomal DNAと cytochrome oxidase c subunit I DNA, および　核コードの5.8S−r DNA）のデータ解析より、このスナギンチャク類はスナギンチャク目の新科に相当する高次レベルで新奇な分類群であることが明らかになった。このサンプルは偶然に採取された為に画像はほとんど無く、これから電子顕微鏡を用いて、*A. nankaiensis*が共生菌を有しているかどうかを調べるためにも、さらにサンプルが必要である。また、去年日本海溝で観察された深海スナギンチャクが南海トラフで見つかった*A. nankaiensis*と同種かどうかの確認も必要なので調査および採取を目的とした潜航を実施する。今後、新江ノ島水族館と協力研究で生きた状態でスナギンチャクを持ち帰り、水族館で飼育することも検討している。

【北西太平洋の新種火山「プチスポット」の成因解明：海洋プレート熱物質構造調査】

北西太平洋上で近年発見された新たなタイプのプチスポット火山は、地球深部から表層への熱物質移動において未知の役割を担っており、海洋プレート構造や物性に影響を及ぼすと考えられる（Hirano et al, 2006）。
このプチスポット火山のマグマには、海洋プレート深部を構成するかんらん岩やガブロなどの岩片が捕獲されていることが、過去の調査（KR04−08, YK05−06, KR07−06）で明らかになっている。しかし、これまでに採取された捕獲岩の数は非常に少なく、かんらん岩捕獲岩に至っては6つの火山体から合計10個であり、統計的なデータとして示すには不充分である。
そこで本調査ではプチスポット火山を観察しつつ、海洋プレート深部岩捕獲岩とそれを捕獲しているプチスポット火山の溶岩を採取することを目的とする。

さらに、マルチナロービーム（シービーム）による海底地形調査により、新たなプチスポット火山の存在を見つけることは、同火山の分布・活動範囲および時期を解明する上で重要である。そこで過去航海によって得られている地形データに加えて、本行動により得られるシービームデータを解析する。

7. 実施内容(別図-1調査海域図　参照)

(1)潜航調査目標海域(水深:1000～6500m)

40° 00.0'N　143° 30.0'E ,　38° 00.0'N　150° 00.0'E
36° 30.0'N　150° 00.0'E ,　38° 30.0'N　143° 30.0'E
の緯線・経線で囲まれる範囲

潜航調査海域内の以下に示す5カ所での潜航を予定しているが、航海中の水塊構造により④及び⑤が変更される可能性がある。

①Site 6K959 スナギンチャク・サイト(水深:1000～5351m)
39° 05.0'N　143° 52.0'E
39° 08.0'N　143° 55.0'E の緯線・経線で囲まれる範囲
②Site 6K880 プチスポット火山西サイト(水深:1000～6450m)
39° 15.0'N　144° 15.0'E
39° 30.0'N　144° 30.0'E の緯線・経線で囲まれる範囲
③Site 6K877 プチスポット火山東サイト(水深:1000～6000m)
37° 29.0'N　149° 29.0'E
37° 38.0'N　149° 46.0'E の緯線・経線で囲まれる範囲
④Site Kurage1 クラゲ1サイト(水深:1000～6000m)
38° 25.0'N　145° 55.0'E
38° 35.0'N　146° 05.0'E の緯線・経線で囲まれる範囲
⑤Site Kurage2 クラゲ2サイト(水深:1000～6000m)
37° 55.0'N　147° 55.0'E
38° 05.0'N　148° 05.0'E の緯線・経線で囲まれる範囲

(2)潜水船による作業

①目視による周辺の観察および水中ビデオカメラ・水中スチルカメラ撮影による地形・地質・生物調査。
②超深海性近底層性クシクラゲ類の観察とスラープガンなどによる採取。
③超深海性ゼラチン質生物の観察とスラープガンなどによる採取。
④メタンシープに生息する謎のシンカイスナギンチャクの観察、撮影および採取。
⑤岩石試料の採取。
⑥SAHFによる海底地殻熱流量測定。
⑦プッシュコアによる堆積物採取。

(3) 支援母船による海底地形調査及び地球物理探査

潜水船揚収後の夜間または潜水船整備日および潜航中止となった荒天時等に、地形調査が可能な場合、下記範囲内においてプチスポット火山の分布調査および関連海洋プレートの詳細地形調査の為に、既存データの無い範囲に限定した海底地形・重力・地磁気(全磁力・三成分測定)の観察を実施する。

35° 00.0'N　143° 00.0'E
40° 00.0'N　155° 00.0'Eの緯線・経線で囲まれる範囲

8. その他

(1) 安全対策

①海洋研究開発機構が定めた「安全衛生心得」「潜水調査船及び支援母船運用規定」に従って作業を実施する。
②海上衝突予防法を遵守し、水中作業中は第27条第4項に基づく灯火または形象物を掲げるとともに海上の警戒を行う。
③水路測量を実施する際は、水路業務法第17条に定める標識を掲げる。
④調査に際しては、航行する船舶に充分注意する。
⑤調査海域には海底ケーブルが存在する。ケーブルに接近する運用を行う際には「海底ケーブル近傍における調査・作業にかかわる安全基準」に準じて潜航調査を実施する。
⑥事故・トラブル発生時には、海洋研究開発機構が定めた「事故・トラブル緊急対処要領」に従い対処する。(連絡体制は別表-3参照)

(2) 許可・届け出等

①「作業届」を海上交通安全法第31条の規定に準じて、各海域を管轄する管区海上保安本部および最寄りの各海上保安部に提出する。
②漁業調整については、関係各部署を通じて漁業組合並びに漁業関係者との調整を行う。

9. 別添

別表-1　調査日程表
別図-1　調査海域図
別表-2　調査チーム組織図
別表-3　事故・トラブルに対する連絡体制及び役職員緊急連絡先一覧表
別表-4　乗船者名簿及び連絡先一覧表

以上

別表－1

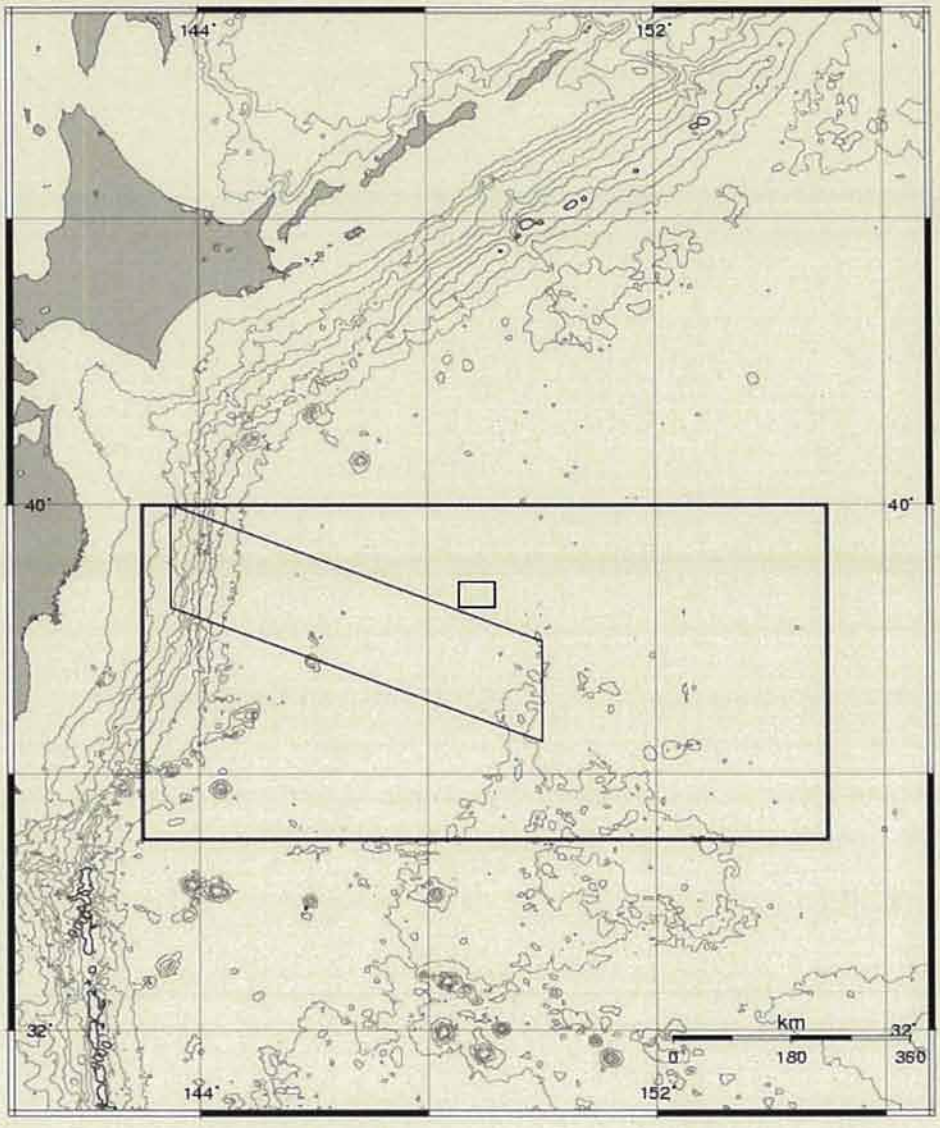
YK07-15 調 査 日 程 表

期　日 平成19年	「よこすか」	水 域	実 施 内 容
10月11日(木)	出港	仙台出港	関係者乗船
12日(金)	回航		作業内容 ・ｸｼｸﾗｹﾞ類・ｾﾞﾗﾁﾝ質生物の観察および採取 ・ｼﾝｶｲｽﾅｷﾞﾝﾁｬｸの観察および採取 ・岩石試料の採集 ・SAHFによるヒートフロー計測 ・柱状採泥
13日(土)	事前		
14日(日)	潜航①	↑	
15日(月)	潜航②		
16日(火)	予備		
17日(水)	潜航③	日本海溝 宮古東方陸側斜面 1000～5500m	
18日(木)	潜航④		
19日(金)	整備		
20日(土)	潜航⑤		
21日(日)	潜航⑥	↓	
22日(月)	整備		
23日(火)	潜航⑦	↑	
24日(水)	潜航⑧	三陸沖および 北海道沖北西太平洋 4500～6250m	
25日(木)	潜航⑨	↓	
26日(金)	回航		
27日(土)	回航		
28日(日)	入港	機構入港	関係者下船

※　気象、海象などの事由により日程変更される場合がある。

別図－1

YK07-15　調査海域図



(1)調査範囲

35° 00.0'N　143° 00.0'E

40° 00.0'N　155° 00.0'Eの緯線・経線で囲まれる範囲

(2)潜航予定範囲(水深:1000～6500m)

40° 00.0'N　143° 30.0'E ,　38° 00.0'N　150° 00.0'E

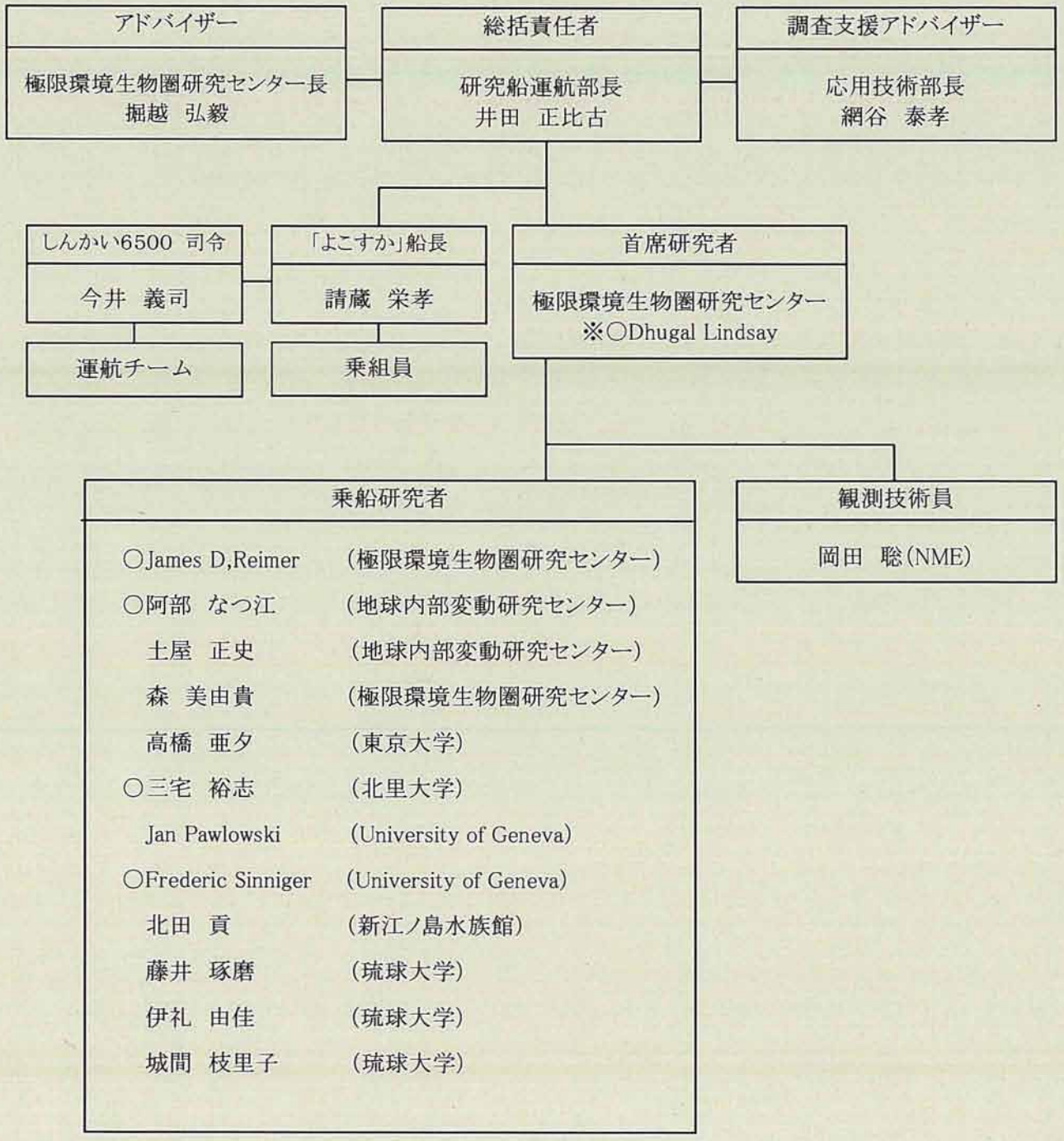
36° 30.0'N　150° 00.0'E ,　38° 30.0'N　143° 30.0'E

の緯線・経線で囲まれる範囲

※海上自衛隊より10/13～10/16までの4日間に、調査海域の西側を潜水艦が通過予定と連絡があった。その為この期間中は東経145度より西側の海域での調査は実施しない。

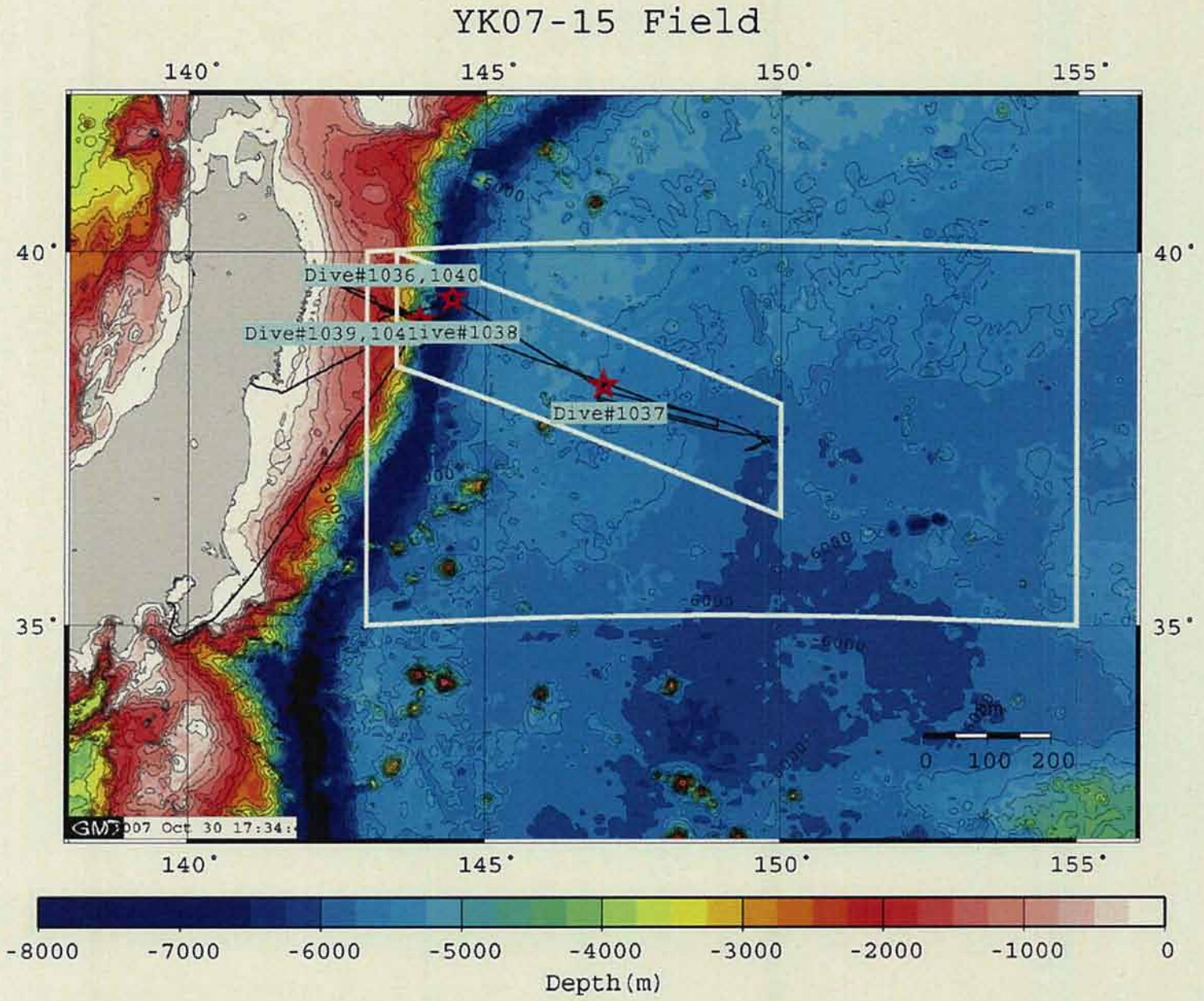
別表－2

YK07－15調査チーム組織図

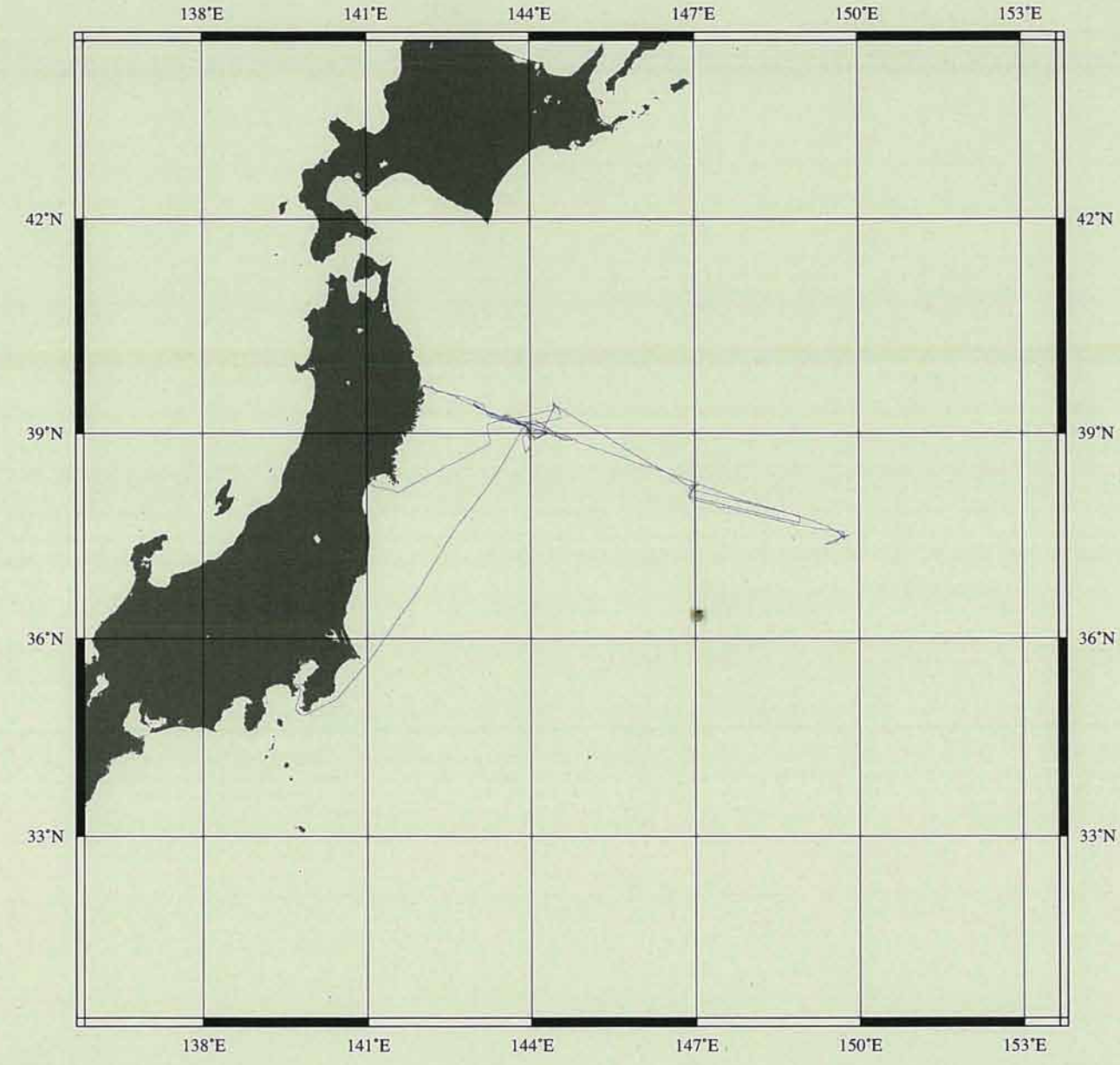


○潜航予定者
※安全衛生担当者

Cruise Data


YK07-15 Field
140°
145°
150°
155°
40°
35°
Dive#1036,1040
Dive#1039,1041ive#1038
Dive#1037
0 100 200
GMT 007 Oct 30 17:34:
-8000 -7000 -6000 -5000 -4000 -3000 -2000 -1000 0
Depth(m)

YK07-15 TRACK MAP IN R/V YOKOSUKA



GMT Oct 27 16:17 YK07-15 , R/V YOKOSUKA, Cruise Term:2007.10.11 - 2007.10.26(UTC), Datum:WGS84, Mercator Projection, Copyright 2008 JAMSTEC.

YK07-15 Daily Report

11 October 2007

13:00 Boarding R/V Yokosuka (all members accounted for)
13:30 Dive planning meeting with Shinkai 6500 team and scientists
14:00 R/V Yokosuka leaves dock
14:15 Explanation of fire drill and "life aboard the R/V Yokosuka"
15:00 fire drill on deck
16:40 "Konpira-san" Ceremony to wish for good weather and a successful cruise.
17:00 Dinner (for those on the regular meal schedule)
18:00 Operations explanation for first-time divers inside the Shinkai 6500
19:30 Scientific party meeting
0:00 ship time forwarded to 01:00 for the remainder of the cruise

12 October 2007
Dive 6K#1036, Scientist ABE Natsue (geology)

05:30 XBT probe to get water tempertaure profile
06:00 Seafloor mapping of dive site
08:00 Pre-Dive meeting/briefing
09:00 Start of Dive (aiming for 39°23.7433N, 144°26.3152E, 6500m)
13:31 Reached Seafloor (39°23.873N, 144°26.2762E, 6457m
14:49 Left Bottom (39°24.1603N, 144°26.1275E, 6406m)
17:10 Surfaced

Remarks:
8 rock samples, 2 core samples.
Slurp gun tested and functioned well at 6406m depth though no samples were obtained.
HDV camera malfunctioned and no HDV record exists of dive. Hard drive problems?

13 October 2007
[Dive 6K#1037, Scientist LINDSAY, Dhugal (midwater & benthopelagic ecology)]

06:00 XBT probe to get water tempertaure profile (warm core ring)
06:30 Seafloor mapping of dive site (aiming for 38°15.0N, 147°00.0E, 5500m)
09:00 Large swell but wind dropping. Ready and waiting.
10:00 Large swell but wind dropping. Ready and waiting.
10:45 Dive cancelled due to large swell.
11:00 Surface plankton sampling
11:30 Seabeam mapping start
SeaBeamは、下記の点を結ぶ測線で走っています。
明日の朝、潜航までに#1037へ戻れるように、途中で引き返すこともある。

1）38。 11.5'N, 146。 54'E
2）37。 48'N, 148。 55'E
3）37。 42'N, 148。 55'E
4）38。 05.5'N, 146。 53'E
5）38。 15'N, 147。 00'E (Dive #1037)

14 October 2007
Dive 6K#1037, Scientist LINDSAY, Dhugal (midwater & benthopelagic ecology)

09:00 Pre-Dive meeting/briefing
10:00 Start of Dive (aiming for 38°15.0N, 147°00.0E, 5500m)
10:00-12:30 Midwater Observations
12:31 Seafloor
14:58 Left Bottom
17:05 Surfaced

Remarks:
HDV camera functioned ok.

2 core samples, one with xenophyophore and one next to it.
1 jellyfish (new species of Sigiweddelia)
3 holothurians (2 species)
1 pycnogonid with hydroids attached
1 mysid
1 benthopelagic polychaete
1 plastic bag with associated fauna

15 October 2007
[Dive 6K#1038, Scientist ABE Natsue (geology)]

05:30 XBT probe to get water tempertaure profile
06:00 Seafloor mapping of dive site
08:00 Pre-Dive meeting/briefing
09:00 Start of Dive (aiming for 37°29.6', 149°44.5'E, 6000m)
10:10 Dive Cancelled. Hydraulics faulty. Unable to dive.
10:30 Recovery of Shinkai on deck
10:45 Surface plankton sampling
18:00 Surface plankton Sampling
19:30 Science Meeting

16 October 2007
[Dive 6K#1038, Scientist ABE Natsue (geology)]

08:15 Dive Cancelled. Gale-force wind warning for today and tomorrow.
08:30 Surface plankton sampling
09:00 Steaming towards westernmost site (39°05′N-39°08′N, 143°52′E-143°55′E)

17 October 2007
[Dive 6K#1038, Scientist James REIMER (benthos)]

05:30 XBT probe to get water tempertaure profile
06:00 Seafloor mapping of dive site
09:00 Pre-Dive meeting/briefing
09:45 Dive Cancelled. Swell too high for deployment.
09:50 Science Meeting
10:00 Surface plankton sampling
12:30 X-CTD probe deployment (39°15'N, 143°30'E)
18:00 X-CTD probe deployment (38°54'N, 144°45'E)

18 October 2007
[Dive 6K#1038, Scientist James REIMER (benthos)]

07:00 Dive Cancelled. Swell too high for deployment.
07:05 Surface plankton sampling (39°06.5′N, 143°53.4′E)
12:30 Surface plankton sampling (39°4.0′N, 143°00.0′E)
13:00 X-CTD probe deployment (39°4.0′N, 143°00.0′E)
19:00 Surface plankton sampling (39°4.0′N, 143°00.0′E)

19 October 2007
[Dive 6K#1038, Scientist James REIMER (benthos)]

08:00 Dive Cancelled. Swell too high for deployment.
08:05 Surface plankton sampling (39°06.5′N, 143°53.4′E)
16:00 Surface plankton sampling (39°30.0′N, 142°40.0′E)
18:30 Surface plankton sampling (39°30.0′N, 142°40.0′E)

20 October 2007
Sheltering from bad weather in Miyako Bay

21 October 2007
Sheltering from bad weather in Miyako Bay
13:00 Surface plankton sampling
15:00 Left Miyako Bay. Anchored outside.
15:30 Surface plankton sampling
19:00 Surface plankton sampling

23:00 Sailing for 39°06.5′N, 143°53.4′E

22 October 2007
Dive 6K#1038, Scientist REIMER, Jamie (benthic biology, zoanthid taxonomy)

08:00 Pre-Dive meeting/briefing
08:15 Dive delayed for weather observation
09:15 Start of Dive (aiming for 39°06.356′N, 143°53.5619′E, 5350m)
11:23 time reached bottom
12:36 time left bottom
14:50 time surfaced
16:15 time back on ship
19:00 science meeting

SAMPLES
zoanthids: 5 (Abyssoanthus - five large rocks - approx. 300 polyps)
plankton: 6 (1000m intervals plus 0~500m and 500~1000m)
MBARI cores: 2
sponge: 1
core bacteria samples: (from core 1 - 3 samples)

23 October 2007
Dive 6K#1039, Scientist LINDSAY, Dhugal (midwater & benthopelagic ecology)

08:00 Pre-Dive meeting/briefing
09:00 Start of Dive (aiming for 39°06.356′N, 143°53.5619′E, 5350m)
09:00-11:39 Midwater Observations
11:39 Seafloor
14:02 Found Calyptogena colony with vestimentiferans (39o6.3404'N, 143o53.4897'E)
14:28 Retrieved trap
14:37 Left Bottom
14:37-16:33 Midwater Observations
16:33 Surfaced
17:00 Back on board

SAMPLES
3 core samples (1 with asellote isopod, 1 with scyphopolyp, 1 normal seafloor)
3 jellyfish (1 new species of Sigiweddelia, 2 inds. of new genus?)
2 benthic ctenophores sampled. Both lost-destroyed during ascent and retrieval. (Some tissue from one frozen)
several amphipods in trap

24 October 2007
Dive 6K#1040, Scientist ABE Natsue (geology)

08:00 Pre-Dive meeting/briefing
09:00 Start of Dive (aiming for 39°23.7433N, 144°26.3152E, 6500m)
11:42 Reached bottom at 637m
14:06 Left bottom
16:29 Reached surface
17:10 Back on board
19:00 Surface plankton sampling
19:30 Science meeting

SAMPLES
many rocks
2 MBARI cores

25 October 2007
Dive 6K#1041, Scientist SINNIGER, Frederic (benthic biology, zoanthid taxonomy)

08:00 Pre-Dive meeting/briefing
09:00 Start of Dive (aiming for 39°06.356′N, 143°53.5619′E, 5350m)
11:10 Reached bottom at 5352m
14:29 Left bottom at 5359m
16:30 Reached surface
17:10 Back on board
19:00 Surface plankton sampling

SAMPLES
2 cores
some zoanthids
1 benthic ctenophore

26 October 2007
[Dive6K#1042, Scientist MIYAKE, Hiroshi (midwater biology)]

08:00 Pre-Dive meeting/briefing
08:30 Dive cancelled due to bad weather
09:05 Steaming towards Yokosuka

27 October 2007
late morning Reach JAMSTEC pier
afternoon Offload ship

Shipboard Log & Ship Track(YK0715 07/10/11 - 07/10/28)				Position/Weather/Wind/Sea condition (Noon)
Date	Time	Description	Remark	
11, Oct, 07	13:00	embarkation science group		10/11 12:00
	13:30	on board seminar	for survey plan	38-16.0N, 141-01.8E
	14:00	departure from SENDAI Port		cloudy
	14:20	on board education	for safety YOKOSUKA life	SW-4(Moderate breeze)
	15:00	on board education & training	for survey plan	Moderate breeze
	16:40	pray safety cruise to KONPIRASAN		
	19:30	scientific meeting		
	0:00	put ship's clocks ahead 1hour		
12, Oct, 07	5:00	arrived at Dive area		10/12 12:00(JST+1h)
	5:28	released XBT	39-19.3N, 144-19.4E	39-23.7N, 144-26.3E
	6:03～6:46	carried out MBES survey		cloudy
	10:33	launched 6K		W-4(Moderate breeze)
	10:41	started 6K#1036 dive		Sea slight
	13:31	arrived at bottom	D=6457m	
	14:49	leave the bottom	D=6400m	
	17:09	surfaced 6K		
	17:35	recovered 6K		
	17:55～18:05	carried out Plankton sampling with Plankton net		
13, Oct, 07	5:30	arrived at Dive area		10/13 12:00(JST+1h)
	5:55	released XBT	38-15.2N, 146-51.4E	38-12.0N, 146-53.7E
	6:28～7:16	carried out MBES survey		cloudy
	10:40	suspended 6K submergence due to rough sea		NNW-5(Fresh breeze)
	10:50～11:21	carried out Plankton sampling with Plankton net		Sea rough
	12:11	commenced MBES servey		
14, Oct, 07	5:20	finished MBES survey		10/14 12:00(JST+1h)
	9:46	launched 6K		38-15.0N, 147-00.0E
	10:00	started 6K#1037 dive		cloudy
	10:11～10:26	carried out Plankton sampling with Plankton net		SW-2(Light breeze)
	12:31	arrived at bottom	D=5437m	Sea smooth
	14:58	leave the bottom	D=5435m	
	17:04	surfaced 6K		
	17:30	recovered 6K		
	19:01	commenced MBES servey		
15, Oct, 07	3:13	finished MBES survey		10/15 12:00(JST+1h)
	5:28	released XBT	37-34.6N, 149-36.4E	37-30.0N, 149-43.2E
	6:09～6:52	carried out MBES survey		over cast
	10:40	suspended 6K submergence		E-4(Moderate breeze)
	10:45～11:36	carried out Plankton sampling with Plankton net		Sea slight
	18:00～18:30	carried out Plankton sampling with Plankton net		
16, Oct, 07	8:15	suspended 6K submergence due to rough sea		10/16 12:00(JST+1h)
	8:19～8:35	carried out Plankton sampling with Plankton net		37-47.7N, 148-54.2E
				cloudy
				ENE-6(Strong breeze)
				Sea rough
17, Oct, 07	6:00	released XBT	39-09.1N, 143-56.1E	10/17 12:00(JST+1h)
	6:37～7:19	carried out MBES survey		39-12.6N, 143-35.0E
	9:45	suspended 6K submergence due to rough sea		cloudy
	9:48～10:33	carried out Plankton sampling with Plankton net		NE-4(Moderate breeze)
	12:24	released XCTD	39-14.6N, 143-31.6E	Sea moderate
	12:37～13:06	carried out Plankton sampling with Plankton net		
	18:36	released XCTD	38-54.0N, 144-44.6E	
	17:15	commenced proceeding to St5		
18, Oct, 07	7:00	suspended 6K submergence due to rough sea		10/18 12:00(JST+1h)
	7:10～7:45	carried out Plankton sampling with Plankton net		39-24.0N, 143-00.0E
	12:02	released XCTD	39-23.7N, 143-00.4E	fine but cloudy
	12:48～12:59	carried out Plankton sampling with Plankton net		N-5(Fresh breeze)
	19:05～19:30	carried out Plankton sampling with Plankton net		Sea rough
19, Oct, 07	8:05～8:30	carried out Plankton sampling with Plankton net		10/19 12:00(JST+1h)
	10:15	released XBT	39-16.0N, 143-33.5E	39-13.0N, 143-25.7E
	10:54～11:39	carried out MBES survey		fine but cloudy
	15:47～16:12	carried out Plankton sampling with Plankton net		ENE-4(Moderate breeze)
	18:23～18:50	carried out Plankton sampling with Plankton net		Sea moderate

Shipboard Log & Ship Track(YK0715 07/10/11 - 07/10/28)				Position/Weather/Wind/Sea condition (Noon)
Date	Time	Description	Remark	
20, Oct, 07	8:00	anchored at MIYAKO		10/20 12:00(JST+1h)
				39-38.0N, 141-58.8E
				cloudy
				WSW-2(Light breeze)
				Sea moderate
21, Oct, 07	15:00	recovered anchor		10/21 12:00(JST+1h)
				39-38.0N, 141-58.8E
				fine but cloudy
				W-3(Gentle breeze)
				Sea smooth
22, Oct, 07	6:00	arrived at Dive area		10/22 12:00(JST+1h)
	9:01	launched 6K		39-06.4N, 143-53.6E
	9:16	started 6K#1038 dive		fine but cloudy
	9:35~9:55	carried out Plankton sampling with Plankton net		SW-6(Strong breeze)
	11:26	arrived at bottom	D=5347m	Sea moderate
	12:37	leave the bottom	D=5348m	
	14:39	surfaced 6K		
	15:58	recovered 6K		
23, Oct, 07	9:00	launched 6K		10/23 12:00(JST+1h)
	9:16	started 6K#1039 dive		39-06.2N, 143-53.5E
	11:39	arrived at bottom	D=5354m	fine but cloudy
	14:37	leave the bottom	D=5349m	NW-5(Fresh breeze)
	16:32	surfaced 6K		Sea moderate
	16:57	recovered 6K		
24, Oct, 07	8:59	launched 6K		10/24 12:00(JST+1h)
	9:13	started 6K#1040 dive		39-23.7N, 144-26.3E
	9:26~10:15	carried out Plankton sampling with Plankton net		fine but cloudy
	11:42	arrived at bottom	D=6379m	NW-4(Moderate breeze)
	14:06	leave the bottom	D=6440m	Sea slight
	16:28	surfaced 6K		
	16:57	recovered 6K		
	19:00~19:30	carried out Plankton sampling with Plankton net		
25, Oct, 07	8:52	launched 6K		10/25 12:00(JST+1h)
	9:06	started 6K#1039 dive		39-06.2N, 143-53.5E
	11:10	arrived at bottom	D=5352m	fine but cloudy
	14:29	leave the bottom	D=5359m	SSW-4(Moderate breeze)
	16:29	surfaced 6K		Sea slight
	17:01	recovered 6K		
	19:21	released XCTD	39-01.7N, 144-15.4E	
	19:35~20:10	carried out Plankton sampling with Plankton net		
26, Oct, 07	8:30	suspended 6K submergence due to rough sea		10/26 12:00(JST+1h)
	9:00	left research area for YOKOSUKA		36-24.0N, 141-16.0E
				cloudy
				NNE-4(Moderate breeze)
				Sea smooth
27, Oct, 07	13:00	arrived at YOKOSUKA		10/27 12:00
	17:00	left the ship and concluded YK0715	YK0715 scientists	

潜航目的及びペイロード

24/10/08

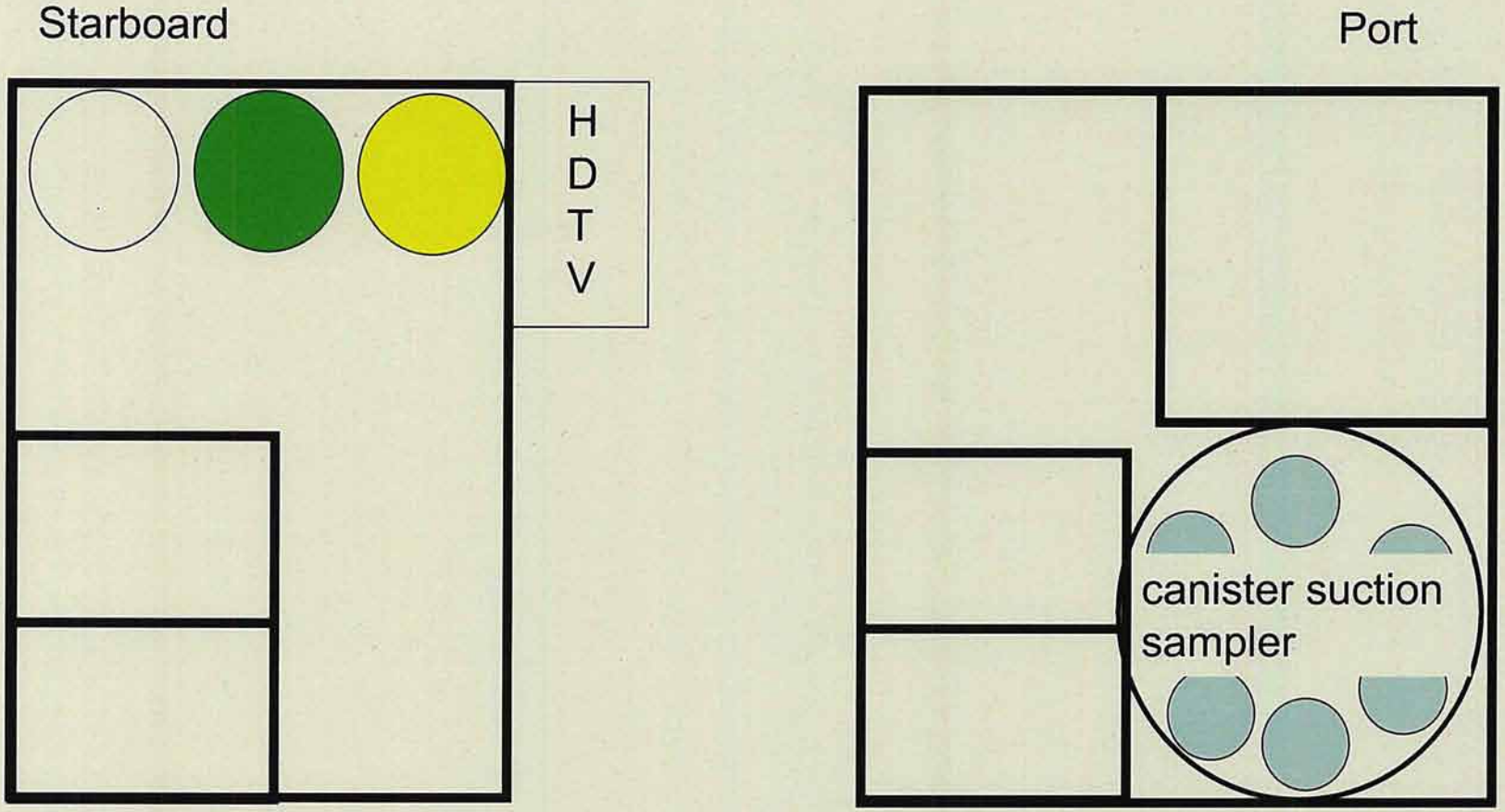
潜航番号	潜航者名	潜航目的・緯度・経度・深度			ペイロード
1036	阿部なつ江 ABE Natsue	目的;かいこう海丘群におけるプチスポット火山露頭観察、および岩石試料、底泥、生物採取			柱状採泥(3本),Box((有)・無),仕切(右・左)(有・無) MBARI core samplers (3), lidded box 他;HDVカメラ、スコップ、6連キャニスターサクションサンプラー HDV video camera, scoop, 6 cannister suction sampler
		緯度;39°23.7433	経度;144°26.3152	D;6500m	
1037	Dhugal LINDSAY	目的;深海性ゼラチン質生物調査			柱状採泥(3本),Box(有・無),ゲートサンプラー(3式) MBARI core samplers (3), gate samplers (3) 他;HDVカメラ、スコップ、6連キャニスターサクションサンプラー HDV video camera, scoop, 6 cannister suction sampler
		緯度;38°15	経度;147°00.0	D;5500	
1038	ライマー James REIMER	目的;スナギンチャクおよび岩石試料、底泥、生物採取			柱状採泥(7本),Box(有・無),仕切(右・左)(有・無) MBARI core samplers (3), lidded box 他;HDVカメラ、スコップ、6連キャニスターサクションサンプラー HDV video camera, scoop, 6 cannister suction sampler
		緯度;37°29.6'	経度;149°44.5'	D;5350	
1039	Dhugal LINDSAY	目的;深海性ゼラチン質生物調査			柱状採泥(3本),Box(有・無),ゲートサンプラー(3式) MBARI core samplers (3), gate samplers (3) 他;HDVカメラ、スコップ、6連キャニスターサクションサンプラー HDV video camera, scoop, 6 cannister suction sampler
		緯度;37°29.57	経度;149°44.67	D;5350	
1040	阿部なつ江 ABE Natsue	目的;#878海丘におけるプチスポット火山露頭観察、および岩石試料、底泥、生物採取			柱状採泥(3本),Box(有・無),仕切(右・左)(有・無) MBARI core samplers (3), lidded box 他;HDVカメラ、スコップ、6連キャニスターサクションサンプラー HDV video camera, scoop, 6 cannister suction sampler
		緯度;39°23.74	経度;144°26.3	D;6500m	
1041	Frederic SINNINGER	目的;スナギンチャクおよび岩石試料、底泥、生物採取			柱状採泥(3本),Box(有),仕切(無),ゲートサンプラー(1式) MBARI core samplers (3), lidded box(bigX1, smallX2) 他;HDVカメラ、スコップ、6連キャニスターサクションサンプラー HDV video camera, scoop, 6 cannister suction sampler,gate sampler
		緯度;37°29.6'	経度;149°44.5'	D;5350	
1042	三宅裕志 MIYAKE Hirosh	目的;深海性ゼラチン質生物調査			ゲートサンプラー(3式) gate samplers (3) 他;HDVカメラ、6連キャニスターサクションサンプラー HDV video camera, 6 cannister suction sampler
		緯度;37°29.57	経度;149°44.67	D;1000	

注)柱状採泥は最大7本搭載可能、()内には必要本数を記入。

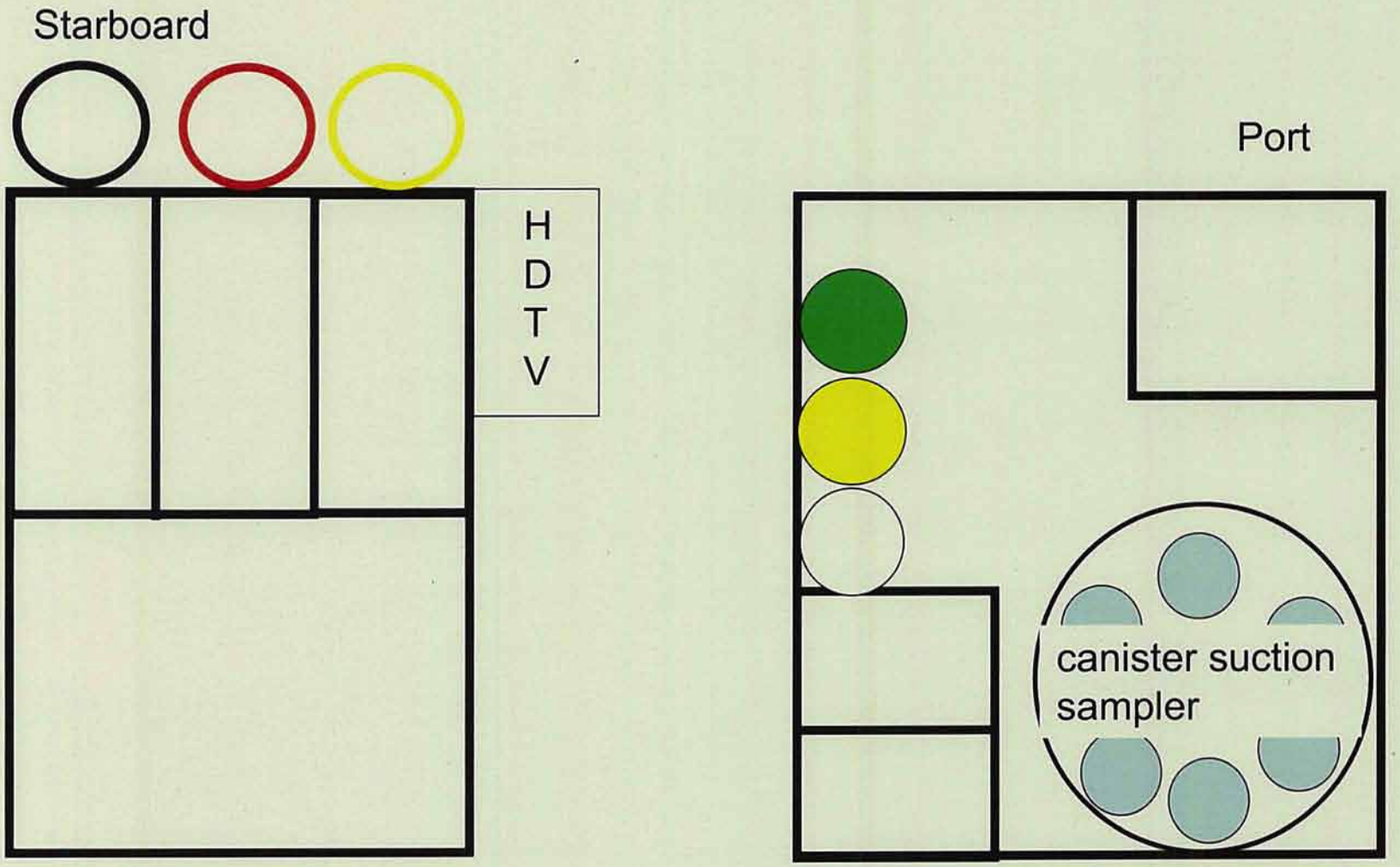
注)Boxは蓋付き塩ﾋﾞ製ﾎﾞｯｸｽで中は1～3分割が可能、通常右ｻﾝﾌﾟﾙﾊﾞｽｹｯﾄに搭載、必要に応じ左ｻﾝﾌﾟﾙﾊﾞｽｹｯﾄ搭載も可能、左仕切は取付出来ない。

注)仕切はｻﾝﾌﾟﾙﾊﾞｽｹｯﾄの仕切、左は4～6分割が可能、右はBoxとの組合せで最大9分割、両方共必要な場合、()内左右両方に○を付けて、有に○。

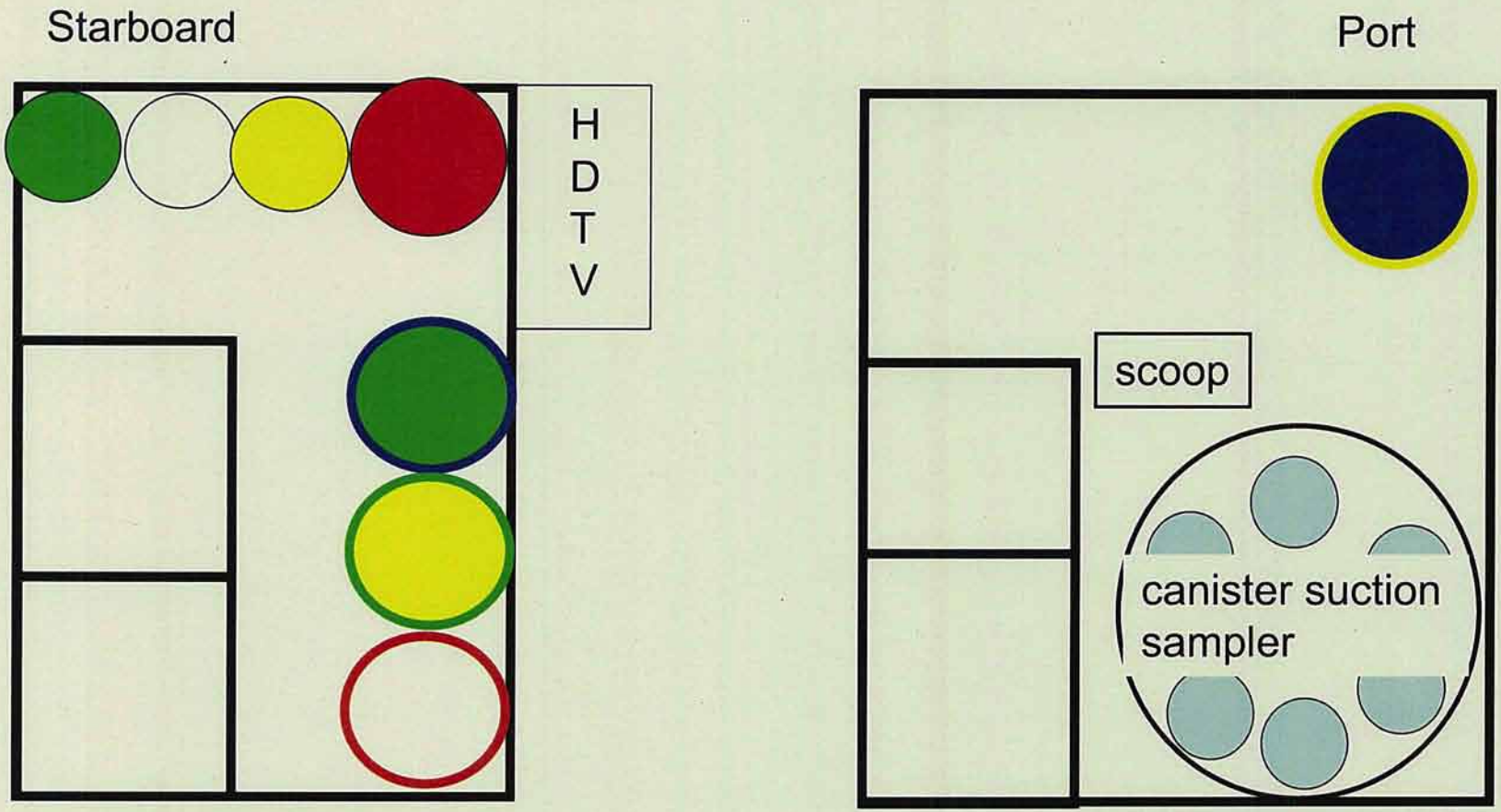
注)ｻﾝﾌﾟﾙﾊﾞｽｹｯﾄの搭載可能重量は右左共に、空中重量で100kg



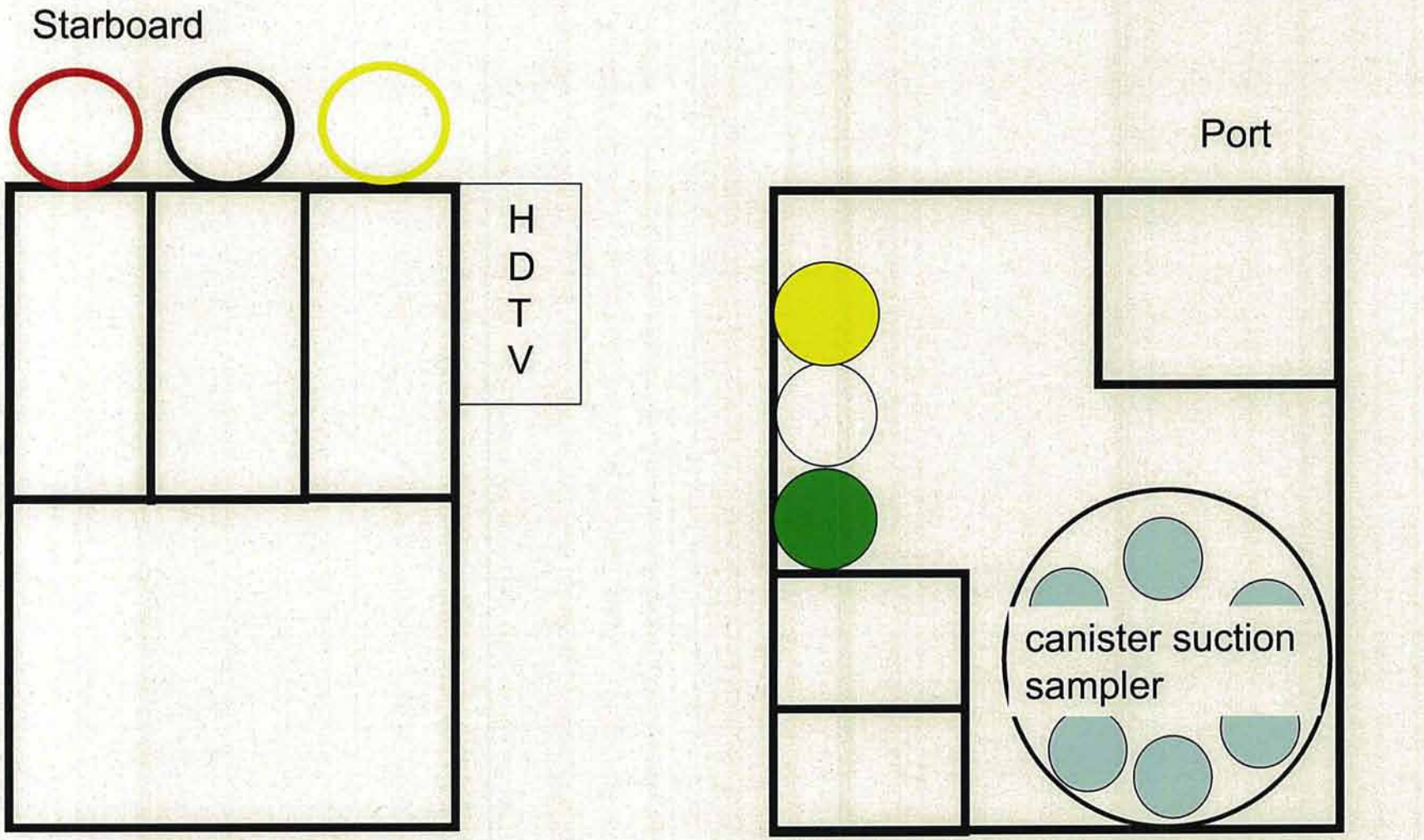
6K Dive#1036(07/10/12)



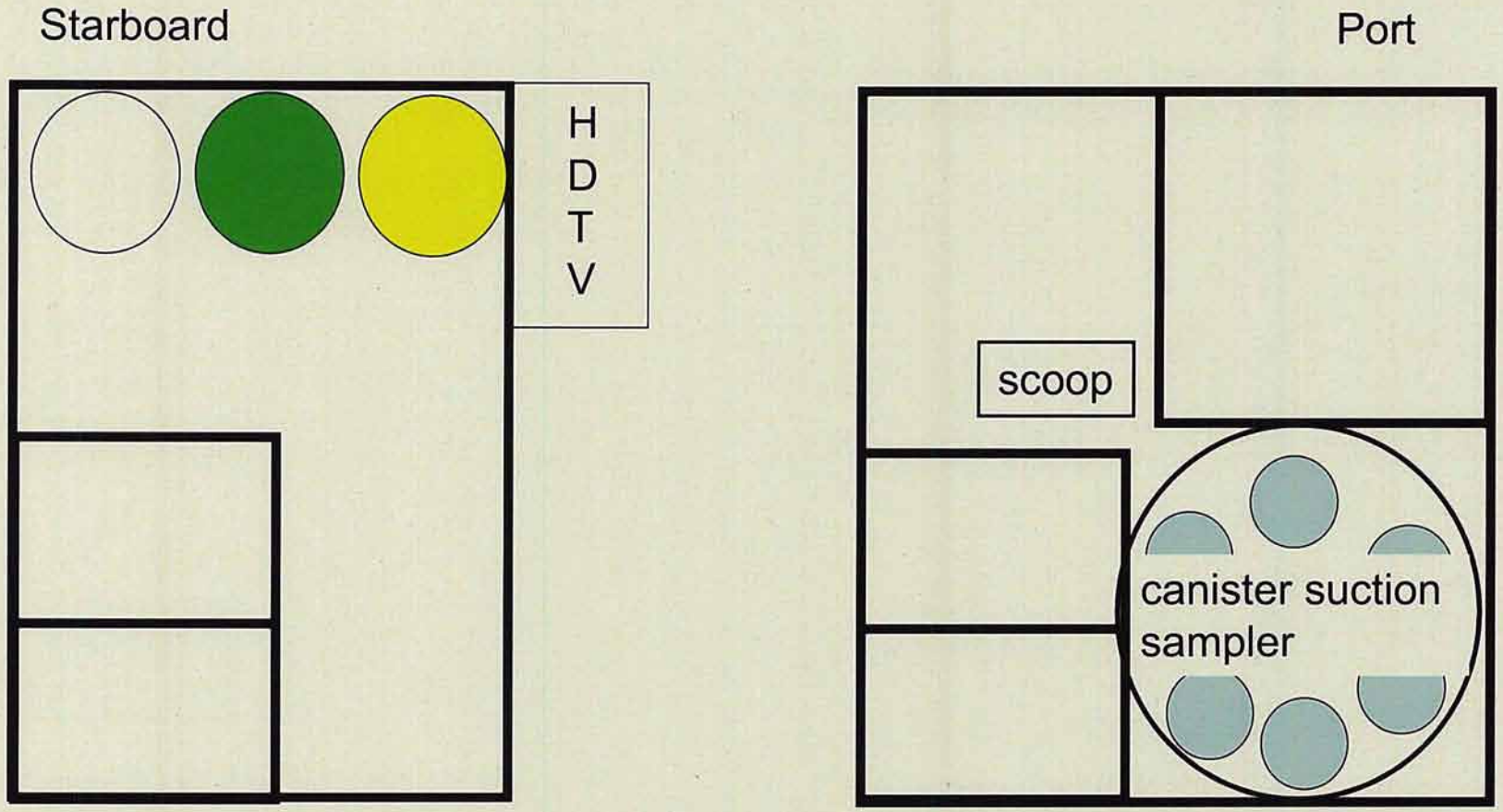
6K Dive#1037(07/10/13)



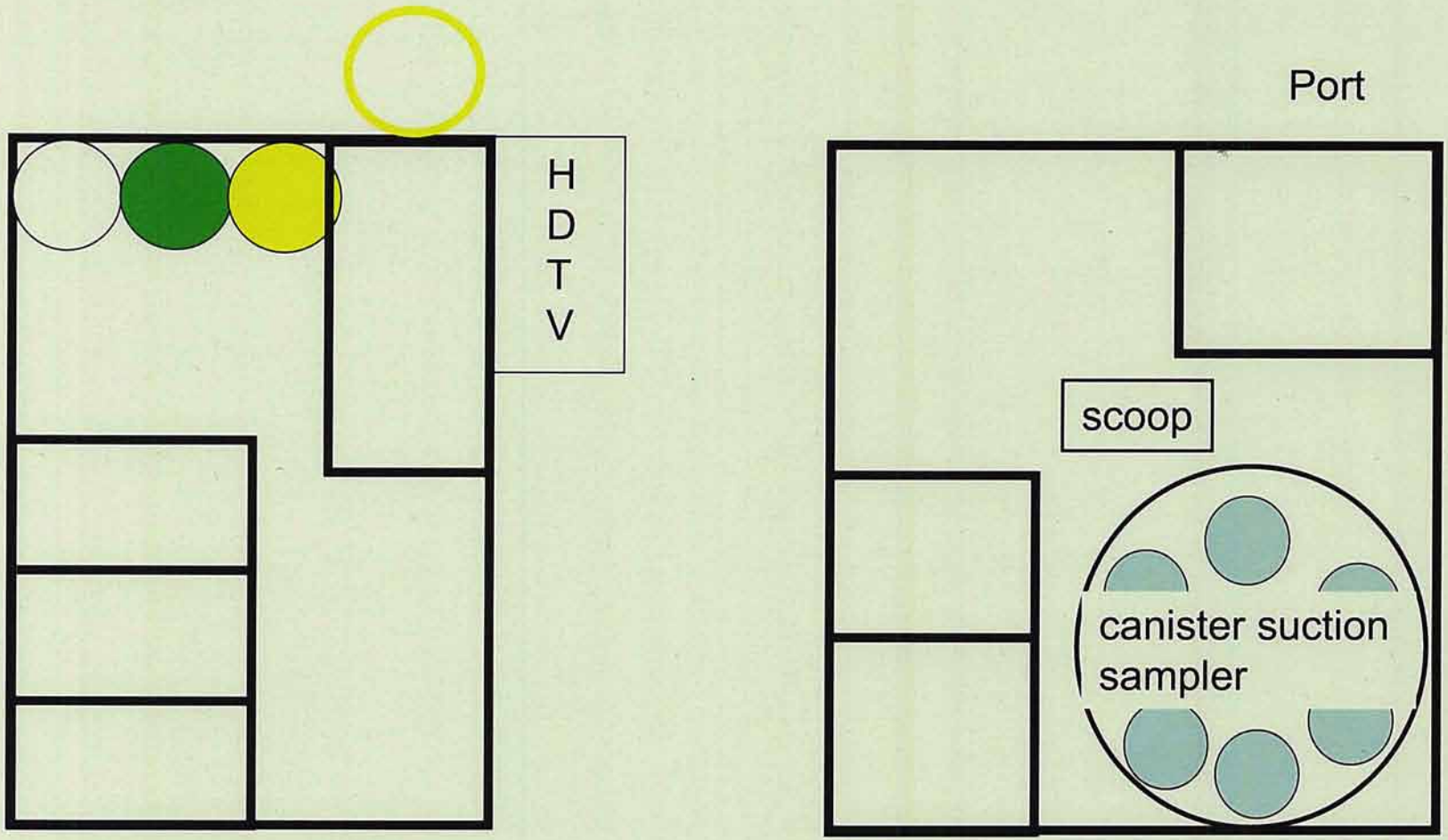
6K Dive#1038(07/10/22)



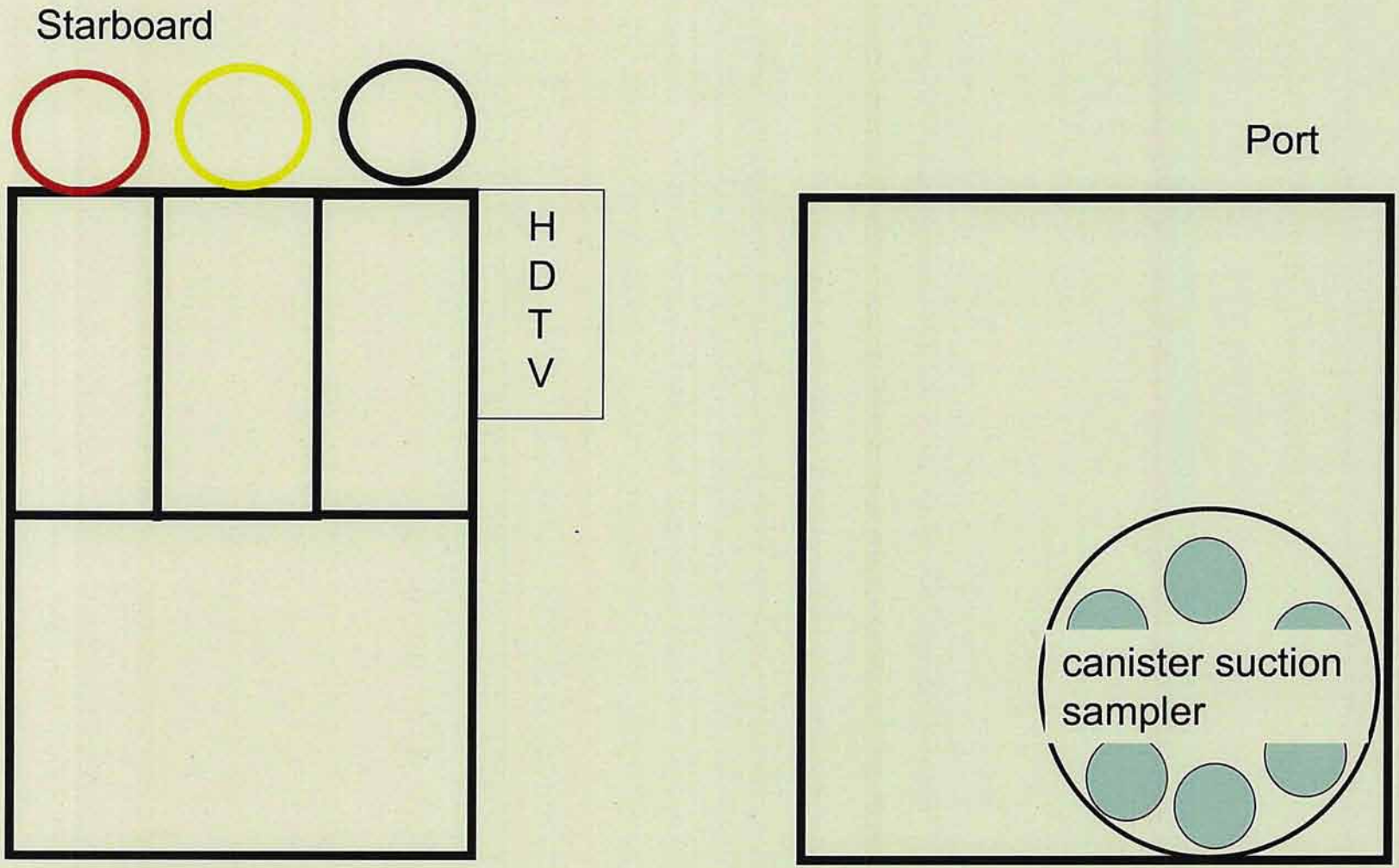
6K Dive#1039(07/10/23)



6K Dive#1040(07/10/24)



6K Dive#1041(07/10/25)



6K Dive#1042(07/10/26)

平成 19 年 10 月 11 日

作業予定

１０月１２日（金）

０５：３０　ＸＢＴ投入

０６：００　事前調査開始
　３９°２１．０Ｎ　１４４°２５．０Ｅ
　　↑↓　８ノット（対地）、６．０マイル
　３９°２７．０Ｎ　１４４°２５．０Ｅ
０６：４５　事前調査終了

０９：００　潜航開始

＃１０３６ＤＩＶＥ

海域　　：日本海溝海側斜面　宮古沖

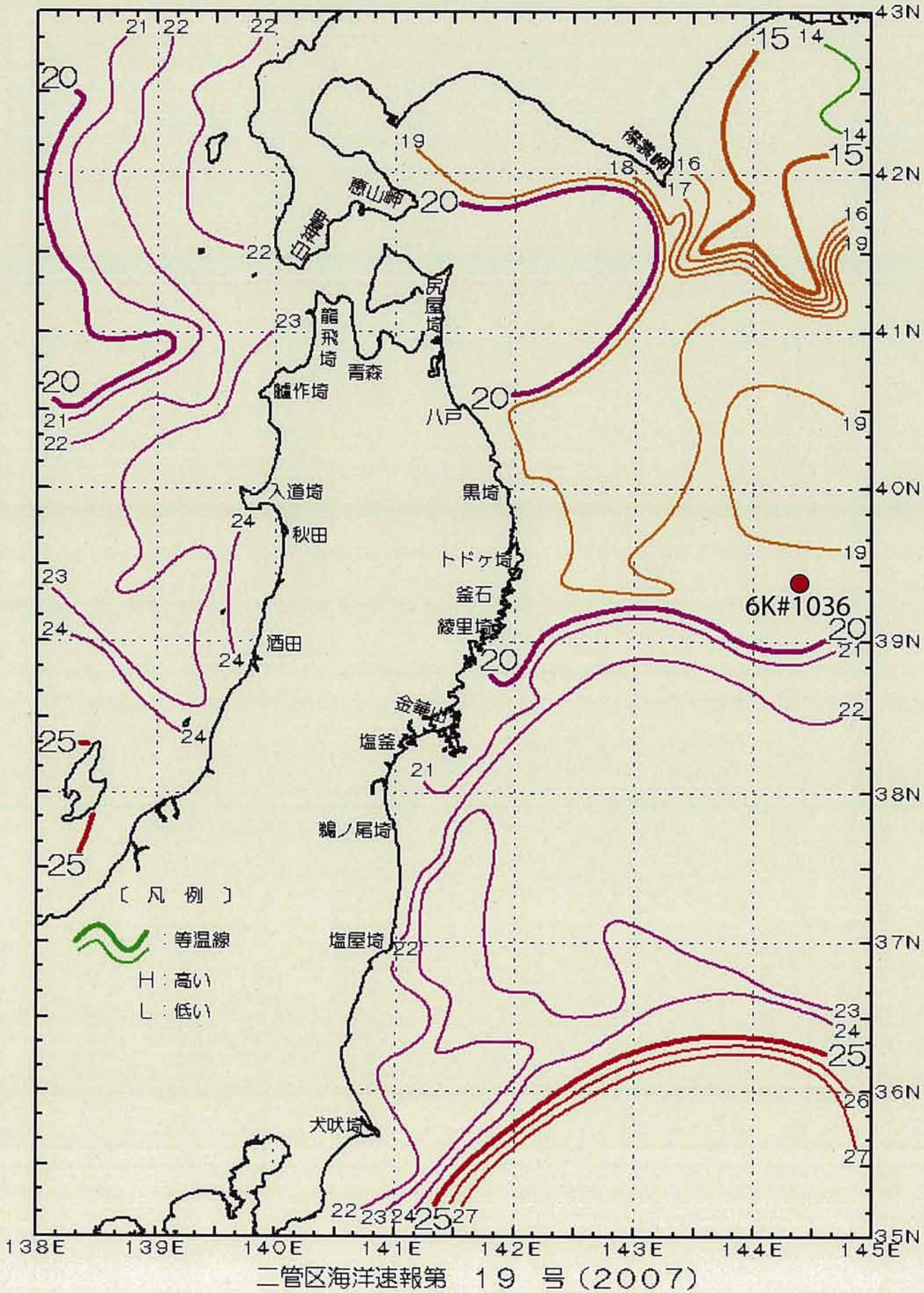
潜航者　：佐々木、植木、阿部　なつ江　（海洋研究開発機構）

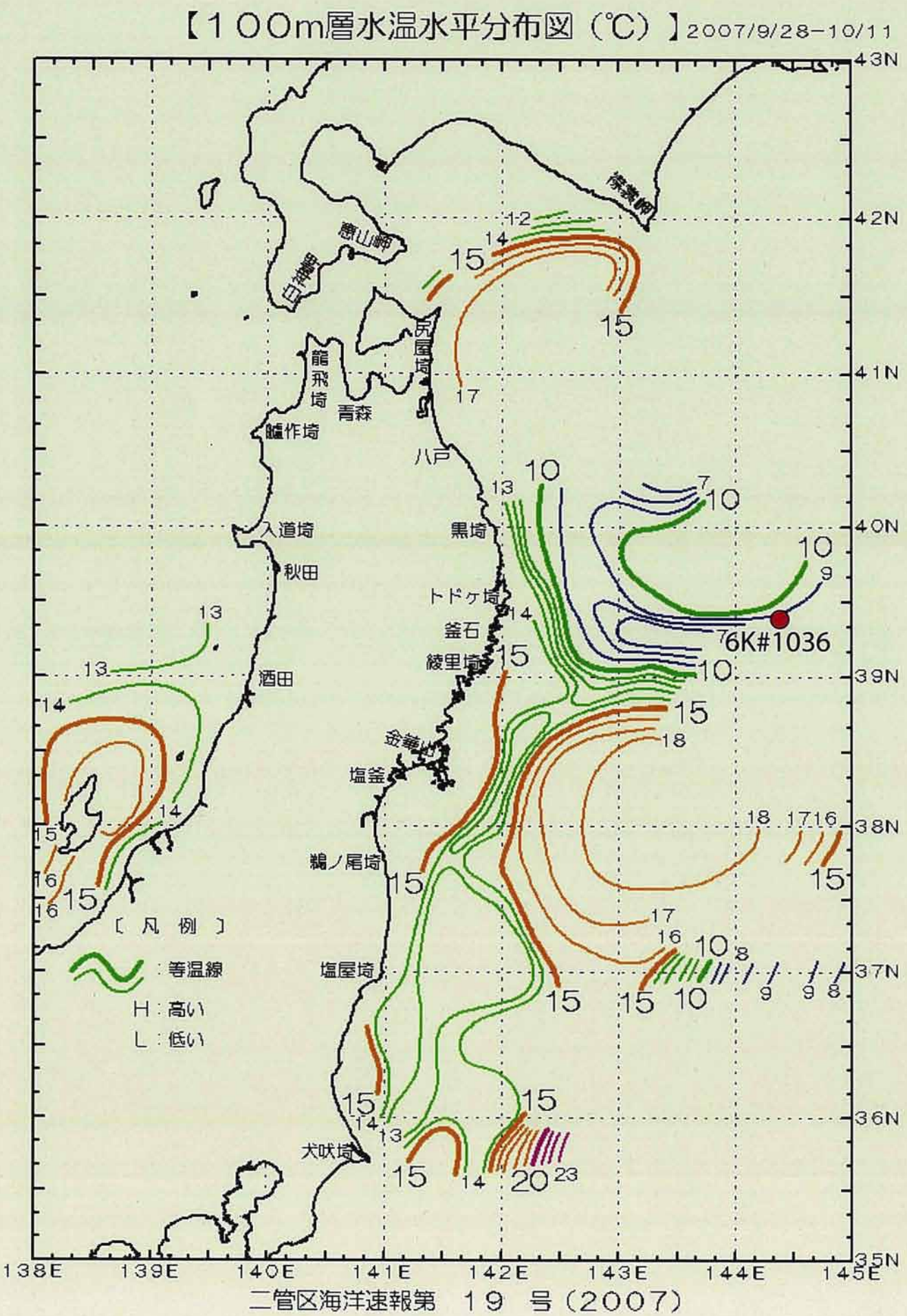
潜航点　：　３９°２３．７４３３Ｎ
　　１４４°２６．３１５２Ｅ
　　水深　６５００ｍ

X-Y 原点：　３９°２４．５Ｎ
　　１４４°２５．５Ｅ

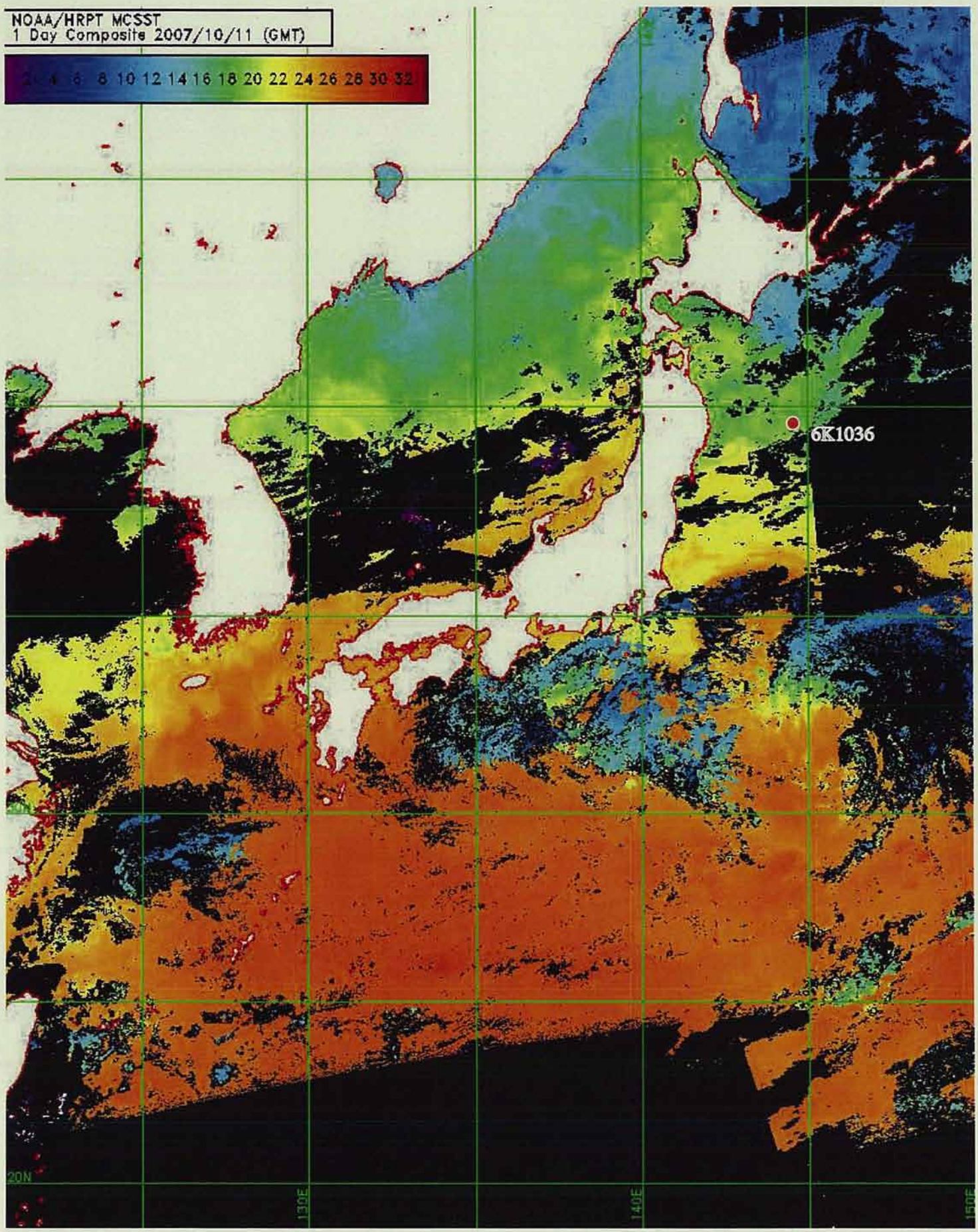
１７：００　浮上

〈備考〉
時　刻：ＪＳＴ＋１
測位センサ：Ｄ－ＧＰＳ
測地系：ＷＧＳ－８４
使用受波器：No.１，２受波器


【表面水温水平分布図（℃）】2007/9/28-10/11
恵山岬
白神岬
尻屋埼
龍飛埼
青森
鰺作埼
八戸
入道埼
秋田
黒埼
トドヶ埼
釜石
綾里埼
酒田
金華山
塩釜
鵜ノ尾埼
塩屋埼
犬吠埼
6K#1036
〔 凡 例 〕
：等温線
H：高い
L：低い
43N
42N
41N
40N
39N
38N
37N
36N
35N
138E
139E
140E
141E
142E
143E
144E
145E
二管区海洋速報第 19 号（2007）

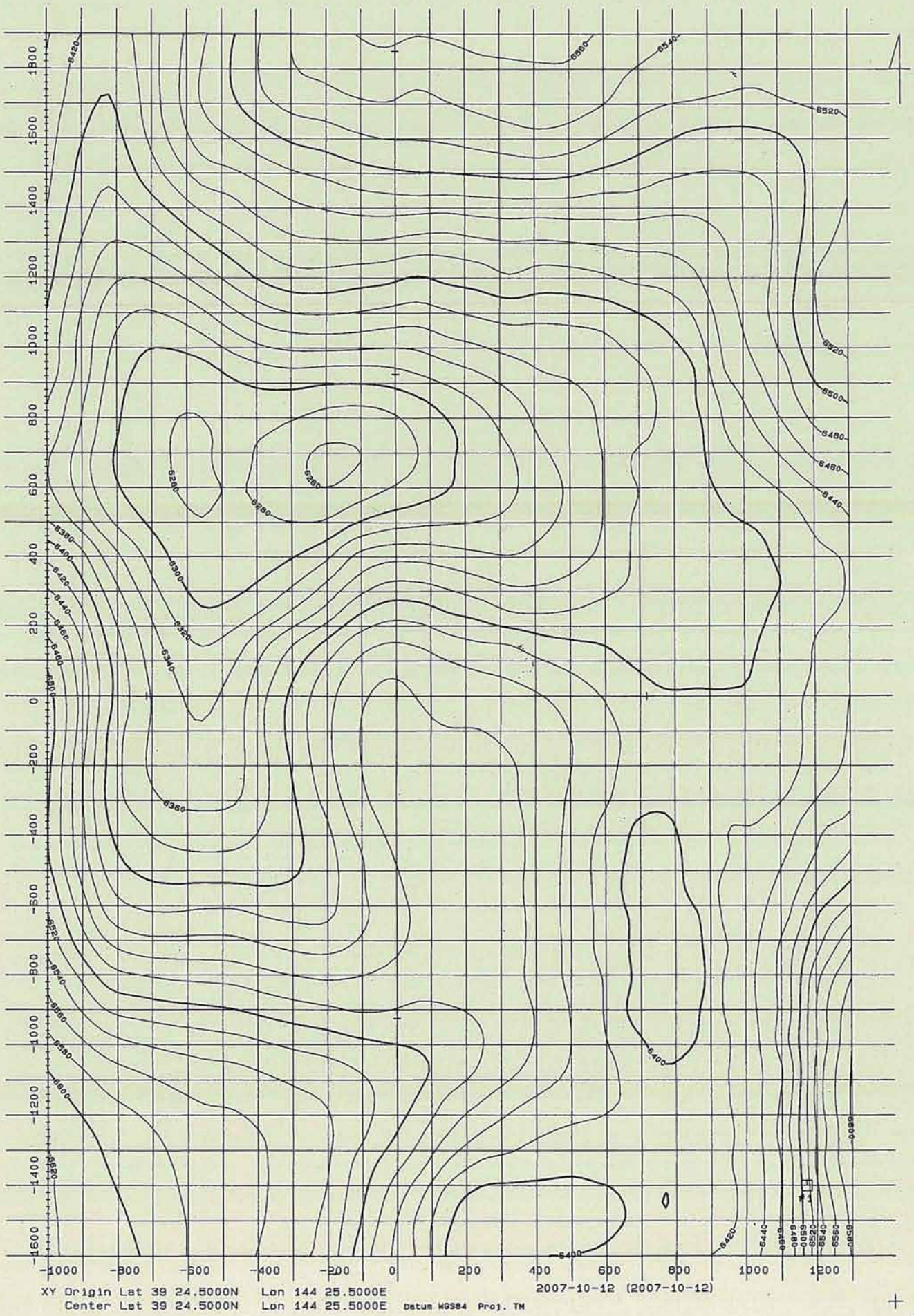


二管区海洋速報第 １９ 号（2007）


NOAA/HRPT MCSST
1 Day Composite 2007/10/11 (GMT)
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
6K1036
20N
130E
140E
150E

#1036DIVE

Scale (1/ 10000)

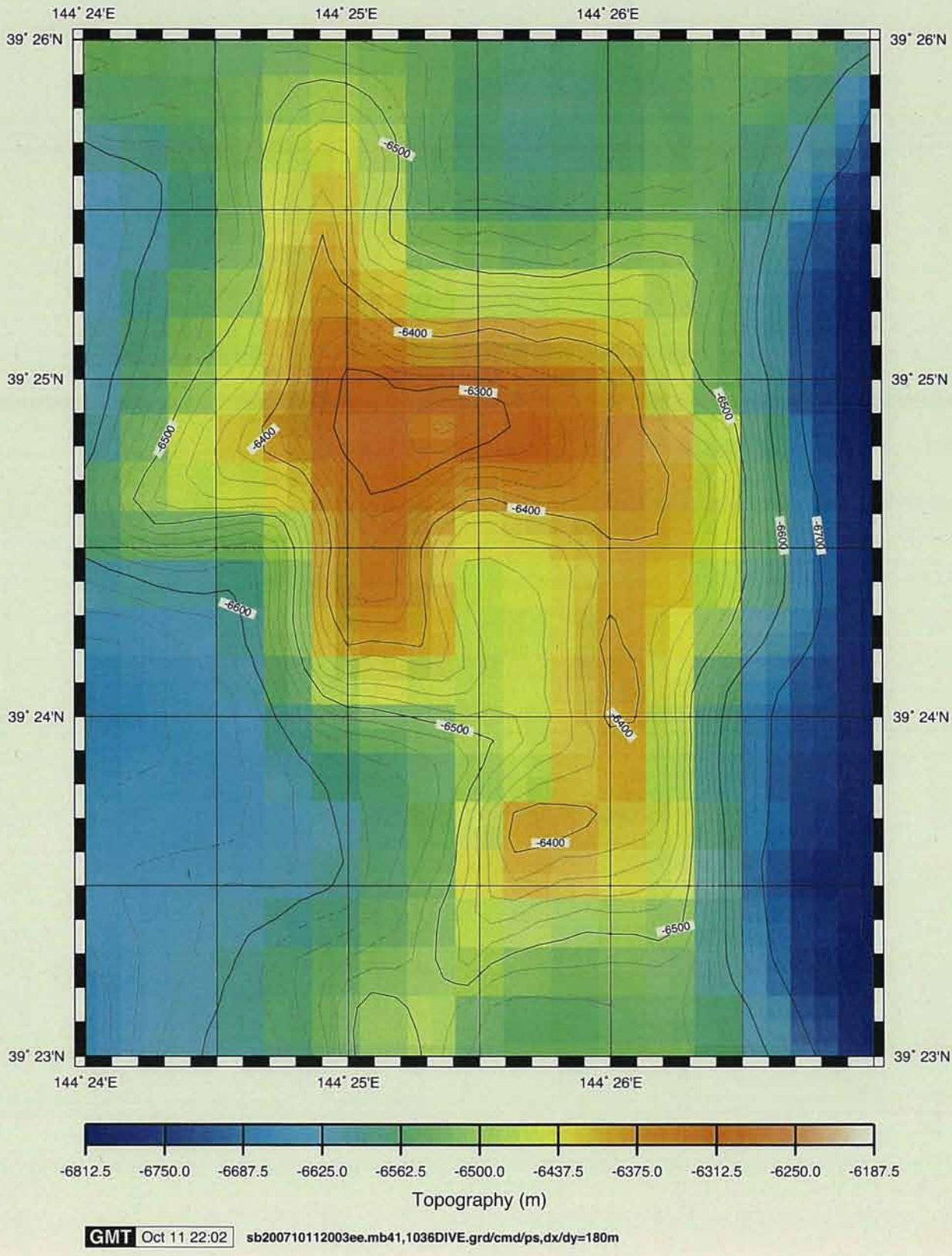


XY Origin Lat 39 24.5000N Lon 144 25.5000E

Center Lat 39 24.5000N Lon 144 25.5000E Datum WGS84 Proj. TM

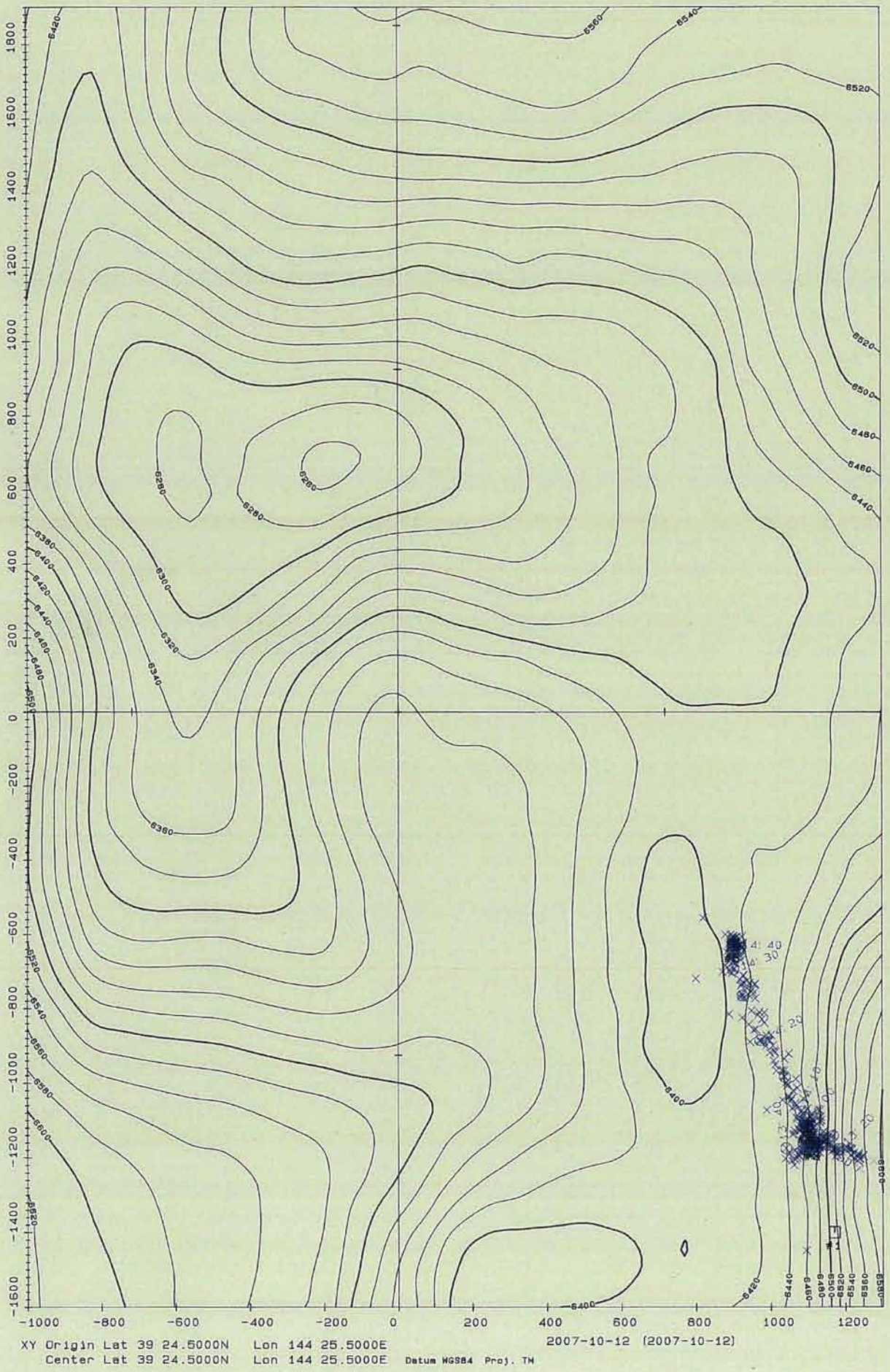
2007-10-12 (2007-10-12)

1036DIVE Japan Trench



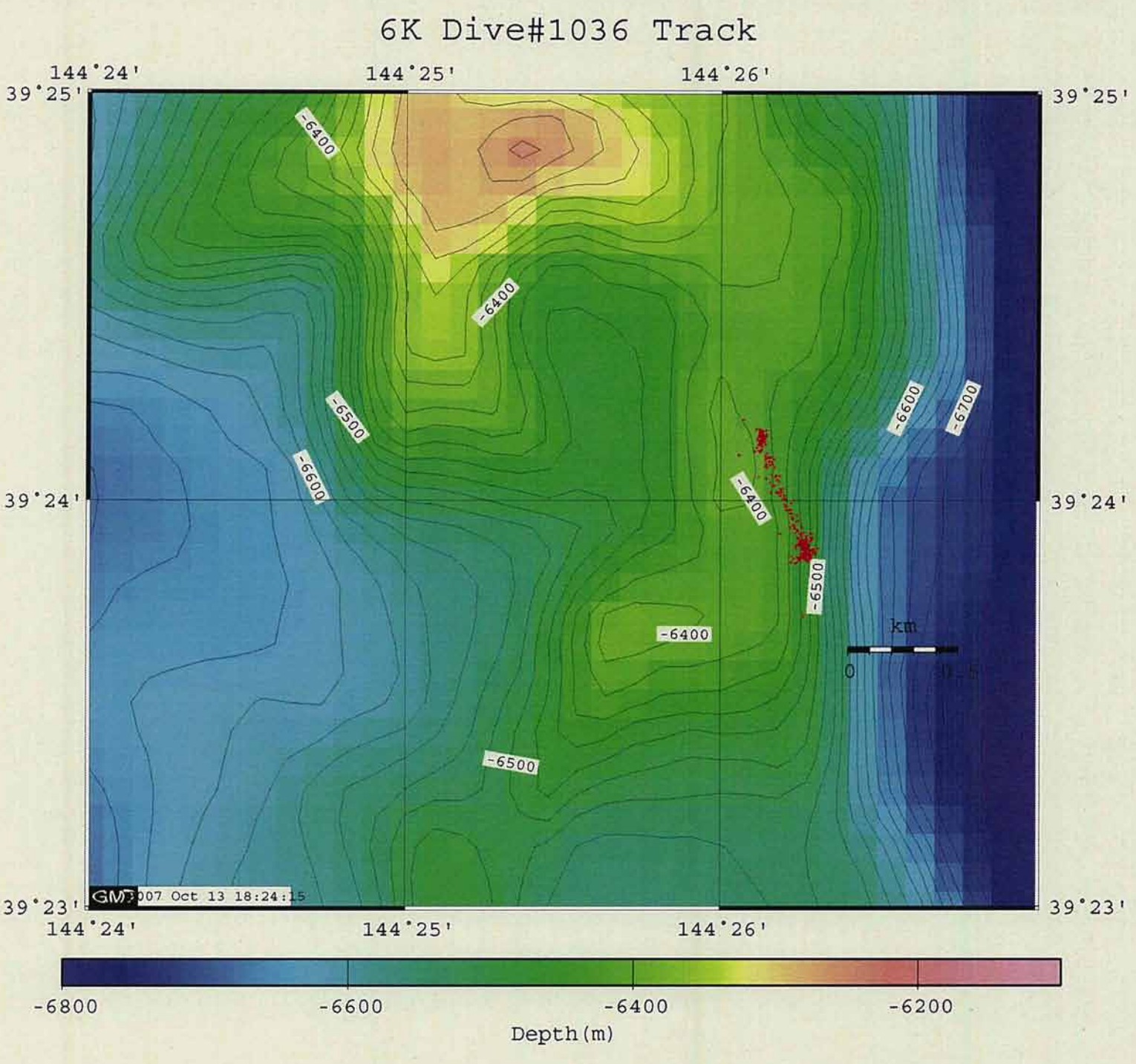
#1036DIVE
日本海事測量株式会社

Scale (1/ 10000)



XY Origin Lat 39 24.5000N Lon 144 25.5000E
Center Lat 39 24.5000N Lon 144 25.5000E Datum WGS84 Proj. TM

2007-10-12 (2007-10-12)


6K Dive#1036 Track
144°24'
144°25'
144°26'
39°25'
39°24'
39°23'
-6400
-6500
-6600
-6700
km
0
GMT 2007 Oct 13 18:24:15
-6800
-6600
-6400
-6200
Depth(m)

#1036DIVE 日本海溝海側斜面　阿部なつ江　D-GPS(WGS-84)SSBL

*** EVENT MARK LIST ***　　2007-10-12 15:01:57

ORIGIN (XY<->LATLON CONVERT)　LAT 39°24.5000'N　LON 144°25.5000'E
XY ORIGIN ((X,Y)=(0,0))　LAT 39°24.5000'N　LON 144°25.5000'E

NO.	DAY	TIME	LAT	LON	X	Y
1	2007-10-12	09:00:00	39° 23.7433' N	144° 26.3152' E	-1400.0	1170.0
	Landing Target					
2	2007-10-12	13:31:00	39° 23.8730' N	144° 26.2762' E	-1160.0	1114.0
	Landing D=6457m					
3	2007-10-12	13:45:00	39° 23.8730' N	144° 26.2762' E	-1160.0	1114.0
	Sampling 3 rocks D=6457m					
4	2007-10-12	14:04:00	39° 23.8972' N	144° 26.2632' E	-1115.2	1095.4
	Sampling 4 rocks D=6448m					
5	2007-10-12	14:48:00	39° 24.1602' N	144° 26.1275' E	-628.6	900.6
	Sampling 1 rock, MBARI(2) D=6406m					
6	2007-10-12	14:49:00	39° 24.1603' N	144° 26.1275' E	-628.5	900.6
	Left Bottom D=6406m					
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

SHINKAI 6500 Dive #1036

Area: Kaiko Knolls, Japan Trench

Observer: N. Abe
Recorded by A. Takahashi
Pilot : Sasaki
Co Pilot : Ueki

2007/10/12

Time(LCL) UTC + 10.0hrs hh|mm|ss			Dep. (m)	Head (Deg)	Pos. Xm	Pos. Ym	Observation	Sample	Remarks
10	33	58					surface		
10	40	3					launching		
13	4	41	-6428	218	-1264.0	1257.0	stop descending		
13	14	11	-6449	295	-1208.0	1275.0	trim balanced, decsending to bottom along the fault wall		
13	31	29	-6457	249	-1160.0	1109.0	on bottom; rubbly floor, water temperature: 1.7		
13	34	52	-6456	249	-1168.0	1124.0	sampling attempted		
13	43	10	-6454	301	-1148.0	1098.0	sea anemone		
13	45	17	-6454	302	-1181.0	1080.0	samples recovered	Site 1-A, B	box 1
							start flying to northwest		
13	53	45	-6443	223	-1090.0	1134.0	alternate rubbly and muddy floor		
13	56	44	-6444	230	-1112.0	1106.0	Shinkai stopped		
14	1	10	-6443	229	-1111.0	1104.0	lobate lava flows? Sampling attempted		
14	4	51	-6443	252	-1110.0	1090.0	samples recovered	Site 2-A, B, C, D	box 3
14	8	13					start moving		
14	16	22	-6420	15	-966.0	1016.0	orange sea cucumber?		
14	18	21	-6419	327	-913.0	1009.0	ushi-namako visible against muddy floor		
14	19	40	-6416	311	-885.0	973.0	outcrop, Mn coated?		
14	25	10	-6412	357	-759.0	941.0	sea lily visible against muddy floor		
14	25	56	-6412	29	-748.0	952.0	sampling attempted		
14	28	3	-6407	336	-738.0	921.0	gave up sampling rocks		
14	29	0	-6405	344	-692.0	904.0	sea cucumber visible against muddy floor		
14	31	58	-6405	258	-666.0	903.0	ushi-namako		
14	36	36	-6405	301	-634.0	925.0	sampling attempted		
14	40	32	-6405	212	-631.0	912.0	samples recovered	Site 3-A, B	between box 3 & 5
14	44	39	-6405	207	-635.0	904.0	taking push cores (yellow, green)	PC01(yellow), PC02(green)	
14	49	19	-6406	216	-620.0	900.0	off bottom		

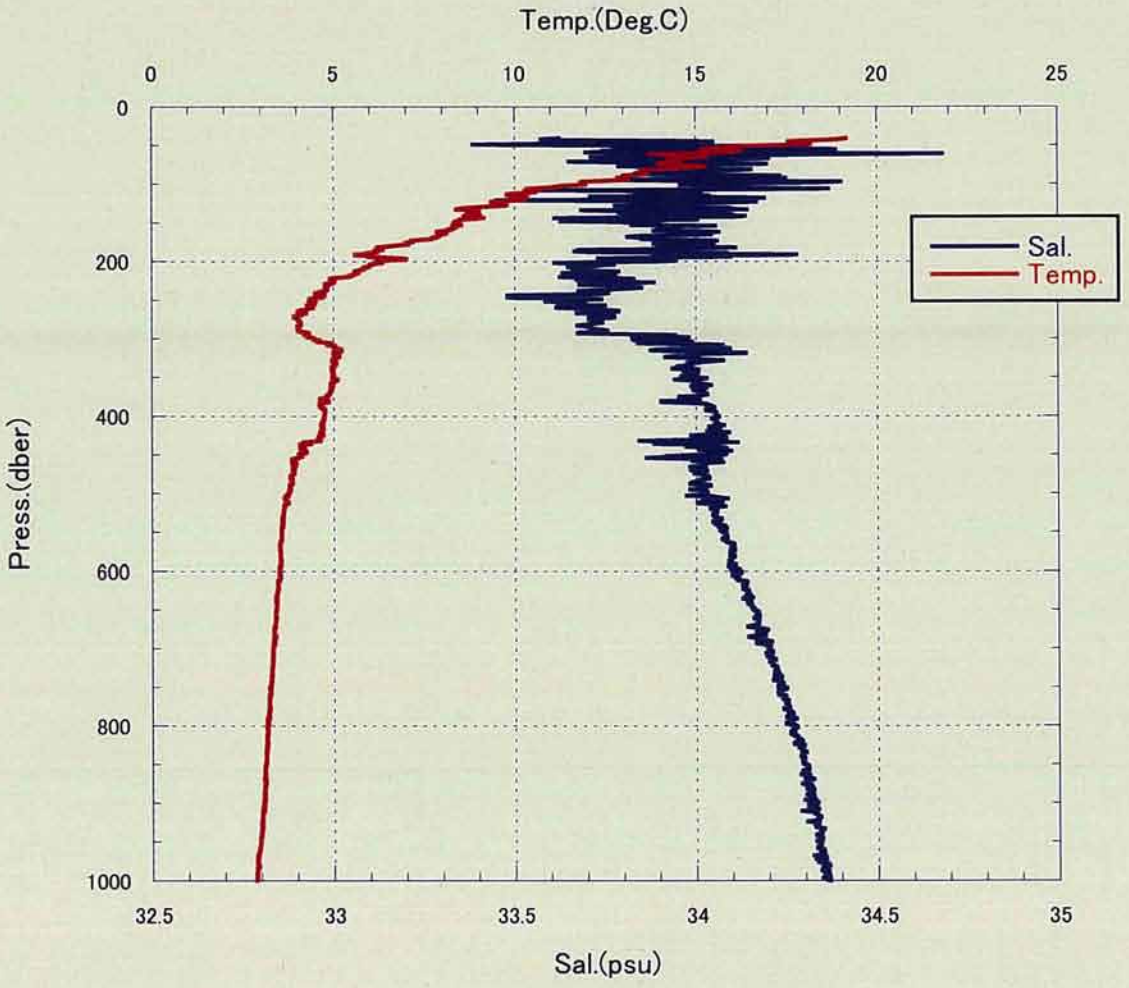


Fig. CTD at 6K Dive#1036

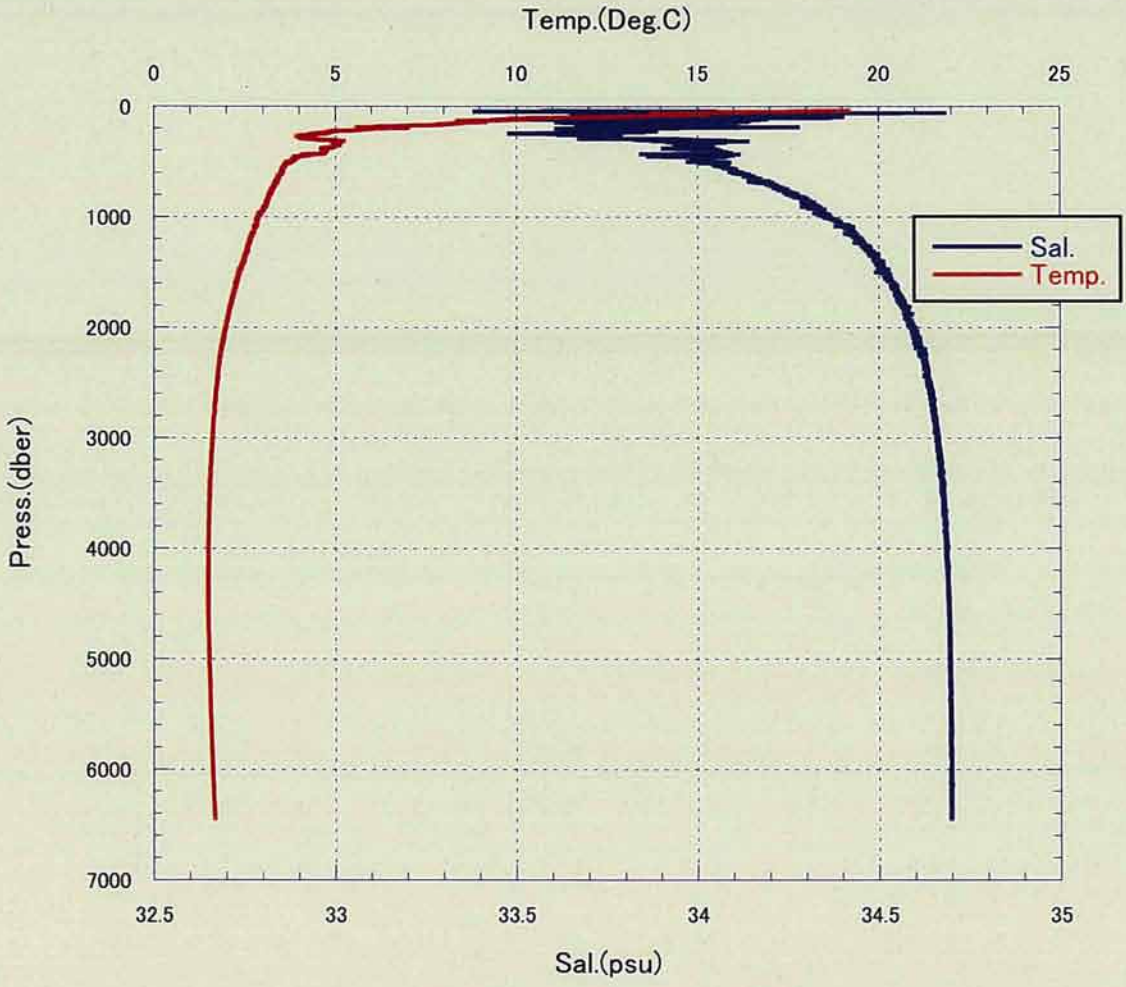


Fig. CTD at 6K Dive#1036

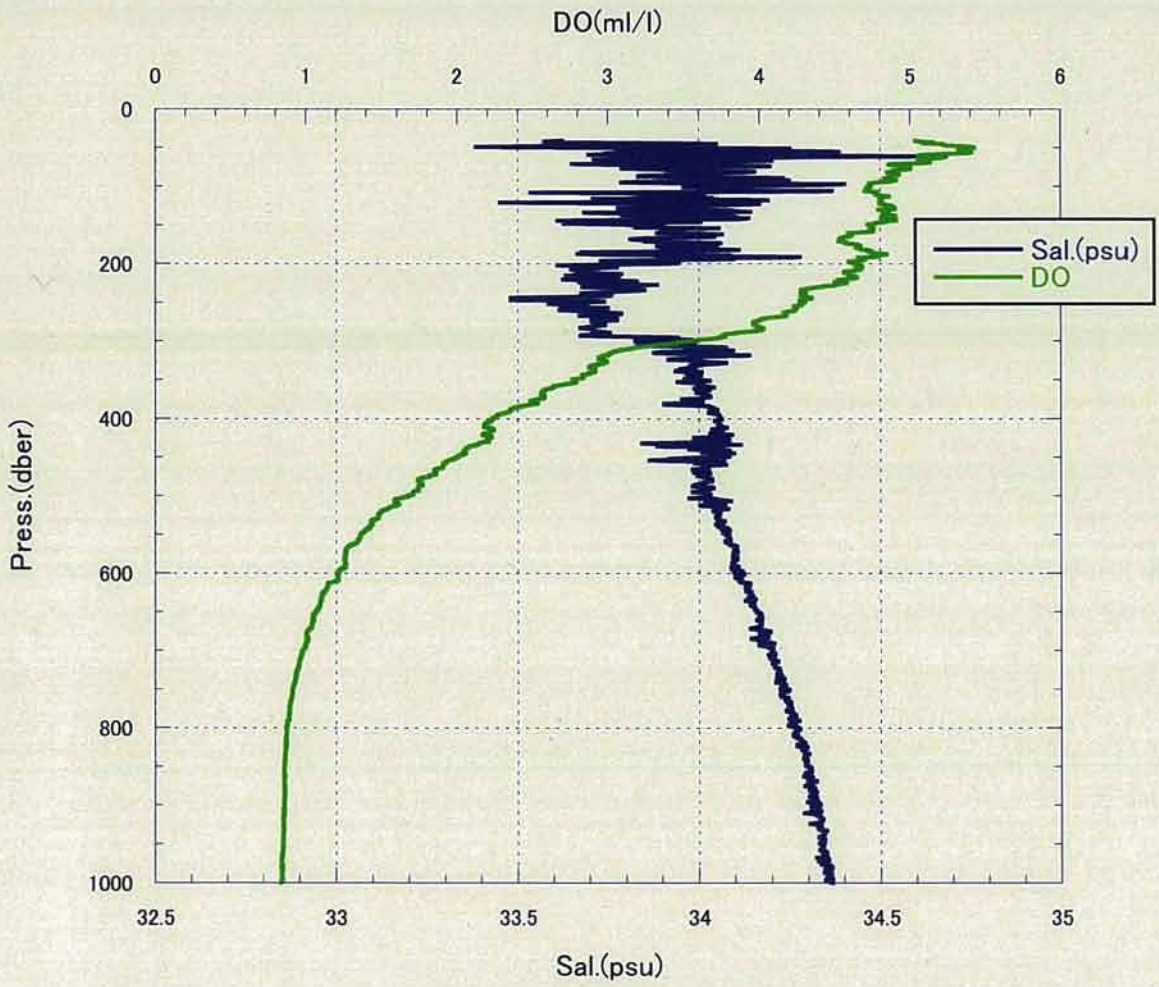


Fig. CTD at 6K Dive#1036b

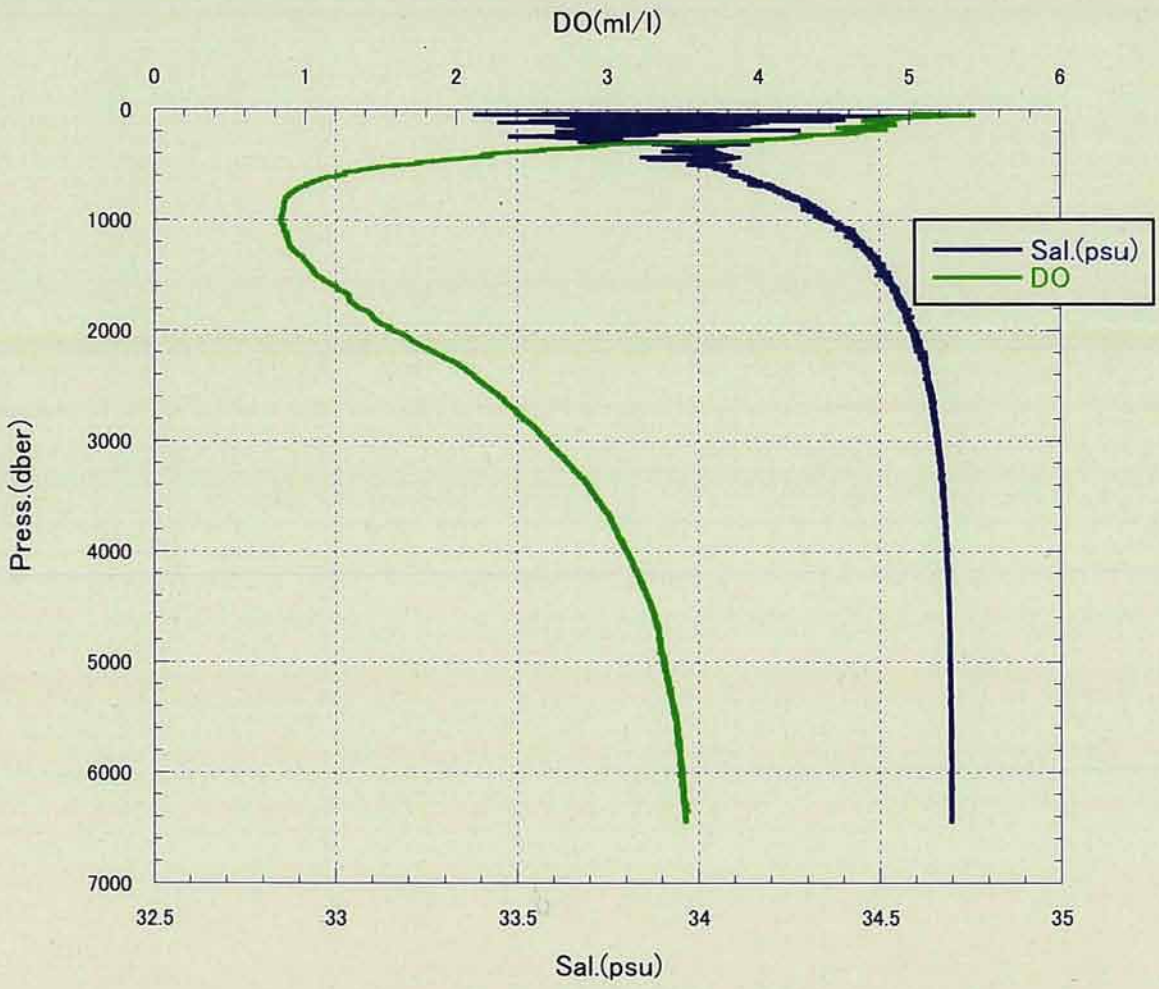


Fig. CTD at 6K Dive#1036b

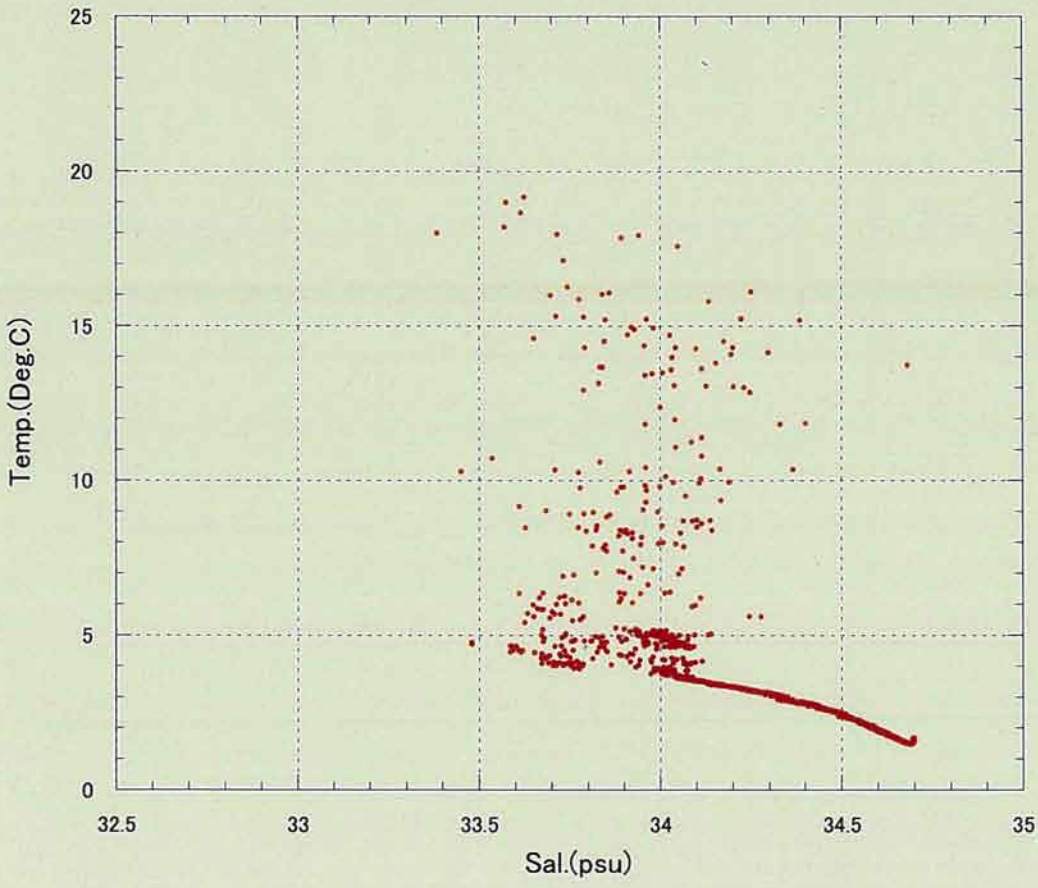


Fig. T-S Dia at 6K Dive#1036

平成 19 年 10 月 13 日

作業予定

１０月１４日（日）

１０：００　潜航開始

＃１０３７ＤＩＶＥ

海域　　：北西太平洋　１４７° Ｅ

潜航者　：川間、千葉、Dhugal Lindsay　（海洋研究開発機構）

潜航点　：　　３８° １５．０Ｎ
　　１４７° ００．０Ｅ
　　水深　　５５００ｍ

X-Y 原点：　　３８° １５．０Ｎ
　　１４７° ００．０Ｅ

１７：００　浮上

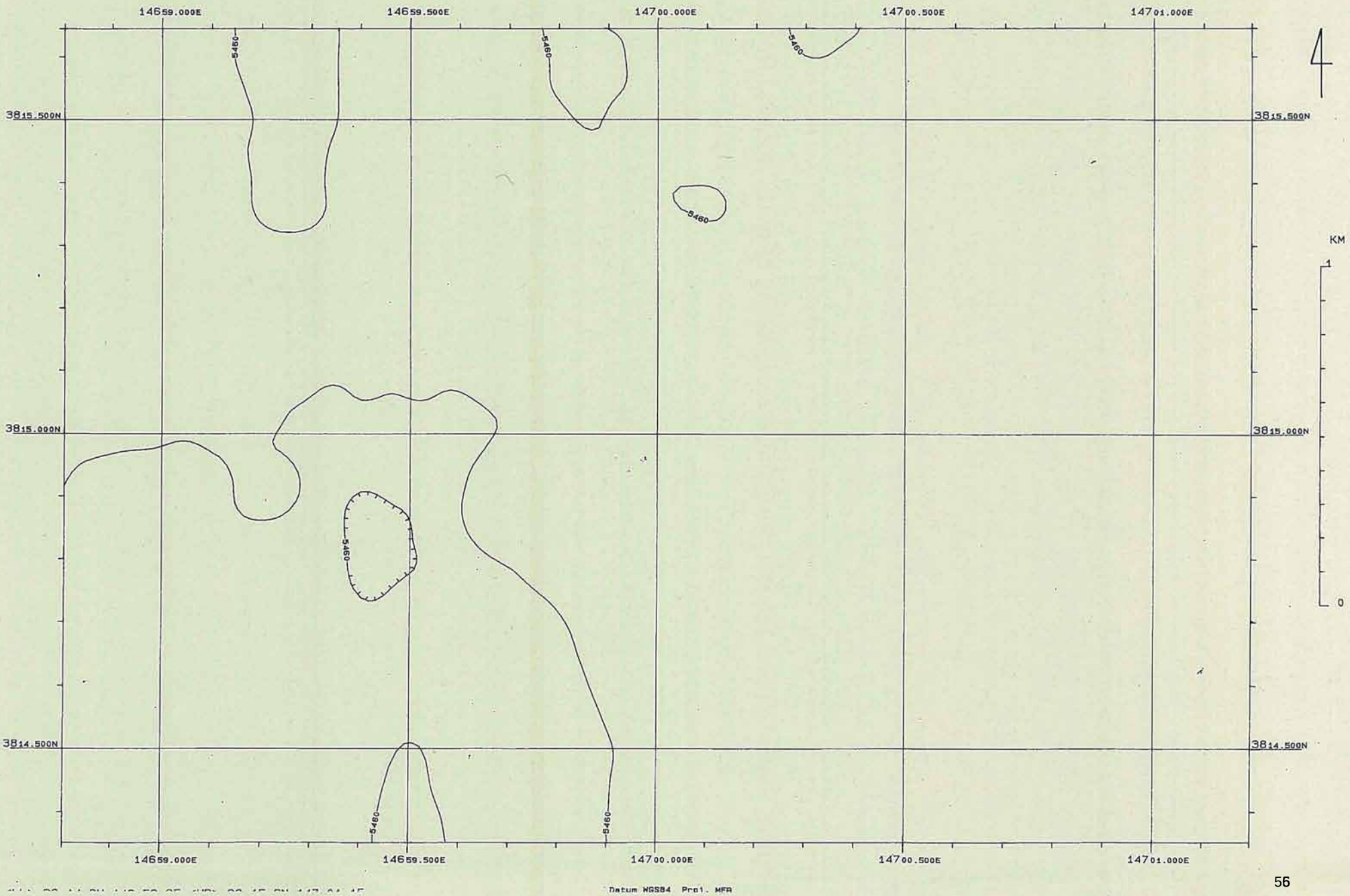
〈備考〉
時　刻：ＪＳＴ＋１
測位センサ：Ｄ－ＧＰＳ
測地系：ＷＧＳ－８４
使用受波器：No.１，２受波器

YK07-15 #1037 DIVE

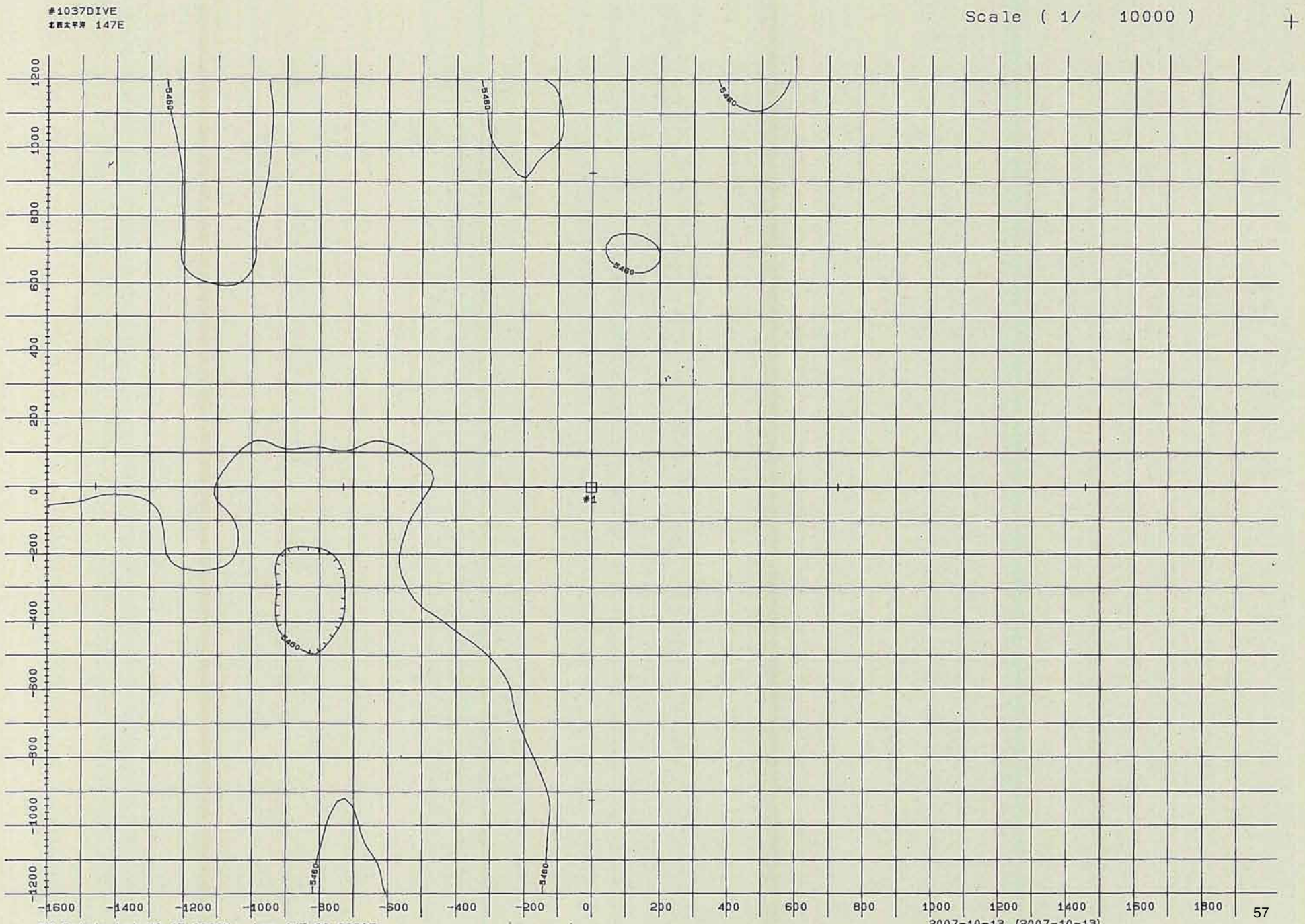
North West Pacific 147E

Date 2007/10/13

Scale (1/ 10000)



4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北西太平洋 147E
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5460
5460
5460
5460
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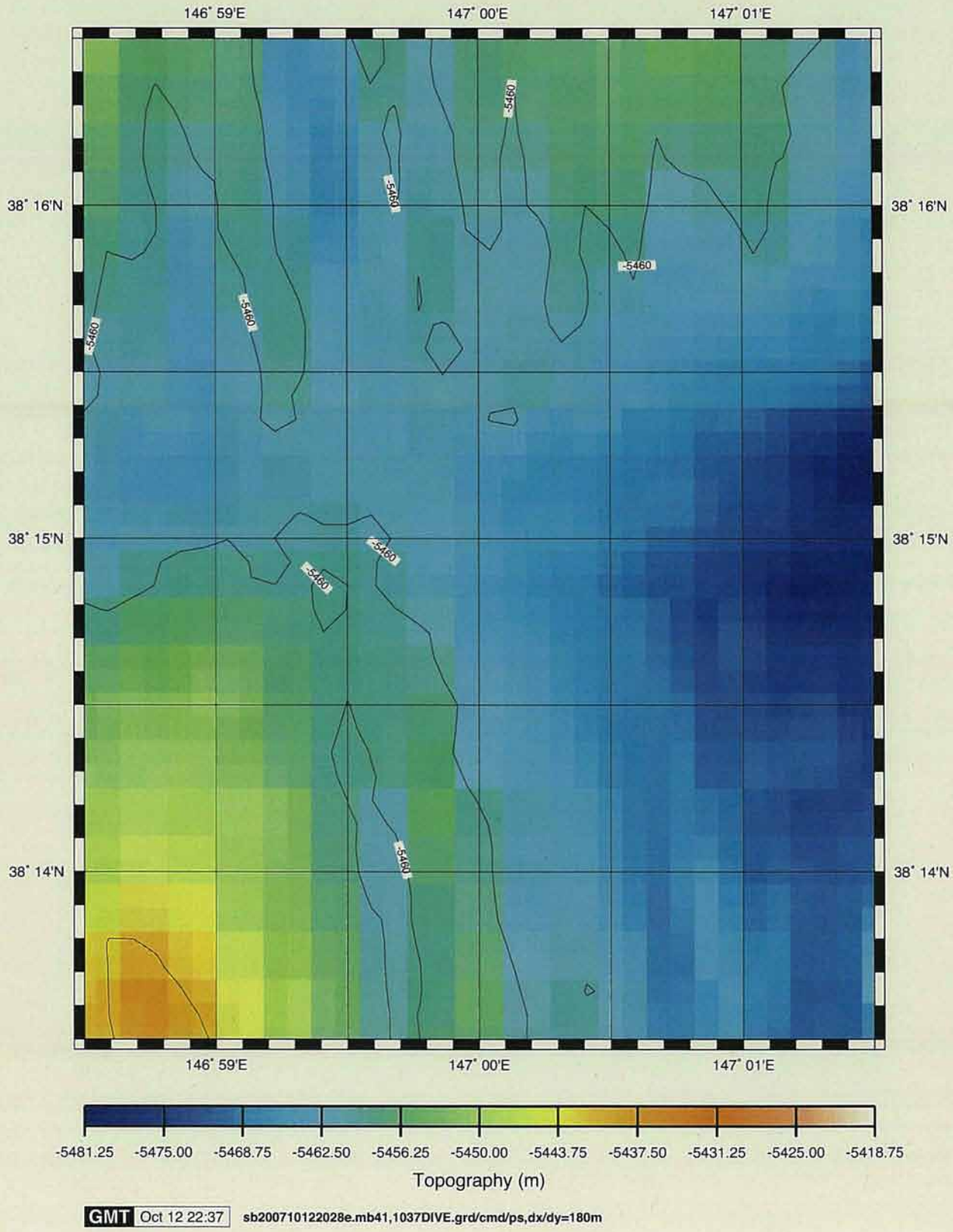
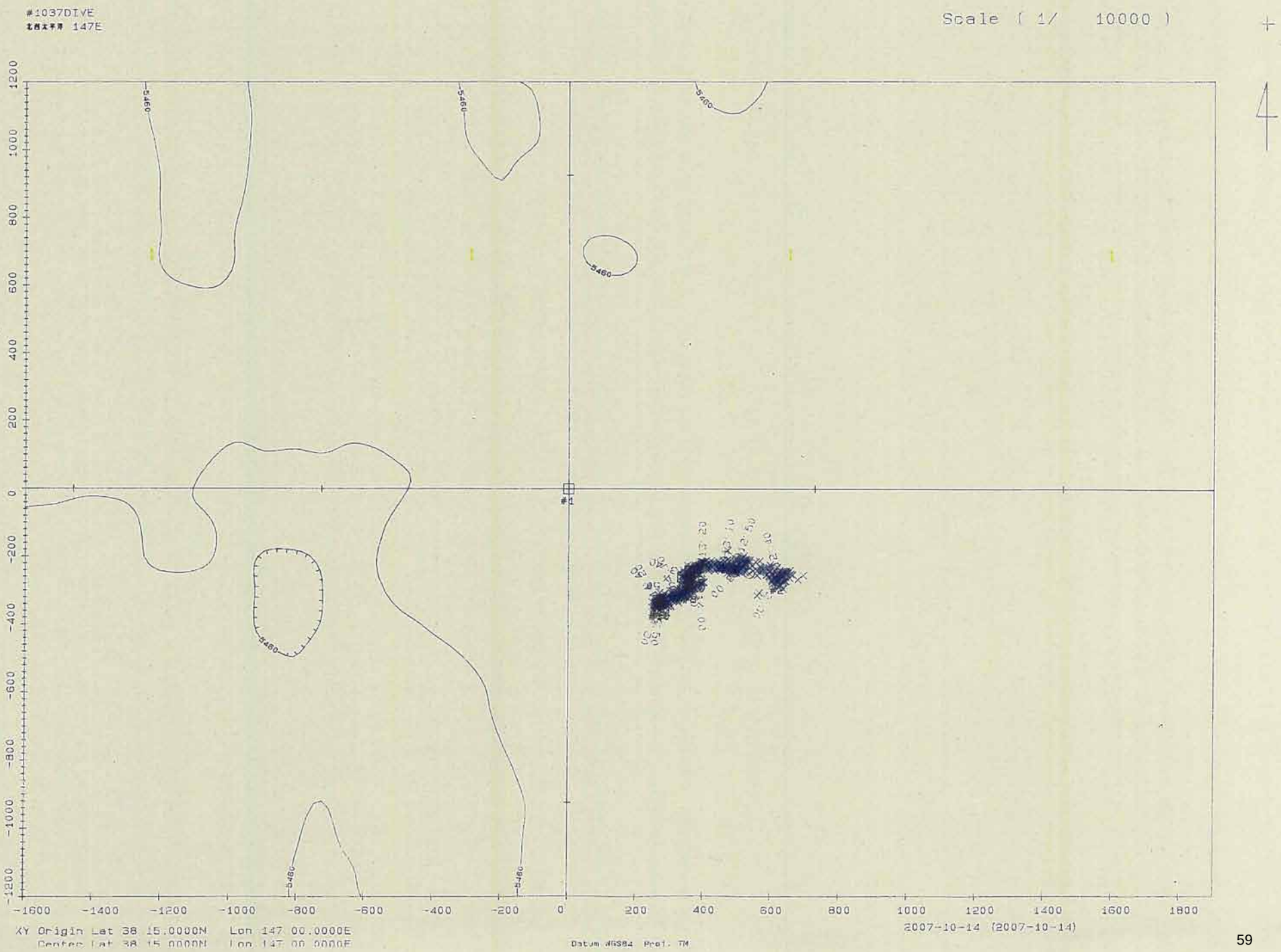
1000
800
600
400
200
0
-200
-400
-600
-800
-1000
-1200
-1600
-1400
-1200
-1000
-800
-600
-400
-200
0
200
400
600
800
1000
1200
1400
1600
1800
XY Origin Lat 38 15.0000N Lon 147 00.0000E
2007-10-13 (2007-10-13)

1037DIVE NorthWest Pacfic 147E

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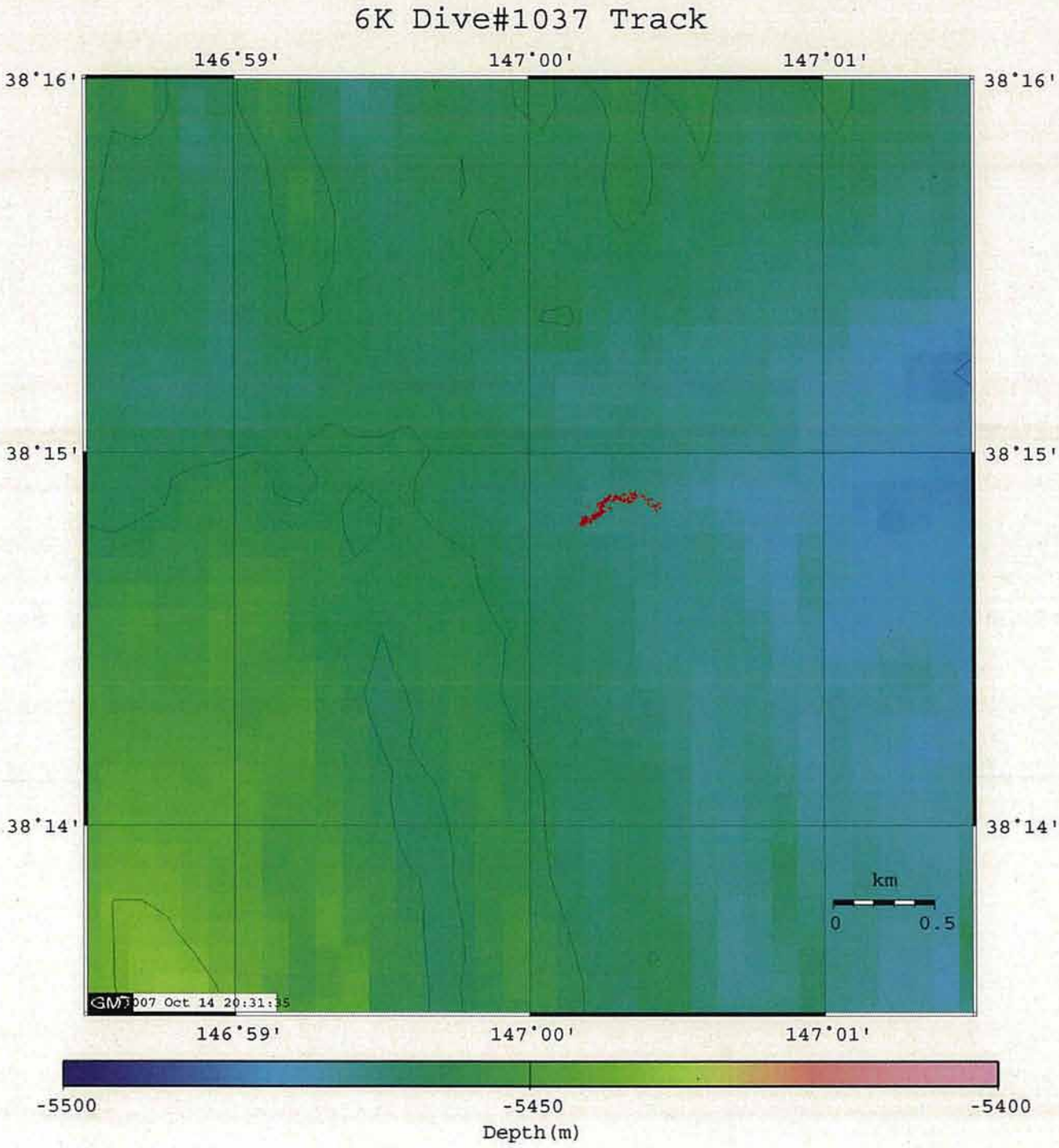
-1400
-1200
-1000
-800
-600
-400
-200
0
200
400
600
800
1000
1200
1400
1600
1800
1200
1000
800
600
400
200
0
-200
-400
-600
-800
-1000
-1200
XY Origin Lat 38 15.0000N Lon 147 00.0000E
Datum WGS84 Proj. TM
2007-10-14 (2007-10-14)


6K Dive#1037 Track
146°59'
147°00'
147°01'
38°16'
38°15'
38°14'
km
0
0.5
GMT 2007 Oct 14 20:31:35
-5500
-5450
-5400
Depth(m)

#1037DIVE 北西太平洋 147E Dhugal Lindsay D-GPS(WGS-84)SSBL

*** EVENT MARK LIST *** 2007-10-14 15:00:10

ORIGIN (XY<->LATLON CONVERT) LAT 38°15.0000'N LON 147°00.0000'E
XY ORIGIN ((X,Y)=(0,0)) LAT 38°15.0000'N LON 147°00.0000'E

NO.	DAY	TIME	LAT	LON	X	Y
1	2007-10-14	10:00:00	38° 15.0000' N	147° 0.0000' E	0.0	0.0
	Landing Target					
2	2007-10-14	12:31:00	38° 14.8575' N	147° 0.4259' E	-263.5	621.2
	Landing D=5437m					
3	2007-10-14	13:26:00	38° 14.8740' N	147° 0.2642' E	-233.0	385.3
	Sampling Animal D=5431m					
4	2007-10-14	13:31:00	38° 14.8686' N	147° 0.2578' E	-243.0	376.0
	Sampling Lugworm D=5432m					
5	2007-10-14	13:36:00	38° 14.8694' N	147° 0.2468' E	-241.5	360.0
	Sampling Lugworm D=5433m					
6	2007-10-14	13:42:00	38° 14.8593' N	147° 0.2468' E	-260.2	360.0
	Sampling Jellyfish D=5428m					
7	2007-10-14	13:47:00	38° 14.8594' N	147° 0.2324' E	-260.0	339.0
	Sampling Seacucumber D=5430m					
8	2007-10-14	13:54:00	38° 14.8427' N	147° 0.2486' E	-290.9	362.6
	Sampling Shrimp D=5429m					
9	2007-10-14	14:39:00	38° 14.8175' N	147° 0.1885' E	-337.5	274.9
	Sampling Seacucumber, MBARI(green,yellow) D=5435m					
10	2007-10-14	14:45:00	38° 14.8158' N	147° 0.1798' E	-340.7	262.2
	Sampling Seacucumber D=5433m					
11	2007-10-14	14:58:00	38° 14.8220' N	147° 0.1823' E	-329.2	265.9
	Sampling Plasticbag Left Bottom D=5435m					
12						
13						
14						
15						
16						
17						
18						
19						
20						

SHINKAI 6500 Dive #1037

Observer: D. Lindsay
Recorded by A. Takahashi, M. Mori
Pilot : Kawama
Co Pilot : Chiba

2007/10/14

page: 1/1

Area: Hokkaido Rise

Time(LCL) hh	mm	ss	Dep. (m)	Head (Deg)	Pos. Xm	Pos. Ym	Observation	Sample		Remarks
9	58	22					surface			
10	0	42					launching			
11	34	17	-3864	71			set head angle to 75, deadslow ahead, jellyfish?			
11	42	8	-4060	92	-220.0	380.0	unfix head angle			
12	18	18	-5382	201	-218.0	611.0	trim balanced			
12	20	23	-5385	177	-226.0	604.0	descending to bottom			
12	26	24	-5436	304	-267.0	680.0	sea cucumber visible against muddy floor			
12	29	33	-5437	293	-266.0	626.0	sea cucumbers, trail visible			
12	33	7	-5436	292	-259.0	642.0	ushi-namako			
12	39	6	-5436	285	-273.0	602.0	nest?			
12	47	12	-5435	290	-212.0	524.0	sea cucumber & sea urchin, still flying to north west			
12	53	2	-5436	273	-203.0	511.0	trail visible			
12	55	38	-5436	287	-224.0	517.0	kushi-kurage? Shinkai stopped			
13	1	23	-5436	290	-238.0	489.0	observation finished, sampling attempted with vacuum			
13	3	50	-5435	289	-237.0	498.0	gave up sampling, start moving			
13	8	11	-5432	264	-215.0	463.0	otohime-no-hanagasa?			
13	14	11	-5433	286	-237.0	444.0	sea urchins			
13	16	35	-5435	285	-230.0	436.0	ushi-namako visible against muddy floor			
13	20	26	-5433	286	-217.0	403.0	sea urchin			
13	27	20	-5430	300	239.0	377.0	sampling attempted with vacuum			
13	29	17	-5432	298	-236.0	386.0	yume-namako?			
13	31	9	-5432	288	-241.0	374.0	sample (gokai) recovered		1	canister 1
13	37	11	-5432	286	-253.9	359.6	eboshi-sea cucumber			
13	39	12	-5434	260	-244.9	356.5	jellyfish		1	canister 1
13	43	12	-5430	290	-259.8	335.3	sea cucumber (swimming ushi-namaco)		1	canister 6
13	53	55	-5429	278	-296.4	354.4	shrimp		1	canister 5
14	10	14	-5433	282	-322.1	338.5	eboshi-sea cucumber			
14	18	44	-5452	248	-329.8	268.9	jellyfish (kushi-kurage)			
14	22	14	-5435	290	-367.7	271.8	sea cucumber (ushi-namako)			
14	29	25	-5435	278	-343.2	269.6	isoginchaku ? Mass of forma ? Taking push core	PC01(green),		core sample1
14	35	55	-5435	278	-343.2	269.6	core of the bottom	PC02(yellow)		core sample 2
14	39	15	-5435	278	-343.2	269.6	sea cucumber		1	canister 5
14	44	16	-5434	331	-345.9	358.3	sea cucumber		1	canister 4
14	46	45	-5435	302	-336.3	265.9	vinyl with isoginchaku ?		1	gate sampler 3 (red)
14	57	27	-5435	320	-336.3	265.9	off bottom			

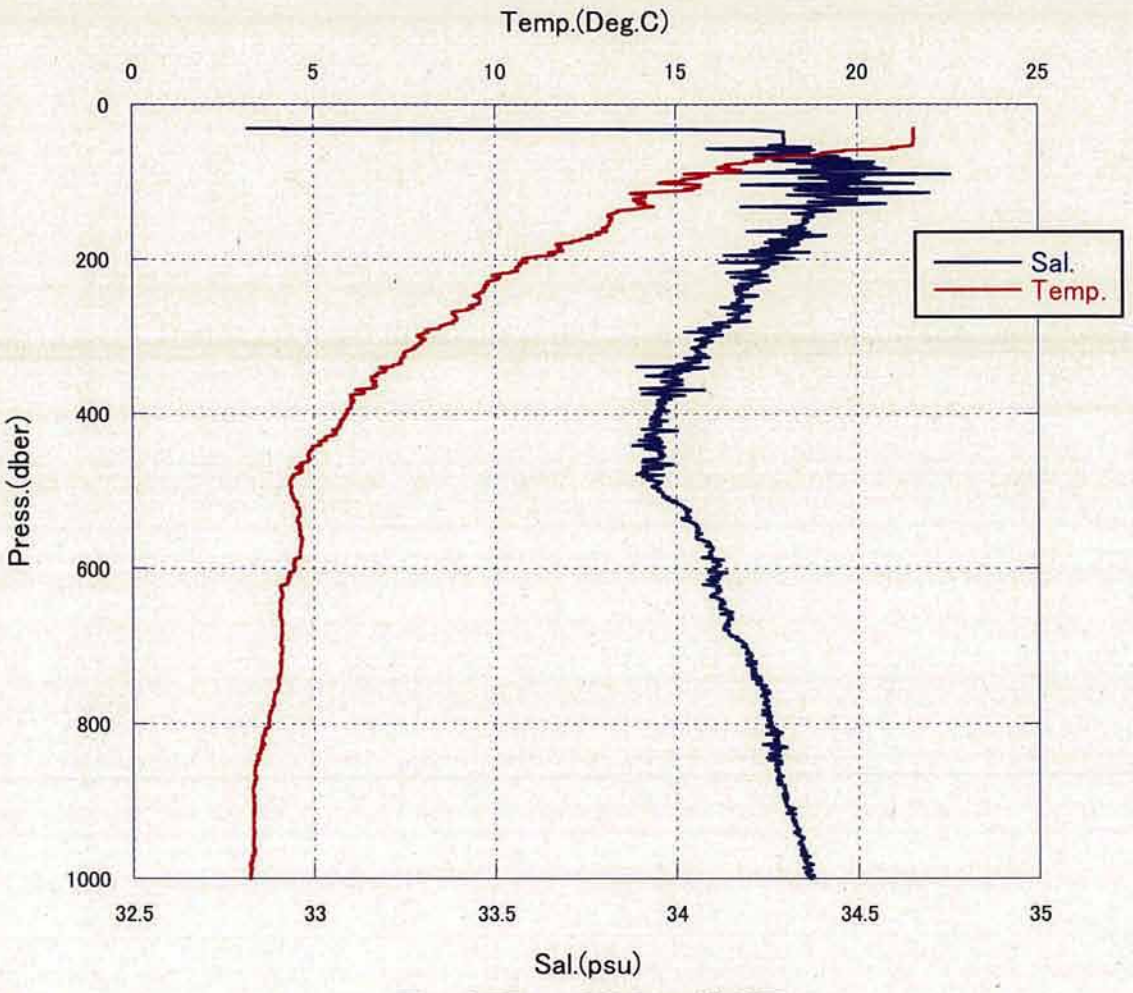


Fig.. CTD at 6K Dive#1037

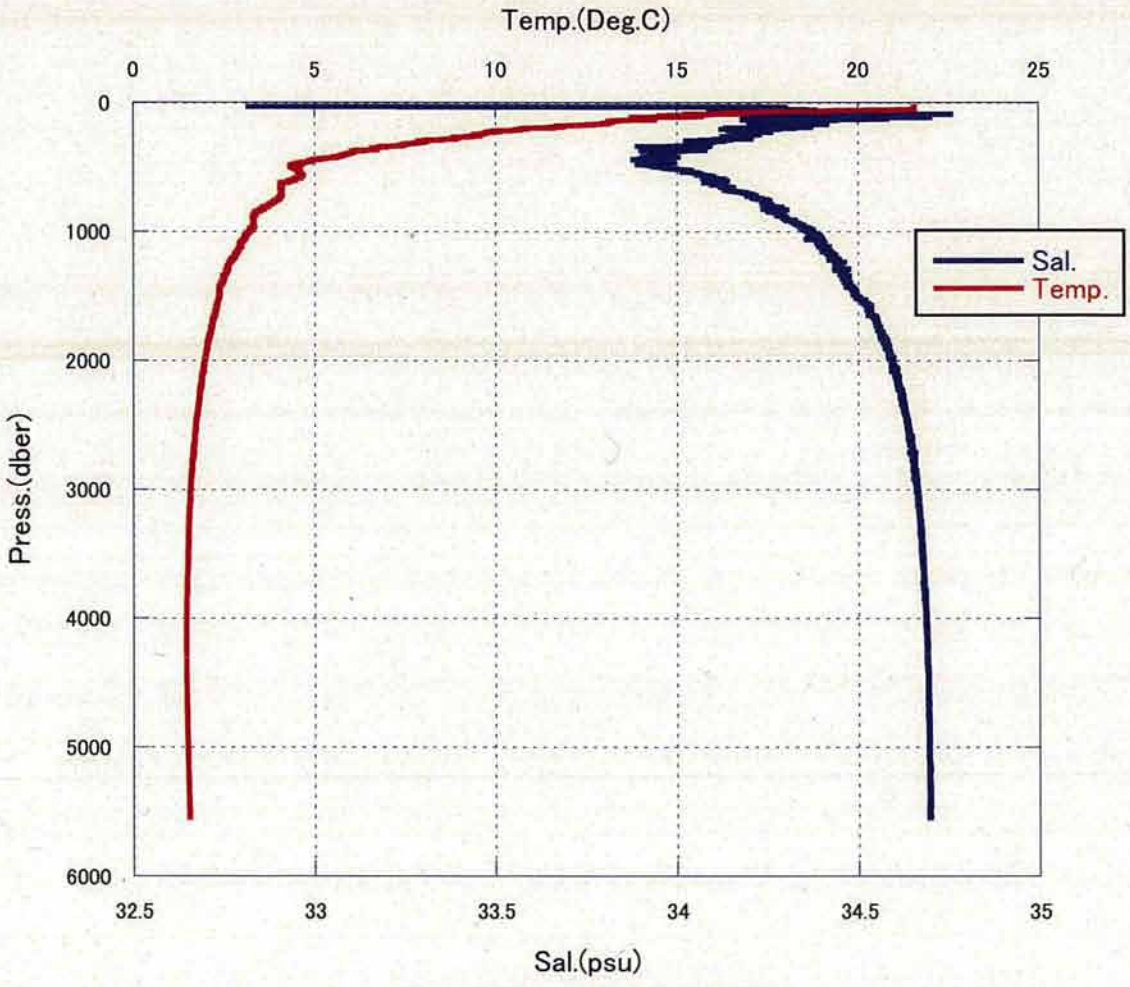


Fig.. CTD at 6K Dive#1037

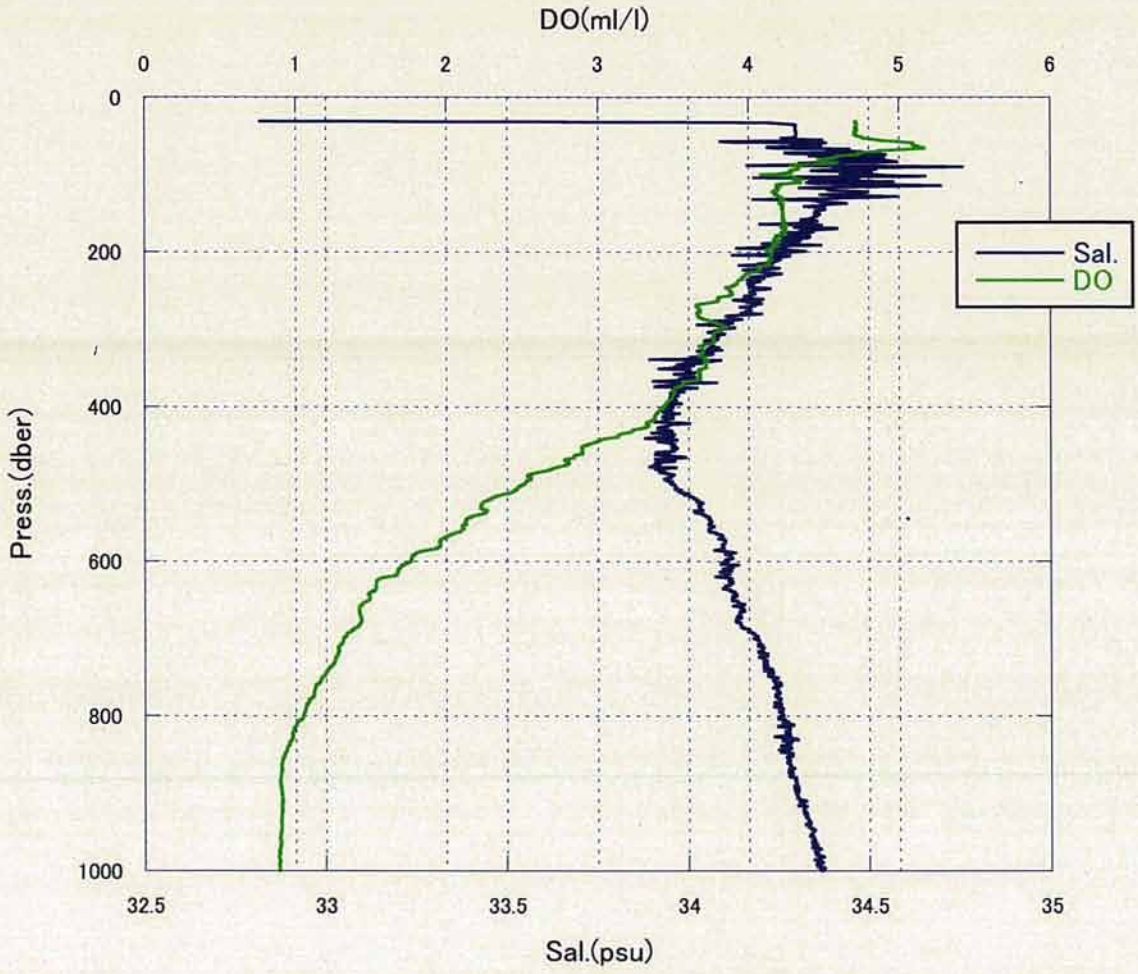


Fig. CTD at 6K Dive#1037b

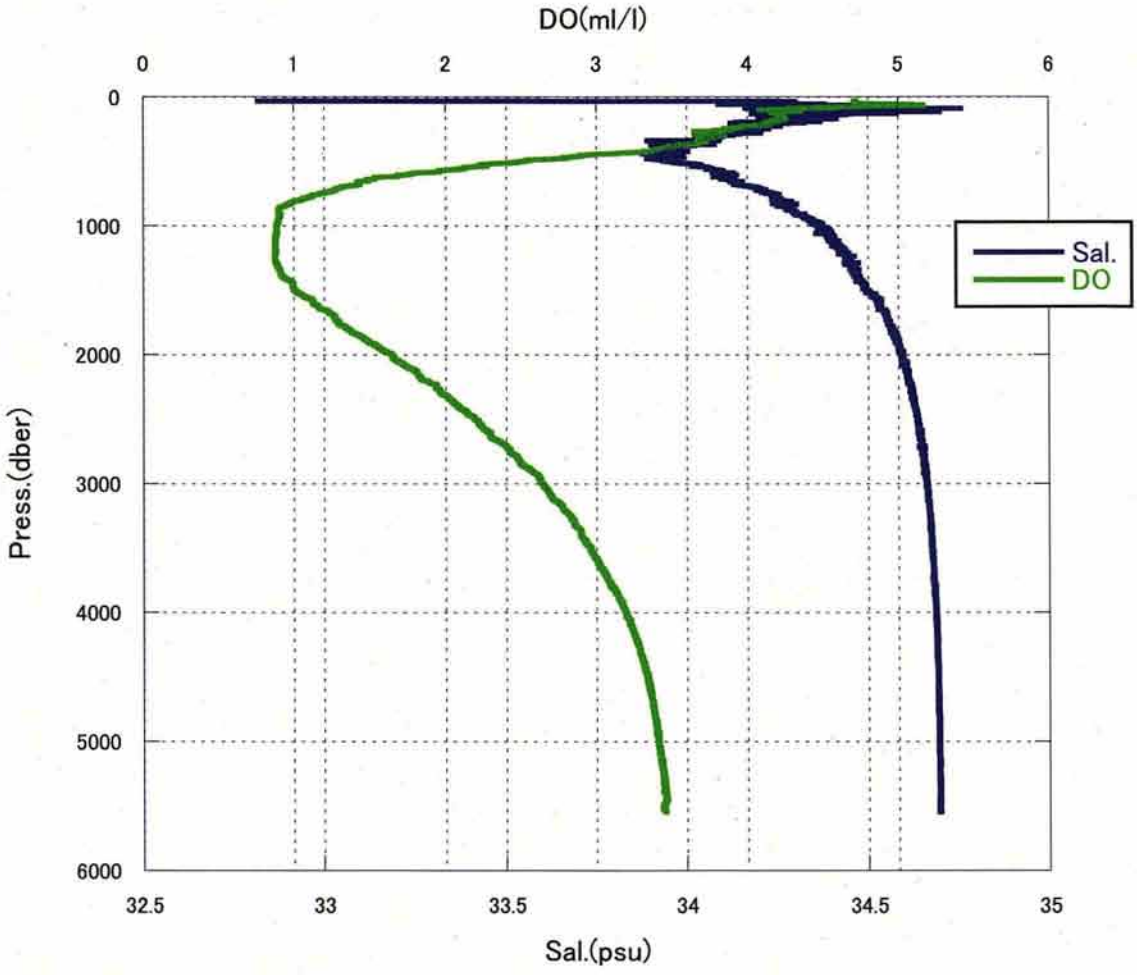


Fig. CTD at 6K Dive#1037b

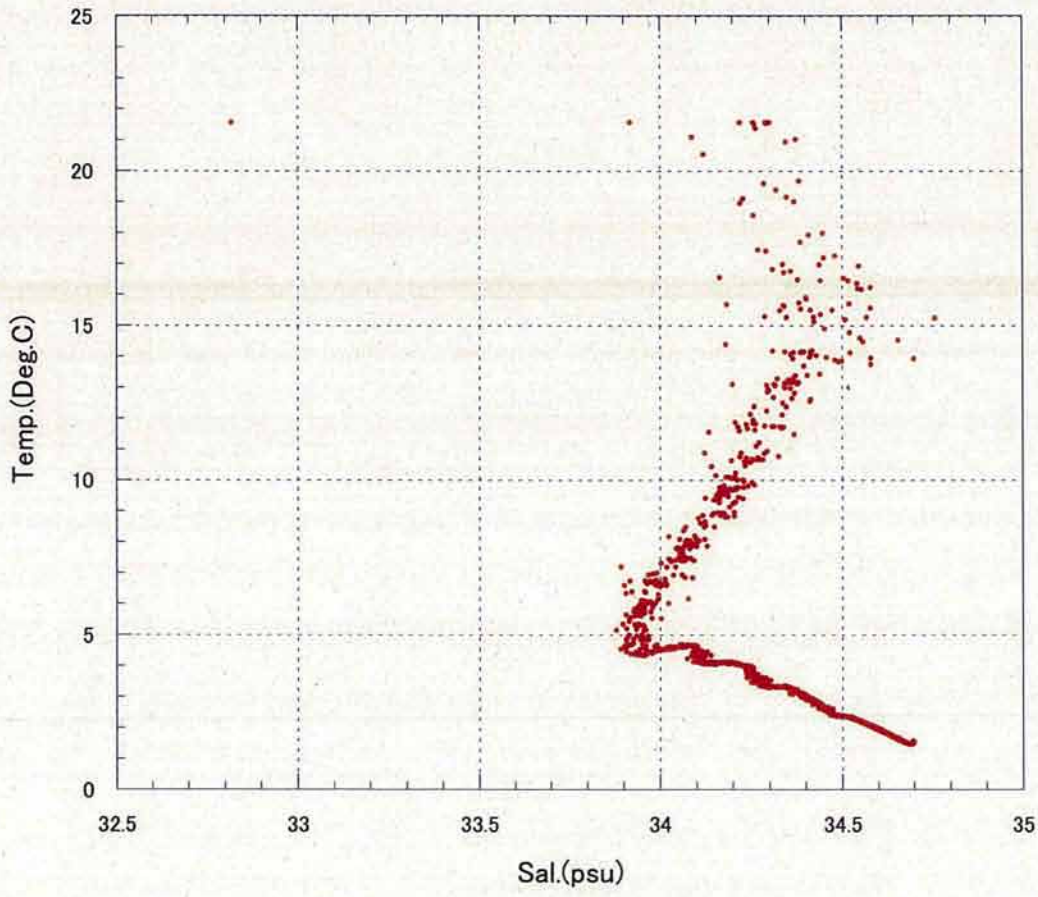


Fig. T-S Dia at 6K Dive#1037

平成 19 年 10 月 21 日

作業予定

１０月２２日（月）

１０：００　潜航開始

＃１０３８ＤＩＶＥ

海域　　：日本海溝　宮古東方陸側斜面

潜航者　：櫻井、小椋、James Davis Reimer　（海洋研究開発機構）

潜航点　：　３９°０６．３５６０Ｎ
　　１４３°５３．５６１９Ｅ
　　水深　５３５０ｍ

X-Y原点：　３９°０６．５Ｎ
　　１４３°５３．４Ｅ

１７：００　浮上

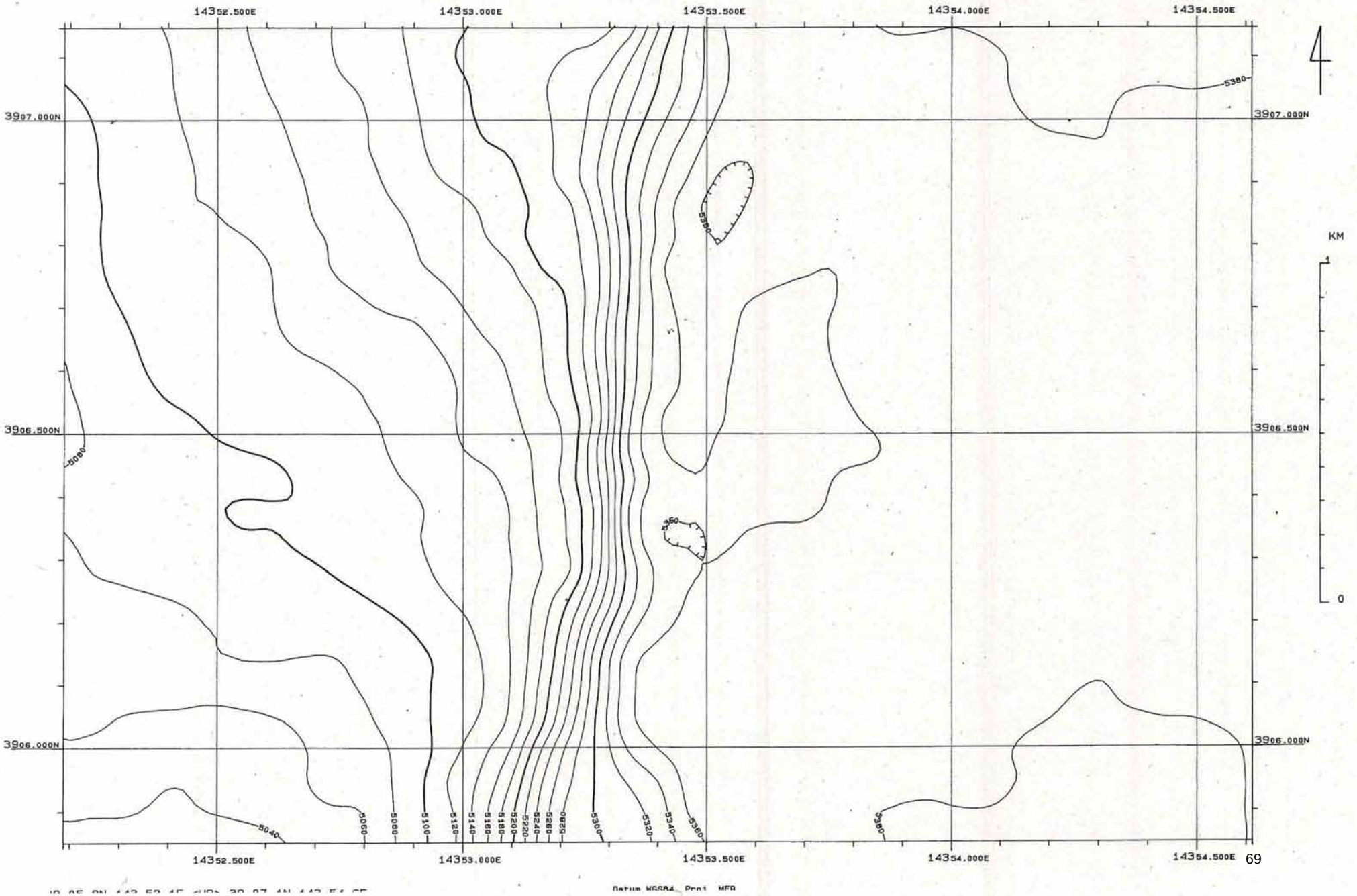
〈備考〉
時　刻：ＪＳＴ＋１
測位センサ：Ｄ－ＧＰＳ
測地系：ＷＧＳ－８４
使用受波器：No.１，２受波器

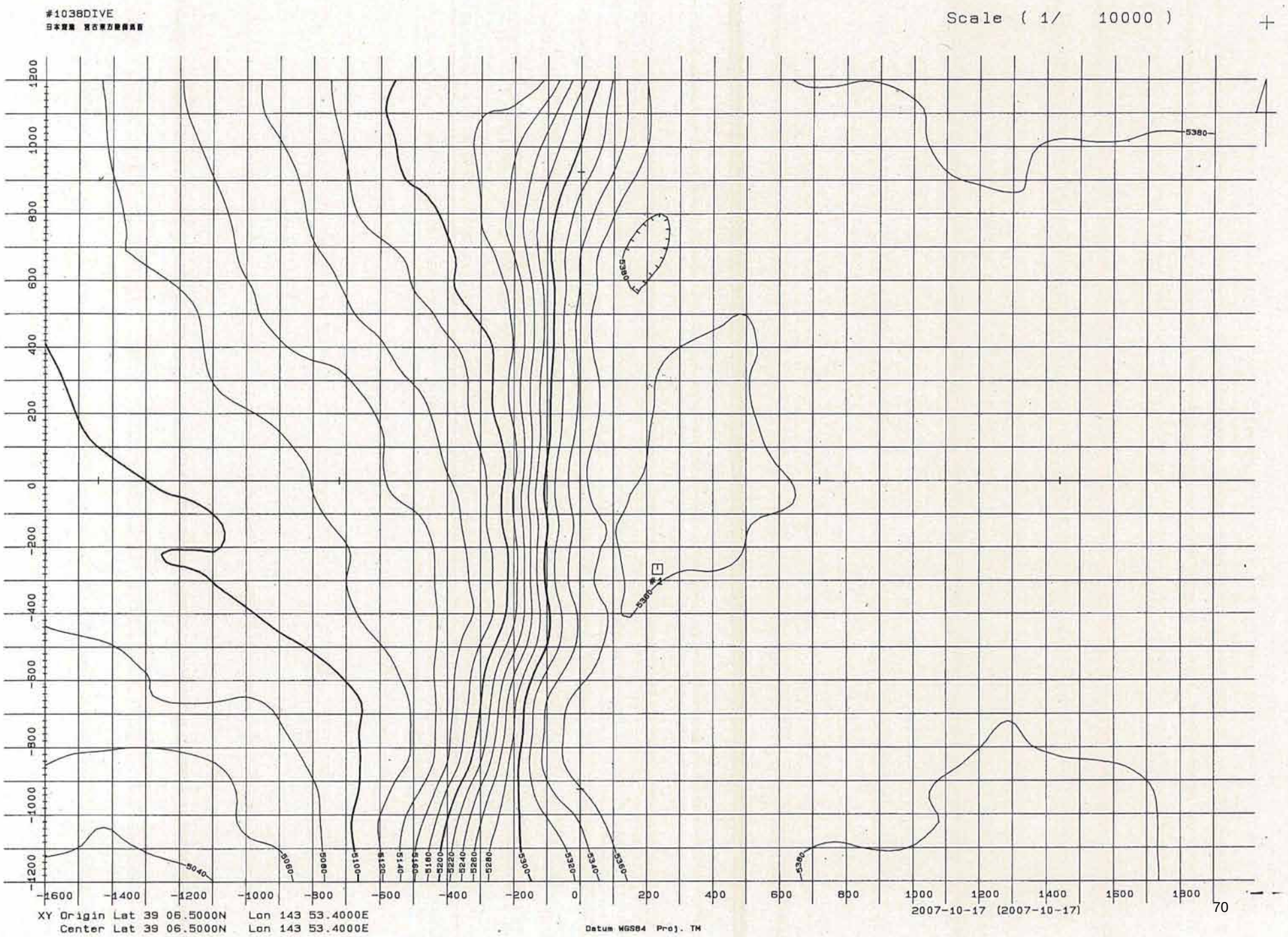
YK07-15 #1038 DIVE

Japan Trench Miyako EastWard

Date 2007/10/17

Scale (1/ 10000)

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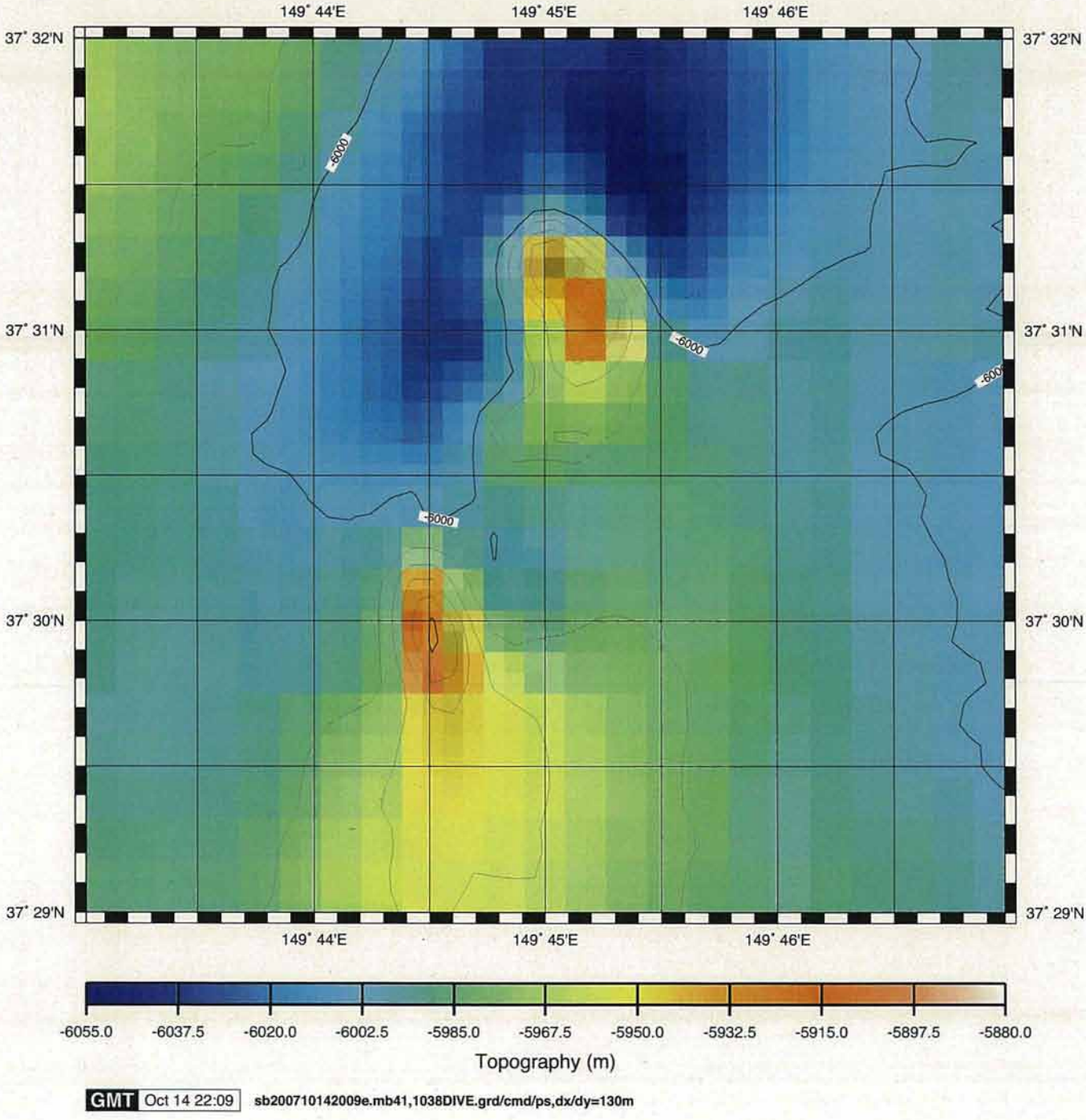
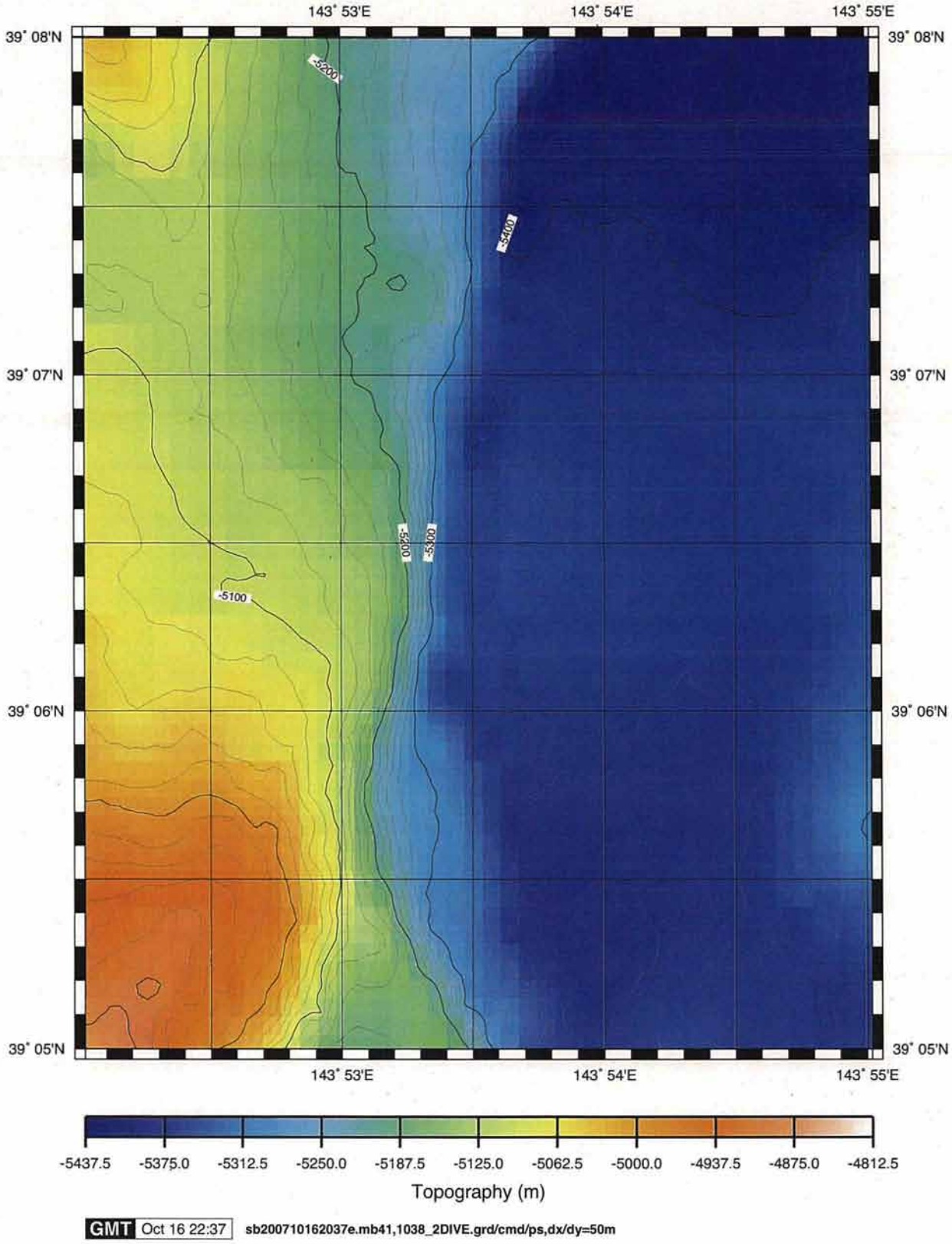
5180
5200
5220
5240
5260
5280
5300
5320
5340
5360
-1600
-1400
-1200
-1000
-800
-600
-400
-200
0
200
400
600
800
1000
1200
1400
1600
1800
1200
1000
800
600
400
200
0
-200
-400
-600
-800
-1000
-1200
XY Origin Lat 39 06.5000N Lon 143 53.4000E
Center Lat 39 06.5000N Lon 143 53.4000E
Datum WGS84 Proj. TM
2007-10-17 (2007-10-17)

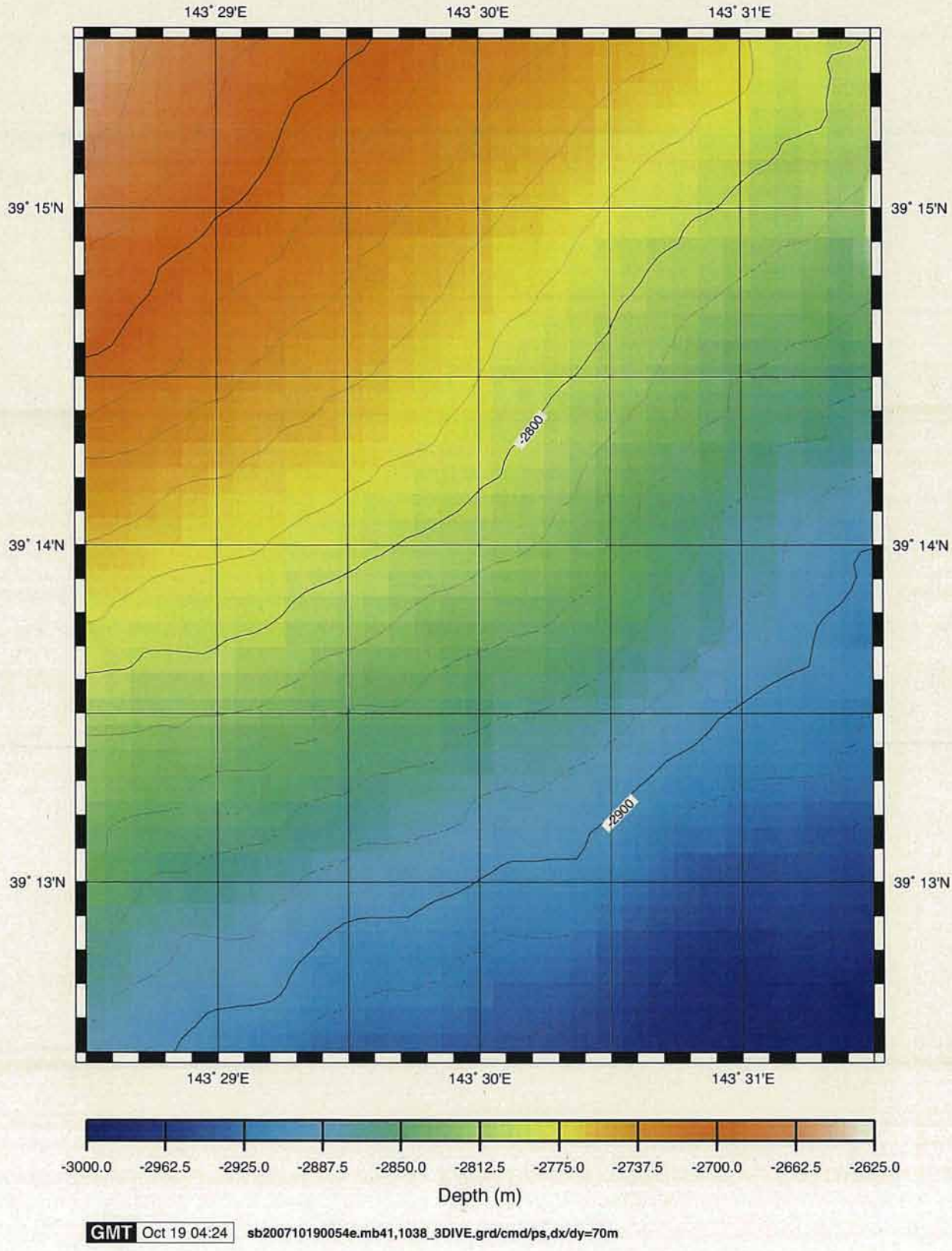
1038DIVE NorthWest Pacfic YUKAWA Knoll



1038_2DIVE Japan Trench



1038DIVE_3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143° 30'E
143° 31'E
39° 15'N
39° 14'N
39° 13'N
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-2900
-3000.0
-2962.5
-2925.0
-2887.5
-2850.0
-2812.5
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-2737.5
-2700.0
-2662.5
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Depth (m)
GMT Oct 19 04:24
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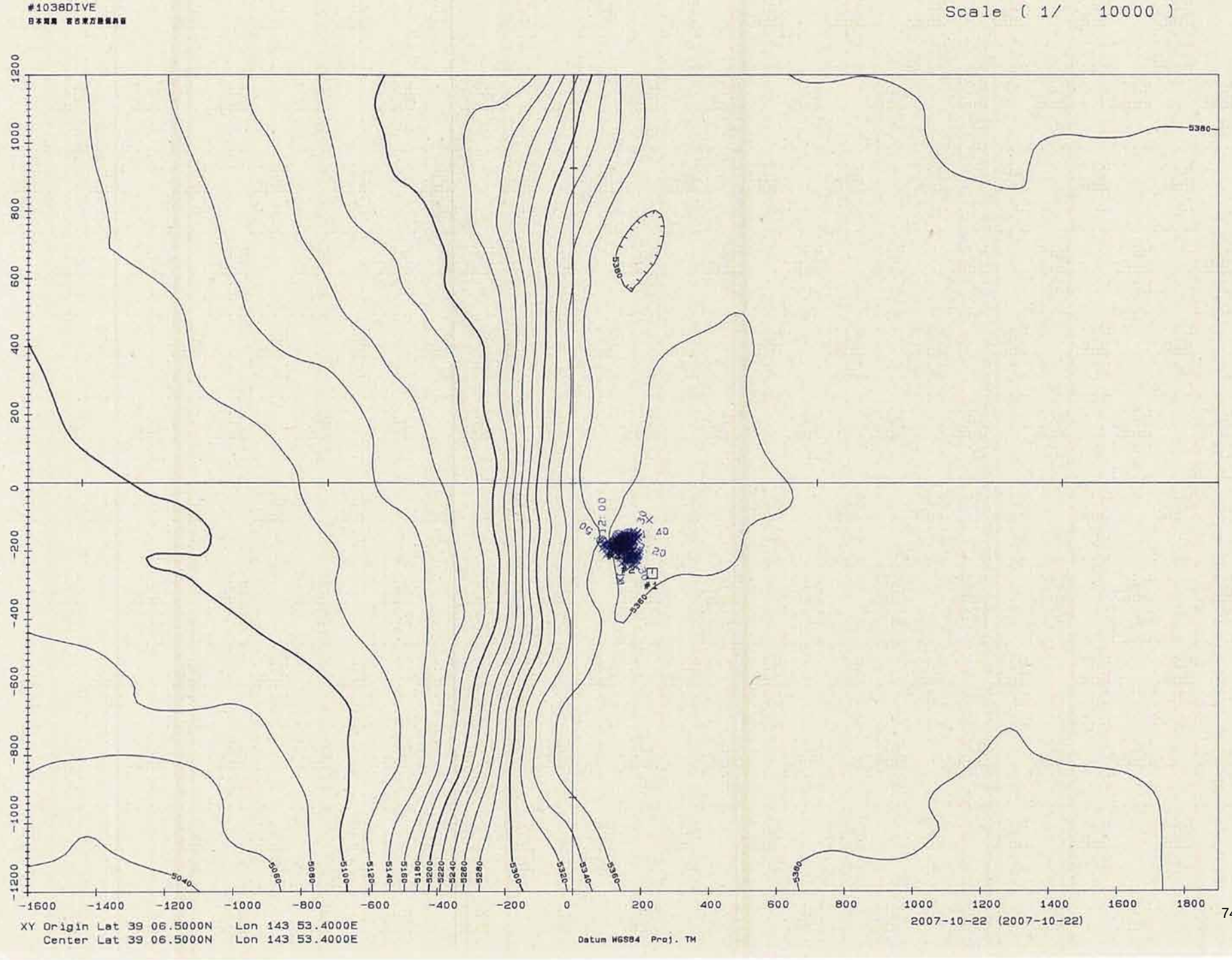
#1038DIVE
Scale (1/ 10000)
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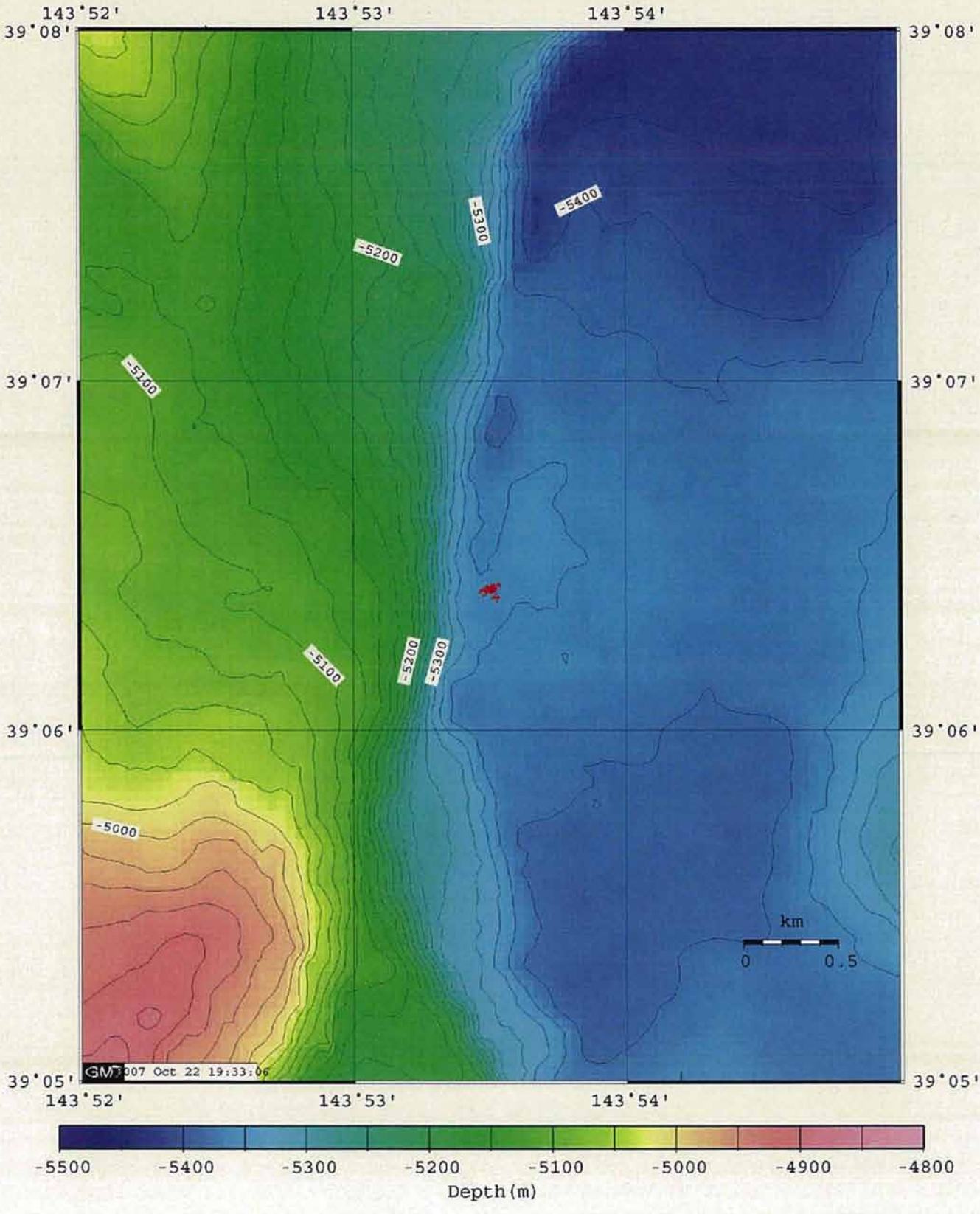
1000
800
600
400
200
0
-200
-400
-600
-800
-1000
-1200
-1600 -1400 -1200 -1000 -800 -600 -400 -200 0 200 400 600 800 1000 1200 1400 1600 1800
5380
5360
5340
5320
5300
5280
5260
5240
5220
5200
5180
5160
5140
5120
5100
5080
5060
5040
12:00
30
40
20
XY Origin Lat 39 06.5000N Lon 143 53.4000E
Center Lat 39 06.5000N Lon 143 53.4000E
Datum WGS84 Proj. TM
2007-10-22 (2007-10-22)

6K Dive#1038 Track



#1038DIVE 日本海溝 James Davis Reimer D-GPS(WGS-84)SSBL

*** EVENT MARK LIST *** 2007-10-22 12:53:19

ORIGIN (XY<->LATLON CONVERT) LAT 39°06.5000'N LON 143°53.4000'E
XY ORIGIN ((X,Y)=(0,0)) LAT 39°06.5000'N LON 143°53.4000'E

NO.	DAY	TIME	LAT	LON	X	Y
1	2007-10-22	09:00:00	39° 6.3560' N	143° 53.5619' E	-266.4	233.3
	Landing Target					
2	2007-10-22	11:26:00	39° 6.3811' N	143° 53.5152' E	-219.9	166.0
	Landing D=5347m					
3	2007-10-22	12:01:00	39° 6.4027' N	143° 53.4865' E	-180.0	124.6
	Sampling Rock with Zoantharia, MBARI(yellow,white) D=5349m					
4	2007-10-22	12:01:00	39° 6.4027' N	143° 53.4864' E	-180.0	124.5
	Deployment Trap, #63Marker D=5349m					
5	2007-10-22	12:32:00	39° 6.4121' N	143° 53.5110' E	-162.6	159.9
	Sampling a few Rocks with Zoantharia D=5348m					
6	2007-10-22	12:37:00	39° 6.4121' N	143° 53.5109' E	-162.6	159.8
	Left Bottom D=5348m					
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

SHINKAI 6500 Dive #1038

Observer: J.D.Reimer
Recorded by Irei,Fujii, Shiroma

2007/10/22

Pilot : Sakurai
Co Pilot : Komuku

Area: Miyako oki Knolls, Japan Trench

Time(LCL) hh	mm	ss	Dep. (m)	Head (Deg)	Pos. Xm	Pos. Ym	Observation	Sample	Remarks
9	9	23					surface		
9	21	30	240				jelly fish(white)		
9	22	0	264				cydippid		
9	22	45	301				pyrosome		
9	24	45	400				abandoned larvacean house ,squid		
9	26	45	496				Bathyclenid cybippid?		
9	34	40	875				Pandea rubra?		
9	39	20	1097				hydromedusa(10cm diameter)		
9	40	40	1160				Solmissus incia		
9	41	35	1202				Solmissus incia		
9	42	20	1236				Solmissus incia		
9	43	5	1272				Solmissus incia		
9	43	20	1284				cydippid		
9	44	30	1338				Solmissus incia		
9	45	50	1402				Solmissus incia		
9	46	20	1427				Solmissus incia		
9	47	30	1483				Marrus or Thocanna ?		
9	55	24	1853				Rhopalonematid		
9	56	21	1897				Halicreatid (4 long-tentacled)		
10	12	36	2681				Bathocyroe		
10	20	29	2992				clausophyid?		
10	26	50	3274				rattail fish		
10	32	30	3525				Nacomedus Aeginid-like		
10	34	55	3630				Nacomedus Aeginid-like		
11	20	21	5307	47	-224.3	162.8			
11	23	10	5347	28	-227.0	168.1	descending to bottom		1.5℃
11	26	0	5347		-219.9	166.0	landing		
11	27	17	5347	19	-219.2	149.5	sea anemone, sea cucumber		
11	30	29	5347	19	-197.4	177.4	sea anemone (white)		
11	31		5347				sea anemone-2 (orange, white)		
11	35	1	5347	357	-192.0	156.2	Calyptogena soyoae		
11	37	1	5346	359	-192.8	158.4	Calyptogena soyoae		
11	42	30	5346		-180.0	120.4	sea anemone (orange)		
11	42	50	5346				sea anemone		
11	43	0	5346				trap , marker		
11	43	30	5349	56	-180.0	117.1	zoanthid		
11	46	29	5349		-180.0	124.6	close up ,sampling rock with Zoanthid	1	blue box
11	59	17	5349		-183.7	120.0	core of bottom		yellow
12	0	53	5349		-188.0	110.7	core of bottom		White
12	4	5	5348	58	-172.8	128.2	zoanthid		
12	8	5	5347	42	-182.4	186.3	sea anemone-2		
12	8	53	5348	18	-163.9	164.0	zoanthid		
12	9	41	5348				close up		
12	11	49	5348	15	-180.7	170.3	sea anemone-3 (white-2 , orange-1)		
12	27	17	5348		-162.6	159.9	zoanthid	1	
12	29	25	5348	353	-166.8	170.0	sea anemone(white)		
12	32	5	5348	353	-169.2	145.9	sampling a few rocks with zoanthid	1	blue box
12	36	5	5348		-154.6	159.4	left bottom		
12	37		5338	341	-187.3	164.4	oil?		
12	42	29	5017		-140.1	48.2	oil ?		
12	44	37	4951	242	-198.5	95.0	start of the slurp gun (every 1000m)		

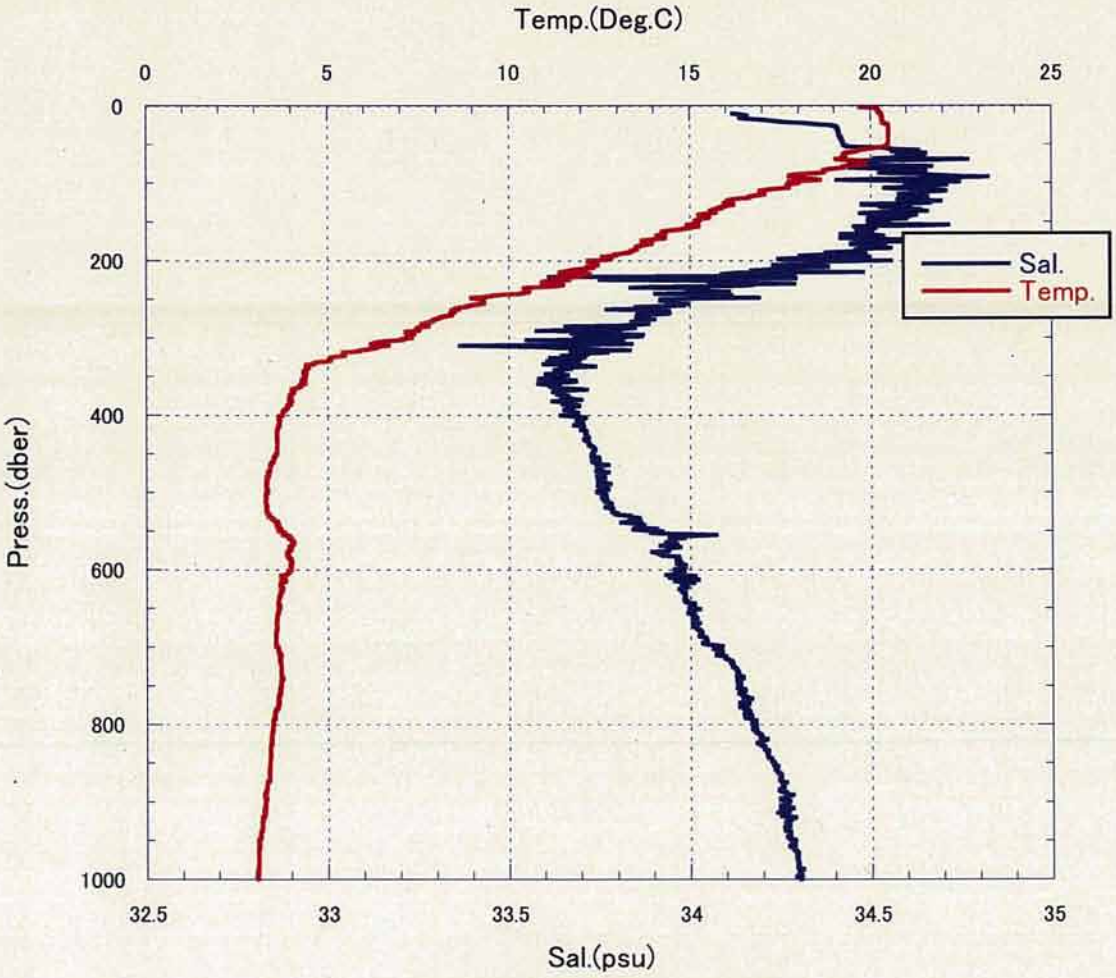


Fig. CTD at 6K Dive#1038

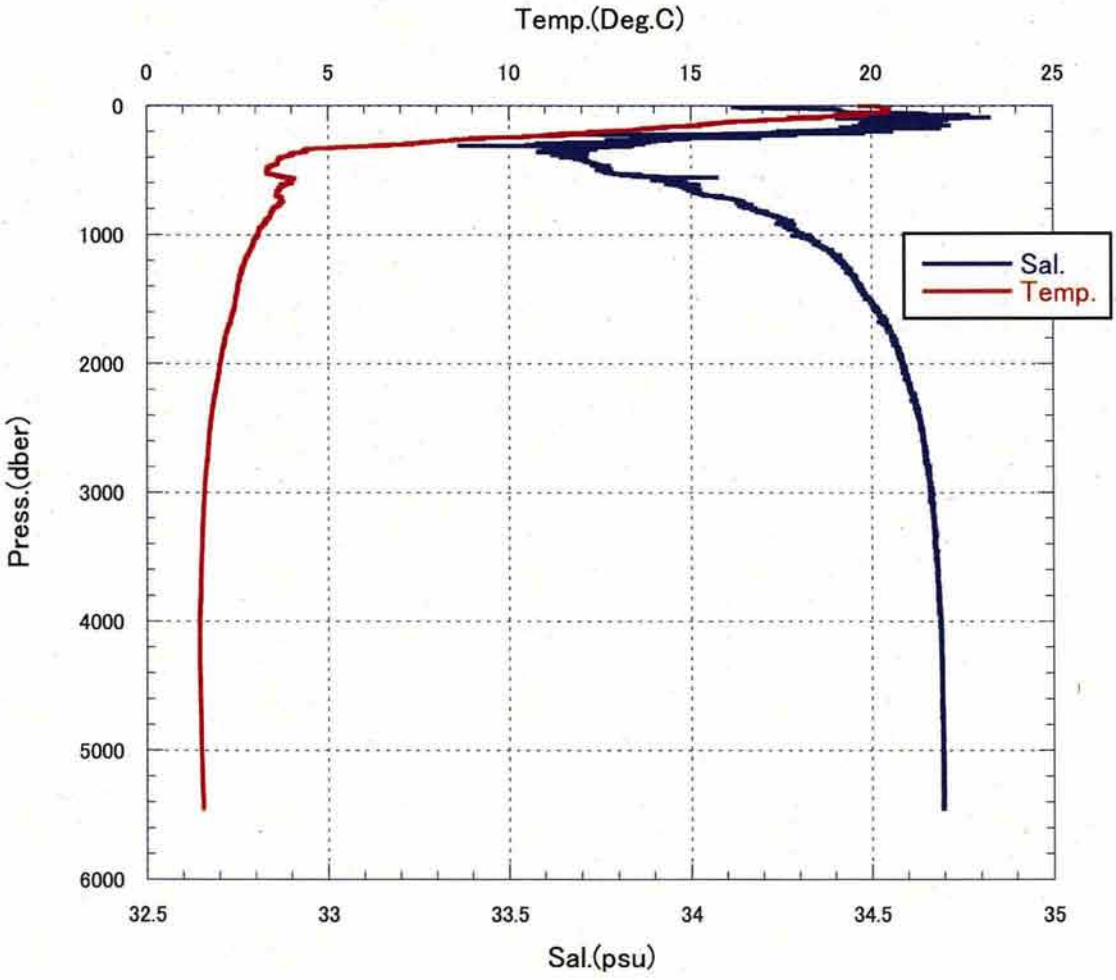


Fig. CTD at 6K Dive#1038

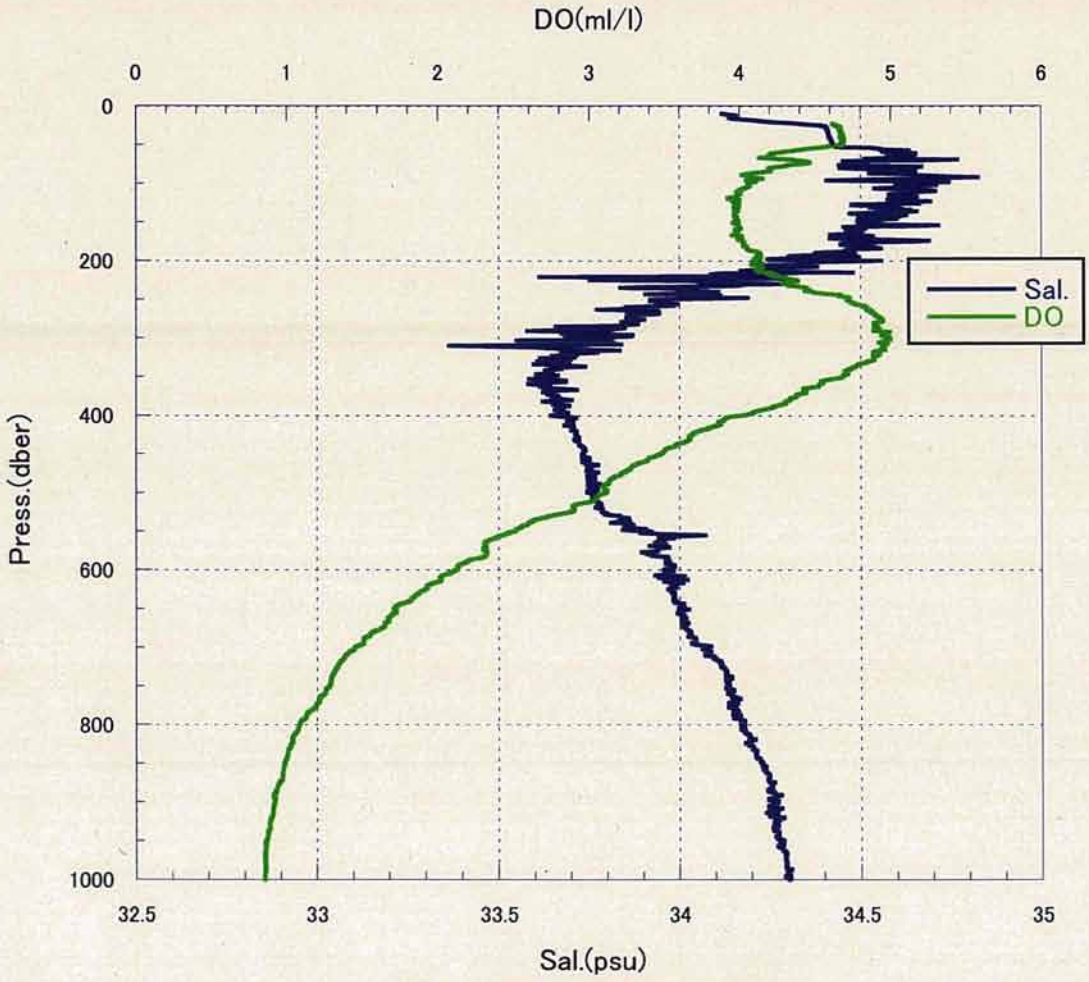


Fig. CTD at 6K Dive#1038b

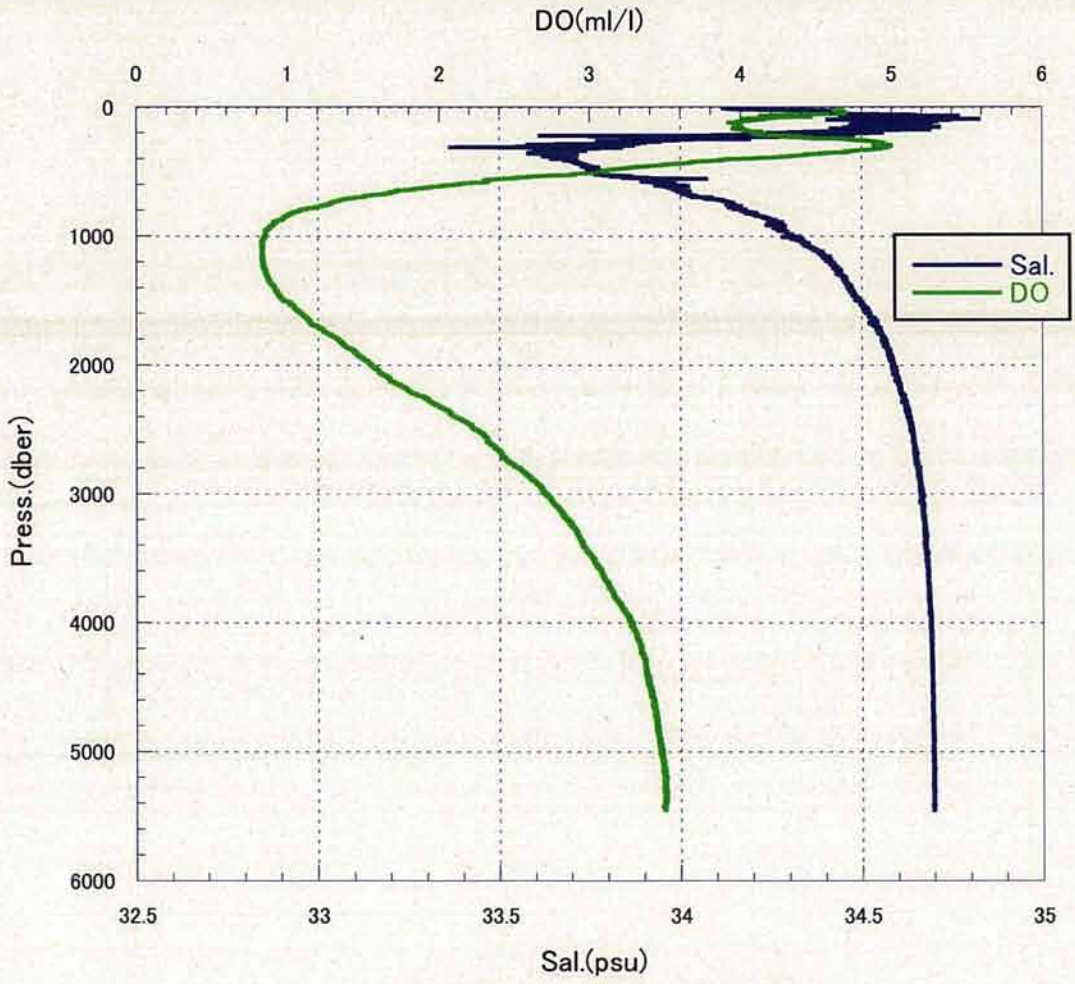
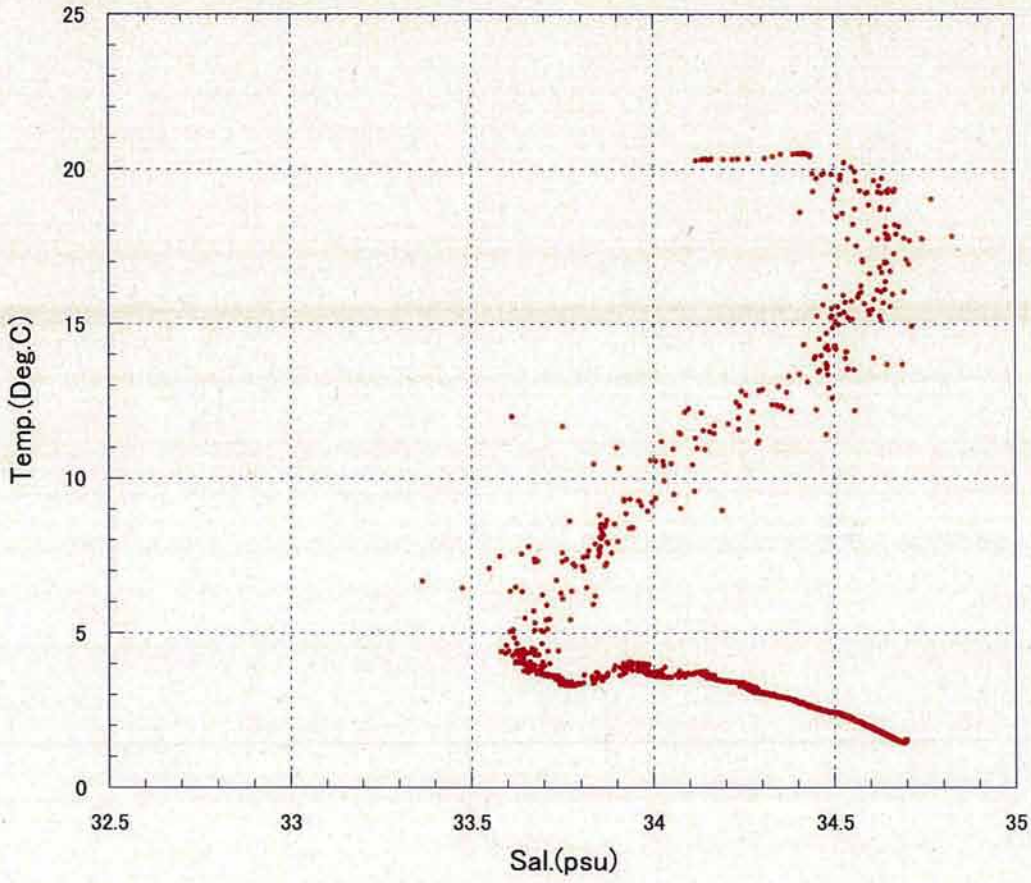


Fig. CTD at 6K Dive#1038b



T-S Dia at 6K Dive#1038

平成 19 年 10 月 22 日

作業予定

１０月２３日（火）

０９：００　潜航開始

＃１０３９ＤＩＶＥ

海域　　：日本海溝　宮古東方陸側斜面

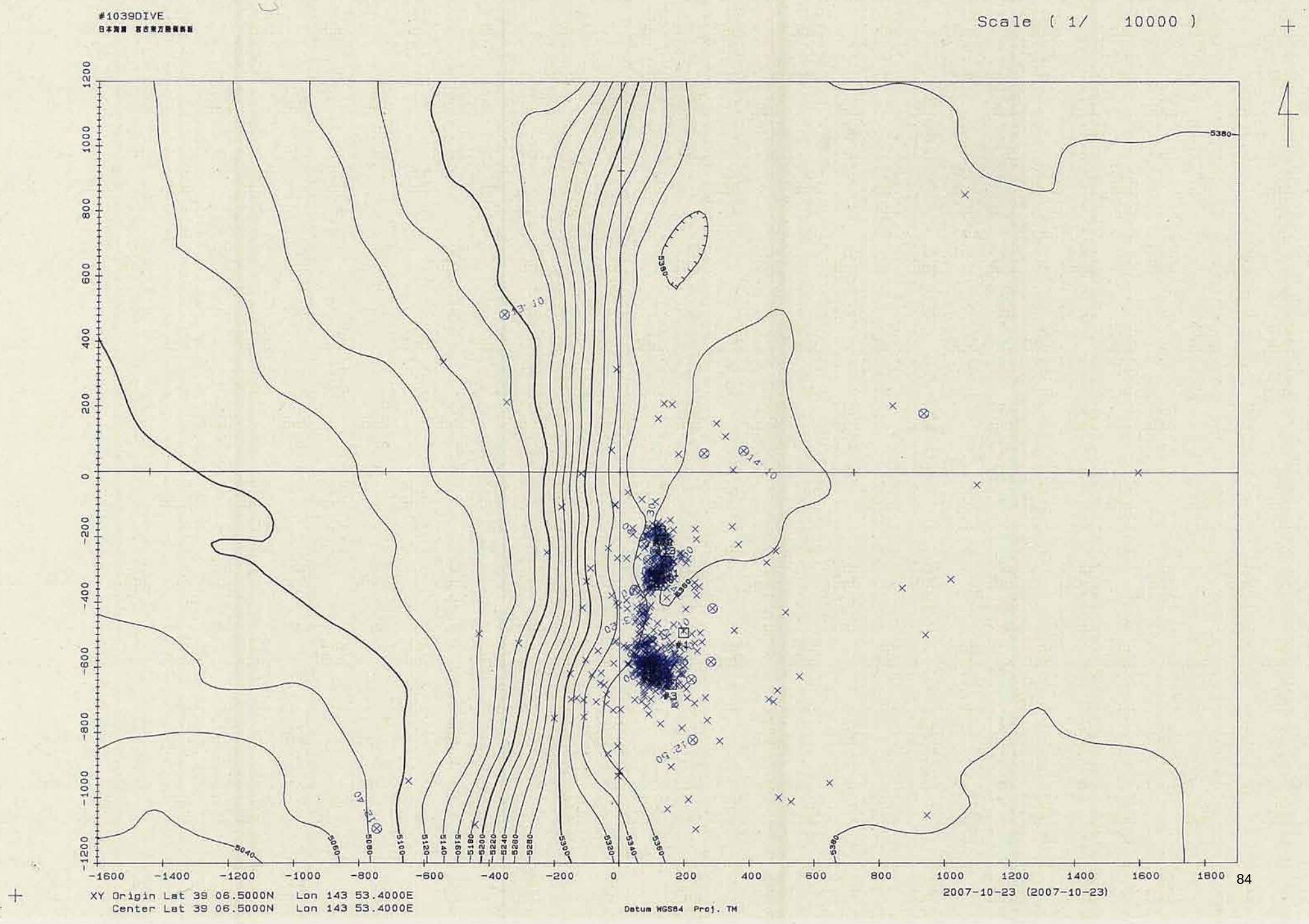
潜航者　：松本、千田、Dhugal Lindsay （海洋研究開発機構）

潜航点　：　３９°０６．２３３０Ｎ
　　１４３°５３．５３６４Ｅ
　　水深　５３５０ｍ

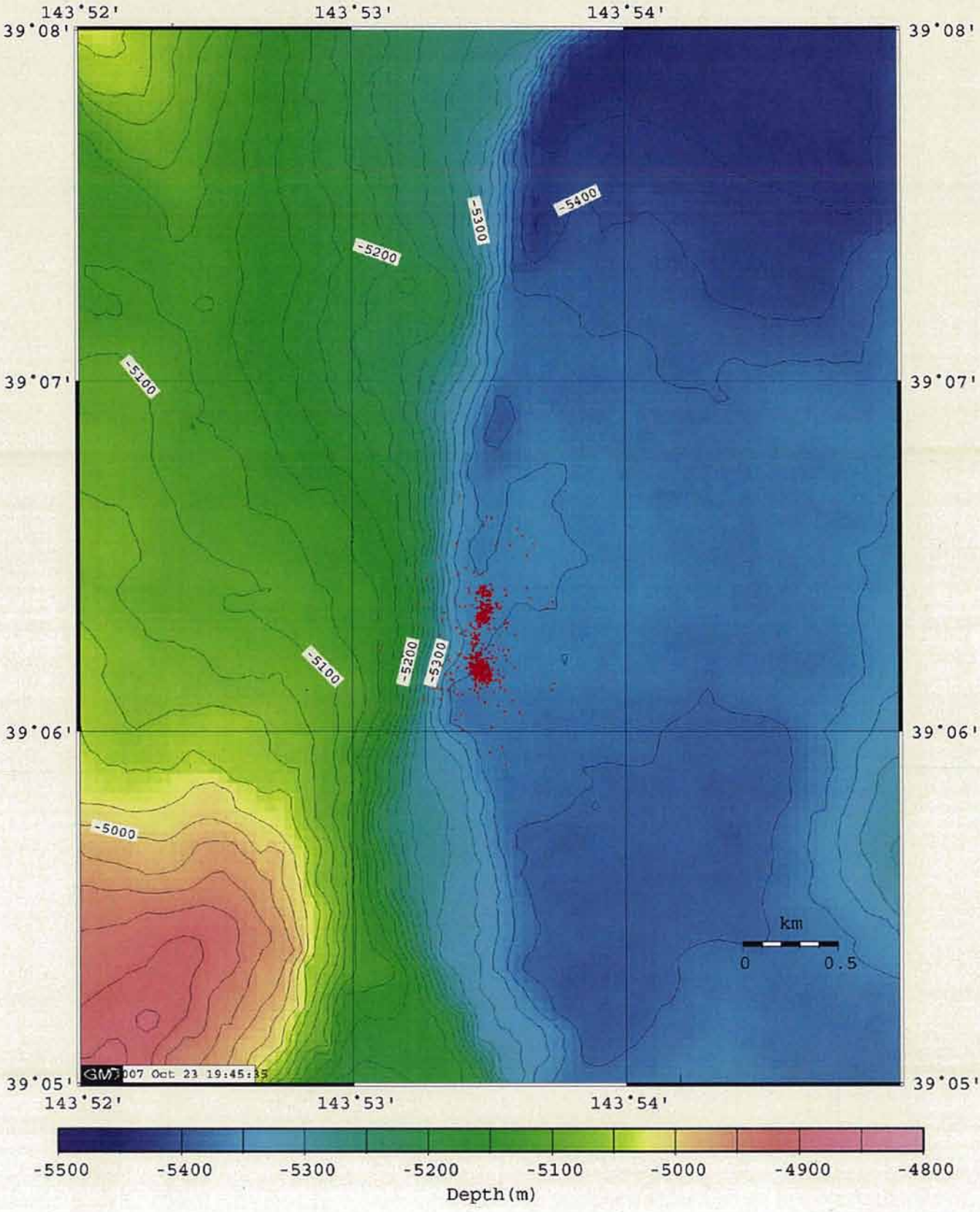
X-Y 原点：　３９°０６．５Ｎ
　　１４３°５３．４Ｅ

１７：００　浮上

〈備考〉
時　刻：ＪＳＴ＋１
測位センサ：Ｄ－ＧＰＳ
測地系：ＷＧＳ－８４
使用受波器：No.１，２受波器


#1039DIVE
Scale (1/ 10000)
XY Origin Lat 39 06.5000N Lon 143 53.4000E
Center Lat 39 06.5000N Lon 143 53.4000E
Datum WGS84 Proj. TM
2007-10-23 (2007-10-23)

6K Dive#1039 Track



#1039DIVE 日本海溝 Dhugal Lindsay D-GPS(WGS-84)SSBL

*** EVENT MARK LIST *** 2007-10-23 16:23:47

ORIGIN (XY<->LATLON CONVERT) LAT 39°06.5000'N LON 143°53.4000'E
XY ORIGIN ((X,Y)=(0,0)) LAT 39°06.5000'N LON 143°53.4000'E

NO.	DAY	TIME	LAT	LON	X	Y
1	2007-10-23	09:00:00	39° 6.2330' N	143° 53.5364' E	-493.9	196.6
	Landing Target					
2	2007-10-23	11:39:00	39° 6.1667' N	143° 53.4944' E	-616.6	136.0
	Landing D=5354m					
3	2007-10-23	11:51:00	39° 6.1476' N	143° 53.5110' E	-651.9	159.9
	Sampling Jellyfish D=5353m					
4	2007-10-23	11:57:00	39° 6.1750' N	143° 53.4643' E	-601.2	92.6
	Sampling Jellyfish D=5350m					
5	2007-10-23	12:05:00	39° 6.1739' N	143° 53.4759' E	-603.3	109.4
	Sampling Jellyfish D=5350m					
6	2007-10-23	12:55:00	39° 6.1847' N	143° 53.4638' E	-583.3	91.9
	Sampling Gatesampler (Ctenophore) D=5358m					
7	2007-10-23	13:06:00	39° 6.1847' N	143° 53.4638' E	-583.3	91.9
	Sampling MBARI (yellow) D=5358m					
8	2007-10-23	13:45:00	39° 6.3288' N	143° 53.4740' E	-316.7	106.6
	Sampling Gatesampler (Ctenophore) D=5349m					
9	2007-10-23	13:53:00	39° 6.3287' N	143° 53.4740' E	-316.9	106.6
	Sampling MBARI(white) D=5349m					
10	2007-10-23	14:02:00	39° 6.3404' N	143° 53.4897' E	-295.2	129.2
	Finding Calyptogena colony D=5347m					
11	2007-10-23	14:12:00	39° 6.3519' N	143° 53.4990' E	-273.9	142.6
	Sampling MBARI(green) D=5348m					
12	2007-10-23	14:28:00	39° 6.4027' N	143° 53.4864' E	-180.0	124.5
	Sampling Animals, Retrieve trap D=5349m					
13	2007-10-23	14:37:00	39° 6.3887' N	143° 53.4920' E	-205.9	132.6
	Left Bottom D=5349m					
14						
15						
16						
17						
18						
19						
20						

SHINKAI 6500 Dive #1039

Observer: D. Lindsay
Recorded by M. Miyuki
Pilot : K. Matsumoto
Co Pilot : Y. Chida

2007/10/23

page: 1/1

Area: East of Miyako Knolls, Japan Trench

Time(LCL) hh|mm|ss			Dep. (m)	Head (Deg)	Pos. Xm	Pos. Ym	Observation	Sample	Remarks
9	15	26					surface		
9	17	10					launching		
11	40	15	5354	316	-620.0	110.0	descending to bottom		
11	52	43	5353	324	-650.0	150.0	jellyfish (Kappa-crage?)	1	canister 1
11	57	41	5355	12	-637.5	122.5	animal with 2 long tentacles (jellyfish?)		
11	58	46	5354	18	-729.2	110.1	jellyfish	1	canister 2
12	3	16	5354	276	-647.3	104.9	jellyfish	1	canister 3
12	13	27	5357	359	-540.0	49.0	sea cucumber		
12	15	37	5358	344	-577.8	46.1	observation on jellyfish (Kushi-kurage) for 20 minutes		
12	42	45	5358	355	-518.8	48.7	sea cucumbers		
12	57	10	5358	359	-518.7	45.8	cath the jellyfish (Kushi-kurage)	1	gate sampler yellow
12	59	29	5358	6	-566.7	87.7	jellyfish		
13	2	21	5358	295	-576.6	135.7	sea urchin		
13	4	40	5358	334	-565.5	93.8	jellyfish ?		
13	6	25	5358	345	-683.0	40.6	get core sample and move to north	1	core samoler yellow
13	18	14	5356	356	-531.7	58.8	sterfish		
13	35	32	5349	350	-699.1	114.9	sea anenone		
13	39	12	5349	351	-319.5	108.6	observation on jellyfish (kushi-kurage) and shrimp		
13	45	11	5349	350	-536.9	101.1	catch the jellyfish (kushi-kurage)	1	gate sampler black
13	53	41	5349	350	-327.8	168.8	get core sample	1	core sampler white
13	53	22	5349	8	-311.1	88.1	sea anemone	1	
13	57	53	5348	18	-421.3	237.2	a kind of cod fish (Sokodara)		
14	2	42	5348	29	-276.0	106.9	sea anemones		
14	3	24	5348	21	-300.0	130.0	colony of calyptogenas (Naginata sirouri-gai)		
14	10	24	4348	346	-260.0	130.0	get core samlpe and calyptogena and move to marker No.20	1	core sampler green
14	21	45	5349	353	-185.0	150.9	descending to bottom and recovery marker trap	1	canister 4
14	23	15	5349	351	-232.9	141.0	sea cucumbers		
14	37	25	5349	351	-195.0	81.7	off bottom		

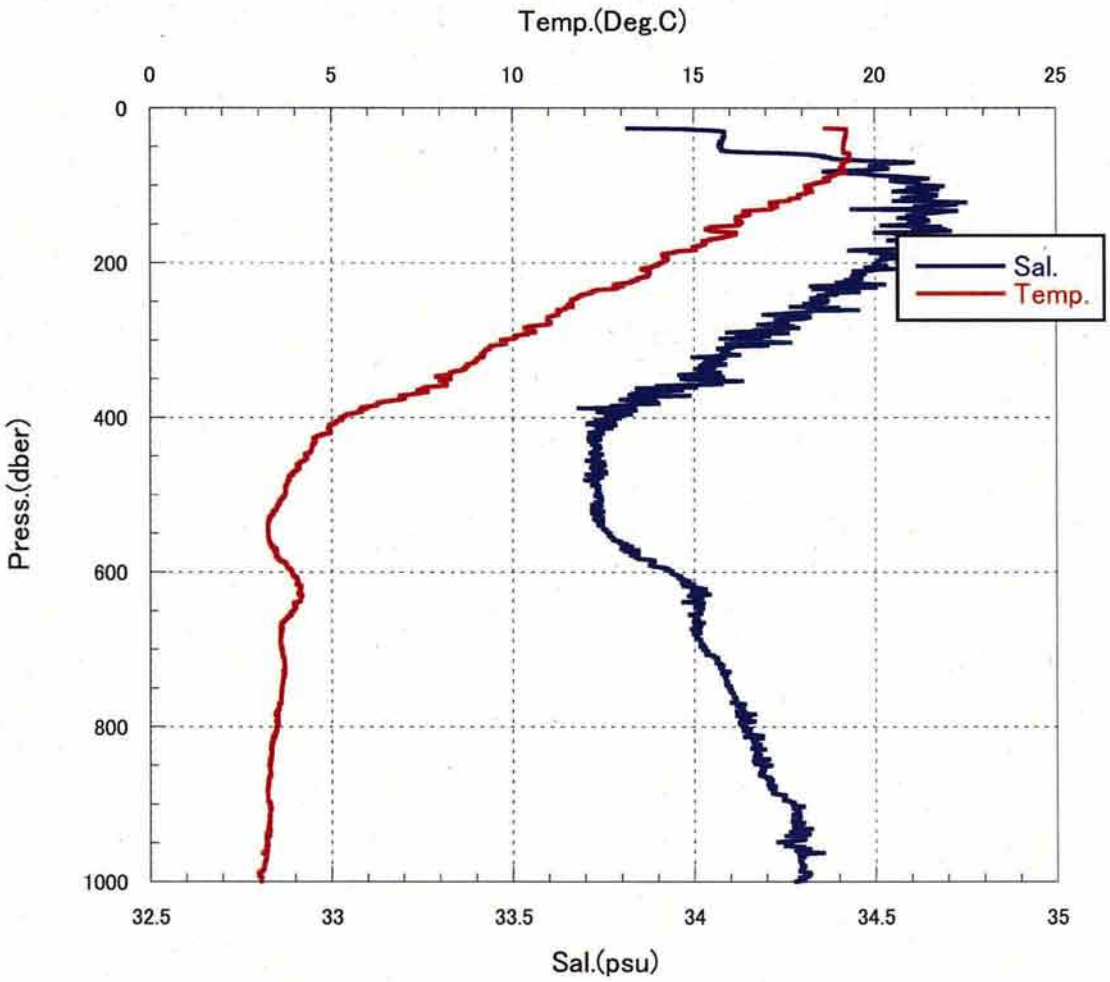


Fig. CTD at 6K Dive#1039

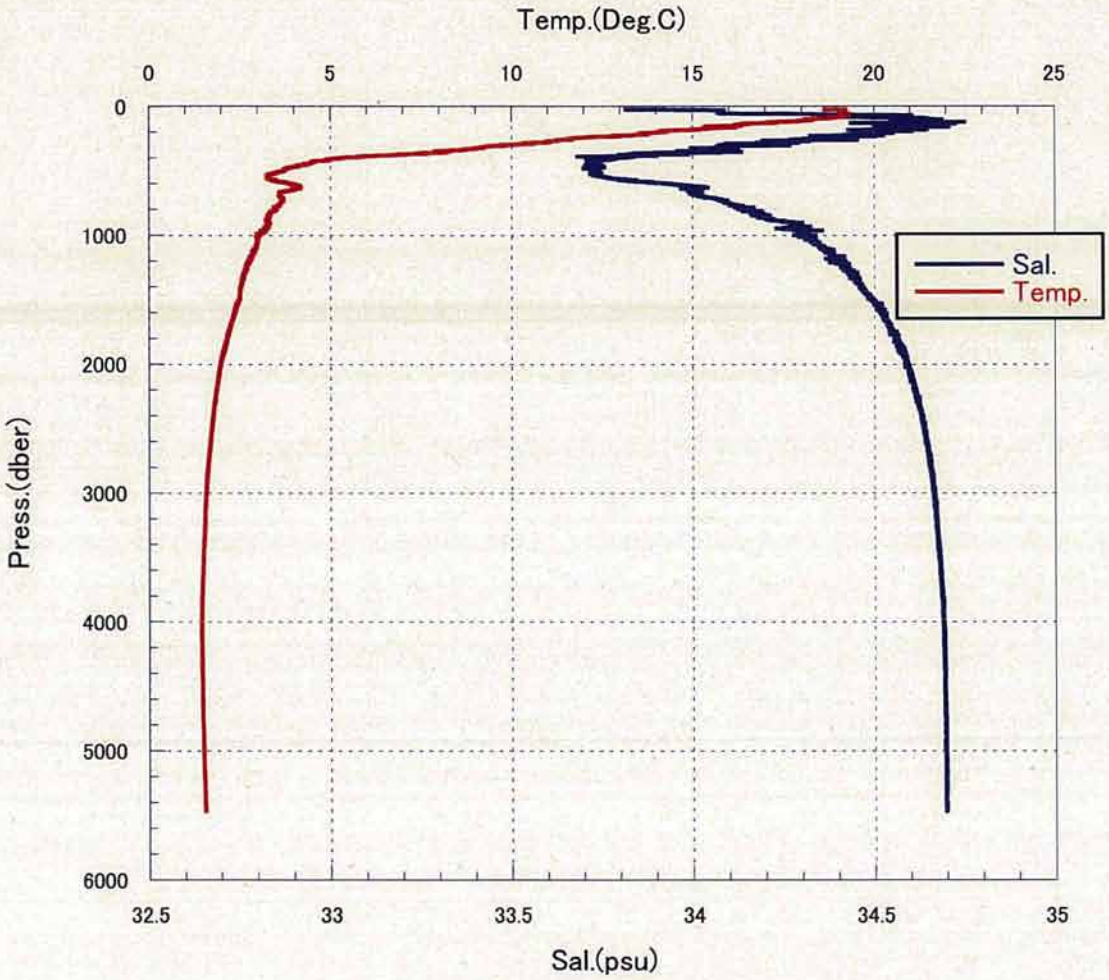


Fig. CTD at 6K Dive#1039

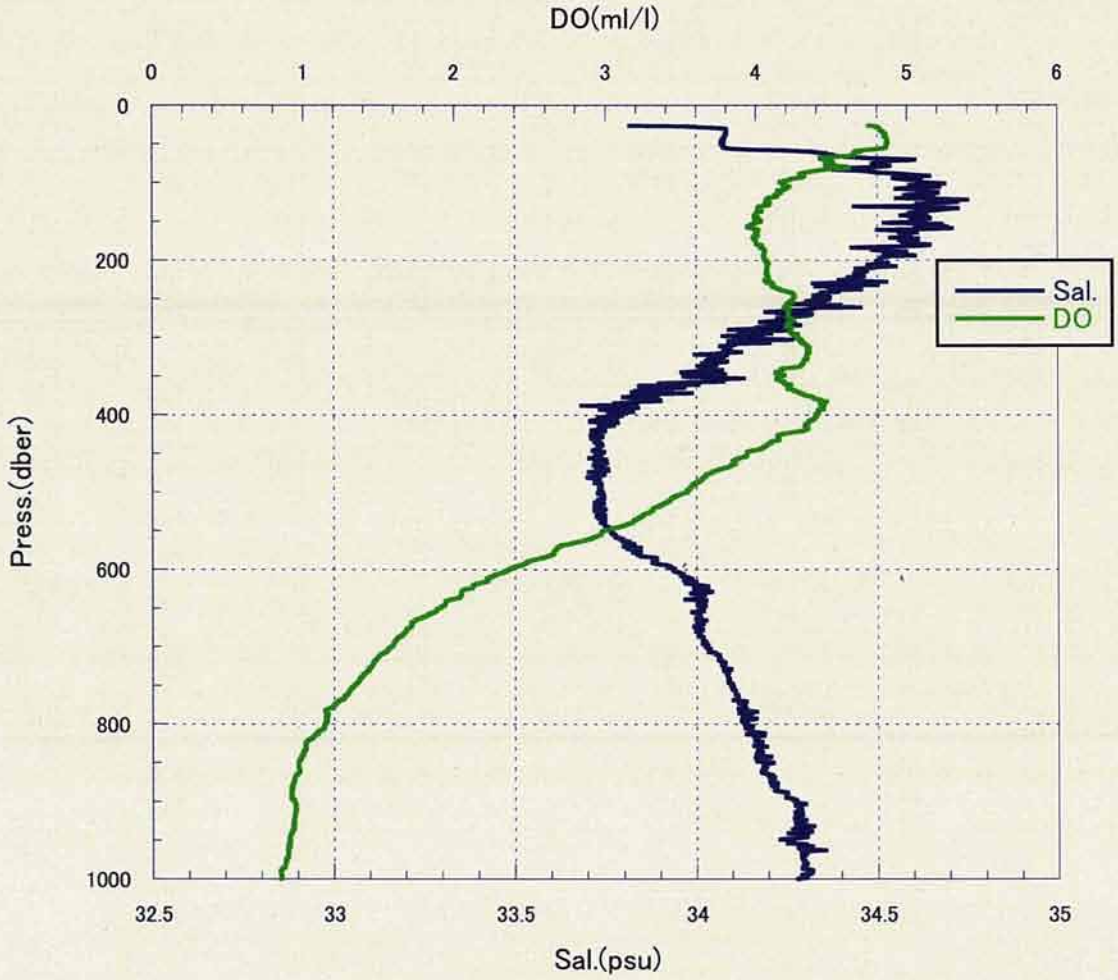


Fig. CTD at 6K Dive#1039b

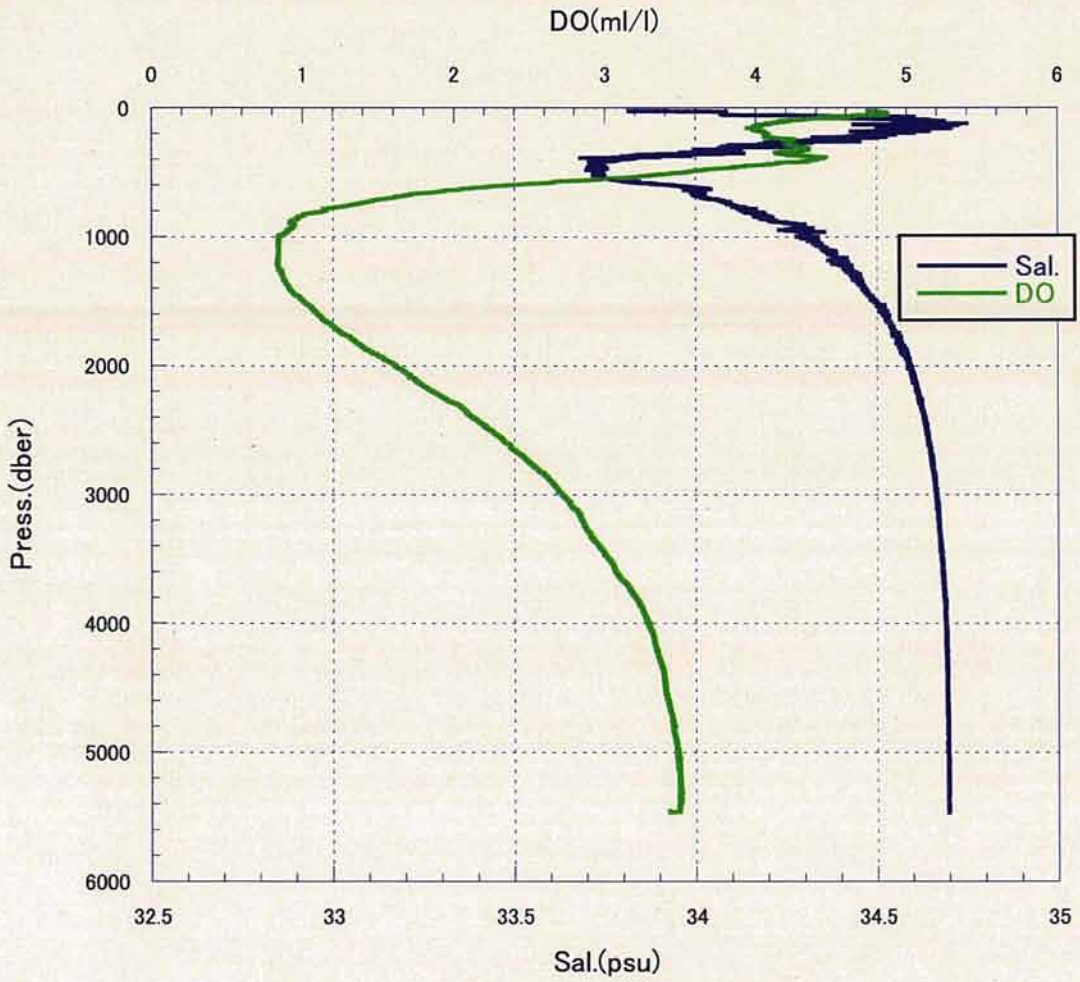
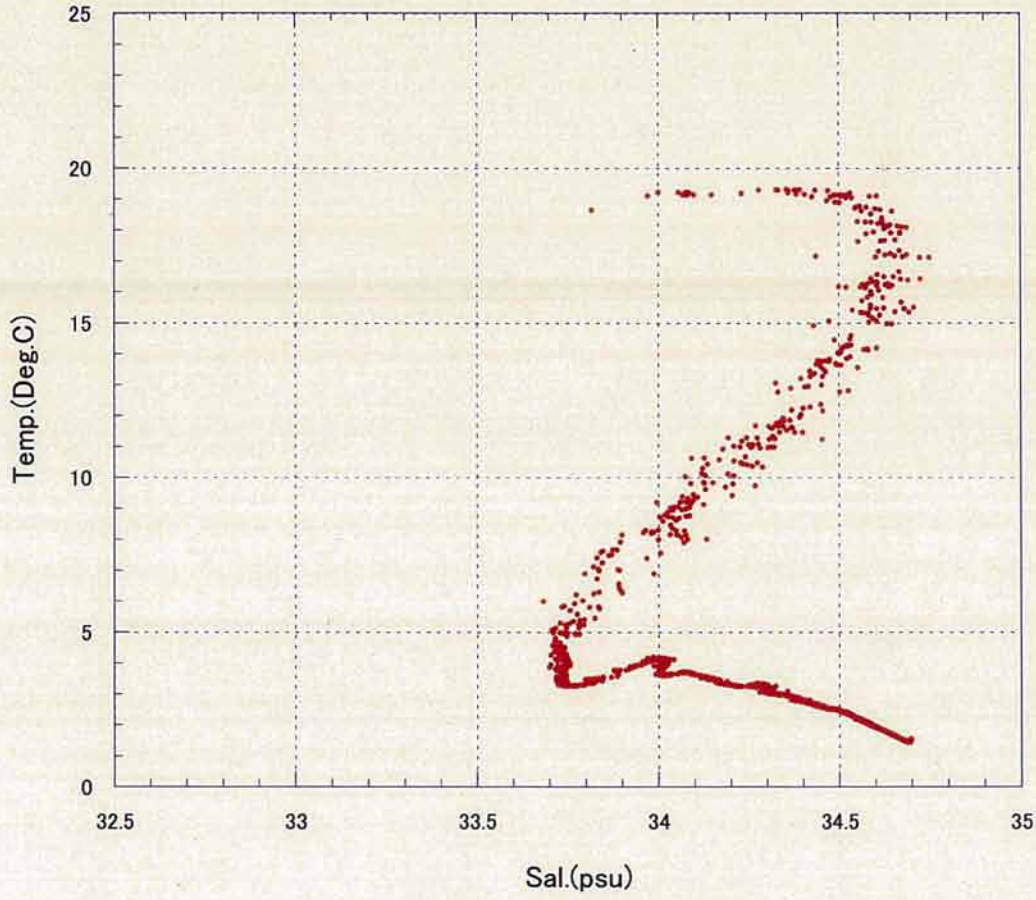


Fig. CTD at 6K Dive#1039b



T-S Dia at 6K Dive#1039

平成 19 年 10 月 23 日

作業予定

１０月２４日（水）

０９：００　潜航開始

＃１０４０ＤＩＶＥ

海域　　：日本海溝　宮古東方海側斜面

潜航者　：佐々木、齋藤、阿部　なつ江　（海洋研究開発機構）

潜航点　：　３９°２３．７Ｎ
　　１４４°２６．３Ｅ
　　水深　６５００ｍ

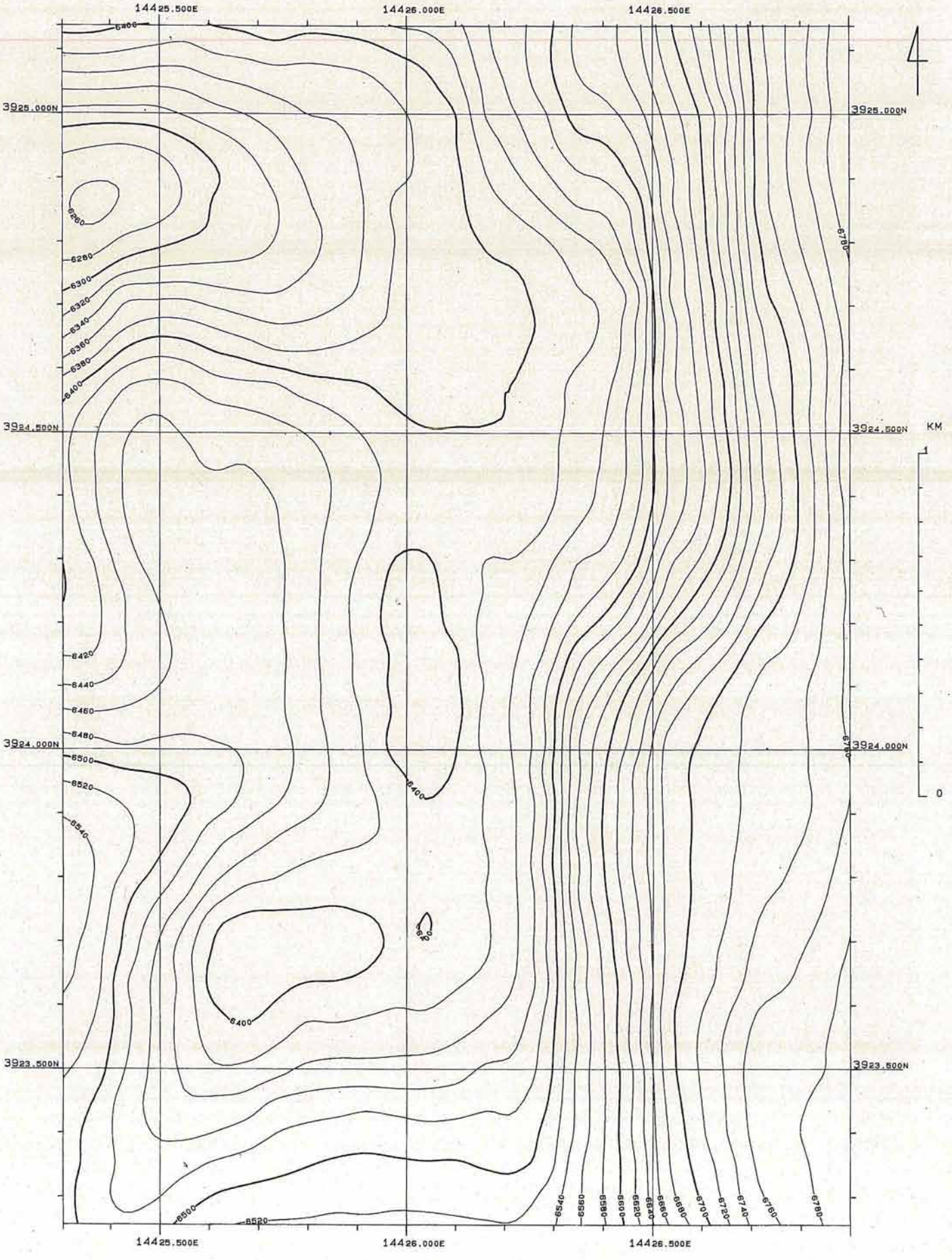
X-Y 原点：　３９°２４．５Ｎ
　　１４４°２５．５Ｅ

１６：３０　浮上

〈備考〉
時　刻：ＪＳＴ＋１
測位センサ：Ｄ－ＧＰＳ
測地系：ＷＧＳ－８４
使用受波器：No.１，２受波器

YK07-15 #1040 DIVE Date 2007/10/23

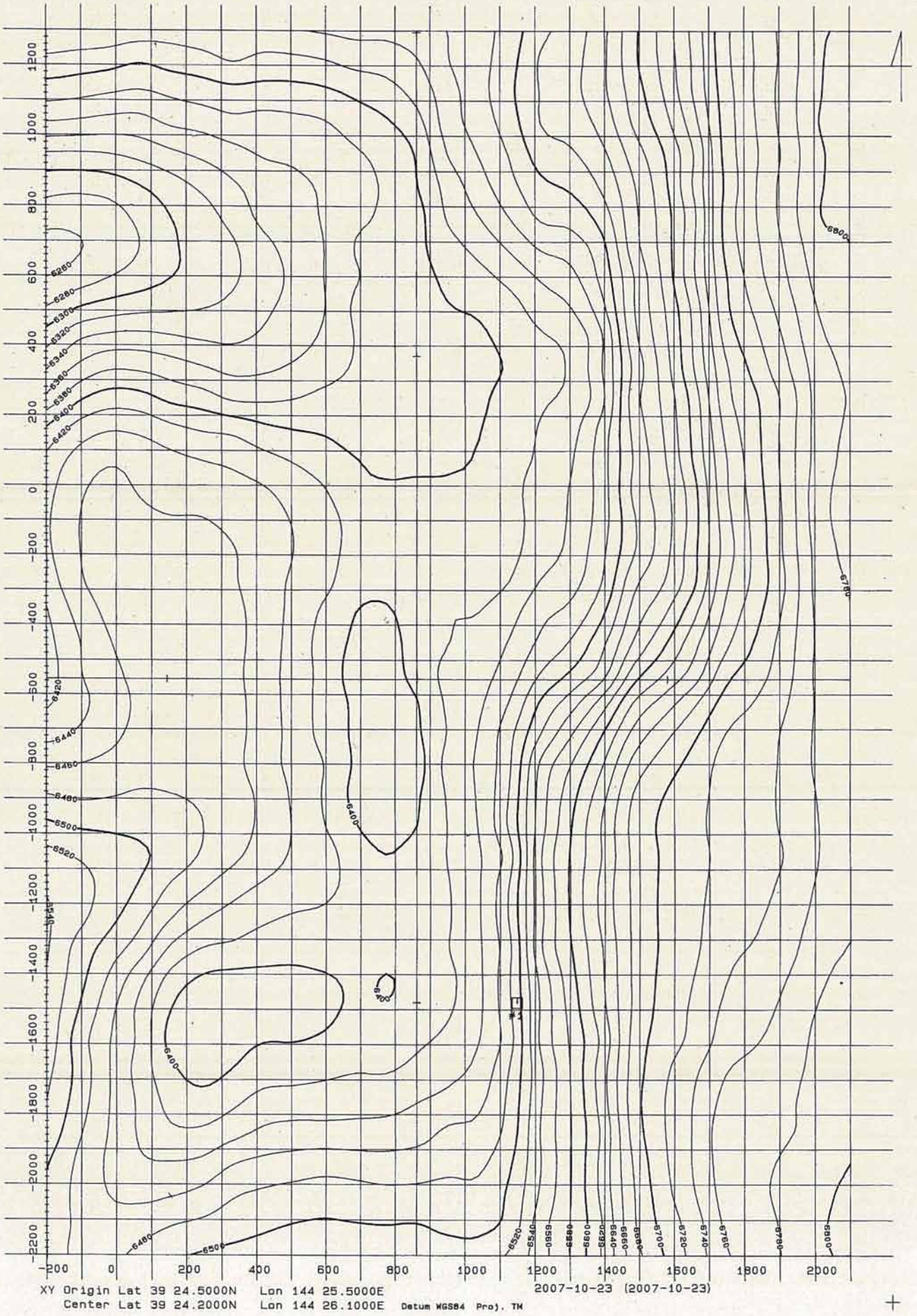
Japan Trench Miyako EastWard Scale (1/ 10000)



<LL> 39 23.2N 144 25.3E <UR> 39 25.1N 144 26.8E Datum WGS84 Proj. MER

#1040DIVE

Scale (1/ 10000)



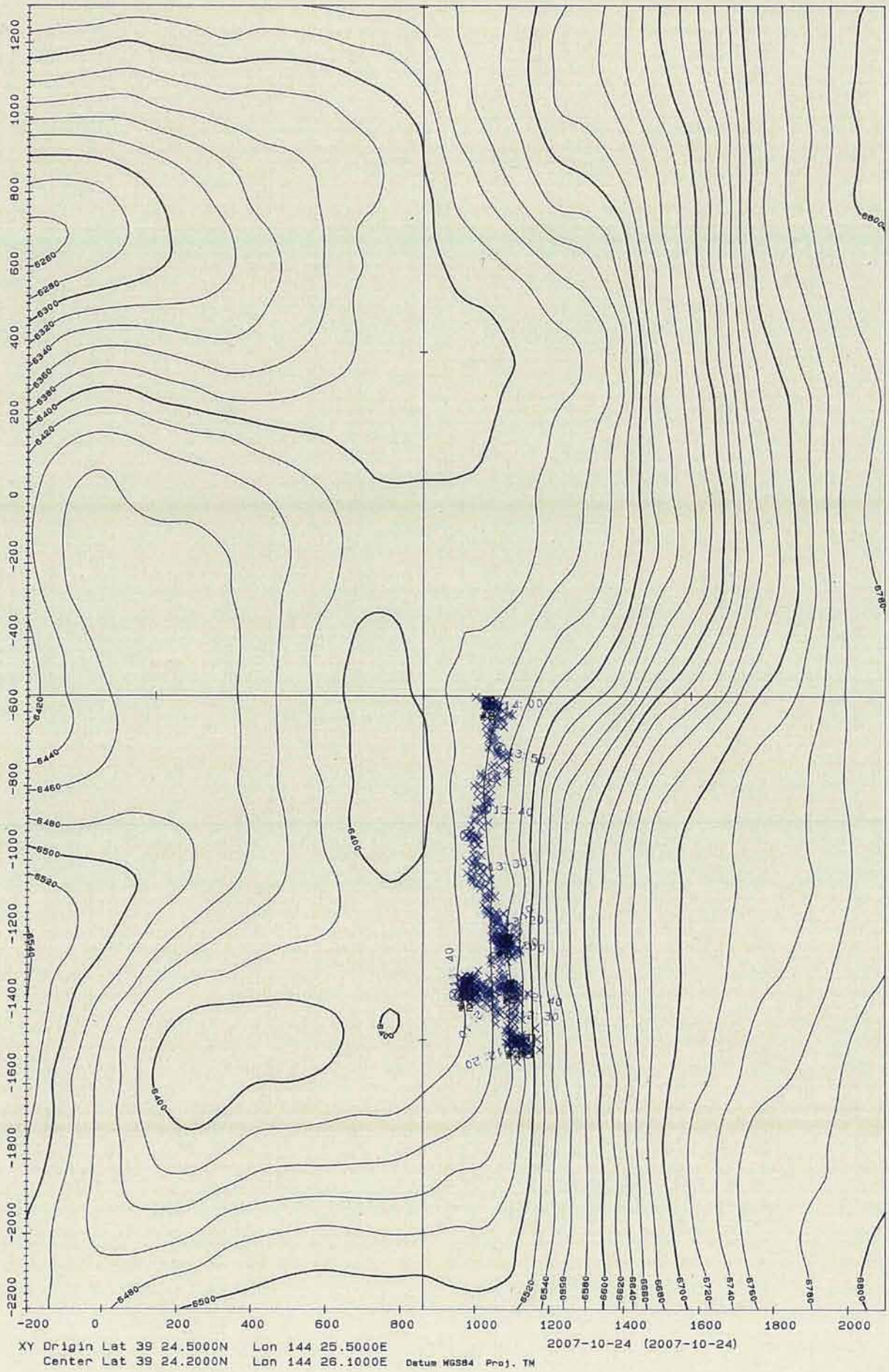
XY Origin Lat 39 24.5000N Lon 144 25.5000E

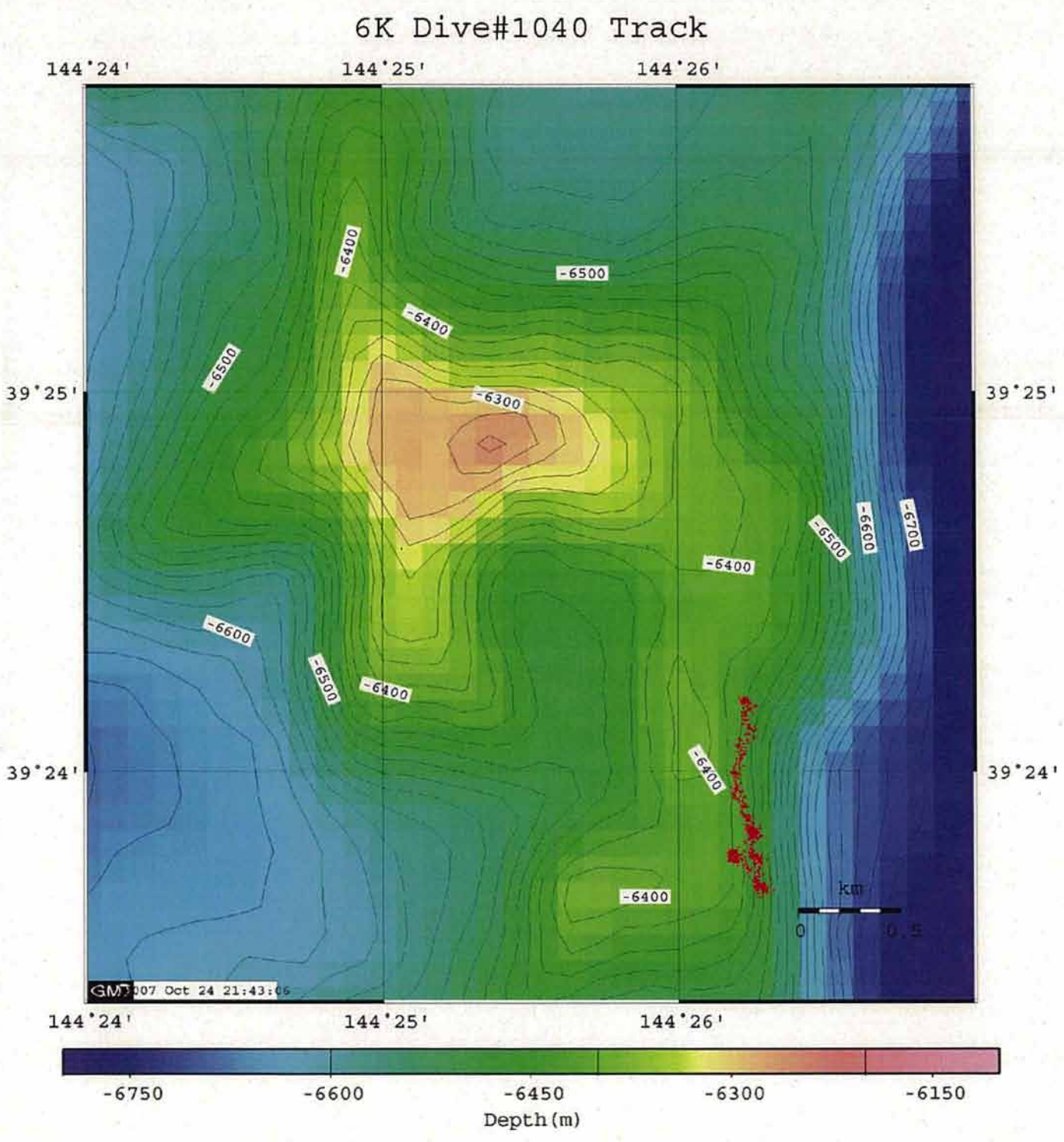
Center Lat 39 24.2000N Lon 144 26.1000E Datum WGS84 Proj. TM

2007-10-23 (2007-10-23)

#1040DIVE

Scale (1/ 10000)




6K Dive#1040 Track
144°24'
144°25'
144°26'
39°25'
39°24'
-6400
-6500
-6400
-6500
-6300
-6500
-6600
-6700
-6400
-6600
-6500
-6400
-6400
-6400
km
0
0.5
GMT 2007 Oct 24 21:43:06
-6750
-6600
-6450
-6300
-6150
Depth(m)

#1040DIVE 日本海溝　阿部　なつ江　D-GPS(WGS-84)SSBL

*** EVENT MARK LIST ***　　2007-10-24 19:13:01

ORIGIN (XY<->LATLON CONVERT)　LAT 39°24.5000'N　LON 144°25.5000'E
XY ORIGIN ((X,Y)=(0,0))　LAT 39°24.5000'N　LON 144°25.5000'E

NO.	DAY	TIME	LAT	LON	X	Y
1	2007-10-24	09:00:00	39° 23.7000' N	144° 26.3000' E	-1480.1	1148.2
	Landing Target					
2	2007-10-24	11:42:00	39° 23.7664' N	144° 26.1828' E	-1357.3	980.0
	Landing D=6379m					
3	2007-10-24	11:59:00	39° 23.7826' N	144° 26.1823' E	-1327.3	979.2
	Sampling 2 Rocks D=6383m					
4	2007-10-24	12:22:00	39° 23.6976' N	144° 26.2720' E	-1484.5	1108.0
	Sampling Rock, MBARI(white) D=6448m					
5	2007-10-24	12:41:00	39° 23.7779' N	144° 26.2664' E	-1336.0	1099.9
	Sampling MBARI(green) D=6429m					
6	2007-10-24	13:07:00	39° 23.8439' N	144° 26.2539' E	-1213.9	1082.0
	Sampling 2 Rocks D=6427m					
7	2007-10-24	14:03:00	39° 24.1894' N	144° 26.2223' E	-574.6	1036.6
	Sampling MBARI(yellow) D=6441m					
8	2007-10-24	14:06:00	39° 24.1894' N	144° 26.2222' E	-574.6	1036.5
	Left Bottom D=6440m					
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

SHINKAI 6500 Dive #1040

Observer: N. Abe
Recorded by A. Takahashi
Pilot : Sasaki
Co Pilot : Saitou

2007/10/24

page: 1/1

Area: Kaiko Knolls, Japan Trench

Time(LCL) hh mm ss			Dep. (m)	Head (Deg)	Pos. Xm	Pos. Ym	Observation	Sample	Remarks
9	13	21					surface		
9	14	28					launching		
11	11	31	5686	174	-1286.0	1066.0	set head angle to 180, start moving		
11	14	21			-1350.0	1070.0	stop moving, descending to bottom		
11	30	58	-6331	257	-1329.0	1046.0	trim balanced, descending to bottom		
11	42	41	-6379	14	-1350.0	980.0	on bottom, muddy floor		
11	43	34	-6379	14	-1351.0	991.0	shinkai stopped, sampling attempted, sub-angular~round shaped blocks visible against muddy floor		
11	59	12	-6382	6	-1292.0	1009.0	samples recovered, set head angle to 130, start moving	Site 1-A, B	
12	4	28	-6386	129	-1340.0	1010.0	still flying to southeast		
12	9	35	-6422	129	-1550.0	1100.0	still flying to southeast		
12	12	56	-6451	256	-1516.0	1123.0	shinkai stopped, taking push core (white), sampling attempted		
12	23	21	-6450	256	-1480.0	1110.0	samples recovered, start flying to north	PC01(white) Site 2-A, B, C	box 4
12	26	43	-6441	346	-1472.0	1138.0	rubbly floor		
12	29	32	-6436	0	-1460.0	1100.0	still flying to north, alternate blocky and rubbly floor		
12	33	10	-6432	330	-1360.0	1120.0	still flying to north, muddy floor		
12	35	44	-6431	329	-1347.0	1112.0	shinkai stopped, sampling attempted, taking push core (green)		
12	42	14	-6429	323	-1340.0	1100.0	sample recovered	PC02(green)	
12	45	47	-6426	356	-1336.0	1065.0	start moving, set head angle to 0, muddy floor		
12	52	17	-6426	323	-1240.0	1066.0	rubbly floor, fragments of lava?		
12	56	0	-6427	265	-1209.0	1071.0	sampling attempted		
13	8	22	-6427	259	-1210.0	1080.0	samples recovered	Site 3-A, B	
13	11	53	-6424	347	-1204.0	1045.0	start moving, set head angle to 0, rubbly floor		
13	15	30	-6419	3	-1170.0	1080.0	still flying to north, rubbly floor		
13	21	32	-6408	5	-1148.0	1033.0	still flying to north, some blocks against muddy floor		
13	25	14	-6400	311	-1090.0	1040.0	still flying to north, muddy floor		
13	33	35	-6400	2	-940.0	980.0	set head angle to 30		
13	36	45	-6404	30	-917.0	987.0	lobate lava flow?		
13	42	23	-6433	354	-830.0	1030.0	set head angle to 0, muddy floor		
13	45	39	-6438	44	-780.0	1030.0	still flying to north, muddy floor		
13	53	56	-6442	19	-650.0	1047.0	lava flow? outcrop observed along slope		
14	0	22	-6440	345	-566.0	1015.0	shinkai stopped, taking push core		
14	3	49	-6441	345	-570	1040	sample recovered	PC03(yellow)	
14	6	22	-6440	329	-565.0	1029.0	off bottom		

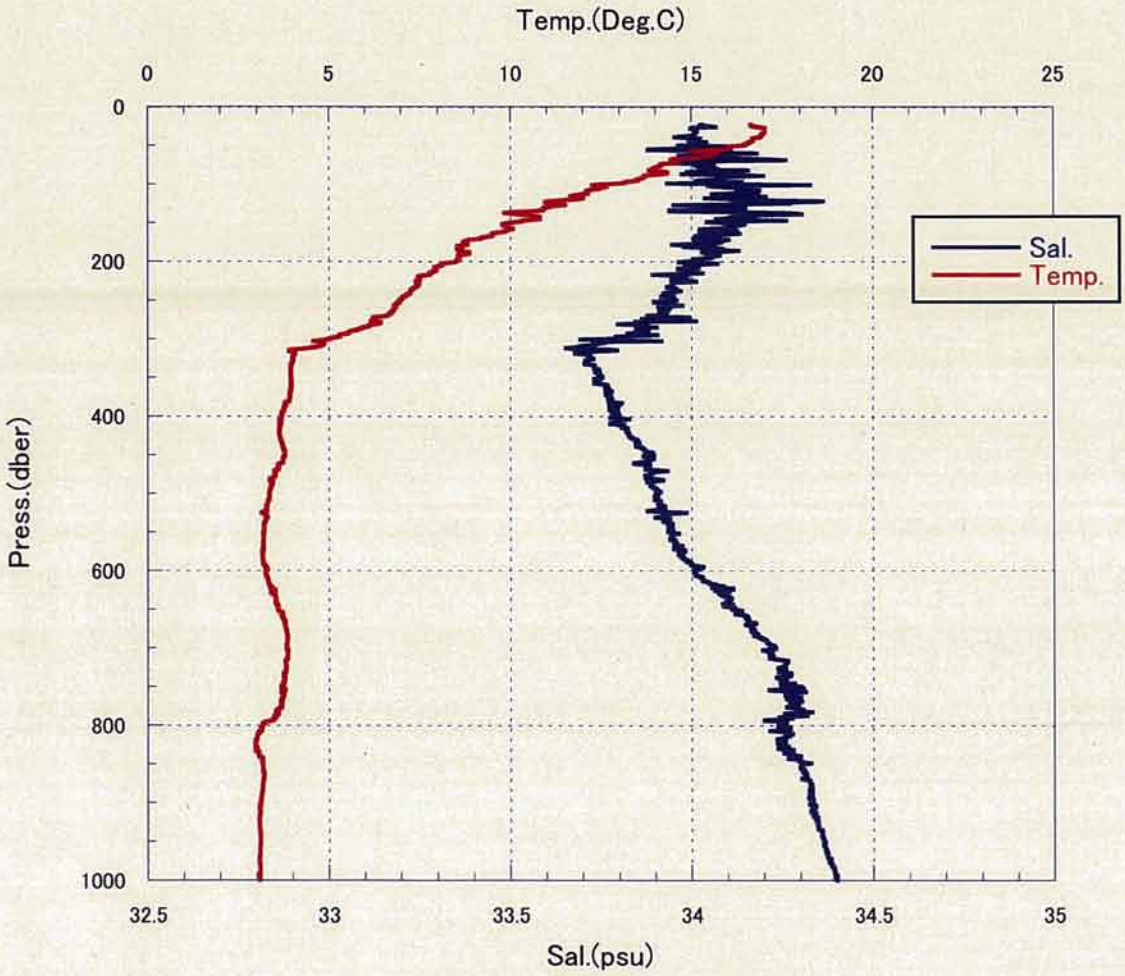


Fig. CTD at 6K Dive#1040

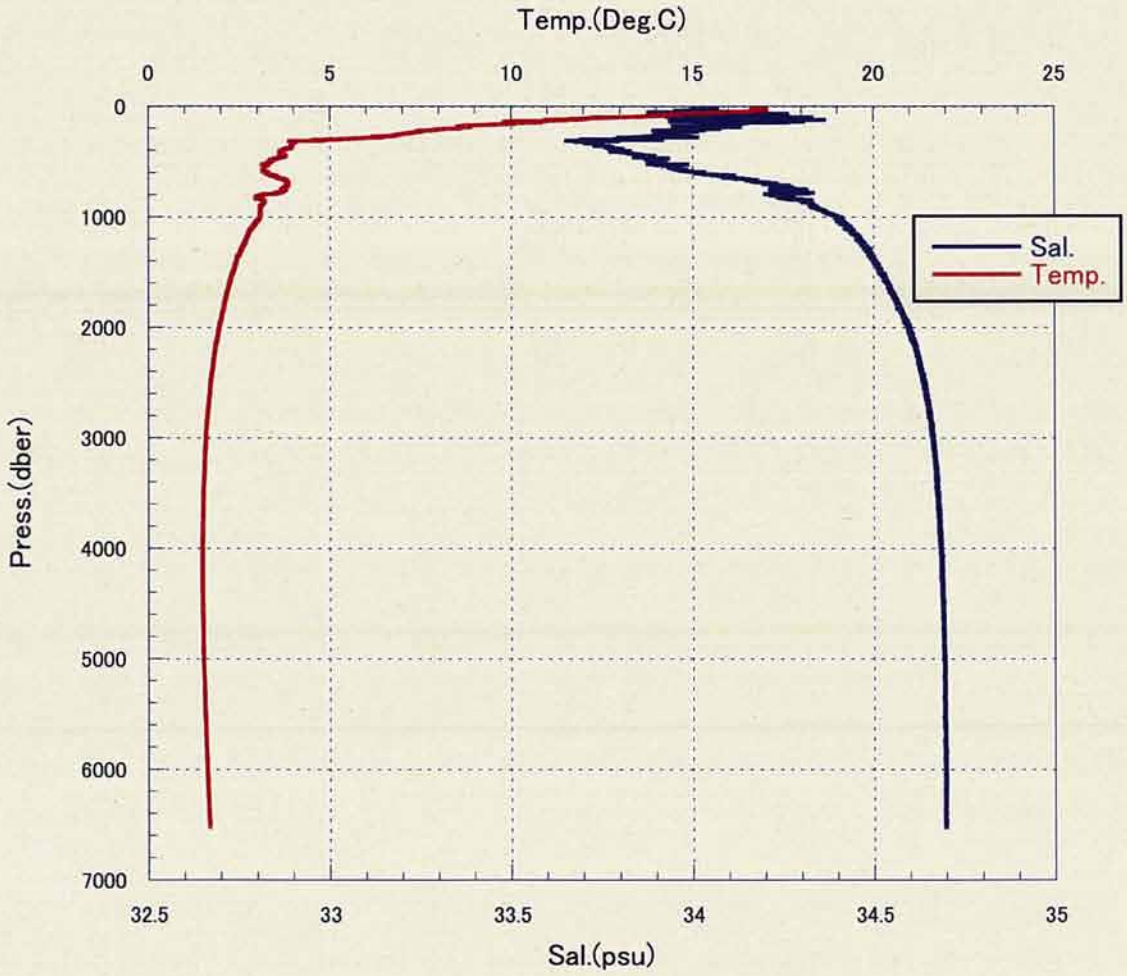


Fig. CTD at 6K Dive#1040

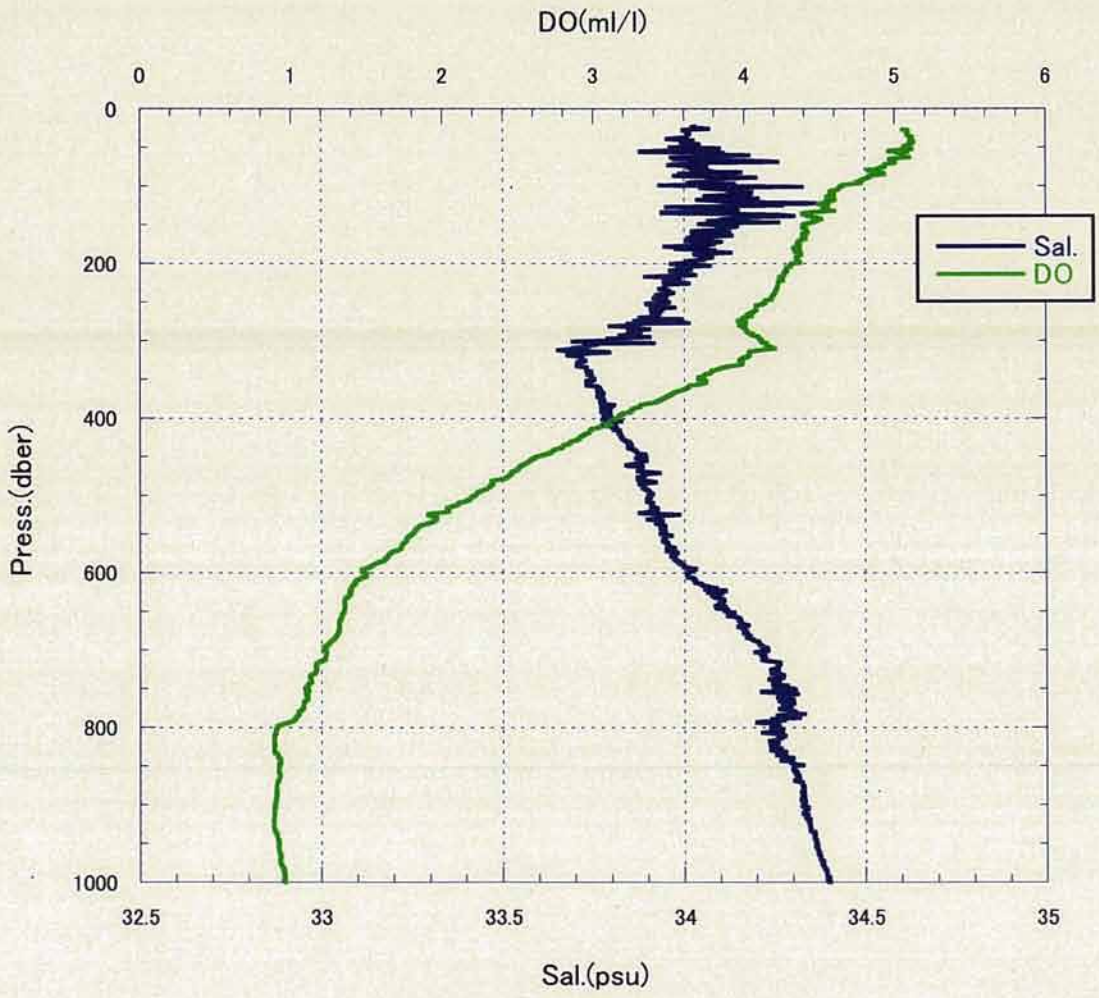


Fig. CTD at 6K Dive#1040b

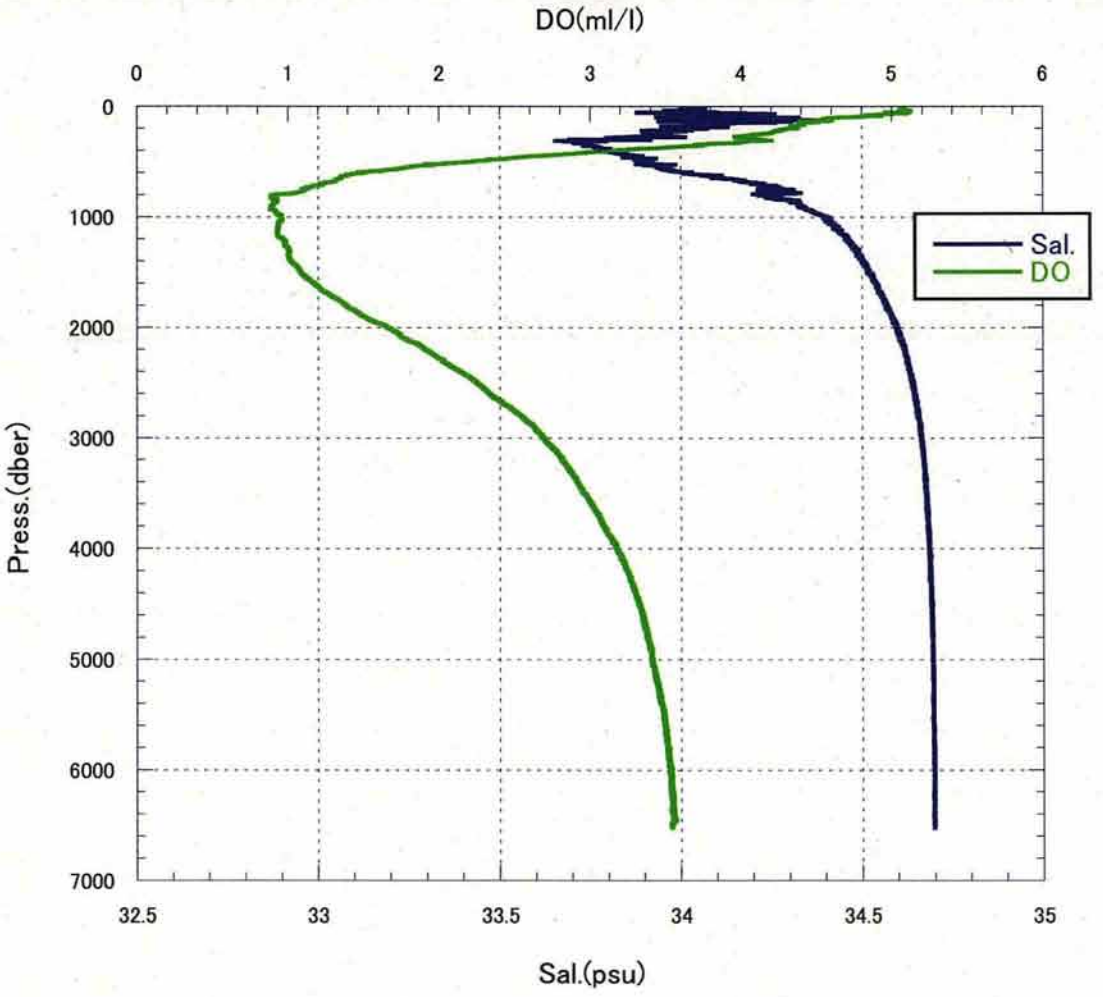


Fig. CTD at 6K Dive#1040b

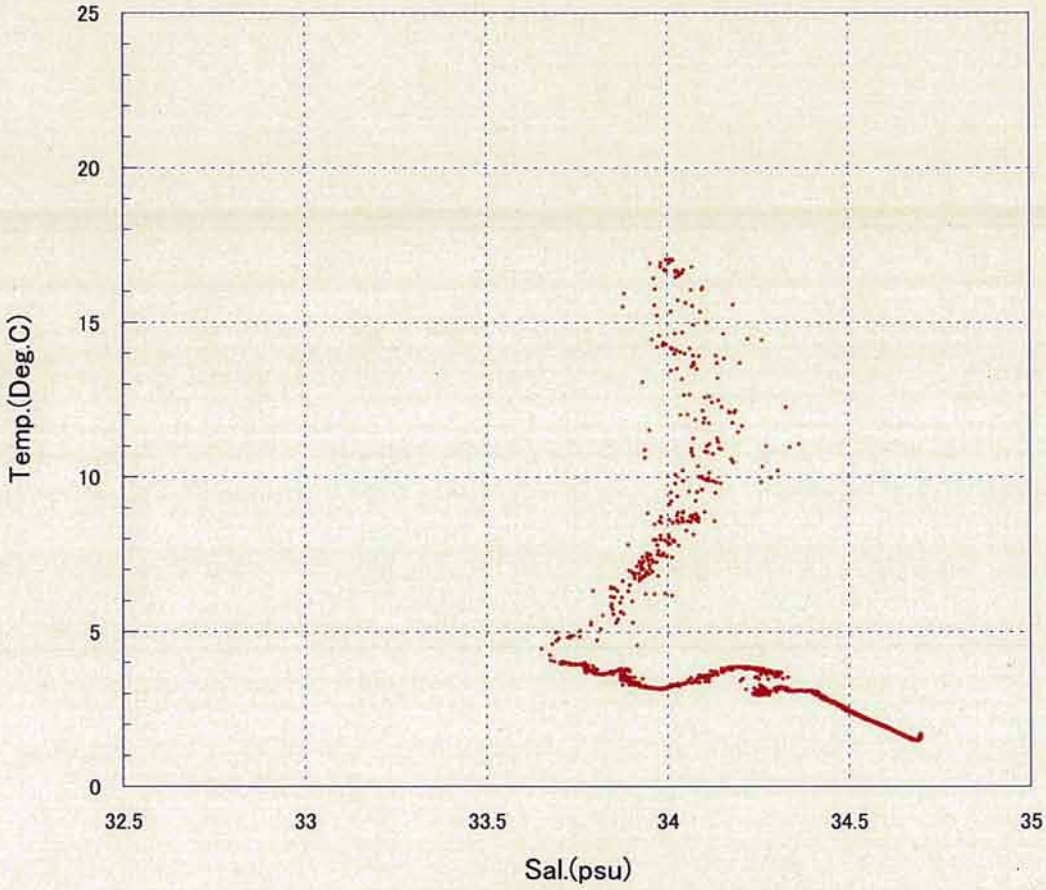
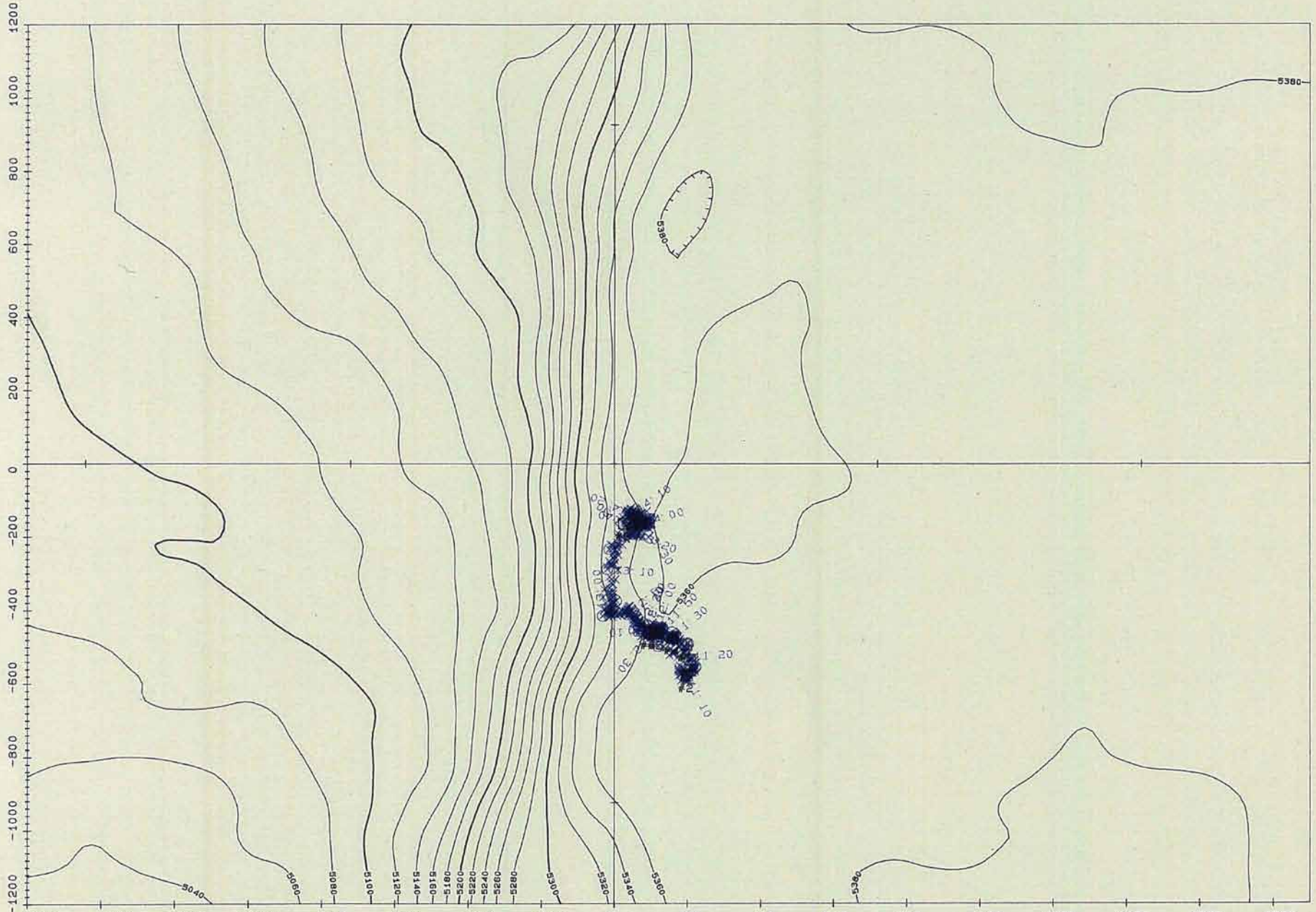


Fig. T-S Dia at 6K Dive#1040

#1041DIVE

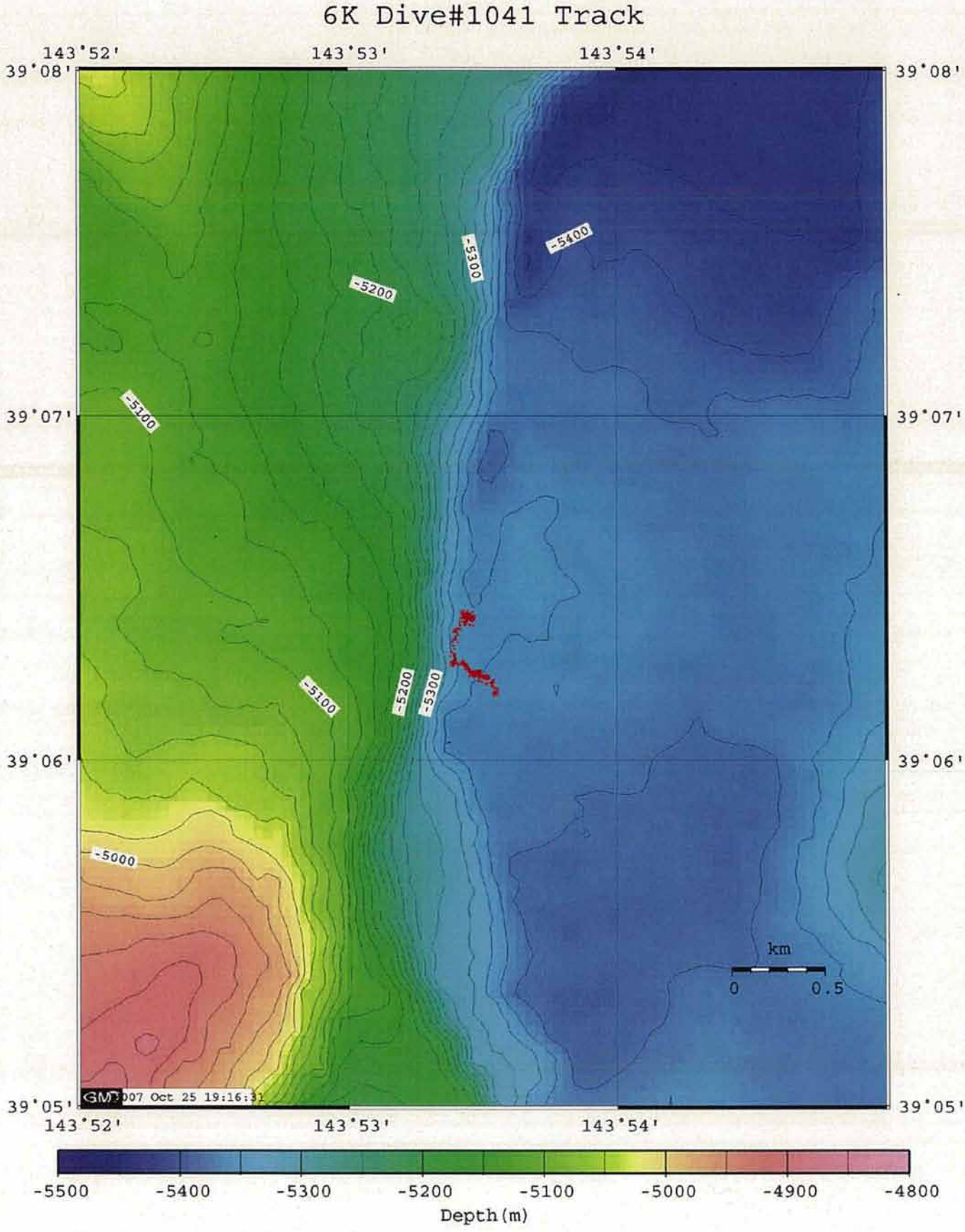
Scale (1/ 10000)



XY Origin Lat 39 06.5000N Lon 143 53.4000E
Center Lat 39 06.5000N Lon 143 53.4000E

Datum WGS84 Proj. TM

2007-10-25 (2007-10-25)


6K Dive#1041 Track
143°52'
143°53'
143°54'
39°08'
39°07'
39°06'
39°05'
-5400
-5300
-5200
-5100
-5000
km
0
0.5
2007 Oct 25 19:16:31
-5500
-5400
-5300
-5200
-5100
-5000
-4900
-4800
Depth (m)

#1041DIVE 日本海溝 Frederic Sinniger D-GPS(WGS-84)SSBL

*** EVENT MARK LIST *** 2007-10-25 14:33:32

ORIGIN (XY<->LATLON CONVERT) LAT 39°06.5000'N LON 143°53.4000'E
XY ORIGIN ((X,Y)=(0,0)) LAT 39°06.5000'N LON 143°53.4000'E

NO.	DAY	TIME	LAT	LON	X	Y
1	2007-10-25	09:00:00	39° 6.2330' N	143° 53.5364' E	-493.9	196.6
	Landing Target					
2	2007-10-25	11:10:00	39° 6.1879' N	143° 53.5378' E	-577.4	198.6
	Landing D=5352m					
3	2007-10-25	11:19:00	39° 6.2110' N	143° 53.5434' E	-534.6	206.6
	Finding Calyptgena D=5351m					
4	2007-10-25	11:44:00	39° 6.2438' N	143° 53.5105' E	-473.9	159.2
	Sampling Sea anemone D=5353m					
5	2007-10-25	12:10:00	39° 6.2510' N	143° 53.4800' E	-460.6	115.3
	Sampling Sea anemone, MBARI(yellow) D=5354m					
6	2007-10-25	12:34:00	39° 6.2517' N	143° 53.4661' E	-459.3	95.2
	Sampling Rock with Zoanthid in No.1 canister D=5356m					
7	2007-10-25	14:07:00	39° 6.4254' N	143° 53.4370' E	-138.0	53.3
	Sampling MBARI(green), Video D=5362m					
8	2007-10-25	14:26:00	39° 6.4254' N	143° 53.4370' E	-138.0	53.3
	Sampling Mud Rock, Deployment Trap, #64Marker D=5362m					
9	2007-10-25	14:29:00	39° 6.4117' N	143° 53.4185' E	-163.3	26.6
	Left Bottom D=5359m					
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

SHINKAI 6500 Dive #1041

Observer: Frederic Sinniger
Recorded byIrei,Fujii,Shiroma
Pilot : Kawama
Co Pilot : Ueki

2007/10/25

page: 1/1

Area:East of Miyako Knolls, Japan Trench

Time(LCL) hh|mm|ss			Dep. (m)	Head (Deg)	Pos. Xm	Pos. Ym	Observation	Sample	Remarks
8	59	15					surface		
9	3	14					diphyomorph		
9	3	42					cestum		
9	5						launching		
9	11	25					Beroe		
9	12	10					Copepods		
9	12	25					Copepods		
9	12	40					Chaetognathe		
9	12	52					Chaetognathe		
9	13	15					Chaetognathe		
9	13	30					shrimps		
9	14	9					house		
9	14	43					salp chain		
9	15	5					diphyomorph		
9	15	40					house		
9	16	12					hydromedusa		
9	16	36					cydippid		
9	16	57					cydippid		
9	17	5					hydromedusa		
9	18	0					house		
9	18	20					Beroe		
9	18	33					capitate hydromedusa side on by thotiara?		
9	19	20					ctenophore		
9	19	38					cyclothone?		
9	20	2					big red shrimp		
9	20	13					fish		
9	20	37					4 tentacle hallcreatid?		
9	21	2					Aeginura grimaldi		
9	21	38					houses		
9	23	6					houses		
9	23	47					mini jelly fish without tentacles		
9	24	15					littele ruby cydippid		
9	25	19					red shrimp		
9	25	49					houses		
9	26	7					red shrimp		
9	26	33					hydromedusa		
9	27	8					solmissus incisa		
9	27	31					Chaetognathe		
9	27	43					hydromedusa		

9	28	16					elbowAeginid?		
9	29	16					house		
9	29	20					lobate ctenophore		
9	29	52					lobate ctenophore		
9	30	21					house		
9	31	4					diphyomorph		
9	31	12					lobate ctenophore		
9	32	25					hydromedusa		
9	32	42					Solmissus incisa		
9	33	6					Solmissus incisa		
9	33	56					Solmissus incisa		
9	34	9					sinker		
9	34	42					Solmissus incisa		
9	35	3					lobate ctenophore		
9	36	42					chaetognaths		
9	37	2					chaetognaths		
9	37	24					sinker		
9	37	45					5mm hydromedusa		
9	38	21					ctenophore		
9	38	33					lobate ctenophore		
9	39	33					Rhopaelonematid? Pantachogon		
9	39	54					pulsar		
9	40	26					fish		
9	40	45					halicreatid		
9	41	43					lobate ctenophore		
9	42	12					diphyomorph, labate		
9	43	14					lobate ctenophore		
9	43	48					lobate ctenophore		
9	44	0					flat jelly fish		
9	45	22					house		
9	45	46					3 chaetognaths		
9	45	51					lobate		
9	46	38					cydippid		
9	46	55					Botrynema		
9	49	9					larvacean		
9	50	13					lobate		
9	50	20					onespot Rhopulonematid		
9	50	50					Bathocyroe		
9	51	30					Bathocyroe		
9	52	34					Pulsar		
9	53	55					onespot Rhopulonematid		
9	53	13					larvacean		
9	53	36					onespot Rhopulonematid		

9	54	36					lobate		
9	55	2					big Physonect		
9	55	45					Bathocyroe		
9	57	25					halicreatid		
9	57	42					Bathocyroe		
9	58	9					Bathocyroe		
9	58	26					Bathocyroe		
10	58	41					pink hydromedusa		
10	0	1					Pulsar		
10	0	51					hydromedusa		
10	1	12					Bathocyroe		
10	3	3					hydromedusa		
10	3	30					lobate		
10	4	25					Bathocyroe		
10	5	10					Bathocyroe		
10	6	0					Bathocyroe		
10	9	54					Pulsar		
10	12	56					cone		
10	13	0					Bathocyroe		
10	16	10					Pulsar		
10	16	32					larvacean		
10	17	0					cone		
10	18	4					cone		
10	18	54					lobate		
10	20	34					ctenoceros		
10	21	0					polychaete		
10	21	21					polychaete		
10	23	42					big shrimp		
10	27	0					Pulsar		
10	28	13					big pulsar		
10	31	58					4 tentacle Halicreatid		
10	32	7					Halicreatid		
10	39	2					siphonophore		
10	39	22					siphonophore		
11	4	53					big mysid (from bottom?)		
11	10	57	5352	34	-580	208	arriving at bottom 1.5℃		
11	10	57	5350	329	-536.9	201.6	sea anemone		
11	18	9	5351	330	-530	208.4	Calyptogena soyoae		
11	20	49	5352	329	-511.9	193.2	sea anemone		
11	25	25	5351	328	-489.4	182.6	sea anemone		
11	36	17	5353	278	-476.8	162.7	sea anemone		
11	38	9	5353	279	-478	162	sea anemone-3 (white)		
11	42	25	5353	265	-495.5	109	sampling sea anemone	1	box no.1

11	45	5	5354	302	-496	128.2	star fish?		
11	51	29	5354	302	-496	128.2	sea anemone		
11	57	37	5355	324	-452	121.1	sampling kushikurage	1	box no.3
12	8	33	5355	326	-459.3	114.9	core of bottom	1	yellow
12	15	13	5356	272	-448.3	123.1	sea anemone and some rocks		
12	21	8	5357	311	464.2	77.9	zoantid?		
12	35	29	5357	305	-451.7	97.1	sampling zoantid?	1	canister-1
13	15	45	5347	23	-225.6	6.5	going to zoantid site		
13	31	45	5352	13	-167.8	82.3	zoantid?		
13	37	27	5354	220	-150	69.7	zoantid?		
13	38	25	5354	222	-149	79	sea cucumber		
13	53	21	5361	315	-156.6	47.9	zoantid? Close up		
13	58	22	5362	320	-149.1	556.3	High Vision Camera?		
14	5	5	5362	319	-120.2	43.8	core of bottom	1	green
14	11	13	5362	315	-164	78.4	sea anemone, zoanthid close up		
14	17	53	5362	316	-149.7	54.9	sampling zoanthid, sponge		canister-2
14	26	25	5362	313	-153.3	49.3	trap, marker , collecting mud stone		canister-3
14	28	2	5359	261	-144	39	off bottom		
15	6	40					clbow Aeyinid?		
15	7	5					littele ruby cydippid		
15	9	1					onespot Rhopulonematid		
15	15	29					cydippid		
15	17	50					Beroe		
15	18	10					Bathocyroe sphonophone		
15	19	1					Bathocyroe		
15	19	43					Bathocyroe		
15	20	50					chaetognaths		
15	21	12					Bathocyroe		
15	21	31					Bathocyroe		
15		50					Bathocyroe		
15	21	15					Lampocteis		
15	21	53					Bathocyroe		
15	23	45					Apolemiid		
15	24	43					Bathocyroe		
15	25	35					Bathocyroe		
15	27	32					Bathocyroe		
15	28	0					hydromedusa		
15	28	3					Bathocyroe		
15	28	15					ctenoceros		
15	29	21					ctenoceros		
15	30	5					Bathocyroe		
15	30	11					Bathocyroe		
15	30	40					onespot Rhopalonematid		

15	30	58					Bathocyroe		
15	31	29					Bathocyroe		
15	31	45					hydromedusa		
15	33	53					Bathocyroe		
15	39	30					Halrcreatid		
15	35	0					siphonophone siphosome		
15	35	33					Apolemiid		
15	36	12					Bathocyroe		
15	36	40					caitatetentacle hydromadusa		
15	39	40	2030				video on		
15	40	20					lobate		
15	41	19					Halrcreatid		
15	42	41					little ruby?		
15	44	16					Bathocyroe		
15	46	10					little ruby		
15	52	2					Solmissus incisa		
15	52	53					Solmissus incisa		
15	53	20					Solmissus incisa?		
15	54	45					Solmissus incisa		
15	56	45					Solmissus incisa		
15	59	5					Solmissus incisa		
16	4	19					cydippid		
16	5	15					physonect siphonophore		
16	6	21					Bathocyroe		
16	7	10					hydromedusa		
16	10	11					iittle ruby		
16	11	21					squid		
16	11	44					4tentacle Halicriatid		
16	12	10					Aegina?		
16	13	10					siphonophone		
16	13	20					cydippid		
16	15	2					siphonophone		
16	15	22					pulsar		
16	17	13					siphonophone		
16	17	22					cydippid		
16	17	42					lobate		
16	18	18					cydippid		
16	19	0					cydippid		
16	21	30	295				video off		
16	23	11					tiny clenophone		
16	24	46					Solmissus? Pegantha?		
16	30						surface, lost core(green)		

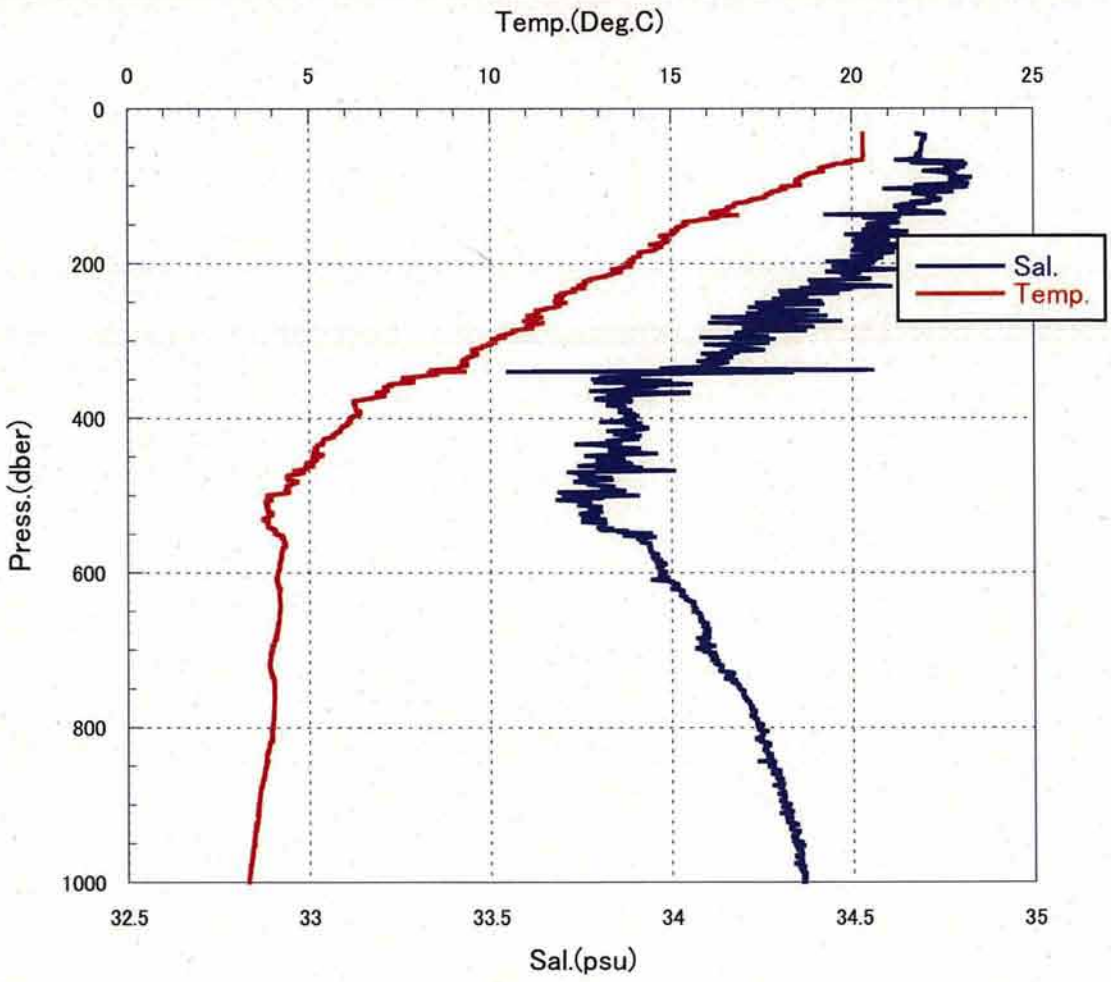


Fig. CTD at 6K Dive#1041

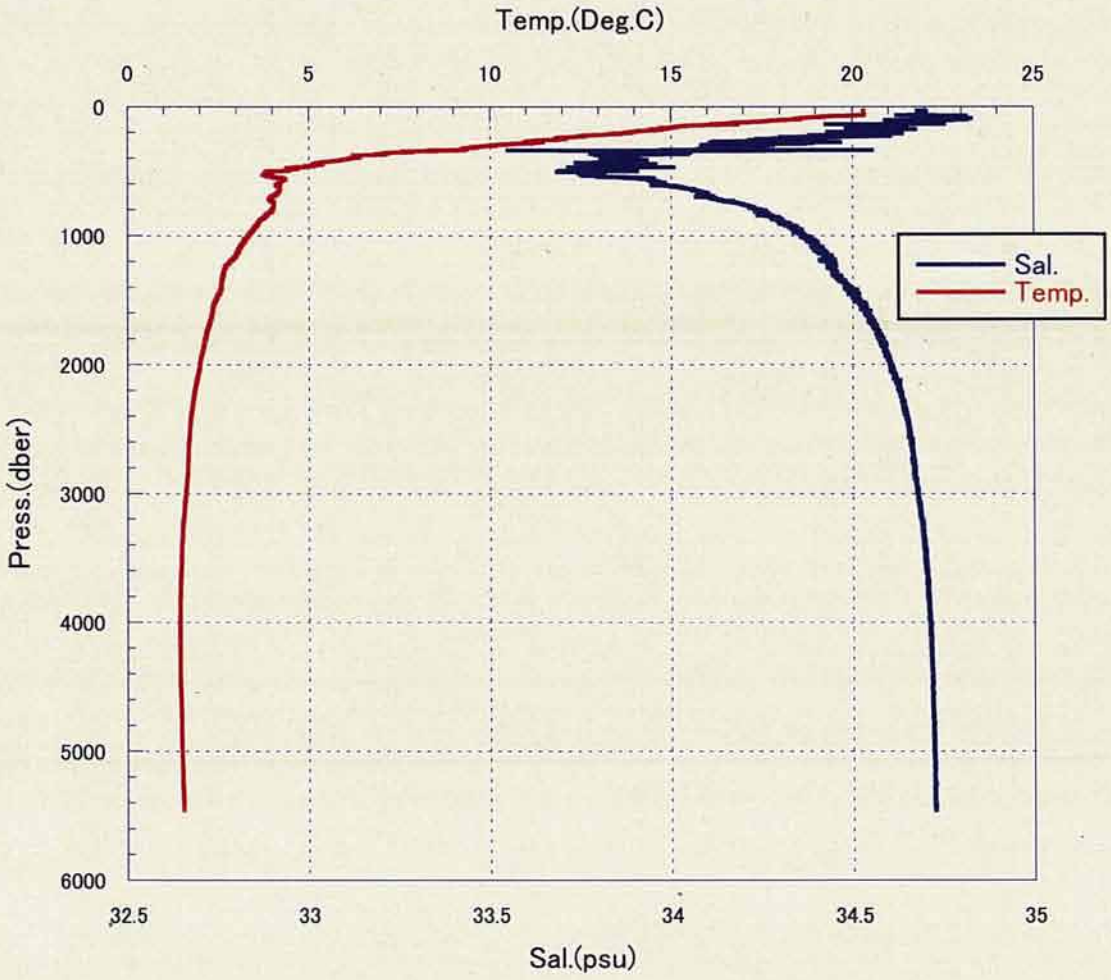


Fig. CTD at 6K Dive#1041

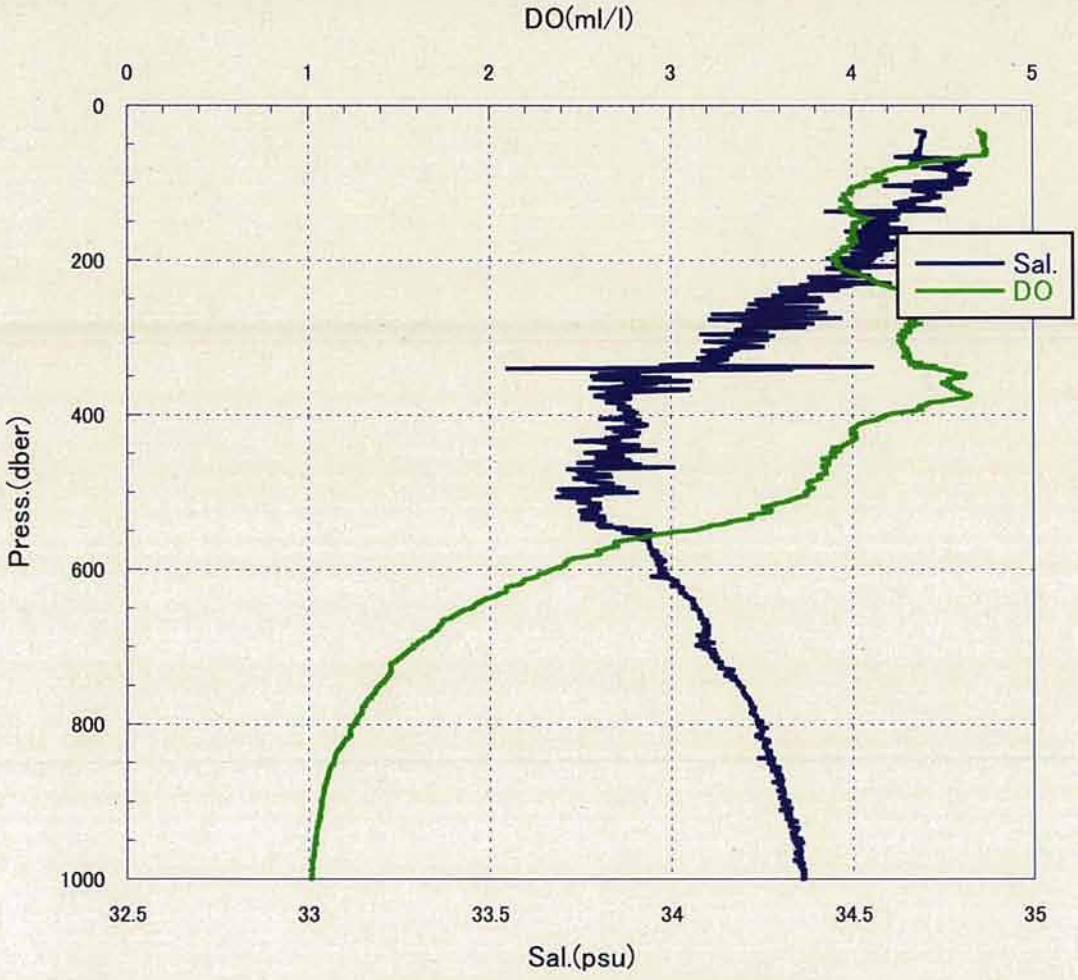


Fig. CTD at 6K Dive#1041b

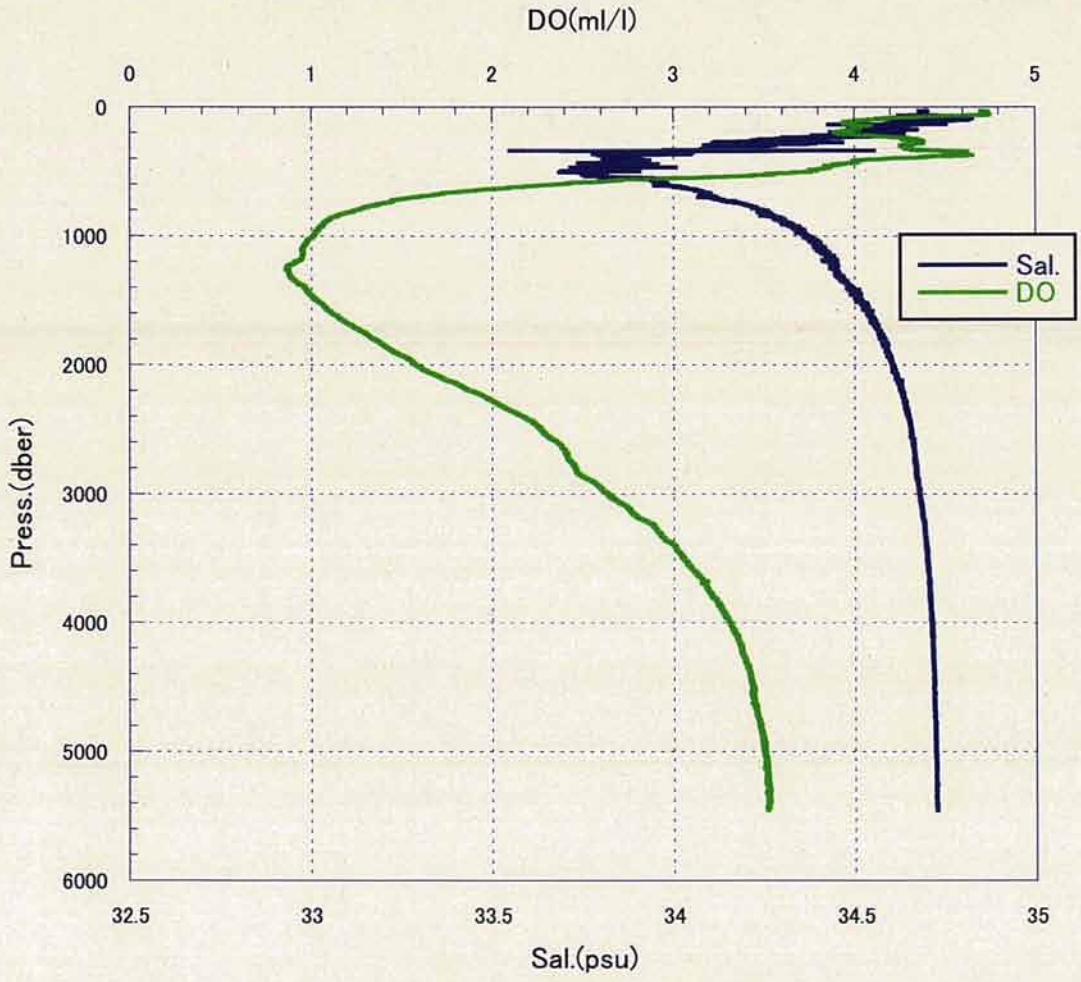


Fig. CTD at 6K Dive#1041b

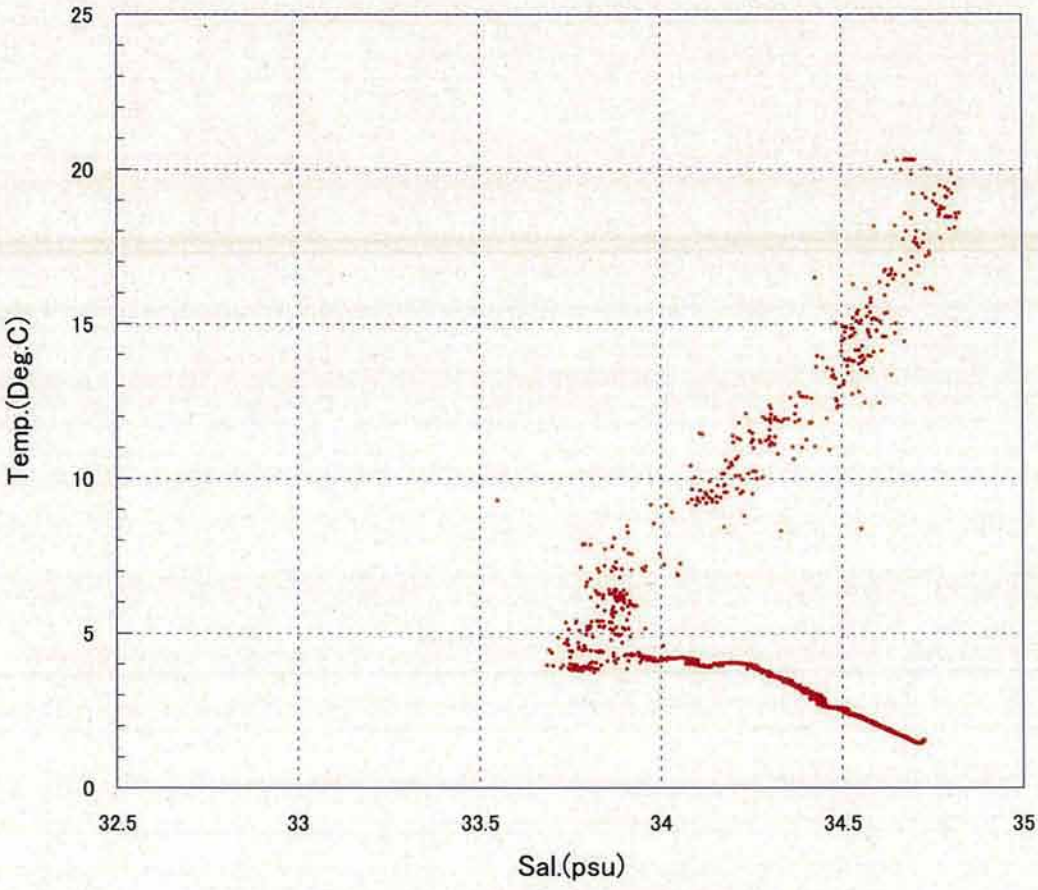
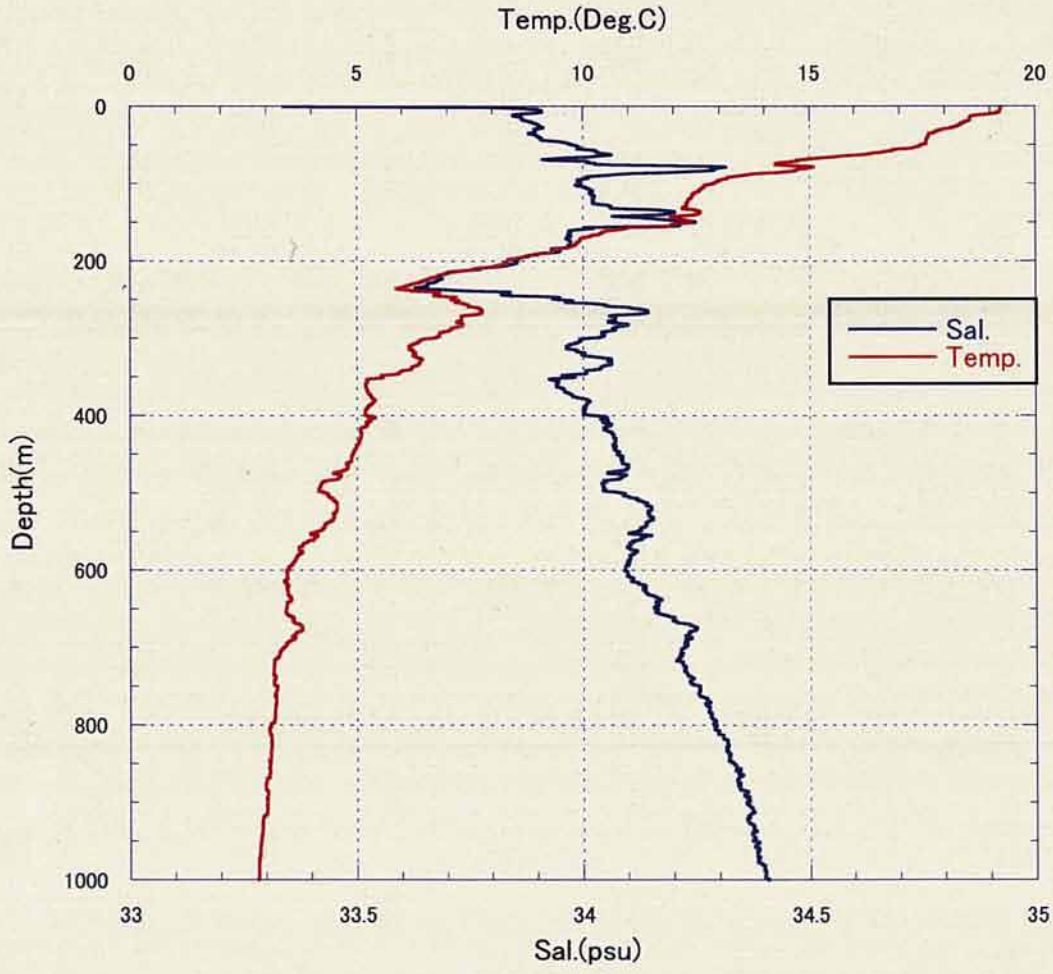


Fig. T-S Dia at 6K Dive#1041



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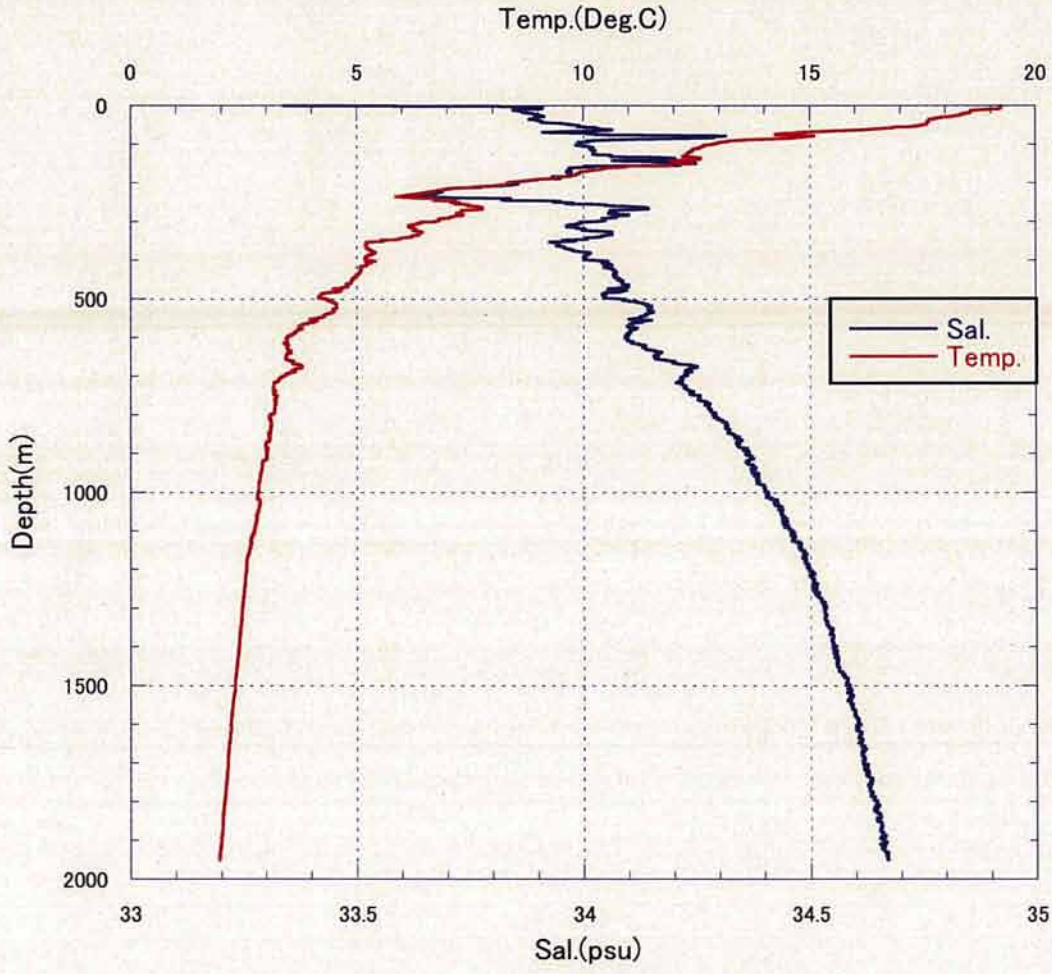

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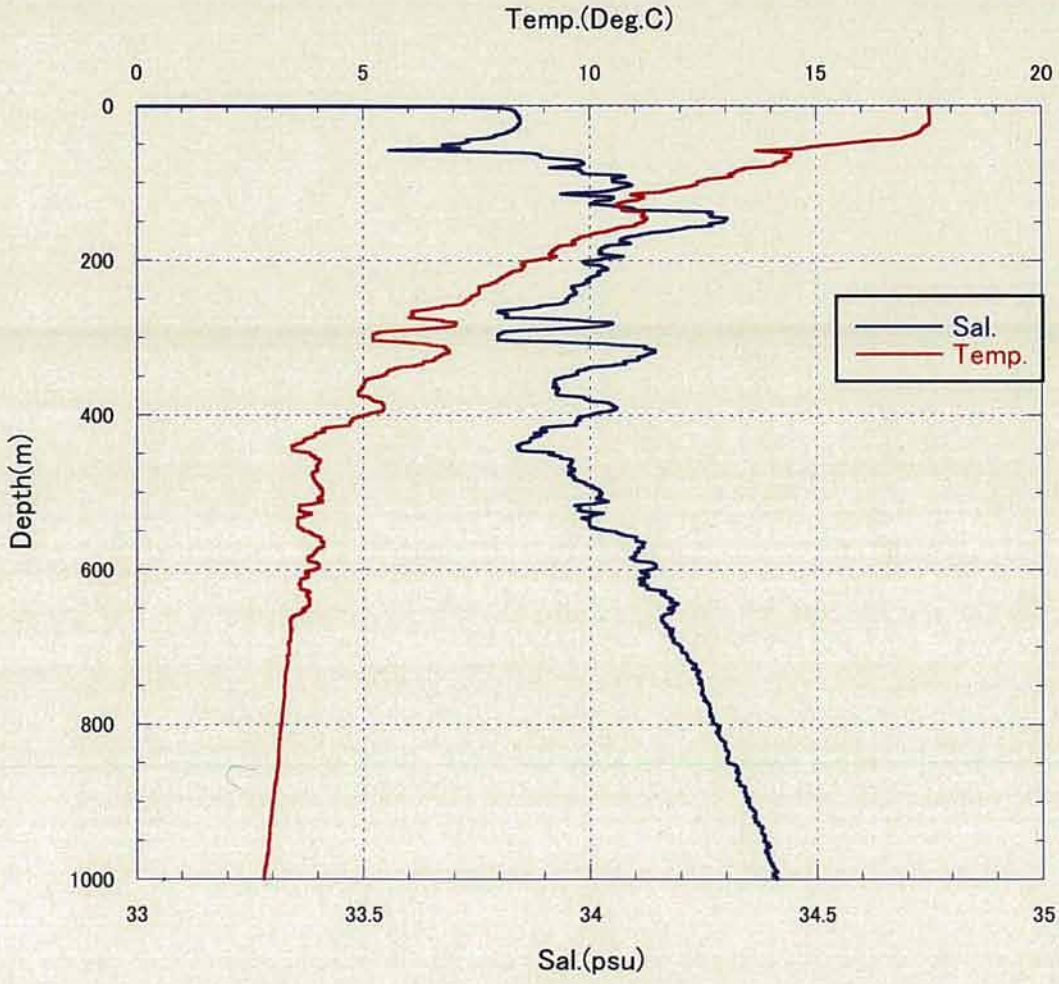

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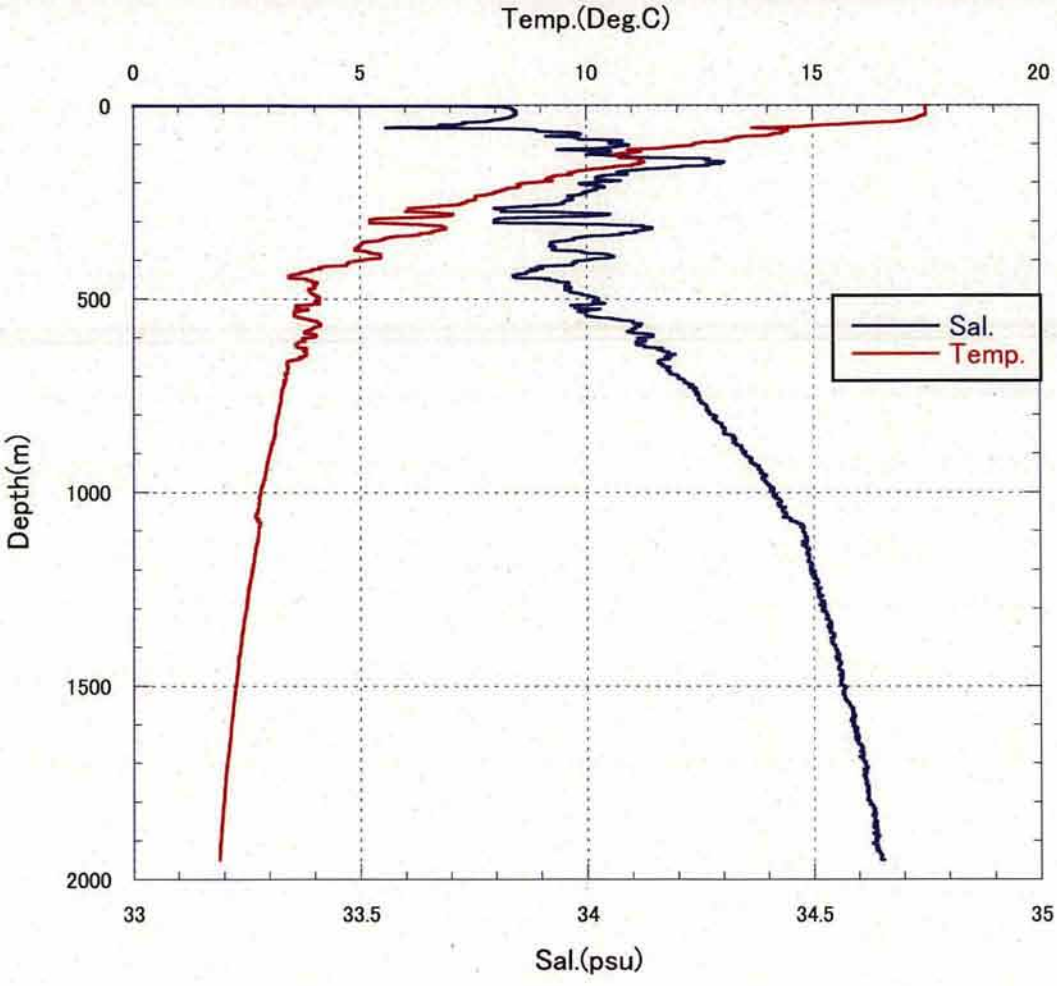

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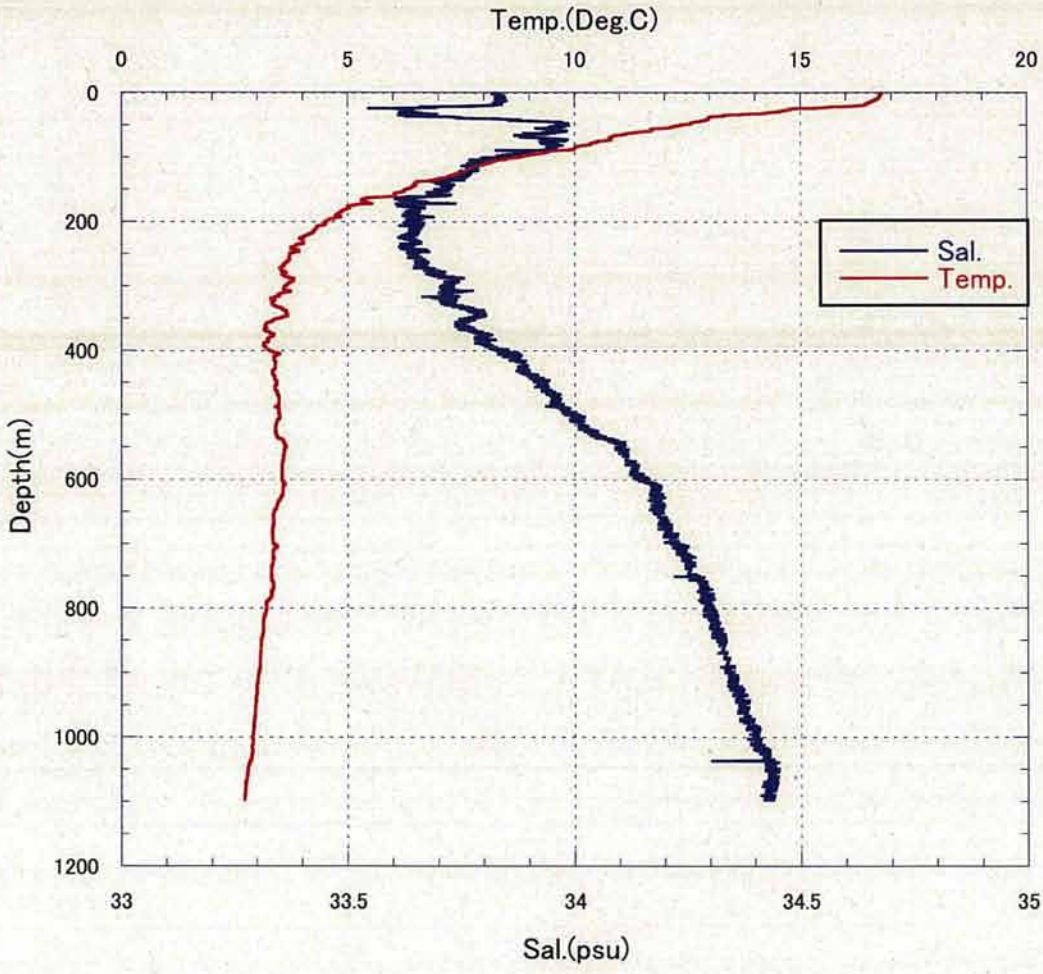

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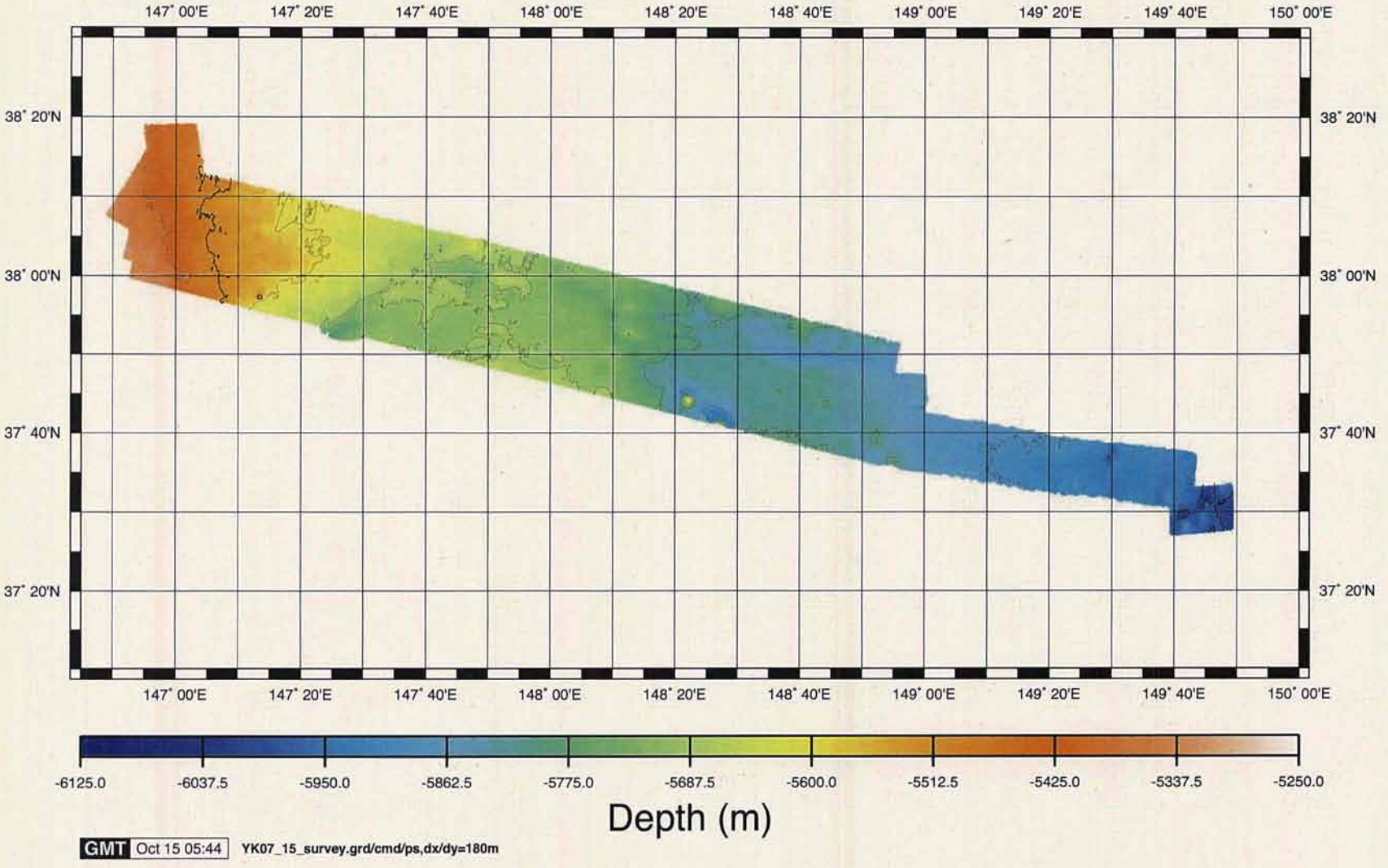
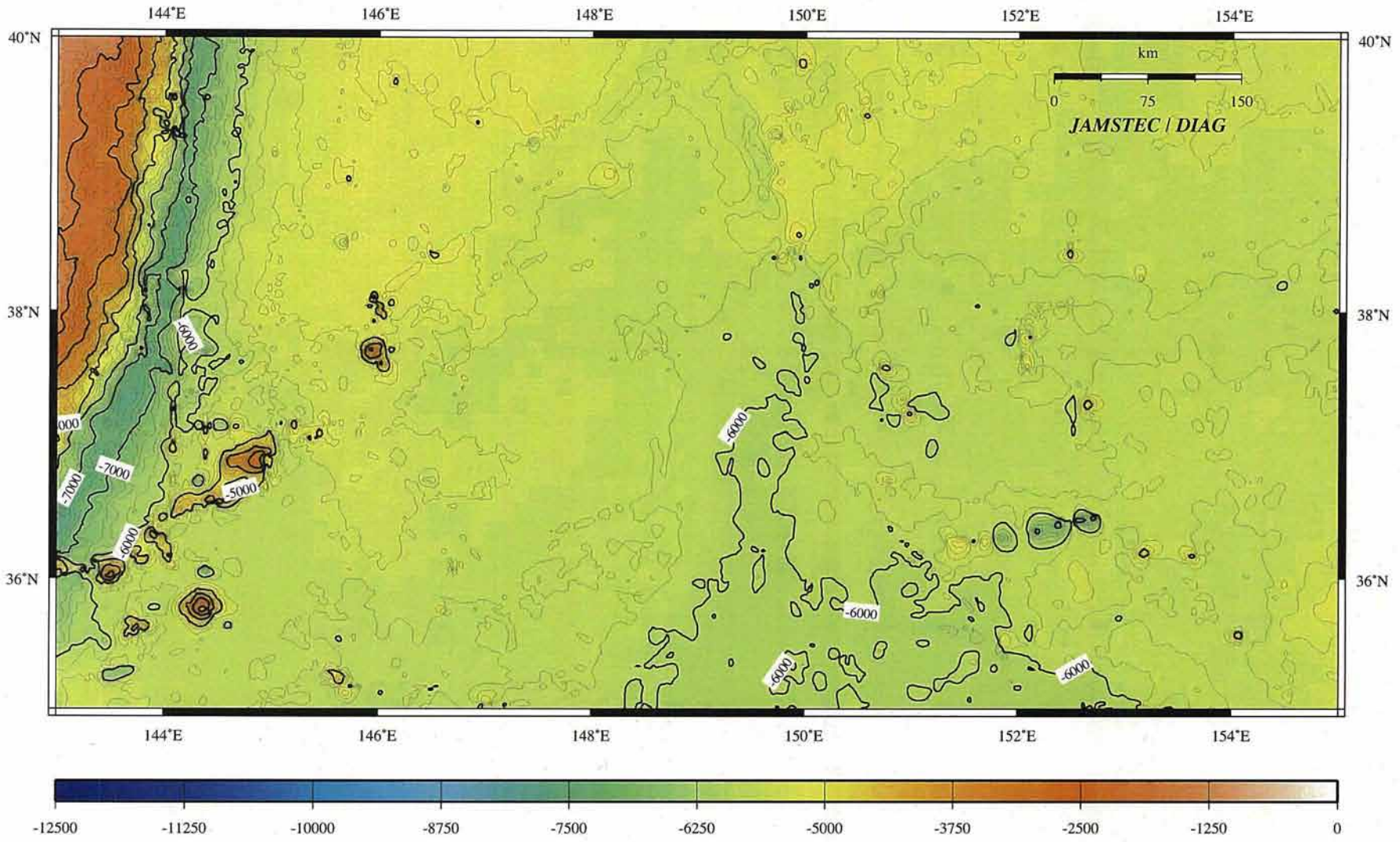
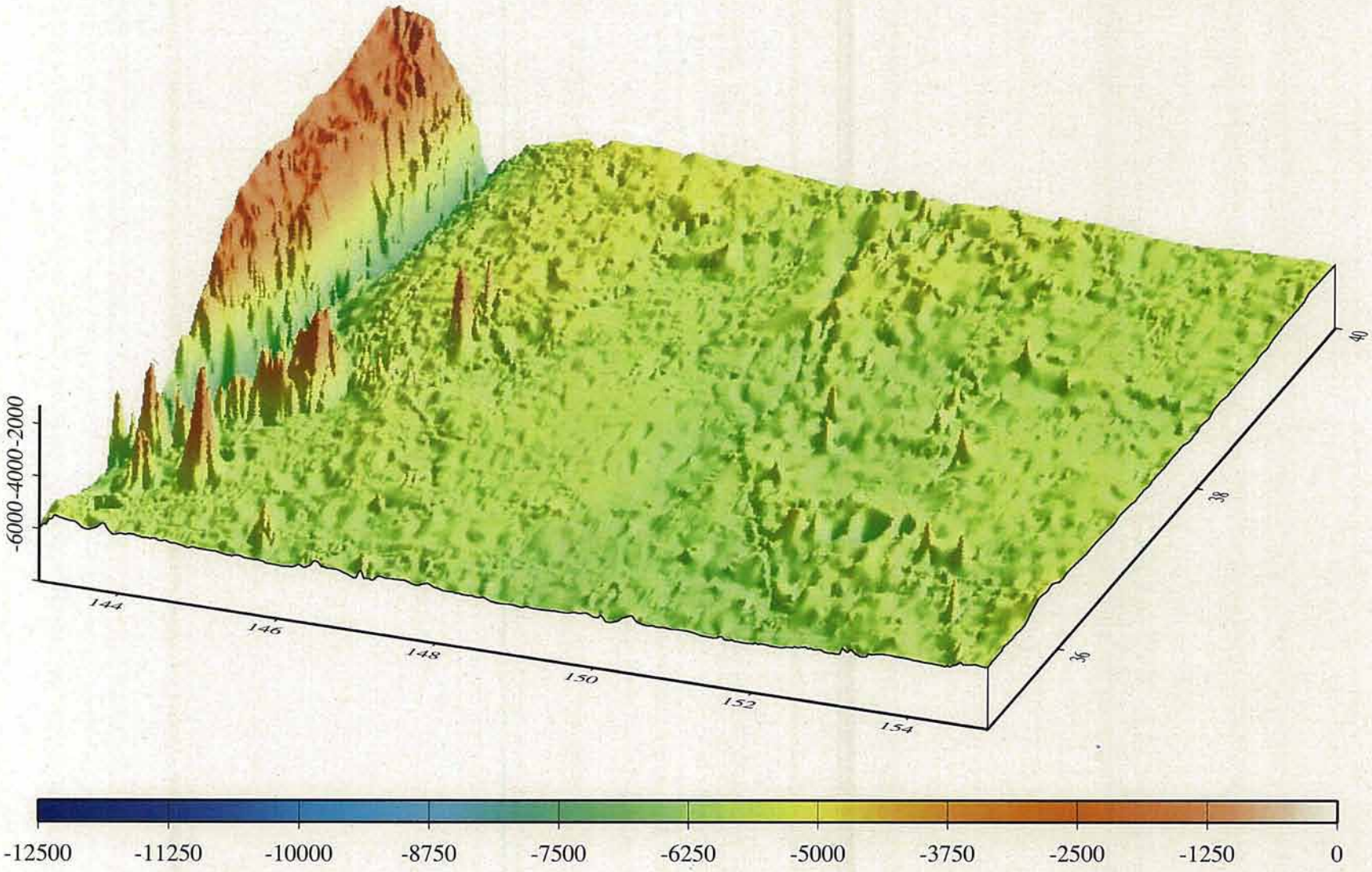
YK07_15_survey



Bathymetric Map



Bathymetric Map



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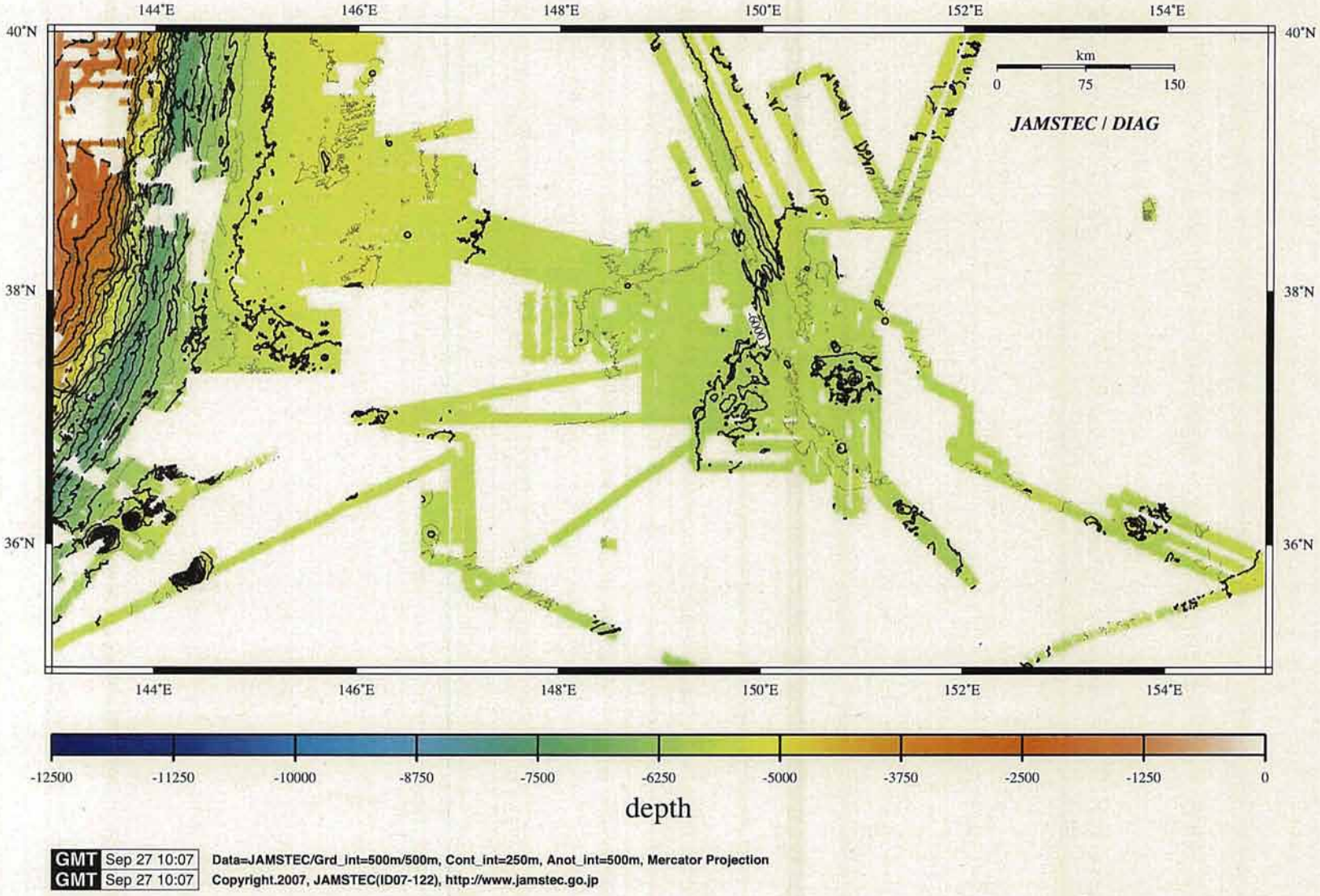

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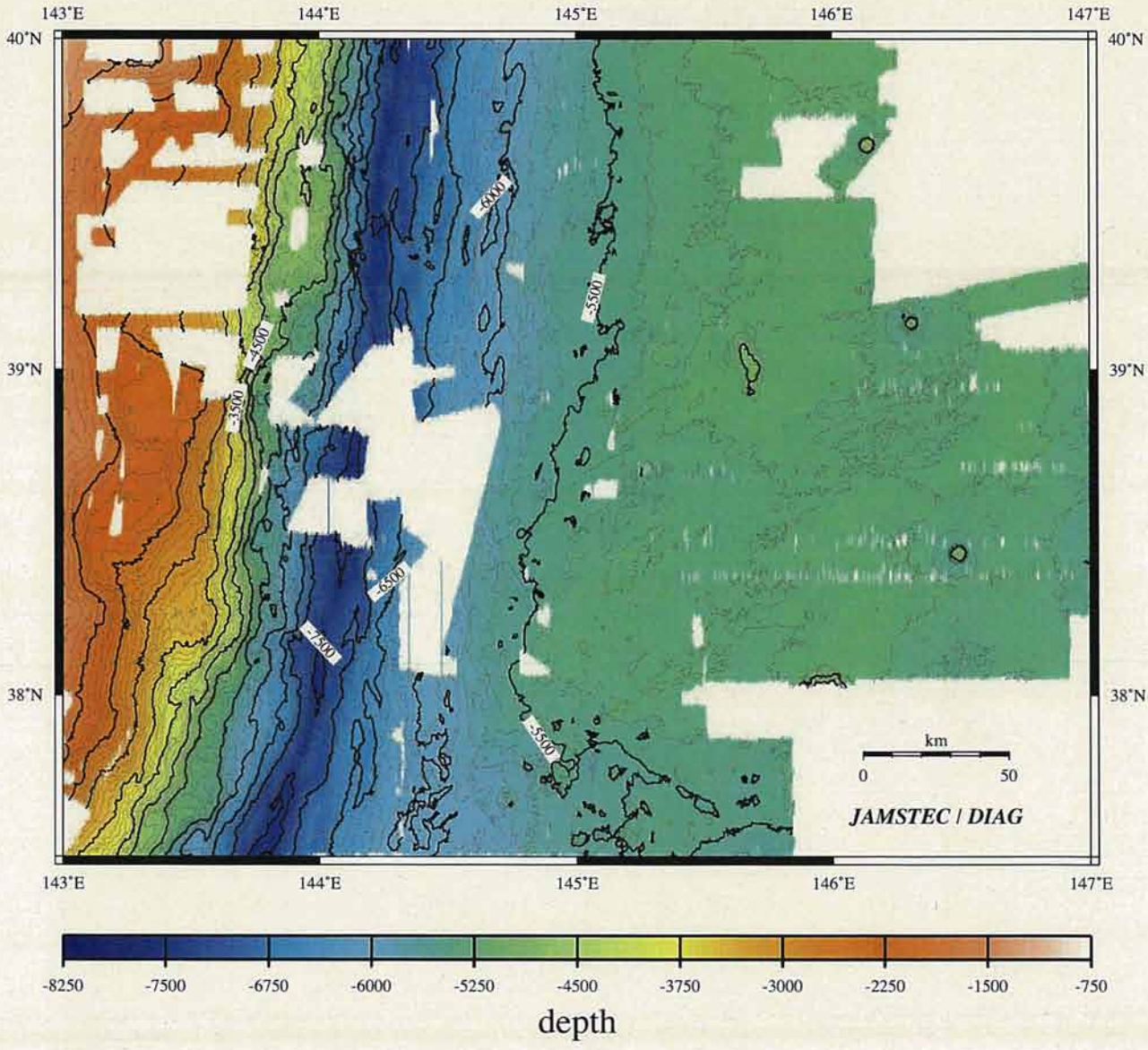

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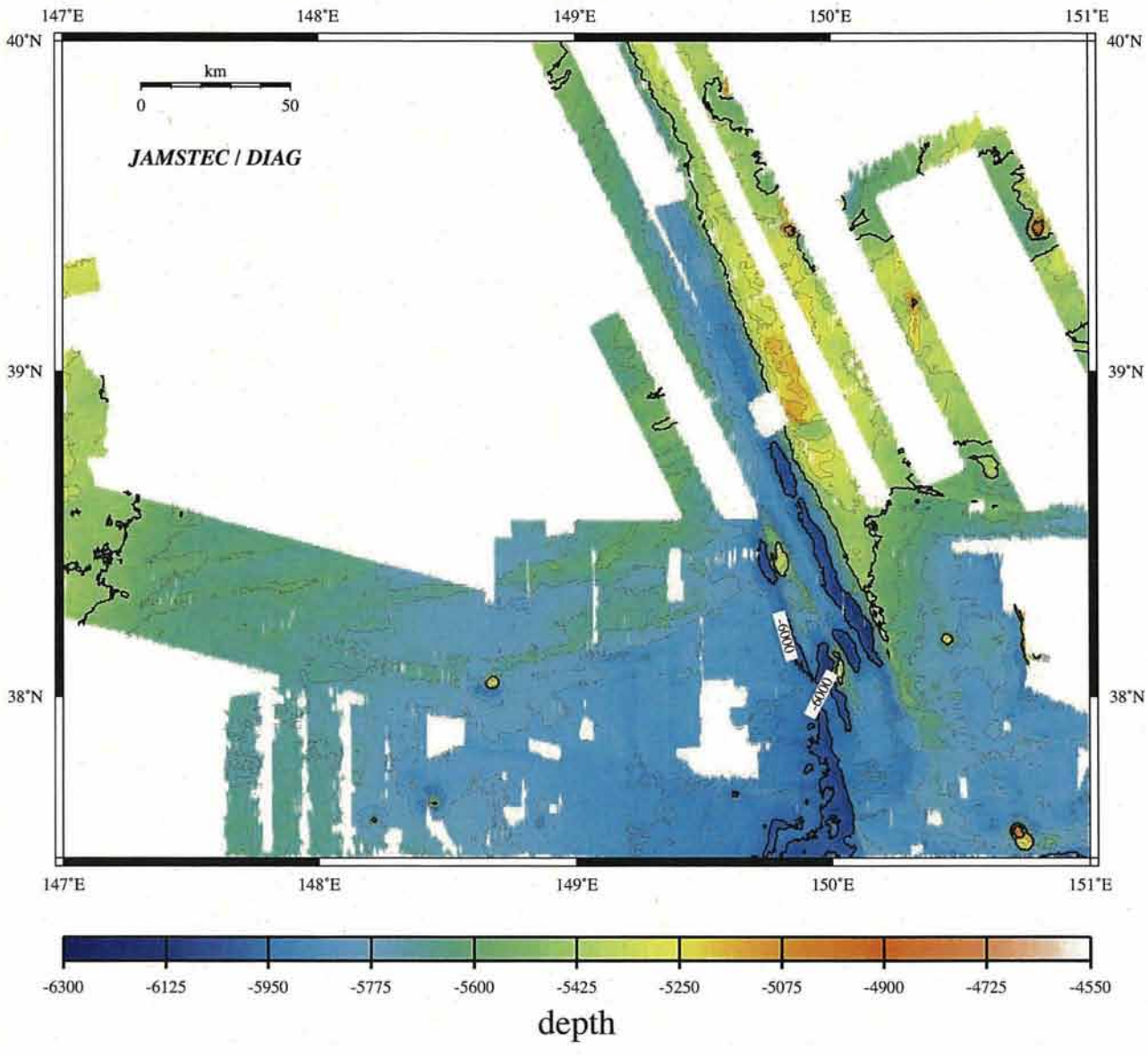

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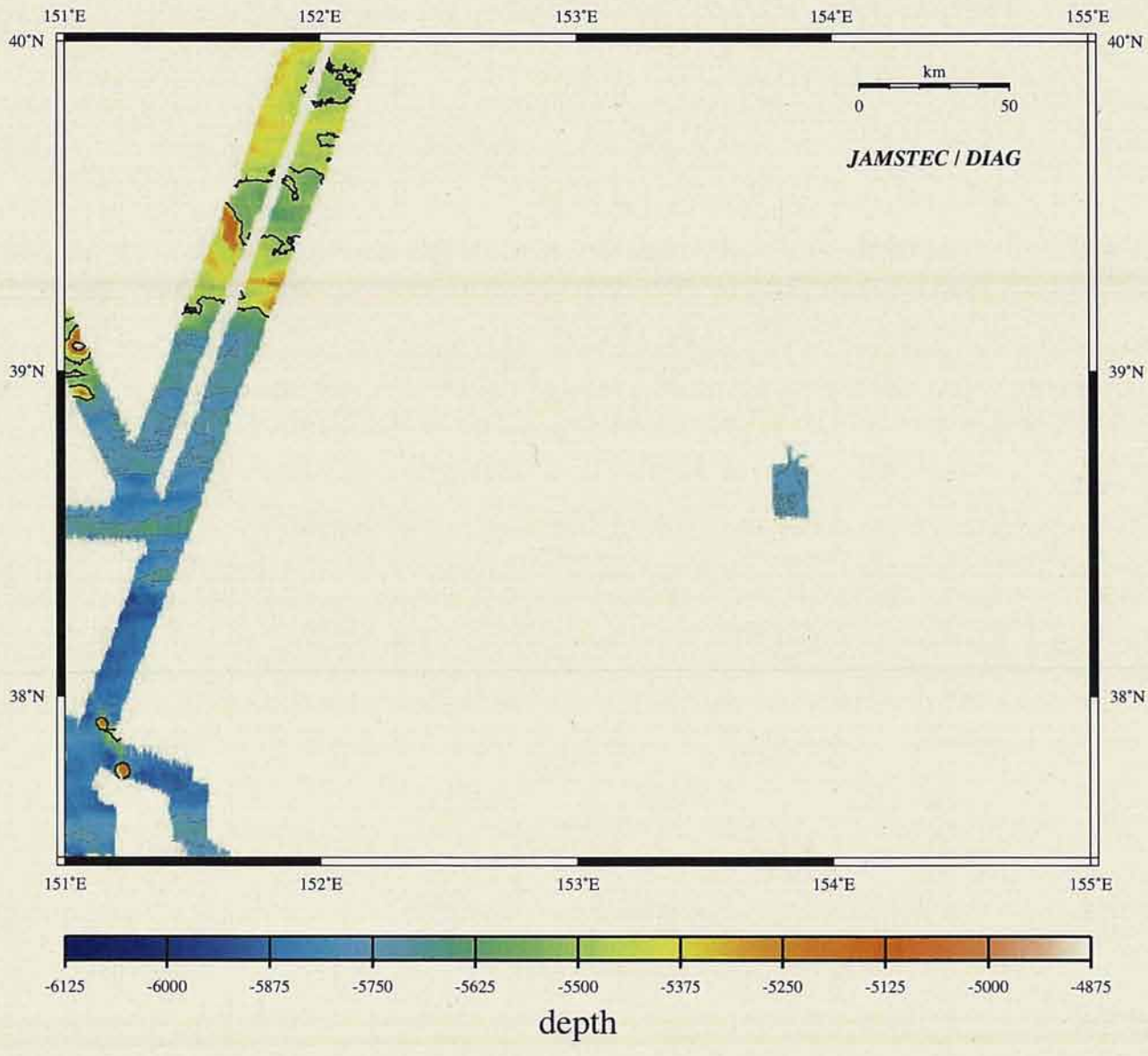

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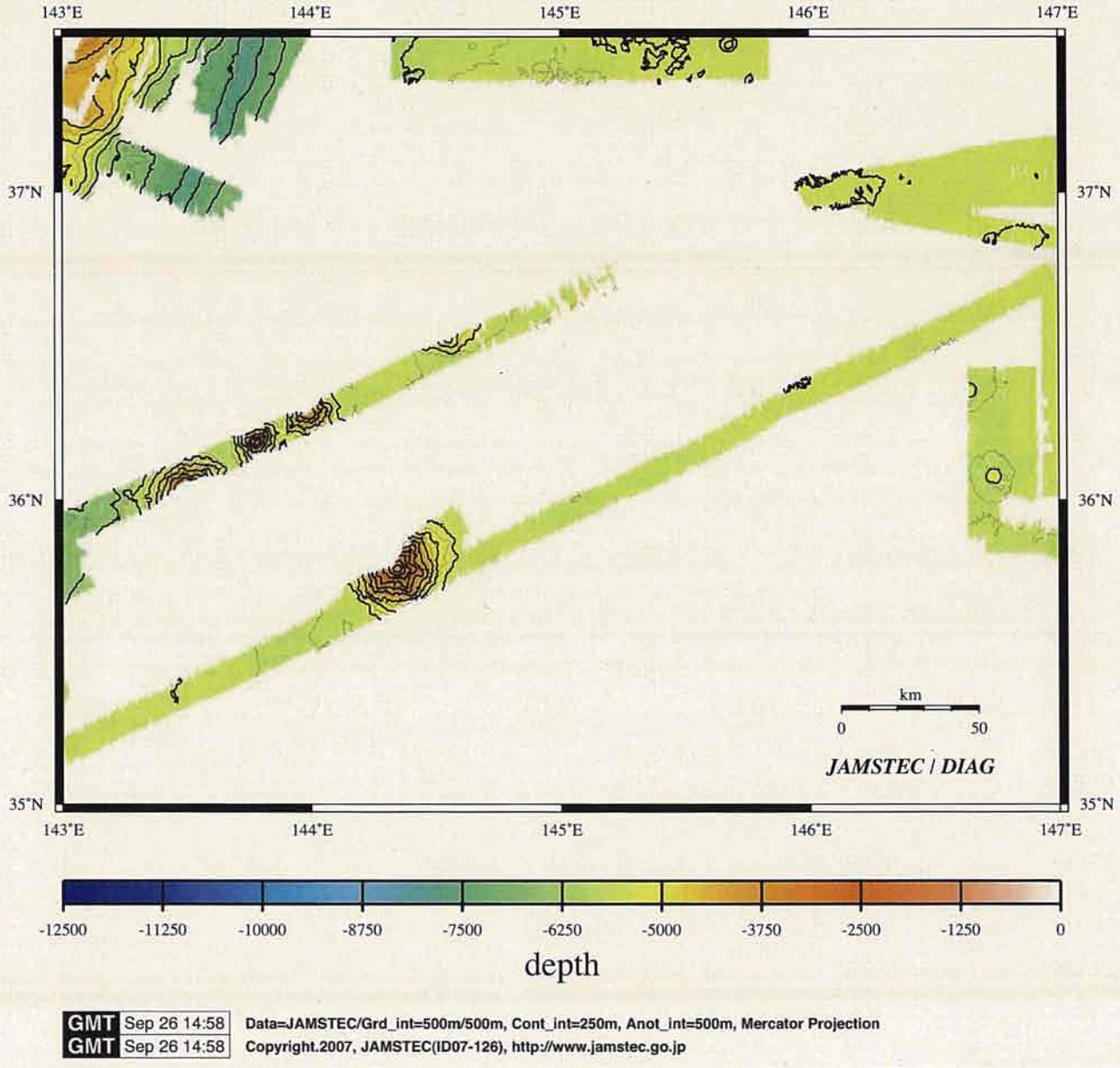

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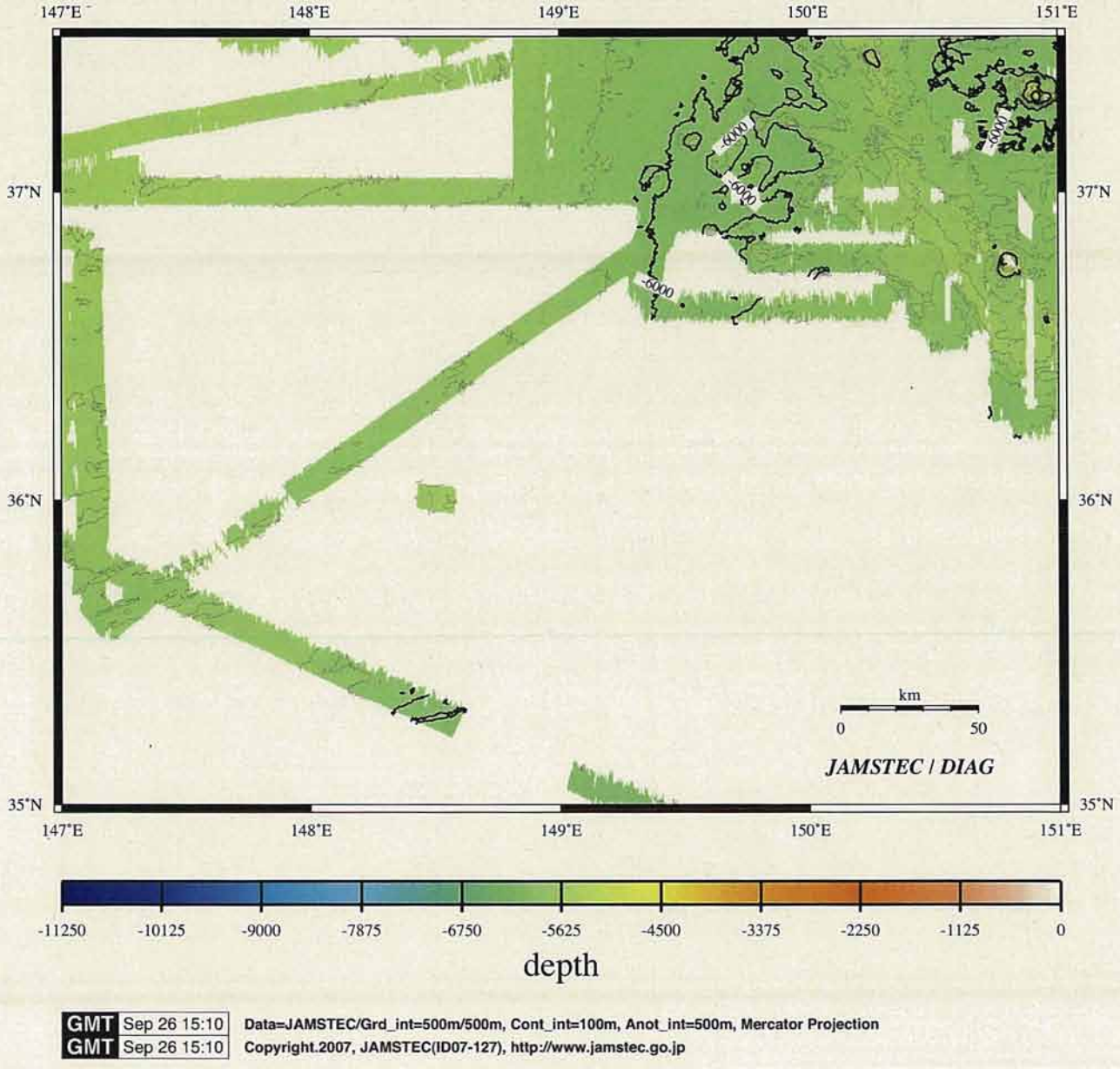

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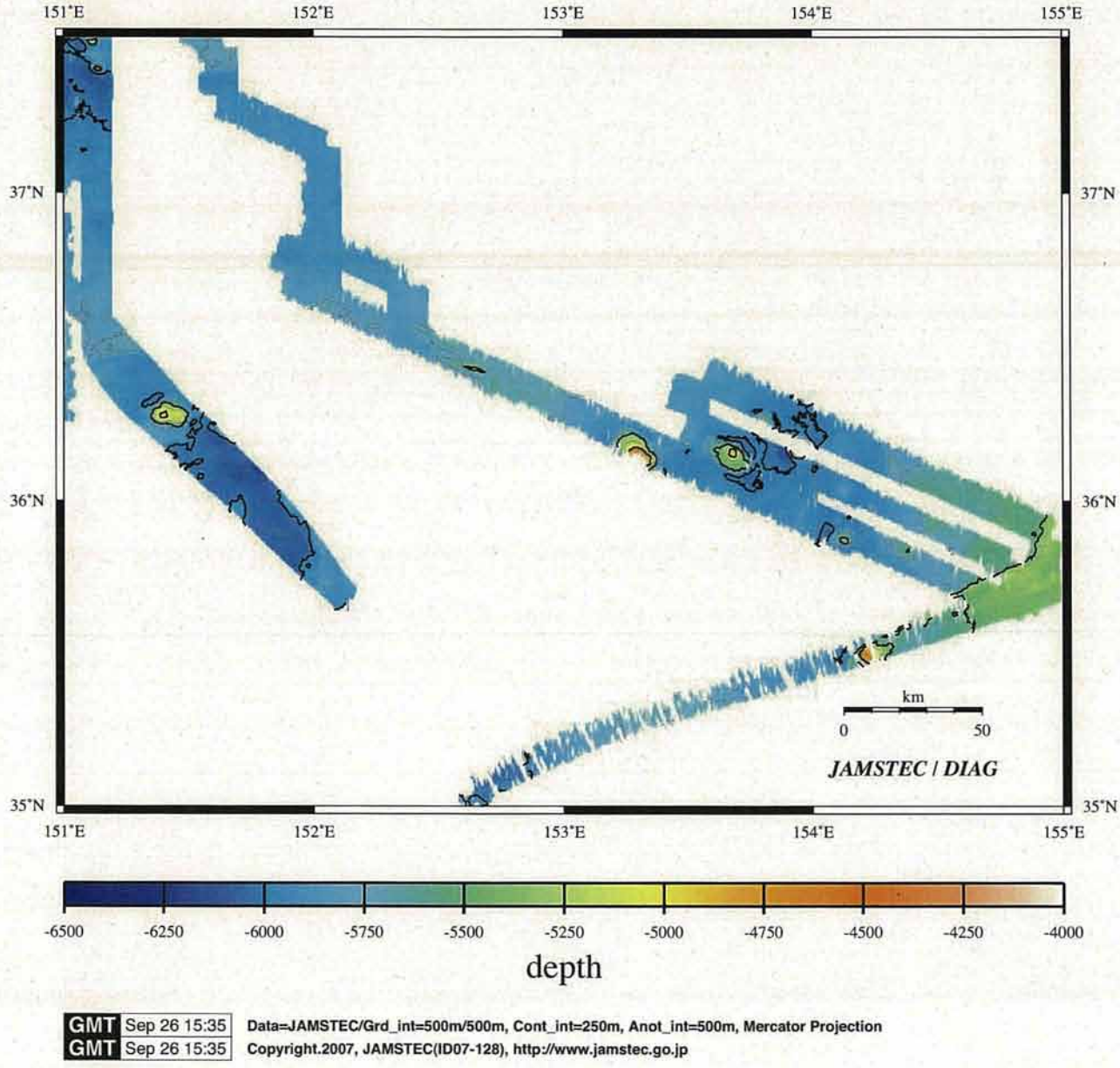

Preliminary Results

INTRODUCTION

State-of-the-art survey techniques and tools have recently shed light on many aspects of gelatinous midwater animals. Taxonomic work, including new species descriptions, benefit greatly from both specimens sampled in pristine condition (eg Pugh, 2006; Haddock et al., 2005; Kitamura et al., 2005) and from the in situ imagery that can be obtained of fragile gelatinous forms (eg Hopcroft & Robison, 2005; Matsumoto et al., 2003; Harbison et al., 2001). Aspects of their ecology such as interspecies interactions are often also only able to be characterised due to in situ observations with cutting edge technologies (eg Pagès et al., 2007; Drazen & Robison, 2004; Lindsay et al., 2001). Recognising this need, submersible platforms designed specifically for in situ surveys of fragile planktonic organisms are now under development (Yoshida & Lindsay, 2007).

The eastern seaboard of Japan off the Sanriku Coast and above the Japan Trench is an extremely productive oceanic area with Oyashio-derived cold water masses, Kuroshio-derived warm water masses and eddies, and frontal and mixing zones. The variety of water masses ensures that planktonic diversity is high. The species composition and distribution patterns of robust organisms such as krill, shrimps, fish and copepods, which are able to be sampled with conventional plankton nets and midwater trawls, has been studied in this area to a certain extent (Nishikawa, 1995). Much attention has focused on the physical and biological properties of these water masses in recent years with a special edition of the Journal of Oceanography (Vol. 54, No. 5, 1998) devoted to the topic. Information on the gelatinous zooplankton community is still sparse, with some submersible-based surveys concentrated in the far northern reaches where cold water masses predominate (Vinogradov & Shushkina, 2002 and references therein), a dive with the French bathyscaphe *F.N.R.S.III* off the Boso Peninsula (Peres, 1959), a dive with the Japanese submersible *Shinkai 6500* off the Sanriku Coast at 39°53'N 144°11'E (Lindsay, 2005), and a series of dives with the ROV*Hyper Dolphin* (Lindsay et al., 2004), also off the Sanriku Coast.

Several surveys have been undertaken in recent years to shed light on the gelatinous midwater fauna over the Japan Trench. In April 1999, a series of dives using the ROV Kaiko was carried out both within a warm core eddy and in outlying areas. The gelatinous community was found to differ considerably between these dive sites (10K#113-#116) but a faulty dissolved oxygen sensor prohibited rigorous investigations on the relationship between the vertical distributions of the gelatinous midwater fauna and the physical parameters of the water column. A Deep-Tow Cruise (KY99-06) on the R/V Kaiyo designed to gather distributional information on the midwater fauna and correlate it to water column parameters under several differing oceanic regimes was implemented in 1999. This was in order to answer basic questions on the ecology of the midwater community in this highly important region. Important data was obtained during this cruise but the inability to sample organisms using the Deep-Tow system meant that positive identifications to species level of many of the animals was impossible. Distinct layers of the larvacean Bathochordeus were observed, as well as patches of the narcomedusa Aegina and several other readily recognizable forms.

A cruise (YK00-04) on the R/V Yokosuka was designed to characterize the upper water column and locate cold and warm core rings and the frontal zone using XBT probes. Dives on the Shinkai 6500 were carried out to determine the endemic midwater fauna of a cold water tongue (Oyashio-derived), a warm water tongue (Kuroshio-derived) and the mixing area of these two water masses and to identify the physical parameters affecting vertical distributions for those organisms that occurred within both water masses. Distribution profiles were made over several thousand metres in order to determine the lower distributional limit for each midwater form. Several samples were taken to allow species level identification of some of the gelatinous midwater forms observed but a malfunctioning of the suction sampler on two of the four dives only allowed a partial characterization of the midwater fauna.

A transect that included Oyashio-derived cold waters, Kuroshio-derived warm waters, and their respective mixing and frontal zones was run along the eastern seaboard of Japan using the R/V *Kaiyo* during cruise KY02-06 from 20 April – 6 May 2002. Water masses were identified using satellite imagery and XCTD (eXpendable Conductivity Temperature Depth) probes, and dive surveys using the ROV HyperDolphin were carried out to determine the vertical distributions of the macroplanktonic gelatinous organisms (Figure 1). Dives analysed during this study were conducted in the locations and to the maximum depths outlined below: Dive 98, 41°00'N, 144°41'E, 1034m; Dive 100, 38°56'N, 143°06'E, 1000m; Dive 101, 40°26'N, 144°32'E, 2000m; Dive 103, 38°20'N, 143°55'E, 1002m; Dive 104, 39°30'N, 144°15'E, 1212m; Dive 105, 39°52'N, 144°22'E, 1000m. All dives were conducted during daylight hours with the exception of the latter halves of dives 98 and 103, where the ROV surfaced at 20:31 and 20:35, respectively. Sunset on these two days was at 18:09 and 18:13, respectively. Data on the scyphomedusan fauna over the Trench during this period was able to be gained and has been reported (Lindsay et al., 2004).

All of these previous studies have concentrated mainly on the mesopelagic zone with only cursory information yet available for the bathypelagic zone (Lindsay, 2005). The present study aims to shed further light on the bathypelagic gelatinous zooplanktonic fauna of the waters above the Japan Trench.

MATERIALS & METHODS

During Cruise YK07-15 on the R/V Yokosuka, held between 13-28 October 2007, the *Shinkai 6500* was equipped with two main 3-chip CCD video cameras in pressure housings, one fixed to the forehead of the vehicle just above and starboard of the main (pilot's) viewing porthole and the second on a pan-tilt unit between the pilot's and scientific observer's viewing windows. Video footage was recorded onto DV-Cam videotapes with depth, time and other text superimposed via an analogue composite video connection. Supplementary video footage was recorded by a high definition video camera (Sony HVR-A1J) with a 1/3 inch CMOS sensor (2.97 megapixels, minimum sensitivity 15lux) and saved to hard disk in HDV1080i streaming format (.m2t files) in real time. This camera was deployed inside an aluminium (7075-T6) pressure housing (170mm diameter, 360mm length) on a specially constructed stand that hung off the sample basket such that the camera recorded the scene observable from the central (pilot's) porthole. Zoom was set on lowest setting (wide) and focus adjusted to 3m distance using an RS232C connection. A second video camera (Sony HDR-SR8) with a 1/2.9 inch CMOS sensor (2.28

megapixels, minimum sensitivity 5 lux) was set flush to the pilot's porthole during the free-fall descent (28m/min) and recorded HDV NTSC video saved to hard disk in HDV1080i streaming format (.m2t files) in real time. Observations made with the naked eye were recorded on the audio track of the DV-Cam video tapes through a microphone set next to the scientist's viewport. The *Shinkai 6500* was outfitted with seven 400W Metal Halide (HMI) lights: one pointing forward on the forehead of the vehicle more than one metre above the pilot's porthole, one next to the fixed CCD camera, two on the same pan-tilt unit as the remaining CCD camera, one below each of the port and starboard portholes and one on a separate pan-tilt unit between the pilot's and the remaining starboard observer's porthole. Physico-chemical data was collected using a SeaBird SBE19 CTD and an SBE43 oxygen sensor attached to the top of the vehicle next to the hatch turret and correlated to the presence of a given animal by matching the timecode on the CTD series to the timecode on video. Water mass structure in the waters around the dive sites were investigated using XCTD probes.

Direct visual observation through the portholes of the crewed submersible *Shinkai 6500* allowed accurate identifications of gelatinous zooplankters in situ due to the superior resolution and focusing speed of the human eye over video cameras mounted on hydraulic pan-tilt units. The volume of water investigated was also greater in comparison to that surveyed by ROVs per unit time because of the slow response speed of the focussing and zoom functions on the video camera compared to peripheral vision and rapid focusing in the human eye.

Video will be analysed using a Sony HDW-M2100 Deck with an editing jog controller that will allow us to move frame by frame through a recorded observation to resolve morphological details such as tentacle number and estimate bell contraction rate. Images will be captured from videotape through the SDI output using an HVD04 capture card and saved in Quicktime TIFF format. To increase the accuracy of morphological measurements the gamma value and exposure of frame grabs or digital stills may sometimes be adjusted to make edges more visible.

RESULTS

Vertical transects were made on all dives during this cruise using the NTSC cameras aboard the *Shinkai 6500*. Transects were also recorded on the external HDV camera on dives 1037-1041. This data will be analyzed back in the land laboratory. Transects based on counting by eye were made on dives 1037 and 1039 (observer: Dhugal Lindsay) and data recorded on the audio track of the video tape with additional information from visual counts during dives 1038 (observer: James Reimer) and 1041 (observer: Frederic Sinniger) recorded as sketches with descriptional notes. The distributions of the narcomedusa *Solmissus incisa* and the lobate ctenophore genus *Bathocyroe* should be able to be characterized on the basis of these combined dives. Dives 1037 and 1039 will be analyzed in detail back in the land laboratory to assess community structure vs depth and the factors determining distribution in key species.

Two undescribed species of the genus *Sigiweddelia* were sampled, their morphology when fresh recorded, samples taken and stored in 99.5% ethanol at -80°C for DNA analysis, and the voucher specimens preserved in 5% formalin. Species descriptions of these animals will be done and their position in the cnidarian tree of life determined through collaboration with the Tree of Life Project at the Smithsonian Museum. One undescribed species of benthic/benthopelagic ctenophore was

videotaped, photographed, and tissue fragments recovered. It appears to be a relative of the ctenophore described by Lindsay and Miyake (2007). Its phylogenetic position within the Phylum Ctenophora will be investigated in collaboration with Dr. James Reimer, University of the Ryukyus.

The recently described doliolid *Doliolula equus* Robison, Raskoff & Sherlock, 2005 was captured for the first time outside of the Monterey Bay, California, and we plan to publish this occurrence in the relevent literature.

DISCUSSION

Several important design flaws exist in all serving manned submersibles (see Armstrong et al. 2004). The ballast system on every single manned submersible in the world fleet, including the *Shinkai 6500*, only allows one horizontal transect, of maximum thickness 1000m, to be made in a single dive. Once the main ballast that is used for descent has been jettisoned and the sub trimmed to neutral buoyancy, the sub can no longer descend at the same speed as before once a transect is done. Descent is only possible through filling the ballast tanks with water and sinking extremely slowly or by using the thrusters to descend. Although a typical midwater dive involves horizontal (or oblique) transects at various depths in the water column to contrast and compare the communities living at different depths, in the former case it would take too long to descend to depths over 5000m once a transect had been made at 1000m (and 2000m, 3000m, 4000m), while in the latter case the batteries would run out before a full set of transects could be made.The "New Alvin", which is scheduled to begin operations in 2008, has been designed specifically to overcome this flaw and make midwater research more competitive in terms of science per unit dive time, in a large part because a recent NSF-sponsored study on "Future needs in deep submergence science" identified midwater research as one of the major fields of future expansion in deep sea research due to scientific drivers outlined in the report (Armstrong et al. 2004).

It is hoped that modifications can be made to the *Shinkai 6500* to facilitate surveys of the largest biome on our planet – the midwater zone.

YK07-15 Cruise Report

Zoanthid Group

James Davis Reimer[1, 2], Frederic Sinniger[1], Yuka Irei[1], Takuma Fujii[1], and Eriko Shiroma[1]

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Purpose:

Until recently, no zoanthids (encrusting anemones, Order Zoantharia) had been described from any chemosynthetic environment. However, numerous individuals of an unidentified sediment-encrusted zoanthid-like species were observed and sampled during *Shinkai 6500* deep-sea submersible dive #884 (June 18, 2005) at a methane cold seep (depth=3259m) off Muroto at the Nankai Trough, Japan (32°34.945'N, 134°41.545'E) (Reimer et al. 2007X). Unlike previously described deep-sea zoanthids, *Abyssoanthus nankaiensis* Reimer & Fujiwara 2007 (family Abyssoanthidae) is non-colonial, free-living (non-commensal), and uniquely is found on mudstone in the vicinity of a

methane cold seep.

Following the Nankai Trough report, similar zoanthids were observed but not collected at a deeper site at Miyako-oki, Japan Trench (depth = 5350m) during *Shinkai 6500* dive #959 in summer 2006. The purpose of this research cruise is to observe and collect more samples of *Abyssoanthus nankaiensis* or related species at the Japan Trench, and characterize the surrounding environment by examining core samples and the Foraminifera present (see "Foram" Group report). Additionally, we will attempt to bring live specimens to ShinEnoshima Aquarium (Enoshima, Kanagawa, Japan) where they can be observed in the deep tank. These invaluable field and rearing observations will help us learn more about the biology of this enigmatic deep-sea anthozoan.

Background:

Novel zoanthids at the Nankai Trough

The Order Zoantharia (=Zoanthiniaria, Zoanthidea) is found worldwide in most marine environments. Zoanthids are characterized by the presence of two rows of tentacles and one siphonoglyph, with the majority of species described thus far being colonial and encrusted with sand and/or other detritus. Despite such conspicuous morphological characteristics, Zoantharia remains a poorly described, understood and inventoried group. Until recently, Zoantharia was divided into two suborders, Macrocnemina and Brachycnemina, based on the organization of septa (Haddon and Shackleton 1891). Septa data are only

obtainable by cross-sections, which are unusually difficult to obtain from small, encrusted zoanthids. However, Sinniger *et al.* (2005) showed that based on molecular data these two suborders are invalid taxonomic groupings, with Macrocnemina being paraphyletic. Thus, currently, no single morphological characteristic can be reliably used to identify zoanthid specimens. However, recent work combining both molecular and morphological techniques has begun to bring taxonomic order to some groups of zoanthids (Sinniger *et al.* 2005, Reimer *et al.* 2004, 2006).

Deep-sea zoanthids have been reported worldwide at depths of up to 5000m (reviewed in Ryland *et al.*, 2000), and all deep-sea zoanthids identified until now have been characterized as belonging to the genus *Epizoanthus* (family Epizoanthidae). Both shallow water and deep-sea *Epizoanthus* species have been characterized to generally be; 1) azooxanthellate (although zooxanthellate species exist), 2) epizoic on a wide variety of substrate organisms (including mollusks, pagurid crabs [Muirhead *et al.* 1986], and hyalonematid glass sponges [Beaulieu 2001]) (excepting non-commensal species such as *E. couchii* and *E. paxi*), and 3) colonial, with individual polyps connected by a stolon or coenenchyme.

During a recent *Shinkai 6500* deep-sea submersible dive (Dive #884, June 18, 2005) at the Nankai Trough off Japan (32°34.945'N, 134°41.545'E), numerous polyps of a sediment-encrusted Zoantharia-like species were discovered on blocks of mudstone at 3259 m. Unlike most previously reported

deep-sea Zoantharia species of the family Epizoanthidae, observed specimens were non-colonial and free-living, and also uniquely inhabited a methane cold-seep chemosynthetic environment. Specimens were collected and compared morphologically and genetically (utilizing mitochondrial 16S rDNA and cytochrome oxidase c subunit I (COI) DNA and nuclear 5.8S-rDNA markers) to samples from the other described families in the order Zoantharia: Epizoanthidae, Parazoanthidae, Sphenopidae, and Zoanthidae. As ecological, morphological, and molecular characteristics were all significantly different from known families in the order Zoantharia, our specimens were attributed to a new family, new genus, and new species. Based on morphological characteristics and obtained genetic sequences, the family Abyssoanthidae is the first zoanthid group described from a chemosynthetic ecosystem.

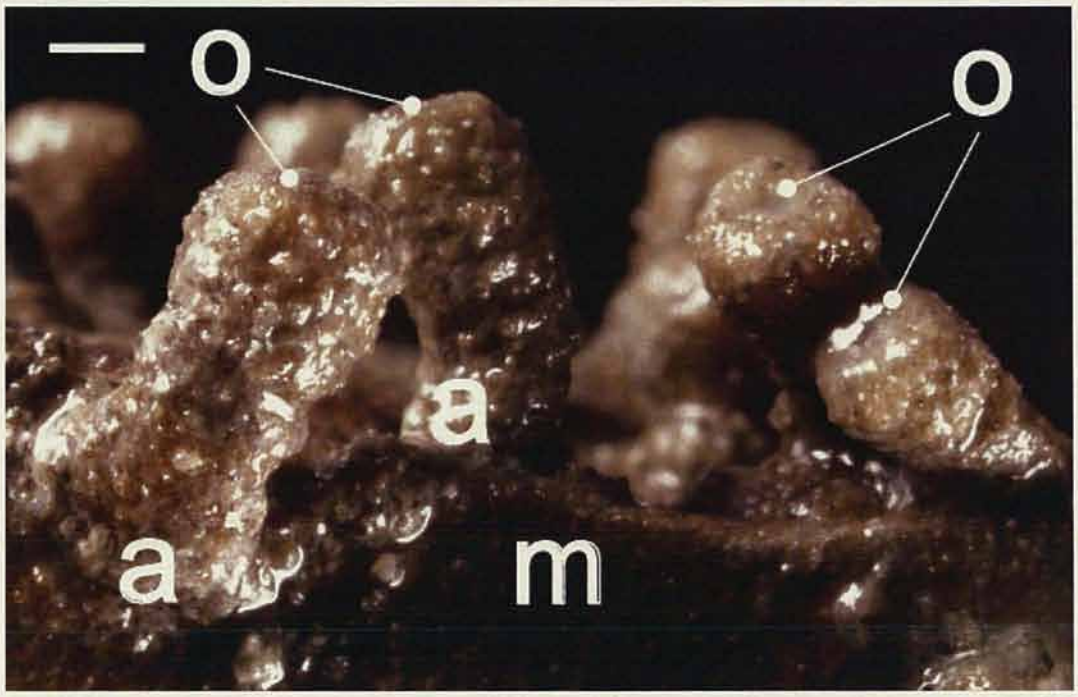


Figure 1 – *Abyssoanthus nankaiensis* sp. nov. polyps on mudstone (m), showing several individual closed polyps. Encrusted sediment is evident on the polyp surface. White bar=1 mm, o= oral opening/oral end, a=aboral end.

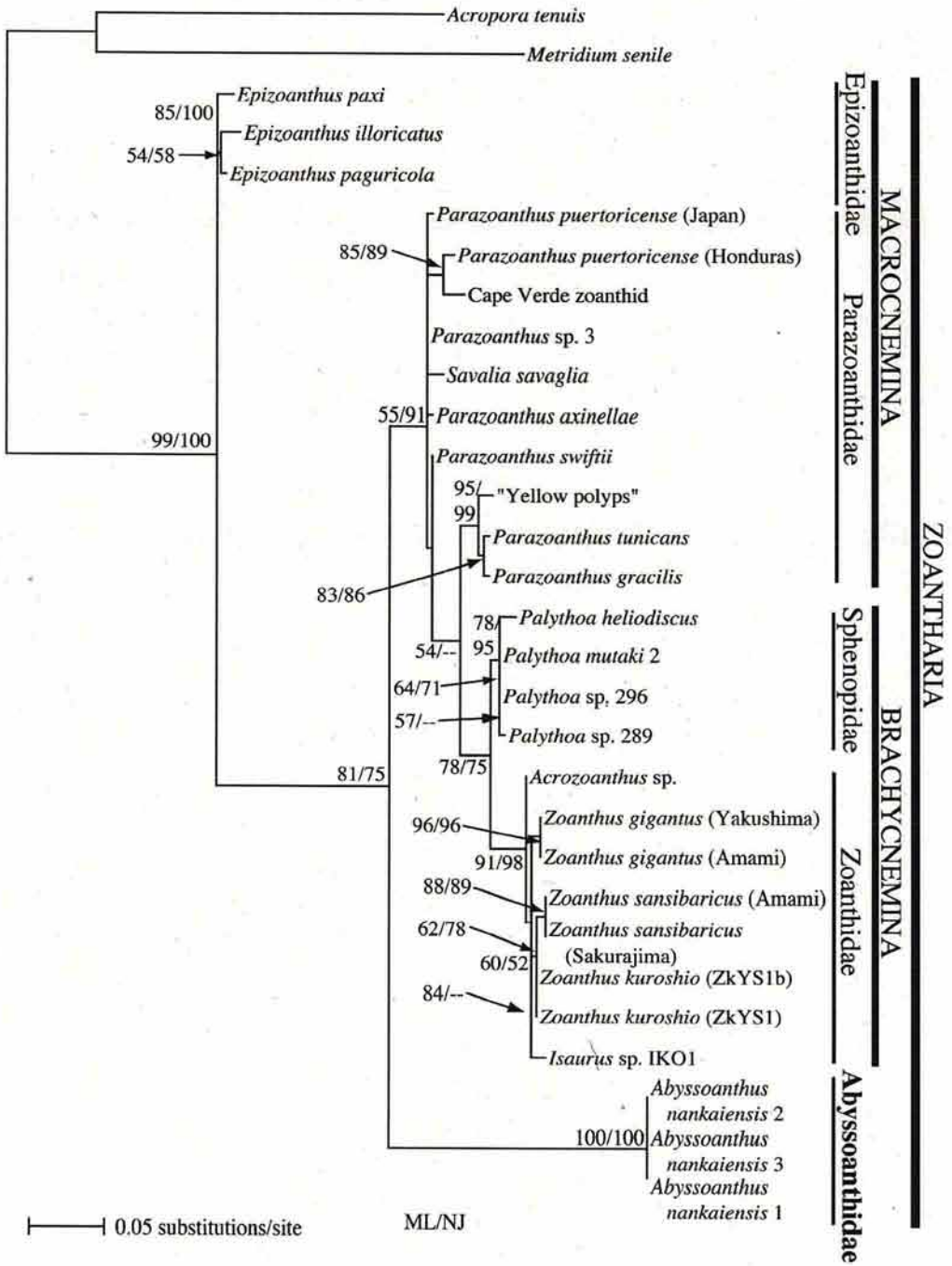


Figure 2 - Maximum likelihood tree of obtained mitochondrial cytochrome oxidase c subunit I sequences. Values at branches represent ML and NJ

bootstrap probability, respectively (>50%).

Methods:

Specimen collection

Using the *Shinkai 6500*, numerous zoanthid and other benthic organisms were collected during dives #1038 and #1041 at depths of 5347 –5360 m (see attached Specimen Lists and Dive Logs). The majority of samples were collected attached to mudstone by using the submersible's manipulator arms and sampling boxes, although a few specimens and small rocks were collected with the slurp gun.

Additionally, core samples were taken during all dives using the *Shinkai 6500*'s manipulator arms MBARI core samplers. For a complete list of core samples obtained, refer to the attached MBARI cores document.

Specimen observation and fixation:

Initially, samples were placed in cold water (approx. 2~4°C) tanks in attempts to observe living specimens with open polyps. Unfortunately, no specimens appeared to have survived the ascent during dive #1038, and all specimens were subsequently preserved. For most specimens, polyps were preserved at –80°C, in 99.5% ethanol at –30°C, and in 10% SW formalin at room temperature (see attached Zoanthid Group Sample List). The few specimens collected from dive #1041 appeared to be in better shape, and will be brought alive to Enoshima Aquarium for further study and observation (see attached Enoshima Sample List document).

Preliminary results:

The ecosystem observed during dives #1038 and 1041 was very rich, with both large numbers of various benthic deep-sea animals, and many of these species present in large numbers (see Dive Log). The majority of collected specimens belonged to two putative colonial benthic cnidarian species; an Abyssoanthidae zoanthid and an undescribed octocoral. Both species appeared abundantly on scattered mudstone found in mud at the base of a cliff/slope just to the west of the dive sites, with no specimens observed directly on the mud, and few if any colonies present slightly higher and west along the mudstone cliffs and slopes. For detailed sample information, please see the attached Sample Lists and Dive Logs.

Additionally, other specimens (sea anemones, sponges, sea cucumbers) were collected and will be examined further at JAMSTEC or other institutions (see Zoanthid Group Sample List).

Objectives for this cruise were all successfully completed. We were able to collect numerous zoanthid samples for future genetic and morphological studies. High resolution, in situ images of these zoanthids were also obtained to aid in morphological characterization. Additionally, live specimens will be taken to Enoshima Aquarium for further observation. Core samples of the mud from this environment were also taken to confirm or deny the presence of chemosynthetic bacteria. Additionally, images and numerous samples (fixed and living) of an undescribed octocorals will likely result in the description of another

new deep-sea benthic colonial cnidarian, further shedding light on the diversity of these animals in the deep sea.

References:

Beaulieu, S.E. (2001). Life on glass houses: sponge stalk communities in the deep sea. *Marine Biology* **138**, 803-817.

Haddon, A.C., and Shackleton, A.M. (1891). Reports on the zoological collections made in Torres Strait by Professor A.C. Haddon, 1888-1889. Actinae: I. Zoantheae. *Scientific Transactions of the Royal Dublin Society* **4**, 673-701.

Muirhead, A., Tyler, P.A., and Thurston, M.H. (1986). Reproductive biology and growth of the genus *Epizoanthus* (Zoanthidea) from the north-east Atlantic. *Journal of the Marine Biology Association of the United Kingdom* **66**, 131-143.

Reimer, J.D., Ono, S., Iwama, A., Tsukahara, J., Takishita, K., and Maruyama, T. (2006). Morphological and Molecular Revision of *Zoanthus* (Anthozoa: Hexacorallia) From Southwestern Japan With Description of Two New Species. *Zoological Science* **23**, 261-275

Reimer, J.D., Ono, S., Fujiwara, Y., Takishita, K., and Tsukahara, J. (2004). Reconsidering *Zoanthus* spp. diversity: molecular evidence of conspecificity within four previously presumed species. *Zoological Science* **21**, 517-525.

Reimer, J.D., Ono, S., Takishita, K., Tsukahara, J., and Maruyama, T. (2006). Molecular evidence suggesting species in the zoanthid genera *Palythoa*

and *Protopalythoa* (Anthozoa: Hexacorallia) are congeneric. *Zoological Science* **23**, 87-94.

Reimer, J.D., Hirano, S., Fujiwara, Y., Sinniger, S., and Maruyama, T. (2007). Morphological and molecular characterization of *Abyssoanthus nankaiensis*, a new family, new genus and new species of deep-sea zoanthid (Anthozoa: Hexacorallia: Zoantharia) from a northwest Pacific methane cold seep. *Invertebrate Systematics* **21**: 255-262.

Ryland, J.S., de Putron, S., Scheltema, R.S., Chimonides, P.J., and Zhadan, D.G. (2000). Semper's (zoanthid) larvae: pelagic life, parentage and other problems. *Hydrobiologia* **440**, 191-198.

Sinniger, F., Montoya-Burgess, J.I., Chevaldonne, P., and Pawlowski, J. (2005). Phylogeny of the order Zoantharia (Anthozoa, Hexacorallia) based on mitochondrial ribosomal genes. *Marine Biology* **147**, 1121-1128.

Takishita K., Yubuki N., Kakizoe N., Inagaki Y., Maruyama T. (2007). Diversity of microbial eukaryotes in sediment at a deep-sea methane cold seep: surveys of ribosomal DNA libraries from raw sediment samples and two enrichment cultures. *Extremophiles* **11**: 563-576.

Future Research:

Collected zoanthid and octocorals specimens will be examined phylogenetically. In particular, zoanthids from the Japan Trench will be compared to previous Abyssoanthidae from the Nankai Trough using the

ITS-rDNA to confirm or deny whether these samples are conspecific or not. As well, as abundant samples were collected, morphological observations (mesentery number, presence or absence of gametes) can now be undertaken. With in situ images, expanded polyp sizes and tentacle number data will be recorded.

The octocorals specimens will also be examined both phylogenetically (using mt 16S rDNA, COI, etc) and morphologically, as it is expected this will be the first described soft coral from the deep sea.

MBARI core samples will be cultured and DNA extracted to investigate the presence of bacteria in the mud, following procedures established in Takishita et al. (2007). This will allow us to better characterize the environment we observed during the dives.

Other specimens (anemones, sponges, etc.) will be sent to experts in their respective fields for further investigation.

Appendix

Attached Excel Files:

1. Dive Logs:

a. Dive #1038 (including mid-water observations)

b. Dive #1041 (including mid-water observations)

2. Sample Lists:

a. zoanthids and other fixed specimens

b. live specimens to Enoshima Aquarium

3. Foram Group files and documents:

a. Foram Group cruise report (MS Word)

b. Foram Group sample list (Excel)

c. MBARI Core list (MS Word)

Forams group - *Preliminary report*

Jan Pawlowski, Masashi Tsuchiya

Purposes

The main objective of this project was to describe the deep-sea foraminifera associated with zoanthids fauna from Japan Trench. Special attention was given to large foraminiferan-like organisms, such as Xenophyophoreans and Komokiaceans, which origins and relationship to other eukaryotes are not elucidated yet.

The specific aims of this project were:

- To collect and isolate all living foraminifera and foraminiferan-like species from deep-sea sediments where zoanthids were collected;
- To identify morphologically the common foraminiferan species and to describe the new species;
- To extract DNA from all collected foraminiferans for further phylogenetic and taxonomic study.

Background

Foraminifera are a significant but often overlooked component of deep-sea benthic fauna. These organisms are usually of size smaller than 0.5 mm and include numerous species of organic-walled allogromiids, finely agglutinated saccaminids and more coarsely agglutinated astrorhizids and textulariids. The tests of many of these species do not fossilize and do not preserve well in geological samples. Therefore, they have been usually overlooked and comprise a large number of unknown and undescribed species.

This is also the case of foraminifera-like xenophyophoreans and komokiaceans. These large, macrofaunal size organisms are common in many deep-sea settings, but their diversity is poorly known. Their skeleton is often built of extremely fragile agglutinated tubes and it is difficult to collect them intact by classical boxcore or multicore sampling.

Our knowledge about the distribution of deep-sea benthic foraminifera is largely limited to the calcareous and multichambered agglutinated species. Very little is known about the distribution of single-chambered organic-walled and agglutinated species that

dominated in deep-sea trenches. Nothing is known about the possible association of these species with other benthic deep-sea animals, such as zoanthids, sea anemones or sponges.

Methods

The samples for foraminiferal study were collected using push cores. The cores were taken preferentially in the vicinity of zoanthids colonies or where the branching structures of xenophyophoreans or komoki were observed.

On board, the foraminifera were isolated from surface sediment samples (0-2 cm) collected by push-corer. For each core, a subsample of 5 ml of surface sediment was collected and immediately deep frozen at -80°. These samples will be used for total DNA extraction and the study of microforaminiferal diversity. The remaining sediment was sieved on 0.5 mm and 0.125 mm meshes and stored at 4°C. Specimens of living foraminifera were then isolated under a dissecting microscopes. The isolated foraminifera were grossly identified, and either immediately processed for DNA extraction in guanidine buffer or frozen at -80° for further molecular study. Additionally, some foraminifera were fixed in ethanol or formalin for further morphological study.

Preliminary Results

Until now, 9 cores were collected during the dives 1036-1039.

The most spectacular finding was certainly the collection during dive 1037 of a large specimen of xenophyophore, which represent possibly a new species (Fig. 1). After taken several subsamples for DNA study, the specimen was frozen and will be examined in details in laboratory. The video record from the diving site shows a large number of similar but morphologically variable forms suggesting that this site may be particularly suitable for further study of xenophyophorean diversity.

The large fraction (> 0.5 mm) of other cores contained some fragments of komokiaceans, large astrorhizids (Astrorhiza, Hyperammina, Hormosina, Saccammina) and few gromiids. The small fraction (0.125 – 0.5 mm) contained many specimens of organic walled genus *Micrometula* and agglutinated genus *Bathysiphon*. We found also many small silver saccaminids, white saccaminids, Nodellum-like specimens and Reophax spp.

A new species of small elongate saccaminid with characteristic yellow-green colour was found in samples collected at sites 1038 and 1039.
In total, 57 single individual DNA extractions were performed and 48 samples containing several specimens of each species were frozen.
The list of collected genera and morphotypes is enclosed below.

Acknowledgements
We thank the cruise scientific leaders Dhugsal Lindsay and James Reimer as well as the captain and the crew of R/V Yokosuka and the Shinkai 6500 for excellent conditions of work at sea.

References

Table 1. List of genera and morphotypes collected during the YK07-15 cruise.

Name	1036	1037	1038	1039
Bathysiphon (digitate form)	x			x
Bathysiphon cf. argenteus	x	x	x	x
Bathysiphon filiformis		x	x	x
Crithionina hispida			x	
Gloiogullmia-like			x	x
Gromia with stercomata inside	x	x	x	x
Hormosina sp.	x			x
Hyperammina sp.		x	x	
Komoki (chains)	x			x
Komoki (Edgertonia)		x		
Komoki (Lana-like)		x		x
Komoki (Septuma-like)		x	x	

Komoki (undet fragments)		x	x	x
Lagenammina spp.	x		x	x
Marsipella-like			x	
Micrometula sp.			x	x
Nemogullmia (short form)			x	x
New yellow-green saccamminid			x	x
Nodellum sp.	x	x		
Pelosina-like				
Reophax spp.	x	x	x	x
Saccammina sphaerica			x	x
Silver saccamminid (elongate)			x	
Silver saccamminids (ovoid)	x		x	x
Undet allogromiids		x		
Vanhoeffenella	x			x
White saccamminids (ovoid)	x		x	x
White saccamminids (short stick)				x
Xenophyophorean		x		

Fig. 1 A large xenophyophore from 1037 dive

Forams group - *Preliminary report*
II. Cores

Dive #1036

Core (White): Thick oxygenated layer (reddish brown clay, Olive grey clay)


Sieved 125µm, 3ml of <125µm sediments were stored in Foramalin, -80°C, 4°C

Core (Yellow): No head space, disturbed sediment surface

Dive #1037

Core (Green): Xenophyophoreans, Thick reddish brown clay



Sieved 125µm, 3ml of <125µm sediments were stored in Foramalin, -80°C, 4°C

Core (Yellow)


Dive #1038

Core (Yellow)


Sieved 125µm, 3ml of <125µm sediments were stored in Foramalin, -80˚C, 4˚C

Core (White), No head space, disturbed sediment surface

Dive #1039

Core (Green); Living Vestimentiferan tube worm; Sea anemone, amphipod attached on the tube)



Core (White)


Sieved 125µm, 3ml of <125µm sediments (Green + White) were stored in Foramalin, -80˚C, 4˚C

Core (Yellow)


Dive #1040

Core (Green)


Sieved 125μm, 3ml of <125μm sediments were stored in Foramalin, -80°C, 4°C

Core (White); No cores (sediment inside), retrieved from core case

Dive #1041

Core (Yellow); No head space, disturbed sediment surface

for environmental DNA study: Reimer & Takishita

Core (Green); A few sediments, kept in 4°C

Slurp gun residues: Sieved 125μm, 3ml of <125μm sediments were stored in Foramalin, -80°C, 4°C

Sample Data

Sample#		Sample name	Photo#	Cruise#	Dive#	Site	Depth (m)	Date	Lat/Long	Destination (sent to)	Core #	Mag. Object.lens	preservation
1		Psammosphaerid	3990	YK07-15	6K#1036	Japan Trench	6406	12-Oct-07	39-24.1602N 144-26.1275E	Tsuchiya	Green		Guanidine
2		Komokiacean (branched tube type)	3994										"
3		Hormosina monile	3995										"
4		Komokiacean /Psammosphaerid type	3998										"
5		Komokiacean (branched tube type)	4000										"
6		Lagenammina sp.5 like (large grain size)	4002										"
7		Komokiacean /Psammosphaerid type	4003										"
8		mixed	4005										Deep freeze
9		Komokiacean (Normania)	4007										Guanidine
10		Komokiacean /Saccaminid type11-like (aggregates with sed.)	4015										Deep freeze
11		Komokiacean /Psammosphaerid type (2 chambered)	4016										Guanidine
12		Komokiacean /Psammosphaerid type (5 chambered)	4018										"
13		Komokiacean-like sp.22 type (bush type)	4020										"
14	same as 13	Komokiacean-like sp.22 type (bush type)											"
15	same as 2	Komokiacean (branched tube type)											"
16		Komokiacean /Psammosphaerid type (5 chambered)	4021										"
17		Komokiacean (network tube type)	4030	YK07-15	1037	Japan Trench	5435	14-Oct-07	38-14.8175N 147- 0.1885E	Tsuchiya	Green		Deep freeze
18		Saccaminid (smooth surface)	4031										"
19		Reophax sp.11 like (with coarse grain)	4033										"
20		Reophax	4047										"
21		Reophax? (frag.)	4048										"
22		Komokiacean (tube with root?)	4051										"
23		attached chain (3 pieces)	4052										"
24		Reophax	4054										"
25		Komokiacean? (chain type)	4055										"
26		Komokiacean? (chain type)	4057										"
27		Reophax	4037										"
28		Catena-type chain	4062										"
29		Reophax	4063										"
30		Komokiacean? (chain type with blackish inside)	4065										"
31		Komokiacean? (tube type with blackish inside)	4067										"

32		"	4068									3.2	"
33		Komokiacean? (tube type)	4069									3.2	"
34		attached chain	4072									4	"
35		Komokiacean? (chain type with blackish inside)	4073									3.2	"
36		Reophax (black dots inside, stercomata?)	4075									3.2	"
37		Laggenammina sp.17 -like	4076									3.2	"
38		Hormosinella sp.2-like	4077									3.2	"
39		Psammosphaerid?	4079									3.2	"
40		attached chain	4080									3.2	"
41		Komokiacean? (chain type with blackish inside)	4081									3.2	"
42		Reophax? (frag.)	4082									3.2	"
43		Xenophyophorean (Black tube with stercomata?)	4090~ 4105										"
44		"											"
45		"											"
46		"											"
47		"											"
48		Xenophyophorean (White tube)											"
49		"											"
50		Nodellum-like form 1a type	4121									2.5	"
51		Komokiacean-like sp.22 type (bush type)	4124									2.8	"
52		Gromia with stercomata	4128									3.2	"
53		Saccminid	4131									3.2	"
54		Komokiacean (branched chain type)	4137									2.5	"
55		"	4139									2.5	"
56		Saccaminid	4140									"	"
57		Hormosinella	4141									"	"
58		Komokiacean (branched chain type)	4142									"	"
59		Komokiacean /Psammosphaerid type	4144									"	"
60		Saccaminid sp.20 like	4149	YK07-15	1038	Zoanthus site	5349	22-Oct-07	39- 6.4027N 143-53.4865E	Tsuchiya	Yellow	2.5	Deep freeze
61		Saccaminid sp.20 like	4200									3.2	"
62		Yellow-green saccaminid?	4201									2.5	"
63		"	4202									"	"

64		Gromia (elongated) with stercomata	4203	"	"
65		Silver saccaminid	4204	"	"
66		Saccaminid	4205	"	"
67		Reophax	4206	"	"
68		Bathysiphon	4207	"	"
69		Bathysiphon (agg. With long needles)	4209	"	"
70		Bathysiphon	4210	"	"
71		"	4211	"	"
72		"	4212	"	"
73		"	4213	"	"
74		" (agg. With granular)	4215	"	"
75		" (agg. With granular with short needles)	4216	"	"
76		Reophax	4217	"	"
77		"	4218	"	"
78		"	4219	"	"
79		" (slim than 78)	4220	"	"
80		" (same as 79)	4221	"	"
81		Saccaminid sp.20 like	4223	"	"
82		Saccaminid	4224	"	"
83		Saccaminid (elongated)	4225	"	"
84		Reophax sp.1-like	4226	"	"
85		Reophax helenae?	4227	"	"
86		"	4229	"	"
87		Saccaminid? (blackish inside, stercomata?)	4230	"	"
88		"	4231	"	"
89		Lagenammina (blackish inside)	4232	"	"
90		Saccaminid? (blackish inside, stercomata?)	4234	"	"
91		Hormosinella	4235	"	"
92		Komokiacean /Psammosphaerid type (small sized)	4240	"	"
93		" (middle sized)	4241	"	"
94		" (large sized)	4242	"	"
95		Komikiacean (leaf-like)	4245	"	"

96		mud ball type Komiki-type15 like)	4246									"	"
97		Komokiacean-like sp.22 type (bush type)	4247									"	"
98		Saccaminid (blackish inside, stercomata?)	4250									"	"
99		Stainforthia	4252	YK07-15	1038	Zoanthus site	5349	22-Oct-07	39- 6.4027N 143-53.4865E	Tsuchiya	White	3.2	"
100		Saccaminid sp.20 like	4253									2.5	"
101		"	4254									"	"
102		Lagenammina	4256									"	"
103		Komokiacean /Saccaminid type6-like	4257									"	"
104		Reophax	4259 center									"	"
105		"	4259 left bot.									"	"
106		Saccaminid sp.20 like	4260 right									"	"
107		"	4260 left									"	"
108		Saccaminid?	4261									"	"
109		"	4263									"	"
110		Komokiacean (large sized)	4265									"	"
111		Komokiacean (middle sized)	4266									"	"
112		Komokiacean-like sp.22 type (bush type)	4267 right									"	"
113		"	4267 left									"	"
114		Komokiacean (branched tube type)	4269									"	"
115		Yellow-green saccaminid? 10 indivs.	4289	YK07-15	1039		5348	23-Oct-07	39- 6.3519N 143-53.4990E	Tsuchiya	Green	2.5	Formalin
116		Silver saccaminid	4291									"	Deep freeze
117		"	4292									"	"
118		"	4293									"	"
119		"	4295									"	"
120		"	4296									"	"
121		"	4298									"	"
122		"	4300 up. Left									"	"
123		"	4300 up.c-left									"	"
124		"	4300 up.c-right									"	"
125		"	4300 up.right									"	"
126		"	4300 dw.left									"	"
127		"	4300 dw.c-left									"	"

128		"	4300 dw.c-right										"	"
129		"	4300 dw.right										"	"
130		Vanhoeffenell	4303 4310										4	"
131		Komokiacean /Psammosphaerid type	4311										2.5	"
132		Hormosinella	4312										3.2	"
133		Komokiacean (chain)	4313										2.5	"
134		Reophax	4314										3.2	"
135		Reopahx sp.1a-like	4315										"	"
136		Allogromid	4316										"	"
137		Reophax helenae?	4317										"	"
138		Lagenammina (blackish inside)	4318 left										"	"
139		"	4318 right										"	"
140		Saccaminid? (blackish inside, stercomata?)	4323 up.left	YK07-15	1040		6429	24-Oct-07	39-23.7779N 144-26.2664E	Tsuchiya	Green	3.2	"	
141		"	4323 up.right										"	"
142		"	4323 dw.left										"	"
143		"	4323 dw.right										"	"
144		Komokiacean (network)	4324										2.5	"
145		Silver saccaminid	4325										3.2	"
146		Saccaminid?	4326										3.2	"
147		Saccaminid sp.20 like	4327 left										3.2	"
148			4327 right										3.2	"
149		Lagenammina?	4328										3.2	"
150		Ammobaculites?	4330										5.6	"
151		Reophax	4331										4	"
152		Bathysiphon	4332										4	"
153		Lagenammina	4333										3.2	"
154		Lagenammina?	4334										3.2	"
155		Reophax	4335										3.2	"
156		Reophax	4337										3.2	"
157		Gromia (globular) with stercomata	4339										5	"
158		Komoki (Catena-type?) Att.to Qtz grain	4343										4	"
159		Komoki (Catena-type?)	4344										4	"

160		Komokiacean	4345 4346		1040		6448	24-Oct-07	39-23.6976N 144-26.2720E	Tsuchiya	White	0.8 2.5	"
161		Gromia (globular) with stercomata			1041	Zoanthus site	5356	25-Oct-07	39- 6.2517N 143-53.4661E	Tsuchiya	Slurp gun		Formalin
162		Gromia (elongated) with stercomata									"		"
163		Yellow-green micrometula (2indivs.)									"		"
164		Komokiacean (branched tube type)									"		"
165		Komokiacean? (branched type with blackish inside)									"		"
166		Komokiacean /Psammosphaerid type									"		"
167		Komokiacean (branched tube type)									"		"
168		Lagenammina (blackish inside)									"		"
169		Komokiacean /Psammosphaerid type									"		"
170		Komokiacean /Psammosphaerid type									"		"
171		Saccaminid sp.20 like									"		"
172		Bathysiphon									"		"

Species	No.	Dive	Place	Depth	Date	Latitude/Longitude	Cruise	Comments	Storage	Preservation	Taxon	Identification	Lat	minutes		Long	minutes		Sample No.
Sigiweddelia sp nov	1	6K#1037	Japan Trench	5428	14/10/07	38 14.8593N/147 0.2468E	@YK07-15	6K1037SS1a (same as 6K1039SS1) 13:40 have 2 tubes of 99.5% EtOH preserved tissue in eppendorf at -80 have 1 tubes of 70% EtOH preserved tissue in eppendorf at -80 8 tentacles, 8 perradial manubrial pouches, about 9 secondary tentacles between each main tentacle with one sensory club with layered statocysts between each secondary tentacle and surrounded by a pit as in Sigiweddelia benthoelaoica same as 6K1039SS1	Lindsay Lab	5% Formalin fixation	Cni	Dhugal Lindsay	38	14.8593	N	147	0.2468	E	6K1037SS1a
Sigiweddelia sp nov	1	6K#1037	Japan Trench	5428	14/10/07	38 14.8593N/147 0.2468E	@YK07-15	6K1037SS1b (same as 6K1039SS1) 13:40 have 5% formalin preserved reference specimen have another tube of 99.5% EtOH preserved tissue in eppendorf at -80 have 1 tube of 70% EtOH preserved tissue in eppendorf at -80 8 tentacles, 8 perradial manubrial pouches, about 9 secondary tentacles between each main tentacle with one sensory club with layered statocysts between each secondary tentacle and surrounded by a pit as in Sigiweddelia benthoelaoica	Lindsay Lab	99.5%Ethanol (-80 CFreeze)	Cni	Dhugal Lindsay	38	14.8593	N	147	0.2468	E	6K1037SS1b
Sigiweddelia sp nov	1	6K#1037	Japan Trench	5428	14/10/07	38 14.8593N/147 0.2468E	@YK07-15	6K1037SS1c (same as 6K1039SS1) 13:40 have 5% formalin preserved reference specimen have another tube of 99.5% EtOH preserved tissue in eppendorf at -80 have 1 tube of 70% EtOH preserved tissue in eppendorf at -80 8 tentacles, 8 perradial manubrial pouches, about 9 secondary tentacles between each main tentacle with one sensory club with layered statocysts between each secondary tentacle and surrounded by a pit as in Sigiweddelia benthoelaoica	Lindsay Lab	99.5%Ethanol (-80 CFreeze)	Cni	Dhugal Lindsay	38	14.8593	N	147	0.2468	E	6K1037SS1c
Sigiweddelia sp nov	1	6K#1037	Japan Trench	5428	14/10/07	38 14.8593N/147 0.2468E	@YK07-15	6K1037SS1d (same as 6K1039SS1) 13:40 have 5% formalin preserved reference specimen have 2 tubes of 99.5% EtOH preserved tissue in eppendorf at -80 8 tentacles, 8 perradial manubrial pouches, about 9 secondary tentacles between each main tentacle with one sensory club with layerd statocysts between each secondary tentacle and surrounded by a pit as in Sigiweddelia benthoelaoica	Lindsay Lab	70%Ethanol (-80°C freeze)	Cni	Dhugal Lindsay	38	14.8593	N	147	0.2468	E	6K1037SS1d
benthopelagic polychaete	1	6K#1037	Japan Trench	5432	14/10/07	38 14.8686N/147 0.2578E	@YK07-15	6K1037SS1d 13:31	Lindsay Lab	99.5%Ethanol (-80 CFreeze)	Pol	Dhugal Lindsay	38	14.8686	N	147	0.2578	E	6K1037SS1d
mysid	1	6K#1037	Japan Trench	5431	14/10/07	38 14.874N/147 0.2642E	@YK07-15	6K1037SS6a 13:26	Lindsay Lab	99.5%Ethanol (-80 CFreeze)	Mys	Dhugal Lindsay	38	14.874	N	147	0.2642	E	6K1037SS6a
Holothurian	1	6K#1037	Japan Trench	5435	14/10/07	38 14.8593N/147 0.2468E	@YK07-15	6K1037SS6b rinsed a few times with ethanol to make sure high concentration gut was nice and full of sediment. good for DNA analysis?		99.5%Ethanol (-30 CFreeze)	Ech	Dhugal Lindsay	38	14.8593	N	147	0.2468	E	6K1037SS6b
Chelophyes contorta	1	6K#	Japan Trench (	0	16/10/07	37 29.6N/149 44.5E	@YK07-15	YK0715SP1 day have HDV under Leica microscope photos too?	Lindsay Lab	99.5%Ethanol (-80 CFreeze)	Cni	Dhugal Lindsay	37	29.6	N	149	44.5	E	YK0715SP1
Chelophyes contorta	1	6K#	Japan Trench (	0	16/10/07	37 29.6N/149 44.5E	@YK07-15	YK0715SP2 day	Lindsay Lab	99.5%Ethanol (-80 CFreeze)	Cni	Dhugal Lindsay	37	29.6	N	149	44.5	E	YK0715SP2
Chelophyes contorta	1	6K#	Japan Trench (	0	16/10/07	37 29.6N/149 44.5E	@YK07-15	YK0715SP3 day	Lindsay Lab	99.5%Ethanol (-80 CFreeze)	Cni	Dhugal Lindsay	37	29.6	N	149	44.5	E	YK0715SP3
Aglaura hemistoma	1	6K#	Japan Trench (	0	16/10/07	37 29.6N/149 44.5E	@YK07-15	YK0715SP4 day fully developed gonads were orange and so was velum have HDV under Leica microscope	Lindsay Lab	99.5%Ethanol (-80 CFreeze)	Cni	Dhugal Lindsay	37	29.6	N	149	44.5	E	YK0715SP4
Sigiweddelia sp nov (yellow species)	1	6K#1039	Japan Trench	5353	23/10/07	39 6.1476N/143 53.511OE	@YK07-15	6K1039SS1 (same as 6K1037SS1a) 11:51 have digital still photos in tank and also in situ.	Lindsay Lab	5% Formalin fixation	Cni	Dhugal Lindsay	39	6.1476	N	143	53.511	E	6K1039SS1a
Sigiweddelia sp nov (red species)	1	6K#1039	Japan Trench	5350	23/10/07	39 6.1750N/143 53.3643E	@YK07-15	6K1039SS2a (same as 6K1039SS3) 11:57 have digital still photos in tank and also in situ. have 3 tentacles in 99.5% EtOH at -80 dearees	Lindsay Lab	5% Formalin fixation	Cni	Dhugal Lindsay	39	6.175	N	143	53.4643	E	6K1039SS2a
Sigiweddelia sp nov (red species)	1	6K#1039	Japan Trench	5350	23/10/07	39 6.1750N/143 53.3643E	@YK07-15	6K1039SS2b (same as 6K1039SS3) 11:57 have digital still photos in tank and also in situ. 3 tentacles in 99.5% EtOH at -80 dearees have 5% formalin voucher specimen too	Lindsay Lab	99.5%Ethanol (-80 CFreeze)	Cni	Dhugal Lindsay	39	6.175	N	143	53.4643	E	6K1039SS2b
Sigiweddelia sp nov (red species)	1	6K#1039	Japan Trench	5350	23/10/07	39 6.1739N/143 53.4759E	@YK07-15	6K1039SS3a (same as 6K1039SS2) 12:05 have microscope digital still photos also in situ. have 2 tentacles in 99.5% EtOH at -80 dearees	Lindsay Lab	5% Formalin fixation	Cni	Dhugal Lindsay	39	6.1739	N	143	53.4759	E	6K1039SS3a
Sigiweddelia sp nov (red species)	1	6K#1039	Japan Trench	5350	23/10/07	39 6.1739N/143 53.4759E	@YK07-15	6K1039SS3b (same as 6K1039SS2) 12:05 have microscope digital still photos also in situ. 2 tentacles in 99.5% EtOH at -80 dearees also have 5% formalin voucher	Lindsay Lab	99.5%Ethanol (-80 CFreeze)	Cni	Dhugal Lindsay	39	6.1739	N	143	53.4759	E	6K1039SS3b
benthic ctenophore (new species)	1	6K#1039	Japan Trench	5358	23/10/07	39 6.1739N/143 53.4759E	@YK07-15	6K1039GS1a (same as 6K1041GS1C to GS1G) 12:55 simple tentacle, no tentilla. rounded tentacle bulb, yellow around bulb margin, otherwise all white have other tentacle also in 99.5% EtOH at -80 degrees also have 5% formalin voucher of filaments attached to stick, and the 2 cups that the filament attaches to in the ctenophore body. (includes an aseliote and polvchaete with tube)	James Reimer Lab	99.5%Ethanol (-80 CFreeze)	Cte	Dhugal Lindsay	39	6.1847	N	143	53.4638	E	6K1039GS1a
benthic ctenophore (new species)	1	6K#1039	Japan Trench	5358	23/10/07	39 6.1739N/143 53.4759E	@YK07-15	6K1039GS1b (same as 6K1041GS1C to GS1G) 12:55 simple tentacle, no tentilla. rounded tentacle bulb, yellow around bulb margin, otherwise all white have other tentacle also in 99.5% EtOH at -80 degrees also have 5% formalin voucher of filaments attached to stick, and the 2 cups that the filament attaches to in the ctenophore body. (includes an aseliote and polvchaete with tube)	Lindsay Lab	99.5%Ethanol (-80 CFreeze)	Cte	Dhugal Lindsay	39	6.1847	N	143	53.4638	E	6K1039GS1b
benthic ctenophore (new species)	1	6K#1039	Japan Trench	5358	23/10/07	39 6.1739N/143 53.4759E	@YK07-15	6K1039GS1c (same as 6K1041GS1C to GS1G) 12:55 5% formalin voucher of filaments attached to stick, and the 2 cups that the filament attaches to in the ctenophore body. (includes an aseliote and polychaete with tube) filaments were like fishing line. quite strong. A chemical analysis would be interesting. have Leica digital photos of the cups. also have 2 simple tentacles, no tentilla. rounded tentacle bulb, yellow around bulb margin, otherwise all white in seaarate vials in 99.5% EtOH at -80 dearees. with sketch in notebook	Lindsay Lab	5% Formalin	Cte	Dhugal Lindsay	39	6.1847	N	143	53.4638	E	6K1039GS1c
benthic ctenophore (new species)	1	6K#1041	Japan Trench	5355	25/10/07	39 6.25N/143 53.5E	@YK07-15	6K1041GS1C (same as 6K1039GS1) 11:58 (sampled by Frederic Sinniger) simple tentacle, no tentilla. rounded tentacle bulb, yellow around bulb margin, otherwise all white have other tentacle in 99.5% EtOH at -80 degrees also have -80 degree frozen voucher of filaments attached to stick also have 2 tubes of -80 dearee/99.5% EtOH tissue (with contaminants)	Lindsay Lab	5% Formalin	Cte	Dhugal Lindsay	39	6.25	N	143	53.5	E	6K1041GS1C
benthic ctenophore (new species)	1	6K#1041	Japan Trench	5355	25/10/07	39 6.25N/143 53.5E	@YK07-15	6K1041GS1D (same as 6K1039GS1) 11:58 (sampled by Frederic Sinniger) simple tentacle, no tentilla. rounded tentacle bulb, yellow around bulb margin, otherwise all white have other tentacle in 5% formalin also have -80 degree frozen voucher of filaments attached to stick also have 2 tubes of -80 dearee/99.5% EtOH tissue (with contaminants)	James Reimer Lab	99.5%Ethanol (-80 CFreeze)	Cte	Dhugal Lindsay	39	6.25	N	143	53.5	E	6K1041GS1D
benthic ctenophore (new species)	1	6K#1041	Japan Trench	5355	25/10/07	39 6.25N/143 53.5E	@YK07-15	6K1041GS1F (same as 6K1039GS1) 11:58 (sampled by Frederic Sinniger) tube of -80 degree/99.5% EtOH tissue (with contaminants) also have simple tentacle, no tentilla. rounded tentacle bulb, yellow around bulb margin, otherwise all white - one in 5% formalin and one frozen at 80 in 99.5% EtOH also have -80 degree frozen voucher of filaments attached to stick also have another tube of -80 dearee/99.5% EtOH tissue (with contaminants)	Lindsay Lab	99.5%Ethanol (-80 CFreeze)	Cte	Dhugal Lindsay	39	6.25	N	143	53.5	E	6K1041GS1F
benthic ctenophore (new species)	1	6K#1041	Japan Trench	5355	25/10/07	39 6.25N/143 53.5E	@YK07-15	6K1041GS1G (same as 6K1039GS1) 11:58 (sampled by Frederic Sinniger) tube of -80 degree/99.5% EtOH tissue (with contaminants) also have simple tentacle, no tentilla. rounded tentacle bulb, yellow around bulb margin, otherwise all white - one in 5% formalin and one frozen at 80 in 99.5% EtOH also have -80 degree frozen voucher of filaments attached to stick also have another tube of -80 dearee/99.5% EtOH tissue (with contaminants)	Lindsay Lab	99.5%Ethanol (-80 CFreeze)	Cte	Dhugal Lindsay	39	6.25	N	143	53.5	E	6K1041GS1G
benthic ctenophore (new species)	1	6K#1041	Japan Trench	5355	25/10/07	39 6.25N/143 53.5E	@YK07-15	6K1041GS1E (sampled by Frederic Sinniger) -80 degree frozen voucher of filaments attached to stick good for chemical analysis also have simple tentacles, no tentilla. rounded tentacle bulb, yellow around bulb margin, otherwise all white - one in 5% formalin, other in 99.5% EtOH at -80 also have 2 tubes of -80 degree/99.5% EtOH tissue (with contaminants)	Lindsay Lab	-80 deg. C freeze	Cte	Dhugal Lindsay	39	6.25	N	143	53.5	E	6K1041GS1E
munnopsid isopod	1	6K#1041	Japan Trench	5355	25/10/07	39 6.25N/143 53.5E	@YK07-15	6K1041B1 (sampled by Frederic Sinniger) kept for 15 hours at 4 degrees to dehydrate then out in -30 dearee freezer to send to Karen Osborne at MBARI	Lindsay Lab	99.5%Ethanol (-30 CFreeze)	Iso	Dhugal Lindsay	39	6.25	N	143	53.5	E	6K1041B1

GPS position	depth	date	collector	destination (sent to)	comments
38°14.8220' N	5435 m	14/10/07	D. Lindsay	Enosui	given to Enoshima aquarium (Enosui 6K1037-2)
38°14.8220' N	5435 m	14/10/07	D. Lindsay	JAMSTEC	white with tubercules, on a plastic bag
38°14.8220' N	5435 m	14/10/07	D. Lindsay	JAMSTEC	small red, on a plastic bag
39°06.4027' N	5349 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	
39°06.4027' N	5349 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	
39°06.4027' N	5349 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	
39°06.4121' N	5348 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	
39°06.4121' N	5348 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	
39°06.4121' N	5348 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	
39°06.4121' N	5348 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	
39°06.4121' N	5348 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	
39°06.4121' N	5348 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	
39°06.4121' N	5348 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	
39°06.4121' N	5348 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	
39°06.4121' N	5348 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	
39°06.4121' N	5348 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	small polyps linked by a stolon, whitish, maybe sand incrusted or sclerites...
39°06.4121' N	5348 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	small polyps linked by a stolon, whitish, maybe sand incrusted or sclerites...
39°06.4027' N	5348 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	small polyps linked by a stolon, whitish, maybe sand incrusted or sclerites...
ıpan Trench	5348 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	small polyps linked by a stolon, whitish, maybe sand incrusted or sclerites...
ıpan Trench	5348 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	
ıpan Trench	5348 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	small polyps linked by a stolon, whitish, maybe sand incrusted or sclerites...
ıpan Trench	5348 m	22/10/07	J.D. Reimer	Reimer Lab (Ryudai)	sponge plus sandy spot that might be a polyp (zoanthid or anemone?)
ıpan Trench	5348 m	22/10/07	J.D. Reimer	JAMSTEC	snail, shell perforated to allow better penetration of EtOH
39°06.4027' N	5349 m	22/10/07	J.D. Reimer	JAMSTEC	white "hairy" sponge and other sponge-like things.
39°06.4027' N	5349 m	22/10/07	J.D. Reimer	JAMSTEC	white "hairy" sponge
39°06.2517' N	5356 m	25/10/07	F. Sinniger	Enosui	sample given to the Enoshima aquarium to be kept alive (Enosui 6K1041-1)
39°06.4254' N	5362 m	25/10/07	F. Sinniger	Enosui	sample given to the Enoshima aquarium to be kept alive (Enosui 6K1041-2)

Sample #	day	time	dive no.	depth (m)	Site name	Lat/Long	name	n	Fixation method	Destination
Eno6K1037-1	10.14.2007	14:46	6K#1037	5435	Japan Trench	38° 8.220`N 147° 0.1823`E	pyclogonid	1	99.5% ethanol	Enoshima Aquarium
Eno6K1037-2	10.14.2007	14:46	6K#1037	5435	Japan Trench	38° 8.220`N 147° 0.1823`E	plasticbag (some polyps attached)	1	live	Enoshima Aquarium
Eno6K1037-3	10.14.2007	14:46	6K#1037	5435	Japan Trench	38° 8.220`N 147° 0.1823`E	shell	1	dead	(for Okutani)
Eno6K1039-1	10.23.2007	14:12	6K#1039	5348	Japan Trench	39° 6.3519`N 143° 53.4990`E	unknown sea anemone	1	live	Enoshima Aquarium
Eno6K1039-2	10.23.2007	14:12	6K#1039	5348	Japan Trench	39° 6.3519`N 143° 53.4990`E	shell	1	99.5% ethanol	(for Okutani)
Eno6K1041-1	10.25.2007	12:34	6K#1041	5356	Japan Trench	39° 6.2517`N 143° 53.4661`E	unknown octocoral	1	live	Enoshima Aquarium
Eno6K1041-2	10.25.2007	14:26	6K#1041	5356	Japan Trench	39° 6.4254`N 143° 53.4370`E	zoanthid (Abyssoanthidae?)	5	live	Enoshima Aquarium
Eno6K1041-3	10.25.2007	14:26	6K#1041	5356	Japan Trench	39° 6.4254`N 143° 53.4370`E	sea sponge	1	live	Enoshima Aquarium

6K#1036 – Site1-A

Oct. 12, 2007
Described by N.Abe

Sample Size: X= 12.5 cm, Y= 11.5 cm, Z= 9 cm
Weight: _____ g
Mn coating: thin
Color (inside): DBR - BL
Alteration: (no) weak strong
Vesicularity: 40 %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: thin
Phenocrysts= ol. 2 %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks <1cm Xenolith

6K#1036 – Site 1-B

Oct. 12, 2007
Described by N.Abe

Sample Size: X=__13__cm, Y=__12__cm, Z=__7.5__cm
Weight: _____ g
Mn coating: ___none_____
Color (inside): ____DBR - BL____
Alteration: no (weak) strong
Vesicularity: ____30_____ %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: _____mm
Phenocrysts= ol. 2 %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks

6K#1036 – Site 2-A

Oct. 12, 2007
Described by N. Abe

Sample Size: X=__23__cm, Y=__22__cm, Z=__14__cm
Weight: _____ g
Mn coating: ___thin___
Color (inside): _____BL_____
Alteration: (no) weak strong
Vesicularity: _____40____ %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: _____mm
Phenocrysts= ol. < 1 %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks large vesicles
表面はパン皮状

6K#1036 – Site 2-B

Oct. 12, 2007
Described by N. Abe

Sample Size: X= 22 cm, Y= 18 cm, Z= 13 cm
Weight: _____ g
Mn coating: thin
Color (inside): BR - BL
Alteration: no (weak) strong
Vesicularity: 30 - 40 %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: thin
Phenocrysts= ol. < 1 %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks large vesicles
~2cm Xenolith

6K#1036 – Site 2-C

Oct. 12, 2007
Described by N. Abe

SKETCH

Sample Size: X= 20 cm, Y= 16 cm, Z= 12 cm
Weight: _____ g
Mn coating: none
Color (inside): DBR - BL
Alteration: no (weak) strong
Vesicularity: 30 %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

Igneous & Ultramafic Rocks

Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: thin
Phenocrysts= ol. < 1 %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks

6K#1036 – Site 2-D

Oct. 12, 2007
Described by N. Abe

Sample Size: X=__11__cm, Y=__7.5__cm, Z=__6.5__cm
Weight: _____ g
Mn coating: ____thin____
Color (inside): _____BL_____
Alteration: (no) weak strong
Vesicularity: ____40____ %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: _____mm
Phenocrysts= ____%, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks extremely fresh

6K#1036 – Site 3-A

Oct. 12, 2007
Described by N. Abe

Sample Size: X=__35__cm, Y=__33__cm, Z=__23__cm
Weight: _____ g
Mn coating: __< 10__ mm
Color (inside): __GRAY - BR__
Alteration: no (weak) strong
Vesicularity: _____ %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: _____ mm
Phenocrysts= %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks

6K#1036 – Site 3-B

Oct. 12, 2007
Described by N. Abe

Sample Size: X= 16 cm, Y= 12 cm, Z= 10 cm
Weight: _____ g
Mn coating: thin
Color (inside): DBR
Alteration: no (weak) strong
Vesicularity: 25 %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: thin
Phenocrysts= ol. < 1 %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

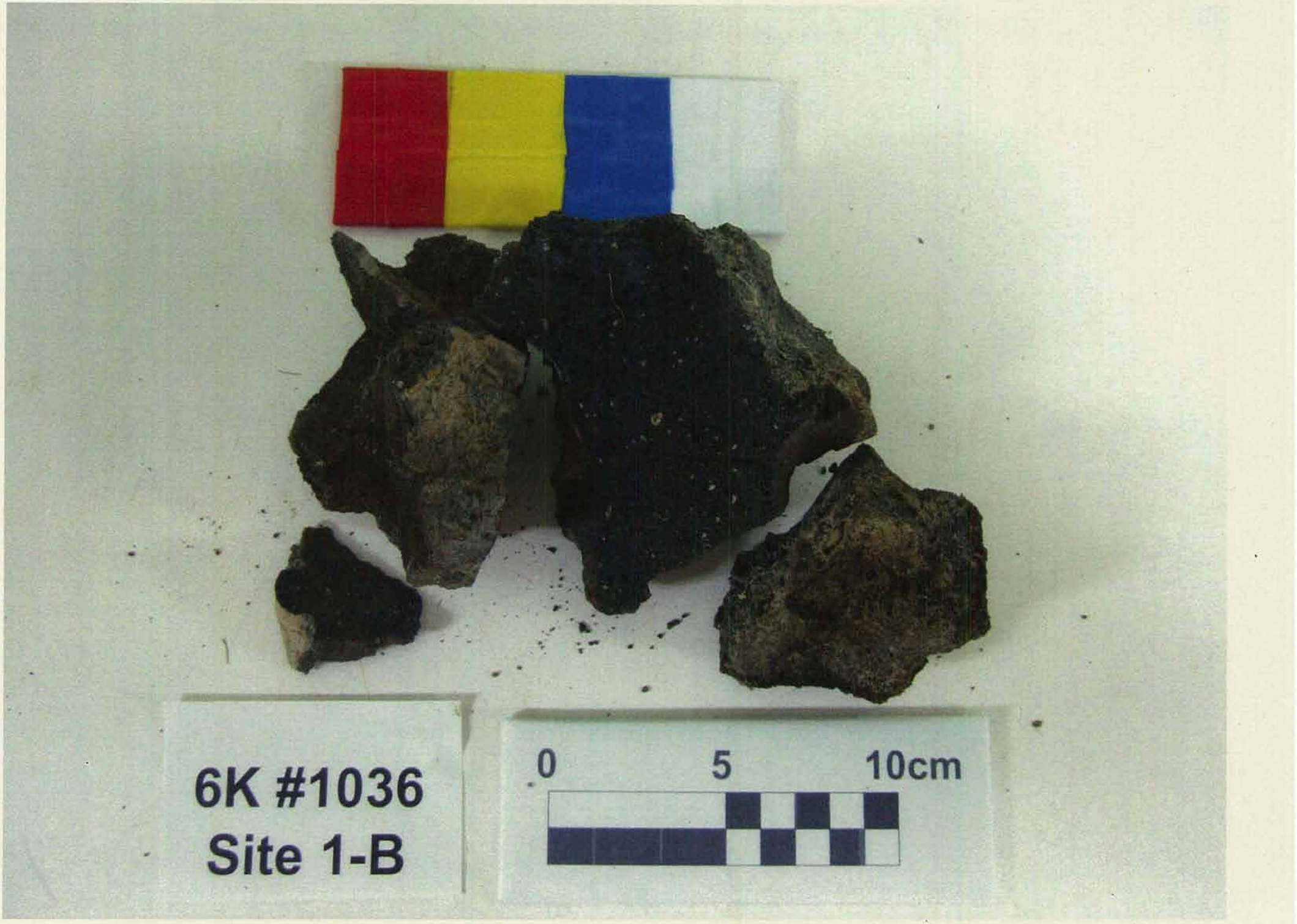
Sedimentary rocks & others (characteristic of the clasts)

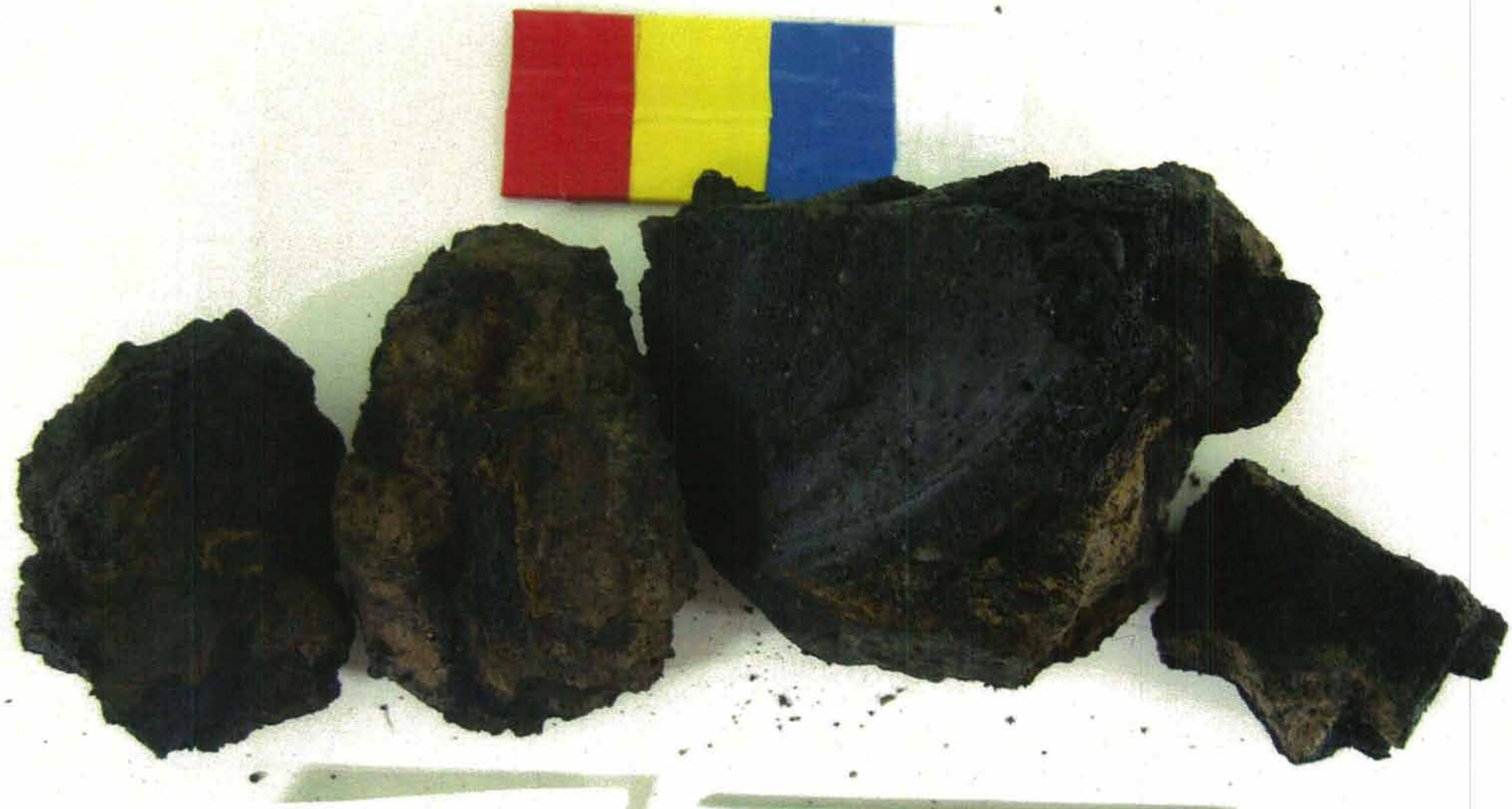
Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks large vesicles
ropy structure visible


1
METRIC 2
1
INCH

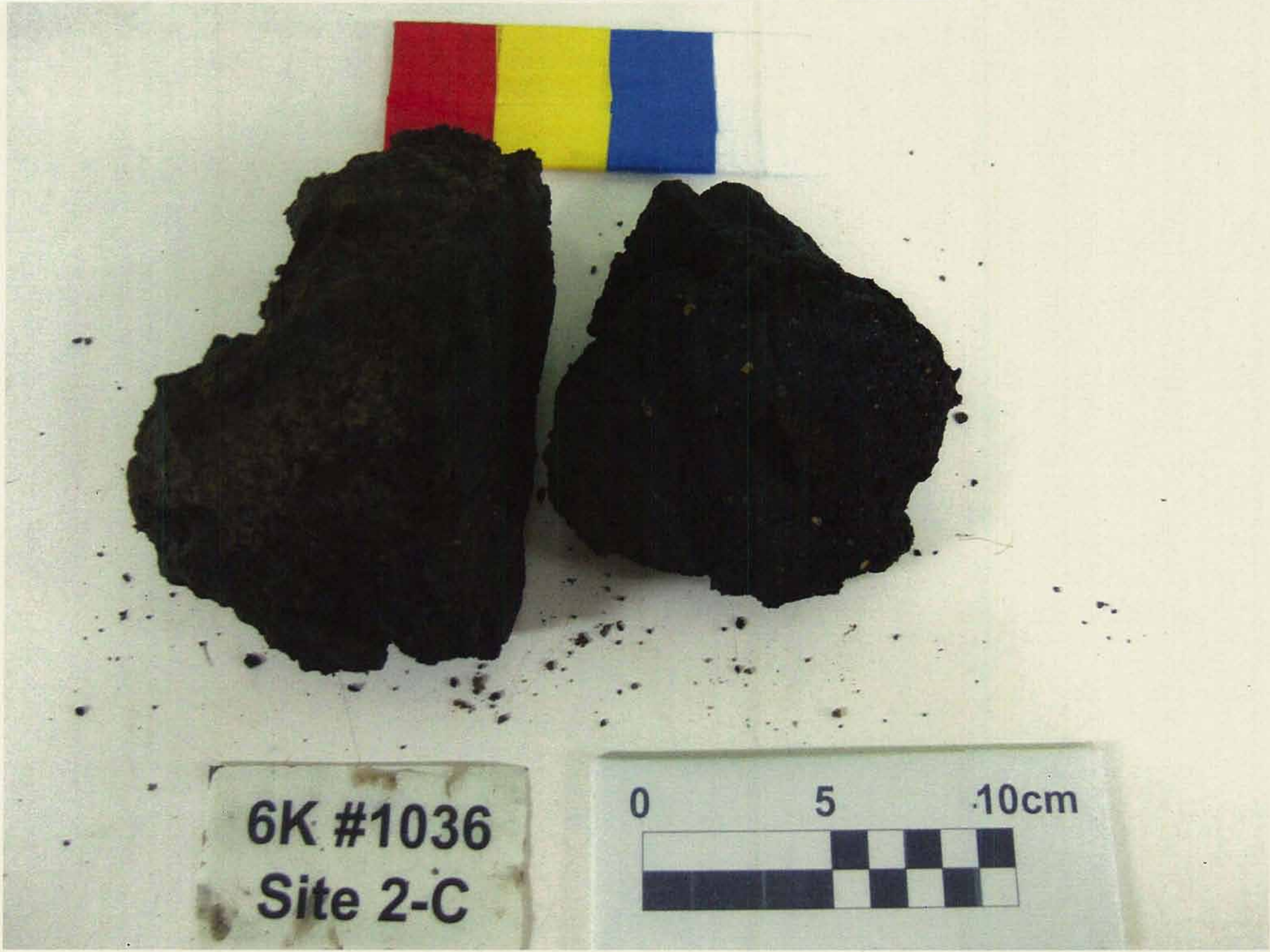

6K #1036
Site 1-A
0
5
10cm

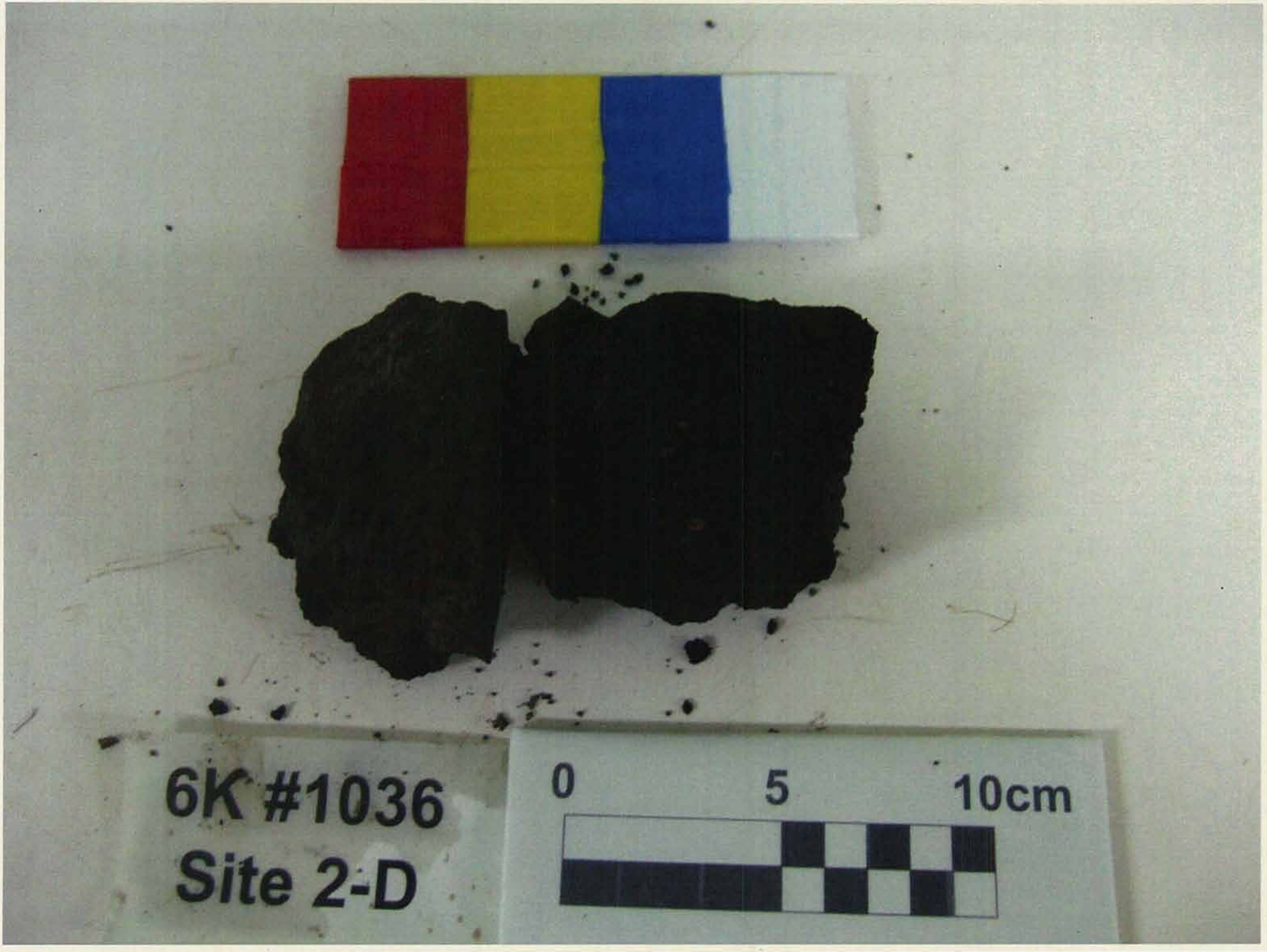

6K #1036
Site 1-B
0
5
10cm

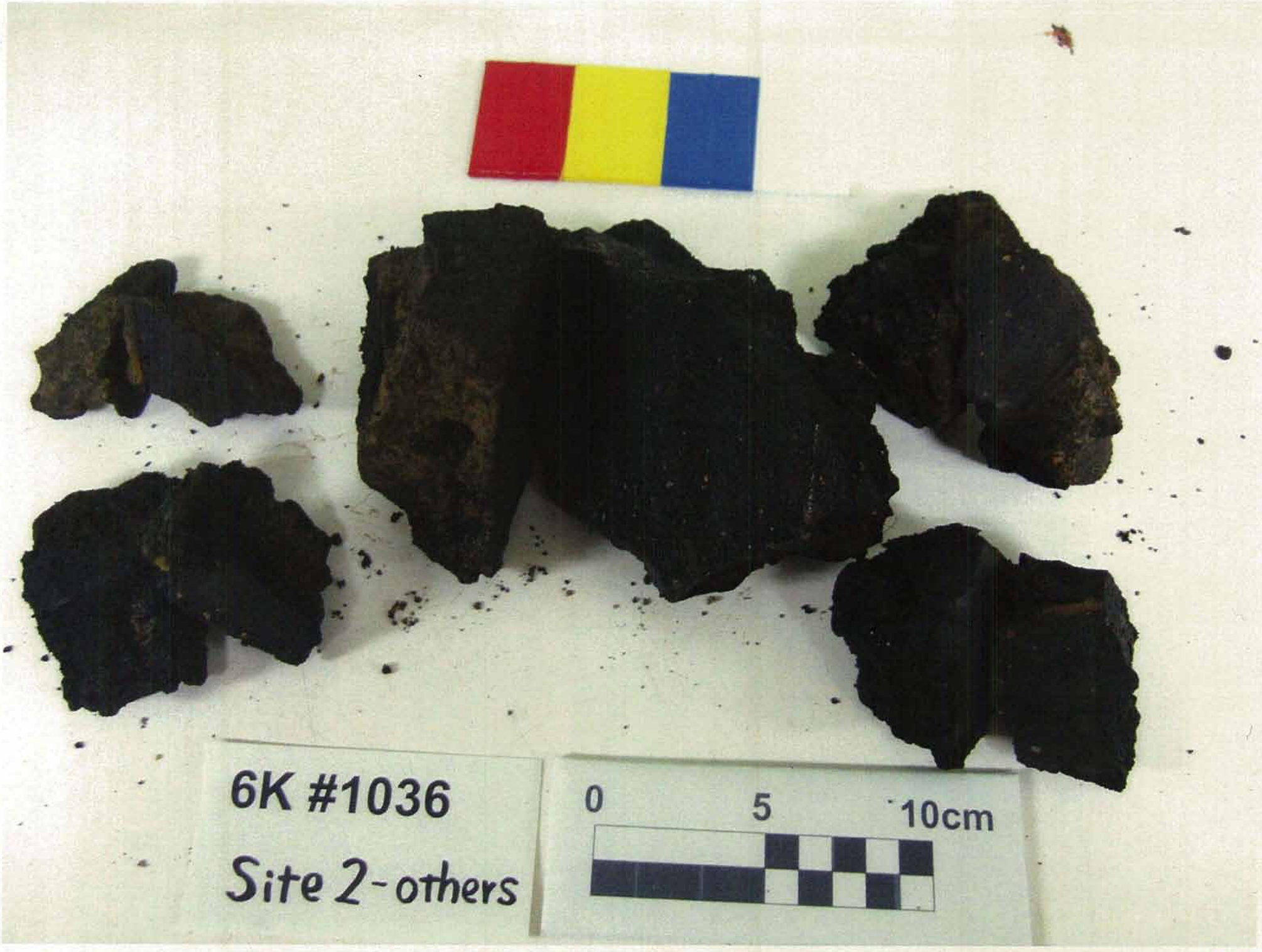

6K #1036
Site 2-A
0
5
10cm

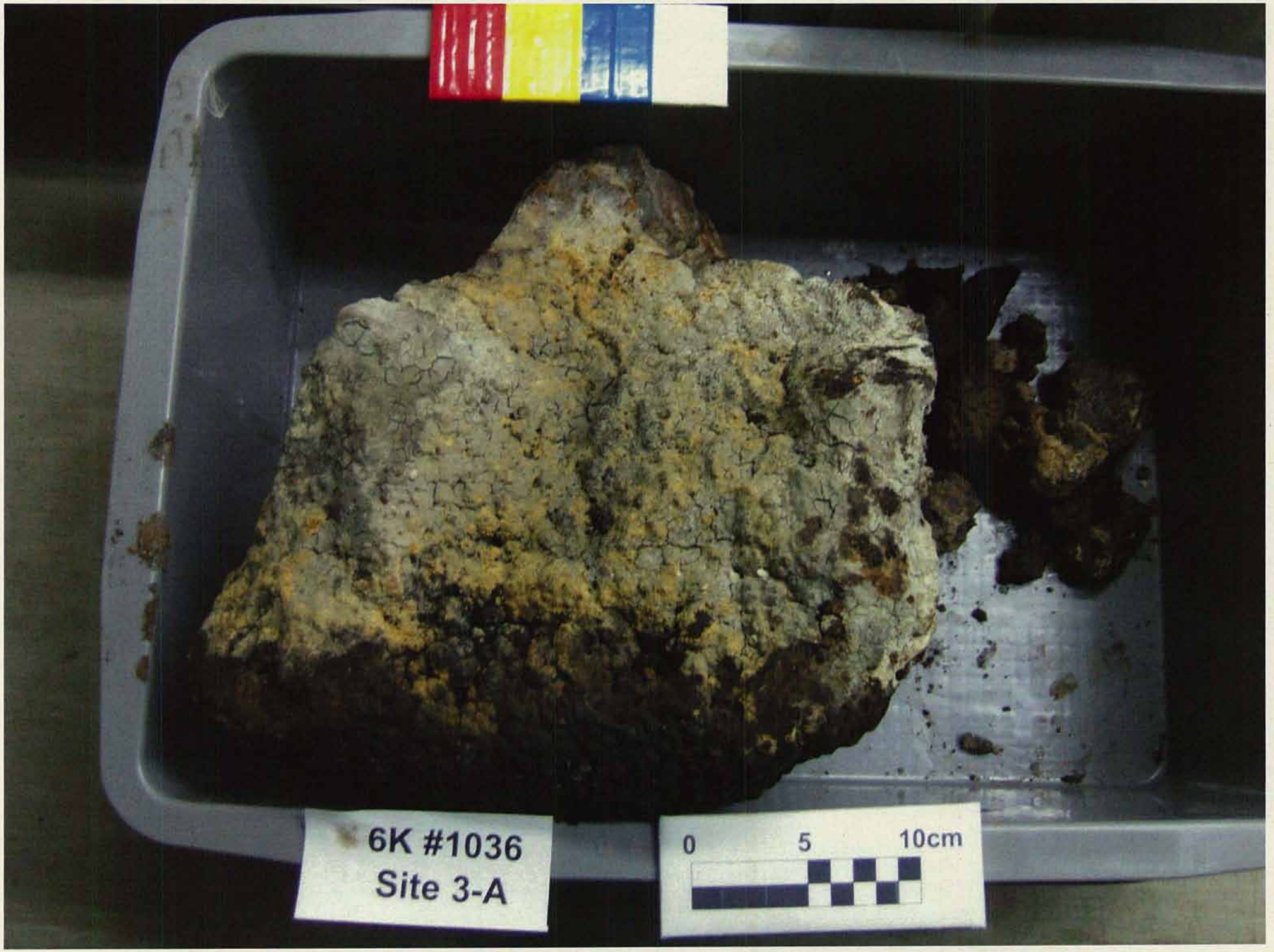

4
5
6
INCH
2
BARLOW

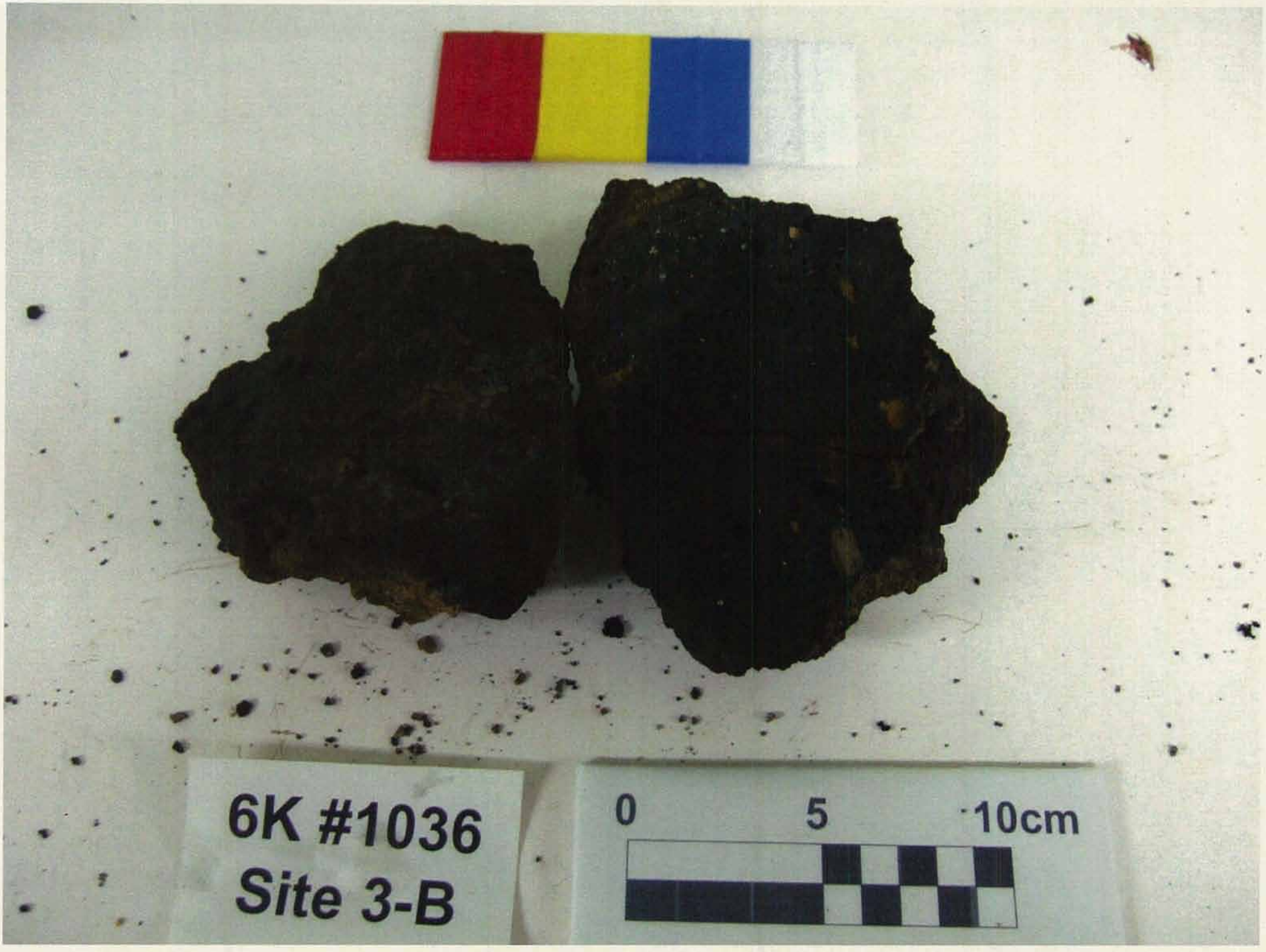

6K #1036
Site 2-B
0
5
10cm


6K #1036
Site 2-C
0
5
10cm


6K #1036
Site 2-D
0
5
10cm


6K #1036
Site 2 - others
0
5
10cm


6K #1036
Site 3-A
0
5
10cm


6K #1036
Site 3-B
0
5
10cm


6K #1036
unknown
0
5
10cm

6K#1040 – Site 1-A

Oct. 24, 2007
Described by N.Abe

Sample Size: X= 19 cm, Y= 15 cm, Z= 11 cm
Weight: _____ g
Mn coating: thin
Color (inside): DBR
Alteration: no (weak) strong
Vesicularity: 30 %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: _____ mm
Phenocrysts= ol.(xenocryst) 3 %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others: _____
Lithic: Lithified or unlithified

Remarks two colors of ol. (yellow / pale green)
irregular cracks

6K#1040 – Site 1-B

Oct. 24, 2007
Described by N. Abe

SKETCH

Sample Size: X=__12__cm, Y=__8__cm, Z=__8__cm
Weight: _____ g
Mn coating: __15__ mm
Color (inside): __Pale BR / DBR__
Alteration: no (weak) (strong)
Vesicularity: __45__ %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

Igneous & Ultramafic Rocks

Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: _____mm
Phenocrysts= ol. < 1 %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks basalt in mud
reaction rim observed around basalt
peperite

6K#1040 – Site 2-A

Oct. 24, 2007
Described by N. Abe

Sample Size: X=__19__cm, Y=__11__cm, Z=__8__cm
Weight: _____ g
Mn coating: ___thin___
Color (inside): ___BL - DBR_____
Alteration: no (weak) strong
Vesicularity: _____ %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: _____mm
Phenocrysts= ol. %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks a lot of peridotite xenolith
lherzolite

6K#1040 – Site 2-B

Oct. 24, 2007
Described by N. Abe

SKETCH

Sample Size: X=__15__cm, Y=__12__cm, Z=__7__cm
Weight: _____ g
Mn coating: ___thin____
Color (inside): ____DBR_____
Alteration: no (weak) strong
Vesicularity: ____25____ %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

Igneous & Ultramafic Rocks

Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: ____———____mm
Phenocrysts= ol. 5 %, px. < 1 %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks a lot of xenocrysts

6K#1040 – Site 2-C

Oct. 24, 2007
Described by N. Abe

Sample Size: X= 16 cm, Y= 10 cm, Z= 7 cm
Weight: _____ g
Mn coating: none (thin)
Color (inside): DBR
Alteration: no (weak) strong
Vesicularity: _____ %
Lithology: monomic or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

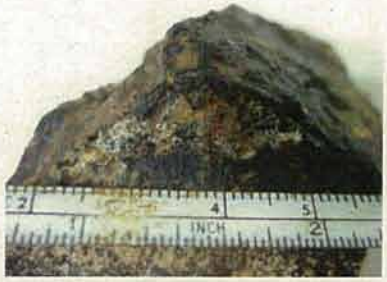
Igneous & Ultramafic Rocks

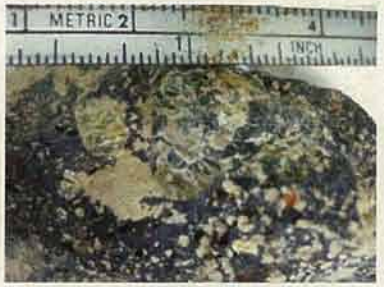
Volcanic: ~~basalt~~ basaltic andesite andesite dacite rhyolite
Thickness of glass: _____ mm
Phenocrysts= ol. 2 (10) %, px. 1 %, % %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

SKETCH





Remarks peperite, a lot of xenocrysts
接触変成作用
crustal xenolith (white / black minerals)

6K#1040 – Site 4-A

Oct. 24, 2007
Described by N. Abe

SKETCH

Sample Size: X= 19 cm, Y= 17 cm, Z= 8 cm
Weight: _____ g
Mn coating: thin
Color (inside): DBR / BR
Alteration: no (weak) ~~strong~~
Vesicularity: 35 %
Lithology: monomict or polymict
Occurrence: massives (~~lavas~~) volcaniclastics sediments others

Igneous & Ultramafic Rocks

Volcanic: ~~basalt~~ basaltic andesite andesite dacite rhyolite
Thickness of glass: 12 mm
Phenocrysts= ol. (xenocryst) 3 %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks layering of vesicles
paragonite

6K#1040 – Site 4-B

Oct. 24, 2007
Described by N. Abe

Sample Size: X=__18__cm, Y=__13__cm, Z=__9__cm
Weight: _____ g
Mn coating: __thin___
Color (inside): _____
Alteration: no weak strong
Vesicularity: _____ %
Lithology: monomict or polymict
Occurrence: massives ~~lavas~~ volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: ~~basalt~~ basaltic andesite andesite dacite rhyolite
Thickness of glass: _____mm
Phenocrysts= %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks

6K#1040 – Unknown1

Oct. 24, 2007
Described by N. Abe

Sample Size: X=__13__cm, Y=__10__cm, Z=__6__cm
Weight: _____ g
Mn coating: ___thin___
Color (inside): ___DBR_____
Alteration: no (weak) strong
Vesicularity: ___25___ %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: ___———___mm
Phenocrysts= ol. 2 %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks one wehrite

6K#1040 – Unknown2

Oct. 24, 2007
Described by N. Abe

Sample Size: X= 11 cm, Y= 8 cm, Z= 8 cm
Weight: _____ g
Mn coating: none
Color (inside): DBR
Alteration: no (weak) strong
Vesicularity: 30 %
Lithology: monomict or polymict
Occurrence: massives ~~lavas~~ volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: ~~basalt~~ basaltic andesite andesite dacite rhyolite
Thickness of glass: ——— mm
Phenocrysts= ol. 4 %, px. 1 %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks layering of vesicles
one wehrite

6K#1040 – Unknown3

Oct. 24, 2007
Described by N. Abe

Sample Size: X=__11__cm, Y=__10__cm, Z=__6__cm
Weight: _____ g
Mn coating: __thin__
Color (inside): ____DBR____
Alteration: no (weak) strong
Vesicularity: ____35____ %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: ____ mm
Phenocrysts= ol. 4 %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks layering of vesicles
peperite, dunite
xenolith

6K#1040 – Unknown4

Oct. 24, 2007
Described by N. Abe

Sample Size: X=__7__cm, Y=__5__cm, Z=__3__cm
Weight: _____ g
Mn coating: __none__
Color (inside): __dark gray__
Alteration: no (weak) strong
Vesicularity: __25__ %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: __none__mm
Phenocrysts= ol. 1 %, px. 1 %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks white crustal xenolith

6K#1040 – Unknown5

Oct. 24, 2007
Described by N. Abe

Sample Size: X=__7__cm, Y=__4__cm, Z=__4__cm
Weight: _____ g
Mn coating: __none__
Color (inside): __DBR__
Alteration: no (weak) strong
Vesicularity: __25__ %
Lithology: monomict or polymict
Occurrence: massives ~~lavas~~ volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: ~~basalt~~ basaltic andesite andesite dacite rhyolite
Thickness of glass: __none__mm
Phenocrysts= ol. 2 %, px. < 1 %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks

6K#1040 – Unknown6

Oct. 24, 2007
Described by N. Abe

Sample Size: X= 7 cm, Y= 5 cm, Z= 4.5 cm
Weight: _____ g
Mn coating: thin
Color (inside): DBR
Alteration: no (weak) strong
Vesicularity: 25 %
Lithology: monomict or polymict
Occurrence: massives ~~lavas~~ volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: ~~basalt~~ basaltic andesite andesite dacite rhyolite
Thickness of glass: none mm
Phenocrysts= ol. 2 %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks

6K#1040 – Unknown7

Oct. 24, 2007
Described by N. Abe

Sample Size: X=__4.5__cm, Y=__4__cm, Z=__3__cm
Weight: _____ g
Mn coating: __none__
Color (inside): __dark gray__
Alteration: no (weak) strong
Vesicularity: __20__ %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: __none__mm
Phenocrysts= ol. 2 %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks xenolith
reaction rim at grain boundary?

6K#1040 – Unknown8

Oct. 24, 2007
Described by N. Abe

Sample Size: X= 4.5 cm, Y= 3.5 cm, Z= 2.5 cm
Weight: _____ g
Mn coating: none
Color (inside): DBR
Alteration: no (weak) strong
Vesicularity: 30 %
Lithology: monomict or polymict
Occurrence: massives (lavas) volcaniclastics sediments others

SKETCH

Igneous & Ultramafic Rocks

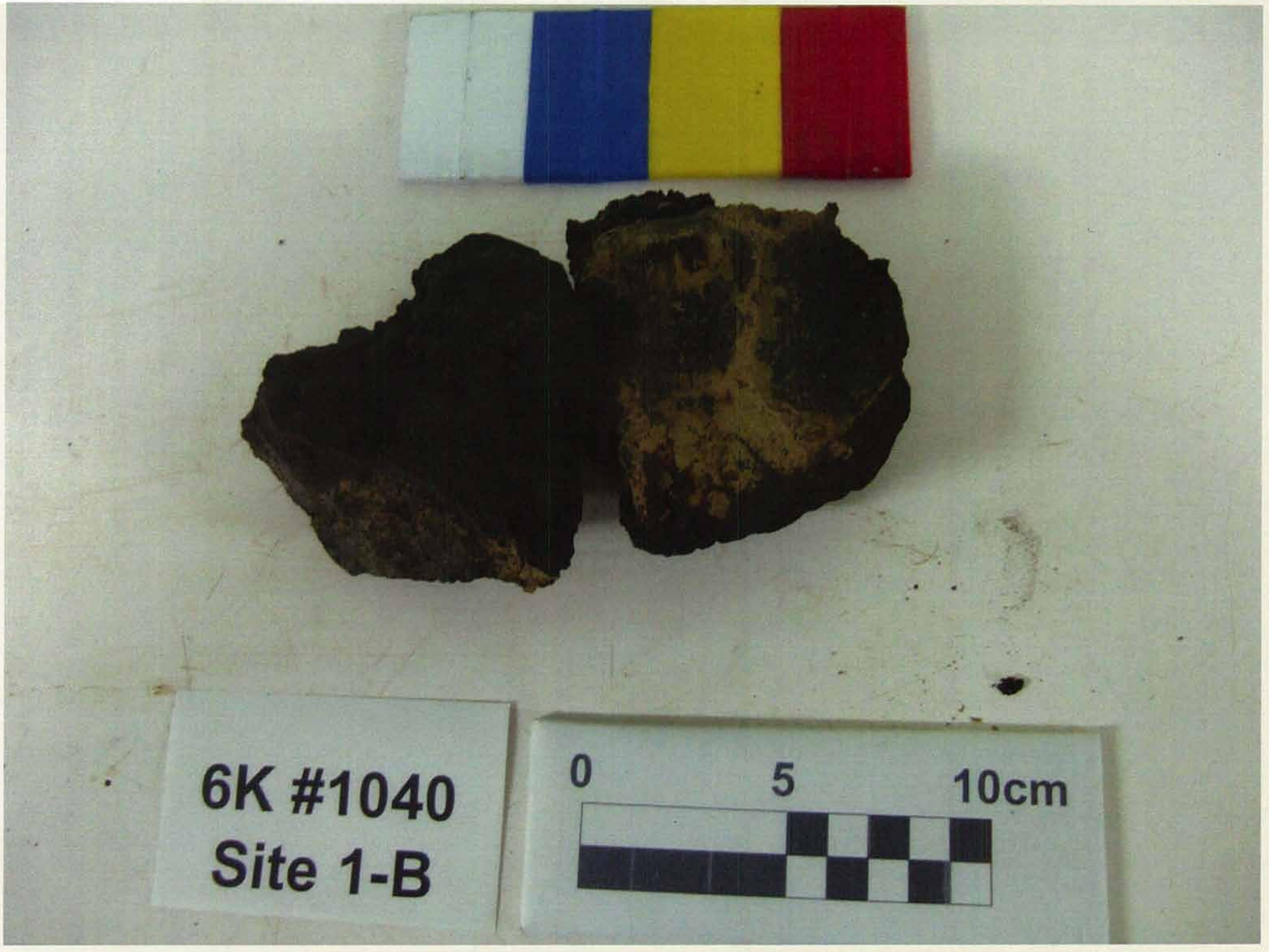
Volcanic: (basalt) basaltic andesite andesite dacite rhyolite
Thickness of glass: none mm
Phenocrysts= ol. 1 %, %, %
Plutonic: gabbro diorite quartz diorite granite
Crystals= %, %, %
Ultramafic: lerzolite harzburgite dunite pyroxenite others
Crystals= %, %, %
Others: _____

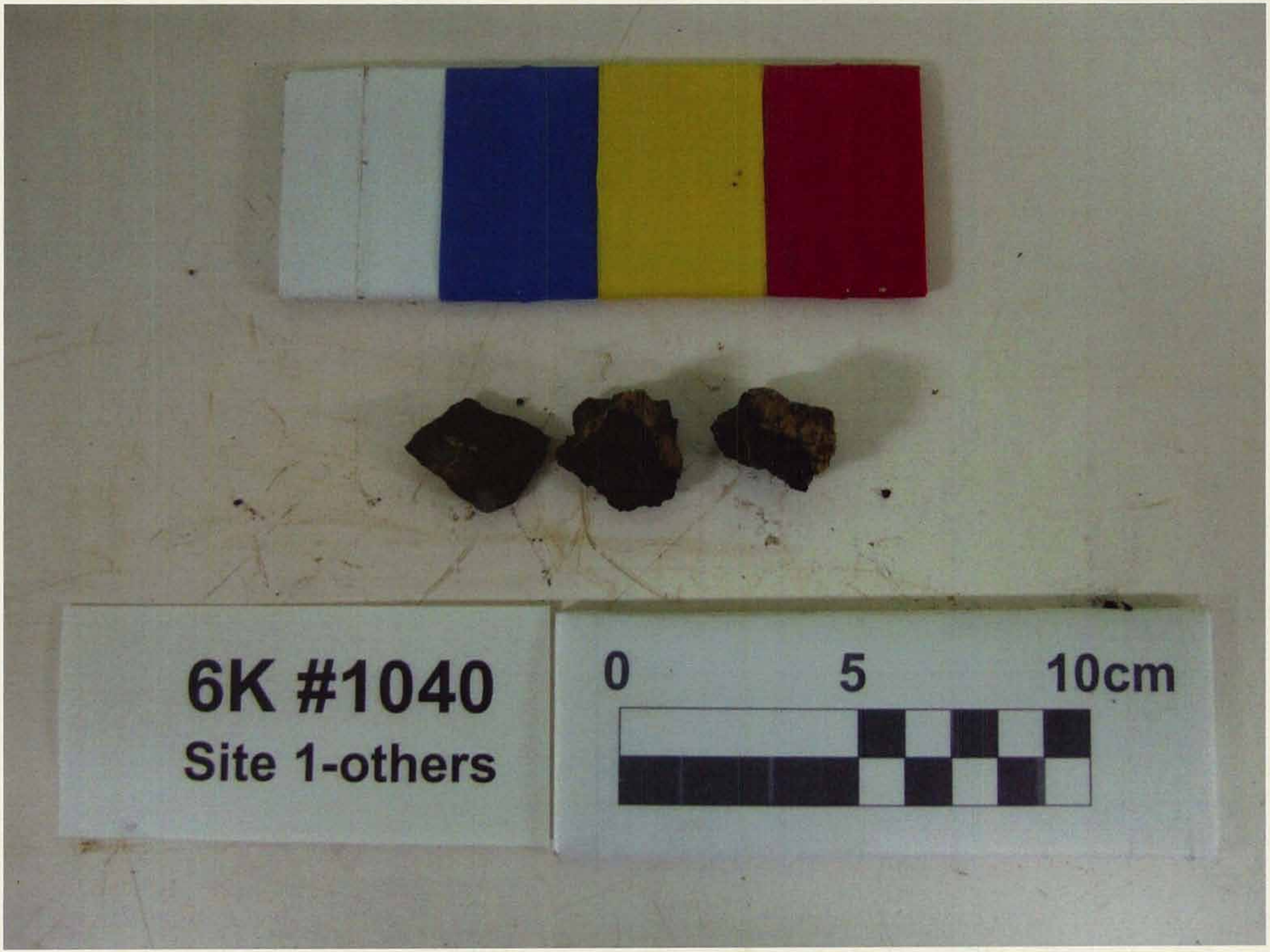
Sedimentary rocks & others (characteristic of the clasts)

Fragments comp.: mono or poly
Rock type: _____
Grain size (mm) : < 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 <
Sorting : well----------poorly
Roundness : round----------angular
Fabric: clast-support ---------- matrix support
Grading : normal----------none----------reverse
Matrix : silt sand others:_____
Lithic: Lithified or unlithified

Remarks xenolith
wehrite
dunite


6K #1040
Site 1-A
0
5
10cm

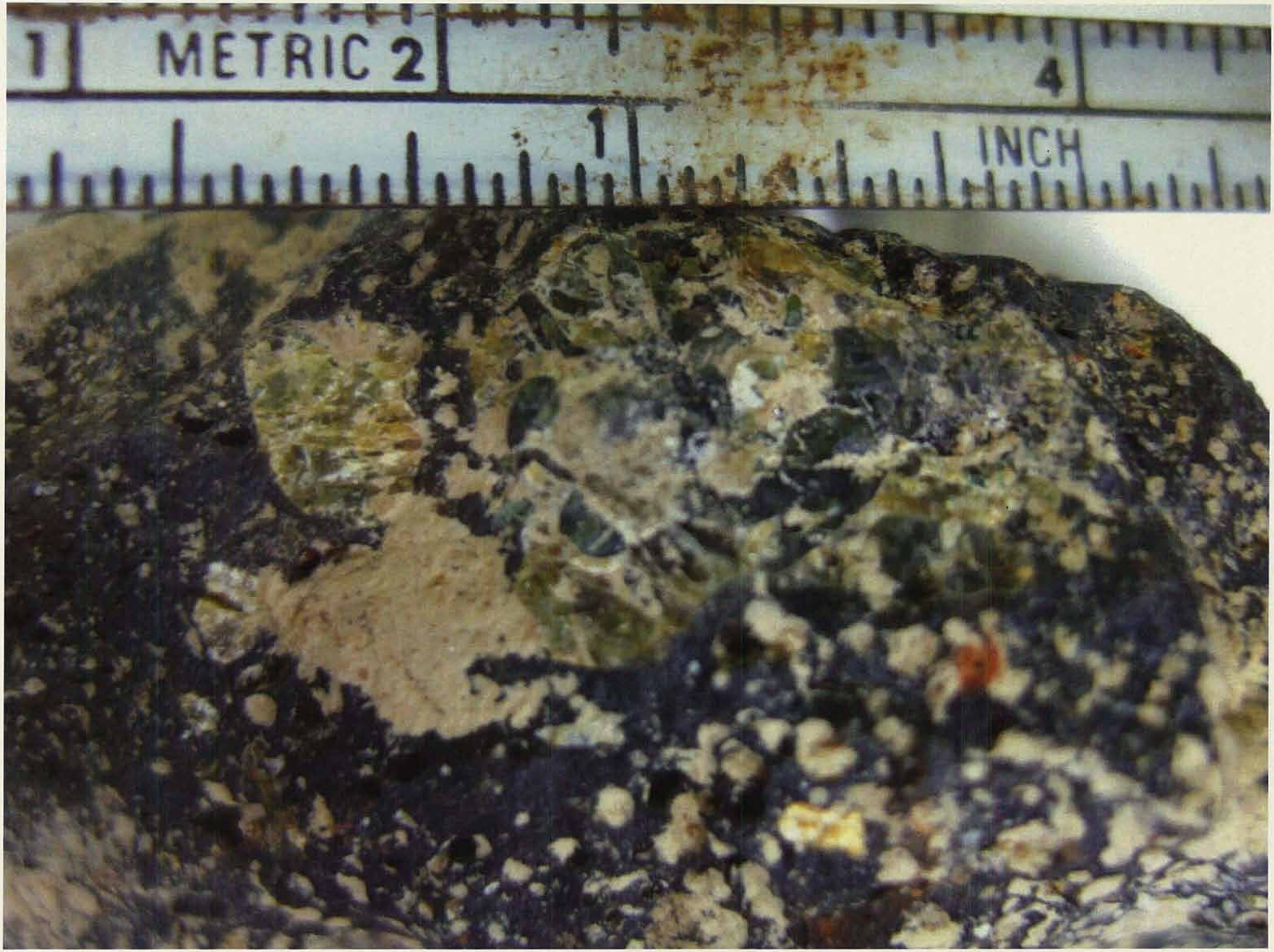

6K #1040
Site 1-B
0
5
10cm


6K #1040
Site 1-others
0
5
10cm


1
METRIC 2
4
1
INCH

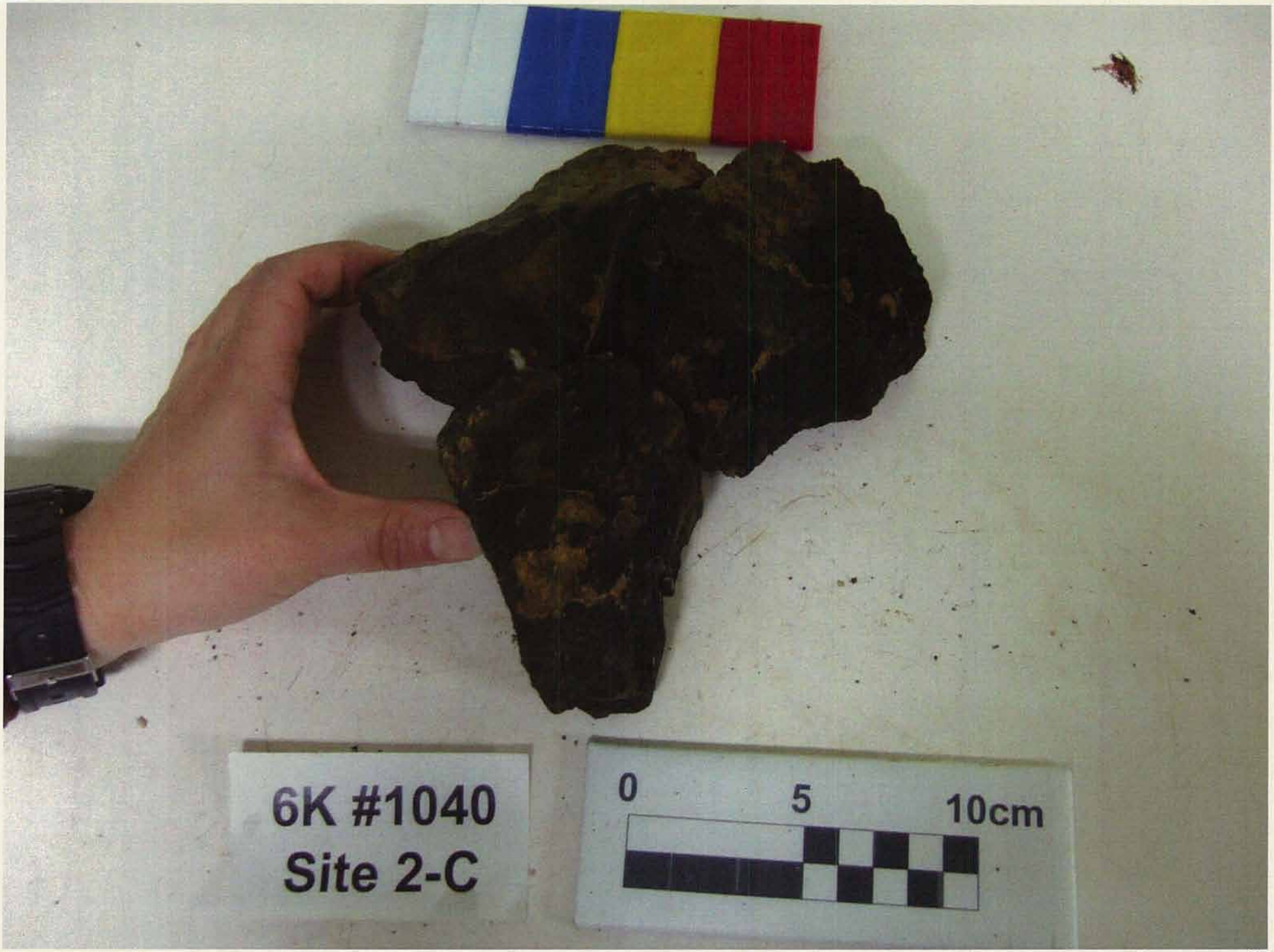

6K #1040
Site 2-A
0
5
10cm


6K #1040
Site 2-B
0
5
10cm

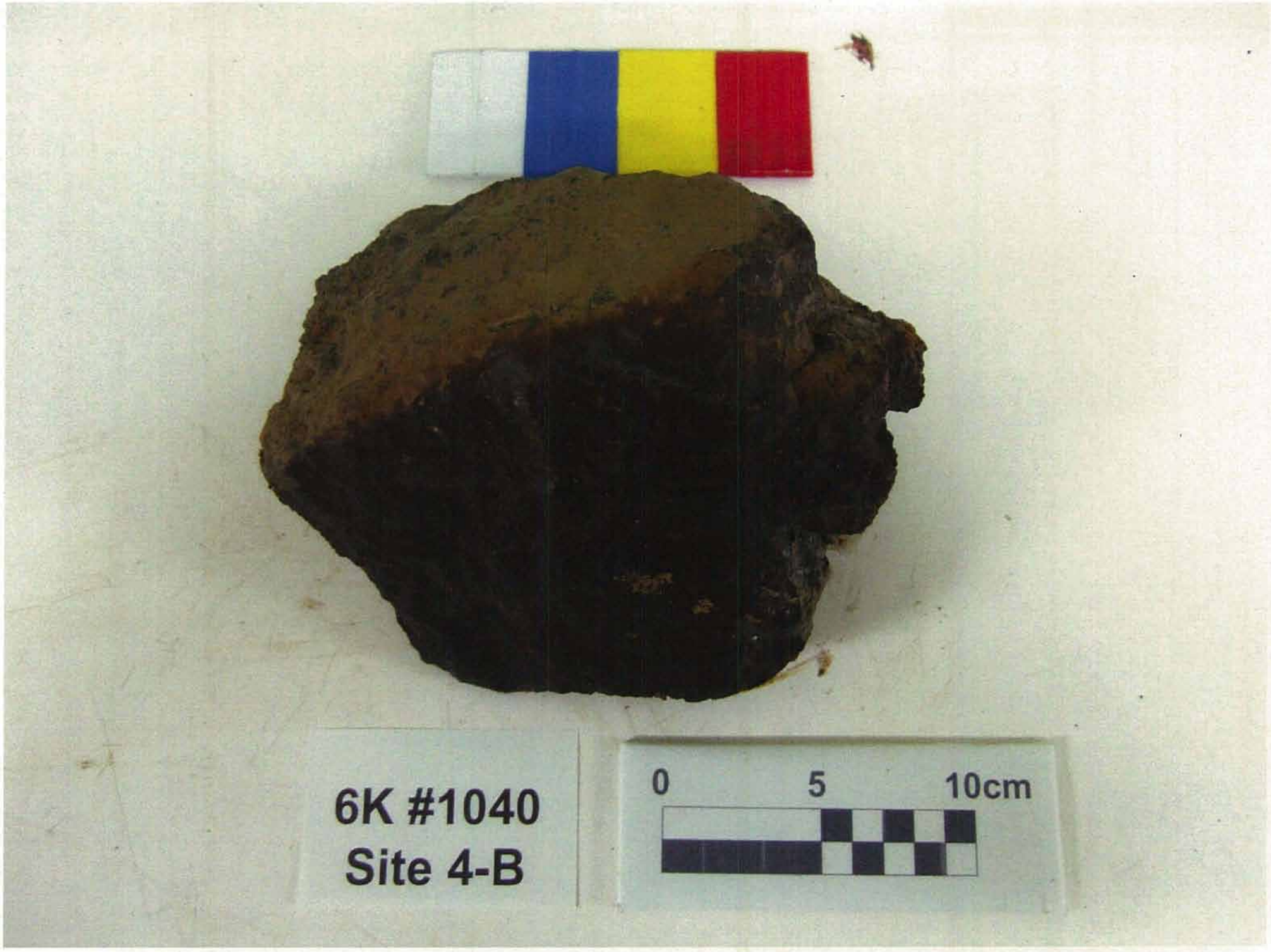

1
METRIC 2
4
1
INCH


4
5
INCH
1
2

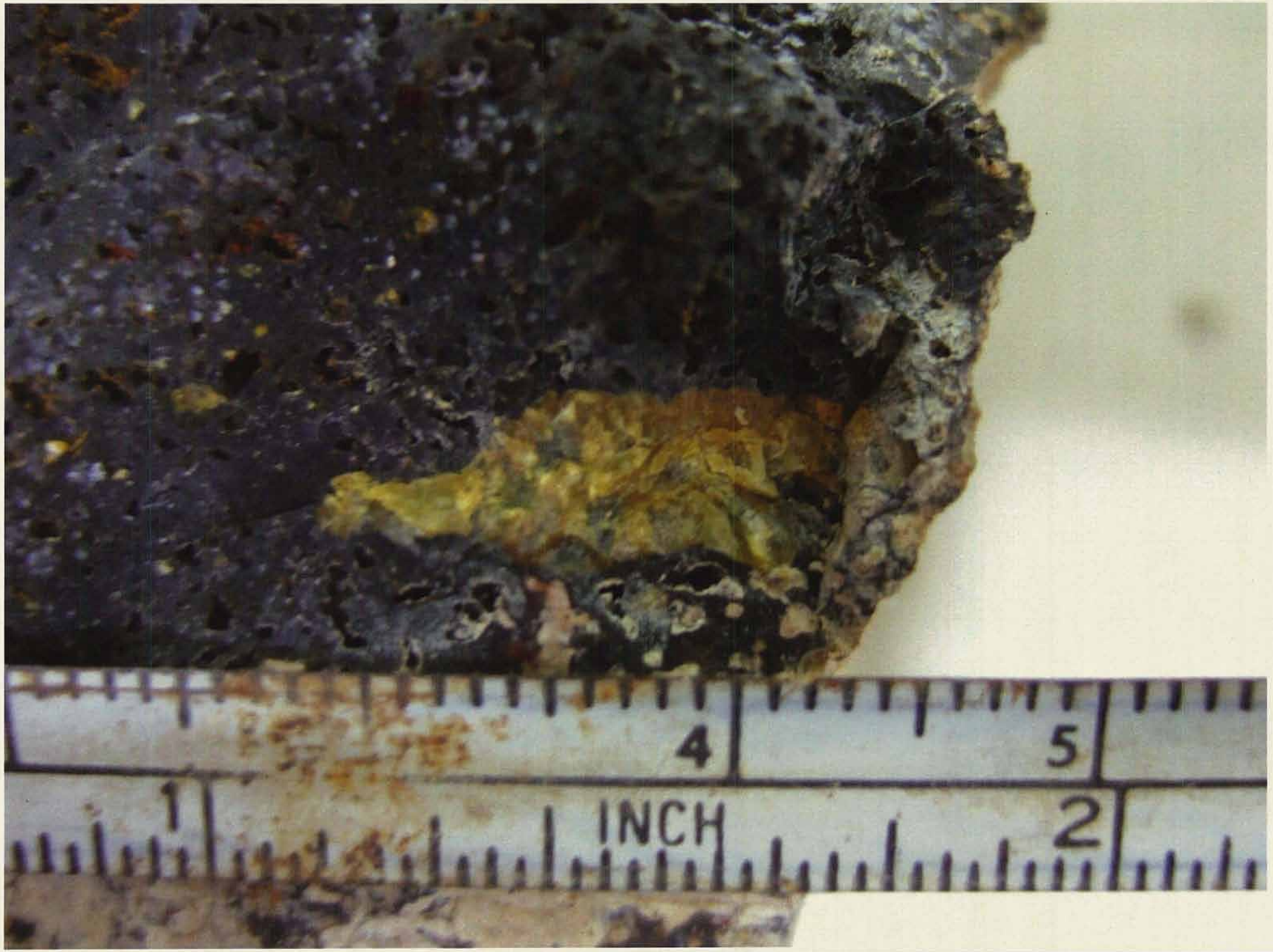
METRIC 2

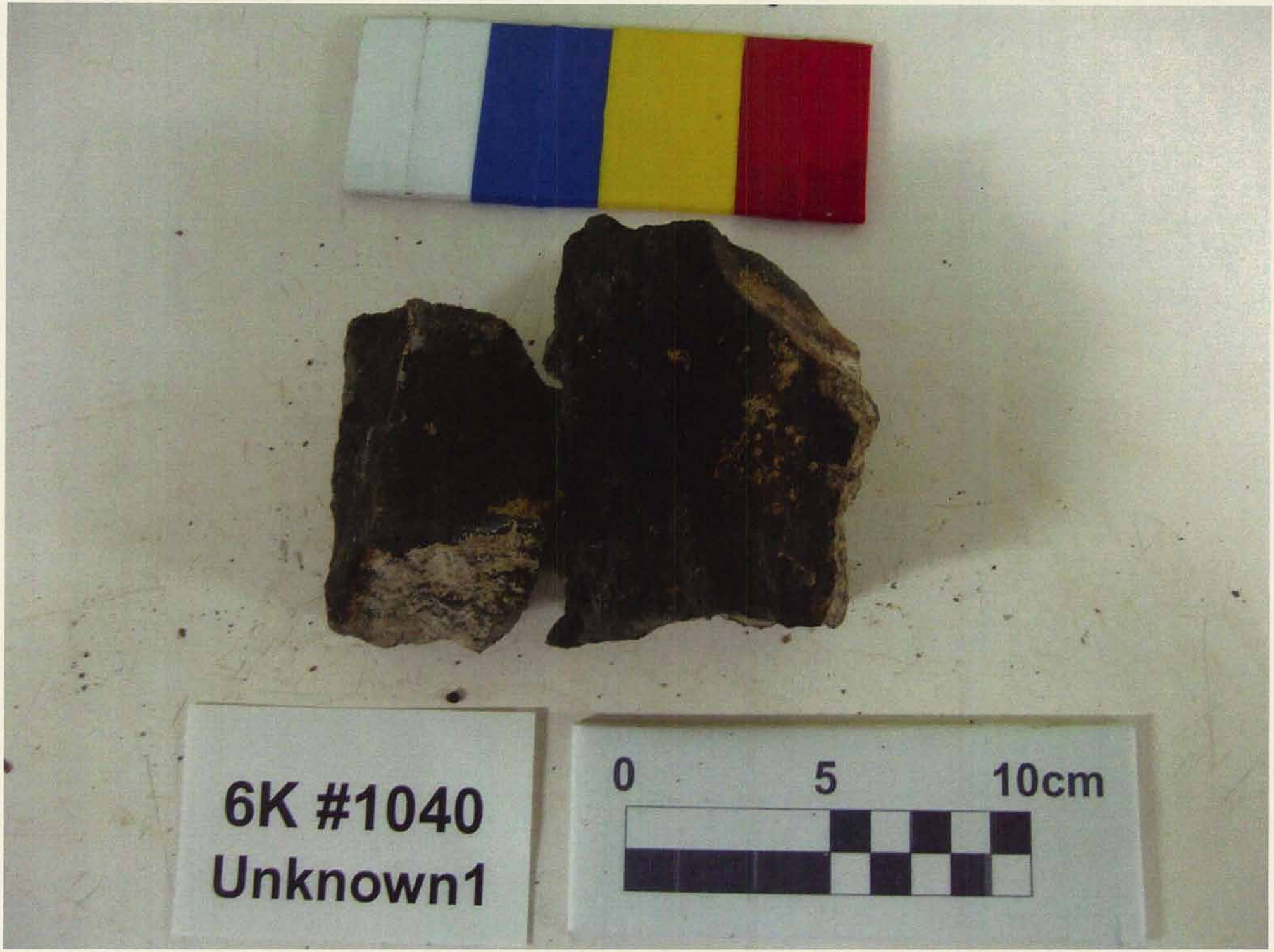

6K #1040
Site 2-C
0
5
10cm


6K #1040
Site 4-A
0
5
10cm


6K #1040
Site 4-B
0
5
10cm


6K #1040
Site 4-others
0
5
10cm


4
5
1
INCH
2


6K #1040
Unknown1
0
5
10cm


6K #1040
Unknown2
0
5
10cm


6K #1040
Unknown3
0
5
10cm


1
METRIC 2
4
1
INCH


6K #1040
Unknown4
0
5
10cm


6K #1040
Unknown5
0
5
10cm


6K #1040
Unknown6
0
5
10cm

1
METRIC 2
1

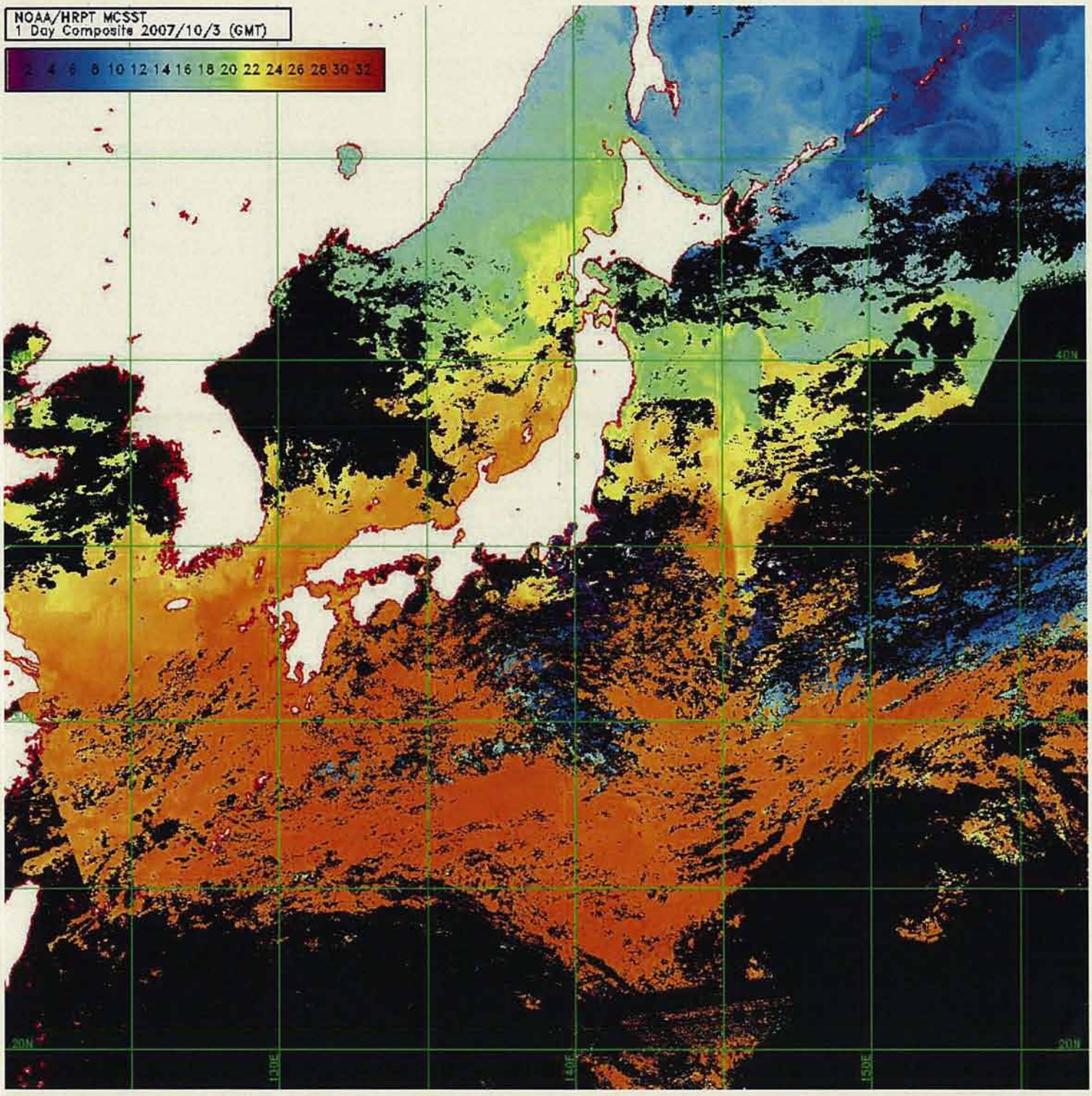

6K #1040
Unknown7
0
5
10cm


1
METRIC 2
1


1
METRIC 2
1


6K #1040
Unknown8
0
5
10cm

Oceanographic Setting


NOAA/HRPT MCSST
1 Day Composite 2007/10/3 (GMT)
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
40N
20N
130E
140E
150E

JCG

海洋速報

Quick Bulletin of Ocean Conditions

海上保安庁

JAPAN COAST GUARD

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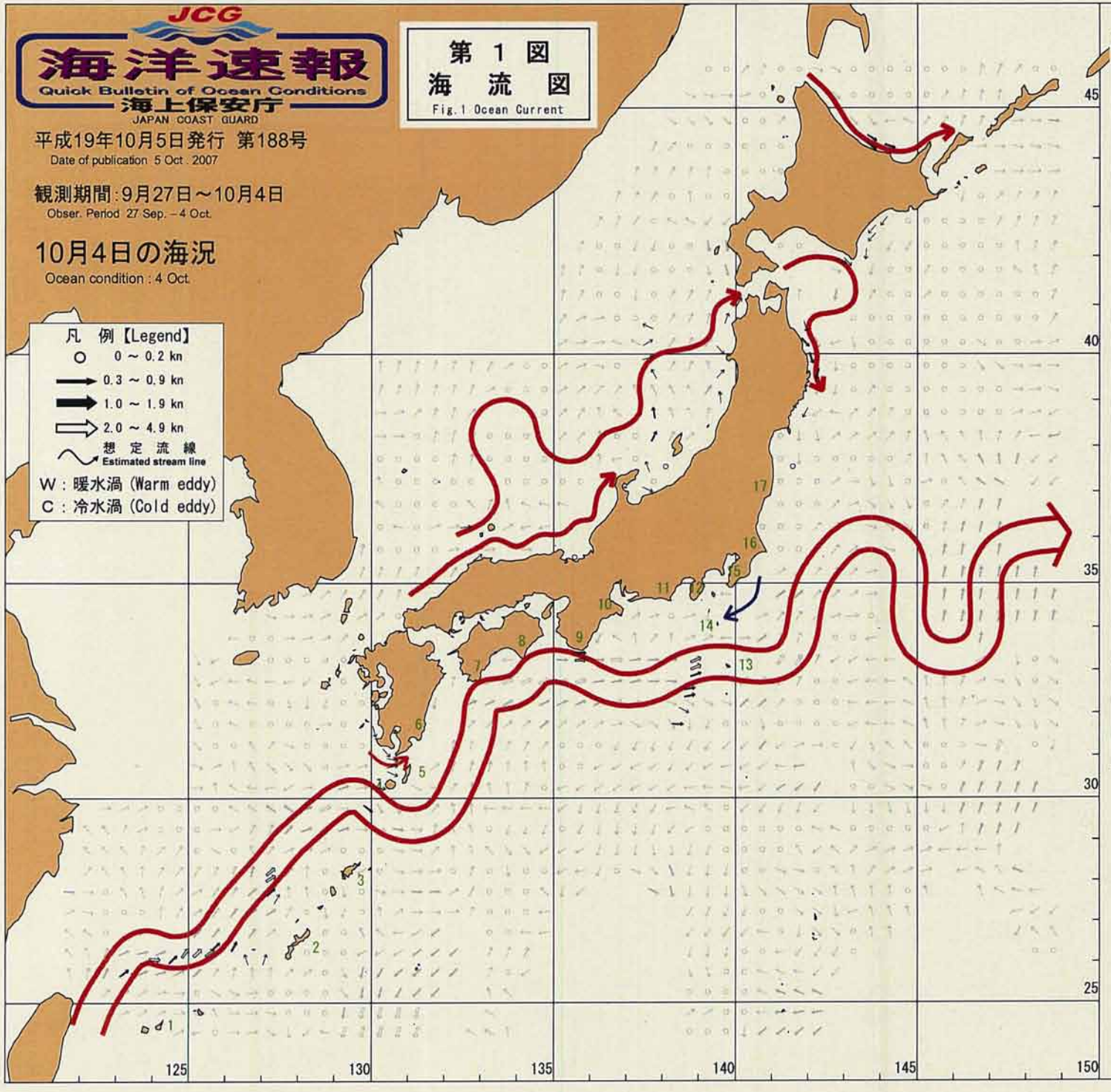
Obser. Period 27 Sep. – 4 Oct.

10月4日の海況

Ocean condition : 4 Oct.

第１図 海流図

Fig. 1 Ocean Current



黒潮本流（Kuroshio Current）				
	地 名 Place Name	流軸までの方向 Direction	流軸までの距離 Dist. (NM)	黒潮流域の表面水温 Surface Temp. (℃)
1	石垣島 (Ishigaki Shima)	N	130	27
2	沖縄島 (Okinawa Shima)	NW	105	28
3	奄美大島(Amami-O Shima)	NW	90	28
4	屋久島 (Yaku Shima)	W	50	28
5	種子島 (Tane ga Shima)	S	55	28
6	都井岬 (Toi Misaki)	ESE	70	28
7	足摺岬 (Ashizuri Misaki)	SSE	15	27
8	室戸岬 (Muroto Saki)	SSE	15	27
9	潮 岬 (Shio-no-Misaki)	S	25	27
10	大王埼 (Daio Saki)	S	95	27
11	御前埼 (Omae Saki)	S	105	27
12	石廊埼 (Iro Saki)	S	80	27
13	八丈島 (Hachijo Shima)	–	付近	27
14	三宅島 (Miyake Shima)	ESE	100	27
15	野島埼 (Nojima Saki)	ESE	100	27
16	犬吠埼 (Inubo Saki)	ESE	70	26
17	塩屋埼 (Shioya Saki)	ESE	145	27

【海洋速報に対する問い合わせ】

海上保安庁 海洋情報部 海洋情報課「海の相談室」

【Inquiry concerning Quick Bulletin of Ocean Conditions】

Marine Information Service Office,

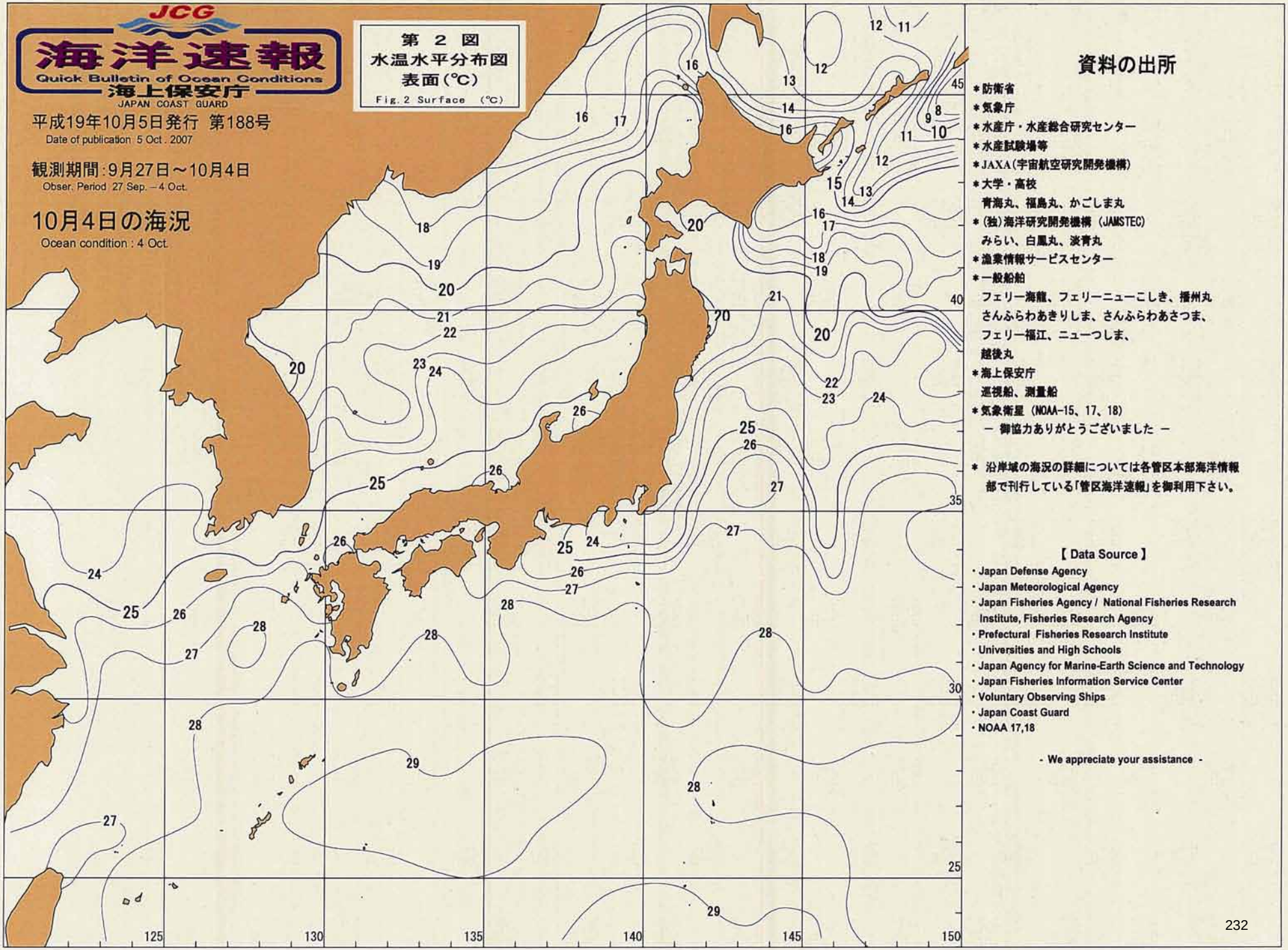
Oceanographic Data and Information Division,

J.H.O.D. J.C.G.

Tel : 03 – 3541- 4296

E-mail : consult@jodc.go.jp

URL : http://www1.kaiho.mlit.go.jp/



資料の出所

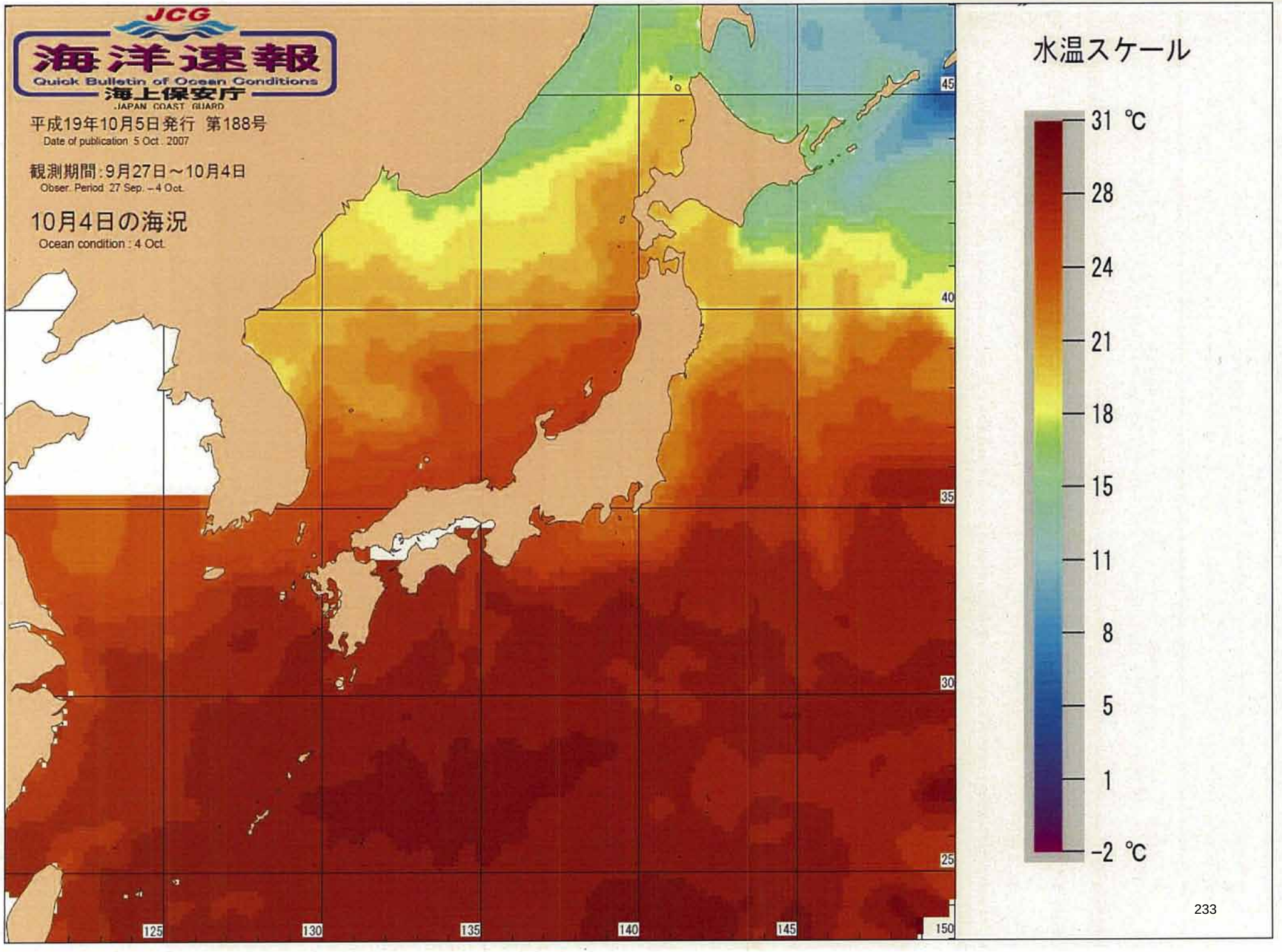
＊防衛省
＊気象庁
＊水産庁・水産総合研究センター
＊水産試験場等
＊JAXA(宇宙航空研究開発機構)
＊大学・高校
　青海丸、福島丸、かごしま丸
＊(独)海洋研究開発機構 (JAMSTEC)
　みらい、白鳳丸、淡青丸
＊漁業情報サービスセンター
＊一般船舶
　フェリー海龍、フェリーニューこしき、播州丸
　さんふらわあきりしま、さんふらわあさつま、
　フェリー福江、ニューつしま、
　越後丸
＊海上保安庁
　巡視船、測量船
＊気象衛星 (NOAA-15、17、18)
　－ 御協力ありがとうございました －

＊ 沿岸域の海況の詳細については各管区本部海洋情報部で刊行している「管区海洋速報」を御利用下さい。

【 Data Source 】

・Japan Defense Agency
・Japan Meteorological Agency
・Japan Fisheries Agency / National Fisheries Research Institute, Fisheries Research Agency
・Prefectural Fisheries Research Institute
・Universities and High Schools
・Japan Agency for Marine-Earth Science and Technology
・Japan Fisheries Information Service Center
・Voluntary Observing Ships
・Japan Coast Guard
・NOAA 17,18

- We appreciate your assistance -


JCG
海洋速報
Quick Bulletin of Ocean Conditions
海上保安庁
JAPAN COAST GUARD
平成19年10月5日発行 第188号
Date of publication 5 Oct. 2007
観測期間:9月27日～10月4日
Obser. Period 27 Sep. – 4 Oct.
10月4日の海況
Ocean condition : 4 Oct.
水温スケール
31 ℃
28
24
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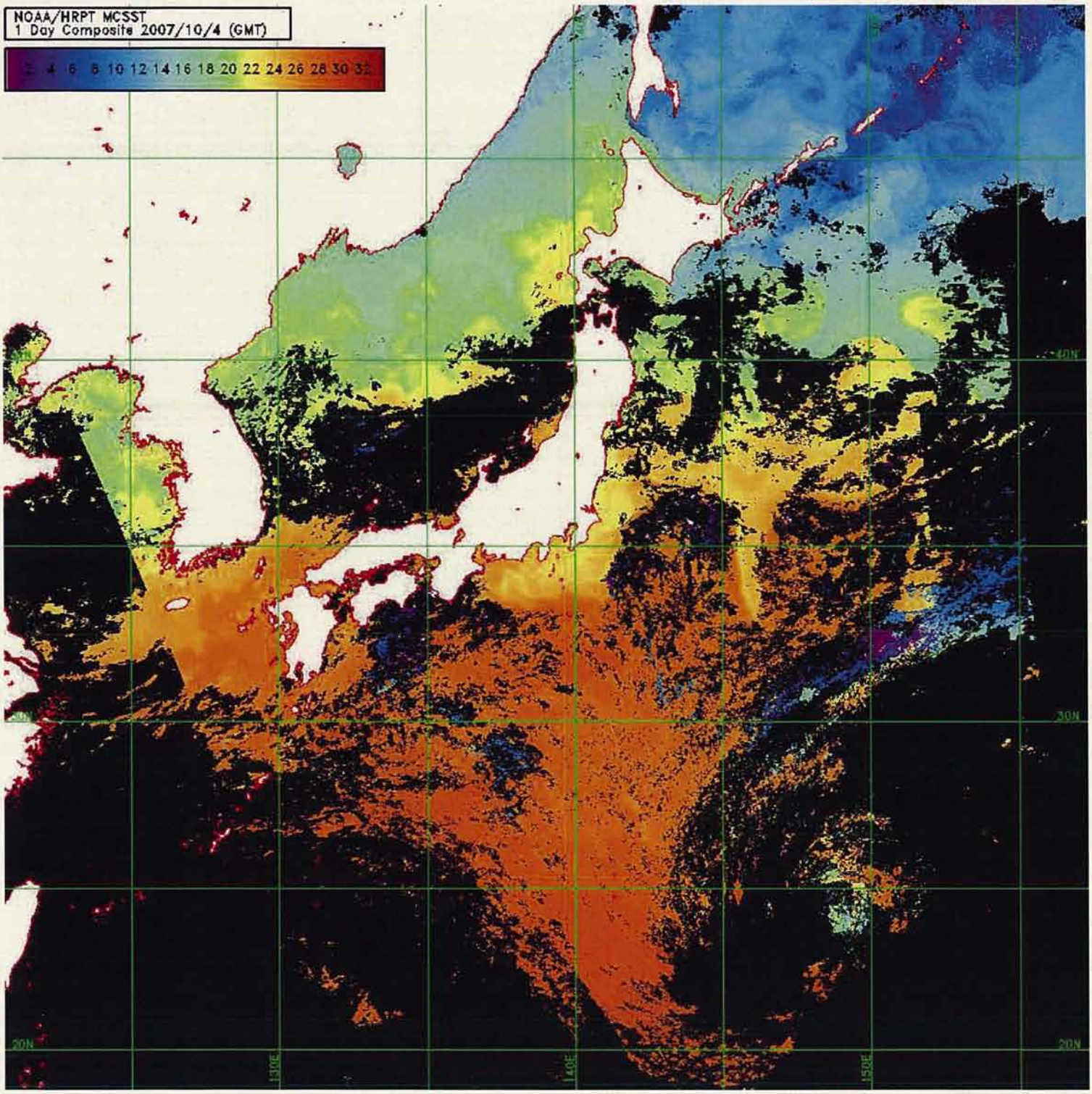
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1 Day Composite 2007/10/4 (GMT)
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30N
20N
130E
140E
150E

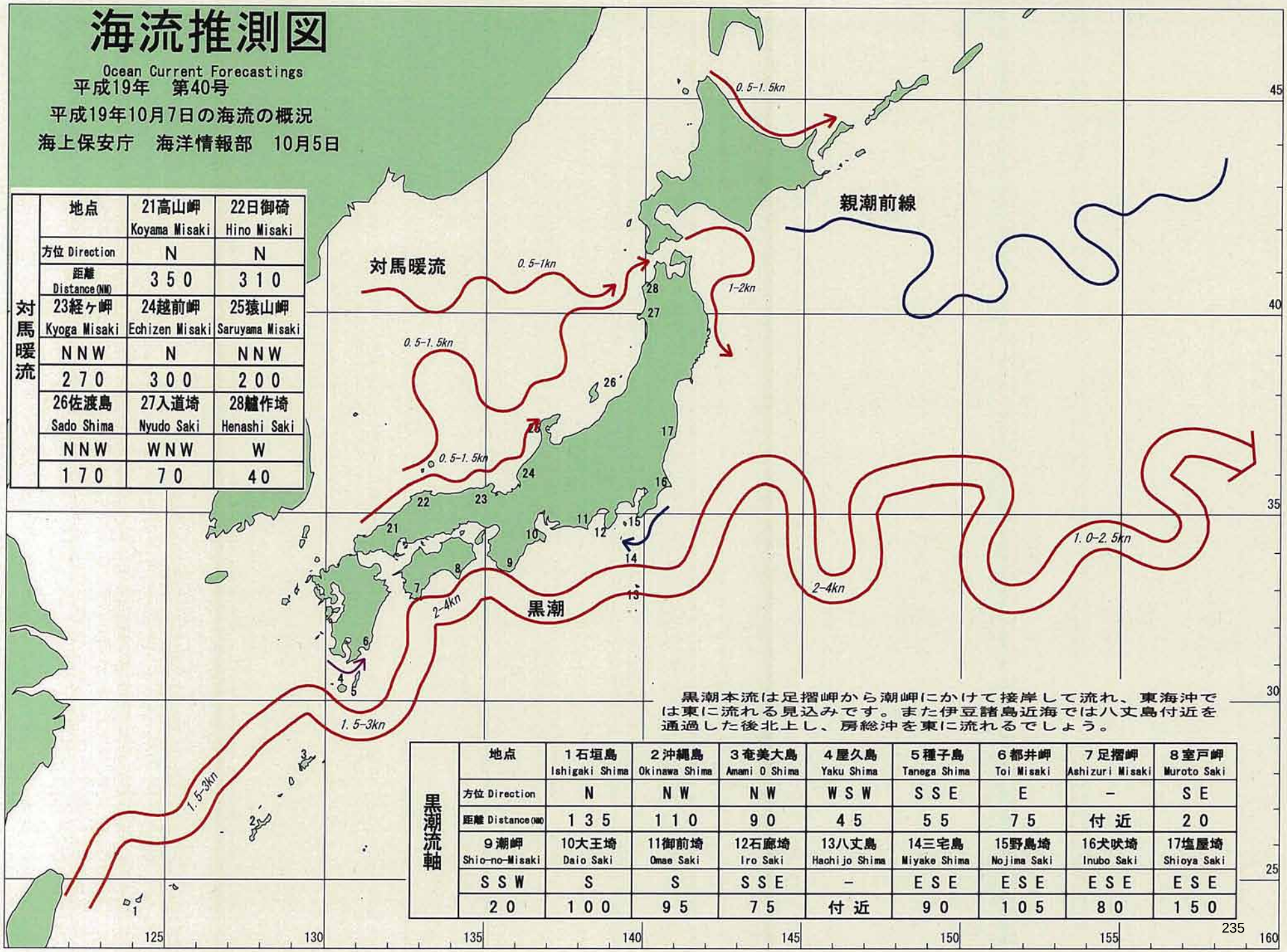
海流推測図

Ocean Current Forecastings

平成19年　第40号

平成19年10月7日の海流の概況

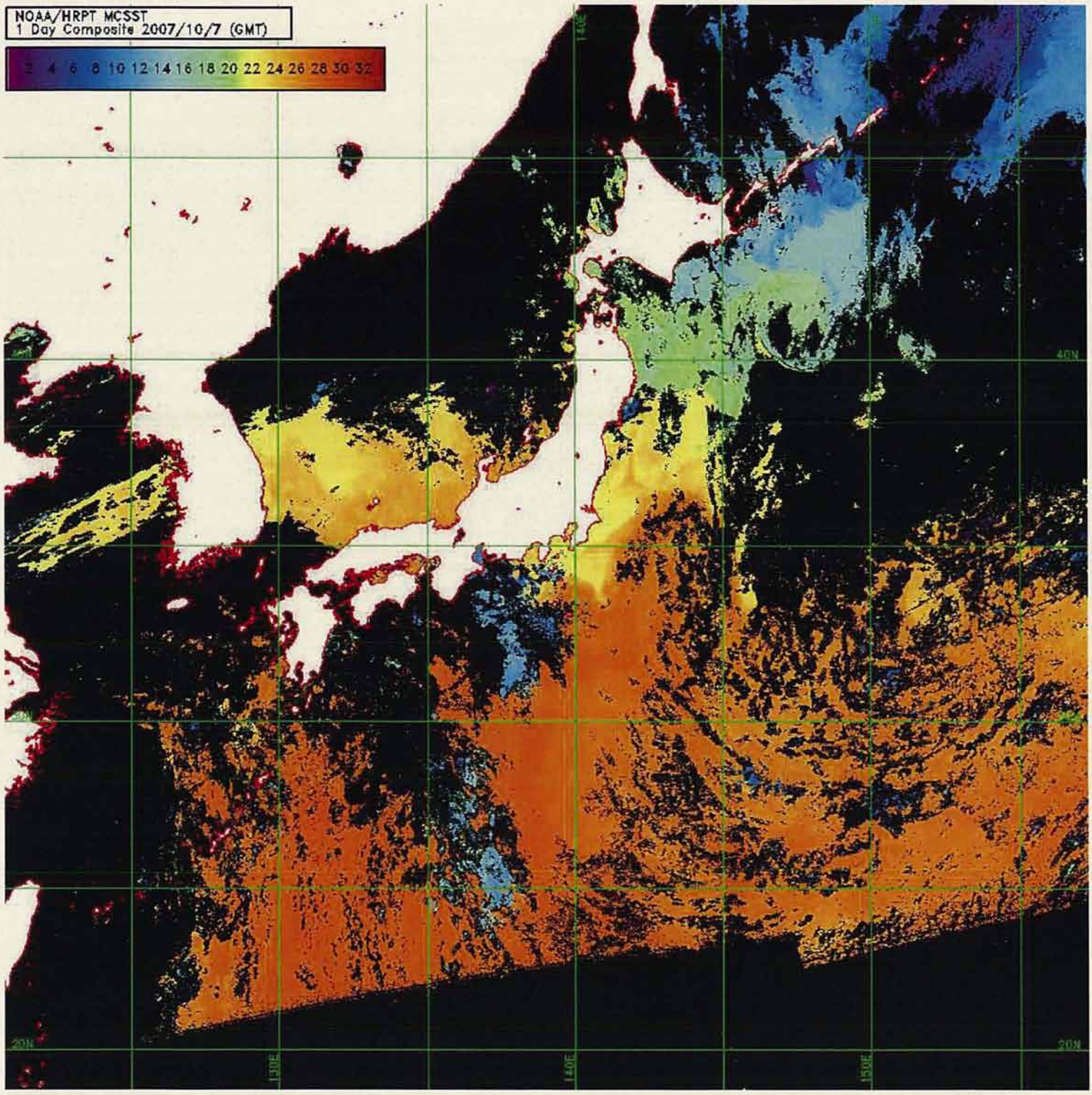
海上保安庁　海洋情報部　10月5日



対馬暖流	地点	21高山岬 Koyama Misaki	22日御碕 Hino Misaki
	方位 Direction	N	N
	距離 Distance(NM)	350	310
	23経ヶ岬 Kyoga Misaki	24越前岬 Echizen Misaki	25猿山岬 Saruyama Misaki
	NNW	N	NNW
	270	300	200
	26佐渡島 Sado Shima	27入道埼 Nyudo Saki	28鰺作埼 Henashi Saki
	NNW	WNW	W
	170	70	40

黒潮本流は足摺岬から潮岬にかけて接岸して流れ、東海沖では東に流れる見込みです。また伊豆諸島近海では八丈島付近を通過した後北上し、房総沖を東に流れるでしょう。

黒潮流軸	地点	1石垣島 Ishigaki Shima	2沖縄島 Okinawa Shima	3奄美大島 Amami O Shima	4屋久島 Yaku Shima	5種子島 Tanega Shima	6都井岬 Toi Misaki	7足摺岬 Ashizuri Misaki	8室戸岬 Muroto Saki
	方位 Direction	N	NW	NW	WSW	SSE	E	−	SE
	距離 Distance(NM)	135	110	90	45	55	75	付近	20
	9潮岬 Shio-no-Misaki	10大王埼 Daio Saki	11御前埼 Omae Saki	12石廊埼 Iro Saki	13八丈島 Hachijo Shima	14三宅島 Miyake Shima	15野島埼 Nojima Saki	16犬吠埼 Inubo Saki	17塩屋埼 Shioya Saki
	SSW	S	S	SSE	−	ESE	ESE	ESE	ESE
	20	100	95	75	付近	90	105	80	150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1 Day Composite 2007/10/7 (GMT)
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40N
20N
130E
140E
150E

JCG

海洋速報

Quick Bulletin of Ocean Conditions

海上保安庁

JAPAN COAST GUARD

平成19年10月9日発行 第189号

Date of publication 9 Oct. 2007

観測期間：10月1日～10月8日

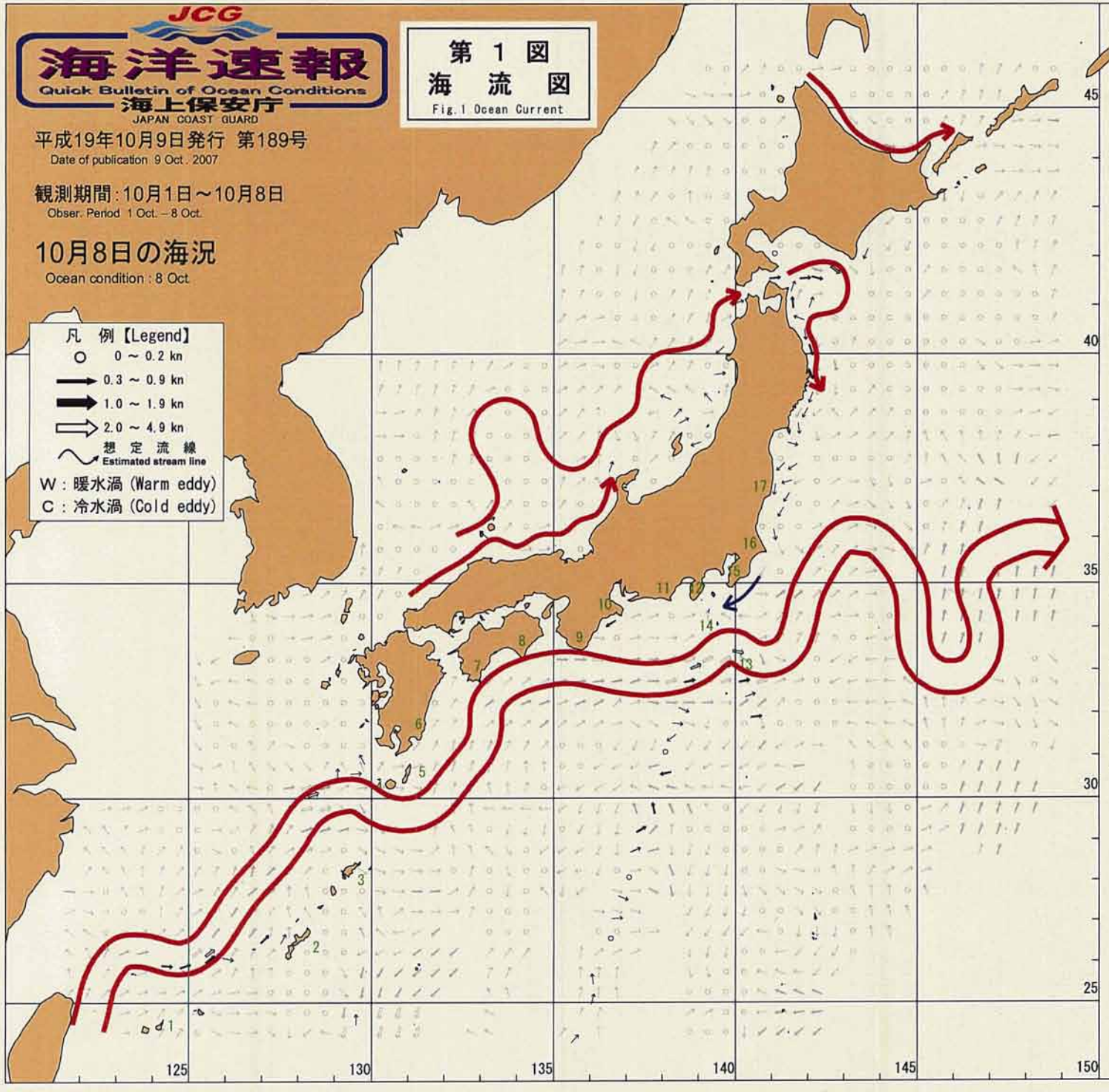
Obser. Period 1 Oct. – 8 Oct.

第１図 海流図

Fig.1 Ocean Current

10月8日の海況

Ocean condition : 8 Oct.



黒潮本流（Kuroshio Current）				
	地 名 Place Name	流軸までの方向 Direction	流軸までの距離 Dist. (NM)	黒潮流域の表面水温 Surface Temp. (℃)
1	石垣島 (Ishigaki Shima)	NNW	130	27
2	沖縄島 (Okinawa Shima)	NW	100	27
3	奄美大島(Amami-O Shima)	NW	95	27
4	屋久島 (Yaku Shima)	W	50	27
5	種子島 (Tane ga Shima)	S	40	27
6	都井岬 (Toi Misaki)	ESE	70	27
7	足摺岬 (Ashizuri Misaki)	SE	20	27
8	室戸岬 (Muroto Saki)	SSE	15	27
9	潮 岬 (Shio-no-Misaki)	S	20	27
10	大王埼 (Daio Saki)	S	80	26
11	御前埼 (Omae Saki)	S	100	26
12	石廊埼 (Iro Saki)	S	80	27
13	八丈島 (Hachijo Shima)	–	付近	27
14	三宅島 (Miyake Shima)	ESE	90	27
15	野島埼 (Nojima Saki)	ESE	100	26
16	犬吠埼 (Inubo Saki)	ESE	70	25
17	塩屋埼 (Shioya Saki)	ESE	125	26

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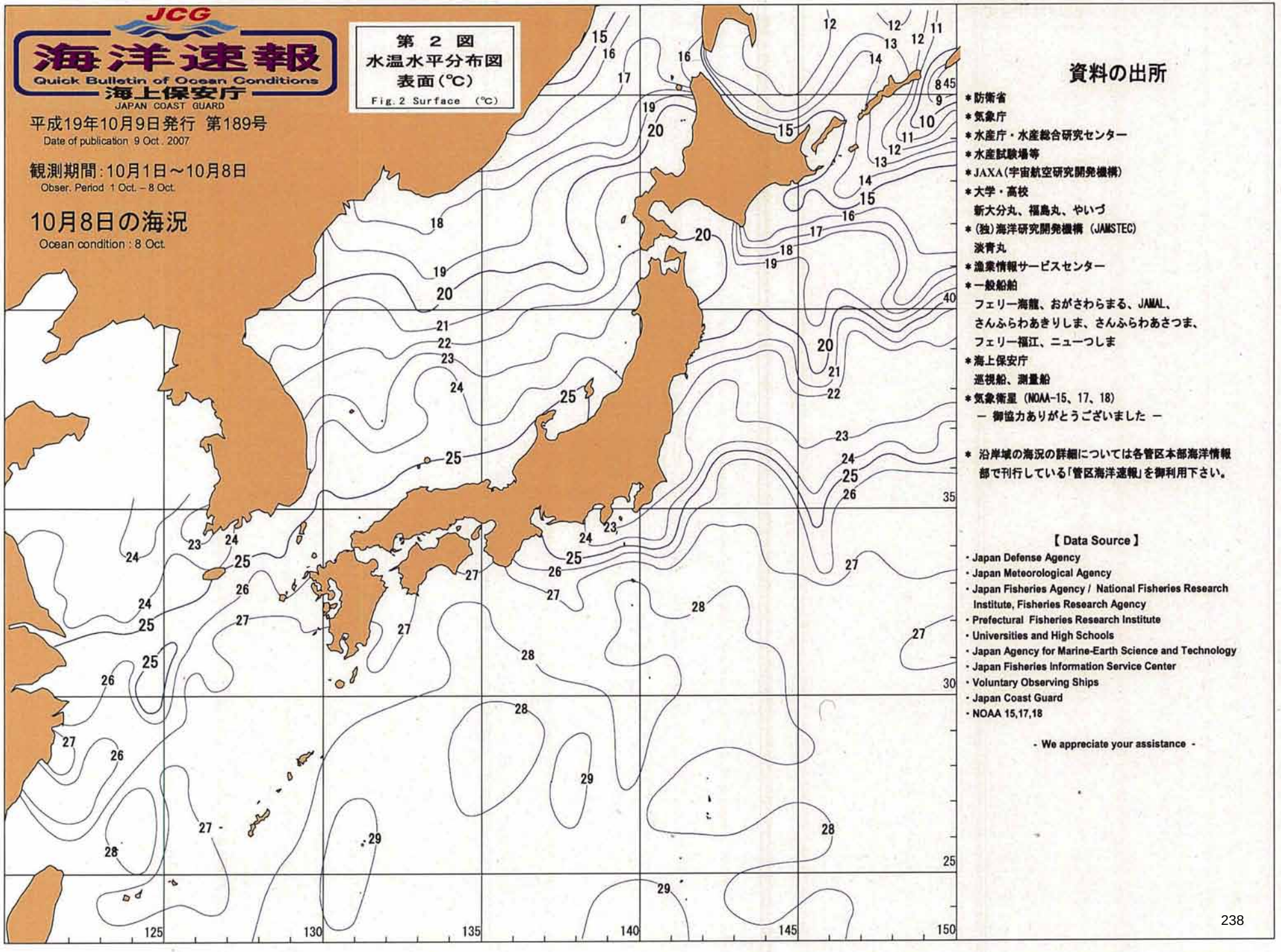

資料の出所

＊防衛省
＊気象庁
＊水産庁・水産総合研究センター
＊水産試験場等
＊JAXA(宇宙航空研究開発機構)
＊大学・高校
新大分丸、福島丸、やいづ
＊(独)海洋研究開発機構 (JAMSTEC)
淡青丸
＊漁業情報サービスセンター
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さんふらわあきりしま、さんふらわあさつま、
フェリー福江、ニューつしま
＊海上保安庁
巡視船、測量船
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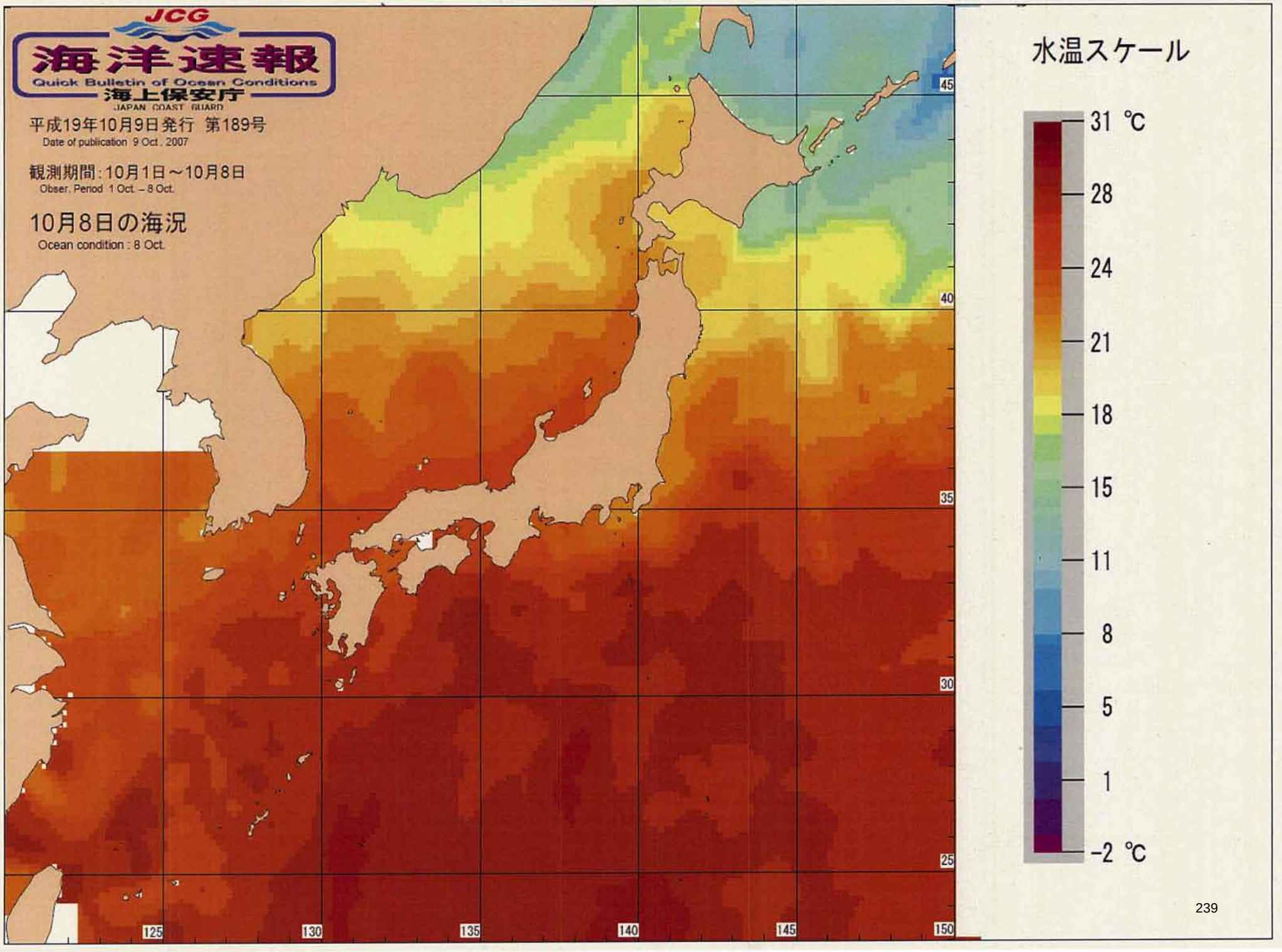
- Japan Fisheries Information Service Center
- Voluntary Observing Ships
- Japan Coast Guard
- NOAA 15,17,18

- We appreciate your assistance -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Date of publication 9 Oct. 2007
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Obser. Period 1 Oct. – 8 Oct.
10月8日の海況
Ocean condition : 8 Oct.
水温スケール
31 ℃
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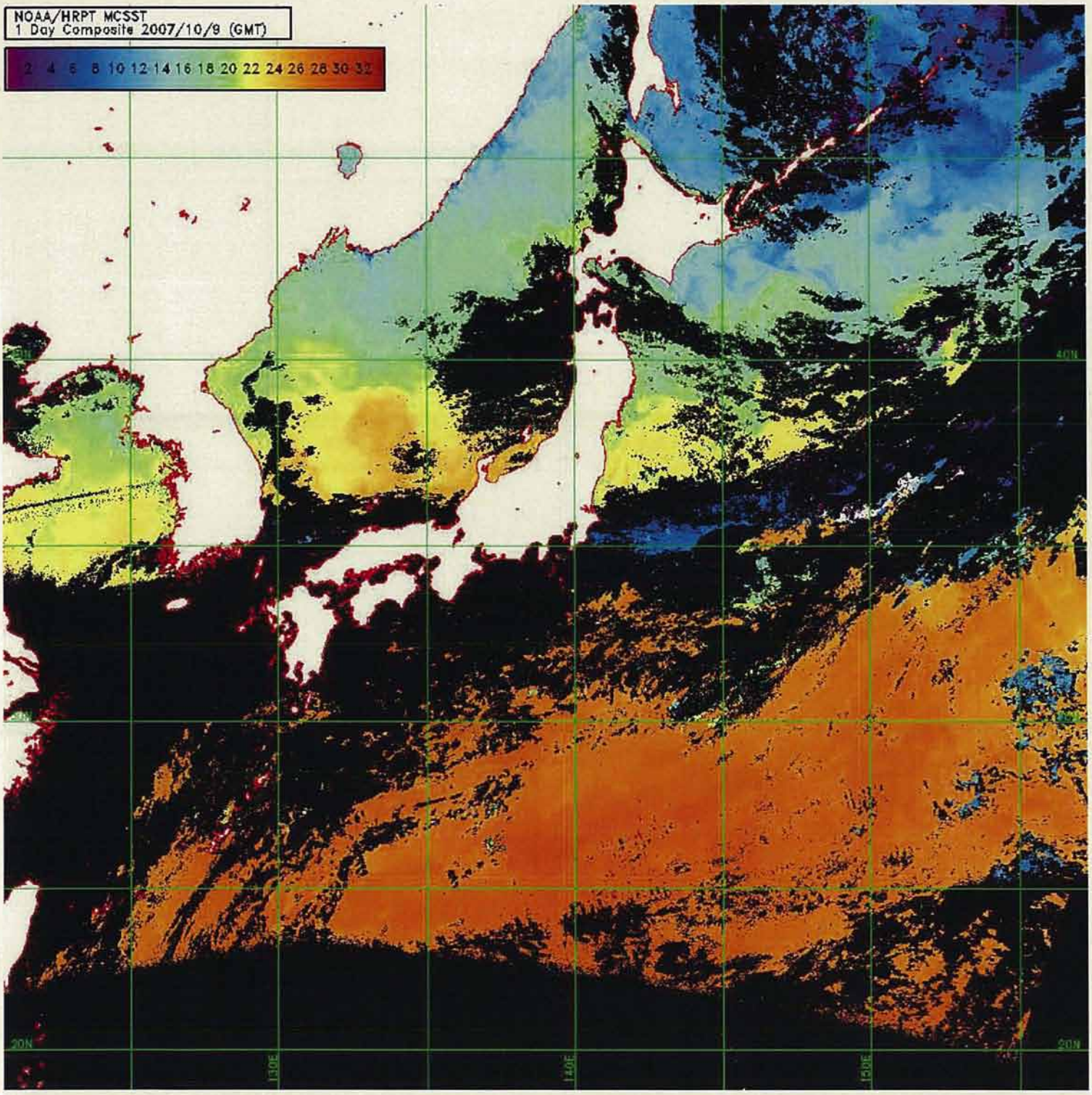
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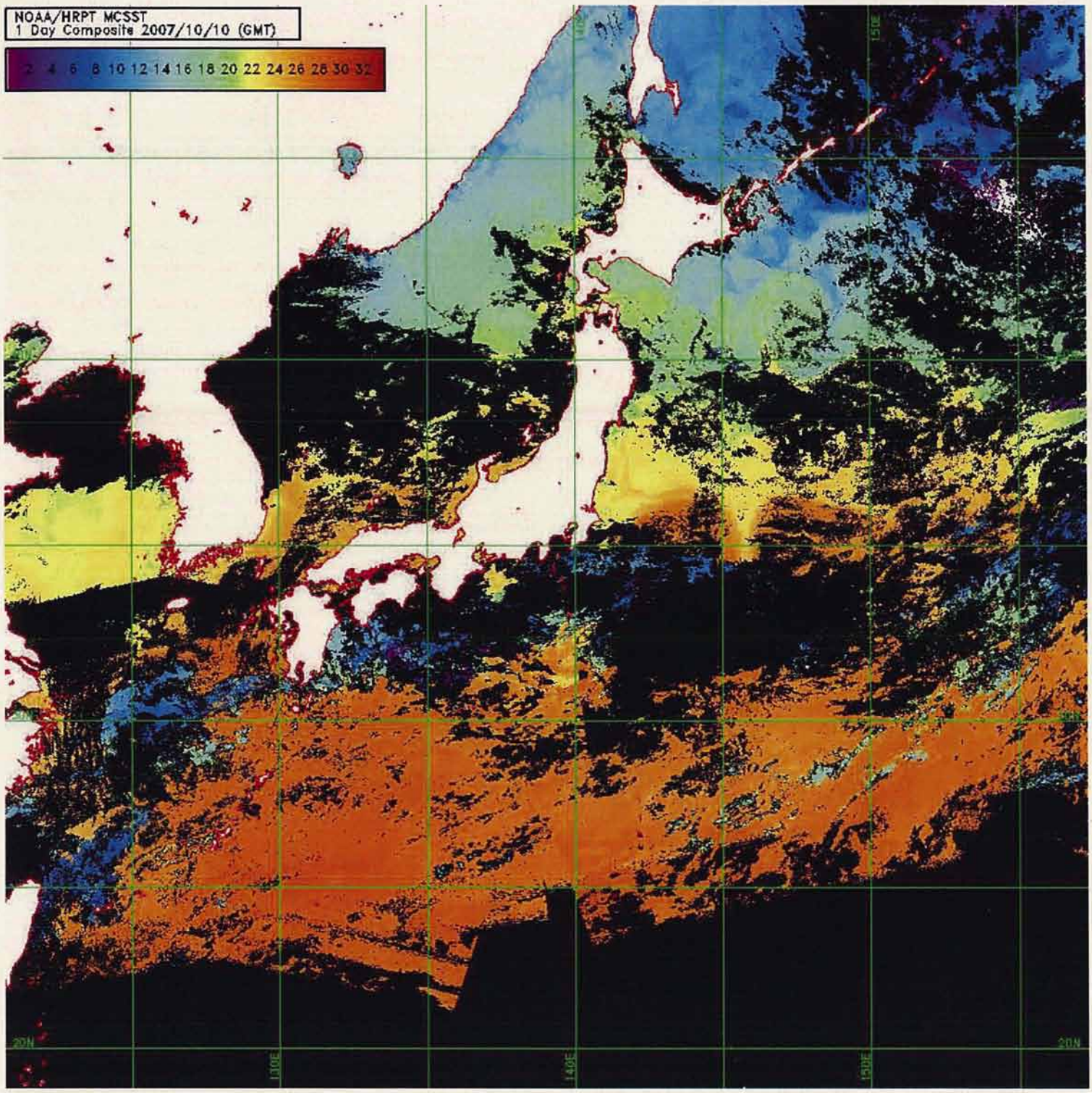
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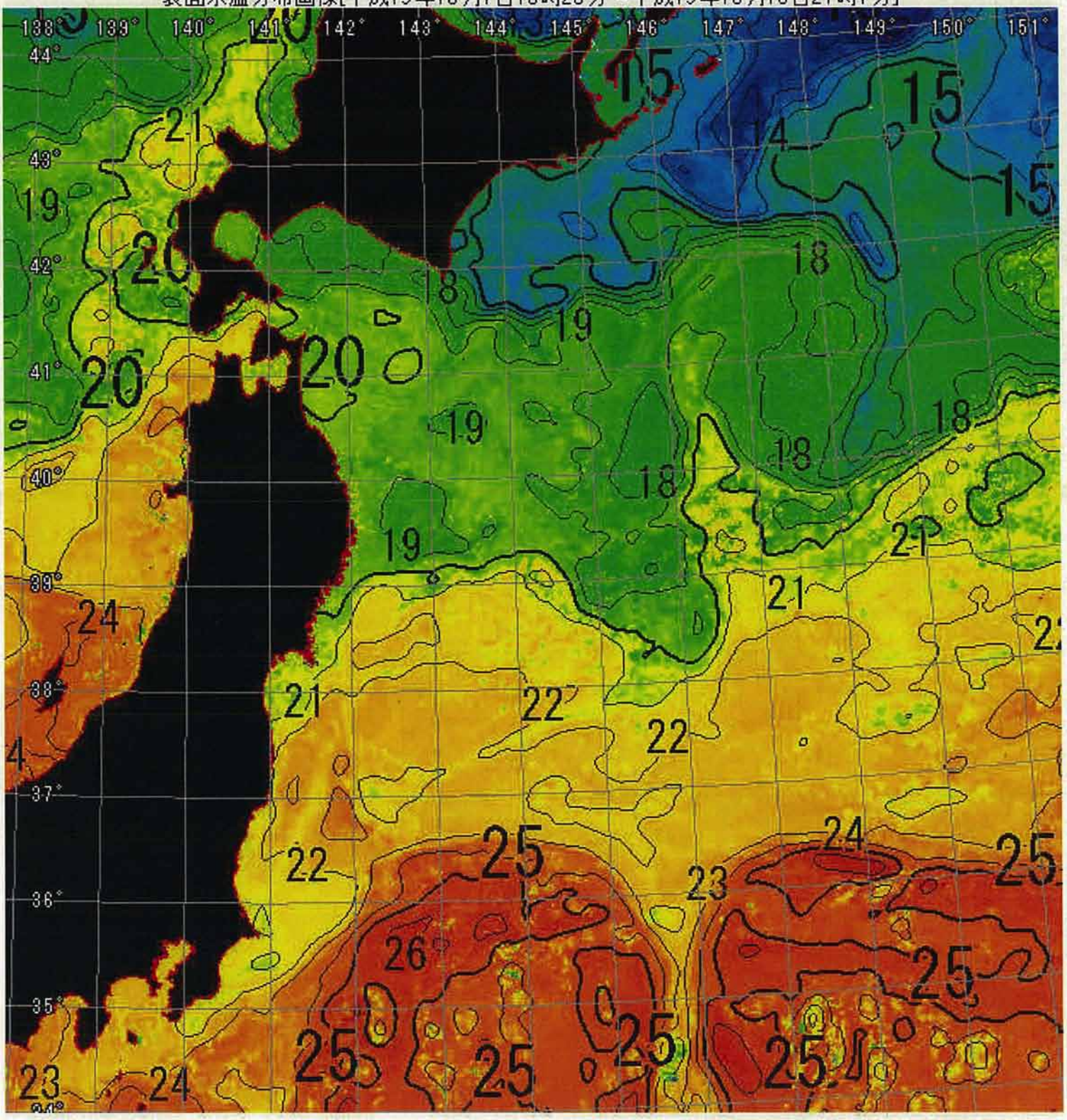

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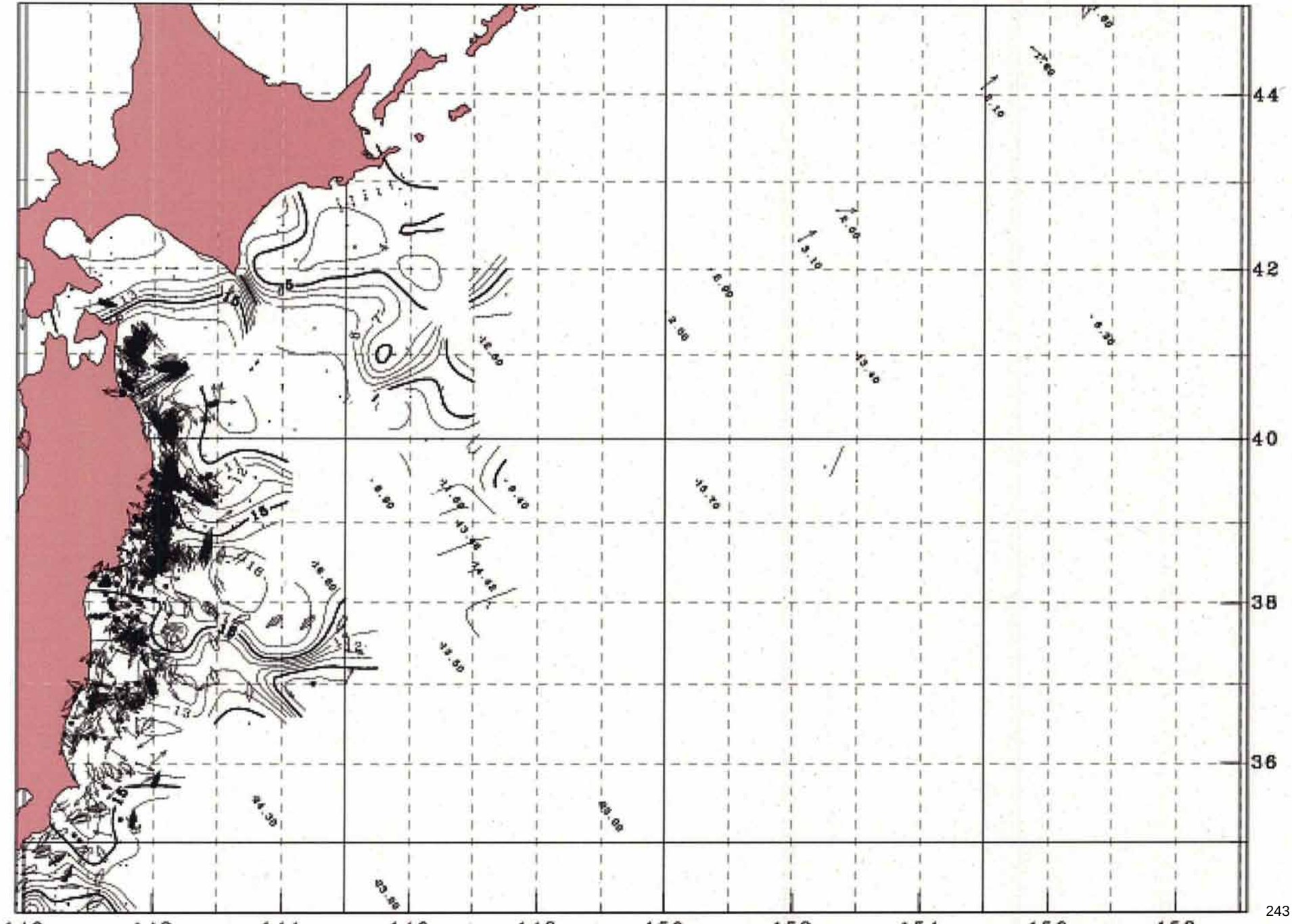

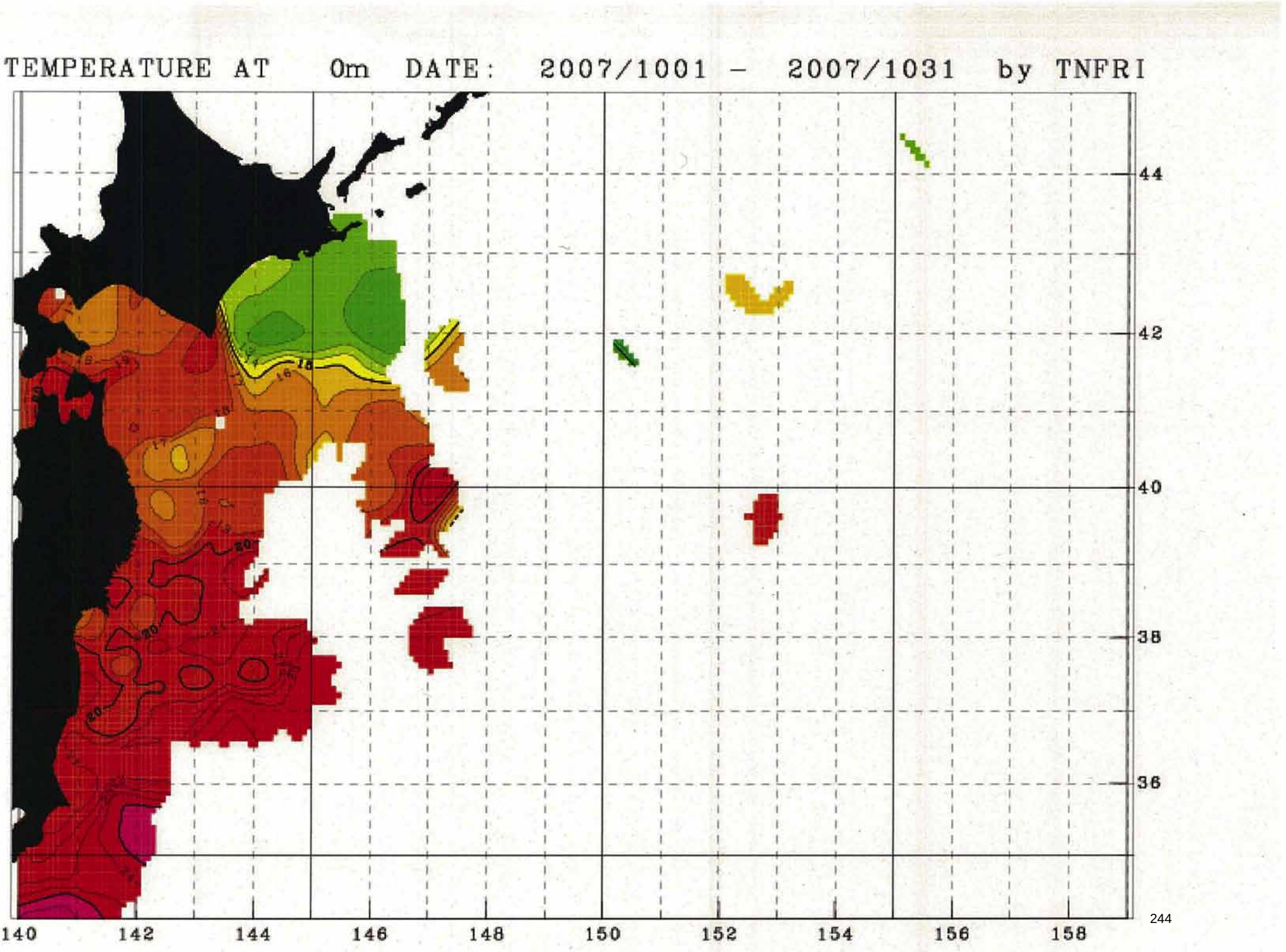
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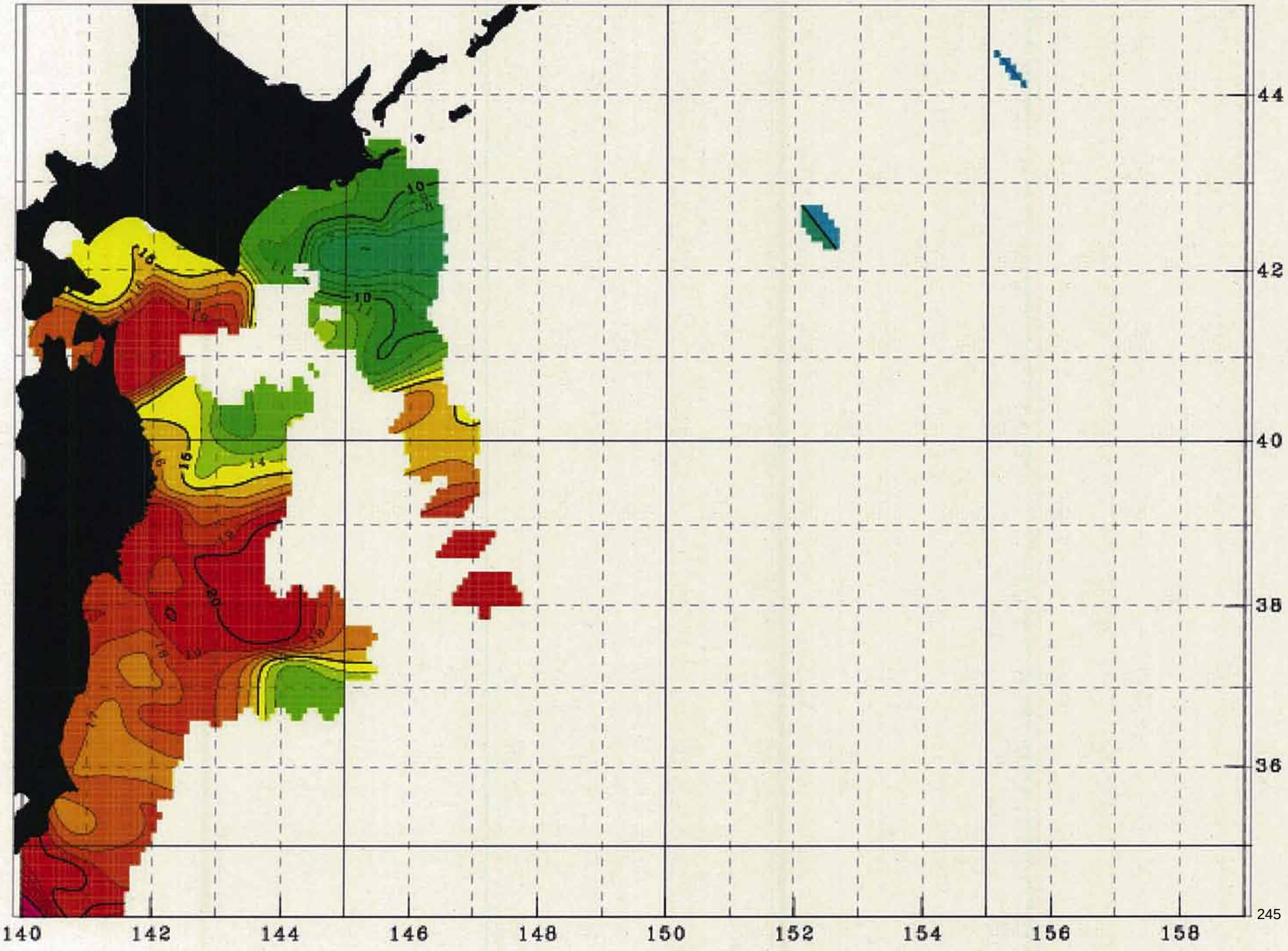
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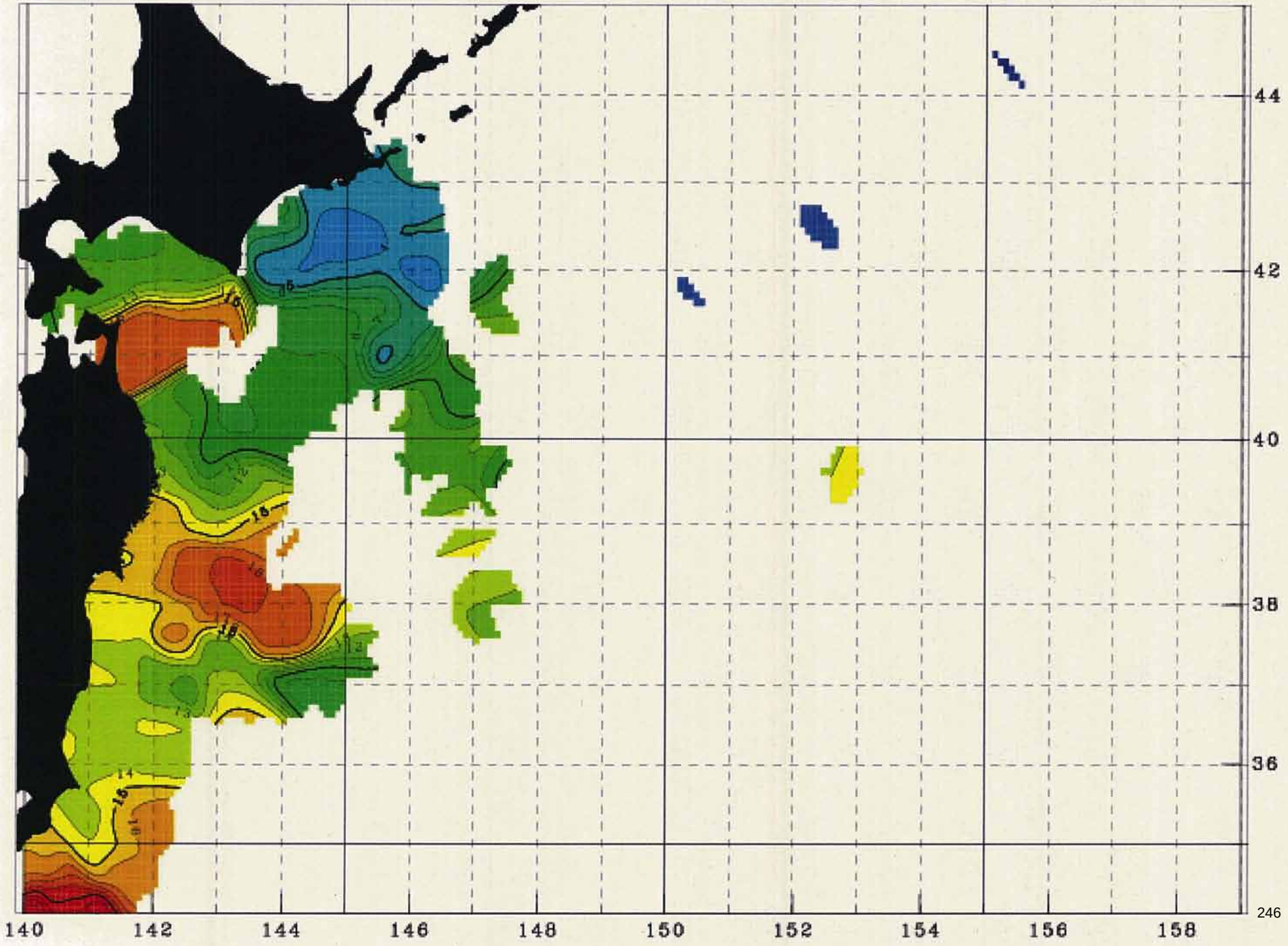
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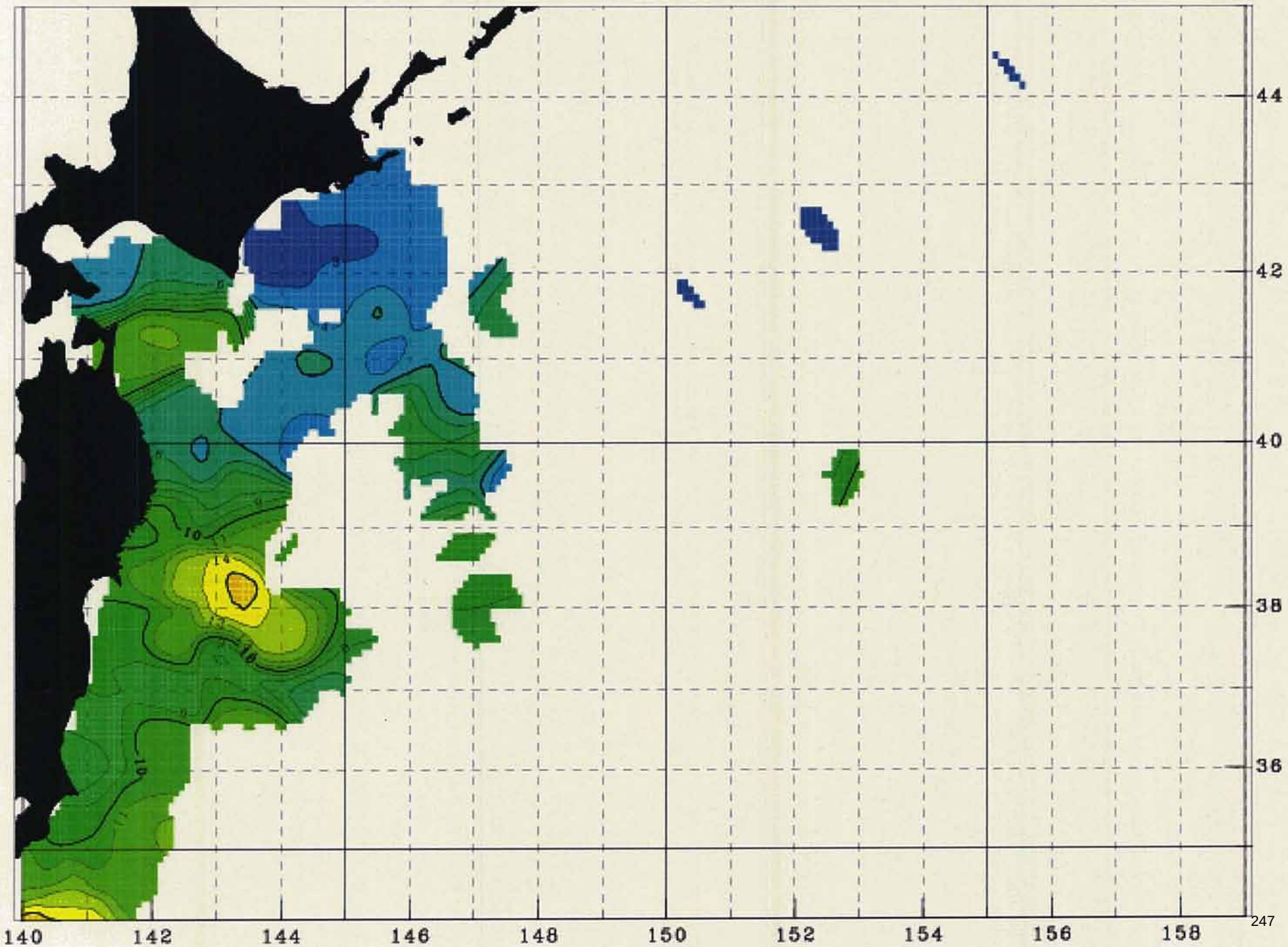
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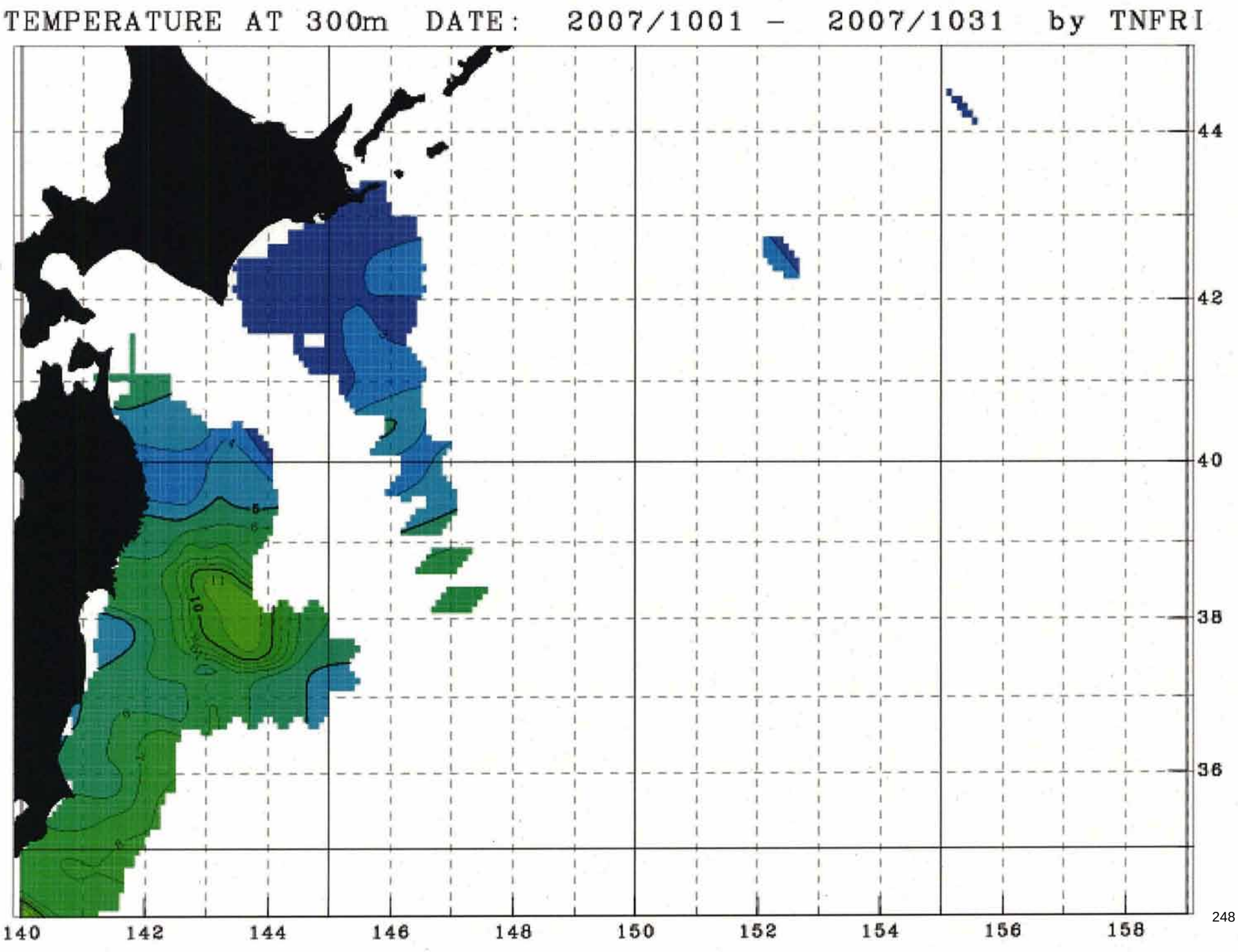
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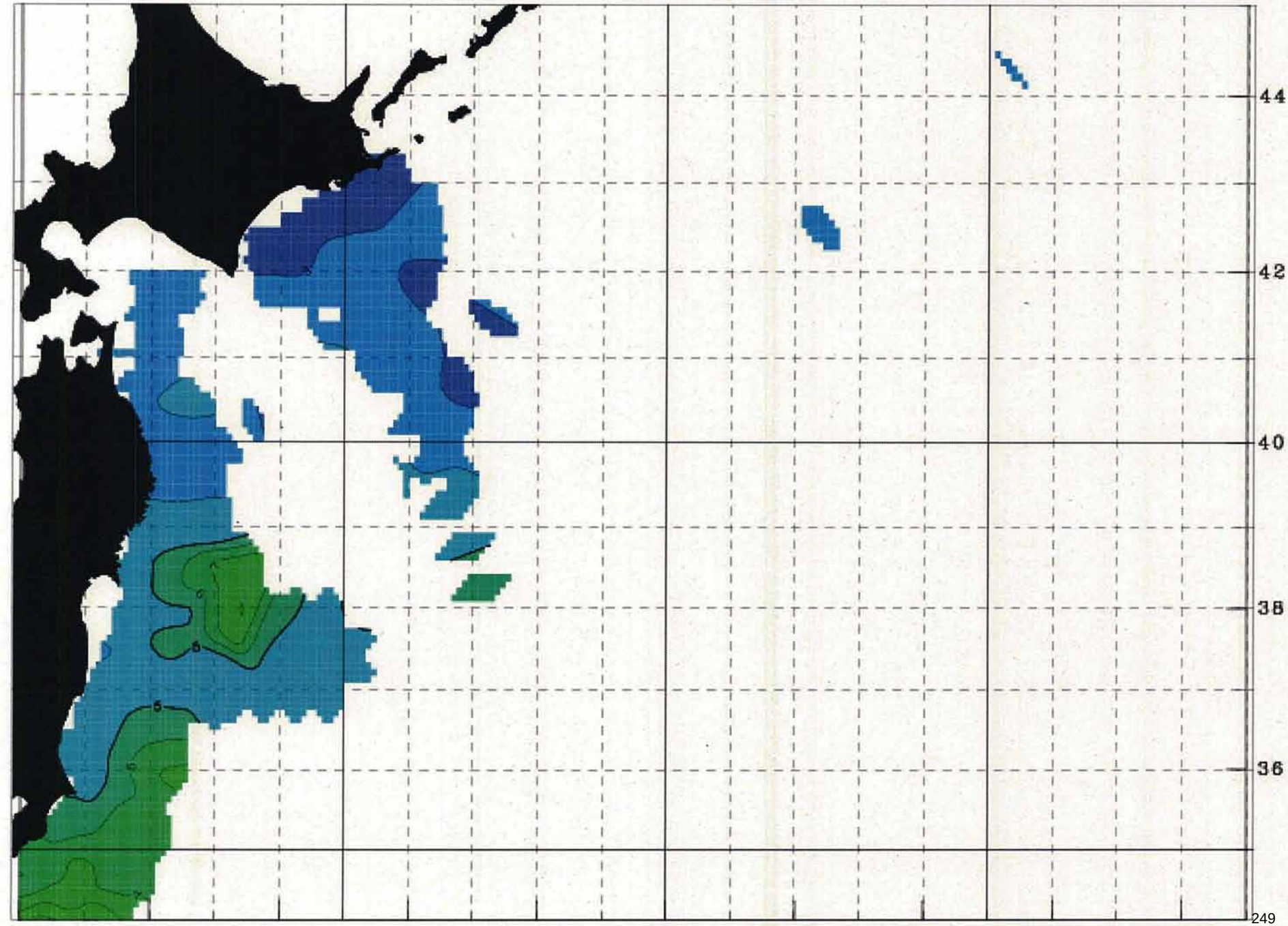
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2007/1001 - 2007/1031

△	SELF-DEFENSE-VESSEL	/ OCEANOGRAHIC-COMMAND(YOKOSUKA)
▲	BATHY	/ JAPAN-METEOROLOGICAL-AGENCY
r	UNIDENTIFIED	/
□	RYOFUMARU	/JAPAN-METEOROLOGICAL-AGENCY
○	KEIFUMARU	/JAPAN-METEOROLOGICAL-AGENCY
☆	SHOYO	/JAPAN-HYDROGRAPHIC-DEPARTMENT
●	SEIFUMARU	/MAIZURU-MARINE-OBSERVATORY
■	HOKKOMARU	/HOKKAIDO-NATIONAL-FISH.-RES.-INST.
◀	HOKUSHINMARU	/HOKKAIDO-KUSHIRO-FISH.-EXP.-STA.
▼	MIRAI	/JAPAN-MARINE-SCIENCE-AND-TECHNOLOGY-CNT.
▶	HOKUHOMARU	/TNFRI-HACHINOHE
★	KINSEIMARU	/HOKKAIDO-HAKODATE-FISH.-EXP.-STA.
◐	WAKATAKAMARU	/TOHOKU-NATIONAL-FISH.-RES.-INST.
◑	IWATEMARU	/IWATE-FISH.-TECHNOLOGY-CNT.
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b	TAKUYOMARU	/MIYAGI-PREFECTURE-FISH.-RES.-AND-DEV.-CNT.
c	IWAKIMARU	/FUKUSHIMA-PREF.-FISH.-RES.-STA.
d	TOKIWA	/IBARAKI-PREF.-FISH-RES.-STA.
e	FUSAMIMARU	/CHIBA-PREF-FISH-RES.-STA.
f	BOSOMARU	/CHIBA-PREF-FISH-RES.-STA.
g	SOYOMARU	/NATIONAL-RES.INST.FISH.SCIENCE
h	HAKUSANMARU	/ISHIKAWA-PREF.FISH.RES.STA
i	FUKUIMARU	/FUKUI-PREF.FISH.RES.INST.
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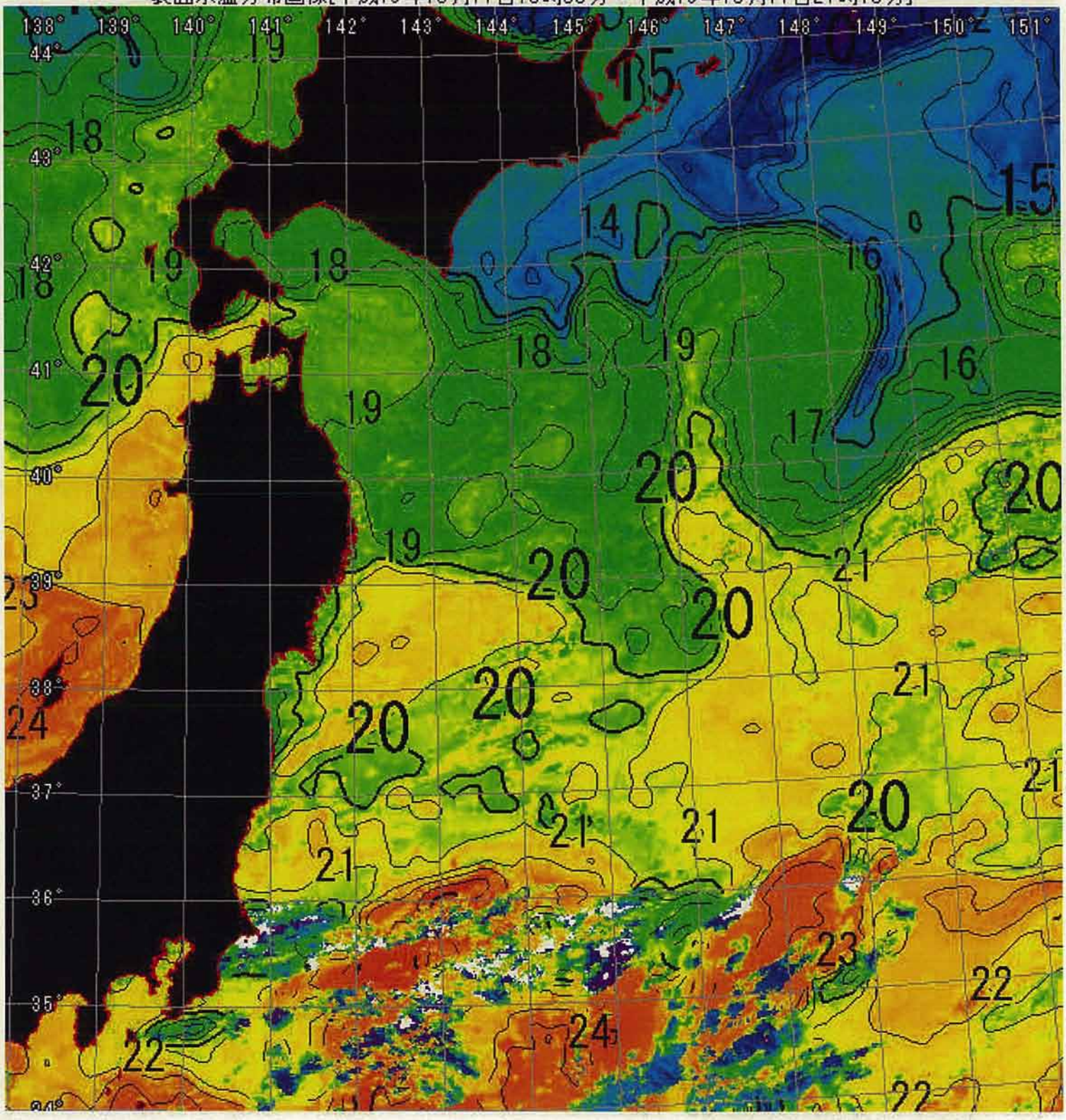

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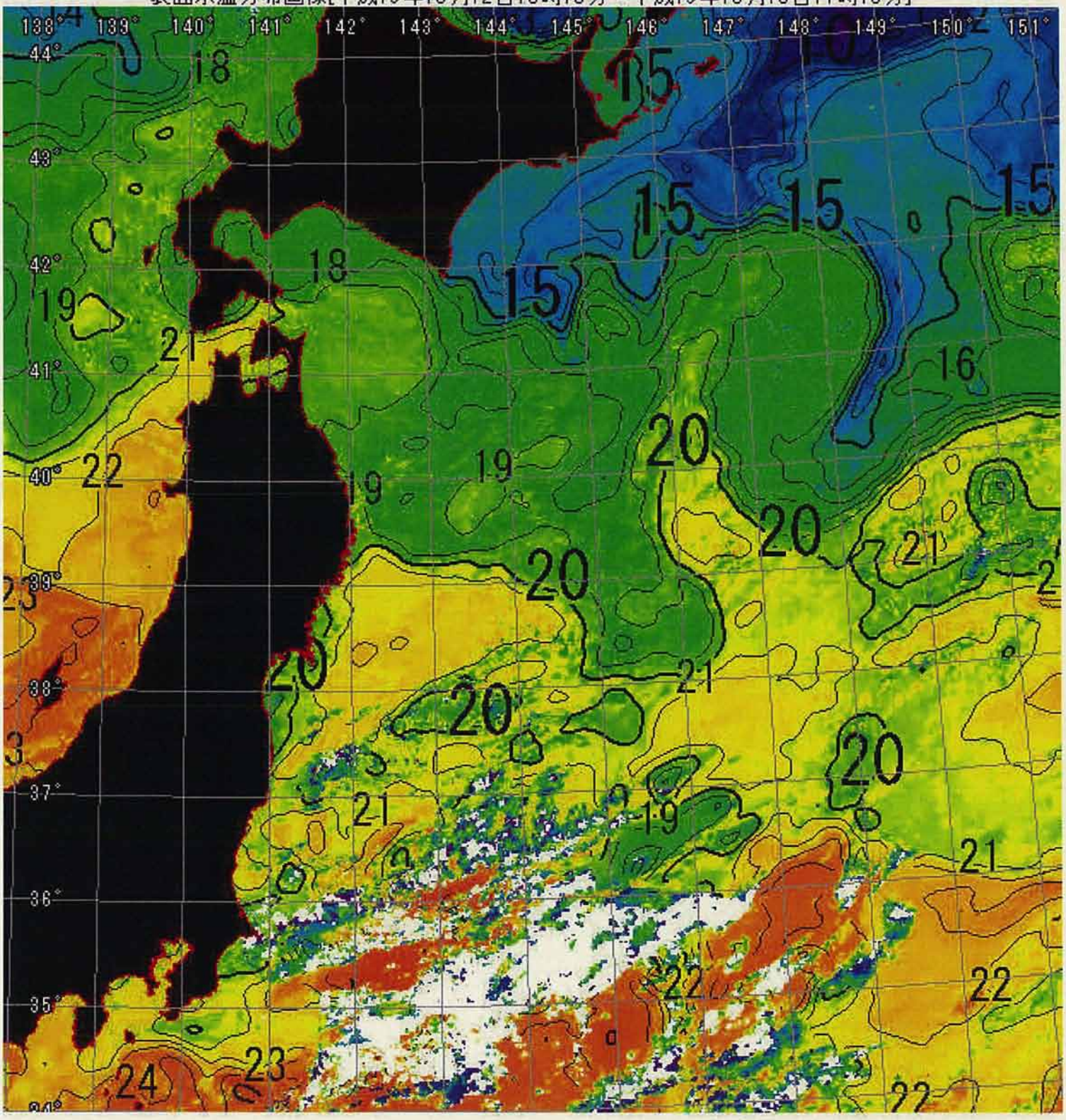
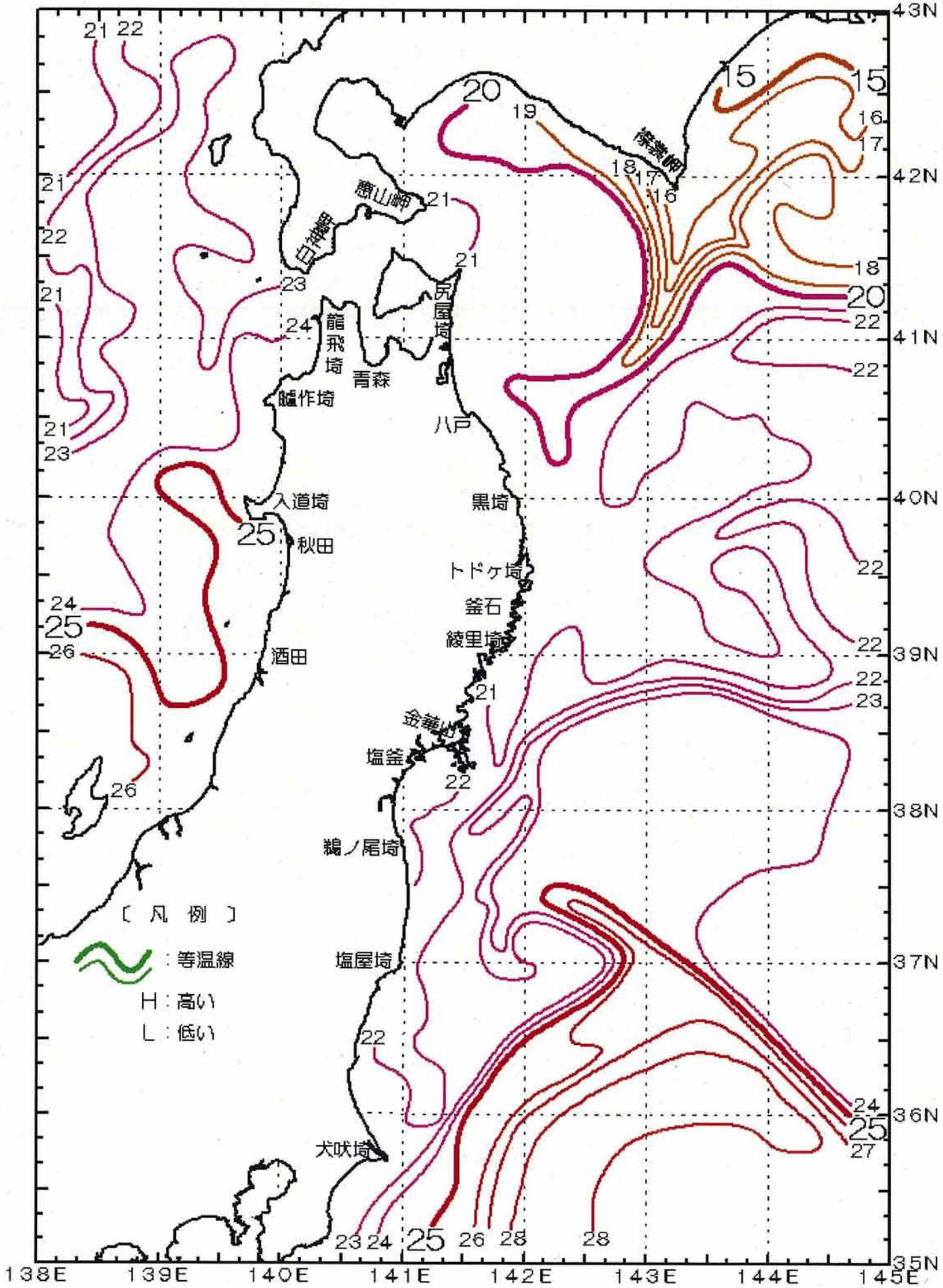


岩手県／宇宙開発事業団　共同プロジェクト

5.0　8.0　11.0　14.0　17.0　20.0　23.0　26.0　30.0 ℃

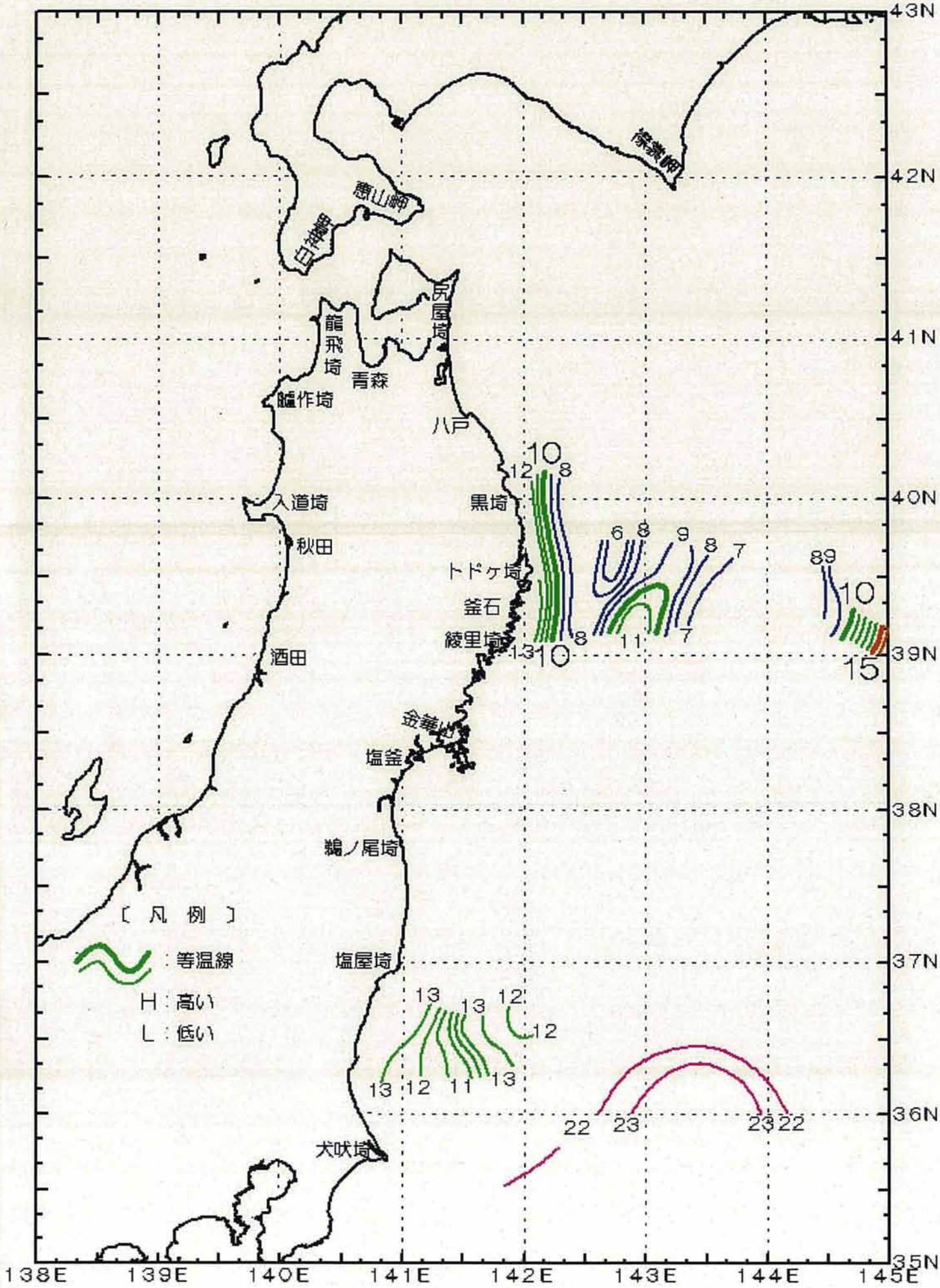
陸域　雲

【表面水温水平分布図（℃）】2007/9/14−9/27

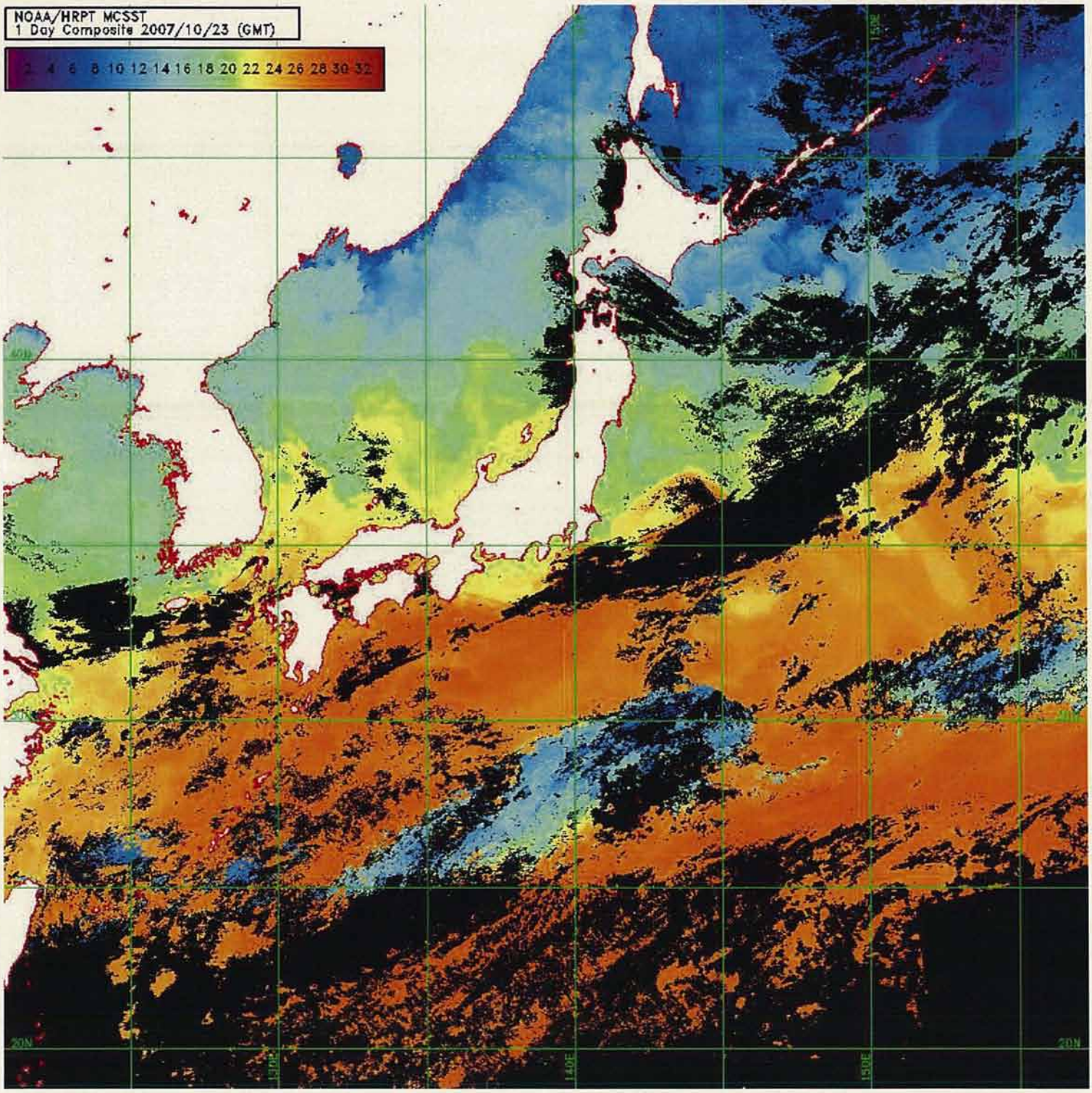


二管区海洋速報第 18 号（2007）

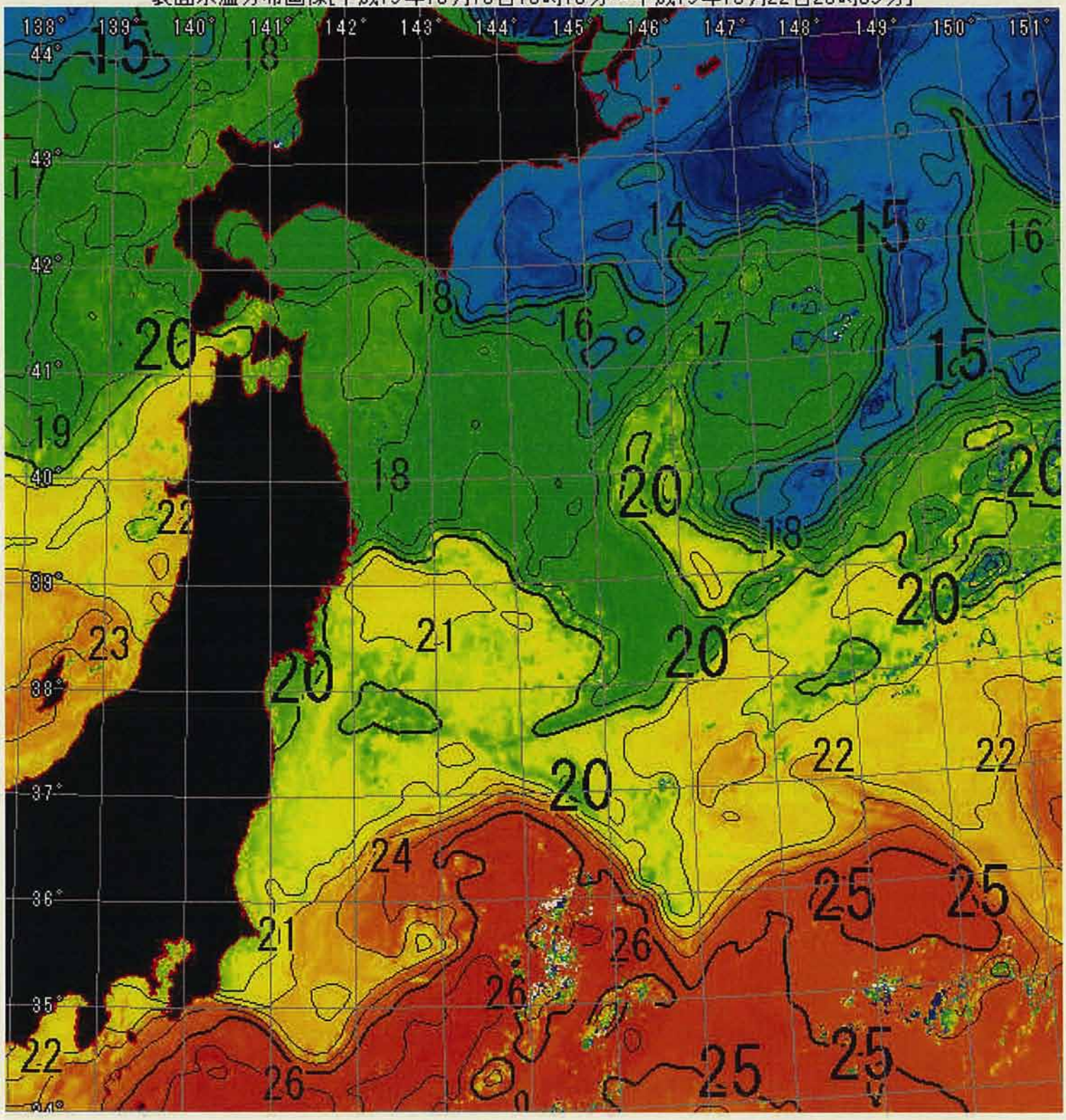
【１００m層水温水平分布図（℃）】2007/9/14-9/27



二管区海洋速報第 18 号（2007）


NOAA/HRPT MCSST
1 Day Composite 2007/10/23 (GMT)
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
40N
30N
20N
130E
140E
150E
150E

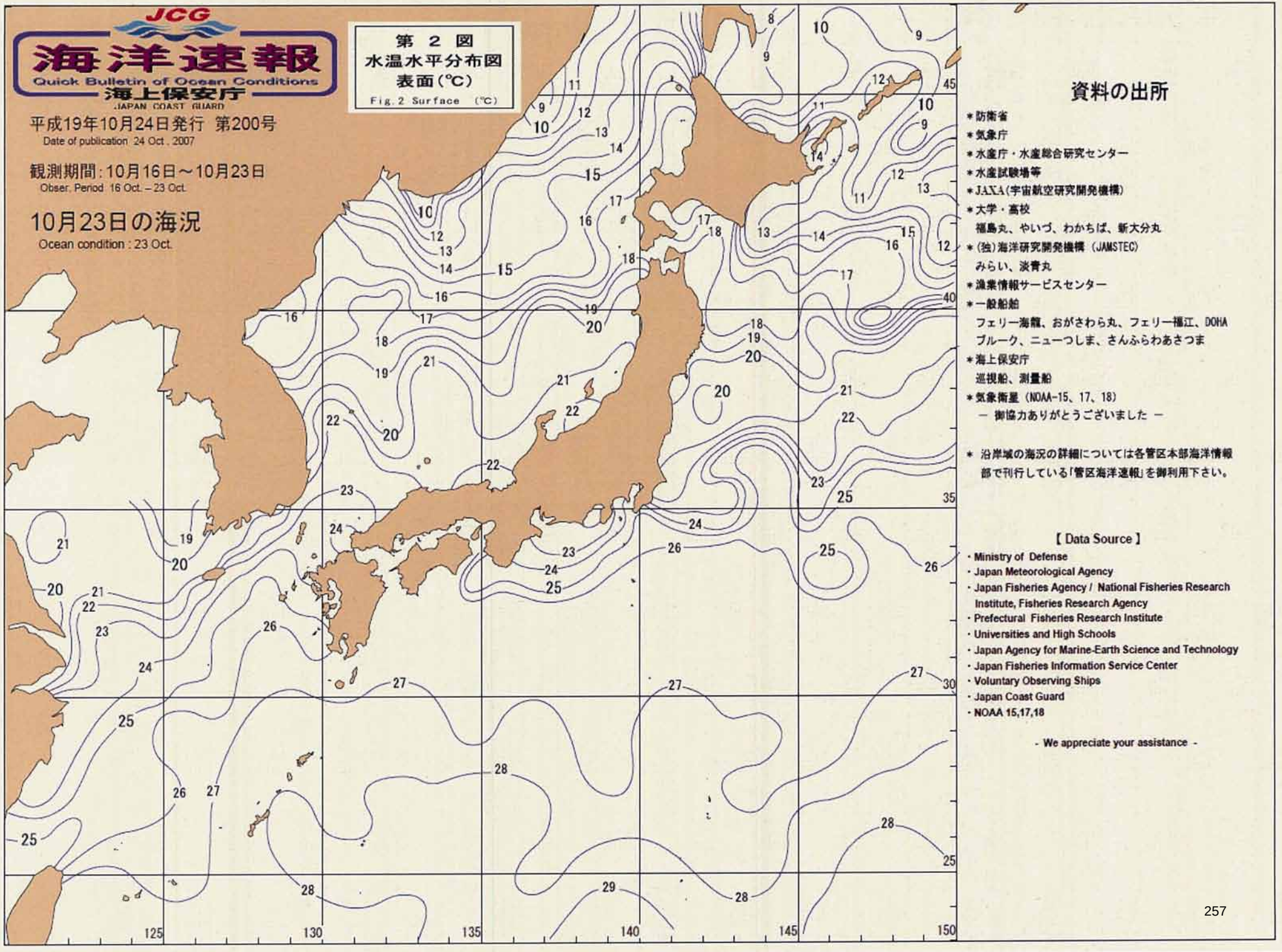
表面水温分布画像[平成19年10月16日10時18分～平成19年10月22日20時59分]



岩手県／宇宙開発事業団　共同プロジェクト

5.0　8.0　11.0　14.0　17.0　20.0　23.0　26.0　30.0 ℃

陸域　雲



資料の出所

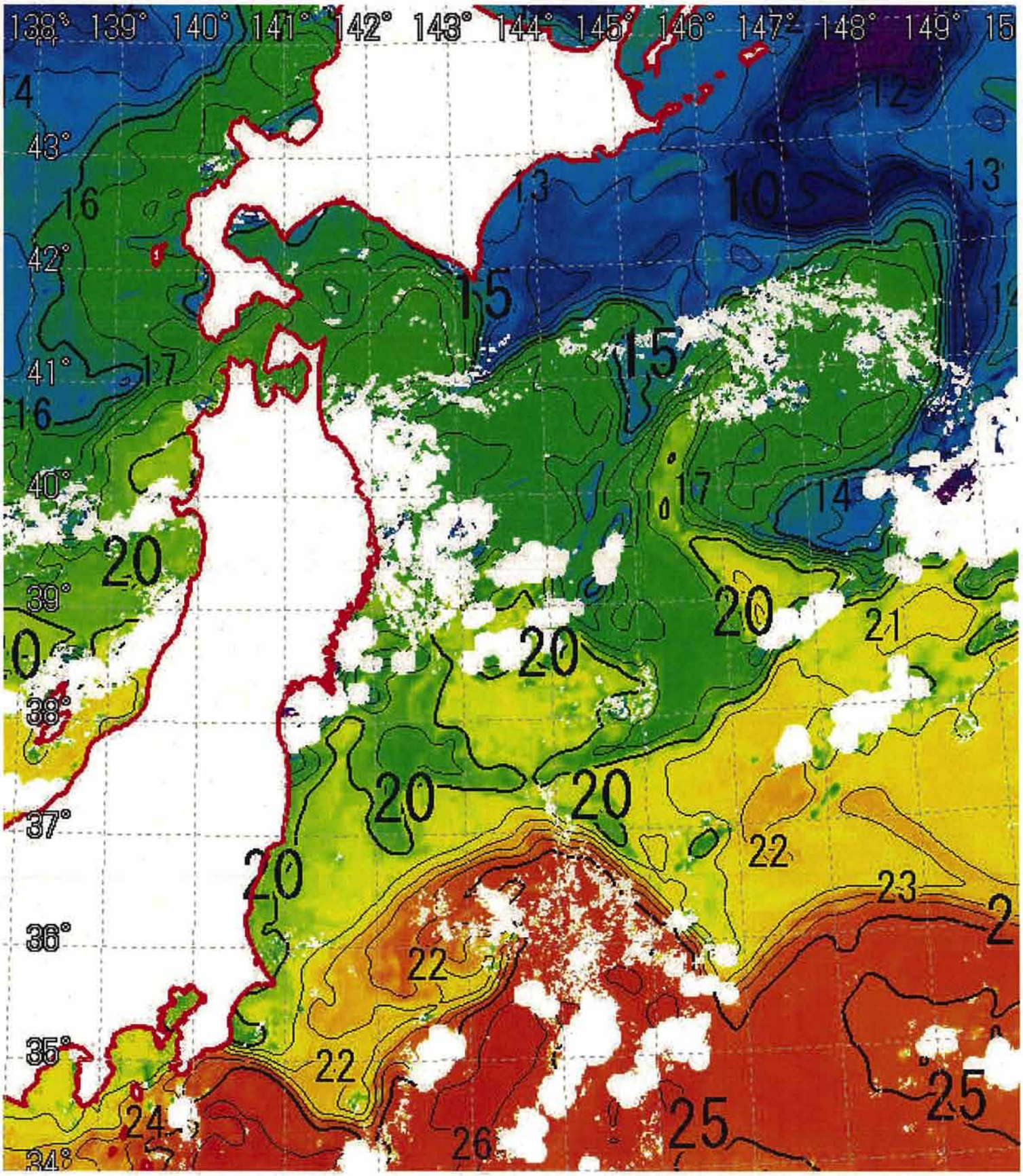
＊防衛省
＊気象庁
＊水産庁・水産総合研究センター
＊水産試験場等
＊JAXA(宇宙航空研究開発機構)
＊大学・高校
福島丸、やいづ、わかちば、新大分丸
＊(独)海洋研究開発機構 (JAMSTEC)
みらい、淡青丸
＊漁業情報サービスセンター
＊一般船舶
フェリー海龍、おがさわら丸、フェリー福江、DOHA
ブルーク、ニューつしま、さんふらわあさつま
＊海上保安庁
巡視船、測量船
＊気象衛星 (NOAA-15、17、18)
－ 御協力ありがとうございました －

＊ 沿岸域の海況の詳細については各管区本部海洋情報部で刊行している「管区海洋速報」を御利用下さい。

【 Data Source 】

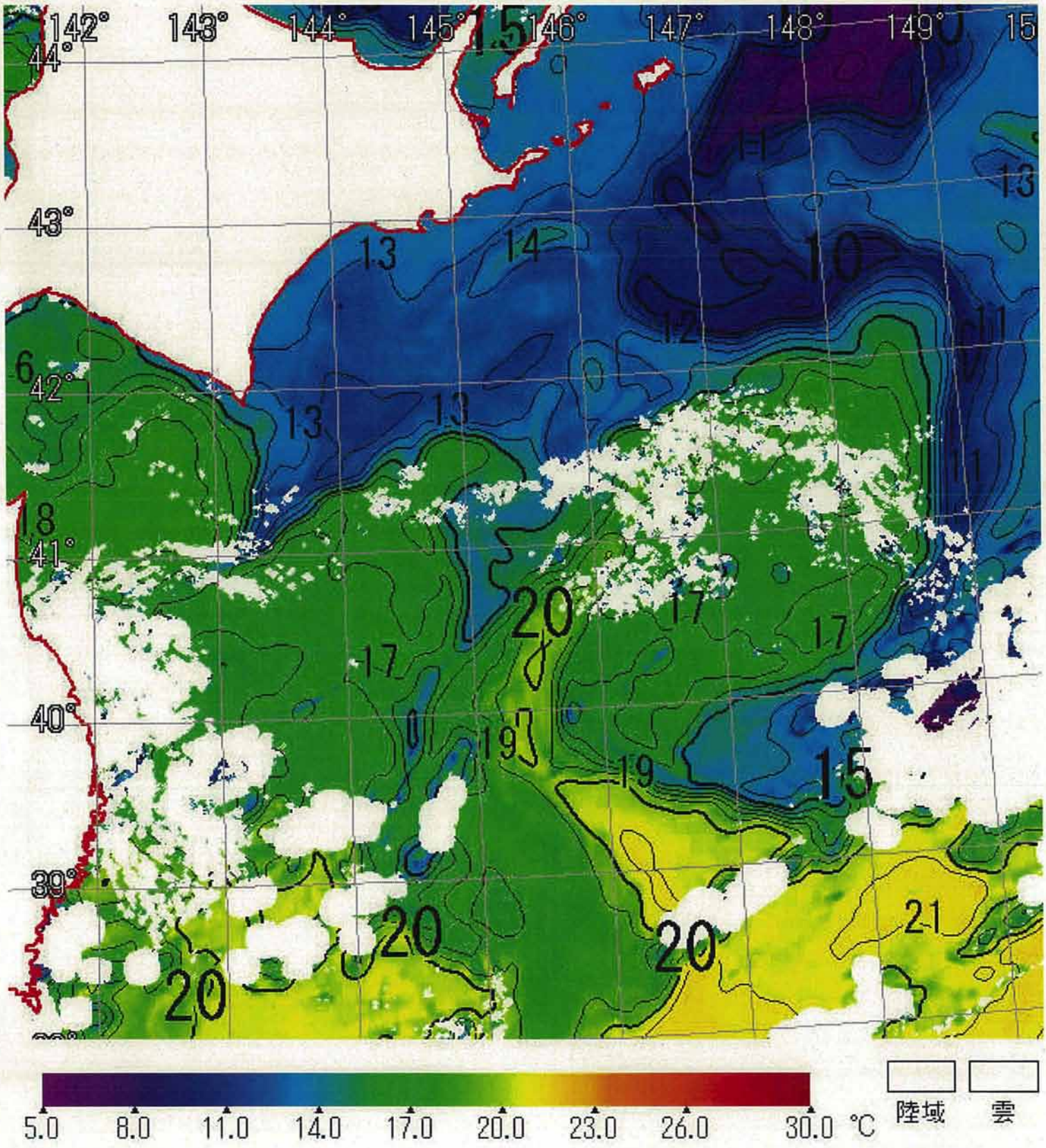
- Ministry of Defense
- Japan Meteorological Agency
- Japan Fisheries Agency / National Fisheries Research Institute, Fisheries Research Agency
- Prefectural Fisheries Research Institute
- Universities and High Schools
- Japan Agency for Marine-Earth Science and Technology
- Japan Fisheries Information Service Center
- Voluntary Observing Ships
- Japan Coast Guard
- NOAA 15,17,18

- We appreciate your assistance -



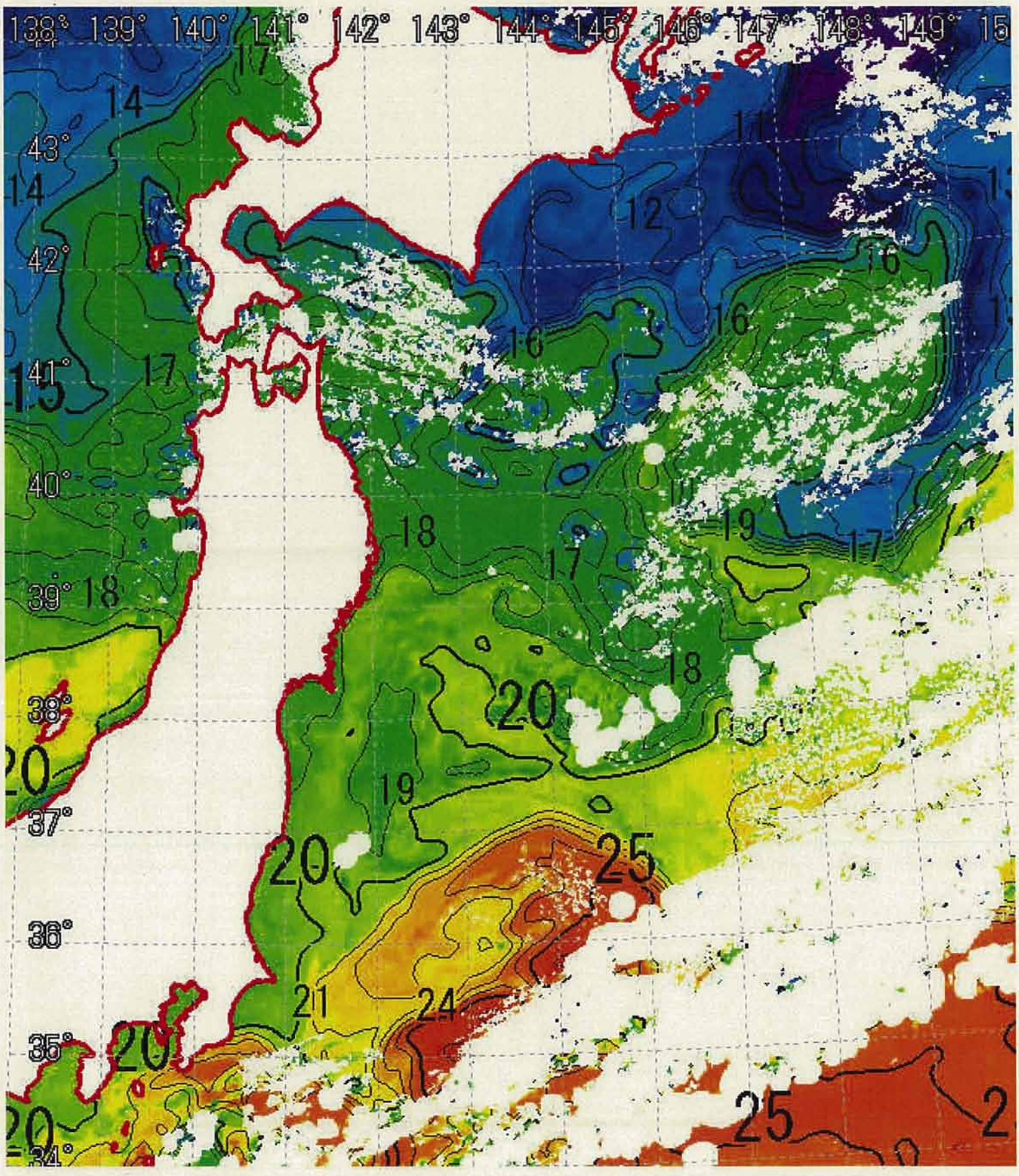
観測日：2007年10月23日

岩手県／宇宙開発事業団　共同プロジェクト



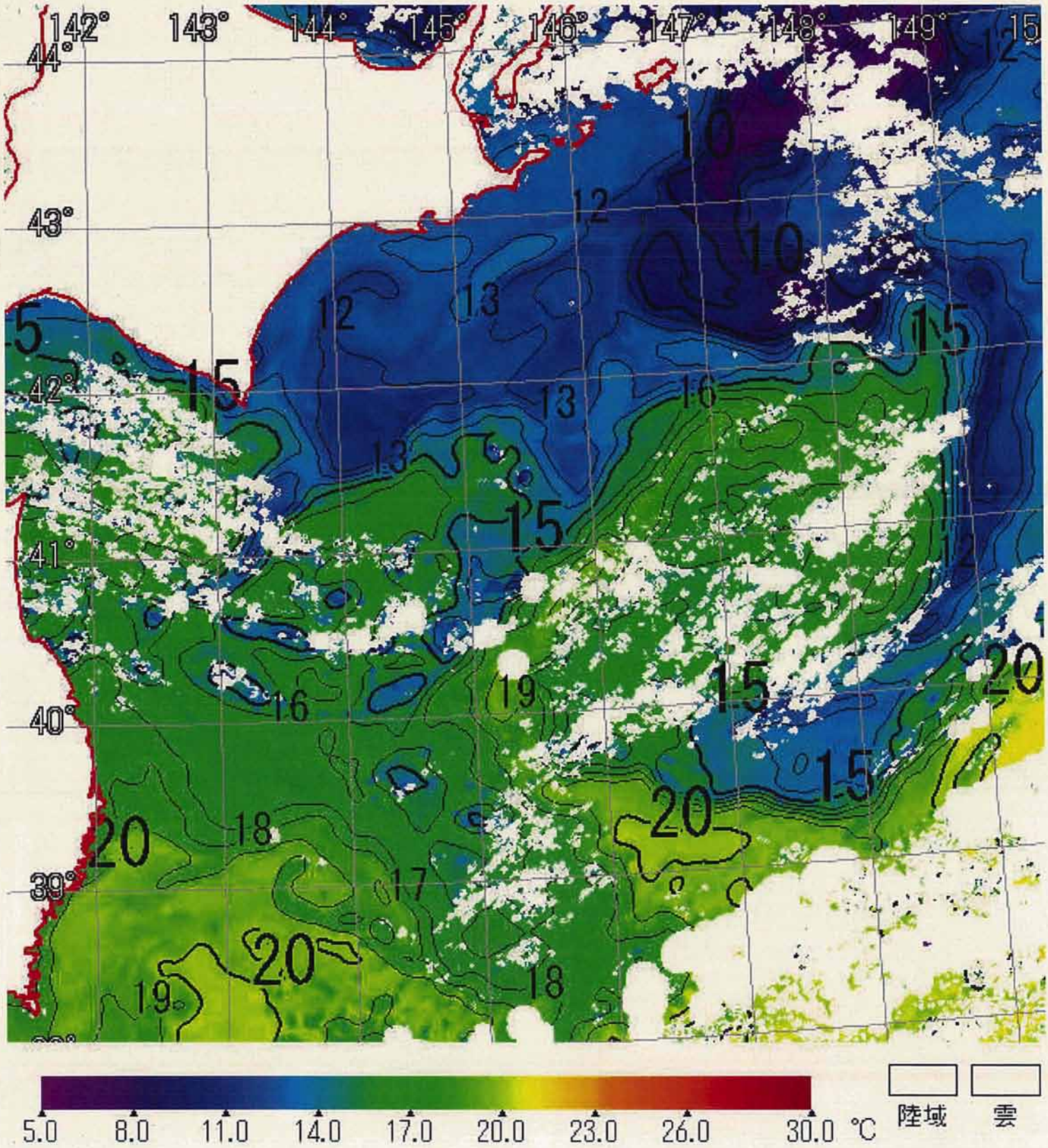
観測日：2007年10月23日

岩手県／宇宙開発事業団　共同プロジェクト



観測日：2007年10月24日

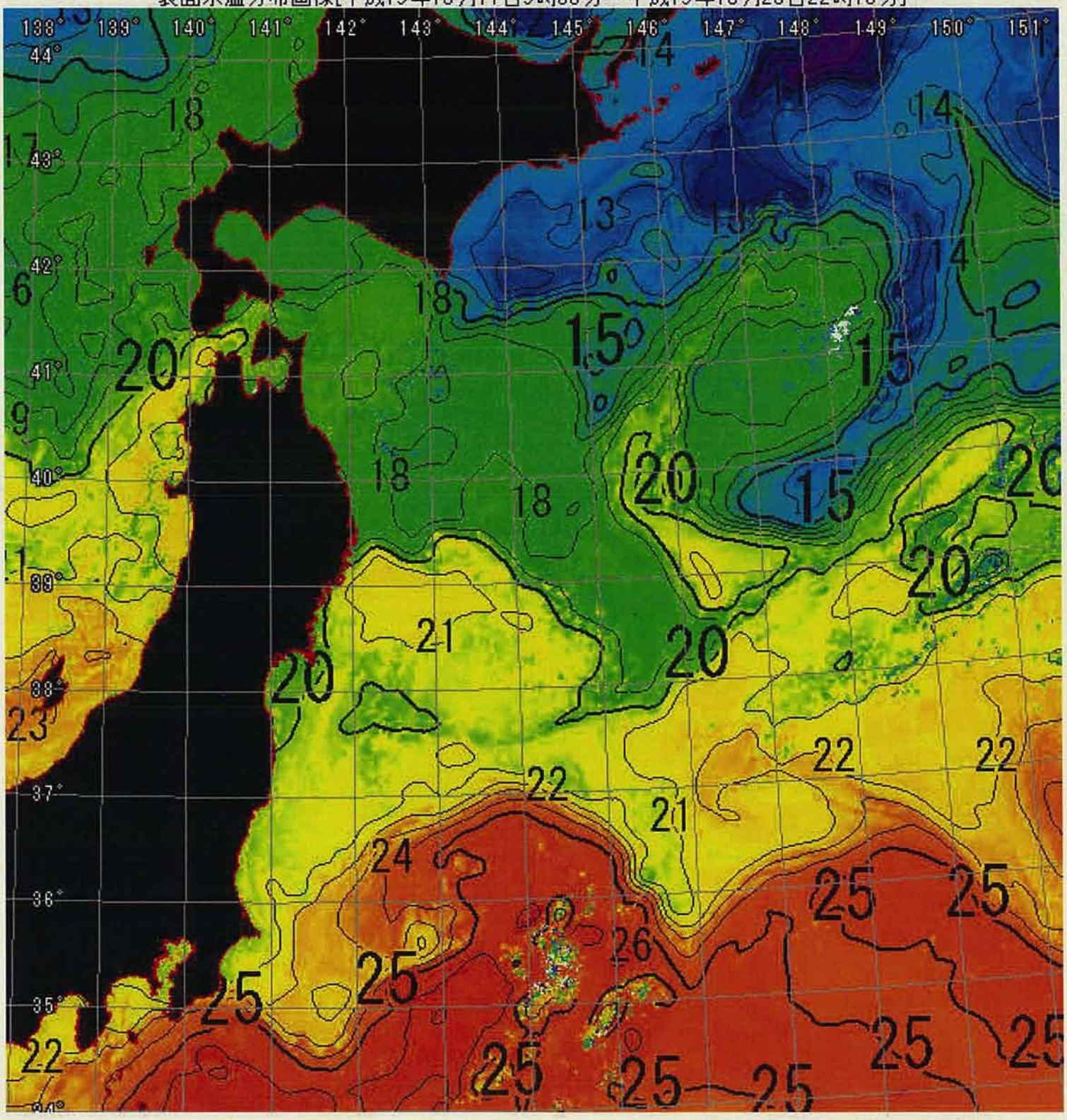
岩手県／宇宙開発事業団　共同プロジェクト



観測日：2007年10月24日

岩手県／宇宙開発事業団　共同プロジェクト

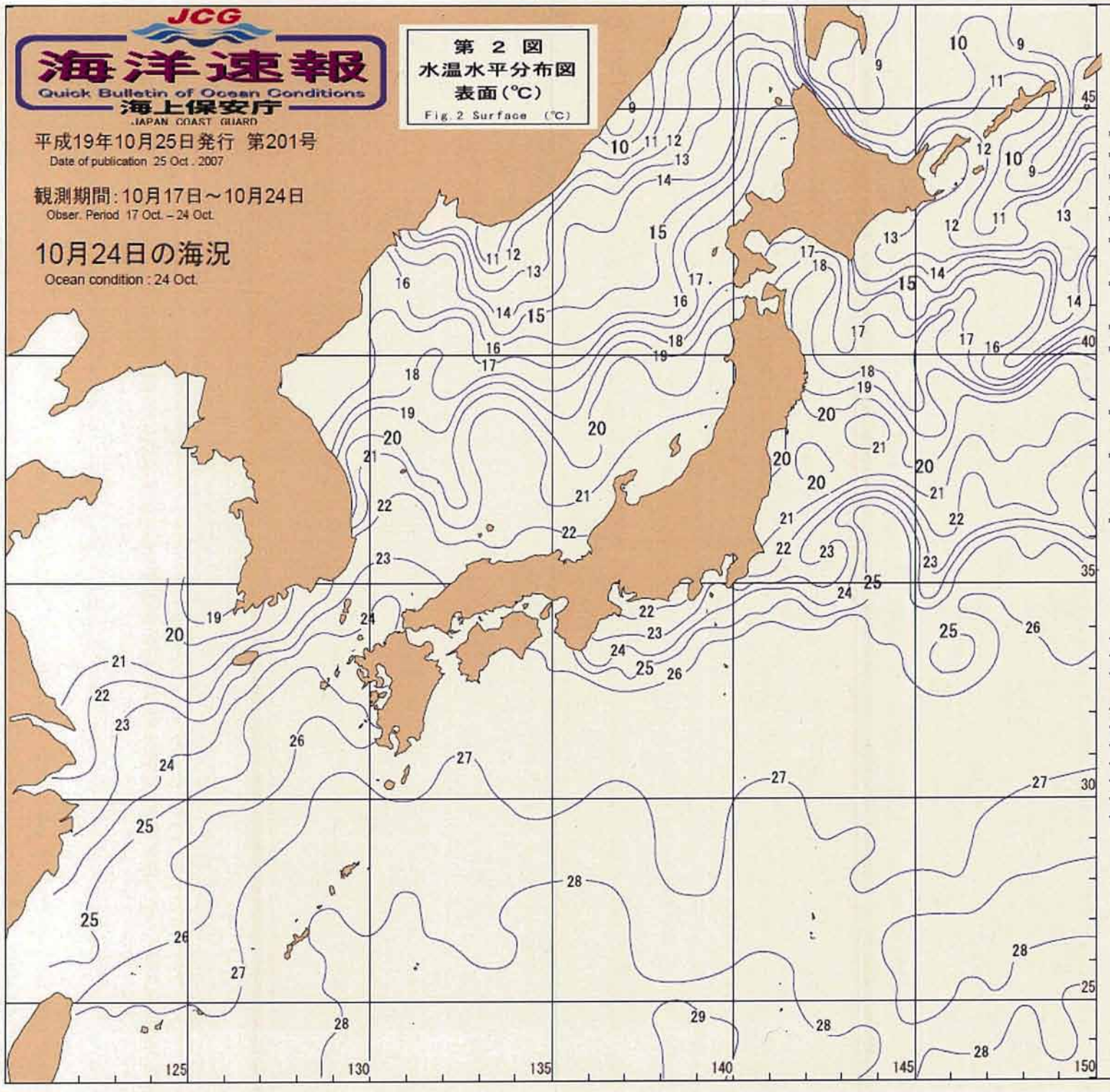
表面水温分布画像[平成19年10月17日9時55分～平成19年10月23日22時18分]



岩手県／宇宙開発事業団　共同プロジェクト

5.0　8.0　11.0　14.0　17.0　20.0　23.0　26.0　30.0 ℃

陸域　雲



資料の出所

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* 気象庁
* 水産庁・水産総合研究センター
* 水産試験場等
* JAXA(宇宙航空研究開発機構)
* 大学・高校
  福島丸、やいづ、わかちば、新大分丸
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  巡視船、測量船
* 気象衛星 (NOAA-15、17、18)

－ 御協力ありがとうございました －

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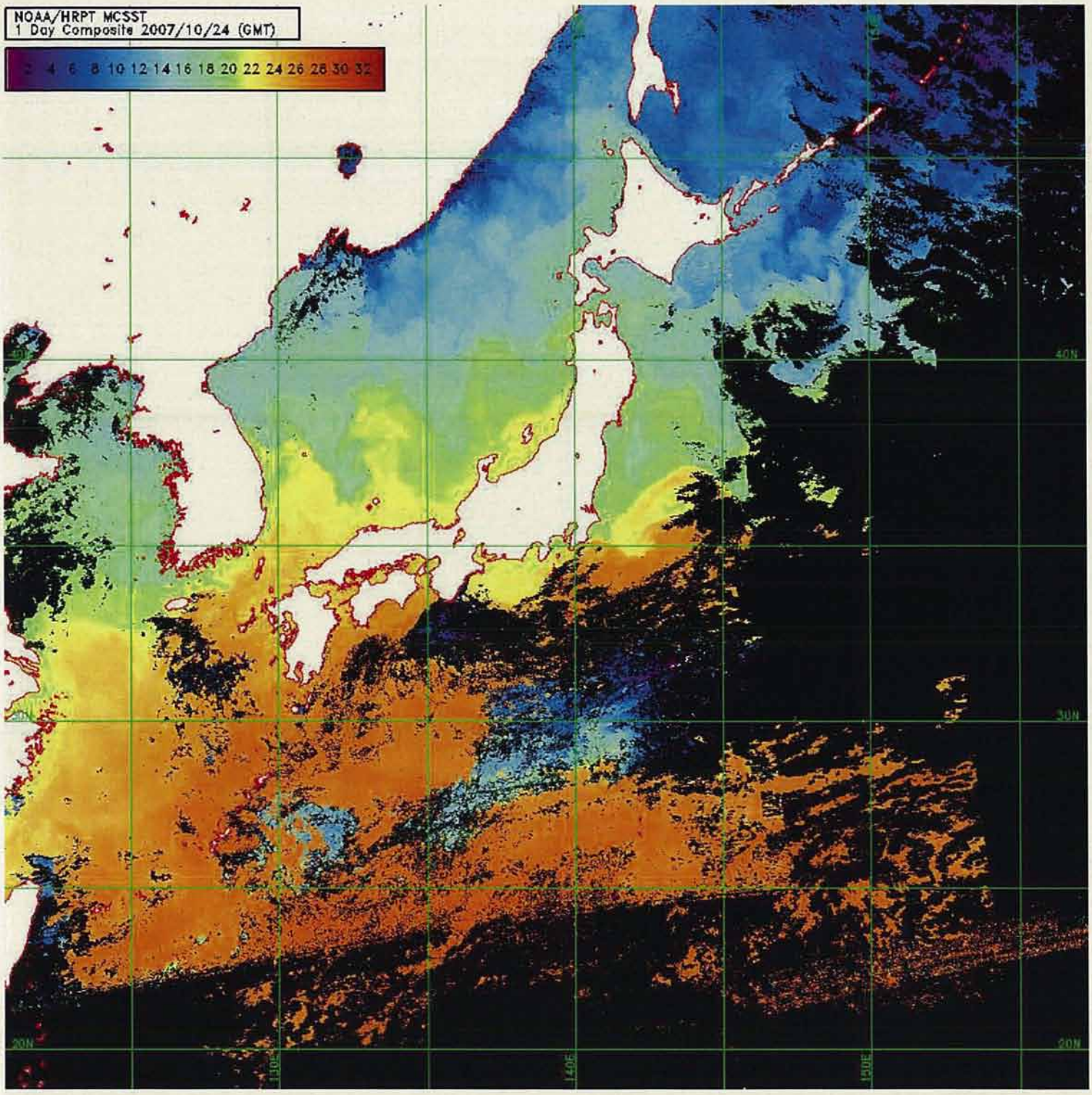
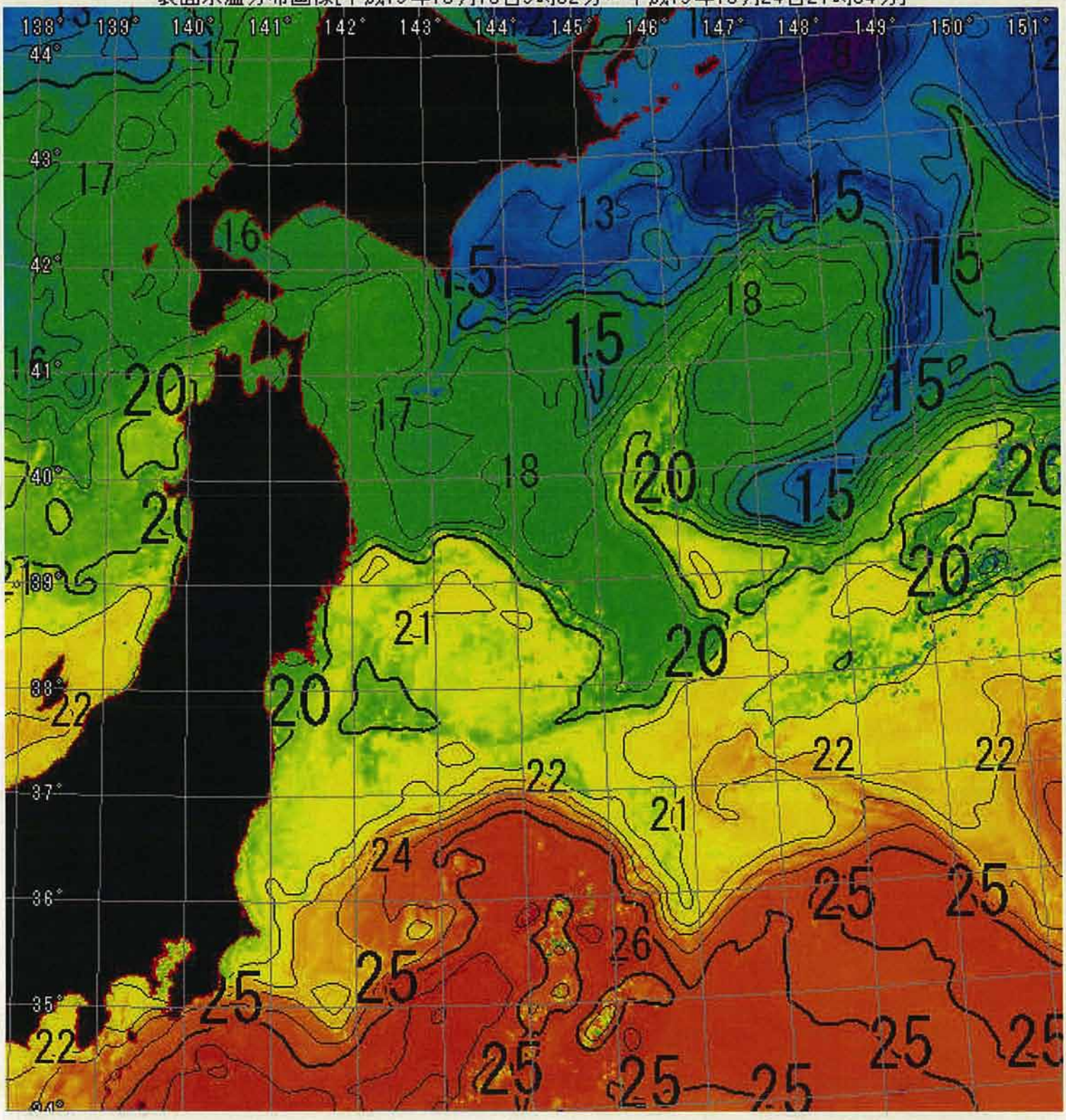
- Voluntary Observing Ships
- Japan Coast Guard
- NOAA 15,17,18

- We appreciate your assistance -


NOAA/HRPT MCSST
1 Day Composite 2007/10/24 (GMT)
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
40N
30N
20N
130E
140E
150E

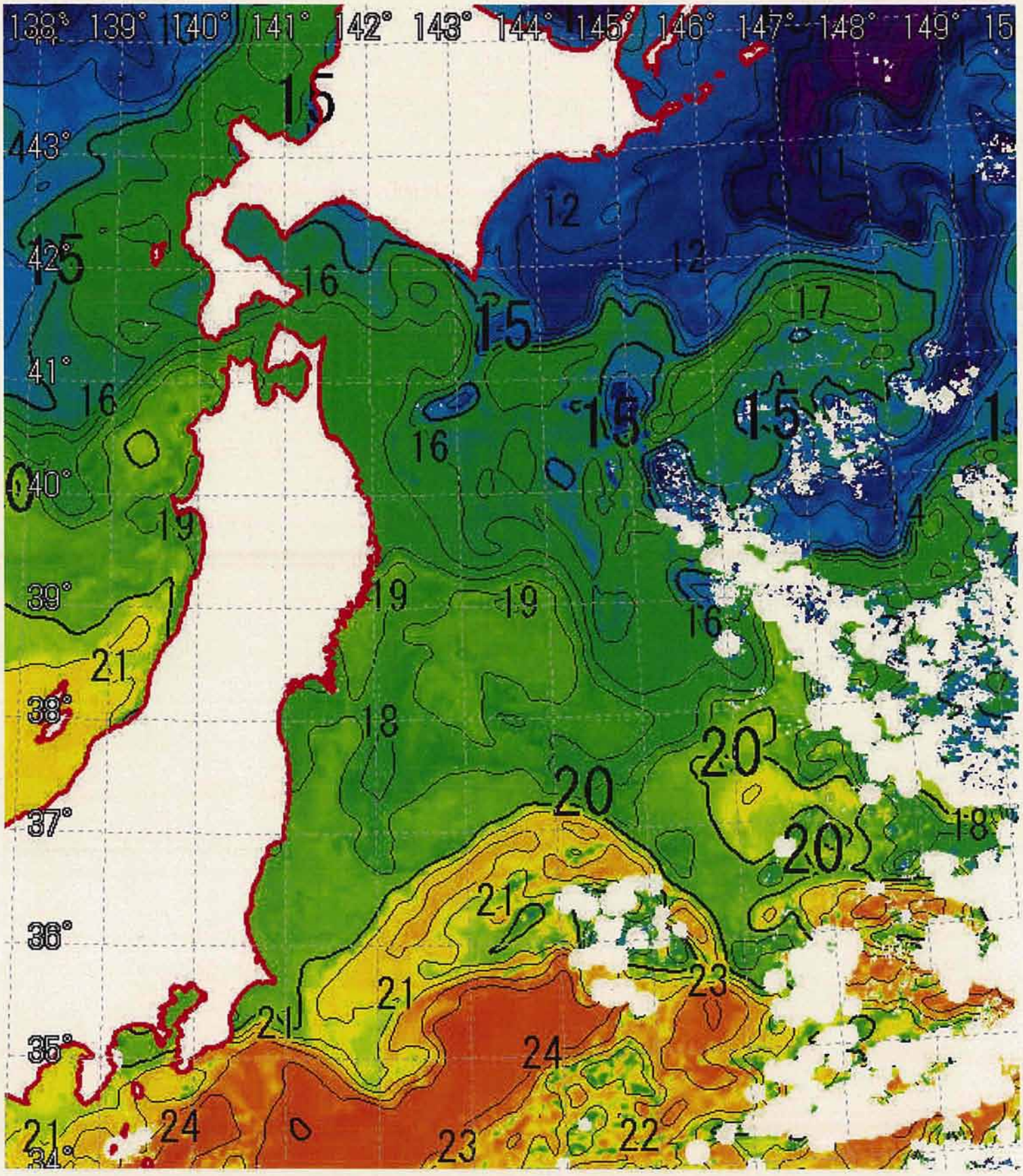
表面水温分布画像[平成19年10月18日9時32分～平成19年10月24日21時54分]



岩手県／宇宙開発事業団　共同プロジェクト

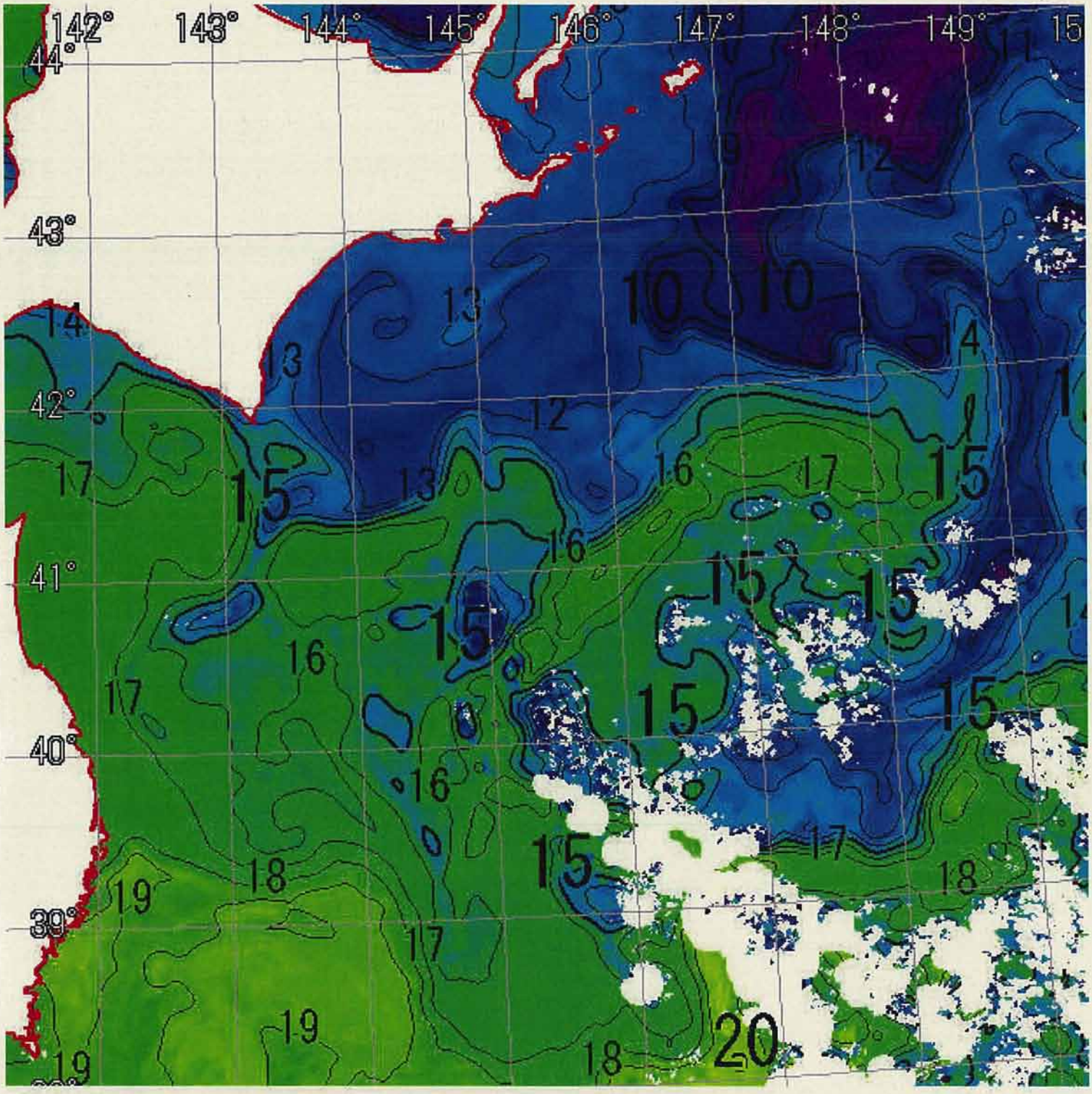
5.0　8.0　11.0　14.0　17.0　20.0　23.0　26.0　30.0 ℃

陸域　雲



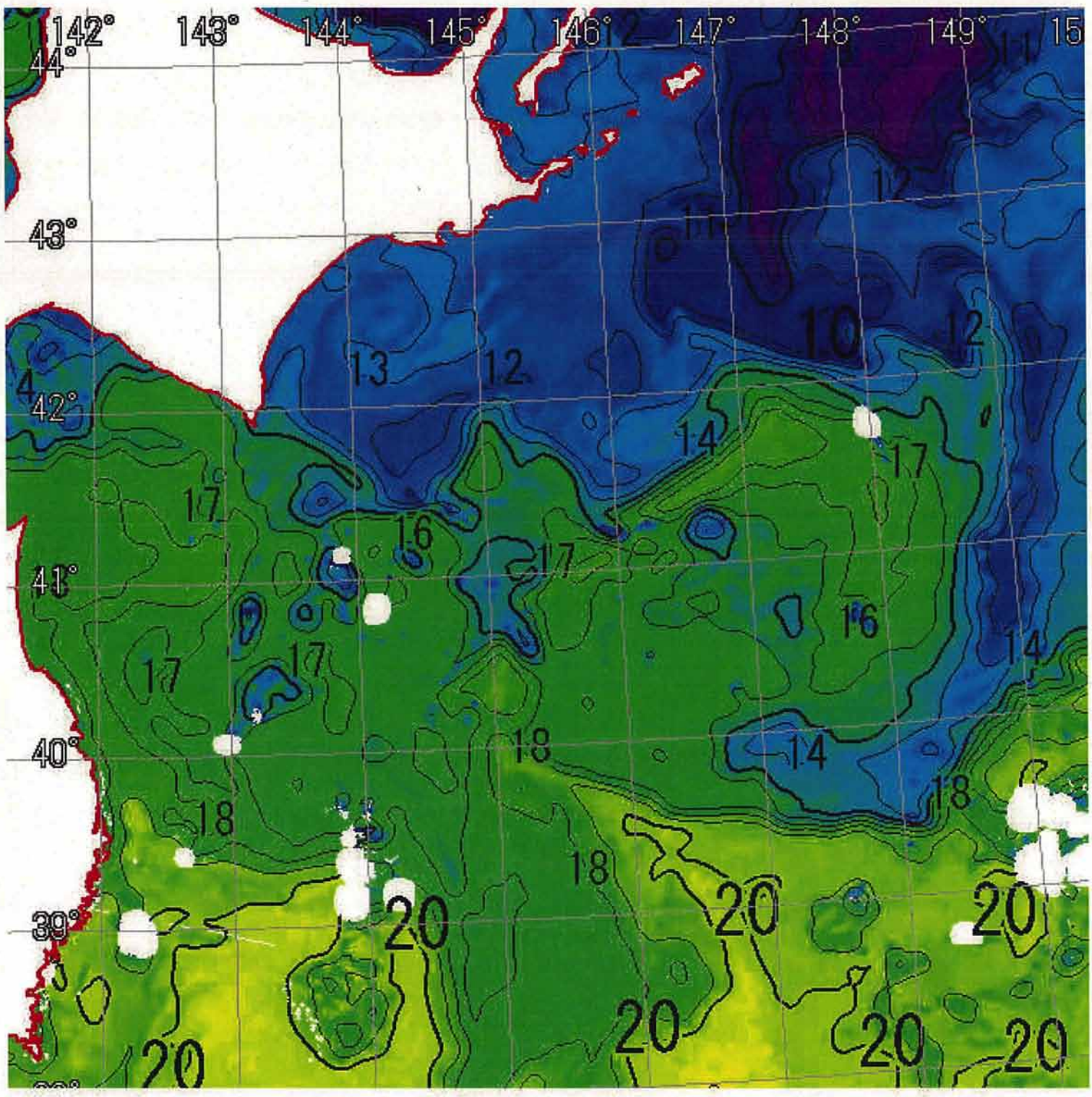
観測日：2007年10月25日

岩手県／宇宙開発事業団　共同プロジェクト



観測日：2007年10月25日

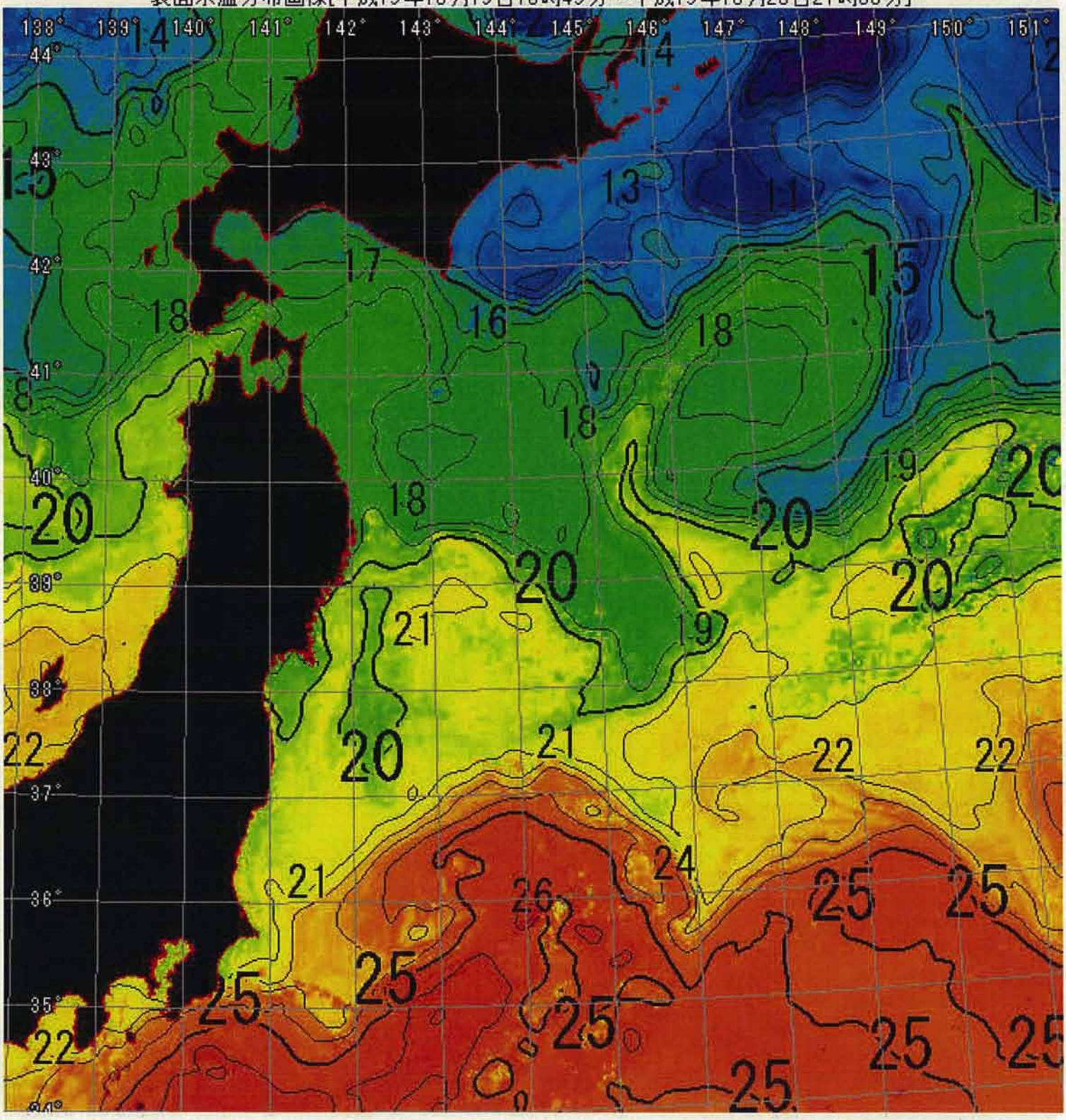
岩手県／宇宙開発事業団　共同プロジェクト



観測日：2007年10月26日

岩手県／宇宙開発事業団　共同プロジェクト

表面水温分布画像[平成19年10月19日10時49分～平成19年10月25日21時30分]



岩手県／宇宙開発事業団　共同プロジェクト

5.0　8.0　11.0　14.0　17.0　20.0　23.0　26.0　30.0 ℃

陸域　雲

Technical Appendix

2006.6.5
応用技術部　中條

小型ハイビジョンカメラ　仕様　（暫定版）
※仕様が変更になる場合があります。

1．概要

小型ハイビジョンカメラは、水中部に記録用 HDD を内蔵しハイビジョン映像（HDV 方式）を連続最大約 7 時間録画可能なカメラ。最大使用水深は 7500m。

2．仕様

1）構　　成　：　水中部　小型ハイビジョンカメラ本体
船上部　カメラコントロール装置
オフライン処理部　内蔵データ保存装置

2）水中部耐圧容器仕様：
（a）外見寸法　：　長さ 約 360mm×直径 170mm
（b）重　　量　：　空中　約 15kg　、水中　約 6.3kg
（エ）材　　質　：　アルミ 7075-T6　（表面　タフラム処理）

3）水中部インターフェース仕様：
（a）水中ケーブル　：　LPBH9　×1、　LPBH7×1
（b）カメラコントロール：　RS232C　（9600bps）
（c）モニター用映像出力　：　NTSC
（e）電源　：　DC12V　（最大 1.5A）

4）カメラ部仕様：　（Sony　HVR-A1J）
（a）光学ズーム　：10 倍
（b）録画方式　：　HDV1080i 方式
（c）使用可能テープ　：　DVCAM　マークの付いたミニ DVCAM カセット
（d）記録時間（テープ）：　63 分　※テープに記録した場合、取出しには耐圧容器開放が必要。
（e）撮像素子　：　1/3 インチ CMOS センサー
有効画素数　約 297 万画素
（f）最低被写体深度　：　15lux

5）HDD 記録部仕様：
（a）容　　量　：　100GB
（b）記録方式　：　HDV1080i 方式　（HDV ストリーム形式　拡張子　.m2t）
（c）記録時間　：　420 分間　（7 時間分）
（e）インターフェース　：　IEEE1394

別紙１

平成 19 年 3 月 7 日
探査技術 G

「よこすか」低温室付コンテナラボについて

１．概要

低温室付きコンテナラボを「よこすか」に搭載し使用できるように平成 18 年度「よこすか」年次検査工事において給排水設備および電気設備工事を実施した。また、「なつしま」搭載のコンテナラボと同等な仕様でコンテナラボを新規製作した。

２．運用

本コンテナは平成 19 年 4 月から運用することとし、「よこすか」へ搭載する。利用に関する連絡窓口は研究船運航部運航グループとする。

３．「よこすか」搭載位置

図１にコンテナラボの搭載位置を斜線部で示す。上甲板の①旧ケーブルウインチ室もしくは②格納庫潜水船事務室前のいずれかに搭載することが可能である。

（①、②については実験海水、温水、清水および電源の供給が可能）

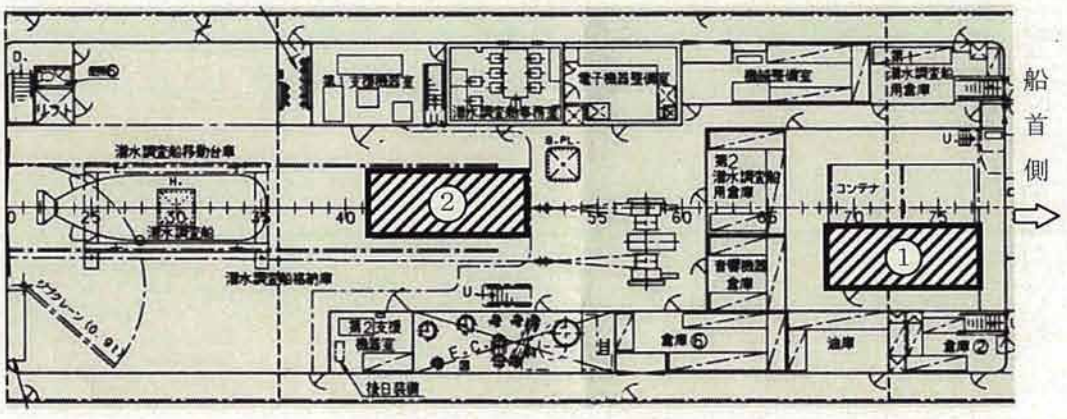


図１　コンテナラボ搭載位置
（「よこすか」上甲板）

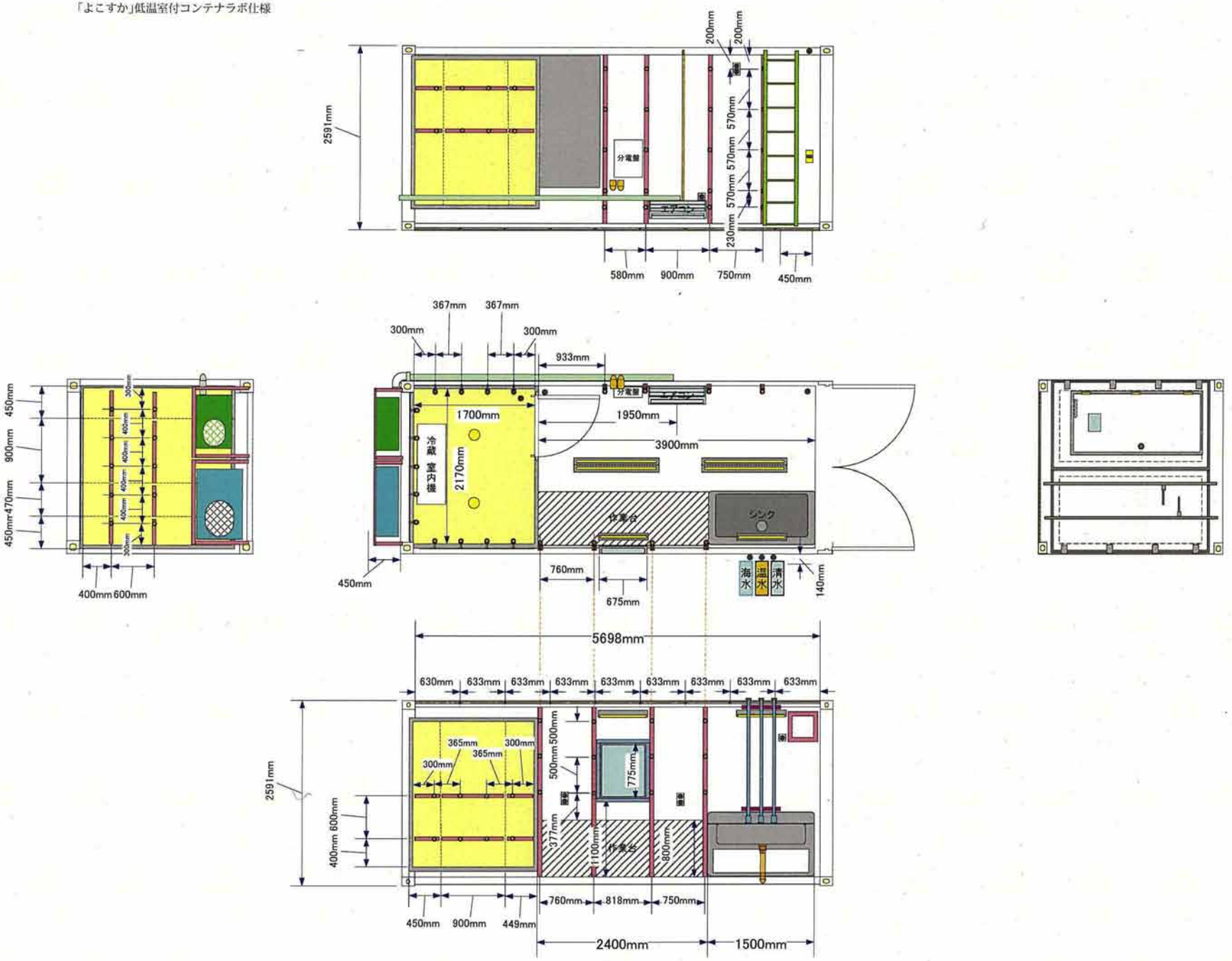
４．コンテナラボ仕様

別紙１−１参照。

以上

「よこすか」低温室付コンテナラボ仕様

別紙1-1

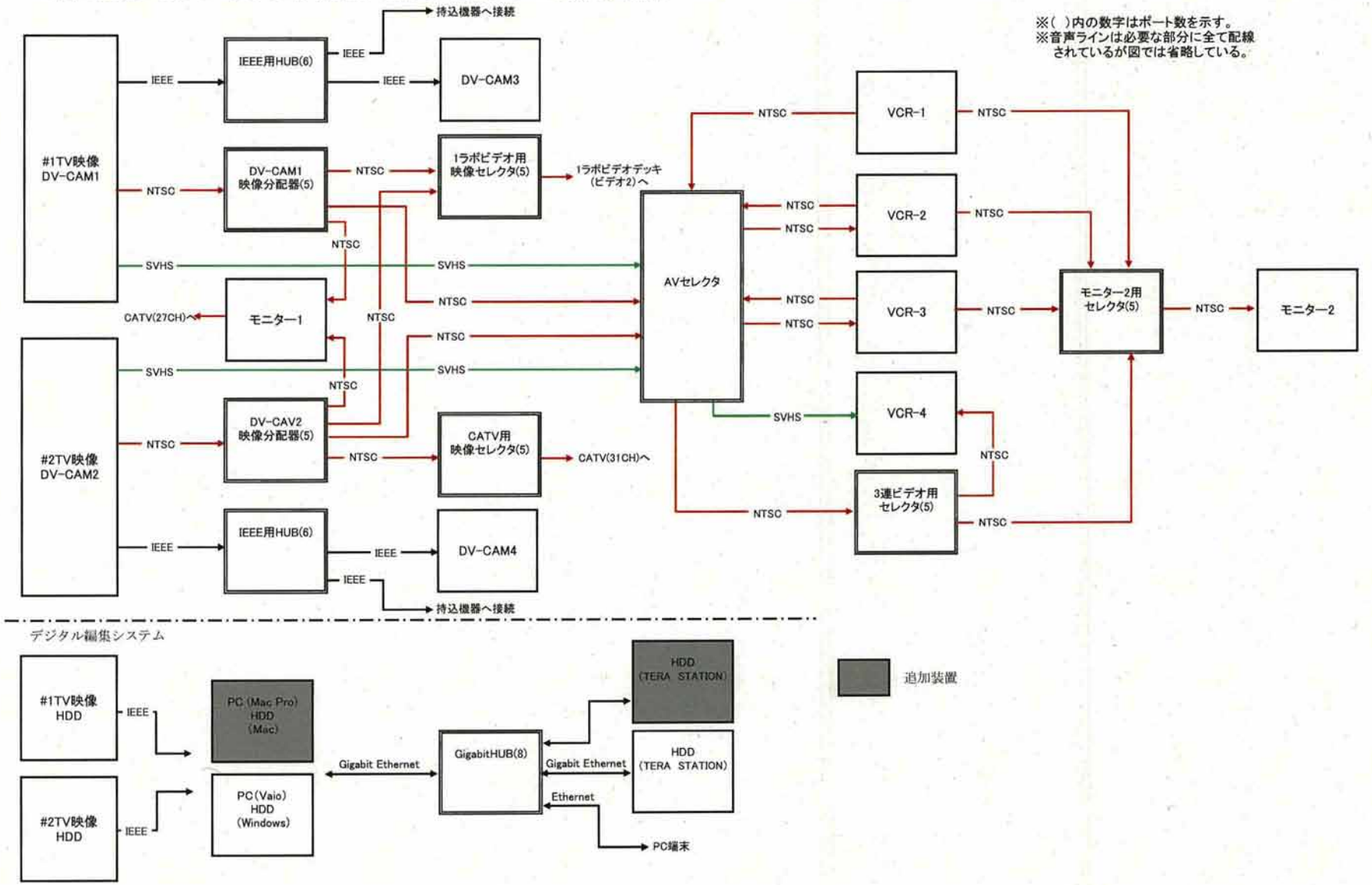


図面名称　冷蔵室付実験ラボ用コンテナ
＊仕様　20ftタイプISO規格スチール製
1 寸法
外形　6058x2438x2591 [mm]
重量　2180kgf（コンテナ本体重量）
2 外装・内装仕様
①外装 白色ペイント仕上げ(塩害仕様)
②天井 白色化粧合板6mm仕上げ　断熱処理
③壁　白色化粧合板6mm仕上げ　断熱処理
④床面 防水加工仕上げ　(フロアトップ仕様)
⑤窓　はめ殺し窓(カーテン付・開口補強)
⑥扉　片開き扉(透明小窓付・クローザー付・右ヒンジ)
3 内部設備
①プレハブ冷蔵室 ホシザキ製 PR-22CC-1.26（特寸）
外形寸法: 2,270W x 1,800D x 2,160H [mm]
庫内高さ: 2,000[mm]
床面積 : 4.08[㎡]
使用温度: -6℃～10℃（冷凍機能力）
消費電力: AC200V 3φ 0.75kW
扉　: 防熱扉 冷蔵枠付片側扉
有効開口: 663W x 1,850H [mm]
付属装置:冷凍機ユニット HUS-11RA 3.2kVA・塩害仕様
＊室外機・室外機架台含む(突出500mm以内)
②流し台　1,500W x 750D x 800H [mm] 支給品
③作業台　2,400W x 750D x 800H [mm] 支給品
4 電気設備
①照明蛍光灯　40W2連 2灯 ・ 40W1連 2灯(ひも付き)
②照明蛍光灯スイッチ　1ヶ所
③コンセント　AC100V 2口 4ヶ所
AC100V 1口 2ヶ所(エアコン・換気扇用)
④配電盤　NFB 8系統
AC100V：60Ax1(漏電BK) 20Ax6
3φAC200V：30Ax1(漏電BK) 20Ax2
⑤室内灯　40W x 2灯 (冷蔵室内・防水仕様)
⑥冷蔵室内灯スイッチ 1ヶ所 (防水仕様)
⑦コンセント 100Vx2口 1ヶ所 (防水仕様)
⑧監禁防止スイッチ 1ヶ所 (防水仕様)
＊パトライト コンテナ内・外 各1ヶ所
5 空調設備
①エアコン(塩害仕様室外機・室外機架台含む)
②換気扇 25タイプ フード付き(奥行き140mm以内の物)
6 その他設備
①給水管3系統 SUS管フランジ付
(呼び径 清水・温水15A/海水25A)＊温水は防熱材使用
②排水口　冷蔵室内 床面1ヶ所
実験室内 床面3ヶ所(シンク含む)
③排水設備 排水出口1ヶ所 (エアコン・冷凍機・冷蔵室・
実験室内ドレン用の内部配管含む)
④固縛用金物
外壁 上部外枠全周・左右ロアレール各6ヶ所
内壁 アイボルト(M10)取り付け用埋込金棒8本
冷蔵室内 ステンレス平板2段2列(扉面除く3側面)
⑤貫通孔　2ヶ所 塩ビエルボ 75タイプ 蓋付
⑥梯子　1ヶ所

「よこすか」ビデオ編集システムの接続概要図

別紙2
2007.3.7

*「しんかい6500」テレビカメラハイビジョン化（HDV方式）に伴うビデオ編集システムの変更は現在検討中。



船舶名 「 よこすか 」 積込品一覧表

行動番号 YK07-15

所 属	XBR
名 前	LINDSAY

1 船舶への持ち込み物品のうち、調査観測機材・高価な物(20万円以上)および、外国製品は全て記入して下さい。
2 外航時は、英名・形式・メーカー名・シリアルナンバー・経路は、必ず記入してください。(シリアル不明場合は、自作し機器に貼り付けてください。)
3 経路の欄には、下記経路の番号を記入して下さい。
1:日本⇔日本 2:日本⇔外地 3:外地⇔日本 4:日本⇔海洋や海底に設置 5:海洋や海底から回収⇔日本 6:外地⇔外地
例)センター岸壁にて積込み、そのまま持ち帰る機材→1, センター岸壁にて積込み、外国で下船し航空機の手荷物として日本に持ち帰る→2
航空機の手荷物として海外へ持出し、外国で船に積込み日本に帰る→3,
4 外国で船舶に陸揚(or搭載)する機材については、空港での手続きは各自で行って下さい。
5 外国製品については該当欄に○をつけて下さい。
6 持ち込み品のない人もなしと書いて提出して下さい。
7 船への搭載にクレーンが必要な機器は該当欄(クレーン車の有無)に○記入してください。
注)クレーン車のサイズを決めるのに"寸法・重量・設置希望場所"は非常に重要です。正確に記入して下さい。また必要に応じて船上配置図の提出をお願いします。
8 危険物を搭載する場合には、該当欄(危険物に該当)に○を記入してください。
9 外国為替及び外国貿易管理法が適用される物品については該当欄(貿管法令の適用)に○を記入してください。

番号	物品名 和名 ※英名	数量	寸法 B×L×H	重量 Kg	使用電源 V.A.Kw	クレーンの有無	使用目的	設置希望場所	※メーカー・形式	※シリアルナンバー (製造番号)	外国製品	※経路	危険物に該当	※貿管法令の適用
1	スラープガン	1	50×50×50 cm			有り								
2	多連キャニスター	1	595X490X275 mm			有り								
3	ゲートサンプラー	4	15x15x30 cm	3		無	生物採集							
4	実体顕微鏡	4	20×20×30 cm	15	100V	無	観察・実験	研究室	ニコン					
5	HDｶﾒﾗ	1	50x45x15	10Kg		無	撮影用	研究室	ｿﾆｰ					
6	ｶﾒﾗ三脚	1	15x15x70	5Kg		無	撮影用	研究室	ｿﾆｰ					
7	青コン	15	700x400x302	10		無								
8	飼育水槽	5	700×500×500	5		無	生物飼育	研究室						

※印の欄は外航時には通関手続き上必要です。