



“YOKOSUKA” Cruise Report

YK16-14

Sea Trial of AUV “JINBEI”,

Suruga-Bay

14/Oct./2016-18/Oct./2016

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

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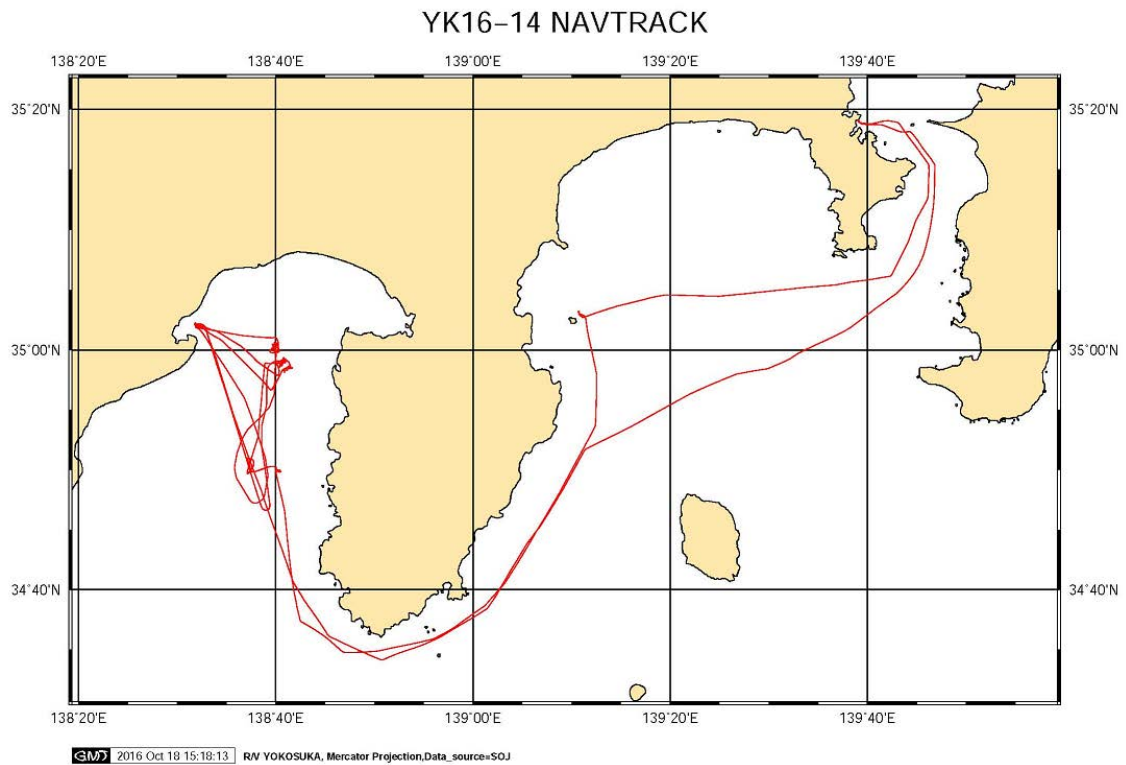
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## 1. Cruise Information

- Cruise ID YK16-14
- Name of vessel R/V YOKOSUKA
- Title of the cruise Sea trial of AUV “JINBEI”
- Title of the proposal Sea trial of AUV “JINBEI”
- Cruise period 14/OCT./2016-18/OCT./2016
- Ports of call Yokosuka(Departure) - Yokosuka(arrival)
- Research area Suruga-Bay
- Research map



## 2. Researchers

- Chief scientist [Affiliation]

Yoshinobu NAMBU [JAMSTEC]

- Representative of the science party [Affiliation]

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### 3. Experiment

- Outline:

We took place performance test for the AUV “JINBEI” such as maneuverability test and acoustic telemetry. And we confirmed every functions of the AUV after improvement and big maintenance.

- Experiment items:

- 1) Tests of MBES on surface
- 2) Functional tests for the vehicle
- 3) Maneuverability tests for the vehicle
- 4) Confirmation for acoustic telemetry
- 5) Electrical survey

#### 3.1. AUV ”JINBEI”



|                    |                                               |
|--------------------|-----------------------------------------------|
| Type               | : AUV                                         |
| Size               | : 4×1.1×1.0 m                                 |
| Weight             | : 1,700 kg                                    |
| Maximum Depth      | : 3,000 m                                     |
| Cruising Speed     | : 0.7 - 3.0 knots                             |
| Min Cruising Alt.  | : 30 m                                        |
| Min Turning Radius | : 20 m                                        |
| Endurance          | : 10 hours (@ 2 knot)                         |
| Communication      | : Acoustic, Optical, Satellite & Wireless LAN |
| Navigation System  | : INS, DVL, Depth censer, Altimeter & SSBL    |

### 3.2. Cruise Log

| Date      | Description (local time)                                                                                                                                                                                                   |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14-Oct-16 | 10:00 departure from JAMSTEC, Yokosuka<br>13:40 arrived at Hatsushima off, Sagami bay<br>test for MBES on surface<br>15:35 departure from Sagami bay<br>19:40 arrived at research area, Suruga bay<br>[Noon] c NNE 4 2 1 8 |
| 15-Oct-16 | 09:03 Dive#36<br>11:40 JINBEI on board<br>test for MBES on surface<br>[Noon] b NNE 3 2 1 8                                                                                                                                 |
| 16-Oct-16 | 08:54 Dive#37<br>13:25 JINBEI on board<br>[Noon] bc East 3 2 1 8                                                                                                                                                           |
| 17-Oct-16 | 10:00 Dive#38<br>15:49 JINBEI on board<br>[Noon] r North 4 3 1 3                                                                                                                                                           |
| 18-Oct-16 | 06:30 departure from Suruga bay<br>14:20 arrived at JAMSTEC, Yokosuka<br>[Noon] bc ENE 3 2 1 8                                                                                                                             |

### 3.3. Experiment results

| Date                                                  | Contents                                                                                                                                                                                                                                                                              | Results                                                                                                                |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| (14-Oct-16)<br>MBES test<br>depth:80m<br>Sagami bay   | <ul style="list-style-type: none"> <li>● Training for Launch and Recovery</li> <li>● Checking MBES system of JINBEI</li> </ul>                                                                                                                                                        | Almost OK<br><br>Battery management unit is NG<br><br>Almost OK                                                        |
| (15-Oct-16)<br>Dive #36<br>depth:1,400m<br>Suruga bay | <ul style="list-style-type: none"> <li>● Scenario cruising with depth control (1.5knot and 2.0knot)on the bottom of ups and downs</li> <li>● Acoustic communication test (measurement, uplink and downlink)</li> <li>● Data acquisition for sensors(MBES, Electrical, etc)</li> </ul> | Vehicle dynamics was sometimes NG<br><br>Sometimes NG in downlink<br><br>Almost OK                                     |
| (16-Oct-16)<br>Dive #37<br>depth:1,400m<br>Suruga bay | <ul style="list-style-type: none"> <li>● Scenario cruising with depth control (1.5knot and 2.0knot)on the bottom of ups and downs</li> <li>● Acoustic communication test (measurement, uplink and downlink)</li> <li>● Data acquisition for sensors(MBES, Electrical, etc)</li> </ul> | Vehicle dynamics was sometimes NG and Scenario cruising was not complete.<br>Sometimes NG in downlink<br><br>Almost OK |
| (17-Oct-16)<br>Dive #38<br>depth:1,400m<br>Suruga bay | <ul style="list-style-type: none"> <li>● Scenario cruising with depth control (1.5knot and 2.0knot)on the bottom of ups and downs</li> <li>● Acoustic communication test (measurement, uplink and downlink)</li> <li>● Data acquisition for sensors(MBES, Electrical, etc)</li> </ul> | Vehicle dynamics was NG.<br>Steering equipment of AUV was broken.<br>Sometimes NG in downlink<br><br>Almost OK         |

### 3.4. Summary

The test area was change at first in Suruga Bay from Izu Ogasawara(myojin knoll) of a schedule by the weather, but the sea conditions were stable, and it was possible to put

the scheduled confirmation item into effect completely and do, and the goal could be achieved for the most part. AUV sailed the complicated bottom of the sea and acquired a sound communication test and data of each sensor including a electrical data in a scenario sailing test. Future's problem got new knowledge about the scenario contents and sailing route decision as well as was also found. Further adjustment and improvement are being piled up for actual practical use continuously.

#### **4. Notice on Using**

This cruise report is a preliminary documentation as of the end of the cruise.

This report may not be corrected even if changes on contents (i.e. taxonomic classifications) may be found after its publication. This report may also be changed without notice. Data on this cruise report may be raw or unprocessed. If you are going to use or refer to the data written on this report, please ask the Chief Scientist for latest information.

Users of data or results on this cruise report are requested to submit their results to the Data Management Group of JAMSTEC.