SAR-EDU: Teaching Earth Observation in an online environment

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ABSTRACT

Distant learning plays a key role in recent education and will be of increasing significance in the future. Free and open education has the potential to overcome multiple shortcomings in information and knowledge transfer in a modern, digital and global society. E-Learning provides potentials to overcome educational deficits and to create a higher level of global education equality.

Radar remote sensing has a long and prosper tradition in the Earth observation sciences. Past, present and future satellite missions provide vast amounts of data for the analysis of the condition and development of the Earth surface as well as natural and anthropogenic habitats. The application of radar data is rife in nearly all fields of geoscientific research, decision making and the creation of commercial geographic products.

The project SAR-EDU is a joint education initiative of the Friedrich-Schiller-University of Jena (FSU), the German Aerospace Center (DLR) and numerous partners in radar-related scientific institutions. In a previous project phase two main cornerstones for education in the field of applied radar remote sensing were established. Since 2013 the FSU is hosting a yearly summer school on applied radar remote sensing. Furthermore DLR and FSU published the SAR-EDU learning portal in late 2014 (https://saredu.dlr.de). This web portal is designed to provide access to a vast range of teaching material regarding the basics, methods and applications for radar remote sensing.

In the recent project phase it is planned to equip the existing web portal with further interactive functionality in order to create a vital online community for radar remote sensing education. The teaching material is available under a creative commons license (CC BY-SA 4.0) allowing for the usage, adaption and distribution of the material.

Building on the concept of E-Learning, modern web platforms cannot be thought without the integration of tools for communication and community. In this framework, the SAR-EDU learning platform is designed to act as an interface for education in the field of Earth observation (EO). The platform consists mainly of two aspects. Firstly, an online university to host online courses and teaching material. Secondly, an online community to host discussions, exchange of knowledge, tools and data regarding EO.

The aim is to create a learning platform that will host multiple courses regarding EO basics, methods and applications. The platform is designed for collaboration between multiple institutions to design and provide online learning courses, such as Massive Open Online Courses (MOOC) and Open Educational Resources (OER). The technical implementation is based on a Learning Management System (LMS) that provides features to host courses and organize learners.

Furthermore, the project aims at the development of interactive content to contribute to the evolution of web-based learning towards a substantial alternative to on-site learning, as well as the exploration of approaches to combine online- and on-site learning.