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DLR – DAAD Fellowships

Fellowship No. 453

Research Area : Space

Research Topic: **Development of Algorithms for Global Soil Moisture Estimation using Multi-Parametric Synthetic Aperture Radar Systems**

DLR Institute: Microwaves and Radar Institute, DLR Oberpfaffenhofen

Position: Doctoral Fellow

Openings: 1

Job Specification:

Today we have mainly two global mission acquiring soil moisture values over land surfaces with a spatial resolution within 50-30 km and with a high temporal repeatability. These passive radiometer missions are important to provide some insight on the global evolution in soil moisture and are used as an input for climate models. However, the low spatial resolution does not allow distinguishing the local spatial patterns needed for local and regional insights. A further limitation is represented by the presence of vegetation which deeply influences the measurements.
Synthetic Aperture Radar (SAR) systems, active radar sensors, can deliver products with a high spatial resolution (e.g 10-50 m) and, due to the multi-parametric acquisition; they allow separating the ground and the vegetation volume signal contribution. The isolation of the effective ground contribution is important for the inversion of the multi-parametric measurements for soil moisture estimation.
The objective of the proposed thesis is to develop innovative algorithms for soil moisture estimation from multi-parametric longer wavelengths SAR data for the derivation of high resolution products. For this, airborne data are available or can be renewed with new campaigns mimicking spaceborne sensors. The ultimate goal would be to implement the algorithms and the processes on spaceborne systems, as for example on the planned L-band mission.

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 (Phython, 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
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