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KAIREI/KAIKO “Cruise Report”
KR18-01

Evaluation test of optical visualization technology using Underwater Super High Vision (USHV)

Okinawa trough

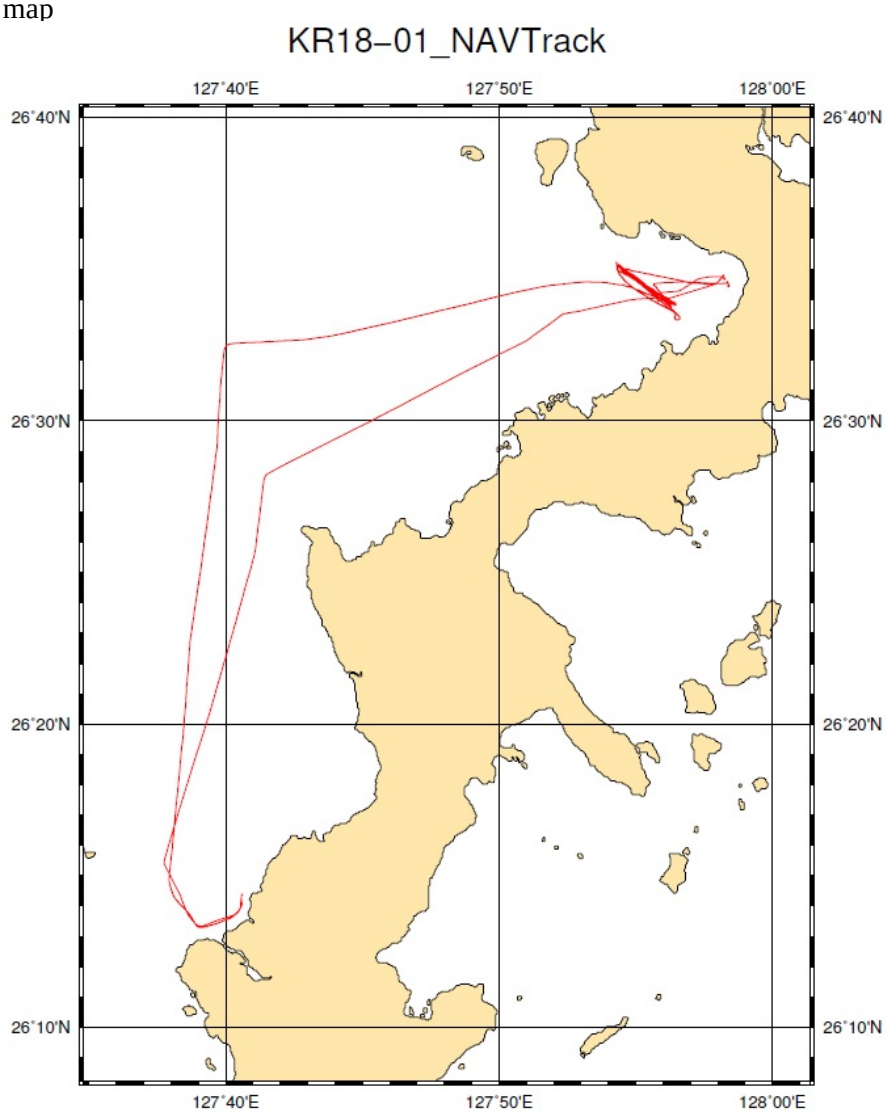
Feb.03,2018-Feb.06,2018

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

Contents

1. Cruise Information

- Cruise ID :
  KR18-01
- Name of vessel :
  KAIREI/KAIKO
- Title of cruise
  Evaluation test of optical visualization technology using Underwater Super High Vision (USHV)
- Chief Scientist [Affiliation] :
  Tatsuhiro Fukuba
- Cruise period :
  Feb.3,2018-Feb.6,2018
- Ports of departure / call / arrival :
  Naha Port/ Naha Port
- Research area :
  Okinawa trough (Nago bay by stormy weather)
- Research map



2. Researchers

● Title of proposal

Fundamental study of super Hi-Vision Camera system for deep sea exploration

● Representative of Science Party [Affiliation]

Shojiro Ishibashi [JAMSTEC]

● Science Party (List) [Affiliation, assignment etc.]

Tatsuhiro Fukuba	[JAMSTEC]
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Katsuhiko Unoki	[KOKIHIFUMI]
Shin Kamijo	[SHIBATEC]
Hideo Ootani	[SHIBATEC]
Kenta Kuroki	[FLANER]

● R/V KAIREI Crew

Captain	Satoshi Susami
Chief Officer	Takaaki Shishikura
2nd Officer	Takeshi Muramatsu
3rd Officer	Tomohiro Yukawa
Chief Engineer	Minoru Tsukada
1st Engineer	Daisuke Gibu
2nd Engineer	Yoshinobu Hiratsuka
3rd Engineer	Keito Shimada
Chief Electronics Operator	Takehito Hattori
2nd Electronics Operator	Takatomo Shirozume
3rd Electronics Operator	Yohei Sugimoto
Boat Swain	Kazuo Abe
Quarter Master	Katsuhiko Sato
Quarter Master	Shuichi Yamamoto
Quarter Master	Hirotaka Shigeta
Quarter Master	Kenji Nakae
Sailor	Toshiya Saga
Sailor	Takumi Miura
Sailor	Eishin Sato

No.1 Oiler	Yukihiro Yamaguchi
Oiler	Masanori Ueda
Oiler	Satoru Minami
Oiler	Ryo Sato
Oiler	Daiki Sato
Chief Steward	Kazuhiro Hirayama
Steward	Hironobu Hodokuma
Steward	Masaru Sugiyama
Steward	Ryu Kubota
Steward	Kina Abe
Submersible Op. Manager	Homare Wakamatsu
1/ Submersible Tec. Officer	Tomoe Kondo
2/ Submersible Tec. Officer	Kiyoshi Takishita
2/ Submersible Tec. Officer	Seiji Shigetake
2/ Submersible Tec. Officer	Shota Ihara
2/ Submersible Tec. Officer	Takuma Goto
2/ Submersible Tec. Officer	Ken Yatsu
2/ Submersible Tec. Officer	Ryu Asai

3. Experiment of USHV

3.1 Purpose

This cruise was conducted to verify the capability of USHV in the actual sea area.
It's the purpose to make sure that a super high vision camera can be used at a deep sea and estimate the grade of the optical subsystem at a deep sea and the communication environment.

3.2 Activities

Table 1 shows the schedule of the cruise.

Table 1 Schedule of the cruise.

Date	Plans / Place	Actual activities
Feb. 3,2018	Depart / Naha port(Okinawa)	Cruise
Feb. 4,2018	Sea Trial of USHV / Okinawa trough	Ship refuge / Nago bay
Feb. 5,2018	Cruise / Okinawa trough	Launch and recovery test USHV with ROV "KAIKO Mk-IV"
Feb. 6,2018	Arrival / Naha port(Okinawa)	Arrive at Naha port

3.3 Results

This cruise was carried out with the plan changed because the westerly barometric arrangement was strong in the westerly wind. For this reason, it was carried out only launch and recovery test from R/V "KAIREI" in Nago bay for visual confirmation of underwater high vision images. As a result, USHV video transmission was able to successfully achieve R/V "KAIREI" using optical transmission from ROV "KAIKO". The obtained USHV video image will be recorded

on a dedicated recorder and analyzed for video quality. Since the shooting of USHV was carried out in a bright environment during the day light, could not image quality evaluation by LED lighting. Also, I could not shoot the sea floor. USHV images in the dark environment will be evaluated in the test pool of JAMSTEC in the future and will be prepared for the next cruise plan.

3.4 About USHV

At the progressing Super Hi-Vision technology as new deep-sea camera such as the Underwater Super High Vision (USHV), it aims to acquire effective video contents with high demand. For the purpose of actual use of USHV, we have applied the production of a pressure-tight camera blimp with angle-of-view correction function and the installation on ROV "KAIKO Mk-IV". The USHV video-image signal was transferred from ROV "KAIKO Mk-IV" to R/V ship “KAIREI” at high speed / large capacity transmission (20 Gbps or more). The quality of USHV video image is guaranteed and established optical transmission until recording to shipboard recording device

Fig. 3.4-1 shows the USHV installed in "KAIKO Mk-IV" and Figure 3.4-2 shows snapshot of the test scenery when confirming landing on R/V ”KAIREI”.

Fig. 3.4-1 USHV Camera blimp on KAIKO Mk-IV payload

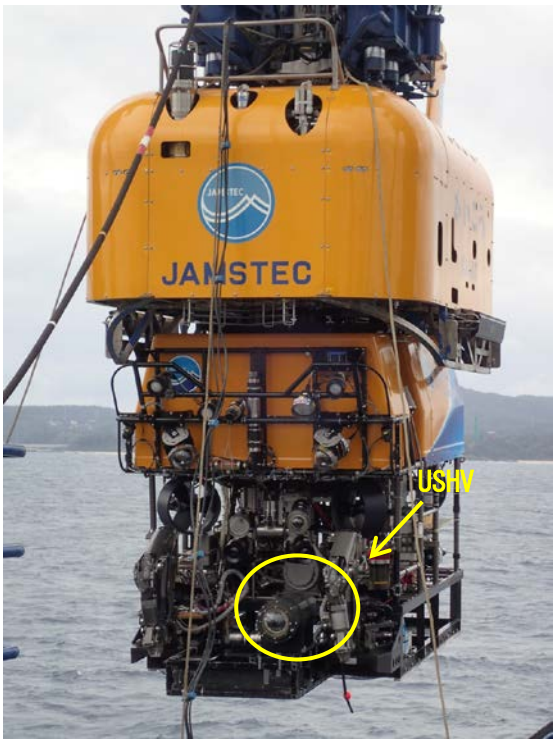

Fig. 3.4-2 Sea landing operation check in Nago bay

3.5 Acknouwledgements
We are grateful to the captain Satoshi Susami and the all crews of the R/V KAIREI/KAIKO for their invaluable supports during the cruise.

4. Notice on Using
Notice on using: Insert the following notice to users regarding the data and samples obtained.

This cruise report is a preliminary documentation as of the end of cruise.
This report is not necessarily corrected even if there is any inaccurate description (i.e. taxonomic classifications). This report is subject to be revised without notice. Some data on this report may be raw or unprocessed. If you are going to use or refer the data on this report, it is recommended to ask the Chief Scientist for latest status.
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