

Preliminary Results from Sediment Sampling of the R.V. Tansei-maru Cruise KT05-9 in the Central and Southwestern Parts of the Japan Sea, the Yamato Bank, off Wakasa bay and off Kurobe River, Central Japan

メタデータ	言語: eng 出版者: 公開日: 2017-10-05 キーワード (Ja): キーワード (En): 作成者: 塚脇, 真二, 堂満, 華子, 深谷, 泰之, 古内, 正美, 鎌田, 耕太郎, 神谷, 隆宏, 熊切, 道人, 村瀬, 高広, 坂野, 健夫, 青海, 忠久, 高橋, 芳枝 メールアドレス: 所属:
URL	https://doi.org/10.24517/00029487

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Preliminary Results from Sediment Sampling of the R. V. *Tansei-maru* Cruise KT05-9 in the Central and Southwestern Parts of the Japan Sea, the Yamato Bank, off Wakasa Bay and off Kurobe River, Central Japan

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2011年8月18日受付, Received 18 August 2011
2011年12月7日受付, Accepted 7 December 2011

Abstract

Submarine surface sediments were collected in the central part of the Japan Sea, the Yamato Bank, and the southwestern parts of the sea, off Wakasa Bay and off Kurobe River, central Japan from the 2nd to 8th of May 2005 during the R. V. *Tansei-maru* cruise KT05-9. This article describes the preliminary results of on-board observation of the sediment samples.

Key Words: submarine sediment, Japan Sea, Wakasa Bay, Oki Trough, Kurobe River, Yamato Bank, R/V *Tansei-maru*

I. Introduction

Marine geology and micropalaeontology were investigated in the central part of the Japan Sea, the Yamato Bank, and the southwestern marginal parts of the sea, off Wakasa Bay and off Kurobe River, central Japan, from the 2nd to 8th of May 2005 during the R. V. *Tansei-maru* cruise KT05-9 as a part in a series on

pursuing time-spatial distribution of depositional facies and spatial distribution of present micro-organisms in the Japan Sea. This article reports results of surface sediment sampling and on-board observation of them during the cruise. Results from sedimentological and micropalaeontological analyses in the laboratory of them, and results from marine biological dredge sampling, plankton net sampling, and lithological descriptions of

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piston- and multiple-cores will be published elsewhere.

Many geological, geophysical and micropalaeontological studies have been made in the Japan Sea mainly by the Hydrographic Department, M.S.A., Japan (*e. g.* Iwabuchi, 1968), the Geological Survey of Japan / AIST (*e. g.* Arita and Okamura, 1989; Ikehara and Okamura *ed.*, 1999), Ocean Research Institute, the University of Tokyo (*e. g.* Kobayashi, *ed.*, 1984), the DSDP / ODP (*e. g.* Ingle *et al.*, 1990) and others (*e. g.* Oba *et al.*, 1991;

Tsukawaki *et al.*, 2000, 2001, 2002, 2003, 2005).

Taking these previous studies into account, grab surface sediment sampling sites were selected in the continental shelf and the continental slope off Wakasa Bay reaching to the bottom floor of the Oki Trough in the southwestern marginal part of the Japan Sea (Fig. 1B). Piston coring sites are selected in a broad valley in the east of the Yamato Bank, and marine biological dredge sites were located in a flat top of the east of the

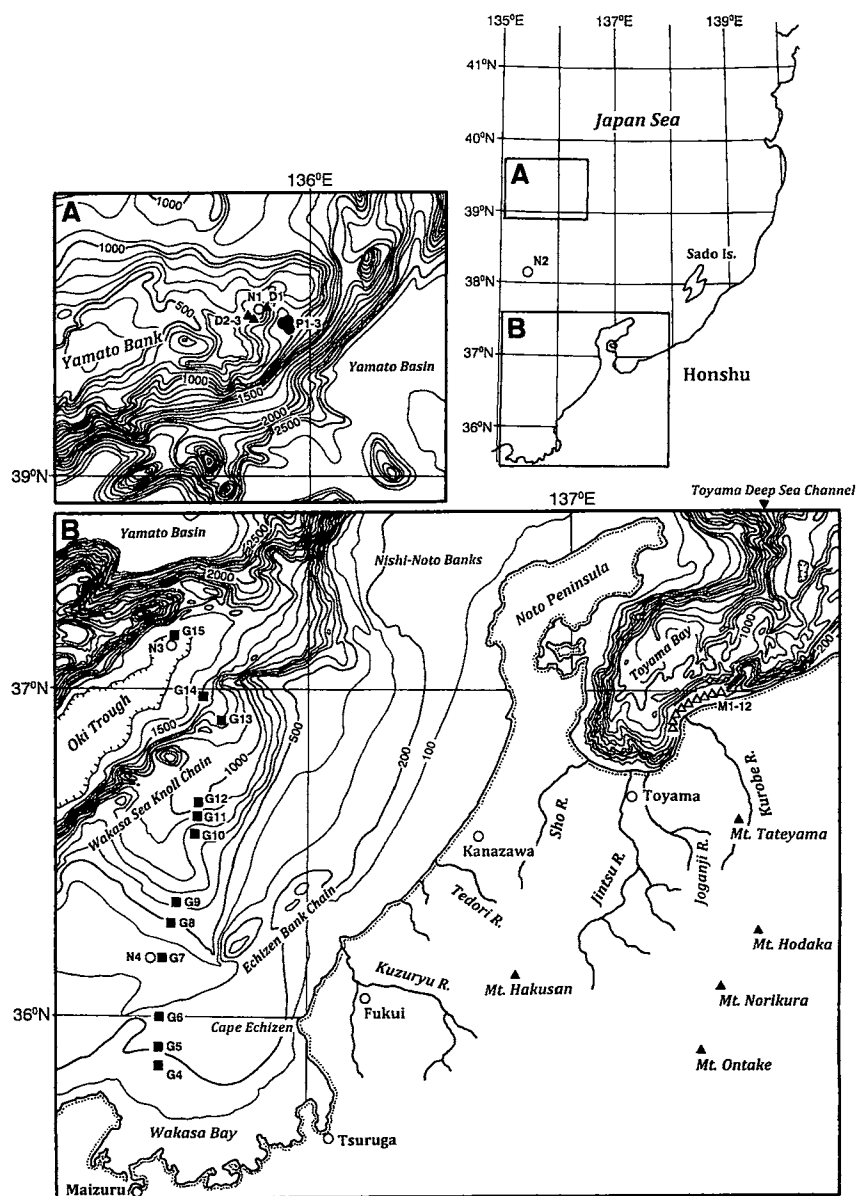


Fig. 1 Submarine topography of the studied areas, and sampling sites of piston cored sediment (solid circles) and biological dredge sampling sites (solid triangles) in the Yamato Bank in the central part of the Japan Sea (Fig. 1A), grab surface sediment sampling sites (solid squares) off Wakasa Bay in the southern part of the sea and multiple cored sediment sites (open triangles) in the Toyama Bay, central Honshu of R. V. *Tansei-maru* Cruise KT05-9 (Fig. 1B) based on Hydrographic Department, M. S. A., Japan (1979). Plankton net sampling sites are indicated by open circles.

bank (Fig. 1A). Multiple coring sites were selected in the continental shelf area of the Toyama Bay, nearby the river mouth of the Kurobe River, Toyama Prefecture (Fig. 1B). Plankton net samplings were carried out along a line of longitude 135°30'E (Fig. 1).

A six-metres-long stainless steel pipe piston core sampler with a 600 kg weight and a 70-cm-long Nasu type pilot core sampler were utilised to obtain cored sediments, and an Okean-type grab sampler, 1,250 cm² in sampling area, with extra weights was used to obtain bottom surface sediments and benthic organisms during the cruise. A multiple type sediment core sampler with six 60-cm-long tubes was used to recover surface sediments off Kurobe River area.

II. Topography of Survey Areas

The survey areas of the KT05-9 cruise are divided into 1) Yamato Bank, 2) continental shelf to continental slope off Wakasa Bay and the Oki Trough, and 3) inner continental shelf off Kurobe River (Fig. 1).

The Yamato Bank, 230 km long and 55 km wide with an E-W trend, is situated in the southern part of the Yamato Rise, which is the largest and most conspicuous topographic high in the Japan Sea. The shallowest part, 236 m deep, is situated in the central part of the bank (Iwabuchi, 1968). Several topographical highs with flat tops and gentle depressions are recognised on the bank. The bank is divided into the West, Central and East Banks roughly by the longitudinal lines of 134°40'E and 135°35'E (Iwabuchi, 1968). Three piston coring sites were located in a broad valley south of the East Bank at water depths of 951 to 1,223 m, and three biological dredge sites were located in the flat top of the bank around 500 m deep.

The wide and shallow Wakasa Bay bounded from the Japan Sea by a line between Capes of Echizen and Kyoga-misaki, is characterised by a rias coastline which is scarce in the coast of the Japan Sea side of Honshu. The bottom topography of the bay is flat and deepens gently northwards. The continental shelf north off the bay is wide and flat, and is bounded on the continental slope by the Echizen Bank Chain having a NE-SW trend

around 200 m deep. The continental slope also deepens gently to the Oki Trough north-westwards, a broad submarine valley which starts on the south of the bank chain is situated on the slope. The Wakasa Sea Knoll Chain with a NE-SW trend around 1,000 m deep forms the boundary between the slope and the Oki Trough. The grab surface sampling line starts on the north of the bay at 177 m deep in the outer continental shelf to the bottom floor of the trough at 1,762 m deep northwards crossing over the valley.

The river mouth of the Kurobe River is situated on the southeast of the Toyama Bay which is one of the deepest bays around the Japanese Islands. The continental shelf around the bay is very narrow and steep followed by steep continental slope to the bottom of the bay deeper than 1,000 m. The multiple coring sites were located on the narrow continental shelf around the river mouth area.

III. Results of Sediment Samplings and Onboard Observation of Sediments

Three piston cored sediments from three sites and three biological dredge samples from three sites, 13 grab surface sediments from 12 sites, and 10 multiple cored sediments from 10 sites were successfully obtained from the Yamato Bank, along the sampling line from the Wakasa Bay to the Oki Trough, and the continental shelf around off Kurobe River in the Toyama Bay, respectively (Fig. 1, Table 1).

1) Yamato Bank

Three piston cored sediments, P-1 (about 350 cm long), P-2 (about 460 cm long) and P-3 (about 500 cm long) were recovered from a broad submarine valley in the south of the East Bank at water depths of 951, 975, and 1,223 m, respectively. In spite of their detailed sedimentological descriptions have not been made in the laboratory, they are composed mostly of olive grey homogeneous mud judged from their horizontal cutting surfaces (Table 1).

A little amount of andesitic pebble- to cobble-gravels with a certain amount of benthic organisms were

Table 1 Results of sampling on the R. V. *Tansei-maru* cruise KT05-9 in the Yamato Bank, central Japan Sea, and off Wakasa Bay and off Kurobe River southern Japan Sea.

Station	Locality	Date (D/M/Y)	Sampler	Time Hit	Longitude (E)	Latitude (N)	Water Depth (m)	Sediment Recovery (cm or %)	Sediment Type
KT05-9 D-1	Yamato Bank	03/05/05	B Dreger	19:18	39 30.9371	135 49.0455	523	-	a little amount of andesitic pebble- to cobble-gravels with a little amount of benthic organisms
KT05-9 D-1'	Yamato Bank	03/05/05	B Dreger	20:12	39 30.8613	135 49.0336	533	-	a little amount of andesitic pebble- to cobble-gravels with a little amount of benthic organisms and fishes
KT05-9 N-1	Yamato Bank	03/05/05	NORPAC	20:45	39 31.0873	135 50.4279	610	-	-
KT05-9 P-1	Yamato Bank	04/05/05	5.5m-PC	08:30	39 27.2323	135 52.2153	951	350 cm	olive grey homogeneous mud on cutting surfaces, surface brownish olive and soupy
KT05-9 P-3	Yamato Bank	04/05/05	5.5m-PC	10:29	39 26.2538	135 55.5949	1,223	460 cm	olive grey homogeneous mud on cutting surfaces, surface brownish olive and soupy
KT05-9 P-2	Yamato Bank	04/05/05	5.5m-PC	12:35	39 27.9805	135 52.6293	975	500 cm	olive grey homogeneous mud on cutting surfaces, surface brownish olive and soupy
KT05-9 D-2	Yamato Bank	04/05/05	B Dreger	14:03	39 28.1616	135 44.4073	597	-	a large volume of dark olive grey muddy fine-grained sand with a little amount of benthic organisms
KT05-9 D-3	Yamato Bank	04/05/05	B Dreger	15:49	39 28.7088	135 42.6253	523	-	a certain amount of black pebble- to cobble-gravels with a little amount of benthic organisms
KT05-9 N-2	Yamato Bank	05/05/05	NORPAC	00:38	38 10.0789	135 30.0602	2,968	-	-
KT05-9 N-3	Oki Trough	05/05/05	NORPAC	07:50	37 10.3630	135 30.0451	1,755	-	-
KT05-9 G-15	off Wakasa Bay	05/05/05	Okean L	11:14	37 09.8374	135 28.3419	1,762	0%	a very small quantity of fine-grained sand with fragments of benthic organisms
KT05-9 G-15'	off Wakasa Bay	05/05/05	Okean L	12:29	37 09.7016	135 27.9975	1,760	30%	olive grey homogeneous compact sticky mud, surface a few millimetres thick reddish brown soupy mud
KT05-9 G-14	off Wakasa Bay	05/05/05	Okean L	14:50	37 58.0795	135 36.8586	1,486	70%	bluish olive grey homogeneous compact mud, surface a few centimetres thick reddish brown soft mud
KT05-9 G-13	off Wakasa Bay	05/05/05	Okean L	16:22	36 53.1544	135 40.3071	1,258	20%	bluish olive grey homogeneous compact mud, surface a half centimetre thick reddish brown soupy mud
KT05-9 G-12	off Wakasa Bay	05/05/05	Okean L	18:24	36 38.7536	135 36.6126	979	40%	bluish olive grey homogeneous compact mud, surface one centimetre thick reddish brown soupy mud
KT05-9 G-11	off Wakasa Bay	05/05/05	Okean L	19:18	36 36.6870	135 36.4098	891	40%	olive grey homogeneous mud, surface a half centimetre reddish brown soupy mud
KT05-9 G-10	off Wakasa Bay	05/05/05	Okean L	20:19	36 33.8776	135 35.6092	757	45%	olive grey homogeneous mud, surface a few millimetres thick reddish brown soupy mud
KT05-9 G-9	off Wakasa Bay	05/05/05	Okean L	22:19	36 20.6026	135 32.0872	616	30%	mottled sediments of bluish grey semi-consolidated mudstone and soft bluish grey mud
KT05-9 G-8	off Wakasa Bay	05/05/05	Okean L	23:17	36 17.1217	135 31.6387	511	40%	dark olive grey fine-grained sandy mud in upper 4 cms, bluish grey semi-consolidated mudstone in lower
KT05-9 G-7	off Wakasa Bay	06/05/05	Okean L	00:24	36 10.3318	135 29.7714	355	50%	dark olive grey fine-grained sandy mud in upper 4 cms, bluish grey semi-consolidated mudstone in lower
KT05-9 N-4	off Wakasa Bay	06/05/05	NORPAC	00:54	36 10.3318	135 29.7714	355	-	-
KT05-9 G-6	off Wakasa Bay	06/05/05	Okean L	03:56	36 00.2353	135 29.7846	265	60%	olive grey soft fine-grained sandy mud in upper 3 cms, olive grey compact mud in lower, serpent stars
KT05-9 G-5	off Wakasa Bay	06/05/05	Okean L	04:55	35 53.2805	135 28.2862	200	80%	dark olive grey homogeneous fine-grained sandy mud, lower compact sandy mud, serpent stars
KT05-9 G-4	off Wakasa Bay	06/05/05	Okean L	05:30	35 50.2800	135 30.2631	177	80%	olive grey massive and homogeneous muddy fine-grained sand, serpent stars
KT05-9 M1 (F2)	off Kurobe River	07/05/05	Multiple	05:48	37 00.0473	137 34 4452	252	15 cm	olive grey homogeneous muddy fine-grained sand
KT05-9 M2 (F1)	off Kurobe River	07/05/05	Multiple	06:26	36 59.6387	137 35.0783	130	0 cm	no recovery
KT05-9 M2' (F1)	off Kurobe River	07/05/05	Multiple	06:42	36 59.6622	137 35.0682	133	0 cm	no recovery
KT05-9 M3 (E2)	off Kurobe River	07/05/05	Multiple	07:15	36 59.3220	137 32.9210	127	30 cm	olive grey homogeneous muddy fine-grained sand / sandy mud, lower partly dark
KT05-9 M4 (E1)	off Kurobe River	07/05/05	Multiple	07:36	36 59.2317	137 32.7811	108	35 cm	olive grey homogeneous muddy fine-grained sand / sandy mud
KT05-9 M5 (D1)	off Kurobe River	07/05/05	Multiple	08:15	36 58.5303	137 29.6843	97	18 cm	olive grey homogeneous muddy fine-grained sand / sandy mud, lower partly dark
KT05-9 M6 (D2)	off Kurobe River	07/05/05	Multiple	08:40	36 59.0863	137 29.2809	220	30 cm	upper 10 cms light olive grey soft mud, lower 20 cms dark olive grey sandy mud
KT05-9 M7 (C1)	off Kurobe River	07/05/05	Multiple	09:45	36 57.5724	137 27.3517	95	33 cm	upper 10 cms light olive grey soft mud, lower mottled dark olive grey to olive grey sandy mud
KT05-9 M8 (C2)	off Kurobe River	07/05/05	Multiple	10:05	36 57.6286	137 26.7701	220	30 cm	upper 10 cms light olive grey soft mud, lower mottled dark olive grey to olive grey sandy mud
KT05-9 M9 (B1)	off Kurobe River	07/05/05	Multiple	11:16	36 55.8643	137 24.8174	230	27 cm	three alternating layers of normally graded f.- to m.-grained granitic sand and light olive grey soft mud
KT05-9 M10 (B2)	off Kurobe River	07/05/05	Multiple	11:47	36 56.0241	137 23.7534	410	26 cm	mottled light olive grey soft mud and olive grey to dark olive grey sandy mud
KT05-9 M11 (A2)	off Kurobe River	07/05/05	Multiple	12:54	36 53.2346	137 23.4526	340	25 cm	upper light olive grey soft mud, lower mottled light olive grey to dark olive grey sandy mud
KT05-9 M12 (A1)	off Kurobe River	07/05/05	Multiple	13:25	36 52.9399	137 23.6737	140	0 cm	no recovery
KT05-9 M12' (A1)	off Kurobe River	07/05/05	Multiple	13:47	36 52.9560	137 23.6922	137	0 cm	no recovery

obtained from the biological dredge sites D-1 and D-3 in a flat top of the East Bank at water depths of both 523 m. On the other hand, a great amount of dark olive grey muddy fine-grained sand with a little amount of benthic organisms was recovered from the dredge site D-2 at a water depth of 593 m (Table 1).

2) Continental Shelf and Continental Slope off Wakasa Bay, and the Oki Trough

Surface sediments of the outer continental shelf north off Wakasa Bay consist of olive grey homogeneous muddy fine-grained sand at the shallowest site G-4 at a water depth of 177 m (Plate, fig. 1) and dark olive grey homogeneous sandy mud at the site G-5 at a water depth of 200 m. A certain number of serpent stars (Ophiuroidea) were recognised on their surfaces.

Dark grey or olive grey soft homogeneous sandy mud, 3 - 4 cm in thickness, and underlain bluish grey or olive grey semi-consolidated mud were recovered from the upper continental slope off Wakasa Bay at the sites G-6 (Plate, fig. 2), G-7 and G-8 (Plate, fig. 3) at water depths of 265, 355 and 511 m, respectively. A little number of serpent stars was recognised on the surface of G-6 (Plate, fig. 2).

On the other hand, submarine surface sediments of the middle continental slope were composed of mixed sediments of bluish grey semi-consolidated mudstone and soft bluish grey mud at the site G-9 (Plate, fig. 4), 616 m deep, olive grey homogeneous compact mud covered by a few millimetres thick reddish brown soupy mud at the sites G-10 (Plate, fig. 5) and G-11 (Plate, fig. 6) at water depths of 757 and 891 m deep respectively, and bluish olive grey homogeneous compact mud covered by about 1 cm thick reddish brown soupy mud at the site G-12 at the water depth of 979 m.

Bluish olive grey homogeneous compact mud covered by a half to a few centimetres thick reddish brown soupy mud was recovered from the lower continental slope at the sites G-13 and G-14 at water depths of 1,258 and 1,486 m, respectively (Plate, fig. 7).

Surface sediments of the central part of the Oki Trough, at the site G-15', 1,760 m deep, consist of olive grey homogeneous compact and sticky mud covered by a

few millimetres thick reddish brown soupy mud (Plate, fig. 8) but a little amount of fine-grained sand was recovered from the site G-15, 1,762 m deep, nearby the site G-15'.

3) Continental Shelf off River Mouth of the Kurobe River

The multiple cored sediment at the site M-1 (15 cm long), 252 m deep, in the continental shelf about 16 km northeast from the river mouth of the Kurobe River was composed of olive grey homogeneous muddy sand but no sediments were recovered from the site M-2 and M-2' at water depths of 130 and 133 m. They from the sites M-3 (30 cm long) and M-4 (35 cm long) obtained from the continental shelf about 12 km to the northeast of the river mouth at water depths of 127 and 108 m, respectively, were composed of olive grey homogeneous muddy sand or sandy mud. No marked sedimentary structures were observed visually in them.

The cored sediments from the sites M-5 (18 cm long) and M-6 (30 cm long) obtained in the continental shelf about 8 km to the northeast of the river mouth consisted of olive grey homogeneous muddy sand or sandy mud in the former, and upper light olive grey soft mud in the upper 10 cm thick and dark olive grey sandy mud in the lower in the later. They from the sites M-7 (33 cm long) and M-8 (30 cm long) both recovered from the continental shelf about 5 km to the northeast of the river mouth at water depths of 95 and 220 m, respectively, were composed of upper light olive grey soft mud, about 10 cm thick, and lower mottled dark olive grey and olive grey sandy mud.

Three alternating layers of graded fine- to medium-grained granitic sand and light olive grey soft mud, 27 cm long in total, were recovered from the site M-9 a few kilometres off the river mouth at a water depth of 230 m and mottled sediments of light olive grey soft mud and dark olive grey sandy mud, 26 cm long, were obtained from the site M-10 also off the river mouth at a water depth of 410 m. Upper light olive grey soft mud and lower mottled light olive grey and dark olive grey sandy mud was recovered from the site M-11 about 3 km southwest of the river mouth at a water

depth of 340 m but no sediments were recovered from the westernmost site M-12 at a water depth of 140 m due to a foul weather.

IV. Discussion

A number of marine geological studies had been made in the central and the southern marginal part of the Japan Sea (*e. g.* Ikehara and Okamura, 1999), and systematic surface sediment sampling in the sea which includes the area of the present study was carried out, but their spatial grid-sampling bearing no relation with water-depths is insufficient for sedimentological and micropalaeontological studies in the shallow-sea area, because it is well known that spatial distribution of benthic micro-organisms is in close association with both water-depth and bottom sediment types.

Although sediment sampling of the present study was carried out along only one line off Wakasa Bay, and observation of the samples was short of a preliminary perception on their compositional features, a sufficient number of samples was recovered from various water-depths for further micropalaeontological and sedimentological studies. As described above a clear change of surface sediments was recognised among the samples as water depth and bottom topographies. Accordingly, the surface sediment samples obtained in the southwestern marginal part of the Japan Sea off Wakasa Bay to the Oki Trough are hold out a promising prospect for investigations of micro-organisms inhabiting in these areas.

Further, in spite of detailed sedimentological description has not been made on the piston cored sediments from the Yamato Bank and the multiple cored sediments from the continental shelf off Kurobe River in the Toyama Bay, they are also expected to contribute to studies of palaeoceanography and sedimentology of these areas.

V. Concluding Remarks

The preliminary results from sediment sampling on the R. V. *Tansei-maru* KT05-9 cruise in the central and

southwestern part of the Japan Sea are summarised as follows:

1. In spite of detailed sedimentological descriptions have not been made, three cored sediments from a broad valley on the south of the East Bank of the Yamato Bank, central Japan Sea, at water depths 951 to 1,223 m, were composed probably by homogeneous mud. The dredge samples from a flat top of the East Bank at water depths of 523 to 593 m were composed mainly of a certain amount of benthic organisms with fine-grained sand and or pebble- to cobble-gravels.
2. Submarine surface sediments north off Wakasa Bay, southwestern Japan Sea, were composed of olive grey homogeneous sandy mud or muddy sand in the outer continental shelf (177 to 200 m deep), olive grey or dark grey sandy mud in the upper and bluish grey semi-consolidated mud or mixture of them in the lower in the upper continental slope (265 to 616 m deep), olive grey homogeneous mud covered by thin reddish brown soupy mud in the middle continental slope (757 to 891 m deep), bluish grey homogeneous compact mud covered by thin reddish brown mud in the lower middle continental slope (979 m deep), bluish grey homogeneous compact mud covered by a few centimetres thick reddish brown mud in the lowest continental slope (1,258 to 1,486 m deep), and olive grey compact and sticky mud covered by thin reddish brown mud in the bottom surface of the Oki Trough (1,760m deep).
3. Short multiple cored sediments, 18 to 33 cm long, from the continental shelf area around the river mouth of the Kurobe River are composed mainly of olive grey homogeneous fine-grained sand to the northeast of the river mouth, upper 10 cm thick light olive grey soft mud and lower mottled dark olive grey sandy mud on the northeast, alternating layers of graded fine- to medium-grained sand and light olive grey mud off the river mouth, upper light olive grey mud and lower mottled light olive grey and dark olive grey sandy mud to the southwest of the river mouth.

Acknowledgements: The authors express their sincere

gratitude to the captain and all crews of the R. V. *Tansei-maru*, JAMSTEC / Atmosphere and Ocean Research Institute, the University of Tokyo, for their help during cruise KT05-9. They would like thank Professor H. Tokuyama, Atmosphere and Ocean Research Institute, University of Tokyo for variable help for arranging the cruises.

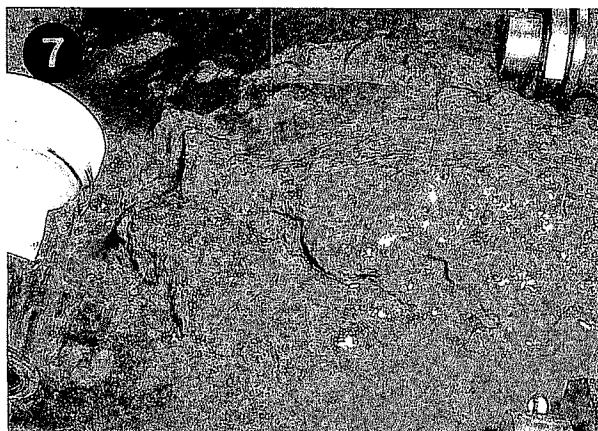
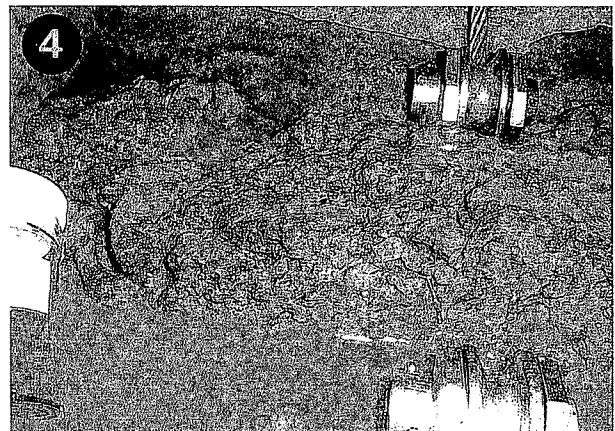
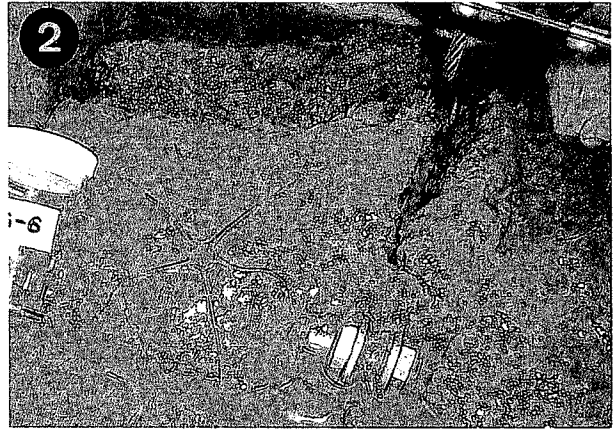
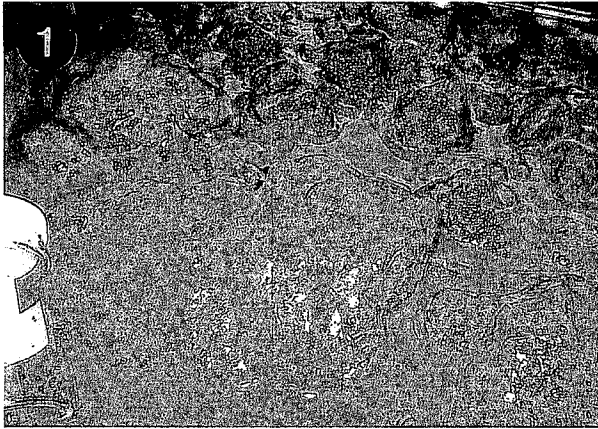
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Explanation of Plate

The grab surface sediments recovered from the continental shelf to the continental slope off Wakasa Bay, central Japan and from the Oki Trough. The sample bottle, 40 mm in diameter, gives scale.

- Fig. 1 Olive grey homogeneous soft muddy sand at the site G-4 in the outer continental shelf at a water depth of 177 m off Wakasa Bay.
- Fig. 2 Olive grey soft fine-grained sandy mud in the upper 3 cm and olive grey compact mud in the lower at the site G-6 of the upper continental slope, 265 m deep, off Wakasa Bay. A serpent star exists on the surface.
- Fig. 3 Dark olive grey fine-grained sandy mud in the upper 4 cm and bluish grey semi-consolidated mudstone in the lower at the site G-8 of the upper continental slope at a water depth of 511 m off Wakasa Bay.
- Fig. 4 Mixed sediments of bluish grey semi-consolidated mud and soft bluish grey mud at the site G-9 in the middle continental slope at a water depth of 616 m off Wakasa Bay.
- Fig. 5 Olive grey soft homogeneous mud covered by a few millimetre thick reddish brown soupy mud at the site G-10 from the middle continental slope at a water depth of 757 m off Wakasa Bay.
- Fig. 6 Olive grey homogeneous mud covered by 0.5 cm thick reddish brown soupy mud at the site G-11 of the middle continental shelf at a water depth of 891 m off Wakasa Bay.
- Fig. 7 Bluish olive grey homogeneous compact mud covered by 0.5 cm thick reddish brown soupy mud at the site G-13 of the lower continental slope, 1,258 m deep, off Wakasa Bay..
- Fig. 8 Olive grey homogeneous compact and sticky mud covered by a few millimetre thick reddish brown soupy mud at the site G-15' in the central part of the Oki Trough at a water depth of 1,760 m.



日本海中央部大和堆ならびに南部若狭湾沖および 黒部川河口沖における淡青丸KT05-9次航海の採泥結果

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要 旨

2005年5月2日～8日に実施した日本海中央部大和堆ならびに同南西部若狭湾沖での海洋研究船淡青丸の研究航海KT05-9において、大和堆東部からピストン柱状堆積物試料3点と生物ドレッジ試料3点、若狭湾沖の陸棚から大陸斜面をへて隠岐トラフにいたる測線からグラブ表層堆積物試料13点、そして富山湾の黒部川河口沖陸棚から10点のマルチプル柱状堆積物試料を採取した。

大和堆東部のピストン柱状堆積物試料は堆積学的な検討をまだ行っていないが、ほぼ全層準をとおして灰緑色の泥から構成されると推定される。一方、同じく大和堆東部で実施したドレッジでは、底棲生物群集とともにわずかな量の安山岩の小礫～中礫あるいは多量の細粒砂が回収された。

若狭湾沖から隠岐トラフにかけての海底表層堆積物は、外部陸棚では灰緑色の砂質泥あるいは泥質砂からなるが、大陸斜面上部では表層数cmは灰緑色あるいは濃緑色の軟弱な泥質砂が分布するもののその下位には青灰色あるいは灰緑色の弱固結泥が確認される。一方、大陸斜面中部から下部にかけては灰緑色あるいは青灰緑色の緻密な泥を赤褐色の軟弱な泥が薄く被う。隠岐トラフ中央部では灰緑色の緻密で粘性の高い泥が厚さ数mmの赤褐色泥で被われる。

富山湾の黒部川河口沖陸棚には、河口の北東方約16kmでは灰緑色塊状の砂質泥、同約8kmでは灰緑色砂質泥あるいは泥質砂、同約5kmには上位の軟弱な淡灰緑色泥と下位の濃灰緑色泥/灰緑色砂質泥、河口沖には級化した細～中粒砂と灰緑色泥の互層あるいは淡灰緑色泥/濃灰緑色砂質泥、そして、河口の南西約3kmには上位の淡灰緑色泥と下位の淡灰緑色泥/濃灰緑色砂質泥がそれぞれ分布する。

キーワード：海底堆積物，日本海，若狭湾，隠岐トラフ，黒部川，大和堆，淡青丸

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