# Application SCIENTIFIC OPERATION WITH POLAR AIRCRAFTPeriod from October 2020 to September 2021

[Deadline for submission: 30. November 2018]

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**

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.

Non-AWI applicants have to cover furthers costs: flight time (~6500 €/h), fuel (~570 l/h), and if required, certification of new instruments (>5000 €; depending on complexity of instrument and requests of Transport Canada) and new campaign certification (~8000 - ~25000).

# General Information

## Name of Project (Acronym and long title)

1. Acronym
2. long title

## Applicant(s)

* Name of the applicant
* Name of the institute
* Street / Postcode / Town
* Telephone / Fax no
* E-mail

## 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.

## Details for cost sharing

* Please provide approximate share of the applicant(s) and partners on the project, distinguishing:

AWI – HGF – German universities – international Universities – other education/research – other commercial

## Reference to POF – for AWI personnel only

* Please point out to which milestones and deliverables of actual POF the proposed project contributes.

# 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, 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))

Guide line for volume: 2-3pages, excluding 3.5 References. Please feel free to attach figures with captions in a separate document.

## Abstract

## Relevance of project, state of the art, and previous work

## Objectives and work program

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

## Analysis

Funding, time frame and own expertise for data analysis.

## References

## Reviewer

Please suggest at least one independent reviewer.

# Requested resources

## Aircraft

One / both

## 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.

## Requested flight hours

The requested time shall include all intended flights for for the project including – if applicable – flights between the airstrips listed at point 4.3 above.

1. Survey flight time (including if applicable calibration flights): \_\_\_\_\_\_\_\_ h
2. Logistic flight time: \_\_\_\_\_\_\_\_ h
3. Positioning between bases listed at point 4.3 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.

## Period for operation and approximate duration of campaign

Rule of thumb for estimating duration of campaign: 30 h survey per week.

## Operation support

All missions are supported by 1-2 technical stuff. 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 principle 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.

**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 |  |  | B857 |  |
| Nikon D5-A, nadir mounted |  |  | B882 |  |
| Canon Mark III 1Ds, zenith mounted |  |  | B724 |  |
| Canon Fisheye Camera | Met |  | B877 |  |
| Digital Nadir- and Zenith-Video System |  |  | B882 |  |
| Adjustable video camera nadir mounted |  |  | B818 |  |
|  |  |  |  |  |
| 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 |  | X | B815 |  |
| PT100 temperature sensor, relative humidity sensor, pitot/static pressure sensor |  | X | B712 |  |
| 5 – hole probe with absolute and relative humidity sensors, PT100 thermometer, relative humidity sensor | J. Hartmann | X | B719 or B851 |  |
| Hygrometer CR2, dew-point and freezing point sensor |  | X | B722 |  |
| Licor 7200 humidity sensor | J. Hartmann | X | B897 |  |
| Nevzorov probe for liquid & total water content |  | X | B809 |  |
|  |  |  |  |  |
| Aerosol LIDAR AMALI | R. Neuber | X | B804 |  |
| Ultra high sensitivity aerosol spectrometer (UHSAS) | A. Herber | X | B861 |  |
| Single particle photometer (SP2) | A. Herber | X | B862 |  |
|  |  |  |  |  |
| Hyper spectral camera AISA Eagle (under floor mount) | G. Birnbaum | X | B841 |  |
| Ocean Optics Spectrometers | G. Birnbaum | X | B825 |  |
| Kipp&Zonen CMP22/CGR4, 2 Pyranom., 2 Pyrgeom. | G. Birnbaum | X | B840 |  |
| Sun photometer | A. Herber | X | B805 |  |
| Infrared radiation thermometer KT19 |  | X | B839 |  |
|  |  |  |  |  |
| EM-system for sea-ice thickness measurements | S. Hendricks | X | B817 |  |
| Ice thickness radar | D. Steinhage | X | B709 & B856 |  |
| Ice structure (accumulation) radar | D. Steinhage | X | B803 |  |
| Snow thickness radar | D. Steinhage | X | B867 |  |
| UWB Depth Sounder (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 |  |
| Drop-sonde system for RD94 sondes (AVAPS lite) |  |  | B807 |  |
| Launcher for CALIB ice buoys |  |  | B415 |  |
| Center wing pylons for up to 4 PMS – probes |  |  | B808 |  |
| Outer Wing Carriers for DMT Canisters |  |  | B873 |  |

Contacts (as October 2018):

Daniela Jansen 0471 4831 1347 Daniela.Jansen@awi.de

Gerit Birnbaum 0471 4831 1795 Gerit.Birnbaum@awi.de

Graeme Eagles 0471 4831 1237 Graeme.Eagles@awi.de

Jörg Hartmann 0471 4831 1789 Jorg.Hartmann@awi.de

Stefan Hendricks 0471 4831 1874 Stefan.Hendricks@awi.de

Andreas Herber 0471 4831 1489 Andreas.Herber@awi.de

Roland Neuber 0331 288 2129 Roland.Neuber@awi.de

Daniel Steinhage 0471 4831 1198 Daniel.Steinhage@awi.de