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MIS005-05 Room: Function Room B Time: May 24 10:00-10:15

Micro-topography and shallow sub-bottom structures in the methane-hydrate area off Joetsu City, Niigata, Japan (NT0916)

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Natsushima/HyperDolphine (ROV) study was scheduled at September 8, 2009 - September 14, the NT09-16 cruise in Toyama Trough, the Sea of Japan. Dive #1043 was performed Sep. 9, in the southern part of Umitaka Spur (a part of the NT07-20 cruise HD#754), and obtained some data using DAI-PACK (Deep-sea Acoustic Imaging PACKage), sound recorder and video camera. Though the area of the NT07-20 HD#755 was the favorite, crab cages were settled for the fishery purpose at just the point, so impossible.
Sound recorder, TASCAM DR-07, was settled in an anti-pressure container and set near the transducer of SBP (sub-bottom profiler), and digital record was obtained from the output of a hydrophone to confirm the noise level of ROV.
The height of ROV from the sea bottom, 4m, as a data acquisition condition of DAI-PACK, was too high to obtain optical investigations.
We expected that the ROV could keep its height about 2.5m from the sea bottom, and a video camcorder in an anti-pressure container was set at the front area of ROV to take vertical shots with laser pointers as a scale. We also expected to detect the relative movements of ROV against the sea bottom.
Rolled geographical features are conspicuous in these area, and the holes of several m in size having the fresh ruptures exist and thought to be recently formed in the area of HD#755.
Micro-geographical features are expected to happen every some period or after the shock such as the earthquake from the fact that the shaking by the arms of ROV caused easily the floating up of the hydrate block.
Target areas were selected to HD#755 and HD#754 for the side-scan-sonar (SSS) record as the base data to detect micro-topographical changes, although the interval of two years from the last investigation (NT07-20) is too short to detect the naturally happening floating up of hydrate blocks.
The setting procedure of SSS equipments to collect best SSS records was confirmed though the change comparing the former video records could not be impressed so far as the sea bottom observation of HD#1043 video camera records were studied.
We also studied about the noise level of the ROV. When it comes into the water, the transmission rate of the sound improves, and direct sound of SBP is being recorded at first.
Noise increases rapidly with the starting behavior of ROV, and SBPs direct sound cannot be almost distinguished soon.
It was only several % of necessary part that video photography succeeded.
When it was installed at the back of frontal cage of ROV, adhesion mud after the ROVs touching sea bottom was flowing through for a very long time, and it caused difficulty to take pictures of the sea bottom. We should install video in the extreme front also from the expectation of the brightness of five 400W lamps.
Stability of ROVs height from the sea floor is also indispensable.
ROV diving at the stormy weather and enforcing running have caused the swinging movements of

ROV and finally caused curious records.

Keywords: off Joetsu, side-scan-sonar, sub-bottom profiler, NT0720,0809,0916 cruise, mapping, Deep-sea Acoustic Imaging PACKage