



## **AURORA BOREALIS: a polar-dedicated European Research Platform**

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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 subject to rapid and dramatic climatic variations. Polar regions react more rapidly and intensively to global change than other regions of the earth. A 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 would additionally have a strong impact on transport, commerce and tourism bearing potential risk for humans and complex ecosystems in the future. In spite of their critical role processes and feedbacks, especially in winter but not exclusively, are virtually unknown: The Arctic Ocean for example, 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. Exceptions are the ODP Leg 151 and the more recent very successful ACEX-expedition of the Integrated Ocean Drilling Program (IODP) in 2004. To help to address the most pressing questions regarding climate change and related processes, a Pan-European initiative in the field of Earth system science has been put in place: AURORA BOREALIS is the largest environmental research infrastructure on the ESFRI roadmap of the European Community. AURORA BOREALIS is a very powerful research icebreaker, which will enable year-round operations in the Arctic and the Antarctic as well as in the adjacent ocean basins. Equipped with its drilling rig, the vessel is also capable to explore the presently completely unknown Arctic deep-sea floor. Last but not least, the ship is a floating observatory and mobile monitoring platform that permits to measure on a long-term basis comprehensive time series in all research fields relevant to global climate change. Chances and challenges rest in securing the construction and operation costs that need a dedicated consortium of interested countries and institutions to help tackling the biggest challenges of the next decades.