Press Releases

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JAMSTEC

Progress report on QUELLE2013 – an around-the-world voyage by the SHINKAI 6500
Surveys at Rio Grande Rise and Sao Paulo Ridge off Brazil

In an effort to study a variety of marine organisms which live and have evolved in extreme environments, the Japan Agency for Marine-Earth Science and Technology (JAMSTEC), led by President Asahiko Taira, has begun a project called QUELLE2013 in January 2013, using the manned research submersible SHINKAI 6500 and its support vessel YOKOSUKA. QUELLE2013 is a scientific voyage for global-scale surveys and research on ecosystems in hydrothermal vent areas and other unique and extreme environments in the Indian, Atlantic and Pacific oceans.

In this report, we will brief the just-completed surveys at the Rio Grande Rise[*1] and the Sao Paulo Ridge[*2] off Brazil, which will be followed by a survey at the Sao Paulo Plateau.

1. Objectives of surveys at Rio Grande Rise and Sao Paulo Ridge off Brazil

This project is part of JAMSTEC's comprehensive studies on chemosynthetic and other marine organisms living in the deep sea, below the sea floor, and in other extreme environments as well as such extreme environments themselves. The objectives of this project are to conduct field surveys on unique marine environments shaped by vast submarine topography and organisms living in such environments, and to find out exactly what is going on, unravel the correlation between organisms and their habitats, and learn how such unique environments were created. The unique marine environments include over-5,000-meter-high extremely-steep topography, a complex environment where deep-sea currents meet from both the Antarctic and the North Atlantic oceans, and areas with outcrops of mantle-derived rocks.

SHINKAI 6500 dived in the South Atlantic Ocean for the first time.

2. Outline

(1)Southern slopes of the Sao Paulo Ridge at depths of 2,600 to 4,200 meters
Period: April 23 to 28, 2013
Details:
i.Geological survey
- Outcrops on southern slopes were observed and rock samples were obtained, using SHINKAI 6500 and a deep-tow ocean floor survey system.

- Data on the submarine topography, gravity and magnetism were measured, using instruments on the vessel.

ii. Survey on depth distribution of organisms

- Visual observation was conducted and samples were collected to survey depth-related distribution of organisms living near bottom and in/on rocks and sediments, using SHINKAI 6500 and the deep-tow ocean floor survey system.
- Field data including seawater temperature, salinity and dissolved oxygen concentrations were measured with CTDO during dives.

(2)Surveys in Rio Grande Rise at depths of 650 to 1,200 meters

Period: April 22, and April 30 to May 2, 2013

Details:

i.Geological survey

- Data on the submarine topography, gravity and magnetism were measured, using instruments on the vessel.
- Data on shallow subsurface geologic structure were measured, using a sub-bottom profiler installed in the vessel.
- Visual observation of outcrops was conducted and samples were obtained during dives of SHINKAI 6500.

ii. Survey on biological communities in various habitats

- JAMSTEC tried to discover and survey seepage-related ecosystems.
- Visual observation of deep-sea coral ecosystems was conducted and samples were collected during dives of SHINKAI 6500.

The surveys off Brazil have been carried out jointly with CPRM (Companhia de Pesquisa de Recursos Minerais), the Institute of Oceanography at the University of São Paulo, and PETROBRAS

* Research results will be released after compiling a report.

3.Future schedules

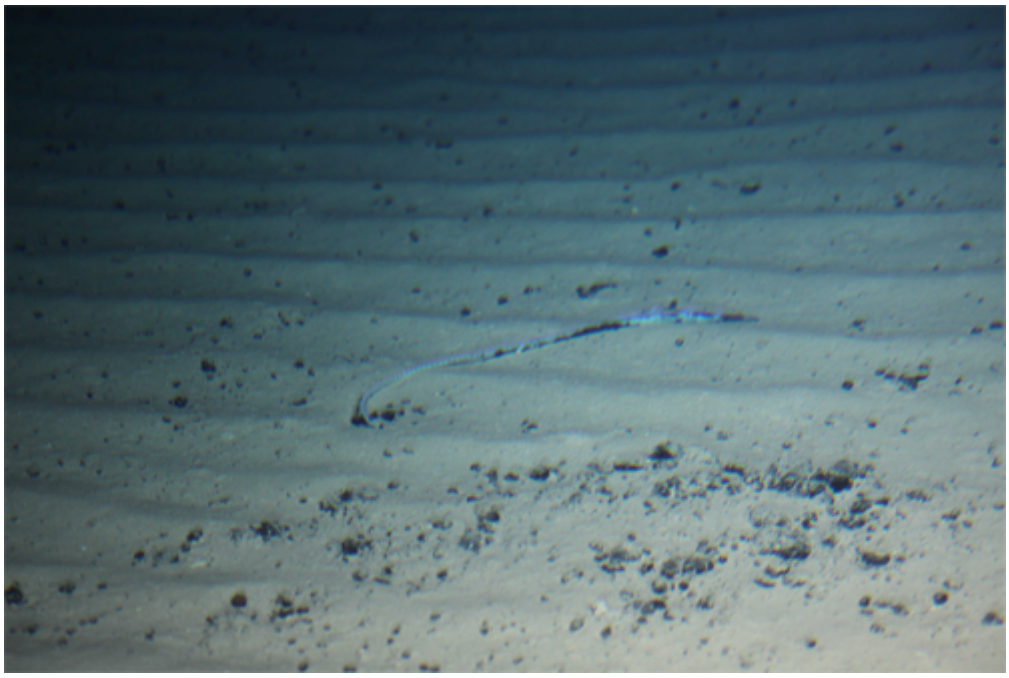
May 6 to 8	YOKOSUKA and SHINKAI 6500 are open to the public in Rio de Janeiro, Brazil.
May 11 to 22	Surveys are conducted at the Sao Paulo Plateau off Brazil.
May 25 to 27	YOKOSUKA and SHINKAI 6500 are open to the public in Santos, Brazil. A symposium and other events are held in Sao Paulo, Brazil.
Mid-June to early-July	Surveys are conducted near the Cayman Islands, a British territory in the Caribbean Sea.

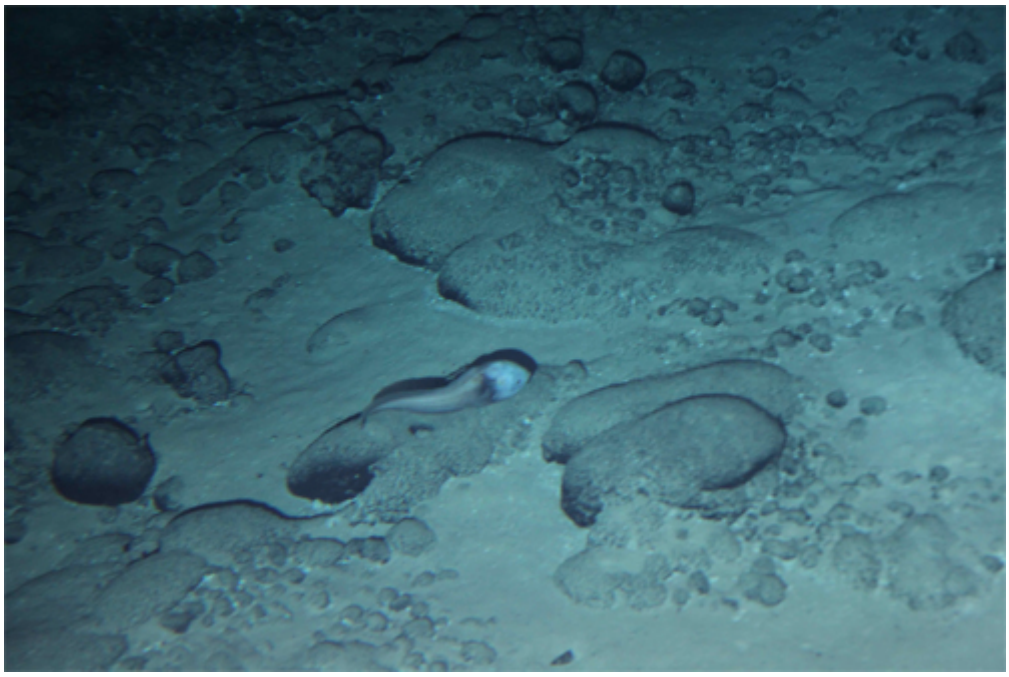
* The above schedules are subject to change due to weather, work progress or other conditions.

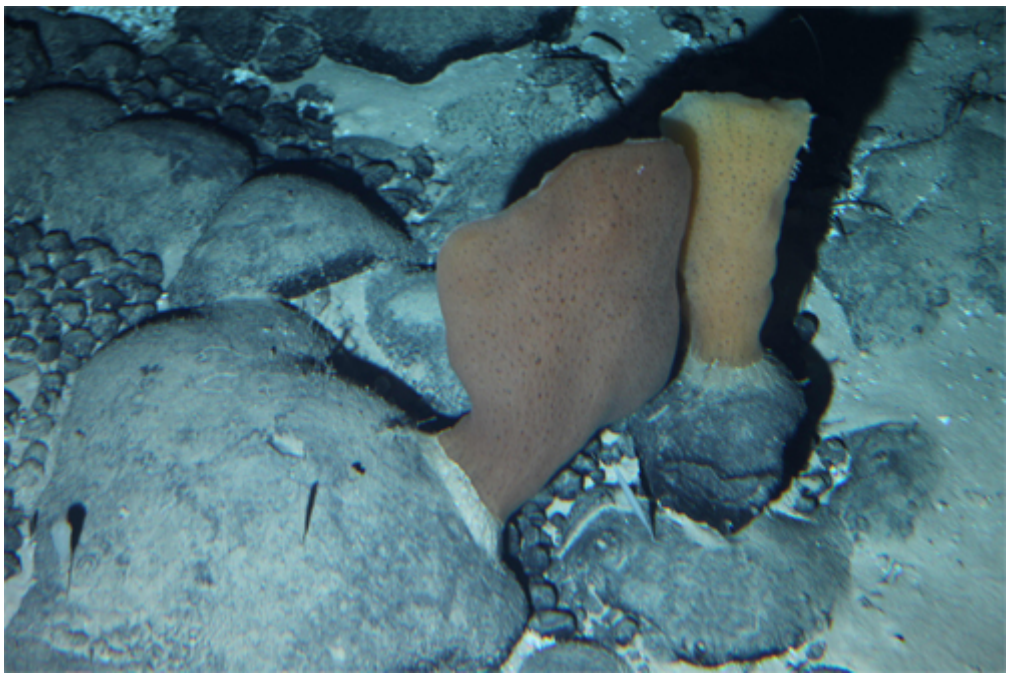
*1 Rio Grande Rise is an area of uplifted seafloor off Brazil with a flat summit some 1,000 meters below sea level. There is an over 5,000-meter high vertical cliff at the center of the rise.

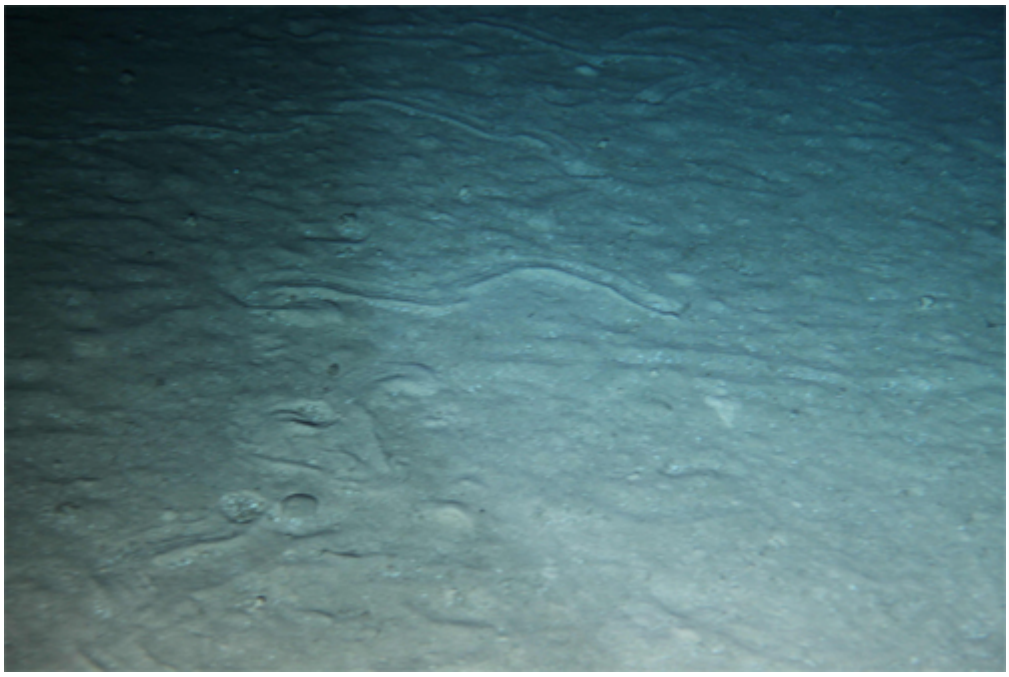
*2 Sao Paulo Ridge is also an area of uplifted seafloor, the slopes of which are steeper than the Rio Grande Rise. It also has a 1,700-meter high steep cliff extending from 2,500 to 4,200 meters below sea level.

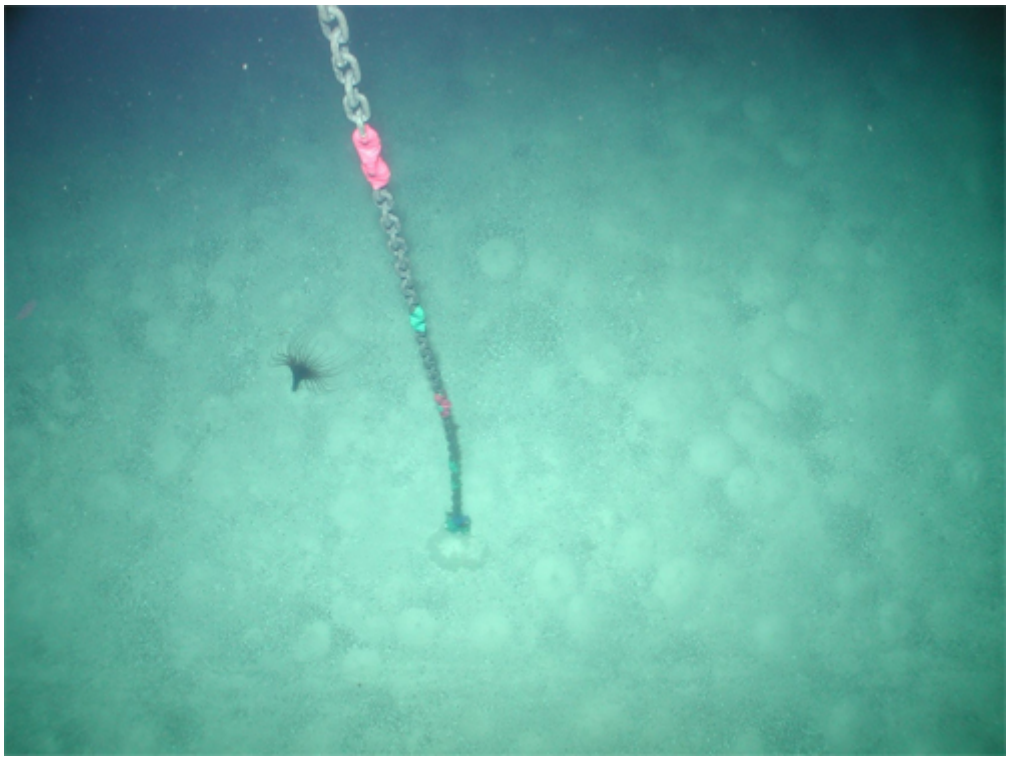
Reference

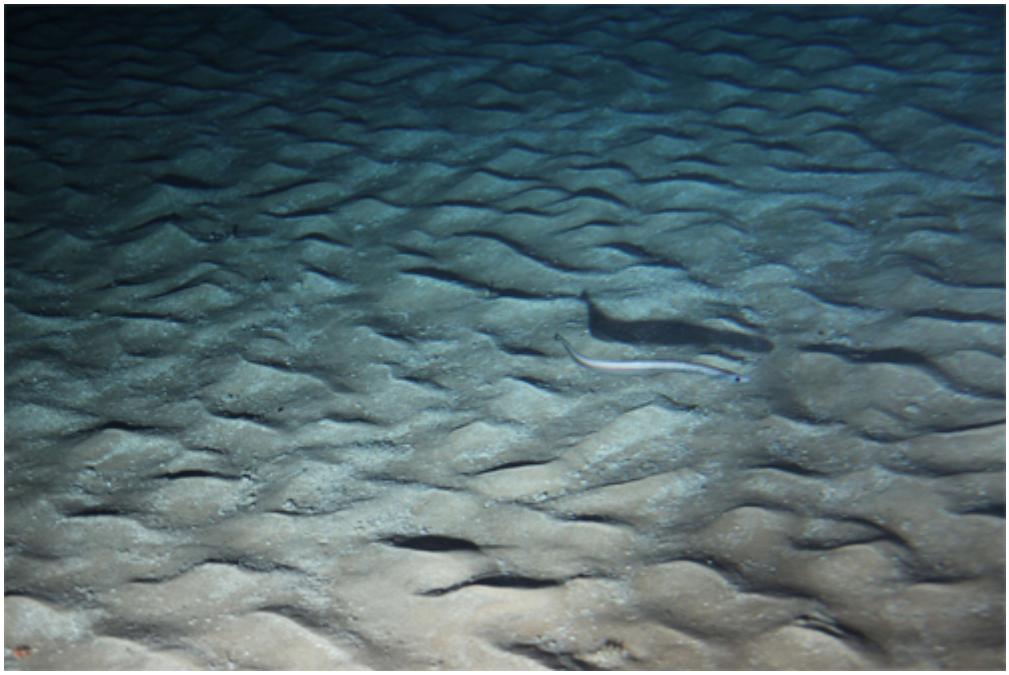


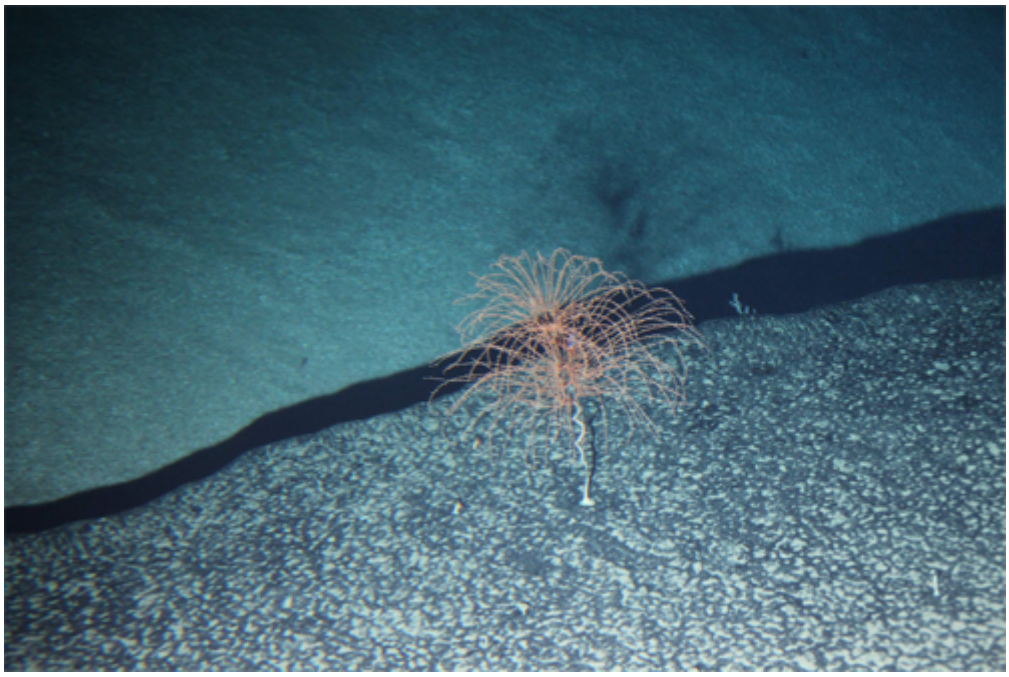


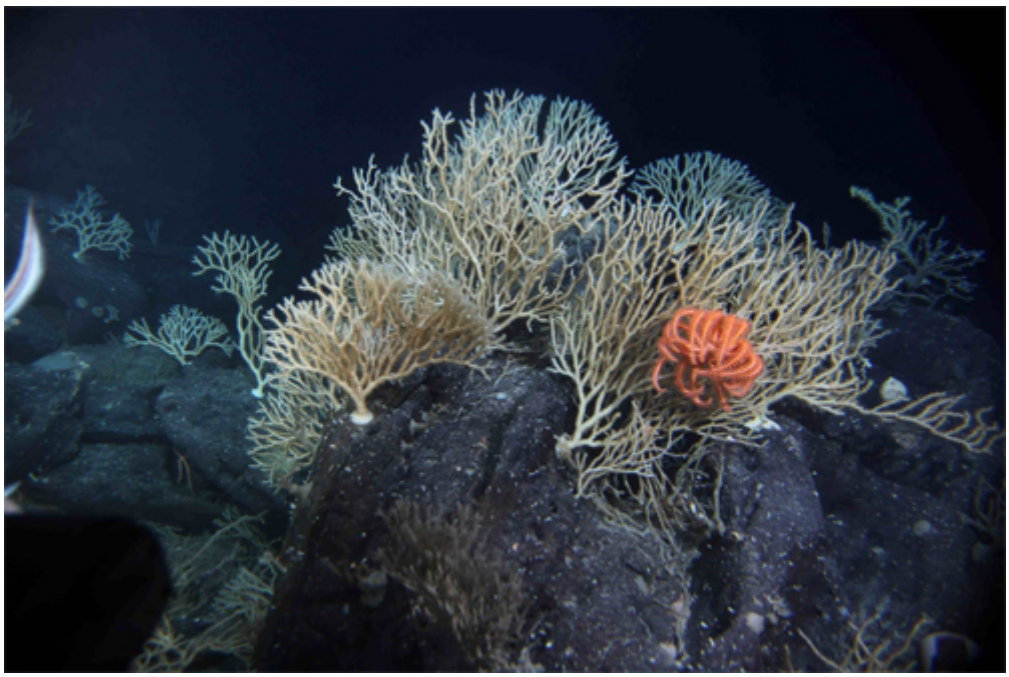












Contacts:
For more information on this voyage, please contact:
Dr. Hiroshi Kitazato,
Research Director,
Institute of Biogeosciences (BioGeos),
Japan Agency for Marine-Earth Science and Technology

For more information on biological community surveys, please contact:
Dr. Yoshihiro Fujiwara
Team Leader
Chemo-Ecosystem Evolution Research Team, Marine Biodiversity Research Program,

Institute of Biogeosciences (BioGeos)
Japan Agency for Marine-Earth Science and Technology

For more information on press release, please contact:
Mr. Kazushige Kikuchi
Director
Press Office, Planning Department
Japan Agency for Marine-Earth Science and Technology