ALFRED-WEGENER-INSTITUT HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG

EXPEDITION PROGRAM ANTARCTICA (ANT – Land 2018/19)

LAND ACTIVITIES AND FLIGHT MISSIONS

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1. ANT-LAND 2018/19

1.1 Summary

The season ANT-Land 2018/19 is scheduled for the period from 31 October 2017 until 28 February 2019. Most of personnel will be flown into the Antarctic and back via the air link from Cape Town within the frame of Dronning Maud Land Air Network (DROMLAN). Ship calls are scheduled for RV POLARSTERN between 5th and 7st January 2019, to supply the majority of cargo for NEUMAYER STATION III and aircraft operations. A further ship call is MARY ARCTICA between 17th and 18th January 2019.

Logistics will focus on two periods of lifting of the station. Furthermore a construction team will be onsite for maintenance of the station facilities.

In the vicinity of NEUMAYER STATION III geophysical, glaciological, geological, biological and atmospheric projects are planned during the summer season.

Medical studies of the Berlin Centre for Space Medicine (ZWMB) and University of Munich (LMU) will be continued and extended by the station staff during the winter period.

In parallel, station facilities will be used to operate the Basler BT-67 aircraft POLAR 6. The regular weather forecast service (AWI/DWD) will be provided to all aircraft operations within the Dronning Maud Land region, in particular as a contribution to DROMLAN.

KOHNEN STATION will be visited by the participants of six scientific projects and maintenance work such as lifting up the station and construction work. A traverse to KOHNEN STATION including supply goods will start from NEUMAYER STATION III will start mid of November.

The DALLMANN LABORATORY at Base CARLINI (Argentina) will be opened at the beginning of November 2018. It is operated in cooperation with the Instituto Antártico Argentino (IAA). During the season 2018/19 German and international scientists (one scientific group) will work at the Potter Cove and the station area.

1.2 Schedule of the season at NEUMAYER STATION III and KOHNEN STATION

The season at NEUMAYER STATION III and KOHNEN STATION is scheduled as shown in Figure 1 and Figure 2.

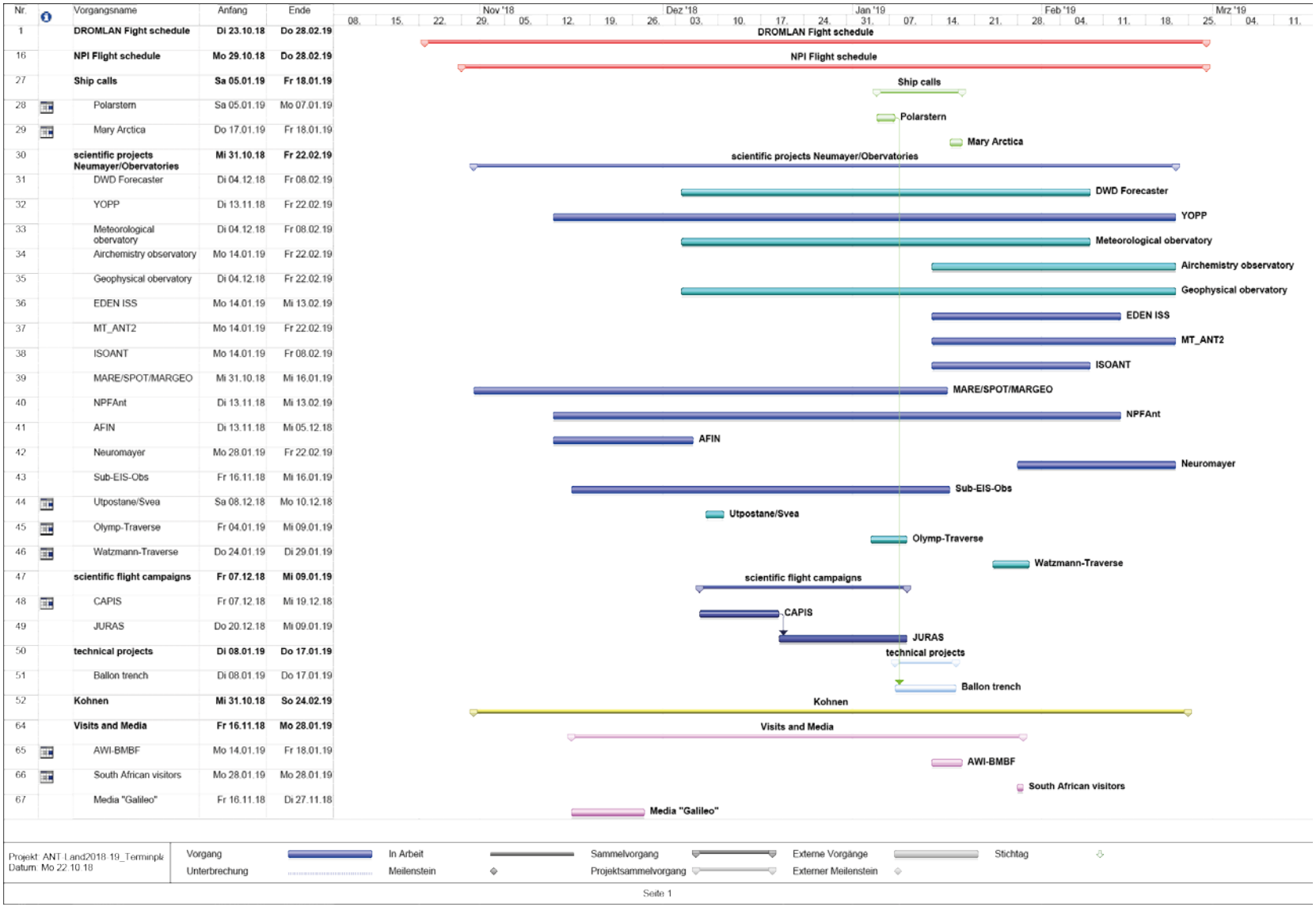

Figure 1 Schedule for Neumayer in season 2018/19.

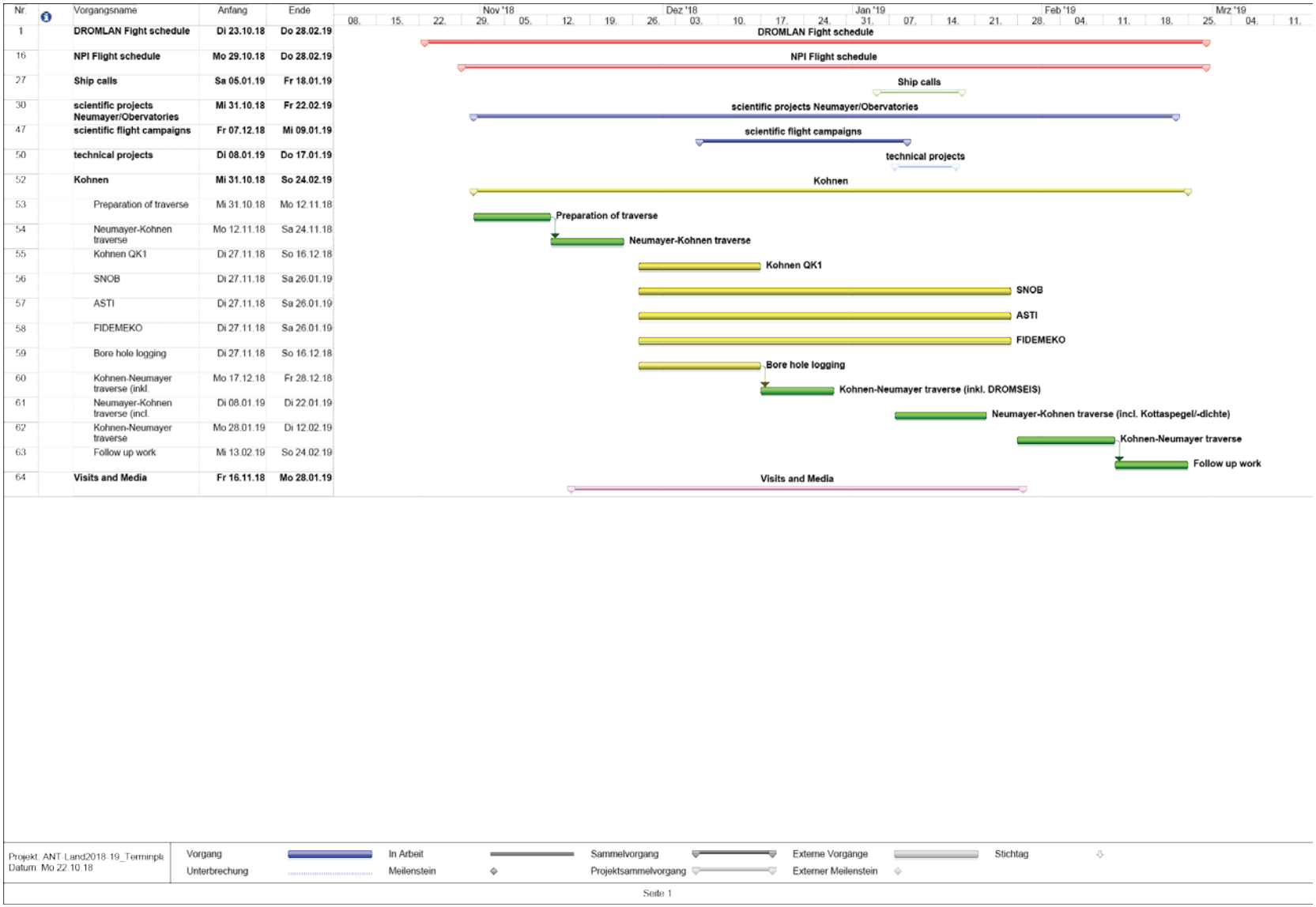

Figure 2 Schedule for Kohnen Station in season 2018/19

1.3 Scientific projects at NEUMAYER STATION III

The maintenance of the observatories will be done by the supervisors. The yearly routine covers the lifting of the instruments due to snow accumulation during the year and maintenance of the instruments to ensure the continuity of the measurement series.

Meteorological Observatory – Holger Schmithüsen (AWI)

Air chemistry Observatory – Rolf Weller (AWI)

Geophysical Observatory – Tanja Fromm (AWI)

CTBTO – I27DE – Matthias Hoffmann, Torsten Grasse (BGR, Germany)

Wintering Projects:

AFIN

PI: Stefanie Arndt (AWI)

Continuous observations of sea ice fastened to coasts, icebergs and ice shelves is of crucial importance for understanding key processes and predicting changes in the climate- and ecosystem in the polar regions. Near Antarctic ice shelves, this landfast sea ice exhibits two unique characteristics that distinguish it from most other sea ice: On the one hand, ice platelets form and grow in super-cooled water, which originates from ice shelf cavities. The crystals accumulate beneath the solid sea-ice cover and are incorporated into the sea-ice fabric, contributing between 10 and 60% to the mass of the land-fast sea ice around Antarctica. On the other hand, a thick and partly multi-year snow cover accumulates on the fast ice, altering the sea-ice surface and affecting the sea-ice energy and mass balance. In order to investigate the role and the spatial and temporal variability of platelet ice and snow for Antarctic fast ice, we perform regular field measurements on the land-fast sea ice of Atka Bay since 2010 as part of the international Antarctic Fast Ice Network (AFIN).

Dromseis/Utpostane

PI: Alfons Eckstaller (AWI)

A first topic of this project is to study local tectonic earthquakes resulting from neotectonic activities and earthquakes caused by postglacial crustal uplift. We will also monitor icequakes and related events caused by the movement of ice streams and ice shields. The second topic is to determine crustal thicknesses and to resolve the structure of the deeper Earth in these areas of interest with seismological analysis methods. The temporarily deployed stations will operate for a year in this selected area of interest and will then be moved to another, preferably adjacent area for another year of operation.

EDEN-ISS

PI: Daniel Schubert (DLR, Germany)

The EDEN ISS project was funded by the European Union Horizon 2020 project (reference number: 636501) supported via the COMPET-07-2014 - Space exploration – Life support subprogramme. The project has developed and has subsequently deployed an advanced plant production system to the NEUMAYER STATION III Antarctic station in the summer season 2017/18. The EDEN ISS greenhouse container was operated for a full winter season at the analogue test site in Antarctica (NEUMAYER STATION III). The production of fresh food for the overwintering crew was successful and more than 140 kg of lettuce, cucumber, radish, tomatoes, and herbs have been harvested until end of the winter season. Scientific investigations on microbial behaviour within the grow chamber, biomass quality examinations, and operation procedure testing were also performed. In the season 2018/19 several systems in the container will be upgraded and repaired. The greenhouse will be operated by the overwintering team of the NEUMAYER STATION III and supported by the EDEN team in the mission control room at DLR Bremen. In addition to the production of fresh food for the crew on site several scientific questions regarding remote operations of a greenhouse in extreme environments will be investigated.

ISOAnt

PI: Martin Werner (AWI)

This proposal is linked to the REKLIM-Project „Iso-Ant“, which will improve our knowledge and understanding of the hydrological cycle and its isotopic composition in Antarctica. Here, we apply for using the facilities at NEUMAYER STATION III to perform maintenance work on a laser-based spectrometer for isotope analyses.

MICA-S

PI: Khan-Hyuk Kim (Kyung Hee University, South Korea)

The goal of this project is to develop and install an induction-coil magnetometer at NEUMAYER STATION III for the studies of ultra low frequency (ULF) waves associated with solar wind coupling to the magnetosphere and ionosphere. Observation of geomagnetic fields is critical in understanding the physical link between the Sun and the Earth’s magnetosphere and ionosphere.

Neuromayer

PI: Alexander Stahn (Charité Berlin, Germany), Alexander Choukér (LUM Munich, Germany)

We will investigate both immediate and long-term benefits of *Hybrid Training*. Our primary outcomes are neurostructural and neurofunctional changes assessed with magnetic resonance imaging (MRI), and cognitive performance assessed with classical paradigms, but also operationally relevant tasks (i.e. virtual ISS robotic arm docking task). We will also assess biochemical markers of stress and neuroplasticity, objective measures of sleep-wake rhythmicity and sleep structure, subjective symptom reports, and group cohesion with unobtrusive measurements as additional outcomes that will provide

insights into mechanisms and consequences of the observed structural and functional brain changes, and their reversibility by *Hybrid Training*. These data will be compared to historic controls from NEUMAYER STATION III and other Antarctic stations (Concordia, Halley), space analog environments and the ISS. At the end of the project, we will have a much clearer understanding whether and to what extent the detrimental effects of ICE environments on neuroplasticity and behavioral health can be mitigated by *Hybrid Training*.

PALAOA

PI: Olaf Boebel (AWI)

Recording the underwater calls of marine mammals is one of the most promising methods to study distribution and seasonal migration of these animals in the ice-covered Antarctic. Visual sightings of marine mammals in Antarctic waters are rare since human access is limited and animals only occasionally surface to breathe. Acoustic recordings, on the other hand, can be made year round. By means of the PALAOA observatory, ocean acoustics experts from the Alfred Wegener Institute for Polar and Marine Research in the Helmholtz Association have discovered that leopard and Ross seals populate Antarctic waters near NEUMAYER STATION III.

SPOT

PI: Daniel Zitterbart (WHIO, USA & University of Erlangen, Germany), Ben Fabry (university of Erlangen, Germany)

This project aims to understand the reorganization process in penguin huddles and the implications for social thermoregulation. We will install a remote-operated penguin observatory including hard- and software for fast image acquisition and real-time processing. The observatory will be capable of detecting the whole huddle, as well as tracking the movements of thousands of individual penguins throughout the winter. An accurate count of animals within the colony and the size of individual animals will also be recorded, and together our data will help to estimate how the increasing environmental strain such as ongoing climate changes, thinning sea ice and reduced krill availability, is affecting Emperor penguins.

WSPR

PI: Ulrich Walter (TU Munich, Germany), Michael Hartje (HS Bremen, Germany)

Using a permanent radio beacon at NEUMAYER STATION III, in order to investigate the state of the D- E- and F-layers of the terrestrial ionosphere and their influence on radio wave propagation throughout the communication spectrum.

This refers to terrestrial paths on shortwave as well as to satellite communication, where radio signals have to penetrate the ionospheric layers in order to reach ground stations.

Seasonal Projects:

MARE

PI: Daniel Zitterbart (WHOI, USA & University of Erlangen, Germany), Celine LeBohec (CNRS-CSM-IPEV, France)

The main goal of MARE project is to assess the vulnerability of Antarctic ecosystems using a sentinel species of Polar Regions: the Emperor penguin. Up to now, the general biology of the entire species (all the breeding, life-history, demographic parameters) was based on the monitoring of a single colony (Pointe Géologie, Adélie Land). Yet, to evaluate the overall trend of a species and the amplitude of its adaptive capacities, it is crucial to monitor over the long-term more than one population breeding in different ecosystems, considering in addition that the species is at a high risk of extinction in a very near future according to climatic scenarios. We thus aim to set up a second worldwide Life Observatory of emperor penguins (Atka Bay, Queen Maud Land) to predict how this species will adapt to climate changes and the consequent fluctuations prey availability and abundance. As umbrella species, seabirds can play an important role in determining the size for conservation areas, and gathering knowledge on the distribution at sea of the species will help to define and map marine biological hotspots/Marine Protected Areas (MPA). Knowledge of the distribution at sea and of foraging strategies of emperor penguins is extremely scarce. We aim to fill this gap through the equipment of individuals from Atka Bay colony with data-loggers at different stages of their life cycle.

MARGEO

PI: Olaf Eisen (AWI)

This project aims to collect gastroliths from Emperor Penguins of the Atka Bay colony in order to 1) obtain geologic samples from the seafloor in the vicinity of the colony; 2) determine the geologic provenance and composition of gastroliths and other stomach contents to determine foraging range of Atka Bay Empreror Penguins; 3) perform a pilot study to consider collection of gastroliths on a continuous basis.

MT_ANT2:

PI: Oliver Ritter (GFZ Potsdam, Germany)

The electrical conductivity of fluids depends strongly on their salinity and temperature: Seawater is highly conductive (~0.3 Ohmm), while snow and ice are typically very resistive materials; their resistivity can easily exceed 100,000 Ohmm. The transition from an ice-layer (e.g. the Ekström Ice Shelf) into the underlying ocean water, represents a first order anomaly that can be imaged with magnetotellurics (MT). Methods to detect and image fluid inclusions at depth are important as subglacial water at the base of grounded ice sheets has significant effects on e.g. ice flow rates and basal friction.

We therefore propose to acquire new MT data from Ekström Ice Shelf and the KOHNEN STATION area, Antarctica, as a follow-on project of preliminary work by Kütter (2017). The work of Kütter demonstrated general feasibility of the MT method but also high noise levels on the electric field data at higher frequencies. To overcome these obstacles, we intend to use a revised version of our preamplifiers with higher input impedances in combination with modified Ag/AgCl electrodes and a different type of power supply. The instruments will be supplied by the Geophysical Instrument Pool Potsdam (GIPP).

Mumiyo

PI: Sonja Berg (University of Cologne, Germany)

The Antarctic region is an important component in the Earth's climate system. Due to its remoteness the number of records of climatic and environmental variability in East Antarcica is mainly limited to coastal and marine regions. The temporal and spacial distribution of snow petrel (Pagodroma nivea) breeding colonies in the interior of the continent provides important information on local glaciation histories but also on enviromental condtions on land as well as in the oceanic foraging grounds of the birds. Mumiyo deposits form in front of snow petrel nesting cavities and consits of guano and stomach oil. The deposits provide a unique archive of snow petrel occupation history and environmental variability in the terrestrial areas of Antarctica. Within the proposed project we want to sample mumyio deposits from un-glaciated nunataks in Dronning Maud Land to extent the known record of snow petrel occupation, in particular during the last glacial period.

NPFAnt:

PI: Mikko Sipilä (University of Helsinki, Finland)

This project will focus on quantification of gas phase precursor vapours of secondary aerosol particles and resolving the molecular steps of secondary new particle formation at the coastal Antarctic environment. Goal is to obtain high level scientific data with which the new particle and cloud condensation nuclei formation can be parameterized for use in large scale chemical transport and climate models.

Sub-EIS-Obs_Coring

PI: Gerhard Kuhn (AWI)

This project plans a continuation of geological pre-site surveys with the goal to assess the potential of the sedimentary archive below the Ekström Ice Shelf for reconstructing East-Antarctic paleoclimate and ice history (from warm Greenhouse climates to the latest Ice House era). In the vicinity of NEUMAYER STATION III, recent geophysical surveys identified a succession of sediments below the Ekström Ice Shelf. These sediments overly the "Explora Wedge" outcrop, which is believed to reflect volcanic rocks of an early rift margin separating South Africa from East Antarctica. Accordingly, the overlying sediments may contain a record of Cretaceous-Cenozoic climate, glaciation and tectonics.

However, the stratigraphic range of the sediment sequence is unknown and up to now remained speculative. Due to the combination of inclined bedding and glacial erosion, sediments of a wide age range reach close to the sea bed. In those areas, where the the dipping strata is only covered by a horizontal, thin, glacial-deglacial layer (< 5 m thickness), the older sediment layers are accessible through shallow (vibration) drilling. After field experience with the corer during season 2017/18 we will optimize the system and try to sample the older, dipping sediment sequences on more sites in order to identify their age range and quality.

YOPP

PI: Holger Schmithüsen (AWI)

To contribute to the special observing efforts of YOPP (www.polarprediction.net) it is planned to increase the radiosounding activity at NEUMAYER STATION III during the “Special Observing Period in the Southern Hemisphere” (SOP-SH). This period is scheduled from 2018-11-16 to 2019-02-15. During this period four radiosondes shall be launched per day, at 00, 06, 12 and 18 UTC. The increased sounding activity for YOPP during the defined SOPs in both hemispheres is carried out at the three AWI research platforms NEUMAYER STATION III, POLARSTERN and AWIPEV. In Antarctica, various other stations are contributing to YoPP in the same manner.

1.4 Scientific projects at KOHNEN STATION

ASTI

PI: Maria Hörhold (AWI)

Extensive study of the stable water isotopes of the water vapor and the surface snow in the close vicinity of KOHNEN STATION, Antarctica. Aim is to understand the transfer of the isotopic signature of the water vapor into the very surface snow and further into deeper snow layers. Recent studies question the classical interpretation of stable water isotopes as proxy for temperature, as sublimation strongly affects the isotopic composition during precipitation. With ASTI we aim to understand and quantify the interaction of the snow surface with the water vapor above – especially in low accumulation areas, such as the East Antarctic plateau, where sublimation rates are very high.

EDML-Log

PI: Ilka Weikusat (AWI)

Current flow properties and behavior of ice sheets are known from surface and remote sensing techniques, but hardly known in 3rd dimension with ice sheet depth. The borehole shape can serve as “proxy” for the flow conditions with depth. Pre-requisite are repeated measurements over as many years as possible. Especially for KOHNEN STATION (slow flow conditions) the repeated measurements after many years are essential to optimize the signal/noise ratio. EDMLBorehole (KOHNEN STATION) will be logged with two different borehole-loggers:

(1) repeat the previous measurements (from 2006, 2011, 2014, 2016) with the DK-logger (UNI Copenhagen) to get information about changes in the borehole properties (azimuth, inclination, diameter, temperature, pressure).
(2) use of the newly developed AWI-Logger system (Hüther 2013), which is fitted with a more detailed caliper measurement in order to improve the logging of the shape of the borehole cross section. It is a big advantage to use the DK-logger and the AWI-logger consecutively for comparison.

FIDEMEKO

PI: Angelika Humbert (AWI)

This project aims to measure in-situ firn densification rates at a cold, low-accumulation site (KOHNEN STATION) continuously over a time period of a year. This point measurement of firn densification rate at KOHNEN STATION is supposed to serve as a validation dataset for a continuum mechanical firn densification model solidFIDEMO, that is to be developed within a DFG SPP1158 proposal.

KohnenQK1

PI: Thomas Laepple (AWI)

KohnenQK1 (season 2018/2019) is targeted to quantify the isotopic variability on regional (1-100km) scales caused by spatially and temporally varying accumulation conditions. To this aim, systematic surface snow sampling along the ~100km Kohnen-B31 traverse will allow to quantify the relationship between isotopic composition, seasonal accumulation and surface topography.

SNOB

PI: Johannes Freitag (AWI)

The behavior of ice sheets and polar climate on centennial, decadal or even shorter time scales could not fairly inferred from ice cores if processes in the upper snow and firn column are not well understood. In particular in areas of low annual snow accumulation like on the East Antarctic plateau the seasonal distribution in accumulation, the amount of redeposition and metamorphism are important factors in interpreting trends on smaller time scales in ice core records. This project initiates a framework for longterm snowpack observations at KOHNEN STATION. It addresses the temporal evolution of the snow pack which includes observations of surface relief, seasonal accumulation, snow structure properties, chemical load and isotopic composition. To this end designated areas in the vicinity of KOHNEN STATION will be assigned for repeated sampling of snow pack over the next years to follow its development with time. It is planned to install an automated ultrasonic sensor array to derive snow deposition patterns over full annual cycles. In addition, strain meters placed in bore holes will provide information of compaction rates on longer time scales. The project make use of the recent analytical progress in determing snow microstructure on a cm- to m-scale (AWI-Ice-XCT) and of the larger capacities in measuring chemical load and isotopic composition.

1.5 Scientific projects at DALLMANN LABORATORY

Environmental controls of iron-reducing microorganisms in the Antarctic marine sediments

PI: Michael Friedrich (University of Bremen, Germany)

The aim of our project is to elucidate the ecology of iron-reducing microbial populations, and their environmental controls in Antarctic marine sediments. We will concentrate on (1) identifying microbial populations involved in iron reduction, as well as (2) determining their distribution, (3) abundance, and (4) activity in anoxic layers of coastal sediment relative to their anaerobically respiring competitors, sulfate-reducing microorganisms.

1.6 Scientific flight campaigns POLAR 6

AirLafoina

PI: Graeme Eagles (AWI)

Geological studies of the Falkland Islands have long been interpreted to suggest their original location in the supercontinent Gondwana to have lain far to the southeast, sandwiched between the eastern coast of South Africa and Coats Land, Antarctica. The geological similarities to South Africa, in particular, are however best understood if the islands are rotated by 180° from their current orientation. This rotation has long been a subject of controversy because very few data exist to clearly support the existence of a set of plate tectonic boundaries that could have accommodated the motion. The only quantitative geophysical model that attempts to include such a rotation is that of Ben Avraham and others, which concludes the islands rotated as part of the body of a small tectonic plate that they termed the Lafonia plate.

The motion of the Lafonia plate will be tested by gathering aeromagnetic data in the Falkland Plateau basin, which Ben Avraham et al propose grew as a result of the Lafonia plate's motion. Here, recent work by the geophysics department at AWI has proved the presence of oceanic crust, and hinted at the presence of magnetic reversal anomalies over it. These kinds of anomalies are excellent indicators of past plate motions, and would produce a unique pattern of magnetic field strength variations in the basin if Lafonia plate motion had occurred as the basin grew.

CAPIS

PI: Christian Haas (AWI)

The Antarctic sea ice cover plays an important role in the Antarctic climate and eco system, and is closely linked to ice-ocean interaction processes under ice shelves. We propose to carry out an airborne electromagnetic (AEM) survey of pack ice and fast ice thickness in the eastern Weddell Sea in order to observe the state of sea ice in this region of the Antarctic, and to quantify the amount of ice exported from small polynyas along the coast. In addition, we will map the occurrence and thickness of the platelet layer under the fast ice. This layer bears information about the presence of supercooled

water originating from the bottom melt of ice shelves. It therefore provides the possibility to study variations in ice shelf bottom melt without the need to directly access that environment. The presence and thickness of the sub-ice platelet layer can be retrieved from AEM measurements. Results will provide a new view of ice shelf bottom melt processes in the Eastern Weddell Sea and will inform future glaciological, oceanographic, and biological studies in this region.

CHIRP

PI: Olaf Eisen (AWI)

The properties of grounding lines determine the overall flux of grounded ice into the ocean. Changes in grounding line dynamics can results in sea-level change, if unbalanced by respective changes in the surface mass balance of the ice sheet. This project aims to acquire airborne data with AWI's UWB (ultrawideband) radar to investigate important aspects which define the dynamics of the sheet-shelf system in Dronning Maud Land, Antarctica. This includes several ice rises, which serve as breaks for unhindered ice-shelf flow as well as a particular site just upstream of the grounding line, where strong interaction between a sediment-carrying, subglacial hydrological network, the ocean and the ice sheet are suspected. The data will lay the ground to constrain estimates of past ice flow and to understand stabilizing/destabilizing mechanisms in the most critical zone around Antarctica. Both aspects will result in improved predictions under future climate change.

JuRaS

PI: Daniela Jansen (AWI)

Ice streams provide the most efficient drainage of ice into the sea (e. g. Alley et al., 2005). They are highly dynamic systems, sensitive to changes in boundary conditions at their outlets or at their base. The consequences of changes at the outlets, e.g. due to ocean warming, can reach far upstream, as has been observed for the Pine Island Glacier, West Antarctica (Joughin et al., 2010). The temporal and spatial variability of ice streams is currently not well understood, and thus these rapid dynamic changes are not well represented in large scale models used to predict future sea level rise (Alley et al., 2005).

The ice streams not only leave their imprint on the surface, but also show up within radar-mapped stratigraphy of the ice sheets. They leave their associated structures buried in the ice to reveal their former presence, even if flow conditions have changed. We aim to map the disturbances of the radar stratigraphy at the shear margins of the Jutulstraumen, a large outlet glacier in Dronning Maud Land, Antarctica. This project will help to improve our understanding of the formation processes of such disturbances around shear margins in active ice streams. A better understanding of the process itself will enable to analyse the observed structures in other parts of the ice sheets in terms of their deformation history.

2. LOGISTICAL OPERATIONS

2.1 Dronning Maud Land Air Network (DROMLAN)

The aim of DROMLAN is to provide an intercontinental air-link from Cape Town to destinations within Dronning Maud Land (DML) to any member country of COMNAP and SCAR in science related activities, including logistics. This regularly operated air-link improves the accessibility and extends the time period for summer season activities. DROMLAN has been established as an international project by Belgium, Finland, Germany, India, Japan, Norway, Russia, South Africa, Sweden, The Netherlands, and UK. In Figure 3, the DROMLAN partners are presented.

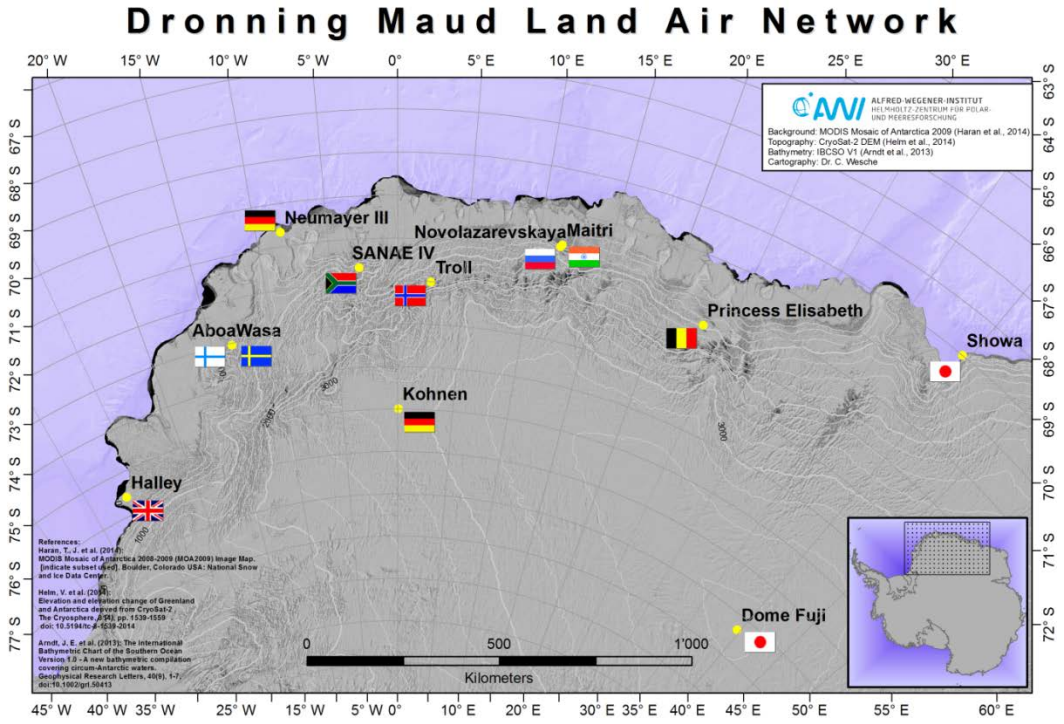

Figure 3 Overview of the DROMLAN partners

Each summer season runways are prepared at NOVO RUNWAY close to the Russian station NOVOLAZAREVSKAYA and at the Norwegian station TROLL for landing of heavy aircraft. The runway at NOVO Airbase consists of compacted snow and is elevated about 500 m a.s.l. The runway at TROLL STATION consists of blue ice at an elevation of about 1300 m a.s.l.

The weather forecast for intercontinental and internal flight operations is organized at NEUMAYER STATION III (AWI, DWD). This service covers the region between HALLEY and SYOWA for all intercontinental and internal flights in the scope of DROMLAN.

Internal feeder flights are performed with ski-equipped aircraft Basler (BT-67) and Twin Otter. DROMLAN members coordinate the feeder flights with the operator ALCI (Antarcric Logistics Center International) and provide necessary services, fuel and facilities at their stations.

The number of flight missions depends on logistic and scientific requirements of the national programs. Every season DROMLAN generally aims to perform 10-13 intercontinental flights with connecting flights to various destinations.
In season 2018/19, for DROMLAN altogether 14 intercontinental flights to NOVO RUNWAY and 10 flights to TROLL RUNWAY.

2.2 Ship calls

During season 2018/19, two ship calls are planned to supply the operations at NEUMAYER STATION III and KOHNEN STATION.
The main supply with goods and fuel will be done by RV POLARSTERN in the beginning of January 2019. In the second half of January 2019, MARY ARCTICA from Royal Arctic Lines will be co-charted together with the Norwegian Antarctic Programm within the DROMSHIP (counterpart to DROMLAN) cooperation. Most of the disposal will be done by the second ship call.

3. PARTICIPANTS

Surname	Name	Destination	Project
Arndt	Stefanie	Neumayer	AFIN
Bagheri	Saeid	Neumayer	ISOAnt
Beck	Lisa	Neumayer	NPFAnt
Berger	Sophie	Neumayer	Sub-EIS-Obs_coring/ Kottaspegel
Boetius	Antje	Neumayer	Visit
Czerwonka	Mirco	Neumayer	Wintering team 2018
Dallmayr	Remi	Kohnen	ASTI/Kohnen QK
Della Lunga	Damiano	Kohnen	ASTI
Denecke	Mirko	Neumayer	Technical coordinator
Dorn	Markus	Neumayer	EDEN-ISS
Dummann	Wolf	Neumayer	Sub-EIS-Obs_coring
Eagles	Graeme	Port Stanley	AirLafonia
Eder	Pitt	Neumayer	Technical team
Eilers	Jörg	Neumayer	Visit
Eisen	Olaf	Neumayer	Sub-EIS-Obs_coring
Eisermann	Hannes	Port Stanley	AirLafonia
Fabry	Ben	Neumayer	MARE/SPOT
Ferl	Robert	Neumayer	EDEN-ISS

Ferstl	Katharina	Neumayer	Wintering team 2018
Fontes	Rene	Neumayer	Scientific operations operations
Franke	Steven	Neumayer	JuRaS/CHIRP
Freitag	Johannes	Kohnen	SNOB/Kohnen QK
Fromm	Tanja	Neumayer	Geophysical observatory
Gehrmann	Martin	Neumayer	CAPIS/JuRaS/CHIRP
Giese	Ole	Neumayer	Technical team
Gong	Da	Neumayer	Sub-EIS-Obs_coring
Gonser	Matthias	Neumayer	Galileo
Grasse	Torsten	Neumayer	CTBTO-I27DE
Gromig	Raphael	Neumayer	Sub-EIS-Obs_coring
Gropp	Bernhard	Neumayer	Wintering team 2018
Grote	Sebastian	Neumayer	Media support
Haas	Christian	Neumayer	CAPIS
Heitland	Tim	Neumayer	FOM
Heuck	Hinnerk	Neumayer	Technical coordinator
Hilmarsson	Sverrir	Neumayer	Balloon trench
Hoffmann	Mathias	Neumayer	CTBTO-I27DE
Hoffmann	Helene	Neumayer	Wintering team 2018
Hörhold	Maria	Kohnen	ASTI/Kohnen QK
Houstin	Aymeric	Neumayer	MARE/MARGEO
Hüther	Matthias	Kohnen	EDML-Log
Ilg	Patrik	Neumayer	Galileo
Irvin	Anne	Neumayer	CAPIS
Jansen	Daniela	Neumayer	JuRaS/CHIRP
Kenny	Darragh	Neumayer	Polarstern
Kipfstuhl	Sepp	Kohnen	EDML-Log
Koch	Michael	Neumayer	Wintering team 2019
Kohlberg	Eberhard	Neumayer	Visit
Köhler	Peter	Neumayer	FOM
Köhler	Jens	Kohnen	Logistic support Kohnen
Korger	Edith	Neumayer	Wintering team 2019
Krams	Ralf	Neumayer	Pistenbully maintenance

Krüger	Konstantin	Neumayer	YOPP
Laepple	Thomas	Kohnen	Kohnen QK
Laubach	Hannes	Neumayer	Technical team
LeBohec	Celine	Neumayer	MARE/MARGEO
Leitl	Martin	Kohnen	Logistic support Kohnen
Lemburg	Johannes	Kohnen	Logistic support Kohnen
Maasch	Matthias	Neumayer	Wintering team 2018
Marquardt	Geron	Kohnen	Logistic support Kohnen
Miesch	Frank	Neumayer	Satety-related inspection
Mitteregger	Christian	Kohnen	Logistic support Kohnen
Müller	Hanno	Neumayer	Wintering team 2018
Müller	Andreas	Neumayer	Wintering team 2019
Naundorf	Katharina	Neumayer	Wintering team 2019
Nixdorf	Uwe	Neumayer	Visit
Paul	Anna-Lisa	Neumayer	EDEN-ISS
Paulmann	Christian	Neumayer	Flight weather forecast
Peter	Dirk	Kohnen	Logistic support Kohnen
Peters	Nils	Neumayer	Wintering team 2019
Petersen	Christoph	Port Stanley	AirLafonia
Reich	Stefan	Kohnen	Logistic support Kohnen
Reick	Julia	Neumayer	Wintering team 2018
Rex	Markus	Neumayer	Polarstern
Riess	Felix	Kohnen/Neumayer	Scientific operations operations
Ritter	Oliver	Neumayer	MT-ANT2
Rohde	Jan	Neumayer	AFIN
Rohkohl	Dorian	Neumayer	Technical team
Rompe	Oliver	Neumayer	Sub-EIS-Obs_coring
Ruholl	Christoph	Neumayer	Visit
Sans Coll	Cristina	Port Stanley	AirLafonia

Schad	Thomas	Neumayer	Wintering team 2019
Schmithüsen	Holger	Neumayer	Meteorological observatory
Schubert	Daniel	Neumayer	EDEN-ISS
Schubert	Holger	Neumayer	Sub-EIS-Obs_coring
Schumacher	Markus	Neumayer	Wintering team 2019
Sipilä	Mikko	Neumayer	NPFAnt
Smith	Emma	Neumayer	Sub-EIS-Obs_coring
Spelz	Sebastian	Neumayer	CAPIS/JuRaS/CHIRP
Stahn	Alexander	Neumayer	Neuromayer
Stakemann	Josefine	Neumayer	Wintering team 2019
Steckelberg	Birgit	Neumayer	Wintering team 2019
Sterbenz	Thomas	Neumayer	Wintering team 2018
Strahl	Gaby	Neumayer	Housekeeping
Strelow	Giesela	Neumayer	Visit
Trimborn	Klaus	Kohnen	Logistic support Kohnen
Ulbort	Marlon	Neumayer	Wintering team 2018
Ungermann	Carlo	Neumayer	Visit
Vrakking	Vincent	Neumayer	EDEN-ISS
Wahl	Sonja	Kohnen	ASTI
Weckmann	Ute	Neumayer	MT-ANT2
Weigand	Gerhard	Kohnen	Logistic support Kohnen
Weller	Rolf	Neumayer	Airchemistry observatory
Wiestler	Otman	Neumayer	Visit
Yazhou	Li	Neumayer	Sub-EIS-Obs_coring
Zabel	Paul	Neumayer	EDEN-ISS
Zahlauer	Holger	Kohnen	Logistic support Kohnen
Zeidler	Conrad	Neumayer	EDEN-ISS
Zitterbart	Daniel	Neumayer	MARE/SPOT
Zwicker	Sarah	Neumayer	Polarstern

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