





# THE PROJECT

The AURORA BOREALIS project focuses on two scientific communities that in part overlap and in part have divergent interests:

**The first** one is the general polar science community, which requires a research vessel for conducting field and marine work throughout **all seasons of the year**.

Polar sciences today lack the critical ability to carry out **year-round** research, observations and experiments in the central Arctic Ocean. Weather and ice conditions prevent the autonomous penetration of research vessels into this pack ice-covered realm during bad seasons when the most critical climatic, biological and oceanographic processes occur. AURORA BOREALIS with its maximum ice-breaking capability, dynamic positioning in closed sea-ice cover, advanced ice-forecasting and management with autonomous, multiple helicopter support, the deployment and operation of Remotely Operated Vehicles (ROV) and Autonomous Underwater Vehicles (AUVs) for sub-ice surveys from the twin moon-pools and the modularized mission-specific laboratory systems will be the premiere platform to accomplish such programs and yield new scientific results.

**The second** is the deep-sea drilling science community, which would use the ship mainly during **summer months** with optimal ice condition to study the structure and properties of oceanic crust and the history of the oceanic depositional environments.



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EUROPEAN RESEARCH ICEBREAKER CONSORTIUM



In spite of the critical role of the Arctic Ocean in climate evolution, it is the only basin of the world's oceans that has essentially not been sampled by the drill ships of the Deep-Sea Drilling Project (DSDP) or the Ocean Drilling Program (ODP) and its long-term environmental history and tectonic structure is therefore poorly known. This lack of data represents one of the largest gaps of information in modern Earth Science. Therefore, the new research icebreaker AURORA BOREALIS shall be equipped with drilling facilities to drill in deep, permanently ice-covered ocean basins.



In a long-term perspective the AURORA BOREALIS will also be used to address research targets around Antarctica, both in its mode as a regular multi-purpose research vessel as well as a polar drill ship.

### Timeline

- Preparatory phase: 2008-2011
- Construction phase: 2012-2014
- Operation: 2014 onwards

## SCIENTIFIC RELEVANCE

**Climate Change, European Polar Research, Research Icebreaker**

Polar research and in particular the properties of northern and southern high latitude oceans are currently a subject of intense scientific debate and investigations, because they are (in real time) and have been (over historic and geologic time scales) subject to rapid and dramatic climatic variations. Polar regions react more rapidly and intensively to global change than other regions of the earth. News about shrinking of the Arctic sea-ice cover, potentially leading to an opening of sea passages to the north of North America and Eurasia, on the long to a "blue" Arctic Ocean, as well as about the calving of giant table icebergs from the ice shelves of Antarctica are examples for these modern changes.

Europe has a particular interest in understanding the Arctic environment and its potential for change because many of its highly industrialized nations reach into high northern latitudes and because Europe is under the steady influence of, and in exchange with, the Arctic environment. In addition, considerable living and non-living resources are found in the Arctic Ocean.

Research in the polar regions can only be carried out by sophisticated research vessels. Modern research vessels that are capable of penetrating into the central Arctic are rare. A new state of the art research icebreaker is therefore urgently required to fulfill the needs of European polar research.