The AURORA BOREALIS Project

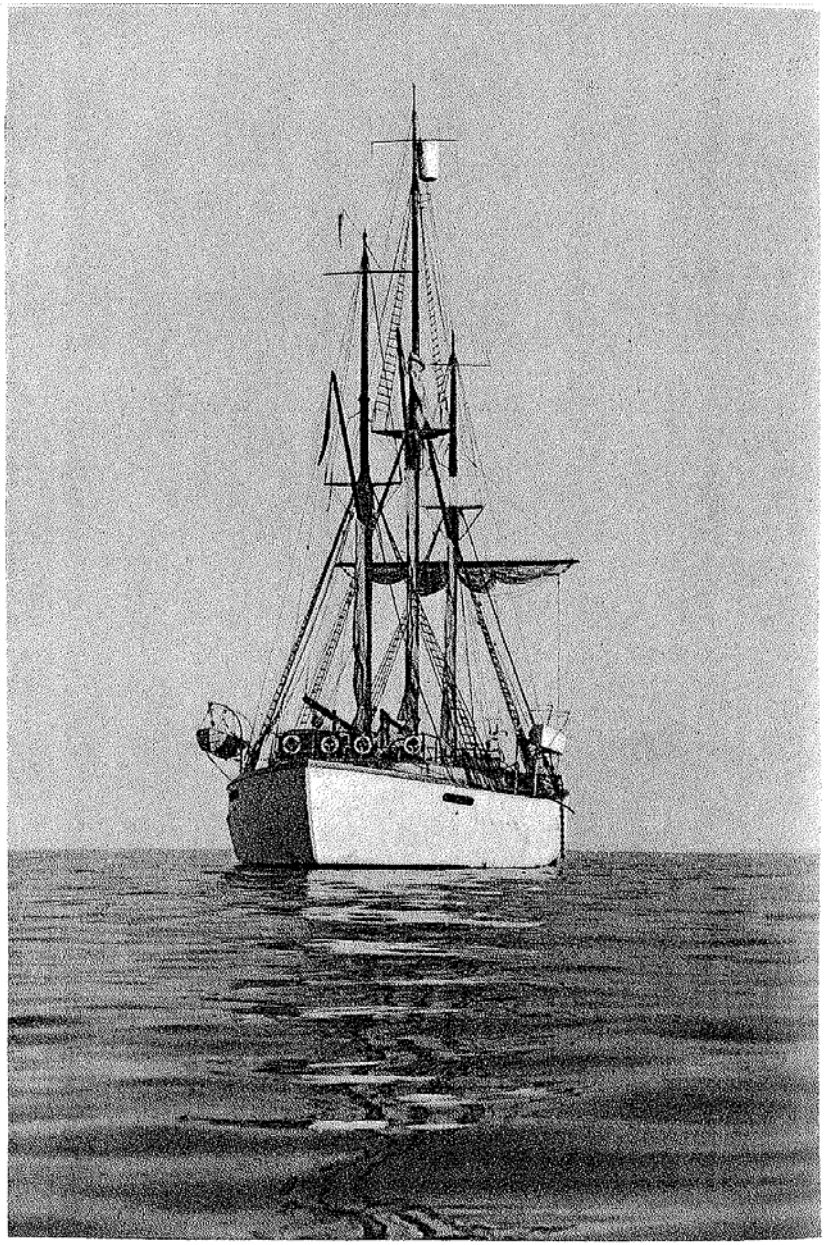
Development of a new European Drilling Research Icebreaker

in cooperation with the European Polar Board (EPB) and the European Consortium of Ocean Research Drilling (ECORD) of the ESF

History and Status-quo

Research from icebreakers/
research in ice-covered waters/

short history of dedicated polar
research vessels



Da «Maud» laa fredelig for anker ved Nome, var vor ishavsfærd endt.


BGR
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Geowissenschaften
und Rohstoffe


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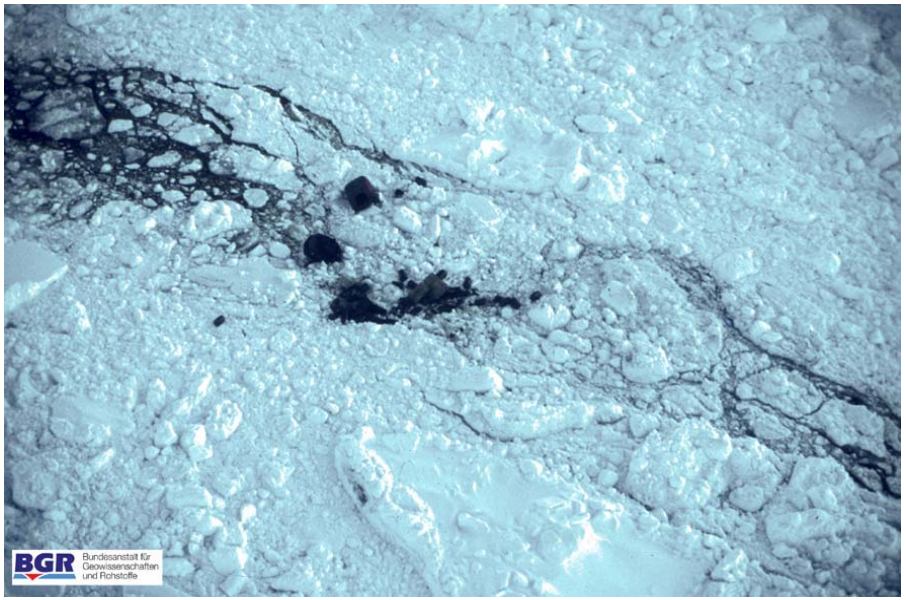
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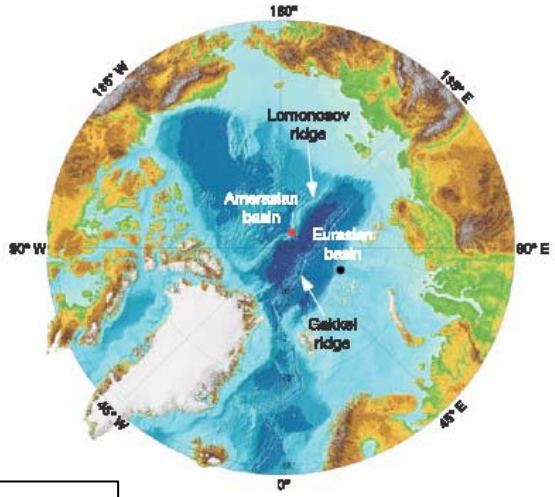
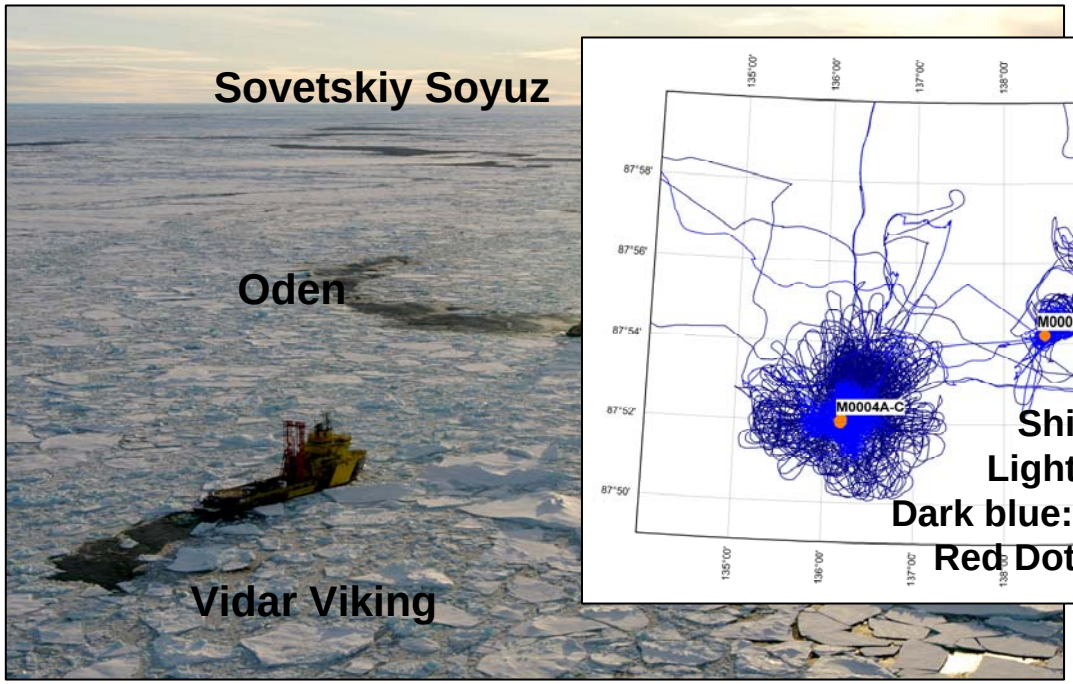
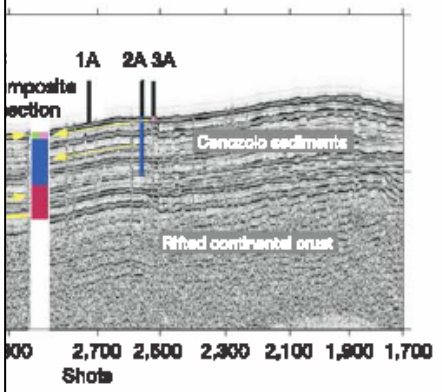
Zur Anzeige wird der QuickTime™
Dekompressor „Cinepak“
benötigt.

Kathryn Moran und u.a. **Jens Matthiessen, Rüdiger Stein, Wilfried Jokat**
Nature, Vol 441

The Cenozoic palaeoenvironment of the Arctic Ocean

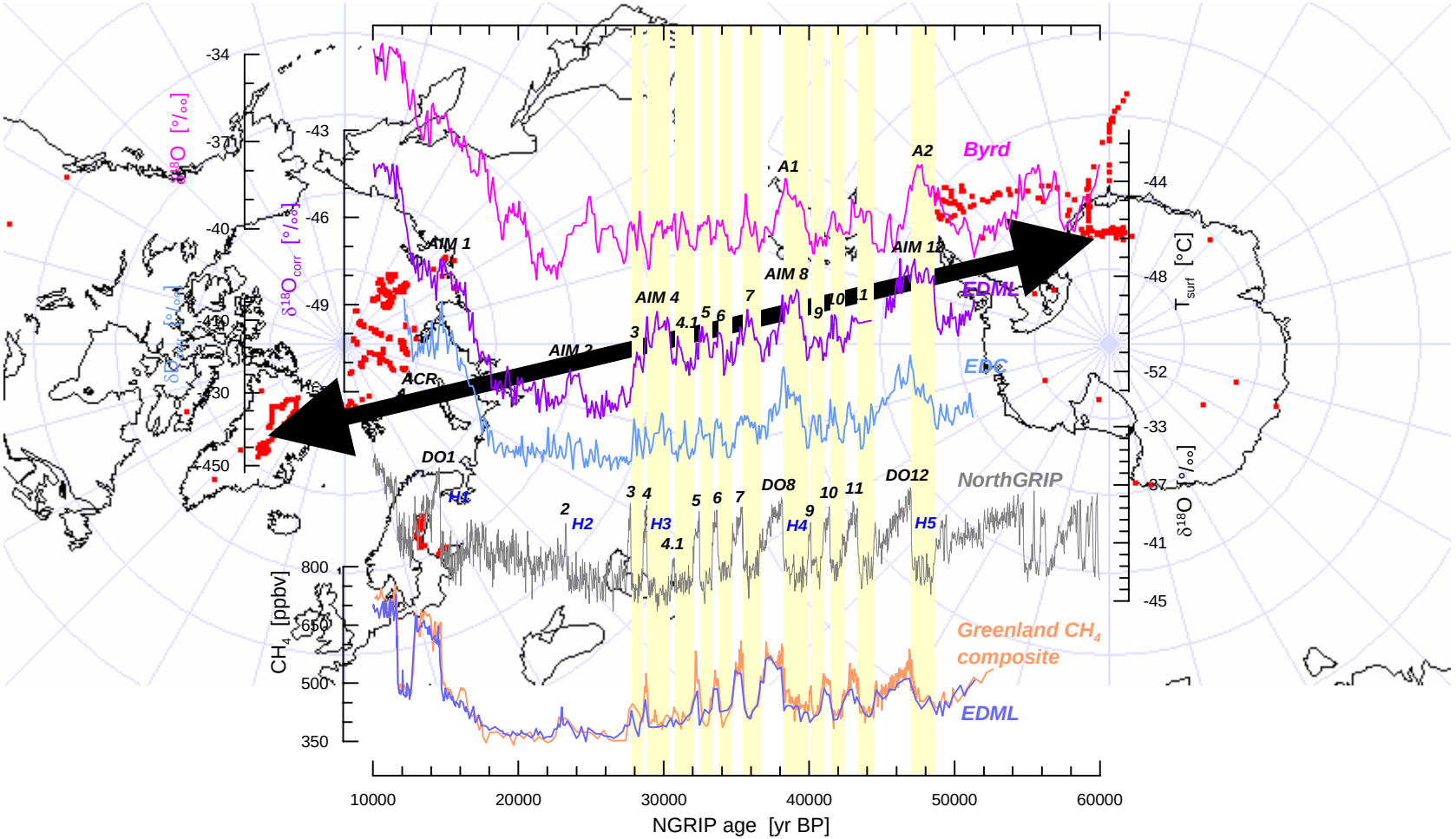




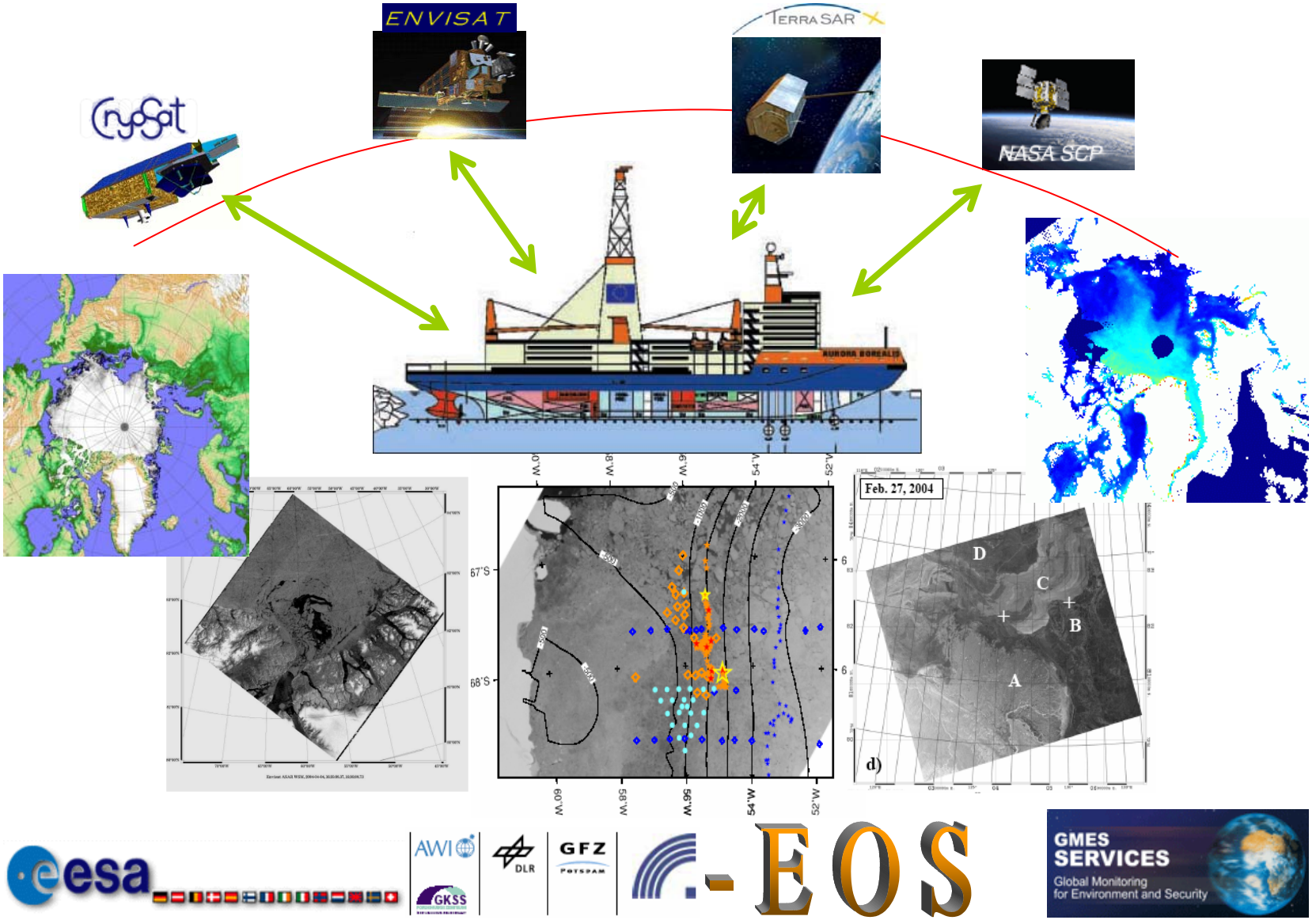


EPICA Community Members
Nature, Vol 444

One-to-one coupling of glacial climate variability in Greenland and Antarctica



Monitoring systems for Arctic sea ice and icebergs



2006: What we can do and what we cannot do

- Regular summer expeditions for all polar research disciplines
- Fullfill all logistic requirements (but at the expense of research time)
- Provide safety and experienced crews

- Bad season expeditions
- Deep-sea drilling
- Deployment of CALYPSO giant piston coring device
- Synoptic bipolar expeditions
- Deployments of ROV and AUV (or MUV)
- Winter navigation based on high-resolution remote sensing information
- Provide a novel and safe research platform to the new generation of polar researchers

HELMHOLTZ GEMEINSCHAFT

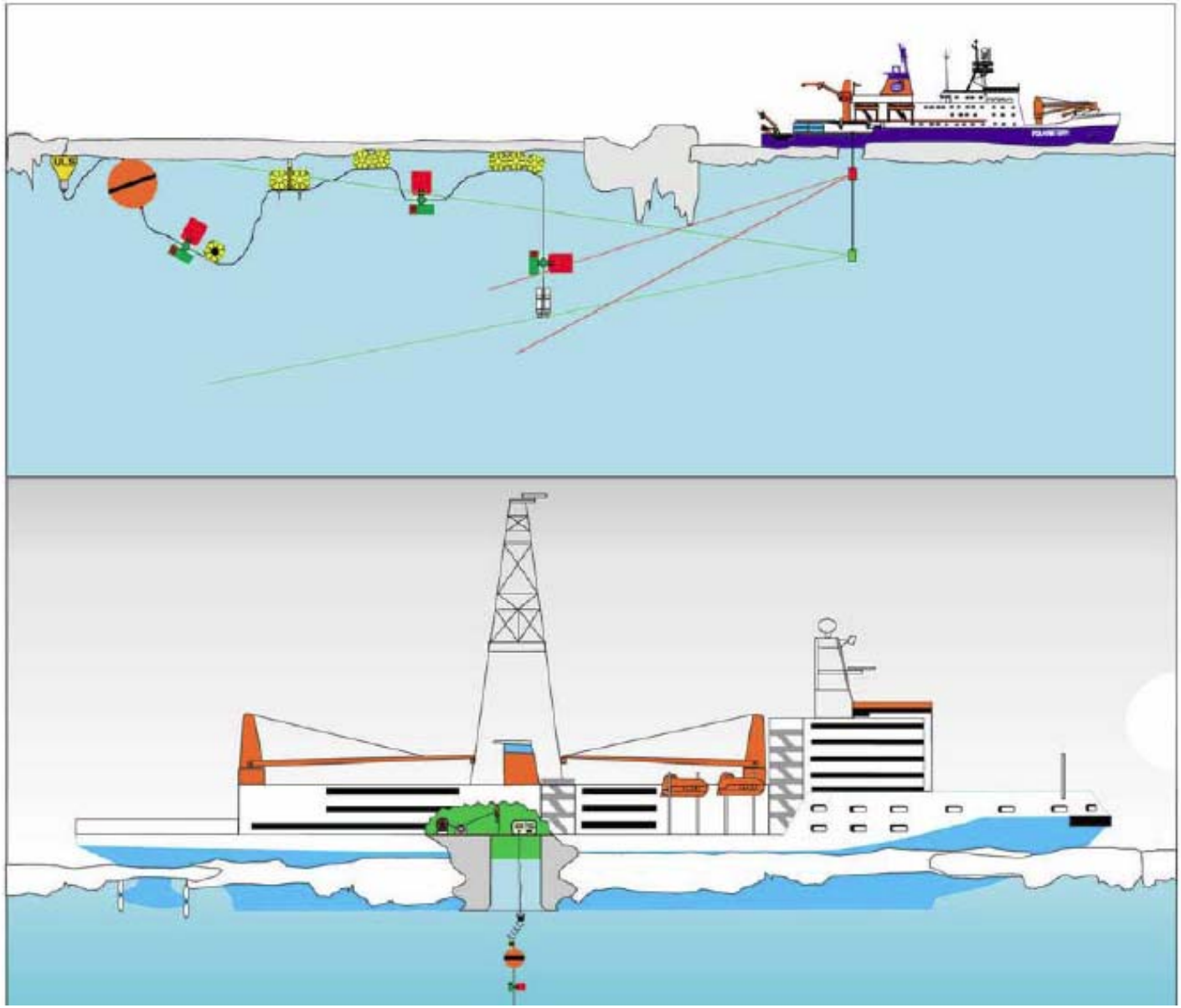
AWI Initiative 'Ice-breaking Research Drill Ship'

Technology of the future

Purpose: Novel icebreaker

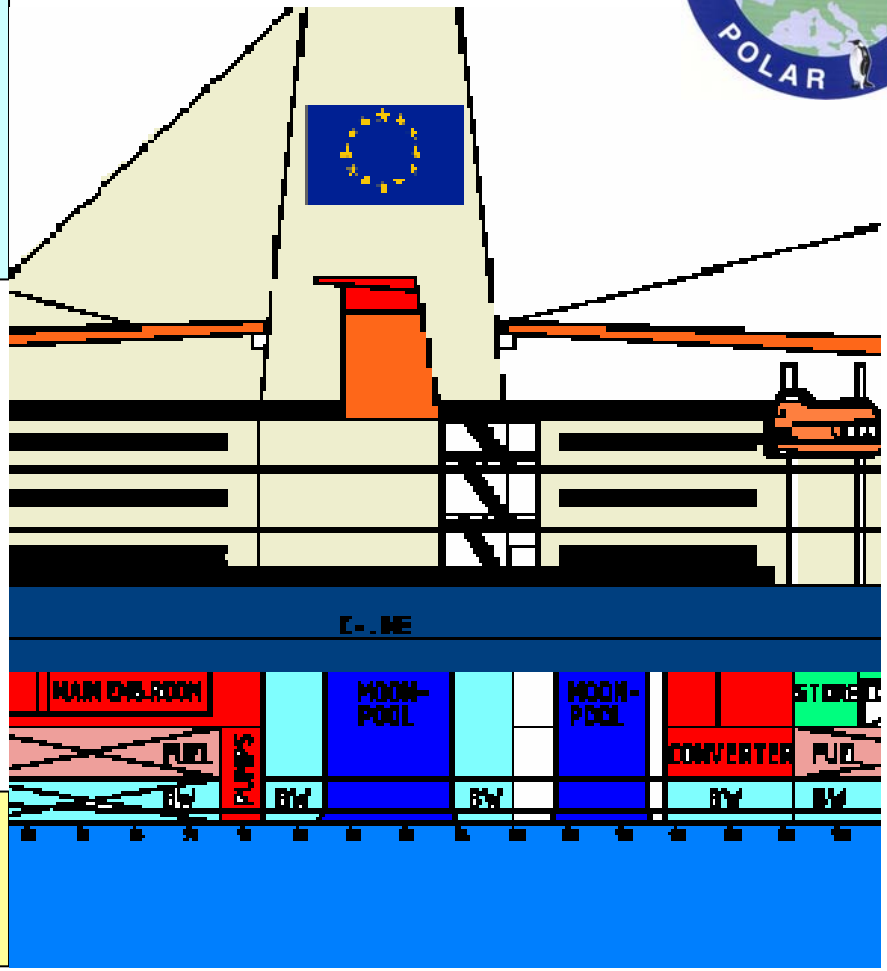
Location of deployment: Central Arctic and Arctic basins

Year-round drilling of 1000 m long sediment cores



Technical Specifications

Moon pool for ROV or similar:
Reduced ice concentration in the moon pool

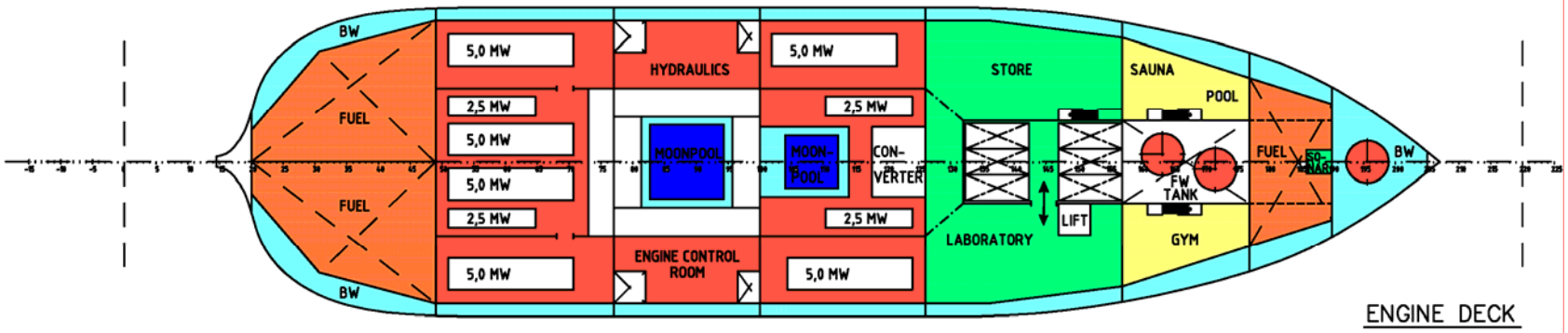


- Moon pool cover (new)
- Hull shape (new)

Technical Specifications

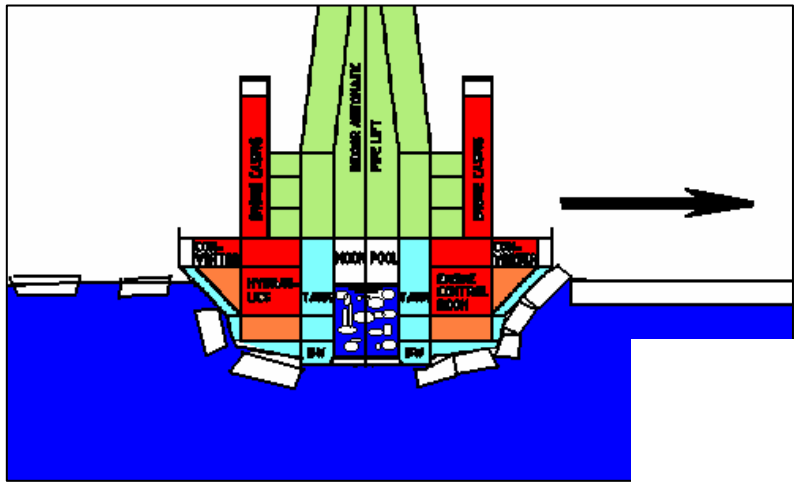
Less risk for the environment
(total loss of the vessel)

- Twin hull,
- Subdivision > 2 compartment status
- Redundancy of main systems

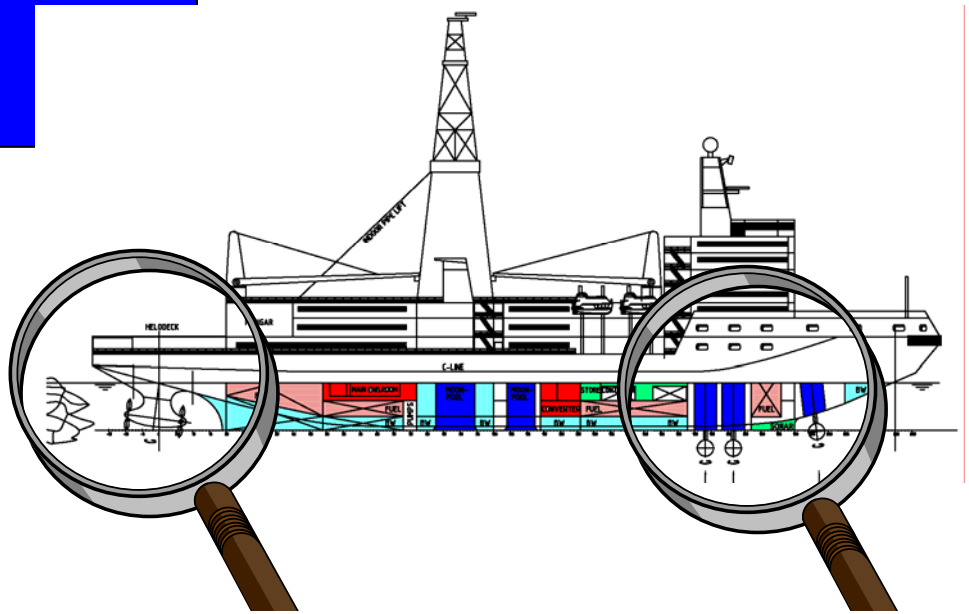


Technical Specifications

Dynamic positioning in drifting ice



Hull shape	new
High propulsion power	
Azimuth propulsion system	new
Azimuth bow thruster system	new



Technical Specifications

ICEBREAKING WITH THE SIDE OF THE SHIP

The AURORA BOREALIS Challenge

- Generate the most modern, innovative and powerful polar research ice-breaker, with an all-season and drilling capabilities
- Generate a multinational polar research platform, motivating new countries to invest into their Arctic research programs to meet new challenges
- Generate a „floating university“ to educate a new generation of polar researchers
- Generate a platform for public outreach and educationals activities
- Prepare the road for commercial enterprises in the Arctic Ocean; potential for rescue operations

HELMHOLTZ GEMEINSCHAFT

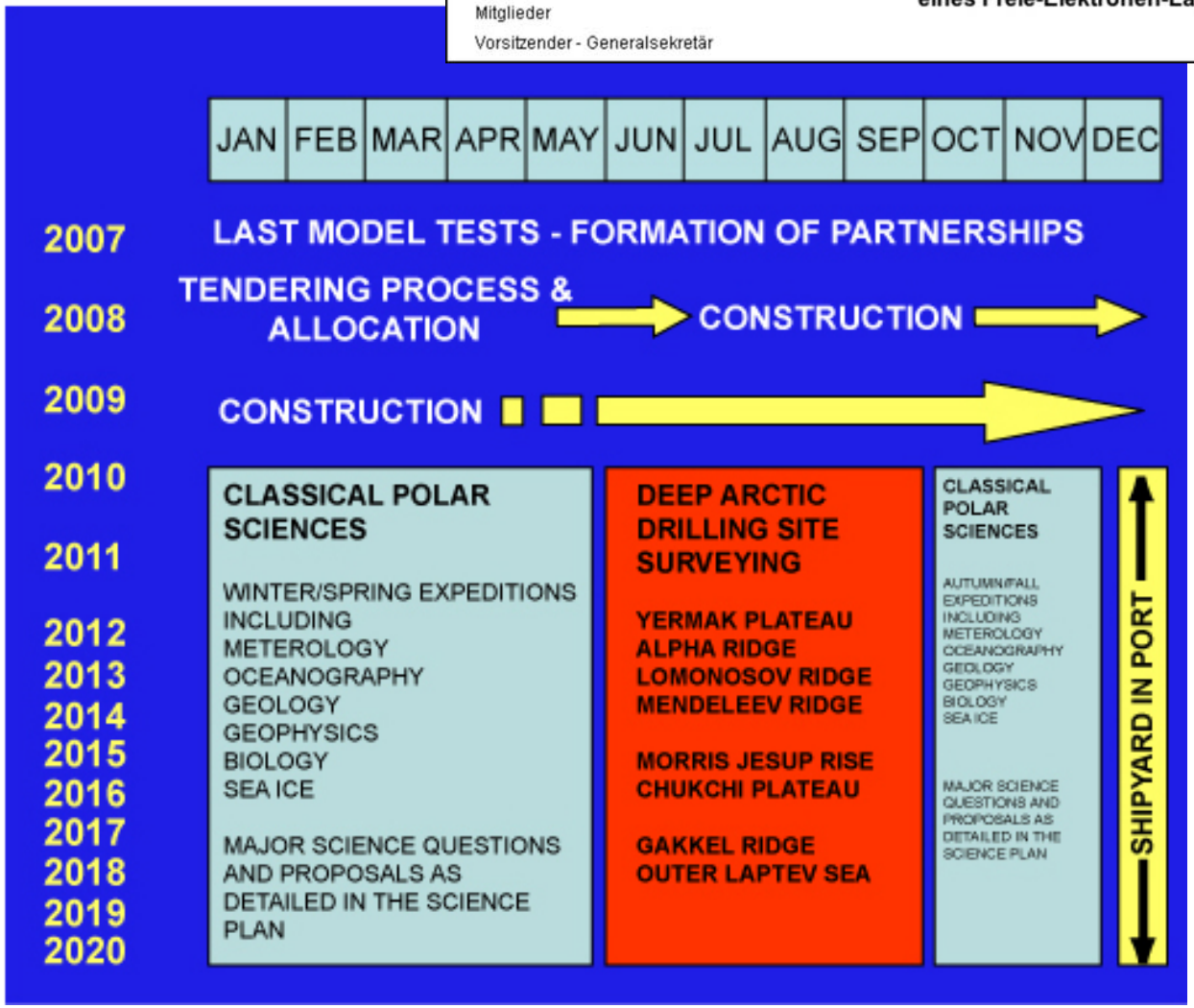
WR WISSENSCHAFTSRAT

Willkommen
Aufgaben - Organisation
Mitglieder
Vorsitzender - Generalsekretär

Pressemitteilung 13/2006
vom 22. Mai 2006

Bau eines eisbrechenden Forschungsbohrschiffes und Förderung eines Freie-Elektronen-Lasers empfohlen

Pressemitteilung drucken



The German “Wissenschaftsrat” evaluated the project again in July 2005 and recommended the construction in May 2006

European Strategy Forum on Research Infrastructures

ESFRI

EUROPEAN ROADMAP FOR RESEARCH INFRASTRUCTURES

Report 2006

	Projects (in alphabetical order per discipline)	Estimated Construction Cost (M€) *	First possible operations for users	Indicative Operational/ Deployment Cost (M€/year)
Environmental Sciences	AURORA BOREALIS	360	2010	18
	EMSO	150	2011	20
	EUFAR	50 - 100	2007	2 - 4
	EURO ARGO (GLOBAL)	76	2010	6
	IAGOS-ERI (GLOBAL)	20	2008	6
	ICOS (GLOBAL)	255	2010	13
	LIFE WATCH	370	2014	70


THANK YOU VERY MUCH FOR YOUR ATTENTION
Photo: L. Tadday