

FEDERAL REPUBLIC OF GERMANY

ANTARCTIC TREATY

**EXCHANGE OF INFORMATION
UNDER ARTICLES III (1) AND VII (5)
FOR 2006 - 2007**

Part 2

ANNUAL REPORT (01 October 2005 – 30 September 2006)

**Federal Ministry
for Foreign Affairs**

Berlin

November 2006

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2. ANNUAL REPORT (01 October 2005 – 30 September 2006)

2.1 Scientific Information

2.1.1 Forward Plans

Germany as one of the consultative parties since 1981 maintains its long-term commitment of scientific research in Antarctica. The Alfred Wegener Institute for Polar and Marine Research (AWI) as the national coordinator enables Germany to maintain this role from its research and long-term monitoring and survey activities. In addition to AWI, the Federal Institute for Geosciences and Natural Resources (BGR), the German Aerospace Centre (DLR) undertake long-term survey and remote sensing activities in Antarctica. The DFG Priority Program “Antarctic Research with comparative investigations in ice covered Arctic regions” supports Antarctic research projects of German universities. Scientific activities will also be coordinated with other national programs.

Planning has progressed for German contributions to research activities and logistical operations for the International Polar Year 2007/08. This includes a schedule for RV Polarstern expeditions dedicated towards IPY requirements of the German polar marine research communities in geophysics, geology, oceanography and biology. The German participation in the IPY will have a kick-off during a RV Polarstern expedition to the Prydz Bay region in early 2007. Glaciological, atmospheric and geophysical/geological research activities at Neumayer Station and during land expeditions, led by AWI as well as BGR, also have their focus on internationally cooperated IPY projects.

AWI provides the main infrastructure for polar research, maintains the permanent German presence in Antarctica, and supports international objectives through collaborative scientific and logistic links with many other national programs. AWI will keep mobile and stationary infrastructures not only in top condition but also adapt to ever changing requirements posed by new scientific experiments and field observations. As an important contribution for long-term scientific activities will be the replacement of the present Neumayer Station by a new permanently occupied research station Neumayer Station III being built until 2008/2009 season. In parallel efforts will be continued to further develop logistic infrastructure in the frame of international collaboration. As a priority the international project Dronning Maud Land Air Network (DROMLAN) will be supported by AWI in order to maintain and further improve an intercontinental air-link from Cape Town to destinations in Dronning Maud Land, Antarctica.

2.1.2 Science Activities in the previous year (01 October 2005 – 30 September 2006)

The Alfred Wegener Institute for Polar and Marine Research (AWI) coordinated all German Antarctic activities. The following German institutions performed in the frame of their research programs Antarctic expeditions as well as operated stations or camps in Antarctica:

Alfred Wegener Institute for Polar and Marine Research (AWI)

German Aerospace Centre (DLR)

Federal Agency for Cartography and Geodesy (BKG)

Federal Institute for Geosciences and Natural Resources (BGR)

Further Antarctic activities were performed in co-operation with other national operators.

(a) Ship operations

Detailed reports on RV Polarstern expeditions leg ANT XXIII/2 – ANT XXIII/7 are available at:

<http://www.awi-bremerhaven.de/php/ResearchPlatform/Display.php?year=2005&name=polarstern&type=ship>

RV Polarstern - leg ANT XXIII/2 (AWI): Weddell Sea

Scientific Leader: Volker Strass, vstrass@awi-bremerhaven.de

Period: 19 November 2005 Cape Town
12. January 2006 Punta Arenas

Scientific activities report:

During cruise ANT-XXIII/2 *Polarstern* served to support an extensive marine research programme as well as to supply the Neumayer base and scientific expeditions on the Antarctic continent with personnel and material. The major marine research programme of the cruise was devoted to the BMBF (German Ministry for Education and Research)-funded LAzarev Sea KRIII Study (LAKRIS), a German contribution to the Southern Ocean Global Ocean Ecosystems Dynamics (SO-GLOBEC) programme. This is an international, multidisciplinary effort to understand the physical and biological factors that influence the growth, reproduction, recruitment, and survival of Antarctic krill (*Euphausia superba*). As part of SO-GLOBEC, the LAzarev Sea KRIII Study (LAKRIS) aims to quantify seasonal population dynamics and physiological condition of krill in an interdisciplinary approach and in a region of the Antarctic that is poorly sampled and understood. The LAKRIS-project is divided in 5 subprojects with the following topics:

- Seasonal and interannual variability in krill demography in the Lazarev Sea.
- Horizontal and vertical distribution of krill and zooplankton.
- Effects of water mass circulation and sea ice on the abundance of zooplankton.
- Seasonal dynamics of physiological conditions of krill with emphasis on the larvae stages.
- Seasonal krill lipid dynamics and energetic adaptations, with emphasis on juvenile and adult stages.

The extensive study of krill was complemented by further projects, which focussed on other zooplankton genera such as pelagic tunicates (salps), chaetognaths (arrow worms) and pteropods to elucidate their grazing impact and effect on the flow of biogenic matter through the food chain and water column. A further study was dedicated to benthic suspension feeders, which contribute to the pelago-benthic coupling on the Antarctic shelf.

Other research projects without regional focus on the Lazarev Sea were:

- A marine mammal automated surveillance, aimed at establishing ship-based detection methods based on passive acoustics and infrared optics.
- A study of the distribution of bathypelagic plankton, in particular Mysidacea and Polychaeta, aimed at contributing to the Census of the BioDiversity of the Abyssal Marine Life (CeDAMar).
- A study of the adaptive competence and ecology of Antarctic bottom fish.
- The deployment of an Italian geophysical/oceanographic seafloor observatory named MABEL.

Scientific equipment:

See Permanent Information, topic 3.1.2

vessel-mounted:

Thermosalinograph for the underway measurement of temperature and salinity.

ADCP (acoustic Doppler current profiler) for the underway measurement of current profiles.

SIMRAD EK 60 – plankton echosounder.

towed:

hydrophone streamer for the recording of whale sounds.

CPR - Continuous Plankton Recorder.

Agassiz-Trawl - bottom trawl for the collection of benthic animals.

RMT- Rectangular Midwater Trawl.

deployed at hydrographic stations:

CTD - multi-variable sonde with water sampler carousel.

Bongo Net (Plankton net).

Multi Net (Plankton net).

Oceanographic moorings for the recording of multi-months to year-long time series at three locations.

Fish traps (1-day deployments at two locations).

Helicopters were used in association with the supply of the Neumayer Base and for ice patrol.

RV Polarstern - leg ANT XXIII/3 (AWI):

Drake Passage

Scientific Leader: Christine Provost, France, Christine.Provost@lodyc.jussieu.fr

Period: 15 January 2006 Punta Arenas
08 February 2006 Punta Arenas

Scientific activities report:

During cruise ANT-XXIII/3 *Polarstern* served to support an extensive marine research programme DRAKE as well as to supply the Jubany base (King George Island) and O Higgins base (Antarctic Peninsula) with personnel.

The major research programme of the cruise was devoted to the CNES (Centre National d'Etudes Spatiales) and CNRS (Centre National de la Recherche Scientifique) funded DRAKE project, a French contribution to the international Climate Variability and Predictability (CLIVAR) Programme. This is an international effort to describe and understand the physical processes responsible for climate variability and predictability on time-scales from months to decades and the response of the climate to anthropogenic forcing. The Southern ocean region has been recognized as a key component of the climate system.

The Antarctic Circumpolar Current (ACC), the world largest current, is a key element of the global climate system. This 2000 km broad ring of cold water which encircles the antarctic continent is pushed eastward by the strong westerly wind belt. The ACC is constricted to its narrowest extent (700 km) in Drake Passage thus a convenient place for observations.

Monitoring the ACC transport and water mass characteristics is essential for understanding the coupling of this major current with climate change. It is not an easy matter since the current is concentrated in highly variable narrow bands of swift currents and energetic eddies of all sizes are numerous.

Our experimental set up is designed to use the complementarity between satellite and in situ observations. Satellite altimetry measures the sea level of the ocean along tracks every 10 days with an horizontal resolution of 7 km. The in situ measurements will provide information on the vertical structure of the ocean, information that cannot be obtained by satellite.

The two main tasks of the expedition are the deployment of a currentmeter mooring array along a ground track of Jason altimeter satellite and the realization of a refined array of hydrographic stations. The hydrographic stations provide profiles of horizontal velocity, temperature salinity, oxygen, nutrients, chlorophyll-a, alkalinity, total CO₂, Helium/tritium and Chlorofluorocarbons (CFC's) to properly examine the water masses (characteristics, origin, pathways, age, mixing, modifications since the WOCE A21 1990 cruise..) and compute partial pressure of CO₂ and assess the source/sink of CO₂ (relative role of physical and biological parameters).

The Drake cruise is also an opportunity to test the ability of kinematic GPS to measure sea level and sea state over a distance of a few hundred km (order 800 km) with a few centimeters accuracy. The GPS receivers on board RV Polarstern are used for doing the sea level survey. A small surface buoy equipped with a GPS is used to calibrate precisely the Polarstern GPS with respect to the sea surface. The small buoy is deployed (attached to the ship) at each CTD station during the day.

Geotrace people are measuring trace elements and isotopes. These trace elements have very low concentration in seawater and large amounts of water have to be processed in order to detect them. Therefore a few pumping stations and specific large volume CTD casts are carried out.

We also have fish scientists on board who are studying thermal adaptation strategies. During the cruise they aim at collecting alive fish for the continuous work at AWI. Their fishing ground is King George Island. Four fish trap have to be deployed there and stay in place for at least 24h.

Scientific equipment:

vessel-mounted:

Thermosalinograph for the underway measurement of temperature and salinity.

ADCP (acoustic Doppler current profiler) for the underway measurement of current profiles.

deployed at hydrographic stations:

CTD - multi-variable sonde with water sampler carousel and LADCP

In situ pumps deployed at a few stations to filter large amounts of water.

GPS buoy attached to the ship.

Oceanographic moorings for the recording of multi-months to year-long time series at ten locations.

Fish traps (1-day deployments at four locations).

See also Permanent Information, topic 3.1.2

RV Polarstern - Leg ANT XXIII/4 (AWI): Scotia Sea

Scientific Leader: Karsten Gohl, kgohl@awi-bremerhaven.de

Period: 10 April 2006 Punta Arenas
 11 April 2006 Punta Arenas

Scientific activities report:

The RV *Polarstern* expedition ANT-XXIII/4 had its main focus on geoscientific research with the goal to investigate the glacial-marine sedimentation processes and the tectonic-geodynamic evolution of the southern Amundsen Sea and Pine Island Bay for deciphering the glacial and deglacial development of West Antarctica. In addition, a program on marine microbial ecology, an oceanographic program and the transport of persons and freight from Rothera and Jubany Stations were conducted.

After leaving Punta Arenas and the Magellan Strait, *Polarstern* set course toward Rothera Station for personnel transfer. The ship headed to Peter I Island where a GPS station and a magnetometer were installed in order to record data for the duration of the following weeks. The GPS measurement is the first repeat measurement of a point on this island since it was established in 1998 as part of the West Antarctic GPS network. The magnetometer served as a base station to record temporal variations of the earth magnetic field for the helicopter-magnetic surveys of this expedition. In addition, a long-term automatic weather station was deployed on the Radiosletta plateau and volcanic rocks were dredged from the submarine slope of the island.

After a swath-bathymetric survey and sediment coring along the seamount chain north of Peter I Island, the ship headed toward the main research areas in the Amundsen Sea Embayment and Pine Island Bay. A wide sea-ice belt and strong northerly winds pressing onto the sea-ice prevented the first attempt to enter Pine Island Bay. Before moving westward along the sea-ice edge, a small bathymetric survey revealed strongly structured mega-scale glacial lineation, and a seismic profile was added to an existing line on the outer continental shelf. At about 115°W, an attempt was made for an entry through the sea-ice belt into the western Pine Island Bay, which succeeded. In this part of the Amundsen Sea Embayment, seismic reflection and refraction profiles were recorded in addition to extensive swath-bathymetric (Hydrosweep) and sub-bottom profiler (Parasound) surveys of the deep (down to 1600 m water depth) glacial troughs off the Eastern Getz and Dotson Ice-Shelves. On selected sites of troughs and plains of the inner shelf, a large number of sediment cores were taken with a gravity corer. Due to very favourable weather conditions, it was possible to fly out the volcanology team, the GPS team and the surface-exposure-dating team to Mt. Murphy. All teams succeeded in their rock sampling and instrument installation program.

In the meantime, a polynya had developed along the Thwaites Glacier ice-tongue, which allowed *Polarstern* to enter the inner Pine Island Bay. In this part of the bay, bathymetric and seismic surveying as well as sediment coring continued in order to obtain information on the deglaciation history of this part of West Antarctica, where the retreat of the Pine Island and Thwaites Glacier systems occurs rapidly. The Hudson Mountains of Ellsworth Land were the destination for a further rock sampling and GPS site installation program to investigate the volcanic province and to obtain parameters for tectonic and glacial rebound studies. Additional GPS sites on ice-shelves of Pine Island Bay provided data on tidal and ice-shelf motion. As part of the oceanographic program, CTD moorings were deployed near the ice-shelves and on the outer shelf. The instruments are planned to be recovered by an American expedition in the following year.

After leaving Pine Island Bay through the northern sea-ice belt, seismic reflection and refraction profiling continued on the continental rise off the shelf break before the ship moved into the area of the Marie Byrd Seamounts. Here, the dredging program succeeded with collecting freshly broken volcanic rocks from the slopes of several of these previously unsampled seamounts, providing material for determining their petrological-geochemical composition and their eruption age.

As part of the geophysical program, large parts of the southern Amundsen Sea and Pine Island Bay were surveyed with shipborne gravity and magnetic profiles as well as with a dense grid of helicopter-magnetic flight lines.

The marine biology group collected krill and microbial species from the water column on several sites along the entire ship track of this leg. Experiments were conducted on board in order to investigate the microbial food web and its effect on biodiversity in the Southern Ocean. A whale observation team recorded whale sightings and identifications along the cruise track.

On the return track from the Marie Byrd Seamount area, the GPS and magnetic instruments were recovered from Peter I Island. Jubany Station on King George Island was the next destination for person and freight transfer and for a collection of sediment cores in the bay before *Polarstern* headed back to Punta Arenas.

The main scientific goals during this leg have been:

- Mapping, imaging and sampling of Late Quaternary sediments to reconstruct the deglaciation history of Pine Island Bay since the Last Glacial Maximum;
- Mapping and imaging of the older sedimentary sequences across the shelf, slope and the continental rise to derive a sedimentation model;
- Mapping of acoustic basement and its structure with seismic methods to obtain the tectonic geometries necessary to understand sediment depositional processes;
- Identification of the boundaries between suspected crustal blocks, in particular of those between the Thurston Island and Marie Byrd Land blocks;
- Heli-magnetic mapping and deep crustal seismic profiling of the continental margin of Marie Byrd Land as well as petrological sampling and geochemical analyses of volcanic rocks from seamounts and parts of exposed mainland provided data to develop models of the magmatic evolution;

Scientific equipment:

On RV Polarstern: multibeam bathymetry (Hydrosweep), sediment-echography (Parasound), seismic reflection, seismic refraction, ocean-bottom seismographs, gravity meter, magnetometer, piston corer, gravity corer, grab sampler, dredge, CTD, oceanogr. mooring, div. plankton nets, water sampler

On helicopter: magnetometer

In the field: GPS recorders, geological sampling

See also Permanent Information, topic 3.1.2

RV Polarstern - Leg ANT XXIII/6 (AWI): Scotia Sea

Scientific Leader: Ulrich Bathmann, ubathmann@awi-bremerhaven.de

Period: Cape Town 17 June 2006
 Cape Town 21 August 2006

Scientific activities report:

On 17th June 2006 RV POLARSTERN will leave from Cape Town for the 6th leg of her 23rd Antarctic Expedition. During this cruise, that will end 21st August 2006 in Cape Town, RV POLARSTERN will support an extensive marine research programme during the austral winter. In order to access the working area in the Lazarev Sea as soon as possible, RV POLARSTERN will head almost straight towards its first scientific position at 52°S 3°E. On the way to the Antarctic only such scientific activities will start that need no extra ship time.

The projects planned on the way south focus on observations of marine vertebrates and zooplankton. A Dutch team will visually observe penguins and seabirds from the upper bridge from out two wooden cabins. One observer sent by the International Whaling Commission (IWC) to participate in the cruise will contribute cetacean sightings and records of other wildlife such as seals. The IWC observer will also record a comprehensive suite of sea ice data. In addition to the visual observations of marine mammals, two different automated monitoring systems will be tested during transit. The one is a passive acoustic system consisting of towed hydrophone streamers that are custom-tailored to the detection of marine mammals. The other system is based on two infrared cameras, which are mounted at the crow's nest and are operated with image processing software that will continuously monitor the regions next to the ship for infrared signatures of whale spouts even at night and poor visibility.

On the southward route from Cape Town another project scheduled and not requiring any ship time is the sampling of the near-surface zooplankton by use of the so-called Continuous Plankton Recorder (CPR).

The major marine research programme of this cruise is devoted to the BMBF-funded LAzarev Sea KRILL Study (LAKRIS), a German contribution to SO-GLOBEC. The ongoing cruise is the first winter cruise within the framework of this project.

The Southern Ocean Global Ocean Ecosystems Dynamics (SO-GLOBEC) programme is an international, multidisciplinary effort to understand the physical and biological factors that influence the growth, reproduction, recruitment, and survival of Antarctic krill (*Euphausia superba*) with special emphasis on its overwintering mechanisms. As part of SO-GLOBEC, LAKRIS aims to quantify seasonal population dynamics and physiological condition of krill in an interdisciplinary approach and in a region of the Antarctic that is poorly sampled and understood, especially during winter.

Much of our knowledge of Antarctic krill originates from a few regions, such as the much-studied Antarctic Peninsula. But it is becoming increasingly clear that the seasonal survival mechanisms of krill are variable, so neither the local environment, (e.g. those along the Antarctic Peninsula) nor the response of krill to it, can be extrapolated easily to a wider area. The LAKRIS project will complement the existing international research activities within SO-GLOBEC and CCAMLR (Convention for the Conservation of Antarctic Marine Living resources) along the west Antarctic Peninsula, Scotia Sea and in the Southwest Indian Ocean Sector.

Within the great current systems encircling Antarctica, there is a hotspot of krill density within a sector defined roughly by the Greenwich Meridian (i.e. the Lazarev Sea) and the west of the Antarctic Peninsula. Whether this hotspot itself contains one or several "stocks" of krill and whether these are connected with those in the rest of the Southern Ocean are currently topics of intense debate. Understanding krill survival at the seldom-studied eastern extremity of this hotspot may provide some clues in this puzzle.

The Lazarev Sea has been suggested to be the gateway through which the krill population enters the Weddell Gyre. At the 0° meridian krill distribution ranges from approximately 50°S to the Antarctic continent at 70°S - the widest latitudinal range throughout their entire circumpolar distribution. North of 60°S, krill are under the

influence of the eastward-flowing Antarctic Circumpolar Current. They are thus downstream of the extensive Scotia Sea populations and reflect spawning success there. But south of 60°S, within the westwards flowing counter currents of the Lazarev Sea, there is little information on krill spawning and larval occurrence. If, however, the Weddell Gyre is the source of high krill densities in the Scotia Sea, then the westward moving water masses of the Lazarev Sea should seed substantial amounts of krill larvae into the system to sustain the large population observed at the northern outflow of the Weddell Gyre.

Field work for LAKRIS will be distributed over three cruises in different seasons, of which this is the second, apart of a pilot study already conducted during RV POLARSTERN cruise ANT-XXI/4. The LAKRIS-project is divided in 5 subprojects with the following topics:

SEASONAL AND INTERANNUAL VARIABILITY IN KRILL DEMOGRAPHY OF HIGH LATITUDE KRILL STOCKS IN THE LAZAREV SEA.

A standardized RMT (Rectangular Midwater Trawl) net sampling programme will be carried out during the LAKRIS study to collect biological data on the krill population in the southern Lazarev Sea. The main focus will be the estimation of average spatial krill density and the determination of year-class strength in relation to key environmental variables. Reproductive success of the spawning stock will be studied as well as larval distribution and survival during the winter period.

HORIZONTAL AND VERTICAL DISTRIBUTION OF KRILL AND ZOOPLANKTON.

Diel vertical migration and geographical distribution of target organisms like krill (*Euphausia superba*, *E. crystallorophias*), copepods (*Calanus propinquus*, *Rhincalanus gigas*, *Oithona* spp.), other zooplankton (salps, medusae, pteropods, chaetognaths, amphipods) and fish (Myctophiden) will be detected by means of a four-split beam acoustic array (38, 72, 120, 200 kHz). Some major questions are: Do organisms migrate daily in relation to the light field, feeding conditions and/or to the predator field? Do populations of different species and/or different developmental stages of one species segregate in certain environmental conditions or different times of the year? Is the geographical distribution of species subject to change and if so, what are the possible causes?

EFFECTS OF WATER MASS CIRCULATION AND SEA ICE ON THE ABUNDANCE OF ZOOPLANKTON.

The project is aimed at identifying relationships between the physical environment and the abundance of zooplankton in the Lazarev Sea. Special emphasis will be put on the possible role of the Weddell Gyre circulation in closing the life cycle of krill. The data base for this study will be collected by moored instruments to reveal temporal variations, by shipboard observations to map spatial distributions, and will also encompass the analysis of historical ADCP (Acoustical Doppler Current Profiler) data from the region.

SEASONAL DYNAMICS OF PHYSIOLOGICAL CONDITION OF KRILL WITH EMPHASIS ON THE LARVAE STAGES.

The subproject will quantify various fitness indicators, which will permit the prediction of recruitment success and mortality rates of the following generation and how these factors will be influenced. The work on larval krill will focus on their mechanisms that have evolved to survive the nutrient poor winter conditions despite high larval metabolism.

SEASONAL LIPID DYNAMICS AND ENERGETIC ADAPTATIONS OF *EUPHAUSIA SUPERBA*, WITH EMPHASIS ON JUVENILE AND ADULT STAGES.

The subproject will focus on seasonal dynamics of lipid accumulation and utilization of juvenile and adult stages of krill. Energetic requirements with regard to overwintering strategies and reproductive effort will be quantified using experiments and field data.

A study about "Seabird food chains in the Antarctic sea-ice zone" will investigate the dietary requirements of the ex top predators especially by closely examining the under ice fauna. The role of krill as main food source for such surface feeding populations is challenged. Our extensive study of krill will be complemented by further projects, which focus on other zooplankton genera such as pelagic tunicates (salps) and jellyfish (medusae), and on fish and fish larvae. The central question addressed by these projects is the grazing impact exerted and the flow of biogenic matter through the food chain and water column accomplished by those groups of zooplankton.

A photographer will accompany the cruise in order to assist in the information of the general public. Special emphasis will be given on the hard working conditions and the results obtained during the Antarctic winter

The main scientific goals during this leg have been:

- to understand the physical and biological factors that influence the growth, reproduction, recruitment, and survival of Antarctic krill (*Euphausia superba*) with special emphasis on its overwintering mechanisms.;
- to quantify seasonal population dynamics and physiological condition of krill
- to record the horizontal and vertical distribution of krill and zooplankton by means of acoustic systems and net tows.
- to visually observe whales, penguins and seabirds and to map their regional distribution
- to passively record marine mammals acoustically and visually (infra-red)
- to sample near-surface zooplankton by use of the so-called Continuous Plankton Recorder (CPR)
- to examine the under ice biota

Scientific equipment:

On RV Polarstern: multibeam acoustics (SIMRAD), CTD, div. plankton nets, water sampler, under ice plankton net.

On helicopter: visual obs.

See also Permanent Information, topic 3.1.2

(b) Aircraft operations

Dornier aircraft Do228-101 (Polar 2) (AWI)

Period: 30 November 2005 – 19 February 2006

departure in Germany:	30/11/2005
arrival at Neumayer:	19/12/2005
begin of logistic flights:	21/12/2005
begin of aero-geophysical flights:	27/12/2005
end of aero-geophysical flights:	29/01/2006

end of logistic flights:	06/02/2006
departure from Neumayer	07/02/2006
arrival in Germany	19/02/2006

Chief pilot: Hans-Jürgen Berns, (DLR; Germany)
Scientific leader: Daniel Steinhage, (AWI, Germany)

Scientific goals:

Project ANTSYO - WEGAS

In 2005/06 aero-geophysical flights for the WEGAS project (West-East Gondwana Amalgamation and its Separation) were carried out above the open sea and the Antarctic ice sheet. The line spacing was be 20 km, which might be supplemented by further lines in later survey if data analysis shows the need for it. The aircraft was equipped with a gravity meter, altimeter, GPS, magnetometer, and radio echo sounding system. These measurements will be used for studies of the Gondwana break-off as well as for studies of the sub-glacial geology. The area of interest is located south and north of the Japanese wintering base Syowa, (see attached map).

Project ANTSYO – DISTINCT

The second project planned for 2005/06 is called DISTINCT (Dronning Maud Land Ice Sheet Incorporative Task). The ice thickness was mapped along the major flow line of the Shirase Glacier and along several elevation contour lines of its drainage basin.

Main scientific equipment:

The scientific equipment of POLAR 2 consisted of a radio echo sounding device, a modified ships gravimeter, a laser altimeter, 2 geodetic GPS receiver, and a magnetometer. On ground 3 GPS reference stations and 2 magnetic base stations were operated.

See also Permanent Information, topic 3.1.2

(c) Stations

Neumayer station (AWI)

Summer season: 03 November 2005 – 12 February 2006

Officers in charge:

Station leader: Wolfgang Meier (AWI, physician) January 2005 until February 2006
Maja Petzel (AWI, physician) until February 2007.
Logistic coordinator: Jürgen Janneck (AWI, engineer) for season 2005/2006.

Scientific activities reports:

Meteorological Observatory

The meteorological observatory programme at Neumayer is planned to be ongoing. It includes:

- 3-hourly routine synoptic observations,
- daily upper-air soundings,
- weekly ozone soundings,
- continuous surface radiation and mast measurements,
- satellite picture reception (HRPT, DMSP).
- Training of the over winterer staff.
- Preparation of the over wintering period 2005/2006.

During the summer season 2005/06 all routine maintenance services has been carried out successfully. The data acquisition systems have been upgraded and modernized. The sun-photometer measurements as well as the spectral uv-measurements have been terminated. They will be restarted as soon as more reliable instruments are available.

The new over winterer team took over the observatory work and are continuing the observatory programs continuously without mayor changes.

During the summer season the meteorological observatory of Neumayer was used successfully as the DROMLAN weather forecast centre. The service will start again in November 2006.

Air Chemistry Observatory:

During the summer campaign 2005/2006, activities at the Air Chemistry Observatory of Neumayer Station were focused on maintenance of the equipment, validation of the measured data, as well as practice of the new over-winterer.

Geophysical Observatory:

i) Seismology:

The main task of seismological observations at Neumayer Station is the monitoring of the local, regional and global seismic activity. As the global seismographic monitoring network is rather wide-meshed in the southern hemisphere, especially in Antarctica, seismographic recordings at Neumayer Station (including also the broad band station SNAA at Sanae IV) contribute substantially to seismological research in this region. Onset times and the arrival times of other seismic phases of detected earthquakes are determined regularly and reported to the National Earthquake Information Center (NEIC), USA. The investigation of the local and regional seismicity is a point of special interest. Antarctica is not that aseismic as it is generally believed. Monitoring this seismicity over many years revealed the existence of some distinct seismic active areas in Dronning Maud Land.

ii) Geomagnetism:

The geomagnetic field and its time dependent variations are recorded continuously. Absolute hourly means of the three field components and the total field intensity are reported on a monthly schedule to the World Data Center (WDC) in Copenhagen, Denmark. The results of these measuerments are incorporated into the calcualtion of the International Geomagnetic Reference Field (IGRF) performed by WDC. A new 3-component fluxgate sensor with superior measurement performances has been installed during last season for further enhancement of data quality.

iii) Others:

To determine the amount of ice melting at the bottom of the Ekström Ice Shelf a thermistor chain, frozen in into the ice, is monitored since 1993. A PRARE ground station has been operating at Neumayer Station to improve the ephemerides of the ERS-2 satellite.

Infrasound Array IS27DE (CTBT-network):

According to the Comprehensive Nuclear Test Ban Treaty (CTBT), the IS27 infrasound station is operated at the German “Neumayer” Antarctic Research base as one of 60 elements of the infrasound network of the International Monitoring System (IMS). Infrasound stations measure micropressure fluctuations in the atmosphere. Therefore they are mainly focussed on the monitoring of the compliance of the CTBT with respect to atmospheric nuclear explosions. The approximately uniform global distribution of the 60 stations ensures the ability to detect any atmospheric nuclear explosion of 1 kiloton TNT equivalent or more by at least two stations. Besides IS27, three other infrasound stations will be established along the coast of Antarctica.

The Federal Institute for Geosciences and Natural Resources (BGR) operates the German National Data Center (NDC) for the CTBT and is responsible for the operation of IS27, which will be carried out in close co-operation with the Alfred Wegener Institute for Polar and Marine Research (AWI).

IS27 is an infrasound array with nine array stations. Each station is equipped with a microbarometer and a data acquisition system. Meteorological sensors are installed at the central station. A wind-noise reducing pipe array is connected to each microbarometer. The distribution of the inlet ports to the microbarometer in a wide area ensures the suppression of the influence of wind-generated disturbances. The central array control system is installed in the seismo-acoustic observatory to power the stations and retrieve the recorded data. The infrasound data are transmitted continuously in near real time with a maximum delay of 5 minutes to the International Data Center (IDC) in Vienna, Austria, sharing the permanent satellite link between the Neumayer base and AWI.

IS27 is to be operated continuously with at least 98 % data availability over a year's time, which is required for an IMS station. Routine maintenance of the array is a prerequisite to ensure the high reliability and is normally carried out every year during the Austral summer between December and February. During this period, the nine array elements have to be recovered from the snow and re-installed on the surface. The condition of the equipment has to be checked and software upgrades have to be installed.

Each array station is equipped with

- a MB2000 microbarograph,
- a Callisto Remote Field Authenticating Digitizer,
- a Telesto radio frequency data transceiver, and
- a power supply unit.

These devices are installed in an insulated aluminum container (1200 × 800 × 500 mm) to protect them from low temperatures. An antenna mast with a Yagi and a GPS antenna is installed close to the container. The central array station is equipped with an ultrasonic anemometer and a temperature sensor on an additional mast.

The wind-noise reducing pipe arrays consist of eight 25-m long arms laid out radially around the station. Each arm in the pipe array consists of a certain length of impermeable polyethylene pipe connected to a 15-m long porous hose encased in a perforated polyethylene pipe.

The central array control system is installed in a container on stilts, which contains

- the data acquisition computer with backup system,
- the radio frequency receiver system,
- the power supply units, and
- an uninterrupted power supply.

The stations are connected to the central array control system by cable.

DROMLAN Weather forecast service

Established in season 2002/03 and now for the fourth summer season the meteorological observatory of the German Antarctic station Neumayer offered a detailed and individual weather forecast service for all activities in Dronning Maud Land. This service is performed in close cooperation between the Alfred-Wegener-Institute for Polar and Marine Research (AWI) and the German Weather Service (DWD).

Neumayer station has a central position within the Dronning Maud Land due to its good communication facilities including a permanent satellite data link (128 kb, Intelsat), and the modern infrastructure of the meteorological observatory.

The forecasts based on special model outputs from the European Centre for Medium-Range Weather Forecasts (ECMWF), the Antarctic Mesoscale Prediction System (AMPS) and the Global-Model (GME). New outputs are available twice a daily. They are used to cover a forecast period up to one week.

For short-term forecasts and flight activities the satellite picture receiving station from Neumayer (HRPT, SeaSpace) is of great importance. Up to 20 satellite passes can be obtained daily (NOAA 17, 18, DMSP 14, 15 and 16). Visual as well as infrared pictures get geocoded automatically on a variety of masters covering the synoptic scale (2500 x 5000 km) down to local scale with a spatial resolution up 500 x 500 m at any place in the Dronning Maud Land.

Additionally, all information from the Global Telecommunication System (GTS) was available via the permanent data link at any time. Also measurements from surrounding automatic weather stations transponding via ARGOS but not included into the GTS get extracted automatically from the NOAA-satellite information.

The forecaster at Neumayer can be reached at any time from all DROMLAN members by mail, fax, telex, phone, and by short-wave communication. While the forecaster is not at Neumayer his service can be obtained via Iridium.

During the summer season 2005/2006 more than 2600 forecasts get performed for field parties, ships, stations and especially aircrafts (table 1). It is obvious, that this service increased the safeness of the ambiguous projects in the Dronning Maud Land. Furthermore, it helps to reduce weather induced idle times of expensive flight operations to a minimum.

Kohnen station (AWI)

Summer season: 06 November 2005 till 02 February 2006

Scientific leader: Hans Oerter, hoerter@awi-bremerhaven.de

Scientific activities reports:

Deep ice core drilling from 2565m to bedrock, which was reached at a depth of 2774 m. The drilling was stopped when subglacial water flew into the borehole. Logging of the ice core and first in-situ measurements with respect to electrical properties and physical properties of the ice. The drilling operation was accompanied by near surface snow pit studies and firn-air sampling down to the firn - ice transition in 2 satellite holes in the surroundings of the main drill location. Firn samples were analysed by micro-tomography to reconstruct the pore and grain size. The deep drilling aims for research on paleo-climate, especially the inter-comparison with other Antarctic and Greenland ice cores. Firn-air sampling and micro-tomography are important tools to gain better insight into the processes of air inclusion into the ice, which is essential for the interpretation of the measured gas concentrations in the deep ice core. Joint meteorological and aerosol-sampling programmes were carried out as well.

Dallmann Laboratory (AWI) - annex to Base Jubany (Argentina)

Summer season: 02 November 2005 – 06 April 2006

Scientific leader: Katja Heise, kheise@awi-bremerhaven.de

Scientific activities report:

Last season four different projects, in charge of AWI, took part at the Dallmann-Laboratory:

- The function of the hypoxia inducible transcription factor (HIF-1) in cold stenothermal Antarctic ectotherms (Project Abele)
- Monitoring of Wilson's storm petrel *Oceanites oceanicus*
- Monitoring of the reproductive performance of South Polar Skua (*Catharacta maccormicki*), Brown Skua (*Catharacta a. lonnbergi*) and mixed pairs at Potter Peninsula
- Comparative taxonomic, cytological, and photophysiological studies on snow algae and higher plants from Antarctic, Arctic, and mid-european alpine environments

The studies performed are part of the German-Argentinean cooperation at the Dallmann Laboratory/Jubany Station. The focus of the summer campaign 2005-2006 was centred around three terrestrial projects and one marine biological project. Among the terrestrial projects there were two ornithological projects focussed on the reproductive performance on Skuas and Wilson's storm petrels. In the third terrestrial project cytological and photophysiological studies on snow algae and the two naturally occurring Antarctic higher plants were performed and compared to the same or similar species in the European Alps and the Arctic. In the marine biological project the molecular biological regulation of oxygen homeostasis was investigated in Antarctic fish.

Project of IMBT – Fraunhofer Institute

Snow algae from different snow and glacier fields were sampled for subsequent single cell isolation to establish clonal and axenic cultures. These cultures will be added to the existing Culture Collection of Cryophilic Algae (CCCryo) which is located at the IBMT in Berlin. The taxon inventory of snow, glacier, and soil algae were documented using light microscopy, as well as digital image acquisition and processing. Field material of trophic (green) and resting (red) cell stages were also collected, fixed or freeze dried for DNA extraction and later genome analyses (sequencing of SSU, rDNA and ITS regions, AFLP techniques) as well

as for screening for pigments (secondary carotenoids, thylakoid pigments) and secondary metabolites (cold-active enzymes, UV-/high light protectants, natural freeze protectants) under different environmental and culture conditions, such as temperature stress, UV-/high light stress. Our studies at Dallmann Laboratory in the Antarctic are important for an analysis of the bipolar and worldwide comparison of snow algal populations using molecular methods to detect an existing or vanished gene flow between snow algal habitats (cold islets). The CCCryo algal collection will further on serve as an important bioresource for cryophilic freshwater microalgae in Germany and Europe. Regarding the comparative work between snow algae and higher plants, earlier studies by Prof. C. Lütz (campaign 2002/2003 at Dallmann Lab) were pursued. Snow algal samples and leaf samples of the two vascular plants *Dechampsia antarctica* and *Colobanthus quitensis* were compared in their physiological reaction to high light and temperature stress measuring photosynthetic activity and chlorophyll fluorescence. These measurements were done partly to repeat and compare with earlier measurements performed during the 2002/2003 campaign.

Project of the University Bonn

During my sojourn at the Russian station Bellinghausen (Jan. 26 to Feb. 15) I carried out a qualitative evaluation of the benthic ciliates in the tidal region. At ebb tide an extensive rock and rubble bank is revealed. Here an unexpectedly luxuriant growth of algae is found on the substrate. This algal growth shelters a large number of metazoans and protozoans among which ciliates live, in many species and large populations. Over 20 different species were identified. In the end result, the documented species inventory is identical with that found in correspondingly situated tide pools near Jubani. When all of them are considered together, species that are characteristic of the various tidal zones can be identified.

On Jubani (Feb. 15 to Mar. 25) I additionally investigated benthic ciliates, but mainly those of the interstitial system (occupying gaps in the sand). According to preliminary studies the interstitial sand fauna exists only under water that is more than 2 m deep. The absence of an interstitial fauna in the eulittoral region is causally related to the fact that below this depth the capillary water does not freeze in winter, and when the snow melts in summer no fresh water penetrates into the interstices, so that their salinity is unaffected. The sand samples were processed in the laboratory according to the method of Uhlig (driving the interstitial fauna out by thawing marine ice).

In general the ciliate fauna of the interstitial is remarkable in that some special taxonomic groups live only here (main representatives: Karyorelictida, Geleidae, Loxodidae). The only one of these represented in the Jubani interstitial was the Karyorelictida. Also present in abundance were Holophryidae as well as hymenostomous and hypotrichous species. The taxonomy of the Karyorelictida has been thoroughly investigated. For this reason I selected the more taxonomically interesting hypotrichous ciliates and processed them by the protargol method in order to reveal their infraciliature.

Project of University Jena

The first aim of the skua project at Fildes and Potter Peninsula, King George Island, was the phylogeography of the southern skua complex to deepen our knowledge about processes in the hybrid zone between South Polar Skua and Brown Skua in the area of the Antarctic Peninsula. This goal was achieved by sequencing the HVR I region of the mitochondrial D-Loop. The studies were focused on chick growth in pairs of different pair assemblage, fitness of hybrids and pure species individuals and mechanisms of mate choice (morphometry, acoustics). At Potter and Fildes Peninsula the distribution of skua nests was mapped, adults and chicks were

One of these sensors is GOME providing the measurement of the Ozon layer over Antarctica. Data provision is executed in near real time (platform is the "World Data Center for Remote Sensing of the Atmosphere,

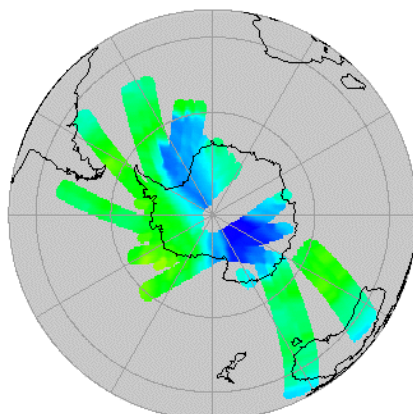
ERS2 GOME

Ozone Vertical Column Densities

Dec 04, 2005

Southern Hemisphere

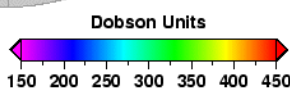
<http://wdc.dlr.de/>) [ERS2 GOME data reception for Antarctica at TF GARS-O'Higgins, MM McMurdo, and HO Hobart (Australia)].



Composite

Level2 Version 4.0 / ESA

<http://wdc.dlr.de>



Geodetic observations for the maintenance of global geodetic reference frames, for monitoring Earth rotation, crustal movements and sea level changes.

The radio telescope is also employed for geodetic applications and research.

It is a network station of the global Very Long Baseline Interferometry

(VLBI) network, which is coordinated by the International VLBI Service for Geodesy and Astrometry (IVS) in order to support the realization and maintenance of the global reference frames. Parameters to describe the celestial and terrestrial reference frame and the Earth rotation are derived by observing and recording signals from quasars simultaneously with other radio telescopes. Regular VLBI operations were started in January 1992. In addition two receivers are permanently established to observe satellites of the global satellite navigation systems (GNSS) as GPS and GLONASS. The receivers are respected as important stations of the International GNSS Service (IGS). The data are complementary to VLBI observations, providing precise positions with respect to the center of mass and the velocity. Additional sensors for observing sea level changes (tide-gauge sensors) and meteorology data are installed and continuously operated. The underwater tide-gauge sensors are calibrated with a radar based tide-gauge sensor (temporarily installed during summer season), which allows a precise connection of the measured sea level to the geodetic ties.

Gondwana Station (BGR)

Period: 27 October 2005 to 06 February 2006

Scientific leader: Norbert W. Roland (BGR)

Scientific activities report:

Project GANOVEX IX:

Geological and geophysical investigations in northern Victoria Land and offshore north of Cape Hallett.

The primary objectives of this BGR project are to investigate the plate tectonic relations between transform faults (e.g.. *Balleny Fracture Zone* and *Tasman Fracture Zone*) and continental structures in northern Victoria Land:

- aeromagnetic survey over an area southeast of the Balleny Islands and the northern coast of Victoria Land including the Cape Adare Trough.

- geological investigations to determine young brittle tectonic events in Cenozoic volcanics to distinguish these from older events and to date these with radiometric methods.
- measuring deformations of metamorphosed rocks along faults to investigate the possible left-lateral separation of Antarctica from Australia in contrast to the later right-lateral tectonic regime.
- sampling rocks for sedimentological and palaeontological investigations for stratigraphic correlations.
- sampling rocks for geochemical analyses and geochronology.

(d) Field parties and activities in cooperation with other national operators

Station: Dumont d`Urville, France
National Operator: IPEV, Technopole Brest Iroise, France

Period: 27 October – 19 December 2005

Project: Foraging behaviour of emperor penguins (AWI)
Guest scientist: Ilka Zimmer (AWI)

Scientific activities report

1. Our study focused on the foraging areas and the diving behaviour of chick-rearing emperor penguins. The primary objective was to identify potential feeding grounds by tracking emperor penguins using satellite telemetry. The analysis of data obtained from two types of ARGOS transmitters as well as Multiple Channel Logger units will provide new information on the duration and horizontal extent of foraging trips during the late breeding season and, moreover, on the vertical distribution of dive depths. The scientific goals are:

- the reconstruction of foraging routes for visualisation
- the comparison of foraging areas with sea-ice conditions;
- the relation of foraging location and dive depth to bottom topography using the ETOPO1 (GEPCO) database
- the definition of foraging trip length and duration for the late chick rearing period;
- the comparison of dive depth and haul-out pattern in relation to time of day;
- the characterization of emperor penguin dive profiles.

For further details please contact Ilka Zimmer izimmer@awi-bremerhaven.de

In addition to the More Channel Logger units, already being used in 2004, two types of ARGOS transmitters were deployed recording the foraging locations and diving parameters of adult emperor penguins during their foraging trips in the late chick-rearing period. Devices were attached to the lower back feathers of the penguin with watertight tape as this does not affect the waterproofing quality of the feathers.

Station: **Amundsen-Scott, USA**
National operator: National Science Foundation (NSF)
Period: 20 November 2005 – 14 February 2006

Project: Amanda/Ice cube Neutrino Telescopes
US Coordinator: Robert Morse, morse@amanda.wisc.edu
National Science Foundation/Raytheon Services in co-operation with University of Wisconsin (USA).

German participating institutions:

DESY-Zeuthen and Humboldt: Dr. Christian Spiering/ Dr. Stefan Schlenstedt
University of Dortmund: Prof. Wolfgang Rhode
University of Mainz: Prof. Lutz Köpke
University of Wuppertal: Prof. K.H.Kampert
MPIK Heidelberg: Dr. Elisa Resconi

Scientific activities report:

Operation of the Amanda Neutrino Telescope. Investigation of high-energy cosmic neutrinos, search for dark matter and magnetic monopoles, monitoring of the Galaxy for Supernova bursts.

During the 2005/2006 season, the following main tasks have been performed:

- a) Drilling of eight 2.5 km deep holes and installation of eight new IceCube strings
- b) Installation of 16 IceTop stations at the surface
- c) Time synchronization between AMANDA and IceCube
- d) Verification and commissioning of all new equipment

All planned activities have been successfully performed.

Station: **Bellingshausen Station (Russia)**
Escudero Station (Chile)
Great Wall (China)
King Sejong Station (Korea)

Period: 05 December 2005 – 26 March 2006
Over wintering of Anne Fröhlich in the frame of the Russian Antarctic Expedition at Bellingshausen (26 March 2006 till end of 2006)

Project: Biological research on Antarctic seabirds, skuas and Wilson's storm petrels

Scientific leader: Hans-Ulrich Peter (University of Jena)

Area: Potter Peninsula and Fildes Peninsula including Ardley Island, King George Island

Scientific activities report:

The project 'risk assessment for the Fildes Peninsula and Ardley Island and the development of management plans for designation as Antarctic Specially Protected or Managed Areas' was continued with its third field season. A complete census of avian and mammal fauna is carried out. Central aim was an area-wide GPS-mapping of the vegetation. Furthermore, actual human activities in their impacts (research, station constructional and logistic work, air and marine traffic) were assessed temporally and spatially. To facilitate future management recommendations, station members were interviewed for their individual knowledge and perception of the environmental situation. From 30 January to 3 February 2006 Bellingshausen Station, an international workshop with the title 'Possibilities for Environmental Management of the Fildes Peninsula and Ardley Island' was held to discuss the field results and environmental risk assessment (see also Working Paper for ATCM29 in Edinburgh)

The first aim of the skua project at Fildes and Potter Peninsula, King George Island, was the phylogeography of the southern skua complex to deepen our knowledge about processes in the hybrid zone between South Polar Skua and Brown Skua in the area of the Antarctic Peninsula. This goal was achieved by sequencing the HVR I region of the mitochondrial D-Loop. The studies were focused on chick growth in pairs of different pair assemblage, fitness of hybrids and pure species individuals and mechanisms of mate choice (morphometry, acoustics). At Potter and Fildes Peninsula the distribution of skua nests was mapped, adults and chicks were banded and the breeding success of chicks was determined (long term program). Additional studies at Potter Peninsula will investigate in detail the consequences of hatching date for chick growth. The migration routes of skuas was investigated by using satellite telemetry.

The project "Effects of variable environmental conditions on breeding, feeding and population ecology of Wilson's Storm Petrel" is a sequel to last year's investigations of the Wilson's Storm Petrel (*Oceanites oceanicus*) in the area around the Tres Hermanos, Potter Peninsula, King George Island. Since 1996 the of 500 marked nests consisting breeding colony is studied in terms of ecology and adaptation to the prevailing weather conditions. A central aim was the begging behaviour of the juveniles. A previous investigation suggested a close correlation between begging and the chick body condition. Miniature infrared cameras were installed inside the nests to record the nocturnal feedings. Furthermore the continuation of the monitoring program was carried out which included amongst others the ascertainment of breeding success, chick's growth rates and morphometric data of the adults as well as their ringing.

Ship cruise: RV Laurence M. Gould, LMG 06-02

National operator: USA

Period: 14 February – 16 March 2006

Project: LMG 06-02: Biological Oceanography

Guest scientist: Lena von Harbou (AWI)

Scientific activity report of AWI participant:

HPLC analysis of gut pigments

Salps of different sizes and stages were collected from 20 MOCNESS_1 hauls (8 depths) over 48h cycles and from 9 Bongo net hauls during the ascend and descend of migrating salps. Additionally, salps from down to

2500 m were collected from one MOCNESS_10 haul. Salps were staged and sized as soon as possible after net collection and frozen at -80 C. Guts were excised on ice and will be shipped on dry ice for later detailed gut pigment analysis (High Pressure Low Chromatography) which will give information of the composition of the diet and the digestion. According to net collections, water samples were taken from CTD cast and will be analyzed together with the guts at the the IfM Geomar, Kiel, Germany in co-operation with Dr. I. Peeken. The results will be compared to the results from analysis of total gut fluorescence of net collected salps completed during the cruise with the Turner fluorometer. Microscopic analysis of guts by Dr. Kremer will provide background information of ingested food particles.

Laboratory feeding rate measurements

Feeding experiments were carried out to estimate salps' clearance rates and to follow their food uptake, digestion and defecation with pigment analysis in order to understand the role of salps in altering not only the available quantity of food in the water but also its quality.

Diver-collected animals were held in 20 L containers filled with surface water for 8 to 24 hours, chlorophyll concentrations ranged between 0.08 to 0.85 ug L⁻¹. According to size, chains of 2 – 46 aggregate animals or one to two solitary individuals were put in each container. In total, six experiments, each including between 4 – 8 containers with animals of different size and/or stage and two control containers without animals were carried out. Salp feeding was followed by sampling water at regular intervals for chlorophyll measurements read on board, additional water samples were taken for POC measurements and pigment analysis at home. For microscopic analysis of the food composition, a water sample was taken at the beginning of each experiment and fixed with 5 % Lugol's. Fecal pellets were collected regularly over the experiment and number of pellets produced recorded. At the end of the experiment, the pellets and collecting water was mixed and sampled for later POC and pigment analysis. Experimental animals were frozen at the end of the experiment for gut pigment analysis, and at the beginning of the experiment, if available to compare in vitro and in situ feeding. So far, preliminary results show clearance rates depending on the size of the animals from 30 up to 630 ml animals⁻¹ h⁻¹ for aggregate salps between 10 to 35 mm length, respectively. The feeding rate did apparently not change with natural food concentrations but digestion efficiency and fecal pellet production still need to be analyzed. Solitary salps, which are seemingly more influenced by the containment in small containers, were feeding at clearance rates between 500 to 1500 ml animal⁻¹ h⁻¹.

Ship cruise: RV "Almirante IRIZAR" (2nd and 3rd leg)

National operator: Armada Argentina

Period: 05 December 2004 to 19 January 2005

Project: Geodesy in Antarctica

Guest scientist: Sonja Gütz (AWI)

Scientific activity report of AWI participant:

Installation, maintenance and operation of geodetic and oceanographic equipment on permanent tracking stations for geodetic (geoid horizontal and vertical datum, atmosphere) and geophysical (ice mass balance, plate tectonic) studies.

GPS	AWI and IAA/DNA are operating since several years jointly three permanent GPS tracking stations at the Argentine bases Belgrano 2, Jubany and San Martín in continuation of the former German Geodetic Antarctic Project (GAP) campaigns. The GPS-observations are used to connect geodetic points in Antarctica via the IGS-network to the International Terrestrial Reference Frame (ITRF) with highest accuracy. Other objectives are the determination of the relative motion rates and directions of the Antarctic Plate with respect to the adjoining plates and the determination of the vertical motion of the Antarctic lithosphere due to changes of the ice and ocean loading. The project is related to the Antarctic Neotectonics (ANTEC) program of the Scientific Committee on Antarctic Research (SCAR). During this campaign the regular maintenance and check on all three stations has been carried out. On Belgrano II the software system was changed from TRS to Trimble GPS_Base to meet IGS data standards and on San Martín the Ashtech Z-12 receiver was replaced by a Trimble 4000 Ssi which were kindly supplied by the Federal Agency for Cartography and Geodesy (BKG) in Frankfurt. Furthermore multiple simultaneous measurements on the stations security markers have been made to check the location of the excenters and the geometry between the center and the excenters. In addition a short GPS Survey on Orcadas was conducted for the IAA in order to analyze rotational movements of the Isla Laurie after the earth quake in August 2003 and the reference points and GAP markers at the stations Esperanza and Marambio were maintained and inspected.
DORIS	On Belgrano II the 3rd generation DORIS ground station was maintained and checked.
Tide gauge station	Once a year AWI exchanges the data storage unit of the tide gauge station at San Martín and downloads the data of the previous recording period. These long-term observation data is used for the height determination of the mean sea level. Having had several problems with one of the transmitting channels of the sensor, it was replaced and a new sensor unit was installed. In order to adjust the newly installed sensor and connecting it to the adjacent height marker at the station, a height leveling was carried out.

Main scientific equipment used at stations:

Orcadas:	GPS receiver Trimble 4000 SSE GPS antenna Trimble
Belgrano II:	GPS receiver (Trimble 5700) GPS antenna (Ashtech choke ring antenna with dome) DORIS beacon 3.0 Starec antenna 3.0 Meteorological station 3 GPS receiver Trimble 4000 SSE 3 GPS antenna Trimble

San Martín

GPS receiver (Ashtech Z-12)
GPS receiver (Trimble 4000 SSi)
Page 4 of 4
GPS antenna (Ashtech choke ring antenna with dome)
3 GPS receiver Trimble 4000 SSE
3 GPS antenna Trimble
Tide gauge sensors (Aanderaa Norway)
Sensor Scanning Unit 3010 (Aanderaa Norway)
Data storage unit (DSU) (Aanderaa Norway)
Data reading unit (Aanderaa Norway)
Theodolit (Wild T0)
Leveling rod

Jubany

GPS receiver (Trimble 4000 SSi)
GPS antenna (Trimble Zephyr geodetic with dome now)
4 GPS receiver Trimble 4000 SSE
4 GPS antenna Trimble

2.2 Operational Information

2.2.1 National Expeditions

The Alfred Wegener Institute for Polar and Marine Research (AWI) coordinated all German Antarctic activities. The following German institutions performed in the frame of their research programs Antarctic expeditions as well as operated stations or camps in Antarctica:

Alfred Wegener Institute for Polar and Marine Research (AWI)

German Center for Aeronautical and Space Research (DLR)

Federal Agency for Cartography and Geodesy (BKG)

Federal Agency for Geosciences and Mineral Resources (BGR)

Further Antarctic activities were performed in co-operation with other national operators.

(a) Ship operations

RV Polarstern - leg ANT XXIII/2 (AWI): Weddell Sea

Cruise report:

Cape Town: 19 November 2005

Neumayer-Station: 03 December 2005

Punta Arenas: 12 January 2006

Master: Schwarze, Stefan (Reederei F. Laeisz)

Cruise leader: Strass, Volker (AWI)

Crew: 44

Staff (scientists, technicians): 55

Area of activity:

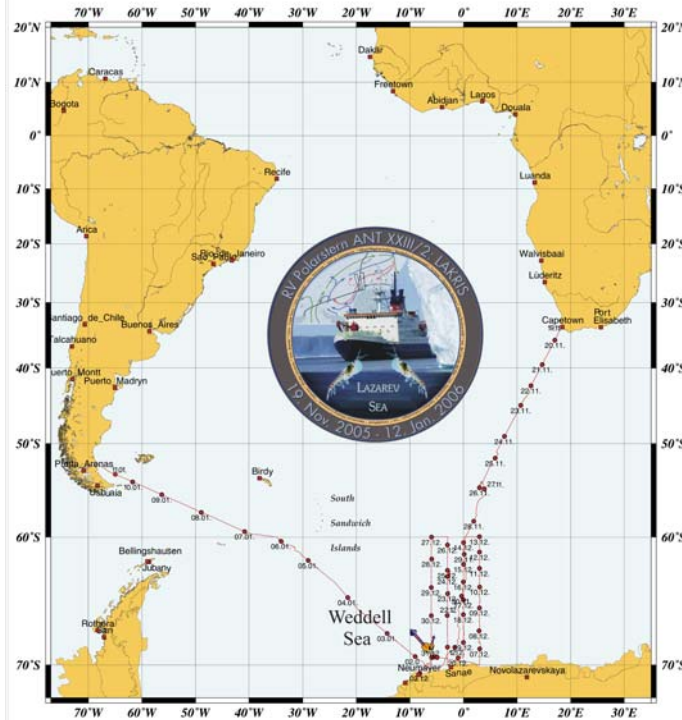
Whole Atlantic sector of the Southern Ocean, coordinates 34°S - 72°S, 70°W - 18°E, with the majority of research activities in the Lazarev Sea between latitudes 60°S to the Antarctic coast and longitudes 6°W to 3°E.

Supply of the German Neumayer base at 70°39'S, 08°15'W.

Start of cruise in Cape Town, end of cruise in Punta Arenas.

ANT XXIII-2

Capetown - Neumayer - Punta Arenas
19.11.2005 - 12.01.2006



PFS "Polarstern"
ANT XXIII-2
Capetown - Neumayer - Punta Arenas
November 19th till January 12th, 2006

Miles Total:
8711nm



AWI
Alfred Wegener Institute
Polar and Marine Research
D-27513 Bremerhaven

Participants:

Surname	Given name	Institute/Company	Profession	Nationality	Comments
Asmus	Kelly	Deakin Univ.	Scientist	Australian	
Auerswald	Lutz	Univ. Cape Town	Scientist	De	
Bernard	Kim Sarah	Rhodes Univ.	Student	South Africa	
Boebel	Olaf	AWI	Scientist	De	disembarked NM
Boebel	Tobias	Optimare	Scientist	De	disembarked NM
Brauer	Jens	HeliTransair	Technician	De	
Broglio	Elisabetta	ICM Barcelona	Scientist	Italian	
Büchner	Jürgen	HeliTransair	Helicopter Pilot	De	
Calcara	Massimo	PNRA Rome	Scientist	Italian	
Capua	Carmine	INGV Rome	Scientist	Italian	
Cisewski	Boris	AWI	Scientist	De	
Demmler	Petra		Journalist	De	
Fach	Bettina	AWI	Scientist	De	
Federowitz	Marcus	HeliTransair	Helicopter Pilot	De	
Fuentes	Verónica	AWI	Scientist	Argentinian	
Gerull	Linda	AWI	Student	De	
Giesecke Astorga	Claudio R.	Univ. Concepcion	Scientist	Chilean	
Glasgow	Debra	IWC	Scientist	New Zeal.	
Gurney	Leigh	Univ. Brit. Columb.	Scientist	South Africa	
Haraldsson	Matilda	Univ. Göteborg	Student	Swedish	
Hayden	Andreas	AWI	Student	De	

Herrmann	Regine	AWI	Student	De	
Hohn	Sönke	AWI	Scientist	De	
Homs-Ramirez	Patricia	ICM Barcelona	Scientist	Spanish	
Hunt	Brian	Univ. Brit. Columb.	Scientist	South Africa	
Jennings	Michael E.	Rhodes Univ.	Student	South Africa	
Klinck	Holger	AWI	Scientist	De	disembarked NM
Koschnick	Nils	AWI	Technician	De	
Krägefsky	Sören	AWI	Scientist	De	
Kresling	Andreas	DWD	Meteorologist	De	
Leach	Harry	Univ. Liverpool	Scientist	British	
Lo Bue	Nadia	INGV Rome	Scientist	Italian	
Loes	Peter	AWI	Engineer	De	
Lucassen	Magnus	AWI	Scientist	De	
Meyer	Bettina	AWI	Scientist	De	
Mühlenhardt-Siegel	Ute	DZMB Hamburg	Scientist	De	
Otto	Juliane	AWI	Student	De	
Pape	Carsten	AWI	Scientist	De	
Poppe	Ulrike	AWI	Student	De	
Riedel	Sven	AWI	Scientist	De	disembarked NM
Rohr	Harald	Optimare	Engineer	De	
Schmidt	Gesine	AWI	Student	De	
Schukat	Anna	Univ. Bremen	Student	De	
Siegel	Volker	BFA Fisch, HH	Scientist	De	
Sonnabend	Hartmut	DWD	Technician	De	
Spahic	Susanne	AWI	Technician	De	
Steinhage	Daniel	AWI	Scientist	De	disembarked NM
Strass	Volker	AWI	Scientist	De	
Stübing	Dorothea	Univ. Bremen	Scientist	De	
Vendrell	Begona	ICM Barcelona	Scientist	Spanish	
Vortkamp	Martina	BFA Fisch, HH	Technician	De	
Witt	Ralf	AWI	Technician	De	disembarked NM
Wittmann	Astrid	AWI	Student	De	
Zeidler	Martin	HeliTransair	Technician	De	
Ziffer	Albert	AWI	Technician	De	disembarked NM

RV Polarstern - leg ANT XXIII/3 (AWI): Weddell Sea

Cruise report:

Punta Arenas 15 January 2006
Dallmann –Laboratory 27 January 2006
O' Higgins / GARS 28 January 2006
Dallmann Laboratory 29 January 2006
Punta Arenas 08 February 2006

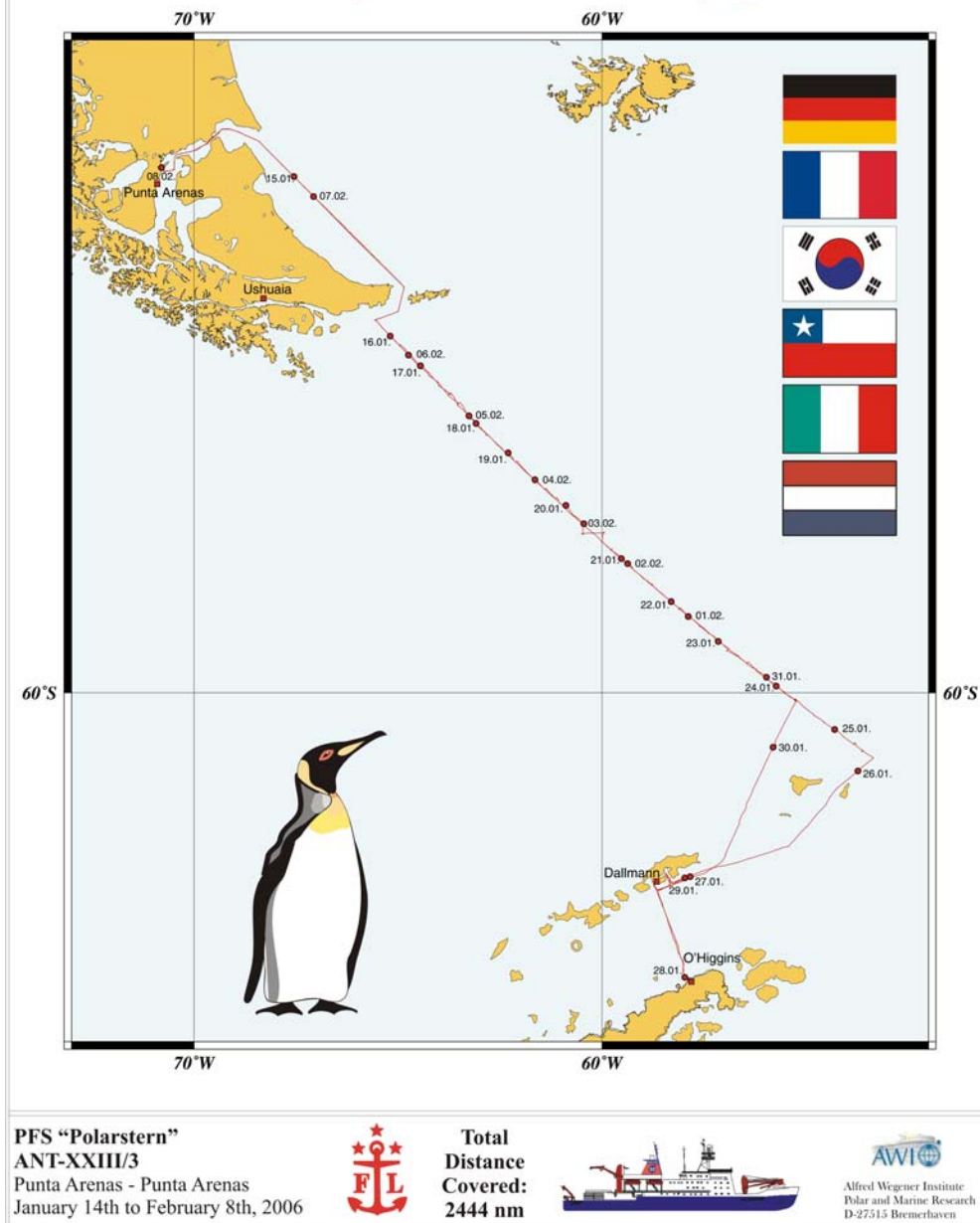
Master: Uwe Pahl (Reederei F. Laeisz)
Cruise leader: Christine Provost (LOCEAN, CNRS, France)
Crew: 44
Staff (scientist and technicians): 43

Area of activity:

Drake Passage and Bransfield Strait

Start of cruise in Punta Arenas, end of cruise in Punta Arenas.

PFS “Polarstern” ANT-XXIII/3



Participants:

Surname	Given name	Institute/Company	Profession	Nationality
Barré	Nicolas	UPMC LOCEAN	Student	French
Beaumont	Laurence	CNRS Meudon	Technician	French
Busdraghi	Fabiano	UPMC LOCEAN	Student	Italy
Caceres	Mario	Univ. Valparaiso	Observer	Chilean
Chastel	Olivier	CNRS Villiers	Scientist	French

Chouaib	Nadine	IRD LOCEAN	Engineer	French
Clement-Chastel	Céline	CNRS Villiers	Student	French
Delhaye	Claude	CNRS Meudon	Technician	French
Faillot	Mathilde	CNES LEGOS	Engineer	French
Feyen	Anja	University Bremen	Student	German
Friederich	Jana	AWI	Scientist	German
Garcon	Veronique	CNRS LEGOS	Scientist	French
Houssais	Marie-Noëlle	CNRS LOCEAN	Scientist	French
Huhn	Oliver	University Bremen	Scientist	German
Hwang	Sang Chul	KORDI	Engineer	Korea
Jeandel	Catherine	CNRS LEGOS	Scientist	French
Kartavtseff	Annie	CNRS LOCEAN	Engineer	French
Knobelsdorf	Michael	DWD	Meteorologist	German
Koschnick	Nils	AWI	Technician	German
Lacombe	Marielle	UPS LEGOS	Student	French
Lanoisellé	Jacky	CNRS LOCEAN	Engineer	French
Lee	Jae Hak	KORDI	Scientist	Korea
Le Goff	Hervé	CNRS LOCEAN	Engineer	French
Lucassen	Magnus	AWI	Scientist	German
Marec	Claudie	CNRS Brest	Engineer	French
Martin	Nicolas	CNRS LOCEAN	Engineer	French
Ménard	Yves	CNES LEGOS	Engineer	French
Monglon	Thierry	CNRS LOCEAN	Technician	French
Oriol	Louise	CNRS Banyuls	Engineer	French
Pradoux	Catherine	CNRS LEGOS	Technician	French
Provost	Christine	CNRS LOCEAN	Scientist	French
Rafizadeh	Mehrad	CNRS LOCEAN	Engineer	French
Rouault	Catherine	CNRS LOCEAN	Engineer	French
Ronat	Luc	CNRS Meudon	Technician	French
Rutgers Van der Loeff	Michiel	AWI	Scientist	Netherlands
Schauer	Bernard	UPMC LOCEAN	Engineer	French
Sennechael	Nathalie	MNHN LOCEAN	Scientist	French
Sonnabend	Hartmut	DWD	Technician	German
Spadone	Aurélie	UPMC LOCEAN	Student	French
Stoëhr	Felix	CNES LOCEAN	Engineer	German
Sudre	Joël	CNRS LEGOS	Engineer	French
Sultan	Emmanuelle	MNHN LOCEAN	Engineer	French
Vivier	Frédéric	CNRS LOCEAN	Scientist	French

RV Polarstern - leg ANT XXIII/4 (AWI): Amundsen and Bellingshausen See

Cruise report:

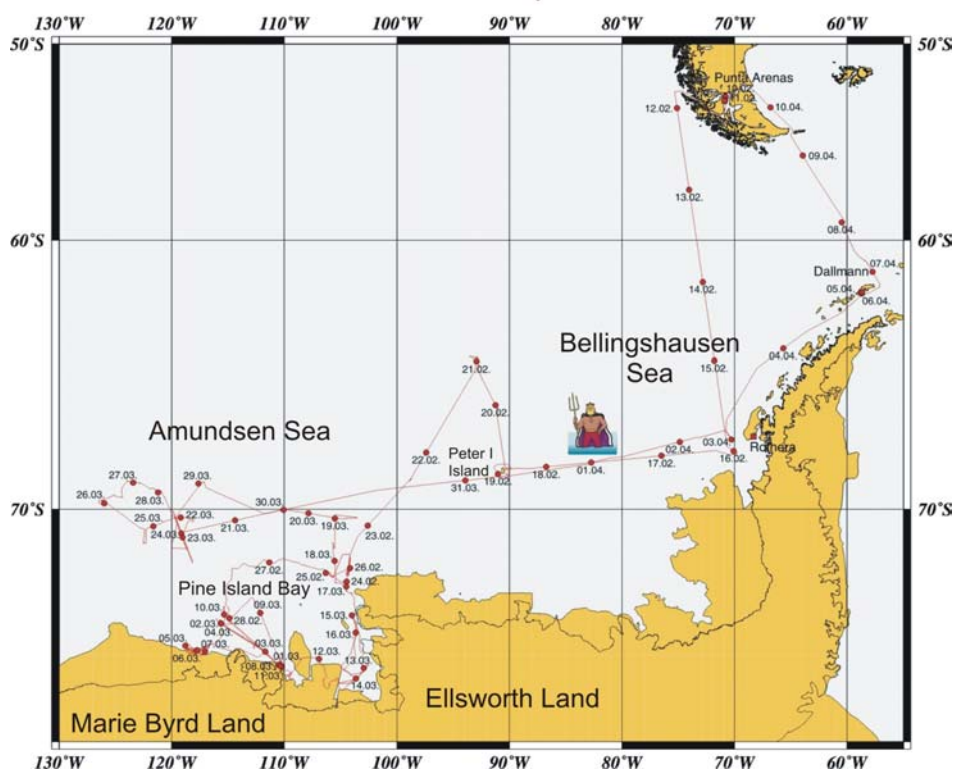
Punta Arenas 10 February 2006
 Rothera 16 February 2006 (only by helicopter)
 Rothera 03 April 2006 (only by helicopter)
 Dallmann Laboratory 06 April 2006
 Punta Arenas 11 April 2006

Master: Pahl, Uwe (Reederei F. Laeisz)
 Cruise leader: Gohl, Karsten (AWI)
 Crew: 44
 Staff (scientist and technicians): 55

Area of activity:

Southern Amundsen Sea, Amundsen Sea Embayment & Pine Island Bay Coordinates: 100°-125°W, 69°-75°S

RV Polarstern expedition ANT-XXIII/4 10 Feb - 11 Apr 2006



Participants:

Surname / Given name	Institute/Company	Profession	Nationality
Blume, Marlen	AWI	Biologist	German

Bohlmann, Harald	Isitec	Technician	German
Buldt, Klaus	DWD	Technician	German
Daniel, Kristin	FSU Jena	Student, geology	German
Dietrich, Reinhard	TU Dresden	Geodesist	German
Eagles, Graeme	AWI	Geophysicist	British
Fahl, André	AWI	Student, geophysics	German
Feigl, Thomas	Univ. Graz/AWI	Student, geodesy	Austrian
Feldt, Oliver	HeliTransair	Technician	German
Forwick, Matthias	Univ. Tromsø	Geologist	German
Gebauer, Manfred	DWD	Meteorologist	German
Gohl, Karsten	AWI	Geophysicist	German
Grobys, Jan	AWI	Geophysicist	German
Guerrero, Raul	INIDEP Argentina	Oceanographer	Argentine
Hass, Christian	AWI Sylt	Geologist	German
Hauff, Silke	IfM-Geomar	Technician	German
Hauff, Sven Folkmar	IfM-Geomar	Geologist	German
Heckmann, Hans-Hilmar	HeliTransair	Pilot	German
Heise, Katja	AWI	Biologist	German
Hillenbrand, Claus-Dieter	BAS	Geologist	German
Johnson, Joanne	BAS	Geologist	British
Just, Janna	AWI	Student, geophysics	German
Kamennaya, Nina	Univ. Jerusalem	Student, biology	Israel
Kober, Martin	Univ. Jena	Student, geology	German
Krüger, Stefan	Univ. Leipzig/AWI	Geologist	German
Kuhn, Gerhard	AWI	Geologist	German
Leinweber, Volker	AWI	Student, geophysics	German
Lemenkova, Polina	VIG/Univ. Moscow	Cartographer	Russian
Lensch, Norbert	AWI	Technician	German
Mayr, Christina	AWI	Student, geophysics	German
Netzeband, Gesa	Univ. Hamburg	Physicist	German
Neubacher, Elke	Univ. Salzburg	Student, biology	Austrian
Nitsche, Frank	Lamont-Doherty	Geophysicist	German
O'Donova, Terence	BAS	Technician	British
Parsiegla, Nicole	AWI	Geophysicist	German
Petitot, Manuel	AWI	Student, geology	Swiss
Rackebrandt, Nick	AWI	Student	German
Richter, Andreas	TU Dresden	Engineer	German
Ritter, Marc	AWI	Engineer	German
Schlüter, Philip	AWI	Geophysicist	German
Schmiing, Mara	AWI	Student, biology	German
Steinmair, Ulrike	Univ. Salzburg	Student, biology	Austrian
Strahl, Julia	AWI	Student, biology	German
Suckro, Sonja	AWI	Student, geophysics	German
Thiede, Jörn	AWI	Geologist	German
Veit, Andreas	Univ. Jena	Geologist	German
Walter, Torben	Univ. Salzburg	Student, biology	German
Werner, Reinhard	Tethys/Geomar	Geologist	German
Wickham, Stephen	Univ. Salzburg	Biologist	Canadian
Wiencke, Christian	AWI	Biologist	German
Winter, Stefan	HeliTransair	Pilot	German
Zeidler, Martin	HeliTransair	Mechanic	German
Zimmermann, Katja	AWI	Student, geophysics	German
Gauger, Steffen	Fielax	Engineer	German

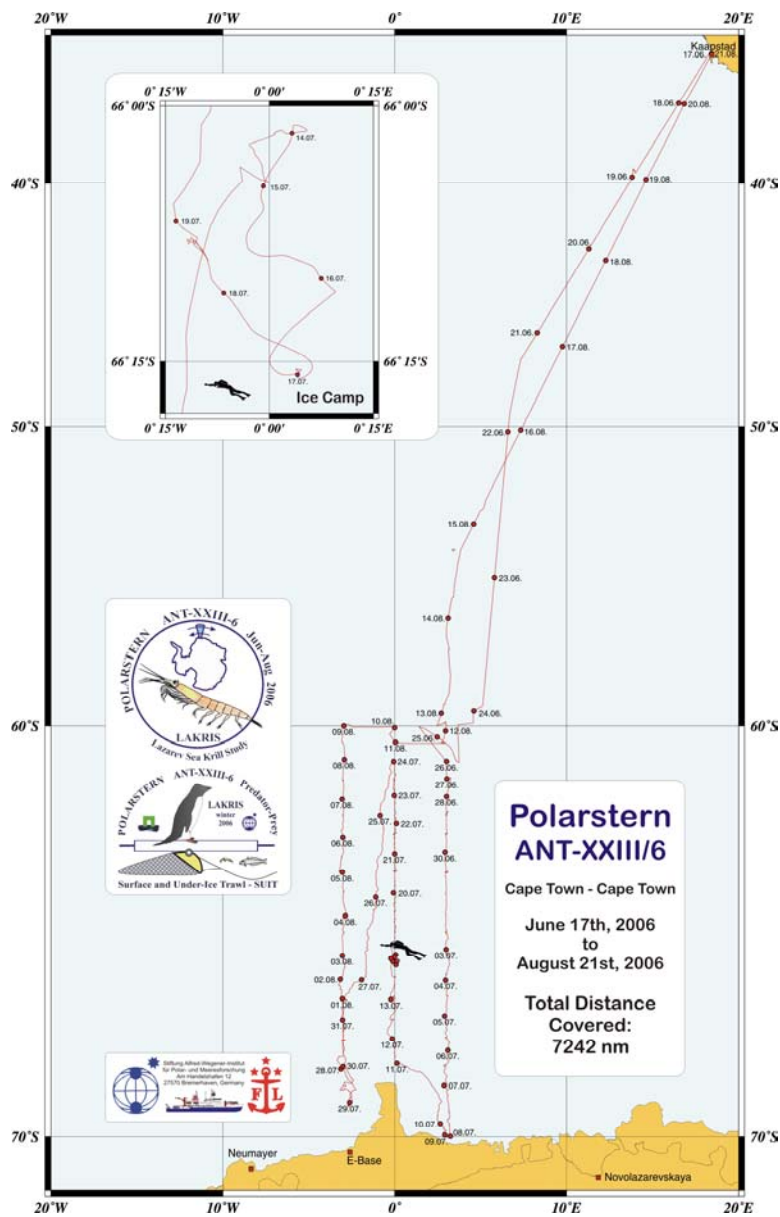
RV Polarstern - leg ANT XXIII/6 (AWI): Weddell Sea

Cruise report:

Cape Town 17 June 2006
Cape Town 23 August 2006

Master: Stefan Schwarze (Reederei F. Laeisz)
Cruise leader: Uli Bathmann (LOCEAN, CNRS, France)
Crew: 44
Staff (scientist and technicians): 43

Area of activity: Area: Lazarev Sea, Coordinates: 10°E-10°W, 60°-70°S



Participants:

Surname	Given name	Institute / Company	Profession
Alheit	Ruth	AWI	Technician
Auerswald	Lutz	UCT	Biologist
Bathmann	Ulrich	AWI	Biologist, chief scientist
Buldt	Klaus	DWD	Technician
Burkhardt	Elke	AWI	Biologist
Cisewski	Boris	AWI	Oceanographer
Dorssen	Michiel van	ALTERRA	Biologist
Ewe	Daniela	Uni HB	Student
Fijn	Ruben	ALTERRA	Biologist
Flores	Hauke	ALTERRA	Biologist
Franeker	Jan van	ALTERRA	Biologist
Freier	Ulrich	AWI	Diver
Fuentes	Veronica	AWI	Biologist
Garcia	Maria	IWC	Biologist
Hager	Julia	Uni HB	Student
Haraldsson	Matilda	BFA Fisch	Student
Herrmann	Sarah	AWI	Student
Klinck	Holger	AWI	Scientist
Kruse	Svenja	AWI	Biologist
Lenderink	Andrea	Uni HB	Student
Michalski	Ulrich	HTA	Pilot
Brauer	Jens	HTA	Technician
Fuhs	Elisabeth	HTA	Technician
Martynova	Daria	Uni St. Petersb.	Biologist
Meijboom	Andre	ALTERRA	Biologist
Meyer	Bettina	AWI	Biologist
Michels	Jan	AWI	Biologist
Miller	Max	DWD	Meteorologist
Nunez-Riboni	Ismael	AWI	Student
Olariaga	Alejandro	AWI	Student
Pakhomov	Evgeny	UBC	Biologist
Pape	Carsten	AWI	Biologist
Risch	Sarah	LAE	Biologist
Sahlmann	Christian	Uni HB	Student
Schreiber	Karolin	AWI	Technician
Schukat	Anna	Uni HB	Student
Spahic	Susanne	AWI	Technician

Surname	Given name	Institute / Company	Profession
Stübing	Dorothea	Uni HB	Biologist
Tadday	Lilo	Via AWI	Photographer
Van de Putte	Anton	LAE	Biologist
Vortkamp	Martina	BFA Fisch	Technician
Wend	Britta	AWI	Biologist
Witte	Timo	OPTIMARE	Technician
Würzberg	Laura	BFA Fisch	Biologist
Yasseri	Michael S.	AWI	Diver

BBS Singapore:

Cruise report:

Cape Town 28 January 2006
 Atka Bay 07 February 2006
 09 February 2006
 Cape Town 17 February 2006

Master: Heinrich Meyering (Briese Schifffahrts GmbH & Co.KG)

Crew: 13

Staff (scientist and technicians): 2

Surname / given name	Institute/Company	Profession	Nationality
Schartel, Harald	Laeizs/AWI	Engineer	German
Buchholz, Oliver	Laeizs/AWI	Electrician	German

(b) Aircraft operations

AWI flight information for AWI aircraft: Dornier 228-101 (Polar 2)

Chief pilot: Hans-Jürgen Berns (DLR; Germany)

Chief scientist: Daniel Steinhage (AWI, Germany)

Crew: 2 pilots, 2 technicians

Scientific staff: 2 scientists, 2 technicians

Period: 30 November 2005 – 19 February 2006

departure in Germany: 30/11/2005

arrival at Neumayer: 19/12/2005

begin of logistic flights: 21/12/2005

begin of aero-geophysical flights: 27/12/2005

end of aero-geophysical flights:	29/01/2006
end of logistic flights:	06/02/2006
departure from Neumayer	07/02/2006
arrival in Germany	19/02/2006

Area of activity:

Flights were carried out in eastern Dronning Maud Land/Enderby Land with the S17 summer camp as main base for our aero-geophysical program (see also map). Logistic flights were flown between Neumayer, Novolazarevskaya, Kohnen, and S17/Syowa.

One Dornier Do228-101 with ski equipped was used during the season (POLAR 2). The aircraft was operated from Neumayer (German wintering base) and S17/Syowa (Japanese summer camp) and during its operations POLAR 2 landed also at Kohnen Station, Novolazarevskaya, and Troll.

Participants:

Surname	Given name	Position/profession	Organization	Nationality
Berns	Hans-Jürgen	chief pilot	DLR	German
Böbel	Tobias	Technician	Optimare	German
Höltig	Jürgen	technician	Optimare	German
Gebhard	Regina	aircraft mechanic	DLR	German
Riedel	Sven	scientist	AWI	German
Gemsa	Steffen	pilot	DLR	German
Steinhage	Daniel	scientific leader	AWI	German
Wolf	Alexander	aircraft mechanic	DLR	German

AWI flight in formations in the frame of the international project DROMLAN

A great number of AWI's land-based scientific and logistic projects were carried out during summer season from November 2005 until February 2006. In order to realize these activities, most of personnel were again flown into Antarctica from Cape Town on board of a Russian cargo aircraft IL-76TD via Novo Airbase and transported back the same way in the end of the campaign. In addition personnel came in and out on the new mid season flight with a Swedish Hercules C130 aircraft to the Norwegian Troll station beginning of January 2006.

The number of persons travelling in this way was 61 and 66 out. Also a substantial part of cargo was sent down. Two vessels transported some personnel and the cargo for the supply and resupply of the Neumayer and Kohnen station.

arrival /departure with	date	ID	route	arrival	departure
aircraft Iljushin 76	03.11.2005	IL22	CPT - Novo - CPT	11	0
aircraft Iljushin 76	(11-13)-11-2005	IL23	CPT - Novo - CPT	15	0
aircraft Iljushin 76	26.11.2005	IL24	CPT - Novo - CPT	26	0
aircraft Hercules C130	(06-11)-01-2006	C130	CPT - Troll - CPT	9	16
aircraft Iljushin 76	(02-06)-02-2006	IL25	CPT - Novo - CPT	0	30
aircraft Iljushin 76	(10-12)-02-2006	IL26	CPT - Novo - CPT	0	20
aircraft Dornier 228-101	16-12-2005 - 13-02-2006	P2	at Neumayer, S17	3	3

ship Polarstern-ANTXXIII/2	19-11 - (02-03)-12-2005	PS	Cape Town - Neumayer	7	0
ship S.A.Agulhas	(07-09)-02-2006	S	Neumayer - Cape Town	0	0
ship BBCSingapore(Briese)	(07-09)-02-2006	SB	CT - NM - CT	0	2
DROMLAN Pax in / out:				61	66

The first flight (IL 22) scheduled early November carried one person from the German Weather Service (DWD) to Neumayer and 10 persons of the logistic team to open Kohnen station for the ice core drilling project EPICA. As already during last season the DWD expert provided flight weather forecasts for DROMLAN in co-operation with the South African Weather Service at Cape Town.

15 scientists of the EPICA project came in with IL 23.

The IL 24 flight scheduled end of November carried 26 scientists and technicians for Neumayer station including the over wintering team for 2006.

The mid season flight (C-130) beginning of January carried 3 scientists /technicians to Neumayer and a VIP group of 6 persons to visit the Neumayer and Kohnen station. The first persons left Neumayer station on this flight. The IL 25 and IL 26 flight were scheduled for beginning and mid February. Both return flights had to pick up 50 scientists and technicians in total from Neumayer and Kohnen and fly them back to Cape Town. DROMLAN activities were completed by the last flight on 12 February 2006.

A Basler aircraft BT67 performed the feeder flights from Novo and Troll Airbase to Neumayer and Kohnen station and the return feeder flights.

AWI flight information: South America to Teniente Marsh, Chile

Transport of personnel and cargo for Dallmann Laboratory/Jubany was done in co-operation with the Direction Nacional del Antartico (DNA _ Argentine), the Instituto Antartico Uruguayo, Instituto Antartico Chileno. Flights, DAP and ALCI. Flights were performed with a C-130 aircraft operated by the Uruguayan and Chilean Air Force between Punta Arenas (PA) and the airfield at Teniente Marsh. In addition AWI used commercial supporters (DAP and ALCI) for some flights. These flights were performed by a DASH 7 (DAP) and an BT67 of ALCI. For feeder flights in the area of King George Island helicopters (BO-105) were used of DAP, FACH and AWI.

Date	Nation/Company	Route	For Frei	For Punta Arenas
			Pax / cargo	Pax / cargo
28 October 2005	Chile	PA – Frei – PA	5 / 1000 kg	0 / 0
23 November 2005	Chile	PA – Frei – PA	0 / 0	1 / 50 kg
10 December 2005	Chile	PA – Frei – PA	5 / 0	2 / 50 kg
05 January 2006	DAP	PA – Frei – PA	3 / 100	0 / 0
25 January 2006	Uruguay	PA – Frei – PA	3 / 100	0 / 0
02 February 2006	DAP	PA – Frei – PA	0 / 50	0 / 0
15 February 2006	ALCI	PA – Frei – PA	0 / 0	3 / 0
24 March 2006	Chile	PA – Frei – PA	0 / 0	2 / 0
26 March 2006	Chile	PA – Frei – PA	2 / 0	2 / 0
03 April 2006	Uruguay	PA – Frei – PA	2 / 0	0 / 0

Gondwana and GANOVEX IX - flight information

The expedition GANOVEX IX, organized by BGR, was supported by one Twin Otter (DHC-6), operated by Kenn Borek Air Ltd. and two helicopters (AS350B), operated by Helicopters (NZ) Ltd.

Twin Otter (DHC-6): Chief pilot: Bob Baldwin,
Chief technician: Rob McLeod
Flight hours: 220
Helicopter (AS350B): Chief pilot: Ashley Clarke / Angus Taylor
Chief technician: Shane Bond / Robert Gits
Flight hours: 361

Area of activity: The project area was located in northern Victoria Land and offshore to the north and east of Cape Hallett.

Participants: see logistic report

For further information please contact: <http://www.borekair.com> or <http://www.helicopters.net.nz>

(c) Stations

Neumayer station (AWI)

Summer season: 03 November 2005 – 12 February 2006

Officers in charge:

Station leader: Wolfgang Meier (AWI, physician) January 2005 until February 2006
Maja Petzel (AWI, physician) until February 2007.

Logistic coordinator: Juergen Janneck (AWI, engineer) for season 2005/2006.

Up to 65 scientists, experts, pilots and technicians stayed temporarily at the station during summer season. Additionally visitors from other national programs took short time stays at the station site. UK, Russian and South African fixed wing and rotary aircraft were scheduled to land at Neumayer station for transport of personnel and freight in the frame of scientific and logistic co-operation or refueling.

Logistic activities report:

On 02 December 2005 RV Polarstern arrived at Atka Bay to provide the bulk of material, equipment, and consumables for Neumayer and Kohnen. 7 scientists and technicians arrived with the vessel. For summer activities the majority of personnel including the new over wintering staff moved in and out in the frame of DROMLAN. The cargo was carried out with the German vessel BBC Singapore from Neumayer at the 09 February 2006.

During the season technical services were provided for air operations such as runway maintenance, refuelling, communication, flight following, weather forecast. The aircraft Do228-101 (Polar 2) was based at Neumayer station. For the ANTSYO project the aircraft was positioned at S17 during January.

Technical preparations of the supply traverses for Kohnen station were a further task in December and beginning of February.

Maintenance works were carried out at station building, eastern ramp, garage, ventilation shafts, emergency exits as well as different platforms of the observatories.

The sensor array of the infrasound station IS27DE was dug out and re-established at the accumulated snow surface. Contract personnel of a commercial company performed this great amount of physical work.

A new observatory was built near the north point at the ice shelf.

The **PerenniAL Acoustic Observatory** in the **Antarctic Ocean** (PALAOA, Hawaiian “whale”) is intended to record the underwater soundscape in the vicinity of the shelfice-edge for several years.

The assembly of the long-term observatory near Neumayer Station will be carried out in two steps. During the austral summer 2004/05 the energy module of PALAOA including the WLAN connection to Neumayer Station was set up at the Ekström shelf ice. After a one year's test stage, the acoustic measuring sensors (4 hydrophones) and a CTD sensor were deployed under the shelf ice during the season. To this end, three hot water drillings through the shelf ice provided access to the water below the shelf ice to insert the sensors into the water column.

The recording system and the control technology of PALAOA are placed in an isolated 10 foot container. A Savonius wind generator for power supply, a WLAN antenna for data transfer to Neumayer Station and a Webcam for visual observations of the sea surface are mounted on a pylon of 3 m height fixed on top of the container. In addition, solar panels are mounted directly on the container wall oriented towards the north. To be energy self-sufficiency – especially during polar winter – a methanol fuel cell complements the energy module of PALAOA.

The 25rd over wintering team was replaced by its successors, a group of nine women and men. The new team was finally briefed on site.

Weather forecast:

Since season 2002/2003 DROMLAN weather forecast service is established in Dronning Maud Land. Also in season 2004/2005 this service worked well for all partners in the DROMLAN community. Like in the past seasons over 2000 individual forecasts for aircrafts, stations, traverses, ships and other field activities have been worked out and distributed via email, HF, VHF and Iridium. The covered region is between Halley (BAS, UK) and eastward to Syowa (JARE, Japan).

This season the weather forecast service started on the 5th of November 2004 and ended with the last flight on the 15th of February 2005. The weather forecast was organized by AWI in co-operation with German Weather Service (Deutscher Wetterdienst).

Two forecasters shared the season and they worked permanently at Neumayer Station as well as temporary at Novo Airbase (Russia) at the beginning and end of the season traveling to and from Cape Town Airport, South Africa.

Next to the data of the meteorology observatory up to 300 MByte of meteorological data and forecast products have been received daily via email at Neumayer Station with the permanent satellite data link (128 kB). Therefore the forecaster had the advantage to get access to different products of the numerical weather forecast models of the ECMWF, AMPS and GME at any time. Also this season the Satellite picture receiving station (SeaSpace) for highly spatially and timely resolved multi-cannel pictures from the NOAA- and DMSP-satellites worked well. These images with a horizontal resolution down to 500 meter are very important for the individual flight forecasts in the DROMLAN community.

This and also the last seasons it was sometimes difficult to get meteorological data from any station in the DROMLAN community. It was always possible to get actual weather from any station in the DROMLAN area

on request, but it would be a great advantage to have more automatic weather stations (AWS) in Dronning Maud Land, especially at Novo Runway for the intercontinental flights. Also a direct access to the automatic weather station at Troll runway was not possible, but the new permanent satellite data link at Troll Station it should be available next season via Internet.

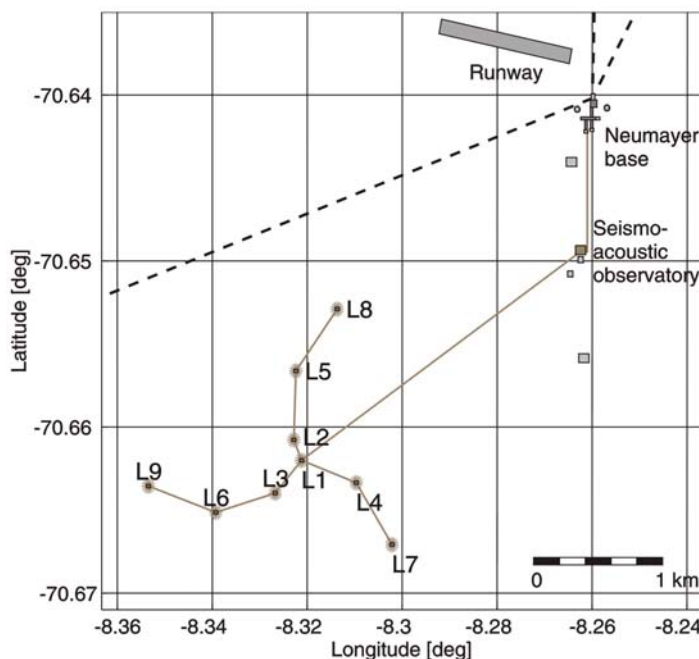
All intercontinental flights between have been successfully supported last season by the DROMLAN weather forecast service. This included also the first intercontinental flight between Cape Town and Troll Station with the C-130 operated by the Norwegian Air force.

For westbound and eastbound flights leaving the forecast area off DROMLAN weather forecast service the forecaster at Neumayer Station was in contact with the forecast service at Rothera and McMurdo.

Service works at the Infrasound Array IS27DE (CTBT-network):

The IS27 array is located about 3 km southwest of the Neumayer base, as shown in the figure below. It consists of nine stations arranged on a spiral at regularly increasing radii from the center point. The aperture of this array is about 2 km. The central array control system is installed in the seismo-acoustic observatory about 800 m south of the Neumayer base. The stations of the IS27 array are 1.8 to 4 km from the central control system.

IS27 is co-located with the facilities of the permanent Neumayer base, which provides all logistical requirements for operation and maintenance. The infrasound array is powered by the mains of the Neumayer base. A fiber-optic cable as well as WLAN technology is used to connect the central array control system to the local intranet at the Neumayer base, which provides access to the permanent satellite link. The infrasound array is maintained by the permanent staff of the Neumayer base. During the routine maintenance additional manpower is provided by AWI for the recovery of the array elements.



Location of the IS27DE infrasound array

Geophysical observatory:

During the austral summer 2004/2005 the geophysics branch at the base was mainly engaged in maintenance and service works at the base itself and at the remote seismological stations. New computing facilities were installed and thus several problems in network administration had to be solved. A substantial amount of time was spent for training of the geophysics staff off the new wintering team. Besides this all geophysicist assisted in the annual service works for the infrasound station IS27. From January 05 until January 11 a service trip to the remote seismological stations VNA2 and VNA3 was made. At station VNA3 the seismometer and the data acquisition system were recovered from deep below the the snow surface and set up again at a higher level. New solar panels were installed at the antenna mast. The mast was set up at a higher position again. All batteries were changed to guarantee an uninterrupted operation during the Antarctic winter. At station VNA2,

the site of the detection array, service works were quite limited. A telecommunication link had to be changed because transmission of array data became worse shortly before the visit. It was not necessary to recover the central seismometer due to a rather low accumulation of snow. The antenna mast could also remain in its current position. Only the batteries had to be changed and the electronics had to be adjusted.

Participants:

Surname	Given name	Position/profession	Stay	Institute / company	Country
Anastou	Anja	meteorologist	26.11.05-2007	AWI	Germany
Behrendt	Chris	engineer	26.11.05-2007	AWI /Laeisz	Germany
Berns	Hans-Juergen	chiefpilot	16.12.05-13.02.06	DLR	Germany
Bock	Michaela	geophysicist	26.11.05-2007	AWI	Germany
Boebel	Olaf	scientist	02.12.05-12.01.06	AWI	Germany
Boebel	Tobias	engineer	02.12.05-13.02.06	Optimare	Germany
Bornemann	Horst	scientist	26.11.05-04.02.06	AWI	Germany
Brauner	Ralf	weather forecaster	07.01.06-13.02.06	DWD	Germany
Bruecklmeier	Eric-Roger	IT, radiooperator	26.11.05-2007	AWI /Laeisz	Germany
Brüggemann	Marc	airchemist	2004-04.02.06	AWI	Germany
Buchholz	Oliver	electrician	2004-09.02.06	AWI /Laeisz	Germany
Buhl	Andreas	electrician	26.11.05-2007	AWI /Laeisz	Germany
Burfeind	Mathias	technician	26.11.05-04.02.06	maintenance company	Germany
Duecker	Jens	journalist	26.11.05-04.02.06	Eikon-Südwest	Germany
Eron	Andreas	technician	26.11.05-04.02.06	maintenance company	Germany
Gebhard	Regina	technician	07.01.06-13.02.06	DLR	Germany
Gemsa	Steffen	pilot	16.12.05-13.02.06	DLR	Germany
Gernandt	Hartwig	VIP	07.01.06-12.01.06	AWI-Logistics	Germany
Giedke	Kolja Benjamin	geophysicist	2004-13.02.06	AWI	Germany
Grasse	Torsten	technician	26.11.05-12.01.06	BGR Hannover	Germany
Hennig	Hans-Peter	IT, radiooperator	2004-12.01.06	AWI /Laeisz	Germany
Hoeltig	Juergen	engineer	07.01.06-13.02.06	Optimare	Germany
Hoeltz	Andre	cook	2004-04.02.06	AWI /Laeisz	Germany
Hofmann	Joerg	engineer	07.01.06-13.02.06	FIELAX	Germany
Janneck	Juergen	engineer	26.11.05-13.02.06	AWI-logistics	Germany
Junker	Reinhard	VIP	07.01.06-12.01.06	BMBF, Ministerialdirektor	Germany
Kindermann	Lars	scientist	26.11.05-12.01.06	AWI	Germany
Klinck	Holger	scientist	02.12.05-04.02.06	AWI	Germany
Koenig-Langlo	Gert	scientist	26.11.05-12.01.06	AWI	Germany
Köttgen	Rainer	VIP	07.01.06-12.01.06	SfBW, Staatsrat	Germany
Medenwald	Florian	technician	26.11.05-04.02.06	maintenance company	Germany
Meyer	Wolfgang	physician	2004-04.02.06	AWI	Germany
Moeller	Hans-Joachim	weather forecaster	03.11.05-12.01.06	DWD	Germany
Moeller	Andrea	airchemist	26.11.05-2007	AWI	Germany
Mueller-Wrana	Tobias	geophysicist	26.11.05-2007	AWI	Germany
Müller	Christian	scientist	26.11.05-12.01.06	FIELAX	Germany
Petzel	Maja	physician	26.11.05-2007	AWI	Germany
Ploetz	Joachim	scientist	26.11.05-12.01.06	AWI	Germany
Rauch	Claudia	journalist	26.11.05-04.02.06	Eikon-Südwest	Germany
Riedel	Sven	scientist	02.12.05-13.02.06	AWI	Germany
Schartel	Harald	engineer	2004-09.02.06	AWI /Laeisz	Germany
Schües	Nikolaus	VIP	07.01.06-12.01.06	Reederei Laeisz	Germany
Schultz	Corinna	cook	26.11.05-2007	AWI /Laeisz	Germany
Steinhage	Daniel	scientific leader	02.12.05-13.02.06	AWI	Germany
Sulzbach	Frank	technician	26.11.05-04.02.06	maintenance	Germany

				company	
Thiede	Jörn	VIP	07.01.06-12.01.06	AWI, Direktor	Germany
Vorshelen	Axel van	technician	26.11.05-12.01.06	maintenance company	Germany
Waldow	Mario	technician	26.11.05-04.02.06	maintenance company	Germany
Wellmann	J. Florian	geophysicist	2004-12.01.06	AWI	Germany
Witt	Ralf	technician	02.12.05-04.02.06	AWI-logistics	Germany
Wolf	Alexander	technician	02.12.05-13.02.06	DLR	Germany
Ziffer	Albert	technician	02.12.05-04.02.06	AWI	Germany
Zoellner	Mathias	meteorologist	2004-12.01.06	AWI	Germany

Kohnen station (AWI)

Summer season: 03 November 2005 – 06 February 2006

Officers in charge:

Scientific leader: Frank Wilhelms (AWI)

Station leader: Cord Drücker (AWI)

16 scientists and 10 technicians stayed at the station during summer season. UK, Russian and German fixed wing were scheduled to land at Kohnen station for transport of personnel and freight in the frame of scientific and logistic co-operation.

Logistic activities report:

The Basler carried 10 technicians from Novo to Kohnen to open the station on the 06. November. 16 scientists and freight were flown from Novo to Kohnen by Basler on the 11. November. The traverse from Neumayer station with the main cargo arrived Kohnen on the 20. December. The drilled ice cores were transported by Twin Otter from BAS to Neumayer station end of January. On the end of the scientific works the traverse left Kohnen station on 26. January 2006. All scientists were carried out with IL 25 in the beginning of February. The station was closed by logistics on 06. February 2006. Polar 2 carried the technicians to Neumayer station.

Surname	Given name	Position/profession	Stay	Institute / company	Country
Ackermann	Adolf	Cook	03.11.05-13.02.06	AWI /Laeisz	Germany
Beiersdorf	Hans	Physician	03.11.05-13.02.05	AWI	Germany
Birnbaum	Gerit	meteorological exper.	03.11.05-04.02.06	AWI	Germany
Blattner	Mark	Technician	26.11.05-13.02.06	Kaessbohrer	Germany
Brehme	Andreas	Technician	03.11.05-13.02.06	AWI /Laeisz	Germany
Dick	Dorothee	drillers helper /Impaktor	10.11.05-04.02.06	AWI	Germany
Druecker	Cord	Technician	03.11.05-13.02.06	AWI-logistics	Germany
Faria	Sergio	Science	10.11.05-04.02.06	AWI / NPI	Norway
Freitag	Johannes	science /Micro Tomog.	10.11.05-04.02.06	AWI	Germany
Frenzel	Andreas	driller	10.11.05-04.02.06	AWI	Germany
Fritzsche	Diedrich	driller	10.11.05-04.02.06	AWI	Germany
Karlin	Torbjoern	driller	10.11.05-04.02.06	Uni-Stockholm	Sweden

Kaufmann	Patrik	drillers helper	10.11.05-04.02.06	Uni-Bern	Germany
Kipfstuhl	Sepp	science	10.11.05-04.02.06	AWI	Germany
Koehler	Jens	technician	03.11.05-13.02.06	AWI /Laeisz	Germany
Krischat	Jochen	technician	03.11.05-13.02.06	AWI /Laeisz	Germany
Lambrecht	Anja	technician	03.11.05-13.02.06	AWI /Laeisz	Germany
Lawer	Gunther	driller	10.11.05-04.02.06	AWI /extern	Germany
Miller	Heinz	drillers helper	10.11.05-04.02.06	AWI	Germany
Oerter	Hans	science	10.11.05-04.02.06	AWI	Germany
Schubert	Holger	technician	03.11.05-13.02.06	AWI	Germany
Stoof	Guenter	technician	03.11.05-13.02.06	AWI	Germany
Trimborn	Klaus	technician	26.11.05-13.02.06	AWI /Laeisz	Germany
Twarloh	Birte	drillers helper	10.11.05-04.02.06	AWI	Germany
Valero-Delgado	Fernando	drillers helper	10.11.05-04.02.06	AWI	Germany
Weiler	Karin	firm air sampling	10.11.05-04.02.06	Uni-Bern	Switzerland
Wilhelms	Frank	chief driller	10.11.05-04.02.06	AWI	Germany

Dallmann Laboratory (AWI) - annex to Jubany station (Argentina)

Summer season: 02 November 2005 – 06 April 2006

Officers in Charge:

Scientific leader: Katja Heise from 02 November 2005 to 06 April 2006

Chief technician: Richard Steinmetz from 02 November 2005 to 05 December 2005

Guido Kleffel from 05 January 2006 to 15 February 2006

Richard Steinmetz from 28 February 2006 to 06 April 2006

Participants:

Surname	Given name	Position/profession	Stay at Dallmann	Institute / company	Country
Heise	Katja	Scientific leader	02.11.05 – 06.04.06	AWI	Germany
Abele	Doris	scientist	02.11.05 – 22.11.05	AWI	Germany
Weihe	Ellen	scientist	02.11.05 – 06.04.06	AWI	Germany
Halder	Felix	scientist	02.11.05 – 10.12.05	AWI	Germany
Kopp	Matthias	scientist	15.12.05 – 26.02.06	Uni Jena	Danish
Nordt	Anja	scientist	13.01.05 – 26.03.06	Uni Jena	Germany
Leya	Thomas	scientist	25.01.06 – 26.02.06	MPI Berlin	Germany
Remias	Daniel	scientist	25.01.06 – 26.02.06	Uni Insbruck	Germany
Wilbert	Norbert	scientist	15.02.06 – 26.03.06	Uni Bonn	Germany
Wiencke	Christian	scientist	02.11.05 – 06.04.06	AWI	Germany
Thiede	Jörn	scientist	02.11.05 – 06.04.06	AWI	Germany
Steinmetz	Richard	Technician	02.11.05 – 10.12.05	AWI	Germany
Fiedler	Harald	Technician	02.01.05 – 15.02.06	AWI	Sweden
Ferber	Thomas	Technician	02.01.05 – 15.02.06	AWI	Germany

Kleffel	Guido	Engineer, logistics	02.01.05 – 15.04.06	AWI	Germany
Kleffel	Guido	Engineer, logistics	27.03.05 – 06.04.06	AWI	Germany
Steinmetz	Richard	Technician	26.02.05 – 06.04.06	AWI	Germany
Zimmer	Alfons	scientist	25.01.06 – 26.01.06	DLR	Germany
Kiening	Rainer	scientist	25.01.06 – 26.01.06	DLR	Germany
Dietrich	Eberhart	scientist	25.01.06 – 26.01.06	DLR	Germany
Dinter	Wolfgang	scientist	05.02 – 09.02.06	UBA	Germany

Logistic activities report:

During summer season maintenance works have been performed. The four new Laboratories, which were erect in March 2005, were connected to the local supply system.

20 scientists and technicians with 1.25 tons of cargo were transported by plane southbound from Punta Arenas to the Dallmann Laboratory/Jubany station and Bellingshausen. 10 scientists and technicians were transported by plane northbound from Dallmann Laboratory/Jubany Station and Bellingshausen to Punta Arenas (see (b) Aircraft operations).

11 technicians have been transported by the RV Las Palmas (1), MV Hanseatic (5) and RV Polarstern (5) from Maxwell Bay to South America.

Date	Nation	Vessel name	For Jubany	For Punta Arenas
			Pax / cargo	Pax / cargo
09 December 2005	Argentina	Almirante Irizar	0 / 8000	0 / 0
23 November 2005	Chile	Oscar Viel	0/ 300	0 / 0
10 January 2006	Chile	DAP Mares	0 / 500	0 / 0
22 January 2006	Spain	Las Palmas	0 / 0	1 / 50
26 February 2006	Germany	MV Hanseatic	1 / 0	5 / 0
06 April 2006	Germany	RV Polarstern	0 / 0	5 / 3000

GARS O'Higgins (DLR) - annex to General Bernardo O'Higgins (Chile)

Director of GARS: Klaus-Dieter Reiniger (DLR / DFD-BI)

Head of campaign(s): Alfons Zimmer (DLR / DFD-BI)

Marcelo Morais (DLR / DFD-BI)

Logistic activities report:

The German Antarctic Receiving Station (GARS O'Higgins is logistically operated as annex to the Chilean station General Bernardo O'Higgins. Additional support (transportation of personnel and material; power supply and inspection of the station during the time between the campaigns) is performed by the Chilean partners.

Normally equipment of Chilean Air Force and Navy is used for transportation of personnel and material, as usual within two steps,

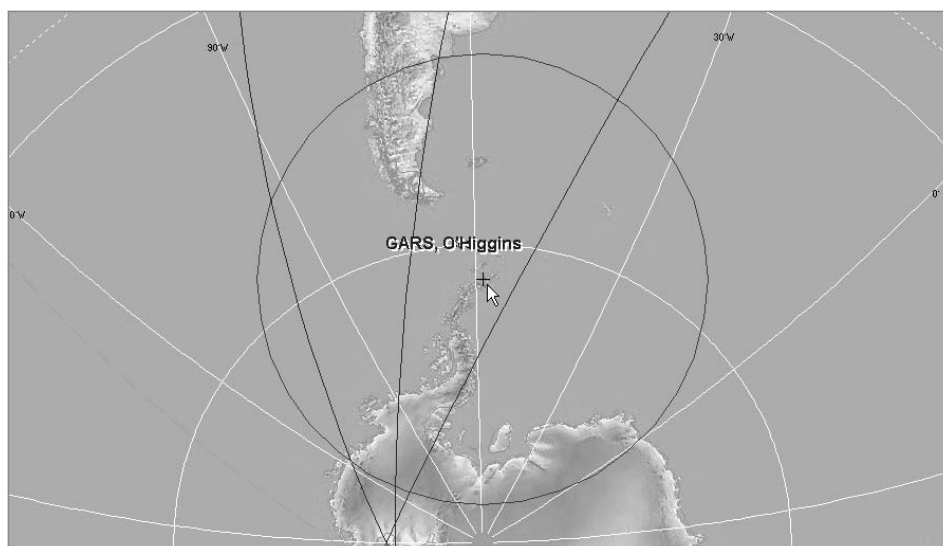
- a) between Punta Arenas (Chile) and Base Frei (King George Island) by FACH C-130 Hercules// FAB C-130 Hercules// FAU C-130 Hercules // DAP King Air or Dash-7

- b) between Base Frei and O'Higgins by vessels (POLARSTERN, O.VIEL, LAUTARO, M/S BREMEN) or by FACH DHC-6 Twin Otter, DAP BO-105 Helicopter.

In cooperation with AWI also Dallmann/Jubany could be used as an intermediate station for the route from King George Island to Base O'Higgins (Jan. 2006). Occasionally tourist vessels (e.g. M/S HANSEATIC) could be used on the route between Ushuaia (Argentina) and O'Higgins.

Area of Activity:

Due to the characteristic of "remote sensing", the requirement for the location was the result of the requests of the scientific community and the logistic constraints. A main objective of VLBI is the determination of the movements of the continental plates. Thus it is necessary to be located on



the continental plate itself, not at a less stable area near the border (like King George Island). As well the cooperation with Chile/INACH recommended O'Higgins as the preferable location.

Participants:

Surname	Given name	Position/profession	Stay	Institute / Company	Country
Morais	Marcelo	Engineer	TF050901	DLR / DFD-B	Brazil/Germany
Artemenko	Ruslan	Engineer	TF050901	DLR / DFD-BI	Uzbekistan
Zimmer	Alfons	Physicist	TF050901	DLR / DFD-BI	Germany
Plötz	Christian	Engineer	TF050901	BKG-Wetzell	Germany
Wojdziak	Reiner	Computer Scientist	TF050901	BKG – Leipzig	Germany
Wende	Wilfried	Engineer	TF050901	ESAT	Germany
Kuttert	Renato	Technician	TF040901	ESAT	Brazil
Reiniger	Klaus-Dieter	Engineer	TF060103	DLR / DFD-BI	Germany
Diedrich	Erhard	Physicist	TF060103	DLR / DFD-BI	Germany
Zimmer	Alfons	Physicist	TF060103	DLR / DFD-BI	Germany
Kiening	Rainer	Engineer	TF060103	DLR / DFD-BI	Germany
Alstetter	Holger	Geophysicist	TF060103	DLR / DFD-BI	Germany
Plötz	Christian	Engineer	TF060103	BKG-Wetzell	Germany
Reinhold	Andreas	Engineer	TF060103	BKG - Leipzig	Germany
Wende	Wilfried	Engineer	TF060103	ESAT	Germany
Mafrá	Ivo	Technician	TF060103	ESAT	Brazil

Silveira	Renato	Technician	TF060103	ESAT	Brazil
Da Silva	Nelson	Technician	TF060103	ESAT	Brazil

Gondwana (BGR)

Summer season: 27 October 2005 – 06 February 2006

Officer in Charge: Norbert Roland (BGR), Detlef Damaske (BGR)

Area of Activity: northern Victoria Land and offshore to the north and east of Cape Hallett

Logistic activities report:

The helicopter-borne and fixed-wing aeromagnetic investigations took place in the 2005/2006 season. Operational base was the BGR summer station Gondwana (Terra Nova Bay) and a temporary camp on the Edisto Glacier (Cape Hallett area) for fixed-wing operations for this project. A small short-time satellite camp for geological work was established with helicopter support (helicopters based at Gondwana) at Mt Carson (Upper Rennick Glacier area).

- 27 Oct Arrival of first field team and 2 helicopters (Helicopters NZ) at Gondwana base by Hercules flight (Italian Antarctic programme).
- 28 Oct Arrival of Twin Otter (Kenn Borek) at Mario Zucchelli Station/Gondwana base.
Begin logistic helicopter operations around Gondwana base and to Edisto Glacier.
- 02 Nov Begin Twin Otter logistic flights to establish Edisto camp.
- 04 Nov Arrival of second field team at Gondwana base by Hercules flight (Italian Antarctic programme).
- 05 Nov-31Jan Helicopter supported geological work in the area of northern Victoria Land from Reeves Glacier in the south to the Everett Range in the north.
- 10 Nov Establishment of Edisto camp.
- 17 Nov Establishment of Carson camp.
- 25 Nov-29 Dec Aeromagnetic Survey offshore Cape Hallett/Cape Adare (Twin Otter operations based at Edisto camp).
- 05 Dec Closing Carson camp
- 12 Jan Closing Edisto camp
- 13 Jan Contract with Kenn Borek ends, Twin Otter now with Italian programme at Mario Zucchelli Station.
- 19 Jan First group leaves Gondwana base transiting to Dumont d'Urville (Twin Otter flight) to leave Antarctica with French vessel L'Astrolabe.
- 06 Feb Closing Gondwana base; last logistic helicopter operations. Remaining personnel moves to Mario Zucchelli Station
- 08 Feb Transfer from Mario Zucchelli Station by Twin Otter to Dumont d'Urville to leave Antarctica with French vessel L'Astrolabe.

The participants were transported to Mario Zucchelli Station in cooperation with the Italian Antarctic Research programme from Christchurch by aircraft. The return was organized through the French Polar Institute via Dumont d'Urville by ship to Hobart.

Participants:

Surname	Given name	Position/profession	Stay	Institute / company	Country
Damaske	Detlef	Geophysicist	27.10.05-27.02.06	BGR	Germany
Kothe	Jürgen	Logistics	27.10.05-12.02.06	BGR	Germany
Möller	Heinz-Dieter	Technician	27.10.05-12.02.06	BGR	Germany
Goldmann	Felix	Technician	27.10.05-12.02.06	BGR	Germany
Conway	Maurice	Field guide	27.10.05-12.02.06	Via BGR	New Zealand
Läufer	Andreas	Geologist	27.10.05-22.01.06	BGR	Germany
Clarke	Ashley	Helicopter pilot	27.10.05-09.12.05	HNZ	New Zealand
Taylor	Angus	Helicopter pilot	09.12.05-31.01.06	HNZ	New Zealand
Barry	Steve	Helicopter pilot	27.10.05-06.02.06	HNZ	New Zealand
Bond	Shane	Helicopter eng.	27.10.05-09.12.05	HNZ	New Zealand
Gits	Robert	Helicopter eng.	09.12.05-03.02.06	HNZ	New Zealand
Baldwin	Bob	Twin Otter pilot	01.11.05-13.01.06	Kenn Borek	Canada
Dauenhauer	Monica	Twin Otter pilot	01.11.05-13.01.06	Kenn Borek	Canada
McLeod	Rob	Twin Otter eng.	01.11.05-13.01.06	Kenn Borek	Canada
Roland	Norbert	Geologist	04.11.05-27.02.06	BGR	Germany
Viereck-Götte	Lothar	Geologist	04.11.05-06.01.06	Uni Jena	Germany
Schöner	Robert	Geologist	04.11.05-22.01.06	Uni Jena	Germany
Bomfleur	Benjamin	Geologist	04.11.05-12.02.06	Uni Münster	Germany
Lisker	Frank	Geologist	04.11.05-22.01.06	Uni Bremen	Germany
Schneider	Jörg	Geologist	04.11.05-22.01.06	BAK Freiberg	Germany
Staite	Brian	Field guide	04.11.05-12.02.06	Via BGR	New Zealand
Trapp	Michael	Journalist	04.11.05-12.02.06	FH Kiel	Germany
Wagner	Henri	Journalist	04.11.05-22.01.06	FH Kiel	Germany

(d) Field parties and activities in co-operation with other national operators

Station: Dumont d'Urville, France

National Operator: IPEV, Technopole Brest Iroise, France

Period: 27 October – 19 December 2005

Project: Foraging behaviour of emperor penguins (AWI)

Guest scientist: Ilka Zimmer (AWI)

Area of Activity: The emperor penguin breeding colony of Pointe Géologie near the French Antarctic research station Dumont d'Urville in Terre Adélie (66°40'S, 140°00'E), Antarctica.

Station: Amundsen-Scott, USA

National operator: National Science Foundation (NSF)

Period: 20 November 2005 – 14 February 2006

Officer in charge: Amundsen-Scott Station: See US report
Amanda/IceCube Science:
Barwick, Steve, US Spokesman AMANDA, Univ. of California, Irvine, USA
Spiering, Christian, Europe Spokesman AMANDA, DESY Zeuthen, Germany
Halzen, Francis, PI IceCube, Univ. of Wisconsin, Madison, USA
Hulth, Per-Olof, Spokesman IceCube, University of Stockholm, Sweden
Principal Investigator for AMANDA/Pole operation: Robert Morse,
University of Wisconsin. USA

Area of Activity: Station area

Guest scientists:

surname	given name	position/profession	stay	organization	country
Walter	Michael	scientist	30.01-14.02.06	DESY Zeuthen	Germany
Ackermann	Markus	scientist	30.01-14.02.06	DESY Zeuthen	Germany
Voigt	Bernhard	PhD Student	20.12.05-5.01.06	DESY Zeuthen	Germany
Leich	Holger	scientist	11.01.-23.01.06	DESY Zeuthen	Germany
Tepe	Andreas	PhD Student	01.12.-20.12.05	Univ. Wuppertal	Germany
Messarius	Timo	PhD Student	20.11.-10.12.05	Univ. Dortmund	Germany

Station: Bellingshausen Station (Russia)

Escudero Station (Chile)

Great Wall (China)

King Sejong Station (Korea)

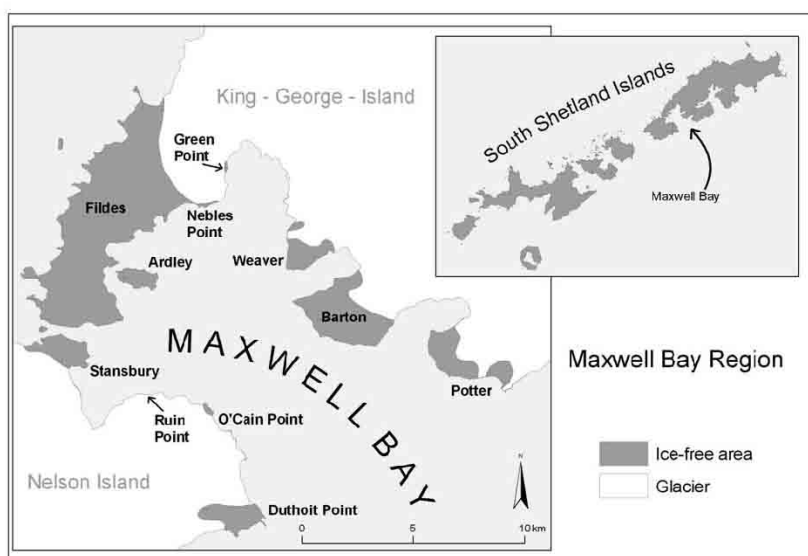
Period: 05 December 2005 – 26 March 2006

Over wintering of Anne Fröhlich in the frame of the Russian Antarctic Expedition at Bellingshausen (26 March 2006 till end of 2006)

Project: Biological research on Antarctic seabirds, skuas and Wilson's storm petrels

Officer in Charge: Hans - Ulrich Peter (University Jena)

Area: Potter Peninsula and Fildes Peninsula including Ardley Island, King George Island



Guest scientist:

Surname	Given name	Position/profession	Stay	Institute / Company	Country
Büsser	Christina	PhD student	10.12.05 – 26.02.06	Jena University	Germany
Fröhlich	Anne	Diploma student	27 March to Dec. 06	Jena University	Germany
Peter	Hans Ulrich	Scientific leader	unknown	Jena University	Germany
Mustafa	Osama	PhD student	10.12.05 – 26.02.06	Jena University	Germany
Pfeiffer	Simone	PhD student	10.12.05 – 24.02.06	Jena University	Germany
Peter	Hans-Ulrich	Biologist/ project leader	10.12.05 – 26.02.06	Jena University	Germany
Ritz	Markus	PhD student	10.12.05 – 24.02.06	Jena University	Germany

Ship cruise: **RV Laurence M. Gould, LMG 06-02**

National operator: USA

Period: 14 February – 16 March 2006

Project: LMG 06-02: Biological Oceanography

Guest scientist: Lena von Harbou (AWI)

Ship cruise: **RV “Almirante IRIZAR” (2nd and 3rd leg)**

National operator: Armada Argentina

Period: 03 January 2006 to 25 March 2006

Guest scientist: Sonja Gütz (AWI)

Area of Activity: Weddell Sea and Antarctic Peninsula

Base Belgrano 2 (Argentina)	77° 52' 29" S, 34° 37' 37" W
Base Jubany (Argentina)	62° 14' 16" S, 58° 39' 52" W
Base San Martín (Argentina)	68° 07' 47" S, 67° 06' 12" W

Base Orcadas (Argentina)	60° 40' 22" S, 44° 44' 17" W
Base Esperanza (Argentina)	63° 23' 42" S, 56° 59' 46" W
Base Marambio (Argentina)	64° 14' 42" S, 56° 39' 25" W

Schedule:

Second leg	03.01.2006 departure Ushuaia
	06.01.2006 Base Orcadas i scientific work
	17.01.2006 – 20.01.2006 Base Belgrano II scientific work
	06.02.2006 Base Orcadas i scientific work
	08.02.2006 Base Jubany i scientific work
	10.02.2006 arrival Ushuaia
Third leg	13.02.2006 departure Ushuaia
	17.02.2006 – 19.02.2006 Base San Martín scientific work
	26.02.2006 Base Esperanza scientific work
	02.03.2006 – 10.03.2006 Base Marambio i scientific work
	15.03.2006 – 17.03.2006 Base Jubany i scientific work
	21.03.2006 Base Orcadas i scientific work
	25.03.2006 arrival Ushuaia

2.2.2 Non-governmental expeditions

# 1 Ship-based Operation			
Name of operator		Turismo SIM Ltd., Wolf Kloss, Calle Maragaño 168, P.O. Box 6, Puerto Williams, XII Region, Chile	
Name of vessel		S/Y SANTA MARIA	
Country of registry of vessel		Chile	
Number of voyages		1	
# of crew/pax		2/5	
Port of departure to Antarctica		Puerto Williams (Chile)	
Port of arrival from Antarctica		Puerto Williams (Chile)	
Date of departure / arrival		11.01.05 / 04.02.05	
Areas of operation		A1	
Landing sites and dates at which these landings took place:			
#	Date	Site	Type of activity
1	16.01.06	Deception Island	Zodiac landing
2	19.01.06	Enterprise Island	Zodiac landing
3	20.01.06	Cuerverville Island	Zodiac landing
4	21.01.06	Danco Island	Zodiac landing
5	21.01.06	Base Chilena Videla	Zodiac landing
6	21.01.06	Port Charcot	Zodiac landing
7	23.01.06	Port Lockroy	Zodiac landing
8	24.01.06	Argentine Islands	Zodiac landing
9	25.01.06	Peterman Island	Zodiac landing
10	26.01.06	Port Lockroy	Zodiac landing
11	26.01.06	Dorian Bay	Zodiac landing

12	27.01.06	Melchior Islands	Zodiac landing
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# 2 Ship-based Operation	
Name of operator	Henk Boersma, P.O. Box 61, 9410 Ushuaia, Argentina
Name of vessel	S/Y SARAH W. VORWERK
Country of registry of vessel	Germany
Number of voyages	2
# of crew/pax	2/8
Port of departure to Antarctica	Ushuaia (Argentina)
Port of arrival from Antarctica	Ushuaia (Argentina)
Date of departure / arrival	23.12.05 / 20.01.06, 27.01.05 / 21.02.05
Areas of operation	A1 & A2
Landing sites and dates at which these landings took place:	

VOR	Date	Site	Type of activity
01/05			
1	28.12.05	Hannah Point	Zodiac landing
2	29.12.05	Deception Island	Zodiac landing
3	01.01.06	Enterprice Island	Zodiac landing
4	01.01.06	Cuverville Island	Zodiac landing
5	02.01.06	Videla Station	Zodiac landing
6	03.01.06	Old Palmer	Zodiac landing
7	04.01.06	Palmer Station	Zodiac landing
8	04.01.06	Torgersen Island	Zodiac landing
9	05.01.06	Pleneau Island	Zodiac landing
10	05.01.06	Petermann Island	Zodiac landing
11	07.01.06	Vernadsky Station	Zodiac landing
12	08.01.06	Galindez Island	Zodiac landing
13	09.01.06	Wordie Hut	Zodiac landing
14	10.01.06	Bertholet Island	Zodiac landing
15	10.01.06	Waddington Bay	Zodiac landing
16	11.01.06	Port Chargot	Zodiac landing
17	12.01.06	Port Lockroy	Zodiac landing
18	12.01.06	Wienke Island	Zodiac landing

VOR	Date	Site	Type of activity
02/05			
1	01.02.06	Hannah Point	Zodiac landing
2	02.02.06	Whalers Bay	Zodiac landing
3	05.02.06	Petermann Island	Zodiac landing
4	06.02.06	Peterman Island	Zodiac landing
5	07.02.06	Vernadsky/ Argentine Islands	Zodiac landing
6	09.02.06	Torgersen Island	Zodiac landing
7	10.02.06	Port Lockroy	Zodiac landing
8	12.02.06	Cuverville Island	Zodiac landing
9	14.02.06	Paradise Harbour	Zodiac landing
10	15.02.06	Omega Island	Zodiac landing

# 3 Ship-based Operation	
Name of operator	Hapag-Lloyd Kreuzfahrten GmbH, Ballindamm 25, D-20095 Hamburg, Germany
Name of vessel	MV BREMEN
Country of registry of vessel	Nassau/Bahamas No. 716244
Number of voyages	6 (BRE 0600 to BRE 0605)
Max. # of staff/crew/pax	BRE0600: 12/94/164 BRE0601: 12/94/164 BRE0602: 12/94/164 BRE0603: 12/94/164 BRE0604: 12/94/164 BRE0605: 12/94/164
Port of departure to Antarctica	BRE0600: Buenos Aires (Argentina) BRE0601 to BRE0605: Ushuaia (Argentina)
Port of arrival from Antarctica	BRE0600 to BRE0604: Ushuaia (Argentina) BRE0605: Cape Town (South Africa)
Date of departure / arrival	BRE0600: 16.12.05 / 03.01.06 BRE0601: 03.01.06 / 16.01.06 BRE0602: 16.01.06 / 29.01.06 BRE0603: 29.01.06 / 12.02.06 BRE0604: 12.02.06 / 02.03.06 BRE0605: 02.03.06 / 23.03.06
Areas of operation	A1, A2 & A3
Landing sites and dates at which these landings took place:	

#	Date	Time of day	Location	Site	Type of activity
BRE 0600					
1	29.12.05	A.m.	Elephant Island	Cape Lookout (LOOK)	Zodiac landing
2	29.12.05	P.m.	Elephant Island	Gibbs Island	Zodiac cruising
3	30.12.05	A.m.	Deception Island	Whalers Bay (WHAL)	Zodiac landing, visit of old whaling station
4	30.12.05	P.m.	Two Hummock Islands	Hydrurga Rocks	Zodiac landing
5	31.12.05	A.m.	SW Antarctic Peninsula	Petermann Island (PETE)	Zodiac landing
6	31.12.05	P.m.	NW Antarctic Peninsula	Melchior Islands (MELC)	Zodiac cruising
BRE 0601					
1	05.01.06	P.m.	Elephant Island	Cape Lookout (LOOK)	Zodiac landing
2	06.01.06	A.m.	SH South Shetland Isl.	Penguin Island (PENG)	Zodiac cruising
3	06.01.06	P.m.	King George Is.	Arctowski Station Vicinity (ARCT)	Zodiac landing, station visit
4	07.01.06	A.m.	NE Antarctic Peninsula	Paulet Island (PAUL)	Zodiac landing
5	07.01.06	P.m.	Hope Bay (HOPE)	Esperanza	Zodiac landing, Station visit
6	08.01.06	P.m.	Paradise	Almirante Brown	Zodiac landing, Hiking

			Bay	(ALMI)	to the summit
7	09.01.06	A.m.	NW Antarctic Peninsula	Goudier Island	Zodiac landing
8	09.01.06	P.m.	SW Antarctic Peninsula	Petermann Island (PETE)	Zodiac landing
9	10.01.06	A.m.	King George Island	Bellingshausen Station	Zodiac landing
10	10.01.06	P.m.	Greenwich Island	Yankee Harbor	Zodiac landing
11	11.01.06	A.m.	NW Antarctic Peninsula	Melchior Islands (MELC)	Zodiac cruising
12	11.01.06	P.m.	Andvord Bay	Neko Harbour (NEKO)	Zodiac landing
13	12.01.06	A.m.	NW Antarctic Peninsula	Astrolabe Island (ASTR)	Zodiac cruising
14	12.01.06	P.m.	South Shetlands	Half Moon Island	Zodiac landing
15	13.01.06	A.m.	Deception Island	Whalers Bay (WHAL)	Zodiac landing, visit old whaling station
16	13.01.06	P.m.	South Shetland Islands	Aitcho Island (AITC)	Zodiac landing
BRE 0602					
1	18.01.06	P.m.	Elephant Island	Point Wild (WILD)	Ship cruise
2	18.01.06	P.m.	Elephant Island	Cape Lookout (LOOK)	Zodiac landing
3	19.01.06	P.m.	NE Antarctic Peninsula	Paulet Island (PAUL)	Zodiac landing
4	19.01.06	P.m.	NE Antarctic Peninsula	Devil Island (DEVI)	Zodiac landing
6	20.01.06	P.m.	NE Antarctic Peninsula	Snow Hill Island (SNOW)	Zodiac landing
7	21.01.06	A.m.	NE Antarctic Peninsula	Penguin Point	Zodiac landing
8	22.01.06	A.m.	NW Antarctic Peninsula	Astrolabe Island (ASTR)	Zodiac cruising
9	23.01.06	P.m.	South Shetlands	Cuverville (CUVE)	Zodiac landing
10	23.01.06	P.m.	Andvord Bay	Neko Harbor	Zodiac landing
11	24.01.06	P.m.	SW Antarctic Peninsula	Petermann Island (PETE)	Zodiac landing
12	24.01.06	P.m.	Paradise Bay	Almirante Brown (ALMI)	Zodiac cruising, Hiking to the summit
13	24.01.06	P.m.	Paradiese Bay	Skontorp Cove	Zodiac cruising
14	25.01.06	A.m.	NW Antarctic Peninsula	Goudier Island	Zodiac landing
15	25.01.06	P.m.	NW Antarctic Peninsula	Melchior Island	Zodiac cruising
16	26.01.06	A.m.	Deception Island	Whalers Bay (WHAL)	Zodiac landing, station visit
17	26.01.06	P.m.	Livingston Island	Hannah Point (HANN)	Zodiac landing
18	26.01.06	P.m.	South Shetlands	Half Moon Island	Zodiac landing

BRE 0603					
1	03.02.06	P.m.	SH South Shetland Isl.	Penguin Island (PENG)	Zodiac landing
2	04.02.06	A.m.	NE Antarctic	Paulet Island	Zodiac landing
3	04.02.06	P.m.	Hope Bay (HOPE)	Esperanza	Station visit
4	05.02.06	A.m.	South Shetlands	Aitcho Island (AITC)	Zodiac landing
5	05.02.06	P.m.	South Shetlands	Half Moon Island (HALF)	Zodiac landing
6	06.02.06	A.m.	Deception Island	Whalers Bay (WHAL)	Zodiac landing, visit of the old whaling station
7	06.02.06	P.m.	Livingston Island	Hannah Point (HANN)	Zodiac landing
8	07.02.06	A.m.	Paradise Bay	Almirante Brown (ALMI)	Zodiac landing
9	07.02.06	A.m.	Paradiese Bay	Skontorp Cove	Zodiac cruising
10	07.02.06	P.m.	SW Antarctic Peninsula	Petermann Island (PETE)	Zodiac landing
11	08.02.06	A.m.	SW Antarctic Peninsula	Prospect Point	Zodiac landing
12	09.02.06	A.m.	NW Antarctic Peninsula	Jugla Point	Zodiac landing
13	09.02.06	A.m.	NW Antarctic Peninsula	Goudier Island	Zodiac landing
14	09.02.06	P.m.	NW Antarctic Peninsula	Melchior Islands (MELC)	Zodiac cruising
BRE 0604					
1	22.02.06	A.m.	South Orkney Islands	Orcadas Station (ORCA)	Zodiac landing, station visit
2	23.02.06	P.m.	Elephant Island	Point Wild (WILD)	Zodiac landing
3	24.02.06	A.m.	NE Antarctic Peninsula	Paulet Island (PAUL)	Zodiac landing
4	25.02.06	A.m.	NW Antarctic Peninsula	Melchior Islands (MELC)	Zodiac cruising
5	25.02.06	P.m.	W Antarctic Peninsula	Goudier Island	Zodiac landing
6	25.02.06	P.m.	NW Antarctic Peninsula	Jugla Point	Zodiac landing
7	26.02.06	A.m.	SW Antarctic Peninsula	Petermann Island (PETE)	Zodiac landing
8	26.02.06	P.m.	Paradiese Bay	Skontorp Cove	Zodiac cruising
9	26.02.06	P.m.	Paradise Bay	Almirante Brown (ALMI)	Zodiac landing
10	27.02.06	A.m.	Deception Island	Whalers Bay (WHAL)	Zodiac landing
BRE 0605					
1	05.03.06	P.m.	NW Antarctic Peninsula	Melchior Islands (MELC)	Zodiac cruising
2	05.03.06	P.m.		Goudier Island	Zodiac landing

3	06.03.06	A.m.	SW Antarctic Peninsula	Petermann Island (PETE)	Zodiac landing
4	06.03.06	P.m.	Paradiese Bay	Skontorp Cove	Zodiac cruising
5	06.03.06	P.m.	Paradise Bay	Almirante Brown (ALMI)	Zodiac landing
6	07.03.06	A.m.	Deception Island	Whalers Bay (WHAL)	Zodiac landing
7	08.03.06	A.m.	Elephant Island	Cape Lookout (LOOK)	Zodiac landing

# 4 Ship-based Operation	
Name of operator	Hapag-Lloyd Kreuzfahrten GmbH, Ballindamm 25, D-20095 Hamburg, Germany
Name of vessel	MV HANSEATIC
Country of registry of vessel	Nassau/Bahamas No. 720407
Number of voyages	5 (HAN 0600 to HAN 0604)
Max. # of staff/crew/pax	HAN0600: 12/115/188 HAN0601: 12/115/188 HAN0602: 12/115/188 HAN0603: 12/115/188 HAN0604: 12/115/188
Port of departure to Antarctica	HAN0600: Cape Town (South Africa), HAN0601 to HAN0604: Ushuaia (Argentina)
Port of arrival from Antarctica	HAN0600 to HAN 0604: Ushuaia (Argentina)
Date of departure and arrival	HAN0600: 14.12.05, 05.01.06 HAN0601: 05.01.06, 21.01.06 HAN0602: 21.01.06, 04.02.06 HAN0603: 04.02.06, 22.02.06 HAN0604: 22.02.06, 06.03.06
Areas of operation	A1, A2 & A3
Landing sites and dates at which these landings took place:	

#	Date	Time of day	Location	Site	Type of activity
HAN 0600					
1	30.12.05	P.m.	South Orkney Islands	Coronation Island	Zodiac cruising
2	31.12.05	P.m.	Elephant Island	Cape Lookout (LOOK)	Zodiac cruising
3	01.01.06	A.m.	King George Island	Bellingshausen Station	Science support
4	01.01.06	A.m.	NE Antarctic Peninsula	Paulet Island (PAUL)	Zodiac landing
5	01.01.06	P.m.	NE Antarctic Peninsula	Brown Bluff (BROW)	Zodiac landing & cruising
6	02.01.06	A.m.	Deception Island	Whalers Bay (WHAL)	Zodiac landing, visit of the old whaling station
7	02.01.06	P.m.	Livingston Island	Hannah Point (HANN)	Zodiac landing
HAN 0601					
1	08.01.06	A.m.	South Shetlands	Aitcho Island (AITC)	Zodiac landing

2	08.01.06	P.m.	South Shetlands	Half Moon Island (HALF)	Zodiac landing
3	09.01.06	A.m.	South Shetlands	Cuverville (CUVE)	Zodiac landing
4	09.01.06	P.m.	Paradise Bay	Almirante Brown (ALMI)	Zodiac landing
5	09.01.06	P.m.	Paradiese Bay	Skontorp Cove	Zodiac cruising
6	10.01.06	A.m.	SW Antarctic Pensinsula	Petermann Island (PETE)	Zodiac landing
7	10.01.06	P.m.	NW Antarctic Peninsula	Goudier Island	Zodiac landing
8	11.01.06	A.m.	Deception Island	Baily Head	Zodiac landing
9	11.01.06	P.m.	Deception Island	Telefon Bay	Zodiac landing
10	11.01.06	P.m.	Deception Island	Pendulum Cove	Zodiac landing
11	11.01.06	P.m.	Livingston Island	Hannah Point (HANN)	Zodiac landing
12	12.01.06	A.m.	NE Antarctic Peninsula	Paulet Island (PAUL)	Zodiac landing
13	12.01.06	P.m.	NE Antarctic Peninsula	Devil Island (DEVI)	Zodiac cruising
14	13.01.06	A.m.	King George island	Jubani (JUBA)	Zodiac landing, station visit
15	13.01.06	P.m.	South Shetland Islands	Penguin Island (PENG)	Zodiac landing
16	15.01.06	A.m.	South Orkney Islands	Signy Island Station	Zodiac landing, station visit
HAN 0602					
1	26.01.06	P.m.	Elephant Island	Point Wild (WILD)	Zodiac cruising
2	26.01.06	P.m.	Elephant Island	Cape Lookout	Zodiac landing
3	27.01.06	A.m.	Livingston Island	Hannah Point (HANN)	Zodiac landing
4	27.01.06	P.m.	Deception Island	Whalers Bay (WHAL)	Zodiac landing, Visit of the old whaling station
5	28.01.06	A.m.	South Shetlands	Cuverville (CUVE)	
6	28.01.06	P.m.	Paradise Bay	Almirante Brown (ALMI)	Zodiac landing & cruising
7	28.01.06	P.m.	Paradiese Bay	Skontorp Cove	Zodiac cruising
8	29.01.06	A.m.	SW Antarctic Peninsula	Petermann Island	Zodiac landing
9	29.01.06	P.m.	SW Antarctic Peninsula	Yalour Island	Zodiac landing
10	01.02.06	P.m.	NW Antarctic Peninsula	Goudier Island	Zodiac landing
HAN 0603					
1	14.02.06	P.m.	South Orkney Islands	Signy Island Station	Zodiac landing, station visit
2	14.02.06	P.m.	South Orkney Islands	Sandefjord Bay	Zodiac cruising
3	15.02.06	P.m.	Elephant Island	Point Wild (WILD)	Zodiac cruising
4	16.02.06	A.m.	South Shetlands	Aitcho Island	Zodiac landing

				(AITC)	
6	16.02.06	P.m.	Deception Island	Whalers Bay (WHAL)	Zodiac landing, visit of the old whaling station
7	17.02.06	A.m.	SW Antarctic Peninsula	Petermann Island (PETE)	Zodiac landing
8	17.02.06	P.m.	SW Antarctic Peninsula	Vernadsky Base (VERN)	Zodiac landing, station visit
9	17.02.06	P.m.	SW Antarctic Peninsula	Argentine Island Other	Zodiac cruising
10	17.02.06	P.m.	SW Antarctic Peninsula	Fish Island	Zodiac cruising
11	18.02.06	A. m.	NW Antarctic Peninsula	Goudier Island	Zodiac landing, station visit
12	18.02.06	P.m.	Paradiese Bay	Almirante Brown (ALMI)	Zodiac landing
13	18.02.06	P.m.	Paradiese Bay	Skontorp Cove	Zodiac cruising
HAN 0604					
1	24.02.06	P.m.	Livingston Island	Hannah Point (HANN)	Zodiac landing
2	25.03.06	A.m.	Paradise Bay	Almirantw Brown (ALMI)	Zodiac landing
3	25.02.06	P.m.	Paradiese Bay	Skontorp Cove	Zodiac cruising
4	25.03.06	P.m.	SW Antarctic Peninsula	Petermann Island (PETE)	Zodiac landing
5	26.02.06	A.m.	Deception Island	Whalers Bay (WHAL)	Zodiac landing, visit of the old whaling station
6	26.02.06	P.m.	King George Island	Bellingshausen Station	Zodiac landing, Station visit
7	26.02.06	P.m.	King George Island	Jubany	Science Support
8	28.02.06	A.m.	Elephant Island	Point Wild (WILD)	Ship cruise

2.3 Permit Information

2.3.1 Visits to Protected Areas

During the reporting period of 01 October 2005 – 30 September 2006, 55 permits were issued under Annex V of the Protocol for scientific purposes:

1) for ASPA 132 (Potter Peninsula) ten (10) permits:

Hans-Ulrich Peter, Matthias Koop, Fritz Hertel, Antje Neumann, Wolfgang Dinter, Anja Nord, Doris Abele, Katja Heise, Ellen Weihe and Felix Halder.

2) for ASPA 150 (Ardley Island) twentytwo (22) permits:

Hans-Ulrich Peter, Marcus Ritz, Osama Mustafa, Anne Fröhlich, Christina Büber, Fritz Hertel, Antje Neumann, Wolfgang Dinter, Simone Pfeiffer, Axel Szelinski, Steffen Vogt, Michaela Mayer, Denise Landau, Tania A. Brito, Mariano Memoli, Jiang Xiaodong, Jaeyong Choi, Lee Sang Joon, Victor Pomelov, Maria Gavrilov, Daniel Antunez and Ricardo Roura.

3) for ASPA 125 (Fildes Peninsula) twentythree (23) permits:

Hans-Ulrich Peter, Osama Mustafa, Christina Büber, Markus Ritz, Anne Fröhlich, Simone Pfeiffer, Fritz Hertel, Antje Neumann, Wolfgang Dinter Axel Szelinski, Steffen Vogt, Michaela Mayer, Denise Landau, Tania A.

Brito, Mariano Memolli, Jiang Xiaodong, Jaeyong Choi, Lee Sang Joon, Victor Pomelov, Maria Gavriilo, Daniel Antunez and Ricardo Roura.

2.3.2 Taking and harmful interference with flora and fauna

During the period of 01 October 2005 – 30 September 2006, three (3) permits were issued under Annex II of the Protocol for scientific purposes.

One permit was issued for catching, ringing, and blood sampling at two different bird species/genera: *Oceanites oceanicus* (max. 100 Individuals) and *Catharacta* ssp. (max. 290 Individuals). It was also issued for feeding chicks of *Oceanites oceanicus* (max. 20 Juveniles), exchanging eggs and injecting ACTH (Adrenocorticotrope hormone) at *Catharacta* ssp. (max. 20 breeding pairs) and fitting one individual of *Catharacta* ssp. with satellite transmitters. This permit also includes removing twenty samples of lichens and mosses (max. 200 g of dry mass).

Location: Fildes Peninsula, Ardley Island and Potter Peninsula, King George Island

Title: A) Antarctic Skuas (*Catharacta* spec.) and their life-history parameters

B) Impact of various environmental conditions on the ecology relation to nesting, feeding and population of Wilsons Storm Petrel (*Oceanites oceanites*) (University of Jena)

Two permits were issued for flying or landing helicopters or other aircraft in a manner that disturbs concentrations of birds and seals.

Location: Weddell Sea

Topic: A) Validation of CryoSat data in the north western Weddell Sea (AWI)

B) Magnetic field mapping in the southern Indian Ocean (AWI)

2.3.3 Introduction of non-native species

None.

2.4 Environmental Information

2.4.1 Compliance with the Protocol

None.

2.4.2 List of IEEs and CEEs

During the period of 01 October 2005 – 30 September 2006, for five licensing procedures, four Initial Environmental Evaluations (IEE), and one Comprehensive Environmental Evaluation (CEE) were conducted, in accordance with Annex I, Article 2, of the Protocol of Environmental Protection to the Antarctic Treaty.

IEE

Cruise activities

An IEE concerned 11 tourist cruises with MV Hanseatic and MV Bremen. Based on the IEE, a permit was issued on 13 December 2005.

Scientific activities

Two IEEs were conducted for bathymetric research projects using the hydroacoustic systems HYDROSWEEP and PARASOUND. On the basis of the IEEs, permits for these activities were issued on 5 December 2005.

An IEE was conducted for a survey on the evolution of glacial-marine sedimentation. Based on the IEE, a permit was issued on 15 December 2005.

CEE

Scientific activities

A CEE was conducted for Construction of the Neumayer III Station, Operation of the Neumayer III Station, Dismantling of the Existing Neumayer II Station, a permit for this activity was issued on 6 October 2005.

No	Category of activity	Type of activity	Organisation	EIA type	Permit issued
		Scientific activities			
1	Station construction	Construction of the Neumayer III Station, Operation of the Neumayer III Station, Dismantling of the Existing Neumayer II Station	Alfred-Wegener-Institut, Bremerhaven	CEE	06.10.05
2	Bathymetric survey	Bathymetric survey of the bed of Amundsen Sea and the ocean west of Antarctic Peninsula	Alfred-Wegener-Institut, Bremerhaven	IEE	05.12.05
3	Sediment survey	A survey on the evolution of glacial-marine sedimentation in Amundsen Sea and South Pacific in order to quantify glacial-interglacial cycles	Alfred-Wegener-Institut, Bremerhaven	IEE	15.12.05
4	Bathymetric survey	Geodynamic and vulcanic evolution of submarine vulcanic areas in Amundsen Sea and Bellinghausen Sea	IfM GEOMAR Kiel	IEE	05.12.05
		Cruises			
5	11 Cruises with zodiak landings	Antarctic tourist cruises of the MV Bremen (6 cruises) and MV Hanseatic (5 cruises) – 2005/2006	Hapag-Lloyd ltd., Hamburg	IEE	13.12.05

Annual List of any Initial and Comprehensive Environmental Evaluations

2.4.3 Monitoring activities report

During the period of 01 October 2005 – 30 September 2006, no significant information was obtained from the above-mentioned monitoring procedures.

2.4.4 Waste Management Plans

None.

2.5. Relevant National Legislation

None.

2.6 Other Information

2.6.1 Inspection Reports

Report of any inspections conducted under Antarctic Treaty Article VII and Article 14 and Article 10 (Annex V) of the Environmental Protocol during the year giving date of inspection, person(s) conducting inspection, nationality of inspector(s), locations inspected, where inspection report located.

2.6.2 Notice of Activities Undertaken in Case of Emergencies

None.