



Polar LK II research infrastructures of the Alfred Wegener Institute

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Definition LK II Infrastructure



Operation of significant **research infrastructure for the national and international research community**, which needs to fulfill the following criteria:

- User/projects are by over 50 % Helmholtz externals.
- The users/projects are selected in a transparent application process with evaluation by an external committee.
- The operating costs (full cost basis) are in the order of € 6 million annually or more

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- In addition to its own research, the provision of large-scale scientific equipment and large platforms for a mostly international scientific user community is a central Helmholtz task - operation of research infrastructures that are significant for the national and international community and meet the following conditions (LK II criteria):

Polar LK II infrastructures by AWI



RV POLARSTERN

- General information
- Application process



RV HEINCKE

- General information
- Application process



Polar 5 & 6

- Aircrafts and instruments
- Application process



Neumayer Station III & Kohnen Station

- Stations and facilities,
- Application process



Coordination and contact

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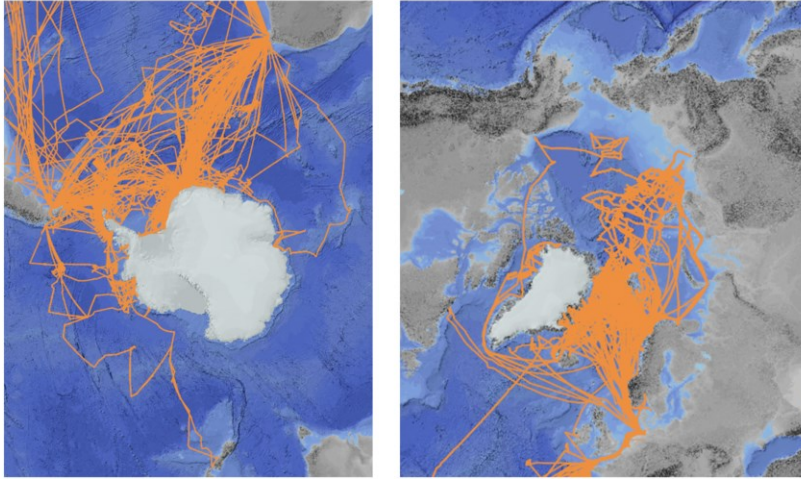
RV POLARSTERN



- Length: 118 m
- Cruising speed: 10.5 kn
- Endurance: max. 75 days
- Scientists: max. 52 persons
- Operating areas: Arctic and Antarctic Ocean
- Research fields: biology, geology, geophysics, glaciology, chemistry, oceanography, meteorology
- Lead time for proposals (main use): 3-4 years

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Operation area of RV POLARSTERN



- POLARSTERN's operational areas in Antarctica are mainly in the Weddel Sea, the Antarctic Peninsula, the Bellingshausen Sea and the Amunsen Sea. Very rarely in the "eastern areas", never before in the Ross Sea. - Arctic: Fram Strait, Spitsbergen, central Arctic, rare in the "western" parts of the central Arctic.
- Focus will possibly shift more from the East Arctic to the Canadian Arctic (Beaufort Sea).
- Transit routes south-north-south are used for instrument testing, student training and scientific programmes that require little or no station time, such as air chemistry and air physics (measurements en route).

RV POLARSTERN user applications

Main user:

- Mid-term planning for expeditions into the polar regions until Antarctic 2025 is closed. Next call for new main-user applications will be summer next year

Secondary-use:

- Submission deadlines are end of August and end of February each year with a lead-time of approx. 1.5 years.
- currently applications possible from arctic season 2024 on

www.portal-forschungsschiffe.de



The screenshot shows the 'Portal deutsche Forschungsschiffe' website. At the top right, there are logos for the Federal Government of Germany (Bund), Helmholtz Association (Helmholtz), PUF, CAWI, and DFG. The main content area features a large image of the RV Polarstern. Below the image is a navigation menu with the following items: Home, Forschungsschiffe (with a sub-item for POLARSTERN), SERVICE, SERVICE, SERVICE, SERVICE, SERVICE, SERVICE, SERVICE, SERVICE, SERVICE, SERVICE, SERVICE, SERVICE, SERVICE. To the right of the image is a text block titled 'POLARSTERN' with a description of the ship's capabilities and a 'Technische Daten' table. The HELMHOLTZ logo is visible at the bottom right of the page.

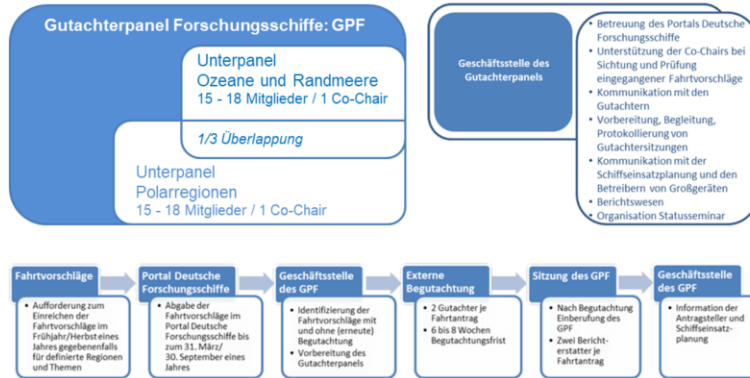
Technische Daten	
Name	
Kapazität	
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Wasserschubleistungsdichte	

Nebennutzeranträge (meist ca 3 Pers. => max. 10 Pers.)

Review procedure at GPF



Applies for all large and medium-large German research vessels



General questions: gpf@dfg.de

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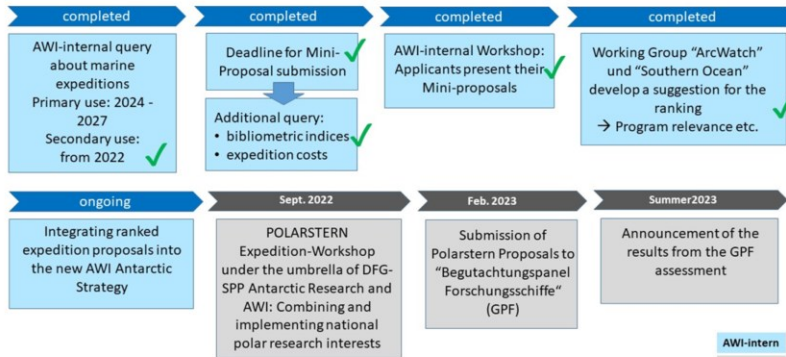
- desired session:

Winter (January/February) - submission by July of the previous year.

Summer (June/July) - submission by January of the same year

RV POLARSTERN from planning to approval

Planning of marine expeditions 2025 – 2028 (RV Polarstern) From application to approval – Process



AWI-internal
AWI-extern

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Submission to the GPF would then be July 2023.

RV HEINCKE



Length: 54,5 m
Cruising speed: 12.4 kn
Endurance: max. ~ 30d / 7500nm
Scientists: max. 12 persons
(day trips) max. 38 persons

Operating areas:
North Sea and Sub-Arctic

Research fields:
biology, geology, geophysics,
chemistry, oceanography,
meteorology

Lead time for proposals: 1-2 years

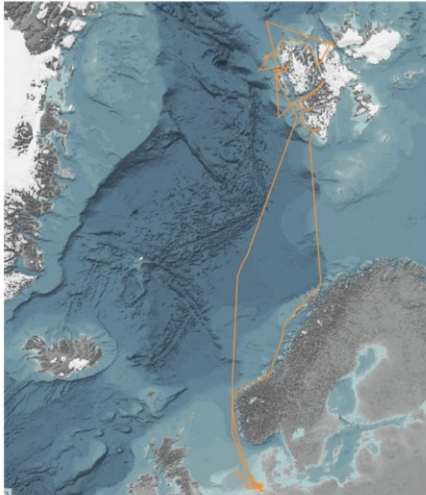


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- In addition to Polarstern, Heincke can also be used for comparative research projects, for example.

Kosten je Nutzungstag: 17.000 €

Operation area of RV HEINCKE

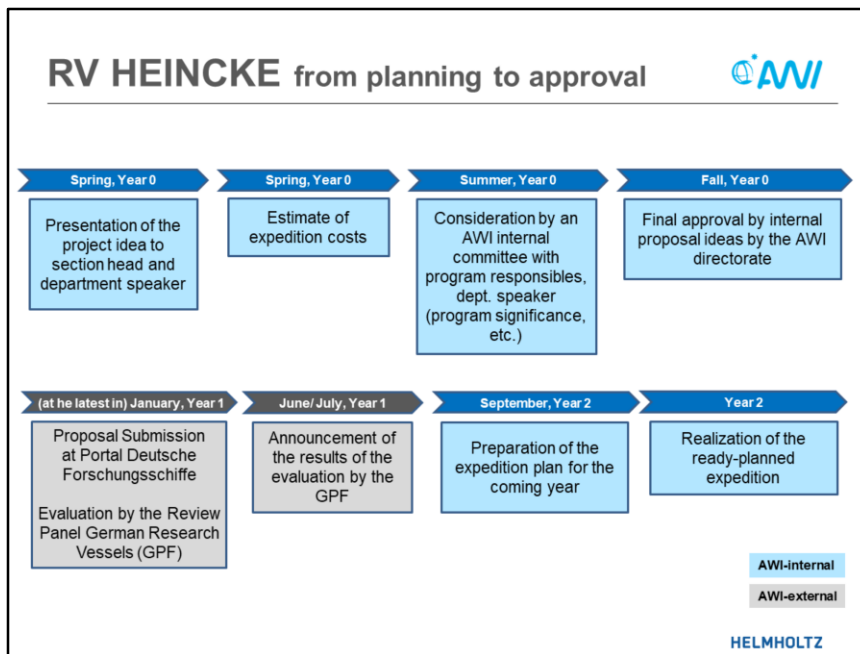


- **Main working area:**
German Bight and North Sea
- **but in recent years also:**
northern North Atlantic
and Sub-Arctic

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- can be very interesting especially for comparative studies
- in the subarctic, Barents Sea and around Spitsbergen

RV HEINCKE from planning to approval



- Lead time at least one year
- the lower part is also interesting here

Polar 5 & 6



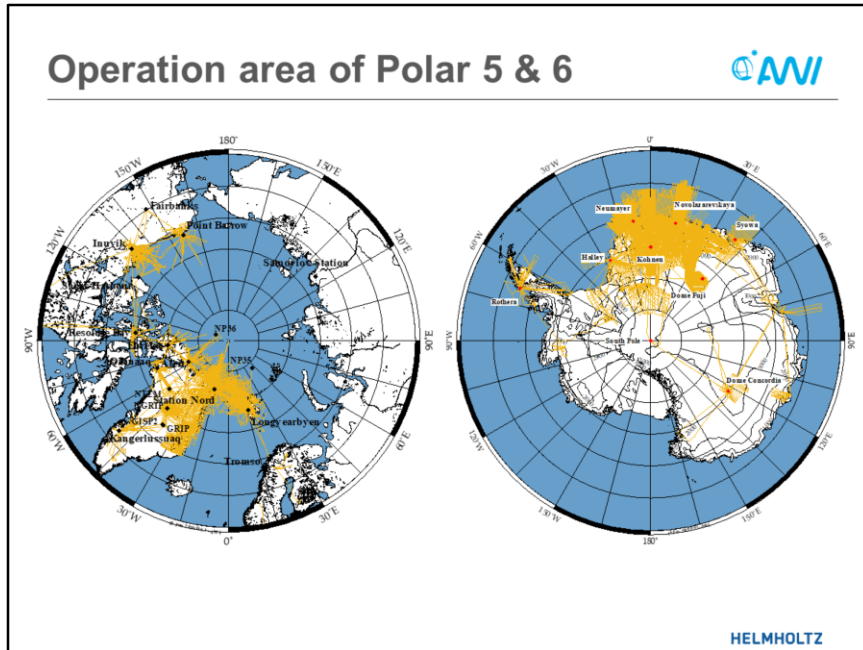
- Model: Basler BT-67
- Length: 20.66 metres
- Wingspan: 29 metres
- Basic weight: 8.3 t
(with ski landing gear 8.9 t)
- Approx. 1700 km (6.5 h) range for survey flights on skis
- Fuel consumption: 570 litres / hour
- Range without payload: ca. 3,000 kilometres
- Crew: 2 pilots, 1 mechanic
- Capacity for up to 18/14 passengers on wheels/skis
- Good take off performance at altitudes above 2500 m a.s.l.



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- The two Basler BT-67 aircraft are specially equipped for flights in the extreme environmental conditions of the polar regions.
- The aircraft can take off and land on concrete, gravel and snow runways with the help of a combined ski and wheel landing gear.
- De-icing systems, heating mats for batteries and engines as well as advanced navigation systems even allow blind flying,
- landings in very difficult weather conditions and temperatures as low as -54 degrees Celsius.
- Can also take off and land very well on high-altitude runways

Operation area of Polar 5 & 6



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- Main Arctic routes: Fram Strait from Longyearbyen and Station North; East Coast Greenland; Canadian Arctic.
- Antarctica: Main working areas: DROMLAN region between 30° W and 30° E; Antarctic Peninsula; but also other regions

Scientific instruments of the aircraft

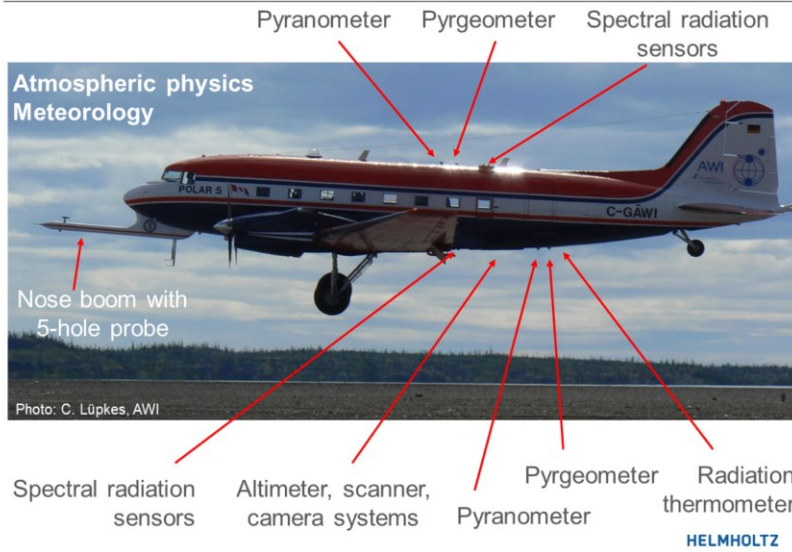
Glaciology
Geophysics



EMR, accumulation and snow thickness radar, ultra wide-band radar, mUWB, gravimeter, magnetometer, ASIRAS (ESA), EM bird, laser scanner, long range laser altimeter

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Scientific instruments of the aircraft



Polar 5&6 from planning to approval



Lead time for expedition applications currently 2 years.

- The project proposals received are evaluated by an external user advisory board and checked for their technical and logistical feasibility.
- A campaign plan is then drawn up, for which the approval of the AWI Directorate is obtained.

In general, all users have to bear the travel costs for themselves and their nominated expedition personnel.

External, non-university project partners must also be invoiced for additional costs.

These are, for example, in addition to the flight hour costs:

Necessary certification costs

Transport of project-specific equipment

Kerosin

New campaign certification: 8000-25000 €

Flight hour: ~ 7100 € + fuel

Neumayer Station III



Position: 70° 40' S, 8° 16' W, Ekstrom Shelf

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- Neumayer Station III a combined building for research, operations and living.
- The station serves as a logistical base for inland expeditions and polar aircraft.

Neumayer Station III



Station:

- 6 laboratories, 4 offices, workshop
- 50 beds (25 fixed personnel)
- Roof installations
- Hospital, gym, sauna, lounge



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- It consists of several levels.
- Instead of a closed foundation, the station has 16 foundation plates that rest on the snowy ground in an 8.20 metre deep trench.
- Above this is the actual platform on which all the rooms are formed from containers surrounded by an outer shell. The actual station stands six metres above the snow surface.
- The total height of the construction from the floor of the garage to the roof of the balloon hall is 29.20 metres. Access is from the garage via a staircase.
- The containers are stacked on top of each other in several levels. They provide space for living and working, utility rooms such as kitchen and mess as well as laboratories.

Neumayer Station III



Vehicles:

- Pistenbullys
- Scooters
- Arctic Trucks



Mobile accommodation:

- Biwak huts
- Caboose container
- Tents

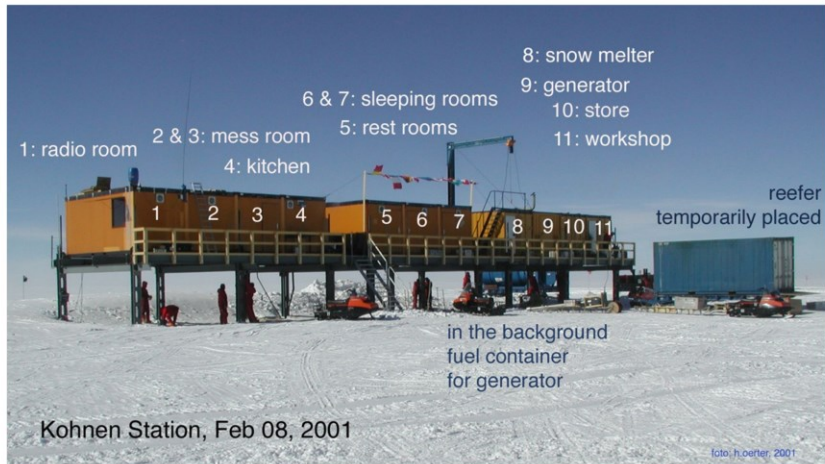


Furthermore: Generators, sledges

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- Vehicles and accommodation for scientific purposes. For scientific purposes. Please contact Logistics for further equipment and list it in the application under point 6.

Kohnen Station



Position: 75° 00' S, 0° 04' O, 2850 m a.s.l.

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Kohnen Summer Station

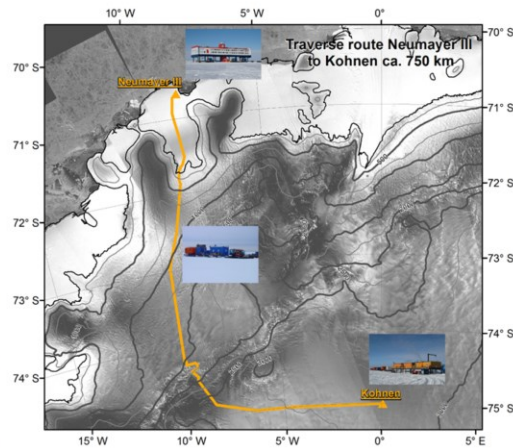
- Built in 2001 as a logistical base for ice drilling and fuel storage for aircraft expeditions on the inland ice plateau.
- In the containers there are living quarters, a kitchen and a mess hall. Other containers house the radio station, a snow melt for drinking water and the power supply.
- offers space for up to 20 researchers at a time.
- The crew of the station changes depending on the research projects. The scientists can work and live in eleven containers,

Kohnen Station



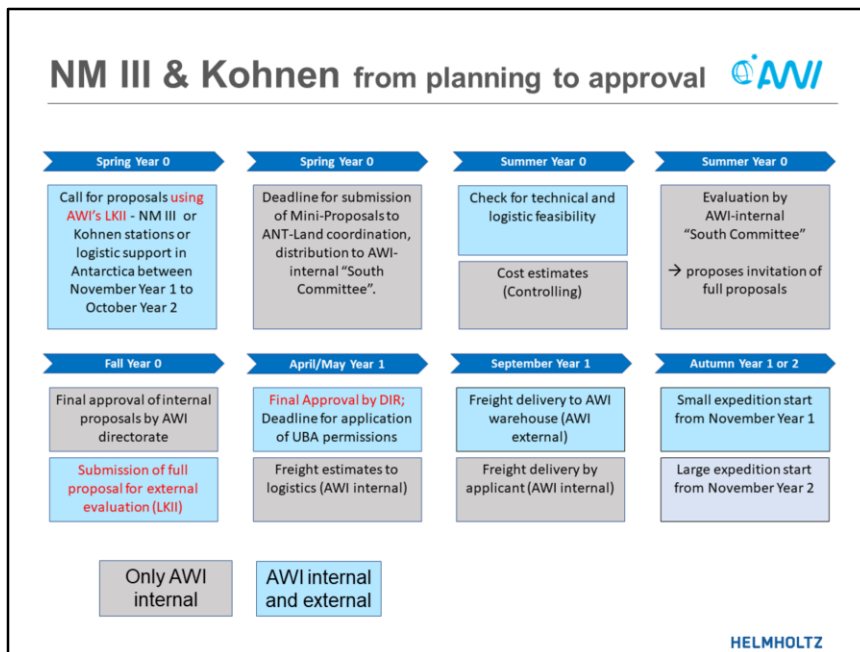
Station:

- Summer only base
- Max. 20 persons
(6 fixed personnel)
- Drill trench



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- To supply Kohnen Station, up to six tracked vehicles regularly set off from Neumayer Station III - the transports are called traverse.
- a good 750 kilometres from Neumayer Station III.
- The vehicles usually have containers in tow and spend about ten days on the ice for the arduous journey.
- For the transport of people and ice cores, the Kohnen Station can also be approached from Polar 5 and Polar 6.



Application procedure NM & Kohnen

- Small projects: take place in January/February of the following season (cargo is transported by Polarstern) or in November/December if the cargo can be done entirely by air.
- Large projects: long and/or early campaign (November to February) and cargo can only be transported to Antarctica by Polarstern, i.e. transport must be done one season in advance.
- Applications for research projects are handled jointly
- Lead time for small expeditions: 1 year
- Lead time for larger expeditions: 2 years

Main contacts



POLARSTERN & HEINCKE

- Scientific coordination: Dr. Ingo Schewe
- Email: polcoord@awi.de



Polar 5&6 aircrafts

- Scientific coordination: Dr. Daniel Steinhage
- Email: aircraftcoord@awi.de



Neumayer III / Kohlen / Antarctic land

- Scientific coordination: Dr. Julia Regnery
- Email: antland-coordination@awi.de



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