



Yokosuka Cruise Report
YK22-20C

Experiments of
Time Reversal MIMO Acoustic Communication

Mie offshore, Kochi offshore

Nov.11,2022-Nov.28,2022

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

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1. Cruise Information

Cruise ID :YK22-20C
Name of vessel :Yokosuka
Title of cruise :Research on time reversal MIMO acoustic communication
Chief Scientist :Mitsuyasu Deguchi [JAMSTEC]
Cruise period :Nov. 11, 2022 – Nov. 28, 2022
Ports of departure / call / arrival: Yokosuka(JAMSTEC) – Yokosuka(JAMSTEC)
Research area :Mie offshore, Kochi offshore
Research map

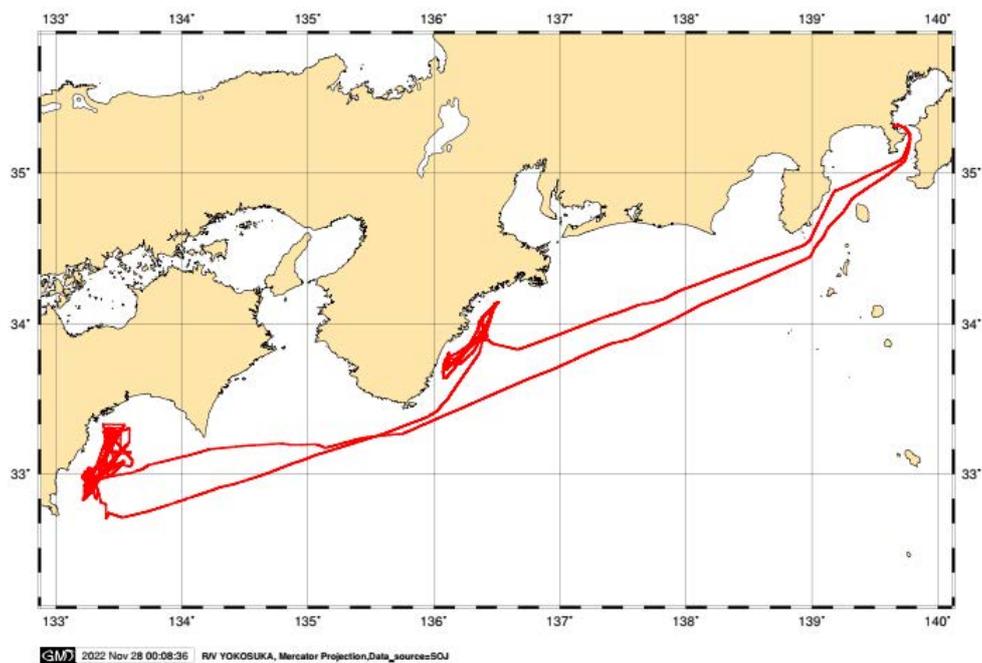


Fig.1 Track chart

2. Science Party

Chief Scientist

Mitsuyasu DEGUCHI [JAMSTEC]

Science Party

Yoshitaka WATANABE [JAMSTEC]
Kenjiro OKADOME [JAMSTEC]
Seiji KUROSAKI [Nippoe Denshi Ltd.]
Hiroki MIYATA [Nippoe Denshi Ltd.]
Shuichiro TERADA [Shoshin Corp.]
Kotaro NISHIDA [Shoshin Corp.]
Mai KUMAGAI [Shoshin Corp.]

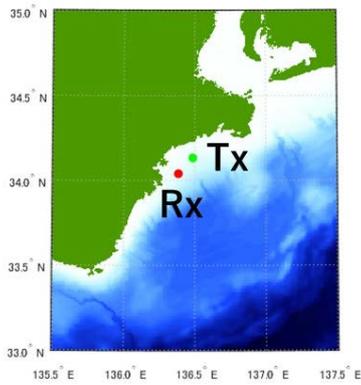
3. Research Activities

(1) objective

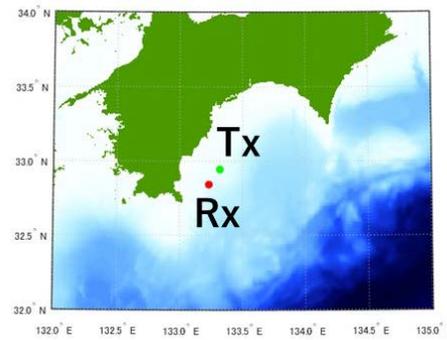
This cruise was a part of the research on MIMO acoustic communication using time reversal. The experiments were carried out in Mie and Kochi offshores of water depth from 170 to 210 m. The characteristic of acoustic channel in the areas was measured in the previous cruise, YK20-06C, YK21-13C and YK22-12C. In this cruise, a transmitter array with 6 to 7 channels and a receiver array with 24 channels were moored and MIMO communication experiments were carried out.

(2) Measurement

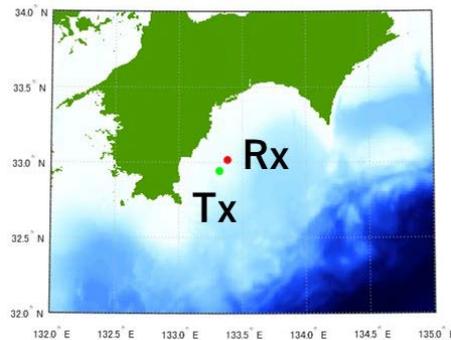
Moored date	Recovery date	Transmitter		Receiver Array	
Nov.11, 2022	Nov. 16, 2022	34° 08.00'N	136° 29.15'N		
Nov.11, 2022	Nov. 15, 2022			34° 08.00'N	136° 23.05'N
Nov.17, 2022	Nov. 19, 2022	32° 56.66'N	133° 19.17'N	32° 56.54'N	133° 13.95'N
Nov.23, 2022	Nov. 26, 2022	32° 56.63'N	133° 19.27'N	33° 00.98'N	133° 22.95'N



(a) Moored at Nov.11, 2022



(b) Moored at Nov. 17 2022



(c) Moored at Nov.23, 2022

Fig. 2 Maps showing locations where Tx and Rx arrays were moored.

4. Cruise Log

Nov. 11, 2022	Departure from Yokosuka
Nov. 12, 2022	Deployment of Tx and Rx arrays (mooring) at Mie offshore
Nov. 13, 2022	Automatic measurement by the arrays
Nov. 14, 2022	Automatic measurement by the arrays
Nov. 15, 2022	Recovery of Rx array
Nov. 16, 2022	Recovery of Tx array
Nov. 17, 2022	Deployment of Tx and Rx arrays (mooring) at Kochi offshore
Nov. 18, 2022	Automatic measurement by the arrays
Nov. 19, 2022	Recovery of both arrays
Nov. 20, 2022	Evacuation due to abysmal weather
Nov. 21, 2022	Evacuation due to abysmal weather
Nov. 22, 2022	Evacuation due to abysmal weather
Nov. 23, 2022	Deployment of Tx and Rx arrays (mooring) at Kochi offshore
Nov. 24, 2022	Automatic measurement by the arrays
Nov. 25, 2022	Automatic measurement by the arrays
Nov. 26, 2022	Recovery of both arrays
Nov. 27, 2022	Shifting to Yokosuka
Nov. 28, 2022	Arrival at Yokosuka

5. Notice on Using

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.
Users of information on this report are requested to submit Publication Report to JAMSTEC.

<http://www.godac.jamstec.go.jp/darwin/explain/1/e#report>

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