Cruise Summary

1. Cruise Information

(1) **Cruise ID:** MR20-E01

(2) **Vessel:** R/V MIRAI

(3) **Cruise Title**

Study on air-sea interaction associated with the northward-propagating boreal summer intraseasonal oscillation

(4) **Chief Scientist**

Satoru Yokoi (JAMSTEC)

(5) **Representative of the Science Party**

P20-11 Kunio Yoneyama (JAMSTEC)

P20-11-08 Kelvin Richards (IPRC)

P20-11-06 Kazuaki Yasunaga (Toyama Univ.)

P20-11-01 Kei Yoshimura (Tokyo Univ.)

P20-11-02 Gilles Reverdin (LOCEAN)

P20-11-03 Kazuma Aoki (Toyama Univ.)

P20-11-04 Yutaka Matsumi (Nagoya Univ.)

P20-11-05 Akira Kuwano-Yoshida (Kyoto Univ.)

P20-11-07 Tetsuya Takemi (Kyoto Univ.)

(6) **Research Titles**

P20-11 Study on air-sea interaction associated with the northward-propagating boreal summer intraseasonal oscillation

P20-11-01 Observational study on variation of precipitation and vapor isotope ratio associated with MJO

P20-11-02 Observational study for upper-ocean stratification: Case of tropical western Pacific

P20-11-03 Observation of aerosol optical characteristics over the ocean

P20-11-04 Measurement of column-integrated CO2 density in the atmosphere

P20-11-05 Continuous observation of precipitable water vapor using microwave radiometer

P20-11-06 Study on impacts of aerosols on precipitation and lightning

P20-11-07 Study on mechanisms for convective clustering associated with northward-propagating intraseasonal oscillation

P20-11-08 Analysis of fine vertical structure of oceanographic parameters over the tropical western Pacific

(7) **Cruise Period**

2020/08/01 - 2020/09/13

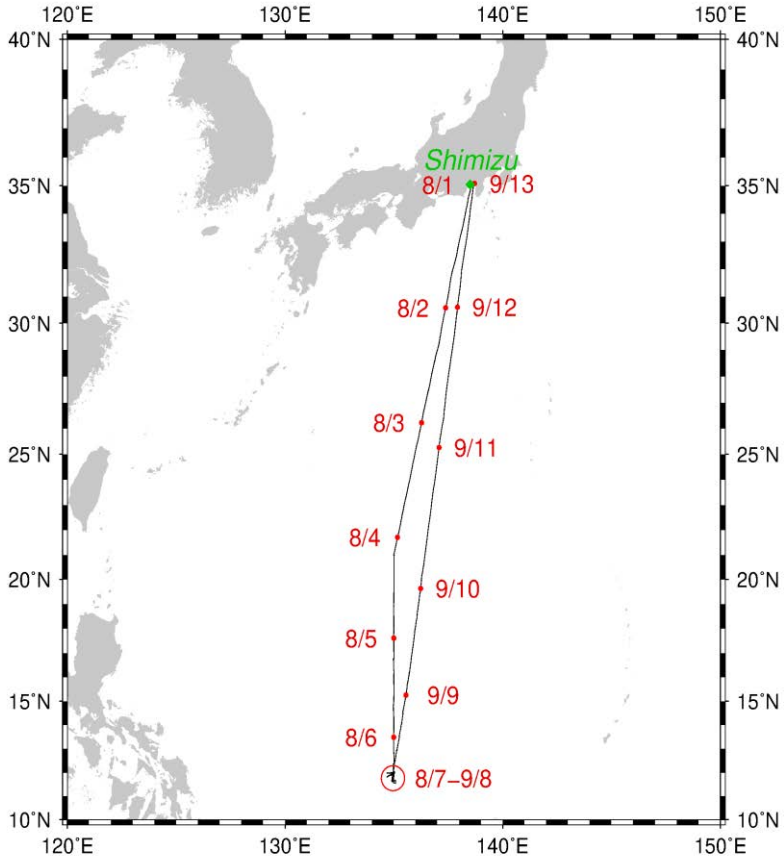
(8) **Ports of departure/call/arrival**

Shimizu - Shimizu

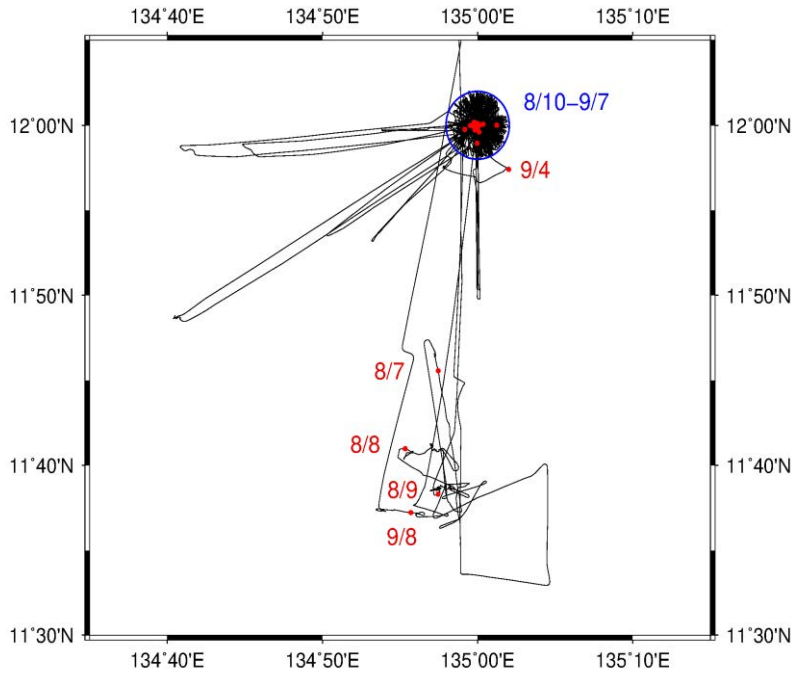
(9) **Research Area**

Tropical Western Pacific

(10) **Cruise Track**



Cruise track for the whole cruise



Cruise track just in the area that covers the station observation point and m-TRITON mooring site.

2. Overview of the Observation

In order to investigate atmospheric and oceanic variations over the tropical western Pacific, intensive observations with the use of R/V Mirai were carried out at the station observation point (12N, 135E) and its surrounding area, which is the main purpose of this cruise.

On the way from Shimizu to the station observation point, three ARGO floats were deployed at (21N, 135E), (18N, 135E), and (15N, 135E).

Just before the start of the station observation, we deployed an m-TRITON mooring at (11-38N, 134-59E) on August 7 and three Wave Gliders on August 8. Then the R/V Mirai moved to the station observation point and stayed there for 30 days from August 9 to September 7 to perform the station observation, including 3-hourly radiosonde launch, RINKO Profiler casts, and CTD casts. Furthermore, the surface drifters were deployed and recovered 4 times. The three Wave Gliders were recovered on September 4, while the m-TRITON mooring was recovered on September 8, just before start sailing back to Shimizu.

On the way to Shimizu, we deployed the surface drifters at (17-00N, 135-50E).

Autonomous instruments were in operation continuously wherever possible during the whole cruise.

In summary, we could conduct almost all the observational items we had planned. In the station observation period, we observed several events of active cumulus convective systems with large amount of precipitation and calm and sunny days in between. The observed data collected during this cruise will be fruitful for deepening our understanding of the air-sea interaction processes regarding the cumulus convective activity and the scale interaction processes between the cumulus convective systems and large-scale disturbances such as BSISO.