



DLR – DAAD Fellowships

Fellowship No. 452

Research Area : Space

Research Topic: **Development of Algorithms for Monitoring Permafrost Indicators using Multi-Parametric Synthetic Aperture Radar Systems**

DLR Institute: Microwaves and Radar Institute, DLR Oberpfaffenhofen

Position: Doctoral Fellow

Openings: 1

Job Specification:

Monitoring permafrost regions from space is one of the objectives of future satellite missions. In times of climate change and global warming the permafrost boundary moves north more rapidly every year. Permafrost soils contain CO₂ and even worse methane (CH₄). When thawed (or activated) these critical gases are released to the atmosphere.

Radar remote sensing can help to find indicators for the thawing and freezing states of the soil surface. The problem often in natural terrains is the vegetation cover on top of the soil surface. In order to get the response of the soil and not the vegetation cover, different approaches can be applied. The objective of the proposed thesis is to develop innovative algorithms for the quantification of the soil state and its change from polarimetric tomographic Synthetic Aperture Radar data at different frequencies. For this, experimental airborne data are available over the Canadian Northwest (Northwest Territories and Yukon) and Saskatchewan mimicking spaceborne sensors. The ultimate goal would be to implement the algorithms and the processes on spaceborne systems, as for example on single-pass L-band missions.

Please send your complete application (cover letter including preferred starting date, curriculum vitae, current enrollment, current transcript of records from your University).

Required Qualification:

- Master degree in Information and Communication Engineering, Computer Science, Mathematics, Physics, Geoscience
- Proficient on multiple platforms (Linux, Mac, Windows) with skilled programming experiences (Python, IDL, C++, etc.)
- Experiences in statistical and electromagnetic modelling, data processing and image analysis
- Good knowledge of English (speaking and writing)

Advantageous Skills:

- Experiences already in the Synthetic Aperture Radar domain

English competence: See requirements on www.daad.de/dlr

Earliest Start Date: November 1st, 2020

Application Deadline: September 20th, 2020

Further Information: <http://www.dlr.de>
<http://www.daad.de/dlr>