



Yokosuka Cruise Report
YK22-12C

Experiments of
Time Reversal MIMO Acoustic Communication

The coast of Kochi

Jul.7,2022-Jul.20,2022

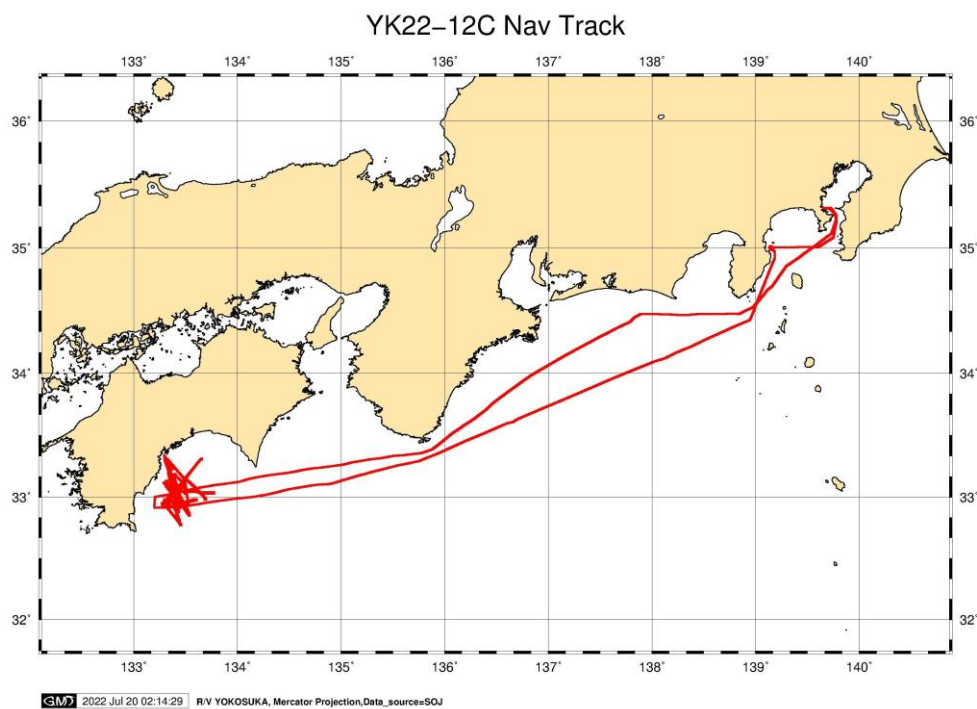
Japan Agency for Marine-Earth Science and Technology
(JAMSTEC)

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1. Cruise Information

Cruise ID : YK22-12C
Name of vessel : Yokosuka
Title of cruise : Experiments of Time Reversal MIMO Acoustic Communication
Chief Scientist : Takuya SHIMURA [JAMSTEC]
Cruise period : Jul. 7, 2022 – Jul. 20, 2022
Ports of departure / call / arrival: Yokosuka – Yokosuka
Research area : The coast of Kochi
Research map



2. Science Party

Chief Scientist

Takuya SHIMURA [JAMSTEC]

Science Party

Mitsuyasu DEGUCHI	[JAMSTEC]
Kenjiro OKADOME	[JAMSTEC]
Seiji KUROSAKI	[Nippoe Denshi Ltd.]
Hiroki MIYATA	[Nippoe Denshi Ltd.]
Shuichiro TERADA	[Shoshin Corp.]
Shuichiro MIYAUCHI	[Shoshin Corp.]
Mai KUMAGAI	[Shoshin Corp.]

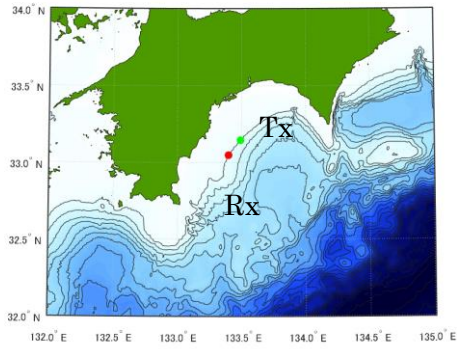
3. Research Activities

(1) objective

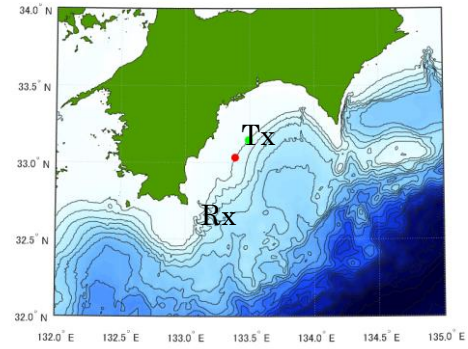
This cruise was a part of the research on MIMO acoustic communication using time reversal. The experiments were carried out in the coast of Kochi at a depth from 150 m to 400 m approximately. The characteristic of acoustic channel in the areas was measured in the previous cruises, YK21-13C and KR21-12C. In this cruise, a transmitter array with 7 channels and a receiver array with 24 channels were moored and MIMO communication experiments were carried out.

(2) Measurement

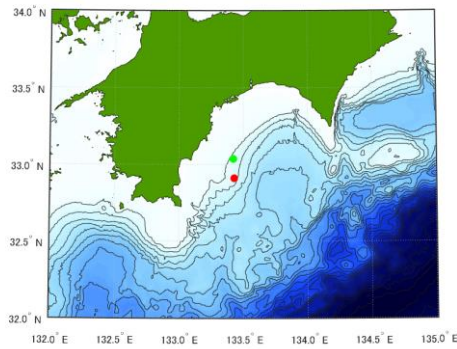
Moored date	Recovery date	Type	position	
Jul. 09th ,2022	Jul. 13th,2022	Transmitter	33°08.7668'N	133°29.4609'E
Jul. 09th ,2022	Jul. 11th ,2022	receiver	33°02.8843'N	133°23.8324'E
Jul. 12th ,2022	Jul. 13th ,2022	receiver	33°01.9302'N	133°23.1956'E
Jul. 15th ,2022	Jul. 16th,2022	Transmitter	33°02.1836'N	133°25.8811'E
Jul. 15th ,2022	Jul. 16rd ,2022	receiver	33°54.6376'N	133°25.8026'E
Jul. 17th ,2022	Jul. 18th,2022	Transmitter	32°54.6345'N	133°25.7933'E
Jul. 17th ,2022	Jul. 18th ,2022	receiver	33°02.1750'N	133°25.3961'E



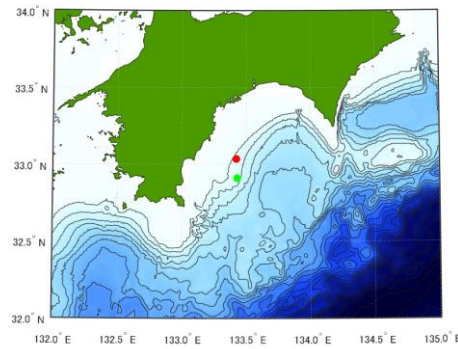
(a) Moored at Jul. 09th, 2022



(b) Moored at Jul. 12th 2022



(a) Moored at Jul. 15th, 2022



(b) Moored at Jul. 17th 2022

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

4. Cruise Log

Jul. 7, 2022	Departure from Yokosuka
Jul. 8, 2022	Shifting to the coast of Kochi
Jul. 9, 2022	Deployment of Tx and Rx arrays (mooring)
Jul. 10, 2022	Automatic measurement by the arrays
Jul. 11, 2022	Recovery of the Rx array
Jul. 12, 2022	Deployment of Rx arrays (mooring)
Jul. 13, 2022	Recovery of the Tx and Rx array
Jul. 14, 2022	Waiting for weather recovery due to abysmal weather
Jul. 15, 2022	Deployment of Tx and Rx arrays (mooring)
Jul. 16, 2022	Recovery of the Tx and Rx array
Jul. 17, 2022	Deployment of Tx and Rx arrays (mooring)
Jul. 18, 2022	Recovery of the Tx and Rx array
Jul. 19, 2022	Shifting to Yokosuka
Jul. 20, 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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