## Cruise Summary

## 1. Cruise Information

- Cruise ID: MR24-02
- Name of vessel: R/V Mirai
- Title of cruise 1: Geological Study of Paleo-Earthquakes and Tsunamis along the Chishima Trench
- Title of cruise 2: Contourite Deposition Processes in the Outer Rise of the Chishima Trench
- Chief Scientist [Affiliation]: Toshiya Fujiwara [IMG, JAMSTEC]
- Representative of Science Party 1 [Affiliation]: Toshiya Kanamatsu [IMG, JAMSTEC]

IMG: Research Institute for Marine Geodynamics

- Representative of Science Party 2 [Affiliation]: Hisashi Ikeda [Graduate School, Yamaguchi Univ.]
- Cruise period: March 12, 2024 March 28, 2024
- Ports of departure / call / arrival: Sekinehama / Shimizu, Japan
- Research area: Chishima Trench
- Research map:



Survey lines and locations in the cruise area. Blue lines show the R/V "Mirai" ship tracks. PC: piston core, Fig-8: "Figure-8" sailing, SCS: single-channel seismic reflection survey, SBP: sub-bottom profiling.



Survey lines and locations in the survey area. Blue lines show the R/V "Mirai" ship tracks. PC: piston core, Fig-8: "Figure-8" sailing, SCS: single-channel seismic reflection survey, SBP: sub-bottom profiling.

## 2. Overview of Research Activities

- Purpose, background: To understand the history of paleo-earthquakes and tsunamis along the Chishima Trench from geological studies, sediment core samples including earthquake-induced turbidite will be collected on the landward trench slopes. And bathymetry, geology, and sub-surface structure of sedimentary layers around the sediment core sampling sites will be surveyed. In addition, sediment core samples will be collected, which are considered to be contourite, on the outer rise seaward slope of the Chishima Trench to investigate the deposition processes.
- Activities (observation, sampling, methods, instruments): Piston-coring, sub-bottom profiling, single-channel seismic reflection survey, multibeam bathymetric survey, XCTD measurement, shipboard gravity meter measurement, surface-towed magnetometer and shipboard three-component magnetometer measurement, surface seawater sampling.

## - Results:

- Sediment core samples were collected at 5 sites. The water depths of the sampling sites were 5171-7040 m. The length of piston core was 6 m.
- Single-channel seismic reflection surveys were conducted along 5 lines. The seismic source was a 355 cu in (G: 250, I: 105) ×2 GI guns.
- Sub-bottom profiler surveys were conducted at 10 locations and along the single-channel seismic reflection survey lines. The piston-coring sites were selected from the results of this survey.
- Multibeam bathymetric surveys were conducted in the survey area.
- XCTD measurements were conducted at 6 sites.
- Surface-towed geomagnetic measurements using a cesium magnetometer were conducted during the multibeam bathymetric survey.
- Shipboard gravity data and shipboard three-component magnetic data were collected throughout the cruise. "Figure-8" sailings for data calibration of the shipboard magnetic data were conducted at 3 locations.
- Surface seawater was sampled at 72 sites during the cruise.