

# Ground topography estimation over forests considering Polarimetric SAR Interferometry

A research group of the UPC in collaboration with the German Aerospace Center (DLR) has developed a new implementation for the retrieval of the topographic phase, avoiding the bias introduced by the volumetric scattering components. Partners to further develop the system and/or to establish commercial agreements with technical cooperation are sought.

## The Challenge

Forest areas cover approximately 30% of the Earth's solid surface, with a mean tree height of about 20 m. Any attempt to provide global surface mapping based on SAR Interferometry (InSAR) is affected by the presence of the vegetation cover. The interferometric phase due to the ground surface scattering presents a bias, respect to the actual value, due to vegetation. The magnitude of this bias error depends on the system parameters, mainly the microwave frequency, and on the forest characteristics, basically the extinction coefficient.

## The Technology

This technology represents an alternative implementation of Random Volume over Ground (RVoG) scattering model inversion to estimate the underlying ground topography from Polarimetric Interferometric SAR data.

It presents several advantages respect to the conventional use of the RVoG model, presents a more robust by means of parameter estimation, implementation and an unambiguous estimation of the ground topography.

## Innovative advantages

- Allow a direct and unambiguous estimation of the underlying ground topography without the bias induced by the vegetation cover in case of forested areas.
- More robust than the Random Volume over Ground scattering model inversion

## Current stage of development

Feasibility is tested in the Laboratory scale

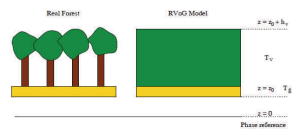
## Applications and Target Market

This technology could be of interest for companies devoted to navigation and communication devices. Global surface mapping companies.

## Reference number

MKT2010/0021\_I

## New implementation for the retrieval of the topographic phase



## An alternative implementation of the Random Volume over Ground (RVoG)

**More robust, accurately, efficiently and unambiguous estimation of the ground topography**

## Business Opportunity

Technology available for licensing with technical cooperation

## Patent Status

Patent priority application filed

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