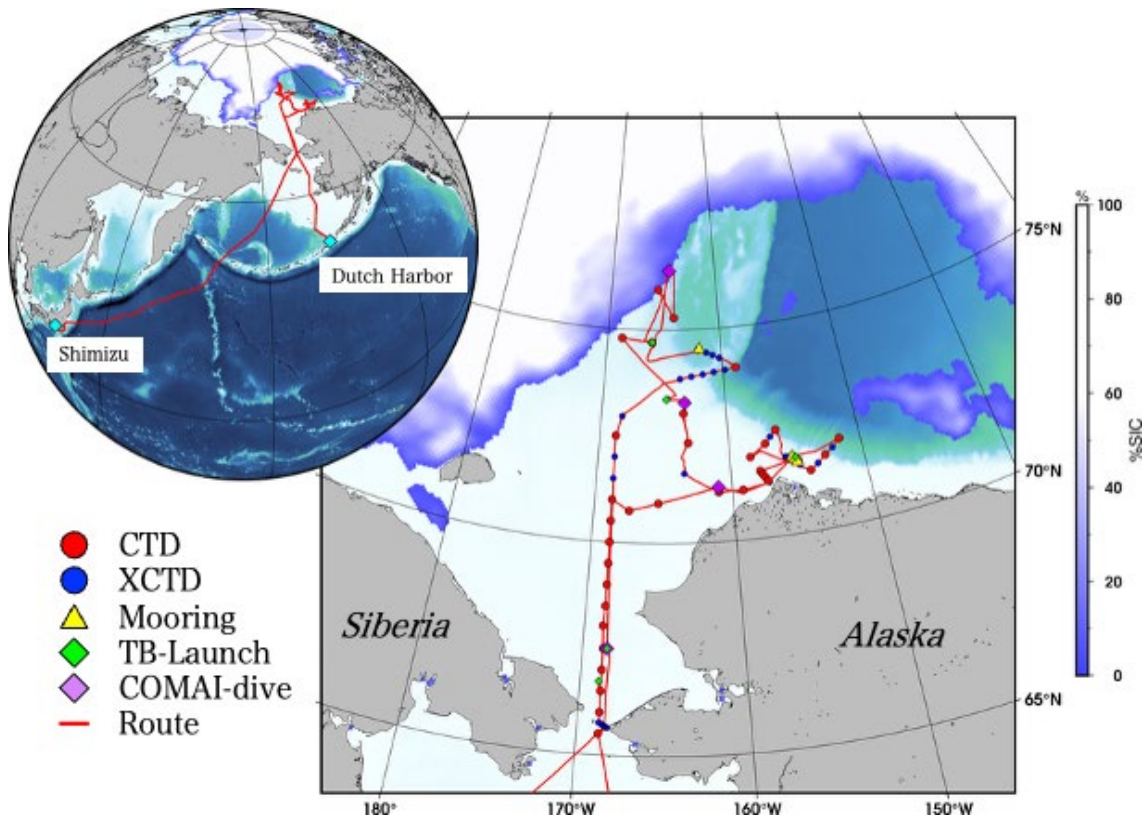


Cruise Summary

1. Cruise Information

- Cruise ID MR25-05C
- Name of vessel R/V Mirai
- Title of cruise Arctic Challenge for Sustainability III (ArCS III) Project Cruise
- Chief Scientist Amane Fujiwara [JAMSTEC]
- Title of proposal Arctic Challenge for Sustainability III (ArCS III) Project Cruise
- Representative of Science Party Eiji Watanabe [JAMSTEC]
- Cruise period 2025/08/31–2025/10/05
- Ports of departure / call / arrival Dutch Harbor – Shimizu
- Research area Arctic Ocean (Chukchi Sea), Bering Sea, North Pacific Ocean
- Research map



The map shows the locations of CTD stations, XCTD deployment sites, mooring deployment/recovery sites (Mooring), tethered balloon observation sites (TB-Launch), and underwater drone test dive sites (COMAI-dive). The color scale indicates the average sea-ice concentration from September 4 to 24 (during the observation period north of 65°N in the Arctic Ocean), derived from AMSR2/GCOM-W data.

2. Overview of Research Activities

The cruise was conducted under the framework of the Arctic Challenge for Sustainability III (ArCS III) project, aiming to investigate rapid environmental changes in the Arctic Ocean through interdisciplinary observations. We carried out basic oceanographic measurements (CTD casts and water sampling), mooring deployment and recovery, trace metal measurements, sea-ice sampling, plankton net and imaging observations, high-resolution surveys of oceanic fronts using a towed CTD, assessments of the vertical distribution of carbon fixation, and meteorological and atmospheric observations with a tethered balloon and radiosondes. We also conducted sediment sampling for paleoceanographic studies and test dives of the autonomous underwater vehicle COMAI. Multi-year sea ice was distributed across the study area, significantly affecting the surface water properties by maintaining cold, low-salinity conditions.