Major Features

- High-precision and multi-parameter observation equipment for atmospheric, oceanic, meteorological, and biological research
- Fuel efficient hull shape for ice-breaking, ice resistant performance, and navigation in ice-free areas
- Equipped with an advanced ice-sea navigation support system
- Dual-fuel engine to reduce environmental impact
- Dynamic positioning system
- Facilities for deployment and operation of Unmanned Underwater Vehicles (ROV, AUV, etc.)
- Helicopter facilities for safety and sea ice observation
- Ideal research and analysis environment with variety of laboratory spaces and excellent network infrastructure
- Living & working environment for multinational teams
- Other potential functions
  (e.g. operation and assistance in natural disaster-affected areas)

Main specifications (tentative)

Length	128 m
Beam	23 m
Draft	8 m
Gross tonnage	13,000 tons
Ice breaking capability	Up to 1.2 m thick at 3.0 knots
Ice class	PC4
Accommodation	90-99 people

Japan's first research icebreaker for Arctic science

-Solving challenges facing the Arctic through international collaboration-

JAMSTEC 国立研究開発法人 海洋研究開発機構
Japan Agency for Marine-Earth Science and Technology

Japan's first research icebreaker for Arctic science

The Arctic region is facing many difficult challenges including environmental changes that have led to the loss of sea ice, and learning how to balance the increased economic activities that have resulted from these changes. The effects of these environmental changes are far-reaching and are often witnessed as extreme weather systems outside of the Arctic region – one example of this being extreme snowfall occurring in Japan. As such, the changing Arctic environment is really a global concern. It is our responsibility as a world leading nation, that is also directly affected by these changes, to form a commitment to scientific investigations into the changing environment of the Arctic. In order to fulfill these commitments, Japan has decided to build an Arctic research vessel with icebreaking capabilities and world-class scientific facilities. This research vessel will be harnessed to promote the importance of Arctic science and to work towards sustainable development of the Arctic region. Furthermore, Japan remains committed to raising the next generation of scientists and engineers and plans to utilize this research vessel to further develop collaborations with international partners.

Weather balloon carrying atmospheric instruments

Measure atmospheric variables such as, air pressure, temperature, and humidity.

Rainfall/snowfall observations using a meteorological radar

Measure variables such as wind speed, speed and size of raindrops and snowflakes inside the clouds by radiating electric waves over the Arctic ocean.

Sea-ice observation using autonomous on-ice and under-ice vehicles

Non-destructive observation above and below the sea ice to i) measure ice thickness and floe shape, and ii) observe the marine environment under the ice.

Monitoring the hull structure of the ship

Collect data on the ice load experienced by the ship for continued operation and maintenance.

Deep sea water sampler

Measure variables such as temperature, salinity, and pressure in the deep sea, which enable us to better characterize the ongoing changes in the Arctic Ocean.

Piston corer

Collect seafloor sediment cores without disrupting the sediment layers.

Fixed point observation by moorings

Continue to maintain our moorings, which monitor physical and biological changes in the Arctic Ocean.

Survey of bathymetry and biological resources using echo sounders

Conduct bathymetric and biological surveys of the Arctic Ocean.

Seafloor survey using ROV/AUV

Operate autonomous underwater vehicles for data collection.