# Application SCIENTIFIC OPERATION WITH POLAR AIRCRAFTPeriod from October 2024 to September 2025

[Deadline for submission: 30. November 2022]

General remarks:

Please

* rename file to: AWI\_Aircraft\_YOUR\_PROJECT\_ACRONYM\_yymmdd

(replace yymmdd by the date you compile this document: dd.mm.yy)

* insert your project acronym into the footer.
* inform your collaborators and budget officer / head of section.
* submit your application to: [**aircraftcoord@awi.de**](mailto:aircraftcoord@awi.de)

The applicants have to cover the costs (travel, accommodation) for own personnel (scientists and technicians) on site as well as for cargo/instruments required at the base of operation and if required, certification of new instruments (>5000 €; depending on complexity of instrument and requests of Transport Canada) and new campaign certification (~8000 - ~25000).

Non-AWI applicants have also to cover costs for flight time (~7200 €/h) and fuel (~540 l/h), except of applicants based at German universities.

# General Information

## Name of Project (Acronym and long title)

1. Acronym
2. long title

## Applicant(s)

* Name of the applicant(s)
* Affiliation including contact details (phone, email) and ORCID for each applicant

## Person in charge for organizational issues

* Please nominate one person as contact for organizational matters, respectively spokesperson of the applicants and provide if applicable same details as for 1.2.

## Co-operation partners

* Please provide same details as for 1.2.

## Mailing list

* Please provide comma separated email addresses used as contact list for all matters regarding the project.

## Details for intended scientific sharing of acquired data

* Please provide approximate share of the acquired data between the applicant(s) and partners (per facility/group) on the project (e.g. 40 % AWI/Section\_A, 35 % University B, 25 % University C), in the table below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Internal | | external | | |
| AWI | HGF | German Universities | International Universities | other |
|  |  |  |  |  |

## Reference to POF – for AWI personnel only

* Please point out to which (sub-) topic, milestones and deliverables of actual POF the proposed project contributes.

## Previous projects based on airborne surveys

* Please list the 5 most recent, respectively important publications of previous projects the PI has conducted using airborne data. List peer reviewed papers including a link, e.g.: Chief et. al, 2017 ‘Results from Neumayer Project X’, Journal of Geofantasy, doi. http://doi.org/**10.10000/s123456-00-01-0**

Project name:

Year:

# Conference talks:

# Conference papers:

# Peer reviewed papers:

Link to published data:

## Data handling

* Please remove incorrect option (yes / no).

I can provide the required resources (personnel, costs, equipment,…) to ensure data analysis and publication: Yes / No

If ‘No’, comment:

I accept and comply with the ‘DFG Guidelines on the Handling of Research Data’: Yes / No

If ‘No’, comment:

## Statistics

* The following details are asked for statistics. Please provide for each applicant:
* Gender (f/m/d):
* H-index:
* Academic age:

Calculation of academic age: Todays year – year of first publication – leave time – part time leave

e.g. 16 years between first publication and today; 24 month parental leave; 7 years with 65% part time => academic age = 11.55 years

# Brief information for activity reports of AWI and on AWI’s webpages

## Information for reports

1. Mission summary in one sentence (e.g.: Sea ice thickness and roughness measurement as well as shortwave radiation above selected regions for SMOS and CryoSat Cal/Val).
2. Field of science, choose maximum two of the following: Biosphere, Boundary layer, Continental surface, Instrument development (includes certification), Maintenance and testing, Polar regions, Research other than geo-science, Satellite calibration/validation, Sea Surface, Solid Earth, Troposphere.
3. Type of science, choose maximum three of the following: Aerosol chemistry and physics, Agriculture, Archaeology, Atmospheric dynamics (includes thermodynamics), Biology and Ecology (includes animals and vegetation), Cloud physics, Forest fire, Gas chemistry, Geology (includes soils), Geophysics and Glaciology, Gravimetry, Hydrology (includes water quality, fresh water and inland water), Marine science (includes oceanography), Ocean-Atmosphere interactions, Pollution (includes air, sea and soil), Precipitation, Radiation, Sea-Ice, Soil-Atmosphere interactions, Urban studies, Vulcanology

## Project description for AWI’s webpages

* Descriptive text or bullet points in German **or** English as background information for AWI’s Communication and Media Department for a presentation on AWI’s webpages.
* Illustrative pictures/graphs are possible, but not required at the time of proposal submission and evaluation.

# Project description and objectives (for external evaluation))

* Please feel free to attach figures with captions in a separate document.
* The text for project description is expected to be in the order of 6-8 pages, references, figures and tables not included.

## Abstract

## Relevance of project, state of the art, and previous work (including own)

## Objectives and work program

* Main research questions, methods, work plan, if applicable interaction with other projects.

## Description of flight pattern

* Please explain intended flight pattern and requirement regarding the deployed aircraft. Feel free to provide a sketch of the flight pattern.

## Analysis

* Funding, time frame and own expertise for data analysis.

## Data management and publication plan

* Data policy (e.g. open, restricted, with embargo time), data repository, intended time of data publishing
* Please outline intended publication strategy: key aspects, kind of publication, etc.

## References

## Reviewer

* Please suggest at least one independent reviewer including contact details.

# Requested resources

## Aircraft

One / both

## Participants

Please provide number of participants

1. On site (without science engineers): \_\_\_\_\_
2. On logistic and ferry flights (without science engineers): \_\_\_\_\_
3. On survey flight (without science engineers): : \_\_\_\_\_

Please list all participants who will be on site for the survey and their role:

|  |  |  |
| --- | --- | --- |
|  | Name | Role |
| 1 | NN 1 | PI, expert for magnetics |
| 2 | NN 2 | PhD student, observer |
| 3 | NN 3 | Technician, operator of radiation sensors |
| 4 | … |  |

## Region of operation

Region of operation and base (airport) for project (please provide map on separate page and a shape file (geographic coordinates) of the area of investigation, respectively the proposed flights).

## Base for flights

Please provide name of airport/station where the aircraft shall be based. If more than one base is required, please list them all. The flight time between these bases has to be provided at 4.5 c.

## Requested flight hours

The requested time shall include all intended flights for the project including – if applicable – flights between the airstrips listed at point 4.3 above. In case the project consists of more than one survey period, provide flight time per period and list all periods.

1. Survey flight time (including if applicable calibration flights): \_\_\_\_\_\_\_\_ h
2. Logistic flight time: \_\_\_\_\_\_\_\_ h
3. Positioning between bases listed at point 4.4 above: \_\_\_\_\_\_\_\_ h

Rule of thumb for estimating required flight hours: 260 km/h for survey flights, 300 km/h for logistic and positioning flights on skis or with installed instruments.

Flight time for a test flight in Bremen prior to the campaign, to the first base and back from the last base must not be included in requested flight time.

## Specifics of flights

Please specify flights with respect to flight level (high, low, fixed flight level, terrain following, repeat track, etc.) and conditions (in clouds, in icing conditions etc.) and provide a draft flight plan (map).

## Period for operation and occupancy days

Rule of thumb for estimating duration of campaign: 30 h survey per week. In case the project consists of more than one survey period, list all periods.

## Operation support

All missions are supported by 1-2 technical staff. Please indicate if further (internal / external) instrument specialists are required.

## Instruments

Please find below a table the showing the AWI-owned certified instruments. If applicable, please contact persons in charge for availability of instruments and – if required – support for data evaluation.

Some instruments require calibration flights on site, respectively calibration prior to and/or after the survey in laboratories. The principal investigator is in charge to obtain the calibrations and if - necessary - to take the flight time into account.

In case own instruments shall become part of the instrumentation, the principal investigator has to cover the costs for integration and certification.

Please note, the combination of chosen instruments has to be approved by AWI’s engineers. Not all combinations are feasible.

For campaigns without AWI researchers on site an insurance of the scientific instruments on board of the aircraft is mandatory. Details have to be sorted out individually.

**Certified AWI owned instruments.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Instrument | Contact | Calibration required | Id-No | Required |
| Basic data acquisition system |  |  | B835 |  |
| 2 Novatel OEM-V3 GPS receivers on cabin |  |  | B704 |  |
| 2 Novatel OEM-V3 GPS receivers on wing tips |  |  | B704 |  |
|  |  |  |  |  |
| GoPro Hero external camera installation on wing (bottom) |  |  | B857 |  |
| GoPro Hero external camera installation on belly |  |  | B857 |  |
| GoPro Hero external camera installation on wing (top) |  |  | B857 |  |
| GoPro Hero external camera installation in cabin (window) |  |  | B857 |  |
| Nikon D5-A, nadir mounted with 14 mm lens |  |  | B882 |  |
| Nikon D5-A, nadir mounted with fish-eye lens |  |  | B882 |  |
| Digital Nadir-Video System |  |  | B882 |  |
| Digital Zenith-Video System |  |  | B882 |  |
| Slewable video camera belly mounted |  |  | B818 |  |
|  |  |  |  |  |
| Modular Aerial Camera System (MACS) |  |  | B428 |  |
|  |  |  |  |  |
| Laser altimeter LDM301 (short range) |  |  | B838 |  |
| Laser altimeter RIEGL LD90 (long range) |  |  | B705 |  |
| Laser scanner Riegl VQ580 | S. Hendricks | X | B832 |  |
| Laser scanner Riegl LMS-Q680i |  | X | B852 |  |
|  |  |  |  |  |
| AIMMS 20 probe: 5 hole, temp., pressure, attitude, GPS position |  | X | B815 |  |
| Basic Met.: PT100 temperature sensor, relative humidity sensor, pitot/static pressure sensor |  | X | B712 |  |
| TNB: 5-hole probe with absolute and relative humidity sensors, PT100 thermometer, relative humidity sensor | J. Hartmann | X | B719 or B851 |  |
| Licor 7200 humidity sensor | J. Hartmann | X | B897 |  |
| Nevzorov probe for liquid & total water content (U4.1) |  |  | B438 |  |
|  |  |  |  |  |
| Aerosol LIDAR AMALi | C. Ritter | X | B804 |  |
| Ultra high sensitivity aerosol spectrometer (UHSAS) | A. Herber | X | B861 |  |
| Single particle photometer (SP2) | A. Herber | X | B862 |  |
|  |  |  |  |  |
| Ocean Optics Spectrometers | G. Birnbaum | X | B825 |  |
| Broadband radiation sensors: Kipp&Zonen CMP22/CGR4, 2 Pyranometer, 2 Pyrgeometer | G. Birnbaum | X | B840 |  |
| Sun photometer | A. Herber | X | B805 |  |
| Infrared radiation thermometer KT19 |  |  | B839 |  |
|  |  |  |  |  |
| EM-Bird system for sea-ice thickness measurements | S. Hendricks | X | B817 |  |
| Ice thickness radar - EMR | D. Steinhage | X | B709 & B856 |  |
| Ice structure (accumulation) radar - FMCW | D. Steinhage | X | B803 |  |
| Snow thickness radar | D. Steinhage | X | B867 |  |
| UWB Depth Sounder (8 or 24 Channel System) | D. Jansen | X | B891 |  |
| UWBM Snow radar | D. Jansen | X | B892 |  |
| Gravity meter ZLS S56 | G. Eagles | X | B708 |  |
| Gravity meter GT2a | G. Eagles | X | B879 |  |
| GPS System Javad Delta-Q | G. Eagles |  | B878 |  |
| Scintrex Magnetics: 2 Cs-3 sensors, 1 Fluxgate | G. Eagles | X | B707 |  |
|  |  |  |  |  |
| Methane Sensor Los Gatos RMT-200 | J. Hartmann | X | B824 |  |
| Greenhouse Gas Analyzer Los Gatos GGA/FGGA | J. Hartmann | X | B870 |  |
| Flowmeter TSI | A. Herber | X | B886 |  |
|  |  |  |  |  |
| Isokinetic Inlet and Tubing | A. Herber |  | B885 |  |
| Dropsonde system for RD41 radiosondes (AVAPS II) |  |  | B839 |  |
|  |  |  |  |  |
| Launcher for CALIB ice buoys |  |  | B415 |  |
| Center wing pylons for up to 4 PMS – probes |  |  | B808 |  |
| Outer Wing Carriers for DMT Canisters |  |  | B873 |  |
|  |  |  |  |  |
| PLANET System |  |  | B445 |  |

Contacts (as March 2022):

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Certified external devices:

* Please note: the applicant of the proposal is in charge to ensure that the instrument is available as well as trained operators during the campaign.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Hyper spectral camera AISA Eagle (under floor mount) | U Leipzig | X | B841 |  |

Contact: Manfred Wendisch, m.wendisch@uni-leipzig.de, head of Leipziger Institute for Meteorology, University of Leipzig, Germany